COUNTY OF MENDOCINO
DEPARTMENT OF PLANNING AND BUILDING SERVICES
860 NORTH BUSH STREET · UKIAH · CALIFORNIA · 95482
752 SOUTH FRANKLIN STREET · FT. BRAGG · CALIFORNIA · 95437

JULIA KROG, DIRECTOR
TELEPHONE: 707-234-6650
FAX: 707-463-5709
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FB FAX: 707-961-2427
pbs@mendocinocounty.gov
www.mendocinocounty.org/pbs

August 15, 2025

Planning –Ukiah	Archaeological Commission	County Addresser
Department of Transportation	Sonoma State University	Cloverdale Rancheria
Environmental Health -Fort Bragg	Native Plant Society	Cahto Tribe
Building Inspection - Fort Bragg	Department of Forestry/ CalFire	Redwood Valley Rancheria
Assessor	-Land Use	Sherwood Valley Band of Pomo Indians
Cannabis Department	Department of Fish and Wildlife	Round Valley Tribe
Mendocino County Farm Bureau	California Coastal Commission	Mendocino Volunteer Fire District
Air Quality Management	Regional Water Quality Control Board	Mendocino Community Services

CASE#: CDP_2021-0016, B_2021-0010 & V_2025-0002
DATE FILED: 3/5/2021
OWNER/APPLICANT: Andrew & Kirsten Christensen
AGENT: Wynn Coastal Planning & Biology, INC.
REQUEST: Coastal Development Permit to demolish an existing single-family residence, garage and shed; construct a new single-family residence with an attached garage, guest cottage, and other ancillary development. Also included within the request is to remove dead and dying trees and the allowance for temporary occupancy of travel trailer during construction; and Boundary Line Adjustment proposing to merge three (3) parcels into one (1); and Variance request for a front yard and corridor preservation setback reduction to allow a 6'x12' woodshed, a 10'x10' pump house and a 7'x10' paved generator pad to be located within the combine front yard and corridor preservation setback at RD 500D (CR 500D). The woodshed to be located at 12'-8" from front yard property line (28'-5" from centerline of RD 500D (CR 500D)). The pump house and paved generator pad to be located at 20'-0" from front yard property line (36'-7" from centerline of RD 500D (CR 500D)).
Boundary Line Adjustment proposing to merge three (3) parcels into one (1); and Coastal Development Permit proposing to convert an existing garage to a single-family residence, convert the existing residential structure to a guest cottage, and other ancillary development.
ENVIRONMENTAL DETERMINATION: Mitigated Negative Declaration
LOCATION: In the Coastal Zone, 1.0± mile north of the Town of Mendocino, on the west side of RD 500D (CR 500D), 540 feet west of its intersection with State Route 1 (SR 1), located at 11800 Road 500D, Mendocino Area; APNs: 118-320-10, 11, and 12.
SUPERVISORIAL DISTRICT: 5
STAFF PLANNER: Jessie Waldman
RESPONSE DUE DATE: August 29, 2025

PROJECT INFORMATION CAN BE FOUND AT:
www.mendocinocounty.org
Select "Government" from the drop-down; then locate Planning and Building Services/Public Agency Referrals.

Mendocino County Planning & Building Services is soliciting your input, which will be used in staff analysis and forwarded to the appropriate public hearing. You are invited to comment on any aspect of the proposed project(s). Please convey any requirements or conditions your agency requires for project compliance to the project coordinator at the above address, or submit your comments by email to pbs@mendocinocounty.org. Please note the case number and name of the project coordinator with all correspondence to this department.

We have reviewed the above application and recommend the following (please check one):

☐ No comment at this time.

☐ Recommend conditional approval (attached).

☐ Applicant to submit additional information (attach items needed, or contact the applicant directly, copying Planning and Building Services in any correspondence you may have with the applicant)

☐ Recommend denial (Attach reasons for recommending denial).

☐ Recommend preparation of an Environmental Impact Report (attach reasons why an EIR should be required).

☐ Other comments (attach as necessary).

_____

_____

_____

_____

REVIEWED BY:

Signature _____ Department _____ Date _____

CASE: CDP_2021-0016, B_2021-0010 & V_2025-0002

OWNER/APPLICANT: ANDREW & KIRSTEN CHRISTENSEN

AGENT: WYNN COASTAL PLANNING & BIOLOGY, INC.

REQUEST: Coastal Development Permit to demolish an existing single-family residence, garage and shed; construct a new single-family residence with an attached garage, guest cottage, and other ancillary development. Also included within the request is to remove dead and dying trees and the allowance for temporary occupancy of travel trailer during construction; and Boundary Line Adjustment proposing to merge three (3) parcels into one (1); and Variance request for a reduction to the front yard and corridor preservation setback limitations to allow for the construction of a fence, woodshed, pump house, and a paved generator pad to be located within the combine front yard and corridor preservation setback parallel to RD 500D (CR 500D). The 6' tall fence will follow the front yard property boundary lines, parallel to RD 500D and be located no less than 16'-0" from centerline of RD 500D (CR 500D)). The 6'x12'x9' tall woodshed will be located at 12'-8" from front yard property line (28'-5" from centerline of RD 500D (CR 500D)). The 10'x10'x9' tall pump house and a 7'x10' paved generator pad will to be located at 20'-0" from front yard property line (36'-7" from centerline of RD 500D (CR 500D)).

LOCATION: In the Coastal Zone, 1.0± mile north of the Town of Mendocino, on the west side of RD 500D (CR 500D), 540 feet west of its intersection with State Route 1 (SR 1), located at 11800 Road 500D, Mendocino Area; APNs: 118-320-10, 11, and 12.

APN/S: 118-320-10, 118-320-11, & 118-320-12

PARCEL SIZE: 0.6±, 0.4±, & 0.2± acres

GENERAL PLAN: Rural Residential (RR5(2))
ZONING: Rural Residential (RR5(2))

EXISTING USES: Residential

DISTRICT: 5 (Williams)

RELATED CASES: CDP_2022-0033 (Well- APPROVED); PAC_2017-0006 (Pre-Application Conference; CC 18-01; CDB 22-06; Pre-Application Conference 21-01; EM-04-01 for an emergency well (#1) on APN 118-320-02; CDP-04-02 follow-up permit to EM-04-01 for Well #1; GP-11-2001 and MEN-MAJ-1-02 Part C Amending LUP 4.7-4 and Changing OS to RR; ST24644 (Septic Permit – Pending CDP_2021-0016)

REFERRAL AGENCIES

LOCAL
- ☒ Air Quality Management District
- ☒ Archaeological Commission
- ☒ Assessor's Office
- ☒ Building Division (FB)
- ☒ County Addresser
- ☒ Department of Transportation (DOT)
- ☒ Environmental Health (EH)(FB)
- ☒ Mendocino City Community Services District
- ☒ Mendocino Volunteer Fire District
- ☒ Planning Division (UKIAH)
- ☒ Sonoma State University
- ☒ Mendocino County Farm Bureau
- ☒ Mendocino Cannabis Department

STATE
- ☒ CALFIRE (Land Use)
- ☒ California Coastal Commission
- ☒ California Dept. of Fish & Wildlife
- ☒ California Native Plant Society
- ☒ Regional Water Quality Control Board

TRIBAL
- ☒ Cloverdale Rancheria
- ☒ Cahto Tribe
- ☒ Redwood Valley Rancheria
- ☒ Sherwood Valley Band of Pomo Indians
- ☒ Round Valley Tribe

ADDITIONAL INFORMATION: On July 11, 2025, the Agent revised the CDP_2021-0016 Drawings, with revised building locations, and additional supplemental reports and analyses. On July 28, 2025, the Agent also applied for a Variance request for a reduction to the front yard and corridor preservation setback limitations. No change has been proposed to the B_2021-0010 application, as of this date.

STUDIES COMPLETED:

Revised Architectural Drawings, prepared by Newberger & Associates, dated July 10, 2025

A. *Biological Scoping & Botanical Survey Report,* prepared by Wynn Coastal Planning (WCPB), dated December 28, 2020
   a. *Biological Report of Compliance*, prepared by WCPB, dated December 28, 2020
   b. *Preliminary Mitigation, Management, Monitoring, & Reporting Plan*, prepared by WCPB, dated January 5, 2023
   c. *Biological Scoping & Botanical Survey & Wetland Delineation Report*, prepared by WCPB, dated December 12, 2024
   d. *Takings Analysis*, prepared by WCPB, dated December 27, 2024

B. *Geotechnical Investigation*, prepared by Brunsing Associates, dated May 9, 2019
   a. *Geotechnical Report Update*, prepared by Brunsing Associates, dated November 21, 2024
   b. *Geotechnical Investigation Memo*, prepared by Brunsing & Associates, dated July 1, 2025

C. *Archaeological Survey,* prepared by Max A. Neri, dated October 29, 2001
   a. *Archaeological Survey*, prepared by ALTA Archaeological Consulting, Dated January 2022

D. *CDF # 3-21*, CALFIRE Conditions of Approval Fire Safe Regulations, Approved January 6, 2021
   a. *CDF#59*-25, CALFIRE Conditions of Approval Fire Safe Regulations, dated May 31, 2025
   b. *Fire Prevention Vegetation Management Plan,* prepared by WCPB/Newberger, dated July 10, 2025

E. *Proof of Water Studies*, prepared by Lawrence & Associates, dated October 25, 2023
F. *Structural Evaluation*, prepared by Michael Butler, Civil Engineer, dated June 17, 2025
G. *Evaluation of Potential Well-Pumping Effect on Wetlands,* prepared by Lawrence & Associates, dated June 24, 2025

STAFF PLANNER: JESSIE WALDMAN **DATE:** 8/15/2025

ENVIRONMENTAL DATA

1. MAC:
GIS
NO

2. FIRE HAZARD SEVERITY ZONE:
CALFIRE FRAP maps/GIS
MODERATE

3. FIRE RESPONSIBILITY AREA:
CALFIRE FRAP maps/GIS
CalFire (State Responsible Agency)
Mendocino Fire Protection District (MVFD) (Local Responsible Agency)

4. FARMLAND CLASSIFICATION:
GIS
Grazing Land (G)

5. FLOOD ZONE CLASSIFICATION:
FEMA Flood Insurance Rate Maps (FIRM)
NO

6. COASTAL GROUNDWATER RESOURCE AREA:
Coastal Groundwater Study/GIS
CRITICAL WATER RESOURCES

7. SOIL CLASSIFICATION:
Mendocino County Soils Study Eastern/Western Part
116—Bruhel-Shinglemill complex, 2 to 15

8. PYGMY VEGETATION OR PYGMY CAPABLE SOIL:
LCP maps, Pygmy Soils Maps; GIS
NO

9. WILLIAMSON ACT CONTRACT:
GIS/Mendocino County Assessor's Office
NO

10. TIMBER PRODUCTION ZONE:
GIS
NO

11. WETLANDS CLASSIFICATION:
GIS
ZONE X

12. EARTHQUAKE FAULT ZONE:
Earthquake Fault Zone Maps; GIS
NO

13. AIRPORT LAND USE PLANNING AREA:
Airport Land Use Plan; GIS
NO

14. SUPERFUND/BROWNFIELD/HAZMAT SITE:
GIS; General Plan 3-11
NO

15. NATURAL DIVERSITY DATABASE:
CA Dept. of Fish & Wildlife Rarefind Database/GIS
NO

16. STATE FOREST/PARK/RECREATION AREA ADJACENT:
GIS; General Plan 3-10
YES; RUSSIAN GULCH STATE PARK

17. LANDSLIDE HAZARD:
Hazards and Landslides Map; GIS; Policy RM-61; General Plan 4-44
YES; 0-10

18. WATER EFFICIENT LANDSCAPE REQUIRED:
Policy RM-7; General Plan 4-34
NO

19. WILD AND SCENIC RIVER:
www.rivers.gov (Eel Only); GIS
NO

20. SPECIFIC PLAN/SPECIAL PLAN AREA:
Various Adopted Specific Plan Areas; GIS

21. STATE CLEARINGHOUSE REQUIRED:
Policy
YES

22. OAK WOODLAND AREA:
USDA
NO

23. HARBOR DISTRICT:
Sec. 20.512
NO

FOR PROJECTS WITHIN THE COASTAL ZONE ONLY

24. LCP LAND USE CLASSIFICATION:
LCP Land Use maps/GIS
LCP LAND USE MAP 15: CASPAR

25. LCP LAND CAPABILITIES & NATURAL HAZARDS:
LCP Land Capabilities maps/GIS; 20.500
Bedrock (Zone 1)

26. LCP HABITATS & RESOURCES:
LCP Habitat maps/GIS; 20.496
BARREN

27. COASTAL COMMISSION APPEALABLE AREA:
Post LCP Certification Permit and Appeal Jurisdiction maps/GIS; 20.544
YES, West of First Public Road & Bluff Top Parcel

28. CDP EXCLUSION ZONE:
CDP Exclusion Zone maps/GIS
NO

29. HIGHLY SCENIC AREA:
Highly Scenic & Tree Removal Area Maps/GIS; Secs. 20.504.015, 20.504.020
HIGHLY SCENIC (CONDITIONAL)

30. BIOLOGICAL RESOURCES & NATURAL AREAS:
Biological Resources & Natural Area Map; GIS; General Plan 4-9
YES

31. BLUFFTOP GEOLOGY:
GIS; 20.500.020
YES; BLUFF TOP

Docusign Envelope ID: 9EC11B32-072D-4120-8C85-7D9B1B36C851

PLANNING & BUILDING SERVICES

CASE NO:	B-2021-0010 New Owner
DATE FILED:	12-30-2024
FEE:	-
RECEIPT NO:	
RECEIVED BY:	@WALDMANJ

Office Use Only

BOUNDARY LINE ADJUSTMENT APPLICATION FORM

APPLICANT

Name: Andrew M. + Kirsten L. Christensen Phone: 303-332-1493

Mailing Address: 7944 Dante Drive

City: Littleton State/Zip: CO 80125 Email: biomdlr@me.com

PROPERTY OWNER

Name: Andrew M. Christensen Revocable Trust + Kirsten L. Christensen Revocable Trust Phone: 303-332-1493

Mailing Address: 7944 Dante Drive

City: Littleton State/Zip: CO 80125 Email: biomdlr@me.com

RECEIVED
DEC 30 2024
PLANNING & BUILDING SERV
FORT BRAGG, CA

AGENT

Name: Wynn Coastal Planning & Biology, Meghan Durbin Phone: 707-409-9597

Mailing Address: 703 N Main Street

City: Fort Bragg State/Zip: CA 95437 Email: meghan@wcplan.com

LOT NO.	ASSESSOR'S PARCEL NUMBERS	PARCEL OWNER/S	STREET ADDRESS	LOT ACREAGE BEFORE / AFTER	
1	118-320-11	Christensen Trusts (per above)	11800 Road 500D	1.3 ac	2.8 ac
2	118-320-10	Christensen Trusts (per above)	11800 Road 500D	1.0 ac	0.0 ac
3	118-320-12	Christensen Trusts (per above)	11800 Road 500D	0.5 ac	0.0 ac

BRIEFLY DESCRIBE THE PROPOSED PARCEL ADJUSTMENTS: (ACREAGE TO BE ADJUSTED FROM ASSESSOR'S PARCEL NUMBER INTO ASSESSOR'S PARCEL NUMBER, ETC.)

Propose merge of APNs 118-320-10, 118-320-11, and 118-320-12 into a single 2.8 acre parcel

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

Signed by: Andrew M Christensen 667F114084A241B — 12/21/2024
Signature of Applicant/Agent *Date*

DocuSigned by: E8E24207A23C4B6 — 12/21/2024
Signature of Owner *Date*

Docusign Envelope ID: 9EC11B32-072D-4120-8C85-7D9B1B36C851

Project Description Questionnaire for Boundary Line Adjustments Located In the Coastal Zone

The purpose of this questionnaire is to provide additional information related to the Coastal Zone concerning your application to the Department of Planning and Building Services and other agencies who will be reviewing your project proposal. Please remember that the clearer the 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.

PRESENT USE OF PROPERTY

1) Are there existing structures on the property? ☒ Yes ☐ No
If yes, describe below, and identify the use of each structure on the map to be submitted with your application.

Detached garage, single family residence, four outbuildings/sheds

2) 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.

A concurrent CDP application update is being submitted in which the applicant is proposing to demolish existing development in poor condition, to be replaced with a new residence with ancillary development.
Existing development to be demolished includes a residence, shop/garage and one outbuilding/shed.
All debris will be disposed of at a legal disposal site outside of the coastal zone.

3) Lot area (within property lines): **2.8** ☒ acres ☐ square feet

4) Lot Coverage:

LOT 1	EXISTING	PROPOSED	LOT 2	EXISTING	PROPOSED
Building Coverage	1019 SF	2105 SF	Building Coverage	453 SF	0 SF
Paved Area	0 SF	0 SF	Paved Area	0 SF	0 SF
Landscaped Area	0 SF	0 SF	Landscaped Area	0 SF	0 SF
Unimproved Area	55,609 SF	121,968 SF	Unimproved Area	43,547 SF	0 SF
TOTAL:	56,628 SF	121,968 SF	TOTAL:	43,560 SF	0 SF

LOT 3	EXISTING	PROPOSED	LOT 4	EXISTING	PROPOSED
Building Coverage	633 SF	0 SF	Building Coverage	SF	SF
Paved Area	0 SF	0 SF	Paved Area	SF	SF
Landscaped Area	0 SF	0 SF	Landscaped Area	SF	SF
Unimproved Area	20,985 SF	0 SF	Unimproved Area	SF	SF
TOTAL:	21,780 SF	0 SF	TOTAL:	SF	SF

5) Parking will be provided as follows:

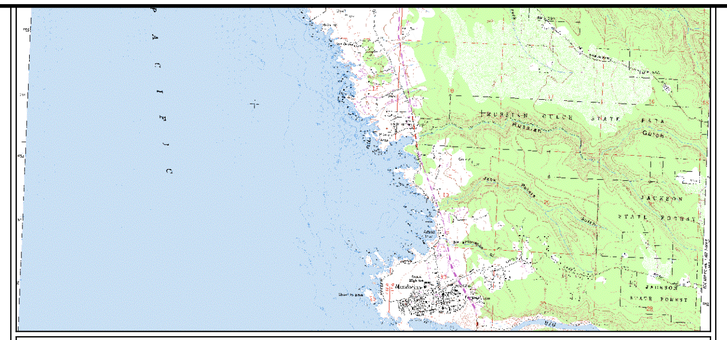
LOT 1	Existing Spaces: 0	Proposed Spaces: 4+
LOT 2	Existing Spaces: 0	Proposed Spaces: 0
LOT 3	Existing Spaces: 0	Proposed Spaces: 0
LOT 4	Existing Spaces: 0	Proposed Spaces: 0

6) Will the alteration of parcel boundaries create any new building sites which are visible from State Highway 1 or another scenic route? ☐Yes ☒ No

7) Will the alteration of parcel boundaries create any new building sites which are visible from a park, beach or other recreational area? ☐Yes ☒ No

ANY ADDITIONAL DEVELOPMENT INCLUDING, BUT NOT LIMITED TO, BUILDING CONSTRUCTION, GRADING OR TREE REMOVAL IS NOT REVIEWED AS PART OF A BOUNDARY LINE ADJUSTMENT AND REQUIRES A SEPARATE COASTAL DEVELOPMENT PERMIT.

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



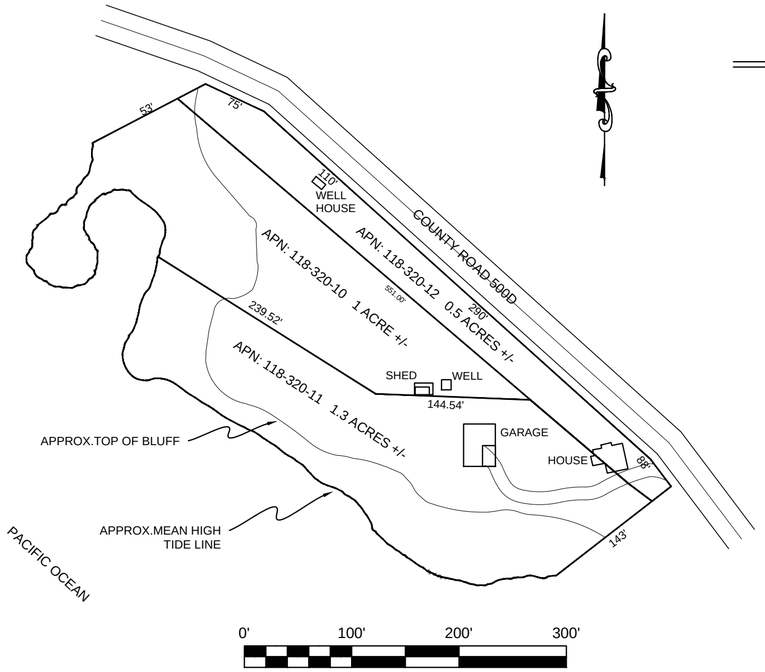
VICINITY MAP NO SCALE

Tentative Map

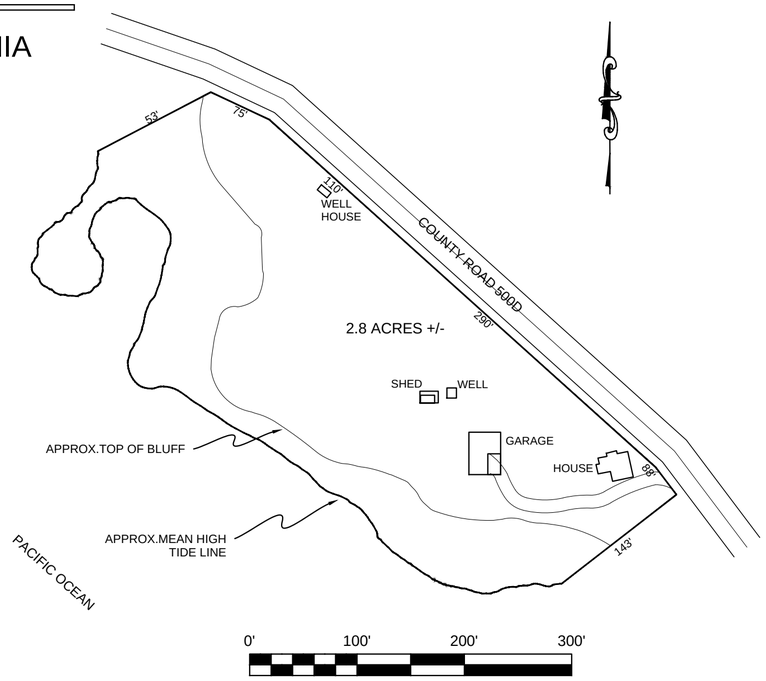
OF PROPOSED BOUNDARY LINE ADJUSTMENT
OF A.P. NO. 118-320-10, 11 & 12
BEING A PORTION OF SECTION 19
TOWNSHIP 17 NORTH,
RANGE 17 WEST, M.D.B.&M.

MENDOCINO COUNTY, CALIFORNIA

OCTOBER, 2024



EXISTING



PROPOSED

AGENT: WYNN COASTAL PLANNING
703 NORTH MAIN STREET
FORT BRAGG, CA 95437

OWNERS: AP# 118-320-10, 11 & 12
ANDREW M. & KIRSTEN L. CHRISTENSEN
7944 DANTE DRIVE
LITTLETON, CO 80125

Docusign Envelope ID: 9EC11B32-072D-4120-8C85-7D9B1B36C851

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@mendocinocounty.gov
www.mendocinocounty.gov/planning

Case No(s)	CDP 2021-0016 UPDATE
CDF No(s)	
Date Filed	12-30-2024
Fee	600.00
Receipt No.	PRJ-065165
Received by	JWALDMAN

Office Use Only

COASTAL ZONE APPLICATION FORM

APPLICANT

Name: Andrew M. and Kirsten L. Christensen
Mailing Address: 7944 Dante Drive
Email:
City: Littleton State: CO Zip Code: 80125 Phone: 303-332-1493

PROPERTY OWNER

Name: Andrew M. Christensen Revocable Trust; and Kirsten L. Christensen Revocable Trust
Mailing Address: 7944 Dante Drive
Email:
City: Littleton State: CO Zip Code: 80125 Phone: 303-332-1493

AGENT

Name: Wynn Coastal Planning & Biology, Meghan Durbin
Mailing Address: 703 N Main Street
Email:
City: Fort Bragg State: CA Zip Code: 95437 Phone: 707-409-9597

PARCEL SIZE

2.8 ☐ Square feet ☒ Acres

STREET ADDRESS OF PROJECT

11800 Road 500D, Mendocino

ASSESSOR'S PARCEL NUMBER(S)

118-320-10, 118-320-11, and 118-320-12

RECEIVED
DEC 30 2024
PLANNING & BUILDING SERV
FORT BRAGG, CA

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

Signed by: Andrew M Christensen	12/21/2024	DocuSigned by:	12/21/2024
Signature of Applicant/Agent	Date	Signature of Owner	Date

Docusign Envelope ID: 9EC11B32-072D-4120-8C85-7D9B1B36C851

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 your 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.

Demolish existing 946sf shop/garage, 670sf single-family residence, and 150sf shed. Construct two-story 4,252 sf single-family residence, attached garage and detached 640sf guest cottage. Establish outdoor small scale agriculture in the optimal area on site. Define outdoor living space with decks and patios attached to structures. Convert existing test wells to production wells as a single well field. Install septic system, underground propane tank, back-up generator, underground water storage tanks, underground existing overhead utility lines, construct 100sf well pump house and trench for utility connections. Modify existing concrete water cisterns - demolish existing outbuilding over one cistern, decommission use as cisterns, construct decks over the remaining concrete structures. Relocate existing driveway and gate away from bluff edge and construct 30" high safety fence along a portion of the bluff edge. Repair/replace existing fence with gate along Road 500D and add service gate at north end for utility access. Remove dead and dying trees for wildfire resilience per biological report. Request temporary occupancy of travel trailer during construction and after the fact approval for existing gravel placed on ground by well driller, at proposed temporary travel trailer location, as part of the work performed under approved CDP_2022-0033.

This application is accompanied by a proposed boundary line adjustment to merge the subject parcels.

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

TYPE OF UNIT	NUMBER OF STRUCTURES	SQUARE FEET PER DWELLING UNIT
[x] Single Family	one	4252
[ ] Mobile Home		
[ ] Duplex		
[ ] Multifamily		

If Multifamily, number of dwelling units per building:_____

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

N/A

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

4. Will the proposed project be phased? [ ] Yes [x] 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.

shop/garage - 946 square feet
single-family residence - 670 square feet
outbuilding - 150 square feet
shed built on top of concrete cistern #1 - 201 square feet
concrete cistern #2 - 102 square feet
well house - 60 sq ft

See site plan for further details.

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.

All demolition debris will be disposed at legal disposal sites.

Shop/garage, single family residence, and one of the outbuilding/sheds will be demolished.

Two concrete cisterns previously used for water storage are located north of the proposed residence location. An existing shed is built on top of cistern #1. The shed will be demolished, and the remaining concrete structures of both cisterns will remain. Use as cisterns will be decommissioned and the decking will be replaced over the top of the remaining structures for safety.

7. Project Height. Maximum height of structure 22.5 feet.

8. Lot area (within property lines): 2.8 ☐ square feet ☒ acres
(121,968 square feet)

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

*****Please refer to additional sheet for lot coverage detail*****

GRAND TOTAL: _____ square feet
(Should equal gross area of parcel)

10. Gross floor area: 4252 sfr + 640 gc + 624 garage = 5,516 square feet (including covered parking and accessory buildings).

11. Parking will be provided as follows:

Number of Spaces Existing_____ Proposed 4 Total 4

Number of covered spaces	2	Size 9' x 20'
Number of uncovered spaces	2	Size 9' x 20'
Number of standard spaces	4	Size 9' x 20'
Number of handicapped spaces	0	Size_____

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

A. Electricity
- [x] Utility Company (service exists to the parcel).
- [ ] Utility Company (requires extension of services to site: _____ feet _____ miles
- [ ] On Site generation, Specify: _____
- [ ] None

B. Gas
- [x] Utility Company/Tank
- [ ] On Site generation, Specify: _____
- [ ] None

C. Telephone: [x] Yes [ ] No

13. Will there by any exterior lighting? [x] Yes [ ] No
If yes, describe below and identify the location of all exterior lighting on the plot plan and building plans.

All lighting will be shielded and downcast. See plans for further detail

14. What will be the method of sewage disposal?

- [ ] Community sewage system, specify supplier _____
- [x] Septic Tank
- [ ] Other, specify _____

15. What will be the domestic water source?

- [ ] Community water system, specify supplier _____
- [x] Well
- [ ] Spring
- [ ] Other, specify _____

16. Is any grading or road construction planned? [x] 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.).

Overall the terrain is mostly level at the site of the existing residence and shop/garage. A small irregular berm created by the excavation for the existing development is located between the existing residence and shop/garage. A small undisturbed knoll (to remain undisturbed) is located along the north and west sides of the existing shop/ garage. The remainder of the terrain slopes downward gently from the knoll in a northerly direction.

For grading and road construction, complete the following:

A. Amount of cut: 900 cubic yards
B. Amount of fill: 0 cubic yards
C. Maximum height of fill slope: 0 feet
D. Maximum height of cut slope: 6.5 feet
E. Amount of import or export: 900 cubic yards
F. Location of borrow or disposal site: County approved landfill or disposal site outside of coastal zone; to be determined by Contractor

17. Will vegetation be removed on areas other than the building sites and roads? ☒ Yes ☐ No
If yes, explain:

Dead and declining trees will be removed for wildfire resilience. Please refer to Sheet A1.3 of the architectural plan set for tree removal detail.

18. Does the project involve sand removal, mining or gravel extraction? ☐ Yes ☒ 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? ☐ Yes ☒ 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? ☐ Yes ☒ No
If yes, explain:

21. Is the proposed development visible from:

A. State Highway 1 or other scenic route? ☒ Yes ☐ No
B. Park, beach or recreation area? ☒ Yes ☐ No

A small portion of the SFR will be just barely visible while driving northbound across Jack Peters Creek Bridge and distantly from portions of Mendocino Headlands State Park; please refer to enclosed visual study on Sheet V1.1 of the architectural plan set.

22. Will the project involve the use or disposal of potentially hazardous materials such as toxic substances, flammables, or explosives? ☐ Yes ☒ 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 ☐ Yes ☒ No
B. Filling ☐ Yes ☒ No
C. Dredging ☐ Yes ☒ No
D. Placement of structures in open coastal waters, wetlands, estuaries or lakes ☐ Yes ☒ No

Amount of material to be dredged or filled? _____ cubic yards.

Location of dredged material disposal site: _____
_____

Has a U.S. Army Corps of Engineers permit been applied for? ☐ Yes ☐ No

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

Docusign Envelope ID: 9EC11B32-072D-4120-8C85-7D9B1B36C851

CDP APPLICATION ADDENDUM

11800 ROAD 500D, MENDOCINO (CHRISTENSEN)

QUESTION 9 - LOT COVERAGE

GROSS PARCEL SIZE = 2.78 ac / 121,097 sq ft					
Category	**Existing (sf)**	**To Be Demolished (sf)**	**New Proposed (sf)**	**Total (sf)**	**% of Lot Size**
Building Coverage	2,105	1,766	3,341	**3,680**	**3.04%**
Paved Area	2,642	2,642	4,715	**4,715**	**3.89%**
Landscaped Area	0	n/a	n/a	**0**	**0.00%**
Unimproved Area	117,221	n/a	n/a	**113,573**	**93.79%**
		TOTAL LOT COVERAGE		**8,395**	**6.93%**

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

SUBMITTAL

December 27, 2024

Planning and Building Services
120 West Fir Street
Fort Bragg, CA 95437

RE: Update to Coastal Development Permit Application CDP_2021-0016

Owner: Andrew M. & Kirsten L. Christensen

Site: 11800 Road 500D
Mendocino, CA 95460
APNs: 118-320-10, -11 and -12

Dear Jessie,

Enclosed, please find the revised application and supplemental material for the update to CDP_2021-0016. In addition to updating the owner/applicant information, we are also proposing changes to the project and providing updated constraint studies.

The original CDP application was filed in 2021 by the previous owner (Camp Bedhead, LLC) with Lavi Daniel (one of the LLC officers) shown as the applicant. The Christensens became the owners in September 2023 as evidenced by the grant deed included in this submittal as proof of ownership.

Prior to Mr. Daniel and other previous owners' use, the parcel was developed with a residence, workshop, carport, sheds, animal enclosures and garden areas beginning in the 1960s/70s.

Juliana Cherry was the previous Mendocino County Planner assigned to this project. As the Planning Division processed the application, the Coastal Commission brought up concerns regarding the lack of demonstration of adequate water. During escrow Mr. Daniel, through facilitation by the Christensens, filed a CDP application to drill test wells. CDP_2022-0033 was issued in February 2023. Through coordination with Director Krog, an Amended CDP was issued on May 3rd, 2024. For clarity - though the work authorized by CDP_2022-0033 had already been completed, it was discovered that the project description on the originally issued CDP was misstated. Hence, the appropriate action was taken to amend CDP_2022-0033 with the correct project description.

Once the test wells were drilled and adequate water was confirmed via a Proof of Water study, completed by Bonnie Lampley of Lawrence & Associates in Fall 2023 (enclosed), the Christensens engaged with the appropriate consultants to update the biological and geotechnical studies previously performed. To modify the home design to suit their needs and intentions for use, the Christensens engaged the services of local architect, Todd Newberger.

The biological study update reveals that the boundaries of the identified ESHA on site have changed over time.

- A number of individual Northern Bishop Pine trees in the northwestern area of the property were near the end of their life expectancy at the time of the 2021 CDP application submittal. Those trees have since died which has changed the extent of the NBP forest ESHA.
- During site visits by WCPB Senior Biologist, Asa Spade, in 2024, no signs of Sonoma Tree Vole were observed. This is presumably attributed to the tree die-off.

Encl: per above

CC: Andrew M. & Kirsten L. Christensen (owners/applicants); Todd Newberger (architect); file

- A formal wetland delineation was performed in 2024. Previously, the boundaries and location of the presumed wetland were determined by estimation based on vegetation patterns. As a result of the formal delineation, the extent of the presumed wetland ESHA was found to be smaller than previously assumed.

As a result of the biological update and safety concerns, pertinent changes to the development layout were determined to be necessary. The similarities and differences between the previous and current proposed projects are outlined below.

- The proposed driveway has been relocated:
    - Previously, the existing rough driveway location parallel to the bluff was retained.
    - To address concerns about the potential for vehicles to accidentally be driven off the bluff, the proposed driveway has been relocated. Rather than on the southeast/bluff side of the home, the driveway is now proposed to be located to the northeast of the home.
    - In addition to increasing the distance between vehicles and the bluff, this results in the home itself serving as a barrier between vehicles and the bluff edge.
    - This new location also provides more room for drivers to maneuver and is close enough to Road 500D for firetrucks and other large vehicles to turn around with more ease.
- The septic system design has been modified per the site plan and residence design changes:
    - The relocation of the driveway prompted a shift to the location of the primary and replacement leachfields. The driveway is now located where a portion of the primary leachfield was initially proposed. As a result, the primary leachfield has been shifted north and the replacement leachfield has shifted northwest.
    - The Mendocino County Division of Environmental Health has established a "Bedroom Definition Policy" which places strict parameters on the required size of a septic system as it relates to both number of bedrooms and residence square footage.
        - Per the DEH bedroom definition policy, there are 4 rooms that meet the physical definition of a bedroom. By that metric the proposed project features 4 bedrooms – 3 in the SFR and 1 in the Guest Cottage.
        - However, even with careful consideration to not exceed 4 rooms that meet the physical bedroom definition, the fact that the home is over 3,000 square feet arbitrarily designates the SFR as a 4 bedroom home.
        - Though there are only 3 rooms in the SFR which meet the physical criteria of a bedroom, DEH designated it as a 4 bedroom home based on the square footage. That automatic designation requires the septic system to be expanded to a 5-bedroom system ("4" in SFR, 1 in Guest Cottage)
- A two-story SFR was also included in the previously proposed project. That same footprint has been retained, with the following modifications to the floor plan:
    - An attached 2-car garage is now located where an art studio was previously proposed, on the east end of the residence ground floor.
    - Interior living space and a covered patio are now located where a carport was previously proposed, in the central area of the residence ground floor.
- No accommodation for water storage was previously proposed. We are now proposing an underground water storage system totaling 10,000 gallons.
- To curtail human impact to ESHA outside the development area:
    - Cantilevered decking is proposed around the second floor of the residence. In addition to providing a location for human activity that does not impact ESHA, this construction method prevents the development footprint from increasing.
    - In concert with the Rural Residential zoning designation, the intent of which is to *"…encourage and preserve local small scale farming in the Coastal Zone on lands which are not well-suited for large scale commercial agriculture. Residential uses should be located as to create minimal impact on the agricultural viability."*, a

vegetable garden is proposed where the existing SFR is located. Previously the existing SFR was proposed to be converted to the guest cottage.

- Due to the current formal wetland delineation and the change to the extent of the Bishop Pine forest, the guest cottage is now proposed to be located northwest of the SFR.
- The wetland delineation also revealed enough space for a travel trailer to be used for temporary occupancy during construction.

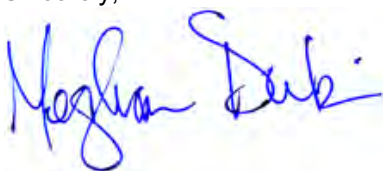
The following items are included in this submittal:

1. 3/28/24 Email Quote of Update Fee
2. Application Form and Project Description Questionnaire
3. Location Map
4. Site Plan, Floor Plans & Elevations
5. Signature Pages:
    a. Certification and Site View Authorization Form
    b. Indemnification Agreement
    c. Acknowledgement of Deposit/Hourly Fee
    d. Declaration of Posting
6. Copy of Notice of Pending Permit Posted On-Site
7. Proof of Applicant's Legal Interest in Subject Property: Grant Deed Recorded on September 15, 2023
8. Mailing List
9. Proof of Water Report by Lawrence and Associates dated October 25, 2023
10. Biological Survey Report by Wynn Coastal Planning & Biology dated December 12, 2024
11. Geotechnical Evaluation Update by Brunsing & Associates dated November 21, 2024
12. Archaeological Survey Report by Alta Archaeological Consulting dated January 2022
13. Takings Analysis by Wynn Coastal Planning and Biology dated December 27, 2024

As Agent for this project, as with all of our projects, we respectfully request to be present during all County and Stakeholder Agency site visits; one week's advance notice will be helpful to ensure our availability.

We look forward to your review of this project. Please let me know if you have any questions or comments.

Sincerely,



Meghan Durbin, Senior Planner
meghan@wcplan.com
707-409-9597 Direct

Docusign Envelope ID: 64B056DC-832B-4520-B66B-9F1C2FFFE0E5

PLANNING & BUILDING SERVICES

CASE NO:	V_2025-0002
DATE FILED:	07/25/2025
FEE:	$4,833.00
RECEIPT NO:	PRJ_067638
RECEIVED BY:	Waldman

Office Use Only

APPLICATION FORM

APPLICANT:

Name: Andrew M. and Kirsten L. Christensen Phone: 303-332-1493

Mailing Address: 7944 Dante Drive

City: Littleton State/Zip: CO 80125 Email: biomdlr@me.com

PROPERTY OWNER:

Name: Andrew M. and Kirsten L. Christensen Phone: 303-332-1493

Mailing Address: 7944 Dante Drive

City: Littleton State/Zip: CO 80125 Email: biomdlr@me.com

AGENT:

Name: Wynn Coastal Planning & Biology Phone: 707-964-2537

Mailing Address: 703 N Main Street

City: Fort Bragg State/Zip: CA 95437 Email: meghan@wcplan.com

ASSESSOR'S PARCEL NUMBER/S: 118-320-10, 118-320-11, and 118-320-12

PROPERTY ADDRESS: 11800 Road 500D, Mendocino

TYPE OF APPLICATION:

- ☐ Administrative Permit
- ☐ Agricultural Preserve: New Contract
- ☐ Agricultural Preserve: Cancellation
- ☐ Agricultural Preserve: Rescind & ReEnter
- ☐ Airport Land Use
- ☐ Development Review
- ☐ Exception
- ☐ Flood Hazard Development Permit
- ☐ General Plan Amendment
- ☐ Land Division – Minor
- ☐ Land Division – Major
- ☐ Land Division – Parcel
- ☐ Land Division – Re-Subdivision
- ☐ Modification of Conditions
- ☐ Reversion to Acreage
- ☐ Rezoning
- ☐ Use Permit – Cottage
- ☐ Use Permit – Minor
- ☐ Use Permit – Major
- ☐ Use Permit – Modification
- ☒ Variance
- ☐ Other

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

Signed by: Andrew M. Christensen 7/23/2025
687F11084A341B...
Signature of Applicant/Agent *Date*

DocuSigned by: 7/23/2025
F8F24207A23C4B6...
Signature of Owner *Date*

Docusign Envelope ID: 64B056DC-832B-4520-B66B-9F1C2FFFE0E5

SITE AND PROJECT DESCRIPTION QUESTIONNAIRE

The purpose of this questionnaire is to relate information concerning your application to the Department of Planning and Building Services 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. Include secondary improvements such as wells, septic systems, grading, vegetation removal, roads, etc. If the proposal is for cancellation of a Williamson Act contract, please specify a proposed alternative use for the land.

In association with CDP_2021-0016 for residential development -

1. Request a variance to allow portions of property line fencing along Road 500D to be located within the corridor preservation setback, as illustrated in the enclosed site plan dated July 10, 2025.

2. Request a variance to allow two small accessory structures and a paved generator pad within the 20-foot front yard setback - specifically one 6'x12' wood shed, one 10'x10' pump house and a 7'x10' paved generator pad.

2. Structures/Lot Coverage	NO. OF UNITS		SQUARE FOOTAGE		
	EXISTING	PROPOSED	EXISTING	PROPOSED	TOTAL
☒ Single Family	1 (to be demolished)	1	670	3216	3216
☐ Mobile Home					
☐ Duplex					
☐ Multifamily					
☒ Other:	1 garage (to demo)	1 guest cottage	946	640	640
☒ Other:	4 sheds (partial demo)	2 sheds	513	160	463
GRAND TOTAL (Equal to gross area of Parcel): 4,319 sf (p) + 116,778 sf (unimproved land) = 121,097 sf/2.78 ac					

3. Is the project commercial, industrial, or institutional? If yes, complete item 3. If no, skip to item 4.

Estimated No. of Employees per shift:_____

Estimated No. of shifts per day:_____

Type of loading facilities proposed:_____

4. Will the project be phased? (Work being done over separate periods of time)

☒ **NO** ☐ **YES** If yes, explain your plans for phasing:

5. Will vegetation be removed on areas other than the building sites and roads?

☐ **NO** ☒ **YES** If yes, explain:

Dead and declining trees will be removed for wildfire resilience. Please refer to Sheet A1.3 of the architectural plan set for tree removal detail.

6. Will the project involve the use or disposal of potentially hazardous materials such as toxic substances, flammables, or explosives?

☒ **NO** ☐ **YES** If yes, explain:

7. How much off-street parking will be provided?

	Number	Size
No. of covered spaces:	Four	9' x 20'
No. of uncovered spaces:	Two	9' x 20'
No. of standard spaces:	Six	9' x 20'
No. of accessible spaces:		
Existing no. of spaces:	Zero	
Proposed additional spaces:		
Total:	Six	9' x 20'

8. Is any road construction or grading planned? If yes, grading and drainage plans may be required.

☐ **NO** ☒ **YES** Also, please describe the terrain to be traversed. (e.g., steep, moderate slope, flat, etc.)

Overall the terrain is mostly level at the site of the existing residence and shop/garage. A small irregular berm created by the excavation for the existing development is located between the existing residence and shop/garage. A small undisturbed knoll (to remain undisturbed) is located along the north and west sides of the existing shop/ garage. The remainder of the terrain slopes downward gently from the knoll in a northerly direction.

9. For grading or road construction, complete the following:

Amount of cut: 900 cubic yards

Amount of fill: 0 cubic yards

Max. height of fill slope: 0 feet

Max. height of cut slope: 6.5 feet

Amount of import/export: 900 cubic yards

Location of borrow or disposal site: County approved landfill or disposal site outside of coastal zone; to be determined by contractor.

Docusign Envelope ID: 64B056DC-832B-4520-B66B-9F1C2FFFE0E5

10. Does the project involve sand removal, mining or gravel extraction? If yes, detailed extraction, reclamation and monitoring plans may be required.

☒ **NO** ☐ **YES**

11. Will the proposed development convert land currently or previously used for agriculture to another use?

☒ **NO** ☐ **YES**

12. Will the development provide public or private recreation opportunities?

☒ **NO** ☐ **YES** If yes, explain how:

13. Is the proposed development visible from State Route 1 or other scenic route?

☐ **NO** ☒ **YES**

14. Is the proposed development visible from a park, beach or other recreational area?

☐ **NO** ☒ **YES**

15. Does the development involve diking, filling, dredging or placing structures in open coastal water, wetlands, estuaries or lakes?

Diking: ☒ NO ☐ YES
Filling: ☒ NO ☐ YES
Dredging: ☒ NO ☐ YES
Structures: ☐ Open Coastal Waters ☐ Wetlands ☐ Estuaries ☐ Lakes

If so, what is the amount of material to be dredged/filled?: _____ cubic yards

Location of dredged material disposal site?: _____

Has a U.S. Army Corps of Engineers permit been applied for? ☐ NO ☐ YES

16. Will there be any exterior lighting?

☐ **NO** ☒ **YES** If yes, describe below and identify the location of all exterior lighting on the plot and building plans.

All lighting will be shielded and downcast. See plans for further detail.

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

Electricity: ☒ Utility Company (service exists to parcel)
☐ Utility Company (requires extension of service to site): _____ feet _____ miles
☐ On Site Generation – Specify:

Gas: ☒ Utility Company/Tank
☐ On Site Generation – Specify:
☐ None

Telephone: ☐ NO ☒ YES

18. What will be the method of sewage disposal?

☐ Community Sewage System (specify supplier):_____
☒ Septic Tank
☐ Other (specify):_____

19. What will be the domestic water source:

☐ Community Water System (specify supplier): _____
☒ Well
☐ Spring
☐ Other (specify): _____

20. Are there any associated projects and/or adjacent properties under your ownership?

☒ **NO** ☐ **YES** If yes, list below (Assessor's Parcel Number, address, etc.)

21. List and describe any other related permits and other public approval required for this project, including those required by other County departments, city, regional, State and Federal agencies:

Coastal Development Permit; Septic Installation Permit; Grading and Building Permits

22. Describe the location of the site in terms of readily identifiable landmarks: (e.g., mailboxes, mile posts, street intersections, etc.)

Subject property is located on Road 500D on the west side of Highway One, just north of Jack Peters Creek bridge; third property on left with existing chainlink fence and gate

23. Are there existing structures on the property? If yes and the proposal is for a subdivision, describe below and identify the use of each structure on the plot plan or tentative map.

☐ **NO** ☒ **YES**

24. Will any existing structure be demolished or removed? If yes, describe the type of development to be demolished or removed, including the relocation site, if applicable.

☐ **NO** ☒ **YES**

Shop/garage, single family residence, and one of the outbuilding/sheds will be demolished. Additionally a shed built on top of a decommissioned concrete water storage cistern will be demolished, but the cistern will remain. Contractor will determine legal disposal site at time of demolition.

25. What is the maximum height of all structures?

Existing: unknown feet
Proposed: 22.5 feet

26. What is the gross floor areas of all structures, including covered parking and accessory buildings?

Existing: 1,826 square feet
Proposed: 6,645 square feet

27. What is the total lot area within property lines?

Total Lot Area: 2.78 ☒ acres ☐ square feet

28. Briefly describe the project site as it exists before the project, including information on existing structures and their uses, slopes, soil stability, plants and animals, and any cultural, historical or scenic aspects. Attach any photographs of the site that you feel would be helpful:

Existing development includes dilapidated remains of residence and ancillary structures built circa 1953 according to Mendocino County Assessor's office records. This is a blufftop parcel surrounded by another residential parcel to the south and state park property to the north and east. Numerous studies including geotechnical, biological and archaeological have been submitted with the CDP application.

29. Briefly describe the surrounding properties, including information on plants, animals and any cultural, historic or scenic aspects. Indicate the type of land use (use chart below) and its general intensity. Attach any photographs of the vicinity that you feel would be helpful.

See answers in question #28 above.

30. Indicate the surrounding land uses:

	Vacant	Residential	Agriculture	Commercial	Industrial	Public Facility	Timberland	Other
North:	☐	☐	☐	☐	☐	☒	☐	☐
East:	☐	☐	☐	☐	☐	☒	☐	☐
South:	☐	☒	☐	☐	☐	☐	☐	☐
West:	☒	☐	☐	☐	☐	☐	☐	☐

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

Variance Findings – Statement of Conformance

CDP_2021-0016 (Christensen) - July 25, 2025
11800 Road 500D, Mendocino – APNs: 118-320-10, -11, and -12

We request a variance to allow fencing within the Corridor Preservation Setback and to allow two small accessory structures (172 sq ft total) and a paved generator pad (70 sf) within the 20-foot front yard setback.

The following information demonstrates that this request can meet the required findings for granting of a variance per MCC Sec 20.540.020.

MCC Sec 20.540.020 *- Before any variance may be granted or modified it shall be shown:*

(A) That there are special circumstances applicable to the property involved, including size, shape, topography, location, or surroundings; and

i. The subject property is an irregular shape which is relatively narrow with varying topography.
ii. The subject property is located on a blufftop. Combined with the narrow shape, a significant portion of the land is not suitable for development due to the geotechnical setback from the bluff edge.
iii. The parcel is also highly constrained by wetland and Bishop pine ESHAs. The entirety of the property is covered by ESHA and 50-foot ESHA buffers.
iv. With the exception of one residential property adjacent to the south, the subject property is surrounded by public lands zoned Open Space and owned by California State Parks.
v. The parcel is the last residential property on a dead-end road, with only State Park land accessed beyond it by Road 500D.

(B) That such special circumstances or conditions are not due to any action of the applicant subsequent to the application of the zoning regulations contained in this Division and applicable policies of the Coastal Element; and

i. These conditions are not due to any action of the applicant.
ii. The parcel had its current configuration when the applicants purchased the land.
iii. The Mendocino County's coastal zoning ordinance was certified in 1992, nearly forty years after the property was originally developed for residential use.
iv. Corridor preservation and yard setback requirements were determined when the zoning ordinance was certified.

(C) That such variance is necessary for the preservation and enjoyment of privileges possessed by other property in the same vicinity and zone and denied to the property in question because of the special circumstances identified in Subsection (A); and

i. The adjacent property to the south is also a blufftop property.
ii. The adjacent property to the south enjoys the privilege of a property fence that is located within the corridor preservation setback.
iii. The adjacent property to the south enjoys the privilege of multiple small accessory structures located within the front yard setback including what appear to be wood sheds and an utility/pump house.

Encl: per above

CC: Andrew M. & Kirsten L Christensen (owners/applicants); Todd Newberger (architect); file

(D) That the granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in such vicinity and zone in which the property is located; and

i. The proposed development will remain located westward of the existing fence along Road 500D, as is the existing development.

ii. Existing fencing is located within the corridor preservation setback. The existing residence, remnants of wooden aviary structure, and a well house are located within the front yard setback.

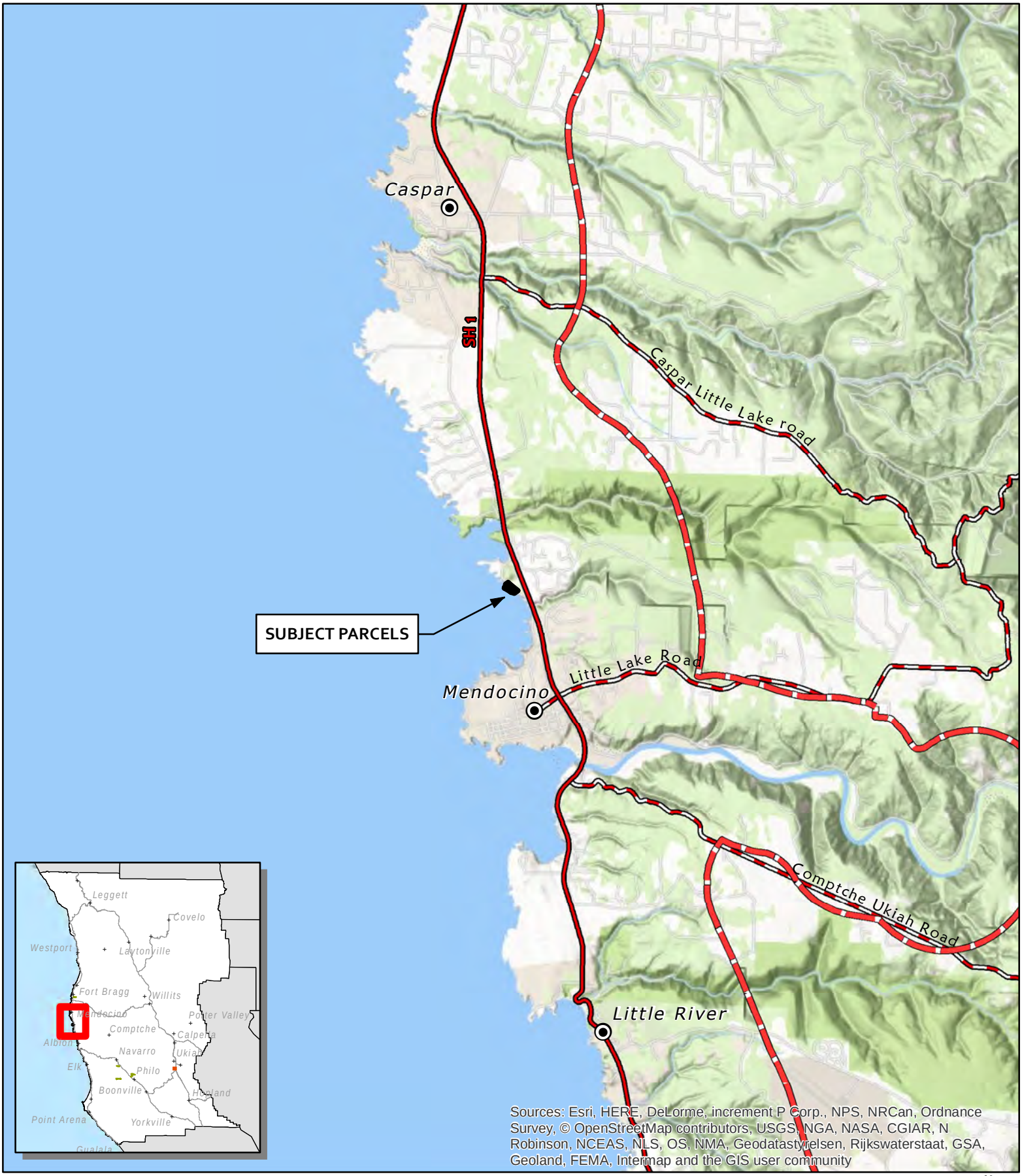
iii. Development within the corridor preservation setback and the front yard setback will not have a material effect on neighboring properties because the general location of the development will not change from what is existing.

(E) That the variance does not authorize a use or activity that is not otherwise expressly authorized by the zoning provisions governing the parcel; and

i. The proposed variance for reduced corridor preservation and front yard setbacks is related to proposed residential development, a principally permissible use on land zoned Rural Residential. No use or activity is proposed that is not authorized by the zoning ordinance.

(F) That the granting of such variance is in conformity with all other provisions of this Division and the Mendocino Coastal Element and applicable plans and policies of the Coastal Act.

i. The granting of reduced setbacks along the county road is in conformity with all other provisions of this Division and the Mendocino Coastal Element, as well as applicable plans and policies of the Coastal Act.



CASE: V2025-0002, CDP2021-0016 & B2021-0010
OWNER: CHRISTENSEN, Andrew & Kirsten
APN: 118-320-10, 11 & 12
APLCT: Andrew & Kirsten Christensen
AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

Major Towns & Places
Major Roads
Coastal Zone Boundary
Highways

0 2,800 5,600 Feet
0 0.5 1 Miles
1:63,360

N W E S

LOCATION

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

CASE: V2025-0002, CDP2021-0016 & B2021-0010
OWNER: CHRISTENSEN, Andrew & Kirsten
APN: 118-320-10, 11 & 12
APLCT: Andrew & Kirsten Christensen
AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

Construction Lines
Private Roads
Highways (2017)
Public Roads

0 270 540 Feet
0 0.05 0.1 Miles
N W E S
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

CASE: V2025-0002, CDP2021-0016 & B2021-0010
OWNER: CHRISTENSEN, Andrew & Kirsten
APN: 118-320-10, 11 & 12
APLCT: Andrew & Kirsten Christensen
AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

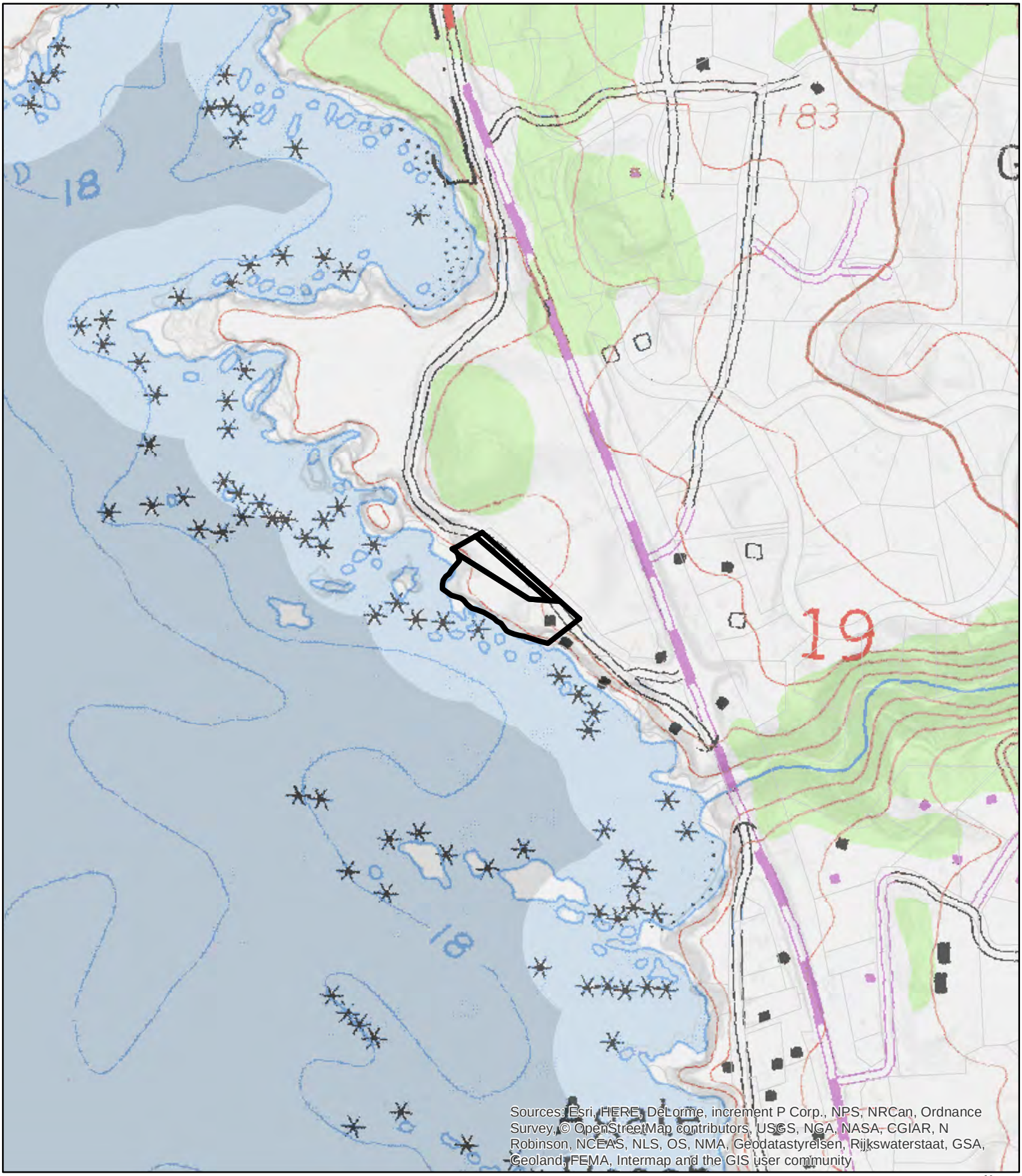
Public Roads

0 45 90 Feet
0 0.0075 0.015 Miles
1:1,000

N W E S

AERIAL IMAGERY

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



CASE: V2025-0002, CDP2021-0016 & B2021-0010
OWNER: CHRISTENSEN, Andrew & Kirsten
APN: 118-320-10, 11 & 12
APLCT: Andrew & Kirsten Christensen
AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

Assessors Parcels

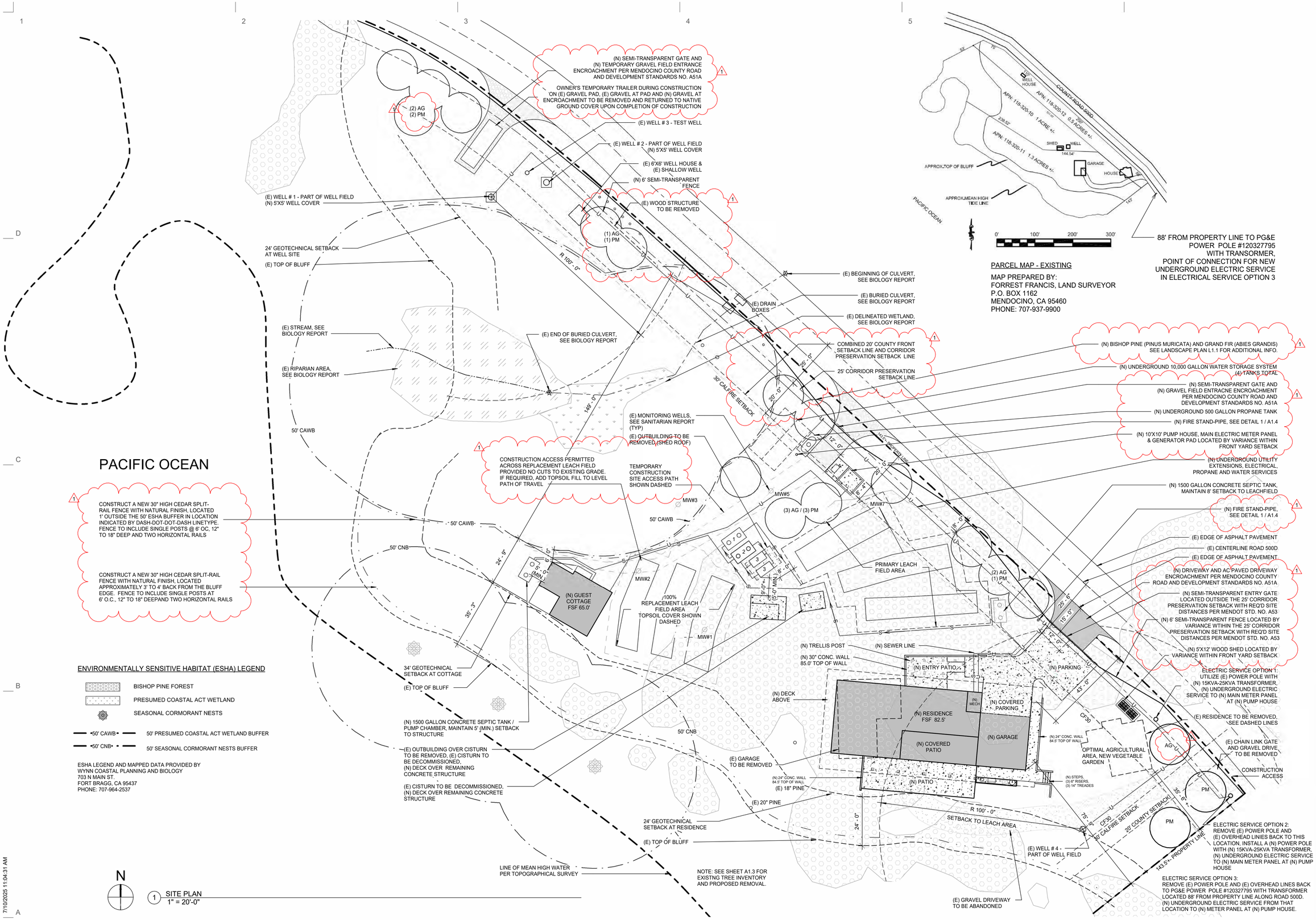
0 270 540 Feet
0 0.05 0.1 Miles

N W E S

1:6,000

TOPOGRAPHIC MAP
CONTOUR INTERVAL IS 40 FEET

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



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SITE PLAN - OVERALL

RESIDENCE FOR:
ANDY AND KIRSTEN CHRISTENSEN
A NEW SINGLE FAMILY
11800 ROAD 500D
MENDOCINO, CA 95460

ISSUE DATE

No.	Description	Date
1	Revision 1	07.10.2025

DRAWN	TN
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DATE	12.02.2024

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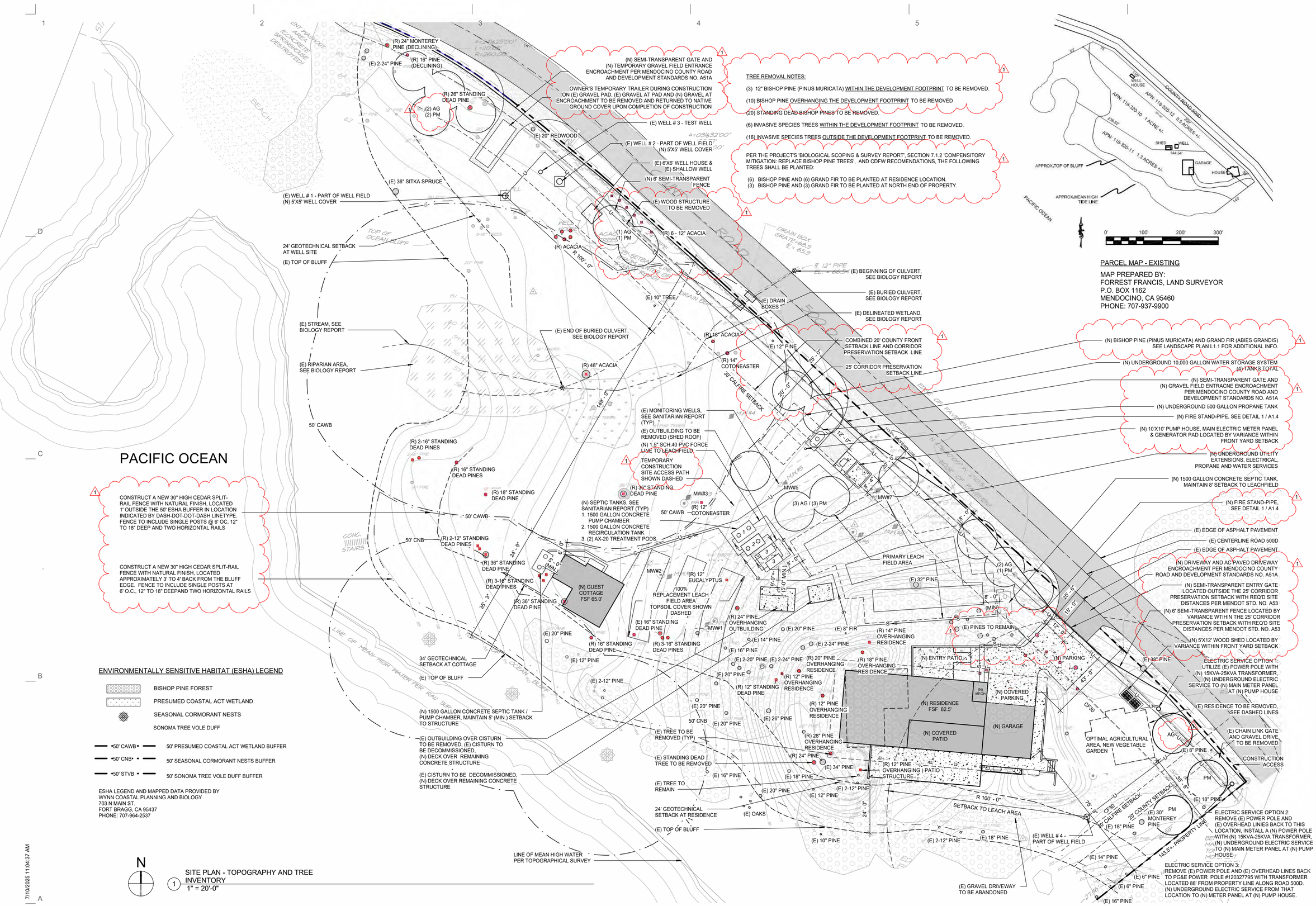

TREE REMOVAL NOTES:

(3) 12" BISHOP PINE (PINUS MURICATA) WITHIN THE DEVELOPMENT FOOTPRINT TO BE REMOVED.

(10) BISHOP PINE OVERHANGING THE DEVELOPMENT FOOTPRINT TO BE REMOVED

(20) STANDING DEAD BISHOP PINES TO BE REMOVED.

(6) INVASIVE SPECIES TREES WITHIN THE DEVELOPMENT FOOTPRINT TO BE REMOVED.

(16) INVASIVE SPECIES TREES OUTSIDE THE DEVELOPMENT FOOTPRINT TO BE REMOVED.

PER THE PROJECT'S 'BIOLOGICAL SCOPING & SURVEY REPORT', SECTION 7.1.2 'COMPENSITORY MITIGATION: REPLACE BISHOP PINE TREES', AND CDFW RECOMENDATIONS, THE FOLLOWING TREES SHALL BE PLANTED:

(6) BISHOP PINE AND (6) GRAND FIR TO BE PLANTED AT RESIDENCE LOCATION.
(3) BISHOP PINE AND (3) GRAND FIR TO BE PLANTED AT NORTH END OF PROPERTY.

PARCEL MAP - EXISTING

MAP PREPARED BY:
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SITE PLAN - TOPOGRAPHY AND TREE INVENTORY

A NEW SINGLE FAMILY RESIDENCE FOR:
ANDY AND KIRSTEN CHRISTENSEN
11800 ROAD 500D
MENDOCINO, CA 95460

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C-31047
8/31/2027
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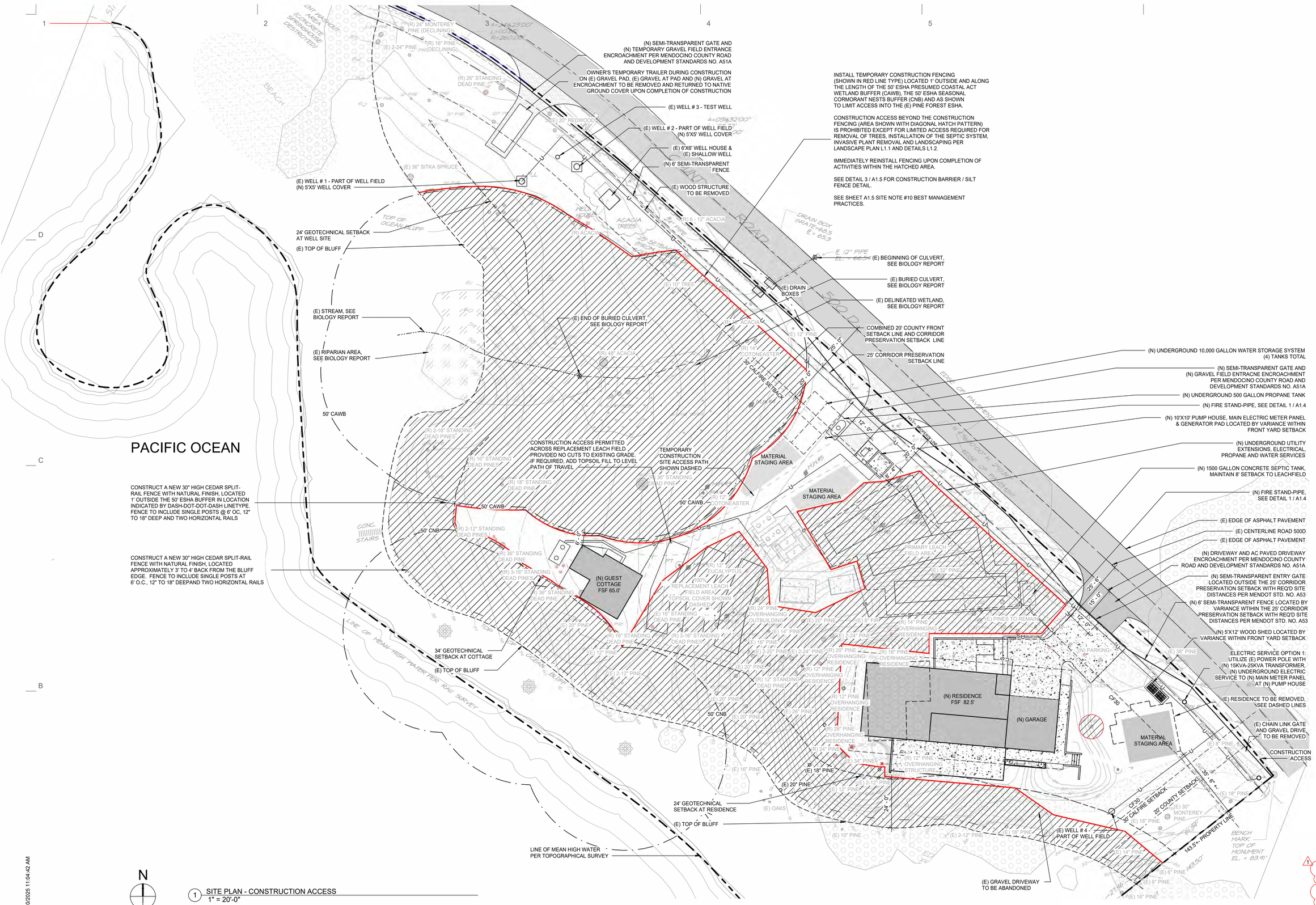

1 SITE PLAN - CONSTRUCTION ACCESS
1" = 20'-0"

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CONSTRUCTION ACCESS PLAN

A NEW SINGLE FAMILY RESIDENCE FOR:
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11800 ROAD 500D
MENDOCINO, CA 95460

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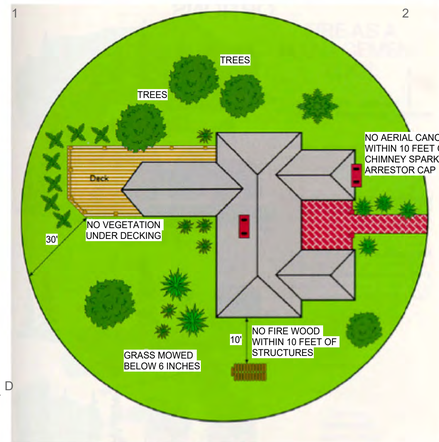


Title 14 Code of California Regulations: Division 1.5, Chapter 7, Subchapter 2, Article 5.
Fuel Modification and Defensible Space Standards

To reduce the intensity of a wildfire by reducing the volume and density of flammable vegetation, the strategic siting of fuel modification and greenbelts shall provide

1. increased safety for emergency fire equipment and evacuating civilians; and
2. a point of attack or defense from a wildfire.

Fuel Modification and Defensible Space Standards (implementation)

Structures on parcels 1 acre and larger shall be set back from the property line at least 30 feet. Smaller parcels shall provide for comparable mitigation.

Flammable waste generated by construction or development must be lawfully disposed of before final approval of a project.

Greenbelts that are proposed as a part of a development or project shall be strategically located to separate wildland fuels and structures.

DEFENSIBLE SPACE AROUND STRUCTURES

A person that owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining any mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material, shall at all times do all of the following:

(a) Maintain around and adjacent to the building or structure a firebreak made by removing and clearing away, for a distance of not less than 30 feet on each side of the building or structure or to the property line, whichever is nearer, all flammable vegetation or other combustible growth. This subdivision does not apply to single specimens of trees or other vegetation that is well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to any building or structure.

(b) Maintain around and adjacent to the building or structure additional fire protection or firebreak made by removing all brush, flammable vegetation, or combustible growth that is located within 100 feet from the building or structure or to the property line or at a greater distance if required by state law, or local ordinance, rule, or regulation. This section does not prevent an insurance company that insures a building or structure from requiring the owner of the building or structure to maintain a firebreak of more than 100 feet around the building or structure. Grass and other vegetation located more than 30 feet from the building or structure and less than 18 inches in height above the ground may be maintained where necessary to stabilize the soil and prevent erosion. This subdivision does not apply to single specimens of trees or other vegetation that is well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a dwelling or structure.

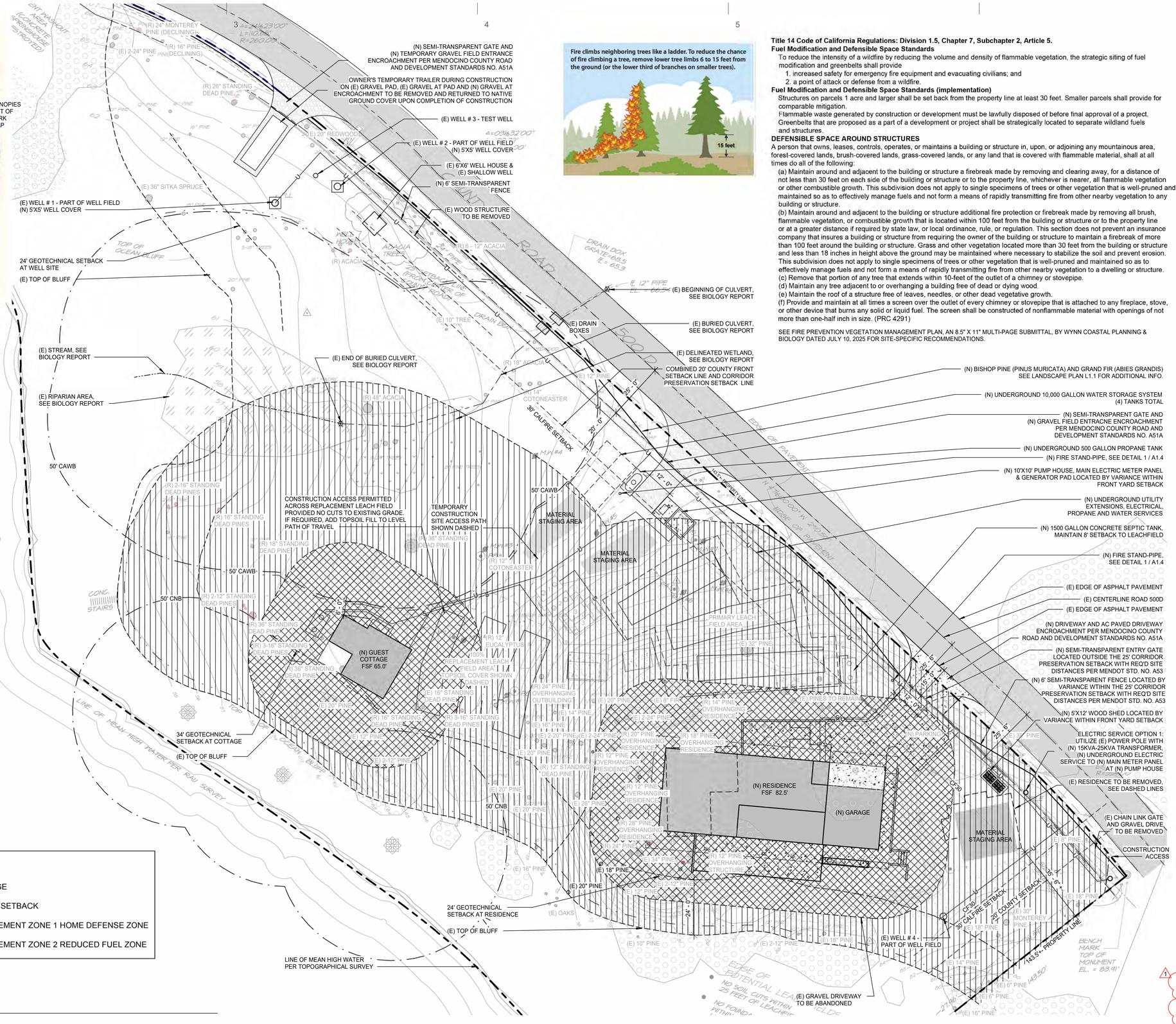
(c) Remove that portion of any tree that extends within 10-feet of the outlet of a chimney or stovepipe.

(d) Maintain any tree adjacent to or overhanging a building free of dead or dying wood.

(e) Maintain the roof of a structure free of leaves, needles, or other dead vegetative growth.

(f) Provide and maintain at all times a screen over the outlet of every chimney or stovepipe that is attached to any fireplace, stove, or other device that burns any solid or liquid fuel. The screen shall be constructed of nonflammable material with openings of not more than one-half inch in size. (PRC 4291)

SEE FIRE PREVENTION VEGETATION MANAGEMENT PLAN, AN 8.5" X 11" MULTI-PAGE SUBMITTAL, BY WYNN COASTAL PLANNING & BIOLOGY DATED JULY 10, 2025 FOR SITE-SPECIFIC RECOMMENDATIONS.



LEGEND:

- (E) TREE COVERAGE
- CF30 — CAL FIRE 30' YARD SETBACK
- FIRE SAFE MANAGEMENT ZONE 1 HOME DEFENSE ZONE
- FIRE SAFE MANAGEMENT ZONE 2 REDUCED FUEL ZONE

1 SITE PLAN - FIRE SAFETY
1" = 20'-0"

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FIRE SAFE PLAN

A NEW SINGLE FAMILY RESIDENCE FOR:
ANDY AND KIRSTEN CHRISTENSEN
11800 ROAD 500D
MENDOCINO, CA 95460

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GUEST COTTAGE SITE NOTES:
1. GUEST COTTAGE FINISH SUB-FLOOR AT 65.0.
2. NO GRADING REQUIRED AT COTTAGE SITE OTHER THAN REMOVING TOPSOIL AND WEAK SOIL LAYER IN COTTAGE FOOTPRINT IN PREPARATION FOR NEW FOUNDATION.
3. SEE SHEET A1.3b FOR OVERALL SITE EXISTING TOPOGRAPHICAL INFORMATION.

GRADING NOTES

CUT / FILL ANALYSIS

CUT: 900 CU.YDS.
FILL: 0 CU.YDS.,

ORGANIC MATERIALS AND CUT MATERIALS UNSUITABLE FOR REUSE SHALL BE OFF HAULED FROM SITE.

GRADING SHALL COMPLY WITH ALL REQUIREMENTS IN THE GEOTECHNICAL INVESTIGATION REPORT PREPARED BY BRUNSING ASSOCIATES, INC., DATED 5/8/2019 AND UPDATE DATED 6/21/2024. SEE REPORT FOR DEFINITIVE INFO.

NOTE: THIS PLAN DOES NOT CONSTITUTE A BOUNDARY SURVEY. ELEVATION SHOWING HEREON ARE BASED ON WATER LEVEL AT TIME OF SURVEY CORRECTED BY TIDE TABLES TO APPROXIMATE SEA LEVEL.

RESIDENCE HEIGHT ANALYSIS:

MAXIMUM EXISTING GRADE @ PERIMETER:	91.0'
MINIMUM EXISTING GRADE @ PERIMETER:	82.0'
AVERAGE EXISTING GRADE:	86.5'
MAXIMUM REQUESTED ALLOWABLE HEIGHT: (28.0' FROM AVERAGE EXISTING GRADE:	114.5'
FINISH SUB-FLOOR SLAB ELEVATION:	82.5'
MAXIMUM HEIGHT OF RESIDENCE (22.5' FROM AVERAGE EXISTING GRADE):	109.0'

(N) UNDERGROUND 10,000 GALLON WATER STORAGE SYSTEM (4) TANKS TOTAL
(E) OUTBUILDING TO BE REMOVED (SHED ROOF)
(N) 1.5" SCH.40 PVC FORCE LINE TO LEACHFIELD
(N) 10'X10' PUMP HOUSE, MAIN ELECTRIC METER PANEL & GENERATOR PAD LOCATED BY VARIANCE WITHIN FRONT YARD SETBACK
COMBINED 20' COUNTY FRONT SETBACK LINE AND CORRIDOR PRESERVATION SETBACK LINE
25' CORRIDOR PRESERVATION SETBACK LINE
(R) 12" COTONEASTER
(N) SEPTIC TANKS, SEE SANITARIAN REPORT (TYP)
1. 1500 GALLON CONCRETE PUMP CHAMBER
2. 1500 GALLON CONCRETE RECIRCULATION TANK
3. (2) AX-20 TREATMENT PODS
(N) UNDERGROUND UTILITY EXTENSIONS, ELECTRICAL, PROPANE AND WATER SERVICES
(N) 1500 GALLON CONCRETE SEPTIC TANK MAINTAIN 8' SETBACK TO LEACHFIELD
(N) FIRE STAND-PIPE, SEE DETAIL 1 / A1.4, LOCATE
(N) PRIMARY LEACH FIELD AREA
(E) CENTERLINE ROAD 500D
(E) EDGE OF ASPHALT PAVEMENT
(N) 100% REPLACEMENT LEACH FIELD AREA
(R) 12" EUCALYPTUS
(E) OUTBUILDING OVER CISTURN TO BE REMOVED, (E) CISTURN TO BE DECOMMISSIONED, (N) DECK OVER REMAINING CONCRETE STRUCTURE
(R) 24" PINE OVERHANGING OUTBUILDING
(E) CISTURN TO BE DECOMMISSIONED, (N) DECK OVER REMAINING CONCRETE STRUCTURE
(N) DRIVEWAY AND AC PAVED DRIVEWAY ENCROACHMENT PER MENDOCINO COUNTY ROAD AND DEVELOPMENT STANDARDS NO. A51A
(N) SEMI-TRANSPARENT ENTRY GATE LOCATED OUTSIDE THE 25' CORRIDOR PRESERVATION SETBACK WITH REQ'D SITE DISTANCES PER MENDOT STD. NO. A53
(N) 6' SEMI-TRANSPARENT FENCE LOCATED BY VARIANCE WTIHIN THE 25' CORRIDOR PRESERVATION SETBACK WITH REQ'D SITE DISTANCES PER MENDOT STD. NO. A53
(N) 5'X12' WOOD SHED LOCATED BY VARIANCE WITHIN FRONT YARD SETBACK
(R) 3-16" STANDING DEAD PINES
(R) 14" PINE OVERHANGING RESIDENCE
(N) SEWER LINE
(N) 30" CONC. WALL (TYP) 85.0' TOP OF WALL
(N) TRELLIS POST
(N) DRIVEWAY
(R) 24" HOLLY
(R) 12" HOLLY
(R) 14" HOLLY
(R) 12" HOLLYARKING
(R) 24" HOLLY
(R) 18" PINE OVERHANGING RESIDENCE
(N) ENTRY PATIO FSF 82.48'
(R) 2-12" PINE
(E) GARAGE TO BE REMOVED, SEE DASHED LINES
(R) 20" PINE OVERHANGING RESIDENCE
(R) 12" PINE OVERHANGING RESIDENCE
(R) 12" STANDING DEAD PINE
(N) DECK ABOVE
STORAGE (UNCONDITIONED)
CELLAR (UNCONDITIONED)
FOYER (CONDITIONED) FSF 82.5'
(R) 26" PINE
COVERED PARKING
(R) 12" HOLLY
(R) 12" PINE, OVERHANGING RESIDENCE
(N) 24" CONC. WALL 84.5' TOP OF WALL
GARAGE (UNCONDITIONED)
(E) 18" PINE
(E) RESIDENCE TO BE REMOVED, SEE DASHED LINES
CONSTRUCT A NEW 30" HIGH CEDAR SPLIT-RAIL FENCE WITH NATURAL FINISH, LOCATED APPROXIMATELY 3' TO 4' BACK FROM THE BLUFF EDGE. FENCE TO INCLUDE SINGLE POSTS AT 6' O.C., 12" TO 18" DEEP, AND TWO HORIZONTAL RAILS.
WORKOUT ROOM (UNCONDITIONED)
96' - 0"
(N) COVERED OUTDOOR PATIO
(E) TREE TO BE REMOVED (TYP)
(R) 18" PINE OVERHANGING RESIDENCE
(R) 24" PINE STANDING DEAD
(E) STANDING DEAD TREE TO BE REMOVED
(R) 12" PINE OVERHANGING RESIDENCE
(N) PATIO 82.25' SPOT ELEVATION
(N) STEPS, (3) 6" RISERS, (3) 14" TREADES
(E) TREE TO REMAIN (TYP)
(N) 24" CONC. WALL 84.5' TOP OF WALL
90.0' TOP OF (E) BERM TO BE REMOVED
24' GEOTECHNICAL SETBACK
R 100' - 0"
SETBACK TO LEACH AREA
84.0' BOTTOM OF (E) BERM
30' CALFIRE SETBACK
(E) WELL # 4
(E) TOP OF BLUFF
(E) OAKS
(E) GRAVEL DRIVEWAY TO BE ABANDONED
(E) 30" MONTEREY PINE
6' COUNTY SETBACK
SIDEYARD SETBACK
POLE
POWER LINE
GATE
Δ=09°18'0"
L=87.83'
R=554.00'

N

1 GRADING PLAN - PROPOSED
1" = 10'-0"

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GRADING PLAN

A NEW SINGLE FAMILY RESIDENCE FOR:
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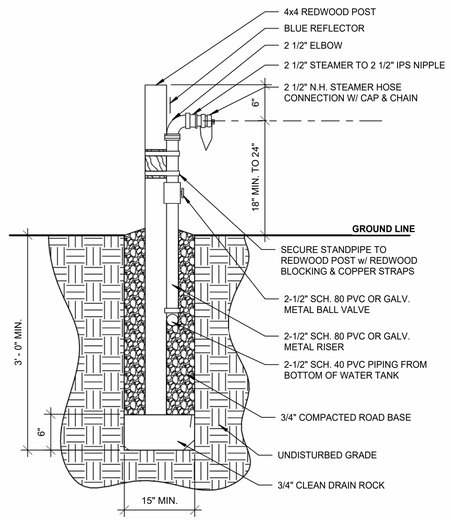
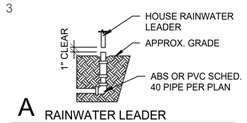
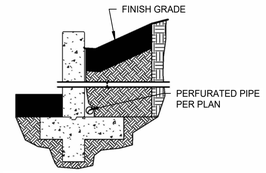


NOTE:
1. ALL PIPING TO BE PVC SCHEDULE 40 MINIMUM
2. INSULATE ALL EXPOSED PIPING AND FITTINGS

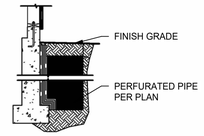
1 FIRE STAND PIPE DETAIL
1" = 1'-0"



A RAINWATER LEADER



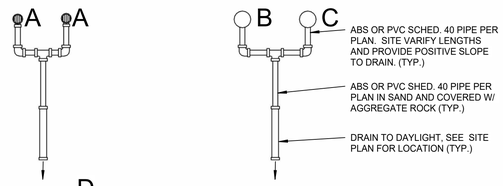
B RETAINING WALL



C FOUNDATION DRAIN

ROOF WATER:

RETAINING WALL & FOUNDATION DRAINS:



D RAINWATER DRAINAGE SYSTEMS PLAN

GENERAL SPECS:

CATCH BASINS, GRATES, ADAPTERS SHALL BE ONE PIECE INJECTION MOLDED BY NDS (NATIONAL DIVERSIFIED SALES) THEY SHALL BE UNIFORM IN QUALITY, FREE FROM FLASHING, SHRINKAGE, DISTORTION, AND OTHER DEFECTS. COMPONENT PARTS SHALL FIT TOGETHER AS PER MANUFACTURERS INSTALLATION INSTRUCTIONS. PROVIDE ALL FITTINGS, FASTENERS, ADHESIVS, GASKETS AND ANY OTHER MATERIALS AND ALL LABOR NECESSARY FOR A COMPLETE AND PROPER INSTALLATION. PROVIDE CLEAN-OUTS AS REQUIRED PER

GENERAL NOTES:

PROJECT INCLUDES TWO DRAINAGE SYSTEMS. KEEP ALL SYSTEMS SEPARATED. SEE SITE PLAN

2 RAINWATER DRAINAGE SYSTEM
3/8" = 1'-0"

SITE PLAN NOTES

1. REMOVE ALL EXCAVATED SOIL AND EXCESS CONCRETE GENERATED BY FOUNDATION WORK AND GRADE ALL AROUND STRUCTURE USING CLEAN TOPSOIL. GRADING SHALL ACHIEVE A 1/2" PER FOOT MINIMUM SLOPE AWAY FROM BUILDING FOR A DISTANCE OF 5'-0" (MIN.) IN ALL DIRECTIONS.
2. DIRECT ALL SURFACE DRAINAGE AWAY FROM STRUCTURES TOWARD THE DIRECTION OF NATURAL FALL AWAY FROM THE STRUCTURE OR INTO DRAINAGE SWALES. ALL DRAINAGE SWALES SHALL SLOPE AT 1/2" PER FT (MIN.) AWAY FROM STRUCTURES TOWARD THE DIRECTION OF NATURAL FALL OR AS SHOWN ON THE DRAWINGS.
3. ALL GRADING AND ROADWORK SHALL CONFORM TO THE LATEST EDITION OF THE STANDARD SPECIFICATIONS OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION. (CALTRANS)
4. ROADWAY ENCROACHMENT ONTO MENDOCINO COUNTY ROAD SHALL COMPLY WITH THE REQUIREMENTS OF THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION.
5. FOR WATER SYSTEMS, SEPTIC SYSTEMS AND HOOKUPS TO UTILITY SYSTEMS, COMPLY WITH ALL REQUIREMENTS OF UTILITY SUPPLIERS AND ALL REQUIREMENTS OF GOVERNMENTAL AGENCIES HAVING JURISDICTION OVER THE WORK.
6. ALL CONCENTRATED RAINWATER FLOWS FROM ROOF DOWNSPOUTS, RETAINING WALL DRAINS AND FOUNDATION DRAINS SHALL BE COLLECTED IN CLOSED PIPE DRAINAGE SYSTEMS AND DISCHARGED TO DAYLIGHT AT LOCATIONS SHOWN ON PLANS. PROVIDE DRAINAGE PIPES FOR OUTLETS OF ALL DOWNSPOUTS FROM GUTTERS OR ROOF DRAINS INDICATED ON PLANS. WHERE DRAINAGE SYSTEM INLETS OCCUR, PROVIDE VERTICAL 'T' IN PIPE AT DOWNSPOUT LOCATION. 'T' SHALL EXTEND 3" ABOVE GRADE. ALLOW A 1" GAP BETWEEN 'T' AND DOWNSPOUT. 'T' SHALL BE 1" LARGER THAN THE WIDEST DIMENSION OF DOWNSPOUT (MIN.).
7. VEGETATION AT THE SITE SHALL BE MAINTAINED TO THE MAXIMUM EXTENT POSSIBLE AND ANY DISTURBED AREAS SHALL BE SEEDED WITH WITH 1 LB. PER 1000 SQ.FT. OF CALIFORNIA NATIVE 'HOLD FAST' SEED MIX, CONSISTING OF BLUE WILD RYE, CA. BROME, 3 WEEKS FESCUE CA POPPY AND LUPINE. 'HOLDFAST' IS AVAILABLE FROM LABALLISTERS SEED CO. LOCATED IN SEBASTOPOL, CA AT 707-526-6733. FOLLOW SEEDING WITH A MULCHING OF WEED FREE WHEAT STRAW (ENOUGH TO COVER SOIL SURFACE, 1" THICK.)
8. EXCAVATED TOPSOILS SHALL BE STOCKPILED AND USED ON-SITE FOR FINISH GRADING. SUITABLE EXCAVATED SUB-SOILS SHALL BE USED FOR ROUGH GRADING. EXCAVATED CLAY AND ROCK SHALL BE OFF-HAULED FROM SITE AND DISPOSED OF IN A COUNTY APPROVED LANDFILL. MEASURES SHOULD BE INCLUDED TO ENSURE THAT STOCKPILES ARE STABLE AND COVERED TO PREVENT EROSION AND SEDIMENTATION.
9. ALL WORK SHALL MEET CALFIRE FIRE SAFE REGULATIONS APPLICATION 'CONDITIONS OF APPROVAL'.
10. BEST MANAGEMENT PRACTICES & CONSTRUCTION RESPONSIBILITIES:
    - A. ANY AND ALL EXCESS EXCAVATED MATERIAL RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REMOVED AND DISPOSED OF AT A DISPOSAL SITE OUTSIDE THE COASTAL ZONE OR PLACED WITHIN THE COASTAL ZONE PURSUANT TO A VALID COASTAL DEVELOPMENT PERMIT.
    - B. COIR ROLLS AND SILT FENCING STRUCTURES SHALL BE INSTALLED PRIOR TO AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD TO CONTAIN RUNNOFF FROM CONSTRUCTION AREAS, TRAP ENTRAINED SEDIMENT AND OTHER POLLUTANTS, AND PREVENT DISCHARGE OF SEDIMENT AND POLLUTANTS DOWN SLOPE.
    - C. ON-SITE VEGETATION SHALL BE MAINTAINED TO THE MAXIMUM EXTENT FEASIBLE DURING CONSTRUCTION ACTIVITIES.
    - D. ANY DISTURBED AREAS SHALL BE REPLANTED OR SEEDED AND IF NECESSARY MULCHED AS SOON AS FEASIBLE FOLLOWING COMPLETION OF CONSTRUCTION, BUT IN ANY EVENT NO LATER THAN MAY 1ST OF THE NEXT SPRING SEASON.
    - E. ALL ON-SITE STOCKPILES OF CONSTRUCTION DEBRIS SHALL BE COVERED AND CONTAINED AT ALL TIMES TO PREVENT POLLUTED WATER RUNOFF.
    - F. THE CANOPY AND ROOT ZONES OF EXISTING LIVING TREES ON SITE SHALL BE PROTECTED THROUGH TEMPORARY FENCING OR SCREENING DURING CONSTRUCTION.
11. PLANT MATERIAL USED IN PLANTING AREAS SHALL BE DROUGHT TOLERANT AND SUITED FOR THE COASTAL CLIMATE. MANY PLANTS THAT ARE APPROPRIATE ARE LISTED IN THE PUBLICATION "LOCAL NATIVE PLANTS FOR COAST LANDSCAPES - MENDOCINO COUNTY" COMPILED BY CA. NATIVE PLANT SOCIETY, DORTHY KING YOUNG CHAPTER, PHONE: 707-882-1655. PLANTS SHALL BE WATERED BY A DRIP IRRIGATION SYSTEM FOR A MINIMUM OF THREE YEARS AND RECEIVE 3" FIR BARK MULCH. PLANTING SHALL BE MAINTAINED AND PLANTS REPLACED IN KIND IF THEY DIE OR DECLINE.

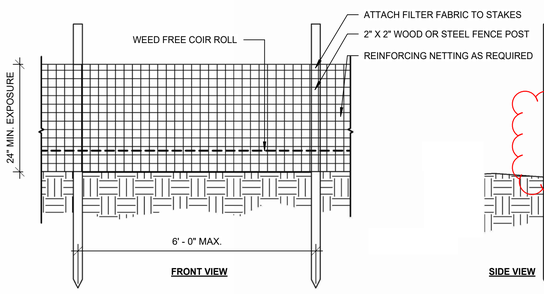
SITE PLAN SYMBOL

56	EXISTING CONTOUR ELEVATION (NUMBER ON HIGH SIDE OF CONTOUR)
	PROPOSED CONTOUR (SHOW AS SOLID LINE)
F.S.F. +0.00	FINISH SUB-FLOOR ELEVATION
S.E. +0.00	SPOT ELEVATION - PROPOSED
S.E. (+0.00)	SPOT ELEVATION - EXISTING
T.C. +0.00	TOP OF CURB (INCLUDE SPOT ELEVATION)
T.O.W +0.00	TOP OF WALL (INCLUDES SPOT ELEVATION)
B.O.W +0.00	BOTTOM OF WALL (INCLUDE SPOT ELEVATION)
	SWALE (DIRECTION OF DRAINAGE)
	PROPERTY LINE
	SETBACK
A.D.	AREA DRAIN
T.S. +0.00	TOP OF STEPS (INCLUDE SPOT ELEVATION)
B.S. +0.00	BOTTOM OF STEPS (INCLUDE SPOT ELEVATION)
C.B.	CATCH BASIN
C.I.	CONTOUR INTERVAL
D.I.	DRAIN INLET (NEEDS R.E. AND I.E.)
H.P.	HIGH POINT (INCLUDE SPOT ELEVATION)
I.E.	INVERT ELEVATION (INCLUDE SPOT ELEVATION)
L.P.	LOW POINT (INCLUDE SPOT ELEVATION)
M.H.	MANHOLE (NEEDS R.E. AND I.E.)
R.E.	RIM ELEVATION (INCLUDE SPOT ELEVATION)
R.O.W.	RIGHT-OF-WAY
S.D.	STORM DRAINS (NEEDS R.E. AND I.E.)
P.O.C.	POINT OF CONNECTION

CALFIRE SRA FIRE SAFE REGULATIONS:

THE SCOPE OF WORK SHALL MEET ALL APPLICABLE CALFIRE STATE RESPONSIBILITY AREA (SRA) FIRE SAFE REGULATIONS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

- ALL GRAVEL DRIVEWAYS SHALL BE DESIGNED TO SUPPORT 75,000 LBS FIRE APPARATUS WEIGHT,
- A MINIMUM OF 10' WIDE, NOT INCLUDING SHOULDER,
- A MINIMUM OF 14' UNOBSTRUCTED HORIZONTAL CLEARANCE AND 15' UNOBSTRUCTED VERTICAL CLEARANCE,
- A MAXIMUM GRAGE OF 16%,
- A MINIMUM INSIDE CURVE RADIUS OF 50',
- TURNAROUNDS AT ALL BUILDING SITES ON DRIVEWAYS OVER 300' AND BE WITHIN 50' OF THE BUILDING.



3 CONSTRUCITON BARRIER / SILT FENCE
3/4" = 1'-0"

CONSTRUCITON BARRIER / SILT FENCE NOTES: (SEE DETAIL)

A. THE HEIGHT OF A CONSTRUCTION BARRIER / SILT FENCE SHOULD BE 36" MIN.

B. TO AVOID THE USE OF JOINTS, THE FILTER FABRIC SHOULD BE PURCHASED IN A CONTINUOUS ROLL AND CUT TO THE LENGTH OF THE BARRIER.

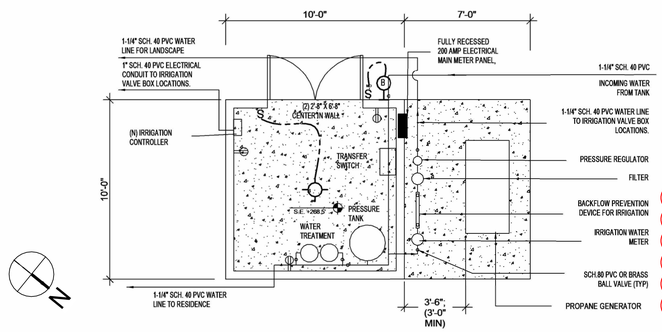
C. WHEN STANDARD STRENGTH FILTER FABRIC IS USED APPLY A REINFORCING NETTING TO SUPPORT THE FABRIC. FASTEN THE REINFORCING NETTING SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES OR TIE WIRES. ATTACH THE FILTER FABRIC TO THE UPSLOPE SIDE OF THE NETTING USING TIE WIRE OR PLASTIC ZIP STRAPS.

D. WHEN EXTRA STRENGTH FILTER FABRIC AND CLOSER POST SPACING ARE USED, THE REINFORCING NETTING MAY BE ELIMINATED. IN SUCH CASES THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS.

E. WEED FREE COIR ROLLS TO BE SECURED IN PLACED ALONG THE BASE OF CONSTRUCTION BARRIER / SITE FENCE WITH STAKES. NO TRENCHING REQUIRED.

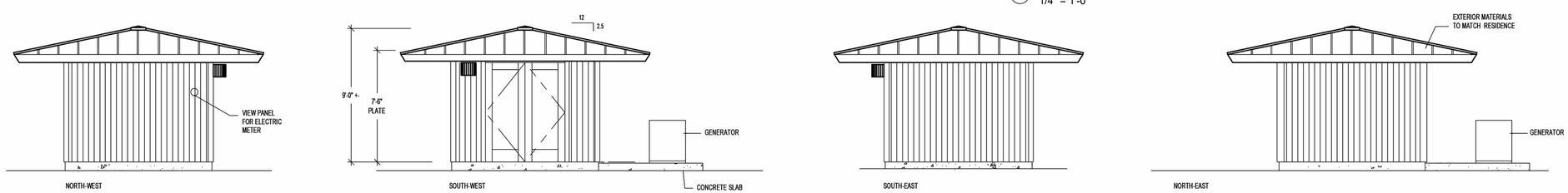
F. REGULAR INSPECTIONS SHOULD BE CONDUCTED WEEKLY TO ENSURE THE FENCE IS INTACT AND THE DEBRIS AND SEDIMENT HAS NOT ACCUMULATED AT THE BOTTOM. REMOVE ANY DEPOSITS AT THE BOTTOM. REMOVE ANY DEPOSITES WHEN THE REACH ONE-HALF THE FENCE HEIGHT.

G. SILT FENCES AND BARRIERS MAY BE REMOVED WHEN THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED AND CONSTRUCTION IS COMPLETE.



PUMP HOUSE ORIENTATION REVISED SO DOORS OPEN TO THE SOUTH-WEST

4 PUMP HOUSE - PLAN
1/4" = 1'-0"



5 PUMP HOUSE - ELEVATIONS
1/4" = 1'-0"

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SITE DETAILS

A NEW SINGLE FAMILY RESIDENCE FOR:
ANDY AND KIRSTEN
CHRISTENSEN
11800 ROAD 500D
MENDOCINO, CA 95460

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1	Revision 1	07.10.2025

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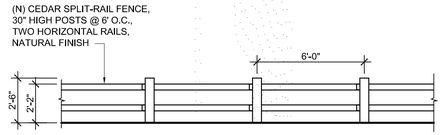
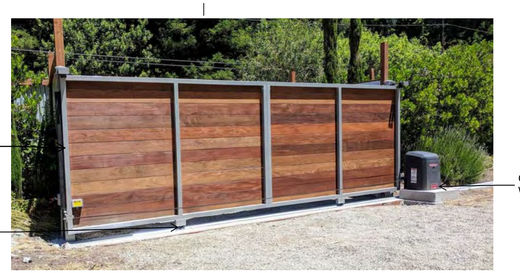
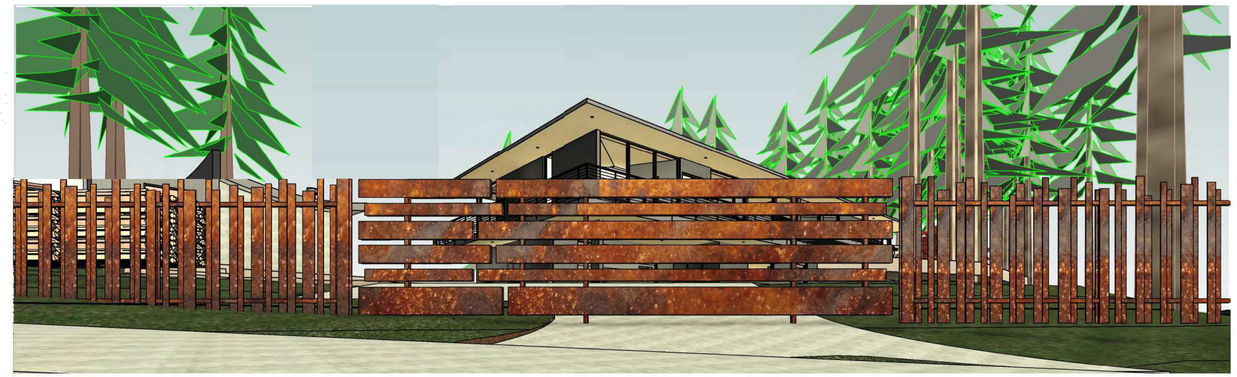


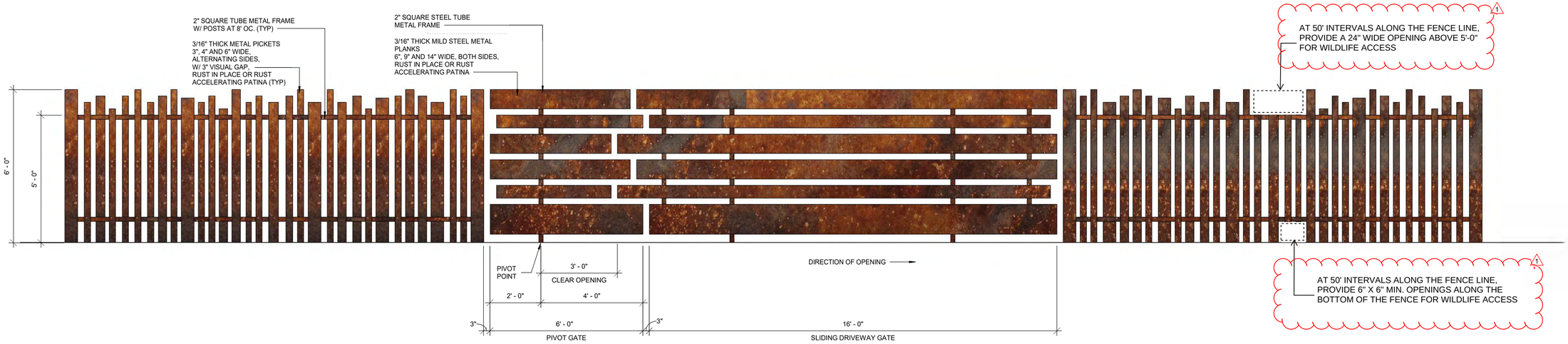
4 (N) SPLIT-RAIL FENCE
SCALE: 1/4" = 1'-0"



3 SLIDING GATE OPERATING SYSTEM



2 3D_ENTRY GATE



1 DRIVEWAY ENTRY GATE ELEVATION
1/2" = 1'-0"
LOOKING FROM ROAD 500D

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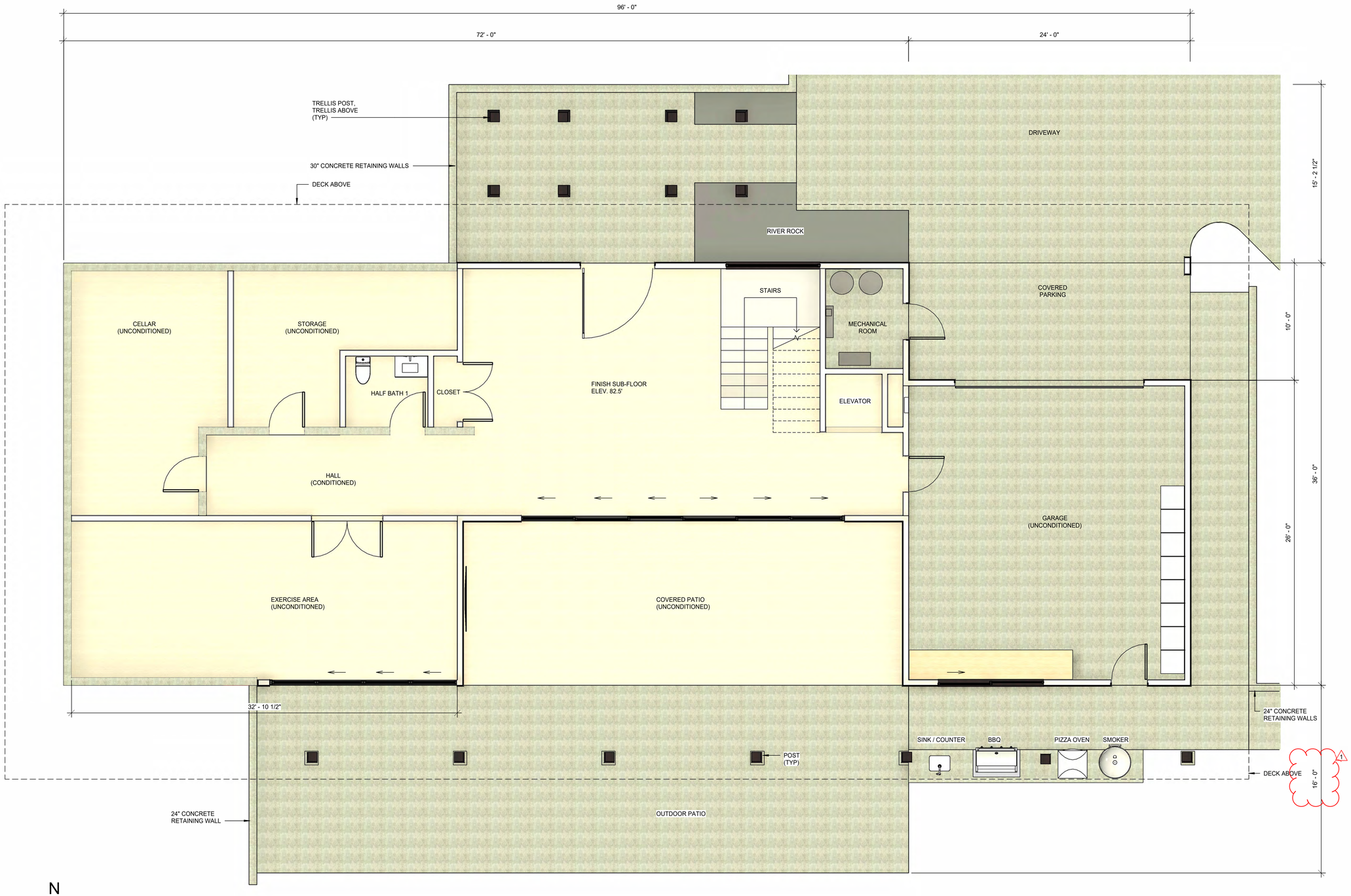

1 FLOOR PLAN - LEVEL 1
1/4" = 1'-0"

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FLOOR PLAN - LEVEL 1

A NEW SINGLE FAMILY RESIDENCE FOR:
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MENDOCINO, CA 95460

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SCALE	1/4" = 1'-0"

SHEET
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OF SHEET

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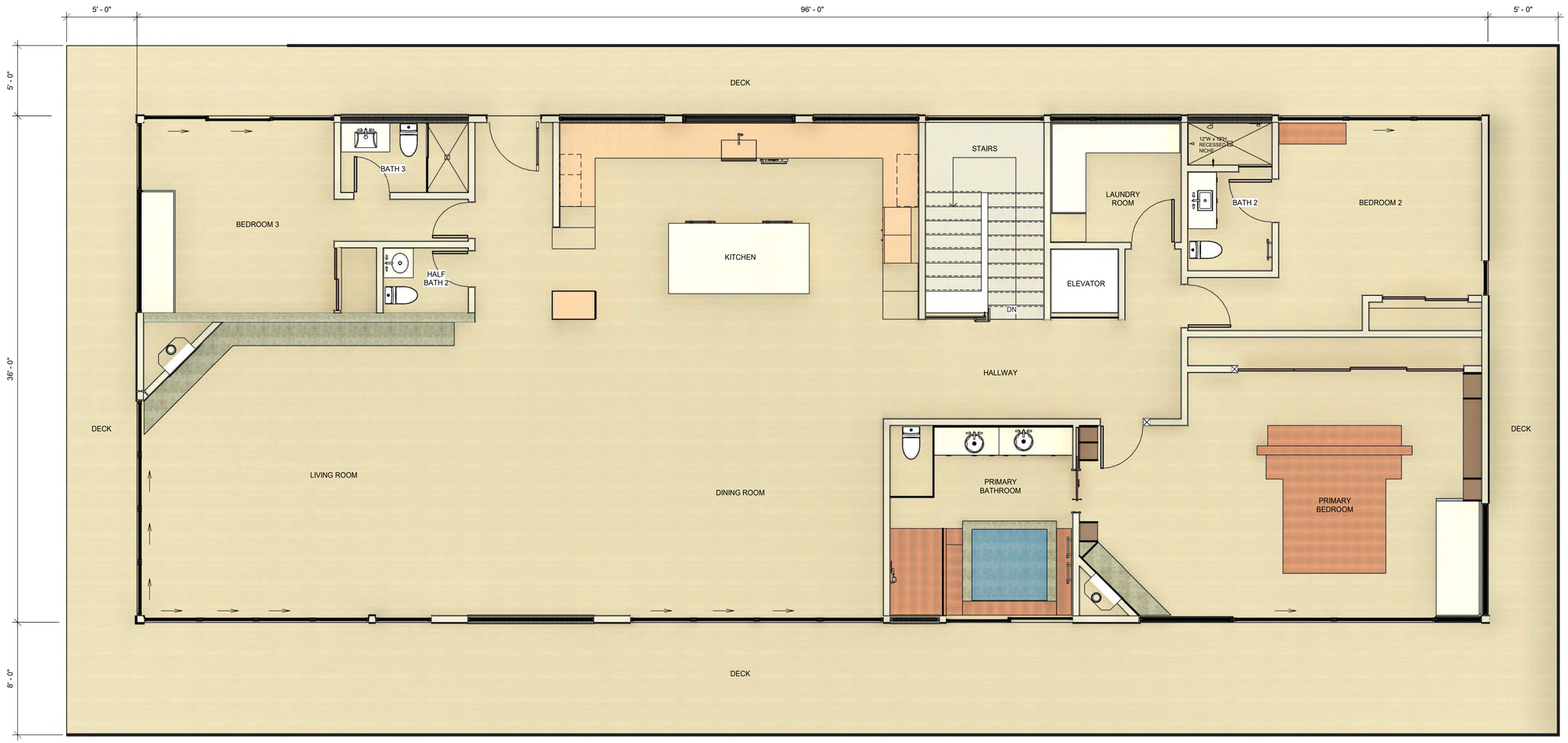

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1 FLOOR PLAN - LEVEL 2
1/4" = 1'-0"

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FLOOR PLAN - LEVEL 2

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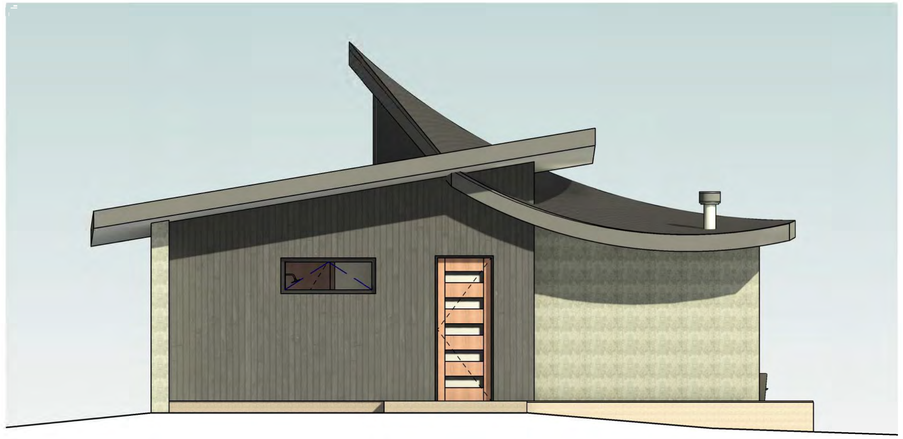
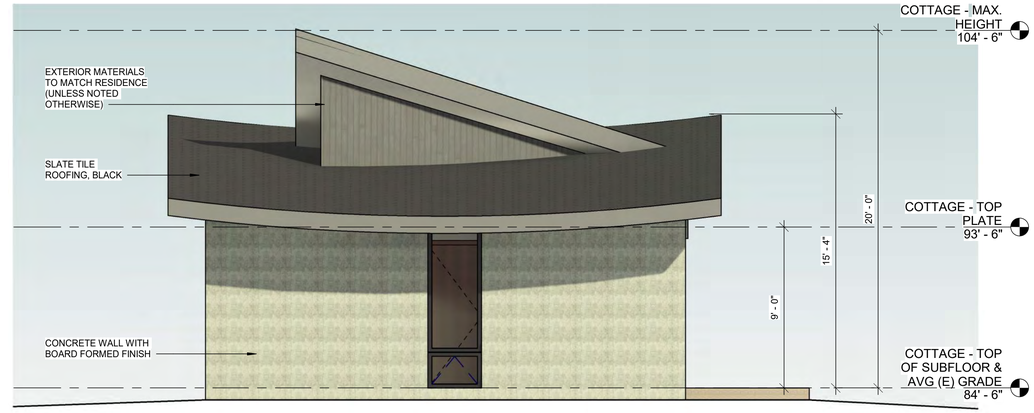
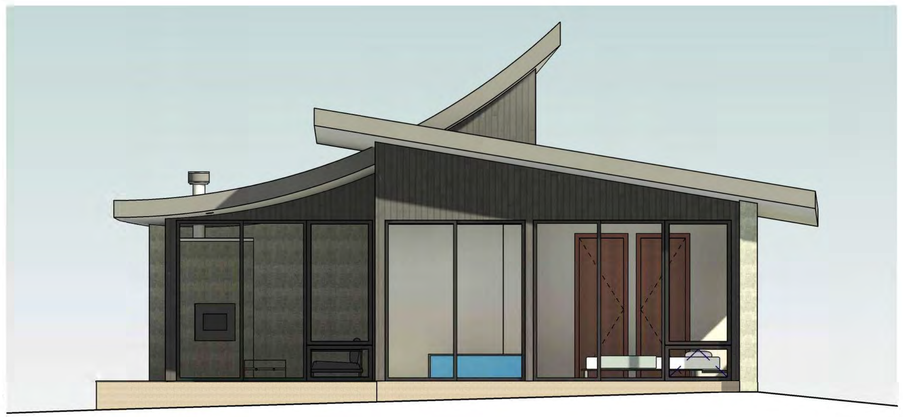


2 NORTH - COTTAGE
1/4" = 1'-0"

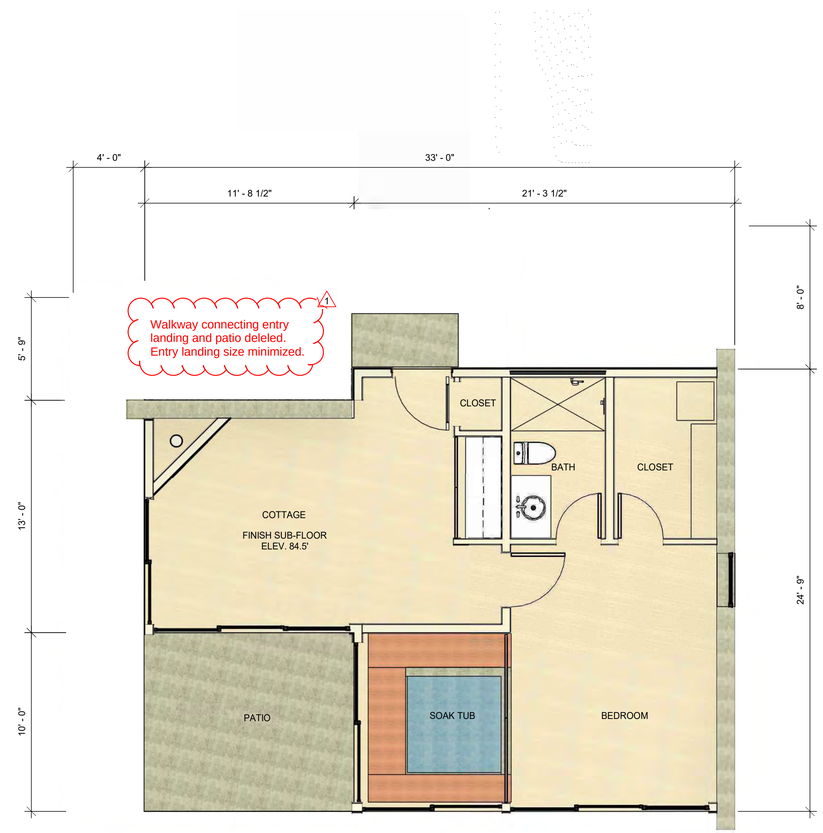


3 EAST - COTTAGE
1/4" = 1'-0"



4 SOUTH - COTTAGE
1/4" = 1'-0"

5 WEST - COTTAGE
1/4" = 1'-0"



N
ASSUMED

1 FLOOR PLAN - GUEST COTTAGE
1/4" = 1'-0"

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GUEST COTTAGE - PLAN & ELEVATIONS

A NEW SINGLE FAMILY RESIDENCE FOR:
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1 North
1/4" = 1'-0"

2 East
1/4" = 1'-0"

EXTERIOR MATERIALS

SIDING:	1X6 (5" EXPOSURE) WESTERN RED CEDAR, CLEAR HEART, VERTICAL SHIPLAP, SQUARE EDGE, FLUSH JOINTS, SMOOTH EXPOSED FINISH, PROFILE #WRCLA_SLO_5-375.
SOFFIT:	1X6 (5" EXPOSURE) WESTERN RED CEDAR, CLEAR HEART, HORIZONTAL SHIPLAP, SQUARE EDGE, FLUSH JOINTS, SMOOTH EXPOSED FINISH, PROFILE #WRCLA_SLO_5-375.
EXTERIOR SIDING FINISH:	SHOU SUGI BAN - HEAT TREATED CHARRED BLACK APPEARANCE
EXTERIOR SOFFIT FINISH:	OR TWO COAST EXTERIOR SEMI-TRANSPARENT STAIN FINISH, BLACK.
CASINGS:	WESTERN RED CEDAR WITH FINISH TO MATCH SIDING.
FASCIAS:	WESTERN RED CEDAR WITH FINISH TO MATCH SIDING.
WINDOWS:	BLACK ALUMINUM FRAMES W/ DUAL LOW-E NON-REFLECTIVE GLAZING.
SLIDING GLASS DOORS:	BLACK ALUMINUM FRAMES W/ DUAL LOW-E NON-REFLECTIVE GLAZING.
ENTRY DOORS:	REDWOOD, 2 COATS CLEAR SATIN URETHANE FINISH.
ROOFING:	BLACK STANDING SEAM ANODIZED ALUMINUM METAL ROOFING.
FLASHING:	BLACK ANODIZED ALUMINUM AND 16 OZ. COPPER, SEPERATE ALL DISSIMILAR METALS.
GUTTERS:	BLACK ANODIZED ALUMINUM 6" FASCIA GUTTERS.
DOWNSPOUTS:	BLACK ANODIZED ALUMINUM WITH 2"X3" PROFILE.
DECKS:	NATURAL STONE SET IN MORTAR, BROWN / GREY TONES.
DECK FRAMING:	P.T.D.F OR CONHEART REDWOOD, STEEL BEAMS, WATER-TIGHT SYSTEM.
NAILING:	ALL EXPOSED NAILING TO BE STAINLESS STEEL RING SHANK.
DECK GUARDWALL:	STAINLESS STEEL (SS) FRAME, BURNISHED BLACK WITH HORIZONTAL SS CABLES.
FOUNDATION:	CAST IN PLACE CONCRETE, BOARD FORM FINISH.
CONCRETE FLATWORK:	CAST IN PLACE CONCRETE, GREY.

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EXTERIOR ELEVATIONS

A NEW SINGLE FAMILY RESIDENCE FOR:
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A3.1

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1 South
1/4" = 1'-0"

2 West
1/4" = 1'-0"

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EXTERIOR ELEVATIONS

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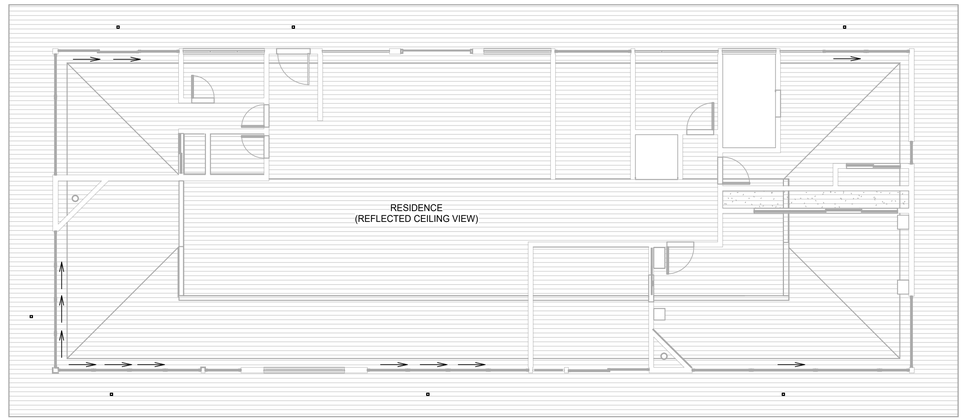
A3.2

EXTERIOR LIGHTING FIXTURE SCHEDULE						ALL LAMPS TO BE SHIELDED AND DOWNCAST.
SYMBOL	FUNCTION	MANUFACTURER	MODEL NO.	FINISH	LAMP	OTHER
⊙	DOWNLIGHT RECESSED	HALO	HL36SA-20FL930ED0101CAT	TL3R2GBN SELF FLANGED REFLECTOR PRISMATIC LENS W/ BLACK TRIM	20W LED, 40 DEG. FLOOD 90 CRI, 3000K, 120-277V	UL LISTED FOR USE IN WET LOCATIONS. 360ø ROTATION, 45ø FULLY ADJUSTABLE, OPTICS: TIR45FL40 40 DEG. BEAM
⊢●	WALL MOUNT - SECURITY	RAB	SMSLES "LESLIE 2X13"	BLACK ANOXIZED ALUMINUM	(2) 75 W QUARTZ HALOGEN	UL LISTED FOR USE IN WET LOCATIONS, PRE-ASSEMBLED / WIRED, INTEGRAL WALL MOUNT, MOTION SENSOR AND PHOTO-CONTROL SWITCH



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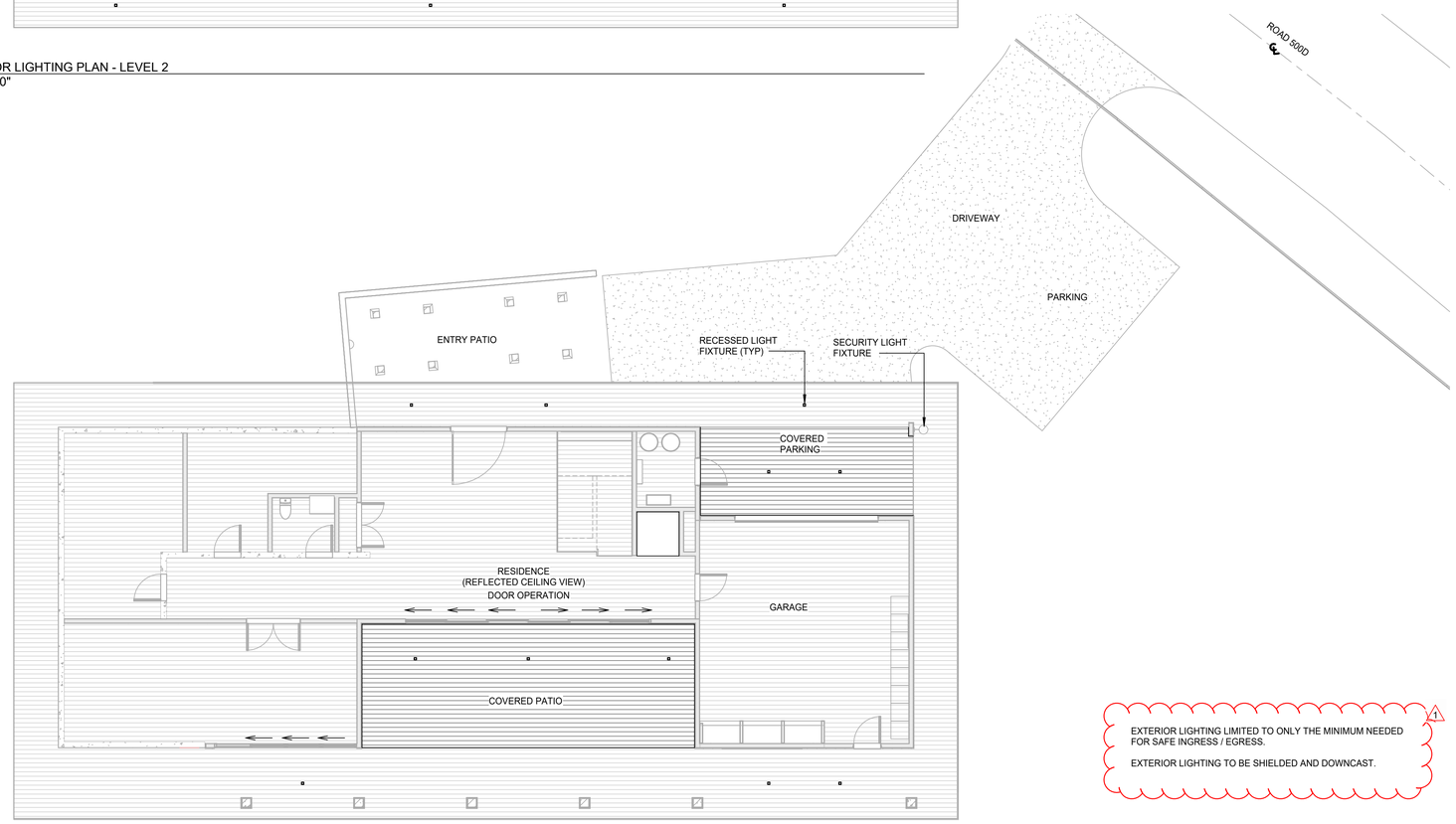
2 EXTERIOR LIGHTING PLAN - LEVEL 2
1/8" = 1'-0"



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1 EXTERIOR LIGHTING PLAN - LEVEL 1
1/8" = 1'-0"

EXTERIOR LIGHTING LIMITED TO ONLY THE MINIMUM NEEDED FOR SAFE INGRESS / EGRESS.

EXTERIOR LIGHTING TO BE SHIELDED AND DOWNCAST.

1

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EXTERIOR LIGHTING PLAN

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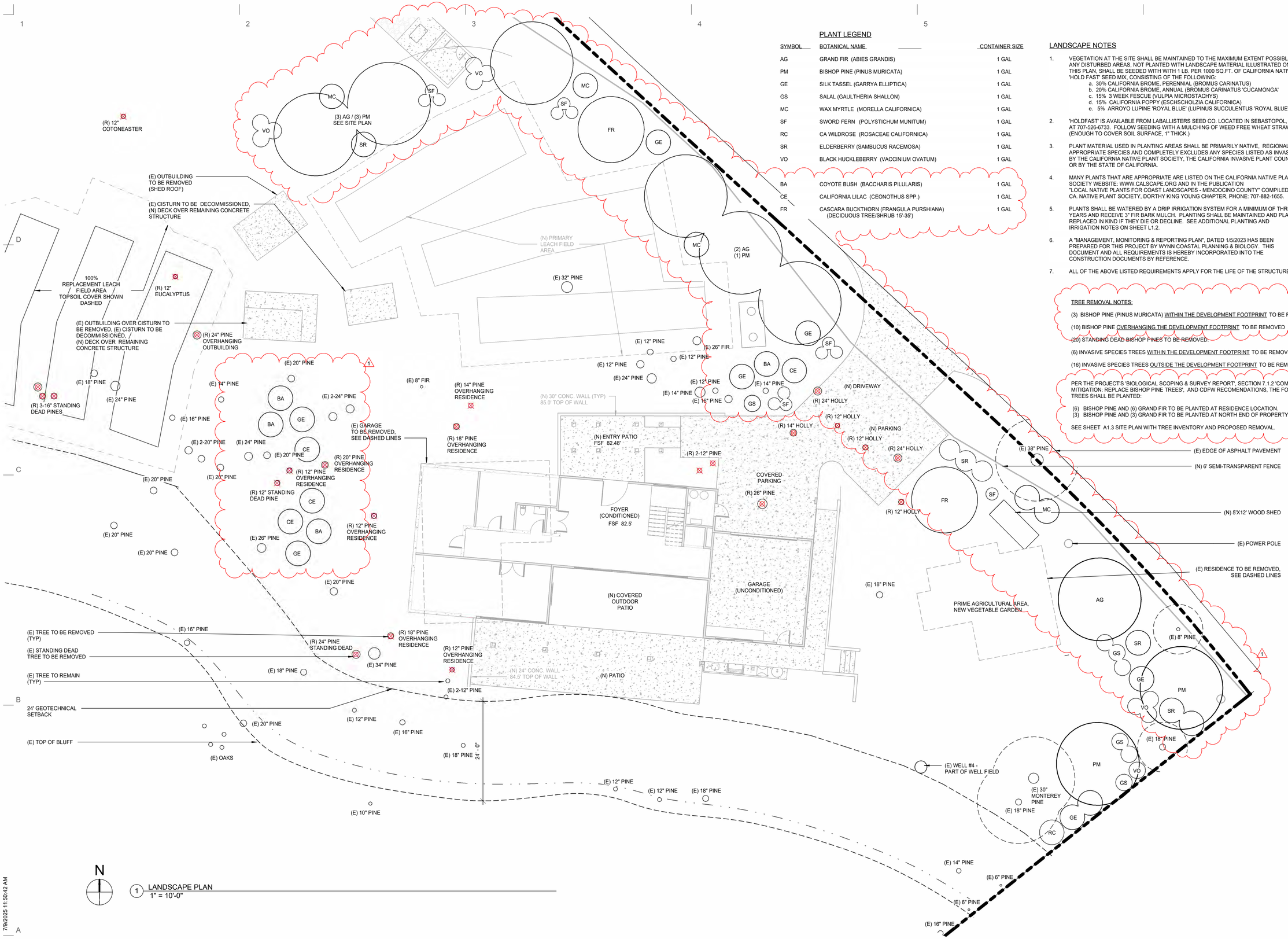

1 LANDSCAPE PLAN
1" = 10'-0"

PLANT LEGEND

SYMBOL	BOTANICAL NAME	CONTAINER SIZE
AG	GRAND FIR (ABIES GRANDIS)	1 GAL
PM	BISHOP PINE (PINUS MURICATA)	1 GAL
GE	SILK TASSEL (GARRYA ELLIPTICA)	1 GAL
GS	SALAL (GAULTHERIA SHALLON)	1 GAL
MC	WAX MYRTLE (MORELLA CALIFORNICA)	1 GAL
SF	SWORD FERN (POLYSTICHUM MUNITUM)	1 GAL
RC	CA WILDROSE (ROSACEAE CALIFORNICA)	1 GAL
SR	ELDERBERRY (SAMBUCUS RACEMOSA)	1 GAL
VO	BLACK HUCKLEBERRY (VACCINIUM OVATUM)	1 GAL
BA	COYOTE BUSH (BACCHARIS PILULARIS)	1 GAL
CE	CALIFORNIA LILAC (CEONOTHUS SPP.)	1 GAL
FR	CASCARA BUCKTHORN (FRANGULA PURSHIANA) (DECIDUOUS TREE/SHRUB 15'-35')	1 GAL

LANDSCAPE NOTES

1. VEGETATION AT THE SITE SHALL BE MAINTAINED TO THE MAXIMUM EXTENT POSSIBLE. ANY DISTURBED AREAS, NOT PLANTED WITH LANDSCAPE MATERIAL ILLUSTRATED ON THIS PLAN, SHALL BE SEEDED WITH WITH 1 LB. PER 1000 SQ.FT. OF CALIFORNIA NATIVE 'HOLD FAST' SEED MIX, CONSISTING OF THE FOLLOWING:
   a. 30% CALIFORNIA BROME, PERENNIAL (BROMUS CARINATUS)
   b. 20% CALIFORNIA BROME, ANNUAL (BROMUS CARINATUS 'CUCAMONGA'
   c. 15% 3 WEEK FESCUE (VULPIA MICROSTACHYS)
   d. 15% CALIFORNIA POPPY (ESCHSCHOLZIA CALIFORNICA)
   e. 5% ARROYO LUPINE 'ROYAL BLUE' (LUPINUS SUCCULENTUS 'ROYAL BLUE')
2. 'HOLDFAST' IS AVAILABLE FROM LABALLISTERS SEED CO. LOCATED IN SEBASTOPOL, CA AT 707-526-6733. FOLLOW SEEDING WITH A MULCHING OF WEED FREE WHEAT STRAW (ENOUGH TO COVER SOIL SURFACE, 1" THICK.)
3. PLANT MATERIAL USED IN PLANTING AREAS SHALL BE PRIMARILY NATIVE, REGIONALLY APPROPRIATE SPECIES AND COMPLETELY EXCLUDES ANY SPECIES LISTED AS INVASIVE BY THE CALIFORNIA NATIVE PLANT SOCIETY, THE CALIFORNIA INVASIVE PLANT COUNCIL OR BY THE STATE OF CALIFORNIA.
4. MANY PLANTS THAT ARE APPROPRIATE ARE LISTED ON THE CALIFORNIA NATIVE PLANT SOCIETY WEBSITE: WWW.CALSCAPE.ORG AND IN THE PUBLICATION "LOCAL NATIVE PLANTS FOR COAST LANDSCAPES - MENDOCINO COUNTY" COMPILED BY CA. NATIVE PLANT SOCIETY, DORTHY KING YOUNG CHAPTER, PHONE: 707-882-1655.
5. PLANTS SHALL BE WATERED BY A DRIP IRRIGATION SYSTEM FOR A MINIMUM OF THREE YEARS AND RECEIVE 3" FIR BARK MULCH. PLANTING SHALL BE MAINTAINED AND PLANTS REPLACED IN KIND IF THEY DIE OR DECLINE. SEE ADDITIONAL PLANTING AND IRRIGATION NOTES ON SHEET L1.2.
6. A "MANAGEMENT, MONITORING & REPORTING PLAN", DATED 1/5/2023 HAS BEEN PREPARED FOR THIS PROJECT BY WYNN COASTAL PLANNING & BIOLOGY. THIS DOCUMENT AND ALL REQUIREMENTS IS HEREBY INCORPORATED INTO THE CONSTRUCTION DOCUMENTS BY REFERENCE.
7. ALL OF THE ABOVE LISTED REQUIREMENTS APPLY FOR THE LIFE OF THE STRUCTURES.

1

TREE REMOVAL NOTES:

(3) BISHOP PINE (PINUS MURICATA) WITHIN THE DEVELOPMENT FOOTPRINT TO BE REMOVED.

(10) BISHOP PINE OVERHANGING THE DEVELOPMENT FOOTPRINT TO BE REMOVED

(20) STANDING DEAD BISHOP PINES TO BE REMOVED.

(6) INVASIVE SPECIES TREES WITHIN THE DEVELOPMENT FOOTPRINT TO BE REMOVED.

(16) INVASIVE SPECIES TREES OUTSIDE THE DEVELOPMENT FOOTPRINT TO BE REMOVED.

1

PER THE PROJECT'S 'BIOLOGICAL SCOPING & SURVEY REPORT', SECTION 7.1.2 'COMPENSATORY MITIGATION: REPLACE BISHOP PINE TREES', AND CDFW RECOMENDATIONS, THE FOLLOWING TREES SHALL BE PLANTED:

(6) BISHOP PINE AND (6) GRAND FIR TO BE PLANTED AT RESIDENCE LOCATION.
(3) BISHOP PINE AND (3) GRAND FIR TO BE PLANTED AT NORTH END OF PROPERTY.

SEE SHEET A1.3 SITE PLAN WITH TREE INVENTORY AND PROPOSED REMOVAL.

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LANDSCAPE PLAN

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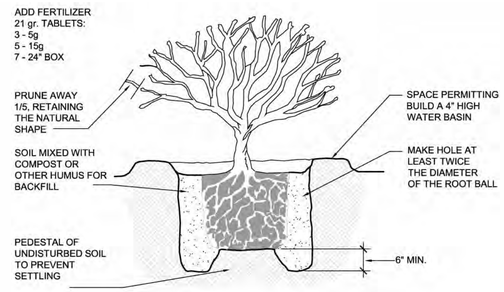
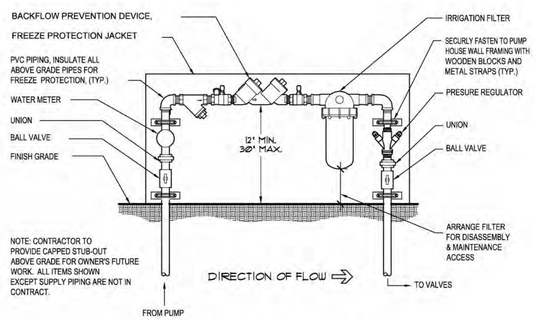
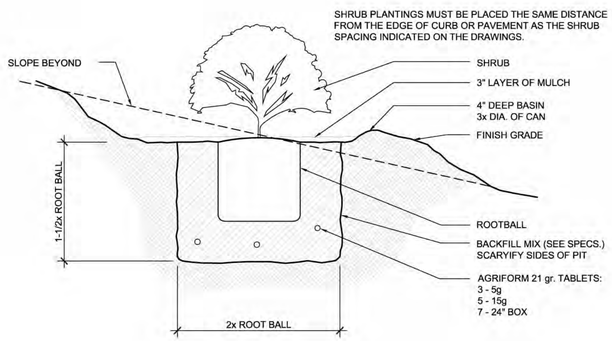


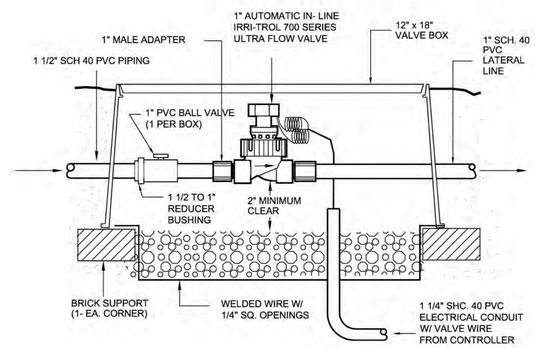
1 / L1.3 SHRUB PLANTING DETAIL



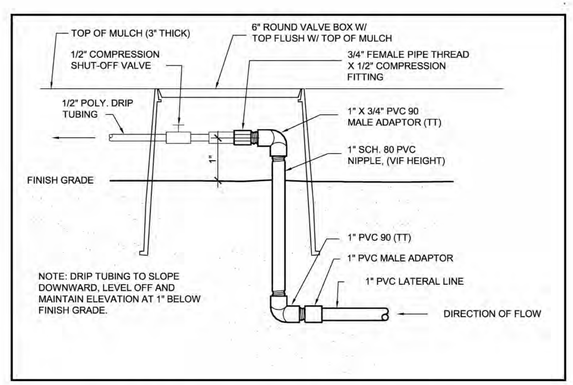
3 / L1.3 IRRIGATION SYSTEM SET-UP



2 / L1.3 SHRUB PLANTING ON SLOPE



4 / L1.3 VALVE BOX SET UP



5 / L1.3 DRIP IRRIGATION CONNECTION

GENERAL CONDITIONS:
1. ALL MATERIALS, METHODS & WORKMANSHIP SHALL CONFORM TO THE MOST RECENT EDITIONS OF THE CALIFORNIA BUILDING CODE, CA. ELECTRICAL CODE, CA. MECHANICAL CODE AND CA PLUMBING CODE WITH CURRENT STATE AND LOCAL AMENDMENTS.
2. ALL WORK SHALL BE DONE IN A PROFESSIONAL MANNER AND BE OF THE HIGHEST QUALITY STANDARDS.

PLANT MATERIAL:
1. ALL PLANT MATERIAL TO BE DROUGHT TOLERANT AND HAVE LOW WATER USAGE.
2. ALL PLANTS SHALL BE TOP QUALITY NURSERY STOCK, FREE OF DISEASE AND PESTS.
3. ALL PLANTS SHALL BE NORMAL SIZE FOR CONTAINER, VIGOROUS, AND TRUE TO NAME AND VARIETY.
4. PLANT STOCK TO BE USED IS LISTED ON PLAN WITH APPROPRIATE NUMBER, CONTAINER SIZE AND GROWTH HABIT.
5. SPACING OF PLANTS ON CENTER IN PLANTING BEDS IS EQUAL TO THEIR GROWTH WIDTH.

SOIL PREPARATION:
1. PLANTING AREAS SHALL BE FREE OF CONSTRUCTION DEBRIS AND WEEDS.
2. ADD 3" ORGANIC COMPOST UNIFORMLY TO PLANTING AREAS AND INCORPORATE TO A DEPTH OF 12".
4. PLANT HOLES SHALL BE TWICE THE DIAMETER AND DEPTH OF THE ROOT BALL. SEE DETAILS FOR PLANTING INSTRUCTIONS.
5. PLACE ORGANIC (20-10-5) SLOW RELEASE 21 GRAM FERTILIZER TABLETS EVENLY AROUND THE PLANT CIRCUMFERENCE, HALF WAY DOWN ROOT BALL AND 4" AWAY. USE 3 TABLETS PER 5 GALLON TREE OR SHRUB, 2 TABS PER 1 GALLON PLANT.

PLANTING:
1. WATER PLANTS IN CONTAINER THOROUGHLY PRIOR TO PLANTING AND DIRECTLY AFTER TO ELIMINATE AIR POCKETS AND REDUCE PLANT STRESS.
2. WHEN PLANTED, CROWN OF PLANT SHALL BE 1 ½" ABOVE GRADE. SLOPE SOILS AWAY FROM PLANT CROWN. PREPARE A WATER BASIN BY FORMING A SOIL RING AT LEAST 3" HIGH AND WIDE AROUND THE OUTER EDGE OF THE NEW PLANT HOLE.
3. ALL PLANTS AND PLANTING AREAS SHALL RECEIVE 3" MINIMUM OF ¾" WALK ON FIR BARK MULCH OR EQUAL SPREAD UNIFORMLY.
4. PLANTS SHALL BE KEPT MOIST FOR TWO WEEKS FOLLOWING PLANTING AND THEN WATERED WELL, ONCE PER WEEK UNTIL RAINY SEASON BEGINS.

STAKING AND WIND PROTECTION:
1. SET THREE (3) 2" DIAMETER X 8' TALL PRESSURE TREATED DOUGLAS FIR (P.T.D.F.), REDWOOD OR LODGE POLE TREE STAKES FORMING A 90 DEGREE ANGLE ON THE WINDWARD SIDE OF THE TREES, OPENING AWAY FROM THE DIRECTION OF PREVAILING WINDS. SET ALL STAKES 20" FROM THE ROOT CROWN, PLUMB AND 12" MIN. SECURELY INTO UNDISTURBED GRADE BELOW THE TREE ROOT BALL.
2. SECURE FOUR (4) RUBBER OR POLY. TREE TIES FASTENED IN A FIGURE "8" AROUND TREE PER DETAIL. TIES SHALL BE PLACED ON THE TWO STAKES THAT ARE PERPENDICULAR TO THE DIRECTION OF THE PREVAILING WINDS. SECURE TIES TO TREE STAKES WITH 1 ½" GALV. ROOFING NAILS.
3. STAKING AND WIND PROTECTION SHALL REMAIN FOR A MINIMUM OF TWO YEARS OR UNTIL TREE IS WELL ESTABLISHED.
4. HIGH QUALITY WOVEN LANDSCAPE FABRIC, 4' TALL, MAY BE STAPLED SECURELY TO THE POLES IF HEAVY WINDS ARE ANTICIPATED.

IRRIGATION:
1. SYSTEM IS DESIGNED FOR 10 G.P.M. MIN. AND 25 P.S.I. MAX.
CONTRACTOR TO VERIFY G.P.M. AND P.S.I. TO INSURE PROPER SYSTEM PERFORMANCE.
ALL PIPING IS SCH. 40 PVC WITH SIZES LISTED ACCORDINGLY.
A 3/4" GARDEN HOSE BIB MUST BE PROVIDED FOR MANUAL WATERING AT TIME OF PLANTING.
2. AN AUTOMATED IRRIGATION SYSTEM SHALL BE PROFESSIONALLY INSTALLED AND FUNCTION FOR A MINIMUM OF TWO YEARS. IT SHALL BE MAINTAINED AND RETAINED TO IRRIGATE REPLACEMENT PLANTS, AS NEEDED, FOR THE LIFE OF THE STRUCTURE.
3. SYSTEM SHALL BE INSTALLED IN THE FOLLOWING MANNER:
WATER WILL FLOW FROM POINT OF CONNECTION THROUGH A 1-1/4" BALL VALVE,
A 1-1/4" ZURN WILKINS 975XLT3 REDUCED PRESSURE BACKFLOW PREVENTOR,
A 1-1/4" ARKAL AGRICULTURAL DISC FILTER WITH 140 MESH SIZE,
A 1-1/4" NETAFIM PRESSURE REGULATOR WITH 25 P.S.I. SPRING,
A 1" IRRI-TROL 700 SERIES ULTRA FLOW AUTOMATIC IN LINE VALVE,
1" SCH. 40 PVC FROM VALVE SET UP TO EACH PLANTING AREA,
TRANSITION TO 1/2" POLY. DRIP TUBING LAID NEXT TO EACH PLANT CROWN,
AGRIFIM ONE GALLON PER HOUR FLAG DRIP EMITTERS WILL DELIVER WATER TO EACH PLANT.
TO ENSURE BALANCED WATERING, LOCATE EMITTERS IN THE FOLLOWING MANNER:
(5) AGRIFIM ONE GALLON PER HOUR DRIP EMITTERS WILL BE PLACED 14" FROM CROWN SURROUNDING EACH 15 GAL. TREE,
(3) AGRIFIM ONE GALLON PER HOUR DRIP EMITTERS WILL BE PLACED 10" FROM CROWN SURROUNDING EACH 5 GAL. SHRUB,
(2) AGRIFIM ONE GALLON PER HOUR DRIP EMITTERS WILL BE PLACED 6" FROM CROWN EITHER SIDE OF EACH 1 GAL. GROUND COVER.
4. BACK FLOW PREVENTION DEVICE TO BE MOUNTED PER DETAIL & CODES.
5. VALVE, FILTER, AND PRESSURE REGULATOR TO BE MOUNTED BELOW GRADE IN A JUMBO SIZE VALVE BOX WITH TOP MOUNTED FLUSH WITH MULCH.
PLACE 3" 3/4" DRAIN ROCK AT BOTTOM OF VALVE BOX TO ENSURE DRAINAGE.
6. A HARDIE RAIN DIAL 12 STATION CONTROLLER SHALL BE INSTALLED IN OWNER APPROVED LOCATION WITH #14 GAUGE 3 STAND BRAIDED MULTICOLORED BUNDLED VALVE WIRE RUNNING IN 3/4" SCH. 40 PVC ELECTRICAL CONDUIT TO THE VALVE BOX LOCATION. WIRE TO BE ATTACHED TO VALVES WITH SPEARS DRI-SPLICE SILICONE FILLED CONNECTORS.
7. THIS SYSTEM WILL PROVIDE 12 TO 15 YEARS OF SERVICE.

MAINTENANCE AND REPLACEMENT:
1. PROVIDE A MONTHLY MAINTENANCE CHECK ON IRRIGATION AND PLANT CONDITIONS TO ENSURE SUCCESS OF THE PLANTING AND IRRIGATION SYSTEM.
2. PLANTS SHALL BE REPLACED IN-KIND PER THE LANDSCAPE PLAN AND WRITTEN SPECIFICATIONS AS THEY DIE OR ARE SUBSTANTIALLY DECLINING.

PROTECTION OF EXISTING VEGETATION:
1. PRIOR TO ANY SITE DEVELOPMENT ACTIVITIES, TEMPORARY 3 FEET TALL NYLON 1" SQ. MESH FENCING SHALL BE PLACED 1 FT. OUTSIDE OF THE DRIP LINE OF ALL VEGETATION WHICH IS IDENTIFIED FOR RETENTION.
2. NO CONSTRUCTION ACTIVITIES, VEGETATION REMOVAL, EXCAVATION, MATERIALS OR EQUIPMENT STORAGE SHALL BE PERMITTED WITHIN THE DRIP LINE OF THIS VEGETATION.
3. SEE SHEET A1.4 SITEWORK NOTES FOR SILT FENCE / CONSTRUCTION FENCING.

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LANDSCAPE DETAILS AND NOTES

A NEW SINGLE FAMILY RESIDENCE FOR:
ANDY AND KIRSTEN CHRISTENSEN
11800 ROAD 500D
MENDOCINO, CA 95460

ISSUE DATE

No.	Description	Date
1	Revision 1	07.10.2025

REGISTERED ARCHITECT TODD NEWBERGER C-31047 8/31/2027 Renewal Date STATE OF CALIFORNIA

DRAWN	TN
CHECKED	TN
DATE	12.02.2024

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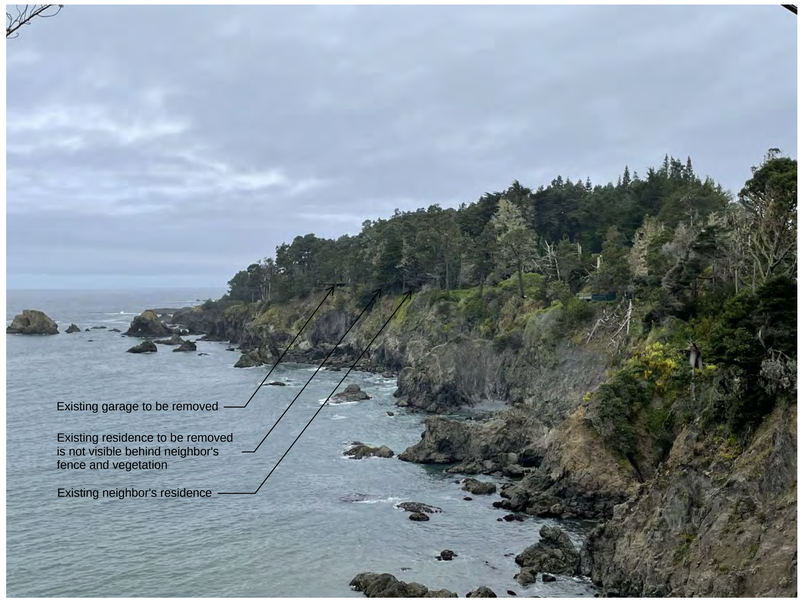
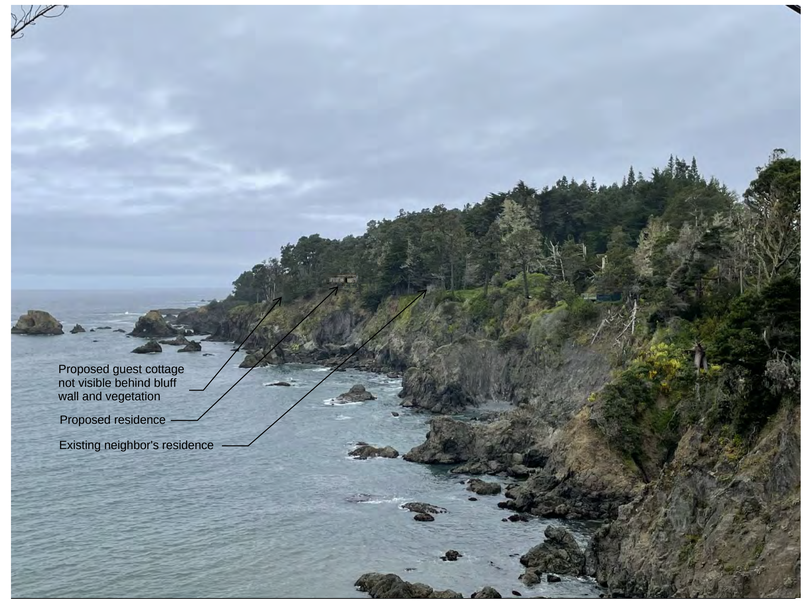
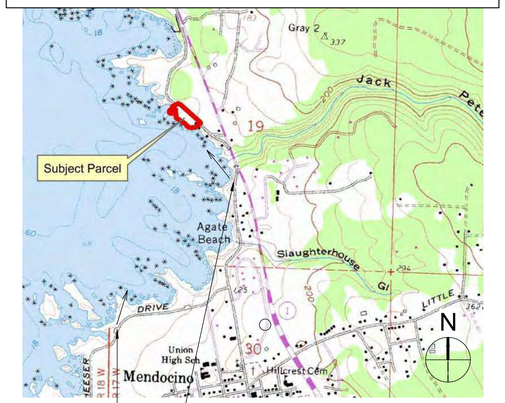


LOCATION #1 - EXISTING - VIEW FROM JACK PETERS CREEK VIEWING NORTH



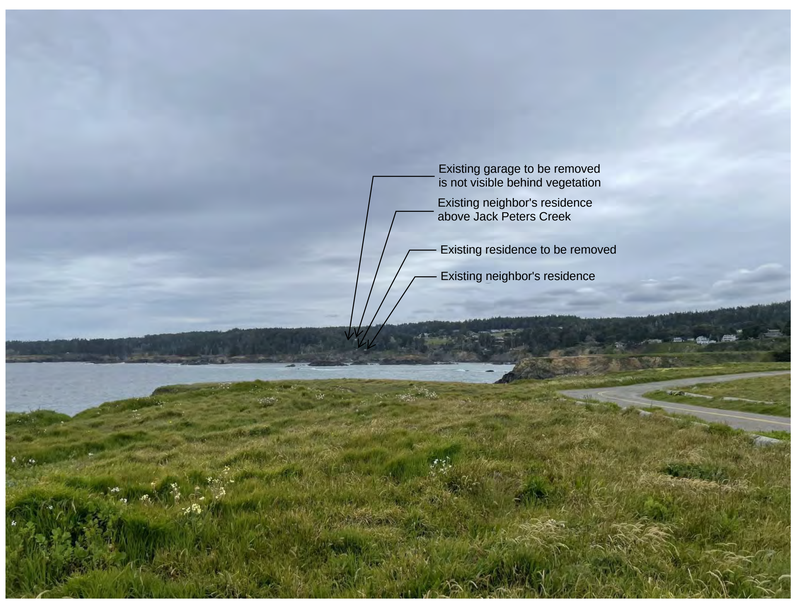
LOCATION #1 - PROPOSED - VIEW FROM JACK PETERS CREEK VIEWING NORTH

VICINITY MAP



LOCATION AND DIRECTION #1:
LANSING STREET, MENDOCINO VIEWING NORTH

LOCATION AND DIRECTION #2:
HEESER STREET, MENDOCINO
MENDOCINO HEADLANDS STATE PARK VIEWING NORTH



LOCATION #2 - EXISTING - VIEW FROM MENDOCINO HEADLANDS STATE PARK VIEWING NORTH

LOCATION #2 - PROPOSED - VIEW FROM MENDOCINO HEADLANDS STATE PARK VIEWING NORTH

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VISUAL STUDY

A NEW SINGLE FAMILY RESIDENCE FOR:
ANDY AND KIRSTEN CHRISTENSEN
11800 ROAD 500D
MENDOCINO, CA 95460

ISSUE DATE

No.	Description	Date
1	Revision 1	07.10.2025

REGISTERED ARCHITECT
TODD NEWBERGER
C-31047
8/31/2022
Renewal Date
STATE OF CALIFORNIA

DRAWN	TN
CHECKED	TN
DATE	12.02.2024

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OF SHEET

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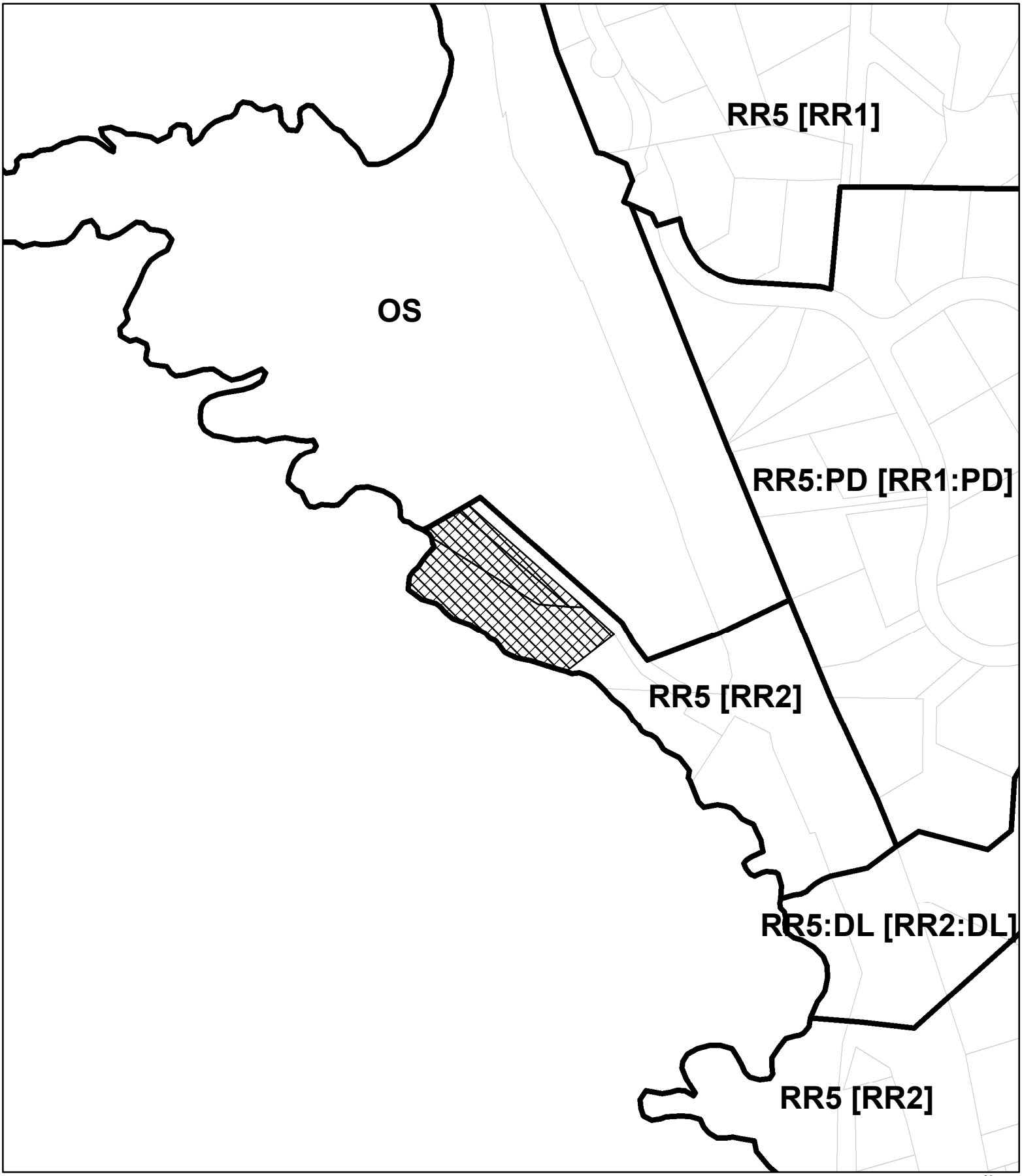

CASE: V2025-0002, CDP2021-0016 & B2021-0010
OWNER: CHRISTENSEN, Andrew & Kirsten
APN: 118-320-10, 11 & 12
APLCT: Andrew & Kirsten Christensen
AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

Zoning Districts
Assessors Parcels

0 180 360 Feet
0 0.03 0.06 Miles
1:4,000

N W E S

ZONING

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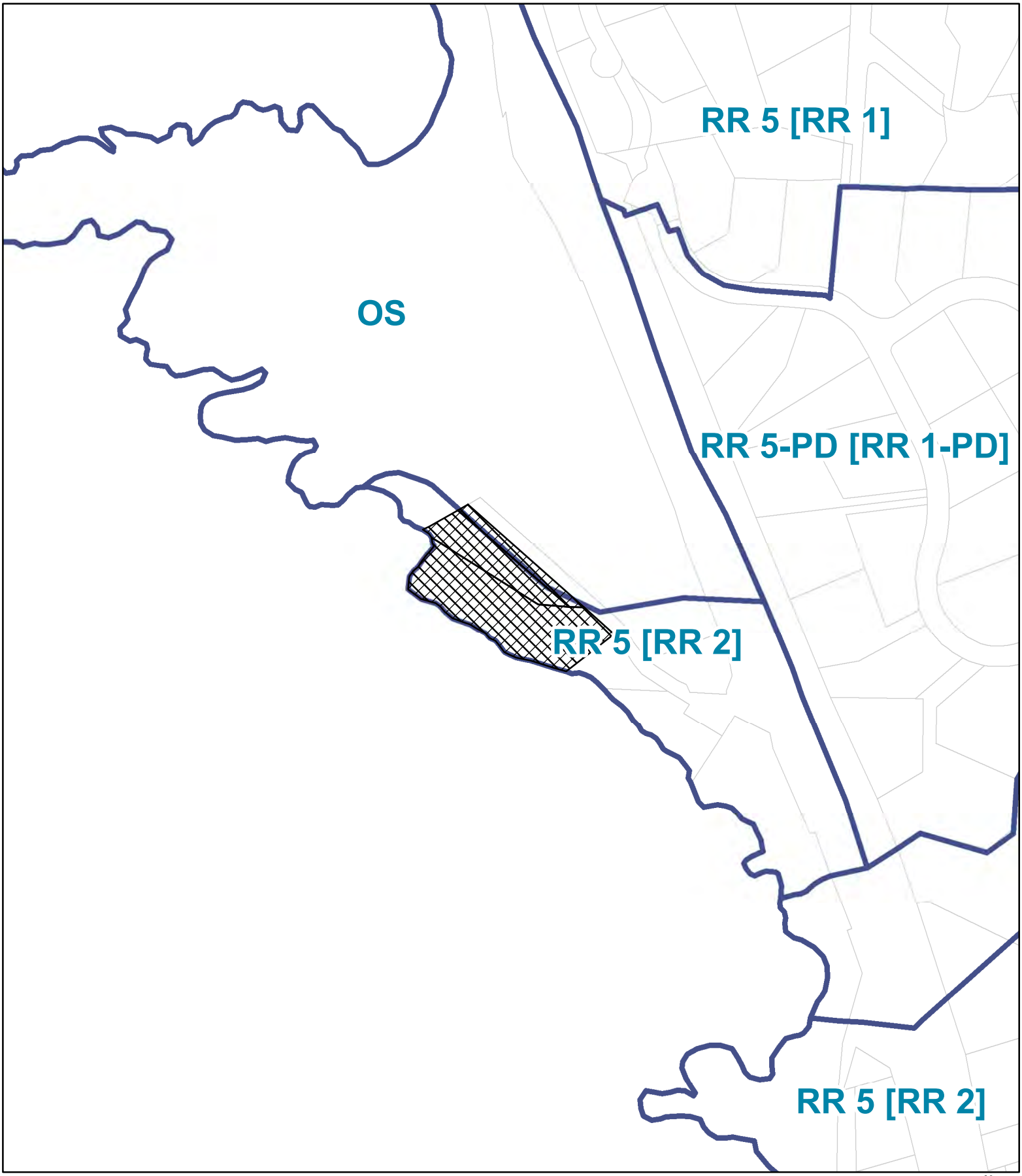

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Assessors Parcels

0 180 360 Feet
0 0.03 0.06 Miles
1:4,000

N W E S

GENERAL PLAN

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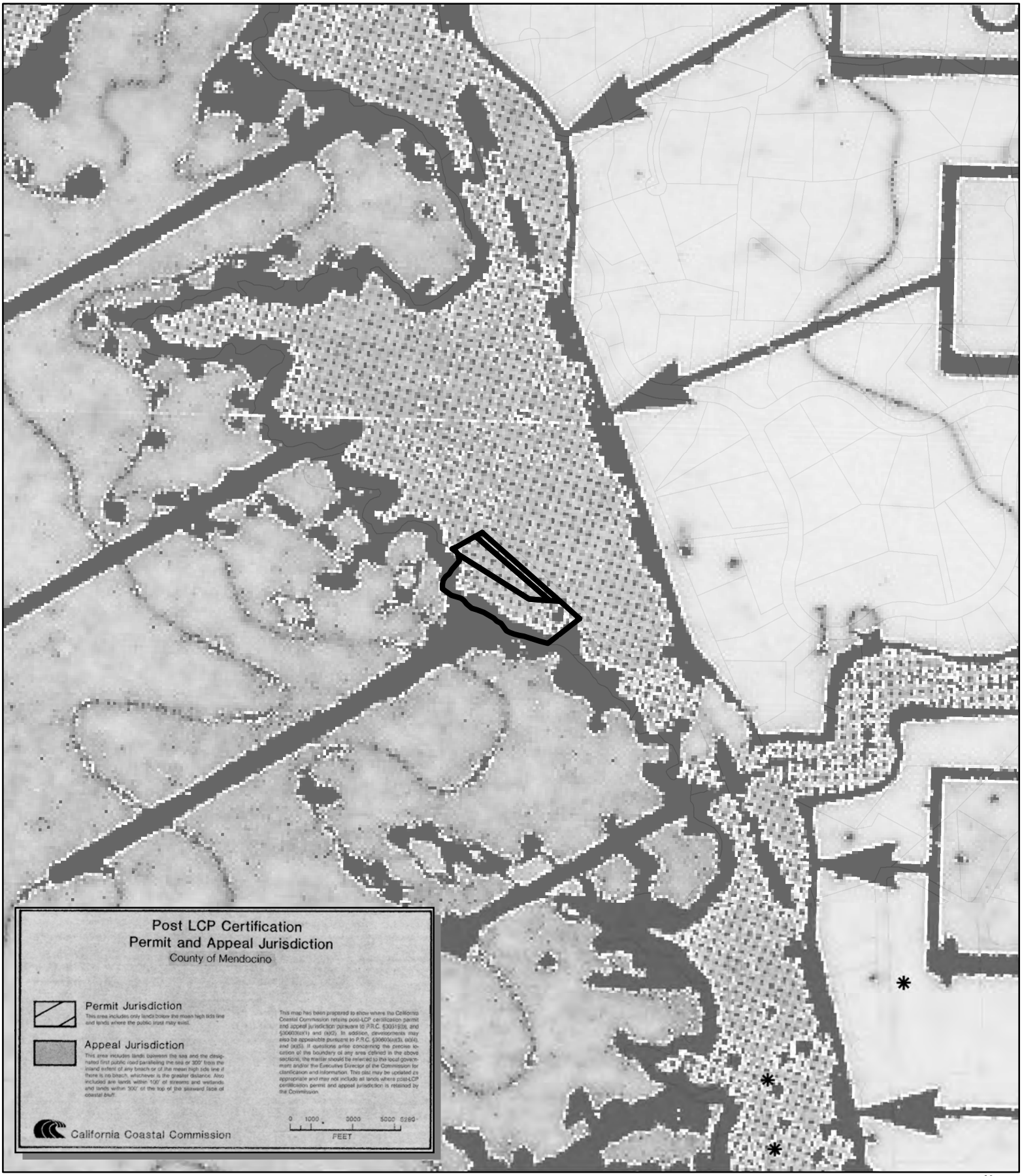

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✱ Visitor_Accomodation_&_Services

Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles

N W E S

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POST LCP CERTIFICATION & APPEAL JURISDICTION

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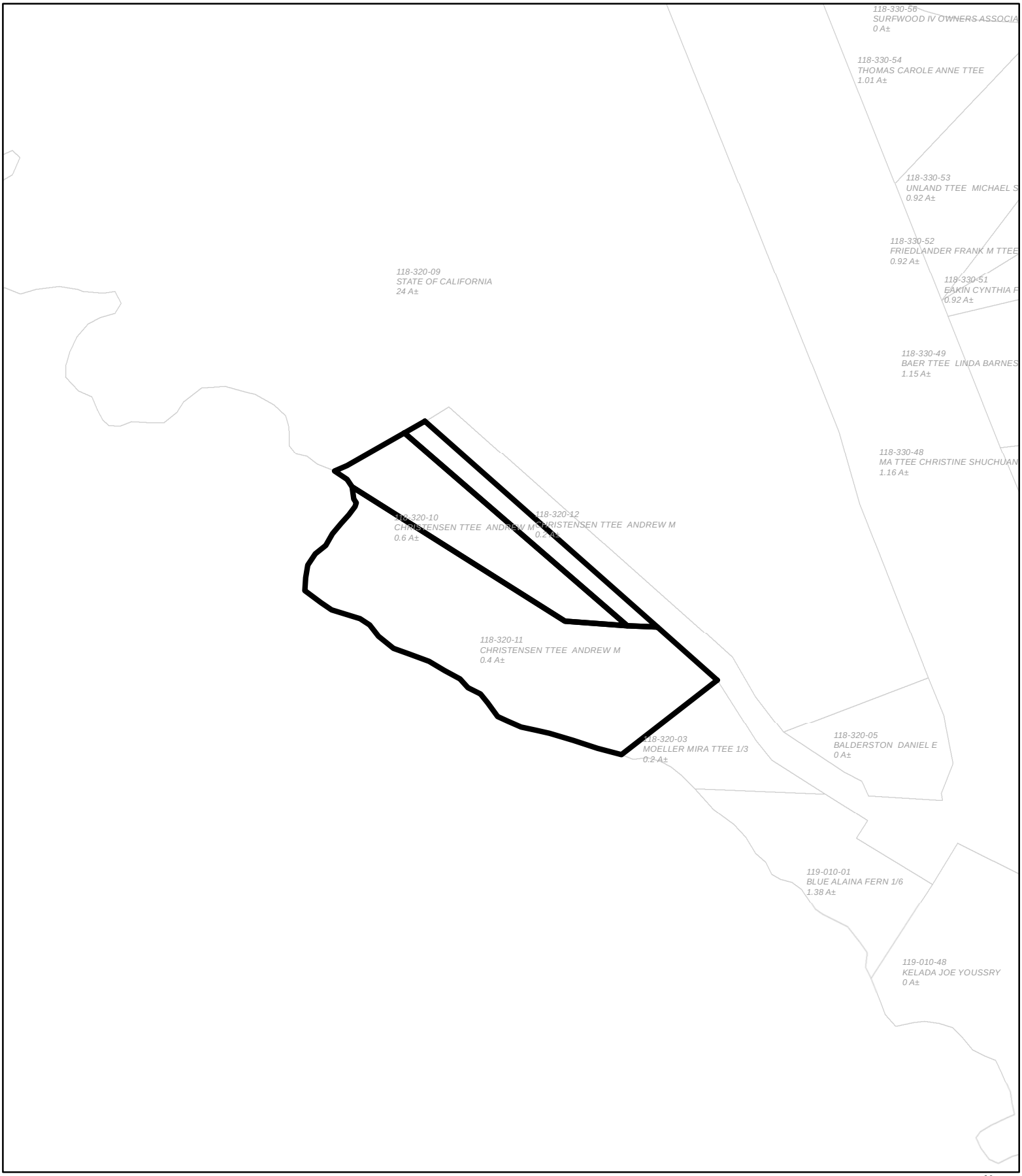

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Assessors Parcels

0 90 180 Feet
0 0.015 0.03 Miles
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ADJACENT PARCELS

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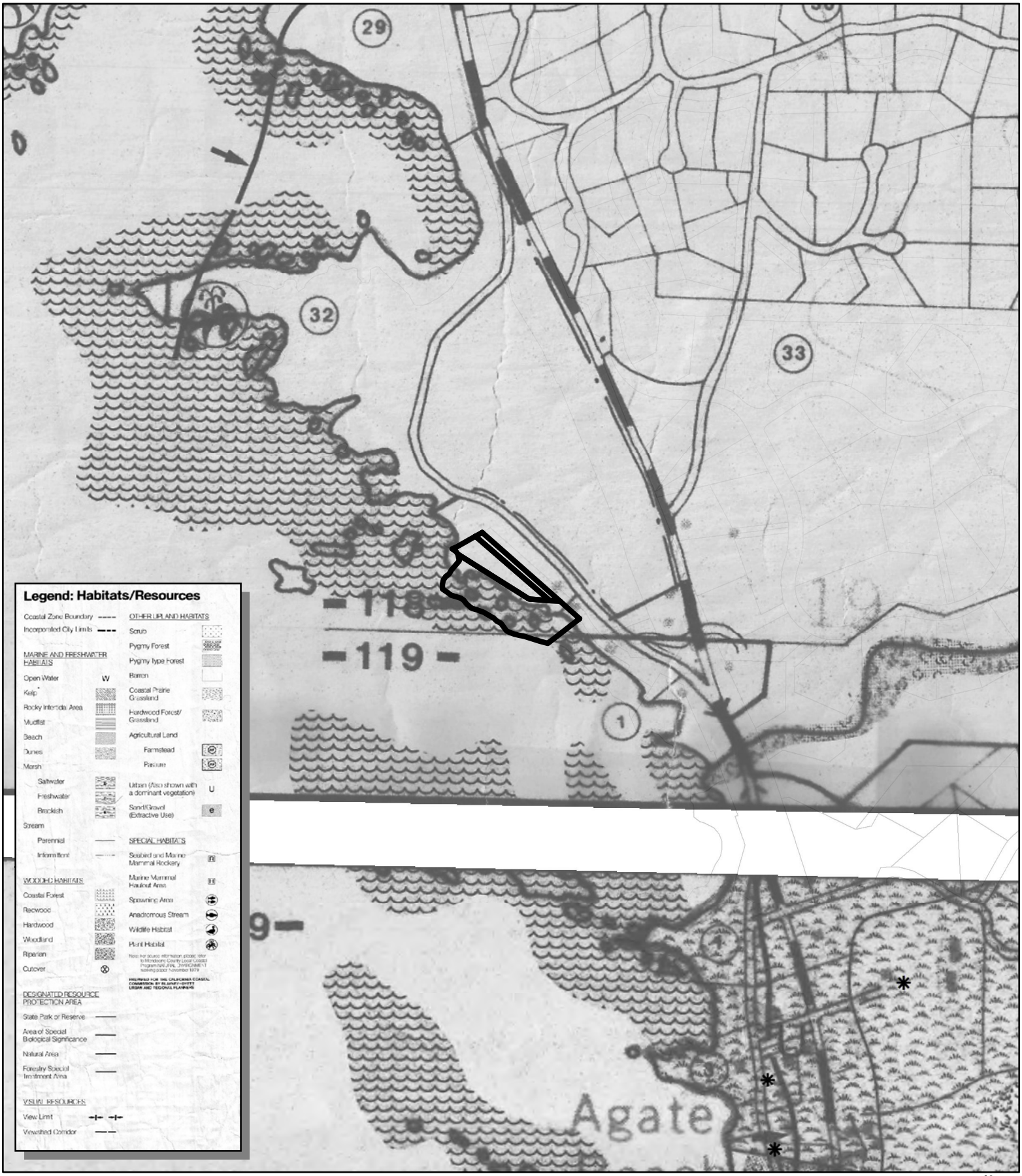

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Assessors Parcels

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LCP HABITATS & RESOURCES

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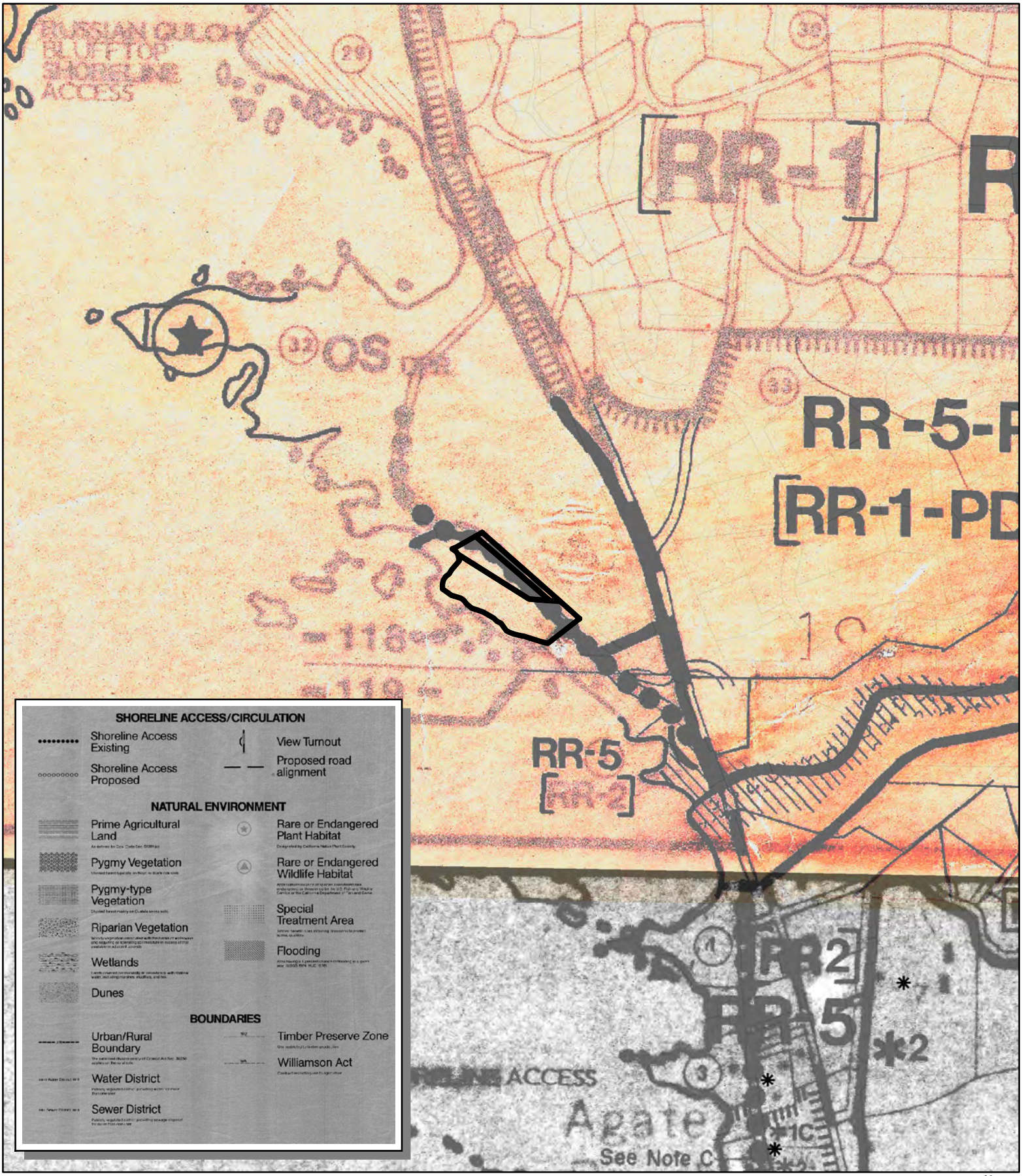

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Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles
1:6,000

LAND USE MAP 15: CASPAR

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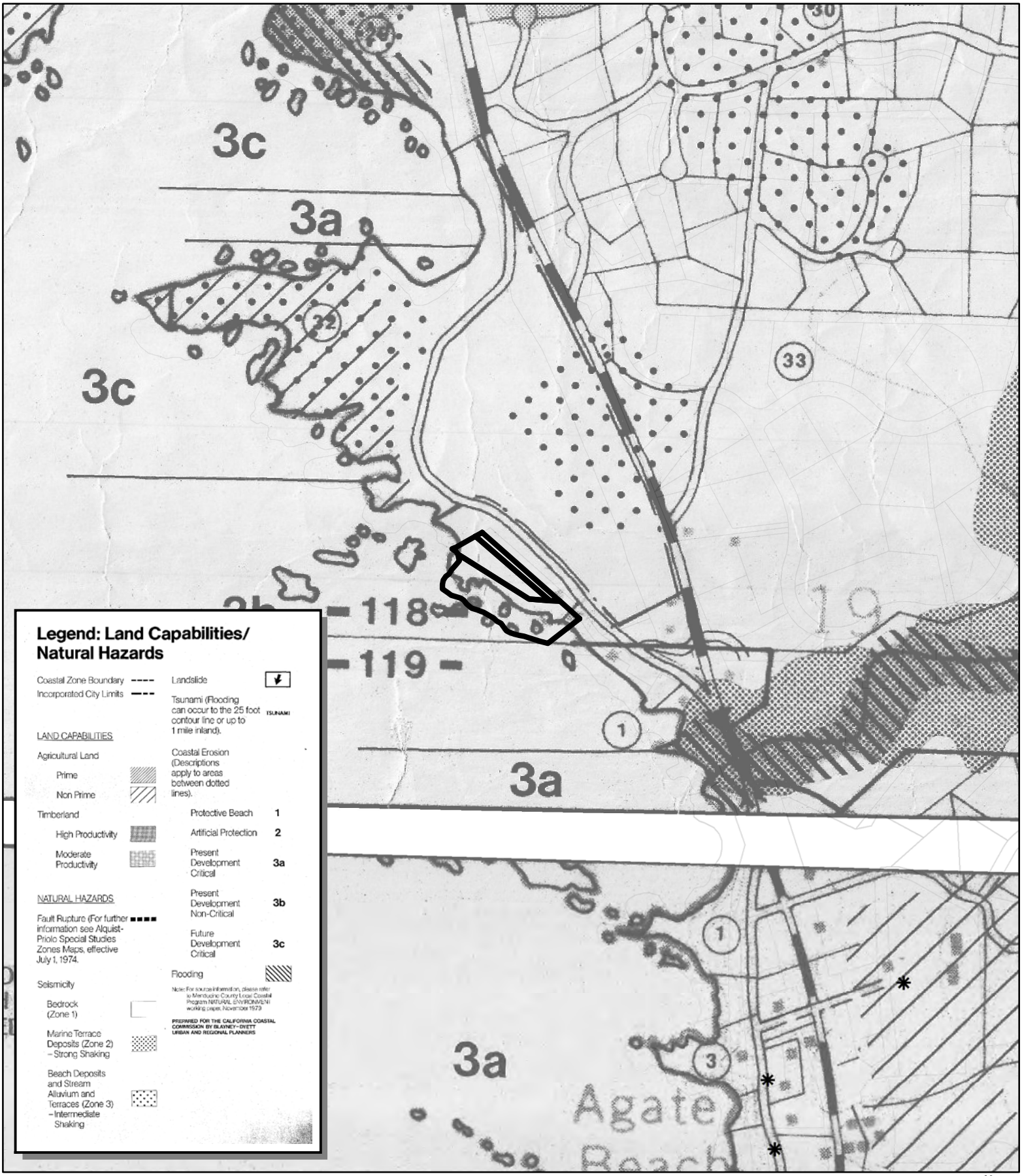

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Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles
1:6,000

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LCP LAND CAPABILITIES & NATURAL HAZARDS

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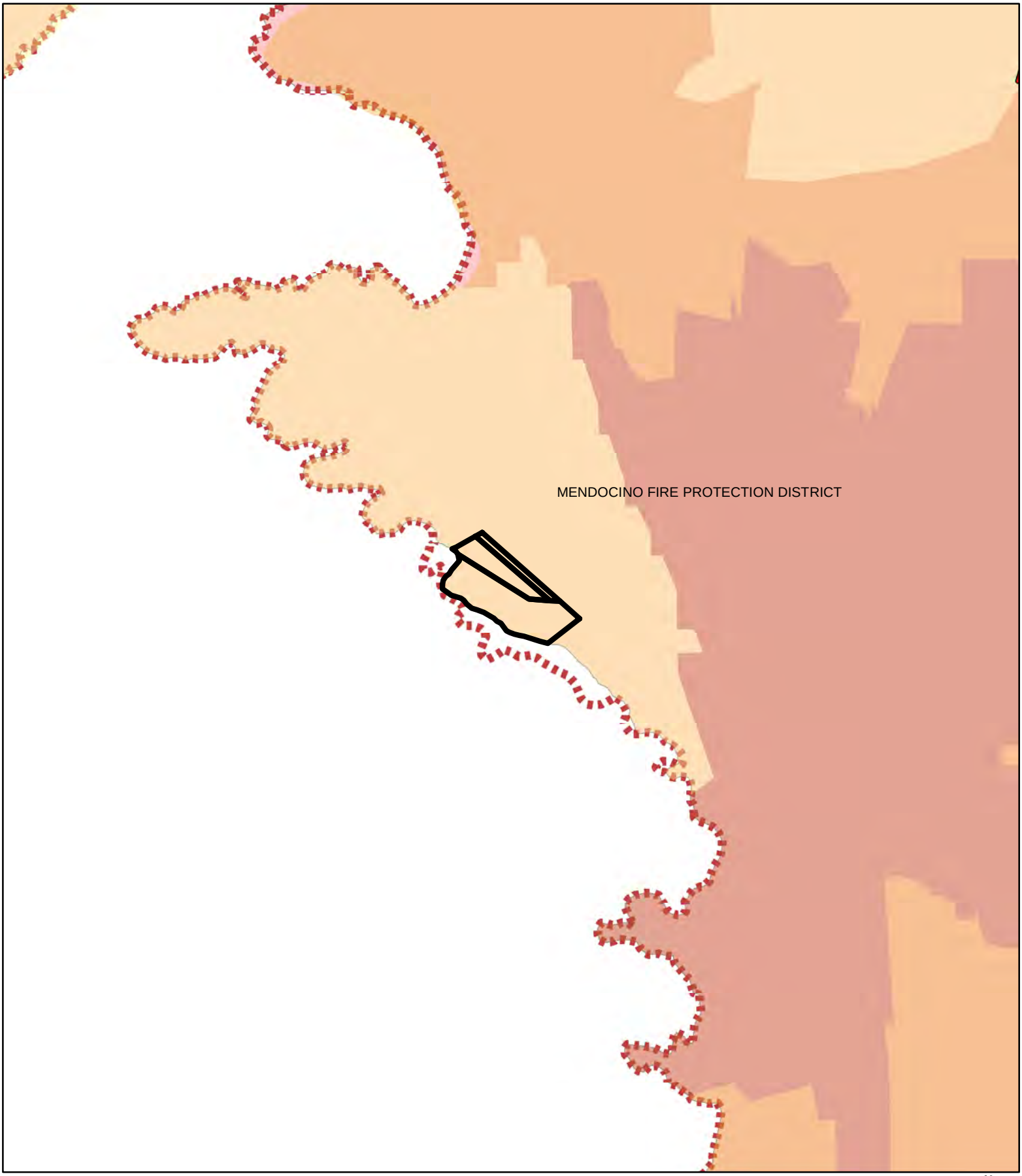

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Construction Lines
Very High Fire Hazard
High Fire Hazard
Moderate Fire Hazard
County Fire Districts

0 270 540 Feet
0 0.05 0.1 Miles

N W E S

1:6,000

FIRE HAZARD ZONES & RESPONSIBILITY AREAS
STATE RESPONSIBILITY AREA

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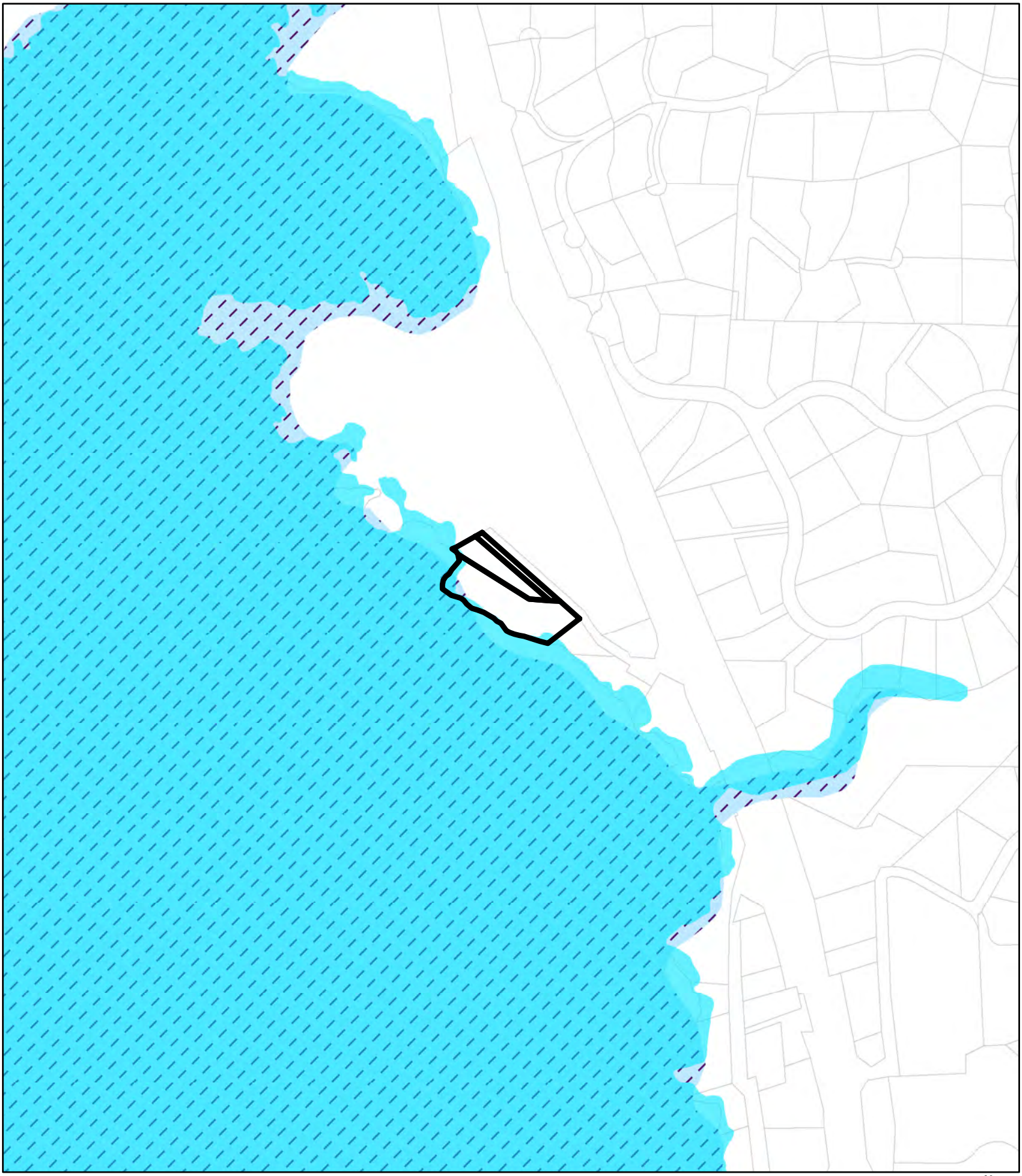

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1% Annual Chance Flood Hazard
Tsunami Inundation Zones
Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles
1:6,000

N W E S

FLOOD & TSUNAMI INUNDATION ZONES

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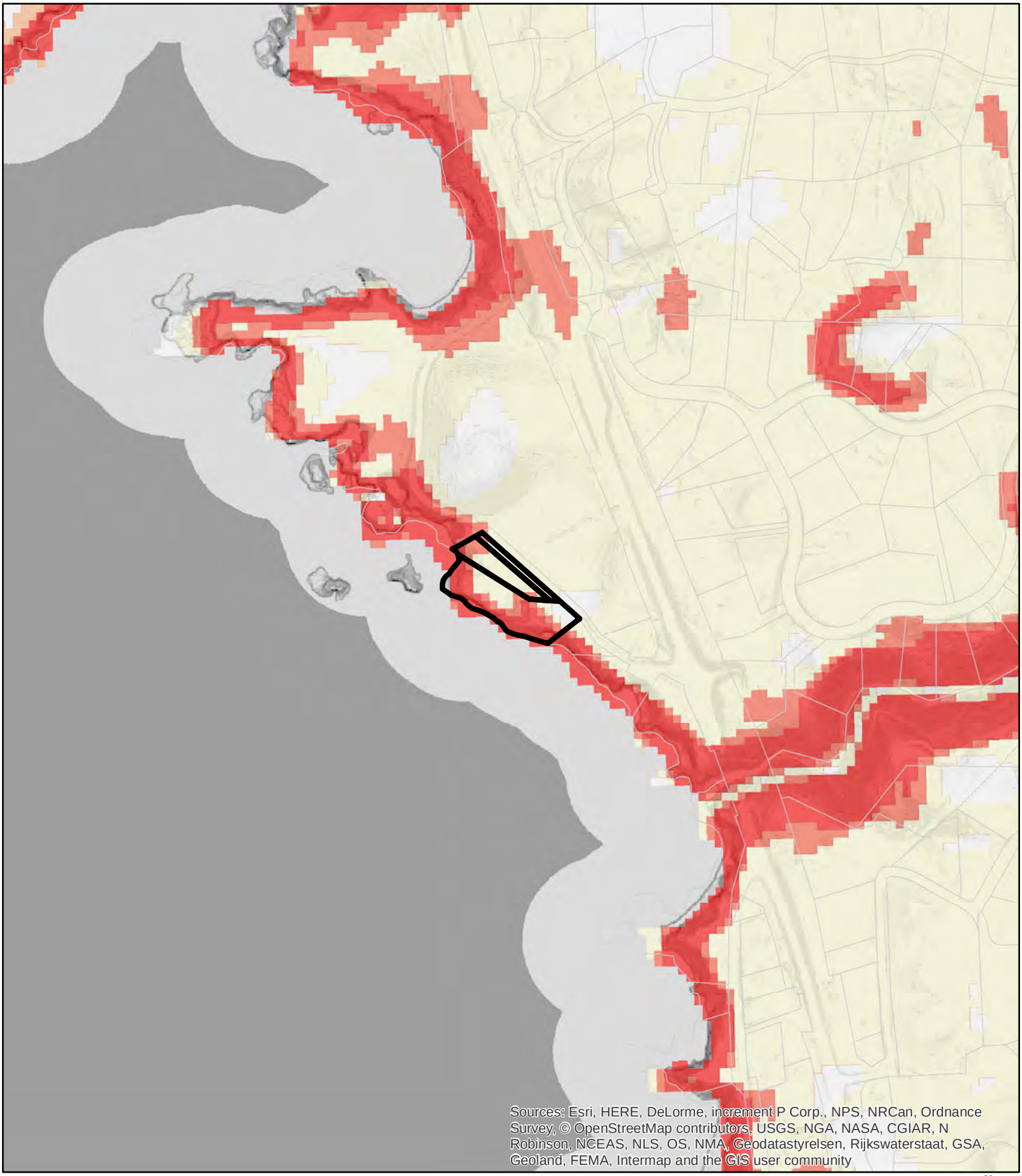

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Assessors Parcels
0
0 - 5
5 - 7
7 - 8
8 - 10

0 270 540 Feet
0 0.05 0.1 Miles
N W E S
1:6,000

LANDSLIDE HAZARDS

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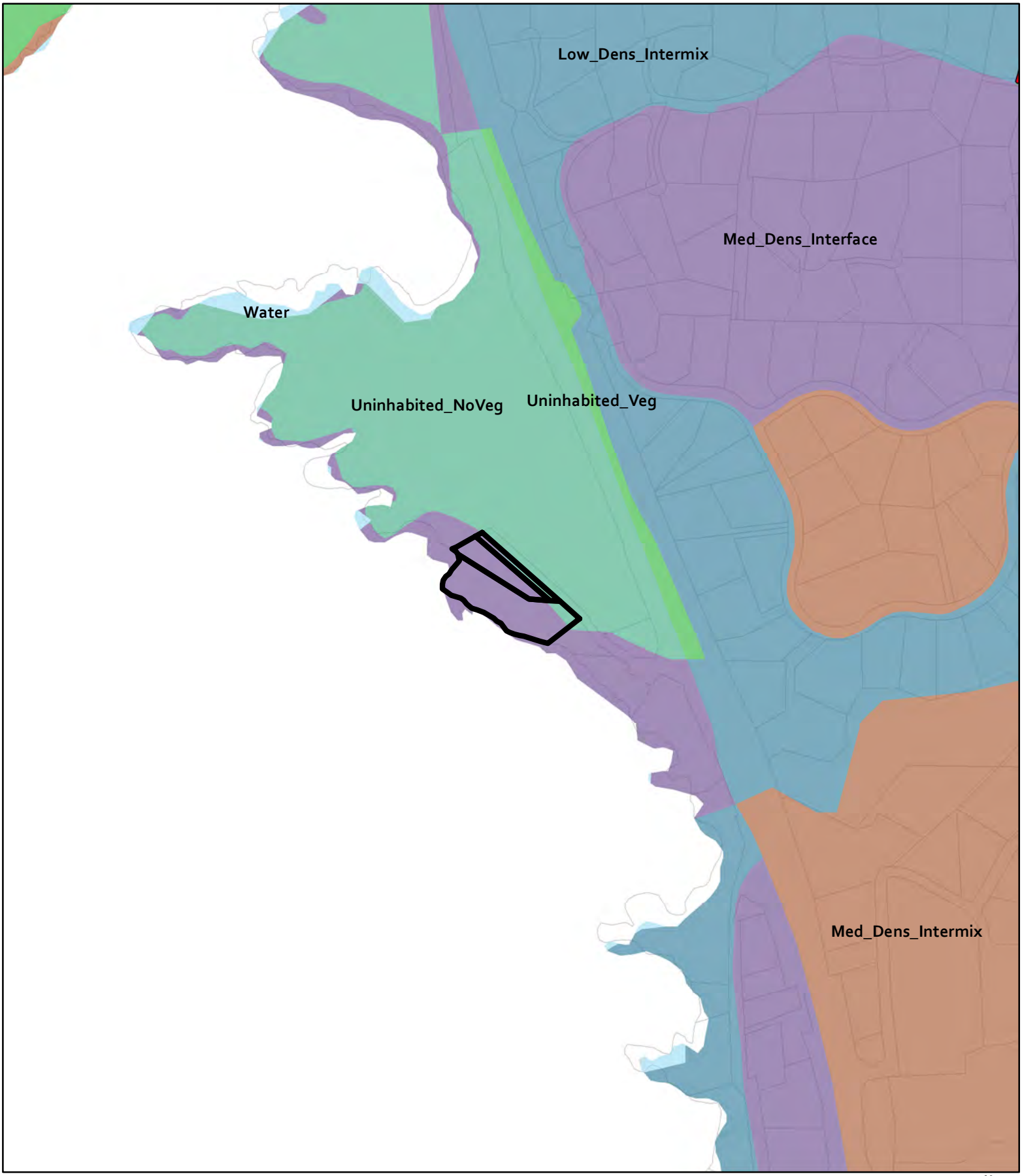

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Construction Lines

Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles

N W E S

1:6,000

WILDLAND-URBAN INTERFACE

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Assessors Parcels
0 - 10%
10% - 20%
20% - 30%
30% - 40%
40% - 50%

0 270 540 Feet
0 0.05 0.1 Miles
N W E S
1:6,000

ESTIMATED SLOPE

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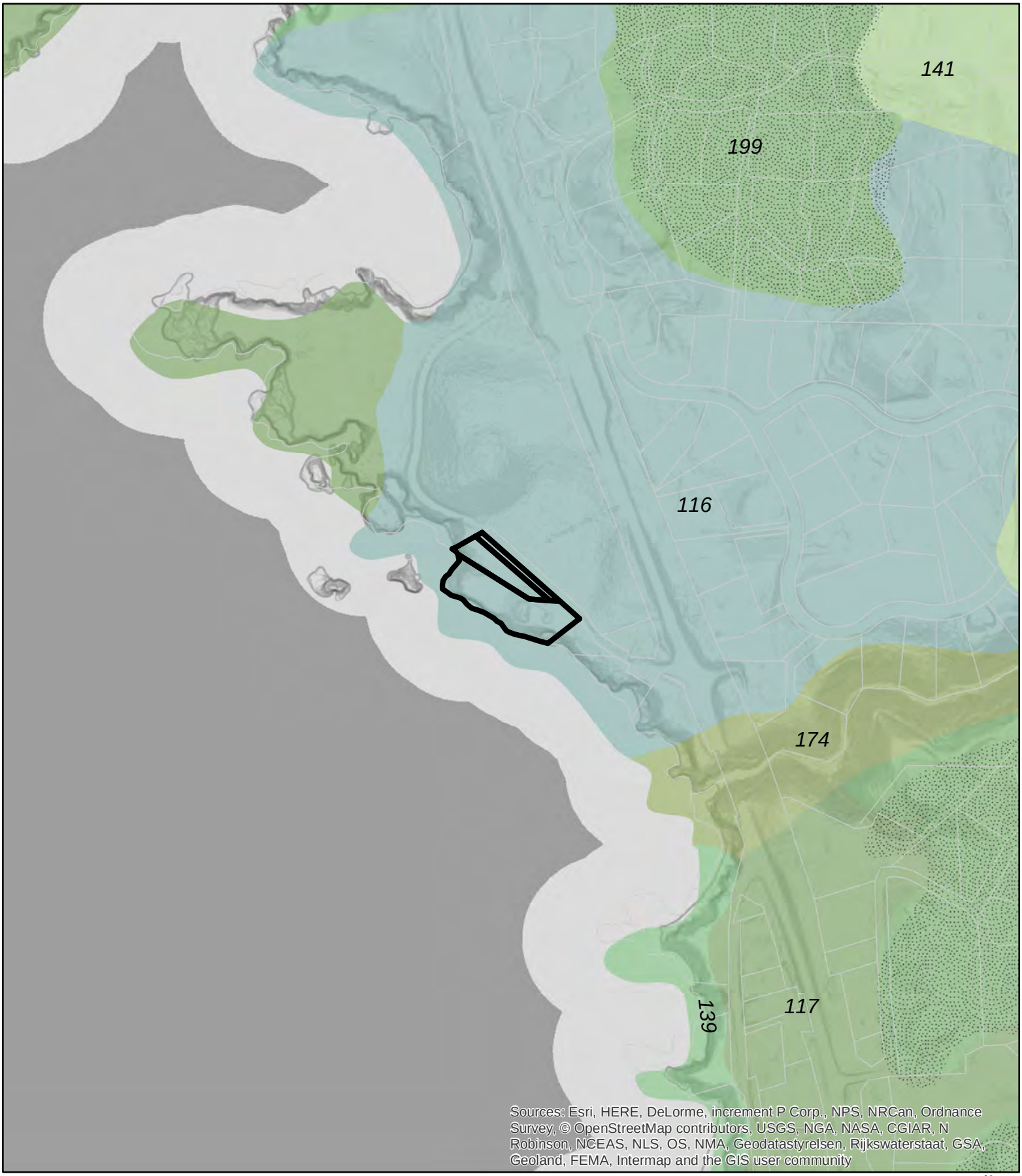

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Assessors Parcels

Shinglemill-Gibney Complex

0 270 540 Feet
0 0.05 0.1 Miles
N W E S
1:6,000

WESTERN SOIL CLASSIFICATIONS

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Construction Lines
Critical Water Resources
Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles
N W E S
1:6,000

COASTAL GROUND WATER RESOURCES

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CASE: V2025-0002, CDP2021-0016 & B2021-0010
OWNER: CHRISTENSEN, Andrew & Kirsten
APN: 118-320-10, 11 & 12
APLCT: Andrew & Kirsten Christensen
AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

Highly Scenic

Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles

N W E S

1:6,000

HIGHLY SCENIC AREAS

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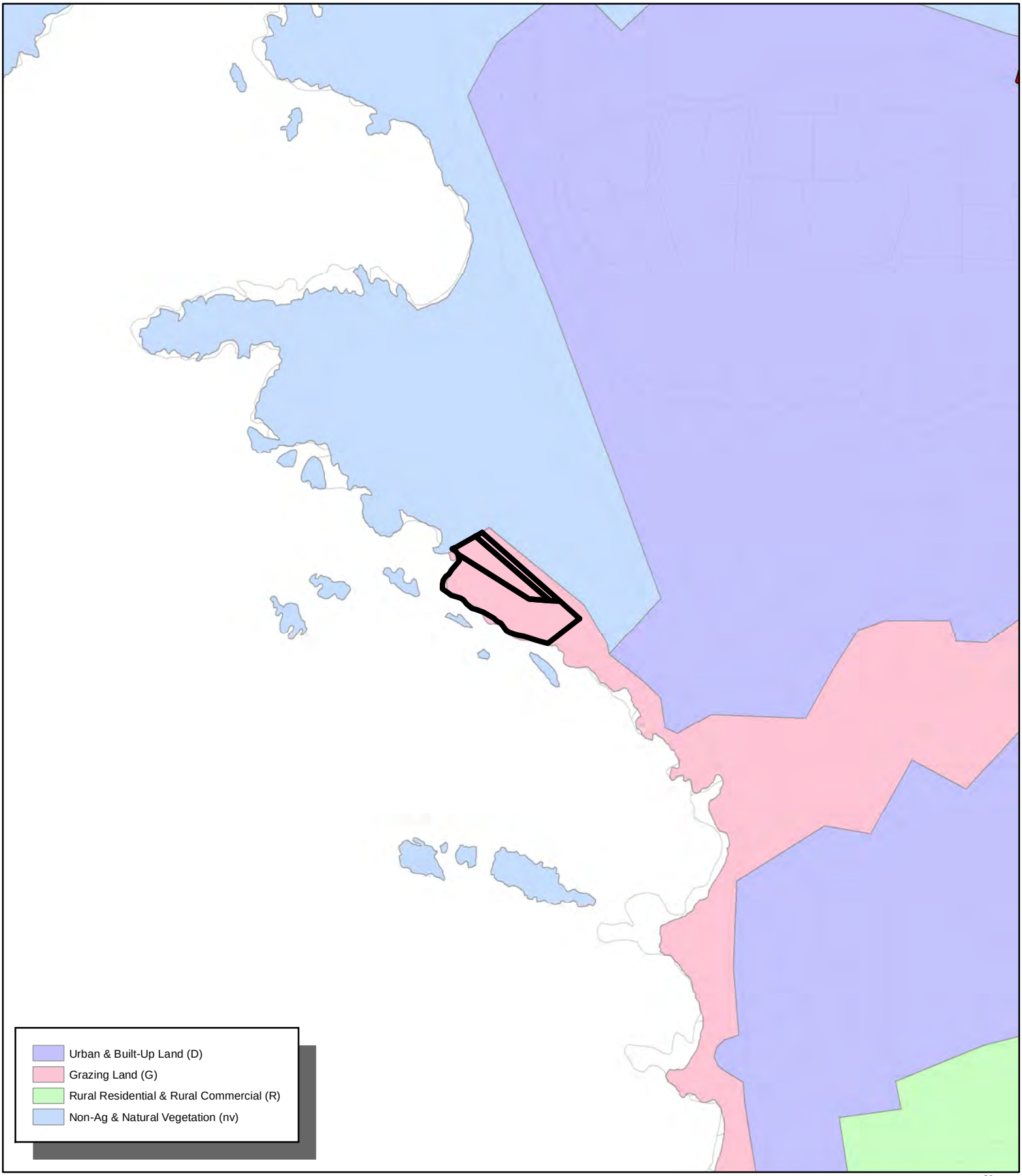

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ADDRESS: 11800 Road 500D, Mendocino

Construction Lines

Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles

N W E S

1:6,000

IMPORTANT FARMLANDS

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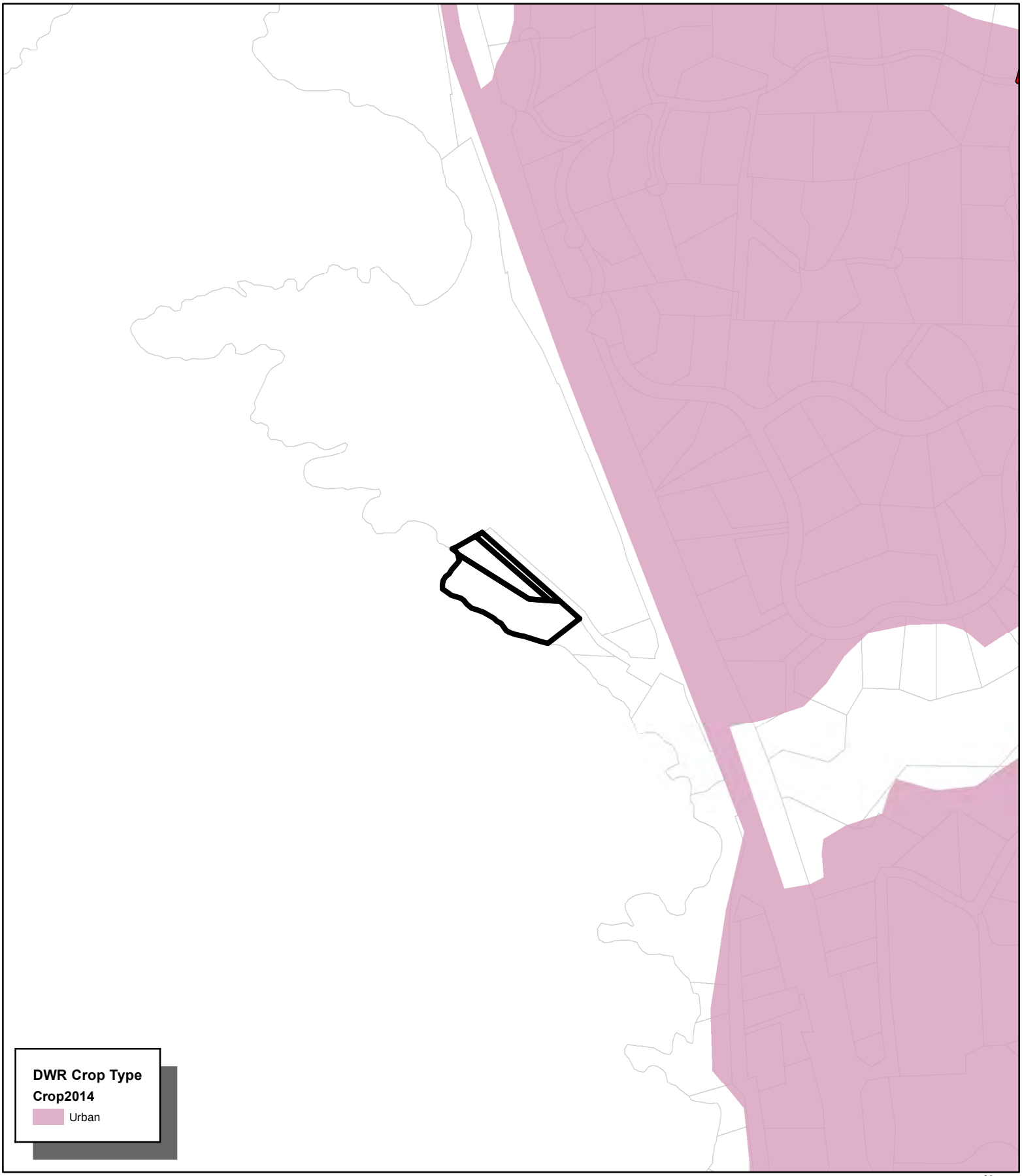

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AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

Construction Lines

Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles

N W E S

1:6,000

CROP TYPES

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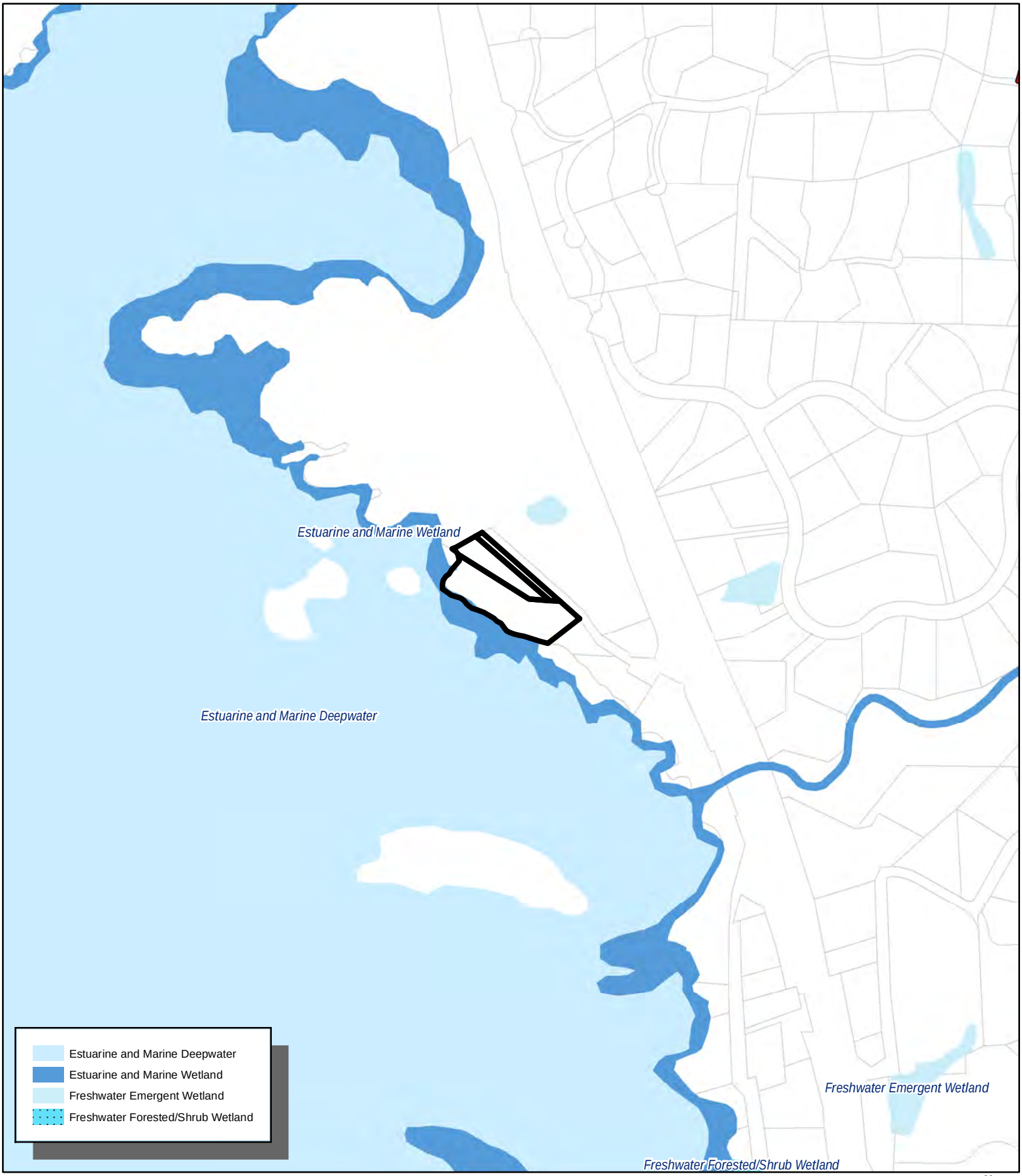

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APN: 118-320-10, 11 & 12
APLCT: Andrew & Kirsten Christensen
AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

Construction Lines

Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles

N W E S

1:6,000

WETLANDS

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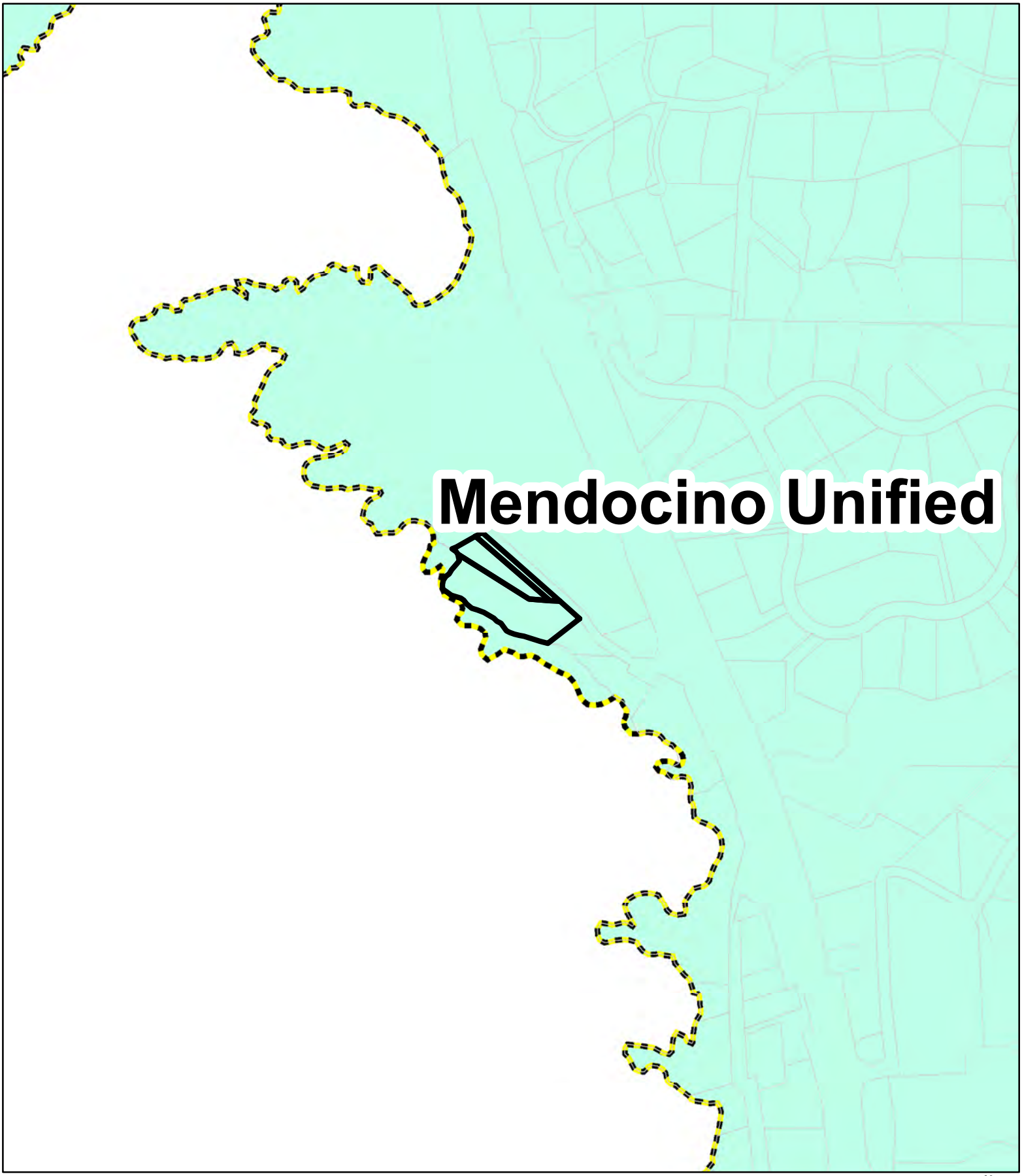

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AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles
N W E S
1:6,000

SCHOOL DISTRICT

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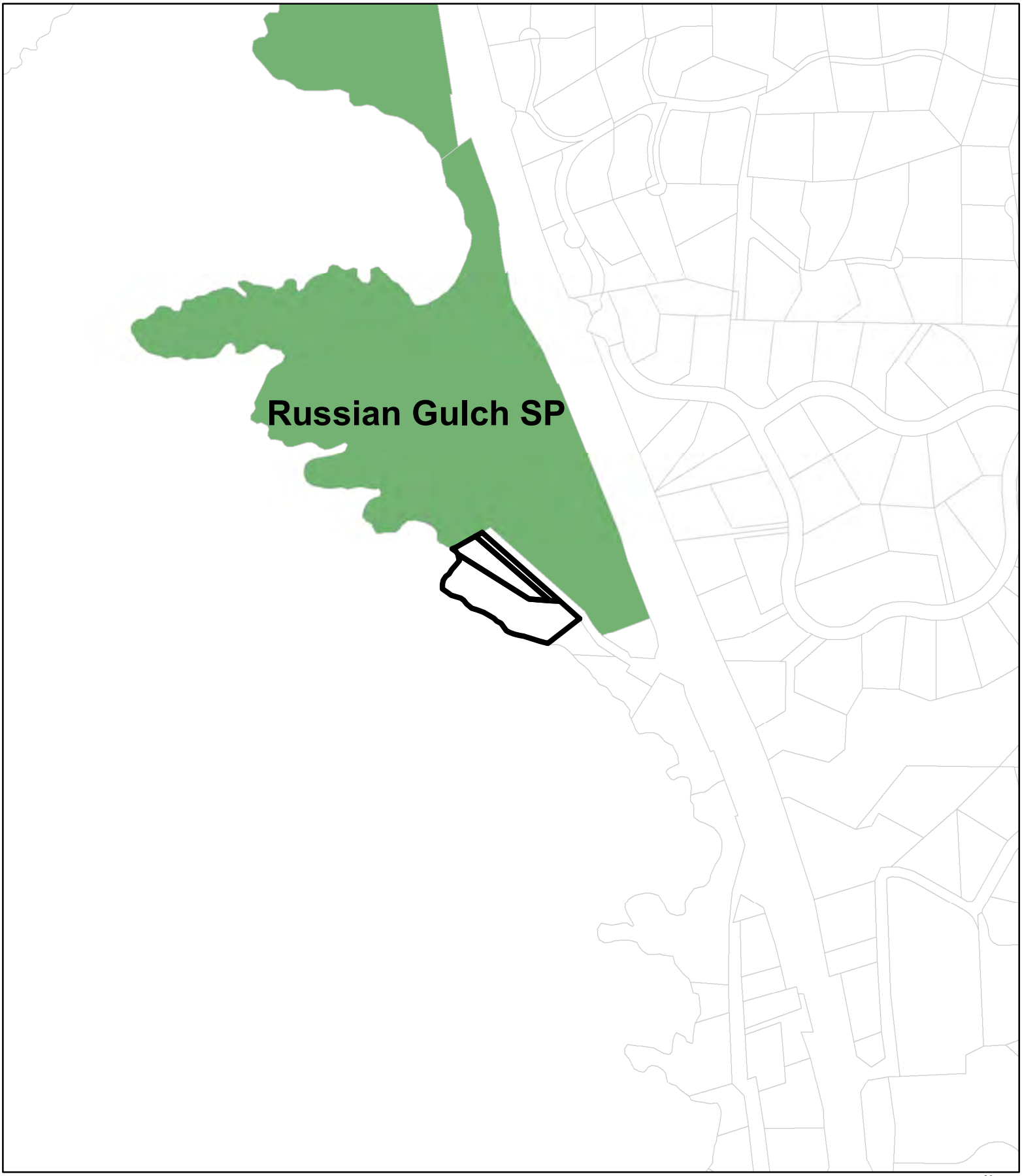

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APN: 118-320-10, 11 & 12
APLCT: Andrew & Kirsten Christensen
AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

Assessors Parcels
State Parks

0 270 540 Feet
0 0.05 0.1 Miles
N W E S
1:6,000

STATE PARKS

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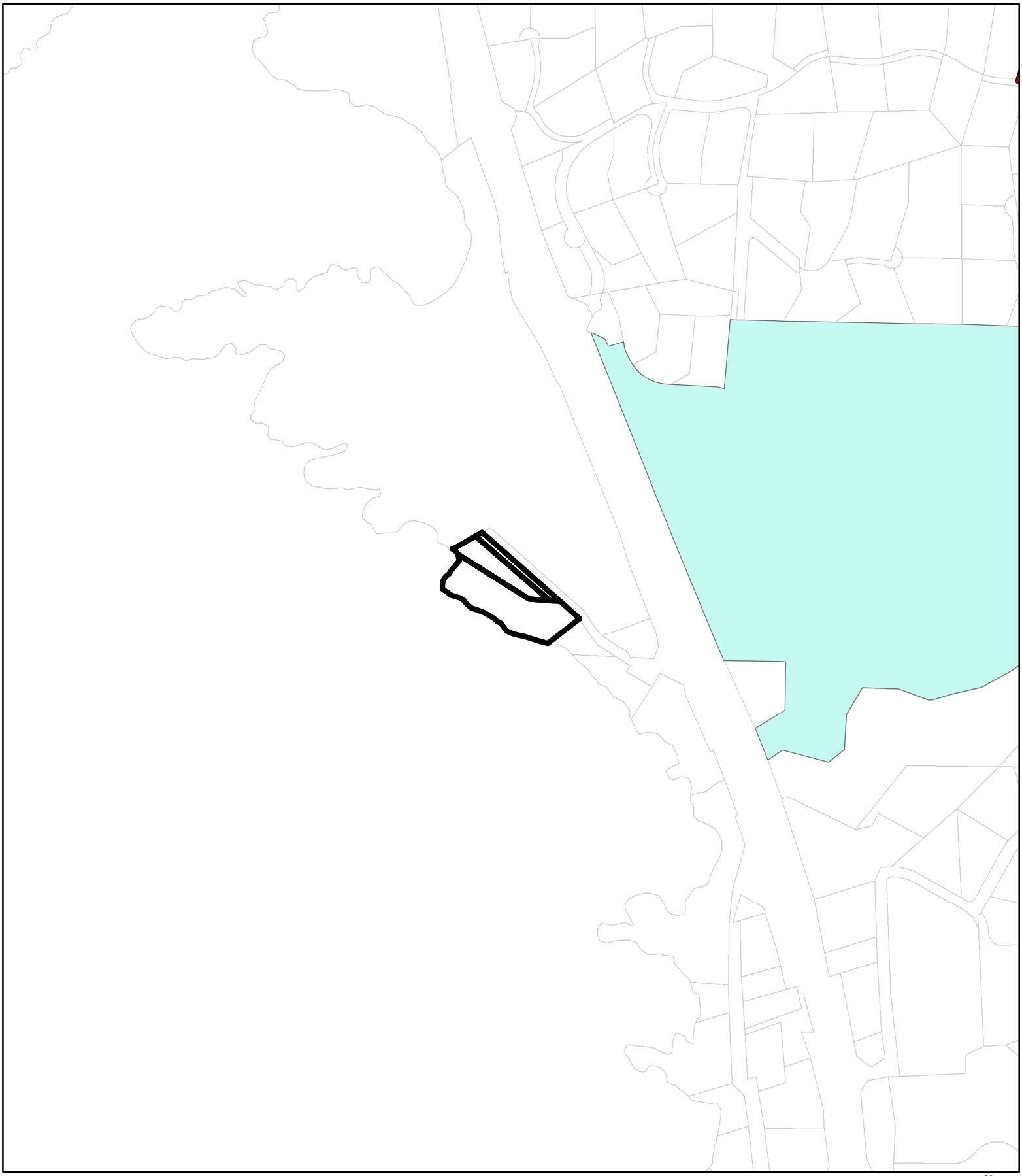

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AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

Construction Lines

Assessors Parcels

0 270 540 Feet
0 0.05 0.1 Miles

N W E S

1:6,000

SURFWOOD SUBDIVISION

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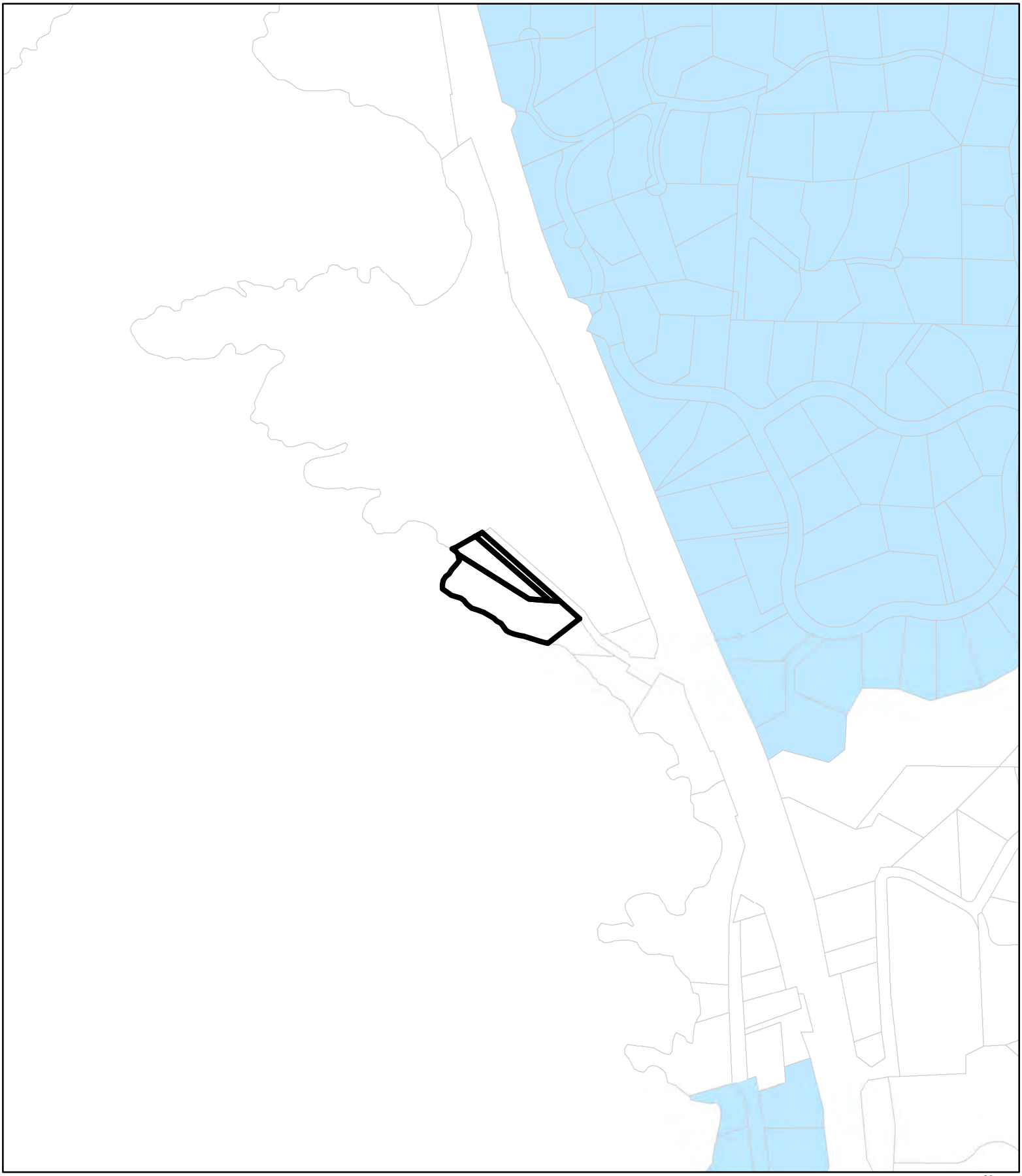

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APLCT: Andrew & Kirsten Christensen
AGENT: Wynn Coastal Planning & Biology
ADDRESS: 11800 Road 500D, Mendocino

Assessors Parcels
County Water Districts

0 270 540 Feet
0 0.05 0.1 Miles
N W E S
1:6,000

WATER DISTRICT

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BIOLOGICAL SCOPING
&
BOTANICAL SURVEY REPORT

for

11800 500 D Road
Mendocino, CA 95460
APN 118-320-10, -11, -12
Mendocino County

Property Owners:

Camp Beadhead LLC
14880 Caspar Rd
Caspar, CA 95420

Report Prepared By:

Asa Spade, Senior Biologist
Wyatt Dooley, Biologist
Suzie Woolhouse, Biologist

December 28, 2020

Wynn Coastal Planning & Biology
703 North Main Street, Fort Bragg CA 95437
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1. PROJECT SUMMARY

A biological survey, botanical survey, and preliminary wetland delineation was conducted on three parcels, APN 118-320-10, -11, -12, by Wynn Coastal Planning & Biology (WCPB) to locate potential Environmentally Sensitive Habitat Areas (ESHAs) - special status plants and communities, wetlands and riparian areas, and special status animals and/or their habitats and to determine if they would be directly or indirectly impacted by the proposed development. The proposed development consists of:

> Merge three separate legal parcels into one legal parcel. Convert existing garage to single-family residence; convert existing single-family residence to guest cottage; build new artist studio; shift location of driveway back from bluff edge; construct symbolic fencing near bluff; install septic; connect to utilities. Provide for sufficient domestic water through one or more of the following as necessary: Convert existing test well in the northern portion of the parcels to production, convert existing shallow irrigation well in the northern portion of the parcels to production, drill a new production well in the southeastern corner of the parcels. Connect new well(s) to the residence.

The study area (**Figure 1)** is located 0.3 miles north of the Mendocino village. The parcels are located on the headlands and together add to slightly less than 3 acres, with only around 1.5 acres of land above the bluff edge. The property contains an existing driveway with a single-family residence, garage/workshop, well house/storage shed, shallow irrigation well, test well, concrete staircase to the ocean, and a portion of an aviary. The parcels are fenced on all sides where access is not restricted by the bluff edge.

Wynn Coastal Planning & Biology's staff biologists conducted surveys on March 5, May 16, July 5 & 18 of 2018 for a total of 7.2 person hours. Additional surveys were conducted on May 19, July 10 & 28, and August 26, 2020 in order to make more observations, gather additional information on specific resources, and to keep the survey up to date by ensuring that site conditions had not changed significantly since the initial study. These additional studies involved another ~13.0 person hours of site work. Four types of potential ESHA were identified within the study area according to the definitions by the California Coastal Act (CCA) and Mendocino County Local Coastal Plan (LCP) (**Figure 2**).

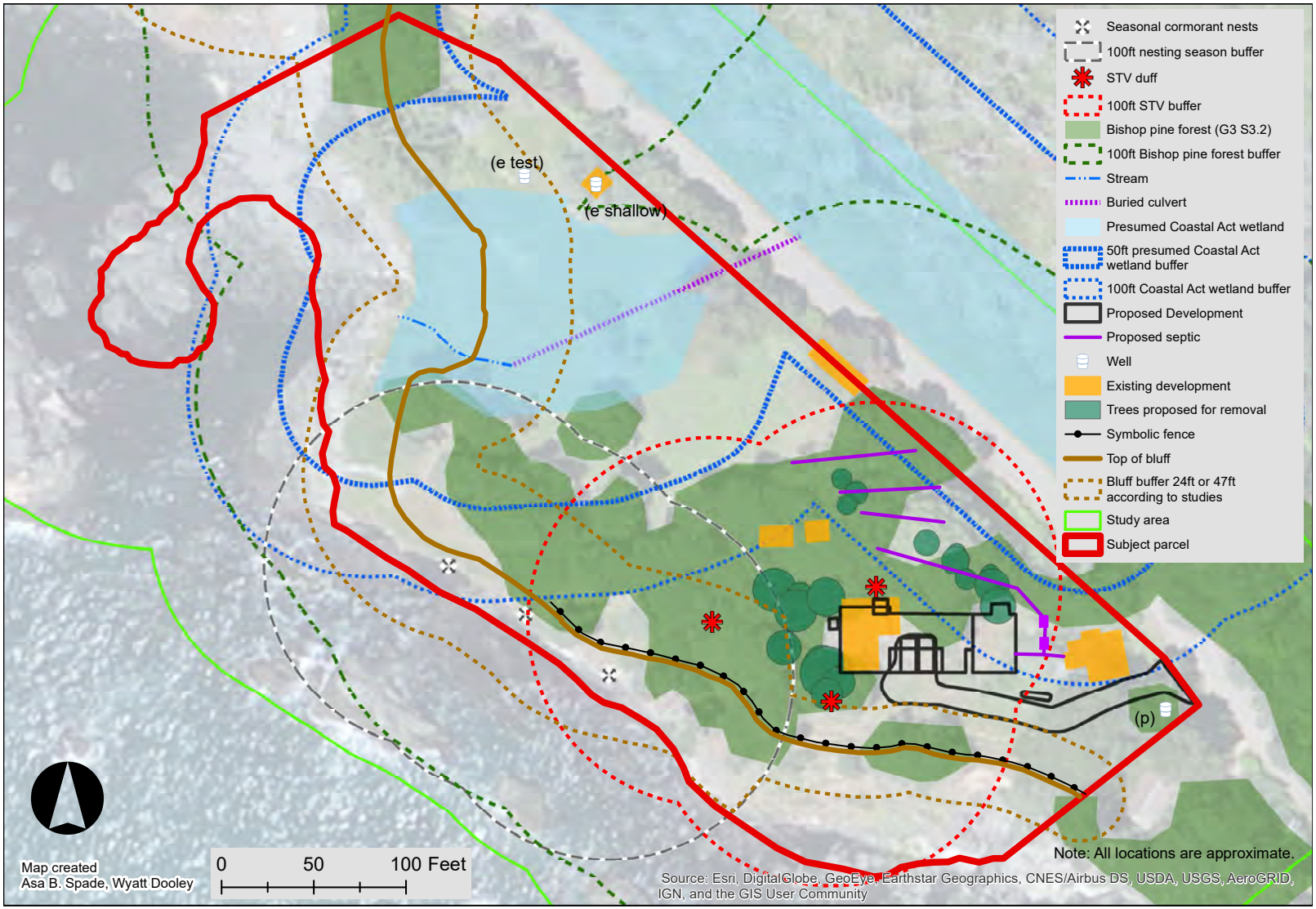
> **Wetland Presumed ESHA** – Two areas of presumed Coastal Act wetland were present within the study area totaling approximately 1 acre.
>
> **Rare Plant Community Presumed ESHAs** – One special status plant community was identified in the study area: **Bishop Pine Forest** (*Pinus muricata* forest alliance (G3 S3)).
>
> **Stream ESHA**- A small stream originating from a culvert was present on the north-western portion of the study area and is within the presumed Coastal Act wetland.
>
> **Special Status Wildlife Habitat Presumed ESHA** – Three groups of pelagic cormorant (*Phalacrocorax pelagicus*) nests were identified on the bluff edge. Clumps of Bishop pine resin ducts presumably from a Sonoma tree vole nest were observed in the Bishop pine forest indicating that the trees are habitat for this Species of Special Concern.

This analysis has been performed by Wynn Coastal Planning & Biology, and is the culmination of our professional opinion, research, and data collection. The County of Mendocino (County), California Department of Fish and Wildlife (CDFW), and U.S. Fish and Wildlife Service (USFWS) should also be consulted regarding this project to obtain all necessary permits and obtain their concurrence with our findings and recommendations, and to make recommendations of their own, including concurrence of the boundaries of the sensitive areas and appropriate avoidance and protective measures.

OWNER: Bertrand - Daniel
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

Parcel Location

Figure 1. Location of Bertrand-Daniel parcel.



OWNER: Bertrand - Daniel
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

Presumed ESHA with Buffers, Existing and Proposed Development

Figure 2. Potential Environmental Sensitive Habitat Areas (ESHAs) identified in the study area and their recommended buffers.

2. PROJECT DESCRIPTION

Merge three separate legal parcels into one legal parcel. Convert existing garage to single-family residence; convert existing single-family residence to guest cottage; build new artist studio; shift location of driveway back from bluff edge; construct symbolic fencing near bluff; install septic; connect to utilities. Provide for sufficient domestic water through one or more of the following as necessary: Convert existing test well in the northern portion of the parcels to production, convert existing shallow irrigation well in the northern portion of the parcels to production, drill a new production well in the southeastern corner of the parcels. Connect new well(s) to the residence.

3. STUDY AREA DESCRIPTION

3.1. General Site Description

The sum of three parcels is slightly less than 3 acres in size with around 1.5 acres of that area above the bluff edge. The parcels are located on the bluff top north of Mendocino village. The property is located on a terrace with an elevation of about 70 feet. A driveway entrance at the southeastern corner of the parcel leads into a courtyard with a single-family residence (**Figure 3**), garage/workshop, garden, and a couple sheds present. The cinderblock and concrete garage/workshop (**Figure 4**) is built into a small hill upon which a number of Bishop pine trees are growing. Bishop pine trees are present north of the residence and garage. In the northern portion of the parcel a buried culvert empties water into a small watercourse. A small wellhouse and an aviary “airlock”, which is overgrown with young acacia trees, are present along the eastern fence. The fenced “airlock” once allowed entry into a larger netted area for birds which is no longer present and is now overgrown with non-native Himalayan blackberry (*Rubus armeniacus*). A small wellhouse containing a shallow irrigation well is present adjacent to the 500D Road and a test well is present a bit further to the west of this wellhouse. A concrete staircase leads from the blufftop down to the rocks just above the ocean in the northwestern portion of the parcel. A fence is present along the northern and eastern portions of the parcel.

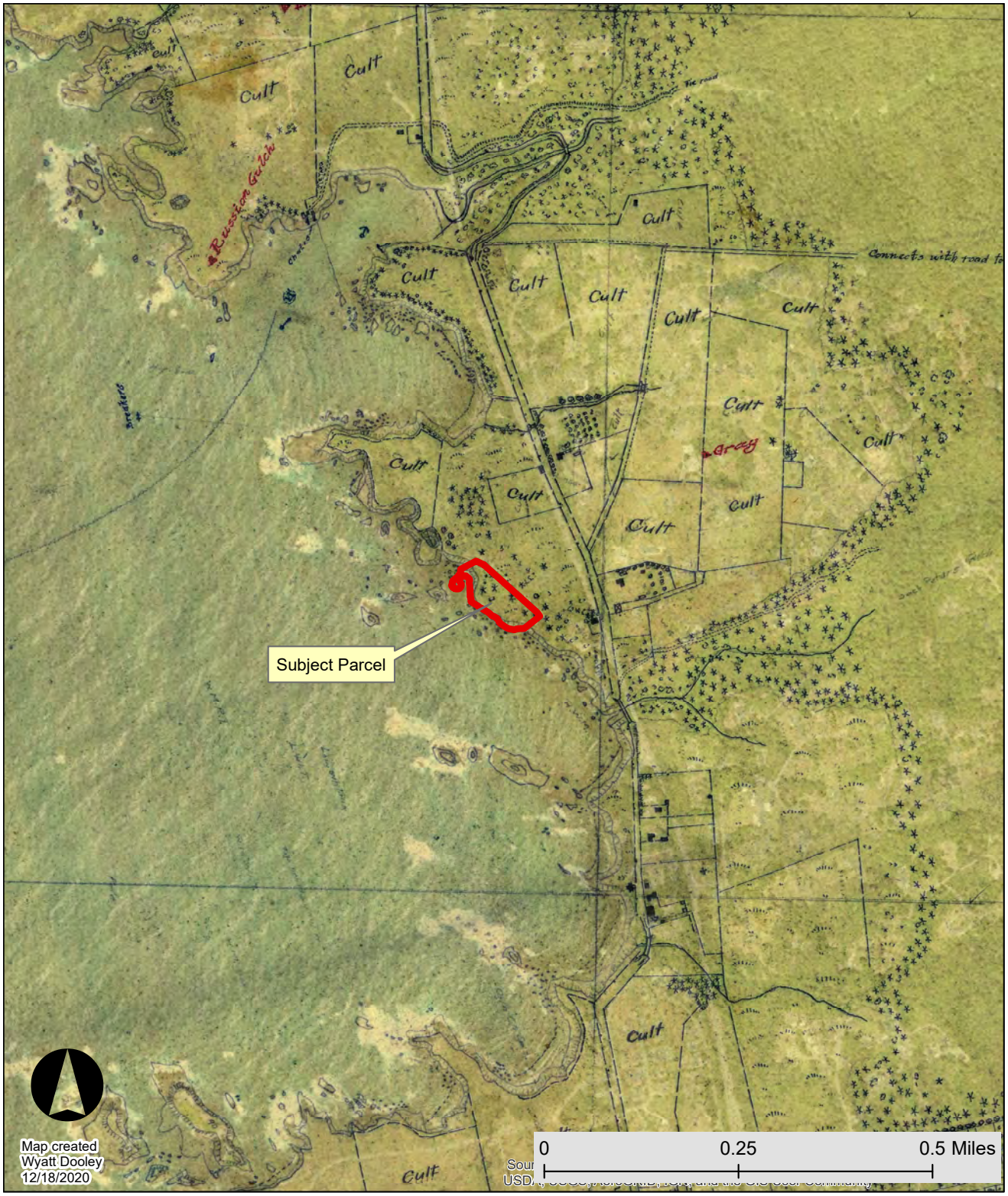
3.2. Land-Use History

A T-Sheet map produced in 1909 (**Figure 5**) shows that the parcel was a combination of forested and open space at that time. Surrounding areas were used for cultivation. An aerial photo from 1998 (**Figure 6**) shows that most of the area was forested, presumably with bishop pine trees. When comparing the 1998 photo to more current aerial photos, there are now many dead or dying trees within the riparian area in the northern third of the parcel.

The late Mendocino naturalist and artist Jack Helfer owned this property and reportedly used the woodshed, which was likely kept cool by its dug-in nature and concrete construction, to store animal specimens for study and preservation while he drew them. An aviary airlock is located on the property along the 500D Road, which once lead into a netted area where he kept birds to study.

Figure 3. Single-family residence located near southeastern property corner.

Figure 4. Garage and workshop surrounded by a berm vegetated with Bishop pines.



OWNER: Bertrand - Daniel
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

Historic 1909 T-Sheets Map

Map provided by NOAA

Figure 5. Historic T-Sheets map with parcel boundary overlaid.

OWNER: Bertrand - Daniel
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

1998 USGS & Google Earth Image Overlay

Image supplied by USGS & Google Earth

Figure 6. Map of Study Area with 1998 Aerial Photo.

3.3. Topography and Soils

The elevation of the study area is approximately 70 feet above sea level. One type of soil has been mapped by the Natural Resource Conservation Service in the study area: Bruhel-Shinglemill complex, 2 to 15 percent slopes. This soil complex is found on marine terraces. According to the NRCS mapping results, Bruhel-Shinglemill complex 2 to 15 percent slopes is included on the National Hydric Soils List due to the inclusion of these components within the complex: 25% Shinglemill, 5% Flumeville, and 5% Tropaquepts (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.

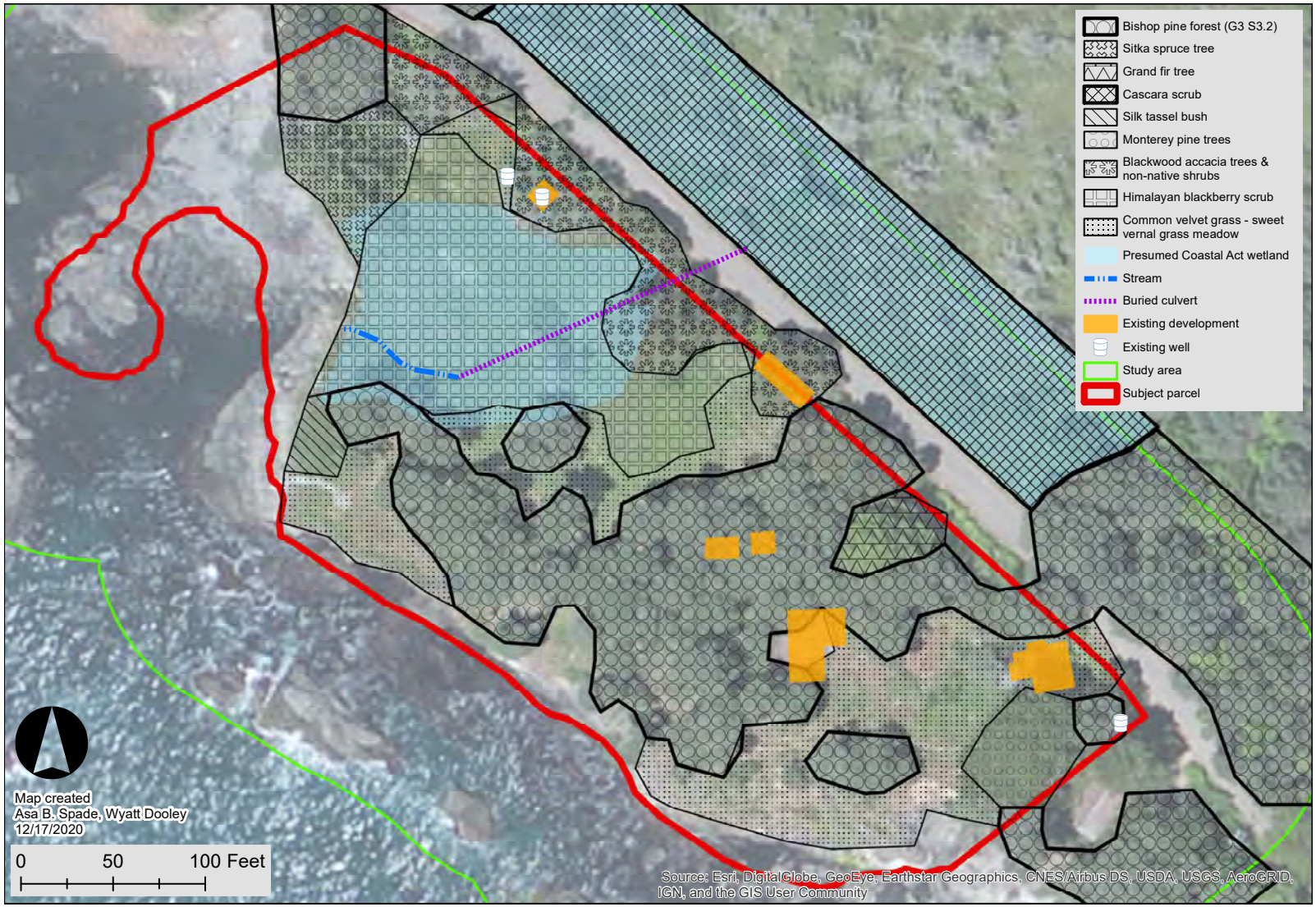
3.4. Climate and Hydrology

The Mendocino Coast has a Mediterranean climate with average annual precipitation of 40.24 inches (WRCC, Station Fort Bragg 5N, average for years 1895-2016), with the majority of rain occurring in winter months (November through March).

The USFWS National Wetlands Inventory does not indicate any wetlands on the subject parcels. A freshwater emergent wetland is included on the NWI map approximately 200ft east of the subject parcels, across the 500D Road (**Appendix B**).

3.5. Vegetation and Natural Communities

Approximately a third of the study area was vegetated with Bishop pine forest. The other two thirds were vegetated with Himalayan blackberry and/or non-native grassland (**Figure 7**). The Bishop pine forest was located on a hill with a predominant understory of non-native grassland. The hill itself had a higher percentage of natives such as salal (*Gaultheria shallon*) and polypody fern (*Polypodium* sp.). Other areas within the Bishop pine forest had large cotoneaster and English holly shrubs. The non-native grassland extends from the understory of the Bishop pine forest outwards where it forms its own plant community to the north and south of the Bishop pines. North of the Bishop pine forest is a presumed Coastal Act wetland dominated by Himalayan blackberry (*Rubus armeniacus*). Along 500D road is a stand of blackwood acacia (*Acacia melanoxylon*) and other non-native shrubs.



OWNER: Bertrand - Daniel
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

Plant Communities & Vegetation Map

Note: Locations are approximate

Figure 7. Map of plant communities and vegetation observed onsite.

3.6. Adjacent Lands

Lands surrounding the study area include: undeveloped areas to the east and north. North of the subject parcel is the southern extent of the Russian Gulch State Park. South of the parcels are several single-family residences. East of Highway One is the Surfwood Estates subdivision.

3.7. Existing Development

The property contains an existing driveway with a single-family residence, garage/workshop, well house/storage shed, shallow irrigation well, test well, concrete staircase to the ocean, and a portion of an aviary. The parcels are fenced on all sides where access is not restricted by the bluff edge.

4. SURVEY METHODOLOGY

4.1. Scoping Tables

Scoping tables were created for the special-status plant species and wildlife with the potential to occur in the study area by reviewing the most up-to-date species lists for the California Department of Fish and Wildlife (CDFW), California Natural Diversity Database (CNDDB) and the California Native Plant Society (CNPS).

For purposes of this evaluation, special-status plant species are vascular plants that are (1) designated as rare, threatened, or endangered by the state or federal governments; or (2) are proposed for rare, threatened, or endangered status; and/or (3) are state or federal candidate species, and/or (4) considered species of concern by the USFWS and/or (5) are included on the California Native Plant Society (CNPS) List 1A, 1B, & 2.

Maps were created using the California Natural Diversity Database CNDDB for records within 1 mile of the study area **(Figure 8** and **Figure 9)**. The CNDDB is a database consisting of historical observations of special-status plant species, wildlife species, and natural plant communities. CNDDB was used to help compile a list of special status plants and animals with potential to occur in the study area. This list was not limited to species presented in the maps, it includes all species indicated by a search of all quads with similar geology, habitats, and vegetation to those found in the project area. Because the CNDDB is limited to reported sightings, it is not a comprehensive list of plant species that may occur in a particular area. However, it is useful in refining the list of special-status plant species that have the potential to occur on a particular site.

A database search was performed using the CNPS *Electronic Inventory*, which allows users to query the *Inventory of Rare and Endangered Plants of California* using a set of search criteria (e.g., quad name, habitat type). A target list of special-status plant species with the potential to occur on the site was developed through interpretation of the CNDDB and CNPS query results. The biological scoping tables with special status resources potential occurrences in the study area are presented in **Appendix C: Tables 1, 2, and 3.** While directed by query results, surveys were not restricted only to those species indicated by this literature review. Field surveys and subsequent reporting were comprehensive and floristic in nature.

Additional information, (e.g. morphological characteristics, range, habitat and bloom period) was collected for each of the special-status plant species that had the potential to occur within the study area. Wynn Coastal Planning and Biology's staff botanist reviewed these characteristics for each of the plants on the target list prior to initiating fieldwork.

The botanical survey of the study area was conducted primarily adhering to the protocol described by the California Department of Fish and Wildlife in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (2018).*

Additional database review was conducted to assess the potential for wetlands to occur in the area prior to field work. Aerial photography was assessed for features with "wet" characteristics and the Inventory of National Wetlands database was viewed with the subject parcel boundaries to see if any predetermined wetlands occur in the study area.

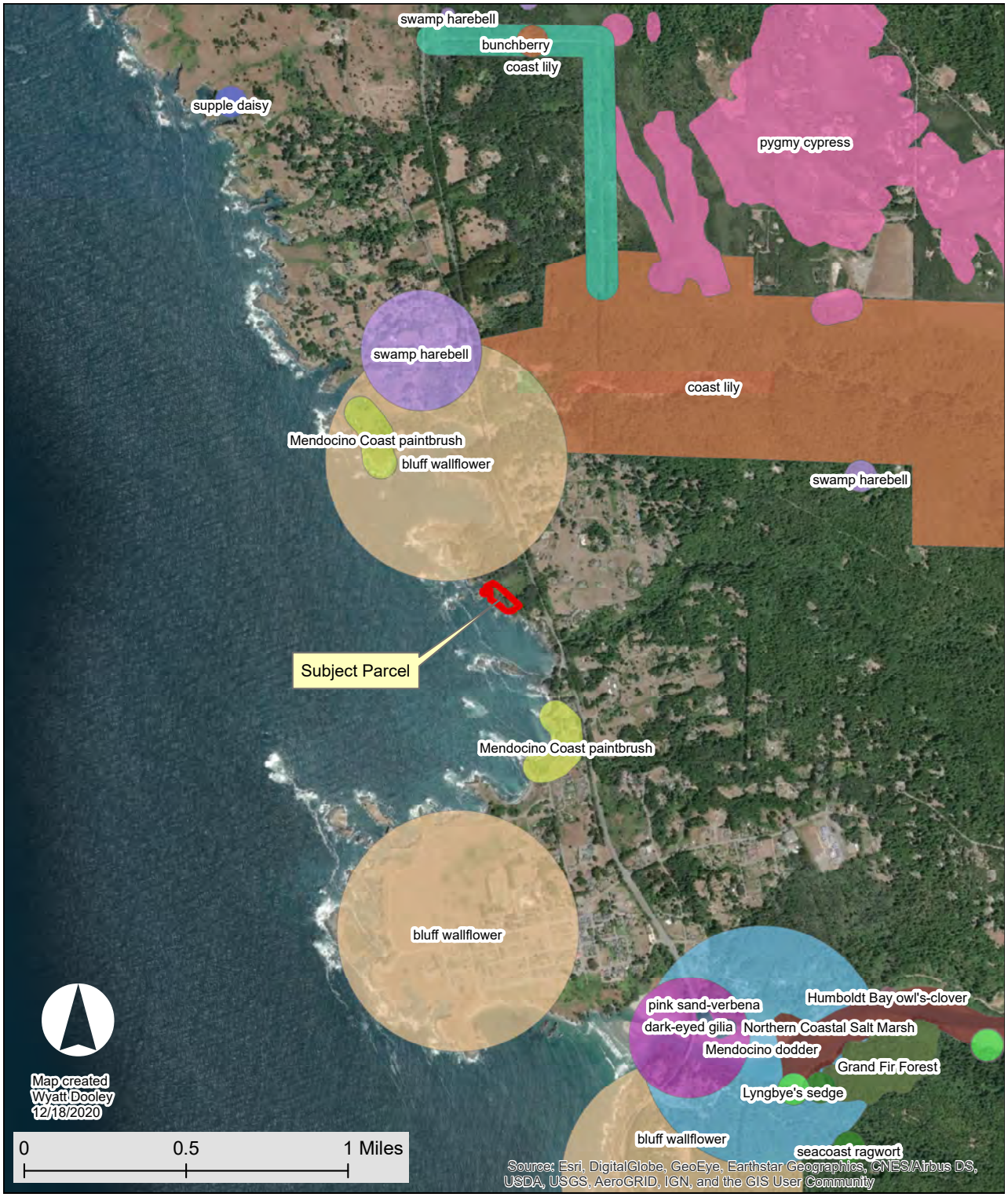
4.2. Field Surveys

Wynn Coastal Planning & Biology's staff biologists conducted surveys on March 5, May 16, July 5 & 18 of 2018 for a total of 7.2 person hours. Additional surveys were conducted on May 19, July 10 & 28, and August 26, 2020 in order to make more observations, gather additional information on specific resources, and to keep the survey up to date by ensuring that site conditions had not changed significantly since the initial study. These additional studies involved another ~13.0 person hours of site work. Surveys were conducted to compile a full floristic list of plants occurring in the study area and to identify any rare resources having the potential to meet the LCP ESHA definitions. To ensure potential ESHA plants were evident and identifiable, offsite **reference plant populations** were visited prior to the project field surveys. Verified offsite reference site plants observed by WCPlan staff during the 2018 and 2020 floristic seasons included: short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia*), Mendocino coast paintbrush (*Castilleja mendocinensis*), harlequin lotus (*Hosackia gracilis*), headland wallflower (*Erysimum concinnum*), Menzies' wallflower (*Erysimum menziesii*), coastal bluff morning glory (*Calystegia purpurata* ssp. *saxicola*), Blasdale's bent grass *(Agrostis blasdalei*), Point Reyes blennosperma (*Blennosperma nanum* var*. robustum*), coast lily (*Lilium maritimum*), deceiving sedge (*Carex saliniformis*), Maple-leaved checkerbloom (*Sidalcea malachroides*), Howell's spineflower (*Chorizanthe howellii*), round-headed Chinese houses (*Collinsia corymbosa*), hair-leaved rush (*Juncus supiniformis*), swamp harebell (*Campanula californica),* Point Reyes horkelia (*Horkelia marinensis*), thin-lobed horkelia (*Horkelia tenuiloba*), perennial goldfields (*Lasthenia californica* ssp*. macrantha*), great burnet (*Sanguisorba officinalis*), early blue violet (*Viola adunca*), nodding-semaphore grass (*Pleuropogon refractus*), stag's-horn clubmoss (*Lycopodium clavatum*), north coast semaphore grass (*Pleuropogon hooverianus*), Canadian bunchberry (*Cornus canadensis*), Pacific blue field gilia (*Gilia capitata* ssp. *pacifica*), redwood lily (*Lily rubescens*), pygmy manzanita (*Arctostaphylos nummularia* ssp. *mendocinoensis*), manyleaf gilia (*Gilia millefoliata*), Bolander pine (*Pinus contorta* ssp. *bolanderi*), Mendocino cypress (*Hesperocyparis pygmaea*), leafy Bishop's cap (*Mitella caulescens*), Bolander's reed grass (*Calamagrostis bolanderi*), pink sand verbena (*Abronia umbellata* var. *beviflora),* Lyngbye's sedge (*Carex lyngbyei*), white beak sedge (*Rhynchospora alba*), Oregon goldthread (*Coptis laciniata*), Point Reyes sidalcea (*Sidalcea calycosa* ssp. *rhizomata*), Gairdner's yampah (*Perideridia gairdneri*), and corn lily *(Veratrum fimbriatum*).

All identifiable plant species located during the surveys were identified to the lowest taxonomic level necessary to determine the presence of special status plant species and are listed in **Table 1 (Appendix C**). *The Jepson Manual: Vascular Plants of California* (Baldwin 2012) was used to determine the taxonomic nomenclature. *A Manual of California Vegetation Second Edition* (Sawyer 2009), *Classification of the Vegetation Alliances and Associations of Sonoma County, CA, V. 2* (Klein 2015) and the *List of Vegetation Alliances and Associations* (CDFW 2010) were used to classify and describe representative plant communities present.

4.3. Wetland and Riparian Delineation

A full protocol level US Army Corp of Engineers (ACOE) wetland delineation was not performed at the site. However, the site topography was examined and observations of surface hydrology and hydrophytic plants were made. Further analyses were performed at three sample points to assess for hydrophytic, hydrology, and hydric soil parameters. The ACOE recognizes wetlands where hydrophytic vegetation, hydric soils, and hydrology are all present. In the California Coastal Zone, wetlands are recognized if any one of the three ACOE parameters (hydrophytic vegetation, hydric soils, or hydrology) is present. Wetlands reported and mapped in this report are Coastal Act wetlands and may or may not be Army Corps wetlands; a distinction is made where important.



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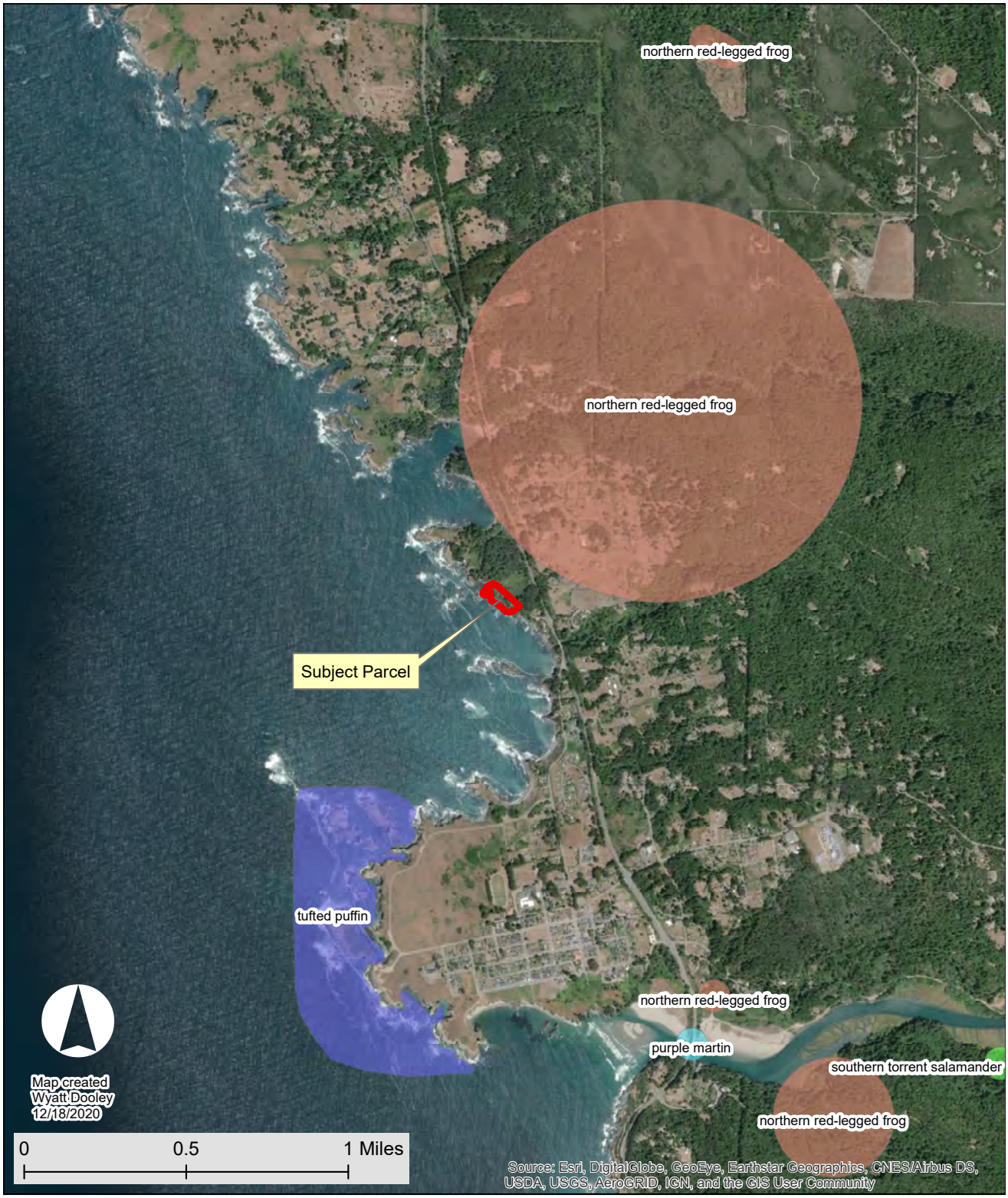
CNDDB Flora

Figure 8. Rare flora reported to CDFW in the proximity of the study area.



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CNDDB Fauna

Figure 9. Rare fauna reported to CDFW in the proximity of the study area and recorded in the CNDDB database.

5. SURVEY RESULTS

Biological Field Surveys were performed that identified the following: plants, plant communities, wetlands, special status animals and animal habitat in the study area.

5.1. Plants

The CDFW's California Native Diversity Database (CNDDB) BIOS, *Version 5* (2016), was used to inform the search on special status flora previously reported in the vicinity of the project area. Eighty-one species of herbs, grasses, sedges, rushes, ferns, shrubs, and trees were identified in the study area and are listed in **Appendix E**. No special status plants were observed.

5.2. Plant Communities Observed

5.2.1. Bishop Pine Forest (*Pinus muricata* forest G3 S3.2 presumed ESHA)

The dominant overstory tree is Bishop pine (*Pinus muricata*) (**Figure 10**), with a small number of grand fir (*Abies grandis*), and Monterey pine (*Pinus radiata*) trees also present. The understory vegetation within the pine forest varies from the more natural plant species expected in this plant community, including black huckleberry (*Vaccinium ovatum*), sword fern (*Polystichum munitum*), and polypody fern (*Polypodium* sp.), to areas that are cleared and vegetated with grasses, landscaping plants, and invasive species such as scotch broom (*Cytisus scoparius*), English ivy (*Hedera helix*) (**Figure 11**), and English holly (*Ilex aquifolium*). The quality of the Bishop pine forest varies, with higher quality habitat occurring to the north of the existing workshop/garage and lower quality occurring near existing development. A number of dead pines are present, especially within the portion of the forest to the northwest of the proposed single-family residence site.

Figure 10. Bishop pine forest looking east towards abandoned shed/well house. Understory mainly non-native grassland with more native plants upslope.

Figure 11. Bishop pine forest with invasive English ivy understory near the proposed building envelope.

Evidence of Sonoma tree vole (*Arborimus pomo*) in the form of clumps of Bishop pine needle resin ducts and rodent droppings was found on the ground below Bishop pines as mapped in **Figure 2**. Sonoma tree voles feed on the needles of several species of coniferous trees and are presumed to be present in the canopy of portions of the Bishop pine forest. **Section 5.4.5** discusses Sonoma tree voles in more detail.

5.2.2. Non-native Grassland (*Anthoxanthum odoratum – Holcus lanatus* Herbaceous Alliance, and *Briza maxima* Provisional Semi-Natural Association)

An area vegetated primarily with non-native grasses occurs in the northern half of the study area (**Figure 12**). Dominant grasses include sweet vernal grass (*Anthoxanthum odoratum*) and common velvet grass (*Holcus lanatus*), with creeping bentgrass (*Agrostis stolonifera*), rattlesnake grass (*Briza maxima*), and wild oats (*Avena barbata*) also common. Forbs present included English plantain (*Plantago lanceolata*), selfheal (*Prunella vulgaris*), rigid hedge nettle (*Stachys rigida*), cow parsnip (*Heracleum lanatum*), and sheep sorrel (*Rumex acetosella*). A site visit in May of 2020 revealed that portions of this area were becoming overgrown with California blackberry (*Rubus ursinus*) (**Figure 13**), with the plants described above still present but becoming covered by this early successional native plant due to the removal of the regular mowing regime practiced prior to initiation of the vegetation study. The vegetation in these areas is likely to return to non-native grassland when mowing is continued.

Figure 12. Non-native grassland dominated by sweet vernal grass and common velvet grass.

Figure 13. Portion of non-native grassland transitioning into California blackberry bramble in absence of mowing regime in 2020.

5.2.3. Blackwood Acacia Trees & Non-Native Shrubs

A mosaic of blackwood acacia (*Acacia melanoxylon*) and cotoneaster (*Cotoneaster* sp.) was prevalent north of the existing SFR along the 500D Road (**Figure 14**). Patches of vegetation where blackwood acacia was dominant had little to no understory. Areas where cotoneaster was more prevalent had English holly (*Ilex aquifolium*) and pampas grass (*Cortaderia jubata*).

Figure 14. Edge of vegetated area dominated by blackwood acacia and cotoneaster.

5.2.4. Himalayan Blackberry Scrub (*Rubus armeniacus* Shrubland Semi-Natural Alliance)

The northern third of the parcel was dominated by invasive Himalayan blackberry scrub (*Rubus armeniacus* shrubland semi-natural alliance) (**Figure 15**). Other plants present within this plant community were English ivy, sword fern (*Pteridium aquilinum*), coyote brush (*Baccharis pilularis*), common cowparsnip (*Heracleum maximum*), rigid hedge nettle (*Stachys rigida*), and in wetter areas, water parsley (*Oenanthe sarmentosa*), pennyroyal (*Mentha pulegium*), California bee plant (*Scrophularia californica*), and rush (*Juncus effusus* and *J. patens*).

Figure 15. Himalayan blackberry bramble with old aviary airlock in background. A portion of the area shown was once a netted aviary.

5.2.5. Cascara shrubland – presumed Coastal Act wetland ESHA

The habitat to the east of the parcel across the 500D Road is dominated by cascara sagrada (*Frangula purshiana*) (**Figure 16).** A number of dead Bishop pines rise above and/or are lying among the living portion of the plant community. Cascara shrubland alliance is not currently recognized as a plant community in the online Manual of California Vegetation. This area may have previously been considered Bishop pine forest but no longer has a living Bishop pine overstory. Likewise, Bishop pines may become established here again but may currently be excluded due to the lack of bare soil and sunlight they need for germination. Shifts in site hydrology due to Highway 1 to the east and/or the 500D Road to the west of this stand may have contributed to the death of the Bishop pines and their inability to recolonize the area since then. Live Bishop pine stands are present to the south, southeast and northwest of this plant community. Other vegetation within this plant community included wax myrtle (*Morella californica*), cotoneaster (*Cotoneaster* sp.), red elderberry (*Sambucus racemosa*), sword fern (*Polystichum munitum*), domestic rose (*Rosa* sp.), Himalayan blackberry (*Rubus armeniacus*), common rush (*Juncus effusus*), Pacific oenanthe (*Oenanthe sarmentosa*), English holly (*Ilex aquifolium*), cow parsnip (*Heracleum maximum*), and poison oak (*Toxicodendron diversilobum*).

Figure 16. Riparian area on east side of the road looking south towards Mendocino.

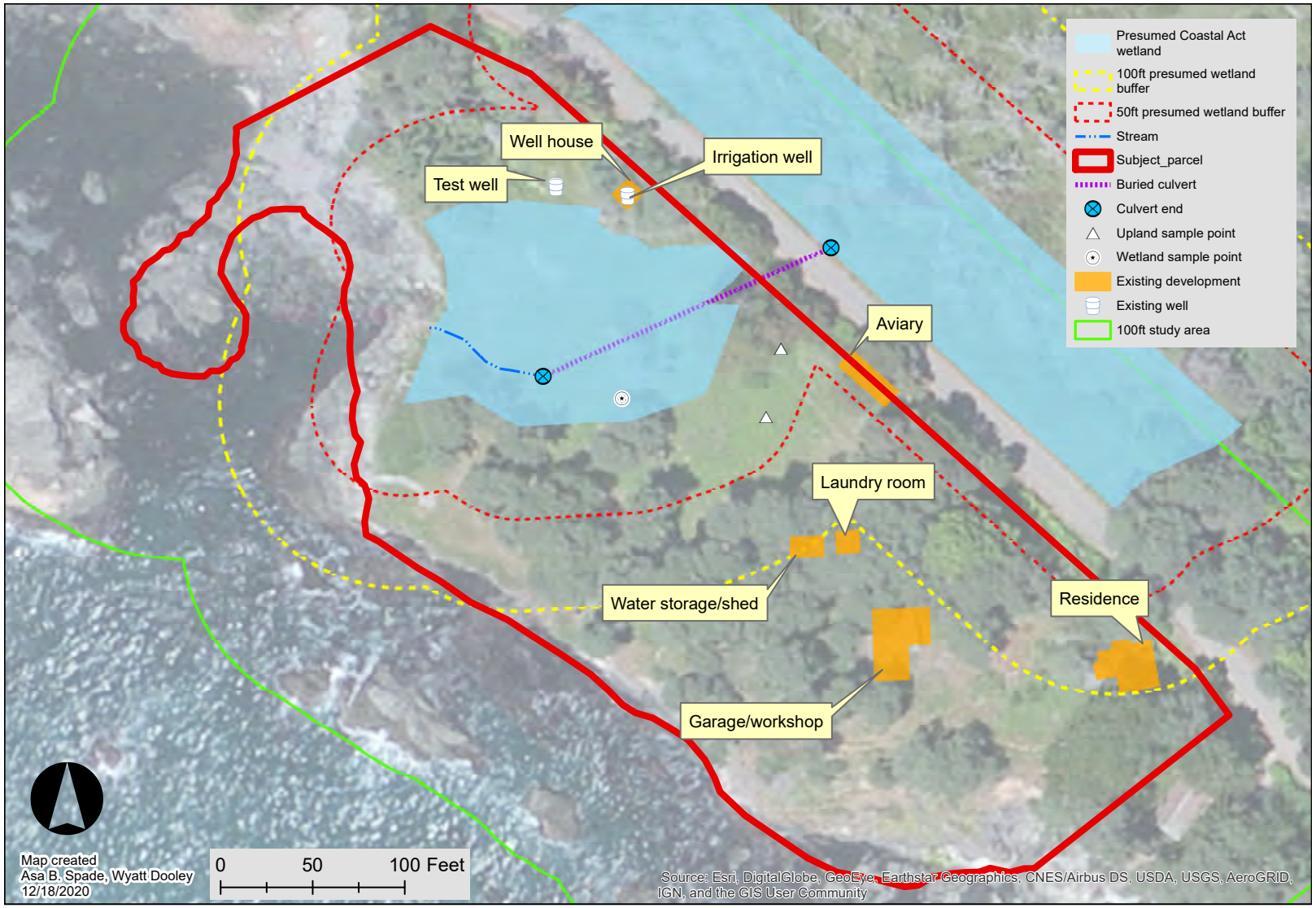
5.2.6. Other Vegetation

There is other vegetation mapped in **Figure 7** that does not conform to the mapping and classifications standards in the *Manual of California Vegetation* which cannot be described as a plant community. Areas such as these are generally single plant specimens or a cluster of a few trees, they are mapped separately rather than lump them in with disparate adjacent communities. These mapped areas that do not make a plant community are: grand fir (*Abies grandis*), silk tassel (*Garrya elliptica*), Monterey pine trees (*Pinus radiata*), and Sitka spruce (*Picea sitchensis*).

5.3. Presumed Coastal Act Wetland–presumed ESHA

Preliminary work on a US Army Corp of Engineers (ACOE) and Coastal Act wetland delineation was performed at the site and presumed Coastal Act wetlands mapped (**Figure 17**). The site topography was examined and a search made for surface hydrology and plants growing as hydrophytes. While examining site topography, plant species that grow as hydrophytes were observed in a depressed area (**Figure 18**) running roughly west to east through the middle of the meadow. Vegetation outside this swale (**Figure 19**) was not indicative of wetland condition. Further investigation revealed that there is a culvert (**Figure 20**) on the east side of the 500D Road that runs beneath the meadow and empties into the natural gully at the bluff edge. It is likely that the water ran on the surface through this area before the installation of the culvert. Further analyses were performed at three sample points to informally assess for hydrophytic vegetation, hydrology, and hydric soil parameters. The westernmost soil pit had shallow groundwater and soil mottles, indicating likely wetland conditions. The northeastern and southern most pits did not display shallow groundwater or hydric soil characteristics. The mapped extent of the presumed wetland northward was based on vegetation present. A full protocol wetland delineation was not performed because no development is proposed in this area. The proposed residential structures were designed to avoid this presumed wetland by more than 100ft. The area designated for a replacement septic leach field is less than 100ft but more than 50ft from the presumed Coastal Act wetland on the subject parcel. Wetland/upland boundaries mapped are based on observation and a conservative (protective of wetland) interpretation.

A ditch along the eastern side of the 500D road was full of water during at least one site visit and surface water was apparent in many locations further to the east of the ditch. Vegetation in this location was dominated by cascara buckthorn (*Frangula purshiana*) and many dead Bishop pines were present, which may indicate that site hydrology changed during some point in the recent past. As described above, a culvert hydrologically connects the ditch on the east side of the road to a natural gully at the cliff edge. The proposed project is in the least impacting location on the parcel with all resources considered but a portion of the residence and the majority of the studio and septic leach fields are within 100ft of the area of presumed Coastal Act wetland across the 500D Road and a very small portion of the septic leach fields are proposed within 50ft of this resource. This area of presumed Coastal Act wetland is uphill from the proposed project and the 500D Road is between the wetland and proposed development, buffering the cascara dominated presumed wetland area. Potential impacts to the presumed Coastal Act wetland are addressed in the mitigation section of this report and in a Reduced Buffer Analysis and Report of Compliance included as appendices.



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Wetland Map

Note: Locations are approximate

Figure 17. Map of presumed wetland and riparian areas with associated buffers. Sample points were not protocol level ACOE soil pits.

Figure 18. Himalayan blackberry patch and presumed wetland area at bluff edge looking northeast.

Figure 19. Photo taken at same point as Figure 18 but taken while looking directly east. The old shed/well house can be observed in the background.

Figure 20. Location of culvert underneath 500D road. Photo taken from east side of road looking west towards the parcel.

5.4. Wildlife - Potential Occurrences

The California Department of Fish and Wildlife (CDFW) California Native Diversity Database (CNDDB) BIOS, Version 5 (2016), was used to inform the search on fauna previously reported in the vicinity of the project area (**Figure 9**). No special-status wildlife were observed during the field biological surveys however suitable habitat for special status wildlife species was identified. Descriptions below are for wildlife species with moderate to high potential to occur, and for State or Federally Endangered or Threatened Species with potential to occur. A complete list of special status wildlife with the potential to occur at the project site can be found in **Table 3 of Appendix C**.

5.4.1. Invertebrates

a) **Lotis Blue butterfly (*Lycaeides argyrognomon lotis*)** (G5TH SH). This Federally Endangered butterfly species has not been seen since 1983, it is primarily from Mendocino County but historically recorded in northern Sonoma and possibly Marin Counties. This species inhabits wet meadows, damp coastal prairie, and potentially pygmy bogs or poorly-drained sphagnum-willow bogs where soils are waterlogged and acidic. The presumed host plant is Harlequin lotus (*Hosackia gracilis*), which was not observed within the study area. No further surveys are recommended for this species.

b) **Behren's silverspot butterfly (*Speyeria zerene behrensii*)** (G5T1 S1). Behren's silverspot is known historically from the town of Mendocino, Mendocino County, south to the area of Salt Point State Park, Sonoma County. Now presumed to be from Manchester south to the Salt Point area. This species inhabits coastal terrace prairie with caterpillar host plant western dog violet, and adult nectar sources such as thistles, asters, etc. No western dog violet (*Viola adunca*) was observed in the study area and therefore no further surveys are recommended at this time.

c) **Western Bumblebee (*Bombus occidentalis*) (G2G3 S1)** Western bumblebee (*Bombus occidentalis*) is not a Federal or State protected species but is listed as a California Natural Diversity Database S1 species, an indication that there are limited known occurrences in California. The project area is in the former historical range of this species. Bumblebees observed during botanical surveys did not demonstrate the field markings of the western bumble bee, which include a conspicuous white tip of the abdomen. No further surveys for this species are recommended at this time.

5.4.2. Fish

No aquatic habitat capable of supporting freshwater fish was observed within the study area. The Pacific Ocean is west of the parcel. The small stream present on the subject parcel is not habitat for anadromous fish.

5.4.3. Amphibians

a) **Northern red-legged frog (*Rana aurora aurora*) (G4T2T3 S2S3)** Northern red-legged frog (*Rana aurora*) is listed as a California Department of Fish and Wildlife Species of Special Concern. Their range extends from the southwest British Colombia coast to central Mendocino County. Often found in woods adjacent to streams and streamsides with plant cover, northern red-legged frogs breed in permanent water sources, including lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. The wetland and riparian area may contain potential Northern red-legged frog breeding habitat and the rest of the parcel has the potential for the presence of the frog during their overland movements between water sources.

   Avoidance measures in **Section 7** address how to minimize the potential for impacts to all potentially occurring amphibians including prohibiting sediment transport into the wetland to protect potential frog and salamander habitat. It is also recommended that the contractor be trained to recognize amphibians and contact a qualified biologist if any are found onsite during construction activities.

b) **Southern Torrent Salamander (*Rhyacotriton variegatus*) (G3G4 S2S3)** This Species of Special Concern occurs primarily in cold, well-shaded permanent streams and spring seepages in redwood, Douglas fir, mixed conifer, montane riparian and montane hardwood-conifer habitats. On land it normally occurs only within the splash zone or on moss-covered rock rubble with trickling water. The wetland areas within the study area are unlikely to be suitable habitat for this salamander. Because it does not stray far from the splash zone of streams and seeps it should be sufficiently protected by wetland/riparian buffers.

c) **Red-bellied newt (*Taricha rivularis*) (G4 S2)** This Species of Special Concern inhabits primarily redwood forest, but also found within mixed conifer, valley-foothill woodland, montane hardwood and hardwood-conifer habitats. Rapid-flowing, permanent streams are required for breeding and larval development. No suitable breeding habitat was present within the study area. This species may range up to a mile from streams and may therefore be found in upland habitat during some times of the year. Identification and avoidance training for construction workers should include a discussion of this species.

5.4.4. Birds

a) **Nesting birds**. Resident and migratory birds that are present during the nesting season may nest in the habitat present within the study area. Nesting requirements for different species of birds are highly variable. Some birds nest in burrows, others on the ground, in vegetation, brush, trees, rocky outcrops, or on man-made structures. The bird nesting season typically

extends from February to August. The Migratory Bird Treaty Act protects special status and common native birds and their nests while they are in the process of nesting. If construction is to occur during the breeding season (February to August), a pre-construction survey is recommended to ensure that no nesting birds will be disturbed during development (**Table 1**). No nesting surveys are recommended if activity occurs in the non-breeding season.

b) **Pelagic Cormorant (*Phalacrocorax pelagicus*).** Nesting pelagic cormorants (**Figure 21**) were observed on the cliff edges as mapped in **Figure 2**. Pelagic cormorants are year-round residents on the California coast. Special attention should be applied to nesting bird surveys with concern to this species which nests on the bluff edge and may therefore be affected by the proposed project. The proposed development is greater than 100ft away from the nests that were identified during the surveys. During the pre-construction survey, a qualified biologist should identify any active nests and establish a 100ft buffer. No construction activity which could disturb nesting shall occur within the 100ft buffer during the breeding season (February – August).

Figure 21. Nesting pelagic cormorant on parcel cliff edge.

5.4.5. Mammals

a) **Sonoma tree vole (*Arborimus pomo*) (G3 S3)**

According to the January 2016 Department of Fish and Wildlife Special Animals List, Sonoma tree vole (*Arborimus pomo*) is listed as a G3 S3 Species of Special Concern. The state listing indicates the species is considered vulnerable in its range due to a restricted range, relatively few populations, recent and widespread declines or other factors.

Preferred habitat is considered mesic old growth Douglas fir forest, however Sonoma tree voles are known to live in other coniferous forests. They are known to eat primarily Douglas fir (*Pseudotsuga menziesii*) needles, but eat other conifer needles as well. They may also eat the inner bark of twigs.

A clump of resin ducts presumably having fallen from a nest within a Bishop pine tree growing within the forest adjacent to the proposed SFR site was found during scoping early (Feb 2017) in the project. A Sonoma tree vole survey was conducted and one tree was climbed to examine a potential nest. It was determined that the potential nest structure examined was not a STV nest. No occupied or active nests were observed. In May of 2020 an additional visit was made to the site and a relatively fresh clump of Bishop pine resin ducts (**Figure 22**) was observed. The resin ducts on the outside of the clump were oxidized and somewhat brown while the resin ducts within the clump were a fresher greenish-yellow indicating that the clump fell from was probably at that time an actively occupied nest. Another clump was found during a later survey. No potential nest structures were visible from the ground. Sonoma tree voles must be assumed present in the Bishop pine forest that will be impacted by at least some tree removal necessary for the project. Potential incidental take of this species is discussed further in a Report of Compliance. Avoidance, minimization, and compensatory mitigations are recommended.

Figure 22 Clump of Bishop pine resin ducts and droppings from a tree vole nest found on the ground at the site.

b) Bats (various species)

Several special status bats live on the Mendocino Coast. See **Table 1** for months when bats are present at roost sites. The existing structures could provide suitable habitat for common or special status bat species. If development is to occur during months bats are roosting for reproduction or hibernation, pre-constructions surveys should occur as discussed in **Section 7**. Bats should be excluded from existing disused buildings prior to construction work on them.

6. PROJECT ALTERNATIVES

Alternative locations for the structures were considered but are not feasible, or would be more impactful to the resources on and around the parcel. Limitations on the site of the development include a setback of 24 feet from the top of the bluff at the southern portion of the parcel and a setback of 47 feet from the top of the bluff from portions of the parcel further north, front and side yard setbacks, only one viable location for a septic leach field where soils are appropriate and are more than 100ft from wells on the parcel and neighboring parcels, and multiple resources to avoid including Bishop pine forest, Sonoma tree vole habitat, bluff face pelagic cormorant nests, stream, and presumed Coastal Act wetlands. An emphasis on protecting wetland areas on the parcel was an important consideration. The only location that could avoid Bishop pine forest would impact Coastal Act wetland instead. The proposed alternative uses the existing development footprint as the site for new buildings, utilizing a portion of the existing development. This is the least impaction location for the development available on the parcel.

7. MITIGATION AND AVOIDANCE MEASURES

The proposed project has been analyzed relative to its proximity to natural resources to determine its potential disturbance to sensitive species, utilizing the methods and results gathered above along with a Reduced Buffer Analysis (**Appendix E)** and Report of Compliance (**Appendix F**) performed pursuant to the Mendocino County's Local Coastal Program. As a result of these analysis, we believe that potential impacts to stream and wetland ESHA habitat can be avoided, while impacts to Bishop pine forest and Sonoma tree voles can be avoided, minimized, and/or compensated for so that impacts are reduced to less than significant levels if the project utilizes the Mitigation Measures WCPB recommends below. The following mitigation measures are recommended to minimize impacts for development to Coastal Act Wetlands, stream, Bishop pine forest, Sonoma tree voles, birds and bats. These measures will serve to prevent negative impacts to potential resources located within 100 feet from the proposed development.

7.1. Impacts to Bishop Pine Forest

A number of Bishop pine trees will be need to be removed in order to construct the proposed project in the least impacting location available and to reduce hazards that will result from having the residence in close proximity to trees. A number of trees are leaning toward the proposed building envelope and/or show signs and symptoms of disease that may make them vulnerable to falling during a wind storm. Vegetation, including Bishop pine trees, need to be cleared around structures in accordance with CalFire guidance in order to reduce fire hazard. Some Bishop pine trees will need to be removed within the footprint of the proposed septic leach field in order to install the underground lines. **A Bishop pine forest active management plan is recommended.**

7.1.1. Minimization Measure: Remove the least number of trees necessary

Native coniferous trees should only be removed if strictly necessary.

7.1.2. Compensatory Mitigation: Replace Bishop pine trees

Bishop pine trees that are removed should be replaced at a minimum 1:1 ratio in an appropriate location on the project site. Locations toward the northern end of the parcel would expand Bishop pine forest southward from Bishop pine forest located on State Parks land and result in more contiguous habitat beneficial to Sonoma tree voles.

7.1.3. Compensatory Mitigation: Improve Bishop pine forest habitat by removing invasive plants

Target invasive plant species within the mapped Bishop pine forest and areas where Bishop pines will be planted should be eliminated. The target species are: English ivy (Hedera helix), English holly (Ilex aquifolium), cotoneaster (*Cotoneaster spp.*), pampas grass (*Cortaderia jubata*), Scotch broom (*Cytisus scoparius*), blackwood acacia (Acacia melanoxylon), red claws (Escallonia rubra), purple fox glove (Digitalis purpurea), and red hot poker (Kniphofia uvaria).

7.2. Potential Impacts to Sonoma Tree Voles

Sonoma tree voles are presumed to be present within the stand and there is a potential for incidental take. Bishop pine trees will be removed that may contain hidden nests. The microclimate within the tree canopy is likely to change adjacent to trees that are removed because they will no longer block wind, shade areas, collect fog, etc. Changes in microclimates in the tree canopy may reduce the habitat suitable for Sonoma tree voles.

7.2.1. Minimization Measure: Remove the least number of trees necessary

Native coniferous trees should only be removed if strictly necessary.

7.2.2. Compensatory Mitigation: Replace Bishop pine trees

Bishop pine trees that are removed should be replaced at a minimum 1:1 ratio in an appropriate location on the project site. Locations most beneficial to Sonoma tree voles should be chosen, with special consideration given to habitat connectivity to existing occupied and potential habitat and a corridor to other habitat off site.

7.2.3. Compensatory Measure: Coordinate with CDFW

Coordination should occur with California Department of Fish and Wildlife to determine if there are additional recommendations or requirements from that agency. Sonoma tree voles are a CDFW Species of Special Concern, which do not have the legal protections of a Federally or State listed Threatened or Endangered species.

7.3. Potential Impact to Presumed Coastal Act Wetland

There is a potential for rain to carry sediment from construction areas into wetland habitat. The majority of the proposed development is located more than 100ft from the areas of presumed Coastal Act wetland on the subject parcel. Portions of the presumed Coastal Act wetland across the 500D Road are closer than 100ft but are uphill from the proposed project and buffered by the presence of the road.

7.3.1. Avoidance Measure: 50ft Buffer

A suitable buffer should be established between areas of Coastal Act wetland and proposed development. A reduced buffer analysis has been conducted and a buffer distance of 50ft was determined to be suitable to protect the resources present. No construction or materials staging shall occur within 50ft of the areas of presumed Coastal Act wetland identified and mapped with the exception of the eventual construction of a replacement leach field if and when the primary fails, and the conversion of the existing test well in the northern portion of the parcels, and its connection to water and power at the existing well house, if it is necessary in order to supply the residence with sufficient drinking water. It is required that CDFW concurs that 50ft is an appropriate buffer distance.

7.3.2. Avoidance Measure: Construction During Dry Season

Ground disturbing construction should occur only during the dry season. If a rain event occurs during the ground disturbance period, all ground disturbing activities will cease for a period of 48 hours after the rain stops.

7.3.3. Avoidance Measure: Straw Wattles

Straw wattles shall be installed between the portions of the Coastal Act wetland on the subject parcel and the proposed septic leach field, and existing test well if it is converted to a domestic water production well, separating the wetlands and their buffer zones from the construction related impact area. No materials storage, heavy equipment use or other impacts shall occur within the wetlands buffer area with the exception of the eventual construction of a replacement leach field if and when the primary fails, and the conversion of the existing test well in the northern portion of the parcels, and its connection to water and power at the existing well house, if it is necessary in order to supply the residence with sufficient drinking water. Straw wattles shall be properly installed to intercept liquids leaving the construction area. All fencing shall be maintained in a functional manner through the duration of construction and until all disturbed soil is stabilized. Fencing shall be checked and appropriate maintenance shall occur on a weekly basis and after every rain event.

7.3.4. Avoidance Measure: Employ Best Management Practices (BMPs)

Standard Best Management Practices shall be employed to assure minimization of erosion resulting from construction. Ground disturbance shall be limited to the minimum necessary and disturbed soil areas shall be stabilized as soon as feasible. Areas of bare soil should be seeded with native erosion control seed mix.

7.4. Potential Impact to Birds

Construction in the Study Area has the potential to disturb special status birds during the nesting season. Removal of vegetation and construction activity near trees and vegetated areas has the potential to disturb bird species.

7.4.1. Avoidance Measure: Seasonal Avoidance

No 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 14 days of the onset of construction to ensure that no nesting birds will be disturbed during development (**Table 1**).

7.4.2. 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.

Attention should also be paid to the cormorants located on the bluff edge to ensure that nests are buffered by 100ft during the breeding season.

7.4.3. Avoidance Measure: Construction activities during daylight hours

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

7.5. Potential Impact to Bats

Construction in the Study Area has the potential to impact special status bat species. Bats are vulnerable when roosting for reproduction when young are not yet able to fly, and during hibernation because they can die of cold or malnutrition if hibernation is disturbed. The disused structures onsite could serve as roosting or hibernation refugium; therefore, there is potential for impact to occur. Temperatures on the Mendocino Coast usually do not drop low enough to necessitate bat hibernation. The following measures are provided to ensure that there is no impact to bats.

7.5.1. Avoidance Measure: Pre-construction surveys for bats

Construction will ideally occur between September 1st and October 31 after the young have matured and prior to the bat hibernation period. **If it is necessary to disturb potential bat roost sites between November 1 and August 31**, pre-construction surveys should be performed by a qualified biologist 14 days prior to the onset if development activities. If active bat roosts are observed, no ground disturbance activities shall occur within a minimum 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 roost until all young are no longer dependent upon the roost.

Pre-construction bat surveys involve surveying trees, rock outcrops, and buildings subject to construction for evidence of bat use (guano accumulation, or acoustic or visual detections). If evidence of bat use is found, then biologists shall conduct acoustic surveys under appropriate conditions using an acoustic detector, to determine whether a site is occupied. If bats are observed, a minimum 50ft buffer should be implemented around the bat cave.

Table 1 Months surveys are or are not needed for birds and bats.

Months During Which Pre-Construction Surveys Are Not Required For Birds & Bats

	January	February	March	April	May	June	July	August	September	October	November	December
Birds												
Bats												

	Pre-Construction Surveys Are NOT Needed
	Pre-Construction Surveys Are Needed

7.5.2. Avoidance Measure: Construction activities during daylight hours

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

7.5.3. Avoidance Measure: Exclude bats from buildings

In order to avoid incidental impact to bats that may be roosting in existing buildings that will be demolished or modified, bats should be excluded by closing off potential entrances and installing one-way exit tubing. Exclusion tubes should be in place for at least 7 warm nights and should not be installed during pup-rearing season when mother bats could be separated from their non-flying young.

7.6. Potential Impact to Amphibians

Construction activities will involve noise from construction tools, bringing new material to the site and removing old material. To minimize impacts to the amphibians, the following avoidance measures should be followed.

7.6.1. Avoidance Measure: Reduce footprint of impact

The 100ft wetland buffer should be staked and flagged onsite to act as a visual reminder to construction personal to reduce the impact site to within the construction area. Construction will be occurring greater than 100ft from the wetland. The sea stack will also partially act as a natural buffer between the onsite wetland and proposed development. Some areas for ribbon placement may not be feasible due to the bluff edge and/or dense vegetation. The fence along 500D Road will act as a buffer between the riparian area east of the parcel so ribbon is not needed along this area.

7.6.2. Avoidance Measure: Construction activities during daylight hours

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

7.6.3. Avoidance Measure: Limit ground disturbing construction to dry season

Ground disturbing construction within should occur during the dry season, which is generally April 1 to October 31 of any year.

7.6.4. Avoidance Measure: Restrict staging area

Stage all building materials and construction vehicles in upland area greater than 100 feet from areas designated as wetland and riparian on the parcel where amphibians have a greater likelihood of being present. The fence on 500D Road also acts as a physical and visual buffer to the riparian area east of the parcel.

7.6.4.1. Avoidance Measure: Contractor education

Within two weeks prior to construction activities, project contractors will be trained by a qualified

biologist in the identification of 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.

7.6.5. 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.

7.6.6. 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.

7.6.7. 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.

7.7. Potential Introduction and Spread of Invasive Plants

During construction and landscaping, invasive species can be introduced and spread to surrounding areas that could out compete native flora and degrade habitat that native fauna may use.

7.7.1. Avoidance Measure: Clean heavy machinery

Heavy machinery such as and not limited to excavators and skid steers that may be used onsite have the potential to spread invasive plant material from use on other sites. Heavy machinery that is used in dirt needs to be power washed offsite to eliminate seeds and other propagules.

7.7.2. Avoidance Measure: Plant non-invasive vegetation

While many ornamental landscapes on the California coast use non-native plants, invasive plants should not be planted. Some invasive plants commonly seen by Wynn Coastal Planning & Biology biologists on the coast that should be avoided are: Iceplant (*Carpobrotus edulis, C. chiloensis,* & *Delosperma* sp.), cotoneaster (*Cotoneaster franchetii* & *C. pannosus*), English holly (Ilex aquifolium), English ivy (*Hedera helix*), cape ivy (*Delairea odorata*), pampas grass (*Cortaderia jubata* & *C. selloana*), cape weed (*Arctotheca calendula* & *A. prostrata*), *Crocosmia* sp., blue gum eucalyptus (*Eucalyptus globulus*), redhot poker (*Kniphofia uvaria*), periwinkle (*Vinca major*), bulbil bugle lily (*Watsonia meriana*), and callalily (*Zantedeschia aethiopica*).

7.7.3. Avoidance and Minimization Measure: Reduce invasive vegetation

In order to prevent the spread of invasive plants already present at the site into additional areas, efforts should be undertaken to reduce, and if possible eliminate, invasive plants. Success eliminating some species of invasive non-native plants that occur on site is more likely than with others. For example, WCPB believes it would be beneficial and possible to eliminate English ivy (Hedera helix), English holly (Ilex aquifolium), cotoneaster (*Cotoneaster spp.*), pampas grass (*Cortaderia jubata*), Scotch broom (*Cytisus scoparius*), blackwood acacia (Acacia melanoxylon), red claws (Escallonia rubra), purple fox glove (Digitalis purpurea), and red hot poker (Kniphofia

uvaria) with a concerted effort. Himalayan blackberry (*Rubus armeniacus*) and poison hemlock (Conium maculatum) could be reduced but would either require significant soil disturbance to grub out roots and/or the application of herbicide to significantly diminish the population present, neither of which are desirable within the Coastal Act wetland where these species are most prevalent. Other invasive non-native plants present, such as bentgrass (*Agrostis* spp.), sweet vernal grass (*Anthoxanthum odoratum*), slender wild oats (*Avena barbata*), orchard grass (*Dactylis glomerata*), velvet grass (*Holcus lanatus*), sixweeks grass (*Festuca myuros*), rattlesnake grass (*Briza maxima*), hairy cat's ear (*Hypochaeris radicata*), and sheep sorrel (*Rumex acetosella*) are unlikely to be eliminated or significantly reduced. Reduction and elimination of target species within the Bishop pine forest are outlined above as compensatory mitigation measures for impacts to the Bishop pine forest. Additional invasive removal within the grassland and Coastal Act wetland areas of the parcel are recommended but in WCPB's opinion, should not be made a requirement of the project's approval.

8. DISCUSSION

It is the professional opinion of the biologists at Wynn Coastal Planning & Biology that the project, as proposed, is the least damaging and most feasible option.

Four types of potential ESHAs were identified within the Study Area:

Wetland Presumed ESHA – Two areas of presumed Coastal Act wetland were present within the study area totaling approximately 1 acre.

Rare Plant Community Presumed ESHAs – One special status plant community was identified in the study area: **Bishop Pine Forest** (*Pinus muricata* forest alliance (G3 S3)).

Stream ESHA- A small stream originating from a culvert was present on the north-western portion of the study **area and** is *within the* presumed Coastal Act wetland.

Special **Status Wildlife Habitat Presumed ESHA** – Three groups of pelagic cormorant (*Phalacrocorax pelagicus*) nests were identified on the bluff edge. Clumps of Bishop pine resin ducts presumably from a Sonoma tree vole nest were observed in the Bishop pine forest indicating that the trees are habitat for this Species of Special Concern.

The results of this report were based upon the information gathered during Wynn Coastal Planning & Biology's site visits. After analyzing the results, the proposed project (single family residence, guest cottage, studio, septic leach fields and associated infrastructure) will occur partly within Bishop pine forest, and mostly within 50ft of the Bishop pine forest. The Bishop pine forest is also presumed habitat for Sonoma tree voles. As briefly discussed in **Section 6**, the proposed project's least impacting location is to redevelop within the footprint of the existing structures and courtyard. A driveway serving the proposed SFR location already exists. Alternative locations for a SFR would require an additional driveway which would be located within 50ft of areas of presumed Coastal Act wetland, as well as longer lines to the septic leach field and to connect utilities. Wetland is arguably more sensitive than upland Bishop pine forest. Building any new structures outside the dripline of the Bishop pine forest would be within 50ft of both the Bishop pine forest and 50ft of presumed Coastal Act wetland. Therefore, the least impacting alternative is to develop away from the wetland and utilize the footprint of the existing development, a portion of which is partly within the Bishop pine forest. Further analysis of the Bishop pine forest is performed within the Report of Compliance (**Appendix E**). WCPB recommends a Bishop pine forest active management plan and consultation with CDFW regarding buffer distances, Sonoma tree vole mitigation, and avoidance of impacts to bats that may use the existing structures on the subject parcels.

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10. INVESTIGATOR BIOGRAPHIES

Contributing Biologists

Asa B Spade graduated from Humboldt State University with a Bachelor's Degree 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. 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. 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, and the California red-legged frog. He has contributed to more than 150 coastal development projects in Mendocino County.

Wyatt Dooley graduated from University of California Santa Barbara with a Bachelor's of Science in Environmental Studies and a minor in Geology. After graduating, he worked for Fish and Wildlife and Pacific States Marine Fisheries as a technician researching salmon. He has also worked abroad in New Zealand as a conservation ranger helping on restoration projects and controlling invasive species. Additionally, he has received training in Army Corp wetland delineation by San Francisco State University and the Wetland Science and Coastal Training Program, training from CNPS-CDFW on vegetation rapid assessment and relevé methods, is on the US Fish and Wildlife Service's approved list for Point Arena Mountain Beaver Surveys, and received a specialization in ArcGIS through University of California Davis. He has also received training in *Carex* keying and identification through CNPS taught by CA Fish and Wildlife staff biologist Gordon Leppig (March 2018).

Suzie E.W. Woolhouse received her BS degree in Environmental Studies and her M.S. degree in Biology both from San José State University. Her Masters was funded by the United States Forest Service to study rare plants that grow on Serpentine soils. This work was done in the Northern Sierra Nevada and included field and lab studies of six rare plant species. She presented her work at the 7th International Conference on Serpentine Ecology in Coimbra, Portugal as well as numerous conferences throughout California. A publication from her BS Senior Thesis research project can be found in the June 2019 copy of the journal Madroño and a paper from her MS was published in the journal Molecular Ecology in 2019. One of her photos from the project also made the cover. Suzie has worked as a biologist at the Santa Clara Valley Water district as the lead naturalist at the Mendocino Outdoor Science School, and as an instructor and assistant for Field Studies courses in France and Death Valley.

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

August 8, 2018

Preface

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).

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

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

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

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 12, Oct 3, 2017

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

Date(s) aerial images were photographed: Dec 31, 2009—Jun 9, 2016

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
116	Bruhel-Shinglemill complex, 2 to 15 percent slopes	17.1	77.4%
117	Cabrillo-Heeser complex, 0 to 5 percent slopes	0.0	0.1%
Totals for Area of Interest		**22.1**	**100.0%**

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,

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.

Mendocino County, Western Part, California

116—Bruhel-Shinglemill complex, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hmkl
Elevation: 50 to 1,300 feet
Mean annual precipitation: 35 to 55 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 250 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Bruhel and similar soils: 50 percent
Shinglemill and similar soils: 25 percent
Minor components: 23 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bruhel

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 21 inches: clay loam
H3 - 21 to 41 inches: gravelly clay loam
H4 - 41 to 45 inches: weathered bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Shinglemill

Setting

Landform: Marine terraces

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Fluviomarine deposits derived from sedimentary rock

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 15 inches: loam
H3 - 15 to 25 inches: clay loam
H4 - 25 to 63 inches: sandy clay

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Flumeville

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Tropaquepts

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Abalobadiah

Percent of map unit: 5 percent
Hydric soil rating: No

Gibney

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed, gentler or steeper slopes

Percent of map unit: 3 percent
Hydric soil rating: No

117—Cabrillo-Heeser complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: hmkm
Elevation: 20 to 240 feet
Mean annual precipitation: 35 to 45 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 250 to 330 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cabrillo and similar soils: 50 percent
Heeser and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cabrillo

Setting

Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fluviomarine deposits derived from sandstone

Typical profile

H1 - 0 to 26 inches: sandy loam
H2 - 26 to 35 inches: sandy clay loam
H3 - 35 to 50 inches: sandy clay loam
H4 - 50 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural 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
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Ecological site: Sandy Loam Terrace (Perennial Grass) (R004XB060CA)

Hydric soil rating: No

Description of Heeser

Setting

Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits derived from sandstone

Typical profile

H1 - 0 to 34 inches: sandy loam
H2 - 34 to 65 inches: sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: Sandy Loam Terrace (Perennial Grass) (R004XB060CA)
Hydric soil rating: No

Minor Components

Biaggi

Percent of map unit: 5 percent
Hydric soil rating: No

Crispin

Percent of map unit: 5 percent
Hydric soil rating: No

Sirdrak

Percent of map unit: 4 percent
Hydric soil rating: No

Tropaquepts

Percent of map unit: 3 percent
Landform: Marine terraces
Hydric soil rating: Yes

Unnamed, gentler or steeper slopes

Percent of map unit: 3 percent
Hydric soil rating: No

Custom Soil Resource Report

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U.S. Fish and Wildlife Service
National Wetlands Inventory

Bertrand-Daniel NWI Map

August 9, 2018

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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.

WYNN COASTAL PLANNING & BIOLOGY

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Appendix C. Species Rarity Ranking System and Definitions

FED: federal status includes federally rare (**FR**), threatened (**FT**), or endangered (**FE**)

STATE: California state status includes rare (**CR**), threatened (**CT**), or endangered (**CE**)

CNPS: California Native Plant Society ranked inventory of native California plants thought to be at risk

CNPS Ranking

List 1A (1A) Presumed extinct in California.

List 1B (1B) Rare, threatened, or endangered in California and elsewhere.

List 2 (2) Rare, threatened or endangered in California but more common elsewhere.

List 3 (3) More information needed, a review list.

List 4 (4) Species of limited distribution, a watch list.

Threat Code extensions and their meanings:

.1 - Seriously endangered in California

.2 – Fairly endangered in California

.3 – Not very endangered in California

G-RANK: Global Ranking - The global rank (G-rank) is a reflection of the overall condition of an element throughout its global range.

SPECIES OR NATURAL COMMUNITY LEVEL

G1 = Less than 6 viable element occurrences (Eos) OR less than 1,000 individuals OR less than 2,000 acres.

G2 = 6-20 Eos OR 1,000-3,000 individuals OR 2,000-10,000 acres.

G3 = 21-80 Eos OR 3,000-10,000 individuals OR 10,000-50,000 acres.

G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.

G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

GH - All sites are historical so possibly extinct; the element has not been seen for at least 20 years, but suitable habitat still exists (**SH** = All California sites are historical and possibly extinct).

GX - All sites are extirpated; this element is extinct in the wild (**SX** = All California sites are extirpated).

Appendix C. Species Rarity Ranking System and Definitions

GXC - Extinct in the wild; exists in cultivation.

G1Q - The element is very rare, but there are taxonomic questions associated with it.

T - Rank applies to a subspecies or variety.

S-RANK: STATE RANKING - The state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.

S1 = Less than 6 viable Eos OR less than 1,000 individuals OR less than 2,000 acres

S1.1 = very threatened

S1.2 = threatened

S1.3 = not very threatened OR no current threats known

S2 = 6-20 Eos OR 1,000-3,000 individuals OR 2,000-10,000 acres

S2.1 = very threatened

S2.2 = threatened

S2.3 = not very threatened OR no current threats known

S3 = 21-80 Eos or 3,000-10,000 individuals OR 10,000-50,000 acres

S3.1 = very threatened

S3.2 = threatened

S3.3 = not very threatened OR no current threats known

S4 = Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat.

S5 = Demonstrably secure to ineradicable in California. NO THREAT RANK.

Notes:

1. Other considerations used when ranking a species or natural community include the pattern of distribution of the element on the landscape, fragmentation of the population/stands, and historical extent as compared to its modern range. It is important to take a bird's eye or aerial view when ranking sensitive elements rather than simply counting Eos.
2. Uncertainty about the rank of an element is expressed in two major ways:
By expressing the rank as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3.
By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less than S2.
3. Other symbols

Appendix C. Table 1. Rare plant scoping list.

Scientific Name (Synonyms) Common Name	Habitat found	Blooming Period	CRPR	Fed. Listing	State Listing	State Rank	Global Rank	Found?
Abronia umbellata var.breviflora Pink sand-verbena	Coastal dunes	Jun-Oct	1B.1	N	N	S1	G4G5T	No
Agrostis blasdalei Blasdale's bent grass	Coastal dunes, coastal bluff scrub, coastal prairie.	May- Jul	1B.2	N	N	S2	G2	No
Arctostaphylos nummularia ssp. Mendocinoensis Pygmy manzanita	Closed-cone coniferous forest. Acidic sandy-clay soils in dwarfed coniferous forest.	Jan	1B.2	N	N	SH	G3?THQ	No
Astragalus agnicidus Humboldt milk- vetch	Openings, disturbed areas, roadsides,broadleafed upland forest, North coast coniferous forest	Apr-Sep	1B.1	N	CE	S3	G3	No
Astragalus pycnostachyus var. pyncnostachyus Coastal marsh milk-vetch	Coastal dunes (mesic), coastal scrub, coastal salt marshes and swamps, and streamsides	Apr-Oct	1B.2	N	N	S2	G2T2	No
Blennosperma nanum var.robustum Point Reyes blennosperma	Coastal prairie, coastal scrub	Feb-Apr	1B.2	N	CR	S2	G4T2	No
Calamagrostis crassiglumis Thurber's reed grass	Coastal scrub (mesic), freshwater marshes and swamps.	May-Aug	2B.1	N	N	S2	G3Q	No
Calystegia purpurata ssp. saxicola Coastal bluff morning-glory	Coastal bluff scrub, Coastal dunes, Coastal scrub, North Coast coniferous forest.	Mar-Sep	1B.2	N	N	S2S3	G4T2T3	No
Campanula californica Swamp harebell	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, freshwater marshes and swamps, and North Coast coniferous forests.	Jun-Oct	1B.2	N	N	S3	G3	No
Carex californica California sedge	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and swamps (often on margins or drier areas).	May-Aug	2B.3	N	N	S2	G5	No
Carex lenticularis var.limnophila Lagoon sedge	Shores, beaches, often gravelly, bogs and fens, marshes and swamps, North Coast coniferous forest.	Jun-Aug	2B.2	N	N	S1	G5T5	No
Carex livida Livid sedge	Bogs and Fens	Jun	2A	N	N	SH	G5	No
Carex lyngbyei Lyngbye's sedge	Brackish or freshwater marshes and swamps	Apr-Aug	2B.2	N	N	S3	G5	No
Carex saliniformis Deceiving sedge	Mesic sites of coastal prairie, coastal scrub, and meadows, seeps, marshes and swamps (coastal salt)	Jun-Jul	1B.2	N	N	S2	G2	No
Carex viridula ssp. Viridula Green yellow sedge	Bogs and fens, marshes and swamps (freshwater), north coast coniferous forest (mesic).	Jun-Nov	2B.3	N	N	S1.3	G5T5	No
Castilleja affinis ssp.litoralis Oregon coast paintbrush	Sandy sites in coastal bluff scrub and coastal scrub; coastal dunes.	Jun	2B.2	N	N	S3	G4G5T4	No
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	Coastal salt marshes and swamps.	Apr-Aug	1B.2	N	N	S2	G4T2	No
Castilleja mendocinensis (Castilleja latifolia ssp. Mendocinensis) Mendocino Coast paintbrush	Coastal bluff scrub, coastal scrub, closed-cone coniferous forest, coastal dunes, coastal prairie.	Apr-Aug	1B.2	N	N	S2	G2	No

Scientific Name (Synonyms) Common Name	Habitat found	Blooming Period	CRPR	Fed. Listing	State Listing	State Rank	Global Rank	Found?
Chorizanthe howellii Howell's spineflower	Sandy, often disturbed, areas of coastal prairie and coastal scrub, and coastal dunes	May - Jul	1B.2	FE	CT	S1	G1	No
Clarkia amoena ssp. whitneyi Whitney's farewell-to- spring	Coastal bluff scrub, coastal scrub.	Jun-Aug	1B.1	N	N	S1	G5T1	No
Collinsia corymbosa Round-headed Chinese-houses	Coastal dunes, coastal prairie.	Apr-June	1B.2	N	N	S1	G1	No
Cornus canadensis Bunchberry	Bogs and fens, meadows and seeps, North Coast coniferous forest.	May-Jul	2B.2	N	N	S2	G5	No
Cuscuta pacifica var. papillata Mendocino dodder	Coastal dunes (interdune depressions).	Jul-Oct	1B.2	N	N	S1	G5T1	No
Erigeron supplex Supple daisy	Coastal bluff scrub, coastal prairie.	May-Jul	1B.2	N	N	S2	G2	No
Erysimum concinnum Headland wallflower	Coastal bluff scrub, coastal dunes, coastal prairie.	Feb-Jul	1B.2	N	N	S3	G3	No
Erysimum menziesii (Erysimum menziesii ssp. eurekense, Erysimum menziesii ssp. menziesii, Erysimum menziesii ssp. yadonii) Menzies' wallflower	Localized on coastal dunes and coastal strand.	Mar-Sep	1B.1	FE	CE	S1	G1	No
Erythronium revolutum Coast\Mahogany fawn lily	Mesic, streambanks. Bogs and fens; broadleafed upland forests; North Coast coniferous forest.	Mar-Aug	2B.2	N	N	S3	G4	No
Fritillaria roderickii (Fritallaria biflora var. biflora) Roderick's fritillary	Coastal bluff scrub, coastal prairie, valley and foothill grassland.	Mar-May	1B.1	N	CE	S1.1	G1Q	No
Gilia capitata ssp.chamissonis Blue coast gilia	Coastal dunes, coastal scrub.	Apr-Jul	1B.1	N	N	S2	G5T2	No
Gilia capitata ssp. pacifica Pacific gilia	Coastal bluff scrub, openings in chaparral, coastal prairie, valley and foothill grassland.	Apr-Aug	1B.2	N	N	S2	G5T3T4	No
Gilia capitata ssp.tomentosa Woolly-headed gilia	Serpentinite, rocky, outcrops of coastal bluff scrub and calley and foothill grassland.	May-Jul	1B.1	N	N	S2	G5T2	No
Gilia millefoliata Dark-eyed gilia	Coastal dunes	Apr-Jul	1B.2	N	N	S2	G2	No
Glyceria grandis American manna grass	Bogs and fens, wet meadows and seeps, marshes, swamps,streambanks, and lake margins	Jun-Aug	2B.3	N	N	S3	G5	No
Hemizonia congesta ssp. Congesta Seaside tarplant	Sometimes roadsides.Valley and foothill grassland	Apr-Nov	1B.2	N	N	S1S2	G5T1T2	No
Hesperevax sparsiflora var. brevifolia Short-leaved evax	Sandy coastal bluffs; coastal dunes, coastal dune mat, and sandy openings in wet dune meadows. Coastal bluff scrub. Rocky, grassy slopes. In areas of sparse vegetation cover in sandy substrate.	Mar-Jun	1B.2	N	N	S2	G4T3	No
Hesperocyparis pygmaea (Cupressus pygmaea, Cupressus goveniana ssp. pigmaea, Callitropsis pygmaea) Pygmy cypress	Closed-cone coniferous forests, usually podzol-like	NA	1B.2	N	N	S1	G1	No

Scientific Name *(Synonyms)* Common Name	Habitat found	Blooming Period	CRPR	Fed. Listing	State Listing	State Rank	Global Rank	Found?
Horkelia marinensis Point Reyes horkelia	Sandy, coastal dunes, coastal scrub, coastal prairire	May-Sep	1B.2	N	N	S2	G2	No
Horkelia tenuiloba Thin-lobed horkelia	Mesic openings or sandy sites in broadleafed upland forests, chaparral, and valley and foothill grassland.	May-Aug	1B.2	N	N	S2	G2	No
Hosackia gracilis ***(Lotus formosissimus)*** Harlequin lotus	Wetlands, roadsides, Broadleafed upland forest, Coastal bluff scrub, Closed-cone coniferous forest, Cismontane woodland, Coastal prairie, Coastal scrub, Meadows and seeps, Marshes and swamps, North Coast coniferous forest, Valley and foothill grassland	Mar-Jul	4.2	N	N	S3	G4	No
Juncus supiniformis Hair-leaved rush	Bogs and fens; freshwater marshes and swamps near the coast.	Apr-Jul	2B.2	N	N	S1	G5	No
Kopsiopsis hookeri ***(Boschniakia hookeri)*** Small groundcone	North Coast conferous forest	Apr-Aug	2B.3	N	N	S1S2	G4G5	No
Lasthenia californica ssp.bakeri Baker's goldfields	Openings in closed-cone coniferous forest; coastal scrub; meadows and seeps; marshes and swamps.	Apr-Oct	1B.2	N	N	SH	G3TH	No
Lasthenia californica ssp. macrantha Perennial goldfields	Coastal bluff scrub, coastal dunes, and coastal scrub.	Jan-Nov	1B.2	N	N	S2	G3T2	No
Lasthenia conjugens Contra Costa goldfields	Mesic sites in cismontane woodlands, alkaline playas, valley and foothill grasslands, vernal pools	Mar-Jun	1B.1	FE	N	S1.1	G1	No
Lathyrus palustris Marsh Pea	Bogs and fens; mesic sites of coastal prairies, coastal scrub, lower montane coniferous forests, and North Coast coniferous forests.	Mar- Aug	2B.2	N	N	S2	G5	No
Lilium maritimum Coast lily	Broadleafed upland forests, closed-cone coniferous forests, coastal prairies, coastal scrub, freshwater marshes and swamps. Roadsides and roadside ditches.	May-Aug	1B.1	N	N	S2	G2	No
Microseris paludosa Marsh microseris/silverpuffs	Closed-cone coniferous forests, cismontane woodlands, coastal scrub, valley and foothill grasslands. *(A 1968 collection from Point Arena (3.2 km to N, between Hwy. 1 and beach) is the northernmost occurrence and is disjunct from southern populations.*	Apr-Jul	1B.2	N	N	S2	G2	No
Oenothera wolfii Wolf's evening- primrose	Sandy, usually mesic sites in coastal bluff scrub, coastal dunes, coastal prairie, and lower montane coniferous forests. *(Along roads on vertical cutbanks and in grassy median. On disturbed sterile soil; upper stabilized dunes; rocky slopes protected above strand; vertical cliffs above the ocean.)*	May-Oct	1B.1	N	N	S1	G2	No
Packera bolanderi var.bolanderi ***(Senecio bolanderi var. bolanderi)*** Seacoast ragwort	Sometimes roadsides, Coastal Scrub, North coast coniferous forest	Jan-Aug	2B.2	N	N	S2S3	G4T4	No
Phacelia insularis var.continentis North Coast phacelia	Sandy, sometimes rocky, sites in coastal bluff scrub; coastal dunes. *(Rocky, thin soil with native and non-native grasses and forbs. Sandy pastureland and grazed coastal prairie.)*	Mar-May	1B.2	N	N	S2	G2T2	No
Pinus contorta ssp.bolanderi Bolander's beach pine	Closed-cone coniferous forests with podzol-like soils. Associated with Mendocino cypress and bishop pine, and Mendocino pygmy cypress forests.	Jul-Aug	1B.2	N	N	S2	G5T2	No
Piperia candida White-flowered rein orchid	Sometimes serpentinite, Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest	Mar-Sep	1B.2	N	N	S3	G3	No

Scientific Name (Synonyms) Common Name	Habitat found	Blooming Period	CRPR	Fed. Listing	State Listing	State Rank	Global Rank	Found?
Pleuropogon hooverianus North Coast semaphore grass	open areas, mesic, broadleafed upland forest, meadows and seeps, North coast coniferous forest.	Apr-Jun	1B.1	N	CT	S2	G2	No
Potamogeton epihydrus Ribbonleaf pondweed	Marshes and swamps (assorted shallow freshwater)	Jun-Sep	2B.2	N	N	S2.2?	G5	No
Puccinellia pumila Dwarf alkali grass	Coastal salt marshes and swamps; meadows and seeps, mineral spring meadows.	Jul	2B.2	N	N	SH	G4?	No
Rhynchospora alba White beaked-rush	Bogs and fens (sometimes in Mendocino pygmy forests); meadows and seeps; marshes and swamps (freshwater).	Jul-Aug	2B.2	N	N	S2	G5	No
Sanguisorba officinalis Great burnet	Bogs and fens,broadleafed upland forests, meadows and seeps, marshes and swamps, North Coast coniferous forests, riparian forests, Serpentine seepage areas and along stream borders.	Jul-Oct	2B.2	N	N	S2	G5?	No
Sidalcea calycosa ssp.rhizomata Point Reyes checkerbloom	Freshwater marshes and swamps near the coast.	Apr-Sep	1B.2	N	N	S2	G5T2	No
Sidalcea malviflora ssp.patula Siskiyou checkerbloom	Often roadcuts, coastal bluff scrub; coastal prairie; North coast coniferous forest	May-Aug	1B.2	N	N	S2	G5T2	No
Sidalcea malviflora ssp. purpurea Purple-stemmed checkerbloom	Broadleafed upland forest, coastal prairie	May-Jun	1B.2	N	N	S1	G5T1	No
Trifolium buckwestiorum Santa Cruz clover	Gravelly margins of broadleafed upland forests, cismontane woodlands, coastal prairie. *(Common associates include Juncus bufonius, Soliva sessilis, Danthonia californica, and Bromus hordeaceus. In Mendocino Co., most collections from ~5 miles up Garcia River.)*	Apr-Oct	1B.1	N	N	S2	G2	No
Trifolium trichocalyx Monterey clover	Closed-cone coniferous forest (sandy, openings, burned areas).	Apr-Jun	1B.1	FE	CE	S1	G1	No
Triquetrella californica Coastal triquetrella	Soil of Coastal bluff scrub, coastal scrub,	NA	1B.2	N	N	S2	G2	No
Viola adunca Western dog violet	Yellow pine forest, red fir forest, lodgepole forest, redwood forest, mixed evergreen forest, subalpine forest, alpine fell-fields, wetland riparian. Common and widespread on open sea bluffs to red fir forest.	Apr-Aug	not ranked	N	N	?	?	No
Viola palustris Alpine marsh violet	Coastal Bogs and Fens; Coastal Scrub (mesic)	Mar-Aug	2B.2	N	N	S1S2	G5	No

Sensitive Natural Communities and Alliances Occuring in Coastal and Inland Mendocino County								
Alliance Scientific Name	**Association Scientific Name**	**Alliance Common Name**	**Alliance Global Rank**	**Alliance State Rank**	**Associciation Global Rank**	**Association Rank State**	**Rare ?**	**Present?**
Woodland and Forest Alliances, Associations, and Stands								
Abies grandis	*Abies grandis – Picea sitchensis / Gaultheria shallon / Polystichum munitum*	Grand fir forest	G4	S2	G1	S1	Y	No
	Abies grandis – Tsuga heterophylla / Polystichum munitum	Grand fir forest	G4	S2	G2	S1	Y	No
Acer macrophyllum	*Acer macrophyllum*	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Adenocaulon bicolor	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Corylus cornuta	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Dryopteris arguta	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Philadelphus lewisii	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Polystichum munitum	Bigleaf maple forest	G4	S3			Y	No
Acer negundo	*Acer negundo*	Box-elder forest	G5	S2			Y	No
	Acer negundo – Salix gooddingii	Box-elder forest	G5	S2			Y	No
Aesculus californica	*Aesculus californica*	California buckeye groves	G3	S3			Y	No
	Aesculus californica – Umbellularia californica / Diplacus aurantiacus	California buckeye groves	G3	S3	G3	S3?	Y	No
	Aesculus californica – Umbellularia californica / Holodiscus discolor	California buckeye groves	G3	S3			Y	No
	Aesculus californica / Datisca glomerata	California buckeye groves	G3	S3			Y	No
	Aesculus californica / Lupinus albifrons	California buckeye groves	G3	S3			Y	No
	Aesculus californica / Toxicodendron diversilobum / moss	California buckeye groves	G3	S3			Y	No
Alnus rhombifolia	*Alnus rhombifolia*	White alder groves	G4	S4	G2Q		Y	No
Arbutus menziesii	*Arbutus menziesii – Quercus agrifolia*	Madrone forest	G4	S3	G3	S3?	Y	No
	Arbutus menziesii – Umbellularia californica	Madrone forest	G4	S3			Y	No
	Arbutus menziesii – Umbellularia californica – (Notholithocarpus densiflorus)	Madrone forest	G4	S3	G3	S3?	Y	No
	Arbutus menziesii – Umbellularia californica – Quercus kelloggii	Madrone forest	G4	S3	G3	S3?	Y	No
Fraxinus latifolia	*Fraxinus latifolia*	Oregon ash groves	G4	S3			Y	No
	Fraxinus latifolia – Alnus rhombifolia	Oregon ash groves	G4	S3			Y	No
	Fraxinus latifolia / Cornus sericea	Oregon ash groves	G4	S3			Y	No
	Fraxinus latifolia / Toxicodendron diversilobum	Oregon ash groves	G4	S3			Y	No
Hesperocyparis macrocarpa	*Hesperocyparis macrocarpa*	Monterey cypress stands	G1	S1			Y	No
Hesperocyparis pigmaea	*Hesperocyparis pigmaea – Pinus contorta ssp. bolanderi – Pinus muricata / Rhododendron macrophyllum*	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea – Pinus contorta ssp. bolanderi / Rhododendron columbianum	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea – Pinus muricata / Arctostaphylos nummularia	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea / Cladina impexa	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea / Cladonia bellidiflora	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea / Usnea subfloridana	Mendocino pygmy cypress woodland	G1	S1			Y	No
Notholithocarpus densiflorus	*Notholithocarpus densiflorus*	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Acer circinatum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Acer macrophyllum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Arbutus menziesii	Tanoak forest	G4	S3	G3	S3	Y	No
	Notholithocarpus densiflorus – Arbutus menziesii / Ceanothus integerrimus	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Calocedrus decurrens / Festuca californica	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Chamaecyparis lawsoniana	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Chrysolepis chrysophylla	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Cornus nuttallii	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Cornus nuttallii / Toxicodendron diversilobum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Pinus lambertiana / Toxicodendron diversilobum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Quercus chrysolepis	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Quercus kelloggii	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Umbellularia californica	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Corylus cornuta	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Frangula californica	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Gaultheria shallon	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Mahonia nervosa	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Quercus vaccinilfolia – Rhododendron macrophyllum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Toxicodendron diversilobum – Lonicera hispidula var. vacillans	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Vaccinium ovatum	Tanoak forest	G4	S3			Y	No
Picea sitchensis	*Picea sitchensis – Tsuga heterophylla*	Sitka spruce forest	G5	S2			Y	No
	Picea sitchensis / Maianthemum dilatatum	Sitka spruce forest	G5	S2			Y	No
	Picea sitchensis / Polystichum munitum	Sitka spruce forest	G5	S2	G4?		Y	No
	Picea sitchensis / Rubus spectabilis	Sitka spruce forest	G5	S2	G3		Y	No
Pinus contorta ssp. contorta	*Pinus contorta ssp. contorta*	Beach pine forest	G5	S3			Y	No
	Pinus contorta ssp. contorta – Picea sitchensis	Beach pine forest	G5	S3			Y	No
Pinus lambertiana	*Pinus lambertiana – Chrysolepis chrysophylla / Quercus vaccinilfolia – Quercus sadleriana*	Sugar pine forest	G4	S3			Y	No
Pinus muricata – Pinus radiata	*Pinus muricata*	Bishop pine – Monterey pine forest	G3	S3	G3?	S3?	Y	Yes
	Pinus muricata – (Arbutus menziesii) / Vaccinium ovatum	Bishop pine – Monterey pine forest	G3	S3	G2	S2	Y	No
	Pinus muricata – Chrysolepis chrysophylla / Arctostaphylos nummularia	Bishop pine – Monterey pine forest	G3	S3	G2	S2	Y	No
	Pinus muricata – Notholithocarpus densiflorus	Bishop pine – Monterey pine forest	G3	S3	G3	S3	Y	No
	Pinus muricata – Pseudotsuga menziesii	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus muricata / Arctostaphylos glandulosa	Bishop pine – Monterey pine forest	G3	S3	G2	S2	Y	No
	Pinus muricata / Arctostaphylos spp.	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus muricata / Comarostaphylis diversifolia ssp. planifolia	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus muricata / Xerophyllum tenax	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata – Pinus muricata / Arctostaphylos tomentosa – Arctostaphylos hookeri	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata – Quercus agrifolia / Toxicodendron diversilobum	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata / Arctostaphylos tomentosa – Vaccinium ovatum	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata / Toxicodendron diversilobum	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata plantations	Bishop pine – Monterey pine forest	G3	S3	GNR	SNR	N	No
Pseudotsuga menziesii – Notholithocarpus densiflorus	*Pseudotsuga menziesii – Notholithocarpus densiflorus*	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Acer macrophyllum) / Polystichum munitum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Calocedrus decurrens) / Festuca californica	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana – Alnus rubra) / riparian	Douglas fir – tanoak forest	G3	S3			Y	No

Sensitive Natural Communities and Alliances Occuring in Coastal and Inland Mendocino County								
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	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana – Tsuga heterophylla) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana – Umbellularia californica) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Acer circinatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Mahonia nervosa / Linnaea borealis	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Vaccinium ovatum – Rhododendron occidentale	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Vaccinium parvifolium	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chrysolepis chrysophylla) / Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chrysolepis chrysophylla) / Pteridium aquilinum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chrysolepis chrysophylla) / Rhododendron macrophyllum – Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Pinus lambertiana)	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Mahonia nervosa	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Mahonia nervosa – Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / rockpile	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Toxicodendron diversilobum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis, Quercus kelloggii) / Toxicodendron diversilobum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus kelloggii) / Rosa gymnocarpa	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Umbellularia californica) / Toxicodendron diversilobum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Iris	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – Thuja plicata / Vaccinium ovatum – Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Acer circinatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Achlys triphylla	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Aralia californica	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Chimaphila umbellata	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Cornus nuttallii	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Corylus cornuta	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Mahonia nervosa	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Quercus vaccinilifolia – Holodiscus discolor	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Rhododendron macrophyllum	Douglas fir – tanoak forest	G3	S3	G2	S2	Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Taxus brevifolia	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Toxicodendron diversilobum – (Lonicera hispidula)	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Vaccinium ovatum – (Gaultheria shallon)	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Whipplea modesta	Douglas fir – tanoak forest	G3	S3			Y	No
Salix laevigata	*Salix laevigata*	Red willow thickets	G3	S3	GNR		Y	No
	Salix laevigata – Cornus sericea / Scirpus microcarpus	Red willow thickets	G3	S3	G3	S3?	Y	No
	Salix laevigata – Salix lasiolepis	Red willow thickets	G3	S3			Y	No
	Salix laevigata – Salix lasiolepis / Artemisia douglasiana – Rubus ursinus	Red willow thickets	G3	S3			Y	No
	Salix laevigata – Salix lasiolepis / Baccharis salicifolia	Red willow thickets	G3	S3			Y	No
	Salix laevigata / Rosa californica	Red willow thickets	G3	S3			Y	No
	Salix laevigata / Salix lasiolepis / Artemisia douglasiana	Red willow thickets	G3	S3			Y	No
Sequoia sempervirens	*Sequoia sempervirens*	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Acer macrophyllum – Umbellularia californica	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens – Acer macrophyllum / Polypodium californicum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Alnus rubra / Rubus spectabilis	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Arbutus menziesii	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Arbutus menziesii / Vaccinium ovatum	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens – Chrysolepis chrysophylla / Arctostaphylos glandulosa	Redwood forest	G3	S3	G2	S2?	Y	No
	Sequoia sempervirens – Hesperocyparis pigmaea	Redwood forest	G3	S3	G1	S1	Y	No
	Sequoia sempervirens – Notholithocarpus densiflorus / Carex globosa – Iris douglasiana	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Notholithocarpus densiflorus / Vaccinium ovatum	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens – Pinus muricata	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii – Arbutus menziesii	Redwood forest	G3	S3			Y	No

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	Sequoia sempervirens – Pseudotsuga menziesii – Notholithocarpus densiflorus	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii – Notholithocarpus densiflorus – Chamaecyparis lawsoniana / Vaccinium ovatum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii – Umbellularia californica	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii / Gaultheria shallon	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii / Rhododendron macrophyllum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii / Vaccinium ovatum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Tsuga heterophylla / Polystichum munitum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Tsuga heterophylla / Rubus spectabilis	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Tsuga heterophylla / Vaccinium ovatum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Umbellularia californica	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens / (Pteridium aquilinum) – Woodwardia fimbriata	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens / Blechnum spicant	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Mahonia nervosa	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Marah fabaceus – Vicia sativa ssp. nigra	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Oxalis oregana	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Polystichum munitum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Pteridium aquilinum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Pteridium aquilinum – Trillium ovatum	Redwood forest	G3	S3			Y	No
Sequoiadendron giganteum	*Sequoiadendron giganteum – Pinus lambertiana / Cornus nuttallii*	Giant sequoia forest	G3	S3			Y	No
Tsuga heterophylla	*Tsuga heterophylla – Pseudotsuga menziesii – Chamaecyparis lawsoniana*	Western hemlock forest	G5	S2			Y	No
Umbellularia californica	*Umbellularia californica*	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Acer macrophyllum	California bay forest	G4	S3	G3	S3?	Y	No
	Umbellularia californica – Aesculus californica / Holodiscus discolor	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Alnus rhombifolia	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Arbutus menziesii	California bay forest	G4	S3			Y	No
	Umbellularia californica – Juglans californica / Ceanothus spinosus	California bay forest	G4	S3	G3		Y	No
	Umbellularia californica – Notholithocarpus densiflorus	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Platanus racemosa	California bay forest	G4	S3	G3		Y	No
	Umbellularia californica – Pseudotsuga menziesii / Rhododendron occidentale	California bay forest	G4	S3	G3	S3?	Y	No
	Umbellularia californica – Quercus agrifolia	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus agrifolia / (Genista monspessulana)	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus agrifolia / Heteromeles arbutifolia – Toxicodendron diversilobum / Melica torreyana	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus agrifolia / Toxicodendron diversilobum (Corylus cornuta)	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus chrysolepis	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus wislizeni	California bay forest	G4	S3			Y	No
	Umbellularia californica / Ceanothus oliganthus	California bay forest	G4	S3			Y	No
	Umbellularia californica / Polystichum munitum	California bay forest	G4	S3			Y	No
	Umbellularia californica / Toxicodendron diversilobum	California bay forest	G4	S3			Y	No
Shrub Alliance, Associations, and Stands								
Arctostaphylos (nummularia, sensitiva)	*Arctostaphylos nummularia*	Glossy leaf manzanita chaparral	G2G3	S2S3	G2	S2	Y	No
Cornus sericea	*Cornus sericea*	Red osier thickets	G4	S3?			Y	No
	Cornus sericea – Salix exigua	Red osier thickets	G4	S3?			Y	No
	Cornus sericea – Salix lasiolepis	Red osier thickets	G4	S3?			Y	No
	Cornus sericea / Senecio triangularis	Red osier thickets	G4	S3?			Y	No
Diplacus aurantiacus	*Diplacus aurantiacus*	Bush monkeyflower scrub	G3	S3?	G3		Y	No
Garrya elliptica		Coastal silk tassel scrub	G3?	S3?				No
Holodiscus discolor	*Holodiscus discolor – Arctostaphylos patula*	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor – Keckiella corymbosa	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor – Sambucus racemosa	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor / Achnatherum occidentale – Eriogonum nudum	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor / Mimulus suksdorfii	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor / Sedum obtusatum ssp. boreale – Cryptogramma acrostichoides	Ocean spray brush	G4	S3			Y	No
Lupinus chamissonis – Ericameria ericoides	*Ericameria ericoides*	Silver dune lupine – mock heather scrub	G3	S3			Y	No
	Lupinus chamissonis	Silver dune lupine – mock heather scrub	G3	S3			Y	No
	Lupinus chamissonis – Ericameria ericoides	Silver dune lupine – mock heather scrub	G3	S3	G2		Y	No
Morella californica	*Morella californica*	Wax myrtle scrub	G3	S3			Y	No
Quercus chrysolepis (shrub)	*Quercus chrysolepis*	Canyon live oak chaparral	G3	S3			Y	No
	Quercus chrysolepis – Ceanothus integerrimus	Canyon live oak chaparral	G3	S3			Y	No
Rhododendron columbianum	*Rhododendron columbianum*	Western Labrador-tea thickets	G4	S2?			Y	No
	Rhododendron columbianum / Pinus contorta ssp. murrayana	Western Labrador-tea thickets	G4	S2?			Y	No
Rhododendron occidentale		Western azalea patches	G3	S2?				No
Rosa californica	*Rosa californica*	California rose briar patches	G3	S3			Y	No
	Rosa californica – Baccharis pilularis	California rose briar patches	G3	S3			Y	No
	Rosa californica / Schoenoplectus spp.	California rose briar patches	G3	S3			Y	No
Rubus (parviflorus, spectabilis, ursinus)	*Gaultheria shallon – Rubus spectabilis – Rubus parviflorus*	Coastal brambles	G4	S3			Y	No
	Ribes aureum	Coastal brambles	G4	S3			Y	No
	Rubus parviflorus	Coastal brambles	G4	S3			Y	No
	Rubus parviflorus – Rubus spectabilis – Rubus ursinus	Coastal brambles	G4	S3			Y	No
	Rubus spectabilis	Coastal brambles	G4	S3			Y	No
	Rubus ursinus	Coastal brambles	G4	S3			Y	No
Salix lasiolepis	*Salix lasiolepis*	Arroyo willow thickets	G4	S4			Y	No
Salix sitchensis	*Salix sitchensis*	Sitka willow thickets	G4	S3?			Y	No
Sambucus nigra	*Sambucus nigra*	Blue elderberry stands	G3	S3			Y	No
	Sambucus nigra – Heteromeles arbutifolia	Blue elderberry stands	G3	S3			Y	No
	Sambucus nigra / Leymus condensatus	Blue elderberry stands	G3	S3			Y	No
Herbaceous Alliance, Associations, and Stands								
Abronia latifolia – Ambrosia chamissonis	*Abronia latifolia – Erigeron glaucus*	Dune mat	G3	S3			Y	No
	Abronia latifolia – Leymus mollis	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Abronia maritima – Cakile maritima	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Abronia umbellata	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Eriophyllum staechadifolium – (Lupinus arboreus)	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Malacothrix incana – Carpobrotus chilensis – Poa douglasii	Dune mat	G3	S3			Y	No
	Artemisia pycnocephala – Calystegia soldanella	Dune mat	G3	S3			Y	No
	Artemisia pycnocephala – Cardionema ramosissimum	Dune mat	G3	S3	G3		Y	No
	Artemisia pycnocephala – Ericameria ericoides	Dune mat	G3	S3			Y	No

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Alliance Scientific Name	**Association Scientific Name**	**Alliance Common Name**	**Alliance Global Rank**	**Alliance State Rank**	**Associciation Global Rank**	**Association Rank State**	**Rare ?**	**Present?**
	Artemisia pycnocephala – Poa douglasii	Dune mat	G3	S3			Y	No
	Artemisia pycnocephala – Polygonum paronychia	Dune mat	G3	S3			Y	No
	Cakile maritima – Abronia maritima	Dune mat	G3	S3			Y	No
	Cakile maritima – Ambrosia chamissonis – Carpobrotus edulis	Dune mat	G3	S3			Y	No
	Calystegia macrostegia – Erigeron glaucus – Malacothrix incana	Dune mat	G3	S3			Y	No
	Poa douglasii – Lathyrus littoralis	Dune mat	G3	S3			Y	No
Bromus carinatus – Elymus glaucus	*Bromus carinatus*	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
	Elymus glaucus	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
	Pteridium aquilinum – Grass	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
	Thermopsis californica – Bromus carinatus – Annual Brome	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
Calamagrostis canadensis	*Calamagrostis canadensis*	Bluejoint reed grass meadows	G5	S3	GNR		Y	No
Calamagrostis canadensis	*Calamagrostis canadensis – Carex utriculata*	Bluejoint reed grass meadows	G5	S3			Y	No
	Calamagrostis canadensis – Dodecatheon redolens	Bluejoint reed grass meadows	G5	S3			Y	No
	Calamagrostis canadensis – Scirpus microcarpus	Bluejoint reed grass meadows	G5	S3			Y	No
Calamagrostis nutkaensis	*Calamagrostis nutkaensis*	Pacific reed grass meadows	G4	S2			Y	No
	Calamagrostis nutkaensis – Carex (obnupta) – Juncus (patens)	Pacific reed grass meadows	G4	S2			Y	No
	Calamagrostis nutkaensis / Baccharis pilularis	Pacific reed grass meadows	G4	S2			Y	No
Camassia quamash	*Camassia quamash / Sphagnum subsecundum*	Small camas meadows	G4?	S3?			Y	No
Carex barbarae	*Carex barbarae*	White-root beds	G2?	S2?			Y	No
Carex densa	*Carex densa – Juncus xiphioides*	Dense sedge marshes	G2?	S2?			Y	No
	Carex densa – Lolium perenne – Juncus spp.	Dense sedge marshes	G2?	S2?			Y	No
Carex nudata	*Carex nudata*	Torrent sedge patches	G3	S3			Y	No
Carex obnupta	*Carex obnupta*	Slough sedge swards	G4	S3			Y	No
	Carex obnupta – Juncus lescurii	Slough sedge swards	G4	S3			Y	No
	Carex obnupta – Juncus patens	Slough sedge swards	G4	S3			Y	No
Danthonia californica	*Danthonia californica*	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – (Briza maxima – Vulpia bromoides)	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – Aira caryophyllea	California oat grass prairie	G4	S3	G3		Y	No
	Danthonia californica – Arrhenatherum elatius	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – Elymus elymoides	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – Nassella pulchra	California oat grass prairie	G4	S3			Y	No
Darlingtonia californica	*Darlingtonia californica*	California pitcher plant fens	G4?	S3			Y	No
Deschampsia cespitosa	*Deschampsia cespitosa*	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Anthoxanthum odoratum	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Bistorta bistortoides	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Danthonia californica	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Eryngium armatum	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Holcus lanatus	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Horkelia marinensis	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa var. holciformis	Tufted hair grass meadows	G5	S4?			Y	No
Elymus glaucus Montane	*Elymus glaucus – Carex feta*	Blue wild rye montane meadows	G3?	S3?	G2?		Y	No
	Elymus glaucus – Carex pellita	Blue wild rye montane meadows	G3?	S3?			Y	No
	Elymus glaucus – Heracleum maximum	Blue wild rye montane meadows	G3?	S3?			Y	No
Eryngium aristulatum	*Eryngium aristulatum – Lupinus bicolor*	California button-celery patches	G2	S2			Y	No
	Hemizonia congesta	California button-celery patches	G2	S2			Y	No
Festuca idahoensis	*Festuca californica*	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Achillea millefolium	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Bromus carinatus	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Danthonia californica	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Festuca rubra	Idaho fescue grassland	G4	S3?			Y	No
Festuca rubra	*Festuca rubra*	Red fescue grassland	G4	S3?			Y	No
Frankenia salina	*Frankenia salina*	Alkali heath marsh	G4	S3			Y	No
	Frankenia salina – Distichlis spicata	Alkali heath marsh	G4	S3			Y	No
	Frankenia salina – Limonium californicum – Monanthochloe littoralis – Sarcocornia pacifica	Alkali heath marsh	G4	S3			Y	No
Glyceria (elata, striata)	*Glyceria elata*	Manna grass meadows	G4	S3?			Y	No
	Glyceria elata – Lotus oblongifolius	Manna grass meadows	G4	S3?			Y	No
	Glyceria elata – Scirpus microcarpus	Manna grass meadows	G4	S3?			Y	No
	Glyceria striata	Manna grass meadows	G4	S3?			Y	No
Grindelia (camporum, stricta)	*Grindelia stricta*	Gum plant patches	G2G3	S2S3			Y	No
Heterotheca (oregona, sessiliflora)	*Heterotheca oregona*	Goldenaster patches	G3	S3	G3	S3	Y	No
	Heterotheca sessiliflora	Goldenaster patches	G3	S3	G3	S3	Y	No
Hordeum brachyantherum	*Hordeum brachyantherum*	Meadow barley patches	G2	S2	G2		Y	No
	Hordeum brachyantherum – Poa pratensis	Meadow barley patches	G2	S2			Y	No
	Hordeum brachyantherum – Polypogon monspeliensis	Meadow barley patches	G2	S2			Y	No
Hydrocotyle (ranunculoides, umbellata)	*Hydrocotyle ranunculoides*	Mats of floating pennywort	G4	S3?			Y	No
	Hydrocotyle ranunculoides – Schoenoplectus pungens	Mats of floating pennywort	G4	S3?			Y	No
Isoetes (bolanderi, echinospora, howellii, nuttallii, occidentalis)		Quillwort beds	G3	S3?				No
Juncus (oxymeris, xiphioides)	*Juncus oxymeris*	Iris-leaf rush seeps	G2?	S2?			Y	No
	Juncus xiphioides	Iris-leaf rush seeps	G2?	S2?			Y	No
Juncus lescurii	*Juncus (lescurii) – Distichlis spicata*	Salt rush swales	G3	S2?			Y	No
	Juncus lescurii	Salt rush swales	G3	S2?			Y	No
Lasthenia glaberrima	*Lasthenia glaberrima – Lupinus bicolor*	Smooth goldfields vernal pool bottoms	G2	S2			Y	No
	Lasthenia glaberrima – Pleuropogon californicus	Smooth goldfields vernal pool bottoms	G2	S2			Y	No
	Lasthenia glaberrima – Trifolium variegatum	Smooth goldfields vernal pool bottoms	G2	S2			Y	No
Leymus cinereus – Leymus triticoides	*Leymus triticoides – Bromus spp. – Avena spp.*	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
	Leymus triticoides – Carduus pycnocephalus – Geranium dissectum	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
	Leymus triticoides – Lolium perenne	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
	Leymus triticoides – Poa secunda	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
Leymus condensatus	*Leymus condensatus*	Giant wild rye grassland	G3	S3			Y	No
Leymus mollis	*Leymus mollis – Abronia latifolia – (Cakile sp.)*	Sea lyme grass patches	G4	S2			Y	No
	Leymus mollis – Ammophila arenaria	Sea lyme grass patches	G4	S2			Y	No
	Leymus mollis – Carpobrotus edulis	Sea lyme grass patches	G4	S2			Y	No
Mimulus (guttatus)	*Mimulus guttatus*	Common monkey flower seeps	G4?	S3?			Y	No
	Mimulus guttatus – (Mimulus spp.)	Common monkey flower seeps	G4?	S3?			Y	No
	Mimulus guttatus – Vulpia microstachys	Common monkey flower seeps	G4?	S3?			Y	No
North Coast Bluff Scrub								No
Nuphar lutea		Yellow pond-lily mats	G5	S3?				No
Oenanthe sarmentosa	*Oenanthe sarmentosa*	Water-parsley marsh	G4	S2?			Y	No
Oxyria digyna	*Draba lemmonii – Oxyria digyna*	Mountain sorrel patches	G4	S3?			Y	No
Poa secunda	*Poa secunda – Bromus rubens*	Curly blue grass grassland	G4	S3?			Y	No
	Poa secunda ssp. secunda	Curly blue grass grassland	G4	S3?			Y	No
Sarcocornia pacifica (Salicornia depressa)	*Salicornia bigelovii*	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Atriplex prostrata	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Bolboschoenus maritimus	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Brassica nigra	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Cotula coronopifolia	Pickleweed mats	G4	S3			Y	No

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	Sarcocornia pacifica – Distichlis spicata	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Echinochloa crus-galli – Polygonum – Xanthium strumarium	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Frankenia salina	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Grindelia stricta	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Jaumea carnosa	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Jaumea carnosa – Distichlis spicata	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Lepidium latifolium	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Spartina foliosa	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica / algae	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica / annual grasses (Polypogon, Hordeum, Lolium)	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica Managed	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica Tidal	Pickleweed mats	G4	S3			Y	No
Schoenoplectus (acutus, californicus)	*Schoenoplectus californicus*	Hardstem and California bulrush marshes	GU	S3S4			Y	No
	Schoenoplectus californicus – Schoenoplectus acutus	Hardstem and California bulrush marshes	GU	S3S4			Y	No
	Schoenoplectus californicus – Schoenoplectus acutus / Rosa californica	Hardstem and California bulrush marshes	GU	S3S4			Y	No
	Schoenoplectus californicus – Typha latifolia	Hardstem and California bulrush marshes	GU	S3S4			Y	No
Scirpus microcarpus	*Scirpus microcarpus*	Small-fruited bulrush marsh	G4	S2	G4		Y	No
Sparganium (angustifolium)	*Sparganium angustifolium*	Mats of bur-reed leaves	G4	S3?			Y	No
Trifolium variegatum	*Trifolium variegatum*	White-tip clover swales	G3?	S3?			Y	No
	Trifolium variegatum – Juncus bufonius	White-tip clover swales	G3?	S3?			Y	No
	Trifolium variegatum – Lolium perenne – Leontodon saxatilis	White-tip clover swales	G3?	S3?			Y	No

Special-Status Wildlife with Potential Occurrence on the Project Site.								
Scientific name	Common Name	**Federal Status**	**State Status**	**G**	**S**	**Organization: Code**	**Habitat**	**Observed?**
INVERTEBRATES								
Helminthoglypta arrosa pomoensis	Pomo bronze shoulderband snail	None	None	G2G3T1	S1	IUCN:DD	Found near the coast in heavily-timbered redwood canyons of Mendocino County, from Big River and Russian Gulch watersheds. Found under redwoods. Generally, in somewhat moist duff. Found in scrub in forest opening under a power line in Russian Gulch.	No
Bombus calignosus	Obscure Bumblebee	None	None	G4?	S1S2	IUCN_VU	Inhabits open grassy coastal prairies and Coast Range meadows. Nesting occurs underground as well as above ground in abandoned bird nests. Males patrol circuits in search of mates. Reported to DFW as within 5 miles of project site.is an This species is very similar to the common yellow-faced bumblebee (Bombus vosnesenskii), differentiated by the structure of the male genitalia. he obscure bumblebee tends to have longer hairs, however, and yellow hairs are found on the underside of the abdomen.	No
Bombus occidentalis	Western bumble bee	None	None	GU	S1	XERCES:IM	Populations in central California have declined since the 1990's. It visits flowers in a variety of habitats. Identified by a white patch on its abdomen hind tip. None recorded from coastal Mendocino County at http://www.xerces.org/bumblebees.	No
Coelus globosus	Globose dune beetle	None	None	G1	S1	IUCN:VU	Subterranean beetle that tunnels through sand under dune vegetation. Since coastal dune habitat in California is diminishing, the beetle is a special-status species.	No
Lycaeides argyrognomon lotis	lotis blue butterfly	Endangered	None	G5TH	SH	XERCES:CI	Not seen since 1983, it is primarily from Mendocino County but historically from northern Sonoma and possibly Marin Counties. Inhabits wet meadows, damp coastal prairie, and potentially bogs or poorly-drained sphagnum-willow bogs where soils are waterlogged and acidic. Presumed host plant is *Hosackia gracilis*.	No
Noyo interessa	Ten Mile shoulderband snail	None	None	G2	S2	None	Known from a few locations in Mendocino County with limited habitat information. Known from Ten Mile Dunes.	No
Speyeria zerene behrensii	Behren's silverspot butterfly	Endangered	None	G5T1	S1	XERCES:CI	Historically from near the City of Mendocino, Mendocino County, south to the area of Salt Point State Park, Sonoma County. Now presumed to be from Manchester south to Salt Point area. Inhabits coastal terrace prairie with caterpillar host plants: violet (*Viola adunca*) and adult nectar sources: thistles, asters, etc.	No
FISH								
Entosphenus tridentatus	Pacific lamprey	None	None	G5	S4	AFS:VU	Anadromous lamprey found in freshwater rivers around the Pacific Rim, from Japan to Baja California. Adult Pacific Lamprey spawn in habitat similar to salmon: low gradient stream reaches, in gravel, often at the tailouts of pools and riffles.	No
Lampetra ayresii	River lamprey	None	None	G4	S4	AFS:VU DFG:SSC	Anadromous lamprey that uses riffle and side channel habitats for spawning and for ammocoete rearing where good water quality is essential. Adult Pacific Lamprey spawn in habitat similar to salmon: low gradient stream reaches, in gravel, often at the tailouts of pools and riffles.	No
Oncorhynchus kisutch	Coho salmon - southern Oregon / northern California ESU	Threatened	Threatened	G4T2Q	S2?	AFS:TH DFG:SSC	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	No
Oncorhynchus mykiss irideus	steelhead-northern California DPS	Threatened	None	G5T2Q	S2	AFS:TH DFG:SSC	Cool, swift, shallow water and clean loose gravel for spawning.	No
Oncorhynchus tshawytscha	chinook salmon – California coastal ESU	Threatened	None	G5	S2	AFS:TH	Adults depend on pool depth and volume, amount of cover, and proximity to gravel. Water temps >27° C lethal to adults.	No
Lavinia symmetricus navarroensis	Navarro roach	None	None	G5T1T2	S1S2	DFG:SSC	Habitat generalists. Found in warm intermittent streams as well as cold, well-aerated streams. Found in the lower, warmer reaches of streams in the Russian and Navarro River drainages.	No
Lavinia symmetricus parvipinnis	Gualala roach	None	None	G5T1T2	S1S2	DFG:SSC	Habitat generalists. Found in warm intermittent streams as well as cold, well-aerated streams.	No
Eucyclogobius newberry	tidewater goby	Endangered	None	G3	S2S3	AFS:EN DFG:SSC IUCN:VU	Brackish water habitats along the California coast from Agua Hedionda lagoon, San Diego Co. to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	No
AMPHIBIANS & REPTILES								
Rhyacotriton variegatus	southern torrent (=seep) salamander	None	None	G3G4	S2S3	DFG:SSC IUCN:LC USFS:S	Found in Coastal redwood, Douglas fir, mixed conifer, montane riparian, and montane hardwood-conifer forests from northern California south to Point Arena. Aquatic habitat includes permanent cold creeks, steams and seepages with low water flow; associated with moss-covered rocks within trickling water and the splash zone of waterfalls; old-growth coniferous forests with closed canopy; <50% cobble in creeks, remainder mixture of pebble, gravel and sand.	No
Ascaphus truei	Pacific tailed frog	None	None	G4	S2S3	DFG:SSC IUCN:LC	Occurs in montane hardwood-conifer, redwood, Douglas-fir and ponderosa pine habitats. Coastal from Anchor Bay, Mendocino Co. to Oregon border. Cold, clear, rocky streams in wet forests. They do not inhabit ponds or lakes. A rocky streambed is necessary for cover for adults, eggs, and larvae. After heavy rains, adults may be found in the woods away from the stream.	No
Rana aurora aurora	northern red-legged frog	None	None	G4T4	S2?	DFG:SSC USFS:S	Found in humid forests, woodlands, grasslands, and streamsides in northwestern California. Generally near permanent water, but can be found far from water, in damp woods and meadows, during non-breeding season. Integration zone between northern and California species is between Manchester and Elk.	No
Rana aurora draytonii	California red-legged frog	Threatened	None	G4T2T3	S2S3	DFG:SSC IUCN:VU	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	No
Rana boylii	foothill yellow-legged frog	None	None	G3	S2S3	BLM:S DFG:SSC IUCN:NT USFS:S	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying.	No
Emys marmorata marmorata	western pond turtle	None	None	G3G4	S3	BLM:S DFG:SSC IUCN:VU USFS:S	Former scientific name: *Clemmys marmorata marmorata*. Associated with permanent or nearly permanent water in a wide variety of habitats. Requires basking sites. Nests sites may be found up to 0.5 km from water.	No
BIRDS								
Phalacrocorax auritus	double-crested cormorant (nesting colony)	None	None	G5	S3	DFG:WL IUCN:LC	Rookery site: colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	No
Phalacrocorax pelagicus	pelagic cormorant	None	None	N/A	N/A	IUCN:LC	Rookery site: Nests on islands or coasts on narrow ledges, steep slopes, other inaccessible locations.	Yes
Ardea alba	great egret (nesting colony)	None	None	G5	S4	CDF:S IUCN:LC	Rookery: colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	No
Ardea herodias	great blue heron (nesting colony)	None	None	G5	S4	CDF:S IUCN:LC	Rookery: colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	No
Egretta thula	Snowy egret (nesting colony)	None	None	G5	S4	CDF:S IUCN:LC	Rookery: colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	No
Accipiter cooperii	Cooper's hawk (nesting)	None	None	G5	S3	DFG:WL IUCN:LC	Nesting: woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	No

Scientific name	Common Name	Federal Status	State Status	G	S	Organization: Code	Habitat	Observed?
Accipiter gentilis	northern goshawk (nesting)	None	None	G5	S3	BLM:S CDF:S DFG:SSC IUCN:LC USFS:S	Nesting: within and in vicinity of coniferous forest. Uses old nests, and maintains alternate sites. Usually nests on north slopes, near water. Red fir, lodge pole pine, Jeffrey pine, and aspens are typical nest trees. Northern goshawks typically nest in conifer forests containing large trees and an open understory on the west slope of the Sierra. There is historic nesting in Big River and Pudding Creek. Winter migrant on the coast.	No
Accipiter striatus	sharp-shinned hawk (nesting)	None	None	G5	S3	DFG:WL	Nesting: ponderosa pine, black oak, riparian deciduous, mixed conifer and Jeffrey pine habitats. Prefers riparian areas. North-facing slopes, with plucking perches are critical requirements. Nests usually within 275 ft. of water. Nests in dense, even-aged, single- layered forest canopy, usually nests in dense, pole and small-tree stands of conifers, which are cool, moist, well shaded, with little ground-cover, near water.	No
Aquila chrysaetos	golden eagle (nesting & wintering)	None	None	G5	S3	CDF:S DFG:FP DFG:WL IUCN:LC USFWS:BCC	Nesting and wintering: rolling foothills mountain areas, sage-juniper flats, desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	No
Buteo regalis	ferruginous hawk (wintering)	None	None	G4	S3S4	DFG:WL IUCN:LC USFWS:BCC	Usually east of the coastal belt, uncommon migrant in coastal Mendocino County seen in open areas such as Bald Hill and Manchester. Feeding habitat in open, treeless areas. Does not breed in California.	No
Circus cyaneus	Northern harrier (nesting)	None	None	G5	S3	DFG:SSC IUCN:LC	Northern harriers prefer sloughs, wet meadows, marshlands, swamps, prairies, plains, grasslands, and shrublands and perch on structures such as fence posts.Nesting habitat: nest on the ground, usually near water, or in tall grass, open fields, clearings, or on the water on a stick foundation, willow clump, or sedge tussock. Most nests built within patches of dense, often tall, vegetation (e.g., cattails) in undisturbed areas. They usually nest near hunting grounds.Foraging: They need open, low woody or herbaceous vegetation for nesting and hunting	No
Elanus leucurus	white-tailed kite (nesting)	None	None	G5	S3	DFG:FP IUCN:LC	Nesting: rolling foothills/valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland, open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching. Winter congregation of at least 20 birds seen at Manchester State Park in early 2000's. One nest known from a THP in Albion ~2006; nest was at the edge of conifer forest with no pasture immediately adjacent.	No
Haliaeetus leucocephalus	bald eagle (nesting & wintering)	Delisted	Endangered	G5	S2	CDF:S DFG:FP IUCN:LC USFS:S USFWS:BCC	Nesting and wintering: ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter. Known from winter in Lake Cleone, MacKerricher State Park and Little River.	No
Pandion haliaetus	Osprey (nesting)	None	None	G5	S3	CDF:S DFG:WL IUCN:LC	Nesting: ocean shore, bays, fresh-water lakes, and larger streams.Large nests built in tree-tops within 6-7 to 15 miles of good fish-producing body of water. Flattened portions of partially broken off snags, trees, rocks, dirt pinnacles, cacti, and numerous man-made structures such as utility poles and duck blinds are used for nests. Furthest nest inland may be McGuire's Pond.	No
Falco columbarius	Merlin (wintering)	None	None	G5	S3	DFG:WL IUCN:LC	General wintering habitat: Uncommon winter migrants on the coast. Habitat apparently similar to breeding habitat, (open forest and grasslands). Regularly hunts prey (e.g., shorebirds) concentrated on tidal flats. Often winters in cities throughout its range, where frequently perches on buildings, power poles, and tall trees. Also winters in open woodland, grasslands, open cultivated fields, marshes, estuaries, and seacoasts. Frequents open habitats at low elevation near water and tree stands.	No
Falco peregrinus anatum	American peregrine falcon (nesting)	Delisted	Delisted	G4T3	S2	CDF:S DFG:FP USFWS:BCC	Nesting: near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape on a depression or ledge in an open site.	No
Charadrius alexandrinus nivosus	western snowy plover (nesting)	Threatened	None	G4T3	S2	ABC:WLBCC DFG:SSC USFWS:BCC	Nesting: federal listing applies only to the pacific coastal population. Sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting. Sand spits, dune-backed beaches, unvegetated beach strands, open areas around estuaries, and beaches at river mouths are the preferred coastal habitats for nesting. Less common nesting habitat includes salt pans, coastal dredged spoil disposal sites, dry salt ponds, and salt pond levees and islands.	No
Haematopus bachmani	Black oystercatcher (nesting)	None	None	G5	S2	IUCN:LC USFWS:BCC	From the Aleutian Islands to Baja California, the forage on intertidal macroinvertebrates along gravel or rocky shores and in the southern part of their range nest primarily on rocky headlands and offshore rocks.	No
Larus californicus	California gull (nesting)	None	None	G5	S2	DFG:WL IUCN:LC	Colony nesters and usually occurring on an island or vegetated offshore rock.	No
Brachyramphus marmoratus	marbled murrelet (nesting)	Threatened	Endangered	G3G4	S1	ABC:WLBCC CDF:S IUCN:EN	Nesting: feeds near-shore; nests inland along coast, from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir. Presence of platforms (flat surface at least four inches in diameter) appears to be the most important stand characteristic for predicting murrelet presence. Stands can be: 1) mature (with or without an old- growth component); 2) old-growth; 3) young coniferous forests with platforms; and 4) include large residual trees in low densities sometimes less than one tree per acre.	No
Fratercula cirrhata	tufted puffin (nesting colony)	None	None	G5	S2	DFG:SSC IUCN:LC	Nesting colony: open-ocean bird; nests along the coast on islands, islets, or (rarely) mainland cliffs free of human disturbance and mammalian predators. Nests in burrows or rock crevices when sod or earth in unavailable for burrowing. Occurs year-road offshore near breeding colonies in northern California, but more common in winter.Breeding records from Goat Rock, Mendocino Headlands State Park	No
Athene cunicularia	burrowing owl (burrow sites and some winter sites)	None	None	G4	S2	BLM:S DFG:SSC IUCN:LC USFWS:BCC	Burrow sites: open, dry annual or perennial grasslands, deserts and scrublands, and dunes characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	No
Strix occidentalis caurina	northern spotted owl	Threatened	None	G3T3	S2S3	ABC:WLBCC CDF:S DFG:SSC IUCN:NT	Old-growth forests or mixed stands of old-growth and mature trees. Occasionally in younger forests w/patches of big trees. High, multistory canopy dominated by big trees, many trees w/cavities or broken tops, woody debris, and space under canopy.	No
Chaetura vauxi	Vaux's swift (nesting)	None	None	G5	S3	DFG:SSC IUCN:LC	Nesting: redwood, Douglas fir, and other coniferous forests. Nests in large hollow trees and snags. Often nests in flocks. Forages over most terrains and habitats but shows a preference for foraging over rivers and lakes.The most important habitat requirement appears to be an appropriate nest-site in a large, hollow tree. Forages over most terrains and habitats, often high in theair. Shows an apparent preference for foraging over rivers and lakes.	No
Selasphorus rufus	rufous hummingbird (nesting)	None	None	G5	S1S2	IUCN:LC USFWS:BCC	Breeds in open or shrubby areas, forest openings, yards and parks, and sometimes in forests, thickets, and meadows. Late winter and spring migrant on the California coast. Breeding range from southeast Alaska and as far south as northwestern California.	No
Selasphorus sasin	Allen's hummingbird (nesting)	None	None			ABC:WLBCC IUCN:LC USFWS:BCC	Breeds only along a narrow strip of coastal California and southern Oregon. Nests in densely vegetated areas and forests. An early migrant compared with most North American birds, arriving in summer breeding grounds as early as January. Breeds in moist coastal areas, scrub, chaparral, and forests. Winters in forest edge and scrub clearings with flowers.	No
Picoides nuttallii	Nuttall's woodpecker (nesting)	None	None	G5	SNR	ABC:WLBCC IUCN:LC	Ranging from west of the Cascade mountains and in the Sierra Nevada from southern Oregon to Northern Baja California. Nests are excavated in dead branches or snags of various trees, usually in close association with oak woodlands and riparian zone, habitat vulnerable to development. At least one Mendocino Coast record from 2011 Audubon Christmas Bird Count.	No
Sphyrapicus ruber	red-breasted sapsucker	None	None	G5	SNR	None	Breeds primarily in coniferous forests, but also uses deciduous and riparian habitat, as well as orchards and power line corridors. The nest is a hole usually dug in a live deciduous tree (e.g. alder, willow, madrone) with possible preference for larger trees showing decay-softened wood.	No

Scientific name	Common Name	Federal Status	State Status	G	S	Organization: Code	Habitat	Observed?
Contopus cooperi	olive-sided flycatcher (nesting)	None	None	G4	S4	ABC:WLBCC DFG:SSC IUCN:NT USFWS:BCC	Breeds in montane and northern coniferous forests, at forest edges and openings, such as meadows and ponds. Tall standing dead trees are used as perch trees for catching flying insects. Accordingly, an open canopy is a key components of suitable habitat. Nest is an open cup of twigs, rootlets, and lichens, placed out near tip of horizontal branch of a tree.	No
Progne subis	purple martin	None	None	G5	S3	DFG:SSC IUCN:LC	Nesting: inhabits woodlands, low elevation coniferous forest of Douglas fir, Ponderosa pine, and Monterey pine. Nests in old woodpecker cavities mostly, also in human- made structures such as weep holes in bridges. Nest often located in tall, isolated trees and snags. Nesting on the Mendocino Coast known, in part, from Juan Creek, Ten Mile, Noyo, and Big River, and snags from Ten Mile River to Pudding Creek. Need open foraging habitats.	No
Dendroica occidentalis	hermit warbler (nesting)	None	None	G4G5	S3?	ABC:WLBCC IUCN:LC	Breeding range is relatively limited to the Pacific Coast and the Cascade and Sierra Nevada mountain ranges of Washington, Oregon, and California. Some winter along the coastal central and southern California, but most winter primarily in the mountains of western Mexico and Central America. Nesting habitats in Pacific northwest are coniferous forests with a high canopy volume, generally preferring mature stands of pine and Douglas fir. Avoids areas with a high deciduous volume; absent from riparian areas and clearcuts. Birds of coniferous forests; they prefer cool, wet fir forests at elevation, and moist forests of Douglas-fir, hemlock, and western red cedar closer to sea level. Major threat to this species appears to be the degradation of breeding habitat.Not know as frequently nesting on the coast, perhaps more common inland.	No
Ammodramus savannarum	grasshopper sparrow (nesting)	None	None	G5	S2	DFG:SSC IUCN:LC	Nesting: dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting. Summer (breeding) resident in Mendocino County known from north of Ten Mile River.	No
Agelaius tricolor	tricolored blackbird (nesting colony)	None	None	G2G3	S2	ABC:WLBCC BLM:S DFG:SSC IUCN:EN USFWS:BCC	Nesting colony: highly colonial species, most numerous in central valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, such as cattails and foraging area with insect prey within a few km of the colony. Known inland from McGuire's Pond.	No
Mammals								
Antrozous pallidus	pallid bat	None	None	G5	S3	BLM:S DFG:SSC IUCN:LC USFS:S WBWG:H	A wide variety of habitats deserts, grasslands, shrublands, woodlands and forests from sea level up through mixed conifer forests. Most common in open, dry habitats with rocky areas for roosting. A yearlong resident in most of the range. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings where there is protection from high temperatures.	No
Corynorhinus townsendi	Townsend's big-eared bat	None	None	G4	S2S3	BLM:S DFG:SSC IUCN:LC USFS:S WBWG:H	Generally found in the dry uplands throughout the West, but also occur in mesic coniferous and deciduous forest habitats along the Pacific coast. Unequivocally associated with areas containing caves and cave-analogs for roosting habitat. Requires spacious cavern-like structures for roosting during all stages of its life cycle. Typically, they use caves and mines, but have been noted roosting in large hollows of redwood trees, attics and abandoned buildings, lava tubes, and under bridges. Extremely sensitive to disturbance.	No
Lasionycteris noctivagans	silver-haired bat	None	None	G5	S3S4	IUCN:LC WBWG:M	Ranges throughout California in coastal and montane forests. May be found anywhere in California during spring and fall migrations. Primarily a forest (tree-roosting) bat associated with north temperate zone conifer and mixed conifer/hardwood forests. Prefers forested (frequently coniferous) areas adjacent to lakes, ponds, and streams. During migration, sometimes occurs in xeric areas.Roosts in dead or dying trees with exfoliating bark, extensive vertical cracks, or cavities, rock crevices, and occasionally under wood piles, in leaf litter, under foundations, and in buildings, mines and caves.The primary threat is likely loss of roosting habitat due to logging practices that fail to accommodate	No
Lasiurus blossevillii	western red bat	None	None	G5	S3?	DFG:SSC IUCN:LC	Locally common in some areas of California from Shasta County south to the Mexican border. California Central Valley is the species' primary breeding region.Species appears to be strongly associated with riparian habitats for roosting and foraging, particularly mature stands/large diameter of cottonwood/sycamore. Roosts in woodland borders, rivers, agricultural areas, and urban areas with mature trees in the foliage of large shrubs and trees, usually sheltering on the underside of overhanging leaves. It often hangs from one foot on the leaf petiole and may resemble a fruit or dead leaf. Rarely observed roosting in mines.	No
Lasiurus cinereus	hoary bat	None	None	G5	S4?	IUCN:LC WBWG:M	Most widespread North American bat. Solitary species that winters along the coast and in southern California. Roosts in foliage of trees near ends of branches. Blends with the bark of trees. Highly associated with forested habitats but can be found in suburbs with old, large trees.	No
Myotis evotis	long-eared myotis bat	None	None	G5	S4?	BLM:S IUCN:LC WBWG:M	Widespread in California, but generally is believed to be uncommon in most of its range. It avoids the arid Central Valley and hot deserts, occurring along the entire coast and interior mountains. Found in nearly all brush, woodland, and forest habitats, from sea level to at least 9,000 ft., but coniferous woodlands and forests seem to be preferred. Roosts in loose bark in tall, open-canopied snags; stumps in south-facing clear-cuts with minimal vegetation overgrowth in younger forests, and conifer snags in older forests, rocks, caves, bridges and abandoned mines.	No
Myotis yumanensis	Yuma myotis bat	None	None	G5	S4?	BLM:S IUCN:LC WBWG:LM	Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	No
Aplodontia rufa nigra	Point Arena mountain beaver	Endangered	None	G5T1	S1	DFG:SSC IUCN:LC	Generally known from 2 miles north of Bridgeport Landing to 5 miles south of the town of Point Arena. Coastal areas often near springs or seepages; mesic coastal scrub, northern dune scrub, edges of conifer forests, and riparian plant communities. North facing slopes of ridges and gullies with friable soils and thickets of vegetation.	No
Arborimus pomo	Sonoma tree vole	None	None	G3	S3	DFG:SSC IUCN:NT	Species split into red tree vole and Sonoma tree vole; approximate boundary between two species is Klamath River. Inhabits north coast fog belt from Oregon border to Somona Co. in old-growth and other forests, mainly Douglas-fir, redwood, and montane hardwood-conifer habitats. Feeds almost exclusively on Douglas-fir needles. Will occasionally take needles of pine, grand fir, hemlock or spruce.	Yes
Martes americana humboldtensis	Humboldt marten	None	None	G5T2T3	S2S3	DFG:SSC USFS:S	Endemic to the coastal forests of northwestern California with a historical range described as "the narrow northwest humid coast strip, chiefly within the redwood belt" from the Oregon border to northern Sonoma county. However, the one known remnant Humboldt marten population occurs in the north-central portion of the described range in an area dominated by Douglas-fir and tanoak. Typically associated with closed-canopy, late-successional, mesic coniferous forests with complex physical structure near the ground. Very rare on the Mendocino coast.	No
Martes pennanti (pacifica) DPS	Pacific fisher	Candidate	None	G5	S2S3	BLM:S DFG:SSC USFS:S	Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high percent canopy closure. Use cavities, snags, logs and rocky areas for cover and denning. Need large areas of mature, dense forest. Very rare on the Mendocino coast.	No

Taxon By Family	Common Name	Old Name	Native	Wetland
FERNS AND ALLIES				
Dennstaedtiaceae				
Pteridium aquilinum var. pubescens	bracken; western bracken; hairy bracken fern		Y	FACU
Polystichum munitum	western sword fern		Y	FACU
Equisetaceae				
Equisetum telmateia ssp. braunii	giant horsetail		Y	OBL
Polypodiaceae				
Polypodium californicum	California polypody		Y	NI
GYMNOSPERMS				
Pinaceae				
Abies grandis	grand fir; lowland fir		Y	NI
Picea sitchensis	Sitka spruce		Y	FAC
Pinus contorta ssp. contorta	shore pine; beach pine		Y	FAC
Pinus muricata	Bishop pine; prickle-cone pine; bull pine		Y	NI
Pinus radiata	Monterey pine		Y	NI
Pseudotsuga menziesii var. menziesii	Douglas fir		Y	NI
Tsuga heterophylla	western hemlock		Y	FACU
DICOTS				
Aizoaceae				
Drosanthemum floribundum	showy dewflower, rosy ice plant		N	NI
Anacardiaceae				
Toxicodendron diversilobum	poison oak		Y	NI
Apiaceae				
Conium maculatum	poison hemlock		N	FAC
Heracleum maximum	common cow parsnip	*Heracleum lar*	Y	FACU
Sanicula arctopoides	yellow mats, footsteps of spring		Y	NI
Aquifoliaceae				
Ilex aquifolium	English holly		N	NI
Araliaceae				
Hedera helix	English ivy		N	NI
Asteraceae				
Baccharis pilularis var. consanguinea	coyote brush		Y	NI
Bellis perennis	English daisy		N	NI
Cirsium vulgare	bull thistle		N	FAC
Erigeron glaucus	seaside daisy		Y	FACU
Hypochaeris radicata	rough cat's ear, hairy cat's ear		N	FACU
Berberidaceae				
Berberis aquifolium	Oregon grape, holly leaf berberis		Y	UPL
Betulaceae				
Alnus rubra	red alder, Oregon alder		Y	FACW
Boraginaceae				
Myosotis discolor	forget me not			
Myosotis latifolia	wide-leaved forget-me-not		N	NI
Brassicaceae				
Brassica oleracea	cabbage			
Caprifoliaceae				
Lonicera hispidula	hairy honeysuckle	*Lonicera hisp*	Y	FACU*
Sambucus racemosa var. racemosa	red elderberry	*Sambucus rac*	Y	FACU
Convolvulaceae				
Calystegia purpurata ssp. purpurata	Purple western morning glory, Smooth western morning glory		Y	NI
Crassulaceae				
Dudleya farinosa	north coast dudleya, Bluff lettuce, Powdery liveforever		Y	NI
Sedum praealtum	green cockscomb			
Cucurbitaceae				
Marah oregana	coast wild-cucumber; wild cucumber, coast manroot		Y	NI
Ericaceae				
Gaultheria shallon	salal		Y	FACU
Rhododendron macrophyllum	California rose-bay		Y	NI
Vaccinium ovatum	California huckleberry		Y	NI
Escalloniaceae				
Escallonia rubra	red claws		N	NI
Fabaceae				
Acacia melanoxylon	Blackwood acacia		N	NI

Taxon By Family	Common Name	Old Name	Native	Wetland
Cytisus scoparius	Scotch broom		N	NI
Lupinus variicolor	varied lupine, varied-color lupine		Y	NI
Vicia sativa	vetch		N	FUCU
Garryaceae				
Garrya elliptica	coast silk tassel		Y	NI
Lamiaceae				
Prunella vulgaris var. lanceolata	lance-leaf self-heal	*Prunella vulga*	Y	FAC*
Stachys rigida	rough hedgenettle		Y	
Myricaceae				
Morella californica	wax-myrtle	*Myrica califor*	Y	FAC+
Onagraceae				
Fuchsia magellanica	hardy fuchsia			
Orobanchaceae				
Castilleja affinis ssp. affinis	coast Indian paintbrush, Wight's Indian Paint brush	*Castilleja wigi*	Y	NI
Phrymaceae				
Mimulus aurantiacus	sticky monkeyflower	*Mimulus punic*	Y	NI
Plantaginaceae				0
Digitalis purpurea	purple foxglove		N	UPL
Plantago lanceolata	English plantain, ribwort, narrow leaved plantain, ribgrass	*Plantago altis*	N	FAC-
Plantago maritima	maritime plantain, seaside plantain, goose tongue	*Plantago mari*	Y	FACW+
Polygonaceae				
Rumex acetosella	common sheep sorrel		N	FAC-
Primulaceae				
Lysimachia arvensis	scarlet pimpernel, poor man's weathervane		N	FAC
Rhamnaceae				
Ceanothus thyrsiflorus var. griseus	Carmel ceanothus	*Ceanothus gri*	Y	NI
Rosaceae				
Cotoneaster pannosus	woolly cotoneaster	*Cotoneaster p*	N	
Fragaria vesca	woodland strawberry, wood strawberry, California Strawberry		Y	UPL
Rosa sp.	cultivated rose			
Rubus armeniacus	Himalaya-berry, Himalayan blackberry	*Rubus discolo*	N	FAC+
Rubus parviflorus	thimbleberry		Y	FAC+
Rubus ursinus	California blackberry		Y	FAC+
Rubiaceae				
Galium aparine	common bedstraw; cleavers; goose-grass		Y	FACU
Scrophulariaceae				
Scrophularia californica	California figwort, California bee plant		Y	FAC
Violaceae				
Viola sempervirens	evergreen violet, redwood violet		Y	NI
MONOCOTS				
Asphodelaceae				
Kniphofia uvaria	red hot poker, fire poker			
Iridaceae				
Iris douglasiana	Douglas' iris		Y	NI
Juncaceae				
Juncus hesperius	coast or bog rush	*Juncus effusus*	Y	FACW+
Juncus patens	common rush, spreading rush		Y	FAC
Poaceae				
Agrostis capillaris	colonial bentgrass		N	FAC
Agrostis stolonifera	creeping bentgrass		N	FACW
Anthoxanthum odoratum	sweet vernal grass		N	FACU
Avena barbata	slender wild oat		N	NI
Briza maxima	big quaking grass; rattlesnake grass		N	NI
Bromus carinatus	California brome		Y	NI
Bromus vulgaris	narrow-flowered brome		Y	FACU*
Cortaderia jubata	Andes grass, purple pampass grass		N	NI
Dactylis glomerata	orchard-grass		N	FACU
Elymus glaucus ssp. glaucus	blue wildrye; blue wild rye		Y	FACU
Holcus lanatus	velvet grass		Y	FACW
Polypogon australis	Chilean beardgrass, rabbitfoot grass		N	FACW+
Festuca myuros	rattail sixweeks grass	*Vulpia myuros*	N	FACU*

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Bertrand-Daniel	
(A)	***Buffer Areas.*** *A buffer area shall be established adjacent to all environmentally sensitive habitat areas. The purpose of this buffer area shall be to provide for a sufficient area to protect the environmentally sensitive habitat from degradation resulting from future developments and shall be compatible with the continuance of such habitat areas.*
	The proposed development is to: Merge three separate legal parcels into one legal parcel. Convert existing garage to single-family residence; convert existing single-family residence to guest cottage; build new artist studio; shift location of driveway back from bluff edge; construct symbolic fencing near bluff; install septic; connect to utilities. Provide for sufficient domestic water through one or more of the following as necessary: Convert existing test well in the northern portion of the parcels to production, convert existing shallow irrigation well in the northern portion of the parcels to production, drill a new production well in the southeastern corner of the parcels. Connect new well(s) to the residence. There are four types of presumed Environmental Sensitive Habitat Areas (ESHAs) within 100ft of the proposed development: **Wetland Presumed ESHA –** Two areas of presumed Coastal Act wetland were present within the study area totaling approximately 1-acre. **Rare Plant Community Presumed ESHAs –** One special status plant community was identified in the study area: **Bishop Pine Forest** (Pinus muricata forest alliance (G3 S3.2)). **Stream ESHA-** A small **stream** originating from a culvert was present on the north-western portion of the study area and is within the delineated wetland and riparian area. **Special Status Wildlife Habitat Presumed ESHA** – Three groups of **pelagic cormorant** (Phalacrocorax pelagicus) **nests** were identified on the bluff edge. Clumps of Bishop pine resin ducts from a **Sonoma tree vole** nest were observed in the Bishop pine forest indicating that the trees are habitat for this Species of Special Concern. Avoidance mitigation measures (**Section 7** of the Biological Scoping & Botanical Survey Report) address the potential impacts from proposed development and how they can be avoided, minimized or compensated for so that impacts are reduced to less than significant levels. The stream and pelagic cormorant nests can be buffered by more than 100ft and are therefore not a subject of this Reduced Buffer Analysis. The first portion of this RBA (Section A1-3) addresses presumed **Coastal Act Wetland** which is less than 100ft but more than 50ft from all components of the proposed development (except for a small portion of the septic leach field that is within 50ft of the presumed wetland present across the 500D road, and the conversion of an existing test well and/or an existing irrigation well to domestic water production wells if necessary and feasible). Two of the special status resources present in the study area, **Bishop pine forest** and **Sonoma tree vole habitat**, cannot be avoided by more than 50ft and are therefore addressed in Section 4 of this RBA, which deals with development within a buffer, and are also addressed with a Report of Compliance (ROC) that is included in the submission for this project.

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Bertrand-Daniel	
(1)	***Width.*** *The width of the buffer area shall be a minimum of one hundred (100) feet, unless an applicant can demonstrate, after consultation and agreement with the California Department of Fish and Game, and County Planning staff, that one hundred (100) feet is not necessary to protect the resources of that particular habitat area from possible significant disruption caused by the proposed development. The buffer area shall be measured from the outside edge of the Environmentally Sensitive Habitat Areas and shall not be less than fifty (50) feet in width. New land division shall not be allowed which will create new parcels entirely within a buffer area. Developments permitted within a buffer area shall generally be the same as those uses permitted in the adjacent Environmentally Sensitive Habitat Area.*
	Based on the analysis below, Wynn Coastal Planning & Biology recommends: • **Presumed Coastal Act Wetland** – 50-foot Buffer There are two areas of presumed Coastal Act wetland, one on the subject parcel and the other off the parcel to the northeast, across the 500D Road. The proposed single-family residence, guest cottage, new artist studio, driveway, potential new well location, and primary leach field are located more than 100ft from the wetland on the subject parcel and more than 50ft from the area of wetland across the 500D Road. The area reserved for the replacement septic leach field is within 100ft, but further than 50ft, from the wetland on the subject parcel and the majority of the replacement field is further than 50ft from the wetland across the 500D road. A small portion (~10 linear feet) of the area reserved for a replacement leach field come within 40ft of the area of wetland across the 500D road. The location of septic leach fields is limited by the presence of appropriate soils and they were designed to avoid special status resources to the greatest extent practicable. An existing test well and shallow irrigation water well are within 50ft, and north of, the presumed Coastal Act wetland on the subject parcels. If the test well is converted to a production well then it will also be necessary to connect this well to electricity and piping to pump water to the residence and guest house. The shallow irrigation well is already served by electricity and water pipes that lead to the existing buildings. It should be possible to extend the electric and water pipes from the shallow irrigation well to the test well if the test well is put into production. Development within the buffer area is addressed in Section 4 below. Buffer areas were measured based from the outside edge (dripline of trees and other vegetation) resulting from ground surveys and aerial photo interpretation. It is the professional opinion of Wynn Coastal Planning & Biology that a buffer area of 100 feet is not necessary to protect this special status resource from the proposed development and subsequent use of the property. Consultation with California Department of Fish and Wildlife should occur to obtain their opinion on the buffers recommended by Wynn Coastal Planning & Biology. The Department of Fish and Wildlife and County Planning Staff opinions will be needed to determine the final appropriate buffer widths between ESHA and proposed development. New land division will <u>not</u> be occurring for the proposed project.
1 (a)	***Biological Significance of Adjacent Lands.*** *Lands adjacent to a wetland, stream, or riparian habitat area vary in the degree to which they are functionally related to these habitat areas. Functional relationships may exist if species associated with such areas spend a significant portion of their life cycle on adjacent lands. The degree of significance depends upon the habitat requirements of the species in the habitat area (e.g., nesting, feeding, breeding, or resting).* *Where a significant functional relationship exists, the land supporting this relationship shall also be considered to be part of the ESHA, and the buffer zone shall be measured from the edge of these lands and be sufficiently wide to protect these functional relationships. Where no significant functional relationships exist, the buffer shall be measured from the edge of the wetland, stream, or riparian habitat that is adjacent to the proposed development.*

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Bertrand-Daniel	
	The non-native common velvet grass – sweet vernal grass meadows adjacent to the presumed Coastal Act wetland on the subject parcel are not significantly functionally related to this presumed wetland, which is of relatively low quality, being vegetated primarily with invasive Himalayan blackberry brambles. The area adjacent to the presumed Coastal Act wetland offsite is the paved 500D Road, which is not significantly functionally related to the wetland. The buffer zones of the areas of presumed coastal act wetland should be measured from the edge of these presumed ESHAs which should be sufficiently wide to protect these resources.
1(b)	***Sensitivity of Species to Disturbance.*** *The width of the buffer zone shall be based, in part, on the distance necessary to ensure that the most sensitive species of plants and animals will not be disturbed significantly by the permitted development. Such a determination shall be based on the following after consultation with the Department of Fish and Game or others with similar expertise:* *(1b-i) Nesting, feeding, breeding, resting, or other habitat requirements of both resident and migratory fish and wildlife species;* *(1b-ii) An assessment of the short-term and long-term adaptability of various species to human disturbance;* *(1b-iii) An assessment of the impact and activity levels of the proposed development on the resource.*
	A buffer width of 50-feet from each of the areas of presumed Coastal Act wetland should be sufficient to ensure that the most sensitive species of plants and animals within them are not disturbed significantly by the permitted development. The presumed Coastal Act wetland on the subject parcel is primarily vegetated with invasive Himalayan blackberry which is not important habitat for sensitive native species. Species that rely on non-native plants are usually habitat generalists that can adapt to human presence. The presumed Coastal Act wetland across the 500D Road is buffered by the presence of the road and species present within it are likely already adapted to activity on the road.
1(c)	***Susceptibility of Parcel to Erosion.*** *The width of the buffer zone shall be based, in part, on an assessment of the slope, soils, impervious surface coverage, runoff characteristics, and vegetative cover of the parcel and to what degree the development will change the potential for erosion. A sufficient buffer to allow for the interception of any additional material eroded as a result of the proposed development should be provided.*
	Potential for erosion onsite will be minimal as the area where development is proposed is relatively flat. Mitigation measures have been recommended to avoid or minimize potential for erosion to affect resources present. These measures include straw wattles at the 50ft buffer between the Coastal Act wetlands on the subject parcel and the septic leach field during its construction and/or a seasonal restriction on the construction of the leach field during the dry portion of the year. Bare soil resulting from construction will be seeded with native erosion control mix. The presumed Coastal Act wetland across the 500D Road is uphill from the proposed development and therefore unlikely to be susceptible to materials resulting from erosion.
1(d)	***Use of Natural Topographic Features to Locate Development.*** *Hills and bluffs adjacent to ESHA's shall be used, where feasible, to buffer habitat areas. Where otherwise permitted, development should be located on the sides of hills away from ESHA's. Similarly, bluff faces should not be developed, but shall be included in the buffer zone.*
	The areas where development is proposed is relatively flat. No hills or bluffs that could be used to buffer the ESHAs are present on the parcel. No bluff faces are proposed for development and the steeper portion of the parcel is protected by a geotechnical setback.

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Bertrand-Daniel	
1(e)	***Use of Existing Cultural Features to Locate Buffer Zones.*** *Cultural features (e.g., roads and dikes) shall be used, where feasible, to buffer habitat areas. Where feasible, development shall be located on the side of roads, dikes, irrigation canals, flood control channels, etc., away from the ESHA.*
	The presumed Coastal Act wetland across the 500D Road is buffered by the presence of that road. No cultural features are available to buffer the presumed Coastal Act wetland on the subject parcel, but the majority of proposed development is more than 100ft from this area.
1(f)	***Lot Configuration and Location of Existing Development.*** *Where an existing subdivision or other development is largely built-out and the buildings are a uniform distance from a habitat area, at least that same distance shall be required as a buffer zone for any new development permitted. However, if that distance is less than one hundred (100) feet, additional mitigation measures (e.g., planting of native vegetation) shall be provided to ensure additional protection. Where development is proposed in an area that is largely undeveloped, the widest and most protective buffer zone feasible shall be required.*
	The development is proposed primarily within an area that is already developed. Rather than develop an additional location on the site, the single family residence will be built in the location of the existing garage and the existing single family residence will be retained for use as a guest house. The proposed location for the septic leach fields are as close to the development as possible rather than in a location further away, on the other side of the wetland. A 50-foot buffer for should sufficiently protect the areas of presumed Coastal Act wetland from the proposed development.
1(g)	***Type and Scale of Development Proposed.*** *The type and scale of the proposed development will, to a large degree, determine the size of the buffer zone necessary to protect the ESHA. Such evaluations shall be made on a case-by-case basis depending upon the resources involved, the degree to which adjacent lands are already developed, and the type of development already existing in the area.*
	The proposed single family residence, septic system and gravel driveway are all of the same scale as the developed parcels to the south of the subject parcels with the same zoning. Occurrences of Coastal Act wetland persist adjacent to areas where development already exists.
(2)	***Configuration.*** *The buffer area shall be measured from the nearest outside edge of the ESHA (e.g., for a wetland from the landward edge of the wetland; for a stream from the landward edge of riparian vegetation or the top of the bluff).*
	The 50ft buffer areas are measured from the landward edge of the areas of presumed Coastal Act wetland. The buffers are delineated and mapped through field site visits as well as referencing aerial imagery and using ArcGIS.
(3)	***Land Division.*** *New subdivisions or boundary line adjustments shall not be allowed which will create or provide for new parcels entirely within a buffer area.*
	A boundary line adjustment is proposed that would merge three existing parcels into one parcel. This was necessary in order to provide for a septic leach field and domestic water wells on the same parcel as the dwellings it will serve. Combining the three parcels allows for better avoidance of the presumed ESHAs present.
(4)	***Permitted Development.*** *Development permitted within the buffer area shall comply at a minimum with the following standards:*

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Bertrand-Daniel	
	Approximately 10 linear feet of the replacement septic leach field, as designed, is within 50ft of the area of presumed Coastal Act wetland off the subject parcel across the 500D Road. An existing test well and shallow irrigation well are within 50ft of presumed Coastal Act wetland on the subject parcel. Water pipes and electric power are already connected to the shallow irrigation well but would need to be extended ~20ft to the test well if it is necessary to convert the test well to production to meet the needs of the proposed development. Two presumed ESHAs present, **Bishop pine forest** and **Sonoma tree vole habitat** are closer than 50ft to proposed development. Bishop pine trees will have to be removed to accommodate the proposed project. Potential impacts to these two special status resources are addressed below as well as within a Report of Compliance that is a part of the submission for this project. Minimization and compensatory mitigation measures are recommended in Section 7 of the biological report. A Bishop pine forest active management plan is recommended. Consultation and cooperation with CDFW regarding Sonoma tree vole is recommended.
4(a)	*Development shall be compatible with the continuance of the adjacent habitat area by maintaining the functional capacity, their ability to be self-sustaining and maintain natural species diversity.*

Approximately 10 linear feet of septic leach line for the replacement area is within 50ft of the area of **Coastal Act wetland** across the 500D Road. Estimating an area of soil and vegetation disturbance approximately 3ft wide when the ditch for the line to be buried, this would result in a temporary impact to approximately 30ft^2 within the 50ft buffer to the wetland. A narrow ditch approximately 20ft long would need to be dug within the 50ft Coastal Act wetland buffer in order to connect the existing test well to electric power and water pipes that currently connect the existing pump house with a shallow irrigation well to the residence. This would result in a temporary impact of approximately 20ft^2 within the 50ft buffer to the wetland. A small pump shed may be built to protect well pump equipment if the test well is converted to a production well. This would result in a permanent impact of approximately 36ft^2 within the 50ft buffer to the wetland.

Wetland avoidance mitigation measures are recommended in the main report. These measures include a 50ft buffer between the wetland and proposed development, recommendation for construction only during the dry portion of the year, and installation of straw wattles along the 50ft buffer between the septic leach field and areas of presumed coastal act wetland on the subject parcel during construction of the septic leach field and between the test well and presumed Coastal Act wetland if the test well is converted to a domestic production well. All other portions of the proposed development are greater than 100ft from the areas of presumed Coastal Act wetland on the subject parcel. Portions of the presumed Coastal Act wetlands offsite, across the 500D Road are uphill from the proposed development and are buffered by the presence of the 500D Road.

No impact to the area of presumed Coastal Act wetland within 50ft of the proposed project is expected because it is uphill and across a road from area where the leach line is proposed.

A total of approximately 20 trees within the **Bishop pine forest** community will need to be removed to accommodate the proposed project. Up to 9 trees which currently pose a hazard to the existing development, and which would therefore pose a hazard to the proposed residence built in the same building envelope, would need to be removed. Additionally, 1 tree would need to be removed for the studio, 7 for the primary leach field, and 3 for the replacement leach field. 11 of the 21 trees within the footprint of the primary and replacement septic leach fields will be retained, thinning, but not eliminating the forest canopy in that area. The largest, healthiest trees within the proposed leach field area will be retained. The septic designer has experience with septic leach fields within Bishop pine forest; asserting that the pine roots do not invade leach lines the way redwood or willow roots do, and the effluent does not have a negative impact on the trees.

The total area of Bishop pine forest canopy mapped within the study area is ~71,600ft^2 (1.64 acres). The estimated loss of canopy resulting from the proposed development is up to ~5,250 ft^2 (0.12 acres) which is about 7% of the total Bishop pine forest canopy within the study area.

Avoidance, minimization and compensatory mitigation measures are recommended within the main report. These measures include removing the least number of trees necessary to accommodate the project, replacement of trees lost to development with trees planted on the subject parcel at a minimum ratio of one tree planted to one tree removed, and enhancement of the existing Bishop pine forest habitat through removal of invasive non-native plant species which currently dominate portions of the Bishop pine forest understory. A Bishop pine forest active management plan detailing tree planting and habitat enhancement is recommended.

The Bishop pine forest is presumed to be occupied by **Sonoma tree voles**. Over the course of the study three clumps of resin ducts and scat were found on the ground beneath Bishop pine trees. One potential nest structure was examined and found not

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Bertrand-Daniel	
	to be occupied. Since no other potential nest structures could be located during the search it is unknown which trees Sonoma tree voles occupy. Consultation and cooperation with CDFW is recommended to avoid or minimize potential impact to this Species of Special Concern, which do not benefit from the legal protections that Endangered or Threatened species do. Avoidance mitigation measures recommended for the Sonoma tree vole correspond to those avoiding, minimizing and compensating for impact to the Bishop pine forest, which is the habitat for these arboreal rodents.
4(b)	*Structures will be allowed within the buffer area only if there is no other feasible site available on the parcel.*
	All portions of the subject parcel are within presumed ESHAs and/or their buffers. The site proposed avoids presumed wetlands to the greatest extent feasible and is centered on the existing building envelope where development already occurs. The project proposed is in the least environmentally impacting location. The proposed septic leach fields are designed in a location where soils and distance to existing wells on the subject parcel and neighboring parcels will allow. Conversion of an existing test well to domestic water production should have minimal impact and there is not an alternative location because the test well already exists in this location. There is no other less impacting site feasible.
4(c)	*Development shall be sited and designed to prevent impacts, which would degrade adjacent habitat areas. The determination of the best site shall include consideration of stream, access, soil type, vegetation, hydrological characteristics, elevation, topography, and distance from natural stream channels. The term "best site" shall be defined as the site having the least impact on the maintenance of the biological and physical integrity of the buffer strip or critical habitat protection area and on the maintenance of the hydrologic capacity of these areas to pass a one hundred (100) year flood without increased damage to the coastal zone natural environment or human systems.*
	The “best site” is as proposed. This is the only location that will take advantage of the existing developed area and minimize use of land within buffer areas; any other location within the subject parcels will result in increased development within buffers. Special consideration was given to avoidance of presumed Coastal Act wetlands. The subject parcel is not within a 100 year flood zone.
4(d)	*Development shall be compatible with the continuance of such habitat areas by maintaining their functional capacity and their ability to be self-sustaining and to maintain natural species diversity.*
	The development proposed is similar to the that existing on the neighboring parcels, similarly distanced from the presumed ESHAs present. The development is compatible with the continuance of the presumed Coastal Act wetland, Bishop pine forest and Sonoma tree voles and is compatible with maintaining their functional capacity and their ability to be self-sustaining and maintain natural species diversity. Mitigation measures have been proposed that will reduce the potential impact and repair and return the Bishop pine forest, which is habitat for Sonoma tree voles, to its pre-project extent and enhance the quality of the understory.

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Bertrand-Daniel	
4(e)	*Structures will be allowed within the buffer area only if there is no other feasible site available on the parcel. Mitigation measures, such as planting riparian vegetation, shall be required to replace the protective values of the buffer area on the parcel, at a minimum ratio of 1:1, which are lost as a result of development under this solution.*
	No less impacting location for the proposed components of the project is feasible. Alternatives were considered but would all have more potential for impact. Structures are proposed within an existing developed area with the single family residence proposed in the location of the existing garage. The least number of trees feasible will be removed to accommodate the project and the safety of the residence. Planting of Bishop pine trees to replace those lost due to the project will be at a minimum of 1:1 ratio.
4(f)	*Development shall minimize the following: impervious surfaces, removal of vegetation, amount of bare soil, noise, dust, artificial light, nutrient runoff, air pollution, and human intrusion into the wetland and minimize alteration of natural landforms.*
	The driveway proposed is a permeable gravel surface. The least impacting alternative is proposed. The project will minimize impervious surfaces, removal of vegetation, bare soil, noise, dust, artificial light, nutrient runoff, air pollution or human intrusion into sensitive areas. Mitigation measures are proposed to avoid and minimize these potential impacts.
4(g)	*Where riparian vegetation is lost due to development, such vegetation shall be replaced at a minimum ratio of one to one (1:1) to restore the protective values of the buffer area.*
	No riparian vegetation will be removed as part of the project. Planting of Bishop pines is included in the mitigation measures to compensate for trees lost due to the project. The functionality of the Bishop pine forest as habitat for native plants and animals will be enhanced through removal of non-native invasive plants. A Bishop pine forest active management plan is recommended.
4(h)	*Above ground structures shall allow peak surface water flows from a one hundred (100) year flood to pass with no significant impediment.*
	The development is not proposed in a 100-year flood zone.
4(i)	*Hydraulic capacity, subsurface flow patterns, biological diversity, and/or biological or hydrological processes, either terrestrial or aquatic, shall be protected.*
	Hydraulic capacity, subsurface flow patterns, biological diversity, and/or biological or hydrological processes will be protected and are not expected to be impacted by the proposed development.

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Bertrand-Daniel	
4(j)	*Priority for stream conveyance from a development site shall be through the natural stream environment zones, if any exist, in the development area. In the stream system design report or development plan, the capacity of natural stream environment zones to convey runoff from the completed development shall be evaluated and integrated with the stream system wherever possible. No structure shall interrupt the flow of groundwater within a buffer strip. Foundations shall be situated with the long axis of interrupted impermeable vertical surfaces oriented parallel to the groundwater flow direction. Piers may be allowed on a case-by-case basis.*
	The project will not change topography or stream patterns.
4(k)	*If findings are made that the effects of developing an ESHA buffer area may result in significant adverse impacts to the ESHA, mitigation measures will be required as a condition of project approval. Noise barriers, buffer areas in permanent open space, land dedication for erosion control, and wetland restoration, including off-site stream improvements, may be required as mitigation measures for developments adjacent to environmentally sensitive habitats. (Ord. No. 3785 (part), adopted 1991)*
	Avoidance, minimization and compensatory mitigation measures are recommended within the main report and should result in the project having a less than significant impact to the special status natural resources present. Avoidance mitigation measures to protect the presumed **Coastal Act wetland** are presented in the main biological report and include: Adherence to Best Management Practices (BMPs), straw wattles installed between the development and the Coastal Act wetland, construction within 100ft limited to only the dry portion of the year, and immediate re-vegetation of areas of bare soil created by the project with native erosion control seed mix. Avoidance, minimization, and compensatory mitigation measures to protect **Bishop pine forest** and the **Sonoma tree voles** presumed to live in the canopy of Bishop pine trees include: Removing the least amount of trees necessary, replacement of trees cut within the Bishop pine forest at a ratio of at least 1:1 and removal of non-native invasive plants within the Bishop pine forest. WCPB also recommends a Bishop pine forest active management plan and consultation and cooperation with CDFW to determine additional Sonoma tree vole protection measures.

BIOLOGICAL REPORT OF COMPLIANCE

for

11800 500 D Road
Mendocino, CA 95460
APN 118-320-10, -11, -12
Mendocino County

Property Owner:
Camp Bedhead LLC
14880 Caspar Rd
Caspar, CA 95420

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1. Background and Purpose

The development is located at 11800 500D Road, in Mendocino County, California. The parcel is approximately 0.3 miles north of the village of Mendocino (**Figure 1Error! Reference source not found.**) and is neighbored by small rural residential parcels and Russian Gulch State Park. The parcel is located within the Coastal Zone as defined in Section 30103 of the California Coastal Act.

The parcels are located on the headlands and total slightly less than 3 acres, though only about 1.5 acres is above the bluff edge. The property contains an existing driveway with a single-family residence, garage/workshop, well house/storage shed, garden, concrete staircase to the ocean, and a portion of an aviary. The parcels are fenced on all sides where access is not restricted by the bluff edge. At the time of surveying, the site was vegetated with an overstory of Bishop pine trees as well as non-native grassland and Himalayan blackberry brambles **(Figure 2 & Figure 3)**. The Bishop pine forest was located on a hill with a predominant understory of non-native grassland. The hill itself had a higher percentage of natives such as salal (*Gaultheria shallon*) and polypody fern (*Polypodium sp*.). Other areas within the Bishop pine forest had large cotoneaster and English holly shrubs. The non-native grassland extends from the understory of the Bishop pine forest outwards where it forms its own plant community to the north and south of the Bishop pines. North of the Bishop pine forest is a presumed Coastal Act wetland dominated by Himalayan blackberry (Rubus armeniacus). Along 500D road is a stand of blackwood acacia (*Acacia melanoxylon*) and other non-native shrubs. As discussed in the Biological Scoping Survey, there was an area of presumed Coastal Act wetland on the east side of 500D Road adjacent to the parcel. Water from the wet area across the 500D road flowed into a culvert under a portion of the subject parcel and exited near the bluff edge and into the ocean. Surrounding the area where the culvert exited onsite was a presumed Coastal Act wetland. The majority of the proposed development is greater than 100ft away from the portion of the presumed Coastal Act wetland on the subject parcels, but portions of the area proposed to be designated as a replacement septic leach field as well as portions of the symbolic fence are closer than 100ft. Portions of the proposed single family residence, studio and septic leach fields are within 100ft but further than 50ft from the presumed Coastal Act wetland across the 500D Road and a very small portion of the area (~30ft^2) proposed for designation as replacement septic leach field is within the 50ft buffer to the wet area which is across the 500D road and uphill from this proposed leach field. An existing test well is located just outside the presumed Coastal Act wetland on the northern portion of the parcel, and an existing well house with a shallow irrigation well which is connected to the residence for electrical power and water lines is approximately 20 feet further east. The development proposal includes an option to convert the test well and/or the shallow irrigation well to domestic water production. This may include the installation of a pump and small wellhouse to protect the electrical equipment at the test well, and a narrow trench from the test well to the existing wellhouse to connect water and electric. These activities, if necessary, would include an additional estimated 56ft^2 impact within the 50ft buffer surrounding the presumed Coastal Act wetland.

Due to the extent of presumed ESHAs across the subject property, utilizing primarily the existing developed area including some of the existing structures on site is the most feasible place for new development to occur while avoiding and minimizing impact to the special status resources present. This is because the existing structures and driveway are already within the Bishop pine forest. By contrast, developing on the northern side of the Bishop pine forest would require development in close proximity to the presumed wetland. After considering these factors, in addition to considering yard setbacks, zoning, parcel map setbacks, and geotechnical setbacks, repurposing the existing structures for the proposed residence and guest cottage is the least impacting alternative for development on this property. This Report of Compliance presents an analysis of potential impacts to the Bishop pine forest population and demonstrates that the proposed development is consistent with the County of Mendocino Local Coastal Program in that the development is located in the least impacting location.

OWNER: Bertrand - Daniel
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

Parcel Location

Figure 1. Location of the subject parcel.

The Report of Compliance is required by Section 20.532.060(E) Mendocino County Coastal Zoning Code, which requires supplemental application procedures for development within Environmentally Sensitive Habitat Areas. The purpose of this report is to provide an in-depth analysis of the proposed development and its potential impacts on the Bishop pine forest and Sonoma tree vole by addressing the following items:

Report of Compliance. A report based upon an on-site investigation which demonstrates that the development meets all of the criteria specified for development in, and proximate to, an environmentally sensitive habitat area including a description and analysis of the following performed by a qualified professional:

(1) Present extent of the habitat, and if available, maps, photographs or drawings showing historical extent of the habitat area.

(2) Previous and existing ecological conditions.

(a)The life history, ecology and habitat requirements of the relevant resources, such as plants, fish and wildlife, in sufficient detail to permit a biologist familiar with similar systems to infer functional relationships (the maps described in above may supply part of this information).

(b)Restoration potentials.

(3) Present and potential adverse physical and biological impacts on the ecosystem.

(4) Alternatives to the proposed development, including different projects and alternative locations.

(5) Mitigation measures, including restoration measures and proposed buffer areas.

Items below (6 – 11) are not applicable to this project

(6) If the project includes dredging, explain the following:

(a)The purpose of the dredging.

(b)The existing and proposed depths.

(c)The volume (cubic yards) and area (acres or square feet) to be dredged.

(d)Location of dredging (e.g., estuaries, open coastal waters or streams).

(e)The location of proposed spoil disposal.

(f)The grain size distribution of spoils.

(g)The occurrence of any pollutants in the dredge spoils.

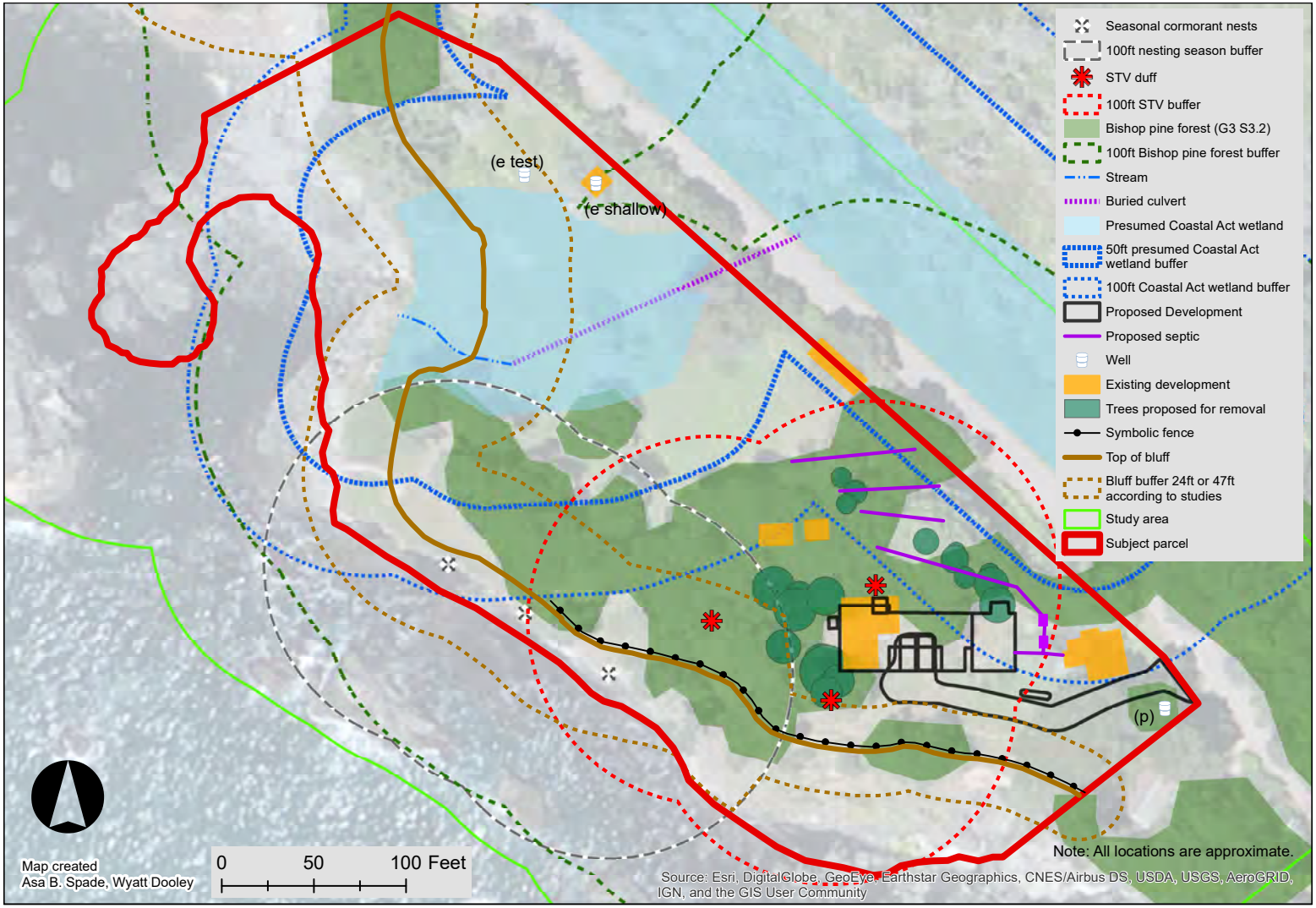
(7) If the project includes filling, identify the type of fill material to be used, including pilings or other structures, and specify the proposed location for the placement of the fill, the quantity to be used and the surface area to be covered.

(8) If the project includes diking, identify on a map the location, size, length, top and base width, depth and elevation of the proposed dike(s) as well as the location, size and invert elevation of any existing or proposed culverts or tide gates.

(9) If the project is adjacent to a wetland and may cause mud waves, a report shall be prepared by a qualified geotechnical engineer which explains ways to prevent or mitigate the problem.

(10) Benchmark and survey data used to locate the project, the lines of highest tidal action, mean high tide, or other reference points applicable to the particular project.

(11) Other governmental approvals as required and obtained. Indicate the public notice number of Army Corps of Engineers permit if applicable.



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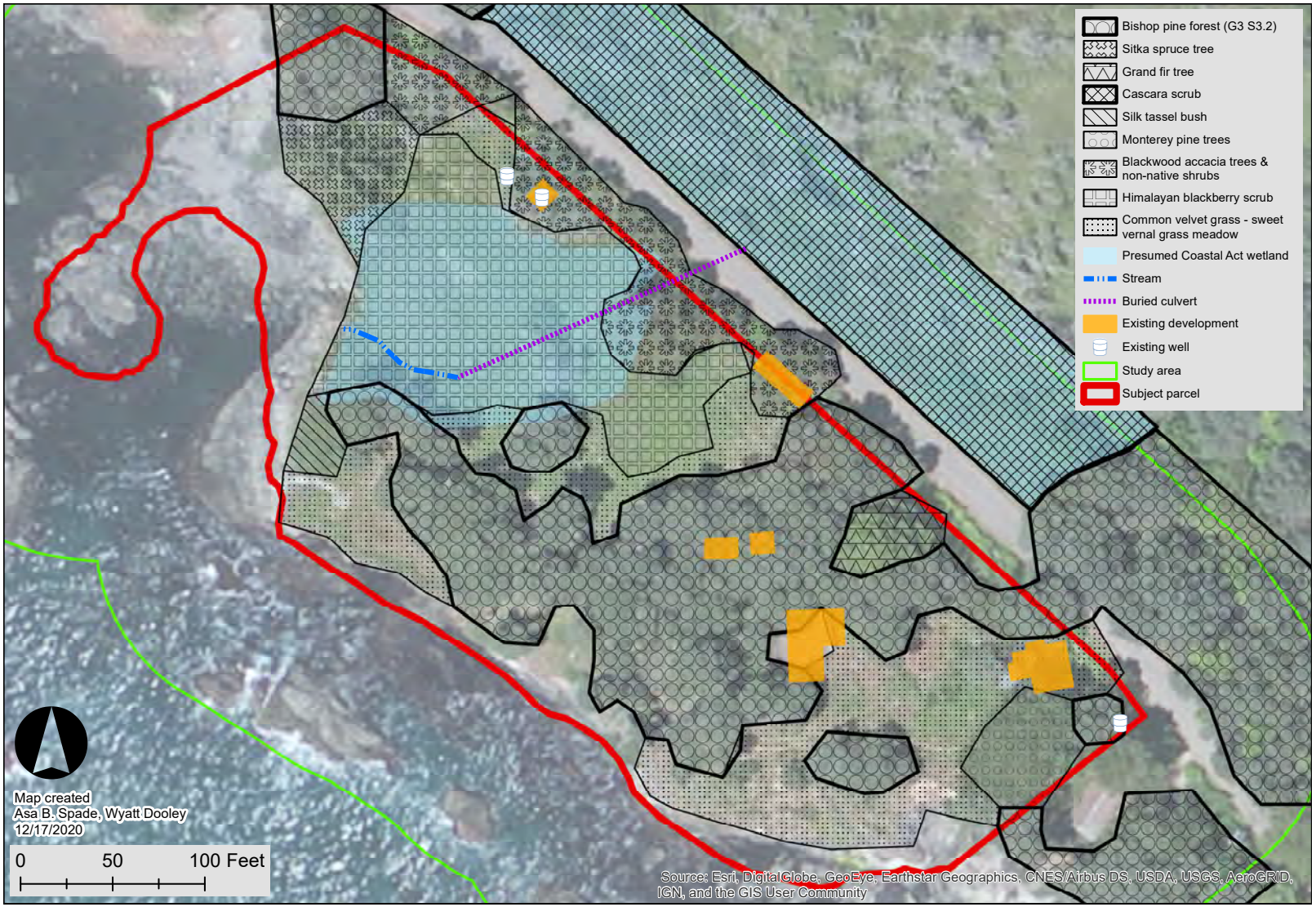
Presumed ESHA with Buffers, Existing and Proposed Development

Figure 2. Presumed ESHAs documented on site.



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Plant Communities & Vegetation Map

Note: Locations are approximate

Figure 3. Plant Communities and Vegetation Map

2. Findings

2.1. Special Status Plant Communities and Animals

2.1.1. Present Extent of Habitat

Bishop pine forest (*Pinus muricata* G3S3)
Bishop pine forest has a ranking of G3 S3, which indicates that the community is rare globally and throughout California. According to both the *Manual of California Vegetation* and USDA, Bishop pine forests typically occur in disjunct coastal populations from southern Oregon to Santa Barbara California (Figure 4, Figure 5 & Figure 6) (Sawyer 2009 & USDA 2018). Bishop pines are also located on Santa Cruz and Santa Rosa islands as well as Baja California, Mexico (Sawyer 20019 & USDA 2018). Populations of Bishop pines are typically located in Mediterranean climates between sea level and 400 meters in elevation (NPS 2015).

Within Bishop pine forests along the Mendocino coast, Bishop pines are either dominant within the forest canopy or co-dominant with: shore pine (*Pinus contorta* ssp. *contorta)*, Bolander's pine (*Pinus contorta* ssp. *bolanderi)*, Mendocino cypress (*Hesperocyparis pygmaea)*, tan oak (*Notholithocarpus densiflorus),* redwood *(Sequoia sempervirens),* bay laurel (*Umbellularia californica*)*,* Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis)*, and western hemlock (*Tsuga heterophylla*). Within Bishop pine forests, the shrub and herb stratum can be sparse due to high percentage of needle duff on the ground. In other cases, understory vegetation can be dense with plants such as, but not limited to: wax myrtle (*Morella californica*), Cascara buckthorn (*Frangula purshiana*), California coffeeberry (*Frangula californica*), sweet vernal grass (*Anthoxanthum odoratum*), common velvet grass (*Holcus lanatus*), California blackberry (*Rubus ursinus*), beach strawberry (*Fragaria chiloensis*), and Pacific reed grass (*Calamagrostis nutkaensis*) (Sawyer 2009 & USDA 2018).

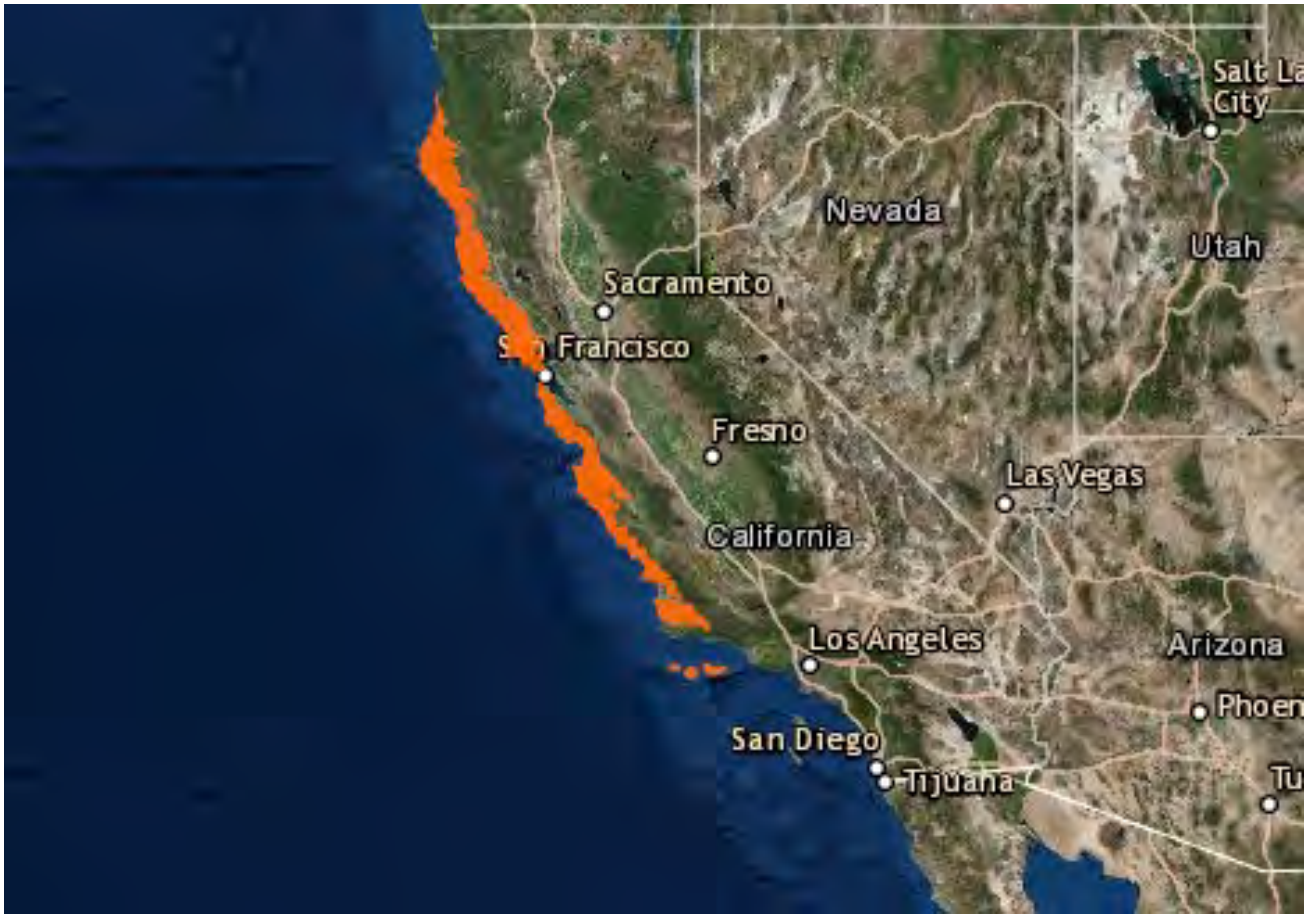
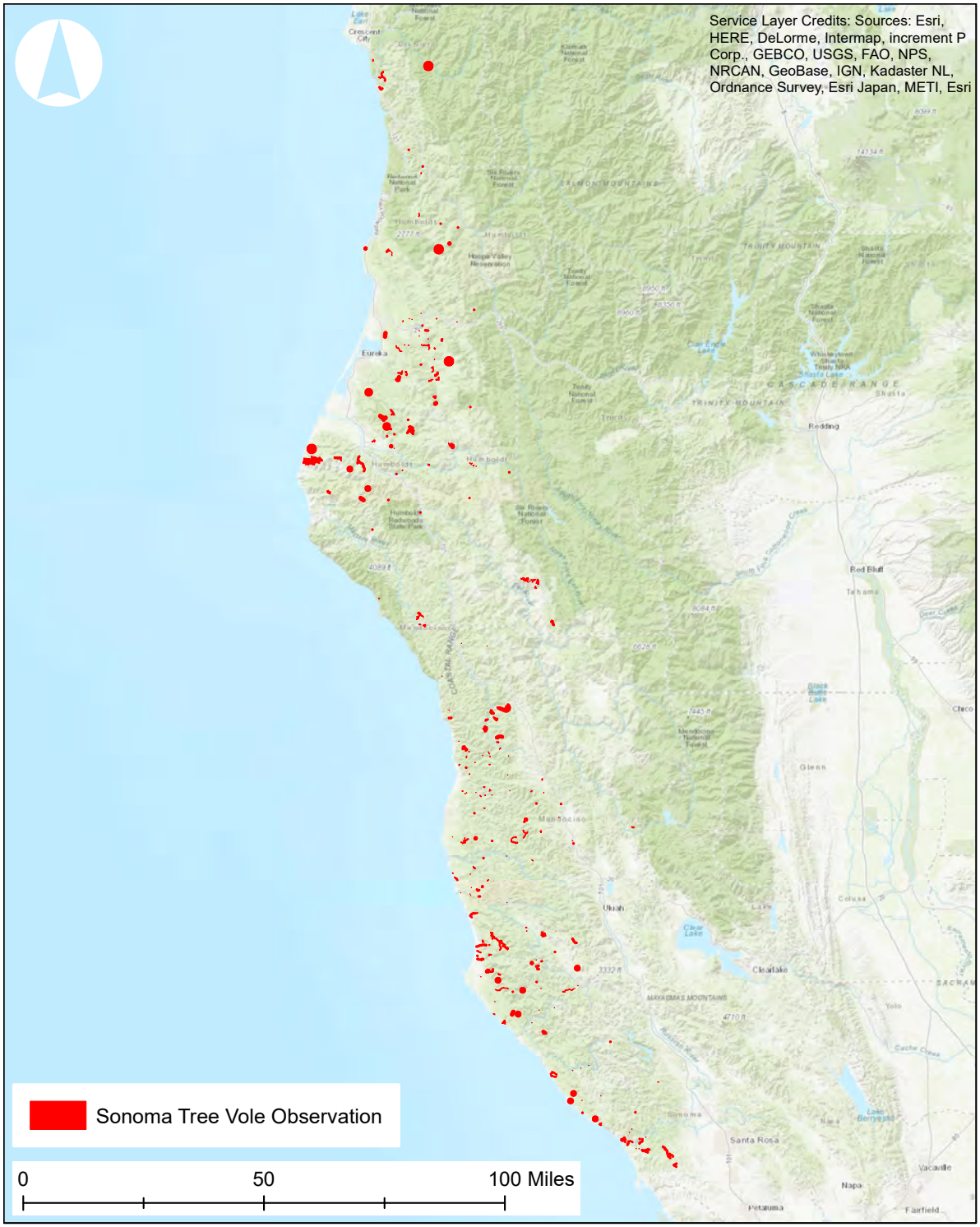


Figure 4. CNPS range of Pinus muricata & Pinus radiata alliance (CNPS 2019).

Figure 5. USDA Bishop pine range (USDA 2019).

Figure 6. CalFlora point locations of Bishop pine trees (CalFlora 2018).

Sonoma tree vole (*Arborimus pomo* G3S3) (Species of Special Concern)
The Sonoma tree vole is a Species of Special Concern which the California Department of Fish & Wildlife defines as "a species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following criteria: is extirpated from the State, is listed as threatened or endangered under the Federal Endangered Species Act (ESA) but not under the State ESA, is experiencing population declines or range retractions that, if continued, could qualify it for State status, and/or has naturally small populations exhibiting high susceptibility to risk from any factor, that if realized, could lead to declines that would qualify it for State status," (CDFW 2020). The Sonoma tree vole is distributed along the North Coast from southern Sonoma County north to the Klamath River and is more or less restricted by the fog belt (Figure 7). The Sonoma tree vole is ecologically similar but geographically isolated from the red tree vole whose southern range starts north of the Klamath River. The rodent occurs in old-growth and other forests, mainly Douglas-fir, redwood, and hardwood-conifer habitats (Forsman et al. 2016). While the literature indicates that Douglas fir is the primary food source for the Sonoma tree vole, within the Coastal Zone of Mendocino County, WCPB biologists, Asa Spade, has made a number of observations of Sonoma tree vole nest materials consisting of Monterey pine (*Pinus radiata*) and Bishop pine (*P. muricata*) needle resin ducts within forests including these pine species. Sonoma tree voles may be capable of, but have not been observed, utilizing shore pine (*P. contorta*) trees.



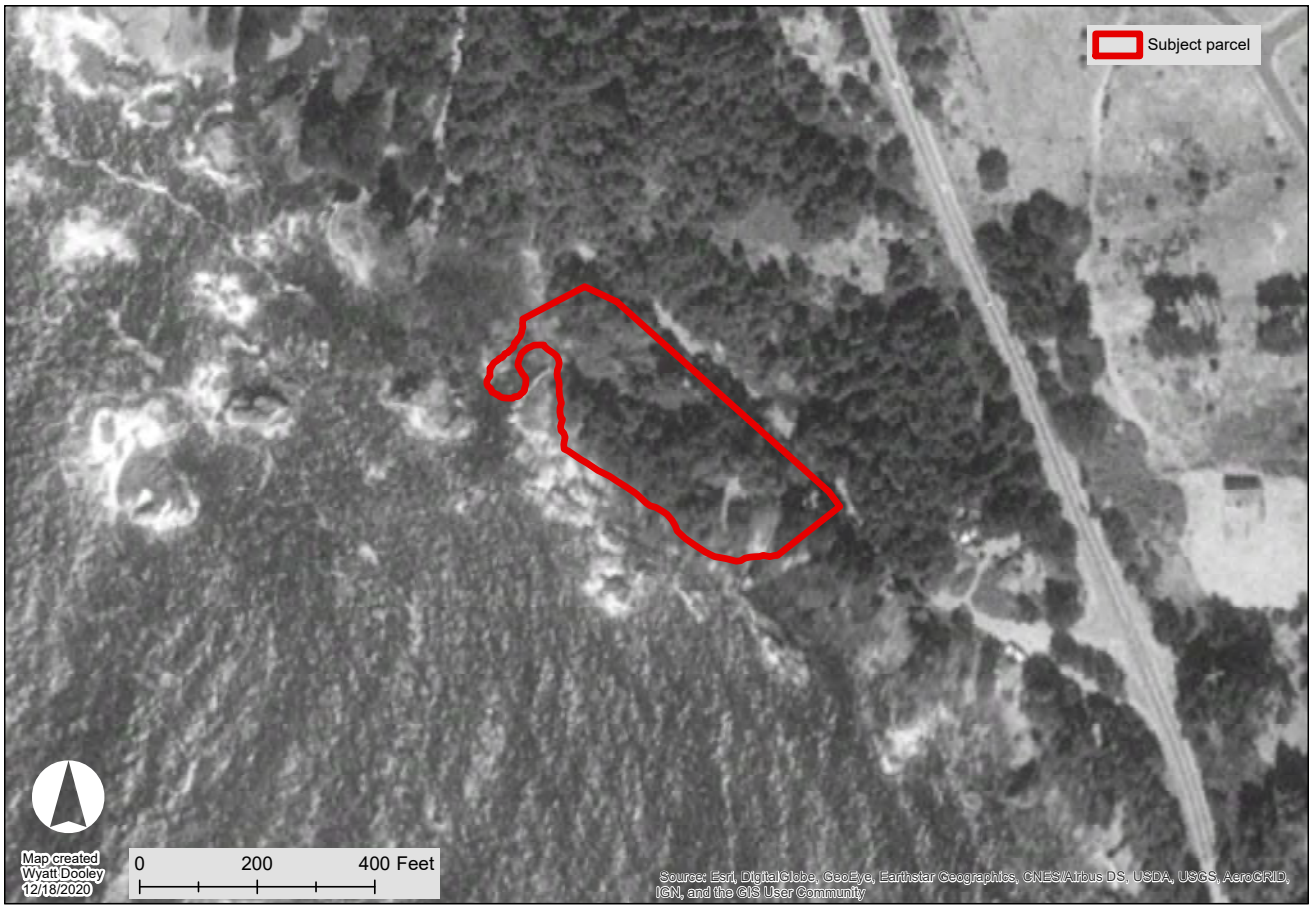
Sonoma Tree Vole Observations Recorded in CNDDB

Figure 7. CNDDB reported observations of Sonoma tree voles (CNDDB 2020).

2.1.2. Historical Extent of Habitat

Bishop pine forest (*Pinus muricata* G3S3)
1998 USGS and Google Earth imagery appears to show the Bishop pine forest onsite (**Figure 8**). The extent of the Bishop pine forest looks approximately the same as it was twenty-two years ago.

Sonoma tree vole (*Arborimus pomo* G3S3) (Species of Special Concern)
There is no prior documentation available in regards to the historical extent of the onsite Sonoma tree voles. This species is threatened by habitat loss due to timber harvest, wildfire, and changes in land use (Forsman et al. 2016).



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1998 USGS & Google Earth Image Overlay

Image supplied by USGS & Google Earth

Figure 8. 1998 USGS and Google Earth image of the study area.

2.2. Previous and Existing Ecological Conditions

2.2.1. Life History and Ecology

Bishop pine forest (*Pinus muricata* G3S3)
Bishop pine trees typically grow to a height of 50ft and have needles approximately 3 to 6 inches long in bunches of 2 (Jepson 2019). They generally live to be 80 years old (NPS 2015). As these trees get older, they are more susceptible to disease.

Bishop pine trees tend to exhibit one of two different morphotypes that are separated geographically throughout their range. To the south of Sea Ranch trees tend to have a greener hue to their needles whereas north of Sea Ranch they have a blueish grey hue (Millar 1986). As stated in **Section 2.1.1**, the Bishop pine forest ranges from Santa Barbara to southern Oregon and are typically found near the coast.

Fire is important to the regeneration of Bishop pine trees as they are a serotinous species and require heat to open their cones for seed dispersal (NPS 2015). Cones will open in response to a fire or extremely high temperatures (Sawyer 2009). Seeds can handle temperatures of up to 203 degrees Fahrenheit before germination success decreases (USDA 2018).

Fires within Bishop pine forest often cause the stand to be replaced. Mature trees are often killed by the fire but allow the seed cones to open and release seed (NPS 2015). Due to this stand replacement phenomenon, populations of this species tend to be evenly aged for the first 10-20 years after a fire occurs (NPS 2015). As humans have encroached on many Bishop pine stands throughout the State and disrupted the natural fire regime, there has been a stop to natural regeneration of Bishop pine as in many other ecosystems in the arid west.

Sonoma tree vole (*Arborimus pomo* G3S3) (Species of Special Concern)
Tree voles are the only species in the Arvicolinae subfamily (i.e. voles, lemmings, and muskrats) that primarily live in the forest canopy. The species primarily feeds on the needles of Douglas fir, western hemlock, and Sitka spruce (*Picea sitchensis*), however, in the California coastal region they have been documented occasionally feeding on grand fir, Monterey pine, and Bishop pine. Tree voles primarily feed on conifer needles and twigs and are the only animals that remove resin ducts from conifer needles. The remaining part of the needle is eaten and the resin ducts are often used to line nests. Both females and males build nests, however, female nests tend to be larger and may be occupied by subsequent generations. Nests are constructed on limbs against trunks or at the outer layer of branches. Nests can be anywhere from 6 – 150 feet off the ground and the size ranges in diameter from 0.5 – 3 feet. Tree voles are mostly nocturnal when navigating outside the nest, but feed on needles within the nest during the day. Breeding mostly occurs from February – September and litter size ranges from 1 – 4 young. Females usually have 1 – 2 litters per year. The northern spotted owl (*Strix occidentalis caurina*) and barred owl (*Strix varia*) are its main predators (Zeiner et al 1988-1990).

2.2.2. Restoration Potential

Bishop pine forest (*Pinus muricata* G3S3)
Bishop pine appears to have good restoration potential. Based on personal communication with WCPB biologist Wyatt Dooley and Jughandle Creek Farm Nursery, this species is easy to grow from seed. Seedlings take three years to establish in pots, at which point they can be planted out onsite. It is recommended that the area around the newly planted seedlings be weeded so they do not get shaded out by faster growing species. Any trees planted should be caged to deter deer from grazing. This weeding should be done by hand and mowing should be avoided as it can easily harm the seedlings.

Sonoma tree vole (*Arborimus pomo* G3S3) (Species of Special Concern)

The presence of tree voles in the Bishop pine forest is assumed due to nest structures with fecal pellets being observed on the ground beneath Bishop pine trees around the proposed SFR addition. Bishop pines are proposed to be removed that may contain hidden nests and potentially change the microclimate within the tree canopy. Restoration of the Bishop pine forest will restore habitat for the Sonoma tree vole by providing forest canopy and habitat connectivity to off-site portions of Bishop pine forest in the future.

2.3. Present and Potential Adverse Biological Impacts on the Ecosystem

2.3.1. Plants and Wildlife

Bishop pine forest (*Pinus muricata* G3S3)
A small proportion of the proposed development is located within the Bishop pine forest and there are approximately 20 trees that will be removed from areas of Bishop pine forest as a part of this project. Some but not all of the trees within an area making up about 7% of the Bishop pine forest mapped within the study area will be removed due to the hazard they pose to the existing development, the potential hazard they would pose to the proposed development, or in order to accommodate septic leach lines. The removal of trees will reduce the overall canopy cover, change shading and microclimate and understory composition, as well as affecting the immediate habitat in other ways. There is a potential to have an impact on nesting birds if development occurs during the breeding season. See **Section 7** of the Biological Report for ways to mitigate potential impacts to nesting birds.

Sonoma tree vole (*Arborimus pomo* G3S3) (Species of Special Concern)
The Bishop pine forest is presumed to support Sonoma tree voles which may depend on the trees present for food, shelter, cover and to provide a microclimate suitable for them by influencing temperature, humidity and wind. Mitigation measures include: removing the least number of native coniferous trees as possible, replacing Bishop pine trees at a 1:1 ratio while taking habitat connectivity into consideration, and consulting with CDFW to determine appropriate additional recommendations and/or measures.

3. Analysis

3.1. Alternatives to the Proposed Development

Alternative locations for the components of this proposed developments are very limited. Only one location for the primary and replacement leach fields was found to be appropriate by the septic designer. Alternatives were considered and explored but keeping the proposed development primarily within the already developed area is clearly the least impacting alternative:

- The proposed project is to remodel the existing single-family residence for use as a guest house and to build upon the garage and courtyard between the existing garage and existing residence to accommodate the development while minimizing the expansion of the development footprint.
- Alternative A is to site the proposed development in the northwestern property corner, north of the area of Coastal Act wetland on the subject parcels.

Wynn Coastal Planning & Biology planners have reviewed 13 other parcels and their associated development within the vicinity of 11800 500 D Road. Through a Takings Analysis they found that after the Mendocino County Coastal Zoning Code was certified, the average square footage of approved development was 4,174 ft^2. The 4,174 ft^2 included a single-family residence, garage, deck, patio, and accessory building. The average single-family residence square footage within the 13 parcels was 2,923ft^2.

As summarized above, the preferred alternative (proposed project) is to remodel the existing single-family residence and add on to the garage to minimize the expansion of the development footprint. The current footprint of the pre-existing buildings within the study area is 1,880ft^2. The owners would like to convert the existing single-family residence into a guest cottage convert the garage into a single-family residence, and add a studio in between. The proposed garage conversion and studio addition would add an additional 1,574ft^2 to the building footprint. **Table 1** below provides a comparison of square footages for the existing development, the proposed footprint and the footprint of Alternative A described below.

By utilizing the existing structure and adding on to it, this would limit the development to only being within the Bishop pine forest, rather than Alternative A which would involve a new development within 50ft of a wetland and still have a comparable impact to the Bishop pine forest.

Alternative A places the proposed development in the northwestern corner of the property. This option would not make use of any of the existing development. By building the proposed development in the northwestern corner, approximately the same total footprint would be developed as in Alternative A while leaving the pre-existing footprint in place. This roughly doubles the footprint proposed in Alternative A. In addition, Alternative A would put the development well within the buffer of areas of presumed Coastal Act wetland. As wetland/riparian resources tend to be the most sensitive, this is not an environmentally feasible option. Only one feasible location for the primary and septic leach fields was reported by the septic designer. If the residence were to be built in the northwestern corner of the parcel then septic, water, and electric lines would need to be extended through the area of presumed Coastal Act wetland within the subject parcels. The majority of trees removed within the Bishop pine forest would still have to be removed to accommodate the septic leach fields and because they would still pose a hazard to the existing development. Alternative A would have approximately the same impact to Bishop pine forest habitat while having additional potential impact to areas of presumed Coastal Act wetland and an overall larger footprint of developed area. The proposed project is the least impacting alternative.

Three options for supplying the residential use of the property with drinking water are proposed but it is unknown whether one, or all of these options will be necessary. Currently the residence is served only by a shallow well that does not supply enough water of drinking quality for the residential use. A deep test well was constructed approximately 20 feet west of the existing shallow well but has not been put into production use as of the time of this proposal. The development proposal includes options to upgrade/convert the existing test well to domestic water production, upgrade/convert the shallow well to domestic water production, and/or to drill a new domestic water well near the southwest corner of the combined parcels. All these options are proposed because at this time it is unknown whether one or more of them will be feasible and successful in producing enough water for the project.

Table 1. Comparison of square footage between pre-existing footprint and proposed footprint.

	Existing Structures in Study Area	Proposed & Existing Structures	Alternative A & Existing Structures
Total Building Square Footage	1,880ft^2	3,754ft^2	5,096 ft^2

4. MITIGATION AND AVOIDANCE MEASURES

Mitigation measures for the Bishop Pine forest have been proposed in the 2020 Biological Scoping and Botanical Survey Report. Avoidance, minimization, and compensatory mitigation measures to protect Bishop pine forest and the Sonoma tree voles presumed to live in the canopy of Bishop pine trees include: Removing the least amount of trees necessary, replacement of trees cut within the Bishop pine forest at a ratio of at least 1:1 and removal of non-native invasive plants within the Bishop pine forest. WCPB also recommends a Bishop pine forest active management plan and consultation and cooperation with CDFW to determine additional Sonoma tree vole protection measures. The report also makes recommendations for mitigation measures to avoid impacts to birds, bats and amphibians.

4.1. Dredging
N/A

4.2. Filling
N/A

4.3. Diking
N/A

4.4. Mud Waves
N/A

4.10 High Tide Benchmarks
N/A

4.11 Governmental Approvals
N/A

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6. Investigator Biographies

Wyatt Dooley graduated from University of California Santa Barbara with a Bachelor's of Science in Environmental Studies and a minor in Geology. After graduating, he worked for Fish and Wildlife and Pacific States Marine Fisheries as a technician researching salmon. He has also worked abroad in New Zealand as a conservation ranger helping on restoration projects and controlling invasive species. Additionally, he has received training in Army Corp wetland delineation by San Francisco State University and the Wetland Science and Coastal Training Program, training from CNPS-CDFW on vegetation rapid assessment and relevé methods, is on the US Fish and Wildlife Service's approved list for Point Arena Mountain Beaver Surveys, and received a specialization in ArcGIS through University of California Davis. He has also received training in *Carex* keying and identification through CNPS taught by CA Fish and Wildlife staff biologist Gordon Leppig (March 2018).

Asa B Spade graduated from Humboldt State University with a Bachelor's Degree 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. Asa has trained with the Carex Working Group in identifying grasses and sedges of Northern California. 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, and the California red-legged frog. He has contributed to more than 150 coastal development projects in Mendocino County.

Suzie E.W. Woolhouse received her BS degree in Environmental Studies and her M.S. degree in Biology both from San José State University. Her Masters was funded by the United States Forest Service to study rare plants that grow on Serpentine soils. This work was done in the Northern Sierra Nevada and included field and lab studies of six rare plant species. She presented her work at the 7th International Conference on Serpentine Ecology in Coimbra, Portugal as well as numerous conferences throughout California. A publication from her BS Senior Thesis research project can be found in the June 2019 copy of the journal Madroño and a paper from her MS was published in the journal Molecular Ecology in 2019. One of her photos from the project also made the cover. Suzie has worked as a biologist at the Santa Clara Valley Water district as the lead naturalist at the Mendocino Outdoor Science School, an instructor and assistant for Field Studies courses in France and Death Valley.

Nicole Bejar 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 and amphibian surveys. She is on the U.S. Fish and Wildlife Service's approved list for Point Arena Mountain Beaver Surveys.

ENVIRONMENTALLY SENSITIVE HABITAT AREAS DEFINED

Definition of Environmentally Sensitive Habitat Area

The Mendocino County Local Coastal Plan (LCP) and the California Coastal Act (CCA) define an Environmentally Sensitive Habitat Area (ESHA) as:

> "any area in which plant or animal life or their habitats are **either** rare **or** especially valuable because of their special nature or role in an ecosystem **and** which could be easily disturbed or degraded by human activities and developments".
>
> [**emphasis given**]

The Mendocino County LCP and California Coastal Commission (CCC) have identified specific types of ESHAs including: wetlands, sand dunes, estuaries, streams, rivers, lakes, open coastal waters, coastal waters, riparian habitats, other resource areas, special status species, and the habitat of special status species. For the purpose of this report, the following definitions were used to assess potential ESHAS present in the study area.

Wetland ESHAs

The Mendocino County Local Coastal Plan (LCP) and the California Coastal Act (CCA) define wetlands as:

> *"Lands within the Coastal Zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens."*

California Coastal Commission Administrative Regulations (Section 13577 (b)) provide the following detailed definition:

> *"Wetlands are lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent or drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salt or other substance in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats." In summary, a wetland in the coastal zone falls under CCA jurisdiction if any of the following conditions are present: wetland hydrology, dominance of wetland vegetation (hydrophytes), and/or presence of hydric soils."*

The Statewide Interpretive Guidelines for Identifying and Mapping Wetlands and Other Wet Environmentally Sensitive Habitat Areas (CCC 1981) use the CCA definition to establish technical criteria to delineate wetlands. These guidelines consider wetland hydrology as the most important parameter to identify a wetland within the coastal zone: "the single feature that most wetlands share is soil or substrate that is at least periodically saturated with or covered by water, and this is the feature used to describe wetlands in the Coastal Act. The water creates severe physiological problems for all plants and animals except those that are adapted for life in water or in saturated soil, and therefore only plants adapted to these wet conditions (hydrophytes) could thrive in these wet (hydric) soils. Thus, the presence or absence of hydrophytes and hydric soils make excellent physical parameters upon which to judge the existence of wetland habitat areas for the purposes of the Coastal Act, but they are not the sole criteria." The saturation of soil in a wetland must be at or near the surface (approximately one foot or less) for a period of time (usually more than two weeks) in order to facilitate anaerobic

soil reduction processes that produce wetland conditions.

Identifying the presence of either wetland classified plants or hydric soils is referred to as the "one parameter approach." This approach can be useful because wetland plants, wetland hydrology, and/or hydric soils often co-occur, especially in natural undisturbed areas. However, situations do exist where wetland classified plants are found in the absence of other wetland conditions. These areas are not wetlands and a delineation study must carefully scrutinize whether the wetland classified plants that are growing as hydrophytes in anaerobic soil conditions caused by wetland hydrology or not.

Examples of hydrophytic plants growing in non-wetland conditions include:

1) Deep-rooted trees (e.g., willows), capable of persisting in the presence of surface water or in dry conditions by tapping into deep groundwater sources; and,

2) Wetland-classified plants that are also salt-tolerant (e.g., alkali heath) can grow in the presence of either wetland conditions or saline soil conditions, but not necessarily both.

Similarly, hydric soils can be found in the absence of wetland hydrology or wetland classified plants. For example, hydric soils have been observed in upland areas where historic disturbances exposed substratum and in densely vegetated grasslands (Mollisols). A wetland delineation must determine if the hydric soil indicators are a result of frequent anaerobic conditions in the presence of hydrology or due to another cause.

In the Coastal Zone, the California Coastal Commission presumes an area is a wetland if any one of the following three-wetland indicators is present: wetland hydrology, wetland plants, or hydric soils. Exceptions to this exist if there is strong positive evidence of upland conditions, which should be obtained during the wet season. Evidence of upland conditions could include the following observations: a given area saturates only ephemerally following a substantial rainfall, soil is very permeable with no confining layer, or the land is steep and drains rapidly.

Hydrology: Depressions, seeps, and topographic low areas in the Study Area are surveyed for primary and secondary hydrological indicators. Primary indicators of wetland hydrology that offer direct evidence include: visible inundation or saturation, surface sediment deposits, oxidized root channels, and drift lines. Secondary indicators that offer indirect evidence include algal mats, shallow restrictive layers in the soil, or vegetation meeting the FAC-neutral test.

Soils: The Study Area is examined for hydric soil indicators according to Natural Resources Conservation Service guidelines (USDA 2006) where horizon depths, color, redoximorphic features, and texture characterize soil profiles. Soils formed under anaerobic wetland conditions generally have a low chroma matrix color, designated 0, 1, or 2, and contain mottles or other redoximorphic features. Soil color and chroma was determined using a Munsell soil color chart (Gretag Macbeth 2000) to identify soils as hydric.

Plants: The US Army Corps of Engineers developed a classification system for plant species known to occur in wetlands. The plant species are categorized based on the frequency that they have been observed in wetlands. Species classified as obligate (OBL), Facultative Wetland (FACW), and Facultative (FAC) are considered hydrophytic. If more than 50 percent of the plant species in a given area are hydrophytic, the area meets the wetland vegetation criterion and is presumed to be a jurisdictional wetland under the CCA.

Areas identified as potential wetlands by the presence of wetland plants are also examined for indicators of wetland hydrology. Positive indicators of wetland hydrology can include direct evidence (primary indicators) such as surface water, saturation, sediment deposits, and surface soil cracks, or indirect evidence (secondary indicators) such as drainage patterns and water-stained leaves.

Riparian ESHAs

The Mendocino County LCP recognizes drainages with associated riparian vegetation to be ESHAs. The Technical Criteria (CCC 1981) defines riparian vegetation as:

> *"that association of plant species which grows adjacent to freshwater watercourses, including perennial and intermittent streams, lakes, and other freshwater bodies. Riparian plant species and wetland plant species either require or tolerate a higher level of soil moisture than dryer upland vegetation, and are therefore generally considered hydrophytic."*

Special Status Species ESHAs

Special status species and their habitats are defined as ESHAs by the CCA and Mendocino County LCP. Special-status species include those species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing by the USFWS or CDFW. In addition, CDFW Species of Special Concern are given special consideration under the California Environmental Quality Act (CEQA). Species of Concern may only be protected as ESHAs if they are ranked by CDFW as imperiled in California (S3 or less). Plant species on California Native Plant Society (CNPS) Lists 1 or 2 are also considered special status species and are protected as ESHAs.

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

SUBMITTAL

January 10, 2023

Julianna Cherry
Planning and Building Services
120 West Fir Street
Fort Bragg, CA 95437

RE: CDP_2022-0033

Owner: Camp Bedhead LLC

Site: 11800 Road 500 D
Mendocino, CA 95460
APNs: 118-320-10, 11, and 12

Dear Ms. Cherry:

Thank you for your continued attention to this project.

Pursuant to Condition of Approval #20 found on the "Notice of Final Action", dated January 2, 2023, we offer the following document:

- Preliminary Mitigation, Management, Monitoring, & Reporting Plan for Bishop Pine Forest Enhancement & Restoration, prepared by Wynn Coastal Planning & Biology, dated January 5, 2023.

Let me know if you have any questions.

Sincerely,

Tara Jackson

Tara Jackson
Senior Planner

Encl: per above
CC: Lavi Daniel, applicant; file

PRELIMINARY MITIGATION, MANAGEMENT, MONITORING, & REPORTING PLAN

for

Bishop Pine Forest Enhancement & Restoration

at

11800 500D Road
Mendocino, CA 95460
APN: 118-320-10, -11, -12
Mendocino County

Property Owner:
Camp Bedhead LLC
14880 Caspar Rd
Caspar, CA 95420

Report Prepared By:
Asa Spade - Senior Biologist
Nicole Herrera - Biologist
January 5, 2023

Wynn Coastal Planning & Biology
703 North Main Street, Fort Bragg CA 95437
ph: 707-964-2537 fx: 707-964-2622
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1.0 PROJECT SUMMARY

The subject parcels are located at 11800 500D Rd, Mendocino, CA (**Figure 1**). The study area is located approximately 0.3 miles to the north of the town of Mendocino and neighbored by rural residential parcels and Russian Gulch State Park. Located on a coastal terrace, the parcels combined are a little less than 3-acres and are accessed from 500D Rd off Highway One. The study area is within the California Coastal Zone as defined in Section 30103 of the California Coastal Act (CCA).

The proposed development consists of merging three separate legal parcels into one legal parcel. Converting the existing garage to a single-family residence; converting the existing single-family residence to guest cottage; building a new artist studio; shifting the location of the driveway back from the bluff edge; constructing symbolic fencing near the bluff edge; installation of septic; connecting to utilities. Providing for sufficient domestic water through one or more of the following as necessary: Converting existing test well in the northern portion of the parcels to production, converting existing shallow irrigation well in the northern portion of the parcels to production, drilling test wells in one or more location (4 locations are proposed) and converting productive one(s) to production wells as needed to meet minimum water requirements. Connecting the new well(s) to the residence. Bishop pine trees will necessarily be removed to make room for the proposed septic system and to provide appropriate defensible space around the proposed single-family residence.

This Mitigation, Management, Monitoring, and Reporting Plan for Bishop Pine Forest Enhancement and Restoration was created to guide the restoration, maintenance and reporting to compensate for the loss of Bishop pine forest habitat on site, to enhance remaining Bishop pine forest habitat, and to guide avoidance of further potential impact to the Bishop pine forest and other special status resources documented or presumed to be present on the site

2.0 BACKGROUND

From 2018 - 2020, biological scoping and floristic botanical surveys were conducted on the parcel APNs 118-320-10, -11, -12 by Wynn Coastal Planning & Biology (WCPB) to locate potential Environmentally Sensitive Habitat Areas (ESHAs) - special status plants and communities, wetlands and riparian areas, and special status animals and/or their habitats. This study also was conducted to determine if any ESHAs would be directly or indirectly impacted by the development.

Wynn Coastal Planning & Biology's staff biologists conducted floristic and ESHA surveys on March 5, May 16, July 5 & 18 of 2018 for a total of 7.2 person hours. Additional surveys were conducted on May 19, July 10 & 28, and August 26, 2020 in order to make more observations, gather additional information on specific resources, and to keep the survey up to date by ensuring that site conditions had not changed significantly since the initial study. These additional studies involved another ~13.0 person hours of site work. Four types of potential ESHA were identified (**Figure 2**) within the study area according to the definitions by the California Coastal Act (CCA) and Mendocino County Local Coastal Plan (LCP)

Wetland Presumed ESHA – Two areas of presumed Coastal Act wetland were present within the study area totaling approximately 1 acre.

Rare Plant Community Presumed ESHAs – One special status plant community was identified in the study area: **Bishop Pine Forest** (*Pinus muricata* forest alliance (G3 S3)).

Stream ESHA- A small stream originating from a culvert was present on the north-western portion of the study area and is within the presumed Coastal Act wetland.

Special Status Wildlife Habitat Presumed ESHA – Three groups of pelagic cormorant (*Phalacrocorax pelagicus*) nests were identified on the bluff edge. Clumps of Bishop pine resin ducts presumably from a Sonoma tree vole nest were observed in the Bishop pine forest indicating that the trees are habitat for this Species of Special Concern.

The pelagic cormorant nests and stream can be avoided by greater than 100ft. The Coastal Act wetland can be mostly be avoided by 50ft except for a small section near the 500D Rd. The nearest part of the Coastal Act wetland is on the other side of 500D Rd and therefore, not likely to be impacted by the installation of the septic system. The Bishop pine ESHA will necessarily be impacted as Bishop pine trees need to be cut down to make room for the proposed septic system and to create defensible space around the proposed single-family residence. The septic system is proposed in the only feasible location on site that has the appropriate soils and is located more than 100ft from existing and/or neighboring wells so it cannot be proposed in another location. Sonoma tree vole resin ducts were observed underneath the Bishop pine forest during field surveys, so it is presumed that Sonoma tree voles are present in the Bishop pine forest canopy. Mitigation measures for impacts to the Bishop pine forest and Sonoma tree voles are discussed in the 2020 Biological Scoping & Botanical Survey Report and Biological Report of Compliance.

Responsible Parties
The party responsible for making sure Mitigation, Management, Monitoring, and Reporting Plan performance goals are met is:

Camp Bedhead LLC
14880 Caspar Rd
Caspar, CA 95420

Or Future Property Owner

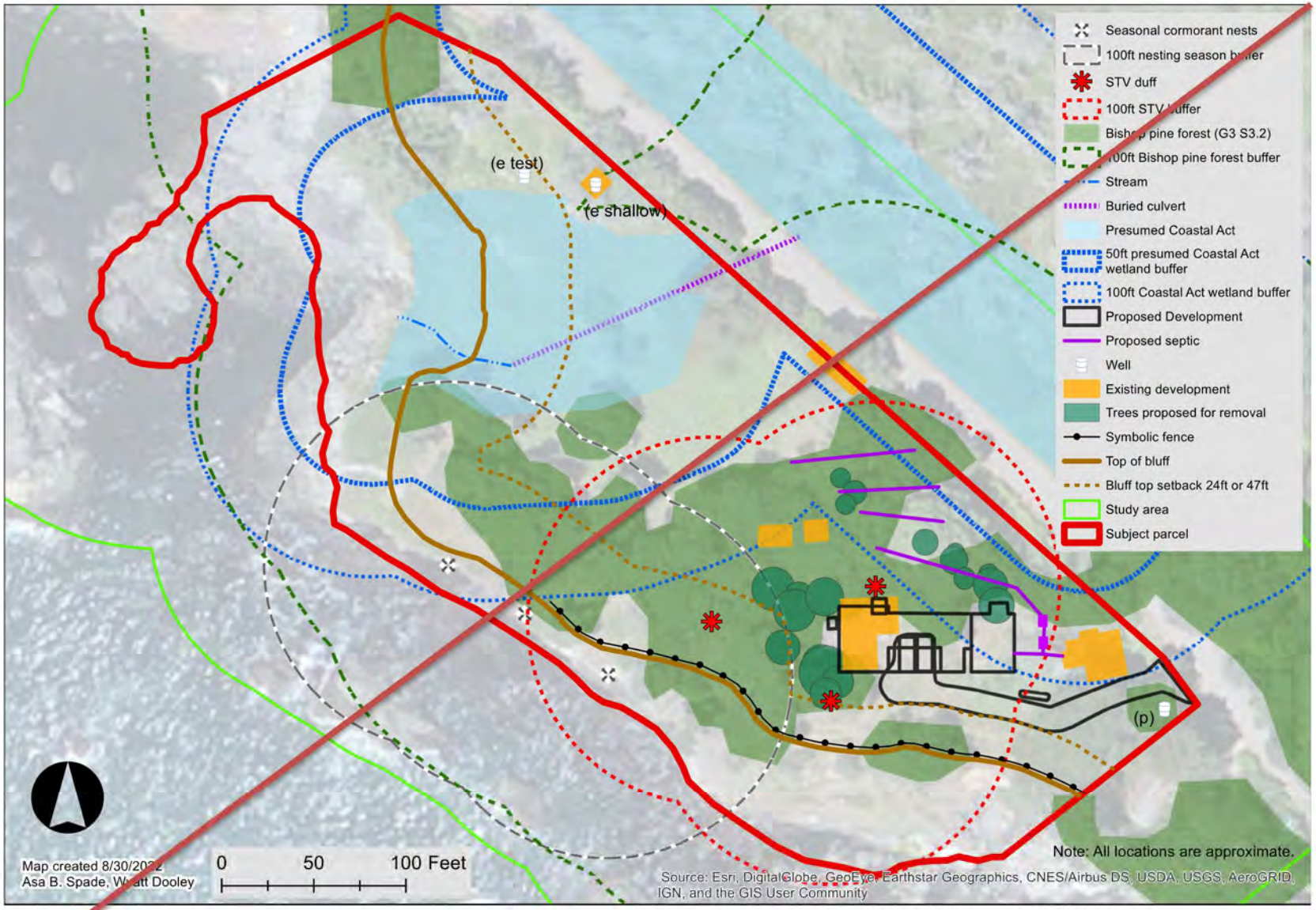
This Mitigation, Management, Monitoring, and Reporting Plan for Bishop Pine Forest was written by:

Nicole Herrera & Asa Spade
Wynn Coastal Planning & Biology
703 North Main Street
Fort Bragg, CA 95437
707-964-2537
Nicole@wcplan.com

OWNER: Bertrand - Daniel
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

Parcel Location

Figure 1. Location of the subject parcel in relation to the town of Mendocino.



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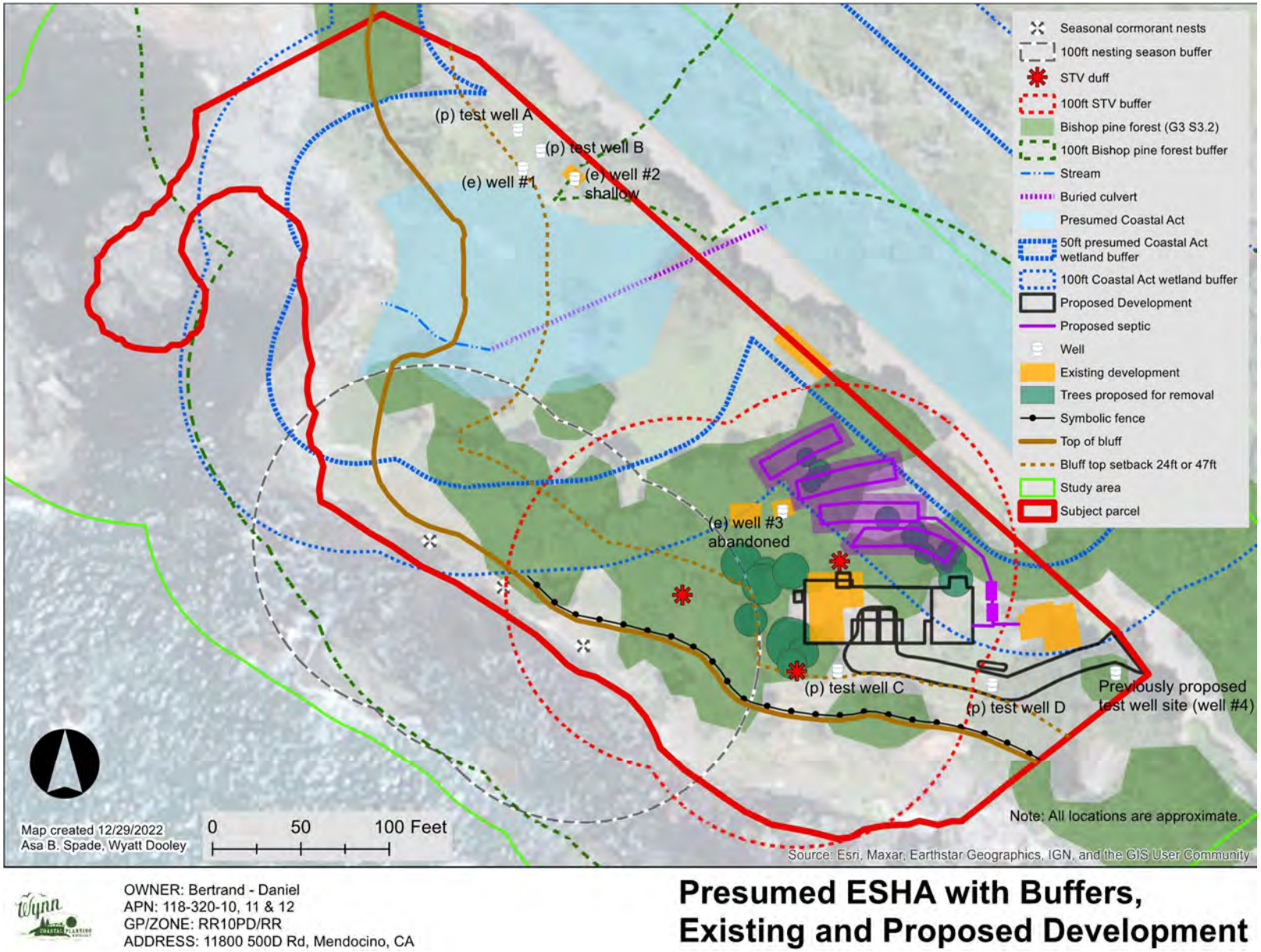
Presumed ESHA with Buffers, Existing and Proposed Development



OWNER: Bertrand - Daniel
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Presumed ESHA with Buffers, Existing and Proposed Development

Figure 2. Proposed development map with presumed ESHAs and buffers mapped.

3.0 PREVIOUS AND EXISTING ECOLOGICAL CONDITIONS

A driveway entrance at the southeastern corner of the parcel leads into a courtyard with a single-family residence, garage/workshop, garden, and a couple sheds present. The cinderblock and concrete garage/workshop is built into a small hill upon which a number of Bishop pine trees are growing. Bishop pine trees are present north of the residence and garage. In the northern portion of the parcel a buried culvert empties water into a small watercourse. A small wellhouse and an aviary “airlock”, which is overgrown with young acacia trees, are present along the eastern fence. The fenced “airlock” once allowed entry into a larger netted area for birds which is no longer present and is now overgrown with non-native Himalayan blackberry (*Rubus armeniacus*). A small wellhouse containing a shallow irrigation well is present adjacent to the 500D Road and a test well is present a bit further to the west of this wellhouse. A concrete staircase leads from the blufftop down to the rocks just above the ocean in the northwestern portion of the parcel. A fence is present along the northern and eastern portions of the parcel.

Bishop pine (*Pinus muricata*) is a serotinous species, meaning that to some degree regeneration is tied to a historic fire regime. While several fires occurred on the Mendocino coast in the years just after World War II, with the increase in population and development on the coast, wildfires are no longer as common an occurrence, and many forests are even aged and nearing the end of their relatively short (80 to 100 year) life cycle. Due to lack of fire, duff and understory layers in forests can be thick, which presents a challenge to seed regeneration. Disease has become an issue in recent years, with large stands of Bishop pine dying from bark beetle and other diseases common with aging. The increasing presence of non-native tree species such as Monterey pine (*Pinus radiata*) may be contributing towards loss by displacement of habitat and spread of disease. Development is further reducing habitat and fragmenting forests (Giusti n.d.). In the absence of fire, Bishop pine forests will need to be actively managed, including brush and duff reduction, identification and appropriate removal of pathogens, and protection of new recruit pine seedlings over time to create stands with diversity in age groups. It is important to note that northern populations (north of Sea Ranch) are less serotinous than southern populations and cones can occasionally open on hot days (Cope 1993).

Bishop pine trees (*Pinus muricata*) dominated the overstory in the center of the parcel with a small number of grand fir (*Abies grandis*) and Monterey pine (*Pinus radiata*) trees also present. The quality of the Bishop pine forest varies, with higher quality habitat occurring to the north of the existing workshop/garage and lower quality occurring near existing development (**Figure 3** & **Figure 4**). A number of dead pines are present, especially within the portion of the forest to the northwest of the proposed single-family residence site. Veiled polypore (*Cryptoporus volvatus*) was observed growing on the dead and dying Bishop pine trees onsite. This fungus fruits from and decomposes the rotting sapwood of conifers and is an indicator of pine beetle infiltration. Veiled polypore has a mutualistic relationship with pine beetles as it provides the appropriate temperature and humidity for the beetles to take shelter in and the beetles disperse the spores that cover their bodies (Harrington 1980).

Figure 3. Bishop pine forest looking east towards abandoned shed/well house. Understory mainly non-native grassland with more native plants upslope.

Figure 4. Bishop pine forest with invasive English ivy understory near the proposed building envelope.

4.0 RESTORATION PLAN

4.1 Basis for Design

The intent of this Mitigation, Management, Monitoring, and Reporting Plan is to provide guidance on managing and enhancing the site after the proposed development has been installed (**Figure 5**). Prior to human interference on the natural landscape, Bishop pine trees relied on wildfire to burn and replace entire stands and disperse seeds onto bare ground. Reintroducing fire onto the landscape is not a viable option; however, steps can be taken to encourage stand regeneration. This plan outlines performance goals and suggests methods for the property owner to help facilitate and mimic natural stand progression as close as possible without the use of fire.

The proposed plan is performance-based, which allows for management to be carried out in an adaptive manner whereby monitoring provides feedback and shows the manager areas within which efforts are successful, as well as areas that may need a different approach in order to meet the performance goals. Monitoring and restoration should occur for at least five years and until all performance goals are met.

4.2 Mitigation Measures

Measures recommended in the Biological Scoping & Botanical Survey Report are repeated below. Changes to the measures are marked with ~~strikethrough~~ or <u>underline</u> to reflect agency input and the process through which the permit is being processed.

- **Bishop Pine Forest & Sonoma Tree Vole- Minimization Measure: Remove the least number of trees necessary**
  Native coniferous trees should only be removed if strictly necessary.

- **Bishop Pine Forest & Sonoma Tree Vole- Compensatory Mitigation: Replace Bishop pine trees**
  Bishop pine trees that are removed should be replaced at a minimum 1:1 ratio in an appropriate location on the project site. Locations toward the northern end of the parcel would expand Bishop pine forest southward from Bishop pine forest located on State Parks land and result in more contiguous habitat beneficial to Sonoma tree voles.

- **Bishop Pine Forest - Compensatory Mitigation: Improve Bishop pine forest habitat by removing invasive plants**
  Target invasive plant species within the mapped Bishop pine forest and areas where Bishop pines will be planted should be eliminated. The target species are: English ivy (*Hedera helix*), English holly (*Ilex aquifolium*), cotoneaster (*Cotoneaster spp.*), pampas grass (*Cortaderia jubata*), Scotch broom (*Cytisus scoparius*), blackwood acacia (*Acacia melanoxylon),* red claws (*Escallonia rubra),* purple fox glove (*Digitalis purpurea),* and red hot poker (*Kniphofia uvaria).*

- **Sonoma Tree Vole - Compensatory Measure: Coordinate with CDFW**
  Coordination should occur with California Department of Fish and Wildlife to determine if there are additional recommendations or requirements from that agency. Sonoma tree voles are a CDFW Species of Special Concern, which do not have the legal protections of a Federally or State listed Threatened or Endangered species.

- **Nesting Birds - Avoidance Measure: Seasonal Avoidance**
  No 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 14 days of the onset of construction to ensure that no nesting birds will be disturbed during development (**Table 2**).

- **Nesting Birds - 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.

  Attention should also be paid to the cormorants located on the bluff edge to ensure that nests are buffered by 100ft during the breeding season.

- **Nesting Birds - Avoidance Measure: Construction activities during daylight hours**
  Construction should occur during daylight hours to limit disturbing construction noise and minimize artificial lights.

- **Roosting Bats - Avoidance Measure: Pre-construction surveys**
  Construction will ideally occur between September 1st and October 31 after the young have matured and prior to the bat hibernation period. **If it is necessary to disturb potential bat roost sites between November 1 and August 31**, pre-construction surveys should be performed by a qualified biologist 14 days prior to the onset if development activities. If active bat roosts are observed, no ground disturbance activities shall occur within a minimum 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 roost until all young are no longer dependent upon the roost.

  Pre-construction bat surveys involve surveying trees, rock outcrops, and buildings subject to construction for evidence of bat use (guano accumulation, or acoustic or visual detections). If evidence of bat use is found, then biologists shall conduct acoustic surveys under appropriate conditions using an acoustic detector, to determine whether a site is occupied. If bats are observed, a minimum 50ft buffer should be implemented around the bat cave.

- **Roosting Bats - Avoidance Measure: Construction activities during daylight hours**
  Construction should occur during daylight hours to limit disturbing construction noise and minimize artificial lights.

- **Roosting Bats - Avoidance Measure: Exclude bats from buildings**
  In order to avoid incidental impact to bats that may be roosting in existing buildings that will be demolished or modified, bats should be excluded by closing off potential entrances and installing one-way exit tubing. Exclusion tubes should be in place for at least 7 warm nights and should not be installed during pup-rearing season when mother bats could be separated from their non-flying young.

- **Coastal Act Wetlands - Avoidance Measure: Limit ground disturbing construction to dry season**
  Ground disturbing construction should occur only during the dry season which is generally April 1 to October 31 of any year. If a rain event occurs during the ground disturbance period, all ground disturbing activities will cease for a period of 48 hours after the rain stops.

- **Coastal Act Wetlands - Avoidance Measure: Restrict staging area**
  No construction ~~or materials staging~~ shall occur within 50ft of the areas of presumed Coastal Act wetland identified and mapped with the exception of the eventual construction of a replacement leach field if and when the primary fails, and the conversion of the existing test well in the northern portion of the parcels, and its connection to water and power at the existing well house,

if it is necessary in order to supply the residence with sufficient drinking water. ~~It is required that CDFW concurs that 50ft is an appropriate buffer distance.~~ Stage all building materials and construction vehicles in upland area greater than 100 feet from areas designated as wetland and riparian on the parcel. Areas east of the 500D Road are not as much of a concern because they will be buffered by the 500D road and the existing fence along it on the subject parcel.

- **Amphibians - Avoidance Measure: Contractor education**
  Within two weeks prior to construction activities, project contractors will be trained by a qualified biologist in the identification of 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.

- **Amphibians - 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.

- **Amphibians - 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.

- **Amphibians - 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.

- **General Habitat Quality - Avoidance Measure: Clean heavy machinery**
  Heavy machinery such as and not limited to excavators and skid steers that may be used onsite have the potential to spread invasive plant material from use on other sites. Heavy machinery that is used in dirt needs to be power washed offsite to eliminate seeds and other propagules.

- **General Habitat Quality - Avoidance Measure: Plant non-invasive vegetation**
  While many ornamental landscapes on the California coast use non-native plants, invasive plants should not be planted. Some invasive plants commonly seen by Wynn Coastal Planning & Biology biologists on the coast that should be avoided are: Iceplant (*Carpobrotus edulis, C. chiloensis,* & *Delosperma* sp.), cotoneaster (*Cotoneaster franchetii* & *C. pannosus*), English holly (*Ilex aquifolium*), English ivy (*Hedera helix*), cape ivy (*Delairea odorata*), pampas grass (*Cortaderia jubata* & *C. selloana*), cape weed (*Arctotheca calendula* & *A. prostrata*), *Crocosmia* sp., blue gum eucalyptus (*Eucalyptus globulus*), redhot poker (*Kniphofia uvaria*), periwinkle (*Vinca major*), bulbil bugle lily (*Watsonia meriana*), and callalily (*Zantedeschia aethiopica*).

- **General Habitat Quality - Avoidance and Minimization Measure: Reduce invasive vegetation**
  In order to prevent the spread of invasive plants already present at the site into additional areas, efforts should be undertaken to reduce, and if possible eliminate, invasive plants. Success eliminating some species of invasive non-native plants that occur on site is more likely than with others. For example, WCPB believes it would be beneficial and possible to eliminate English ivy (*Hedera helix),* English holly (*Ilex aquifolium*), cotoneaster (*Cotoneaster* spp.), pampas grass (*Cortaderia jubata*), Scotch broom (*Cytisus scoparius*), blackwood acacia (*Acacia melanoxylon),* red claws (*Escallonia rubra),* purple fox glove (*Digitalis purpurea),* and red hot poker (*Kniphofia uvaria)* with a concerted effort. Himalayan blackberry (*Rubus armeniacus*) and poison hemlock (*Conium maculatum)* could be reduced but would either require significant soil disturbance to grub out roots and/or the application of herbicide to significantly diminish the population present, neither of which are desirable within the Coastal Act wetland where these species are most prevalent. Other invasive non-native plants present, such as bentgrass (*Agrostis* spp.), sweet vernal grass (*Anthoxanthum odoratum*), slender wild oats (*Avena barbata*), orchard grass (*Dactylis glomerata*), velvet grass (*Holcus lanatus*), sixweeks grass (*Festuca myuros*), rattlesnake grass (*Briza maxima*), hairy cat's ear (*Hypochaeris radicata*), and sheep sorrel (*Rumex acetosella*) are unlikely to be eliminated or significantly reduced. Reduction and elimination of target species within the Bishop pine forest are outlined above as compensatory mitigation measures for impacts to the Bishop pine forest. Additional invasive removal within the grassland and Coastal Act wetland areas of the parcel are recommended but in WCPB's opinion, should not be made a requirement of the project's approval.

  These measures should be kept in mind during implementation.

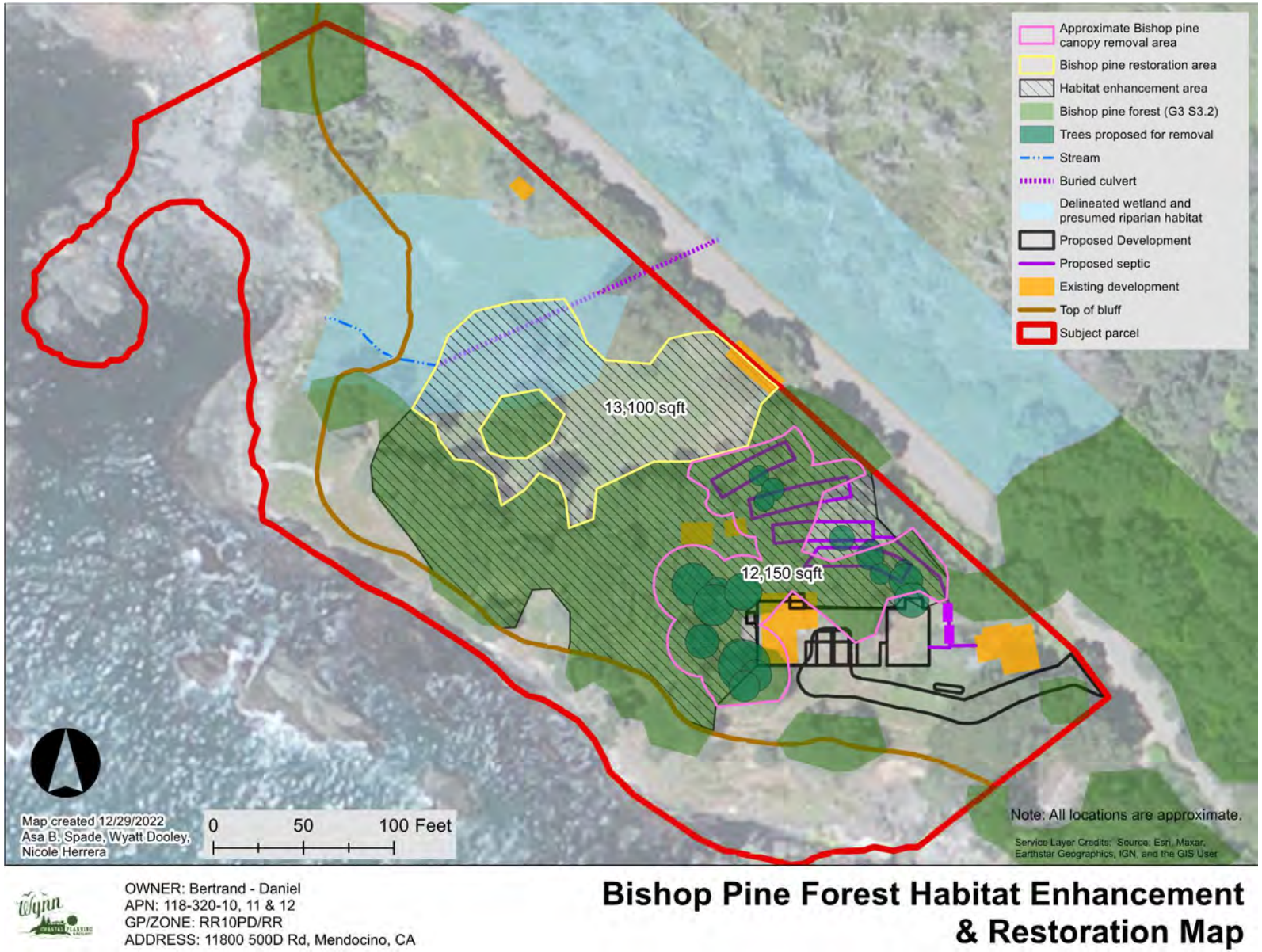

Figure 5. Bishop pine forest habitat enhancement & restoration map.

4.3 Performance Goals and Success Criteria

The Mitigation, Management, Monitoring, & Reporting Plan has been written to direct the improvement of the existing Bishop pine habitat and replacement of Bishop pine forest at a 1:1 ratio in the restoration area. Performance goals for mitigation, management, monitoring, and reporting are as follows:

4.3.1 Remove invasive, non-native plants within the Bishop pine forest habitat enhancement area and restoration area.

Improve habitat value by minimizing invasive, non-native plant presence. Target species for this project are: English ivy (*Hedera helix*), English holly (*Ilex aquifolium*), Scotch broom (*Cytisis scoparius*), pampas grass (*Cortaderia jubata*), Himalayan blackberry (*Rubus armeniacus*), cotoneaster (*Cotoneaster* spp.), and blackwood acacia (*Acacia melanoxylon*).

Success Criteria: Target non-native, invasive plants within the restoration and enhancement area will be reduced by 80-95% or greater by the end of the first year. No English ivy, English holly, Scotch broom, pampas grass, cotoneaster, or blackwood acacia shall be detectable within the habitat enhancement area at the end of the monitoring period.

Notes: Some clumps of scotch broom are growing along the bluff edge and cannot be feasibly removed. Invasive plants are only required to be removed in areas that are safely accessible.

Ornamental plants that can become invasive on the Mendocino coast should not be introduced as new landscaping. Invasive plant removal outside of the habitat enhancement area is highly recommended but not required for successful completion of this plan.

4.3.2 Encourage natural recruitment of Bishop pine seedlings

Encourage natural recruitment of Bishop pine seedlings through existing adult seed trees (Self and Ezell 2020). Cone pollination generally occurs from April to June. Pine seedlings need bare soil to sprout and grow (Cope 1993). New Bishop pine trees should be recruited at a rate of 5-10% every 5-10 years in order to create and maintain a varied-age stand that replaces itself with consideration to a Bishop pine's life expectancy of 80-100 years.

Success Criteria: After the first year of monitoring at least one Bishop pine seedling should be established in the habitat enhancement area for each mature Bishop pine removed due to the project installation. A minimum 1:1 ratio of Bishop pine seedlings surviving to mature Bishop pine trees removed due to the project shall be maintained through the end of the monitoring period.

4.3.3 Reestablish native Bishop pine understory

Reestablish native understory plants appropriate to Bishop pine forest. Any introduced plantings shall be locally sourced.

Success Criteria: After the first year of monitoring, relative cover of native plants in the shrub and herbaceous strata should be >10% and increase by 10-20% yearly until the goal of ≥77% within the restoration area is reached by the end of the monitoring period.

The Manual of California Vegetation describes Bishop pine forest shrub layers as ranging from sparse [1%-10%] to continuous [>66%] and herbaceous layer from sparse to abundant.

Success Criteria: After the first year of monitoring, absolute cover within the shrub layer should be >2% and increase by 2-10% yearly until the goal of ≥33% within the habitat enhancement area is reached by the end of the monitoring period.

4.3.4 Keep fuel load at a safe level.

Within the habitat enhancement area: Retain no more than three fallen trees or standing snags per acre. Trees, shrubs, and other vegetation should meet current standards for CAL FIRE defensible space, based on distance to constructed buildings. Current standards for maintaining defensible space are as follows:

0 to 30 Feet from Structures:

- Remove all dead plants, grass and weeds.
- Remove dead or dry leaves and pine needles from your yard, roof and rain gutters.
- Keep tree branches 10 feet away from your chimney and other trees

30 to 100 Feet from Structures:

- Cut or mow annual grass down to a maximum height of 4 inches.
- Create horizontal spacing between shrubs and trees. Create horizontal and vertical spacing between plants, the amount of spacing will depend on how steep the slope is and the size of the plants.
- Create vertical spacing between grass, shrubs and trees. Large trees do not have to be cut and removed as long as all of the plants beneath them are removed. This eliminates a vertical “fire ladder.” Minimum vertical clearance beneath large trees should be 6ft.

4.3.5 Prevent pathogen outbreaks.

Check trees and vegetation on at least an annual basis and consult with the UC Forest Advisor or the project biologist as necessary if pathogens are suspected. Record findings in annual reports.

4.3.6 Monitoring

The monitoring period shall begin when construction of the proposed project is complete. The monitoring period shall run for a minimum of five years. Failure to meet and maintain Success Criteria by the end of the monitoring period will result in the requirement of one or more additional years of restoration/management and monitoring, until Success Criteria are met.

4.3.7 Reporting

Produce a yearly record of management activities and site performance and submit this information to the planning department on a yearly basis for the duration of the restoration project. Photo points shall be established depicting a view across each portion of the habitat enhancement area. The annual report shall include qualitative and quantitative data regarding each of the performance criterion outlined above including: relative cover of native vs. non-native plant cover in the habitat enhancement area shrub and herbaceous layers; number of Bishop pine trees removed for the project; number of Bishop pine seedlings recruited within the habitat enhancement area; absolute cover within the shrub layer in the habitat enhancement area. The report should include discussion about which success criteria are, and are not, on track and provide suggestions for adaptive management to achieve the success criteria.

5.0 IMPLEMENTATION

Suggested implementation procedures for the project are outlined below. Completion of these procedures is a means and not an end; other ways to meet the goals and performance criteria outlined above may be utilized. Some adaptive management based on results is appropriate and expected. Conditions at the site, weather, and sapling performance will all inform management decisions. Nesting bird, roosting bat, and Sonoma tree vole surveys and contractor training shall be completed within the 14 days prior to the beginning of vegetation removal necessary for the construction.

5.1 INVASIVE PLANT REMOVAL

In preparation for construction of the septic system and single-family residence some Bishop pine trees and understory vegetation will need to be removed. The project has been designed to avoid native tree removal to the greatest extent feasible; however, limited appropriate soils for a septic system on the parcel and wildfire defensible space guidelines necessitates tree removal. Non-native trees should be removed within the habitat enhancement area, which includes both the Bishop pine forest contiguous to the project, and Bishop pine restoration area to its north. If any new non-native invasive plants have been accidentally introduced during construction activities, those plants will also be removed to the greatest extent feasible. If resprouting or other forms of invasive persistence become a problem, the UC Forest Advisor or project biologist should be consulted to provide the currently accepted low impact management technique for removal of the species of issue.

Within the habitat enhancement area, effort should be made to eliminate invasive non-native species for which there is a realistic expectation that their elimination would be possible. Many invasive plant species can easily re-root if left in contact with soil. Plants pulled should therefore be removed from the site in a legal manner, such as placing in garbage service green bins or burned under authorization of a permit and during the appropriate time of year. Additional information and management techniques can be found at the Invasipedia! Page of the Bugwoodwiki website (https://wiki.bugwood.org/Invasipedia) (Bugwoodwiki 2022), or in the book Invasive Plants of California's Wildlands (Bossard 2000), and are summarized below.

All **Scotch broom** shall be removed from the habitat enhancement area. Scotch broom quickly displaces native vegetation in open areas and is toxic to humans and other animals. Scotch broom should be dug out or removed with a weed wrench, removing as much of the root as possible, ideally from July through September when the plants are drought-stressed. Brush cutters may be used to cut back larger infestations; however, the weed will grow back if the roots are not removed (Hulting et al 2008). Herbicides that could kill or affect the ability of native plants to become established in the habitat enhancement areas should not be used. Scotch broom produces many seeds that can last for years in the seed bank. When all Scotch broom plants in an area have been removed the area should be watered to encourage germination of seeds at that location. Seedlings can then be removed when they are identifiable.

Blackwood acacia is a medium sized tree of the legume family that is native to rainforest areas in southeastern Australia. Existing trees can produce additional stems by root sprouting, creating a cluster of trees. Acacias on site should be cut and their stumps should be treated with herbicide in a manner that will not affect surrounding native vegetation. Holes can be drilled into larger stumps and filled with rock salt or Epson salt. Seeds will generally not sprout without scarification but can be long-lived in the seed bank. Clearing areas to create bare soil and/or burning brush piles, which is recommended for Bishop pine recruitment may also stimulate acacia to germinate. Seedling acacias should be pulled.

Pampas grass is a large tussock grass that can quickly become established in disturbed areas due to its prolific seed production. Large clumps of pampas grass should be dug out and/or killed by tarping. This grass needs direct sunlight and can be shaded out within forested areas. Clearing areas to create bare soil and/or burning brush piles, which is recommended for Bishop pine recruitment may also provide areas vulnerable to invasion by pampas grass. Seedlings should be pulled in these areas regularly to prevent them outcompeting native vegetation.

Cotoneaster is an evergreen shrub in the rose family that produces red berries readily eaten by some species of birds which can later spread them to wild areas via their droppings. Cotoneaster should be cut and stumps treated with herbicide in a manner that will not negatively impact the surrounding native vegetation. If not treated with herbicide the stumps will produce profuse coppice shoots. Efforts required to kill the stump can be minimized by timing the initial cut to just after fruit set. Frequent removal of coppice shoots will eventually starve the root, but if the initial cut is not correctly timed, it could take two or three years to effect kill. Stump removal is difficult and labor intensive because of the tenacious root system. (Bossard 2000).

Himalayan blackberry is a perennial shrub that grows as a spiny woody vine. Mechanical removal or burning may be the most effective ways of removing the mature plants. Subsequent treatment with herbicides should be conducted cautiously for two reasons: (1) it often grows in riparian areas and the herbicide may be distributed to unforeseen locations by running water, and (2) some herbicides promote vegetative growth from lateral roots. (Bugwoodwiki 2022). Mowing with a brush cutter or hand removal and burning small piles of vegetation will reduce biomass but cut stems are likely to resprout and will need to be treated with spot application of herbicide in a manner that does not affect surrounding native vegetation or dug out.

The best method for controlling **English ivy** through manual/mechanical means may be hand removal of vines using pruners to cut the vines and then pulling the plants up from the forest floor and down from trees (Bossard 2000). The waxy leaves of English ivy are tolerant of most herbicides so application to the foliage is discouraged. Direct application of herbicide brushed onto cut stems/stumps may be effective.

The best way to remove **English holly** is to dig out the entire root. Cutting and immediate application of herbicide to cut stem surfaces may be effective. The waxy leaves of English holly are tolerant of most herbicides so application to the foliage is discouraged.

Legalities should be followed, and caution should be exercised if herbicides are used near the stream and wetland areas. Some herbicide products require proper training and application by licensed personnel.

There are other invasive non-native plants that are unlikely to be successfully removed; for example, common velvet grass (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*) and birds foot trefoil (*Lotus corniculatus*). These plants can be mowed and can be removed in small areas to prepare soil for Bishop pine seeds and around native plantings.

5.2 BISHOP PINE SEEDLING RECRUITMENT AND PROTECTION

Bishop pines require bare mineral soil with needle duff or grass being maintained at less than one inch of depth over the soil. Bare soil can be created by mowing and raking in some areas and by burning small piles of vegetation in others. When the burning of piles is complete, the remaining ashes can be raked outward to reduce their depth. Pulling or digging out invasive vegetation can also provide disturbed locations for pine seeds to germinate.

New Bishop pine seedling recruits needed to meet performance goals will be protected from overcrowding, browse and mowing, and will be watered in dry conditions as necessary. Every summer (June, July or August), Bishop pine seedlings will be identified and counted; mapping seedling locations may be helpful. Seedlings can be vulnerable to a few natural predators, especially voles, pocket gophers, and deer. Protecting seedlings with wire cages can be an effective way to

deter deer. Caution must be taken to keep vegetation away from the base of seedlings as it can provide hiding places for voles that may then gnaw the bases of the seedlings. If deer browsing or other wildlife damage is observed, appropriate protective measures will be taken, which may include temporary deer exclusion cages or wire fencing around the seedlings. If not caged, seedlings should at least be marked to prevent them from being weed whacked or mowed during maintenance of the property. If dry weather conditions threaten the health of seedlings needed to meet performance goals, those seedlings will be watered as necessary until dry weather conditions end. It may be helpful to weed around and mulch around Bishop pine seedlings to reduce competition from surrounding vegetation. Mulch should not be so deep as to provide refugia for voles that might damage the pines.

Bishop pine seedlings will likely naturally recruit over the newly constructed septic system due to the bare soil. Bishop pine seedlings should be moved to elsewhere in the restoration area where needed to prevent root damage to the septic system. It is also likely that at some point during the restoration project a number of seedlings will become established within a small area where individual plants would not have enough room to grow to full size without interfering with each other's growth. Seedlings can be moved from these densely populated areas into areas that seeds have had a more difficult time reaching and/or becoming established within. Another strategy that could be used to aid in more dispersed establishment is to place cones gathered from Bishop pine trees on or near the site into the areas further from cone bearing trees. Branches with cones that have been broken off in windstorms are one potential source for these cones. Small "teepees" of branches can be created to keep cones off the soil and allow seed to drop to bare soil beneath. Obtaining and planting bishop pine seedlings from off site is not recommended as it can introduce new pathogens and genetics that may not be the best for the site and may have unintended consequences for the future of the stand. Gathering seed on site, sowing it into pots with soil from the site, and planting the resulting seedlings out when they are very young may be an effective strategy. Seed can be obtained from closed cones gathered on site by cooking the cones in an oven at the lowest temperatures the oven can maintain. Seeds obtained in this manner can be planted in pots and/or sown directly onto areas of base soil on the site.

While the success criteria calls for 1:1 replacement of Bishop pines removed it may be prudent to have a greater ratio of seedling trees available and protected during portions of the enhancement effort in case some seedlings are lost and/or to have more choice in regard to locations where seedlings will be nurtured into adult trees. While it may seem like a greater than 1:1 ratio would be a better goal for the restoration/enhancement, this may not be the case. Young trees with room to grow to adult size will grow more quickly and be healthier than a larger number of crowded trees. Staggered recruitment is also more sustainable over time than all trees in an area being even aged. Even aged trees can be more vulnerable to the same environmental conditions or pathogens as their cohort which can lead to whole stand decline exemplified by many areas currently on the Mendocino Coast where Bishop pines are dying.

5.3 UNDERSTORY ENHANCEMENT AND MAINTENANCE

Healthy forest layers should include an herbaceous layer, shrub layer and canopy layer. Native plants present in the herbaceous layer should be retained and maintained to the extent feasible while allowing for small clearings to encourage natural Bishop pine regeneration. Similarly, the native plants present in the shrub layer should be retained and maintained in a well-spaced manner for fire protection purposes as well as to encourage diversity and healthy natural Bishop pine regeneration. Tanoak (*Notholithocarpus densiflorus*), a valuable native tree/shrub found within the Bishop pine forest at the site, should be retained and maintained but can be very aggressive in areas where overstory canopy is removed and no longer holds this species in check. Care should be taken that tan oak does not overgrow and outcompete Bishop pines or become too dense and compromise fire safety. The need for some removal of young tan oaks over the years should be anticipated.

It may be necessary to introduce seed and/or install plants raised in pots off site in order to increase the absolute cover in the shrub layer and to increase the relative cover of native plants vs. non-native plants in the shrub and herbaceous layers within the restoration area. Seed and plants introduced to the site should originate from as close to the site as possible and must be appropriate to the coastal ecotype. Non-native plants should not be planted within the habitat enhancement area.

Generally, the best time to install new plants will be in the fall when rains begin, in order to minimize the necessity for watering and to maximize plant survival. When planting natives, a hole should be dug twice as large as the pot. All native plants installed should receive 3" of bark mulch at a minimum 1ft radius surrounding the center of the plant. Plants should be kept moist for two weeks following planting and then watered well once per week until the rainy season begins.

Table 1 is a list of appropriate native plants for the habitat present and Bishop pine forest habitat to be achieved.

Table 1. Site appropriate shrub and herbaceous plants for the restoration area.

Scientific name	**Common name**
Frangula purshiana	cascara sagrada
Gaultheria shallon	salal
Morella californica	wax myrtle
Rhododendron macrophyllum	Pacific rhododendron
Ribes sanguineum	pink flowering current
Rubus parviflorus	thimbleberry
Vaccinium ovatum	evergreen huckleberry
Achillea millefolium	yarrow
Anaphalis margaritacea	pearly everlasting
Anthoxanthum occidentale	vanilla grass
Bromus carinatus	California brome
Calamagrostis nutkaensis	Pacific reedgrass
Elymus glaucus	blue wild rye
Fragaria vesca	strawberry
Iris douglasiana	Douglas iris
Maianthemum dilatatum	Pacific may lily
Polystichum munitum	western sword fern
Prunella vulgaris var. *lanceolata*	lance leaf self-heal
Scrophularia californica	California bee plant
Sisyrinchium bellum	blue-eyed grass
Solidago spathulata	coast goldenrod
Stachys rigida	hedge nettle

5.4 FUEL LOAD REDUCTION

It is recommended that the forest within the habitat enhancement area be maintained in compliance with CAL FIRE defensible space safety clearance requirements, and vegetation management and maintenance should occur annually.

Trees, shrubs, and other vegetation should be cut, thinned, pruned and mowed to meet current standards for CAL FIRE defensible space, based on distance to neighboring buildings. Current standards for maintaining defensible space outside of the 100-foot perimeter from buildings and within continuous tree canopy are as follows:

Prune lower branches of trees to a height of six to 15 feet from the top of vegetation below (or the lower 1/3 of branches for small trees). Properties with greater fire potential such as steeper slopes or more severe fire danger will require pruning heights in the upper end of this range.

Remove all ground fuels greater than four inches in height. Single specimens of trees or other vegetation may be kept if they are well-spaced, well-pruned, and create an overall condition that avoids the spread of fire to other vegetation or structures (CAL FIRE 2007).

Leaving some fallen trees and standing snags (~3 snags per acre) is beneficial to wildlife, such as acorn woodpeckers, and facilitates species diversity. The wider and taller the snag is the more valuable it is to wildlife. Targeted removal of dead Bishop pine trees shall be allowed as the stand declines for fuel load reduction and defensible space.

5.5 PATHOGEN SPREAD MINIMIZATION

Regular inspections will occur in order to prevent the spread of disease, which can cause stand-wide tree death. The entire property will be inspected at least once a year, and observations of dying vegetation or signs of insect, fungus or other pathogen infestation will be noted, detailing the location of the observation, description of the observation, species of plant it is on, and how widespread the pathogens are. Pictures will be taken and a UC Forest Advisor, a CAL FIRE tree pathogen specialist, or another qualified tree pathogen specialist may be consulted for direction, if the project biologist is not otherwise already familiar with the pathogen and treatment and removal measures. Vegetation treatment and removal measures recommended by the advisor or specialist will be administered.

5.6 MONITORING & PROJECT ADAPTATION

On an annual basis, for at least five years, and until all performance goals have been met, a monitoring report will be written. The report will describe the level of effort and methods used during that monitoring period to eradicate invasive plants, improve forest health and conditions for new Bishop pine seedling recruits, keep the fuel load reduced, develop and maintain an understory, and minimize disease spread. Any new invasive plant species observed or evidence of pathogen presence will be described. Pictures will be included, and a description of whether and how performance goals and criteria were met will be noted.

5.7 REPORTING

Reporting will occur on a yearly basis, and reports will be received by the County of Mendocino Planning Division by the end of each year for a minimum of five years and until all performance goals are met.

Reports will be sent hard-copy by hand or delivery service (such as US Mail or UPS) to:

Attn: Senior Planner
County of Mendocino Planning & Building Services
120 West Fir Street
Fort Bragg, CA 95437

Reports will include the following information:

- Name and contact information of person in charge of monitoring activities, and name and contact information of reporting party.
- Color photos of the management areas at the beginning and end of the reporting period.
- A summary of any issues encountered and management steps taken during the reporting period.
- Level of effort and methods used during that monitoring period to eradicate weeds, improve forest health and conditions for new Bishop pine seedling recruits, keep the fuel load reduced, develop and maintain an understory, and minimize disease spread.
- Any new invasive plant species observed or evidence of pathogen presence will be described.
- Qualitative and quantitative data for each of the performance criteria will be presented.
    - relative cover of native vs. non-native plants in the habitat enhancement area shrub and herbaceous layers
    - number of Bishop pine trees removed for the project
    - number of Bishop pine seedlings recruited within the habitat enhancement area
    - absolute cover within the shrub layer in the habitat enhancement area.

6.0 SCHEDULE

Table 2 below gives us an approximate outline of when in the life of the project each component of the mitigation, management, monitoring, and reporting shall be undertaken.

Table 2. Mitigation, management, monitoring, and reporting implementation schedule.

Relevant Personnel	Action Item	Tentative Implementation Date	Description
Phase 1 – Pre and post construction			
Biologist	Establish photo points	Before construction	The evaluator shall establish photo points and take pre-construction photographs of each area within the restoration area and habitat enhancement area.
Construction personnel, landscaper, groundskeeper	Install straw wattles	Before construction	Construction personnel, landscapers, groundskeepers, or other capable personnel shall install straw wattles in between the septic system and Coastal Act wetland along the 50ft buffer line to separate the Coastal Act wetland from the construction related impact area.
Biologist	Conduct nesting bird, roosting bat, Sonoma tree vole surveys, and contractor training	Within 14 days prior to the onset of tree and vegetation removal	A qualified biologist shall conduct a nesting bird and roosting bat survey in all areas within 100ft of the project prior to vegetation removal if the project begins during the nesting and roosting season. If nesting birds are observed, vegetation removal activities will be postponed until nestling have left the nest. If roosting bats are observed, tree removing activities will be postponed until young bats leave the roost at the end of August. A qualified biologist will conduct Sonoma tree vole surveys adjacent to all areas where native coniferous tree removal will or may occur in association with the construction. A qualified biologist will train the landscaping personnel and/or contractors on amphibian and reptile identification and impact avoidance.
Construction personnel	Attend amphibian and reptile training	Within 14 days prior to the onset of tree and vegetation removal	Construction personnel that will be working within the project area shall attend a training session regarding sensitive resources present and the identification of special status amphibians and reptiles. At least one individual that will be present each day will be responsible for daily checks for amphibians and reptiles around the construction area, equipment, and stockpiled materials before work begins.
Landscapers, gardeners, groundskeepers	Remove target non-native vegetation	"Start" of the project	Before, during and/or just after construction, within the habitat restoration and enhancement area, landscapers, gardeners, groundskeepers, or other capable personnel will remove invasive non-native species including English ivy (*Hedera helix*), English holly (*Ilex aquifolium*), Scotch broom (*Cytisis scoparius*), pampas grass (*Cortaderia jubata*), Himalayan blackberry (*Rubus armeniacus*), cotoneaster (*Cotoneaster* spp.), and blackwood acacia (*Acacia melanoxylon*), to encourage native diversity and natural function.
Biologist	Inventory trees removed	Directly after construction	The biologist that will be performing annual monitoring and reporting will record the number and species of trees that were removed during construction from presumed ESHA and 100ft buffers.
Landscapers, gardeners, groundskeepers	Install post construction erosion control	Directly after construction	Areas of bare soil resulting from construction should be seeded with native erosion control seed mix and/or covered with biodegradable erosion control materials (e.g. coconut fiber, jute, weed free straw).
Landscapers, gardeners, groundskeepers	Prepare areas of soil for Bishop pine seeds	Directly after construction	Within the Bishop pine restoration area rake leaf litter from areas where Bishop pine seedling establishment is desired to create areas of bare mineral soil in these locations.
Landscapers, gardeners, groundskeepers	Plant and seed native understory plants	Fall, Year 1	After areas of bare mineral soil are created within the restoration and habitat enhancement area, landscapers, gardeners, groundskeepers, or other capable personnel will seed or plant areas of the Bishop pine forest, that have sparse understory vegetation but adequate sunlight, with native Bishop pine forest understory plants. If this occurs during the dry portion of the year, watering should occur until rains have sufficiently saturated the ground. Plants should be kept moist for two weeks following planting and then watered well once per week until the rainy season begins. General guidelines for planting are listed in **Section 5.3**.

Biologist	Document efforts	Winter, Year 1	A qualified biologist will document restoration efforts through photographs and record qualitative and quantitative data for each of the success criteria.
Phase 2 – Maintenance and Documentation			
Landscapers, gardeners, groundskeepers	Maintain Bishop pine seedling	Summer, Year 2-5+	Within the restoration area, landscaper, gardener, groundskeeper, or other capable personnel, will place protective caging around Bishop pine seedlings and saplings and remove weeds growing around seedlings. Bishop pine seedlings growing over the septic system or in crowded places may need to be transplanted into the restoration area.
Landscapers, gardeners, groundskeepers	Maintain, plant and seed native understory plants	Year 2-5+	Within the Bishop pine forest restoration area landscapers, gardeners, groundskeepers, or other capable personnel will seed or plant native Bishop pine forest understory plants. If this occurs during the dry portion of the year, watering should occur until rains have sufficiently saturated the ground. Plants should be kept moist for two weeks following planting and then watered well once per week until the rainy season begins. General guidelines for planting are listed in **Section 5.3.** This effort should be repeated at least yearly as necessary to achieve success criteria.
Biologist, forester	Inspect standing trees for pathogens	Annually, Year 2-5+	A qualified biologist or forester will inspect standing Bishop pines trees for signs and/or symptoms of pathogens. The inspector will take appropriate measures and/or consult with the UC Forest Advisor to determine appropriate management actions.
Landscapers, gardeners, groundskeepers	Maintain defensible space	Annually, Year 2-5+	Landscapers, gardeners, groundskeepers or other capable personnel will prune or thin trees and shrubs and clean out dead vegetation and trees to meet current standards for CAL FIRE defensible space.
Landscapers, gardeners, groundskeepers	Supplemental invasive removal	Annually, Year 2-5+	Landscapers, gardeners, groundskeepers or other capable personnel will remove resprouting, germinating or newly introduced invasive plants.
Biologist	Yearly monitoring	Annually, Year 2-5+	A qualified biologist will document restoration efforts through photographs and record qualitative and quantitative data for each of the success criteria.
Biologist	Yearly reporting	Winter, Year 2-5+	Provide all documentation recorded in annual monitoring to the appropriate authority as discussed in the reporting section below.
Biologist	Final Report	Winter, Year 5+	Write and submit a final report when success criteria have been achieved and maintained. If success criteria have not been achieved at the end of the 5th year then the restoration efforts shall continue until these criteria are met. If it becomes apparent that some criteria will not be met then coordination with County Planning shall occur to determine how criteria can be met and/or to re-assess what goals must be achieved for the restoration to be considered successful.

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8.0 CONTRIBUTING STAFF

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 Alverez 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.

BIOLOGICAL SCOPING, BOTANICAL SURVEY, and WETLAND DELINEATION REPORT

for

11800 500D Road
Mendocino, CA 95460
APN 118-320-10, -11, -12
Mendocino County

Property Owners:

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December 12, 2024

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1. PROJECT SUMMARY

A biological survey, botanical survey, and wetland delineation were conducted on three parcels, APN 118-320-10, -11, -12, by Wynn Coastal Planning & Biology (WCPB) to locate potential Environmentally Sensitive Habitat Areas (ESHAs) - special status plants and communities, wetlands and riparian areas, and special status animals and/or their habitats and to determine if they would be directly or indirectly impacted by the proposed development. The proposed development consists of:

Demolish existing 946sf shop/garage, 670sf single-family residence, and 150sf shed. Construct two-story 4,252sf single-family residence, attached garage and detached 640sf guest cottage. Establish outdoor small-scale agriculture in the optimal area on site. Define outdoor living space with decks and patios attached to structures. Convert existing test wells to production wells as a single well field. Install septic system, underground propane tank, back-up generator, underground water storage tanks, underground existing overhead utility lines, construct 100sf well pump house and trench for utility connections. Modify existing concrete water cisterns - demolish existing outbuilding over one cistern, decommission use as cisterns, construct decks over the remaining concrete structures. Relocate existing driveway and gate away from bluff edge and construct 30" high safety fence along a portion of the bluff edge. Repair/replace existing fence with gate along Road 500D and add service gate at north end for utility access. Remove dead and dying trees for wildfire resilience per biological report. Request temporary occupancy of travel trailer during construction.
This application is accompanied by a proposed boundary line adjustment to merge the subject parcels.

The study area is located (**Figure 1)** 0.3 miles north of the Mendocino village. The parcels are located on the headlands and together add to slightly less than 3 acres, with only around 1.5 acres of land above the bluff edge. The property contains an existing driveway with a single-family residence, garage/workshop, well house/storage shed, shallow irrigation well, test wells, concrete staircase to the ocean, and a portion of an aviary. The parcels are fenced on all sides where access is not restricted by the bluff edge.

Wynn Coastal Planning & Biology's staff biologists conducted surveys on March 5, May 16, July 5 & 18 of 2018 for a total of 7.2 person hours. Additional surveys were conducted on May 19, July 10 & 28, and August 26, 2020 in order to make more observations, gather additional information on specific resources, and to keep the survey up to date by ensuring that site conditions had not changed significantly since the initial study. These additional studies involved another ~13.0 person hours of site work. A Coastal Development Permit (CDP) application was submitted in 2021 for residential development of the property. In 2022, as the Mendocino County Planning Department was preparing their Staff Report to support the proposed residential development, the County Planner notified the then-applicant (Camp Bedhead) that a Proof of Water field test would be required to demonstrate adequate water to serve the proposed development. Consequently, the County approved only the well portion of the CDP (CDP 2022-0033). The approved wells were drilled and tested, subsequently demonstrating adequate water supply exists to support residential development of the property. The parcel changed ownership after demonstration of adequate water was provided. The new, current owner had a different design concept than the original application and hired WCPB to continue and to broaden biological work, to keep the report information up to date, and to perform a protocol level wetland delineation. WCPB conducted additional site work, including updated floristic botanical surveys and wetland delineation on April 30, June 11, July 3 and 31, and August 6 and 13, 2024, for a total of ~13.5 additional person hours. Five types of potential or presumed ESHA were identified within the study area according to the definitions by the California Coastal Act (CCA) and Mendocino County Local Coastal Plan (LCP) (**Figure 2**).

> **Wetland Presumed ESHA** – An area of **Coastal Act wetland** was present and delineated near the center of the subject parcel at a location where a stream once flowed but which has been directed through a culvert, the inlet of which is off property east of the 500D Road and which outlets near the western edge of the parcel. Vegetation on a portion of the land adjacent to the subject parcel but east side of the 500D Road indicates that wetland is likely present there. Wetland delineation was not conducted off-property, but this area was treated as presumed Coastal Act wetland for the purpose of this report.

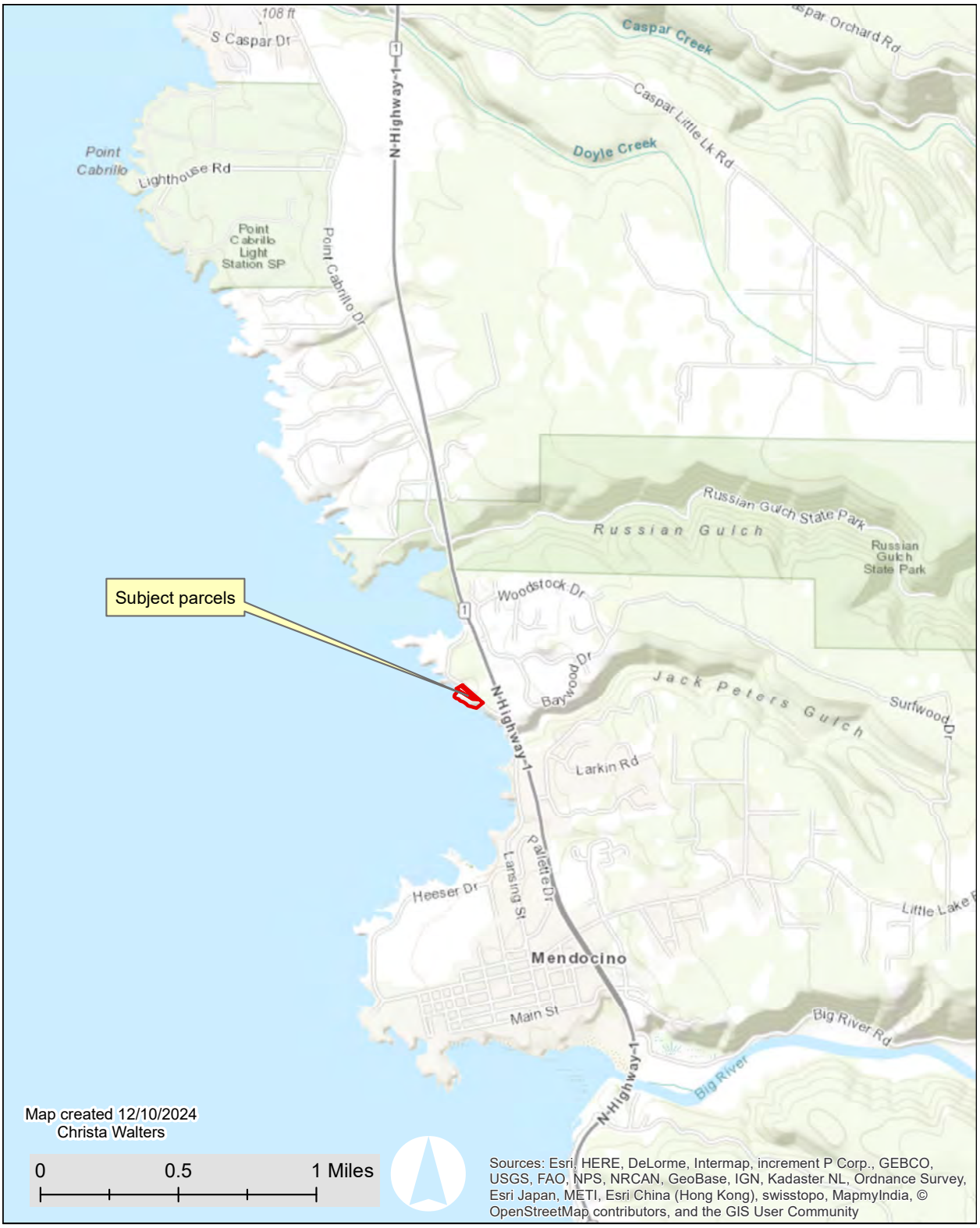
Stream ESHA- A small **stream** originating from a culvert was present on the north-western portion of the study area.

Riparian Presumed ESHA – Vegetation in the gully where the culvert outlets is different than the surrounding drier areas and was considered a **riparian** ESHA for the purpose of this report.

Special Status Plant Community Presumed ESHAs – One special status plant community, **Bishop Pine Forest** (*Pinus muricata* forest alliance (G3 S3)) was present through much of the study area.

Special Status Wildlife Habitat Presumed ESHA – Three groups of pelagic cormorant (*Phalacrocorax pelagicus*) nests were identified on the bluff edge. Clumps of Bishop pine resin ducts presumably from a Sonoma tree vole nest were observed in the Bishop pine forest indicating that the trees have been habitat for this Species of Special Concern.

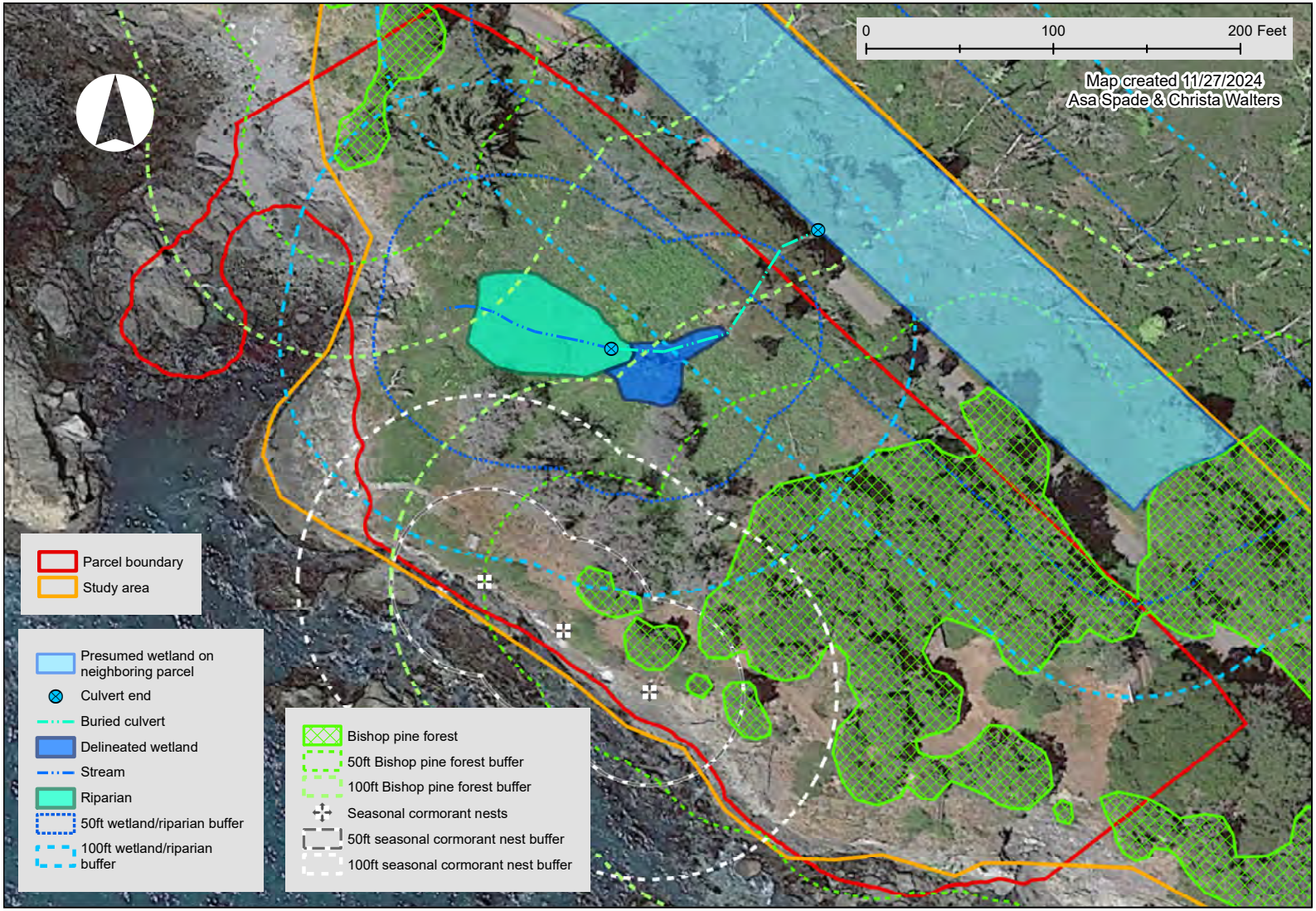
Figure 3 shows existing and proposed development locations relative to presumed ESHAs. This analysis has been performed by Wynn Coastal Planning & Biology, and is the culmination of our professional opinion, research, and data collection. The County of Mendocino (County), California Department of Fish and Wildlife (CDFW), and U.S. Fish and Wildlife Service (USFWS) should also be consulted regarding this project to obtain all necessary permits and obtain their concurrence with our findings and recommendations, and to make recommendations of their own, including concurrence of the boundaries of the sensitive areas and appropriate avoidance and protective measures.



CLIENT: Christensen
APN: 118-320-10, -11, -12
ADDRESS: 11800 500D Road,
Mendocino, CA

Subject Parcels Location

Figure 1. Location of subject parcels in relation to the village of Mendocino, CA.



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APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
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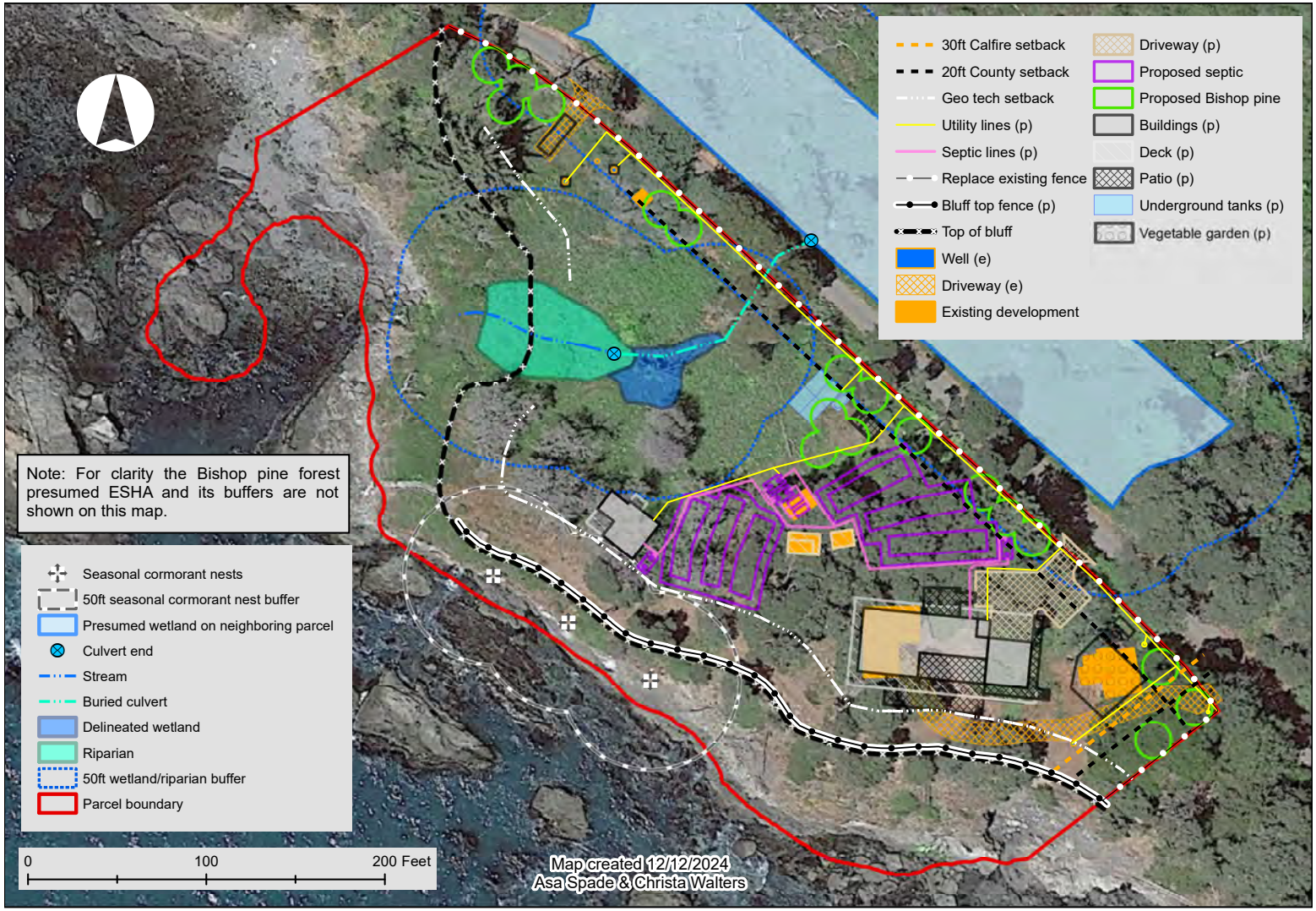
Presumed ESHAs and Buffers

Figure 2. Presumed Environmental Sensitive Habitat Areas (ESHAs) identified in the study area and their recommended buffers.



OWNER: Christensen
APN: 118-320-10, 11 & 12
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ADDRESS: 11800 500D Rd, Mendocino, CA

Existing and Proposed Development Relative to Presumed ESHAs

Figure 3. Existing and proposed development locations relative to presumed ESHAs. Note that for clarity the Bishop pine forest and its buffers are not shown, nor are 100ft buffers for wetlands and seasonal cormorant nests.

2. PROJECT DESCRIPTION

Demolish existing 946sf shop/garage, 670sf single-family residence, and 150sf shed. Construct two-story 4,252sf single-family residence, attached garage and detached 640sf guest cottage. Establish outdoor small-scale agriculture in the optimal area on site. Define outdoor living space with decks and patios attached to structures. Convert existing test wells to production wells as a single well field. Install septic system, underground propane tank, back-up generator, underground water storage tanks, underground existing overhead utility lines, construct 100sf well pump house and trench for utility connections. Modify existing concrete water cisterns - demolish existing outbuilding over one cistern, decommission use as cisterns, construct decks over the remaining concrete structures. Relocate existing driveway and gate away from bluff edge and construct 30" high safety fence along a portion of the bluff edge. Repair/replace existing fence with gate along Road 500D and add service gate at north end for utility access. Remove dead and dying trees for wildfire resilience per biological report. Request temporary occupancy of travel trailer during construction.
This application is accompanied by a proposed boundary line adjustment to merge the subject parcels.

3. STUDY AREA DESCRIPTION

3.1. General Site Description

The sum of three parcels is slightly less than 3 acres in size with around 1.5 acres of that area above the bluff edge. The parcels are located on the bluff top north of Mendocino village. The property is located on a terrace with an elevation of about 70 feet. A driveway entrance at the southeastern corner of the parcel leads into a courtyard with a single-family residence (**Figure 4**), garage/workshop, garden, and a couple sheds. The cinderblock and concrete garage/workshop (**Figure 5**) is built into a small hill upon which a number of Bishop pine trees are growing. Bishop pine trees are present north of the residence and garage. In the northern portion of the parcel a buried culvert empties water into a small watercourse. A small wellhouse and an aviary “airlock”, which is overgrown with young acacia trees, are present along the eastern fence. The fenced “airlock” once allowed entry into a larger netted area for birds which are no longer present and is now overgrown with non-native Himalayan blackberry (*Rubus armeniacus*). A small wellhouse containing a shallow irrigation well is present adjacent to the 500D Road and a test well is present a bit further to the west of this wellhouse. A concrete staircase leads from the blufftop down to the rocks just above the ocean in the northwestern portion of the parcel. A fence is present along the northern and eastern portions of the parcel.

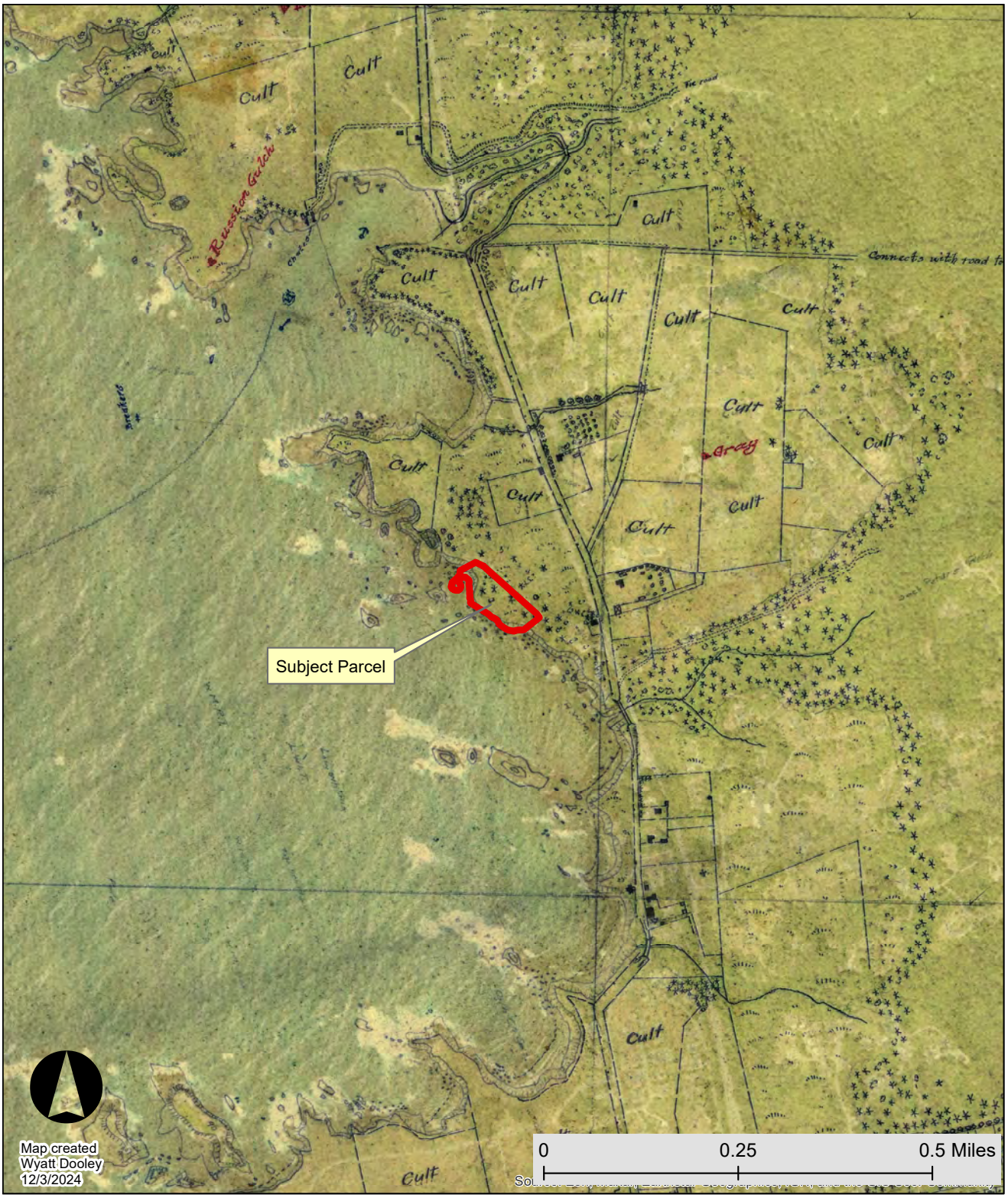
3.2. Land-Use History

A T-Sheet map produced in 1909 (**Figure 6**) shows that the parcel was a combination of forested and open space at that time. Surrounding areas were used for cultivation. An aerial photo from 1998 (**Figure 7**) shows that most of the area was forested, presumably with bishop pine trees. When comparing the 1998 photo to more current aerial photos, there are now many dead or dying trees within the riparian area in the northern third of the parcel.

The late Mendocino naturalist and artist Jack Helfer owned this property and reportedly used the woodshed, which was likely kept cool by its dug-in nature and concrete construction, to store animal specimens for study and preservation while he drew them. An aviary airlock is located on the property along the 500D Road, which once lead into a netted area where he kept birds to study.

Figure 4. Single-family residence located near southeastern property corner.

Figure 5. Garage and workshop surrounded by a berm vegetated with Bishop pines.

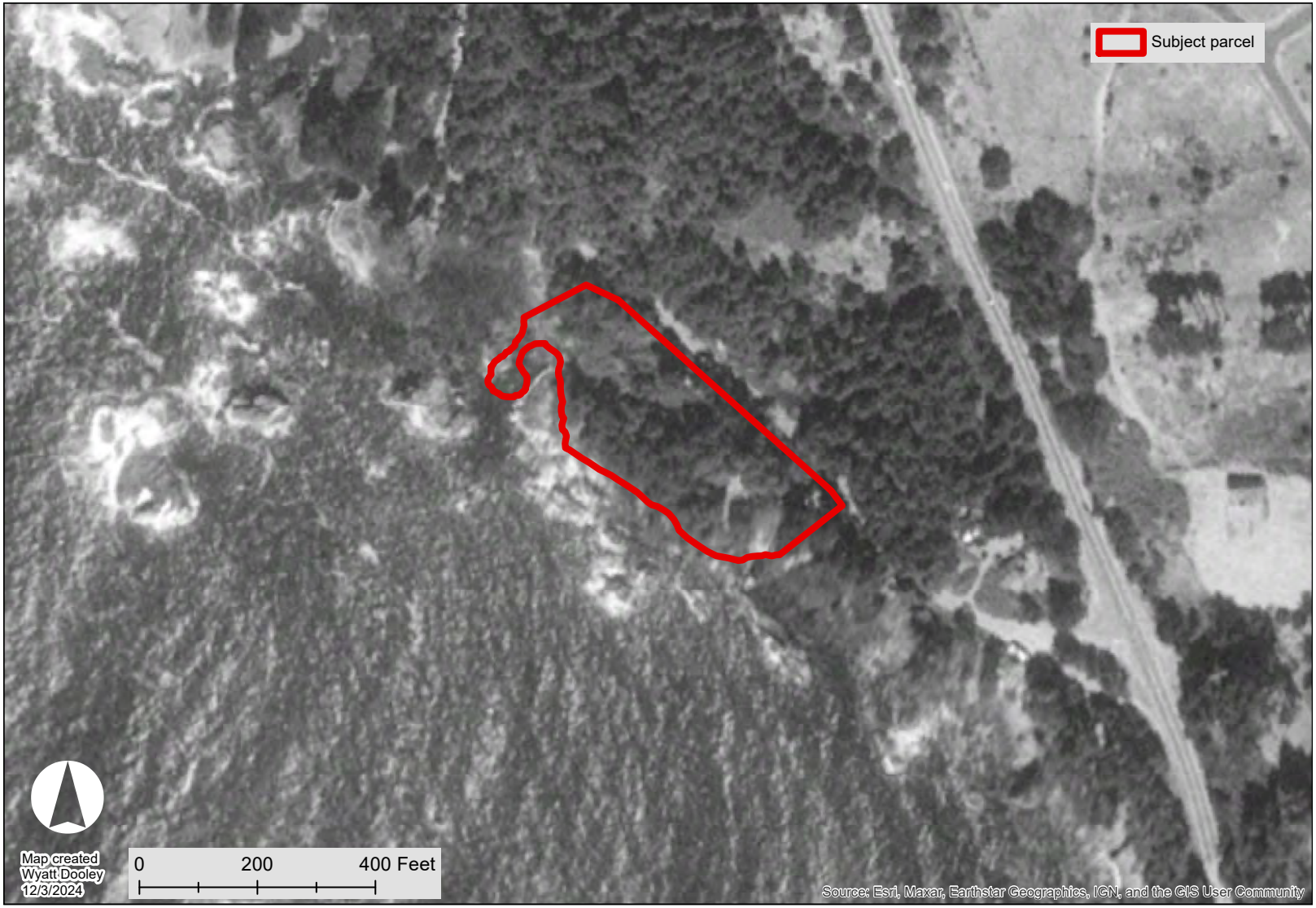


OWNER: Christensen
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

Historic 1909 T-Sheets Map

Map provided by NOAA

Figure 6. Historic T-Sheets map with combined parcel boundaries overlaid.



OWNER: Christensen
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

1998 USGS & Google Earth Image Overlay

Image supplied by USGS & Google Earth

Figure 7. Map of Study Area with 1998 Aerial Photo.

3.3. Topography and Soils

The elevation of the study area is approximately 70 feet above sea level. One type of soil has been mapped by the Natural Resource Conservation Service in the study area: Bruhel-Shinglemill complex, 2 to 15 percent slopes. This soil complex is found on marine terraces. According to the NRCS mapping results, Bruhel-Shinglemill complex 2 to 15 percent slopes is included on the National Hydric Soils List due to the inclusion of these components within the complex: 25% Shinglemill, 5% Flumeville, and 5% Tropaquepts (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.

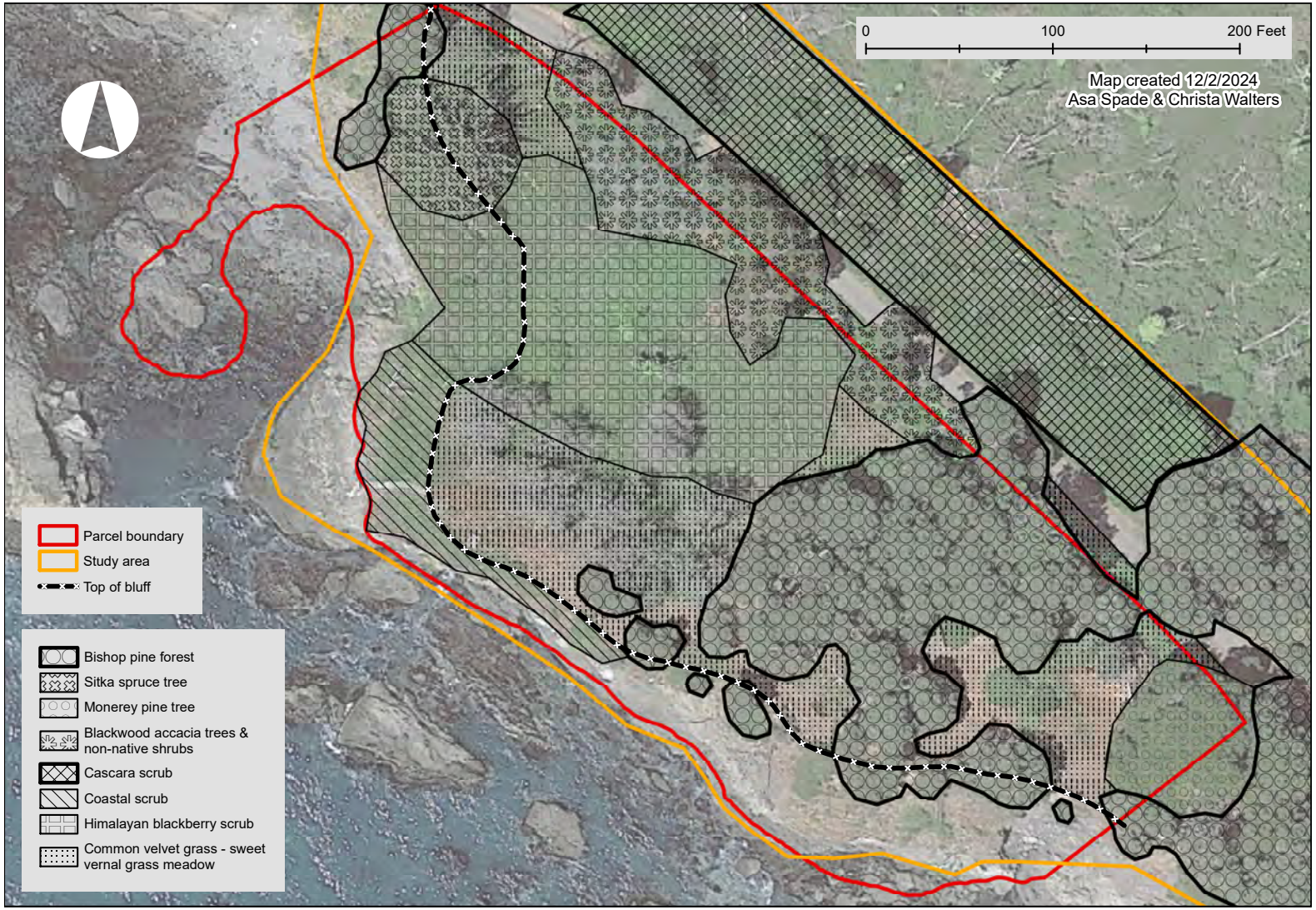
3.4. Climate and Hydrology

The Mendocino Coast has a Mediterranean climate with average annual precipitation of 40.24 inches (WRCC, Station Fort Bragg 5N, average for years 1895-2016), with the majority of rain occurring in winter months (November through March).

The USFWS National Wetlands Inventory does not indicate any wetlands on the subject parcels. A freshwater emergent wetland is included on the NWI map approximately 200ft east of the subject parcels, across the 500D Road (**Appendix B**).

3.5. Vegetation and Natural Communities

Approximately a third of the study area was vegetated with Bishop pine forest. The other two thirds were vegetated with Himalayan blackberry and/or non-native grassland (**Figure 8**). The Bishop pine forest was located on a hill with a predominant understory of non-native grassland. The hill itself had a higher percentage of natives such as salal (*Gaultheria shallon*) and polypody fern (*Polypodium* sp.). North of the hill most of the Bishop pines are standing dead, many having succumbed within the last several years. Other areas within the Bishop pine forest had large cotoneaster and English holly shrubs. The non-native grassland extends from the understory of the Bishop pine forest outwards where it forms its own plant community to the north and south of the Bishop pines. North of the Bishop pine forest is a Coastal Act wetland dominated by Himalayan blackberry (*Rubus armeniacus*). Along the 500D road is a stand of blackwood acacia (*Acacia melanoxylon*) and other non-native shrubs.



OWNER: Christensen
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

Plant Communities & Vegetation

Figure 8. Map of plant communities and vegetation observed onsite.

3.6. Adjacent Lands

Lands surrounding the study area include undeveloped areas to the east and north. North of the subject parcel is the southern extent of the Russian Gulch State Park. South of the parcels are several single-family residences. East of Highway One is the Surfwood Estates subdivision.

3.7. Existing Development

The property contains an existing driveway with a single-family residence, garage/workshop, well house/storage shed, shallow irrigation well, test wells, concrete staircase to the ocean, and a portion of an aviary. The parcels are fenced on all sides where access is not restricted by the bluff edge.

4. SURVEY METHODOLOGY

4.1. Scoping Tables

Scoping tables were created for the special-status plant species and wildlife with the potential to occur in the study area by reviewing the most up-to-date species lists for the California Department of Fish and Wildlife (CDFW), California Natural Diversity Database (CNDDB) and the California Native Plant Society (CNPS).

For purposes of this evaluation, special-status plant species are vascular plants that are (1) designated as rare, threatened, or endangered by the state or federal governments; or (2) are proposed for rare, threatened, or endangered status; and/or (3) are state or federal candidate species, and/or (4) considered species of concern by the USFWS and/or (5) are included on the California Native Plant Society (CNPS) List 1A, 1B, & 2.

Maps were created using the California Natural Diversity Database CNDDB for records within 1 mile of the study area (**Figure 9**). The CNDDB is a database consisting of historical observations of special-status plant species, wildlife species, and natural plant communities. CNDDB was used to help compile a list of special status plants and animals with potential to occur in the study area. This list was not limited to species presented in the maps, it includes all species indicated by a search of all quads with similar geology, habitats, and vegetation to those found in the project area. Because the CNDDB is limited to reported sightings, it is not a comprehensive list of plant species that may occur in a particular area. However, it is useful in refining the list of special-status plant species that have the potential to occur on a particular site.

A database search was performed using the CNPS *Electronic Inventory*, which allows users to query the *Inventory of Rare and Endangered Plants of California* using a set of search criteria (e.g., quad name, habitat type). A target list of special-status plant species with the potential to occur on the site was developed through interpretation of the CNDDB and CNPS query results. The biological scoping tables with special status resources potential occurrences in the study area are presented in **Appendix C: Tables 1, 2, and 3.** While directed by query results, surveys were not restricted only to those species indicated by this literature review. Field surveys and subsequent reporting were comprehensive and floristic in nature.

Additional information, (e.g. morphological characteristics, range, habitat and bloom period) was collected for each of the special-status plant species that had the potential to occur within the study area. Wynn Coastal Planning and Biology's staff botanist reviewed these characteristics for each of the plants on the target list prior to initiating fieldwork.

The botanical survey of the study area was conducted primarily adhering to the protocol described by the California Department of Fish and Wildlife in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (2018).*

4.2. Field Surveys

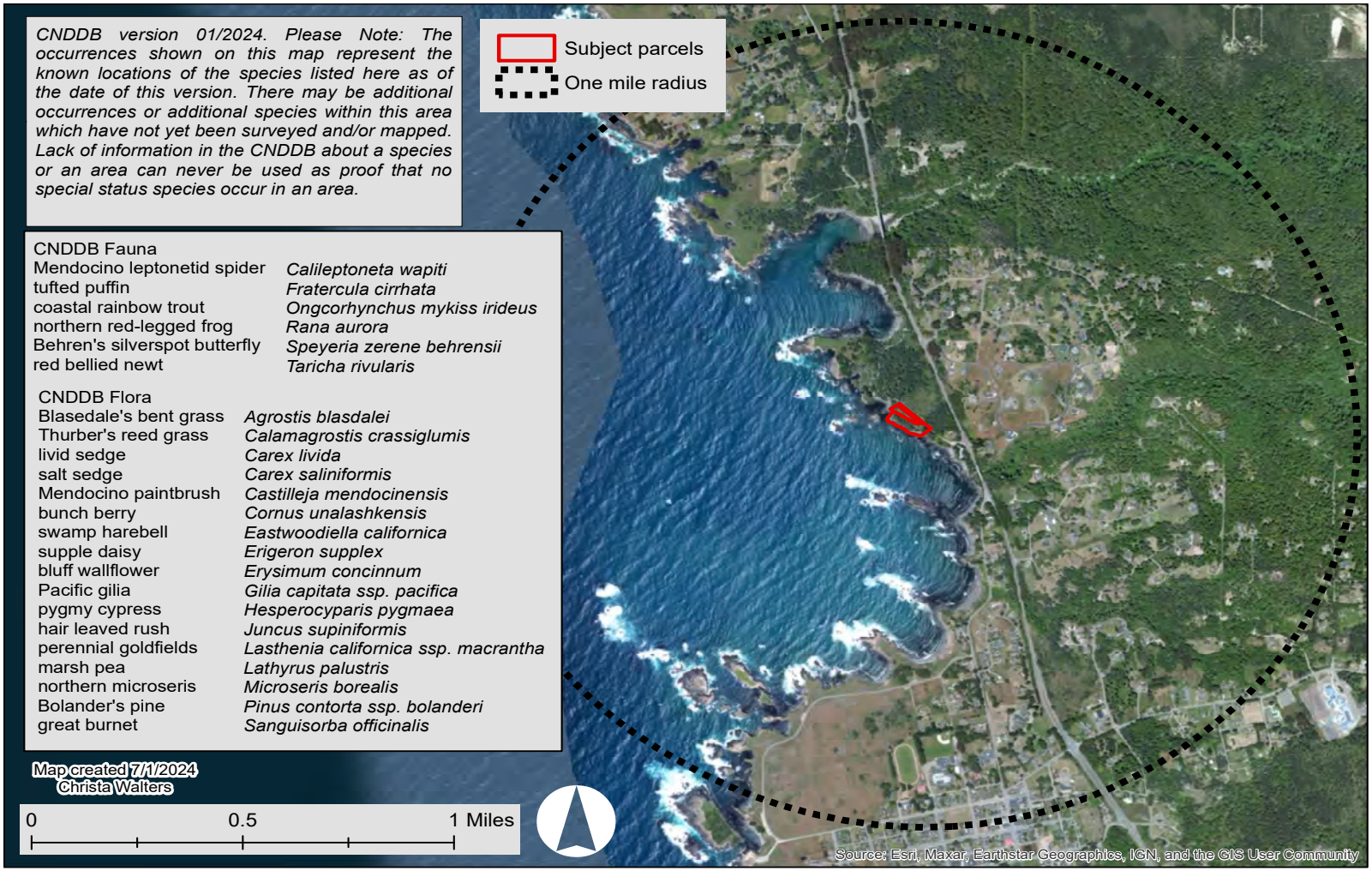
Wynn Coastal Planning & Biology's staff biologists conducted surveys on March 5, May 16, July 5 & 18 of 2018 for a total of 7.2 person hours. Additional surveys were conducted on May 19, July 10 & 28, and August 26, 2020 in order to make more observations, gather additional information on specific

resources, and to keep the survey up to date by ensuring that site conditions had not changed significantly since the initial study. These additional studies involved another ~13.0 person hours of site work. A Coastal Development Permit (CDP) application was submitted in 2021 for residential development of the property. In 2022, as the Mendocino County Planning Department was preparing their Staff Report to support the proposed residential development, the County Planner notified the then-applicant (Camp Bedhead) that a Proof of Water field test would be required to demonstrate adequate water to serve the proposed development. Consequently, the County approved only the well portion of the CDP (CDP 2022-0033). The approved wells were drilled and tested, subsequently demonstrating adequate water supply exists to support residential development of the property. The parcel changed ownership after demonstration of adequate water was provided. The new, current owner had a different design concept than the original application and hired WCPB to continue and to broaden biological work, to keep the report information up to date, and to perform a protocol level wetland delineation. WCPB conducted additional site work, including updated floristic botanical surveys and wetland delineation on April 30, June 11, July 3 and 31, and August 6 and 13, 2024, for a total of ~13.5 additional person hours. Surveys were conducted to compile a full floristic list of plants occurring in the study area and to identify any rare resources having the potential to meet the LCP ESHA definitions. To ensure potential ESHA plants were evident and identifiable, offsite **reference plant populations** were visited prior to the project field surveys. Verified offsite reference site plants observed by WCPlan staff during the 2018 and 2020 floristic seasons included: short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia*), Mendocino coast paintbrush (*Castilleja mendocinensis*), harlequin lotus (*Hosackia gracilis*), headland wallflower (*Erysimum concinnum*), Menzies' wallflower (*Erysimum menziesii*), coastal bluff morning glory (*Calystegia purpurata* ssp. *saxicola*), Blasdale's bent grass *(Agrostis blasdalei*), Point Reyes blennosperma (*Blennosperma nanum* var. *robustum*), coast lily (*Lilium maritimum*), deceiving sedge (*Carex saliniformis*), Maple-leaved checkerbloom (*Sidalcea malachroides*), Howell's spineflower (*Chorizanthe howellii*), round-headed Chinese houses (*Collinsia corymbosa*), hair-leaved rush (*Juncus supiniformis*), swamp harebell (*Campanula californica),* Point Reyes horkelia (*Horkelia marinensis*), thin-lobed horkelia (*Horkelia tenuiloba*), perennial goldfields (*Lasthenia californica* ssp. *macrantha*), great burnet (*Sanguisorba officinalis*), early blue violet (*Viola adunca*), nodding-semaphore grass (*Pleuropogon refractus*), stag's-horn clubmoss (*Lycopodium clavatum*), north coast semaphore grass (*Pleuropogon hooverianus*), Canadian bunchberry (*Cornus canadensis*), Pacific blue field gilia (*Gilia capitata* ssp. *pacifica*), redwood lily (*Lily rubescens*), pygmy manzanita (*Arctostaphylos nummularia* ssp. *mendocinoensis*), manyleaf gilia (*Gilia millefoliata*), Bolander pine (*Pinus contorta* ssp. *bolanderi*), Mendocino cypress (*Hesperocyparis pygmaea*), leafy Bishop's cap (*Mitella caulescens*), Bolander's reed grass (*Calamagrostis bolanderi*), pink sand verbena (*Abronia umbellata* var. *beviflora),* Lyngbye's sedge (*Carex lyngbyei*), white beak sedge (*Rhynchospora alba*), Oregon goldthread (*Coptis laciniata*), Point Reyes sidalcea (*Sidalcea calycosa* ssp. *rhizomata*), Gairdner's yampah (*Perideridia gairdneri*), and corn lily *(Veratrum fimbriatum*). WCPB visits reference sites for these species of plants each year as the floristic bloom windows progress. A similar list of reference site species visits was conducted in 2024.

All identifiable plant species located during the surveys were identified to the lowest taxonomic level necessary to determine the presence of special status plant species and are listed in **(Appendix C Table 1**). *The Jepson Manual: Vascular Plants of California* (Baldwin 2012) was used to determine the taxonomic nomenclature. *A Manual of California Vegetation Second Edition* (Sawyer 2009), *Classification of the Vegetation Alliances and Associations of Sonoma County, CA, V. 2* (Klein 2015) and the *List of Vegetation Alliances and Associations* (CDFW 2010) were used to classify and describe representative plant communities present.

4.3. Wetland and Riparian Delineation

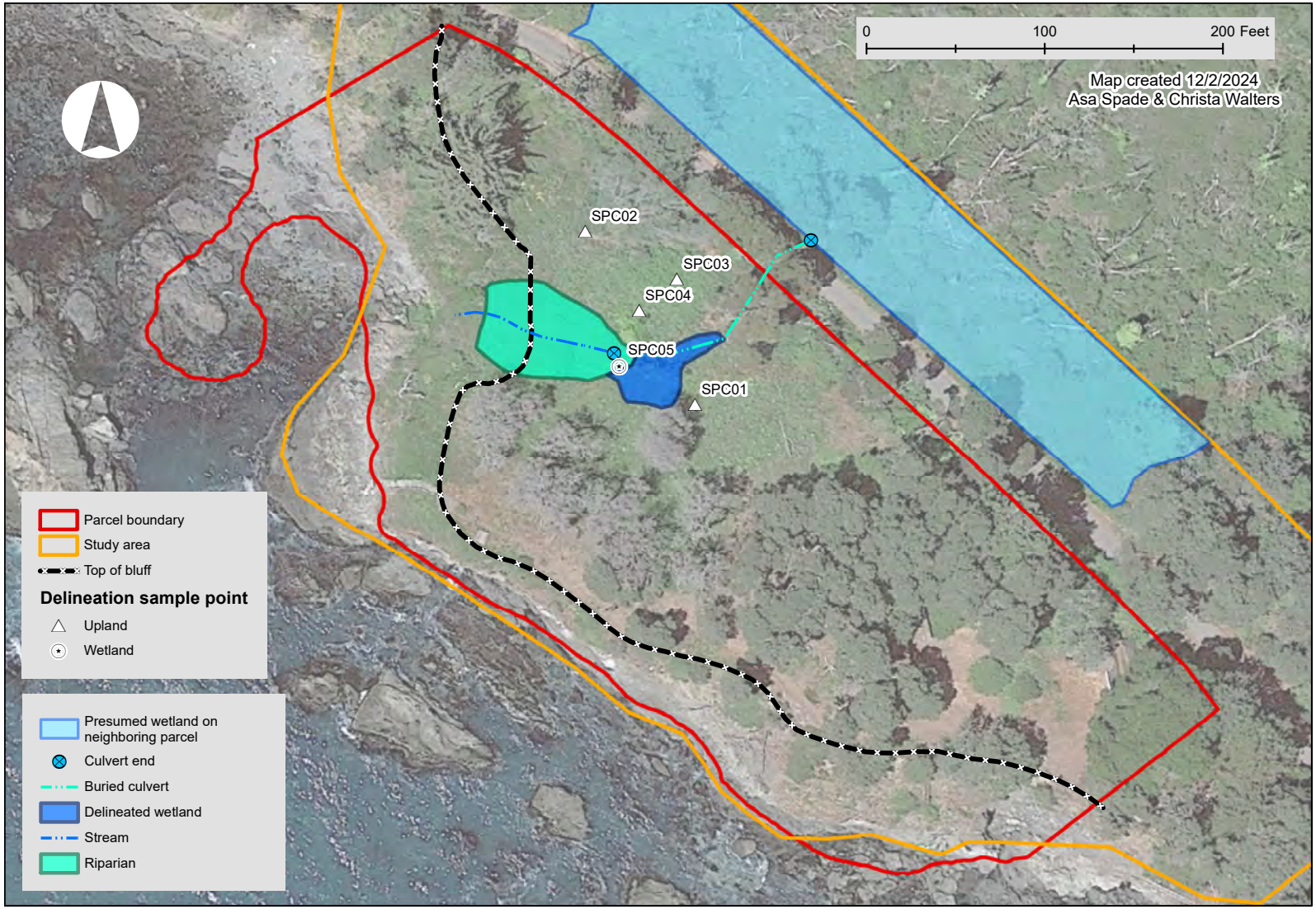
Wetland delineation field work began with examination of the topography and searching for observable indicators of surface hydrology and hydrophytic plants. Further analyses were performed at five (5) sample points where wetland soils, hydrophytic vegetation, and hydrology were inspected according to the US Army Corp of Engineers (ACOE) methodology for: Western Mountains, Valleys, and Coast Region (Version 2.0). Wetland data sheets for these sample points are presented in **Appendix F**. Sampling points were marked in the field with 24-inch wooden stakes with colored flagging and labeled in Sharpie marker. Locations of sampling points are depicted on the Wetland Delineation Map in **Figure 10**. The ACOE recognizes wetlands where hydrophytic vegetation, hydric soils, and hydrology are all present. In the California Coastal Zone, wetlands are recognized if any one of the three ACOE parameters (hydrophytic vegetation, hydric soils, or hydrology) is present. Wetlands reported and mapped in this report are Coastal Act wetlands and may or may not be Army Corps wetlands; a distinction is made where important.



CLIENT: Christensen
APN: 118-320-10, -11, -12
ADDRESS: 11800 500D Road,
Mendocino, CA

CNDDB Fauna & Flora

Figure 9. Rare flora and fauna reported to CDFW in the proximity of the study area and recorded in the CNDDB database.



OWNER: Christensen
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

Wetland Delineation

Figure 10. Wetland delineation map showing sample points, presumed and delineated wetland.

5. SURVEY RESULTS

Biological Field Surveys were performed that identified the following: plants, plant communities, wetlands, special status animals and animal habitat in the study area.

5.1. Plants

The CDFW's California Native Diversity Database (CNDDB) BIOS, *Version 5* (2016), was used to inform the search on special status flora previously reported in the vicinity of the project area. Eighty-one species of herbs, grasses, sedges, rushes, ferns, shrubs, and trees were identified in the study area and are listed in **Appendix D**. No special status plants were observed.

5.2. Plant Communities Observed

5.2.1. Bishop Pine Forest (*Pinus muricata* forest G3 S3.2 presumed ESHA)

The dominant overstory tree is Bishop pine (*Pinus muricata*) (**Figure 11**), with a small number of grand fir (*Abies grandis*), and Monterey pine (*Pinus radiata*) trees also present. The understory vegetation within the pine forest varies from the more natural plant species expected in this plant community, including black huckleberry (*Vaccinium ovatum*), sword fern (*Polystichum munitum*), and polypody fern (*Polypodium* sp.), to areas that are cleared and vegetated with grasses, landscaping plants, and invasive species such as scotch broom (*Cytisus scoparius*), English ivy (*Hedera helix*) (**Figure 12**), and English holly (*Ilex aquifolium*). The quality of the Bishop pine forest varies, with higher quality habitat occurring to the north of the existing workshop/garage and lower quality occurring near existing development. A number of dead pines are present, especially within the portion of the forest to the northwest of the proposed single-family residence site. A portion of the site with standing dead pine trees was mapped as non-native grassland (**Figure 13**) because these trees have no foliage and do not have seedling pine trees below them. It is possible, given the right conditions, that Bishop pines could become established in this area again.

Figure 11. Bishop pine forest around the existing woodshop structure on the western portion of the parcel.

Figure 12. Bishop pine forest with invasive English ivy understory near the proposed building envelope.

Figure 13. An area with non-regenerating dead pines that was mapped as non-native grassland.

Evidence of Sonoma tree vole (*Arborimus pomo*) in the form of clumps of Bishop pine needle resin ducts and rodent droppings was found on the ground below Bishop pines during the 2018 site surveys. Tree vole specific surveys were conducted at that time and no nest structures could be located. No evidence of tree voles was observed during subsequent surveys including scoping surveys and a Sonoma tree vole specific survey conducted in 2024. Sonoma tree voles feed on the needles of several species of coniferous trees and are presumed to have a high potential to occur within the canopy of the Bishop pine forest within the survey area. **Section 5.4.5** discusses Sonoma tree voles in more detail.

5.2.2. Non-native Grassland (*Anthoxanthum odoratum – Holcus lanatus* Herbaceous Alliance, and *Briza maxima* Provisional Semi-Natural Association)

An area vegetated primarily with non-native grasses occurs in the northern half of the study area (**Figure 14**). Dominant grasses include sweet vernal grass (*Anthoxanthum odoratum*) and common velvet grass (*Holcus lanatus*), with creeping bentgrass (*Agrostis stolonifera*), rattlesnake grass (*Briza maxima*), and wild oats (*Avena barbata*). Forbs present included English plantain (*Plantago lanceolata*), selfheal (*Prunella vulgaris*), rigid hedge nettle (*Stachys rigida*), cow parsnip (*Heracleum lanatum*), and sheep sorrel (*Rumex acetosella*). A site visit in May of 2020 revealed that portions of this area were becoming overgrown with California blackberry (*Rubus ursinus*) (**Figure 15**), with the plants described above still present but becoming covered by this early successional native plant due to the removal of the regular mowing regime practiced prior to initiation of the vegetation study. The vegetation in these areas is likely to return to non-native grassland when mowing is continued. In 2024 the site was mowed between July 13 and August 13; the boundaries of the non-native grassland and Himalayan blackberry patch will continue to fluctuate from season to season and year to year.

Figure 14. Non-native grassland dominated by sweet vernal grass and common velvet grass.

Figure 15. Portion of non-native grassland transitioning into California blackberry bramble in absence of mowing regime in 2020.

5.2.3. Blackwood Acacia Trees & Non-Native Shrubs

A mosaic of blackwood acacia (*Acacia melanoxylon*) and cotoneaster (*Cotoneaster* sp.) was prevalent north of the existing SFR along the 500D Road (**Figure 16**). Patches of vegetation where blackwood acacia was dominant had little to no understory. Areas where cotoneaster was more prevalent had English holly (*Ilex aquifolium*) and pampas grass (*Cortaderia jubata*).

Figure 16. Edge of vegetated area dominated by blackwood acacia and cotoneaster.

5.2.4. Himalayan Blackberry Scrub (*Rubus armeniacus* Shrubland Semi-Natural Alliance)

The northern third of the parcel was dominated by invasive Himalayan blackberry scrub (*Rubus armeniacus* shrubland semi-natural alliance) (**Figure 17**). Other plants present within this plant community were English ivy, sword fern (*Pteridium aquilinum*), coyote brush (*Baccharis pilularis*), common cowparsnip (*Heracleum maximum*), rigid hedge nettle (*Stachys rigida*), and in wetter areas, water parsley (*Oenanthe sarmentosa*), pennyroyal (*Mentha pulegium*), California bee plant (*Scrophularia californica*), and rush (*Juncus effusus* and *J. patens*).

Figure 17. Himalayan blackberry bramble with old aviary airlock in background. A portion of the area shown was once a netted aviary.

5.2.5. Cascara shrubland – presumed Coastal Act wetland ESHA

The habitat to the east of the parcel across the 500D Road is dominated by cascara sagrada (*Frangula purshiana*) (**Figure 18).** A number of dead Bishop pines rise above and/or are lying among the living portion of the plant community. Cascara shrubland alliance is not currently recognized as a plant community in the online Manual of California Vegetation. This area may have previously been considered Bishop pine forest but no longer has a living Bishop pine overstory. Likewise, Bishop pines may become established here again but may currently be excluded due to the lack of bare soil and sunlight they need for germination. Shifts in site hydrology due to Highway One to the east and/or the 500D Road to the west of this stand may have contributed to the death of the Bishop pines and their inability to recolonize the area since then. Live Bishop pine stands are present to the south, southeast and northwest of this plant community. Other vegetation within this plant community included wax myrtle (*Morella californica*), cotoneaster (*Cotoneaster* sp.), red elderberry (*Sambucus racemosa*), sword fern (*Polystichum munitum*), domestic rose (*Rosa* sp.), Himalayan blackberry (*Rubus armeniacus*), common rush (*Juncus effusus*), Pacific oenanthe (*Oenanthe sarmentosa*), English holly (*Ilex aquifolium*), cow parsnip (*Heracleum maximum*), and poison oak (*Toxicodendron diversilobum*).

Figure 18. Riparian area on east side of the road looking south towards Mendocino.

5.2.6. Coastal Scrub

Habitat along the bluff top edge (**Figure 19**) and vegetated portions of the bluff face can be classified as coyote brush scrub (*Baccharis pilularis* shrubland association). Plant species present included Coyote brush, poison oak, escaped non-native succulents such as green cockscomb (*Sedum praealtum*), blueblossum (*Ceanothus thyrsiflorus*), silk tassel (*Garrya elliptica*), thimbleberry (*Rubus parviflorus*) and wild cabbage (*Brassica oleracea*).

Figure 19. Coastal scrub habitat along the bluff edge.

5.2.7. Other Vegetation

There is other vegetation mapped in **Figure 8** that does not conform to the mapping and classifications standards in the *Manual of California Vegetation* which cannot be described as a plant community. Areas such as these are generally single plant specimens or a cluster of a few trees, they are mapped separately rather than lump them in with disparate adjacent communities. These mapped areas that do not make a plant community are grand fir (*Abies grandis*), Monterey pine trees (*Pinus radiata*), and Sitka spruce (*Picea sitchensis*).

5.3. Wetland Delineation - Presumed Coastal Act Wetland–presumed ESHA

On July 13th and August 13th, 2024, a routine level study of hydrology, soils, and vegetation indicators was conducted within the study area. The results were recorded from sampling points on data sheets (**Appendix F**) from the Regional Supplement to the Army Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). Locations of sampling points are depicted on the Wetland Delineation Map (**Figure 10**). A thick overgrowth of non-native invasive Himalayan blackberries covered the majority of the site that had the potential to be within wetland. Initial vegetation observations were made on July 13 with the Himalayan blackberry patch intact. The site was mowed soon after the July 13 site visits, which also acted as a pre-vegetation removal nesting bird survey. No evidence of nesting was observed in the area that was then mowed. Additional understory vegetation observations, soil, and hydrology observations were then made on August 13, 2024. The wetland hydrology, hydric soils, and hydrophytic vegetation indicators used to make wetland determinations are summarized below. Sampling points are marked in the field with 24-inch wooden stakes with colored flagging and labeled in a Sharpie marker. A 30-foot plot size was studied for trees present, a 15-foot radius for shrubs present, a 10-foot radius for herbs present, and a 10 to 20-foot radius for vines present as appropriate per each site. **Sample Points SPC01, SPC02, SPC03** and **SP04 were determined by the surveyors to be upland** as no hydric soil, hydrology, or hydrophytic vegetation was observed. **Sample Point SPC05 were determined to be within a Coastal Act wetland.** Hydrophytic vegetation and hydric soil field indicators were observed at the time of sampling at Sample Point SPC05. None of the sample points displayed field indicators of wetland hydrology but because the delineation occurred during the drier portion of the year wetland determinations at each sample point took this into account. Protocol level sample points were only conducted in those areas that both showed a potential for being wetland and occurring in locations with the potential to affect the project proposal.

A ditch along the eastern side of the 500D road was full of water during winter visits and surface water was apparent in many locations further to the east of the ditch. Vegetation in this location was dominated by cascara buckthorn (*Frangula purshiana*) and many dead Bishop pines were present, which may indicate that site hydrology changed during some point in the recent past. A culvert hydrologically connects the ditch on the east side of the road (**Figure 20**) to a natural gully at the cliff edge. This area of presumed Coastal Act wetland is uphill from the proposed project and the 500D Road is between the wetland and proposed development, buffering the cascara dominated presumed wetland area.

5.3.1 Sampling Point SPC01 – Upland

The location of SPC01 was chosen because its location is at the upper extent of a patch of *Juncus* visible within the Himalayan blackberry patch. Dominant plant species at this sample point were poison oak *(Toxicodendron diversilobum* FAC*)*, and Himalayan blackberry *(Rubus armeniacus* FAC). Both these species have a wetland indicator of FAC which means these species occur in upland and wetland in equal measure. Mr. Spade's personal experience is that poison oak occurs mostly in upland areas. The wetland indicator status for poison oak in the Arid West region is FACU, which better matches Mr. Spade's observations. The hydrophytic vegetation parameter was technically met due to both dominant species being FAC plants but because these species occur equally in upland and wetland this is an unreliable parameter upon which to base a wetland determination. Mr. Spade examined the other features of the site and determined that the vegetation in this location is not hydrophytic. No wetland hydrology indicators and no hydric soil indicators were observed within the pit dug to 22 inches deep. As no wetland parameters were met, SPC01 was determined to be upland.

5.3.2 Sampling Point SPC02 – Upland

This sample point was chosen due to its location at the northern edge of the Himalayan Blackberry patch near where test wells were dug. Dominant plant species at this sample point were silver wattle *(Acacia melanoxylon* UPL), and Himalayan blackberry *(Rubus armeniacus* FAC). The hydrophytic vegetation parameter was not met. No wetland hydrology indicators and no hydric soil indicators were observed within the pit dug to 10+ inches. The pit did not need to be dug any deeper because the characteristics of the soils in the upper 10 inches precluded meeting conditions of deeper hydric soil field indicators. As no wetland parameters were met, SPC02 was determined to be upland.

5.3.3 Sampling Point SPC03 – Upland

The location of SPC03 was chosen because of the vegetation observed before mowing; this area was dominated by Himalayan blackberry. Dominant plant species at this sample point were silver wattle *(Acacia melanoxylon* UPL), western bracken fern *(Pteridium aquilinum* FACU), English ivy *(Hedera helix* FACU) and Himalayan blackberry *(Rubus armeniacus* FAC). The hydrophytic vegetation parameter was not met. No wetland hydrology indicators and no hydric soil indicators were observed within the pit dug to 20 inches deep. As no wetland parameters were met, SPC03 was determined to be upland.

5.3.4 Sampling Point SPC04 – Upland

This sample point was chosen because vegetation was dominated by invasive Himalayan blackberry but was mowed just prior to the soil study. This location is a high point above the swale with a culvert. The culvert exists downhill and west of the point. Dominant plant species at this sample point were Himalayan blackberry *(Rubus armeniacus* FAC). The hydrophytic vegetation parameter, while technically met due to the predominance of a single FAC species, was determined by Mr. Spade to be a false positive. The dominance of one FAC clonal invasive species is not good evidence of wetland vegetation when both soils and hydrology indicate upland. No wetland hydrology indicators and no hydric soil indicators were observed within the pit dug to 20 inches deep. As no wetland parameters were met, SPC04 was determined to be upland.

5.3.5 Sampling Point SPC05 – Coastal Act Wetland – Presumed ESHA

This sample point's location was near the swale that has stubble from rushes. Observations of vegetation were made on July 13th and this area was dominated by Himalayan blackberry. Mowing occurred before August 13th when additional observations were made at this site. Dominant vegetation species were a *Juncus sp.* (FACW) and Himalayan blackberry *(Rubus armeniacus* FAC). Once the mowing was completed, the examination of the *Juncus* underneath the Himalayan blackberries was better evidence for the hydrophytic vegetation parameter. A soil pit was dug to 18 inches and the soils met the Redox Dark Surface (F6) field indicator due to significant mottles that occurred as soft masses within the black soil matrix in the upper portion of the soil column. This met the parameter for hydric soils present. No wetland hydrology field indicators were observed, but soils were observed during a dry portion of the year and may therefore not have been observable. Due to the hydrophytic vegetation parameter and the hydric soil parameter being met, sampling point SPC05 was determined to be within a Coastal Act wetland.

Figure 20. Location of culvert underneath 500D road. Photo taken from east side of road looking west towards the parcel.

5.4. Wildlife - Potential Occurrences

The California Department of Fish and Wildlife (CDFW) California Native Diversity Database (CNDDB) BIOS, Version 5 (2016), was used to inform the search on fauna previously reported in the vicinity of the project area (**Figure 9)**. No special-status wildlife were observed during the field biological surveys however suitable habitat for special status wildlife species was identified and evidence of Sonoma tree vole was present. Descriptions below are for wildlife species with moderate to high potential to occur, and for State or Federally Endangered or Threatened Species with potential to occur. A complete list of special status wildlife with the potential to occur at the project site can be found in **Table 3 of Appendix C**.

5.4.1. Invertebrates

a) **Lotis Blue butterfly (*Lycaeides argyrognomon lotis*)** (G5TH SH). This Federally Endangered butterfly species has not been seen since 1983, it is primarily from Mendocino County but historically recorded in northern Sonoma and possibly Marin Counties. This species inhabits wet meadows, damp coastal prairie, and potentially pygmy bogs or poorly-drained sphagnum-willow bogs where soils are waterlogged and acidic. The presumed host plant is Harlequin lotus (*Hosackia gracilis*), which was not observed within the study area. No further surveys are recommended for this species.

b) **Behren's silverspot butterfly (*Speyeria zerene behrensii*)** (G5T1 S1). Behren's silverspot is known historically from the town of Mendocino, Mendocino County, south to the area of Salt Point State Park, Sonoma County. Now presumed to be from Manchester south to the Salt Point area. This species inhabits coastal terrace prairie with caterpillar host plant western dog violet, and adult nectar sources such as thistles, asters, etc. No western dog violet (*Viola adunca*) was observed in the study area and therefore no further surveys are recommended at this time.

c) **Western Bumblebee (*Bombus occidentalis*) (G2G3 S1)** Western bumblebee (*Bombus occidentalis*) is not a Federal or State protected species but is listed as a California Natural Diversity Database S1 species, an indication that there are limited known occurrences in California. The project area is in the former historical range of this species. Bumblebees observed during botanical surveys did not demonstrate the field markings of the western bumble bee, which include a conspicuous white tip of the abdomen. No further surveys for this species are recommended at this time.

5.4.2. Fish

No aquatic habitat capable of supporting freshwater fish was observed within the study area. The Pacific Ocean is west of the parcel. The small stream present on the subject parcel is not habitat for anadromous fish.

5.4.3. Amphibians

a) **Northern red-legged frog (*Rana aurora aurora*) (G4T2T3 S2S3)** Northern red-legged frog (*Rana aurora*) is listed as a California Department of Fish and Wildlife Species of Special Concern. Their range extends from the southwest British Colombia coast to central Mendocino County. Often found in woods adjacent to streams and streamsides with plant cover, northern red-legged frogs breed in permanent water sources, including lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. The wetland and riparian area may contain potential Northern red-legged frog breeding habitat and the rest of the parcel has the potential for the presence of the frog during their overland movements between water sources.

   Avoidance measures in 8 address how to minimize the potential for impacts to all potentially occurring amphibians including prohibiting sediment transport into the wetland to protect potential frog and salamander habitat. It is also recommended that the contractor be trained to recognize amphibians and contact a qualified biologist if any are found onsite during construction activities.

b) **Southern Torrent Salamander (*Rhyacotriton variegatus*) (G3G4 S2S3)** This Species of Special Concern occurs primarily in cold, well-shaded permanent streams and spring seepages in redwood, Douglas fir, mixed conifer, montane riparian and montane hardwood-conifer habitats. On land it normally occurs only within the splash zone or on moss-covered rock rubble with trickling water. The wetland areas within the study area are unlikely to be suitable habitat for this salamander. Because it does not stray far from the splash zone of streams and seeps it should be sufficiently protected by wetland/riparian buffers.

c) **Red-bellied newt (*Taricha rivularis*) (G4 S2)** This Species of Special Concern inhabits primarily redwood forest, but also found within mixed conifer, valley-foothill woodland, montane hardwood and hardwood-conifer habitats. Rapid-flowing, permanent streams are required for breeding and larval development. No suitable breeding habitat was present within the study area. This species may range up to a mile from streams and may therefore be found in upland habitat during some times of the year. Identification and avoidance training for construction workers should include a discussion of this species.

5.4.4. Birds

a) **Nesting birds**. Resident and migratory birds that are present during the nesting season may nest in the habitat present within the study area. Nesting requirements for different species of birds are highly variable. Some birds nest in burrows, others on the ground, in vegetation, brush, trees, rocky outcrops, or on man-made structures. The bird nesting season typically extends from February to August. The Migratory Bird Treaty Act protects special status and

common native birds and their nests while they are in the process of nesting. If construction is to occur during the breeding season (February to August), a pre-construction survey is recommended to ensure that no nesting birds will be disturbed during development (**Table 1**). No nesting surveys are recommended if activity occurs in the non-breeding season.

b) **Pelagic Cormorant (*Phalacrocorax pelagicus*).** Nesting pelagic cormorants (**Figure 21**) were observed on the cliff edges as mapped in **Figure 2**. Pelagic cormorants are year-round residents on the California coast. Special attention should be applied to nesting bird surveys with concern to this species which nests on the bluff edge and may therefore be affected by the proposed project. The proposed development is greater than 50ft away from the nests that were identified during the surveys. During the pre-construction survey, a qualified biologist should identify any active nests and establish a 100ft buffer. No construction activity which could disturb nesting shall occur within the 100ft buffer during the breeding season (February – August).

Figure 21. Nesting pelagic cormorant on parcel cliff edge.

5.4.5. Mammals

a) **Sonoma tree vole (*Arborimus pomo*) (G3 S3)**

According to the January 2016 Department of Fish and Wildlife Special Animals List, Sonoma tree vole (*Arborimus pomo*) is listed as a G3 S3 Species of Special Concern. The state listing indicates the species is considered vulnerable in its range due to a restricted range, relatively few populations, recent and widespread declines or other factors.

Preferred habitat is considered mesic old growth Douglas fir forest; however, Sonoma tree voles are known to live in other coniferous forests. They are known to eat primarily Douglas fir

(*Pseudotsuga menziesii*) needles but eat other conifer needles as well. They may also eat the inner bark of twigs.

A clump of resin ducts presumably having fallen from a nest within a Bishop pine tree growing within the forest adjacent to the proposed SFR site was found during scoping early (Feb 2017) in the project area. A Sonoma tree vole survey was conducted, and one tree was climbed to examine a potential nest. It was determined that the potential nest structure examined was not a STV nest. No occupied or active nests were observed. In May of 2020 an additional visit was made to the site and a relatively fresh clump of Bishop pine resin ducts (**Figure 22**) was observed. The resin ducts on the outside of the clump were oxidized and somewhat brown while the resin ducts within the clump were a fresher greenish-yellow indicating that the clump fell from was probably at that time an actively occupied nest. Another clump was found during a later survey. No potential nest structures were visible from the ground. No evidence of Sonoma tree voles was observed during the 2024 surveys, which included a STV specific effort. Because of their previous occupation of the site WCPB recommends that Sonoma tree voles should be assumed present in the Bishop pine forest that will be impacted by at least some tree removal necessary for the project. Potential incidental take of this species is discussed further in a Report of Compliance. Avoidance, minimization, and compensatory mitigations are recommended.

Figure 22 Clump of Bishop pine resin ducts and droppings from a tree vole nest found on the ground at the site.

b) Bats (various species)

Several special status bats live on the Mendocino Coast. See **Table 1** for months when bats are present at roost sites. The existing structures could provide suitable habitat for common or special status bat species. If development is to occur during months bats are roosting for reproduction or hibernation, pre-constructions surveys should occur as discussed in **Section 8**. Bats should be excluded from existing disused buildings prior to their demolition.

6. PROJECT ALTERNATIVES

Alternative locations for the structures were considered but are not feasible or would be more impactful to the resources on and around the parcel. Limitations on the site of the development include a setback of 24 feet from the top of the bluff, front and side yard setbacks, only one viable location for a septic leach field where soils are appropriate and are more than 100ft from wells on the parcel and neighboring parcels, and multiple resources to avoid including Bishop pine forest, Sonoma tree vole habitat, bluff face pelagic cormorant nests, stream, delineated and presumed Coastal Act wetlands and riparian habitat. An emphasis on protecting wetland areas on the parcel was an important consideration. The only location that could avoid Bishop pine forest would impact Coastal Act wetland instead. The proposed alternative uses the existing development footprint as the site for the majority of the development and living space. This is the least impaction location for the development available on the parcel.

7. REDUCED BUFFER ANALYSIS AND REPORT OF COMPLIANCE SUMMARY

A Reduced Buffer Analysis (**Appendix G**) was conducted to assist in the determination of suitable protection for potential sensitive species and presumed sensitive habitat in the study area. Through the Reduced Buffer Analysis process, necessary mitigation measures were created (**Section 8**) to ensure all impacts from proposed development will have a less than significant effect on sensitive resources.

As a result of the buffer analysis, WCPB concludes that a 50ft buffer for the delineated Coastal Act wetland on the subject parcel, which includes the stream and surrounding riparian area, presumed Coastal Act wetland on the neighboring parcel opposite the 500D Road, and seasonal pelagic cormorant nest sites will sufficiently protect these resources from the impact of proposed development. The only development proposed within 50 feet of the wetlands is buried utility lines and water lines, and perimeter fence each of which must run along the parcel's northeastern boundary line parallel to the 500D road. There are no alternative locations for these developments. Bishop pine forest surrounds the existing development and courtyard where the new single-family residence is proposed and the only suitable locations where soils are appropriate for the septic leach fields are beneath the Bishop pine forest canopy. **Section 4** of the RBA addresses development within the ESHA buffers and within the Bishop pine forest itself. There is no less impacting location for the proposed development to be built and it is presumed that the project will pass a Takings Analysis concluding that the owners have a reasonable expectation to use the property for this principally permitted use in the residentially zoned parcel. Mitigation measures have been developed to ensure that impacts to Coastal Act wetlands and seasonal pelagic cormorant nest sites are avoided and that significant impacts to the Bishop pine forest, which is also presumed to be Sonoma tree vole habitat, is avoided, minimalized and/or compensated for.

A Report of Compliance (**Appendix H**) was written to address development that is proposed within the Bishop pine forest, which is also presumed habitat for Sonoma tree vole, and the buffers for these presumed ESHAs. 18 live Bishop pine trees are proposed for removal because they are either in the footprint of the proposed project or would overhang buildings and pose a threat to them. The project includes the proposal to plant 18 replacement Bishop pine trees in more appropriate locations that would enhance the Bishop pine forest and Sonoma tree vole habitat and provide habitat connectivity.

Through the Reduced Buffer Analysis and Report of Compliance process, necessary mitigation measures were created (**Section 8**) to avoid, reduce, or compensate for impacts from proposed development to special status resources.

8. MITIGATION AND AVOIDANCE MEASURES

The proposed project has been analyzed relative to its proximity to natural resources to determine its potential disturbance to sensitive species, utilizing the methods and results gathered above along with a Reduced Buffer Analysis (**Appendix G)** and Report of Compliance (**Appendix H**) performed pursuant to the Mendocino County's Local Coastal Program. As a result of these analysis, WCPB finds that potential impacts to stream and wetland ESHA habitat can be avoided, while impacts to Bishop pine forest and Sonoma tree voles can be avoided, minimized, and/or compensated for so that impacts are reduced to less than significant levels if the project utilizes the Mitigation Measures WCPB recommends below. The following mitigation measures are recommended to minimize impacts for development to Coastal Act Wetlands, stream, Bishop pine forest, Sonoma tree voles, birds and bats. These measures will serve to prevent or mitigate negative impacts to potential resources located within 100 feet from the proposed development.

8.1. Impacts to Bishop Pine Forest

A number of Bishop pine trees will need to be removed in order to construct the proposed project in the least impacting location available and to reduce hazards that will result from having the residence in close proximity to trees. A number of trees are leaning toward the proposed building envelope and/or show signs and symptoms of disease that may make them vulnerable to falling during a windstorm. Vegetation, including Bishop pine trees, need to be cleared around structures in accordance with CalFire guidance in order to reduce fire hazard. The proposed septic system

will be installed within the Bishop pine forest but will not require the removal of the trees within the forest. The proposed septic system is an 'at-grade' system which will be built above the existing soil and therefore not involve trenching that would cut tree roots. **A Bishop pine forest active management plan is recommended.**

8.1.1. Minimization Measure: Remove the least number of trees necessary

Native coniferous trees should only be removed if strictly necessary.

8.1.2. Compensatory Mitigation: Replace Bishop pine trees

Bishop pine trees that are removed should be replaced at a minimum 1:1 ratio in an appropriate location on the project site. Locations toward the northern end of the parcel would expand Bishop pine forest southward from Bishop pine forest located on State Parks land and result in more contiguous habitat beneficial to Sonoma tree voles.

8.1.3. Compensatory Mitigation: Improve Bishop pine forest habitat by removing invasive plants

Target invasive plant species within the mapped Bishop pine forest and areas where Bishop pines will be planted should be eliminated. The target species are: English ivy (Hedera helix), English holly (Ilex aquifolium), cotoneaster (*Cotoneaster spp.*), pampas grass (*Cortaderia jubata*), Scotch broom (*Cytisus scoparius*), blackwood acacia (Acacia melanoxylon), red claws (Escallonia rubra), purple fox glove (Digitalis purpurea), and red hot poker (Kniphofia uvaria).

8.2. Potential Impacts to Sonoma Tree Voles

Sonoma tree voles are presumed to be present within the Bishop pine forest on site and there is a potential for incidental take. Bishop pine trees will be removed that may contain hidden nests. The microclimate within the tree canopy is likely to change adjacent to trees that are removed because they will no longer block wind, shade areas, collect fog, etc. Changes in microclimates in the tree canopy may reduce the habitat suitable for Sonoma tree voles.

8.2.1. Minimization Measure: Remove the least number of trees necessary

Native coniferous trees should only be removed if strictly necessary.

8.2.2. Compensatory Mitigation: Replace Bishop pine trees

Bishop pine trees that are removed should be replaced at a minimum 1:1 ratio in an appropriate location on the project site. Locations most beneficial to Sonoma tree voles should be chosen, with special consideration given to habitat connectivity to existing occupied and potential habitat and a corridor to other habitat off site.

8.2.3. Compensatory Measure: Coordinate with CDFW

Coordination should occur with California Department of Fish and Wildlife to determine if there are additional recommendations or requirements from that agency. Sonoma tree voles are a CDFW Species of Special Concern, which do not have the legal protections of a Federally or State listed Threatened or Endangered species.

8.3. Potential Impact to Presumed Coastal Act Wetland

There is a potential for rain to carry sediment from construction areas into wetland habitat. The majority of the proposed development is located more than 100ft from the areas of presumed Coastal Act wetland on the subject parcel. Portions of the presumed Coastal Act wetland across the 500D Road are closer than 100ft but are uphill from the proposed project and buffered by the presence of the road.

8.3.1. Avoidance Measure: 50ft Buffer

A suitable buffer should be established between areas of Coastal Act wetland and proposed development. A reduced buffer analysis has been conducted and a buffer distance of 50ft was determined to be suitable to protect the resources present. No construction or materials staging

shall occur within 50ft of the areas of presumed Coastal Act wetland identified and mapped with the exception of the replacement of the perimeter fence and water and utility lines that must necessarily pass through the buffer to connect development on the northern and southern portions of the parcel. CDFW should be consulted for concurrence that 50ft is an appropriate buffer distance.

8.3.2. Avoidance Measure: Construction During Dry Season

Ground disturbing construction should occur only during the dry season. If a rain event occurs during the ground disturbance period, all ground disturbing activities will cease for a period of 48 hours after the rain stops.

8.3.3. Avoidance Measure: Straw Wattles

Straw wattles shall be installed between the portions of the Coastal Act wetland on the subject parcel and the proposed septic leach field, and existing test well if it is converted to a domestic water production well, separating the wetlands and their buffer zones from the construction related impact area. No materials storage, heavy equipment use or other impacts shall occur within the wetlands buffer area with the exception of the eventual construction of a replacement leach field if and when the primary fails, and the conversion of the existing test well in the northern portion of the parcels, and its connection to water and power at the existing well house, if it is necessary in order to supply the residence with sufficient drinking water. Straw wattles shall be properly installed to intercept liquids leaving the construction area. All fencing shall be maintained in a functional manner through the duration of construction and until all disturbed soil is stabilized. Fencing shall be checked, and appropriate maintenance shall occur on a weekly basis and after every rain event.

8.3.4. Avoidance Measure: Employ Best Management Practices (BMPs)

Standard Best Management Practices shall be employed to assure minimization of erosion resulting from construction. Ground disturbance shall be limited to the minimum necessary and disturbed soil areas shall be stabilized as soon as feasible. Areas of bare soil should be seeded with native erosion control seed mix.

8.4. Potential Impact to Birds

Removal of vegetation and construction activity near trees and vegetated areas has the potential to disturb birds' nesting process if it occurs during the nesting season.

8.4.1. Avoidance Measure: Seasonal Avoidance

No surveys are recommended if activity occurs in the **non-breeding season** (September to January). If vegetation removal or development with the potential to disturb nesting is to occur during the **breeding season** (February to August), a pre-construction survey is recommended within 14 days of the onset of construction to ensure that no nesting birds will be disturbed during development (**Table 1**).

8.4.2. 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.

Attention should also be paid to the cormorants located on the bluff edge to ensure that nests are buffered by 100ft during the breeding season.

8.4.3. Avoidance Measure: Construction activities during daylight hours

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

artificial lights.

8.5. Potential Impact to Bats

Construction in the study area has the potential to impact special status bat species. Bats are vulnerable when roosting for reproduction when young are not yet able to fly, and during hibernation because they can die of cold or malnutrition if hibernation is disturbed. The disused structures onsite could serve as roosting or hibernation refugium; therefore, there is potential for impact to occur. Temperatures on the Mendocino Coast usually do not drop low enough to necessitate bat hibernation. The following measures are provided to ensure that there is no impact to bats.

8.5.1. Avoidance Measure: Exclude bats from buildings

In order to avoid incidental impact to bats that may be roosting in existing buildings that will be demolished or modified, bats should be excluded by closing off potential entrances and installing one-way exit tubing. Exclusion tubes should be in place for at least 7 warm nights and should not be installed during pup-rearing season when mother bats could be separated from their non-flying young.

8.5.2. Avoidance Measure: Pre-construction surveys for bats

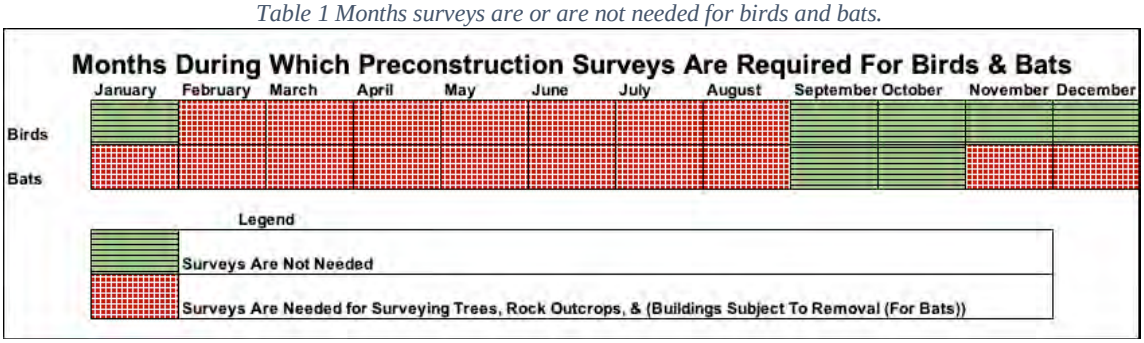
Construction will ideally occur between September 1st and October 31 after the young have matured and prior to the bat hibernation period. **If it is necessary to disturb potential bat roost sites between November 1 and August 31**, pre-construction surveys should be performed by a qualified biologist 14 days prior to the onset if development activities. If active bat roosts are observed, no ground disturbance activities shall occur within a minimum 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 roost until all young are no longer dependent upon the roost.

Pre-construction bat surveys involve surveying trees, rock outcrops, and buildings subject to construction for evidence of bat use (guano accumulation, or acoustic or visual detections). If evidence of bat use is found, then biologists shall conduct acoustic surveys under appropriate conditions using an acoustic detector, to determine whether a site is occupied. If bats are observed, a minimum 50ft buffer should be implemented around the bat roost.

8.5.3. Avoidance Measure: Construction activities during daylight hours

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

Table 1 Months surveys are or are not needed for birds and bats.



8.6. Potential Impact to Amphibians

Construction activities will involve driving vehicles and 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. Silt fencing, straw wattles, fences, or walls may intercept and redirect the travel of amphibians traveling through the area. Amphibians may fall into

and become trapped within holes left open overnight. To minimize impacts to amphibians, the following avoidance measures should be followed.

8.6.1. Avoidance Measure: Reduce footprint of impact

The 50ft wetland buffer should be staked and flagged onsite to act as a visual reminder to construction personal to reduce the impact site to within the construction area. Construction will be occurring primarily greater than 50ft from the wetland.

8.6.2. Avoidance Measure: Construction activities during daylight hours

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

8.6.3. Avoidance Measure: Limit ground disturbing construction to dry season

Ground disturbing construction within 50ft of the wetlands should occur during the dry season, which is generally April 1 to October 31 of any year.

8.6.4. Avoidance Measure: Restrict staging area

Stage all building materials and construction vehicles in upland area greater than 50 feet from areas designated as wetland and riparian on the parcel where amphibians have a greater likelihood of being present. The fence on 500D Road also acts as a physical and visual buffer to the riparian area east of the parcel.

8.6.4.1. Avoidance Measure: Contractor education

Within two weeks prior to construction activities, project contractors will be trained by a qualified biologist in the identification of 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.

8.6.5. 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.

8.6.6. 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.

8.6.7. Avoidance Measure: Properly install silt fencing and straw wattles

If silt fencing or straw wattles are prescribed for a project, they should be installed at the edge of the project site in locations where they will intercept erosion runoff. Extraneous barriers may funnel amphibians toward the project and should not be installed. Silt fencing and straw wattles should not be used to surround and isolate sensitive resources such as wetlands and riparian areas. Silt fencing and straw wattles should be examined each morning to ensure amphibians are not caught along its length.

8.6.8. Avoidance Measure: Do not leave holes open over night

Holes such as fence post holes, holes for septic tank installation, trenches for pipes and electric lines, soil test pits, etc. should be dug at times as close to when they will be utilized to minimize time open pits may entrap amphibians. Amphibians often travel at night. Holes should be filled or covered at the end of the workday. Sticks or boards can be leaned as ramps within larger holes that cannot be covered in order to allow a means of escape for amphibians that may fall in. Holes should be examined for trapped amphibians each morning and before they are filled.

8.6.9. Avoidance Measure: Move Species of Special Concern and Document with CNDDB

If an amphibian that is a Species of Special Concern is detected in the construction area during activities with the potential to harm the animal, it shall be relocated out of the work area into a safe and appropriate habitat area. Construction workers should photograph the amphibian and notify the biologist that trained the crew. Special status species observed during the course of the project should be documented with a CNDDB form submitted to CDFW.

8.7. Potential Introduction and Spread of Invasive Plants

During construction and landscaping, invasive species can be introduced and spread to surrounding areas that could out compete native flora and degrade habitat that native fauna may use.

8.7.1. Avoidance Measure: Clean heavy machinery

Heavy machinery such as and not limited to excavators and skid steers that may be used onsite have the potential to spread invasive plant material from use on other sites. Heavy machinery that is used in dirt needs to be power washed offsite to eliminate seeds and other propagules.

8.7.2. Avoidance Measure: Plant non-invasive vegetation

While many ornamental landscapes on the California coast use non-native plants, invasive plants should not be planted. Some invasive plants commonly seen by Wynn Coastal Planning & Biology biologists on the coast that should be avoided are: Iceplant (*Carpobrotus edulis, C. chiloensis,* & *Delosperma* sp.), cotoneaster (*Cotoneaster franchetii* & *C. pannosus*), English holly (Ilex aquifolium), English ivy (*Hedera helix*), cape ivy (*Delairea odorata*), pampas grass (*Cortaderia jubata* & *C. selloana*), cape weed (*Arctotheca calendula* & *A. prostrata*), *Crocosmia* sp., blue gum eucalyptus (*Eucalyptus globulus*), redhot poker (*Kniphofia uvaria*), periwinkle (*Vinca major*), bulbil bugle lily (*Watsonia meriana*), and callalily (*Zantedeschia aethiopica*).

8.7.3. Avoidance and Minimization Measure: Reduce invasive vegetation

In order to prevent the spread of invasive plants already present at the site into additional areas, efforts should be undertaken to reduce, and if possible, eliminate, invasive plants. Success eliminating some species of invasive non-native plants that occur on site is more likely than with others. For example, WCPB believes it would be beneficial and possible to eliminate English ivy (*Hedera helix*), English holly (*Ilex aquifolium*), cotoneaster (*Cotoneaster spp.*), pampas grass (*Cortaderia jubata*), Scotch broom (*Cytisus scoparius*), blackwood acacia (*Acacia melanoxylon*), red claws (*Escallonia rubra*), purple fox glove (*Digitalis purpurea*), and red hot poker (*Kniphofia uvaria*) with a concerted effort. Himalayan blackberry (*Rubus armeniacus*) and poison hemlock (*Conium maculatum*) could be reduced but would either require significant soil disturbance to grub out roots and/or the application of herbicide to significantly diminish the population present, neither of which are desirable within the Coastal Act wetland where these species are most prevalent. Other invasive non-native plants present, such as bentgrass (*Agrostis* spp.), sweet vernal grass (*Anthoxanthum odoratum*), slender wild oats (*Avena barbata*), orchard grass (*Dactylis glomerata*), velvet grass (*Holcus lanatus*), sixweeks grass (*Festuca myuros*), rattlesnake grass (*Briza maxima*), hairy cat's ear (*Hypochaeris radicata*), and sheep sorrel (*Rumex acetosella*) are unlikely to be eliminated or significantly reduced. Reduction and elimination of target species within the Bishop pine forest are outlined above as compensatory mitigation measures for impacts to the Bishop pine forest. Additional invasive removal within the grassland and Coastal Act wetland areas of the parcel are recommended but in WCPB's opinion, should not be made a requirement of the project's approval.

9. DISCUSSION

It is the professional opinion of the biologists at Wynn Coastal Planning & Biology that the project, as proposed, is the least impacting and most feasible option that accomplishes the property owners' goals of the use of their property.

Five types of potential ESHAs were identified within the Study Area:

Wetland Presumed ESHA – An area of **Coastal Act wetland** was present and delineated near the center of the subject parcel at a location where a stream once flowed but which has been directed through a culvert, the inlet of which is off property east of the 500D Road and which outlets near the western edge of the parcel. Vegetation on a portion of the land adjacent to the subject parcel but east side of the 500D Road indicates that wetland is likely present there. Wetland delineation was not conducted off-property, but this area was treated as presumed Coastal Act wetland for the purpose of this report.

Stream ESHA- A small **stream** originating from a culvert was present on the north-western portion of the study area.

Riparian Presumed ESHA – Vegetation in the gully where the culvert outlets is different than the surrounding drier areas and was considered a **riparian** ESHA for the purpose of this report.

Special Status Plant Community Presumed ESHAs – One special status plant community, **Bishop Pine Forest** (*Pinus muricata* forest alliance (G3 S3)) was present through much of the study area.

Special Status Wildlife Habitat Presumed ESHA – Three groups of pelagic cormorant (*Phalacrocorax pelagicus*) nests were identified on the bluff edge. Clumps of Bishop pine resin ducts presumably from a Sonoma tree vole nest were observed in the Bishop pine forest indicating that the trees have been habitat for this Species of Special Concern.

The results of this report were based upon the information gathered during Wynn Coastal Planning & Biology's site visits. After analyzing the results, the proposed project will occur partly within Bishop pine forest, and to a large extent within 50ft of the Bishop pine forest. The Bishop pine forest is also presumed habitat for Sonoma tree voles. As briefly discussed in **Section 6**, the proposed project's least impacting location is to redevelop primarily within the footprint of the existing structures and courtyard. The existing driveway needs to be moved further from the bluff edge and situated in such a manner that drivers do not need to drive or back out of a garage, for example, toward the bluff edge. Wetland is arguably more sensitive than upland Bishop pine forest. Building any new structures outside the dripline of the Bishop pine forest would be within 50ft of both the Bishop pine forest and 50ft of delineated Coastal Act wetland and/or riparian habitat around the stream. Therefore, the least impacting alternative is to develop away from the wetland and utilize the footprint of the existing development, a portion of which is partly within the Bishop pine forest. Further analysis of the Bishop pine forest is performed within the Report of Compliance (**Appendix H**). WCPB recommends a Bishop pine forest active management plan and consultation with CDFW regarding buffer distances, Sonoma tree vole mitigation, and avoidance of impacts to bats that may use the existing structures on the subject parcels.

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11. INVESTIGATOR BIOGRAPHIES

Contributing Biologists

Asa B Spade has over 15 years of experience surveying for special status natural resources in coastal Mendocino county. He 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. 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 Alverez 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 250 coastal development projects in Mendocino County.

United States Department of Agriculture

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

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).

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

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

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 (Christensen - Soils Map)

Map Scale: 1:1,200 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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

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 19, Aug 28, 2023

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.

Map Unit Legend (Christensen - Soils Map)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
116	Bruhel-Shinglemill complex, 2 to 15 percent slopes	2.8	100.0%
Totals for Area of Interest		**2.8**	**100.0%**

Map Unit Descriptions (Christensen - Soils Map)

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,

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.

Mendocino County, Western Part, California

116—Bruhel-Shinglemill complex, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hmkl
Elevation: 50 to 1,300 feet
Mean annual precipitation: 35 to 55 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 250 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Bruhel and similar soils: 50 percent
Shinglemill and similar soils: 25 percent
Minor components: 23 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bruhel

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 21 inches: clay loam
H3 - 21 to 41 inches: gravelly clay loam
H4 - 41 to 45 inches: weathered bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F004BL102CA - Salt-affected marine terraces with eolian sand parent materials
Hydric soil rating: No

Description of Shinglemill

Setting

Landform: Marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Fluviomarine deposits derived from sedimentary rock

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 15 inches: loam
H3 - 15 to 25 inches: clay loam
H4 - 25 to 63 inches: sandy clay

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F004BL102CA - Salt-affected marine terraces with eolian sand parent materials
Hydric soil rating: Yes

Minor Components

Flumeville

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Abalobadiah

Percent of map unit: 5 percent
Hydric soil rating: No

Tropaquepts

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Gibney

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed, gentler or steeper slopes

Percent of map unit: 3 percent

Custom Soil Resource Report

Hydric soil rating: No

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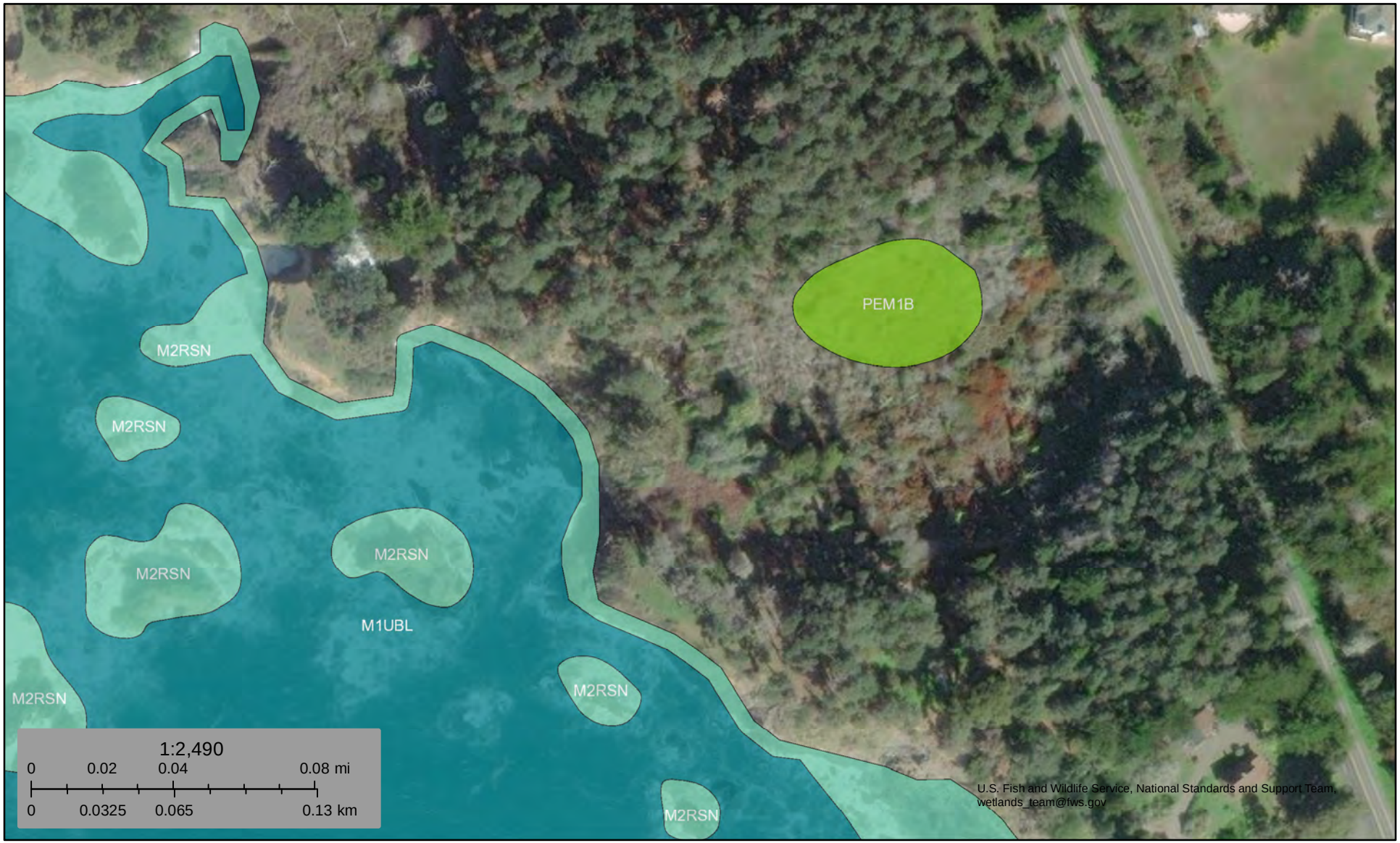
U.S. Fish and Wildlife Service
National Wetlands Inventory

Christensen - NWI Map



April 18, 2024

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.

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

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Appendix C. Species Rarity Ranking System and Definitions

FED: federal status includes federally rare (**FR**), threatened (**FT**), or endangered (**FE**)

STATE: California state status includes rare (**CR**), threatened (**CT**), or endangered (**CE**)

CNPS: California Native Plant Society ranked inventory of native California plants thought to be at risk

CNPS Ranking

List 1A (1A) Presumed extinct in California.

List 1B (1B) Rare, threatened, or endangered in California and elsewhere.

List 2 (2) Rare, threatened or endangered in California but more common elsewhere.

List 3 (3) More information needed, a review list.

List 4 (4) Species of limited distribution, a watch list.

Threat Code extensions and their meanings:

.1 - Seriously endangered in California

.2 – Fairly endangered in California

.3 – Not very endangered in California

G-RANK: Global Ranking - The global rank (G-rank) is a reflection of the overall condition of an element throughout its global range.

SPECIES OR NATURAL COMMUNITY LEVEL

G1 = Less than 6 viable element occurrences (Eos) OR less than 1,000 individuals OR less than 2,000 acres.

G2 = 6-20 Eos OR 1,000-3,000 individuals OR 2,000-10,000 acres.

G3 = 21-80 Eos OR 3,000-10,000 individuals OR 10,000-50,000 acres.

G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.

G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

GH - All sites are historical so possibly extinct; the element has not been seen for at least 20 years, but suitable habitat still exists (**SH** = All California sites are historical and possibly extinct).

GX - All sites are extirpated; this element is extinct in the wild (**SX** = All California sites are extirpated).

Appendix C. Species Rarity Ranking System and Definitions

GXC - Extinct in the wild; exists in cultivation.

G1Q - The element is very rare, but there are taxonomic questions associated with it.

T - Rank applies to a subspecies or variety.

S-RANK: STATE RANKING - The state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.

S1 = Less than 6 viable Eos OR less than 1,000 individuals OR less than 2,000 acres

S1.1 = very threatened

S1.2 = threatened

S1.3 = not very threatened OR no current threats known

S2 = 6-20 Eos OR 1,000-3,000 individuals OR 2,000-10,000 acres

S2.1 = very threatened

S2.2 = threatened

S2.3 = not very threatened OR no current threats known

S3 = 21-80 Eos or 3,000-10,000 individuals OR 10,000-50,000 acres

S3.1 = very threatened

S3.2 = threatened

S3.3 = not very threatened OR no current threats known

S4 = Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat.

S5 = Demonstrably secure to ineradicable in California. NO THREAT RANK.

Notes:

1. Other considerations used when ranking a species or natural community include the pattern of distribution of the element on the landscape, fragmentation of the population/stands, and historical extent as compared to its modern range. It is important to take a bird's eye or aerial view when ranking sensitive elements rather than simply counting Eos.
2. Uncertainty about the rank of an element is expressed in two major ways:
By expressing the rank as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3.
By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less than S2.
3. Other symbols

Special Status Plant Scoping List

Scientific Name (Synonyms) Common Name	Habitat found	Blooming Period	CRPR	Fed. Listing	State Listing	State Rank	Global Rank	Observed?
Abronia umbellata var.breviflora Pink sand-verbena	Coastal dunes	Jun-Oct	1B.1	N	N	S1	G4G5T	NO
Agrostis blasdalei Blasdale's bent grass	Coastal dunes, coastal bluff scrub, coastal prairie.	May- Jul	1B.2	N	N	S2	G2	NO
Arctostaphylos nummularia ssp. Mendocinoensis Pygmy manzanita	Closed-cone coniferous forest. Acidic sandy-clay soils in dwarfed coniferous forest.	Jan	1B.2	N	N	SH	G3?THQ	NO
Astragalus agnicidus Humboldt milk- vetch	Openings, disturbed areas, roadsides,broadleafed upland forest, North coast coniferous forest	Apr-Sep	1B.1	N	CE	S3	G3	NO
Astragalus pycnostachyus var. pyncnostachyus Coastal marsh milk-vetch	Coastal dunes (mesic), coastal scrub, coastal salt marshes and swamps, and streamsides	Apr-Oct	1B.2	N	N	S2	G2T2	NO
Blennosperma nanum var.robustum Point Reyes blennosperma	Coastal prairie, coastal scrub	Feb-Apr	1B.2	N	CR	S2	G4T2	NO
Calamagrostis crassiglumis Thurber's reed grass	Coastal scrub (mesic), freshwater marshes and swamps.	May-Aug	2B.1	N	N	S2	G3Q	NO
Calystegia purpurata ssp. saxicola Coastal bluff morning-glory	Coastal bluff scrub, Coastal dunes, Coastal scrub, North Coast coniferous forest.	Mar-Sep	1B.2	N	N	S2S3	G4T2T3	NO
Campanula californica Swamp harebell	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, freshwater marshes and swamps, and North Coast coniferous forests.	Jun-Oct	1B.2	N	N	S3	G3	NO
Carex californica California sedge	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and swamps (often on margins or drier areas).	May-Aug	2B.3	N	N	S2	G5	NO
Carex lenticularis var.limnophila Lagoon sedge	Shores, beaches, often gravelly, bogs and fens, marshes and swamps, North Coast coniferous forest.	Jun-Aug	2B.2	N	N	S1	G5T5	NO
Carex livida Livid sedge	Bogs and Fens	Jun	2A	N	N	SH	G5	NO
Carex lyngbyei Lyngbye's sedge	Brackish or freshwater marshes and swamps	Apr-Aug	2B.2	N	N	S3	G5	NO
Carex saliniformis Deceiving sedge	Mesic sites of coastal prairie, coastal scrub, and meadows, seeps, marshes and swamps (coastal salt)	Jun-Jul	1B.2	N	N	S2	G2	NO
Carex viridula ssp. Viridula Green yellow sedge	Bogs and fens, marshes and swamps (freshwater), north coast coniferous forest (mesic).	Jun-Nov	2B.3	N	N	S1.3	G5T5	NO
Castilleja affinis ssp.litoralis Oregon coast paintbrush	Sandy sites in coastal bluff scrub and coastal scrub; coastal dunes.	Jun	2B.2	N	N	S3	G4G5T4	NO
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	Coastal salt marshes and swamps.	Apr-Aug	1B.2	N	N	S2	G4T2	NO
Castilleja mendocinensis (Castilleja latifolia ssp. Mendocinensis) Mendocino Coast paintbrush	Coastal bluff scrub, coastal scrub, closed-cone coniferous forest, coastal dunes, coastal prairie.	Apr-Aug	1B.2	N	N	S2	G2	NO
Chorizanthe howellii Howell's spineflower	Sandy, often disturbed, areas of coastal prairie and coastal scrub, and coastal dunes	May - Jul	1B.2	FE	CT	S1	G1	NO

Scientific Name (Synonyms) Common Name	Habitat found	Blooming Period	CRPR	Fed. Listing	State Listing	State Rank	Global Rank	Observed?
Clarkia amoena ssp. whitneyi Whitney's farewell-to- spring	Coastal bluff scrub, coastal scrub.	Jun-Aug	1B.1	N	N	S1	G5T1	NO
Collinsia corymbosa Round-headed Chinese-houses	Coastal dunes, coastal prairie.	Apr-June	1B.2	N	N	S1	G1	NO
Cornus canadensis Bunchberry	Bogs and fens, meadows and seeps, North Coast coniferous forest.	May-Jul	2B.2	N	N	S2	G5	NO
Cuscuta pacifica var. papillata Mendocino dodder	Coastal dunes (interdune depressions).	Jul-Oct	1B.2	N	N	S1	G5T1	NO
Erigeron supplex Supple daisy	Coastal bluff scrub, coastal prairie.	May-Jul	1B.2	N	N	S2	G2	NO
Erysimum concinnum Headland wallflower	Coastal bluff scrub, coastal dunes, coastal prairie.	Feb-Jul	1B.2	N	N	S3	G3	NO
Erysimum menziesii (Erysimum menziesii ssp. eurekense, Erysimum menziesii ssp. menziesii, Erysimum menziesii ssp. yadonii) Menzies' wallflower	Localized on coastal dunes and coastal strand.	Mar-Sep	1B.1	FE	CE	S1	G1	NO
Erythronium revolutum Coast\Mahogany fawn lily	Mesic, streambanks. Bogs and fens; broadleafed upland forests; North Coast coniferous forest.	Mar-Aug	2B.2	N	N	S3	G4	NO
Fritillaria roderickii (Fritallaria biflora var. biflora) Roderick's fritillary	Coastal bluff scrub, coastal prairie, valley and foothill grassland.	Mar-May	1B.1	N	CE	S1.1	G1Q	NO
Gilia capitata ssp.chamissonis Blue coast gilia	Coastal dunes, coastal scrub.	Apr-Jul	1B.1	N	N	S2	G5T2	NO
Gilia capitata ssp. pacifica Pacific gilia	Coastal bluff scrub, openings in chaparral, coastal prairie, valley and foothill grassland.	Apr-Aug	1B.2	N	N	S2	G5T3T4	NO
Gilia capitata ssp.tomentosa Woolly-headed gilia	Serpentinite, rocky, outcrops of coastal bluff scrub and calley and foothill grassland.	May-Jul	1B.1	N	N	S2	G5T2	NO
Gilia millefoliata Dark-eyed gilia	Coastal dunes	Apr-Jul	1B.2	N	N	S2	G2	NO
Glyceria grandis American manna grass	Bogs and fens, wet meadows and seeps, marshes, swamps,streambanks, and lake margins	Jun-Aug	2B.3	N	N	S3	G5	NO
Hemizonia congesta ssp. Congesta Seaside tarplant	Sometimes roadsides.Valley and foothill grassland	Apr-Nov	1B.2	N	N	S1S2	G5T1T2	NO
Hesperevax sparsiflora var. brevifolia Short-leaved evax	Sandy coastal bluffs; coastal dunes, coastal dune mat, and sandy openings in wet dune meadows. Coastal bluff scrub. Rocky, grassy slopes. In areas of sparse vegetation cover in sandy substrate.	Mar-Jun	1B.2	N	N	S2	G4T3	NO
Hesperocyparis pygmaea (Cupressus pygmaea, Cupressus goveniana ssp. pigmaea, Callitropsis pygmaea) Pygmy cypress	Closed-cone coniferous forests, usually podzol-like	NA	1B.2	N	N	S1	G1	NO
Horkelia marinensis Point Reyes horkelia	Sandy, coastal dunes, coastal scrub, coastal prairire	May-Sep	1B.2	N	N	S2	G2	NO

Scientific Name (Synonyms) Common Name	Habitat found	Blooming Period	CRPR	Fed. Listing	State Listing	State Rank	Global Rank	Observed?
Horkelia tenuiloba Thin-lobed horkelia	Mesic openings or sandy sites in broadleafed upland forests, chaparral, and valley and foothill grassland.	May-Aug	1B.2	N	N	S2	G2	NO
Hosackia gracilis (Lotus formosissimus) Harlequin lotus	Wetlands, roadsides, Broadleafed upland forest, Coastal bluff scrub, Closed-cone coniferous forest, Cismontane woodland, Coastal prairie, Coastal scrub, Meadows and seeps, Marshes and swamps, North Coast coniferous forest, Valley and foothill grassland	Mar-Jul	4.2	N	N	S3	G4	NO
Juncus supiniformis Hair-leaved rush	Bogs and fens; freshwater marshes and swamps near the coast.	Apr-Jul	2B.2	N	N	S1	G5	NO
Kopsiopsis hookeri (Boschniakia hookeri) Small groundcone	North Coast conferous forest	Apr-Aug	2B.3	N	N	S1S2	G4G5	NO
Lasthenia californica ssp.bakeri Baker's goldfields	Openings in closed-cone coniferous forest; coastal scrub; meadows and seeps; marshes and swamps.	Apr-Oct	1B.2	N	N	SH	G3TH	NO
Lasthenia californica ssp. macrantha Perennial goldfields	Coastal bluff scrub, coastal dunes, and coastal scrub.	Jan-Nov	1B.2	N	N	S2	G3T2	NO
Lasthenia conjugens Contra Costa goldfields	Mesic sites in cismontane woodlands, alkaline playas, valley and foothill grasslands, vernal pools	Mar-Jun	1B.1	FE	N	S1.1	G1	NO
Lathyrus palustris Marsh Pea	Bogs and fens; mesic sites of coastal prairies, coastal scrub, lower montane coniferous forests, and North Coast coniferous forests.	Mar- Aug	2B.2	N	N	S2	G5	NO
Lilium maritimum Coast lily	Broadleafed upland forests, closed-cone coniferous forests, coastal prairies, coastal scrub, freshwater marshes and swamps. Roadsides and roadside ditches.	May-Aug	1B.1	N	N	S2	G2	NO
Microseris paludosa Marsh microseris/silverpuffs	Closed-cone coniferous forests, cismontane woodlands, coastal scrub, valley and foothill grasslands. *(A 1968 collection from Point Arena (3.2 km to N, between Hwy. 1 and beach) is the northernmost occurrence and is disjunct from southern populations.*	Apr-Jul	1B.2	N	N	S2	G2	NO
Oenothera wolfii Wolf's evening- primrose	Sandy, usually mesic sites in coastal bluff scrub, coastal dunes, coastal prairie, and lower montane coniferous forests. *(Along roads on vertical cutbanks and in grassy median. On disturbed sterile soil; upper stabilized dunes; rocky slopes protected above strand; vertical cliffs above the ocean.)*	May-Oct	1B.1	N	N	S1	G2	NO
Packera bolanderi var.bolanderi (Senecio bolanderi var. bolanderi) Seacoast ragwort	Sometimes roadsides, Coastal Scrub, North coast coniferous forest	Jan-Aug	2B.2	N	N	S2S3	G4T4	NO
Phacelia insularis var.continentis North Coast phacelia	Sandy, sometimes rocky, sites in coastal bluff scrub; coastal dunes. *(Rocky, thin soil with native and non-native grasses and forbs. Sandy pastureland and grazed coastal prairie.)*	Mar-May	1B.2	N	N	S2	G2T2	NO
Pinus contorta ssp.bolanderi Bolander's beach pine	Closed-cone coniferous forests with podzol-like soils. Associated with Mendocino cypress and bishop pine, and Mendocino pygmy cypress forests	Jul-Aug	1B.2	N	N	S2	G5T2	NO
Piperia candida White-flowered rein orchid	Sometimes serpentinite, Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest	Mar-Sep	1B.2	N	N	S3	G3	NO
Pleuropogon hooverianus North Coast semaphore grass	open areas, mesic, broadleafed upland forest, meadows and seeps, North coast coniferous forest.	Apr-Jun	1B.1	N	CT	S2	G2	NO
Potamogeton epihydrus Ribbonleaf pondweed	Marshes and swamps (assorted shallow freshwater)	Jun-Sep	2B.2	N	N	S2.2?	G5	NO

Scientific Name (Synonyms) Common Name	Habitat found	Blooming Period	CRPR	Fed. Listing	State Listing	State Rank	Global Rank	Observed?
Puccinellia pumila Dwarf alkali grass	Coastal salt marshes and swamps; meadows and seeps, mineral spring meadows.	Jul	2B.2	N	N	SH	G4?	NO
Rhynchospora alba White beaked-rush	Bogs and fens (sometimes in Mendocino pygmy forests); meadows and seeps; marshes and swamps (freshwater).	Jul-Aug	2B.2	N	N	S2	G5	NO
Sanguisorba officinalis Great burnet	Bogs and fens,broadleafed upland forests, meadows and seeps, marshes and swamps, North Coast coniferous forests, riparian forests, Serpentine seepage areas and along stream borders.	Jul-Oct	2B.2	N	N	S2	G5?	NO
Sidalcea calycosa ssp.rhizomata Point Reyes checkerbloom	Freshwater marshes and swamps near the coast.	Apr-Sep	1B.2	N	N	S2	G5T2	NO
Sidalcea malviflora ssp.patula Siskiyou checkerbloom	Often roadcuts, coastal bluff scrub; coastal prairie; North coast coniferous forest	May-Aug	1B.2	N	N	S2	G5T2	NO
Sidalcea malviflora ssp. purpurea Purple-stemmed checkerbloom	Broadleafed upland forest, coastal prairie	May-Jun	1B.2	N	N	S1	G5T1	NO
Trifolium buckwestiorum Santa Cruz clover	Gravelly margins of broadleafed upland forests, cismontane woodlands, coastal prairie. *(Common associates include Juncus bufonius, Soliva sessilis, Danthonia californica, and Bromus hordeaceus. In Mendocino Co., most collections from ~5 miles up Garcia River.)*	Apr-Oct	1B.1	N	N	S2	G2	NO
Trifolium trichocalyx Monterey clover	Closed-cone coniferous forest (sandy, openings, burned areas).	Apr-Jun	1B.1	FE	CE	S1	G1	NO
Triquetrella californica Coastal triquetrella	Soil of Coastal bluff scrub, coastal scrub,	NA	1B.2	N	N	S2	G2	NO
Viola adunca Western dog violet	Yellow pine forest, red fir forest, lodgepole forest, redwood forest, mixed evergreen forest, subalpine forest, alpine fell-fields, wetland riparian. Common and widespread on open sea bluffs to red fir forest.	Apr-Aug	not ranked	N	N	?	?	NO
Viola palustris Alpine marsh violet	Coastal Bogs and Fens; Coastal Scrub (mesic)	Mar-Aug	2B.2	N	N	S1S2	G5	NO

Sensitive Natural Communities and Alliances Occuring in Coastal and Inland Mendocino County								
Alliance Scientific Name	**Association Scientific Name**	**Alliance Common Name**	**Alliance Global Rank**	**Alliance State Rank**	**Associciation Global Rank**	**Association Rank State**	**Rare ?**	**Present?**
Woodland and Forest Alliances, Associations, and Stands								
Abies grandis	*Abies grandis – Picea sitchensis / Gaultheria shallon / Polystichum munitum*	Grand fir forest	G4	S2	G1	S1	Y	No
	Abies grandis – Tsuga heterophylla / Polystichum munitum	Grand fir forest	G4	S2	G2	S1	Y	No
Acer macrophyllum	*Acer macrophyllum*	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Adenocaulon bicolor	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Corylus cornuta	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Dryopteris arguta	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Philadelphus lewisii	Bigleaf maple forest	G4	S3			Y	No
	Acer macrophyllum – Pseudotsuga menziesii / Polystichum munitum	Bigleaf maple forest	G4	S3			Y	No
Acer negundo	*Acer negundo*	Box-elder forest	G5	S2			Y	No
	Acer negundo – Salix gooddingii	Box-elder forest	G5	S2			Y	No
Aesculus californica	*Aesculus californica*	California buckeye groves	G3	S3			Y	No
	Aesculus californica – Umbellularia californica / Diplacus aurantiacus	California buckeye groves	G3	S3	G3	S3?	Y	No
	Aesculus californica – Umbellularia californica / Holodiscus discolor	California buckeye groves	G3	S3			Y	No
	Aesculus californica / Datisca glomerata	California buckeye groves	G3	S3			Y	No
	Aesculus californica / Lupinus albifrons	California buckeye groves	G3	S3			Y	No
	Aesculus californica / Toxicodendron diversilobum / moss	California buckeye groves	G3	S3			Y	No
Alnus rhombifolia	*Alnus rhombifolia*	White alder groves	G4	S4	G2Q		Y	No
Arbutus menziesii	*Arbutus menziesii – Quercus agrifolia*	Madrone forest	G4	S3	G3	S3?	Y	No
	Arbutus menziesii – Umbellularia californica	Madrone forest	G4	S3			Y	No
	Arbutus menziesii – Umbellularia californica – (Notholithocarpus densiflorus)	Madrone forest	G4	S3	G3	S3?	Y	No
	Arbutus menziesii – Umbellularia californica – Quercus kelloggii	Madrone forest	G4	S3	G3	S3?	Y	No
Fraxinus latifolia	*Fraxinus latifolia*	Oregon ash groves	G4	S3			Y	No
	Fraxinus latifolia – Alnus rhombifolia	Oregon ash groves	G4	S3			Y	No
	Fraxinus latifolia / Cornus sericea	Oregon ash groves	G4	S3			Y	No
	Fraxinus latifolia / Toxicodendron diversilobum	Oregon ash groves	G4	S3			Y	No
Hesperocyparis macrocarpa	*Hesperocyparis macrocarpa*	Monterey cypress stands	G1	S1			Y	No
Hesperocyparis pigmaea	*Hesperocyparis pigmaea – Pinus contorta ssp. bolanderi – Pinus muricata / Rhododendron macrophyllum*	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea – Pinus contorta ssp. bolanderi / Rhododendron columbianum	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea – Pinus muricata / Arctostaphylos nummularia	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea / Cladina impexa	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea / Cladonia bellidiflora	Mendocino pygmy cypress woodland	G1	S1			Y	No
	Hesperocyparis pigmaea / Usnea subfloridana	Mendocino pygmy cypress woodland	G1	S1			Y	No
Notholithocarpus densiflorus	*Notholithocarpus densiflorus*	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Acer circinatum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Acer macrophyllum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Arbutus menziesii	Tanoak forest	G4	S3	G3	S3	Y	No
	Notholithocarpus densiflorus – Arbutus menziesii / Ceanothus integerrimus	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Calocedrus decurrens / Festuca californica	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Chamaecyparis lawsoniana	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Chrysolepis chrysophylla	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Cornus nuttallii	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Cornus nuttallii / Toxicodendron diversilobum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Pinus lambertiana / Toxicodendron diversilobum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Quercus chrysolepis	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Quercus kelloggii	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus – Umbellularia californica	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Corylus cornuta	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Frangula californica	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Gaultheria shallon	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Mahonia nervosa	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Quercus vaccinilfolia – Rhododendron macrophyllum	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Toxicodendron diversilobum – Lonicera hispidula var. vacillans	Tanoak forest	G4	S3			Y	No
	Notholithocarpus densiflorus / Vaccinium ovatum	Tanoak forest	G4	S3			Y	No
Picea sitchensis	*Picea sitchensis – Tsuga heterophylla*	Sitka spruce forest	G5	S2			Y	No
	Picea sitchensis / Maianthemum dilatatum	Sitka spruce forest	G5	S2			Y	No
	Picea sitchensis / Polystichum munitum	Sitka spruce forest	G5	S2	G4?		Y	No
	Picea sitchensis / Rubus spectabilis	Sitka spruce forest	G5	S2	G3		Y	No
Pinus contorta ssp. contorta	*Pinus contorta ssp. contorta*	Beach pine forest	G5	S3			Y	No
	Pinus contorta ssp. contorta – Picea sitchensis	Beach pine forest	G5	S3			Y	No
Pinus lambertiana	*Pinus lambertiana – Chrysolepis chrysophylla / Quercus vaccinilfolia – Quercus sadleriana*	Sugar pine forest	G4	S3			Y	No
Pinus muricata – Pinus radiata	*Pinus muricata*	Bishop pine – Monterey pine forest	G3	S3	G3?	S3?	Y	Yes
	Pinus muricata – (Arbutus menziesii) / Vaccinium ovatum	Bishop pine – Monterey pine forest	G3	S3	G2	S2	Y	No
	Pinus muricata – Chrysolepis chrysophylla / Arctostaphylos nummularia	Bishop pine – Monterey pine forest	G3	S3	G2	S2	Y	No
	Pinus muricata – Notholithocarpus densiflorus	Bishop pine – Monterey pine forest	G3	S3	G3	S3	Y	No
	Pinus muricata – Pseudotsuga menziesii	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus muricata / Arctostaphylos glandulosa	Bishop pine – Monterey pine forest	G3	S3	G2	S2	Y	No
	Pinus muricata / Arctostaphylos spp.	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus muricata / Comarostaphylis diversifolia ssp. planifolia	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus muricata / Xerophyllum tenax	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata – Pinus muricata / Arctostaphylos tomentosa – Arctostaphylos hookeri	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata – Quercus agrifolia / Toxicodendron diversilobum	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata / Arctostaphylos tomentosa – Vaccinium ovatum	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata / Toxicodendron diversilobum	Bishop pine – Monterey pine forest	G3	S3			Y	No
	Pinus radiata plantations	Bishop pine – Monterey pine forest	G3	S3	GNR	SNR	N	No
Pseudotsuga menziesii – Notholithocarpus densiflorus	*Pseudotsuga menziesii – Notholithocarpus densiflorus*	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Acer macrophyllum) / Polystichum munitum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Calocedrus decurrens) / Festuca californica	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana – Alnus rubra) / riparian	Douglas fir – tanoak forest	G3	S3			Y	No

Sensitive Natural Communities and Alliances Occuring in Coastal and Inland Mendocino County								
Alliance Scientific Name	Association Scientific Name	Alliance Common Name	Alliance Global Rank	Alliance State Rank	Associciation Global Rank	Association Rank State	Rare ?	Present?
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana – Tsuga heterophylla) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana – Umbellularia californica) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Acer circinatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Mahonia nervosa / Linnaea borealis	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Vaccinium ovatum – Rhododendron occidentale	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chamaecyparis lawsoniana) / Vaccinium parvifolium	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chrysolepis chrysophylla) / Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chrysolepis chrysophylla) / Pteridium aquilinum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Chrysolepis chrysophylla) / Rhododendron macrophyllum – Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Pinus lambertiana)	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Mahonia nervosa	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Mahonia nervosa – Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / rockpile	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Toxicodendron diversilobum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis) / Vaccinium ovatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus chrysolepis, Quercus kelloggii) / Toxicodendron diversilobum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Quercus kelloggii) / Rosa gymnocarpa	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – (Umbellularia californica) / Toxicodendron diversilobum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Iris	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus – Thuja plicata / Vaccinium ovatum – Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Acer circinatum	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Achlys triphylla	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Aralia californica	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Chimaphila umbellata	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Cornus nuttallii	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Corylus cornuta	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Gaultheria shallon	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Mahonia nervosa	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Quercus vacciniifolia – Holodiscus discolor	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Rhododendron macrophyllum	Douglas fir – tanoak forest	G3	S3	G2	S2	Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Taxus brevifolia	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Toxicodendron diversilobum – (Lonicera hispidula)	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Vaccinium ovatum – (Gaultheria shallon)	Douglas fir – tanoak forest	G3	S3			Y	No
	Pseudotsuga menziesii – Notholithocarpus densiflorus / Whipplea modesta	Douglas fir – tanoak forest	G3	S3			Y	No
Salix laevigata	*Salix laevigata*	Red willow thickets	G3	S3	GNR		Y	No
	Salix laevigata – Cornus sericea / Scirpus microcarpus	Red willow thickets	G3	S3	G3	S3?	Y	No
	Salix laevigata – Salix lasiolepis	Red willow thickets	G3	S3			Y	No
	Salix laevigata – Salix lasiolepis / Artemisia douglasiana – Rubus ursinus	Red willow thickets	G3	S3			Y	No
	Salix laevigata – Salix lasiolepis / Baccharis salicifolia	Red willow thickets	G3	S3			Y	No
	Salix laevigata / Rosa californica	Red willow thickets	G3	S3			Y	No
	Salix laevigata / Salix lasiolepis / Artemisia douglasiana	Red willow thickets	G3	S3			Y	No
Sequoia sempervirens	*Sequoia sempervirens*	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Acer macrophyllum – Umbellularia californica	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens – Acer macrophyllum / Polypodium californicum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Alnus rubra / Rubus spectabilis	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Arbutus menziesii	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Arbutus menziesii / Vaccinium ovatum	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens – Chrysolepis chrysophylla / Arctostaphylos glandulosa	Redwood forest	G3	S3	G2	S2?	Y	No
	Sequoia sempervirens – Hesperocyparis pigmaea	Redwood forest	G3	S3	G1	S1	Y	No
	Sequoia sempervirens – Notholithocarpus densiflorus / Carex globosa – Iris douglasiana	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Notholithocarpus densiflorus / Vaccinium ovatum	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens – Pinus muricata	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii – Arbutus menziesii	Redwood forest	G3	S3			Y	No

Sensitive Natural Communities and Alliances Occuring in Coastal and Inland Mendocino County								
Alliance Scientific Name	**Association Scientific Name**	**Alliance Common Name**	**Alliance Global Rank**	**Alliance State Rank**	**Associciation Global Rank**	**Association Rank State**	**Rare ?**	**Present?**
	Sequoia sempervirens – Pseudotsuga menziesii – Notholithocarpus densiflorus	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii – Notholithocarpus densiflorus – Chamaecyparis lawsoniana / Vaccinium ovatum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii – Umbellularia californica	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii / Gaultheria shallon	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii / Rhododendron macrophyllum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Pseudotsuga menziesii / Vaccinium ovatum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Tsuga heterophylla / Polystichum munitum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Tsuga heterophylla / Rubus spectabilis	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Tsuga heterophylla / Vaccinium ovatum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens – Umbellularia californica	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens / (Pteridium aquilinum) – Woodwardia fimbriata	Redwood forest	G3	S3	G3	S3	Y	No
	Sequoia sempervirens / Blechnum spicant	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Mahonia nervosa	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Marah fabaceus – Vicia sativa ssp. nigra	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Oxalis oregana	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Polystichum munitum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Pteridium aquilinum	Redwood forest	G3	S3			Y	No
	Sequoia sempervirens / Pteridium aquilinum – Trillium ovatum	Redwood forest	G3	S3			Y	No
Sequoiadendron giganteum	*Sequoiadendron giganteum – Pinus lambertiana / Cornus nuttallii*	Giant sequoia forest	G3	S3			Y	No
Tsuga heterophylla	*Tsuga heterophylla – Pseudotsuga menziesii – Chamaecyparis lawsoniana*	Western hemlock forest	G5	S2			Y	No
Umbellularia californica	*Umbellularia californica*	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Acer macrophyllum	California bay forest	G4	S3	G3	S3?	Y	No
	Umbellularia californica – Aesculus californica / Holodiscus discolor	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Alnus rhombifolia	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Arbutus menziesii	California bay forest	G4	S3			Y	No
	Umbellularia californica – Juglans californica / Ceanothus spinosus	California bay forest	G4	S3	G3		Y	No
	Umbellularia californica – Notholithocarpus densiflorus	California bay forest	G4	S3	G3	S3	Y	No
	Umbellularia californica – Platanus racemosa	California bay forest	G4	S3	G3		Y	No
	Umbellularia californica – Pseudotsuga menziesii / Rhododendron occidentale	California bay forest	G4	S3	G3	S3?	Y	No
	Umbellularia californica – Quercus agrifolia	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus agrifolia / (Genista monspessulana)	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus agrifolia / Heteromeles arbutifolia – Toxicodendron diversilobum / Melica torreyana	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus agrifolia / Toxicodendron diversilobum (Corylus cornuta)	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus chrysolepis	California bay forest	G4	S3			Y	No
	Umbellularia californica – Quercus wislizeni	California bay forest	G4	S3			Y	No
	Umbellularia californica / Ceanothus oliganthus	California bay forest	G4	S3			Y	No
	Umbellularia californica / Polystichum munitum	California bay forest	G4	S3			Y	No
	Umbellularia californica / Toxicodendron diversilobum	California bay forest	G4	S3			Y	No
Shrub Alliance, Associations, and Stands								
Arctostaphylos (nummularia, sensitiva)	*Arctostaphylos nummularia*	Glossy leaf manzanita chaparral	G2G3	S2S3	G2	S2	Y	No
Cornus sericea	*Cornus sericea*	Red osier thickets	G4	S3?			Y	No
	Cornus sericea – Salix exigua	Red osier thickets	G4	S3?			Y	No
	Cornus sericea – Salix lasiolepis	Red osier thickets	G4	S3?			Y	No
	Cornus sericea / Senecio triangularis	Red osier thickets	G4	S3?			Y	No
Diplacus aurantiacus	*Diplacus aurantiacus*	Bush monkeyflower scrub	G3	S3?	G3		Y	No
Garrya elliptica		Coastal silk tassel scrub	G3?	S3?				No
Holodiscus discolor	*Holodiscus discolor – Arctostaphylos patula*	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor – Keckiella corymbosa	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor – Sambucus racemosa	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor / Achnatherum occidentale – Eriogonum nudum	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor / Mimulus suksdorfii	Ocean spray brush	G4	S3			Y	No
	Holodiscus discolor / Sedum obtusatum ssp. boreale – Cryptogramma acrostichoides	Ocean spray brush	G4	S3			Y	No
Lupinus chamissonis – Ericameria ericoides	*Ericameria ericoides*	Silver dune lupine – mock heather scrub	G3	S3			Y	No
	Lupinus chamissonis	Silver dune lupine – mock heather scrub	G3	S3			Y	No
	Lupinus chamissonis – Ericameria ericoides	Silver dune lupine – mock heather scrub	G3	S3	G2		Y	No
Morella californica	*Morella californica*	Wax myrtle scrub	G3	S3			Y	No
Quercus chrysolepis (shrub)	*Quercus chrysolepis*	Canyon live oak chaparral	G3	S3			Y	No
	Quercus chrysolepis – Ceanothus integerrimus	Canyon live oak chaparral	G3	S3			Y	No
Rhododendron columbianum	*Rhododendron columbianum*	Western Labrador-tea thickets	G4	S2?			Y	No
	Rhododendron columbianum / Pinus contorta ssp. murrayana	Western Labrador-tea thickets	G4	S2?			Y	No
Rhododendron occidentale		Western azalea patches	G3	S2?				No
Rosa californica	*Rosa californica*	California rose briar patches	G3	S3			Y	No
	Rosa californica – Baccharis pilularis	California rose briar patches	G3	S3			Y	No
	Rosa californica / Schoenoplectus spp.	California rose briar patches	G3	S3			Y	No
Rubus (parviflorus, spectabilis, ursinus)	*Gaultheria shallon – Rubus spectabilis – Rubus parviflorus*	Coastal brambles	G4	S3			Y	No
	Ribes aureum	Coastal brambles	G4	S3			Y	No
	Rubus parviflorus	Coastal brambles	G4	S3			Y	No
	Rubus parviflorus – Rubus spectabilis – Rubus ursinus	Coastal brambles	G4	S3			Y	No
	Rubus spectabilis	Coastal brambles	G4	S3			Y	No
	Rubus ursinus	Coastal brambles	G4	S3			Y	No
Salix lasiolepis	*Salix lasiolepis*	Arroyo willow thickets	G4	S4			Y	No
Salix sitchensis	*Salix sitchensis*	Sitka willow thickets	G4	S3?			Y	No
Sambucus nigra	*Sambucus nigra*	Blue elderberry stands	G3	S3			Y	No
	Sambucus nigra – Heteromeles arbutifolia	Blue elderberry stands	G3	S3			Y	No
	Sambucus nigra / Leymus condensatus	Blue elderberry stands	G3	S3			Y	No
Herbaceous Alliance, Associations, and Stands								
Abronia latifolia – Ambrosia chamissonis	*Abronia latifolia – Erigeron glaucus*	Dune mat	G3	S3			Y	No
	Abronia latifolia – Leymus mollis	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Abronia maritima – Cakile maritima	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Abronia umbellata	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Eriophyllum staechadifolium – (Lupinus arboreus)	Dune mat	G3	S3			Y	No
	Ambrosia chamissonis – Malacothrix incana – Carpobrotus chilensis – Poa douglasii	Dune mat	G3	S3			Y	No
	Artemisia pycnocephala – Calystegia soldanella	Dune mat	G3	S3			Y	No
	Artemisia pycnocephala – Cardionema ramosissimum	Dune mat	G3	S3	G3		Y	No
	Artemisia pycnocephala – Ericameria ericoides	Dune mat	G3	S3			Y	No

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	Artemisia pycnocephala – Poa douglasii	Dune mat	G3	S3			Y	No
	Artemisia pycnocephala – Polygonum paronychia	Dune mat	G3	S3			Y	No
	Cakile maritima – Abronia maritima	Dune mat	G3	S3			Y	No
	Cakile maritima – Ambrosia chamissonis – Carpobrotus edulis	Dune mat	G3	S3			Y	No
	Calystegia macrostegia – Erigeron glaucus – Malacothrix incana	Dune mat	G3	S3			Y	No
	Poa douglasii – Lathyrus littoralis	Dune mat	G3	S3			Y	No
Bromus carinatus – Elymus glaucus	*Bromus carinatus*	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
	Elymus glaucus	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
	Pteridium aquilinum – Grass	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
	Thermopsis californica – Bromus carinatus – Annual Brome	California brome – blue wildrye prairie	G3	S3	G3	S3	Y	No
Calamagrostis canadensis	*Calamagrostis canadensis*	Bluejoint reed grass meadows	G5	S3	GNR		Y	No
Calamagrostis canadensis	*Calamagrostis canadensis – Carex utriculata*	Bluejoint reed grass meadows	G5	S3			Y	No
	Calamagrostis canadensis – Dodecatheon redolens	Bluejoint reed grass meadows	G5	S3			Y	No
	Calamagrostis canadensis – Scirpus microcarpus	Bluejoint reed grass meadows	G5	S3			Y	No
Calamagrostis nutkaensis	*Calamagrostis nutkaensis*	Pacific reed grass meadows	G4	S2			Y	No
	Calamagrostis nutkaensis – Carex (obnupta) – Juncus (patens)	Pacific reed grass meadows	G4	S2			Y	No
	Calamagrostis nutkaensis / Baccharis pilularis	Pacific reed grass meadows	G4	S2			Y	No
Camassia quamash	*Camassia quamash / Sphagnum subsecundum*	Small camas meadows	G4?	S3?			Y	No
Carex barbarae	*Carex barbarae*	White-root beds	G2?	S2?			Y	No
Carex densa	*Carex densa – Juncus xiphioides*	Dense sedge marshes	G2?	S2?			Y	No
	Carex densa – Lolium perenne – Juncus spp.	Dense sedge marshes	G2?	S2?			Y	No
Carex nudata	*Carex nudata*	Torrent sedge patches	G3	S3			Y	No
Carex obnupta	*Carex obnupta*	Slough sedge swards	G4	S3			Y	No
	Carex obnupta – Juncus lescurii	Slough sedge swards	G4	S3			Y	No
	Carex obnupta – Juncus patens	Slough sedge swards	G4	S3			Y	No
Danthonia californica	*Danthonia californica*	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – (Briza maxima – Vulpia bromoides)	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – Aira caryophyllea	California oat grass prairie	G4	S3	G3		Y	No
	Danthonia californica – Arrhenatherum elatius	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – Elymus elymoides	California oat grass prairie	G4	S3			Y	No
	Danthonia californica – Nassella pulchra	California oat grass prairie	G4	S3			Y	No
Darlingtonia californica	*Darlingtonia californica*	California pitcher plant fens	G4?	S3			Y	No
Deschampsia cespitosa	*Deschampsia cespitosa*	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Anthoxanthum odoratum	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Bistorta bistortoides	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Danthonia californica	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Eryngium armatum	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Holcus lanatus	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa – Horkelia marinensis	Tufted hair grass meadows	G5	S4?			Y	No
	Deschampsia cespitosa var. holciformis	Tufted hair grass meadows	G5	S4?			Y	No
Elymus glaucus Montane	*Elymus glaucus – Carex feta*	Blue wild rye montane meadows	G3?	S3?	G2?		Y	No
	Elymus glaucus – Carex pellita	Blue wild rye montane meadows	G3?	S3?			Y	No
	Elymus glaucus – Heracleum maximum	Blue wild rye montane meadows	G3?	S3?			Y	No
Eryngium aristulatum	*Eryngium aristulatum – Lupinus bicolor*	California button-celery patches	G2	S2			Y	No
	Hemizonia congesta	California button-celery patches	G2	S2			Y	No
Festuca idahoensis	*Festuca californica*	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Achillea millefolium	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Bromus carinatus	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Danthonia californica	Idaho fescue grassland	G4	S3?			Y	No
	Festuca idahoensis – Festuca rubra	Idaho fescue grassland	G4	S3?			Y	No
Festuca rubra	*Festuca rubra*	Red fescue grassland	G4	S3?			Y	No
Frankenia salina	*Frankenia salina*	Alkali heath marsh	G4	S3			Y	No
	Frankenia salina – Distichlis spicata	Alkali heath marsh	G4	S3			Y	No
	Frankenia salina – Limonium californicum – Monanthochloe littoralis – Sarcocornia pacifica	Alkali heath marsh	G4	S3			Y	No
Glyceria (elata, striata)	*Glyceria elata*	Manna grass meadows	G4	S3?			Y	No
	Glyceria elata – Lotus oblongifolius	Manna grass meadows	G4	S3?			Y	No
	Glyceria elata – Scirpus microcarpus	Manna grass meadows	G4	S3?			Y	No
	Glyceria striata	Manna grass meadows	G4	S3?			Y	No
Grindelia (camporum, stricta)	*Grindelia stricta*	Gum plant patches	G2G3	S2S3			Y	No
Heterotheca (oregona, sessiliflora)	*Heterotheca oregona*	Goldenaster patches	G3	S3	G3	S3	Y	No
	Heterotheca sessiliflora	Goldenaster patches	G3	S3	G3	S3	Y	No
Hordeum brachyantherum	*Hordeum brachyantherum*	Meadow barley patches	G2	S2	G2		Y	No
	Hordeum brachyantherum – Poa pratensis	Meadow barley patches	G2	S2			Y	No
	Hordeum brachyantherum – Polypogon monspeliensis	Meadow barley patches	G2	S2			Y	No
Hydrocotyle (ranunculoides, umbellata)	*Hydrocotyle ranunculoides*	Mats of floating pennywort	G4	S3?			Y	No
	Hydrocotyle ranunculoides – Schoenoplectus pungens	Mats of floating pennywort	G4	S3?			Y	No
Isoetes (bolanderi, echinospora, howellii, nuttallii, occidentalis)		Quillwort beds	G3	S3?				No
Juncus (oxymeris, xiphioides)	*Juncus oxymeris*	Iris-leaf rush seeps	G2?	S2?			Y	No
	Juncus xiphioides	Iris-leaf rush seeps	G2?	S2?			Y	No
Juncus lescurii	*Juncus (lescurii) – Distichlis spicata*	Salt rush swales	G3	S2?			Y	No
	Juncus lescurii	Salt rush swales	G3	S2?			Y	No
Lasthenia glaberrima	*Lasthenia glaberrima – Lupinus bicolor*	Smooth goldfields vernal pool bottoms	G2	S2			Y	No
	Lasthenia glaberrima – Pleuropogon californicus	Smooth goldfields vernal pool bottoms	G2	S2			Y	No
	Lasthenia glaberrima – Trifolium variegatum	Smooth goldfields vernal pool bottoms	G2	S2			Y	No
Leymus cinereus – Leymus triticoides	*Leymus triticoides – Bromus spp. – Avena spp.*	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
	Leymus triticoides – Carduus pycnocephalus – Geranium dissectum	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
	Leymus triticoides – Lolium perenne	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
	Leymus triticoides – Poa secunda	Ashy ryegrass – creeping ryegrass turfs	G3	S3			Y	No
Leymus condensatus	*Leymus condensatus*	Giant wild rye grassland	G3	S3			Y	No
Leymus mollis	*Leymus mollis – Abronia latifolia – (Cakile sp.)*	Sea lyme grass patches	G4	S2			Y	No
	Leymus mollis – Ammophila arenaria	Sea lyme grass patches	G4	S2			Y	No
	Leymus mollis – Carpobrotus edulis	Sea lyme grass patches	G4	S2			Y	No
Mimulus (guttatus)	*Mimulus guttatus*	Common monkey flower seeps	G4?	S3?			Y	No
	Mimulus guttatus – (Mimulus spp.)	Common monkey flower seeps	G4?	S3?			Y	No
	Mimulus guttatus – Vulpia microstachys	Common monkey flower seeps	G4?	S3?			Y	No
North Coast Bluff Scrub								No
Nuphar lutea		Yellow pond-lily mats	G5	S3?				No
Oenanthe sarmentosa	*Oenanthe sarmentosa*	Water-parsley marsh	G4	S2?			Y	No
Oxyria digyna	*Draba lemmonii – Oxyria digyna*	Mountain sorrel patches	G4	S3?			Y	No
Poa secunda	*Poa secunda – Bromus rubens*	Curly blue grass grassland	G4	S3?			Y	No
	Poa secunda ssp. secunda	Curly blue grass grassland	G4	S3?			Y	No
Sarcocornia pacifica (Salicornia depressa)	*Salicornia bigelovii*	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Atriplex prostrata	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Bolboschoenus maritimus	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Brassica nigra	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Cotula coronopifolia	Pickleweed mats	G4	S3			Y	No

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	Sarcocornia pacifica – Distichlis spicata	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Echinochloa crus-galli – Polygonum – Xanthium strumarium	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Frankenia salina	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Grindelia stricta	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Jaumea carnosa	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Jaumea carnosa – Distichlis spicata	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Lepidium latifolium	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica – Spartina foliosa	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica / algae	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica / annual grasses (Polypogon, Hordeum, Lolium)	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica Managed	Pickleweed mats	G4	S3			Y	No
	Sarcocornia pacifica Tidal	Pickleweed mats	G4	S3			Y	No
Schoenoplectus (acutus, californicus)	*Schoenoplectus californicus*	Hardstem and California bulrush marshes	GU	S3S4			Y	No
	Schoenoplectus californicus – Schoenoplectus acutus	Hardstem and California bulrush marshes	GU	S3S4			Y	No
	Schoenoplectus californicus – Schoenoplectus acutus / Rosa californica	Hardstem and California bulrush marshes	GU	S3S4			Y	No
	Schoenoplectus californicus – Typha latifolia	Hardstem and California bulrush marshes	GU	S3S4			Y	No
Scirpus microcarpus	*Scirpus microcarpus*	Small-fruited bulrush marsh	G4	S2	G4		Y	No
Sparganium (angustifolium)	*Sparganium angustifolium*	Mats of bur-reed leaves	G4	S3?			Y	No
Trifolium variegatum	*Trifolium variegatum*	White-tip clover swales	G3?	S3?			Y	No
	Trifolium variegatum – Juncus bufonius	White-tip clover swales	G3?	S3?			Y	No
	Trifolium variegatum – Lolium perenne – Leontodon saxatilis	White-tip clover swales	G3?	S3?			Y	No

Special-Status Wildlife with Potential Occurrence on the Project Site.								
Scientific name	Common Name	**Federal Status**	**State Status**	**G**	**S**	**Organization: Code**	**Habitat**	**Observed?**
INVERTEBRATES								
Helminthoglypta arrosa pomoensis	Pomo bronze shoulderband snail	None	None	G2G3T1	S1	IUCN:DD	Found near the coast in heavily-timbered redwood canyons of Mendocino County, from Big River and Russian Gulch watersheds. Found under redwoods. Generally, in somewhat moist duff. Found in scrub in forest opening under a power line in Russian Gulch.	No
Bombus calignosus	Obscure Bumblebee	None	None	G4?	S1S2	IUCN_VU	Inhabits open grassy coastal prairies and Coast Range meadows. Nesting occurs underground as well as above ground in abandoned bird nests. Males patrol circuits in search of mates. Reported to DFW as within 5 miles of project site.is an This species is very similar to the common yellow-faced bumblebee (Bombus vosnesenskii), differentiated by the structure of the male genitalia. he obscure bumblebee tends to have longer hairs, however, and yellow hairs are found on the underside of the abdomen.	No
Bombus occidentalis	Western bumble bee	None	None	GU	S1	XERCES:IM	Populations in central California have declined since the 1990's. It visits flowers in a variety of habitats. Identified by a white patch on its abdomen hind tip. None recorded from coastal Mendocino County at http://www.xerces.org/bumblebees.	No
Coelus globosus	Globose dune beetle	None	None	G1	S1	IUCN:VU	Subterranean beetle that tunnels through sand under dune vegetation. Since coastal dune habitat in California is diminishing, the beetle is a special-status species.	No
Lycaeides argyrognomon lotis	lotis blue butterfly	Endangered	None	G5TH	SH	XERCES:CI	Not seen since 1983, it is primarily from Mendocino County but historically from northern Sonoma and possibly Marin Counties. Inhabits wet meadows, damp coastal prairie, and potentially bogs or poorly-drained sphagnum-willow bogs where soils are waterlogged and acidic. Presumed host plant is *Hosackia gracilis*.	No
Noyo interessa	Ten Mile shoulderband snail	None	None	G2	S2	None	Known from a few locations in Mendocino County with limited habitat information. Known from Ten Mile Dunes.	No
Speyeria zerene behrensii	Behren's silverspot butterfly	Endangered	None	G5T1	S1	XERCES:CI	Historically from near the City of Mendocino, Mendocino County, south to the area of Salt Point State Park, Sonoma County. Now presumed to be from Manchester south to Salt Point area. Inhabits coastal terrace prairie with caterpillar host plants: violet (*Viola adunca*) and adult nectar sources: thistles, asters, etc.	No
FISH								
Entosphenus tridentatus	Pacific lamprey	None	None	G5	S4	AFS:VU	Anadromous lamprey found in freshwater rivers around the Pacific Rim, from Japan to Baja California. Adult Pacific Lamprey spawn in habitat similar to salmon: low gradient stream reaches, in gravel, often at the tailouts of pools and riffles.	No
Lampetra ayresii	River lamprey	None	None	G4	S4	AFS:VU DFG:SSC	Anadromous lamprey that uses riffle and side channel habitats for spawning and for ammocoete rearing where good water quality is essential. Adult Pacific Lamprey spawn in habitat similar to salmon: low gradient stream reaches, in gravel, often at the tailouts of pools and riffles.	No
Oncorhynchus kisutch	Coho salmon - southern Oregon / northern California ESU	Threatened	Threatened	G4T2Q	S2?	AFS:TH DFG:SSC	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	No
Oncorhynchus mykiss irideus	steelhead-northern California DPS	Threatened	None	G5T2Q	S2	AFS:TH DFG:SSC	Cool, swift, shallow water and clean loose gravel for spawning.	No
Oncorhynchus tshawytscha	chinook salmon – California coastal ESU	Threatened	None	G5	S2	AFS:TH	Adults depend on pool depth and volume, amount of cover, and proximity to gravel. Water temps >27° C lethal to adults.	No
Lavinia symmetricus navarroensis	Navarro roach	None	None	G5T1T2	S1S2	DFG:SSC	Habitat generalists. Found in warm intermittent streams as well as cold, well-aerated streams. Found in the lower, warmer reaches of streams in the Russian and Navarro River drainages.	No
Lavinia symmetricus parvipinnis	Gualala roach	None	None	G5T1T2	S1S2	DFG:SSC	Habitat generalists. Found in warm intermittent streams as well as cold, well-aerated streams.	No
Eucyclogobius newberry	tidewater goby	Endangered	None	G3	S2S3	AFS:EN DFG:SSC IUCN:VU	Brackish water habitats along the California coast from Agua Hedionda lagoon, San Diego Co. to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	No
AMPHIBIANS & REPTILES								
Rhyacotriton variegatus	southern torrent (=seep) salamander	None	None	G3G4	S2S3	DFG:SSC IUCN:LC USFS:S	Found in Coastal redwood, Douglas fir, mixed conifer, montane riparian, and montane hardwood-conifer forests from northern California south to Point Arena. Aquatic habitat includes permanent cold creeks, steams and seepages with low water flow; associated with moss-covered rocks within trickling water and the splash zone of waterfalls; old-growth coniferous forests with closed canopy; <50% cobble in creeks, remainder mixture of pebble, gravel and sand.	No
Ascaphus truei	Pacific tailed frog	None	None	G4	S2S3	DFG:SSC IUCN:LC	Occurs in montane hardwood-conifer, redwood, Douglas-fir and ponderosa pine habitats. Coastal from Anchor Bay, Mendocino Co. to Oregon border. Cold, clear, rocky streams in wet forests. They do not inhabit ponds or lakes. A rocky streambed is necessary for cover for adults, eggs, and larvae. After heavy rains, adults may be found in the woods away from the stream.	No
Rana aurora aurora	northern red-legged frog	None	None	G4T4	S2?	DFG:SSC USFS:S	Found in humid forests, woodlands, grasslands, and streamsides in northwestern California. Generally near permanent water, but can be found far from water, in damp woods and meadows, during non-breeding season. Integration zone between northern and California species is between Manchester and Elk.	No
Rana aurora draytonii	California red-legged frog	Threatened	None	G4T2T3	S2S3	DFG:SSC IUCN:VU	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	No
Rana boylii	foothill yellow-legged frog	None	None	G3	S2S3	BLM:S DFG:SSC IUCN:NT USFS:S	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying.	No
Emys marmorata marmorata	western pond turtle	None	None	G3G4	S3	BLM:S DFG:SSC IUCN:VU USFS:S	Former scientific name: *Clemmys marmorata marmorata*. Associated with permanent or nearly permanent water in a wide variety of habitats. Requires basking sites. Nests sites may be found up to 0.5 km from water.	No
BIRDS								
Phalacrocorax auritus	double-crested cormorant (nesting colony)	None	None	G5	S3	DFG:WL IUCN:LC	Rookery site: colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	No
Phalacrocorax pelagicus	pelagic cormorant	None	None	N/A	N/A	IUCN:LC	Rookery site: Nests on islands or coasts on narrow ledges, steep slopes, other inaccessible locations.	Yes
Ardea alba	great egret (nesting colony)	None	None	G5	S4	CDF:S IUCN:LC	Rookery: colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	No
Ardea herodias	great blue heron (nesting colony)	None	None	G5	S4	CDF:S IUCN:LC	Rookery: colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	No
Egretta thula	Snowy egret (nesting colony)	None	None	G5	S4	CDF:S IUCN:LC	Rookery: colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	No
Accipiter cooperii	Cooper's hawk (nesting)	None	None	G5	S3	DFG:WL IUCN:LC	Nesting: woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	No

Scientific name	Common Name	Federal Status	State Status	G	S	Organization: Code	Habitat	Observed?
Accipiter gentilis	northern goshawk (nesting)	None	None	G5	S3	BLM:S CDF:S DFG:SSC IUCN:LC USFS:S	Nesting: within and in vicinity of coniferous forest. Uses old nests, and maintains alternate sites. Usually nests on north slopes, near water. Red fir, lodge pole pine, Jeffrey pine, and aspens are typical nest trees. Northern goshawks typically nest in conifer forests containing large trees and an open understory on the west slope of the Sierra. There is historic nesting in Big River and Pudding Creek. Winter migrant on the coast.	No
Accipiter striatus	sharp-shinned hawk (nesting)	None	None	G5	S3	DFG:WL	Nesting: ponderosa pine, black oak, riparian deciduous, mixed conifer and Jeffrey pine habitats. Prefers riparian areas. North-facing slopes, with plucking perches are critical requirements. Nests usually within 275 ft. of water. Nests in dense, even-aged, single- layered forest canopy, usually nests in dense, pole and small-tree stands of conifers, which are cool, moist, well shaded, with little ground-cover, near water.	No
Aquila chrysaetos	golden eagle (nesting & wintering)	None	None	G5	S3	CDF:S DFG:FP DFG:WL IUCN:LC USFWS:BCC	Nesting and wintering: rolling foothills mountain areas, sage-juniper flats, desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	No
Buteo regalis	ferruginous hawk (wintering)	None	None	G4	S3S4	DFG:WL IUCN:LC USFWS:BCC	Usually east of the coastal belt, uncommon migrant in coastal Mendocino County seen in open areas such as Bald Hill and Manchester. Feeding habitat in open, treeless areas. Does not breed in California.	No
Circus cyaneus	Northern harrier (nesting)	None	None	G5	S3	DFG:SSC IUCN:LC	Northern harriers prefer sloughs, wet meadows, marshlands, swamps, prairies, plains, grasslands, and shrublands and perch on structures such as fence posts.Nesting habitat: nest on the ground, usually near water, or in tall grass, open fields, clearings, or on the water on a stick foundation, willow clump, or sedge tussock. Most nests built within patches of dense, often tall, vegetation (e.g., cattails) in undisturbed areas. They usually nest near hunting grounds.Foraging: They need open, low woody or herbaceous vegetation for nesting and hunting	No
Elanus leucurus	white-tailed kite (nesting)	None	None	G5	S3	DFG:FP IUCN:LC	Nesting: rolling foothills/valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland, open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching. Winter congregation of at least 20 birds seen at Manchester State Park in early 2000's. One nest known from a THP in Albion ~2006; nest was at the edge of conifer forest with no pasture immediately adjacent.	No
Haliaeetus leucocephalus	bald eagle (nesting & wintering)	Delisted	Endangered	G5	S2	CDF:S DFG:FP IUCN:LC USFS:S USFWS:BCC	Nesting and wintering: ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter. Known from winter in Lake Cleone, MacKerricher State Park and Little River.	No
Pandion haliaetus	Osprey (nesting)	None	None	G5	S3	CDF:S DFG:WL IUCN:LC	Nesting: ocean shore, bays, fresh-water lakes, and larger streams.Large nests built in tree-tops within 6-7 to 15 miles of good fish-producing body of water. Flattened portions of partially broken off snags, trees, rocks, dirt pinnacles, cacti, and numerous man-made structures such as utility poles and duck blinds are used for nests. Furthest nest inland may be McGuire's Pond.	No
Falco columbarius	Merlin (wintering)	None	None	G5	S3	DFG:WL IUCN:LC	General wintering habitat: Uncommon winter migrants on the coast. Habitat apparently similar to breeding habitat, (open forest and grasslands). Regularly hunts prey (e.g., shorebirds) concentrated on tidal flats. Often winters in cities throughout its range, where frequently perches on buildings, power poles, and tall trees. Also winters in open woodland, grasslands, open cultivated fields, marshes, estuaries, and seacoasts. Frequents open habitats at low elevation near water and tree stands.	No
Falco peregrinus anatum	American peregrine falcon (nesting)	Delisted	Delisted	G4T3	S2	CDF:S DFG:FP USFWS:BCC	Nesting: near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape on a depression or ledge in an open site.	No
Charadrius alexandrinus nivosus	western snowy plover (nesting)	Threatened	None	G4T3	S2	ABC:WLBCC DFG:SSC USFWS:BCC	Nesting: federal listing applies only to the pacific coastal population. Sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting. Sand spits, dune-backed beaches, unvegetated beach strands, open areas around estuaries, and beaches at river mouths are the preferred coastal habitats for nesting. Less common nesting habitat includes salt pans, coastal dredged spoil disposal sites, dry salt ponds, and salt pond levees and islands.	No
Haematopus bachmani	Black oystercatcher (nesting)	None	None	G5	S2	IUCN:LC USFWS:BCC	From the Aleutian Islands to Baja California, the forage on intertidal macroinvertebrates along gravel or rocky shores and in the southern part of their range nest primarily on rocky headlands and offshore rocks.	No
Larus californicus	California gull (nesting)	None	None	G5	S2	DFG:WL IUCN:LC	Colony nesters and usually occurring on an island or vegetated offshore rock.	No
Brachyramphus marmoratus	marbled murrelet (nesting)	Threatened	Endangered	G3G4	S1	ABC:WLBCC CDF:S IUCN:EN	Nesting: feeds near-shore; nests inland along coast, from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir. Presence of platforms (flat surface at least four inches in diameter) appears to be the most important stand characteristic for predicting murrelet presence. Stands can be: 1) mature (with or without an old- growth component); 2) old-growth; 3) young coniferous forests with platforms; and 4) include large residual trees in low densities sometimes less than one tree per acre.	No
Fratercula cirrhata	tufted puffin (nesting colony)	None	None	G5	S2	DFG:SSC IUCN:LC	Nesting colony: open-ocean bird; nests along the coast on islands, islets, or (rarely) mainland cliffs free of human disturbance and mammalian predators. Nests in burrows or rock crevices when sod or earth in unavailable for burrowing. Occurs year-road offshore near breeding colonies in northern California, but more common in winter.Breeding records from Goat Rock, Mendocino Headlands State Park	No
Athene cunicularia	burrowing owl (burrow sites and some winter sites)	None	None	G4	S2	BLM:S DFG:SSC IUCN:LC USFWS:BCC	Burrow sites: open, dry annual or perennial grasslands, deserts and scrublands, and dunes characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	No
Strix occidentalis caurina	northern spotted owl	Threatened	None	G3T3	S2S3	ABC:WLBCC CDF:S DFG:SSC IUCN:NT	Old-growth forests or mixed stands of old-growth and mature trees. Occasionally in younger forests w/patches of big trees. High, multistory canopy dominated by big trees, many trees w/cavities or broken tops, woody debris, and space under canopy.	No
Chaetura vauxi	Vaux's swift (nesting)	None	None	G5	S3	DFG:SSC IUCN:LC	Nesting: redwood, Douglas fir, and other coniferous forests. Nests in large hollow trees and snags. Often nests in flocks. Forages over most terrains and habitats but shows a preference for foraging over rivers and lakes.The most important habitat requirement appears to be an appropriate nest-site in a large, hollow tree. Forages over most terrains and habitats, often high in theair. Shows an apparent preference for foraging over rivers and lakes.	No
Selasphorus rufus	rufous hummingbird (nesting)	None	None	G5	S1S2	IUCN:LC USFWS:BCC	Breeds in open or shrubby areas, forest openings, yards and parks, and sometimes in forests, thickets, and meadows. Late winter and spring migrant on the California coast. Breeding range from southeast Alaska and as far south as northwestern California.	No
Selasphorus sasin	Allen's hummingbird (nesting)	None	None			ABC:WLBCC IUCN:LC USFWS:BCC	Breeds only along a narrow strip of coastal California and southern Oregon. Nests in densely vegetated areas and forests. An early migrant compared with most North American birds, arriving in summer breeding grounds as early as January. Breeds in moist coastal areas, scrub, chaparral, and forests. Winters in forest edge and scrub clearings with flowers.	No
Picoides nuttallii	Nuttall's woodpecker (nesting)	None	None	G5	SNR	ABC:WLBCC IUCN:LC	Ranging from west of the Cascade mountains and in the Sierra Nevada from southern Oregon to Northern Baja California. Nests are excavated in dead branches or snags of various trees, usually in close association with oak woodlands and riparian zone, habitat vulnerable to development. At least one Mendocino Coast record from 2011 Audubon Christmas Bird Count.	No
Sphyrapicus ruber	red-breasted sapsucker	None	None	G5	SNR	None	Breeds primarily in coniferous forests, but also uses deciduous and riparian habitat, as well as orchards and power line corridors. The nest is a hole usually dug in a live deciduous tree (e.g. alder, willow, madrone) with possible preference for larger trees showing decay-softened wood.	No

Scientific name	Common Name	Federal Status	State Status	G	S	Organization: Code	Habitat	Observed?
Contopus cooperi	olive-sided flycatcher (nesting)	None	None	G4	S4	ABC:WLBCC DFG:SSC IUCN:NT USFWS:BCC	Breeds in montane and northern coniferous forests, at forest edges and openings, such as meadows and ponds. Tall standing dead trees are used as perch trees for catching flying insects. Accordingly, an open canopy is a key components of suitable habitat. Nest is an open cup of twigs, rootlets, and lichens, placed out near tip of horizontal branch of a tree.	No
Progne subis	purple martin	None	None	G5	S3	DFG:SSC IUCN:LC	Nesting: inhabits woodlands, low elevation coniferous forest of Douglas fir, Ponderosa pine, and Monterey pine. Nests in old woodpecker cavities mostly, also in human- made structures such as weep holes in bridges. Nest often located in tall, isolated trees and snags. Nesting on the Mendocino Coast known, in part, from Juan Creek, Ten Mile, Noyo, and Big River, and snags from Ten Mile River to Pudding Creek. Need open foraging habitats.	No
Dendroica occidentalis	hermit warbler (nesting)	None	None	G4G5	S3?	ABC:WLBCC IUCN:LC	Breeding range is relatively limited to the Pacific Coast and the Cascade and Sierra Nevada mountain ranges of Washington, Oregon, and California. Some winter along the coastal central and southern California, but most winter primarily in the mountains of western Mexico and Central America. Nesting habitats in Pacific northwest are coniferous forests with a high canopy volume, generally preferring mature stands of pine and Douglas fir. Avoids areas with a high deciduous volume; absent from riparian areas and clearcuts. Birds of coniferous forests; they prefer cool, wet fir forests at elevation, and moist forests of Douglas-fir, hemlock, and western red cedar closer to sea level. Major threat to this species appears to be the degradation of breeding habitat.Not know as frequently nesting on the coast, perhaps more common inland.	No
Ammodramus savannarum	grasshopper sparrow (nesting)	None	None	G5	S2	DFG:SSC IUCN:LC	Nesting: dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting. Summer (breeding) resident in Mendocino County known from north of Ten Mile River.	No
Agelaius tricolor	tricolored blackbird (nesting colony)	None	None	G2G3	S2	ABC:WLBCC BLM:S DFG:SSC IUCN:EN USFWS:BCC	Nesting colony: highly colonial species, most numerous in central valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, such as cattails and foraging area with insect prey within a few km of the colony. Known inland from McGuire's Pond.	No
Mammals								
Antrozous pallidus	pallid bat	None	None	G5	S3	BLM:S DFG:SSC IUCN:LC USFS:S WBWG:H	A wide variety of habitats deserts, grasslands, shrublands, woodlands and forests from sea level up through mixed conifer forests. Most common in open, dry habitats with rocky areas for roosting. A yearlong resident in most of the range. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings where there is protection from high temperatures.	No
Corynorhinus townsendi	Townsend's big-eared bat	None	None	G4	S2S3	BLM:S DFG:SSC IUCN:LC USFS:S WBWG:H	Generally found in the dry uplands throughout the West, but also occur in mesic coniferous and deciduous forest habitats along the Pacific coast. Unequivocally associated with areas containing caves and cave-analogs for roosting habitat. Requires spacious cavern-like structures for roosting during all stages of its life cycle. Typically, they use caves and mines, but have been noted roosting in large hollows of redwood trees, attics and abandoned buildings, lava tubes, and under bridges. Extremely sensitive to disturbance.	No
Lasionycteris noctivagans	silver-haired bat	None	None	G5	S3S4	IUCN:LC WBWG:M	Ranges throughout California in coastal and montane forests. May be found anywhere in California during spring and fall migrations. Primarily a forest (tree-roosting) bat associated with north temperate zone conifer and mixed conifer/hardwood forests. Prefers forested (frequently coniferous) areas adjacent to lakes, ponds, and streams. During migration, sometimes occurs in xeric areas.Roosts in dead or dying trees with exfoliating bark, extensive vertical cracks, or cavities, rock crevices, and occasionally under wood piles, in leaf litter, under foundations, and in buildings, mines and caves.The primary threat is likely loss of roosting habitat due to logging practices that fail to accommodate	No
Lasiurus blossevillii	western red bat	None	None	G5	S3?	DFG:SSC IUCN:LC	Locally common in some areas of California from Shasta County south to the Mexican border. California Central Valley is the species' primary breeding region.Species appears to be strongly associated with riparian habitats for roosting and foraging, particularly mature stands/large diameter of cottonwood/sycamore. Roosts in woodland borders, rivers, agricultural areas, and urban areas with mature trees in the foliage of large shrubs and trees, usually sheltering on the underside of overhanging leaves. It often hangs from one foot on the leaf petiole and may resemble a fruit or dead leaf. Rarely observed roosting in mines.	No
Lasiurus cinereus	hoary bat	None	None	G5	S4?	IUCN:LC WBWG:M	Most widespread North American bat. Solitary species that winters along the coast and in southern California. Roosts in foliage of trees near ends of branches. Blends with the bark of trees. Highly associated with forested habitats but can be found in suburbs with old, large trees.	No
Myotis evotis	long-eared myotis bat	None	None	G5	S4?	BLM:S IUCN:LC WBWG:M	Widespread in California, but generally is believed to be uncommon in most of its range. It avoids the arid Central Valley and hot deserts, occurring along the entire coast and interior mountains. Found in nearly all brush, woodland, and forest habitats, from sea level to at least 9,000 ft., but coniferous woodlands and forests seem to be preferred. Roosts in loose bark in tall, open-canopied snags; stumps in south-facing clear-cuts with minimal vegetation overgrowth in younger forests, and conifer snags in older forests, rocks, caves, bridges and abandoned mines.	No
Myotis yumanensis	Yuma myotis bat	None	None	G5	S4?	BLM:S IUCN:LC WBWG:LM	Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	No
Aplodontia rufa nigra	Point Arena mountain beaver	Endangered	None	G5T1	S1	DFG:SSC IUCN:LC	Generally known from 2 miles north of Bridgeport Landing to 5 miles south of the town of Point Arena. Coastal areas often near springs or seepages; mesic coastal scrub, northern dune scrub, edges of conifer forests, and riparian plant communities. North facing slopes of ridges and gullies with friable soils and thickets of vegetation.	No
Arborimus pomo	Sonoma tree vole	None	None	G3	S3	DFG:SSC IUCN:NT	Species split into red tree vole and Sonoma tree vole; approximate boundary between two species is Klamath River. Inhabits north coast fog belt from Oregon border to Somona Co. in old-growth and other forests, mainly Douglas-fir, redwood, and montane hardwood-conifer habitats. Feeds almost exclusively on Douglas-fir needles. Will occasionally take needles of pine, grand fir, hemlock or spruce.	Yes
Martes americana humboldtensis	Humboldt marten	None	None	G5T2T3	S2S3	DFG:SSC USFS:S	Endemic to the coastal forests of northwestern California with a historical range described as "the narrow northwest humid coast strip, chiefly within the redwood belt" from the Oregon border to northern Sonoma county. However, the one known remnant Humboldt marten population occurs in the north-central portion of the described range in an area dominated by Douglas-fir and tanoak. Typically associated with closed-canopy, late-successional, mesic coniferous forests with complex physical structure near the ground. Very rare on the Mendocino coast.	No
Martes pennanti (pacifica) DPS	Pacific fisher	Candidate	None	G5	S2S3	BLM:S DFG:SSC USFS:S	Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high percent canopy closure. Use cavities, snags, logs and rocky areas for cover and denning. Need large areas of mature, dense forest. Very rare on the Mendocino coast.	No

Floristic List - Christensen

Taxon By Family	Common Name
FERNS AND ALLIES	
Dennstaedtiaceae	
Pteridium aquilinum var. pubescens	bracken; western bracken; hairy bracken fern
Dryopteridaceae	
Polystichum munitum	western sword fern
Equisetaceae	
Equisetum telmateia	giant horsetail
Polypodiaceae	
Polypodium glycyrrhiza	licorice fern
GYMNOSPERMS	
Pinaceae	
Abies grandis	grand fir; lowland fir
Picea sitchensis	Sitka spruce
Pinus contorta ssp. contorta	shore pine; beach pine
Pinus muricata	Bishop pine; prickle-cone pine; bull pine
Pinus radiata	Monterey pine
Pseudotsuga menziesii var. menziesii	Douglas fir
Tsuga heterophylla	western hemlock
DICOTS	
Aizoaceae	
Drosanthemum floribundum	showy dewflower, rosy ice plant
Anacardiaceae	
Toxicodendron diversilobum	poison oak
Apiaceae	
Conium maculatum	poison hemlock
Heracleum maximum	common cow parsnip
Oenanthe sarmentosa	Pacific oenanthe, water parsely
Sanicula arctopoides	yellow mats, footsteps of spring
Aquifoliaceae	
Ilex aquifolium	English holly
Araliaceae	
Hedera helix	English ivy
Asteraceae	
Baccharis pilularis	coyote brush
Bellis perennis	English daisy
Cirsium vulgare	bull thistle
Erigeron glaucus	seaside daisy
Hypochaeris radicata	rough cat's ear, hairy cat's ear
Leucanthemum vulgare	ox eye daisy, oxeye daisy
Berberidaceae	
Berberis aquifolium	Oregon grape, holly leaf berberis
Betulaceae	
Alnus rubra	red alder, Oregon alder
Boraginaceae	
Myosotis discolor	forget-me-not forget me not
Myosotis latifolia	wide-leaved forget-me-not
Brassicaceae	
Brassica oleracea	wild cabbage

Floristic List - Christensen

Taxon By Family	Common Name
Caprifoliaceae	
Lonicera hispidula	hairy honeysuckle
Sambucus racemosa var. racemosa	red elderberry
Convolvulaceae	
Calystegia purpurata ssp. purpurata	purple western morning glory, smooth western morning glory
Crassulaceae	
Dudleya farinosa	north coast dudleya, bluff lettuce, powdery liveforever
Sedum praealtum	green cockscomb
Cucurbitaceae	
Marah oregana	coast wild-cucumber; wild cucumber, coast manroot
Ericaceae	
Gaultheria shallon	salal
Rhododendron macrophyllum	California rose-bay, big leaf rhododendron
Vaccinium ovatum	California huckleberry
Escalloniaceae	
Escallonia rubra	red claws
Fabaceae	
Acacia melanoxylon	blackwood acacia
Cytisus scoparius	Scotch broom
Lupinus variicolor	varied lupine, varied-color lupine
Trifolium repens	white clover
Vicia sativa	vetch
Garryaceae	
Garrya elliptica	coast silk tassel
Lamiaceae	
Mentha pulegium	pennyroyal
Prunella vulgaris var. lanceolata	lance-leaf self-heal
Stachys rigida	rough hedgenettle
Myricaceae	
Morella californica	wax-myrtle
Onagraceae	
Fuchsia magellanica	hardy fuchsia
Orobanchaceae	
Castilleja affinis ssp. affinis	coast Indian paintbrush, Wight's Indian Paint brush
Phrymaceae	
Diplacus aurantiacus	sticky monkeyflower
Plantaginaceae	
Digitalis purpurea	purple foxglove
Plantago lanceolata	English plantain, ribwort, narrow leaved plantain, ribgrass
Plantago maritima	maritime plantain, seaside plantain, goose tongue
Polygonaceae	
Rumex acetosella	common sheep sorrel
Rumex crispus	curly dock
Primulaceae	
Lysimachia arvensis	scarlet pimpernel, poor man's weathervane
Rhamnaceae	
Ceanothus thyrsiflorus var. griseus	Carmel ceanothus
Frangula purshiana	cascara buckthorn

Floristic List - Christensen

Taxon By Family	Common Name
Rosaceae	
Cotoneaster sp.	cotoneaster
Cotoneaster pannosus	woolly cotoneaster
Fragaria vesca	woodland strawberry, wood strawberry, California Strawberry
Rosa sp.	cultivated rose
Rubus armeniacus	Himalaya-berry, Himalayan blackberry
Rubus parviflorus	thimbleberry
Rubus ursinus	California blackberry
Rubiaceae	
Galium aparine	common bedstraw; cleavers; goose-grass
Scrophulariaceae	
Scrophularia californica	California figwort, California bee plant
Violaceae	
Viola sempervirens	evergreen violet, redwood violet
MONOCOTS	
Araceae	
Zantedeschia aethiopica	calla lily, Calla-lily
Asphodelaceae	
Kniphofia uvaria	red hot poker, fire poker
Iridaceae	
Iris douglasiana	Douglas' iris
Juncaceae	
Juncus hesperius	coast or bog rush
Juncus effusus var. effusus	common rush
Juncus patens	common rush, spreading rush
Poaceae	
Agrostis capillaris	colonial bentgrass
Agrostis stolonifera	creeping bentgrass
Aira caryophyllea	silver European hairgrass, hairgrass
Anthoxanthum odoratum	sweet vernal grass
Avena barbata	slender wild oat
Briza maxima	big quaking grass; rattlesnake grass
Bromus carinatus	California brome
Bromus diandrus	ripgut brome; ripgut
Bromus vulgaris	narrow-flowered brome
Cortaderia jubata	Andes grass, purple pampass grass
Dactylis glomerata	orchard-grass
Elymus glaucus ssp. glaucus	blue wildrye; blue wild rye
Festuca bromoides	brome fescue
Holcus lanatus	velvet grass
Polypogon monspeliensis	annual beard grass

ENVIRONMENTALLY SENSITIVE HABITAT AREAS DEFINED

Definition of Environmentally Sensitive Habitat Area

The Mendocino County Local Coastal Plan (LCP) and the California Coastal Act (CCA) define an Environmentally Sensitive Habitat Area (ESHA) as:

> "any area in which plant or animal life or their habitats are **either** rare **or** especially valuable because of their special nature or role in an ecosystem **and** which could be easily disturbed or degraded by human activities and developments".
>
> **[emphasis given]**

The Mendocino County LCP and California Coastal Commission (CCC) have identified specific types of ESHAs including: wetlands, sand dunes, estuaries, streams, rivers, lakes, open coastal waters, coastal waters, riparian habitats, other resource areas, special status species, and the habitat of special status species. For the purpose of this report, the following definitions were used to assess potential ESHAS present in the study area.

Wetland ESHAs

The Mendocino County Local Coastal Plan (LCP) and the California Coastal Act (CCA) define wetlands as:

> *"Lands within the Coastal Zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens."*

California Coastal Commission Administrative Regulations (Section 13577 (b)) provide the following detailed definition:

> *"Wetlands are lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent or drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salt or other substance in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats." In summary, a wetland in the coastal zone falls under CCA jurisdiction if any of the following conditions are present: wetland hydrology, dominance of wetland vegetation (hydrophytes), and/or presence of hydric soils."*

The Statewide Interpretive Guidelines for Identifying and Mapping Wetlands and Other Wet Environmentally Sensitive Habitat Areas (CCC 1981) use the CCA definition to establish technical criteria to delineate wetlands. These guidelines consider wetland hydrology as the most important parameter to identify a wetland within the coastal zone: "the single feature that most wetlands share is soil or substrate that is at least periodically saturated with or covered by water, and this is the feature used to describe wetlands in the Coastal Act. The water creates severe physiological problems for all plants and animals except those that are adapted for life in water or in saturated soil, and therefore only plants adapted to these wet conditions (hydrophytes) could thrive in these wet (hydric) soils. Thus, the presence or absence of hydrophytes and hydric soils make excellent physical parameters upon which to judge the existence of wetland habitat areas for the purposes of the Coastal Act, but they are not the sole criteria." The saturation of soil in a wetland must be at or near the surface (approximately one foot or less) for a period of time (usually more than two weeks) in order to facilitate anaerobic

soil reduction processes that produce wetland conditions.

Identifying the presence of either wetland classified plants or hydric soils is referred to as the "one parameter approach." This approach can be useful because wetland plants, wetland hydrology, and/or hydric soils often co-occur, especially in natural undisturbed areas. However, situations do exist where wetland classified plants are found in the absence of other wetland conditions. These areas are not wetlands and a delineation study must carefully scrutinize whether the wetland classified plants that are growing as hydrophytes in anaerobic soil conditions caused by wetland hydrology or not.

Examples of hydrophytic plants growing in non-wetland conditions include:

1) Deep-rooted trees (e.g., willows), capable of persisting in the presence of surface water or in dry conditions by tapping into deep groundwater sources; and,

2) Wetland-classified plants that are also salt-tolerant (e.g., alkali heath) can grow in the presence of either wetland conditions or saline soil conditions, but not necessarily both.

Similarly, hydric soils can be found in the absence of wetland hydrology or wetland classified plants. For example, hydric soils have been observed in upland areas where historic disturbances exposed substratum and in densely vegetated grasslands (Mollisols). A wetland delineation must determine if the hydric soil indicators are a result of frequent anaerobic conditions in the presence of hydrology or due to another cause.

In the Coastal Zone, the California Coastal Commission presumes an area is a wetland if any one of the following three-wetland indicators is present: wetland hydrology, wetland plants, or hydric soils. Exceptions to this exist if there is strong positive evidence of upland conditions, which should be obtained during the wet season. Evidence of upland conditions could include the following observations: a given area saturates only ephemerally following a substantial rainfall, soil is very permeable with no confining layer, or the land is steep and drains rapidly.

Hydrology: Depressions, seeps, and topographic low areas in the Study Area are surveyed for primary and secondary hydrological indicators. Primary indicators of wetland hydrology that offer direct evidence include: visible inundation or saturation, surface sediment deposits, oxidized root channels, and drift lines. Secondary indicators that offer indirect evidence include algal mats, shallow restrictive layers in the soil, or vegetation meeting the FAC-neutral test.

Soils: The Study Area is examined for hydric soil indicators according to Natural Resources Conservation Service guidelines (USDA 2006) where horizon depths, color, redoximorphic features, and texture characterize soil profiles. Soils formed under anaerobic wetland conditions generally have a low chroma matrix color, designated 0, 1, or 2, and contain mottles or other redoximorphic features. Soil color and chroma was determined using a Munsell soil color chart (Gretag Macbeth 2000) to identify soils as hydric.

Plants: The US Army Corps of Engineers developed a classification system for plant species known to occur in wetlands. The plant species are categorized based on the frequency that they have been observed in wetlands. Species classified as obligate (OBL), Facultative Wetland (FACW), and Facultative (FAC) are considered hydrophytic. If more than 50 percent of the plant species in a given area are hydrophytic, the area meets the wetland vegetation criterion and is presumed to be a jurisdictional wetland under the CCA.

Areas identified as potential wetlands by the presence of wetland plants are also examined for indicators of wetland hydrology. Positive indicators of wetland hydrology can include direct evidence (primary indicators) such as surface water, saturation, sediment deposits, and surface soil cracks, or indirect evidence (secondary indicators) such as drainage patterns and water-stained leaves.

Riparian ESHAs

The Mendocino County LCP recognizes drainages with associated riparian vegetation to be ESHAs. The Technical Criteria (CCC 1981) defines riparian vegetation as:

> *"that association of plant species which grows adjacent to freshwater watercourses, including perennial and intermittent streams, lakes, and other freshwater bodies. Riparian plant species and wetland plant species either require or tolerate a higher level of soil moisture than dryer upland vegetation, and are therefore generally considered hydrophytic."*

Special Status Species ESHAs

Special status species and their habitats are defined as ESHAs by the CCA and Mendocino County LCP. Special-status species include those species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing by the USFWS or CDFW. In addition, CDFW Species of Special Concern are given special consideration under the California Environmental Quality Act (CEQA). Species of Concern may only be protected as ESHAs if they are ranked by CDFW as imperiled in California (S3 or less). Plant species on California Native Plant Society (CNPS) Lists 1 or 2 are also considered special status species and are protected as ESHAs.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 11800 Road 500 D City/County: Mendocino Sampling Date: 13JUL/13AUG 2024

Applicant/Owner: Christensen State: CA Sampling Point: SPC01

Investigator(s): Asa B Spade Section, Township, Range: S19 T17N R17W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): None Slope (%): 1

Subregion (LRR): A Lat: 39.321921 Long: 123.803480 Datum: NAD83

Soil Map Unit Name: Bruhel-Shingletown complex 2-15% NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: Location of upper extent of Juncus occurence. Vegetation observed before mowing. Soils were examined after mowing

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	— = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1. Rubrus parviflorus	5	No	FACU
2. Toxicodendron diversilobum	40	Yes	FAC
3.			
4.			
5.			
	45 = Total Cover		
Herb Stratum (Plot size: 10'r)			
1. Equisetum telmateia	<1	No	FACW
2. Hetaculum maximum	2	No	FAC
3. Stachys rigida	<1	NO	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	2 = Total Cover		
Woody Vine Stratum (Plot size: 20'r)			
1. Rubus armeniacus	40	Yes	FAC
2.			
	40 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

* FAC plants have equal chance of occuring in wetland and upland here they are occuring in upland

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: Photo 54 In our area Toxicodendron does not usually occur in wetlands, rank in "Arid west" is FACU which is truer to my experience. Rubus armeniacus is a non-native clonal species and may have originated in the wetlands of the parcel but has overgrown upland

SOIL

Sampling Point: PC01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR2/1	95	10YR3/1	5	\	\	sandy loam	Fragmented sand grains visible
9-20	10YR2/1	99	10YR5/6	1	C	M	Sandy loam	hard nodules
20-22+	10YR2/1	98	10YR4/1	1	D	M	sandy clay loam	higher clay content
\	\	\	7.5YR5/6	1	C	M	\	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: No hydric soil field indicators were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology indicators were observed

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 11800 Road 500D City/County: Mendocino / Mendocino Sampling Date: 13JUL/13AUG 2024
Applicant/Owner: Christensen State: CA Sampling Point: SPCØ2
Investigator(s): Asa B Spade Section, Township, Range: S19 T17N R17W
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): None Slope (%): 3
Subregion (LRR): A Lat: 39.322185 Long: 123.803700 Datum: NAD83
Soil Map Unit Name: Bruhel - Shinglemill Complex 2-15% NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: This sample point was chosen at te northern edge of the Himalayan blackberry Patch near where test wells were dug.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acacia delbata	5	Yes	UPL
2.			
3.			
4.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1. Acacia delbata	5	Yes	UPL
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 10'r)			
1. Holcus lanatus	2	No	FAC
2. Conium maculatum	1	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	3 = Total Cover		
Woody Vine Stratum (Plot size: 15'r)			
1. Rubus armeniacus	90	Yes	FAC
2.			
	90 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ 5 - Wetland Non-Vascular Plants[1]
__ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: SPCØ2 Photo 63 Vegetation was observed 13JULY and soils on Aug 13 after te area was mowed

SOIL

Sampling Point: SPC02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR2/1	100	\	\	\	\	Sandy loam	
4-6	10YR2/1	90	10YR6/2	9	D	M	Sandy Clay loam	
\	\	\	7.5YR4/6	1	C	M	\	
6-10+	10YR5/6	100	\	\	\	\	Sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks: No hydric soil field indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology field indicators observed

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 11800 Road 500 D City/County: Mendocino/Mendocino Sampling Date: 13JUL & 13AUG 2024
Applicant/Owner: Christensen State: CA Sampling Point: SPC03
Investigator(s): Asa B Spade Section, Township, Range: S19 T17N R17W
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): None Slope (%): 1
Subregion (LRR): A Lat: 39.322114 Long: 123.803517 Datum: NAD83
Soil Map Unit Name: Bruhel-Shinglemill complex 2-15% NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: Observed vegetation at this point before mowing this area was dominated by Himalayan blackberry

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acacia delbata	10	Yes	UPL
2.			
3.			
4.			
	____ = Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)			
1. None			
2.			
3.			
4.			
5.			
	____ = Total Cover		

Herb Stratum (Plot size: 10'r)			
1. Pteridium aquilinum	10	Yes	FACU
2. Hedera helix	5	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15 = Total Cover		7.5/3

Woody Vine Stratum (Plot size: 15'r)			
1. Rubus armeniacus	30	Yes	FAC
2. Rubus parviflorus	5	NO	FACU
	35 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: Photo 67 SPC03 Vegetation was observed on 13JUL and soils on 13AUG

WYNN COASTAL PLANNING & BIOLOGY

SOIL

Sampling Point: SP03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR2/1	100	\	\	\	\	Sandy loam	sand grains visible fragmented
14-18	10YR2/1	90	10YR5/8	10	C	M	sandy clay loam	
18-20+	10YR6/3	75	10YR5/8	25	C	M	sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 11800 ROAD 500 D City/County: Mendocino / Mendocino Sampling Date: 13AUG2024
Applicant/Owner: Christensen State: CA Sampling Point: SPC04
Investigator(s): Asa B Spade Section, Township, Range: S19 T17N R17W
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 0
Subregion (LRR): A Lat: 39.322070 Long: 123.803606 Datum: NAD83
Soil Map Unit Name: Bruhel-Shinglemill complex 2-15% NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No _____	Is the Sampled Area within a Wetland? Yes _____ No _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	

Remarks: Vegetation was dominated by invasive Himalayan blackberry but was mowed just prior to this soil study. This location is a high point above the swale with a culvert. Culvert exit is downhill and west

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	/ = Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
5.			
	/ = Total Cover		

Herb Stratum (Plot size: 10'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. None observable beneath Rubus			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	/ = Total Cover		

Woody Vine Stratum (Plot size: 15'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Rubus armeniacus	80	Yes	FAC
2. Hedera helix	10	NO	FACU
	90 = Total Cover		

% Bare Ground in Herb Stratum ? under woody vines

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Dominance of one FAC clonal invasive species is not good evidence of wetland vegetation

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: Vegetation was dominated by invasive Himalayan blackberry but was mowed just prior to this study

SOIL

Sampling Point: SP04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR2/2	100	\	\	\	\	Sandy loam	sand grains visible smooth and angled rocks
6-11	10YR5/6	90	10YR3/2	10	\	\	Sandy clay	large sand/small gravel bound in clay
11-20+	10YR4/4	85	7.5YR5/8	15	C	M	Sandy clay	less and smaller sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks: No hydric soil field indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology indicators observed

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: 11800 Road 500D City/County: Mendocino / Mendocino Sampling Date: 13AUG2024

Applicant/Owner: Christensen State: CA Sampling Point: SPC05

Investigator(s): Asa D Spade Section, Township, Range: S19 T17N R17W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): None Slope (%): 2

Subregion (LRR): A Lat: 39.321983 Long: 123.803644 Datum: NAD83

Soil Map Unit Name: Bruhel-Shingletown complex 2-15% NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No _____	Is the Sampled Area within a Wetland? Yes _____ No _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	

Remarks: Location near swale that has stubble from rushes. Observations of vegetation were made JUL13 and this area was dominated by Himalayan blackberry. Mowing occured before AUG13 when additional observations were made at this site

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)			
1. None			
2.			
3.			
4.			
5.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1. Juncus sp	20	Yes	FACW
2. Iris douglasiana	1	No	
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	21 = Total Cover		

Woody Vine Stratum (Plot size: 10'r)			
1. Rubus armeniacus	80	Yes	FAC
2.			
	80 = Total Cover		

% Bare Ground in Herb Stratum 2 covered w/Rubus

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 % (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Area was dominated by Rubus armeniacus but was mowed prior to soil examination. Juncus underneath Himalayan blackberries was better evidence for hydrophytic vegetation

SOIL

Sampling Point: 05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR2/1	97	5YR4/6	3	C	M	Sandy loam	soft masses Fragmented soil
14-18+	10YR4/3	90	10YR5/6	10	C	M	Sandy clay	soft masses

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks: Soils at this location met the Redox Dark Surface (F6) field indicator due to significant mottles that occured as soft masses within the black soil matrix in the upper portion of the soil column

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology field indicators were observed but soils were observed during a dry portion of the year and may therefore not have been observable

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Andy Christensen	
(A)	***Buffer Areas.*** *A buffer area shall be established adjacent to all environmentally sensitive habitat areas. The purpose of this buffer area shall be to provide for a sufficient area to protect the environmentally sensitive habitat from degradation resulting from future developments and shall be compatible with the continuance of such habitat areas.*

The proposed development is to:

Demolish existing 946sf shop/garage, 670sf single-family residence, and 150sf shed. Construct two-story 4,252 sf single-family residence, attached garage and detached 640sf guest cottage. Establish outdoor small scale agriculture in the optimal area on site. Define outdoor living space with decks and patios attached to structures. Convert existing test wells to production wells as a single well field. Install septic system, underground propane tank, back-up generator, underground water storage tanks, underground existing overhead utility lines, construct 100sf well pump house and trench for utility connections. Modify existing concrete water cisterns - demolish existing outbuilding over one cistern, decommission use as cisterns, construct decks over the remaining concrete structures. Relocate existing driveway and gate away from bluff edge and construct 30" high safety fence along a portion of the bluff edge. Repair/replace existing fence with gate along Road 500D and add service gate at north end for utility access. Remove dead and dying trees for wildfire resilience per biological report. Request temporary occupancy of travel trailer during construction.

This application is accompanied by a proposed boundary line adjustment to merge the subject parcels.

There are four types of presumed Environmental Sensitive Habitat Areas (ESHAs) within 100ft of the proposed development:

Wetland Presumed ESHA – An area of **Coastal Act wetland** was present and delineated near the center of the subject parcel at a location where a stream once flowed but which has been directed through a culvert, the inlet of which is off property east of the 500D Road and which outlets near the western edge of the parcel. Vegetation on a portion of the land adjacent to the subject parcel but east side of the 500D Road indicates that wetland is likely present there. Wetland delineation was not conducted off-property, but this area was treated as presumed Coastal Act wetland for the purpose of this report.

Stream ESHA- A small stream originating from a culvert was present on the north-western portion of the study area.

Riparian Presumed ESHA – Vegetation in the gully where the culvert outlets is different than the surrounding drier areas and was considered a riparian ESHA for the purpose of this report.

Special Status Plant Community Presumed ESHAs – One special status plant community, Bishop Pine Forest (*Pinus muricata* forest alliance (G3 S3)) was present through much of the study area.

Special Status Wildlife Habitat Presumed ESHA – Three groups of pelagic cormorant (*Phalacrocorax pelagicus*) nests were identified on the bluff edge. Clumps of Bishop pine resin ducts presumably from a Sonoma tree vole nest were observed in the Bishop pine forest indicating that the trees are habitat for this Species of Special Concern.

Avoidance mitigation measures (**Section 7** of the Biological Scoping & Botanical Survey Report) addresses the potential impacts from proposed development and how they can be avoided, minimized or compensated for so that impacts are reduced to less than significant levels.

The first portion of this RBA (Section A1-3) addresses the delineated wetland on the subject parcel, the presumed wetland on the northeast side of the 500D road, and seasonal pelagic cormorant nest sites. The majority of the proposed development is greater than 50ft from these resources. A portion of the bluff top fence is within 50ft of the pelagic cormorant seasonal nest sites. Portions of the perimeter fence repair/replacement, utility lines, and water pipes are within 50ft of the wetlands on the subject parcel. The service gate at the north end of the subject parcel, portions of the requested occupancy of a travel trailer during construction, conversion of an existing test well to production, a small portion of the cover soil for the septic system, undergrounding of existing overhead utility lines, portions of water lines connecting wells to the underground water cisterns and to the single family residence, portions of the proposed new driveway entrance, and repair/replacement of the existing perimeter fence along the 500D Road are within 50ft of but downhill of and on the opposite side of the 500D road from the presumed wetland habitat on the northeastern side of the 500D Road.

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Andy Christensen	
	Two of the special status resources present in the study area, **Bishop pine forest** and **Sonoma tree vole habitat**, cannot be avoided by more than 50ft and are therefore addressed in Section 4 of this RBA, which deals with development within a buffer, and are also addressed with a Report of Compliance (ROC) that is included in the submission for this project.
(1)	***Width***. *The width of the buffer area shall be a minimum of one hundred (100) feet, unless an applicant can demonstrate, after consultation and agreement with the California Department of Fish and Game, and County Planning staff, that one hundred (100) feet is not necessary to protect the resources of that particular habitat area from possible significant disruption caused by the proposed development. The buffer area shall be measured from the outside edge of the Environmentally Sensitive Habitat Areas and shall not be less than fifty (50) feet in width. New land division shall not be allowed which will create new parcels entirely within a buffer area. Developments permitted within a buffer area shall generally be the same as those uses permitted in the adjacent Environmentally Sensitive Habitat Area.*
	Based on the analysis below, Wynn Coastal Planning & Biology recommends approval of a reduction of the buffers for the following resources: • **Delineated Coastal Act Wetland**, **stream**, and its surrounding **riparian habitat** on the subject parcel – 50ft buffer • **Presumed Coastal Act Wetland** on the opposite side of the 500D Road as the subject parcel– 50-foot buffer • **Pelagic cormorant seasonal nest sites** – 50ft buffer Buffer areas were measured based from the outside edge (dripline of trees and other vegetation) resulting from ground surveys and aerial photo interpretation. It is the professional opinion of Wynn Coastal Planning & Biology that a buffer area of 100 feet is not necessary to protect these special status resources from the proposed development and subsequent use of the property. Consultation with California Department of Fish and Wildlife should occur to obtain their opinion on the buffers recommended by Wynn Coastal Planning & Biology. The Department of Fish and Wildlife and County Planning Staff opinions will be needed to determine the final appropriate buffer widths between ESHA and proposed development. New land division will <u>not</u> be occurring for the proposed project. The project does include a boundary line adjustment to combine the three subject parcels into a single parcel.
1 (a)	***Biological Significance of Adjacent Lands.*** *Lands adjacent to a wetland, stream, or riparian habitat area vary in the degree to which they are functionally related to these habitat areas. Functional relationships may exist if species associated with such areas spend a significant portion of their life cycle on adjacent lands. The degree of significance depends upon the habitat requirements of the species in the habitat area (e.g., nesting, feeding, breeding, or resting).* *Where a significant functional relationship exists, the land supporting this relationship shall also be considered to be part of the ESHA, and the buffer zone shall be measured from the edge of these lands and be sufficiently wide to protect these functional relationships. Where no significant functional relationships exist, the buffer shall be measured from the edge of the wetland, stream, or riparian habitat that is adjacent to the proposed development.*

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Andy Christensen	
	The non-native common velvet grass – sweet vernal grass meadows adjacent to the presumed Coastal Act wetland on the subject parcel are not significantly functionally related to this presumed wetland, which is of relatively low quality, being vegetated primarily with invasive Himalayan blackberry brambles. The area adjacent to the presumed Coastal Act wetland offsite is the paved 500D Road, which is not significantly functionally related to the wetland. The terrestrial habitat on the subject parcel above the pelagic cormorant seasonal nest sites is not functionally related to the use of the bluff face by the pelagic cormorants. The buffer zones of the areas of presumed coastal act wetland should be measured from the edge of these presumed ESHAs which should be sufficiently wide to protect these resources.
1(b)	***Sensitivity of Species to Disturbance.*** *The width of the buffer zone shall be based, in part, on the distance necessary to ensure that the most sensitive species of plants and animals will not be disturbed significantly by the permitted development. Such a determination shall be based on the following after consultation with the Department of Fish and Game or others with similar expertise:* *(1b-i) Nesting, feeding, breeding, resting, or other habitat requirements of both resident and migratory fish and wildlife species;* *(1b-ii) An assessment of the short-term and long-term adaptability of various species to human disturbance;* *(1b-iii) An assessment of the impact and activity levels of the proposed development on the resource.*
	A buffer width of 50-feet from the delineated Coastal Act wetland on the subject parcel, the presumed wetland across the 500D road, and to the pelagic cormorant nesting sites should be sufficient to ensure that the most sensitive species of plants and animals within them are not disturbed significantly by the permitted development. The delineated Coastal Act wetland on the subject parcel is primarily vegetated with invasive Himalayan blackberry which is not important habitat for sensitive native species. Species that rely on non-native plants are usually habitat generalists that can adapt to human presence. The presumed Coastal Act wetland across the 500D Road is buffered by the presence of the road and species present within it are likely already adapted to activity on the road. The pelagic cormorant nest sites are located on the bluff face looking out toward the ocean, and not within the visual field of the proposed development.
1(c)	***Susceptibility of Parcel to Erosion.*** *The width of the buffer zone shall be based, in part, on an assessment of the slope, soils, impervious surface coverage, runoff characteristics, and vegetative cover of the parcel and to what degree the development will change the potential for erosion. A sufficient buffer to allow for the interception of any additional material eroded as a result of the proposed development should be provided.*
	Potential for erosion onsite will be minimal as the area where development is proposed is relatively flat. Mitigation measures have been recommended to avoid or minimize potential for erosion to affect resources present. These measures include straw wattles between the Coastal Act wetlands on the subject parcel and the septic leach field during its construction and/or a seasonal restriction on the construction of the leach field during the dry portion of the year. Bare soil resulting from construction will be seeded with native erosion control mix. The presumed Coastal Act wetland across the 500D Road is uphill from the proposed development and therefore unlikely to be susceptible to materials resulting from erosion.
1(d)	***Use of Natural Topographic Features to Locate Development.*** *Hills and bluffs adjacent to ESHA's shall be used, where feasible, to buffer habitat areas. Where otherwise permitted, development should be located on the sides of hills away from ESHA's. Similarly, bluff faces should not be developed, but shall be included in the buffer zone.*

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Andy Christensen	
	The areas where development is proposed is relatively flat, with the exception of a small knoll on the southern portion of the property, within which the existing garage has been built. No hills or bluffs that could be used to buffer the ESHAs are present on the parcel, as the area south of the knoll is not large enough to support residential redevelopment of the parcel including its necessary septic and water supply. No bluff faces are proposed for development and the steeper portion of the parcel is protected by a geotechnical setback.
1(e)	***Use of Existing Cultural Features to Locate Buffer Zones.*** *Cultural features (e.g., roads and dikes) shall be used, where feasible, to buffer habitat areas. Where feasible, development shall be located on the side of roads, dikes, irrigation canals, flood control channels, etc., away from the ESHA.*
	The presumed Coastal Act wetland across the 500D Road is buffered by the presence of that road. No cultural features are available to buffer the presumed Coastal Act wetland on the subject parcel, nor the seasonal pelagic cormorant nest sites, but the majority of proposed development is more than 100ft from these areas.
1(f)	***Lot Configuration and Location of Existing Development.*** *Where an existing subdivision or other development is largely built-out and the buildings are a uniform distance from a habitat area, at least that same distance shall be required as a buffer zone for any new development permitted. However, if that distance is less than one hundred (100) feet, additional mitigation measures (e.g., planting of native vegetation) shall be provided to ensure additional protection. Where development is proposed in an area that is largely undeveloped, the widest and most protective buffer zone feasible shall be required.*
	The development is proposed primarily within an area that is already developed. Rather than develop an additional location on the site, the single family residence will be built in the location of the existing garage and the vegetable garden will be located where the existing single family residence will be removed. The proposed location for the septic leach fields are as close to the development as possible rather than in a location further away, on the other side of the wetland. A 50-foot buffer for should sufficiently protect the areas of Coastal Act wetland and the seasonal pelagic cormorant nest sites from the proposed development.
1(g)	***Type and Scale of Development Proposed.*** *The type and scale of the proposed development will, to a large degree, determine the size of the buffer zone necessary to protect the ESHA. Such evaluations shall be made on a case-by-case basis depending upon the resources involved, the degree to which adjacent lands are already developed, and the type of development already existing in the area.*
	The proposed developments are all of the same scale as the developed parcels to the south of the subject parcels with the same zoning. Occurrences of Coastal Act wetland persist adjacent to areas where development already exists. Pelagic cormorants nest in many locations along the bluff face adjacent to residential developments of the type and scale of that proposed.
(2)	***Configuration.*** *The buffer area shall be measured from the nearest outside edge of the ESHA (e.g., for a wetland from the landward edge of the wetland; for a stream from the landward edge of riparian vegetation or the top of the bluff).*
	The 50ft buffer areas are measured from the landward edge of the areas of presumed Coastal Act wetland and from the bluff face supporting the pelagic cormorant nest sites. The buffers are delineated and mapped through field site visits as well as referencing aerial imagery and using ArcGIS.

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Andy Christensen	
(3)	***Land Division.*** *New subdivisions or boundary line adjustments shall not be allowed which will create or provide for new parcels entirely within a buffer area.*
	A boundary line adjustment is proposed that would merge three existing parcels into one parcel. This was necessary in order to provide for a septic leach field and domestic water wells on the same parcel as the dwellings it will serve. Combining the three parcels allows for better avoidance of the presumed ESHAs present.
(4)	***Permitted Development.*** *Development permitted within the buffer area shall comply at a minimum with the following standards:*
	Approximately 432 linear feet of utility lines and water pipes, 475 linear feet of perimeter fence and a gate, 88ft^2 of the temporary camping area, 377ft^2 of the new driveway apron and 74 ft^2 of septic leach field are proposed within the 50ft buffer from the presumed Coastal Act wetland off the subject parcel across the 500D Road. These developments are on the opposite side of an existing paved road and downhill from this presumed wetland and therefore unlikely to affect it. Approximately 56 linear feet of perimeter fence and 60 linear feet of underground utility lines and water pipes are proposed within 50ft of the delineated Coastal Act wetland on the subject parcel, connecting the test wells on the northern end of the subject parcel with the proposed residence on the southern side. Approximately 180 linear feet of bluff top fence is proposed within 50ft of the seasonal pelagic cormorant nest sites. The pelagic cormorant nest sites are not visible from the bluff top. Two presumed ESHAs present, **Bishop pine forest**, which is presumed **Sonoma tree vole habitat**, will be directly impacted by the proposed development. Bishop pine trees will have to be removed to accommodate the proposed project totaling approximately 12,237ft^2. An additional 8,019ft^2 of proposed development will be within 50ft of the Bishop pine forest habitat. Potential impacts to these two special status resources are addressed below as well as within a Report of Compliance that is a part of the submission for this project. Minimization and compensatory mitigation measures are recommended in Section 7 of the biological report. A Bishop pine forest active management plan is recommended. Consultation and cooperation with CDFW regarding Sonoma tree vole is recommended.
4(a)	*Development shall be compatible with the continuance of the adjacent habitat area by maintaining the functional capacity, their ability to be self-sustaining and maintain natural species diversity.*

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Andy Christensen	
	The proposed fence lines and gate, utility lines and pipelines, septic leach field and temporary camping over an existing driveway are compatible with the continuance of the adjacent delineated and presumed wetlands. The proposed bluff top fence should be protective of the seasonal cormorant nesting sites and compatible with their continuance. Wetland avoidance mitigation measures are recommended in the main report. These measures include a 50ft buffer between the wetland and proposed development, recommendation for construction that could affect the wetlands to occur only during the dry portion of the year, and installation of straw wattles along the 50ft buffer between the septic leach field and areas of presumed coastal act wetland on the subject parcel during construction of the septic leach field. Portions of the presumed Coastal Act wetlands offsite, across the 500D Road, are uphill from the proposed development and are buffered by the presence of the 500D Road. No impact to this area of presumed Coastal Act wetland within 50ft of the proposed project is expected because it is uphill and across a road from area where the leach line is proposed. A total of 18 live **Bishop pine** trees will need to be removed to accommodate the proposed project: 7 with trunks within the project footprint and 11 that overhang the project footprint. An additional 20 standing dead Bishop pine trees throughout the property are proposed for removal. Six (6) invasive non-native blackwood acacia trees will be removed within the development footprint and another 16 will be removed outside of the footprint. Twelve (12) Bishop pine trees will be planted in the vicinity of the residence and another 6 will be planted at the north end of the property for a total of 18, a 1:1 ratio to the number removed. The total area of Bishop pine forest canopy mapped within the study area is ~62,774ft^2 (1.44 acres). The estimated loss of canopy resulting from the proposed development is up to ~12,237ft^2 (0.28 acres) which is about 19% of the total Bishop pine forest canopy within the study area. Planted Bishop pine trees will not immediately, but should eventually replace this canopy. Avoidance, minimization and compensatory mitigation measures are recommended within the main report. These measures include removing the least number of trees necessary to accommodate the project, replacement of trees lost to development with trees planted on the subject parcel at a minimum ratio of one tree planted to one tree removed, and enhancement of the existing Bishop pine forest habitat through removal of invasive non-native plant species which currently dominate portions of the Bishop pine forest understory. A Bishop pine forest active management plan detailing tree planting and habitat enhancement is recommended. The Bishop pine forest is presumed to be occupied by **Sonoma tree voles**. Early in the study three clumps of resin ducts and scat were found on the ground beneath Bishop pine trees. One potential nest structure was examined and found not to be occupied. Since no other potential nest structures could be located during the search it is unknown which trees Sonoma tree voles occupy. No evidence of tree vole habitation was observed during the 2004 surveys. Consultation and cooperation with CDFW is recommended to avoid or minimize potential impact to this Species of Special Concern, which do not benefit from the legal protections that Endangered or Threatened species do. Avoidance mitigation measures recommended for the Sonoma tree vole correspond to those avoiding, minimizing and compensating for impact to the Bishop pine forest, which is the habitat for these arboreal rodents.

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Andy Christensen	
4(b)	*Structures will be allowed within the buffer area only if there is no other feasible site available on the parcel.*
	All portions of the subject parcel are within presumed ESHAs and/or their buffers. The site proposed avoids presumed wetlands to the greatest extent feasible and is centered on the existing building envelope where development already occurs. The project proposed is in the least environmentally impacting location for the size and scale of development desired, which is consistent with the expected use of the property and consistent with the use of similarly sized and zoned parcels. The proposed septic leach fields are designed in a location where soils and distance to existing wells on the subject parcel and neighboring parcels will allow. Conversion of existing test wells to domestic water production should have minimal impact and there is not an alternative location because the test wells already exist in this location. There is no other less impacting site feasible.
4(c)	*Development shall be sited and designed to prevent impacts, which would degrade adjacent habitat areas. The determination of the best site shall include consideration of stream, access, soil type, vegetation, hydrological characteristics, elevation, topography, and distance from natural stream channels. The term "best site" shall be defined as the site having the least impact on the maintenance of the biological and physical integrity of the buffer strip or critical habitat protection area and on the maintenance of the hydrologic capacity of these areas to pass a one hundred (100) year flood without increased damage to the coastal zone natural environment or human systems.*
	The “best site” is as proposed. This is the only location that will take advantage of the existing developed area and minimize use of land within buffer areas, particularly avoiding the delineated wetland and its 50ft buffer. Any other location within the subject parcels will result in increased development within buffers or special status resources. Special consideration was given to avoidance of presumed Coastal Act wetlands. The subject parcel is not within a 100 year flood zone.
4(d)	*Development shall be compatible with the continuance of such habitat areas by maintaining their functional capacity and their ability to be self-sustaining and to maintain natural species diversity.*
	The development proposed is similar to the that existing on the neighboring parcels, similarly distanced from the presumed ESHAs present. The development is compatible with the continuance of the Coastal Act wetland, seasonal pelagic cormorant nesting sites, Bishop pine forest and Sonoma tree voles and is compatible with maintaining their functional capacity and their ability to be self-sustaining and maintain natural species diversity. Mitigation measures have been proposed that will reduce the potential impact and repair and return the Bishop pine forest, which is habitat for Sonoma tree voles, to its pre-project extent and enhance the quality of the understory.
4(e)	*Structures will be allowed within the buffer area only if there is no other feasible site available on the parcel. Mitigation measures, such as planting riparian vegetation, shall be required to replace the protective values of the buffer area on the parcel, at a minimum ratio of 1:1, which are lost as a result of development under this solution.*

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Andy Christensen	
	No less impacting location for the proposed components of the project is feasible. Alternatives were considered but would all have more potential for impact. Structures are proposed within an existing developed area with the single family residence proposed in the location of the existing garage. The least number of trees feasible will be removed to accommodate the project and the safety of the residence. Planting of Bishop pine trees to replace those lost due to the project will be at a minimum of 1:1 ratio.
4(f)	*Development shall minimize the following: impervious surfaces, removal of vegetation, amount of bare soil, noise, dust, artificial light, nutrient runoff, air pollution, and human intrusion into the wetland and minimize alteration of natural landforms.*
	Mitigation measures are proposed to minimize impervious surfaces, removal of vegetation, bare soil, noise, dust, artificial light, nutrient runoff, air pollution or human intrusion into sensitive areas which should result in a project with a minimal impact on the natural resources present.
4(g)	*Where riparian vegetation is lost due to development, such vegetation shall be replaced at a minimum ratio of one to one (1:1) to restore the protective values of the buffer area.*
	No riparian vegetation will be removed as part of the project. Planting of Bishop pines is included in the mitigation measures to compensate for trees lost due to the project. The functionality of the Bishop pine forest as habitat for native plants and animals will be enhanced through removal of non-native invasive plants. A Bishop pine forest active management plan is recommended.
4(h)	*Above ground structures shall allow peak surface water flows from a one hundred (100) year flood to pass with no significant impediment.*
	The development is not proposed in a 100-year flood zone.
4(i)	*Hydraulic capacity, subsurface flow patterns, biological diversity, and/or biological or hydrological processes, either terrestrial or aquatic, shall be protected.*
	Hydraulic capacity, subsurface flow patterns, biological diversity, and/or biological or hydrological processes will be protected and are not expected to be impacted by the proposed development.
4(j)	*Priority for stream conveyance from a development site shall be through the natural stream environment zones, if any exist, in the development area. In the stream system design report or development plan, the capacity of natural stream environment zones to convey runoff from the completed development shall be evaluated and integrated with the stream system wherever possible. No structure shall interrupt the flow of groundwater within a buffer strip. Foundations shall be situated with the long axis of interrupted impermeable vertical surfaces oriented parallel to the groundwater flow direction. Piers may be allowed on a case-by-case basis.*

Mendocino County Coastal Zoning Code, Table 4. Section 20.496.020 ESHA – Development Criteria – Andy Christensen	
	The project will not change topography or stream patterns.
4(k)	*If findings are made that the effects of developing an ESHA buffer area may result in significant adverse impacts to the ESHA, mitigation measures will be required as a condition of project approval. Noise barriers, buffer areas in permanent open space, land dedication for erosion control, and wetland restoration, including off-site stream improvements, may be required as mitigation measures for developments adjacent to environmentally sensitive habitats. (Ord. No. 3785 (part), adopted 1991)*
	Avoidance, minimization and compensatory mitigation measures are recommended within the main report and should result in the project having a less than significant impact to the special status natural resources present. Avoidance mitigation measures to protect the **Coastal Act wetland** are presented in the main biological report and include: Adherence to Best Management Practices (BMPs), straw wattles installed between the development and the Coastal Act wetland, construction with a potential to impact the wetlands limited to only the dry portion of the year, and immediate re-vegetation of areas of bare soil created by the project with native erosion control seed mix. Avoidance, minimization, and compensatory mitigation measures to protect **Bishop pine forest** and the **Sonoma tree voles** presumed to live in the canopy of Bishop pine trees include: Removing the least amount of trees necessary, replacement of trees cut within the Bishop pine forest at a ratio of at least 1:1 and removal of non-native invasive plants within the Bishop pine forest. WCPB also recommends a Bishop pine forest active management plan and consultation and cooperation with CDFW to determine additional Sonoma tree vole protection measures.

BIOLOGICAL REPORT OF COMPLIANCE

for

11800 500 D Road
Mendocino, CA 95460
APN 118-320-10, -11, -12
Mendocino County

Property Owner:
Andy Christensen
7944 Dante Drive
Littleton, CO 80125

Report Prepared By:
Asa Spade – Senior Biologist

December 11, 2024

Wynn Coastal Planning & Biology
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1. Background and Purpose

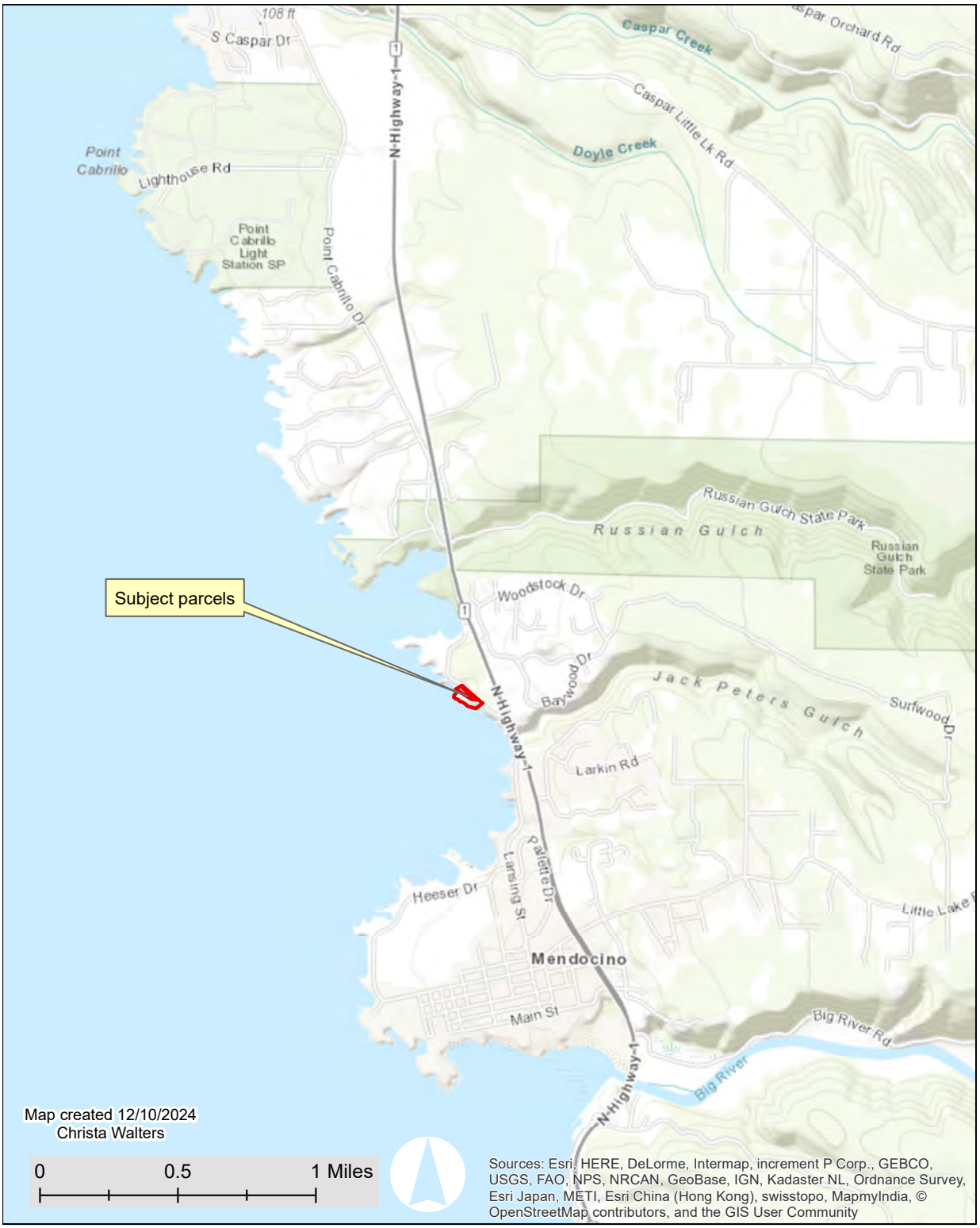
The development is located at 11800 500D Road, in Mendocino County, California. The parcels are approximately 0.3 miles north of the village of Mendocino (**Figure 1**) and is neighbored by small rural residential parcels and Russian Gulch State Park. The parcel is located within the Coastal Zone as defined in Section 30103 of the California Coastal Act.

The parcels are located on the headlands and total slightly less than 3 acres, though only about 1.5 acres is above the bluff edge. The property contains an existing driveway with a single-family residence, garage/workshop, well house/storage shed, garden, concrete staircase to the ocean, and a portion of an aviary. The parcels are fenced on all sides where access is not restricted by the bluff edge. At the time of surveying, the site was vegetated with an overstory of Bishop pine trees as well as non-native grassland and Himalayan blackberry brambles **(Figure 2 & Figure 3)**. The Bishop pine forest was located on a knoll with a predominant understory of non-native grassland. The knoll itself had a higher percentage of natives such as salal (*Gaultheria shallon*) and polypody fern (*Polypodium sp.*). Other areas within the Bishop pine forest had large cotoneaster and English holly shrubs. The non-native grassland extends from the understory of the Bishop pine forest outwards where it forms its own plant community to the north and south of the Bishop pines. North of the Bishop pine forest is a presumed Coastal Act wetland dominated by Himalayan blackberry (*Rubus armeniacus*). Along 500D road is a stand of blackwood acacia (*Acacia melanoxylon*) and other non-native shrubs. As discussed in the Biological Scoping Survey, there was an area of presumed Coastal Act wetland on the east side of 500D Road adjacent to the parcel. Water from the wet area across the 500D road flowed into a culvert under a portion of the subject parcel and exited near the bluff edge and into the ocean. Surrounding the area where the culvert exited onsite was a presumed riparian habitat and a portion of the swale where the stream once flowed before being directed through the culvert was delineated as Coastal Act wetland. The majority of the proposed development is greater than 50ft away from the portion of the delineated Coastal Act wetland on the subject parcels, but the existing perimeter fence that is proposed for repair/replacement goes through the edge of the 50ft buffer, as does a portion of the proposed trench for a utility line and water pipe connecting the northern portion of the parcel to the southern. Portions of the proposed development are within 50ft but also downhill of the presumed Coastal Act wetland across the 500D Road.

Due to the extent of presumed ESHAs across the subject property, utilizing primarily the existing developed area on site is the most feasible place for new development to occur while avoiding and minimizing impact to the special status resources present. This is because the existing structures are already within the Bishop pine forest. By contrast, developing on the northern side of the Bishop pine forest would require development in close proximity to the delineated wetland. After considering these factors, in addition to considering yard setbacks, zoning, parcel map setbacks, and geotechnical setbacks, demolishing the existing structures and using this location for the proposed residence is the least impacting alternative for development on this property. This Report of Compliance presents an analysis of potential impacts to the Bishop pine forest population and demonstrates that the proposed development is consistent with the County of Mendocino Local Coastal Program in that the development is located in the least impacting location.

Table 1. Square footage of proposed development within, within 50ft of, and within 100ft of each of the presumed ESHAs in the study area. For linear features such as fence lines and pipelines it is assumed that a linear foot of the feature is equivalent to a square foot of impact.

Development Alternatives		
Presumed ESHA		**Proposed Project**
	Units	(square feet)
Wetland / riparian delineated on the subject parcel	Direct Impact	0
	Within 50ft Buffer	141
	Within 100ft Buffer	5,522
Presumed wetland / riparian on the opposite side of the 500D Road	Direct Impact	0
	Within 50ft Buffer	1417
	Within 100ft Buffer	8,019
Bishop pine forest / Sonoma tree vole habitat	Direct Impact	12,237
	Within 50ft Buffer	8,126
	Within 100ft Buffer	493
Cormorant nest sites	Direct Impact	0
	Within 50ft Buffer	181
	Within 100ft Buffer	3,551



CLIENT: Christensen
APN: 118-320-10, -11, -12
ADDRESS: 11800 500D Road,
Mendocino, CA

Subject Parcels Location

Figure 1. Location of the subject parcel.

The Report of Compliance is required by Section 20.532.060(E) Mendocino County Coastal Zoning Code, which requires supplemental application procedures for development within Environmentally Sensitive Habitat Areas. The purpose of this report is to provide an in-depth analysis of the proposed development and its potential impacts on the Bishop pine forest and Sonoma tree vole by addressing the following items:

Report of Compliance. A report based upon an on-site investigation which demonstrates that the development meets all of the criteria specified for development in, and proximate to, an environmentally sensitive habitat area including a description and analysis of the following performed by a qualified professional:

(1) Present extent of the habitat, and if available, maps, photographs or drawings showing historical extent of the habitat area.

(2) Previous and existing ecological conditions.

(a)The life history, ecology and habitat requirements of the relevant resources, such as plants, fish and wildlife, in sufficient detail to permit a biologist familiar with similar systems to infer functional relationships (the maps described in above may supply part of this information).

(b)Restoration potentials.

(3) Present and potential adverse physical and biological impacts on the ecosystem.

(4) Alternatives to the proposed development, including different projects and alternative locations.

(5) Mitigation measures, including restoration measures and proposed buffer areas.

Items below (6 – 11) are not applicable to this project

(6) If the project includes dredging, explain the following:

(a)The purpose of the dredging.

(b)The existing and proposed depths.

(c)The volume (cubic yards) and area (acres or square feet) to be dredged.

(d)Location of dredging (e.g., estuaries, open coastal waters or streams).

(e)The location of proposed spoil disposal.

(f)The grain size distribution of spoils.

(g)The occurrence of any pollutants in the dredge spoils.

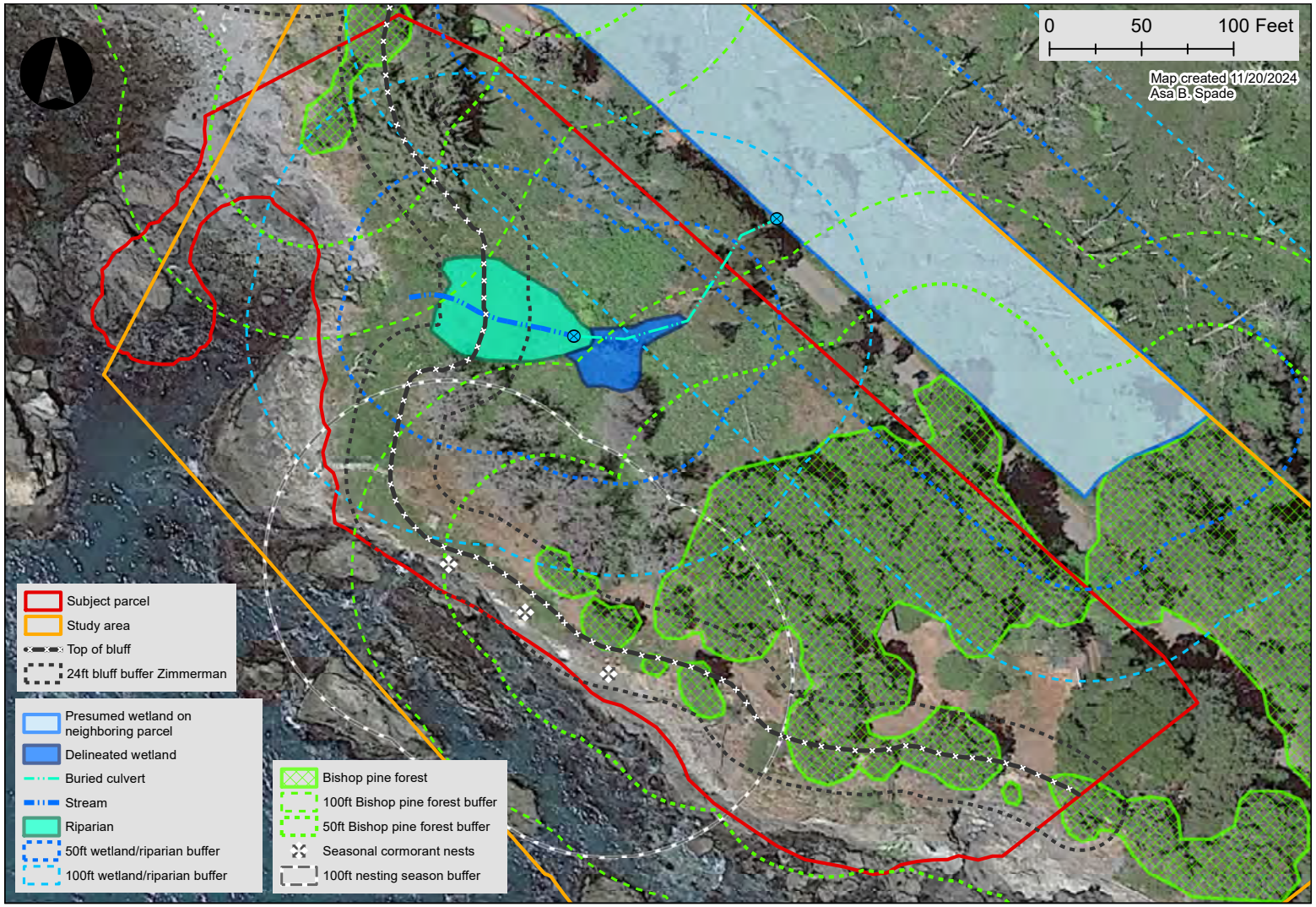
(7) If the project includes filling, identify the type of fill material to be used, including pilings or other structures, and specify the proposed location for the placement of the fill, the quantity to be used and the surface area to be covered.

(8) If the project includes diking, identify on a map the location, size, length, top and base width, depth and elevation of the proposed dike(s) as well as the location, size and invert elevation of any existing or proposed culverts or tide gates.

(9) If the project is adjacent to a wetland and may cause mud waves, a report shall be prepared by a qualified geotechnical engineer which explains ways to prevent or mitigate the problem.

(10) Benchmark and survey data used to locate the project, the lines of highest tidal action, mean high tide, or other reference points applicable to the particular project.

(11) Other governmental approvals as required and obtained. Indicate the public notice number of Army Corps of Engineers permit if applicable.

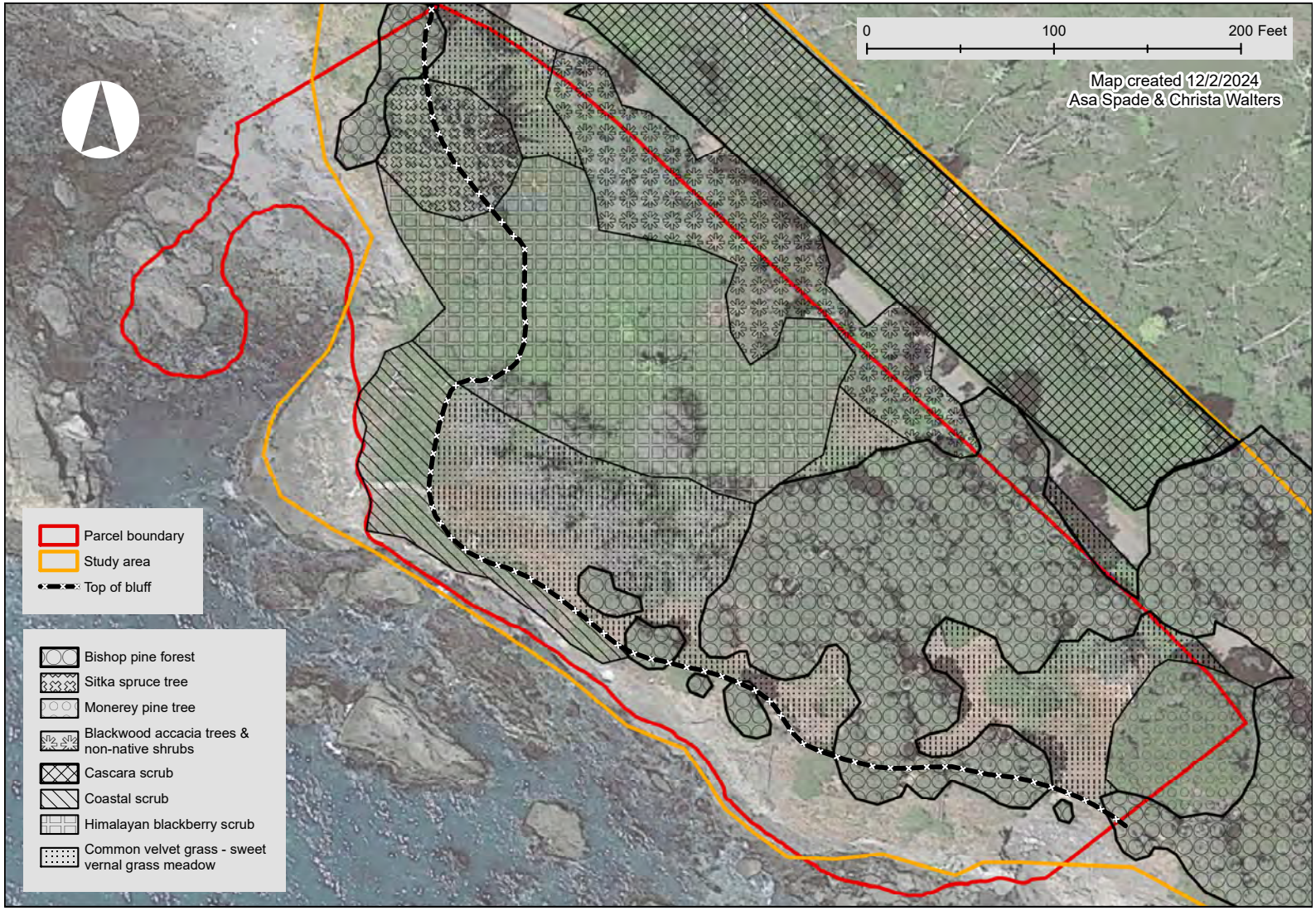


OWNER: Christensen
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

Note: All locations are approximate.
Aerial photo is from June 2021

Presumed ESHAs and Buffers

Figure 2. Presumed ESHAs documented on site.



OWNER: Christensen
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

Plant Communities & Vegetation

Figure 3. Plant Communities and Vegetation Map

2. Findings

2.1. Special Status Plant Communities and Animals

2.1.1. Present Extent of Habitat

Bishop pine forest (*Pinus muricata* G3S3)
Bishop pine forest has a ranking of G3 S3, which indicates that the community is rare globally and throughout California. According to both the *Manual of California Vegetation* and USDA, Bishop pine forests typically occur in disjunct coastal populations from southern Oregon to Santa Barbara California (Figure 4, Figure 5 & Figure 6) (Sawyer 2009 & USDA 2018). Bishop pines are also located on Santa Cruz and Santa Rosa islands as well as Baja California, Mexico (Sawyer 20019 & USDA 2018). Populations of Bishop pines are typically located in Mediterranean climates between sea level and 400 meters in elevation (NPS 2015).

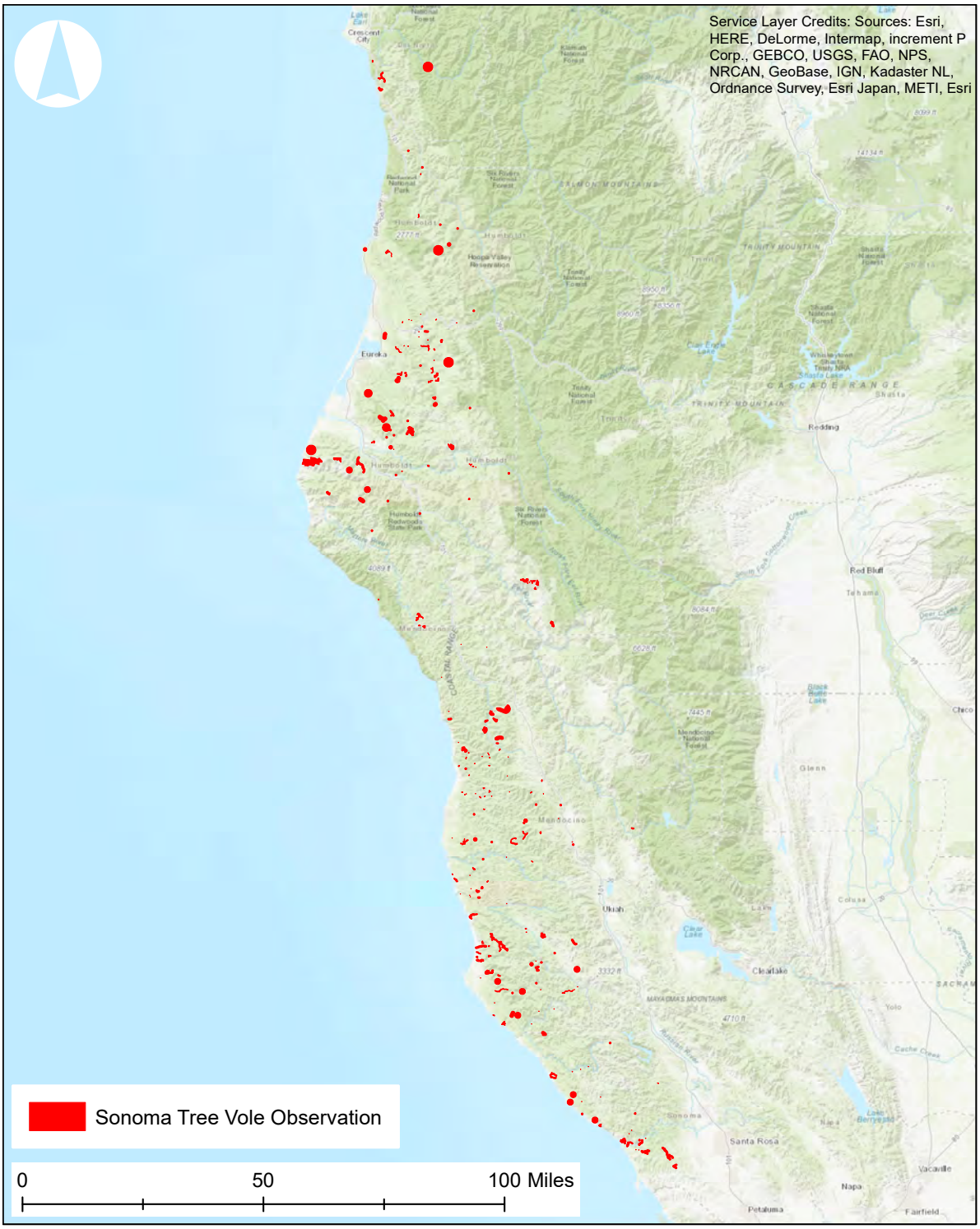
Within Bishop pine forests along the Mendocino coast, Bishop pines are either dominant within the forest canopy or co-dominant with: shore pine (*Pinus contorta* ssp. *contorta)*, Bolander's pine (*Pinus contorta* ssp. *bolanderi)*, Mendocino cypress (*Hesperocyparis pygmaea)*, tan oak (*Notholithocarpus densiflorus),* redwood *(Sequoia sempervirens),* bay laurel (*Umbellularia californica*)*,* Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis)*, and western hemlock (*Tsuga heterophylla*). Within Bishop pine forests, the shrub and herb stratum can be sparse due to high percentage of needle duff on the ground. In other cases, understory vegetation can be dense with plants such as, but not limited to: wax myrtle (*Morella californica*), Cascara buckthorn (*Frangula purshiana*), California coffeeberry (*Frangula californica*), sweet vernal grass (*Anthoxanthum odoratum*), common velvet grass (*Holcus lanatus*), California blackberry (*Rubus ursinus*), beach strawberry (*Fragaria chiloensis*), and Pacific reed grass (*Calamagrostis nutkaensis*) (Sawyer 2009 & USDA 2018).

Figure 4. CNPS range of Pinus muricata & Pinus radiata alliance (CNPS 2019).

Figure 5. USDA Bishop pine range (USDA 2019).

Figure 6. CalFlora point locations of Bishop pine trees (CalFlora 2024).

Sonoma tree vole (*Arborimus pomo* G3S3) (Species of Special Concern)
The Sonoma tree vole is a Species of Special Concern which the California Department of Fish & Wildlife defines as "a species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following criteria: is extirpated from the State, is listed as threatened or endangered under the Federal Endangered Species Act (ESA) but not under the State ESA, is experiencing population declines or range retractions that, if continued, could qualify it for State status, and/or has naturally small populations exhibiting high susceptibility to risk from any factor, that if realized, could lead to declines that would qualify it for State status," (CDFW 2020). The Sonoma tree vole is distributed along the North Coast from southern Sonoma County north to the Klamath River and is more or less restricted by the fog belt (Figure 7). The Sonoma tree vole is ecologically similar but geographically isolated from the red tree vole whose southern range starts north of the Klamath River. The rodent occurs in old-growth and other forests, mainly Douglas-fir, redwood, and hardwood-conifer habitats (Forsman et al. 2016). While the literature indicates that Douglas fir is the primary food source for the Sonoma tree vole, within the Coastal Zone of Mendocino County, WCPB biologist, Asa Spade, has made a number of observations of Sonoma tree vole nest materials consisting of Monterey pine (*Pinus radiata*) and Bishop pine (*P. muricata*) needle resin ducts within forests including these pine species. Sonoma tree voles may be capable of, but have not been observed, utilizing shore pine (*P. contorta*) trees.



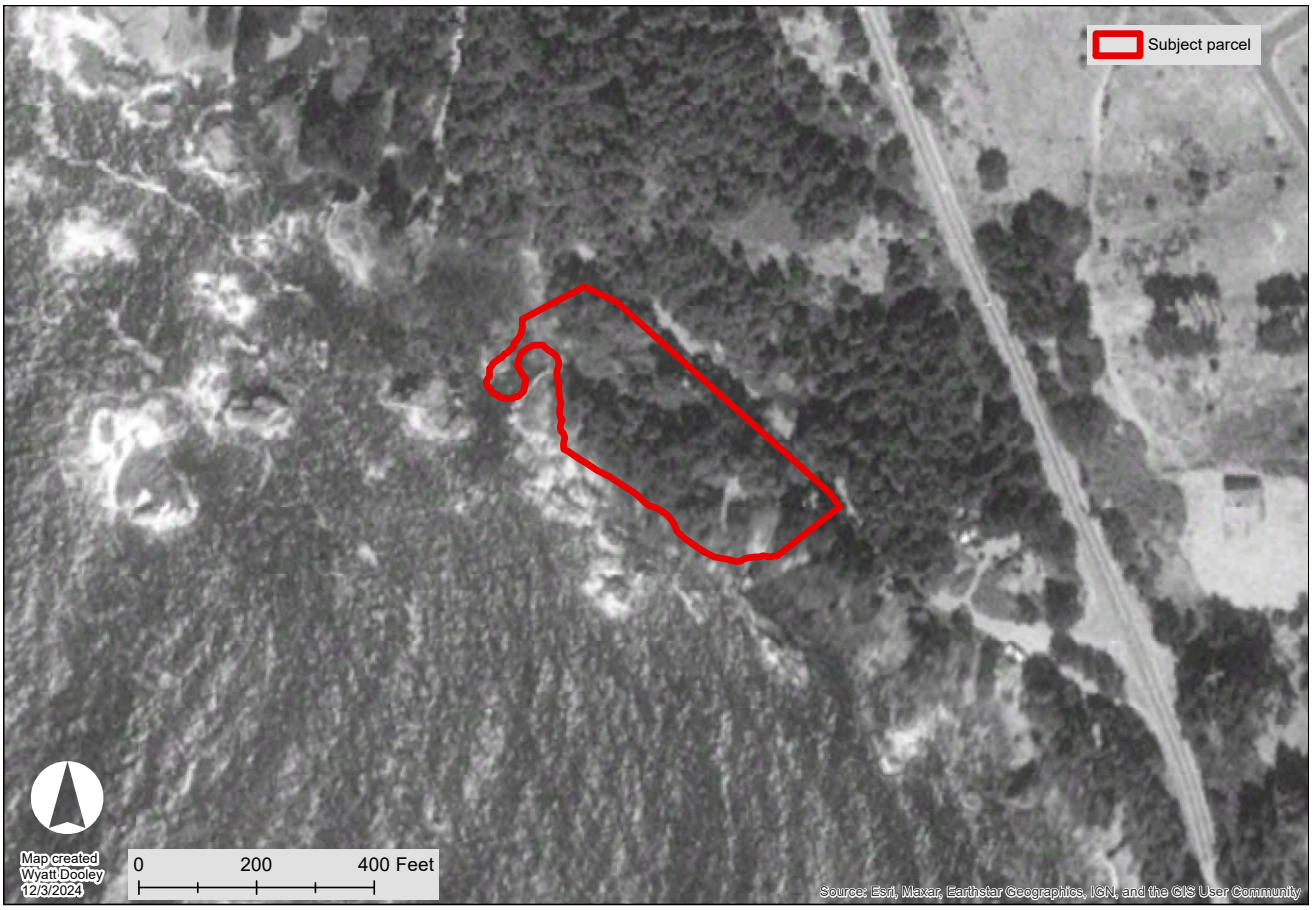
Sonoma Tree Vole Observations Recorded in CNDDB

Figure 7. CNDDB reported observations of Sonoma tree voles (CNDDB 2020).

2.1.2. Historical Extent of Habitat

Bishop pine forest (*Pinus muricata* G3S3)
1998 USGS and Google Earth imagery appears to show the Bishop pine forest onsite (**Figure 8**). The extent of the Bishop pine forest looks approximately the same as it was twenty-six years ago, though a number of the trees on site are now standing dead.

Sonoma tree vole (*Arborimus pomo* G3S3) (Species of Special Concern)
There is no prior documentation available in regards to the historical extent of the onsite Sonoma tree voles. This species is threatened by habitat loss due to timber harvest, wildfire, and changes in land use (Forsman et al. 2016).



OWNER: Christensen
APN: 118-320-10, 11 & 12
GP/ZONE: RR10PD/RR
ADDRESS: 11800 500D Rd, Mendocino, CA

1998 USGS & Google Earth Image Overlay

Image supplied by USGS & Google Earth

Figure 8. 1998 USGS and Google Earth image of the study area.

2.2. Previous and Existing Ecological Conditions

2.2.1. Life History and Ecology

Bishop pine forest (*Pinus muricata* G3S3)
Bishop pine trees typically grow to a height of 50ft and have needles approximately 3 to 6 inches long in bunches of 2 (Jepson 2019). They generally live to be 80 years old (NPS 2015). As these trees get older, they are more susceptible to disease.

Bishop pine trees tend to exhibit one of two different morphotypes that are separated geographically throughout their range. To the south of Sea Ranch trees tend to have a greener hue to their needles whereas north of Sea Ranch they have a blueish grey hue (Millar 1986). As stated in **Section 2.1.1**, the Bishop pine forest ranges from Santa Barbara to southern Oregon and are typically found near the coast.

Fire is important to the regeneration of Bishop pine trees as they are a serotinous species and require heat to open their cones for seed dispersal (NPS 2015). Cones will open in response to a fire or extremely high temperatures (Sawyer 2009). Seeds can handle temperatures of up to 203 degrees Fahrenheit before germination success decreases (USDA 2018).

Fires within Bishop pine forest often cause the stand to be replaced. Mature trees are often killed by the fire but allow the seed cones to open and release seed (NPS 2015). Due to this stand replacement phenomenon, populations of this species tend to be evenly aged for the first 10-20 years after a fire occurs (NPS 2015). As humans have encroached on many Bishop pine stands throughout the State and disrupted the natural fire regime, there has been a stop to natural regeneration of Bishop pine as in many other ecosystems in the arid west.

Sonoma tree vole (*Arborimus pomo* G3S3) (Species of Special Concern)
Tree voles are the only species in the Arvicolinae subfamily (i.e. voles, lemmings, and muskrats) that primarily live in the forest canopy. The species primarily feeds on the needles of Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), and Sitka spruce (*Picea sitchensis*), however, in the California coastal region they have been documented occasionally feeding on grand fir (*Abies grandis*), Monterey pine (*Pinus radiata*), and Bishop pine (*Pinus muricata*). Tree voles primarily feed on conifer needles and twigs and are the only animals that remove resin ducts from conifer needles. The remaining part of the needle is eaten and the resin ducts are often used to line nests. Both females and males build nests, however, female nests tend to be larger and may be occupied by subsequent generations. Nests are constructed on limbs against trunks or at the outer layer of branches. Nests can be anywhere from 6 – 150 feet off the ground and the size ranges in diameter from 0.5 – 3 feet. Tree voles are mostly nocturnal when navigating outside the nest, but feed on needles within the nest during the day. Breeding mostly occurs from February – September and litter size ranges from 1 – 4 young. Females usually have 1 – 2 litters per year. The northern spotted owl (*Strix occidentalis caurina*) and barred owl (*Strix varia*) are its main predators (Zeiner et al 1988-1990).

2.2.2. Restoration Potential

Bishop pine forest (*Pinus muricata* G3S3)
Bishop pine appears to have good restoration potential. Based on personal communication with WCPB biologist Wyatt Dooley and Jughandle Creek Farm Nursery, this species is easy to grow from seed. Seedlings take three years to establish in pots, at which point they can be planted out onsite. It is recommended that the area around the newly planted seedlings be weeded so they do not get shaded out by faster growing species. Any trees planted should be caged to deter deer from grazing. This weeding should be done by hand and mowing should be avoided as it can easily harm the seedlings.

Sonoma tree vole (*Arborimus pomo* G3S3) (Species of Special Concern)

The presence of tree voles in the Bishop pine forest is assumed due to nest materials (pine needle resin ducts) with fecal pellets being observed on the ground beneath Bishop pine trees around the existing single-family residence and garage/shop structures. Bishop pines are proposed to be removed that may contain hidden nests and could potentially change the microclimate within the tree canopy beyond the footprint of the actual tree removal. Restoration of the Bishop pine forest will restore habitat for the Sonoma tree vole by providing forest canopy and habitat connectivity to off-site portions of Bishop pine forest in the future.

2.3. Present and Potential Adverse Biological Impacts on the Ecosystem

2.3.1. Plants and Wildlife

Bishop pine forest (*Pinus muricata* G3S3)
A significant proportion of the proposed development is located within the Bishop pine forest and there are approximately 18 live trees that would need to be removed from areas of Bishop pine forest as a part of this project. Some but not all of the trees within an area making up about 19% of the Bishop pine forest mapped within the study area will be removed due to the hazard they pose to the existing development, the potential hazard they would pose to the proposed development, or in order to accommodate septic leach lines. The removal of trees will reduce the overall canopy cover, change shading and microclimate and understory composition, as well as affecting the immediate habitat in other ways. There is a potential to have an impact on nesting birds if development occurs during the breeding season. See **Section 7** of the Biological Report for ways to mitigate potential impacts to nesting birds.

Sonoma tree vole (*Arborimus pomo* G3S3) (Species of Special Concern)
The Bishop pine forest is presumed to support Sonoma tree voles which may depend on the trees present for food, shelter, cover and to provide a microclimate suitable for them by influencing temperature, humidity and wind. Mitigation measures include: removing the least number of native coniferous trees as possible, replacing Bishop pine trees at a 1:1 ratio while taking habitat connectivity into consideration, and consulting with CDFW to determine appropriate additional recommendations and/or measures.

3. Analysis

3.1. Alternatives to the Proposed Development

Alternative locations for the components of this proposed developments are very limited. While the parcels total just less than 3 acres, only ~1.5 acres are above the bluff edge and the geotechnical bluff setback further reduces the buildable area present. Only one location for the primary and replacement leach fields was found to be appropriate by the septic designer. Limited underground water resources resulted in four test wells being dug for the property, three of which will be used to produce adequate water. The presence and use of the wells further limit the available area for appropriate septic system locations. A stream flows from offsite through a culvert from the northeast side of the 500D Road, runs through the middle of the parcel and outlets as a stream on the western edge of the parcel. Some wetland field indicators are present within the swale that probably once contained the stream before it was directed through the culvert. This wetland, stream, and riparian area presumed ESHA occupies much of the center of the parcel. Bishop pine forest, which is also presumed to be habitat for Sonoma tree vole, is the primary overstory vegetation in much of the remainder of the parcel away from the wetlands. Alternatives were considered and explored but keeping the proposed development primarily within the already developed area is clearly the least impacting alternative:

- The **proposed project** is to demolish the existing garage/shop structure and build the proposed single-family residence in the space where the garage/shop was, extending into the

existing landscaped courtyard to the garage/shop's east. The existing single-family residence will be demolished, and this area will be used as a staging area for construction and then will be used as a personal vegetable and herb garden near the new SFR location. A guest house is proposed in an area outside of the Bishop pine forest and further than 50ft from the delineated wetland. The proposed septic system will be installed within the Bishop pine forest but will not require the removal of the trees within the forest. The proposed septic system is an 'at-grade' system which will be built above the existing soil and therefore not involve trenching that would cut tree roots.

- An alternative considered (**Alternative A**) would be to build the residence in the middle of the parcel in an area vegetated primarily with non-native invasive Himalayan blackberry, but this is the area that was delineated as wetland and riparian habitat, which is generally considered to be more sensitive to disturbance than upland plant communities such as Bishop pine forest, reflected in the fact that upland plant community ESHAs are not explicitly named or addressed in the County's ESHA definition or Local Coastal Plan.
- Another alternative considered (**Alternative B**) was to build within the area to the north of the wetland, but this area is much too small to accommodate the proposed development. The area outside of 50ft wetland buffers on the northern end of the parcel is only ~5,250ft^2 and is too narrow to propose the residence in, therefore much of the proposed development would need to be within 50ft of the wetlands in order to fit north of the stream.

Wynn Coastal Planning & Biology planners have reviewed 28 other parcels and their associated development within the vicinity of 11800 500 D Road. Through a Takings Analysis they found that after the Mendocino County Coastal Zoning Code was certified, the average footprint of approved structures on surrounding properties is 3,500 ft^2 (SFRs, garages and accessory structures; excluding patios and decks).

As summarized above, the preferred alternative (proposed project) is to demolish the existing SFR and garage/shop structures and utilize this area as the primary project footprint. The current footprint of the pre-existing buildings within the study area is 2,069 ft^2, with an ~4,500ft^2 courtyard between them. The footprint of the proposed structures is 3,644 ft^2(SFRs, garages and accessory structures; excluding patios and decks).

By utilizing the existing building envelope developed with the SFR, landscaped courtyard, and garage/shop, the development impact would be limited to Bishop pine forest, rather than the other alternatives which would involve a new development within 50ft of a wetland and still have an impact to the Bishop pine forest. Much of the development proposed within the Bishop pine forest is the at-grade septic system which would not require the removal of tree canopy.

Alternative A would avoid most of the direct impact to the Bishop pine forest but only at the cost of direct impact to the delineated wetland and/or its 50ft buffer. "Wet" ESHA is generally considered to be of higher priority for protection.

Alternative B places the proposed development in the northwestern corner of the property. This option would not make use of the area where the majority of the existing development is already present, unless the guest cottage location were moved to that location. The septic system could not be built in the area where the existing SFR and garage/shop are, but the guest cottage could be because soils there have been disturbed and therefore no longer have the structure needed to accommodate infiltration. By building the proposed development in the northwestern corner, approximately the same total footprint would be developed as in the proposed project while leaving the pre-existing footprint in place. This roughly doubles the footprint of developed area as compared to the proposed project. In addition, Alternative B would put the development well within the buffer of areas of delineated and presumed Coastal Act wetland. As wetland/riparian resources tend to be the most sensitive, this is not the least environmentally impacting option. If the single family residence were built in the northern end of the parcel, fewer Bishop pine trees would need to be removed from the southern portion of the parcel but additional trees would need to be removed from the northern portion of the parcel which includes Bishop pine trees contiguous with the Russian Gulch State Park. Sonoma tree voles and Bishop pine forest may be better served if additional Bishop pine trees were planted in the northern end of the parcel

as proposed as mitigation for the proposed project. The proposed project is the least impacting alternative.

4. MITIGATION AND AVOIDANCE MEASURES

Mitigation measures for the Bishop Pine forest have been proposed in the 2024 Biological Scoping and Botanical Survey Report. Avoidance, minimization, and compensatory mitigation measures to protect Bishop pine forest and the Sonoma tree voles presumed to live in the canopy of Bishop pine trees include: Removing the least amount of trees necessary, replacement of trees cut within the Bishop pine forest at a ratio of at least 1:1 and removal of non-native invasive plants within the Bishop pine forest. WCPB also recommends a Bishop pine forest active management plan and consultation and cooperation with CDFW to determine additional Sonoma tree vole protection measures. The report also makes recommendations for mitigation measures to avoid impacts to birds, bats and amphibians.

4.1. Dredging

N/A

4.2. Filling

N/A

4.3. Diking

N/A

4.4. Mud Waves

N/A

4.10 High Tide Benchmarks

N/A

4.11 Governmental Approvals

N/A

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6. Investigator Biographies

Asa B Spade has over 15 years of experience surveying for special status natural resources in coastal Mendocino county. He 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. 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 Alverez 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 250 coastal development projects in Mendocino County.

LAWRENCE
& ASSOCIATES
ENGINEERS & GEOLOGISTS

June 24, 2025 023029.01

Mr. Andy Christensen
7944 Dante Drive
Littleton, CO 80125

SUBJECT: EVALUATION OF POTENTIAL WELL-PUMPING EFFECT ON WETLANDS, 11800 ROAD 500D, MENDOCINO, CALIFORNIA

INTRODUCTION

This letter presents the results of an evaluation of the potential effect of pumping Wells #1 and #2 on water level in the wetland to the south of the wells (Text Figure 1, p. 2). Per an email from Ms. Meghan Durbin of Wynn Coastal Planning, the California Coastal Commission (CCC) had the following question:

> 5. **Effects of Groundwater Withdrawal on Adjacent Wetlands.** What analysis, if any, has been conducted to date to evaluate potential effects to the wetland that could be caused by operating the well field in such close proximity to the wetland? In particular, the project should evaluate whether the use of the well field in close proximity to the wetland could result in groundwater drawdown that could interfere with the hydrology supporting the wetland feature, and identify measures that will be undertaken to ensure drawdown impacts on groundwater supply do not adversely affect wetlands.

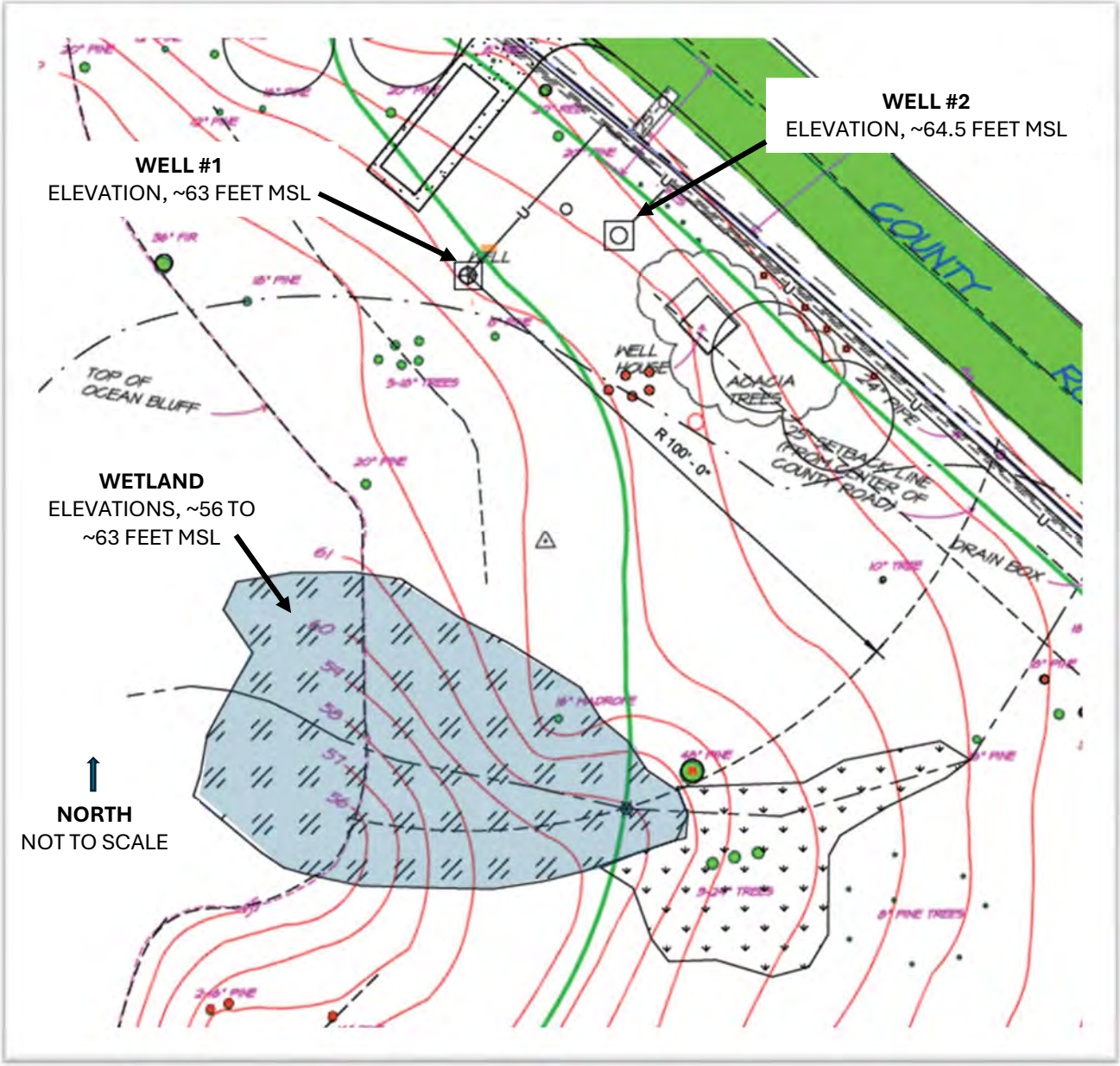
SUMMARY

To evaluate whether pumping Wells #1 and #2 would affect water levels in the wetland, it is necessary to compare (1) the water surfaces in wells vs. that of the wetland and (2) the saturated zones that provide water to the wells vs. that of the wetland.

Comparing the static water level in the wells to that of the wetlands shows that the well water level is approximately 8 to 18 feet below that of the wetland.

More importantly, the zone that supplied Well #2 with water is at an elevation of approximately -50 feet MSL, or more than 100 feet below the wetland. Although there is no log for Well #1, it is likely that it is supplied by a zone of similar elevation. The saturated zones that supply the wells are not hydraulically connected to the wetland.

Therefore, pumping of Wells #1 and #2 will not affect the water level in the wetland because the wells pump from a zone that is not hydraulically connected to the wetland.



TEXT FIGURE 1
PORTION OF SITE PLAN SHOWING WELL LOCATIONS, WETLANDS, AND GROUND-SURFACE ELEVATION CONTOURS
PROVIDED BY CLIENT

DISCUSSION

To evaluate whether pumping Wells #1 and #2 would affect water levels in the wetland, it is necessary to compare the relative elevations of (1) the water surfaces in wells and wetland and (2) the saturated zones that provide water to the wells vs. that of the wetlands.

Water levels in Well #1 and #2 were at 21.10 and 16.85 feet below ground surface bgs in August 2023. In February 2006 the water level in Well #1 was at 18 feet bgs. The approximate elevations of Wells #1 and #2 are 63 and 64.4 feet MSL. Subtracting the depth to water from the ground-surface elevations gives water-level elevations of approximately 45 to 48 feet MSL.

Well #1 has no log available and we do not know its stratigraphy or depth to first water (the saturated zone that provides water to the well). Based on a 2006 report (Carl Rittiman and Associates, Inc., February 24, 2006, *11800 Road 500 Water Quantity Evaluation*), Well #1 was drilled in 2002 to a depth of 236 feet bgs.

Well #2 was drilled in February 2023 to a total depth of 278 feet bgs and cased to 278 feet bgs. It has a 21-foot deep surface seal. The stratigraphy for Well #2 consisted of clay from ground surface to 19 feet bgs, "weathered sandstone" from 19 – 21 feet bgs, and hard rock below 21 feet. Depth to first water was 115 feet bgs (approximately -50 feet MSL).

The elevation of the wetlands ranges from 56 to 63 feet MSL. The depth of the wetted/saturated interval of the wetlands is not known, but it is likely that the water that supports the wetland is perched on the relatively low permeability soil at the site (clay and hard rock).

Comparing the static water level in the wells to that of the wetlands shows that the well water level is approximately 8 to 18 feet below that of the wetland.

More importantly, the zone that supplied Well #2 with water is at an elevation of approximately -50 feet MSL, or more than 100 feet below the wetland. Although there is no log for Well #1, it is likely that it is supplied by a zone of similar elevation.

Therefore, pumping of Wells #1 and #2 will not affect the water level in the wetland.

Please feel free to contact me at 530-275-4800 or blampley@lwrnc.com if you have any questions regarding this report.

Sincerely,

Bonnie E. Lampley

Bonnie Lampley
Principal Hydrogeologist

CERTIFIED HYDROGEOLOGIST
BONNIE E. LAMPLEY
No. HG626
STATE OF CALIFORNIA

TAKINGS ANALYSIS

for

11800 Road 500D, Mendocino, CA 95460
APNs: 118-320-10, -11 and -12

Property Owners:
Andrew M. & Kirsten L. Christensen

December 27, 2024

Wynn Coastal Planning & Biology
703 North Main Street, Fort Bragg CA 95437
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December 27, 2024

Mendocino County Planning and Building Services
120 West Fir Street
Fort Bragg, CA 95437

RE: Takings Analysis for 11800 Road 500D, Mendocino (Christensen)

To Whom It May Concern:

To verify that the Christensens have a reasonable, financially-backed expectation to develop their property at 11800 Road 500D in Mendocino we have conducted a takings analysis to assist in the project review by the Mendocino County Planning Division.

To determine what level of development is reasonable, 28 nearby properties were researched. Properties included in this analysis were selected based primarily on also having required CDPs in order to develop, followed by their proximity to the subject parcel, and physical character. Please refer to the list of properties and satellite image map on pages 6-9 for an inventory of the selection.

Individual property development data was obtained by requesting property characteristic information sheets from the Mendocino County Assessor's office and reviewing permit records on the County's digital database available through the eTrakit website. When complete data about any individual property was not available through those mediums, the CDP archive files kept by Planning & Building Services were reviewed in person.

Please refer to the data table on pages 4-5 for a compilation of individual property detail as well as the resulting average size of development footprints in square footage and lot coverage percentages. Within that table the summary data is categorized by regulation eras, i.e. pre-Coastal Act, post Coastal-Act/pre-LCP, post LCP, and the modern era of post Mendocino County Coastal Zoning Ordinance.

It is important to pay special attention to the data category of post-Mendocino County Coastal Zoning Ordinance, i.e. projects approved in 1992 and later because projects approved in that era were subject to the same regulations applicable today. Within this category the following results were derived:

- The average footprint of a single family residence on surrounding properties is 2,444 square feet.
    - The footprint of the proposed SFR is **less than average** at 1,977 square feet.

- The average footprint of a garage on surrounding properties is 774 square feet.
    - The footprint of the proposed garage is **less than average** at 624 square feet.

- The average footprint of accessory structures on surrounding properties is 282 square feet.
    - The footprint of the accessory structures for the project is **more than average** at 1,043 square feet. However, it is pertinent to point out that the footprint of accessory structures on the subject property includes 303 square feet of existing structures which will remain.
    - The footprint of all existing buildings on the subject parcel is 2,069 square feet.

- The average total footprint of structures on surrounding properties is 3,500 square feet.
    - The total structure footprint (existing + proposed) is 3,644 square feet gross, which is only 144 square feet larger than the average footprint on surrounding properties.
    - The total structure footprint includes 303 square feet of existing structures which will remain. Hence, the **total footprint of <u>proposed</u> structures is less than average** at 3,341 square feet.

- **The average total lot coverage of structures on surrounding properties is 3.45%.**
    - **The project's proposed total lot coverage of structures is less than average at 2.99%.**

It is reasonable to expect that this property can be developed in the manner proposed. It was developed with a residence and a variety of accessory structures in the 1960s-70s. Much of the previous development remains. Unfortunately, the existing development has fallen into disrepair and is uninhabitable. In 2021 a CDP application to demolish the existing development and rebuild a single family residence, including guest cottage and ancillary development was submitted (CDP_2021-0016). That application was reviewed extensively by the County and stakeholder agencies, resulting in the need to demonstrate the property has an adequate water supply to support new development. In December of 2022, CDP_2022-0033 was approved to drill up to four test wells. At no time during the processing of either application was there an indication from Mendocino County or any stakeholder agencies that this property was undevelopable. As demonstrated by the data summary above the amount of proposed development is in scale with that of surrounding properties.

To determine whether or not the applicants have a financially-backed interest in developing the property a questionnaire detailing their amount of financial investment can be found on pages 10-11. Including costs during escrow, purchase, typical carrying costs, and expenses in pursuit of the proper entitlement permits for property development a total of $2,466,383 has been invested to date.

Thank you for your continued attention to this project. Please let me know if you have any questions or comments.

Sincerely,

Meghan Durbin, Senior Planner
meghan@wcplan.com
707-409-9597 direct

Year of CDP Approval	APN	House #	Street	Owner Name	Lot Size (Acre)	Bedrooms	SFR Footprint (Sq Ft)	Garage Footprint (Sq Ft)	Additional Buildings Footprint (Sq Ft)	Total Structure Footprint (Sq Ft)	Structure Lot Coverage (%)
1959	118-320-03-00	11700	Road 500D	Moeller, Mire TTEE	0.20	2	810			810	9.30%
1941 1969	118-320-05-00	12700	Hwy 1	Hathaway Brook J & Linda L Prizmich Robyn	0.68	1	1293	475	384 360 864	3376	11.40%
2001	119-010-48	11500	Rd 500D	Kelada Joe Youssry	2.00		3275	656	100	4031	4.63%
2007	118-290-70-00	11990	Leafwood Dr.	Caccamo Roberto & Oga A	0.64	3	3300	690 217		4207	15.09%
2021	118-290-71	11980	Leafwood Drive	Aaron & Kimberly Speer	0.96	3	3400	1000		4400	10.52%
2002	118-330-54	44901	Baywood	Thomas Carole Anne ttee	1.01	3	1948	528 220	208 130	3034	6.90%
2002	118-330-53	44891	Baywood	CA General Partnership/Richard Manila	0.92	3	3000	570	100	3670	9.16%
2004	118-330-49	44841	Baywood	Ken & Nancy Simpkins	1.15	2	1739	528	120	2387	4.77%
2006	118-330-50	44851	Baywood	Martin, Michael & Yasmine R	1.11	3	3525	966	96	4587	9.49%
1990	118-330-58	11501	Hwy 1	Oday Kirk & Linda Zurl TTEES	1.07	1	1440	728 1938	96 64	4266	9.15%
2005	118-330-57	44791	Baywood Drive	Walter & Gail Boyle	1.86	3	1351	502		1853	2.29%
2000	118-330-43	44781	Baywood	Christofferson, Robert M & Gayla A TTEES	1.44	3	2522	1077		3599	5.74%
2008 2019	118-330-21	44710	Rosewood Terrace	Darlene Wescombe	1.52	4	1206	1280		2486	3.75%
1937	119-030-02	11250	Lansing	Brath Willima & Marilyn S	1.40	2	1039	360	360	1759	2.88%
1981	119-030-15	11080	Lansing	Landles-Cobb and Landles-Dowling	4.20	2	1315	616		1931	1.06%
2002	119-060-26	11050	Lansing Street	Sue Ellen & Jan Eric Bolt	0.54	3	3139	838		3977	16.91%

Year of CDP Approval	APN	House #	Street	Owner Name	Lot Size (Acre)	Bedrooms	SFR Footprint (Sq Ft)	Garage Footprint (Sq Ft)	Additional Buildings Footprint (Sq Ft)	Total Structure Footprint (Sq Ft)	Structure Lot Coverage (%)
1981	119-060-28	11000	Lansing Street	Harbitter	0.74	3	2343	768		3111	9.65%
1982	119-320-01	9600	Hwy 1	Ballinger David Gordon	1.65	2	1678	440 624		2742	3.82%
2007	119-320-04	9401	Road 500B	Hable TTEE Mary	1.62	2	3971	561		4532	6.44%
2003 res 1 2010 res 2	119-340-18	9350	Hwy 1	Williamstown Friendly Village Partners	4.98	2	1699 1108	0 at res 1 910	72 64	3853	1.78%
1969 res 1 1998 res 2	119-330-06	45180	Chapman	McMillan Sharon	1.00	2 1	1523 647	240	147	2557	5.87%
1972	119-330-03	45200	Champan	Ringer Daniel & Laura A	0.97	1	720	360	252 526	1858	4.40%
1964 1967	119-330-02	45250	Chapman	Heim Hans + Easton Carol res #2	1.00	1 1	1432 800	440	78	2750	6.31%
2006	119-330-11	45300	Chapman Road	Little Valley Real Estate	5.01	3	1065	576	960	2601	1.19%
2009	119-330-27	45480	Chapman Road	45480 LLC	6.12	3	1803	624	100	2527	0.95%
1989	119-330-21	45400	Chapman Road	Hyneman James	5.00	1	2516	528		3044	1.40%
2000	119-330-22	45380	Chapman Road	Greenling LLC	5.00	1	678	0		678	0.31%
1996	119-330-23	45350	Chapman Road	Greenling LLC	5.05	2	3100	640	144 578	4462	2.03%

		AVERAGES						
REGULATION ERA	**YEAR APPLICABLE**	**LOT SIZE**	**BEDROOMS**	**SFR FOOTPRINT**	**GARAGE FOOTPRINT**	**ADD'L BUILDINGS FOOTPRINT***	**TOTAL STRUCTURE FOOTPRINT**	**STRUCTURE LOT COVERAGE (%)**
all surrounding properties in analysis	all years	2.10	2	2121	765	387	3273	3.58%
post Mendocino County Zoning Ordinance	**1992 and later**	**2.33**	**3**	**2444**	**774**	**282**	**3,500**	**3.45%**
post Local Coastal Plan	1985 and later	2.40	2	2398	746	283	3427	3.28%
post Coastal Act - pre Local Coastal Plan	1976-1984	2.20	2	1779	816	-	2595	2.71%
pre Coastal Act	pre-1976	1	2	1059	409	594	2062	5.57%
11800 Road 500D	**CHRISTENSEN**	**2.80**	**3**	**1977**	**624**	**1,043**	**3644**	**2.99%**

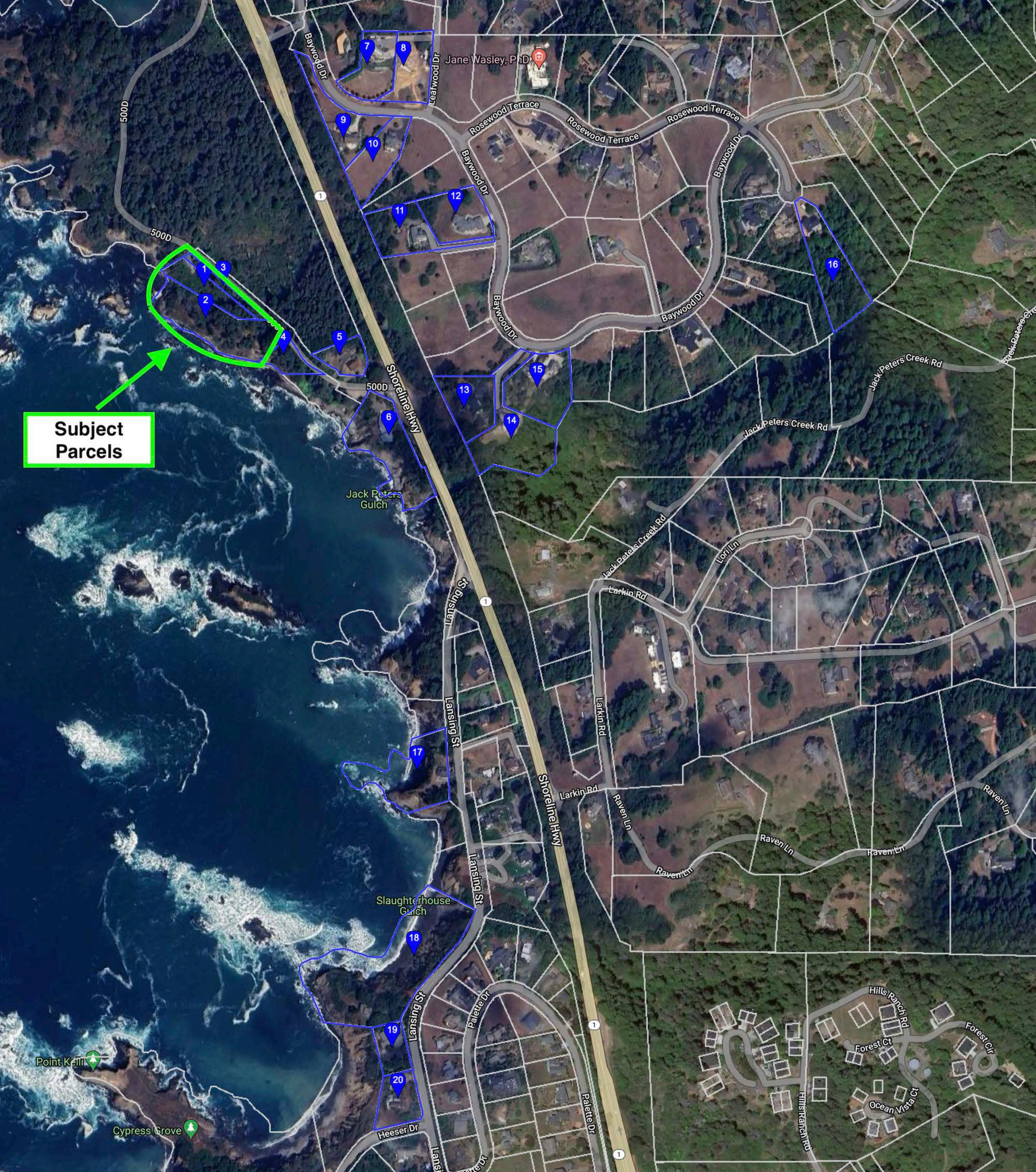
**add'l buiding footprint includes 303 sq ft of existing structures*

PARCELQUEST
LIST 0
DETAIL

		APN	Owner	Impr. Value	Situs City	Situs State	Situs House#	Situs Street	Homeowner Exempt.	Lot Acres	Lot SqFt	Mail Address
☑	1	118-320-10-00	CHRISTENSEN TTEE ANDREW M CHRISTENSEN TTEE KIRSTEN L	$10,935	MENDOCINO	CA	11800	RD 500 D	N	0.600	26,136	7944 DANTE DR
☑	2	118-320-11-00	CHRISTENSEN TTEE ANDREW M CHRISTENSEN TTEE KIRSTEN L	$54,681	MENDOCINO	CA	11800	RD 500 D	N	0.400	17,424	7944 DANTE DR
☑	3	118-320-12-00	CHRISTENSEN TTEE ANDREW M CHRISTENSEN TTEE KIRSTEN L	$3,280	MENDOCINO	CA	11800	RD 500 D	N	0.200	8,712	7944 DANTE DR
☑	4	118-320-03-00	MOELLER MIRA TTEE 1/3 ERIKA SIGRID	$37,694	MENDOCINO	CA	11700	RD 500 D	N	0.200	8,712	61 SEQUOIA RD
☑	5	118-320-05-00	BALDERSTON DANIEL E	$75,486	MENDOCINO	CA	12700	HWY 1	N	0.491	21,425	PO BOX 296
☑	6	119-010-48-00	KELADA JOE YOUSSRY	$642,286	MENDOCINO	CA	11500	RD 500 D	N	1.818	79,203	1548 VISTA RIDGE WAY
☑	7	118-290-70-00	CACCAMO ROBERT R & OLGA A	$718,375	MENDOCINO	CA	11990	LEAFWOOD	N	0.989	43,110	11990 LEAFWOOD DR
☑	8	118-290-71-00	SPEER AARON DALE & KIMBERL		MENDOCINO	CA	11980	LEAFWOOD	N	0.964	42,002	1965 MORELLO AVE
☑	9	118-330-54-00	THOMAS CAROLE ANNE TTEE	$656,187	MENDOCINO	CA	44901	BAYWOOD	Y	1.010	43,995	44901 BAYWOOD DR
☑	10	118-330-53-00	UNLAND TTEE MICHAEL S KAPTAIN TTEE MARY ANN		MENDOCINO	CA	44891	BAYWOOD	N	0.920	40,075	5363 MOUNTAIN SPRINGS RANCH RD
☑	11	118-330-49-00	BAER TTEE LINDA BARNES	$745,044	MENDOCINO	CA	44841	BAYWOOD	Y	1.150	50,093	44841 BAYWOOD DR
☑	12	118-330-50-00	MARTIN MICHAEL J & YASMINE	$729,097	MENDOCINO	CA	44851	BAYWOOD	Y	1.110	48,351	44851 BAYWOOD DR
☑	13	118-330-58-00	GARCIA TTEE SHARON YVONNE GARCIA TTEE JERRY ALLEN	$517,358	MENDOCINO	CA	11501	HWY 1	Y	1.070	46,609	PO BOX 1106
☑	14	118-330-57-00	BOYLE WALTER A III BOYLE GAIL M		MENDOCINO	CA	44791	BAYWOOD	N	1.860	81,021	44791 BAYWOOD DR
☑	15	118-330-43-00	PARRY GORDON PARRY RENATE	$946,617	MENDOCINO	CA	44781	BAYWOOD	N	1.440	62,726	44781 BAYWOOD DR
☑	16	118-330-21-00	WESCOMBE DARLENE M TTEE		MENDOCINO	CA	44710	ROSEWOOD	N	1.520	66,211	PO BOX 168
☑	17	119-030-02-00	BRATH WILLIAM F & MARILYN	$344,176	MENDOCINO	CA	11250	LANSING	N	1.748	76,182	1534 MONTE VIENTO DR
☑	18	119-030-15-00	LANDLESCOBB TTEE MARY LANDLESDOWLING TTEE BONNIE	$110,794	MENDOCINO	CA	11080	LANSING	N	4.237	184,589	169 THE ALAMEDA

^^ Subject Parcels ^^

	Id	APN	Owner	Impr. Value	Situs City	Situs State	Situs House#	Situs Street	Homeowner Exempt.	Lot Acres	Lot SqFt	Mail Address
☑	19	119-060-26-00	BOLT SUE ELLEN & JAN ERIC	$1,072,201	MENDOCINO	CA	11050	LANSING	N	0.543	23,670	3245 COBBLESTONE DR
☑	20	119-060-28-00	HARBITTER TTEE ALAN HARRIS	$367,569	MENDOCINO	CA	11000	LANSING	N	0.738	32,156	1334 41ST AVE
☑	21	119-320-01-00	BALLINGER DAVID GORDON	$234,090	MENDOCINO	CA	9600	HWY 1	N	1.654	72,089	154 CORBETT AVE
☑	22	119-320-04-00	HABLE TTEE MARY R	$1,096,819	MENDOCINO	CA	9401	RD 500B	N	1.615	70,369	32 WISTERIA DR
☑	23	119-340-18-00	WILLIAMSTOWN FRIENDLY VILL	$1,461,135	MENDOCINO	CA	9350	HWY 1	N	4.980	216,928	422 S BURLINGAME AVE
☑	24	119-330-06-00	MCMILLAN SHARON T TTEE	$539,252	MENDOCINO	CA	45180	CHAPMAN	N	1.000	43,560	2192 BLUE HERON LOOP
☑	25	119-330-03-00	RINGER DANIEL A & LAURA A	$184,825	MENDOCINO	CA	45200	CHAPMAN	N	0.974	42,461	1056 COUNTRY CLUB DR
☑	26	119-330-02-00	HEIM HANS G TTEE EASTON CAROL L TTEE	$382,776	MENDOCINO	CA	45250	CHAPMAN	N	1.000	43,560	PO BOX 238
☑	27	119-330-11-00	LITTLE VALLEY REAL ESTATE	$932,683	MENDOCINO	CA	45300	CHAPMAN	N	5.010	218,235	1075 E 20TH ST
☑	28	119-330-27-00	45480 LLC	$911,372	MENDOCINO	CA	45480	CHAPMAN	N	6.120	266,587	GENERAL DELIVERY
☑	29	119-330-21-00	HYNEMAN JAMES F TTEE WALSH EILEEN X TTEE	$804,152	MENDOCINO	CA	45400	CHAPMAN	N	5.000	217,800	PO BOX 1186
☑	30	119-330-22-00	GREENLING LLC	$325,963	MENDOCINO	CA	45380	CHAPMAN	N	5.000	217,800	901 BRUCE RD
☑	31	119-330-23-00	GREENLING LLC	$2,959,024	MENDOCINO	CA	45350	CHAPMAN	N	5.010	218,235	901 BRUCE RD STE 130


Subject Parcels
Jane Wasley, PhD
Baywood Dr
Leafwood Dr
Rosewood Terrace
500D
Shoreline Hwy
Jack Peters Creek Rd
Jack Peters Gulch
Lori Ln
Larkin Rd
Lansing St
Raven Ln
Slaughterhouse Gulch
Palette Dr
Hills Ranch Rd
Forest Ct
Forest Cir
Ocean Vista Ct
Point Kelly
Cypress Grove
Heeser Dr
1
2
3
4
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6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Brewery Gulch Rd
Brewery Gulch Rd
21
Mendocino Grove
1
Brewery Gulch Rd
22
Brewery Gulch Rd
Miss Muffett Dr
Shoreline Hwy
28
29
23
30
Brewery Gulch Rd
26
25
24
31
27
Brewery Gulch
Chapman
Chapman
Chapman
Frontage Rd
1
Frontage Rd
Frontage Rd

Information Needed to Evaluate Project Consistency with Coastal Act Section 30010

If the proposed project cannot be found consistent with the ESHA and ESHA buffer policies of the certified Mendocino Local Coastal Program, the County of Mendocino may evaluate whether denial of the project would result in an unconstitutional taking of private property for public use.

In order to make that evaluation, the applicant provides the information below regarding the applicant's reasonable investment-backed expectations to utilize the property.

Owner: **Andy & Kirsten Christensen**
Site Address: **11800 Road 500D, Mendocino, CA 95460**
APN: **118-320-10, 118-320-11, 118-320-12**
Application #: **CDP_2021-0016**

1. When the property was acquired, and from whom;
   ⇒ ***September 15, 2023***
   ⇒ ***Camp Bedhead, LLC (Lavi Daniel)***

2. The purchase price paid for the property;
   ⇒ ***$2,200,000***

3. The fair market value of the property at the time it was acquired and the basis upon which fair market value was derived;
   ⇒ ***Purchased on the open market in 2023.***

4. Whether a general plan, zoning, or similar land use designations applicable to the property changed since the time the property was purchased. If so, identify the particular designation(s) and applicable change(s);
   ⇒ ***None***

5. At the time the property was purchased, or at any subsequent time, whether the project has been subject to any development restriction(s) (e.g., restrictive covenants, open space easements, etc.), other than the land use designations referred to in the preceding question;
   ⇒ ***None***

6. Whether the size or use of the property changed in any way since it was purchased. If so, identify the nature of the change, the circumstances and the relative date(s);
   ⇒ ***No***

7. Whether a portion of, or interest in, the property was sold or leased since the time the applicants purchased it, and the relevant date(s), sales price(s), rent assessed, and the nature of the portion or interest sold or leased;
   ⇒ ***No***

8. A copy of any title report, litigation guarantee or similar document that might have been prepared in connection with all or a portion of the property, together with a statement of when the document was prepared and for what purpose (e.g., refinancing, sale, purchase, etc.);
   ⇒ ***Please see Preliminary Title Report attached.***

9. The approximate date and offered price of any offers to buy all or a portion of the property since the time the applicants purchased the property;
   ⇒ ***None.***

10. The costs associated with ownership of the property on an annualized basis for the last five calendar years. These costs should include, but not necessarily be limited to, the following:
    - property taxes
    - property assessments
    - debt service, including mortgage and interest costs; and
    - operation and management costs; and

    ⇒ ***Annualized costs of ownership 2024-2025 (actual and projected) = $26,000+/year***
      - ***Property taxes will increase by at least 1% ($2,400+) each year, based on state and county tax regulations***
      - ***Upon development property taxes will increase significantly when Mendocino County reassesses the improvement value***
      - ***Operation and management costs are also expected to increase as improvements are completed***

    ⇒ ***Total investment to date through year end 2024 = $266,383***

11. Whether apart from any rent received from leasing all or a portion of the property (see question #7 above), current or past use of the property generates any income. If the answer is yes, the amount of generated income on an annualized basis for the past five calendar years and a description of the use(s) that generates or has generated such income.
    ⇒ ***No income generated.***

Redwood Empire Title Company of Mendocino County

221 East Pine Street
Fort Bragg, CA 95437
Phone: (707)964-8666 • Fax: (707)409-6305

Our No.: **20221399MN**
Your No.:
Seller: **Camp Bedhead LLC, a California limited liability company**
Buyer: **Andrew M. Christensen. Trustee of the Andrew M. Christensen Revocable Trust, dated 10/29/2014 and Kirsten L. Christensen. Trustee of the Kirsten L. Christensen Revocable Trust, dated 10/29/2014**

When replying Please Contact:
ESCROW OFFICER: **Mandy Niesen**
mniesen@redwoodtitle.com

2nd UPDATED PRELIMINARY REPORT

Property Address: **11800 Road 500 D, Mendocino, CA 95460**

In response to the above referenced application for a policy of title insurance, **Redwood Empire Title Company of Mendocino County** hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a Policy or Policies of Title Insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an Exception below or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations of said Policy forms.

The printed Exceptions and Exclusions from the coverage and Limitations on Covered Risks of said Policy or Policies are set forth in Exhibit A attached. Copies of the Policy forms should be read. They are available from the office which issued this report.

Please read the exceptions shown or referred to below and the exceptions and exclusions set forth in Exhibit A of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters which are not covered under the terms of the title insurance policy and should be carefully considered.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects and encumbrances affecting title to the land.

This report (and any supplements or amendments hereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance, a Binder or Commitment should be requested.

Dated as of August 28, 2023 at 07:30 AM.

Steve Burlesci
Chief Title Officer

sburlesci@redwoodtitle.com

The form of policy of title insurance contemplated by this report is:
CLTA Standard 1990 Owners Policy
Underwritten by Old Republic National Title Insurance Company

SCHEDULE A

1. The estate or interest in the land hereinafter described or referred to covered by this Report is:

   a Fee

2. Title to said estate or interest at the date hereof is vested in:

   Camp Bedhead LLC

3. The land referred to in this report is situated in the State of California, County of Mendocino and is described as follows:

   Tract One:

   Beginning at a point in the legal subdivision line running East and West through the center of Section Nineteen (19), Township Seventeen (17) North, Range Seventeen (17) West, Mount Diablo Meridian, distant 4 chains West from the intersection of the fence line between Christensen Ranch (formerly Gray Ranch) and Forster lot with the Westerly line of old coast road; thence from such point of beginning running North 64° West 52 links; thence North 59° West 2 chains; thence North 53° West 1 chain, 67 links; thence North 49 1/2° West 1.80 chains; thence North 87 3/4° West 2.19 chains; thence North 57 3/4° West 3 chains, more or less, to shore line of the Pacific Ocean; thence on such shore line and following its meanders Southerly and Easterly to a point where the legal subdivision line running East and West through the center of said Section 19 intersects such shore line; and thence Easterly along said legal subdivision line to the point of beginning. Conveying and meaning to convey that tract conveyed by Leonard Gray to Wm. Heeser by Deed dated May 4th, 1892 and recorded in Liber 56 of Deeds at page 526, Mendocino County Records, excepting such portion of such tract as was conveyed by A. A. Heeser to County of Mendocino for right of way by Deed dated February 6th, 1911 and recorded in Liber 118 of Deeds at page 114, Mendocino County Records.

   APN: 118-320-11

   The above description is pursuant to Certificate of Compliance recorded December 5, 2001 as 2001-23715, Mendocino County Records.

   Tract Two:

   Beginning on the ocean shore at the Northwest corner of the parcel of land conveyed by Leonard Gray to William Heeser by Deed dated May 4th, 1892 and recorded in Liber 56 of Deeds at page 526, Mendocino County Records; thence from such point of beginning on the boundary of such parcel of land heretofore conveyed, South 57 3/4° East 3 chains, more or less, to a corner in such boundary; thence South 87 3/4 ° East 2. 19 chains; thence leaving such boundary and running North 49 1/2° West 6 chains and 55 links to a point near the brow of the bluff on the ocean bank from which point a conical shaped rock in ocean bears South 62 1/2° West; thence South 62 1/2° West about 2 chains, more or less, to shore line of the Pacific Ocean; thence on such shore line and following its meanders Southerly and Easterly to the point of beginning, conveying and meaning to convey the tract conveyed by Charles T. Gray to William Reeser by Deed dated December 23rd, 1901 and recorded in Liber 86 of Deeds at page 28, Mendocino County Records.

   APN: 118-320-10

   The above description is pursuant to Certificate of Compliance recorded December 5, 2001 as 2001-23716, Mendocino County Records.

   Tract Three:

   That certain lot or parcel of land lying North of Jack Peters Gulch and the Town of Mendocino, in the County of Mendocino, State of California which is particularly described as follows to wit:

Beginning at the most Northerly corner of the.third tract described in Deed from August Alfred Reeser to Charles D. Wehr dated September 5th, 1933, recorded in Liber 83 of Official Records, page 352, Mendocino County Records, as a point on the brow of the bluff on the ocean bank, from which a conical shaped rock in the ocean bears South 62 degrees 30 minutes West 1 the said point of beginning being marked with a large iron pipe; thence from such point of beginning South 49 degrees 30 minutes East 551 feet; thence South 53 degrees East 110.2 feet to the West line of the Coast Highway; thence along the West line of the Coast highway North 37 degrees West 110 feet; thence North 48 degrees West 484.5 feet; thence North 64 degrees 45 minutes West 72 feet; thence North 71 degrees West 100 feet; thence South 56 degrees 45 minutes West 94 feet to the point of beginning.

Excepting therefrom all that portion conveyed in the Deed from Lester W. Helfer and Charlotte J. Helfer to Francis C. LaJeunesse and Jennie Marie LaJeunesse recorded November 15, 1955 in Book 413 of Official Records at page 533, Mendocino County Records.

APN: 118-320-12

The above description is pursuant to Certificate of Compliance recorded December 5, 2001 as 2001-23717, Mendocino County Records.

SCHEDULE B

At the date hereof exceptions to coverage in addition to the printed Exceptions and Exclusions in the said policy form would be as follows:

1. Taxes and assessments, general and special, for the fiscal year 2023- 2024, a lien not yet due or ascertainable.

2. The lien of supplemental taxes, if any, assessed pursuant to the provisions of Section 75, et seq. of the Revenue and Taxation Code of the State of California.

3. Any adverse claim based upon the assertion that some portion of said land is tide or submerged land or has been created by artificial means, or has accreted to such portion so created.

4. Such rights and easements for commerce, navigation, fishery, and recreation, which may exist over that portion of said land lying below the high water mark of Pacific Ocean.

5. (a) Any adverse claim based upon the assertion that some portion of said land has been created by artificial means, or has accreted to such portion so created; some portion of said land has been brought within the boundaries thereof by an avulsive movement of Jack Peters Gulch, or has been formed by accretion to any such portion.

   (b) Any easement for water course over that portion of said land lying within the banks of Jack Peters Gulch and any changes in the boundary lines of said land that have occurred or may hereafter occur from natural causes.

   (c) Rights and easements for navigation and fishery which may exist over that portion of said land lying beneath the waters of Jack Peters Gulch.

6. Rights of the public, County and/or City, in and to that portion of said land lying within the lines of any public road or highway.

7. Any facts, rights, interests or claims that may exist or arise by reason of matters, if any, disclosed by that certain Record of Survey filed October 30, 1964 in Map Case 2, Drawer 3, Page 38, Mendocino County Records.

8. Deed of Trust to secure an indebtedness of the amount stated below and any other amounts payable under the terms thereof,
   Amount : $925,000.00
   Trustor/Borrower : Camp Bedhead LLC, a California Limited Liability Company
   Trustee: PLM Loan Management Services, Inc.
   Beneficiary/Lender: Secured Income Fund-II, LLC, a California Limited Liability Company
   Dated: July 27, 2017
   Recorded: August 1, 2017 as 2017-10123 of Official Records

   a. Modification/amendment of the terms of said Deed of Trust by an instrument,
      Entitled : Modification Agreement of Deed of Trust Securing a Promissory Note
      Recorded: November 28, 2022 as 2022-13072 of Official Records

   b. Notice of Default under the terms of said Deed of Trust,
      Executed By : PLM Loan Management Services, Inc.
      Recorded: June 22, 2023 as 2023-04864 of Official Records

9. Prior to the issuance of any policy of title insurance, the Company will require the following with respect to Camp Bedhead LLC, a California Limited Liability Company:
a. A copy of any management or operating agreements and any amendments thereto, together with a current list of all members of said LLC.
b. A certified copy of its Articles of Organization (LLC-1), any certificate of correction (LLC-11), certificate of amendment (LLC-2), or restatement of articles of organization (LLC-10).
c. Recording a certified copy of said LLC-1 and any "amendments thereto".

END OF SCHEDULE B

INFORMATIONAL NOTES:

1. Taxes and assessments, general and special, for the fiscal year 2022 - 2023, as follows
Assessor's Parcel No.: 118-320-10
Code No.: 104-004
1st Installment: $5,663.77, Paid
2nd Installment: $5,663.77, Paid

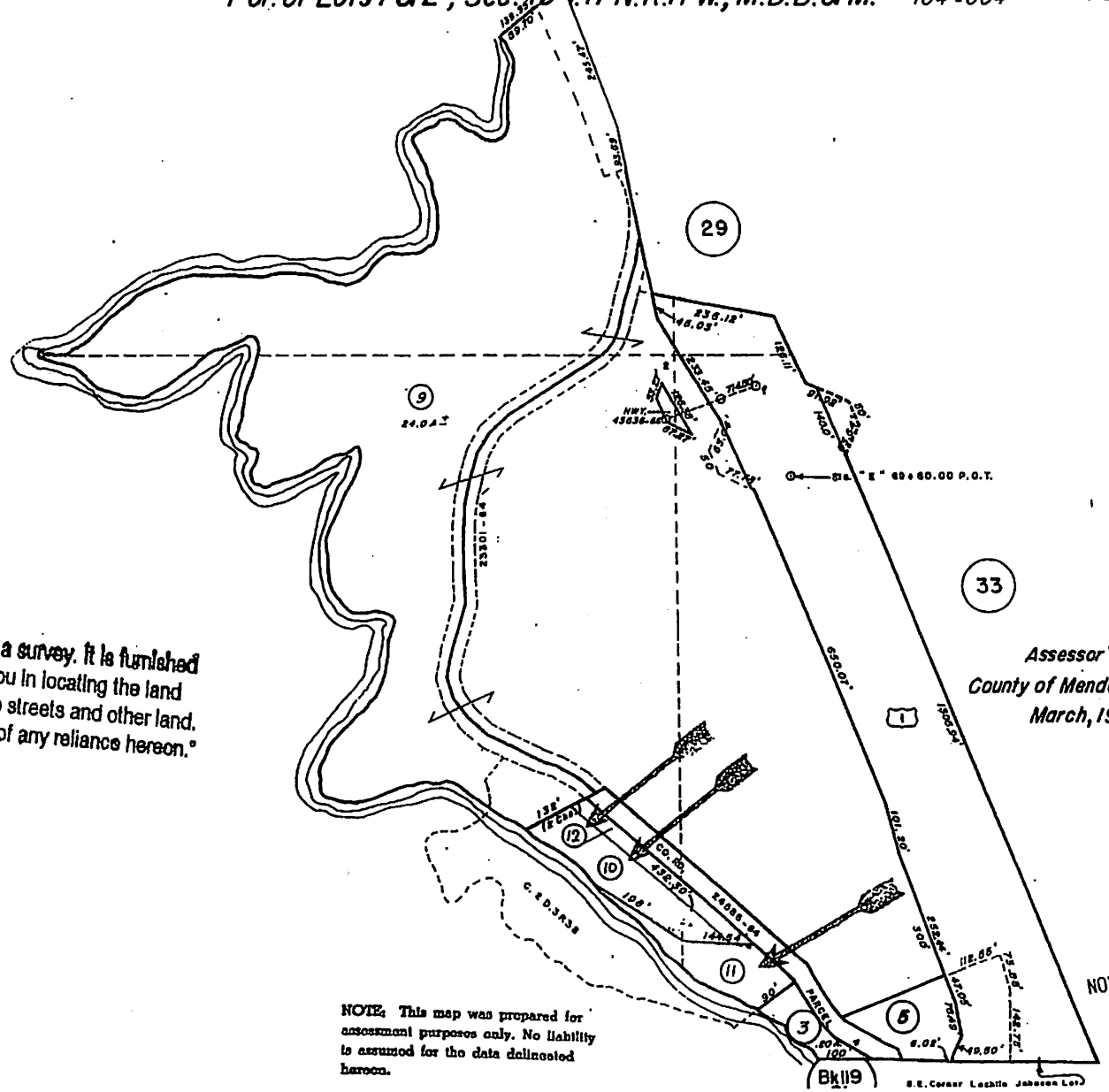
2. Taxes and assessments, general and special, for the fiscal year 2022 - 2023, as follows
Assessor's Parcel No.: 118-320-11
Code No.: 104-004
1st Installment: $6,288.83, Paid
2nd Installment: $6,288.83, Paid

3. Taxes and assessments, general and special, for the fiscal year 2022 - 2023, as follows
Assessor's Parcel No.: 118-320-12
Code No.: 104-004
1st Installment: $317.14, Paid
2nd Installment: $317.14, Paid

4. NOTE: According to the public records, there have been no deeds conveying the property described in this report recorded within a period of 24 months prior to the date hereof except as follows: NONE

5. NOTE: The CLTA 116 may describe the improvements as a single family residence known as 11800 Road 500 D, Mendocino, CA 95460.

Por. of Lots 1 & 2, Sec. 19 T.17N.R.17W., M.D.B.&M. 104-004 118-32



"Notice: This is neither a plat nor a survey. It is furnished merely as a convenience to aid you in locating the land indicated hereon with reference to streets and other land. No liability is assumed by reason of any reliance hereon."

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

NOV 2 1 2008

CLTA PRELIMINARY REPORT FORM (EXHIBIT A) (01-01-08)

CALIFORNIA LAND TITLE ASSOCIATION
STANDARD COVERAGE POLICY - 1990

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building or zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien, or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.

   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.

2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.

3. Defects, liens, encumbrances, adverse claims or other matters:

   (a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;

   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;

   (c) resulting in no loss or damage to the insured claimant;

   (d) attaching or created subsequent to Date of Policy; or

   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage or for the estate or interest insured by this policy.

4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable doing business laws of the state in which the land is situated.

5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.

6. Any claim, which arises out of the transaction vesting in the insured the estate of interest insured by this policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.

EXCEPTIONS FROM COVERAGE - SCHEDULE B, PART I

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

6. Any lien or right to a lien for services, labor or material not shown by the public records.

2006 ALTA LOAN POLICY (06-17-06)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to

   (i) the occupancy, use, or enjoyment of the Land;

   (ii) the character, dimensions, or location of any improvement erected on the Land;

   (iii) the subdivision of land; or

   (iv) environmental protection;

   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.

   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims, or other matters:
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.
6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
   (a) a fraudulent conveyance or fraudulent transfer, or
   (b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.
7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) that arise by reason of:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

2006 ALTA OWNER'S POLICY (06-17-06)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
      (i) the occupancy, use, or enjoyment of the Land;
      (ii) the character, dimensions, or location of any improvement erected on the Land;
      (iii) the subdivision of land; or
      (iv) environmental protection;

      or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters:
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
   (a) a fraudulent conveyance or fraudulent transfer; or
   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) that arise by reason of:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown in the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and that are not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

Privacy Statement
July 1, 2001

We recognize and respect the privacy expectations of today's consumers and the requirements of applicable federal and state privacy laws. We believe that making you aware of how we use your non-public personal information ("Personal Information"), and to whom it is disclosed, will form the basis for a relationship of trust between us and the public we serve. This Privacy Statement provides that explanation. We reserve the right to change this Privacy Statement from time to time consistent with applicable privacy laws.

In the course of our business, we may collect Personal Information about you from the following sources:

- From applications or other forms we receive from you or your authorized representative;
- From your transactions with, or from the services being performed by us, our affiliates, or others;
- From our Internet web sites;
- From the public records maintained by governmental entities that we either obtain directly from those entities, or from our affiliates or others; and
- From consumer or other reporting agencies.

Our Policies Regarding the Protection of the Confidentiality and Security of Your Personal Information

We maintain physical, electronic and procedural safeguards to protect your Personal Information from unauthorized access or intrusion. We limit access to the Personal Information only to those employees who need such access in connection with providing products or services to you or for other legitimate business purposes.

Our Policies and Practices Regarding the Sharing of Your Personal Information

We may share your Personal Information with our affiliates, such as insurance companies, agents, and other real estate settlement providers. We may also disclose your Personal Information:

- to agents, brokers or representatives to provide you with services you have requested.
- to third-party contractors or service providers who provide services or perform marketing or other functions on our behalf; and
- to others with whom we enter into joint marketing agreements for products or services that we believe you may find of interest.

In addition, we will disclose your Personal Information when you direct or give us permission, when we are required by law to do so, or when we suspect fraudulent or criminal activities. We may also disclose your Personal Information when otherwise permitted by applicable privacy laws such as, for example, when disclosure is needed to enforce our rights arising out of any agreement, transaction or relationship with you.

One of the important responsibilities of some of our affiliated companies is to record documents in the public domain. Such documents may contain your Personal Information.

Right to Access Your Personal Information and Ability to Correct Errors or Request Changes or Deletion

Certain states afford you the right to access your Personal Information and, under certain circumstances, to find out to whom your Personal Information has been disclosed. Also, certain states afford you the right to request correction, amendment or deletion of your Personal Information. We reserve the right, where permitted by law, to charge a reasonable fee to cover the costs incurred in responding to such requests.

All requests must be made in writing to the following address:

Privacy Compliance Officer
Redwood Empire Title Company
P.O. Box 238
Ukiah, CA 95482

Multiple Products or Services

If we provide you with more than one financial product or service, you may receive more than one privacy notice from us. We apologize for any inconvenience this may cause you.

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

SUBMITTAL

July 11, 2025

Planning & Building Services
752 South Franklin Street
Fort Bragg, CA 95437
ATTN: Jessie Waldman

RE: CDP_2021-0016 Response to CCC Project Commentary

Owner: Andrew M. & Kirsten L. Christensen

Site: 11800 Road 500D
Mendocino, CA 95460
APNs: 118-320-10, -11 and -12

Dear Jessie,

Thank you for your continued attention to this project. As a comprehensive response to in-person discussion during and after agency site visits on March 11th and April 15th, as well as written project commentary from CDFW, CCC, and County Planning staff, we offer an extensive slate of project revisions and responses in the narrative on the following pages. In support of the information provided, the following supplemental documents are also included in this submittal:

1. Updated Architectural Plan Set by Newberger & Associates *dated July 10, 2025*
2. Fire Prevention Vegetation Management Plan by WCPB/Newberger *dated July 10, 2025*
3. Structural Evaluation by Michael Butler, Civil Engineer *dated June 17, 2025*
4. Reference Project CDP_2017-0007 (Fallow) Staff Report *dated November 15, 2017*
5. Hefler Site Plan *undated*
6. Hanna-Dickson Testimony Letter *dated September 9, 2005*
7. Evaluation of Potential Well-Pumping Effect on Wetlands by Lawrence & Associates *dated June 24, 2025*
8. Geotechnical Investigation Memo by Brunsing & Associates *dated July 1, 2025*
9. CalFire Fire Safe Regulations Preliminary Clearance (CDF#59-25) *dated May 31, 2025*

Thank you,

Meghan Durbin

Encl: per above

CC: Andy & Kirsten Christensen (owners/applicants); Todd Newberger (architect); Mendocino County Planning; CDFW; file

Response to Project Commentary from Stakeholder Agencies
CDP_2021-0016 (Christensen)

Post Site Visit Discussion Points and Project Revisions

This property is on the cusp of irreversible invasives takeover. Wynn Coastal Planning & Biology has been conducting biological surveys on site since 2018, both for the current and previous property owners/applicants. Our Senior Biologist, Asa Spade, and CDFW Senior Environmental Scientist Specialist, Jennifer Garrison, have both remarked on multiple occasions that the intensity of the invasives spread over this approximately 7-year span of time is staggering. The entirety of the parcel is inundated with invasive plant species including Himalayan blackberry, English ivy, English holly, scotch broom, blackwood acacia, cotoneaster, Pampas grass, bull thistle, black mustard, wild radish, calla lily, African wood sorrel, fox glove and poison hemlock. Garrison estimates that invasive species constitute 40-65% of the vegetative cover on site.[1] The science indicates that, if left untouched, in the near future the numerous invasive plant species will be so well-established it will be effectively impossible to restore the habitat to its native state. Approving the currently proposed project is a gateway to resource-mindful restoration.

The Christensens are property owners who are willing to take on the formidable, arduous task and investment that will be necessary to restore the native environment and quell the invasives spread via long-range, consistent land management. This will involve hand removal of invasives and replanting trees, as well as planting and encouraging the understory of native shrubs and plants within the Bishop pine and/or Grand Fir alliance.

The Bishop pine forest has lost over 9,000 square feet of contiguous forest canopy since 2018 and, as a result, the presence of the Sonoma Tree Vole (STV). Indicators of STV that were observed in 2018/19 were absent when searched for again in 2024. The forest mitigation measures that are incorporated into this project will result in more canopy and the potential for STV to return to the site.

The timeliness of the proposed project provides a promising opportunity to affect change. When considering the question of 'what is the least environmentally damaging project?', one would be well-served to also ask 'what is the environmental value and benefit of allowing reasonably scaled new development as a means to require restoration of native habitat through conditions of approval?'. In other words, could approval of new development work as a countermeasure to 1) invasive, non-native plant species takeover?; and 2) the loss of Bishop pine forest?

In demonstration of the property owners' willingness to maximize conformity to the Mendocino County Local Coastal Program, and to illustrate that CDFW, CCC and County Planning comments are acknowledged and respected, we present the following selection of design refinements as illustrated on the revised drawing sheets (enclosed), dated 7/10/2025.

- The location of the Guest Cottage and its septic tank are reconfigured to eliminate the need for temporary construction encroachment into the 50-foot wetland buffer. The construction buffer of 6 feet, provided between the cottage and the 50-foot ESHA buffer line, is sufficient for construction access. (*See revised Sheets A1.2, A1.3 and A1.3b)*

[1] project commentary email '*CDFW comments on CDP_2021-0016 (Christensen)*' dated 4/28/2025

- The driveway is shifted to reduce the removal of live Bishop pines by four individual trees. Additionally, a single Bishop pine located between the proposed SFR and home garden area that was included in the trees to be removed shall now remain. (*See revised Sheets A1.3, A1.4 and L1.1)*

- In an effort to establish and encourage a diverse native plant community, the landscape plan is enhanced to include more extensive understory plantings in addition to the proposed native tree re-planting/enhancement. Per CDFW recommendation, given that the Bishop pine forest is dying out and transitioning to Grand Fir forest at this site and in surrounding areas, one third of the trees to be replanted are now proposed to be Grand Fir. Twelve (12) Bishop pine and six (6) Grand Fir will be planted. (*See revised Sheets A1.2, A1.3 and L1.1)*

- Per CDFW recommendation, the design of the property line fence parallel to Road 500D is updated to incorporate openings for wildlife access along both the top and bottom of the fence at 50-foot intervals, for its entire length. (*See revised Sheet A1.6)*

- Per CDFW recommendation, low symbolic fencing is added to the outside edge of the 50-foot buffer from wetland ESHA. (*See revised Sheets A1.2 and A1.3)*

- Additional revisions to the architectural plan set include the following:

    - Sheet A1.1: Cover Sheet - New plan sheets are added to the Drawing Index. Lot Coverage Analysis is reorganized and updated. Unconditioned area square footage calculation corrected.

    - Sheet A1.2: Site Plan
        - Encroachment locations and driving surface onto Road 500D conform to Mendocino County Department of Transportation (MenDOT) Road and Development Standards No. A51A.
        - Notes added to the proposed field entrance at the north end of the property indicating that the new gravel encroachment and existing gravel pad for the owner's temporary trailer will be removed upon completion of construction.
        - The proposed semi-transparent entry gate is located outside the 25' corridor preservation setback and required sight distance per MenDOT Std. No. A53.
        - The proposed semi-transparent fence along Rood 500D is located by variance request within the 25' corridor preservation setback, with required sight distances per MenDOT Std. No. A53.
        - The combined corridor preservation setback plus front yard setback line is illustrated. The proposed 10'x10' pump house, generator pad and 5'x12' woodshed are located by variance request within the front yard setback.
        - The fire stand-pipe adjacent the entry gate is relocated inside the fence and outside the County right-of-way. A second fire standpipe is added

at the pump house. Note, both fire standpipes are voluntarily included in this project and the 10,000-gallon water supply will be made available to fire fighters. This is specifically not required by CalFire. It is voluntarily provided.

- New Plan Sheet A1.3b: Construction Access Plan – illustrates requirement of the contractor to install temporary construction fencing located 1' outside and along the length of the 50' wetland ESHA buffer, the 50' ESHA seasonal cormorant nests buffer, and as shown on the plan sheet to limit access into the existing Bishop pine forest ESHA. Construction access beyond the construction fencing is prohibited except for limited access required for removal of trees, installation of the septic system, invasive plant removal and landscaping per landscape plan Sheet L1.1 and L1.2.

- New Plan Sheet A1.3c: Fire Safe Plan - illustrates the fire prevention vegetation management plan as well as defensible space standards and requirements within California Code of Regulations, Title 14 Fire Safe Regulations.

- Sheet A1.4: Grading Plan - "Guest Cottage Site Notes" are added, specifying the height of the cottage finish sub-floor and that no grading is required at the cottage site other than removal of topsoil and weak soil layer in cottage footprint in preparation for new foundation.

- Sheet A1.5: Site Details
  - Detail 3: Construction Barrier / Silt Fence: Per CDFW guidance, the requirement of a straw bale behind the fence and backfill trench to secure the fencing material in front of the fence are deleted. In place, a weed free coir roll in front of the fence is specified. No trenching is required, further protecting the adjacent ESHA buffer.
  - Detail 4: Pump House: The pump house orientation is revised so the doors open to the southwest.

- Sheet A2.3: Guest Cottage - The concrete walkway connecting the entry landing and patio is deleted. The entry landing size is minimized. (Note - the revision has no red clouds on the plan sheet.)

- Sheet E1.2: Exterior Lighting Plan – Select exterior lighting fixtures deleted. Those that remain are limited to only the minimum needed for safe ingress and egress. Exterior lighting is specified to be shielded and downcast.

As evidenced by the revisions described above, the property owners accept the CDFW recommendations detailed in the 4/28/2025 email *CDFW comments on CDP_2021-0016 (Christensen)* being incorporated into the project as conditions of approval.

CDFW project commentary also included recommendation to develop a Fire Prevention Vegetation Management Plan. Such a plan has been created and is enclosed with this

submittal. New plan Sheet A1.3c illustrates the detail of the Fire Prevention Vegetation Management Plan, as well as applicable fire safe regulations.

Response to CCC Project Commentary Email dated May 2nd, 2025

The May 2nd project commentary email from CCC staff was organized into seven numbered items/topics. The referenced item numbers below correspond to the numbering in that email.

The property owners accept the following condition of approval recommendations as written:

- Item #4 regarding "Protection of Native Plants" (#4a) and an open space "Deed Restriction" (#4b).

- Item #6 "No Future Armoring" which would prohibit construction of any cliff armoring device, require removal of authorized development if/when no longer safe for habitation due to erosion, and require removal of any debris which falls to the beach/public trust lands as a result of erosion.

- Item #7 "Visual Resources Protection" restricting exterior lighting to the minimum necessary for safe ingress/egress. Accordingly, Sheet E1.2 is updated to reduce the exterior lighting to the minimum necessary for safety and, as originally proposed, specifies downcast and shielded exterior lighting fixtures.

Conformity with ESHA Protection Policies: Item #1 concludes with the question "How is the County able to recommend approval of the project within ESHA and ESHA buffers?". The short and direct answer is that, in any case, there is only one course that can be taken to project approval when development is only feasible within ESHA and 50-foot ESHA buffers, and denial of a project would constitute a regulatory taking.

Takings Analysis: Item #2, and repeated comments while on site, suggest that due to the presence of existing structures, a regulatory taking does not apply to this project. Perhaps there is a misconception about the condition of the existing structures and their suitability for reuse. The existing poured concrete and concrete masonry unit structures were built in the 1950s per Mendocino County Assessor's Office records. They have remained vacant, unprotected from weather and without maintenance for approximately 30 years. Despite the previous applicant's statement that the structures are suitable for reuse, we find them to be structurally deficient. The enclosed evaluation letter from a structural engineer details recent inspection of the existing structures and the discovered lack of suitability for renovation. They are not constructed to current California building codes and seismic safety standards. The existing residence is overrun with rodent feces. In no way can they be relied on to provide health and safety for the occupants nor be considered suitable for habitation. These structures do not provide an economic benefit to the owner in any way. In contrast, they are an economic liability, requiring cost of removal.

The question of whether or not a regulatory taking would occur on this property does not hinge on the presence of existing development. The question of a regulatory taking simply asks 'have regulations deprived the landowner of economically beneficial use of the property?'. To this point, we bring a similar project to attention: CDP_2017-0007 (Fallow), located at 32900 South Highway One in Gualala, which was approved at a Coastal Permit Administrator hearing on November 15, 2017 and was not appealed by CCC.

As with the Christensen project, the Fallow project was located on a blufftop parcel 2.57± acres in size; Christensen is 2.80± acres. Both parcels are zoned Rural Residential: 5 acre minimum (RR5). Fallow additionally includes a development limitations (DL) combining district per MCC Sec 20.416. Fallow featured occurrences of two rare plants – coastal bluff morning glory and short-leaved evax, as well as two areas of wetlands, and the entirety of the parcel was covered with Bishop pine forest and associated buffers. Christensen features cormorant nests, one wetland/riparian area, a stand of Bishop pine forest, and their associated buffers. Just as with the Christensen project, the Fallow parcel featured existing residential development with ancillary structures prior to the Fallows purchasing the property. The Fallow project proposed a structure footprint with a lot coverage of 3.10%. The proposed Christensen structure footprint lot coverage is 2.99%. The total development footprint of the Fallow project, including structures, patios, walkways and driveway is 10,731 square feet as detailed in the CDP staff report (enclosed). Upon recalculation after accounting for the revisions detailed above, the Christensen project total footprint including structures, patios, walkways and driveway is 8,048 square feet. A takings analysis was performed for the Fallow project which analyzed 62 surrounding residential properties. The takings analysis and review by agencies, including CCC, did not require analysis specifically of "similarly constrained" properties. That takings analysis reflects the standard practice for every such CDP project prior to 2024 wherein a takings analysis was applicable. Never in WCPB's experience, until project commentary beginning in 2024, has a takings analysis called for comparison to "similarly constrained" property. It is <u>not</u> reasonable to expect that a typical prospective buyer or landowner in this area will be able to understand and determine what, when and how another property developed in the coastal zone is determined to be "similarly constrained". As with Fallow, the proposed Christensen project is also *"...the most feasible, least environmentally damaging alternative that avoids...ESHA and related ESHA buffer requirements that satisfies the investment backed expectation of the owner*."[2] The following statement within the Fallow staff report applies to the Christensen project as well *"...Mitigation Measures were recommended in the Report of Compliance....to ensure the project does not have an adverse impact on the sensitive resources at the site."*[3]

Decades ago, The Hefler Family developed the subject property with an extensive footprint including agriculture uses and animal enclosures (undated Hefler site plan enclosed). The property record also shows that the next owners, Hanna-Dickson, made substantial effort toward new development. Of great significance is the LCP amendment approved by the Mendocino County Board of Supervisors in 2002 and the Coastal Commission in 2005 changing the zoning designation from Open Space to Rural Residential. The CCC staff report for that LCP amendment includes a testimony letter (enclosed) detailing the lengths they went to in cooperation with the County and CCC to develop this property including multiple studies, rehabbing the existing well, drilling a new well, designing 2 septic fields and designing their first home. The Hanna-Dickson testimony letter details the due diligence that they performed prior to their purchase of the property. After extensive consultation with the County, including the processing of Certificates of Compliance, the Hanna-Dicksons purchased the property for $1.6 million. We recognize that the simple fact of a zoning change does not guarantee in and of itself that development will be allowed. However, the existence of development remnants, the zoning change, redevelopment efforts by previous property owners, and the character of surrounding development are enough to result in a reasonable person expecting to be able to develop the property with a residence and typical ancillary structures at the scale of the proposed project.

Furthermore, this project's original application was submitted in 2021 and processed

[2] CDP_2017-0007 Staff Report, page 7
[3] CDP_2017-0007 Staff Report, page 7

extensively by Mendocino County Planning at that time. A staff report was well underway, and the project was nearing addition to a Coastal Permit Administrator hearing agenda in 2022 when an impasse was reached between County and CCC staff regarding proof of water requirements. The subsequent approval of CDP_2022-0033 to drill test wells in order to determine if adequate water supply could be demonstrated, solidified the current owners' reasonable, investment-backed expectation to develop this property if and when the proof of water testing resulted in meeting adequacy thresholds. That specific effort toward development adds another parallel to the Fallow project, where a test well was drilled years prior to the CDP application for the residential development. At no point during the processing of the original CDP_2021-0016 application did CCC or the County express any concern about the footprint of development. In a letter from CCC staff dated February 3, 2022, Coastal Program Analyst Tatiana Garcia states "The County should require appropriate and feasible mitigation measures for **unavoidable** ESHA impacts." (*emphasis added*). This conclusively acknowledged unavoidable ESHA impacts exist on site, and in the absence of commentary to the contrary, that development of the proposed scale could be approved.

The reasoning detailed above supports the fact that denial of the project, regardless of the existing development, would constitute a regulatory taking. The in-depth takings analysis, submitted with the Christensen application materials in December 2024, comparing the subject to 28 surrounding properties provides evidence that the proposed project is of a size within reasonable expectation considering surrounding development. The structure lot coverage of the Christensen project (2.99%) is less than the average of all properties considered (3.58%), as well as less than the subset of surrounding properties (3.45%) which obtained CDP approval under modern regulations, i.e. since the certification of the Mendocino County Local Coastal Program in 1992.

Alternatives Analysis: Regarding Item #3 in the 5/2/2025 CCC project commentary email, comparison of the previously proposed project under this application (Camp Bedhead) to our current project (Christensen) led to the statement that the current project has *"...a larger development footprint and a smaller mitigation area"*. This conclusion is inaccurate, likely due to different quantification methods and categorizations between the two projects. We present the following table to provide a direct comparison of the two projects' attributes to definitively illustrate that 1) our current project development footprint is reasonably aligned with the previously proposed; and 2) the current restoration plan is more detailed and goes beyond that of the previous project, even when the canopy of the Bishop pine ESHA on site has decreased by 9,000+ square feet.

Category	Camp Bedhead	Christensen	Difference
SFR + Parking Footprint	3,059	3,216	+157
Guest Cottage	640	640	0
Driveway	2,253	1,917	-336
Other Concrete	36	1,972	+1,936
(e) cisterns + shed	453	303	-150
Development Footprint Totals	***6,441***	***8,048***	**+1,607**
Live Bishop Pine to be Removed	19	13	-6
Bishop Pine Canopy (post project)	37,029	27,862	-9,167

The 1,607 additional square feet of footprint is largely associated with outdoor space (patio on south side of residence) that both provides the quality of life every Mendocino Coast resident seeks in harmony with our spectacular natural environment, while also protecting and mitigating potential adverse environmental impacts by clearly defining an outdoor area for human activity. Regardless of whether the defined outdoor space is pervious or impervious, either surface material is development footprint.

The referenced "Bishop Pine Forest Habitat Enhancement & Restoration Map" dated 12/29/22, from the 1/5/23 Preliminary Mitigation, Management, Monitoring & Reporting Plan (pMMRP) illustrates a 13,100 square foot Bishop Pine "restoration area". In the same pMMRP, the Bishop Pine replanting ratio is specified at 1:1. The current project's preliminary restoration plan is detailed in the architectural plan set, specifically sheets A1.3 and L1.1 with a replanting ratio of 1:1.3 (13 live trees removed to 18 trees planted). Rather than generically designating a broad area for restoration, we have provided detail about exactly where Bishop Pine, Grand Fir, and appropriate understory mitigation planting is proposed.

It is also important to highlight, as noted in the table above, that since the original application was submitted by the previous owners, significant Bishop pine die-off has occurred on site. The previous project proposed removal of 19 live Bishop pine trees, all in the same area of the proposed residence where the Christensen project is also proposing removal of live trees. Per the enclosed revisions, the Christensen project now proposes to remove 33 Bishop Pine total, 20 of which are now standing dead/dying.

We anticipate that an updated MMRP will be a condition of approval, and it will be most efficient for that plan to be written after all agency commentary has been worked through. Considering that all of the previous mitigation measures will remain, fewer live Bishop pine will be removed, more Bishop pine/Grand fir trees will be planted, and extensive understory planting will be performed, the mitigation for the current project is actually more robust than the previous project.

The No-Project Alternative is easy to imagine. No one will live on the property, as the existing structures are decrepit and uninhabitable. With no investment of time, money and effort, the project site will continue to be overrun by invasive plant species. The Bishop pine forest ESHA will continue to decline and what is left of native habitat will be lost. There will be no suitable habitat for the STV to return to and reside within. Aside from that environmental impact, in relation to legality, the No-Project alternative would deprive the owner of nearly all economic value of the property, leaving them with only the ability to camp on site for two weeks out of every six months. This would interfere with the owners' reasonable, investment-backed expectation to be permitted to replace the existing residential development in disrepair with new residential development.

Restricting the project to using the footprint of the existing structures, exclusively, limits the project to a residence with a 946 sf footprint (the former garage/shop) and an accessory building with a 670 sq ft footprint (former residence). If held to a 946 sf residence footprint, the owners will no longer entertain this project and the invasives species will prevail. More importantly, limiting the project footprint to this size deprives the owner of significant economic value of their property and would interfere with the owners' reasonable, investment-backed expectation to develop the property at a scale similar to development on surrounding properties.

Principally permitted uses within the Rural Residential (RR) zoning district include Single Family Residential, Vacation Home Rental, Light Agriculture, Row and Field Crops, Tree Crops, and Passive Recreation.

- Use as a Vacation Home Rental would require construction of habitable space, as none currently exists.
- The proposed project does involve light agriculture. We prioritized the optimal agricultural area on the site and reserved it for a home garden. The location of the current 670 sf residence is the best, most suitable area for agricultural activity. It is well protected from wind and weather, has good solar orientation, has close proximity to the proposed residence and is in an already developed area.
- The coastal environment and ESHA make this property not suitable for row, field and tree crops.
- Dedicating the property to passive recreation would allow activity on site that does not require a permit. From MCC Sec 20.308.105 *"Examples include sightseeing, hiking, scuba diving, swimming, sunbathing, jogging, surfing, fishing, bird watching, picnicking, bicycling, horseback riding, boating, photography, nature study and painting."* Limiting use to passive recreation has the same practical effect as the "No Project" alternative which deprives the owner of the economic value of the property.

Conditional Uses within the Rural Residential zoning district include Cluster Development, Mobile Home Park, Alternate Energy Facility, Community Recreation, Day Care Facilities, Educational Facilities, Group Care, Lodge, Fraternal and Civic Assembly, etc. Approval of conditional uses is unlikely due to the site constraints and use permits' inherent lack of qualification to constitute a regulatory taking. Even if approvable, for the most part these conditional uses would likely require more development footprint and more ecological disturbance than the proposed, principally permissible single-family residential use.

Effects of Groundwater Withdrawal on the Adjacent Wetlands: In response to item #5, we enlisted the services of respected hydrogeology consultants, Lawrence & Associates, who have worked extensively in the Mendocino County coastal zone. They conducted an evaluation (enclosed) resulting in the conclusion that the well drawdown would not affect the wetlands, due to site soil stratigraphy and the well source point being located approximately 100 feet below the wetland.

Response to Additional CCC Commentary Email dated May 20th, 2025 and County Planning Incomplete Email dated May 28th, 2025

The CCC commentary email dated May 20th focused on geotechnical questions after CCC staff geologists reviewed the project. We appreciate the opportunity to meet with CCC staff including geologist Philip Johnson, prior to this submittal. The mapping and figures from Brunsing & Associates presented during that meeting are enclosed along with a cover letter.

Additionally, the meeting with CCC staff touched on a discrepancy of the mapped location of the blufftop fence between the biological survey report and the architectural plans. To clarify, the blufftop fence is proposed to be located 3-4' inland of the top of bluff. To err on the side of conservative caution, the biological report analyzed the potential impact of a blufftop fence along the bluff edge. As detailed in the main body of the report and the Reduced Buffer Analysis, the blufftop fence will serve both as a safety feature for humans and a protective feature for the cormorant nests along the bluff face. Per the enclosed transmittal from Brunsing, the blufftop fence is of no geotechnical concern. The standard deed restriction regarding geotechnical hazards will require the property owner to remove the fence and/or retrieve any debris from the rocks and ocean below should any ever fall down the bluff. Though fences are not specifically addressed in MCC Sec 20.500 "Hazard Areas", the proposed fence conforms with the purpose of the section in that it will "(1) minimize risk to life and property....";

Brunsing has commented to "(2) assure structural integrity and stability..."; and that the fence will "(3) neither create nor contribute significantly to erosion [or] geologic instability...". For those reasons the blufftop fence conforms with the Mendocino County LCP and is therefore approvable.

Many of the items detailed above address correlating items listed in the incomplete notice from County Planning originally sent to the applicants and agents on May 19th, then revised and resent on May 28th. We offer the following information about remaining items that have not already been addressed in this response letter:

- PBS Item #4 - The updated plan set now includes sheet A1.3b which details temporary construction fencing, material staging areas and temporary driveways.

- PBS Item #5 – As the original preliminary CalFire Fire Safe Regulation clearance (CDF #3-21) was based on the previous owner's site plan, an updated application was submitted to CalFire with the current site plan. CDF#59-25 is enclosed, which supersedes the previous clearance.

- PBS Item #8 – The split rail fencing which will serve as CDFW recommended low symbolic fencing at the edge of the 50-foot buffer from the wetland will be constructed along each extent of the 50-foot buffer line located between the bluff edge and the property line along Road 500D, one length to the north of the wetland and one length to the south of the wetland.

- PBS Item #9 – Due to the extensive site constraints, we are submitting a variance application to allow the fence along Road 500D to be located within the corridor preservation setback and for select accessory structures to be allowed within the front yard setback. Recommendations from Mendocino County DOT project commentary regarding residential driveway standards have been incorporated into the site plans.

- PBS Item #11 – The septic engineer, Rittiman & Associates, stated that temporary construction access over a small portion of the replacement leachfield area would not degrade the replacement leachfield area as long as no soil was removed and no cut was created for the temporary construction access. If needed to prevent disruption of the natural soil, fill soil could be used to level the path of travel. A note to this effect has been added to sheet A1.2.

- PBS Item #12 – The remnants of the existing atrium structure will be demolished along with the other specified existing development. A note to this effect has been added on sheet A1.2.

In conclusion, there is sufficient record to support a regulatory takings claim and hence a pathway toward approval of the proposed new development. The existing detrimental site conditions call for stakeholder agencies to be receptive to an approval path that would restore a heavily impacted piece of land to a native state, while also allowing the property owner to construct residential development in scale with similar, nearby properties. After all, protecting, conserving, and restoring natural resources is one of the principal goals of the Coastal Act. The current project proposal is designed to restore and enhance the ecosystem beyond just invasives management. Approving new development here is not a negative impact or a crime against environmental justice. It is an opportunity for natural resource recovery. We propose conscientious development with careful restoration of native species. This project could be a model project for the Coastal Commission. Attaching the invasive species mitigation to the

deed of the property and having an owner willingly commit significant time, money and effort to restoration is a win-win situation. The owners can realize the value of their investment while the environment of this piece of the California Coast benefits. This is a carefully thought out, environmentally respectful project.

We submit these itemized responses and project revisions in an effort to work with the County and stakeholder agencies collaboratively and in good faith to get to "Yes".

Sincerely,

Meghan Durbin & Amy Wynn, Wynn Coastal Planning

Todd Newberger, Newberger & Associates

Andrew M. & Kirsten L. Christensen

COASTAL PERMIT ADMINISTRATOR STAFF REPORT- CDP STANDARD

CDP_2017-0007
NOVEMBER 15, 2017

SUMMARY

OWNER:	ROD & REBECCA FALLOW 885 LOS ALTOS AVE LOS ALTOS, CA 94022
APPLICANT/AGENT:	MICHAEL BARRON-WIKE PO BOX 30 GUALALA, CA 95445
REQUEST:	Standard Coastal Development Permit for construction of a single family residence with attached garage/workshop and overhead guest cottage. Associated development includes patios, walkways, a septic system, solar roof panels, pump house, and a 2,500 gallon water storage tank. Existing on the site is a driveway, well, and developed spring.
DATE DEEMED COMPLETE:	May 17, 2017
LOCATION:	2± miles north of the town of Anchor Bay, on the west side of Highway 1, 500± ft. south of its intersection with Roseman Creek Road (Private), located at 32900 S Highway 1, Gualala (APN: 142-180-07).
TOTAL ACREAGE:	2.57 acres
GENERAL PLAN:	Coastal Element, Mendocino County General Plan Rural Residential, 5 acre minimum parcel size (RR5) and Rural Residential, 5 acre minimum parcel size with a development limitations combining district (RR5-DL)
ZONING:	Division II, Title 20, Mendocino County Code Rural Residential, 5 acre minimum parcel size (RR5) and Rural Residential, 5 acre minimum parcel size with a development limitations combining district (RR5-DL)
SUPERVISORIAL DISTRICT:	5
ENVIRONMENTAL DETERMINATION:	Mitigated Negative Declaration
APPEALABLE:	Yes, blufftop parcel
RECOMMENDATION:	Approve with Conditions
STAFF PLANNER:	Julia Acker

BACKGROUND

PROJECT DESCRIPTION: Standard Coastal Development Permit for construction of an approximately 2,906 square foot single family residence with 885 square foot attached garage/workshop and overhead 601 square foot guest cottage, with a maximum height of 28 feet. Associated development includes approximately 2,638 square feet of patios and walkways, a septic system, solar roof panels, a 96 square foot pump house, and a 2,500 gallon water storage tank. Existing on the site is a driveway (to be upgraded under the proposed project), well, and developed spring.

The project also includes removal of the crumbled remains of an incomplete structure, which includes a partial stone chimney, rotted wood floor platform, old metal windmill tower, and rusted propane tank.

APPLICANTS' STATEMENT: "A new single family residence (2906 sf) w/attached two car garage/workshop (885 sf) & overhead guest room (601 sf) w/patios and walkways, a new septic system, existing well & new pumphouse (96 sf), existing spring & waterpipes, new solar roof panels, and 2500 gal. of holding tank water."

RELATED APPLICATIONS ON-SITE:

- Subject parcel is Parcel 4 of the Cliff Dwellers Subdivision recorded on May 20, 1966 in Map Case 2, Drawer 5, Page 33 of Mendocino County Official Records.
- CDP 5-2000 approved, on April 27, 2000, the drilling of a test well on the subject blufftop parcel.
- PA 78-183 was preliminary approval issued by Mendocino County for construction of a single family residence on the parcel. Preliminary approvals were required from Mendocino County for development in the Coastal Zone prior to adoption of a certified Local Coastal Program giving local authority to process Coastal Development Permits.

VICINITY:

- CDP_2012-0017 (Schwager) approved, on April 28, 2016, development of a single family residence on a similarly constrained parcel. Building permits have been issued for the residence and bridge associated with this project. CDP_2012-0017 is located two parcels to the south of the subject project site.

SITE CHARACTERISTICS: The 2.57 acre site is located on the west side of Highway 1, approximately 2 miles north of the town of Anchor Bay, approximately 500 feet south of its intersection with Roseman Creek Road (Private Road). The site is located at 32900 S Highway 1 on a blufftop parcel. The site currently has the old crumbled remains of a previous residential structure. Building permit history demonstrates that the site was previously used as a residential property and building permits for a single-family home were obtained from Mendocino County in both 1979 and 1983. In 2000, a previous owner obtained a Coastal Development Permit for a test well on the subject parcel. Properties north and south of the project site are residentially developed.

The property is located on a coastal bluff terrace and slopes in elevation from approximately 135 feet above sea level at the highway, to a flat area with an elevations ranging from 100 feet to 80 feet above sea level. The site is heavily constrained by the presence of environmentally sensitive habitat areas (ESHAs) and their associated buffers. Vegetation cover on the parcel consists primarily of Bishop Pine Forest and non-native grassland. Northern Coastal Scrub, Northern Coastal Bluff Scrub, Coastal Bluff Morning Glory, Point Reyes ceanothus and short-leaved evax were also documented on the project site. The northern property boundary of the parcel is Roseman Creek and there is a wetland swale located south of the existing graveled driveway.

Mapping associates the following with the project site: a High Fire Hazard severity rating, Critical Water Resources, and a riverine wetland (Roseman Creek). The site is designated as a tree removal area.

SURROUNDING LAND USE AND ZONING: As listed on Table 1 below, the site and surrounding property to the north and south are designated Rural Residential (RR5). Surrounding properties to the east are designated Remote Residential (RMR40), and immediately west of the site is the Pacific Ocean. The existing and proposed land use is a principally permitted land use in the RR District.

Table 1. Surrounding Land Use and Zoning

	GENERAL PLAN	ZONING	LOT SIZES	USES
NORTH	RR5	RR5	1.62 acres	Residential
EAST	RMR40	RMR40	38.63 acres	Residential
SOUTH	RR5-DL & RR5	RR5-DL & RR5	2.12 acres	Residential
WEST	Pacific Ocean	Pacific Ocean	Pacific Ocean	Pacific Ocean

LOCAL COASTAL PROGRAM CONSISTENCY: The proposed project is consistent with the goals and

policies of the Local Coastal Program as detailed below.

Land Use**:** The parcel is classified as Rural Residential with a 5 acre minimum parcel size and a portion of the parcel also contains a Development Limitations (DL) combining district (RR5 and RR5-DL) by the Mendocino County General Plan. The Rural Residential classification is intended to encourage local small scale food production (farming) in areas which are not well suited for large scale commercial agriculture, defined by present or potential use, location, mini-climate, slope, exposure, etc. The Rural Residential classification is not intended to be a growth area and residences should be located as to create minimal impact on agricultural viability.[1] The proposed project, which involves construction of a single family residence and appurtenant structures and utilities, is consistent with the Rural Residential Land Use classification.

Zoning: The project site is located within a Rural Residential District, which is intended to encourage and preserve local small scale farming in the Coastal Zone on lands which are not well suited for large scale commercial agriculture. Residential uses should be located as to create minimal impact on the agricultural viability.[2] The proposed project, which involves construction of a single family residence, appurtenant structures, and utilities, is a principally permitted use within the Rural Residential District, pursuant to Mendocino County Code (MCC) Chapter 20.376 *RR -- Rural Residential District*.

The project would comply with the minimum front, rear, and side yard requirements for the RR District for a parcel of this size, which are 20 feet each. The maximum building height allowed in the RR District is 28 feet above the natural grade for non-Highly Scenic Areas. The maximum height of the proposed project components would be 28 feet in height. The project, as proposed, would result in lot coverage of approximately 3.1 percent (building footprints only, excluding permeable surfaces) or approximately 7 percent (including permeable surfaces), which would not exceed the maximum allowed lot coverage of 15 percent for parcels of this size located with a RR District.

The project, as proposed, would comply with the accessory use requirements, which specify that accessory uses, such as the proposed private garage, guest cottage, pump house, and utilities are appropriate, incidental, and subordinate to the principal permitted single family residential use. **Condition 14** is recommended to insure that the guest cottage is utilized in a manner consistent with Mendocino County Code.

Habitats and Natural Resources: Several studies were prepared for the proposed project in order to identify sensitive resources on the parcel and also to provide recommendations to prevent potential impacts to documented sensitive resources as a result of the project. Spade Natural Resources Consulting (SNRC) prepared a Botanical and Biological Scoping Survey Report (November 17, 2016), which includes as Appendix E a Report of Compliance.

SNRC determined that the site has several vegetation communities present. It is primarily characterized by Bishop Pine Forest (*Pinus muricata* Forest Alliance) and non-native grassland but also contains Northern Coastal Scrub/Coyote Brush Scrub (*Baccharis pilularis* Shrubland Alliance) and Northern Coastal Bluff Scrub (Holland community). The site also contains occurrences of short-leaved evax (*Hesperevax sparsiflora* var. brevifolia), Coastal bluff morning glory (*Calystegia purpurata* spp. *saxicola*), and Point Reyes ceanothus (*Ceanothus gloriosus* var. *gloriosus*). Two drainages and associated riparian areas are present on the parcel. Roseman Creek is a perennial stream that is located along the northern property line. Due to the steep, rocky stream bed, there is no riparian vegetation associated with this stream in the area adjacent to the subject property. The second drainage on the parcel was observed by SNRC to be within the Bishop Pine Forest, starting near the southeast corner of the parcel nearest Highway 1 and traveling south of and parallel to the existing gravel driveway. SNRC noted that the drainage is primarily dominated by invasive non-native calla lily (*Zantedeschia aethiopica*).

Of the resources identified on the site not all are considered Environmentally Sensitive Habitat Areas (ESHA), as defined in MCC Section 20.308.040(G). Identified ESHA include the special status plant community Bishop pine forest; two areas of wetlands (Roseman Creek and a wetland swale); and several occurrences of two species of rare plants, coastal bluff morning glory and short-leaved evax. SNRC did not observe any special status wildlife while on the property but still provided recommendations for the

[1] Mendocino County General Plan. Chapter 2.2 of the Coastal Element. 1991.
[2] Mendocino County Coastal Zoning Code, Division II-20.376.005 (1991). Print.

protection of wildlife species with potential to occur in the area. Wildlife species of concern for this parcel include Califronia red-legged frog, Sonoma tree vole, special status birds and bats, and nesting birds protected by the Migratory Bird Treaty Act.

Mendocino County Code requires that a sufficient buffer be established around all identified ESHA. A Reduced Buffer Analysis was included as Appendix D to the report from SNRC and recommends a minimum 100 foot buffer area between Roseman Creek and Northen Coastal Bluff Scrub/short-leaved evax habitat and a minimum 50-foot buffer between the southern drainage and coastal bluff morning glory plants and the proposed development. There is no location on the parcel where development would not occur within 50 feet of the identified Bishop pine forest. Additionally, the existing gravel driveway is located less than 50 feet from the southern drainage. Due to the presence of ESHA on the site, a Report of Compliance (Appendix E of the Botanical and Biological Scoping Survey Report) was prepared for the project describing the sensitivity of the resources present and showing the least impacting location for the proposed development.

Alternative projects to the proposed development were considered including agricultural and passive recreational opportunities and conditional uses in the district such as day care facilities and religious facilities. SNRC determined these various options to be infeasible either due to their potential for greater impact to identified resources and/or the economic feasibility of the alternatives. The subject parcel was purchased with the understanding that residential use is a principally permitted use for this parcel and expectations were set due to nearby development being residential in nature.

Alternative locations for the proposed residence were also considered. One building envelope has been identified that meets a 100-foot buffer to Roseman Creek and the special status Northern Coastal Bluff Scrub plant community (where the special status short-leaved evax is present), meets a 50-foot buffer to special status coastal bluff morning glory individuals and the southern drainage, is outside geotechnical setbacks, and is a relatively flat area. The identified building envelope is located within the special status Bishop pine forest plant community. An exhibit was submitted by SNRC on June 5, 2017 demonstrating that the footprint for the proposed residence will be located within the identified least environmentally damage building envelope.

The existing driveway is located within 50 feet of identified ESHA. Relocation of the existing driveway would result in significant impacts to the special status Bishop Pine Forest plant community. There is no less impacting alternative for the driveway placement. Improvements proposed to the driveway include trenching and placement of underground utilities within the existing driveway corridor. Since the gravel driveway is already in an area impacted by grading, this is the best location for the proposed utility line extension. The proposed septic system out of necessity is located closest to the bluff edge and was determined to be the only feasible location for the proposed septic system that meets health code requirements.

Mitigation measures have been identified by the project biologist to prevent and/or minimize potential impacts from the proposed development to identified ESHA. Mitigation measures, including restoration measures and proposed buffer areas were suggested in the Report of Compliance and a recommended as **Condition 11.**

The proposed project is not consistent with all LCP policies relating to ESHA, despite the identification of the least environmentally damaging alternative, the lack of feasible alternatives on site, the proposed mitigation measures to offset project impacts, and siting development to minimize impervious surfaces and minimize vegetation removal. As stated above, Section 20.496.020(A)(1) reads in part, “the buffer area shall be measured from the outside edge of Environmentally Sensitive Habitat Areas and shall not be less than fifty (50) feet in width.” The project is inconsistent with this LCP policy; however, no alternative exists on the parcel that could be found to be consistent with this LCP policy. Prohibiting development within fifty (50) feet of an ESHA would deprive the owner of all economic use of the property. Consequently, staff evaluated if denial of the project would result in an unconstitutional taking of private property for public use, which is addressed in further detail in the Staff Report and attachments.

In summary, the proposed project cannot be found consistent with LCP polices relating to ESHA; however, the proposed project is the least damaging alternative and the proposed mitigation measures required by **Condition 11** will address the impacts to ESHA. These measures will mitigate the impact of the proposed development, and restore and enhance ESHA located on the parcel.

Visual Resource and Special Treatment Areas: The site is not designated as a Highly Scenic Area; however, it is designated as a Tree Removal Area. Due to the fact that the tree cover at the site consists of Northern Bishop Pine Forest and the existing vegetation provides screening of the proposed development from public view areas, staff finds that the Tree Removal Area policies contained in MCC Section 20.504.015(C)(9) are not appropriate for this site. The location of the residence will not be visible from public vantage points. Staff finds the proposed project would not have significant visual impacts.

MCC Section 20.504.035 provides exterior lighting regulations intended to protect coastal visual resources in Highly Scenic Areas, Special Treatment Areas and Special Communities of the Coastal Zone. Exterior lighting is required to be within the zoning district's height limit regulations, and requires exterior lighting to be shielded and positioned in a manner that light and glare does not extend beyond the boundaries of the parcel. The proposed exterior lighting is in conformance with these standards.

Hazards Management: The parcel is located in an area classified with a "High Fire Hazard" severity rating.[3] Fire protection services are provided by the California Department of Forestry and Fire Protection (CalFire) and the South Coast Fire Protection Department (SCFPD). The project application was referred to CalFire and the SCFPD for input; SCFPD did not respond, whereas CalFire responded with a recommended condition to comply with the minimum fires safety standards for Hazardous Fire Areas, per the Public Resources Code. CalFire has submitted recommended conditions of approval (CDF# 269-16) for address standards, driveway standards, and defensible space standards. Standard Condition #4 is recommended to achieve compliance with CDF fire safe standards. With the inclusion of the standard and recommended conditions, Staff finds the project to be consistent with Mendocino County policies for fire protection.

Since the proposed project is located on a blufftop parcel, Brunsing Associates, Inc (BAI) prepared a Geotechnical Investigation (November 16, 2016) to evaluate the geologic conditions at the property, primarily bluff stability, retreat (erosion) rate, and subsurface soil and rock conditions to determine bluff setback criteria and provide recommendations for the foundation of the planned development. Based upon review of various resources and on-site investigation, BAI concluded that a bluff setback of 25 feet for future improvements, including leachfield areas, will guarantee a structural life of 75 years and includes a safety factor of 1.5 consistent with MCC Section 20.500.020 (B)(1). BAI also provided recommendations for site grading, foundation support, seismic design criteria, concrete slab-on-grade, retaining walls and site drainage. **Condition 9** is recommended to require the projects consistency with the recommendations of the BAI Geotechnical Investigation.

It is the policy of the Coastal Commission and Mendocino County to require recordation of a deed restriction as a condition of development on blufftop parcels, prohibiting the construction of seawalls and requiring that permitted improvements be removed from the property if threatened by bluff retreat. The restriction also requires that the landowner be responsible for any clean-up associated with portions of the development that might fall onto a beach or into the ocean. **Condition 10** is recommended to address this issue.

Grading, Erosion, and Run-Off: The project would require minimal grading as the site is relatively level in the building area and will only require approximately 10 cubic yards of cut and 10 cubic yards of fill. The only cut is required for the entrance to the garage and for the flat parking area by the trash cans and propane tank enclosure. The maximum height of both the cut and fill slope will be 2 feet. Best Management Practices will be implemented at the time of construction and protection measures recommended for the adjacent ESHA. With the inclusion of **Condition 11** the project is found consistent with policies related to grading, erosion and run-off.

Archaeological/Cultural Resources: At the June 14, 2017 hearing, the Mendocino County Archaeological Commission accepted an Archaeological Survey (May 18, 2002) for the project prepared by Thad Van Bueren and found that site(s) were identified and the recommendations of the report shall be strictly adhered to. **Condition 12** requires compliance with the recommendations of the submitted Archaeological Survey. In addition, **Condition 8** advises the applicant of the "Discovery Clause," which prescribes the procedures subsequent to the discovery of any cultural resources during construction of the project. With

[3] Mendocino County Department of Planning & Building Services. No Date. *Fire Hazard Zones & Responsibility Areas* [map]

the inclusion of the recommended conditions, Staff finds the project to be consistent with Mendocino County policies for protection of paleontological and archaeological resource.

The project was referred to three local tribes for review and comment, including the Cloverdale Rancheria, Sherwood Valley Band of Pomo Indians, and the Redwood Valley Little River Band of Pomo Indians. As of this date, no responses have been received from any of the three local tribes.

Groundwater Resources: The project site is located within a mapped Critical Water Resources Area.[4] CDP#5-2000 approved construction of a test well on the subject parcel. Under the proposed project the test well would be converted to a production well and an approximately 96 square-foot pump house and 2,500-gallon water storage tank would be constructed. The project was referred to the Division of Environmental Health who responded providing clearance for the coastal development permit, noting an approved septic system design exists for the parcel (ST#23060). Staff finds the proposed project would not adversely affect groundwater resources.

Transportation/Circulation: The project would not contribute new sources of traffic on local and regional roadways. The cumulative effects of traffic resulting from development on this site were considered when the Coastal Element land use designations were assigned.

Access to the site would be provided from Highway 1. Caltrans provided comments on the proposed project and as a result of concerns expressed about site distance, the project driveway orientation was revised to provide for a better site distance. Caltrans also noted that any work within their right-of-way will require issuance of an encroachment permit from their office. Condition 4 requires compliance with these recommendations. In addition, CalFire has recommended address standards and driveway standards for the proposed project. Condition 4 requires compliance with these recommendations.

A minimum of two parking spaces are required for the project per MCC Section 20.472.015 and are shown on the site plan. Staff finds the proposed project to be consistent with transportation and circulation requirements.

Public Access: The project site is not designated as a potential public access point on the certified LCP maps. Public access would not be feasible on this site due to the extensive sensitive habitats and high bluff faces associated with the site. The owner does have access to a private easement over Lot 3 of the Cliff Dwellers Subdivision (adjacent parcel to the south) for access to the beach. During the site visit, it did not appear that there was any evidence of prescriptive access at this site. Staff finds the proposed project to be in conformance with public access policies contained in Mendocino County Code.

Takings Analysis: Despite the identification of the least environmentally damaging alternative, the proposed project is not consistent with Section 20.496.020 (A)(1), which reads in part, “the buffer area shall be measured from the outside edge of Environmentally Sensitive Habitat Areas and shall not be less than fifty feet in width.” The proposed project is sited less than fifty feet from ESHA boundaries.

Section 30010 of the California Coastal Act addresses regulatory takings and states the following:

> *The Legislature hereby finds and declares that this division is not intended, and shall not be construed as authorizing the commission, port governing body, or local government acting pursuant to this division to exercise their power to grant or deny a permit in a manner which will take or damage private property for public use, without the payment of just compensation therefore. This section is not intended to increase or decrease the rights of any owner of property under the Constitution of the State of California or the United States.*

In this case, prohibiting development within fifty feet of an ESHA would deprive the owner of all economic use of the property. There are no alternative development options where the project can be at least fifty feet from ESHA, as the entire site is Northern Bishop Pine Forest or its associated buffer.

Some factors courts examine to determine if a regulatory taking has occurred involve the presence of reasonable investment-backed expectations, the degree to which a regulation may interfere with those reasonable investment-backed expectations, and whether or not a regulation deprives an owner of all

[4] Mendocino County Department of Planning & Building Services. July 2016. *Ground Water Resources* [map].

economic use of the property. Staff believes there was a reasonable investment backed expectation that that the scale of the residential development proposed is consistent with similar properties in the vicinity. Attachment C to this staff report includes an outline of the cost the applicant has incurred since purchasing the site in 2015, in an effort to develop the property. The purchase price of $869,000 for approximately two and one half (2.57) acres of vacant land is a substantial investment. Considering the property is zoned for residential development as a principally permitted use, and residential development exists on adjacent properties, a reasonable person would have believed that the property could have been developed with a single family residence. A test well was drilled on the property under CDP 5-2000, which stated that the intent of drilling the test well was to determine if there was water for future development of a single-family residence. CDP 5-2000 as well as building permit history for the property note that previous residential development was permitted on the site.

The applicant has spent approximately $990,510 to purchase the property, design the residence, prepare surveys and studies, and complete permits necessary for future development of the site. The largest expenditures were related to land costs (e.g. purchase of land).

In order to assess if the applicant's expectation to build an approximately 2,906 square foot single family residence with 885 square foot attached garage/workshop and overhead 601 square foot guest room on approximately two and one half (2.57) acres was similar to comparable single family homes in the area, sixty-two (62) single family residences located in the vicinity were examined. The proposed development is roughly equal to the square footage of development in the area over all years reviewed and approximately 450 square feet larger than development approved since 1992. However, it should be noted that the actual footprint of the proposed development is 2,065 square feet, and would be smaller than the average development approved since 1992. The analysis of the comparable development is included in the **Takings Analysis**, attached to this document.

MCC Section 20.368.010 states the principally permitted use types in the RR district, which include: single-family residential, vacation home rental, light agriculture, row and field crops, tree crops and passive recreation. Due to the prevalence of ESHA on the parcel, all principally permitted uses except for passive recreation would require encroachment into a fifty foot ESHA buffer. The allowed agricultural uses would require substantial site disturbance and clearing and are not a viable way to use the property. Passive recreation use would be the only option that would be less impactful than the construction of a single family residence and possibly not require any activities meeting the definition of development under the Coastal Act. Passive recreation uses do not afford the property owner an economically viable use.

The property was purchased with an investment-backed expectation that construction of a single-family residence would be permitted. The obtainment of a previous CDP for construction of a test well is evidence that the owner intended to pursue future development of a single family home after purchase of the parcel. This intent is noted in the Staff Report for CDP 5-2000.

Alternatives to the proposed development, including different development projects and alternative locations, were considered and analyzed by a qualified professional, as required by MCC Sections 20.496.020(A)(4)(b) and 20.532.060(E). The proposed project is considered the most feasible, least environmentally damaging alternative that avoids sensitive plant ESHA and related ESHA buffer requirements that satisfies the investment backed expectation of the owner. Mitigation Measures were recommended in the Report of Compliance and are recommended as **Condition 11** to ensure the project does not have an adverse impact on the sensitive resources at the site.

ENVIRONMENTAL DETERMINATION: The Coastal Permit Administrator finds that the environmental impacts identified for the project can be adequately mitigated through the conditions of approval or features of the project design so that no significant adverse environmental impacts will result from this project; therefore, a Mitigated Negative Declaration is adopted.

PROJECT FINDINGS AND CONDITIONS: Pursuant to the provisions of Chapter 20.532 and Chapter 20.536 of the Mendocino County Code, the Coastal Permit Administrator approves the proposed project, and adopts the following findings and conditions.

FINDINGS:

1. Pursuant with MCC Section 20.532.095(A)(1), the proposed development is in conformity with the

certified Local Coastal Program, except Section 20.496.020(A)(1) relating to buffer widths from Environmentally Sensitive Habitat Areas, which is specifically addressed by the Supplemental Findings below, A single-family residence is a principally permitted use and a garage, greenhouse, and additional appurtenant structures are permitted accessory buildings within the Rural Residential land use classification and are consistent with the intent of the Rural Residential classification and all associated development criteria; and

2. Pursuant with MCC Section 20.532.095(A)(2), the proposed development will be provided with adequate utilities, access roads, drainage and other necessary facilities. The proposed project will be served by an existing test well, to be converted to a production well under this permit and an on-site sewage disposal system. The existing driveway off Highway 1 will be improved to Caltrans and CalFire standards and is adequate to service the proposed development. Drainage and other necessary facilities have been considered in project design; and

3. Pursuant with MCC Section 20.532.095(A)(3), the proposed development is consistent with the purpose and intent of the Rural Residential zoning district, as well as all other provisions of Division II of Title 20 of the Mendocino County Code, and preserves the integrity of the Rural Residential zoning district. With compliance with the conditions of approval, the proposed single-family residence, appurtenant structures, and associated utilities would satisfy all development requirements for the district; and

4. Pursuant with MCC Section 20.532.095(A)(4), the proposed development, if constructed in compliance with the conditions of approval, will not have any significant adverse impacts on the environment within the meaning of the California Environmental Quality Act. An Initial Study and adoption of a Mitigated Negative Declaration is recommended. Condition 13 is recommended to insure compliance with the California Environmental Quality Act requirements for a Mitigated Negative Declaration; and

5. Pursuant with MCC Section 20.532.095(A)(5), the proposed development would not have any adverse impact on any known archaeological or paleontological resources if constructed in compliance with the conditions of approval, as there are known resources within the vicinity of the site. Both Condition 12 and Condition 8 are recommended to insure protection if archaeological sites or artifacts are discovered; and

6. Pursuant with MCC Section 20.532.095(A)(6), other public services, including but not limited to, solid waste and public roadway capacity have been considered and are adequate to serve the proposed development. Solid waste service is available either as curbside pick-up or at the South Coast Transfer Station (seven miles away). The existing level of service at peak hour conditions at this location is considered Level of Service B. While the project would contribute incrementally to traffic volumes on local and regional roadways, such incremental increases were considered when the LCP land use designations were assigned to the site; and

7. Pursuant with MCC Section 20.532.095(B), the proposed development would not diminish public access to Mendocino County coastal areas and conforms to the goals and policies of the Coastal Element of the General Plan. The project site is located between the first public road and the sea; and is not designated as a potential public access point.

8. Pursuant to MCC Section 20.532.100(A)(1) No development shall be allowed in an ESHA unless the resource as identified will not be significantly degraded by the proposed development, there is no feasible less environmentally damaging alternative, and all feasible mitigation measures capable of reducing or eliminating project related impacts have been adopted. Alternatives to the proposed development were considered. Adjacent properties in the vicinity were reviewed to determine that the size and scale of development is in conformance with adjacent properties. Mitigation measures have been recommended to reduce any potential impacts from the proposed project. As conditioned, the proposed development will not significantly degrade the resource as identified.

CONDITIONS OF APPROVAL:

1. This action shall become final on the 11th day following the decision unless an appeal is filed

pursuant to Section 20.544.015 of the Mendocino County Code. The permit shall become effective after the ten (10) working day appeal period to the Coastal Commission has expired and no appeal has been filed with the Coastal Commission. The permit shall expire and become null and void at the expiration of two years after the effective date except where construction and use of the property in reliance on such permit has been initiated prior to its expiration.

2. To remain valid, progress towards completion of the project must be continuous. The Applicants have sole responsibility for renewing this application before the expiration date. The County will not provide a notice prior to the expiration date.

3. The application, along with supplemental exhibits and related material, shall be considered elements of this permit, and that compliance therewith is mandatory, unless an amendment has been approved by the Coastal Permit Administrator.

4. This permit shall be subject to the securing of all necessary permits for the proposed development from County, State and Federal agencies having jurisdiction.

5. The Applicants shall secure all required building permits for the proposed project as required by the Building Inspection Division of the Department of Planning and Building Services.

6. This permit shall be subject to revocation or modification upon a finding of any one or more of the following:

    a. The permit was obtained or extended by fraud.
    b. One or more of the conditions upon which the permit was granted have been violated.
    c. The use for which the permit was granted is conducted so as to be detrimental to the public health, welfare or safety, or to be a nuisance.
    d. A final judgment of a court of competent jurisdiction has declared one or more conditions to be void or ineffective, or has enjoined or otherwise prohibited the enforcement or operation of one or more such conditions.

7. This permit is issued without a legal determination having been made upon the number, size or shape of parcels encompassed within the permit described boundaries. Should, at any time, a legal determination be made that the number, size or shape of parcels within the permit described boundaries are different than that which is legally required by this permit, this permit shall become null and void.

8. If any archaeological sites or artifacts are discovered during site excavation or construction activities, the property owner shall cease and desist from all further excavation and disturbances within 100 feet of the discovery, and make notification of the discovery to the Director of the Department of Planning and Building Services. The Director will coordinate further actions for the protection of the archaeological resources in accordance with Section 22.12.090 of the Mendocino County Code.

9. The recommendations in the Geotechnical Investigation dated November 16, 2016 prepared by Brunsing Associates, Inc. shall be incorporated into the design and construction of the proposed project. Prior to issuance of a building permit in reliance on this Coastal Development Permit, the applicant shall submit evidence that a qualified geotechnical or civil engineer has reviewed the final building plans for consistency with the Geotechnical Investigation. No development shall be permitted within 25 feet of the blufftop edge.

10. Prior to the issuance of the Coastal Development Permit, the applicant as landowner shall execute and record a deed restriction, in a form and content acceptable to the Coastal Permit Administrator and County Counsel, which shall provide that:

    a. The landowner understands that the site may be subject to extraordinary geologic and erosion hazards and the landowner assumes the risk from such hazards;

    b. The landowner agrees to indemnify and hold harmless the County of Mendocino, its successors in interest, advisors, officers, agents and employees against any and all claims,

demands, damages, costs, and expenses of liability (including without limitation attorneys' fees and costs of the suit) arising out of the design, construction, operation, maintenance, existence or failure of the permitted project. Including, without limitation, all claims made by any individual or entity or arising out of any work performed in connection with the permitted project;

c. The landowner agrees that any adverse impacts to the property caused by the permitted project shall be fully the responsibility of the applicant;

d. The landowner shall not construct any bluff or shoreline protective devices to protect the subject single family residence, garage, septic system, or other improvements in the event that these structures are subject to damage, or other erosional hazards in the future;

e. The landowner shall remove the house and its foundation when bluff retreat reaches the point where the structure is threatened. In the event that portions of the house, garage, foundations, leach field, septic tank, or other improvements associated with the residence fall to the beach or ocean before they can be removed from the blufftop, the landowner shall remove all recoverable debris associated with these structures from the beach and ocean and lawfully dispose of the material in an approved disposal site. The landowners shall bear all costs associated with such removal;

The document shall run with the land, bind all successors and assigns, and shall be recorded free of all prior liens and encumbrances, except for tax liens.

11. All recommended Mitigation Measures proposed in the Botanical and Biological Scoping Survey Report (including Appendix E, Report of Compliance) dated November 17, 2016 prepared by Spade Natural Resources Consulting are required to provide for the protection of identified environmentally sensitive habitat areas. Mitigations are as follows:

    a. A minimum buffer distance of 100 feet shall be observed to Roseman Creek and the Northern Coastal Bluff Scrub habitat area containing special status short-leaved evax. A minimum buffer distance of 50 feet shall be observed to special status coastal bluff morning glory and the southern drainage, except for the proposed improvements located along and within the existing driveway footprint. Development within the Bishop pine forest shall be limited to the areas shown on the exhibit submitted by SNRC dated June 5, 2017.

    b. Prior to issuance of any building permits in reliance of this Coastal Development Permit, an active management plan shall be developed for the Bishop pine forest in order to provide for the long term health of the forest habitat. The active management plan shall be prepared by a qualified ecologist and approved by the California Department of Fish and Wildlife, and shall include: invasive species removal; a regular understory management regimen to facilitate the growth of new recruits; and identification, removal, and prevention of pathogens killing Bishop pine trees and other native flora.

    c. The clearing of vegetation and initiation of construction shall be done during the bird non-breeding season between September and January. If this cannot be accomplished then a qualified biologist shall perform preconstruction breeding bird surveys within 14 days of the onset of construction or clearing of vegetation. The survey shall be submitted for review and approval by California Department of Fish and Wildlife staff. If breeding birds are identified then the measures prescribed in the Botanical and Biological Scoping Survey Report dated November 17, 2016 shall be adhered to.

    d. The clearing of vegetation and initiation of construction shall be done between September 1 and October 31. If this cannot be accomplished then preconstruction surveys for potential bat roost sites shall be conducted and submitted for review and approval by the California Department of Fish and Wildlife.

e. Within two weeks prior to construction, project contractors shall be trained by a qualified biologist in the identification of the California red-legged frog. Evidence that such training has been provided, such as a letter from the qualified biologist, shall be submitted to the Mendocino County Planning Division prior to commencement of construction activities. Construction crews shall begin each day with a visual search around all stacked or stored materials, as well as along any silt fences to detect the presence of frogs. If a California red-legged frog is detected, construction crews shall contact US Fish and Wildlife Service or a qualified biologist, and gain clearance prior to re-initiating work. If a rain event occurs during the construction period, all construction related activities shall cease for a period of 48 hours after the rain stops. Prior to resuming construction activities, trained construction crew members shall examine the site for the presence of frogs. If no special status frogs are found, construction activities may resume.

f. A Sonoma tree vole survey shall occur within two weeks of tree removal activities. If tree vole nests are found in trees to be removed, the California Department of Fish and Wildlife shall be immediately notified and steps shall be taken to protect identified tree vole nests per California Department of Fish and Wildlife requirements. Project commencement shall not occur until California Department of Fish and Wildlife gives clearance.

g. Standard Best Management Practices shall be employed to assure minimization of erosion resulting from construction. Ground disturbance shall be limited to the minimum necessary and disturbed soil areas shall be stabilized as soon as feasible. Silt fencing and orange construction fencing shall be placed and maintained for all areas where construction will occur upslope of and within 100 feet of the southern drainage and occurrences of coastal bluff morning glory. Any soil stockpiles shall be covered or otherwise stabilized to prevent dust impacts. Any bare soil created by the construction phase of the project shall be re-vegetated with native vegetation and/or native seed mixes for soil stabilization. Low Impact Development techniques shall be utilized to reduce stormwater runoff from new impervious surfaces.

h. Landscaping on the parcel shall not include any invasive plants and shall consist of native plants compatible with the present plant communities.

i. Heavy equipment undercarriages and tires shall be washed prior to entering the site in order to remove any invasive plant seed.

12. The recommendations contained in the Archaeological Survey dated May 18, 2002 prepared by Thad Van Bueren shall be strictly adhered to.

13. This entitlement does not become effective or operative and no work shall be commenced under this entitlement until the California Department of Fish and Wildlife filing fees required or authorized by Section 711.4 of the Fish and Game Code are submitted to the Mendocino County Department of Planning and Building Services. Said fee of $2266.25 shall be made payable to the Mendocino County Clerk and submitted to the Department of Planning and Building Services within 5 days of the end of any appeal period. Any waiver of the fee shall be on a form issued by the Department of Fish and Wildlife upon their finding that the project has “no effect” on the environment. If the project is appealed, the payment will be held by the Department of Planning and Building Services until the appeal is decided. Depending on the outcome of the appeal, the payment will either be filed with the County Clerk (if the project is approved) or returned to the payer (if the project is denied). Failure to pay this fee by the specified deadline shall result in the entitlement becoming null and void. **The applicant has the sole responsibility to insure timely compliance with this condition.**

14. Prior to issuance of the Coastal Development Permit, the applicants shall execute and record a deed restriction stating that the barn and office shall not contain facilities, either permanent or

temporary and portable, for the cooking or preparation of food, and shall not be used as an independent dwelling unit until such a time as appropriate permits are obtained.

Staff Report Prepared By:

10/31/2017
Date

Julia Acker
Senior Planner

Appeal Period: 10 Days
Appeal Fee: $1616.00

ATTACHMENTS:

A. Location Map
B. Aerial Imagery
C. Revised Site Plan
D. Elevations (NE/NW)
E. Elevations (SE/SW)
F. Lower Floor Plan
G. Upper Floor Plan
H. Biological Study Area & Proposed Buffers
I. Geotechnical Study
J. Zoning Display Map
K. General Plan Classifications
L. LCP Land Use Map 30: Anchor Bay
M. LCP Land Capabilities & Natural Hazards
N. Appealable Areas
O. Adjacent Parcels Map
P. Fire Hazard Zones & Responsibility Areas
Q. Ground Water Resources Map
R. Highly Scenic/Tree Removal Areas Map
S. Estimated Slope
T. Local Soils
U. Classified Wetlands Map

SUMMARY OF REFERRAL AGENCY COMMENTS:

Planning (Ukiah)	Comments
Department of Transportation	No Response
Environmental Health (FB)	Comments
Building Inspection (FB)	No Comment
Assessor	No Response
US Fish and Wildlife Service	No Response
Cloverdale Rancheria	No Response
CalFire	No Comment
Coastal Commission	No Response
Coast Life Support District	No Comment
Sherwood Valley Band of Pomo Indians	No Response
Redwood Valley Rancheria	No Response

South Coast Fire District	No Response
Department of Fish and Wildlife	No Response
Army Corps of Engineers	No Response
Caltrans	Comments
Air Quality Management District	Comments
Gualala Municipal Advisory Council	Comments
Archaeological Commission	Comments

REFERENCES:

Brunsing Associates, Inc. 2016. Geotechnical Investigation, Proposed Fallow Residence, 32900 South Highway 1, Gualala, California. November 16, 2016.

Chapter 2.2. Mendocino County, Planning and Building Services, Planning Division. *The County of Mendocino-General Plan.* 1991. Ukiah, CA.

Chapter 2 Mendocino County, Planning and Building Services, Planning Division. *The County of Mendocino-Coastal Element.* 1985. Ukiah, CA.

Spade Natural Resources Consulting. 2016. Botanical Survey and Biological Scoping Survey, for 32900 South Highway One (APN 142-180-07), Anchor Bay, CA, Mendocino County. November 17, 2016.

Van Bueren, Thad. 2002. Archaeological Survey of the Wallach Property at 32900 South Highway 1 near Anchor Bay, Mendocino County, California. May 18, 2002.

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

Major Towns & Places
Major Roads
California Counties
Highways

0 2,550 5,100 Feet
0 0.5 1 Miles
1:63,360

ATTACHMENT A

LOCATION MAP

THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

Named Rivers

Public Roads

Driveways/Unnamed Roads

0 75 150 Feet

0 0.0125 0.025 Miles

N W E S

1:1,800

ATTACHMENT B

AERIAL IMAGERY

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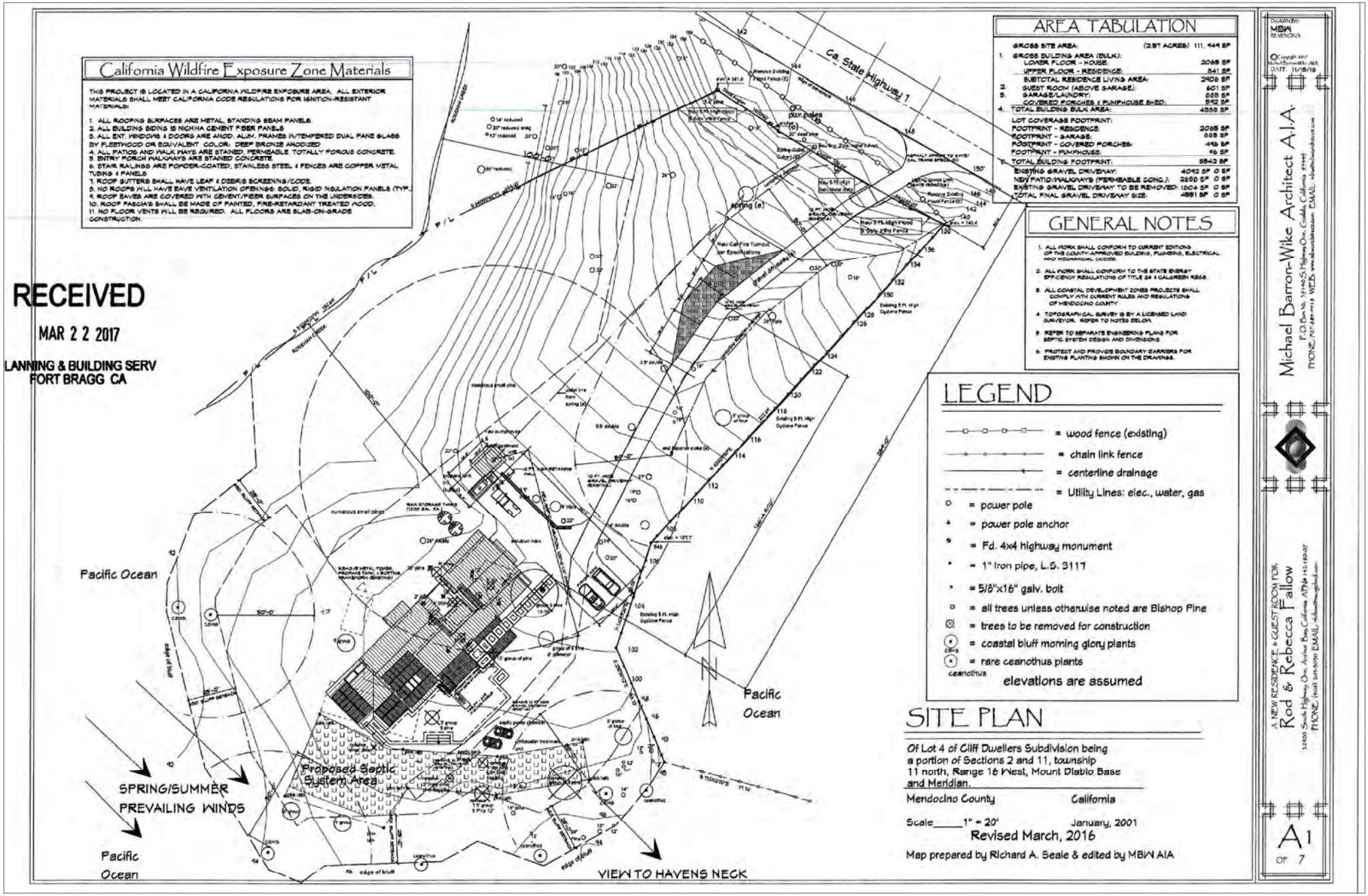


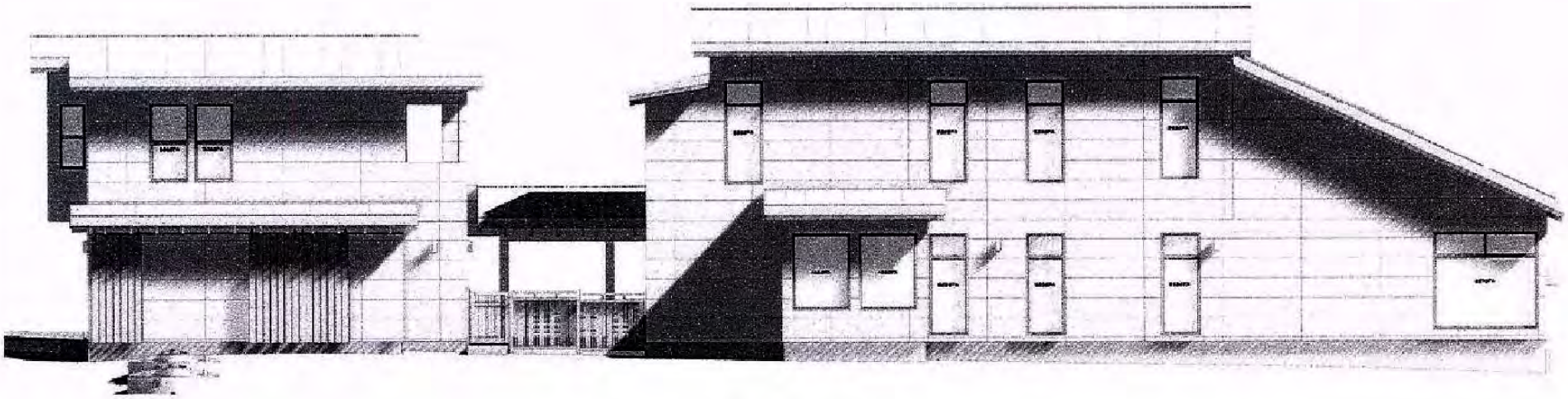
CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

NO SCALE

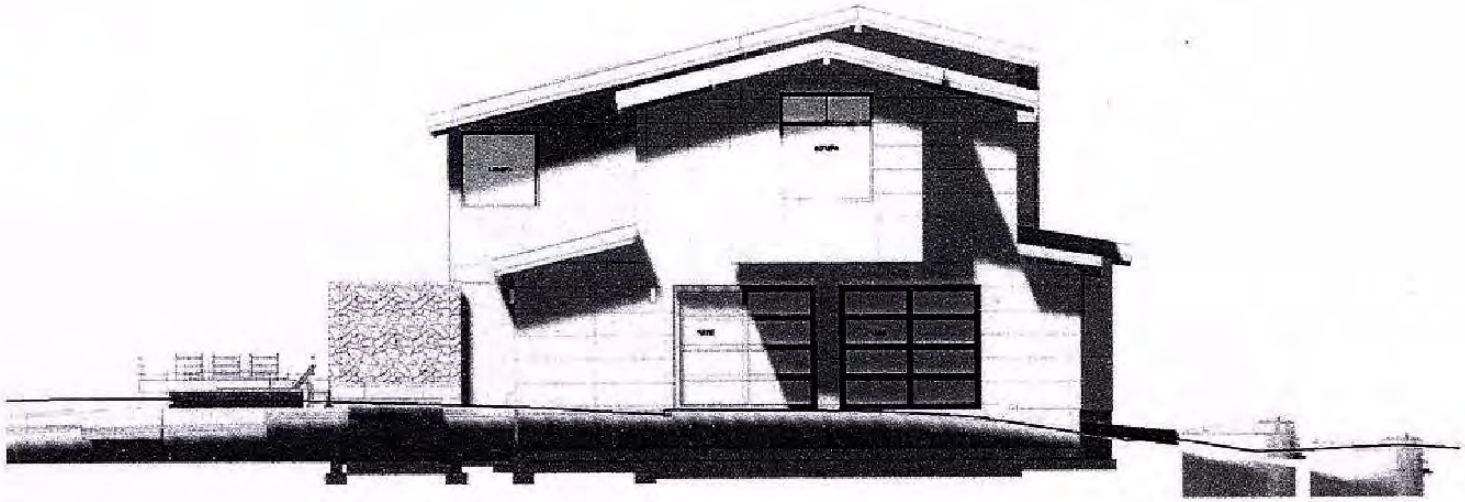
ATTACHMENT C

REVISED SITE PLAN

THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.



NORTHWEST



NORTHEAST

ELEVATIONS 2

scale: 1/4 inch = 1 foot

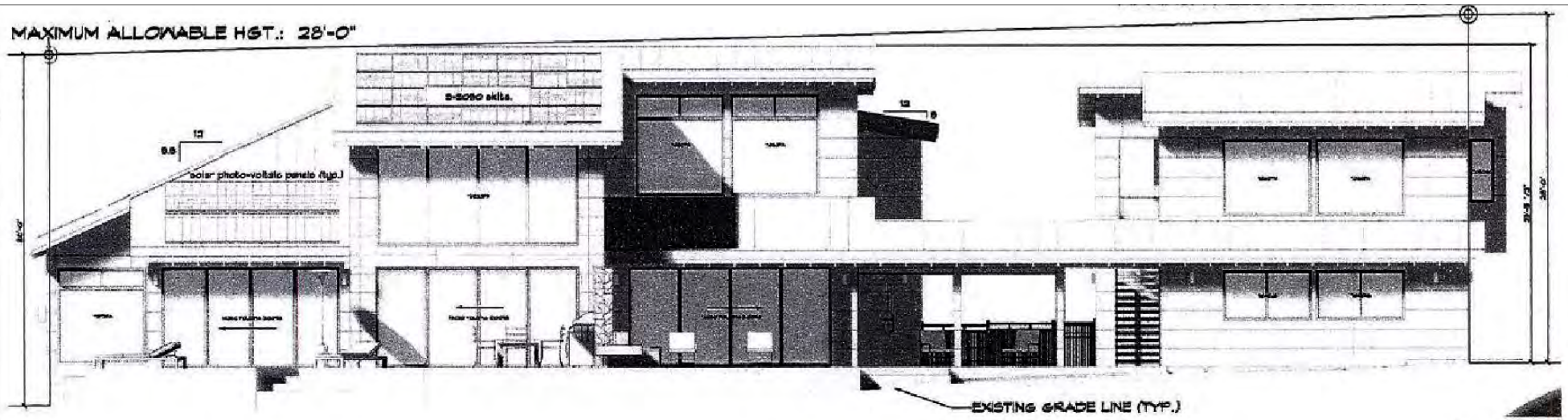
CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

NO SCALE

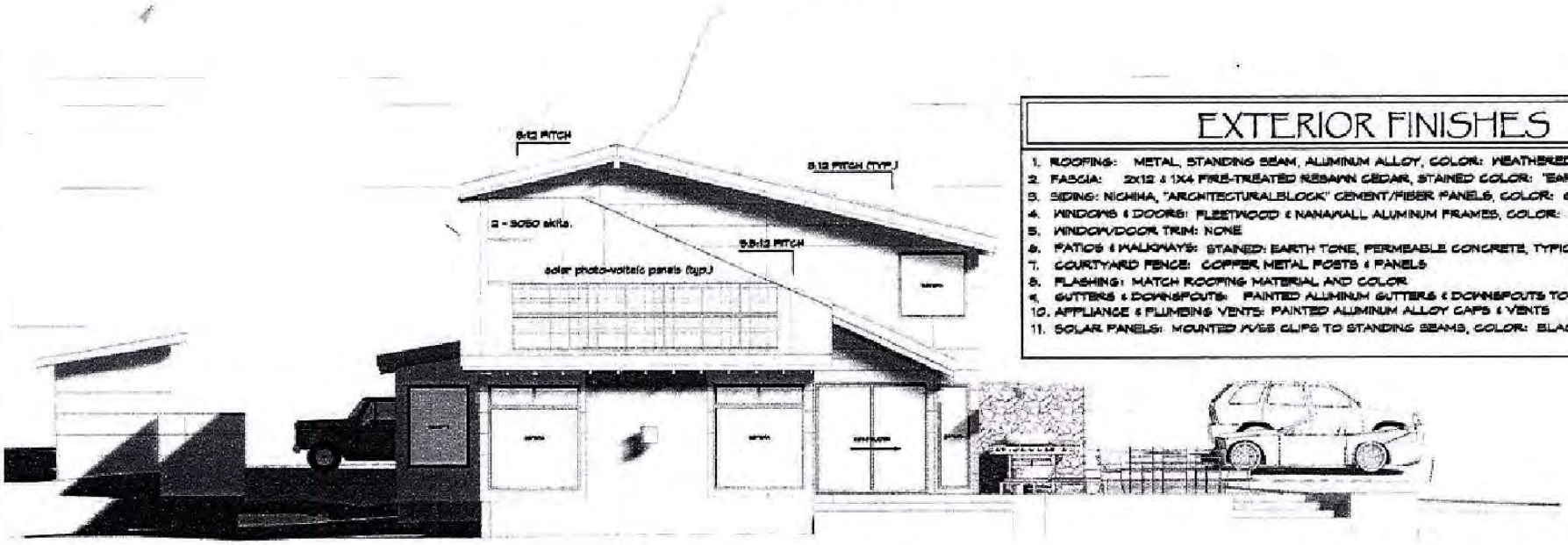
ATTACHMENT D

ELEVATIONS

THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.



SOUTHEAST



SOUTHWEST

EXTERIOR FINISHES

1. ROOFING: METAL, STANDING SEAM, ALUMINUM ALLOY, COLOR: WEATHERED COPPER
2. FASCIA: 2X12 & 1X4 FIRE-TREATED RESAWN CEDAR, STAINED COLOR: "EARTH TONE"
3. SIDING: NICHIHA, "ARCHITECTURALBLOCK" CEMENT/FIBER PANELS, COLOR: GREY , 18"X12"
4. WINDOWS & DOORS: FLEETWOOD & NANAWALL ALUMINUM FRAMES, COLOR: BLACK
5. WINDOW/DOOR TRIM: NONE
6. PATIOS & WALKWAYS: STAINED: EARTH TONE, PERMEABLE CONCRETE, TYPICAL
7. COURTYARD FENCE: COPPER METAL POSTS & PANELS
8. FLASHING: MATCH ROOFING MATERIAL AND COLOR
9. GUTTERS & DOWNSPOUTS: PAINTED ALUMINUM GUTTERS & DOWNSPOUTS TO MATCH ROOF
10. APPLIANCE & PLUMBING VENTS: PAINTED ALUMINUM ALLOY CAPS & VENTS
11. SOLAR PANELS: MOUNTED W/SS CLIPS TO STANDING SEAMS, COLOR: BLACK ANODIZED. ALUM.

ELEVATIONS 1

scale: 1/4 inch = 1 foot

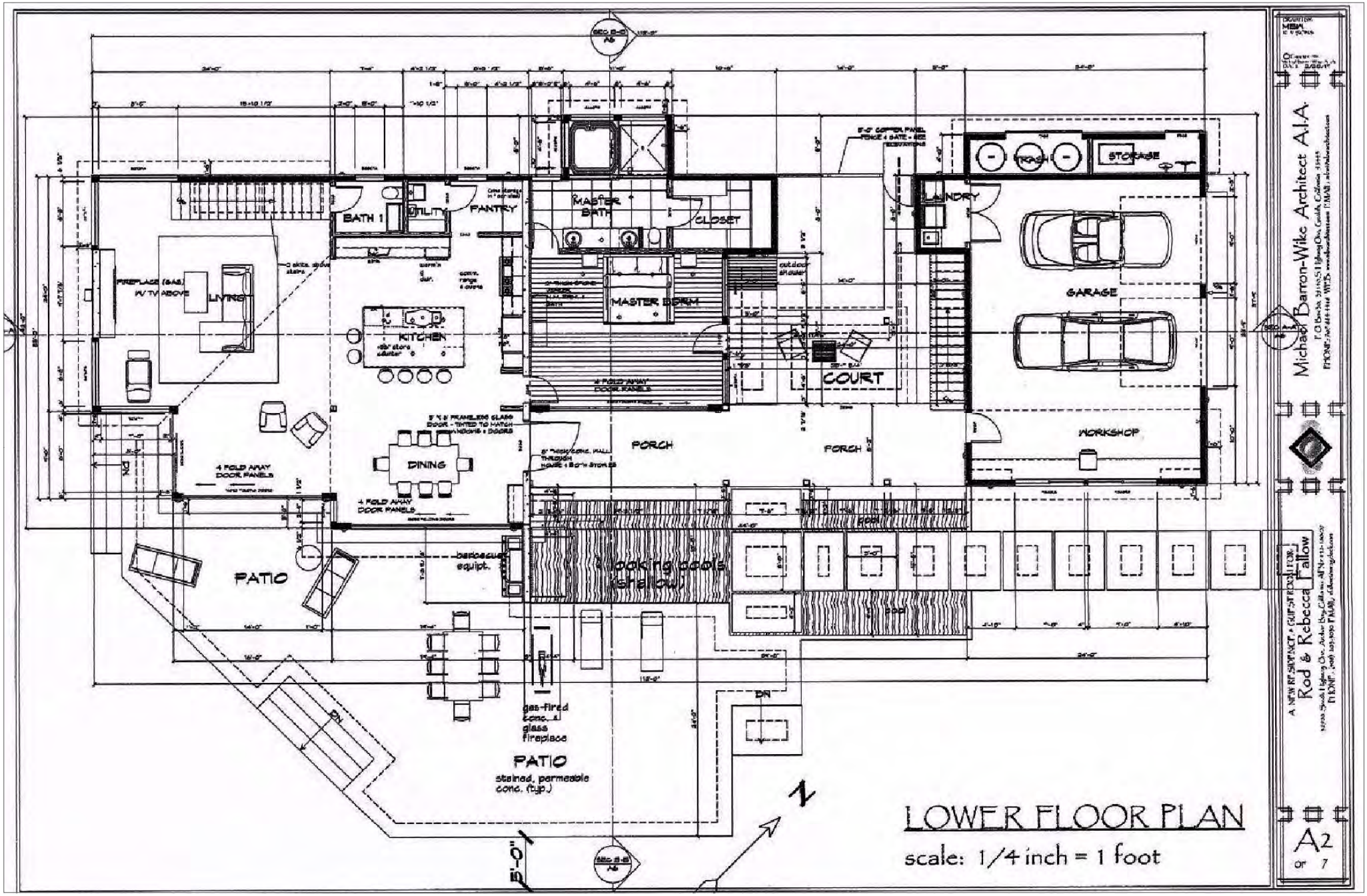
CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

NO SCALE

ATTACHMENT F

ELEVATIONS

THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.



CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

NO SCALE

ATTACHMENT F

LOWER FLOOR PLAN

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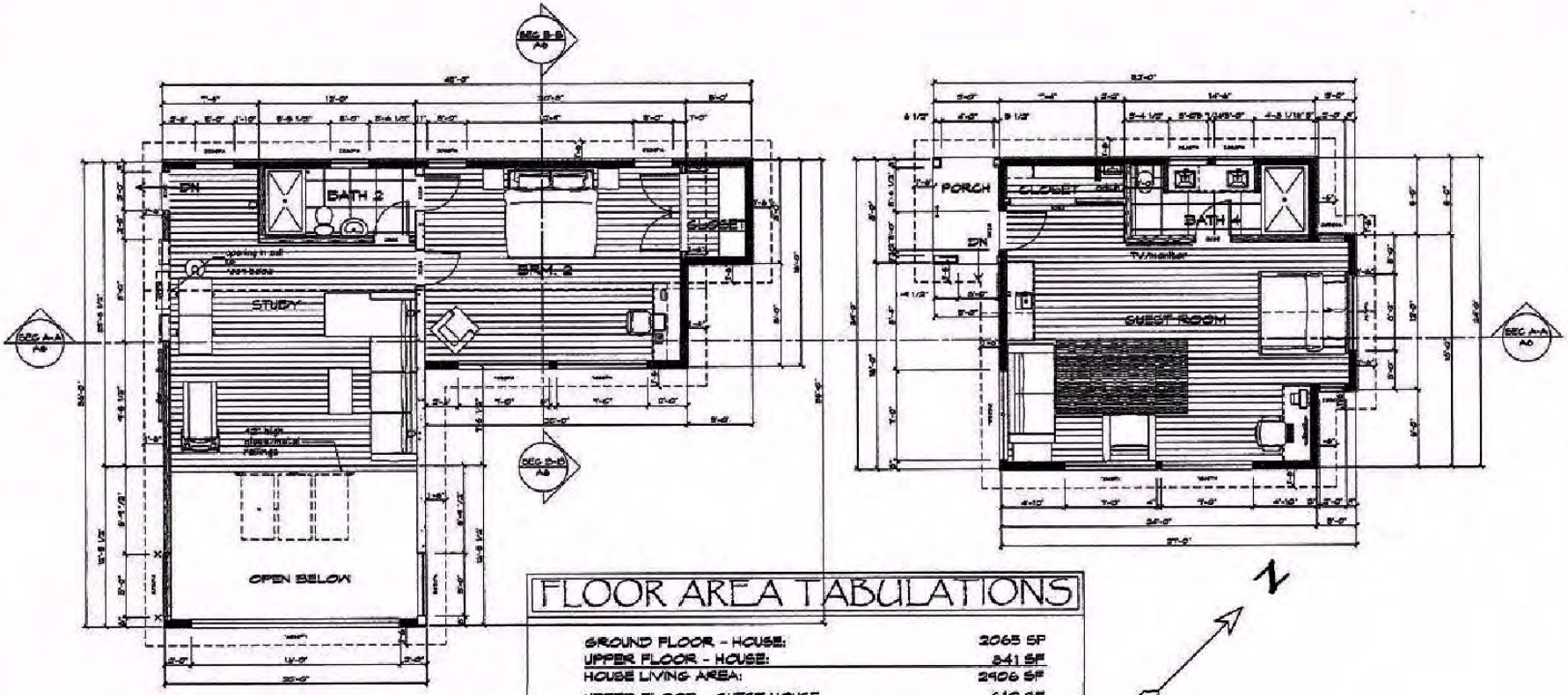

FLOOR AREA TABULATIONS

GROUND FLOOR - HOUSE:	2065 SF
UPPER FLOOR - HOUSE:	841 SF
HOUSE LIVING AREA:	2906 SF
UPPER FLOOR - GUEST HOUSE:	610 SF
TOTAL LIVING AREA:	3516 SF
GARAGE, WORKSHOP & STORAGE:	885 SF
COVERED PORCHES:	496 SF
WELL PUMP HOUSE:	96 SF

UPPER FLOOR PLANS

scale: 1/4 inch = 1 foot

A NEW RESIDENCE + GUEST ROOM FOR
Rod & Rebecca Fallow

Michael Barron-Wike Architect A.I.A.

A3
of 7

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

NO SCALE

ATTACHMENT G

UPPER FLOOR PLAN

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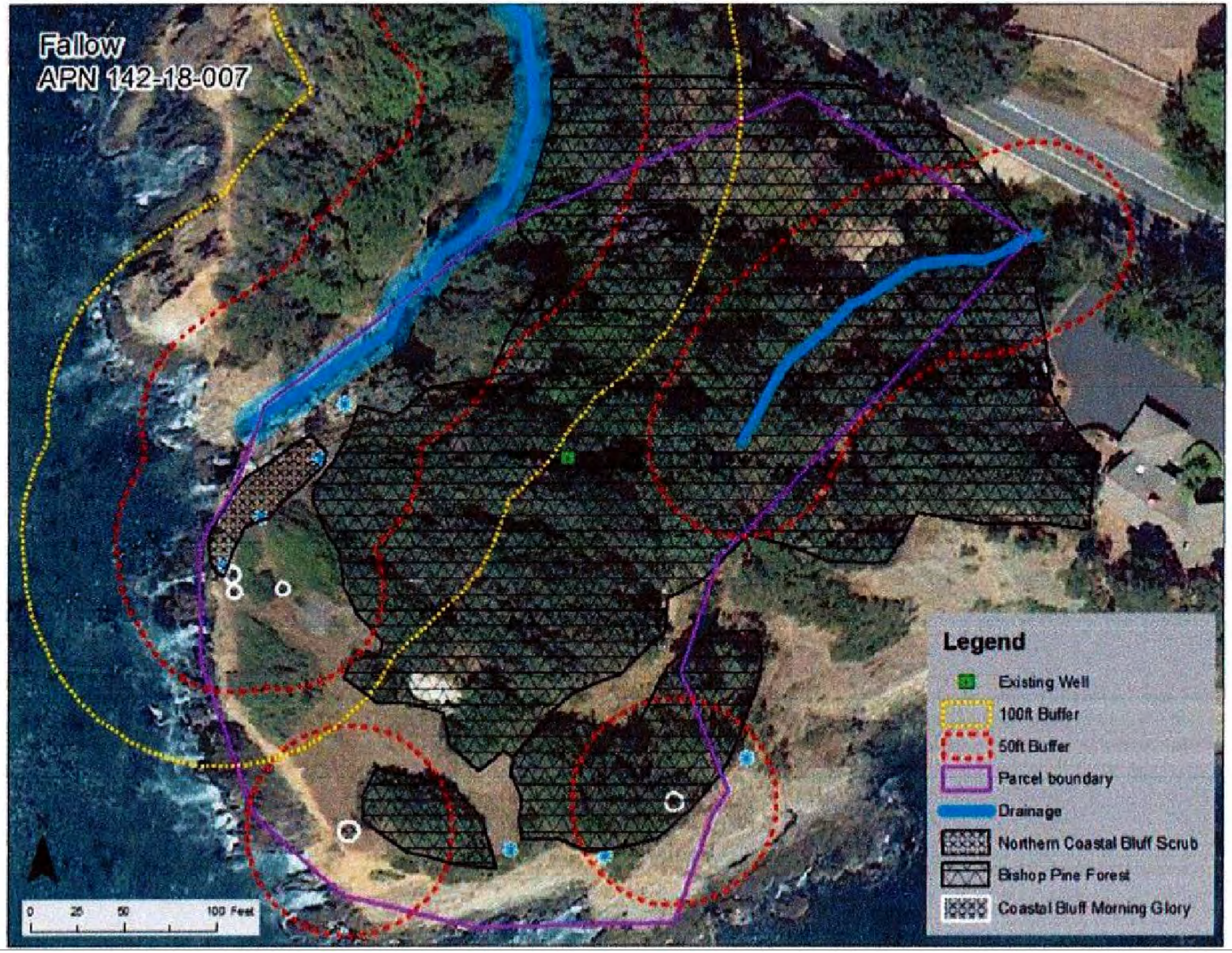

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

NO SCALE

ATTACHMENT H

BIOLOGICAL STUDY AREA & PROPOSED BUFFERS

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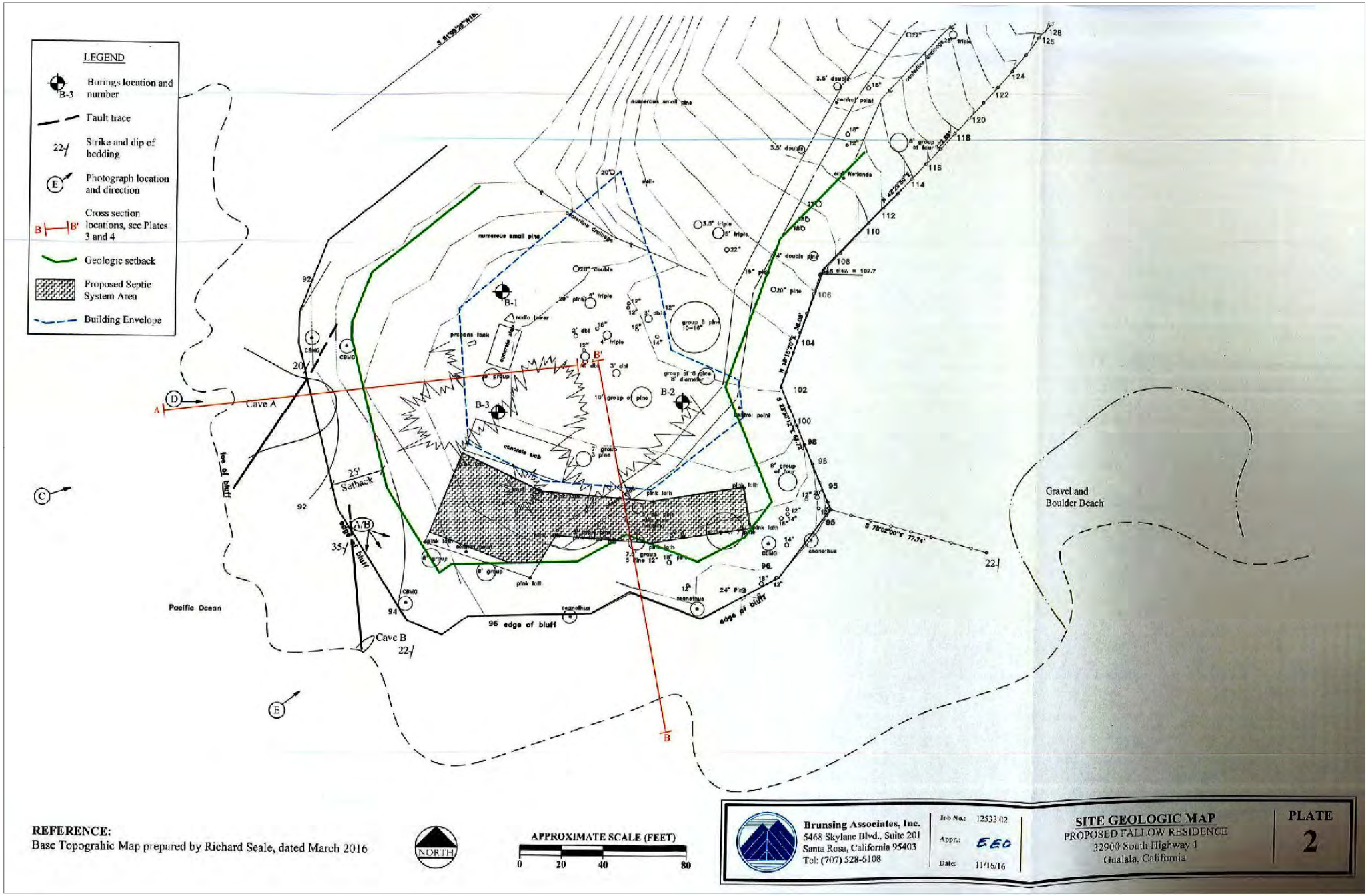

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

NO SCALE

ATTACHMENT I

GEOTECHNICAL STUDY

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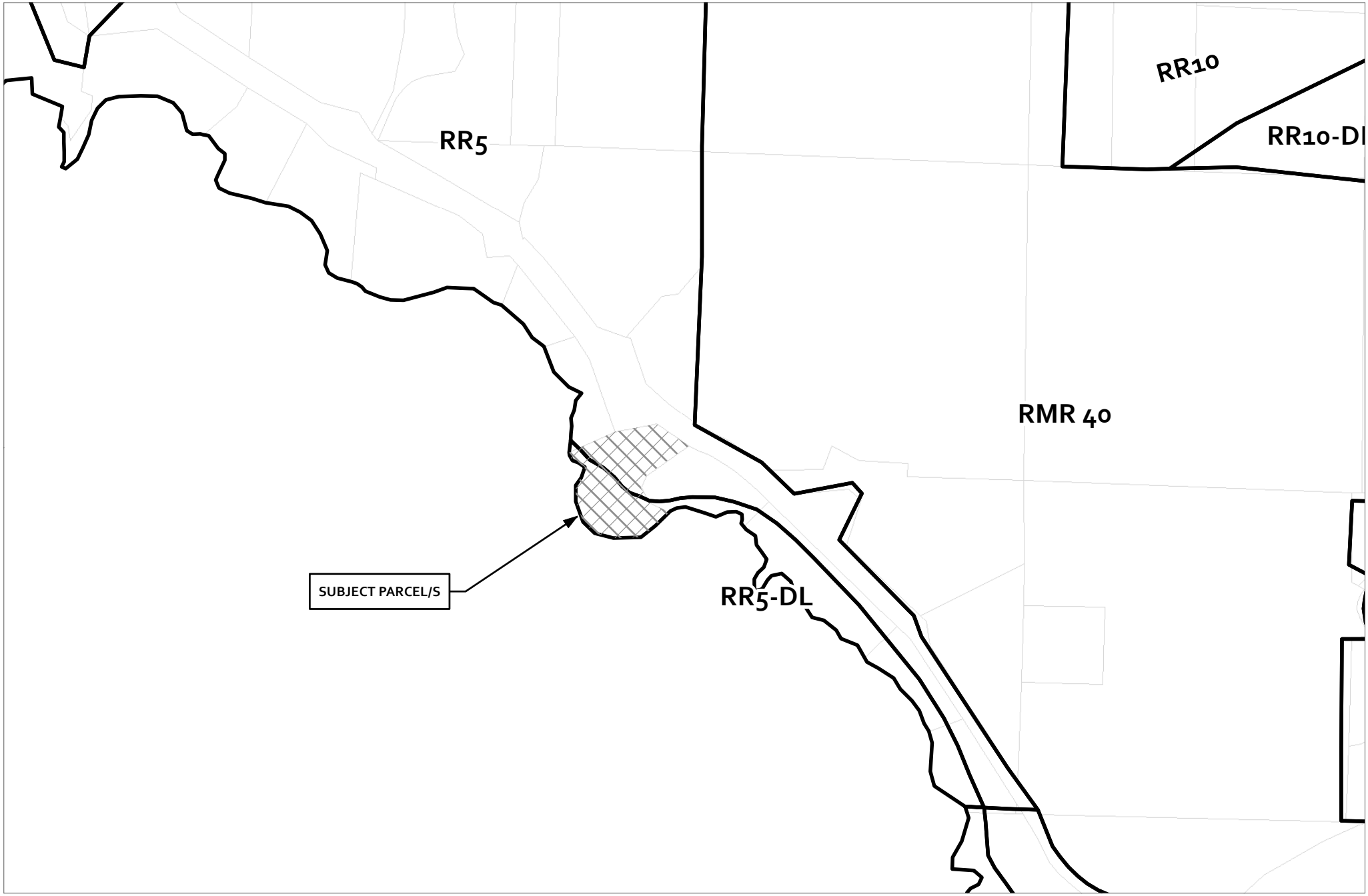

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

Zoning Districts

0 250 500 Feet
0 0.0425 0.085 Miles
1:6,000

ATTACHMENT J

ZONING DISPLAY MAP

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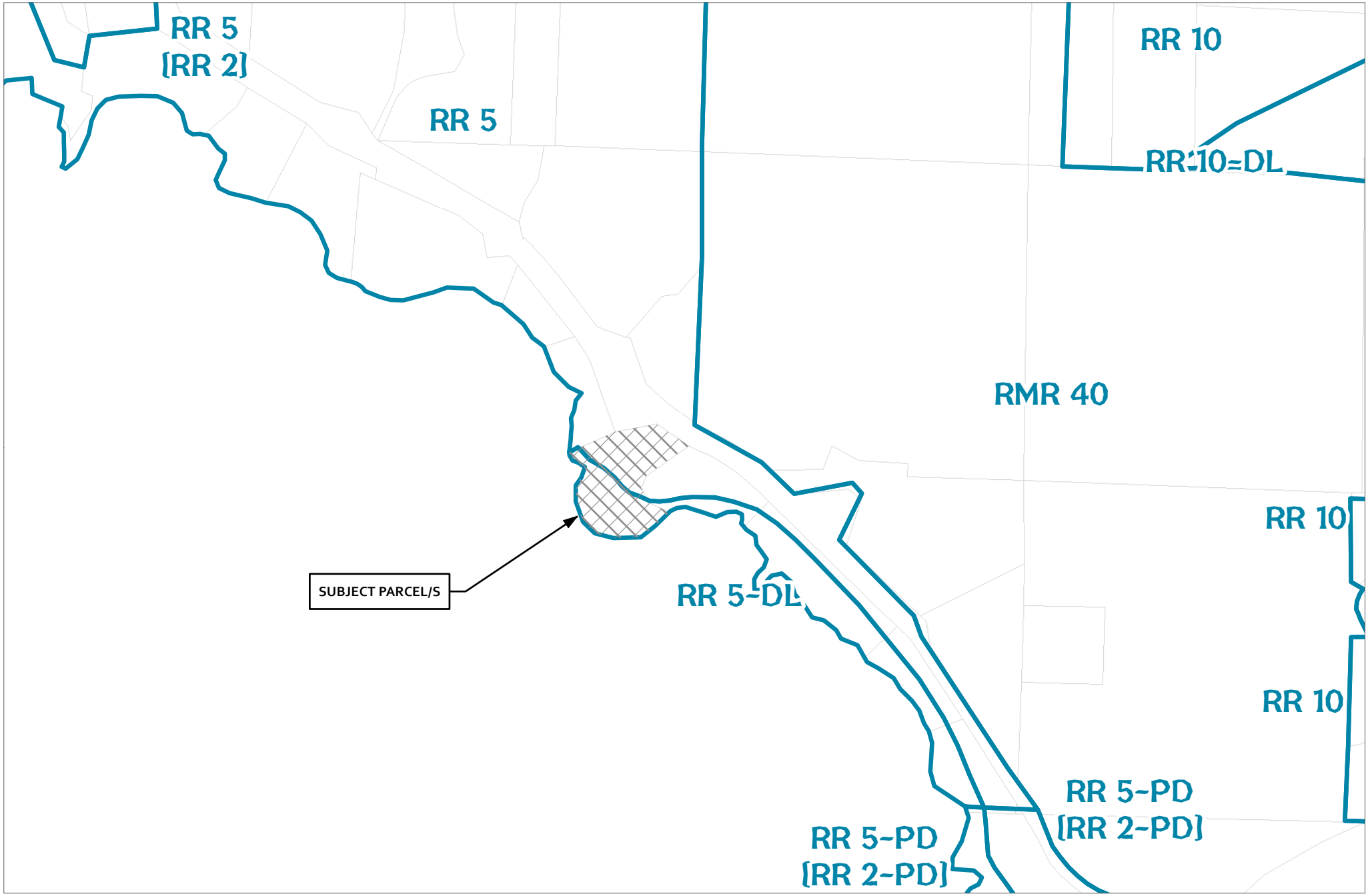

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

General Plan Classes

0 250 500 Feet
0 0.0425 0.085 Miles
N W E S
1:6,000

ATTACHMENT K

GENERAL PLAN CLASSIFICATIONS

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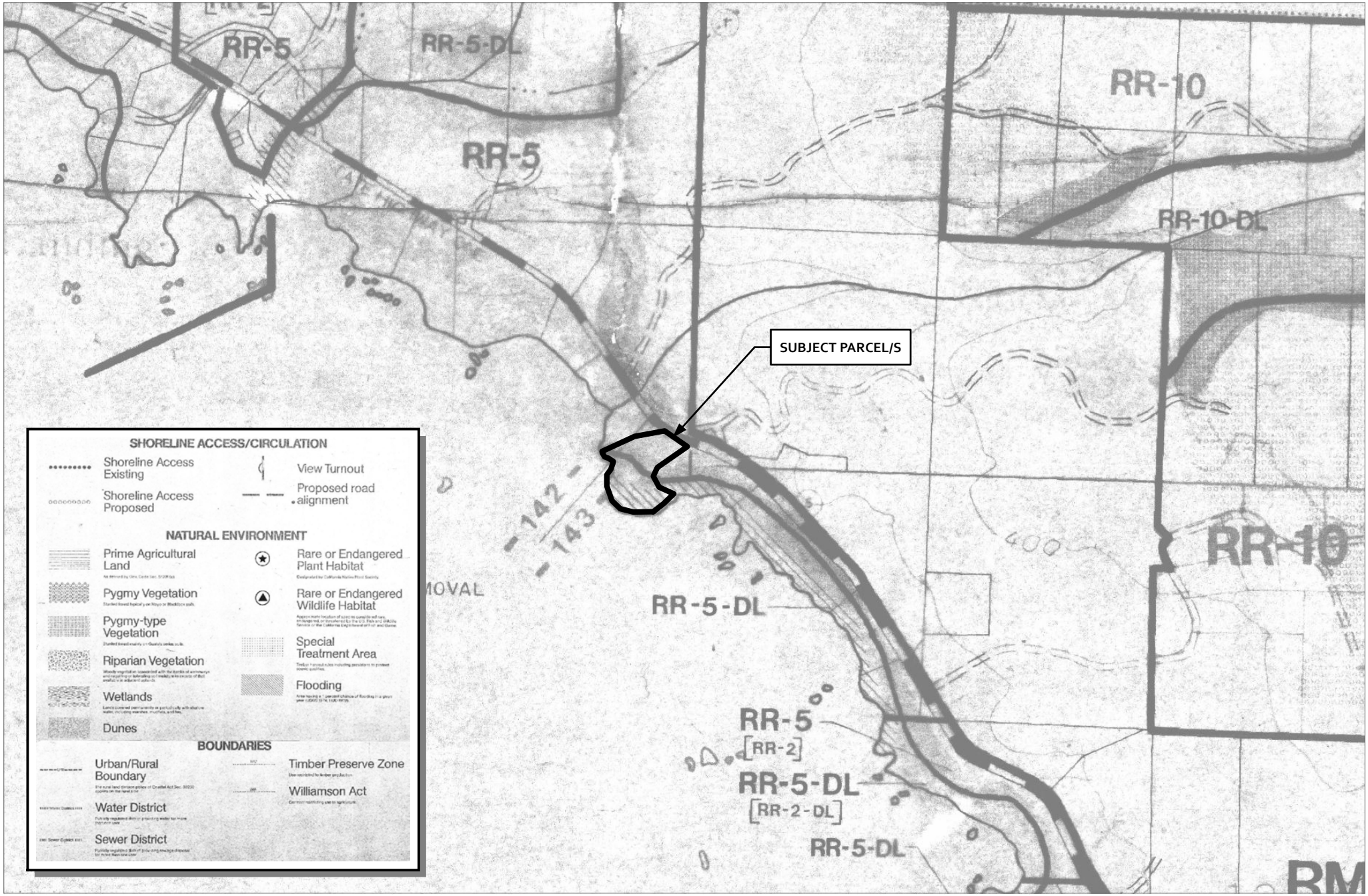

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

0 350 700 Feet
0 0.05 0.1 Miles
1:8,400

ATTACHMENT L

LCP LAND USE MAP 30: ANCHOR BAY

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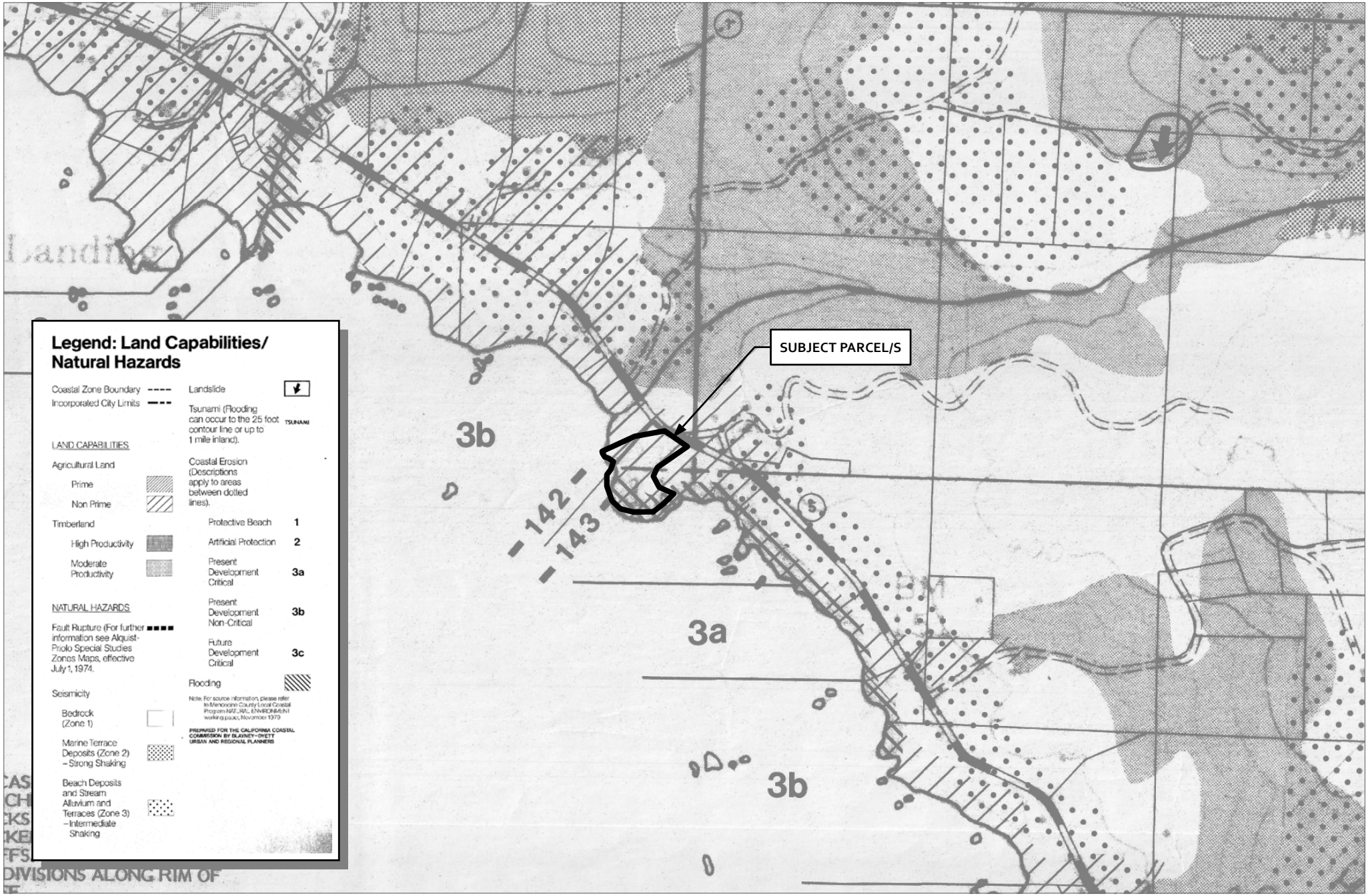

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

0 350 700 Feet
0 0.05 0.1 Miles
1:8,400

ATTACHMENT M

LCP LAND CAPABILITIES & NATURAL HAZARDS

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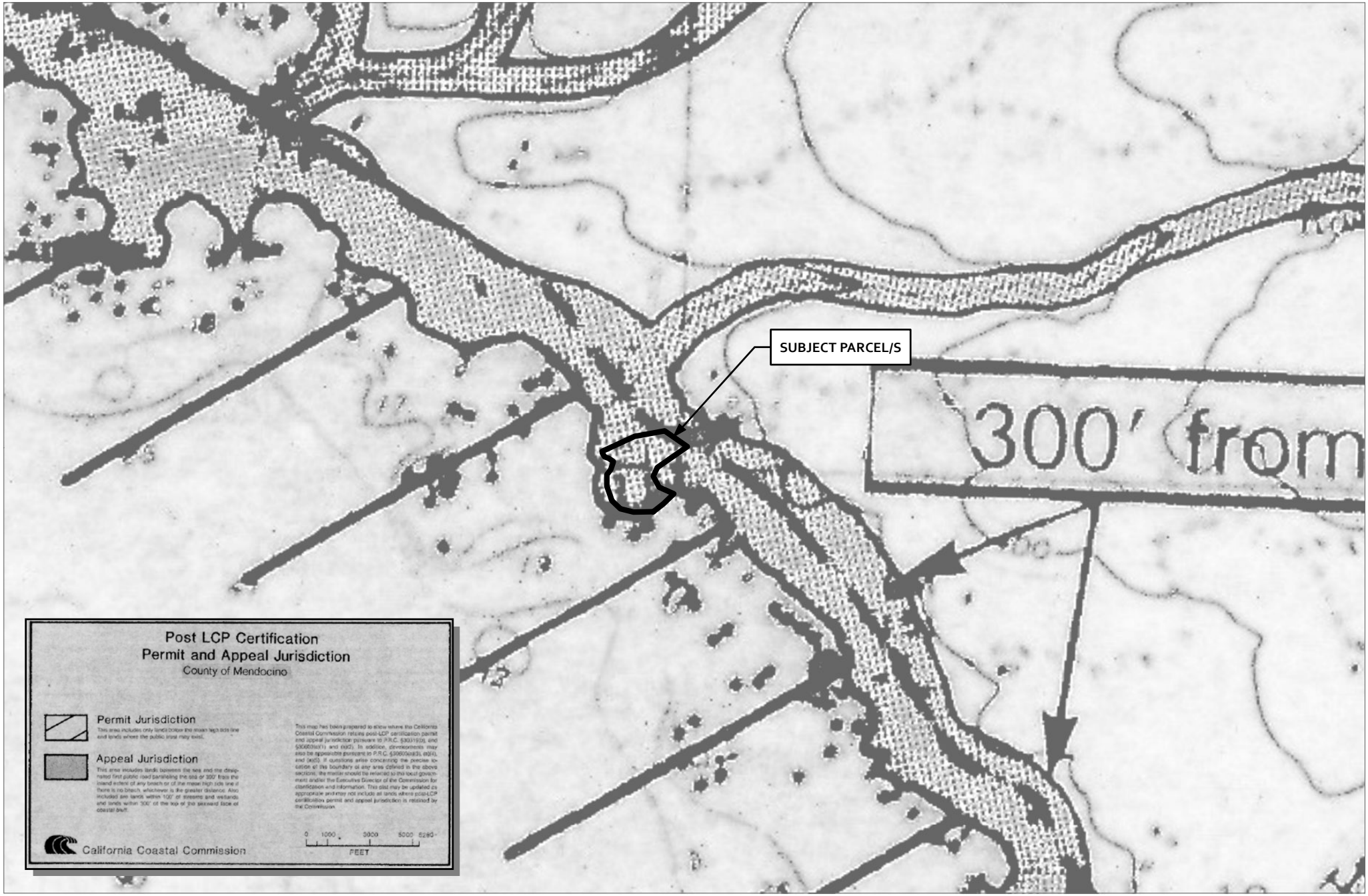

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

0 350 700 Feet
0 0.05 0.1 Miles
1:8,400

ATTACHMENT N

APPEALABLE AREAS

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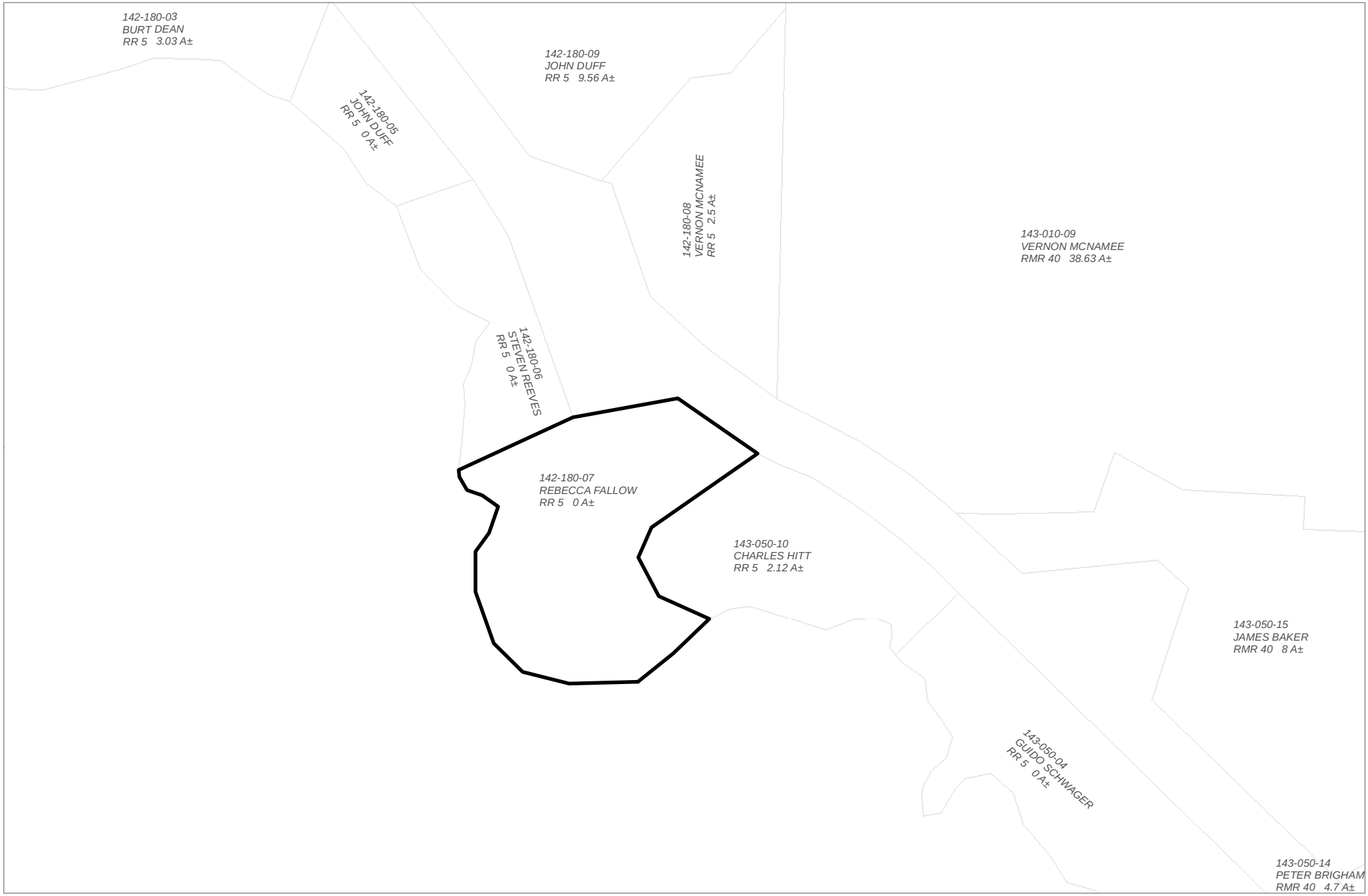

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

0 100 200 Feet
0 0.0175 0.035 Miles
N W E S
1:2,400

ATTACHMENT O

ADJACENT PARCELS

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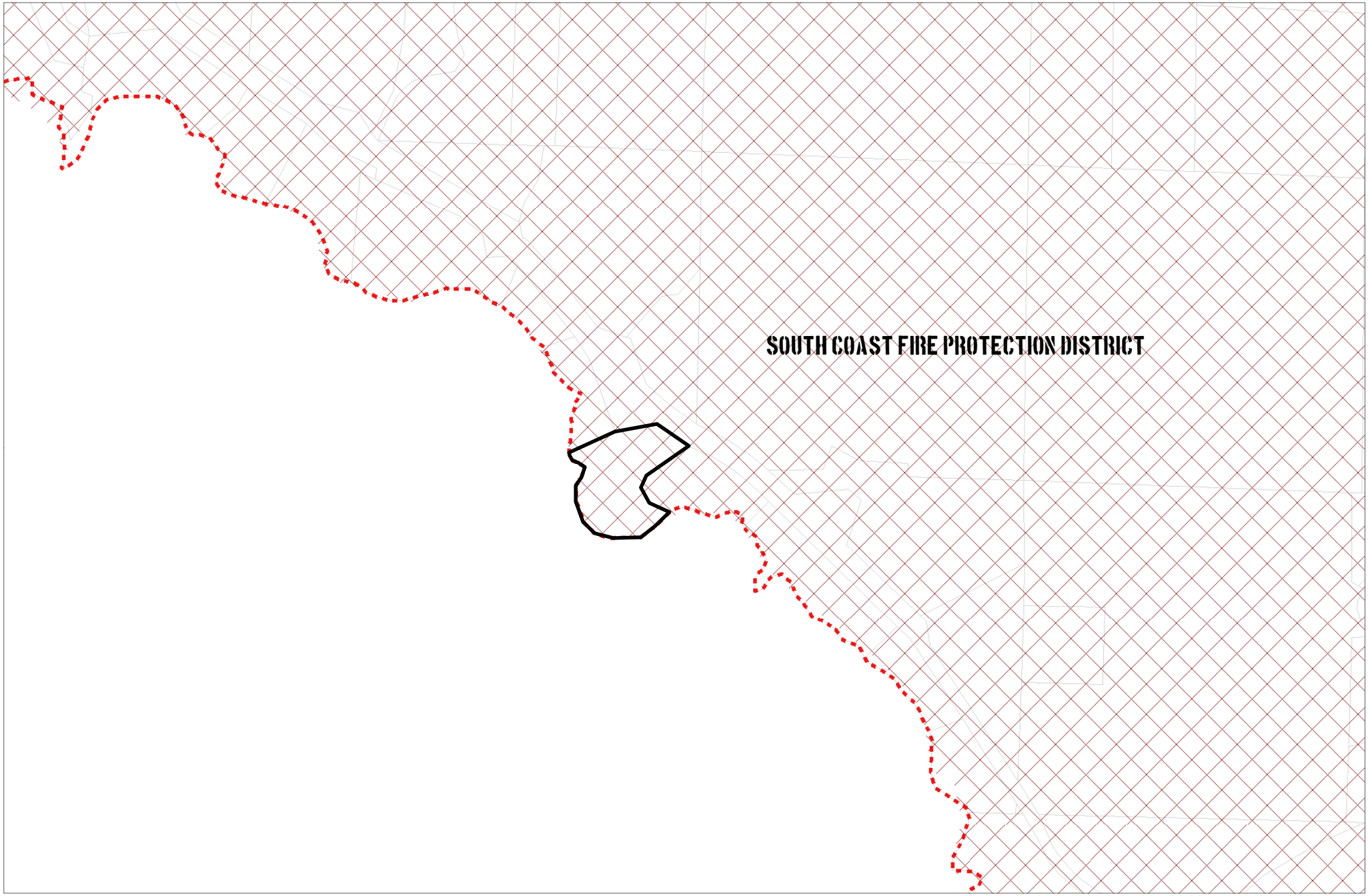


CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

County Fire Districts
High Fire Hazard

ATTACHMENT P

0 250 500 Feet
0 0.0425 0.085 Miles
N W E S
1:6,000

FIRE HAZARD ZONES & RESPONSIBILITY AREAS
STATE RESPONSIBILITY AREA

THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.

CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

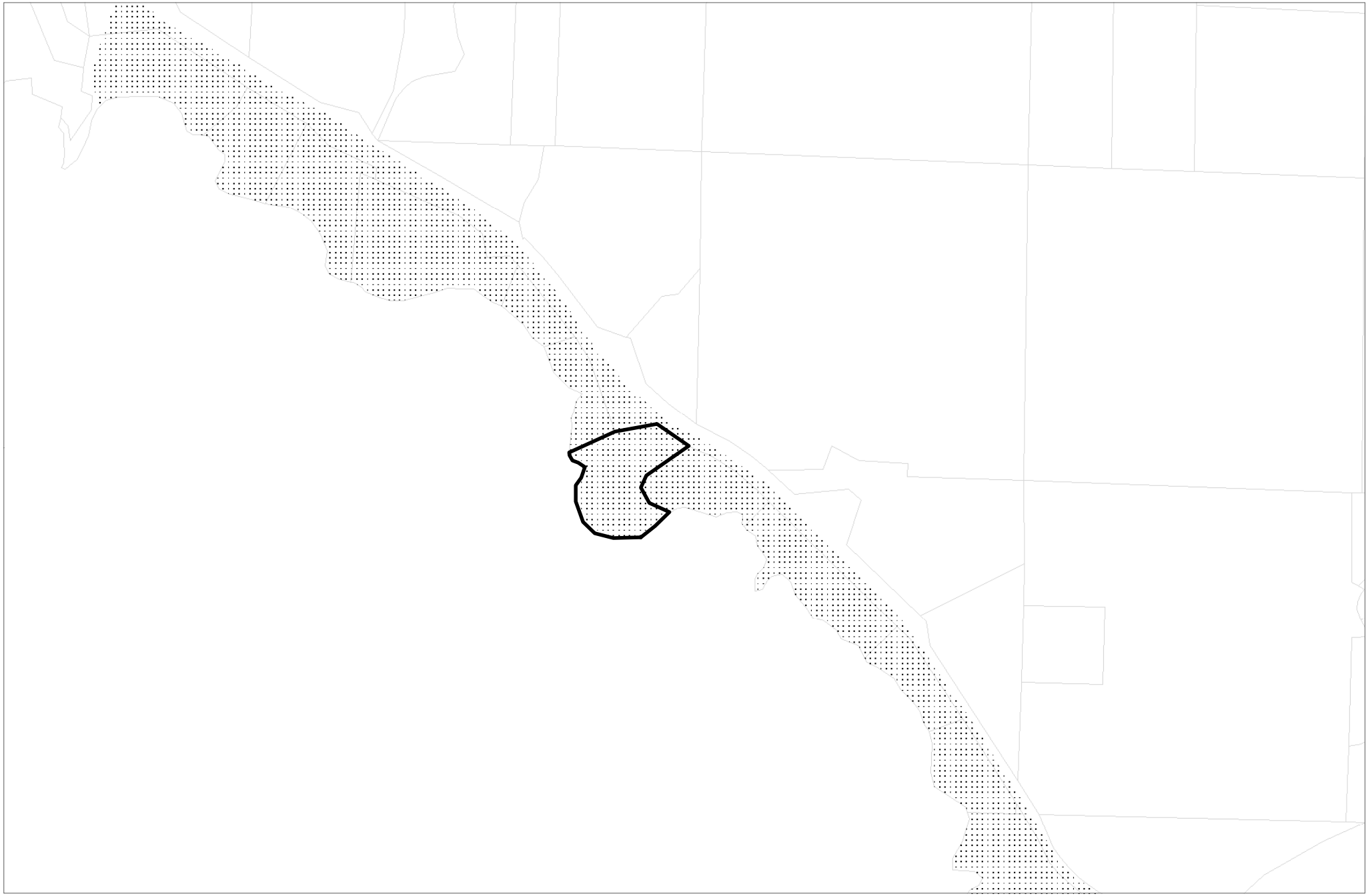
Critical Water Areas

0 250 500 Feet
0 0.0425 0.085 Miles
1:6,000

ATTACHMENT Q

GROUND WATER RESOURCES

THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.



CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

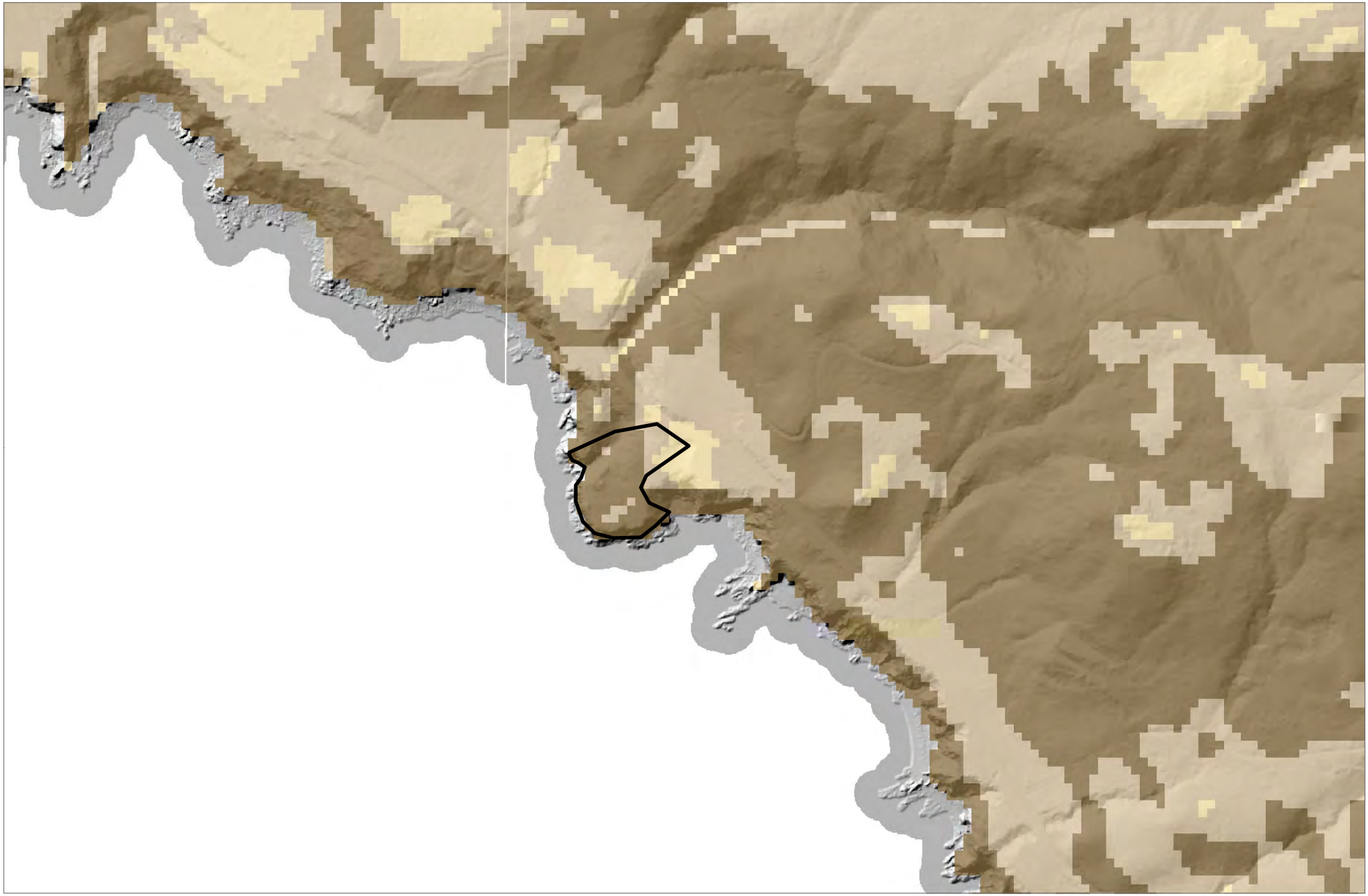
Tree Removal Area

0 250 500 Feet
0 0.0425 0.085 Miles
1:6,000

ATTACHMENT R

HIGHLY SCENIC & TREE REMOVAL AREAS

THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.



CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

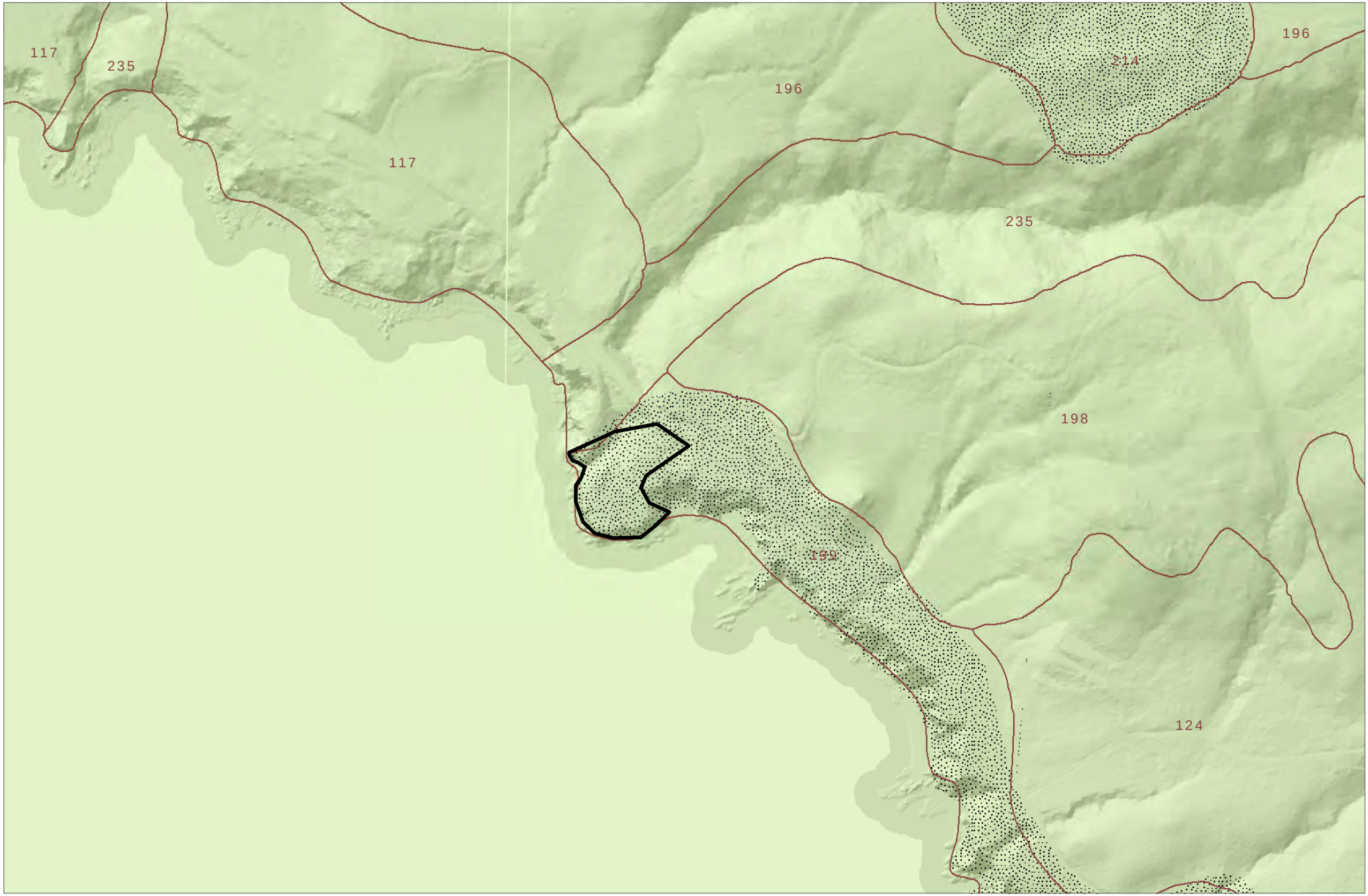
0° - 14°
15° - 32°
33° - 72°

0 250 500 Feet
0 0.0425 0.085 Miles
1:6,000

ATTACHMENT S

ESTIMATED SLOPE

THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.



CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

Western Soils

Shinglemill-Gibney Complex

0 250 500 Feet

0 0.0425 0.085 Miles

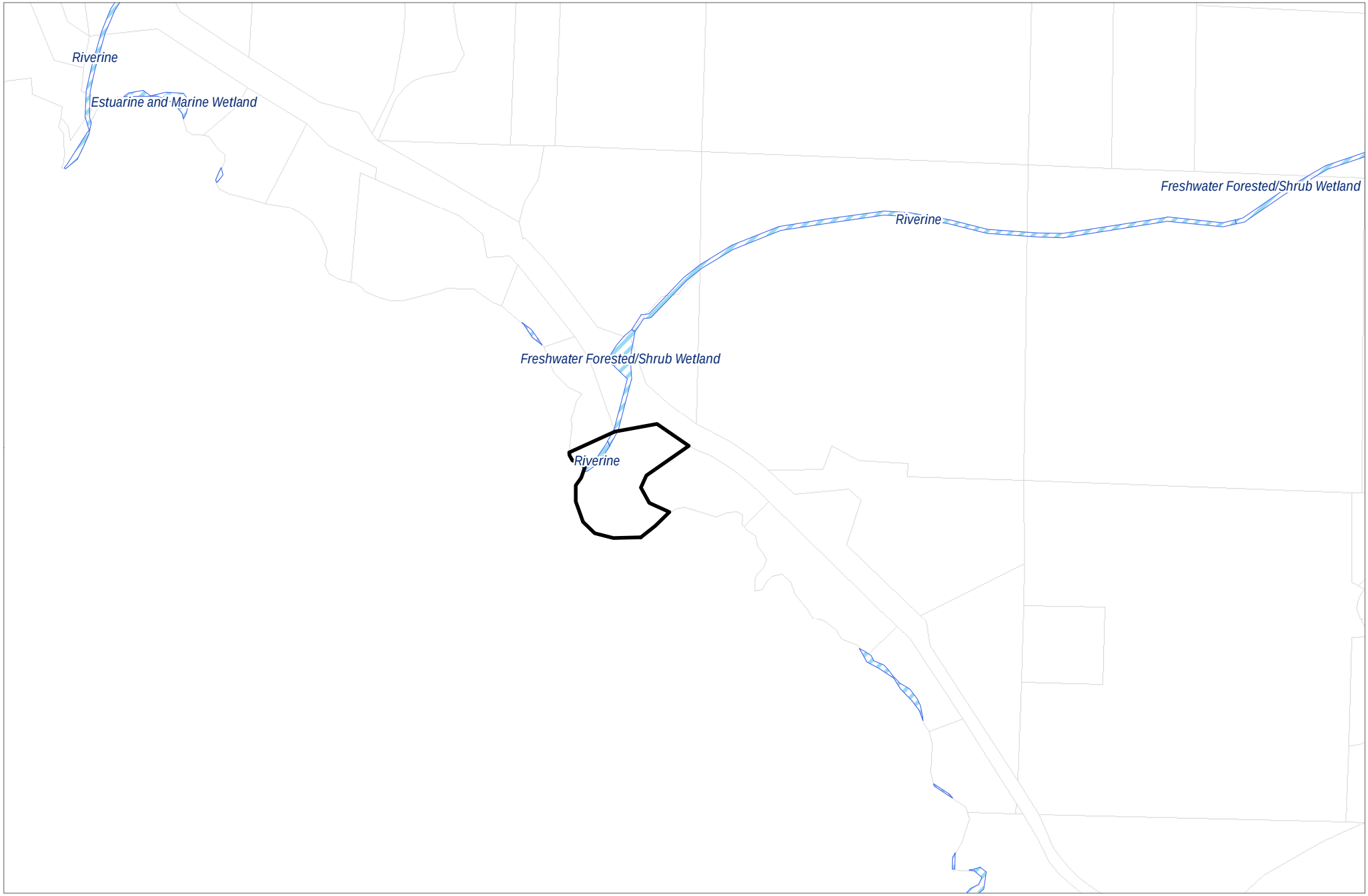
N W E S

1:6,000

ATTACHMENT T

LOCAL SOILS

THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.



CASE: CDP 2017-0007
OWNER: FALLOW, Rebecca & Rod
APN: 142-180-07
APLCT: Michael Barron-Wike
AGENT: Michael Barron-Wike
ADDRESS: 32900 S. Highway 1, Gualala

Wetlands

0 250 500 Feet
0 0.0425 0.085 Miles
1:6,000

ATTACHMENT U

CLASSIFIED WETLANDS

THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.

DATE: OCTOBER 14, 2017

CASE NUMBER: CDP_2017-0007
OWNER: ROD & REBECCA FALLOW
APPLICANT/AGENT: MICHAEL BARRON-WIKE
PROJECT DESCRIPTION: Standard Coastal Development Permit for construction of a single family residence with attached garage/workshop and overhead guest cottage. Associated development includes patios, walkways, a septic system, solar roof panels, pump house, and a 2,500 gallon water storage tank. Existing on the site is a driveway, well, and developed spring. The project will require removal of an existing incomplete structure (partially demolished structure) and related improvements.
LOCATION: The site is located approximately 2 miles north of the town of Anchor Bay, on the west side of Highway 1, approximately 500 feet south of its intersection with Roseman Creek Road (Private), located at 32900 S Highway 1, Gualala (APN: 142-180-07).

Environmental Checklist.

Environmental Checklist. This includes explanations of "no" responses.
"Significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change, may be considered in determining whether the physical change is significant (CEQA Guidelines, Section 15382).

Accompanying this form is a list of discussion statements for all questions, or categories of questions, on the Environmental Checklist. This includes explanations of "no" responses.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Geology /Soils
☐	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials	☐	Hydrology / Water Quality
☐	Land Use / Planning	☐	Mineral Resources	☐	Noise
☐	Population / Housing	☐	Public Services	☐	Recreation
☐	Transportation/Traffic	☐	Utilities / Service Systems	☐	Mandatory Findings of Significance

I. AESTHETICS. **Would the project:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

The subject parcel lies west of Highway 1. The public view west of the highway is dominated by dense woodland vegetation with glimpses of residential structures, visitor accommodation services and the ocean. There are no

other public places or scenic vistas in the vicinity of the project site. State Highway 1 is not a designated state scenic highway.

The project is not located in an area that is designated Highly Scenic by the Local Coastal Plan (LCP), as depicted on the *Anchor Bay* LCP map. The project site is designated as a tree removal area, where tree removal is encouraged in order to enhance public views of the ocean; however, due to the sensitive nature of the forest community (Bishop Pine Forest) present on this parcel tree removal will not be included as a condition of approval on this permit as it would be inconsistent with the LCP policies related to protection of Environmentally Sensitive Habitat Areas.

The proposed development will be visible from the sea, appearing before a forested backdrop. The development is at the toe of the slope, and should not appear as a silhouette against the sky from the sea or any other vantage point. It will appear similar to the existing single-family residential development on adjacent properties.

MCC Section 20.504.035 provides exterior lighting regulations intended to protect coastal visual resources in Highly Scenic Areas, Special Treatment Areas and Special Communities of the Coastal Zone. Exterior lighting is required to be within the zoning district's height limit regulations, and requires exterior lighting to be shielded and positioned in a manner that light and glare does not extend beyond the boundaries of the parcel.

II. AGRICULTURE AND FORESTRY RESOURCES. **Would the project:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

The project site is located in an area designated as "Rural Residential and Rural Commercial" by the State of California Department of Conservation. The parcel is zoned Rural Residential, as are surrounding parcels, and while limited agricultural uses are permitted in the Rural Residential zoning district, approval of this application would not convert any agriculturally zoned lands to non-agricultural uses. The project would not convert any land designated "Prime Farmland," "Unique Farmland," or "Farmland of Statewide Importance" to non-agricultural uses.

III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Conflict with or obstruct implementation of any applicable air quality plan?	☐	☐	☐	☒

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

The project is located within the jurisdiction of the Mendocino County Air Quality Management District (AQMD). Any new emission point source is subject to an air quality permit, consistent with the District's air quality plan, prior to project construction. The AQMD also enforces standards requiring new construction, including houses, to use energy efficient, low-emission EPA certified wood stoves and similar combustion devices to help reduce area source emissions.

While the project will not include a new point source, it may contribute to area source emissions by generating wood smoke from residential stoves or fireplaces. The County's building permit plan check process ensures that this and similar combustion source requirements are fulfilled before construction is permitted to begin, consistent with the current air quality plan. Consequently, the County's building permit approval process will help to ensure new development, including this project, is consistent with and will not obstruct the implementation of the air quality plan.

The generation of dust during grading activities, another type of area-source emission, will be limited by the County's standard grading and erosion control requirements (MCC Sections 20.492.010; -020). These policies limit ground disturbance and require immediate revegetation after the disturbance. Consequently, these existing County requirements will help to ensure PM10 generated by the project will not be significant and that the project will not conflict with nor obstruct attainment of the air quality plan PM10 reduction goals.

The project will establish a single-family residence in a low density rural residential coastal setting where residential development exists on adjacent parcels. Residential uses are consistent with the County's land use plan. Approval of this project will not permit large-scale development that may result in a cumulatively considerable net increase in air pollution, including PM10.

Air Quality Management District permitting may be required for this project. The applicant is advised of **Condition 4** that this permit is subject to the securing of all other necessary permits for the proposed development from County, State and Federal agencies having jurisdiction.

> **Condition 4:** This permit shall be subject to the securing of all necessary permits for the proposed development from County, State and Federal agencies having jurisdiction.

There are no short-term or long-term activities or processes associated with the single-family residence that will create objectionable odors. Nor are there any uses in the surrounding area that are commonly associated with a substantial number of people (i.e., churches, schools, etc.) that could be affected by any odor generated by the project.

IV. BIOLOGICAL RESOURCES: **Would the project:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian	☐	☒	☐	☐

habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?				
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

Several studies were prepared for the proposed project in order to identify sensitive resources on the parcel and also to provide recommendations to prevent potential impacts to documented sensitive resources as a result of the project. Spade Natural Resources Consulting (SNRC) prepared a Botanical and Biological Scoping Survey Report (November 17, 2016) , which includes as Appendix E a Report of Compliance.

SNRC determined that the site has several vegetation communities present. It is primarily characterized by Bishop Pine Forest (*Pinus muricata* Forest Alliance) and non-native grassland but also contains Northern Coastal Scrub/Coyote Brush Scrub (*Baccharis pilularis* Shrubland Alliance) and Northern Coastal Bluff Scrub (Holland community). The site also contains occurrences of short-leaved evax (*Hesperevax sparsiflora* var. brevifolia), Coastal bluff morning glory (*Calystegia purpurata* spp. *saxicola*), and Point Reyes ceanothus (*Ceanothus gloriosus* var. *gloriosus*). Two drainages and associated riparian areas are present on the parcel. Roseman Creek is a perennial stream that is located along the northern property line. Due to the steep, rocky stream bed, there is no riparian vegetation associated with this stream in the area adjacent to the subject property. The second drainage on the parcel was observed by SNRC to be within the Bishop Pine Forest, starting near the southeast corner of the parcel nearest Highway 1 and traveling south of and parallel to the existing gravel driveway. SNRC noted that the drainage is primarily dominated by invasive non-native calla lily (*Zantedeschia aethiopica*).

Of the resources identified on the site not all are considered Environmentally Sensitive Habitat Areas (ESHA), as defined in MCC Section 20.308.040(G). Identified ESHA include the special status plant community Bishop pine forest; two areas of wetlands, Roseman Creek and a wetland swale; and several occurrences of two species of rare plants, coastal bluff morning glory and short-leaved evax. SNRC did not observe any special status wildlife while on the property but still provided recommendations for the protection of wildlife species with potential to occur in the area. Wildlife species of concern for this parcel include Califronia red-legged frog, Sonoma tree vole, special status birds and bats, and nesting birds protected by the Migratory Bird Treaty Act.

Mendocino County Code requires that a sufficient buffer be established around all identified ESHA. A Reduced Buffer Analysis was included as Appendix D to the report from SNRC and recommends a minimum 100-foot buffer area between Roseman Creek and Northen Coastal Bluff Scrub/short-leaved evax habitat and a minimum 50-foot buffer between the southern drainage and coastal bluff morning glory plants and the proposed development. There is no location on the parcel where development would not occur within 50 feet of the identified Bishop pine forest. Additionally, the existing gravel driveway is located less than 50 feet from the southern drainage. Due to the presence of ESHA on the site, a Report of Compliance (Appendix E of the Botanical and Biological Scoping Survey Report) was prepared for the project describing the sensitivity of the resources present and showing the least impacting location for the proposed development.

Alternative projects to the proposed development were considered including agricultural and passive recreational opportunities and conditional uses in the district such as day care facilities and religious facilities. SNRC determined these various options to be infeasible either due to their potential for greater impact to identified resources and/or the economic feasibility of the alternatives. The subject parcel was purchased with the understanding that residential use is a principally permitted use for this parcel and expectations were set due to nearby development being residential in nature.

Alternative locations for the proposed residence were also considered. One building envelope has been identified that meets a 100-foot buffer to Roseman Creek and the special status Northern Coastal Bluff Scrub plant community (where the special status short-leaved evax is present), meets a 50-foot buffer to special status coastal bluff morning glory individuals and the southern drainage, is outside geotechnical setbacks, and is a relatively flat area. The identified building envelope is located within the special status Bishop pine forest plant community. An exhibit was submitted by SNRC on June 5, 2017 demonstrating that the footprint for the proposed residence will be located within the identified least environmentally damage building envelope.

The existing driveway is located within 50 feet of identified ESHA. Relocation of the existing driveway would result in significant impacts to the special status Bishop Pine Forest plant community. There is no less impacting alternative for the driveway placement. Improvements proposed to the driveway include trenching and placement of underground utilities within the existing driveway corridor. Since the gravel driveway is already in an area impacted by grading, this is the best location for the proposed utility line extension. The proposed septic system out of necessity is located closest to the bluff edge and was determined to be the only feasible location for the proposed septic system that meets health code requirements.

Mitigation measures have been identified by the project biologist to prevent and/or minimize potential impacts from the proposed development to identified ESHA. Mitigation measures, including restoration measures and proposed buffer areas were suggested in the Report of Compliance and a recommended as **Condition 11.**

Condition 11: All recommended Mitigation Measures proposed in the Botanical and Biological Scoping Survey Report (including Appendix E, Report of Compliance) dated November 17, 2016 prepared by Spade Natural Resources Consulting are required to provide for the protection of identified environmentally sensitive habitat areas. Mitigations are as follows:

a. A minimum buffer distance of 100 feet shall be observed to Roseman Creek and the Northern Coastal Bluff Scrub habitat area containing special status short-leaved evax. A minimum buffer distance of 50 feet shall be observed to special status coastal bluff morning glory and the southern drainage, except for the proposed improvements located along and within the existing driveway footprint. Development within the Bishop pine forest shall be limited to the areas shown on the exhibit submitted by SNRC dated June 5, 2017.

b. Prior to issuance of any building permits in reliance of this Coastal Development Permit, an active management plan shall be developed for the Bishop pine forest in order to provide for the long term health of the forest habitat. The active management plan shall be prepared by a qualified ecologist and approved by the California Department of Fish and Wildlife, and shall include: invasive species removal; a regular understory management regimen to facilitate the growth of new recruits; and identification, removal, and prevention of pathogens killing Bishop pine trees and other native flora.

c. The clearing of vegetation and initiation of construction shall be done during the bird non-breeding season between September and January. If this cannot be accomplished then a qualified biologist shall perform preconstruction breeding bird surveys within 14 days of the onset of construction or clearing of vegetation. The survey shall be submitted for review and approval by California Department of Fish and Wildlife staff. If breeding birds are identified then the measures prescribed in the Botanical and Biological Scoping Survey Report dated November 17, 2016 shall be adhered to.

d. The clearing of vegetation and initiation of construction shall be done between September 1 and October 31. If this cannot be accomplished then preconstruction surveys for potential bat roost sites shall be conducted and submitted for review and approval by the California Department of Fish and Wildlife.

e. Within two weeks prior to construction, project contractors shall be trained by a qualified biologist in

the identification of the California red-legged frog. Evidence that such training has been provided, such as a letter from the qualified biologist, shall be submitted to the Mendocino County Planning Division prior to commencement of construction activities. Construction crews shall begin each day with a visual search around all stacked or stored materials, as well as along any silt fences to detect the presence of frogs. If a California red-legged frog is detected, construction crews shall contact US Fish and Wildlife Service or a qualified biologist, and gain clearance prior to re-initiating work. If a rain event occurs during the construction period, all construction related activities shall cease for a period of 48 hours after the rain stops. Prior to resuming construction activities, trained construction crew members shall examine the site for the presence of frogs. If no special status frogs are found, construction activities may resume.

f. A Sonoma tree vole survey shall occur within two weeks of tree removal activities. If tree vole nests are found in trees to be removed, the California Department of Fish and Wildlife shall be immediately notified and steps shall be taken to protect identified tree vole nests per California Department of Fish and Wildlife requirements. Project commencement shall not occur until California Department of Fish and Wildlife gives clearance.

g. Standard Best Management Practices shall be employed to assure minimization of erosion resulting from construction. Ground disturbance shall be limited to the minimum necessary and disturbed soil areas shall be stabilized as soon as feasible. Silt fencing and orange construction fencing shall be placed and maintained for all areas where construction will occur upslope of and within 100 feet of the southern drainage and occurrences of coastal bluff morning glory. Any soil stockpiles shall be covered or otherwise stabilized to prevent dust impacts. Any bare soil created by the construction phase of the project shall be re-vegetated with native vegetation and/or native seed mixes for soil stabilization. Low Impact Development techniques shall be utilized to reduce stormwater runoff from new impervious surfaces.

h. Landscaping on the parcel shall not include any invasive plants and shall consist of native plants compatible with the present plant communities.

i. Heavy equipment undercarriages and tires shall be washed prior to entering the site in order to remove any invasive plant seed.

The proposed project is not consistent with all LCP policies relating to ESHA, despite the identification of the least environmentally damaging alternative, the lack of feasible alternatives on site, the proposed mitigation measures to offset project impacts, and siting development to minimize impervious surfaces and minimize vegetation removal. As stated above, Section 20.496.020(A)(1) reads in part, “the buffer area shall be measured from the outside edge of Environmentally Sensitive Habitat Areas and shall not be less than fifty (50) feet in width.” The project is inconsistent with this LCP policy; however, no alternative exists on the parcel that could be found to be consistent with this LCP policy. Prohibiting development within fifty (50) feet of an ESHA would deprive the owner of all economic use of the property. Consequently, staff evaluated if denial of the project would result in an unconstitutional taking of private property for public use, which is addressed in further detail in the Staff Report and attachments.

In summary, the proposed project cannot be found consistent with LCP polices relating to ESHA; however, the proposed project is the least damaging alternative and the proposed mitigation measures required by **Condition 11** will address the impacts to ESHA. These measures will mitigate the impact of the proposed development, and restore and enhance ESHA located on the parcel.

V. CULTURAL RESOURCES. **Would the project:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☐	☐	☒

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

At the June 14, 2017 hearing, the Mendocino County Archaeological Commission accepted an Archaeological Survey (May 18, 2002) for the project prepared by Thad Van Bueren and found that site(s) were identified and the recommendations of the report shall be strictly adhered to. **Condition 12** requires compliance with the recommendations of the submitted Archaeological Survey. In addition, **Condition 8** advises the applicant of the "Discovery Clause," which prescribes the procedures subsequent to the discovery of any cultural resources during construction of the project. With the inclusion of the recommended conditions, Staff finds the project to be consistent with Mendocino County policies for protection of paleontological and archaeological resource.

> **Condition 8:** If any archaeological sites or artifacts are discovered during site excavation or construction activities, the property owner shall cease and desist from all further excavation and disturbances within 100-feet of the discovery, and make notification of the discovery to the Director of the Department of Planning and Building Services. The Director will coordinate further actions for the protection of the archaeological resources in accordance with Section 22.12.090 of the Mendocino County Code.
>
> **Condition 12:** The recommendations contained in the Archaeological Survey dated May 18, 2002 prepared by Thad Van Bueren shall be strictly adhered to.

The project was referred to three local tribes for review and comment, including the Cloverdale Rancheria, Sherwood Valley Band of Pomo Indians, and the Redwood Valley Little River Band of Pomo Indians. As of this date, no responses have been received from any of the three local tribes.

VI. GEOLOGY AND SOILS. **Would the project:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☒	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☒	☐

Brunsing Associates, Inc (BAI) prepared a Geotechnical Investigation (November 16, 2016) to evaluate the geologic conditions at the property, primarily bluff stability, retreat (erosion) rate, and subsurface soil and rock

conditions to determine bluff setback criteria and provide recommendations for the foundation of the planned development. Based upon review of various resources and on-site investigation, BAI concluded that a bluff setback of 25 feet for future improvements, including leachfield areas, will guarantee a structural life of 75 years and includes a safety factor of 1.5 consistent with MCC Section 20.500.020 (B)(1). BAI also provided recommendations for site grading, foundation support, seismic design criteria, concrete slab-on-grade, retaining walls and site drainage. **Condition 9** is recommended to require the projects consistency with the recommendations of the BAI Geotechnical Investigation.

> **Condition 9:** The recommendations in the Geotechnical Investigation dated November 16, 2016 prepared by Brunsing Associates, Inc. shall be incorporated into the design and construction of the proposed project. Prior to issuance of a building permit in reliance on this Coastal Development Permit, the applicant shall submit evidence that a qualified geotechnical or civil engineer has reviewed the final building plans for consistency with the Geotechnical Investigation. No development shall be permitted within 25 feet of the blufftop edge.

It is the policy of the Coastal Commission and Mendocino County to require recordation of a deed restriction as a condition of development on blufftop parcels, prohibiting the construction of seawalls and requiring that permitted improvements be removed from the property if threatened by bluff retreat. The restriction also requires that the landowner be responsible for any clean-up associated with portions of the development that might fall onto a beach or into the ocean. **Condition 10** is recommended to address this issue.

> **Condition 10:** Prior to the issuance of the Coastal Development Permit, the applicant as landowner shall execute and record a deed restriction, in a form and content acceptable to the Coastal Permit Administrator and County Counsel, which shall provide that:
>
> a. The landowner understands that the site may be subject to extraordinary geologic and erosion hazards and the landowner assumes the risk from such hazards;
>
> b. The landowner agrees to indemnify and hold harmless the County of Mendocino, its successors in interest, advisors, officers, agents and employees against any and all claims, demands, damages, costs, and expenses of liability (including without limitation attorneys' fees and costs of the suit) arising out of the design, construction, operation, maintenance, existence or failure of the permitted project. Including, without limitation, all claims made by any individual or entity or arising out of any work performed in connection with the permitted project;
>
> c. The landowner agrees that any adverse impacts to the property caused by the permitted project shall be fully the responsibility of the applicant;
>
> d. The landowner shall not construct any bluff or shoreline protective devices to protect the subject single-family residence, garage, septic system, or other improvements in the event that these structures are subject to damage, or other erosional hazards in the future;
>
> e. The landowner shall remove the house and its foundation when bluff retreat reaches the point where the structure is threatened. In the event that portions of the house, garage, foundations, leach field, septic tank, or other improvements associated with the residence fall to the beach or ocean before they can be removed from the blufftop, the landowner shall remove all recoverable debris associated with these structures from the beach and ocean and lawfully dispose of the material in an approved disposal site. The landowners shall bear all costs associated with such removal;
>
> The document shall run with the land, bind all successors and assigns, and shall be recorded free of all prior liens and encumbrances, except for tax liens.

The project would require minimal grading as the site is relatively level in the building area and will only require approximately 10 cubic yards of cut and 10 cubic yards of fill. The only cut is required for the entrance to the garage and for the flat parking area by the trash cans and propane tank enclosure. The maximum height of both the cut and fill slope will be 2 feet. Best Management Practices will be implemented at the time of construction and protection measures recommended for the adjacent ESHA. With the inclusion of **Condition 11** the project is found consistent with policies related to grading, erosion and run-off.

VII. GREENHOUSE GAS EMISSIONS. **Would the project:**	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☒
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Assembly Bill 32 (AB32), the California Global Warming Solutions Act, 2006 recognized that California is a source of substantial amounts of greenhouse gas (GHG) emission which poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. AB32 established a state goal of reducing GHG emission to 1990 levels by the year 2020 with further reductions to follow. In order to address global climate change associated with air quality impacts, CEQA statutes were amended to require evaluation of GHG emission which includes criteria air pollutants (regional) and toxic air contaminants (local). As a result, Mendocino County Air Quality Management District (AQMD) adopted CEQA thresholds of significance for criteria air pollutants and GHGs, and issued updated CEQA guidelines to assist lead agencies in evaluating air quality impacts to determine if a project's individual emissions would be cumulatively considerable. According to the AQMD, these CEQA thresholds of significance are the same as those which have been adopted by the Bay Area Air Quality Management District (BAAQMD). Pursuant to the BAAQMD CEQA Guidelines, the threshold for project significance of GHG emissions is 1,100 metric tons CO2e (CO2 equivalent) of operation emission on an annual basis. This project as proposed, creating one additional single-family residence, will have no impact and be below the threshold for project significance of 1,100 metric tons CO2e.

Additionally, Mendocino County's building code requires new construction to include energy efficient materials and fixtures. Given the limited scale of the new house, the GHG generated by the project will not have a significant impact on the environment.

VIII. HAZARDS AND HAZARDOUS MATERIALS. **Would the project:**	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☒	☐	☐

The project will establish a residential use involving the routine transport, use and disposal of hazardous materials in small or limited quantities. These materials include construction materials, household cleaning supplies, and other materials including but not limited to fuel, cleaning solvents, lubricants associated with automobiles, small craft engines, and power tools. Storage of these materials in the open may result in contaminated stormwater runoff being discharged into nearby water bodies, including the Pacific Ocean.

This potential hazard is not significant if these materials, particularly construction debris, are properly stored on the project site and then disposed at an approved collection facility such as the nearby South Coast Transfer Station. Cleaning supplies and other household hazardous materials are less of a concern as they are routinely collected with the household waste and transported by waste haulers to approved disposal facilities. The nearest school is located approximately seven (7) miles from the project site, and will not be impacted by the limited quantities of hazardous materials present at or discarded from the project. Consequently, potential impacts involving the transport, use or disposal of hazardous materials is less than significant.

The project site is not subject to any airport land use plan.

The project will not result in any physical change to the existing roadway that would impair its use as an evacuation route. The parcel is located in an area classified with a “High Fire Hazard” severity rating.[1] Fire protection services are provided by the California Department of Forestry and Fire Protection (CalFire) and the South Coast Fire Protection Department (SCFPD). The project application was referred to CalFire and the SCFPD for input; SCFPD did not respond, whereas CalFire responded with a recommended condition to comply with the minimum fires safety standards for Hazardous Fire Areas, per the Public Resources Code. CalFire has submitted recommended conditions of approval (CDF 269-16) for address standards, driveway standards, and defensible space standards. **Condition 4** is recommended to achieve compliance with CDF fire safe standards. The recommended conditions will reduce impacts of hazards and hazardous materials to a less than significant level.

IX. HYDROLOGY AND WATER QUALITY. Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial	☐	☐	☒	☐

[1] Mendocino County Department of Planning & Building Services. No Date. *Fire Hazard Zones & Responsibility Areas* [map]

additional sources of polluted runoff?				
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

The site is located within an area mapped as Critical Water Resources (CWR). MCC Section 20.516.015 (B)(1) states that "approval of the creation of new parcels or additional building sites shall be contingent upon an adequate water supply during dry summer months which will accommodate the proposed parcels, and will not adversely affect the groundwater table of contiguous or surrounding areas. Demonstration of proof of water supply shall be made in accordance with policies found in the Mendocino Coastal Groundwater Study dated June 1982, as revised from time to time, and the Mendocino County Division of Environmental Health's Land Division requirements as revised." A test well was drilled on the parcel in 2000, permitted under CDP 5-2000, the test well produces adequate supply for a single-family residence. The test well will be converted to a production well under this permit.

The proposed project is not anticipated to violate any water quality standard or waste discharge requirements. The project would require minimal grading as the site is relatively level in the building area and will only require approximately 10 cubic yards of cut and 10 cubic yards of fill. The only cut is required for the entrance to the garage and for the flat parking area by the trash cans and propane tank enclosure. The maximum height of both the cut and fill slope will be 2 feet. Best Management Practices will be implemented at the time of construction and protection measures recommended for the adjacent ESHA. With the inclusion of **Condition 11** the existing drainage pattern is not anticipated to be altered where it may cause substantial erosion and/or flooding either on or off site.

The proposed density of the project maximizes the development potential of the existing approximately 2.57 acre parcel. The General Plan designation (Rural Residential – 5) and zoning district (Rural Residential – 5) of the subject site precludes any further subdividing. Additionally, the MCC does not allow second residences on the proposed parcels at this time. The low-density nature of the project, and the lack of potential for future development will ensure that local groundwater supplies are not substantially depleted.

The site is designated with a Development Limitations (DL) combining district. The DL combining district is typically applied to parcels with constraints such as slopes over thirty (30) percent, erosion or landslide potential or other geophysical hazards. All development proposed in an area designated DL is required to comply with the applicable provisions of MCC Chapter 20.420 (Floodplain Combining District) and Chapter 20.488 through Chapter 20.500. The proposed project is in conformance with all policies related to location within a DL combining district. **Condition 9** requires compliance with the BAI Geotechnical Investigation that was prepared for the project.

X. LAND USE AND PLANNING. **Would the project:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☒	☐	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐

The project site is situated in a long established rural residential area, and proposed adjacent to existing residential development. The low density development will be consistent with the established community.

The proposed project is consistent with all policies of the Local Coastal Program of the General Plan and the MCC, except Section 20.496.020(A)(1) relating to buffer widths from Environmentally Sensitive Habitat Areas; however, denial of the project based on this policy would constitute a regulatory taking, as described in the Staff Report. The Findings included with the project Staff Report address the analysis of alternatives, the mitigation measures proposed to offset impacts, and evidence supporting the investment backed expectation of the applicant to develop the parcel with a single-family residence.

The proposed development is not located in an area subject to a habitat conservation plan or natural community conservation plan.

XI. MINERAL RESOURCES. **Would the project:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

The project is not located in an area of known mineral resources. No impact is expected and no mitigation is required.

XII. NOISE. **Would the project result in:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

With the exception of short-term construction related noise, the proposed development will not create a new source of noise that will impact the community. Noise created by the single family residence is not anticipated to be significant, and no mitigation is required.

XIII. POPULATION AND HOUSING. **Would the project:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

The project would permit a new single-family residence in a zoning district and General Plan land use designation intended for residential development. The project would not trigger the need for new public roads or other infrastructure that may indirectly trigger population growth. Consequently, the project would not generate unanticipated population growth in the local area. The project will not require the displacement of any person living or working the area. No impacts are expected, and no mitigation is required.

XIV. PUBLIC SERVICES.	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	☐	☐	☒	☐
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

The project site is served by CALFIRE and the South Coast Fire Protection District. The addition of a single family residence in an existing community would not create additional significant service demands or result in adverse physical impacts associated with delivery of fire, police, parks or other public services.

XV. RECREATION.	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

The project site is located west of Highway 1, but is not designated as a potential public access trail location on the Local Coastal Plan maps. There is no evidence of prescriptive access on the site, nor would the development generate enough recreation demand to require the construction of additional facilities. The project would have no impact on public access or recreation, and no mitigation is required.

XVI. TRANSPORTATION/TRAFFIC. **Would the project:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☒	☐	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

The State Route 1 Corridor Study Update provides traffic volume data for State Highway 1. The subject property is located on Highway 1. The nearest data breakpoint in the study is located approximately one mile north of the property at the intersection of Fish Rock Road (CR 122) and Highway 1. The existing level of service at peak hour conditions at this location is Level of Service B. While the project would contribute incrementally to traffic volumes on local and regional roadways, such incremental increases were considered when the LCP land use designations were assigned to the site.

Access to the site would be provided from Highway 1. Caltrans provided comments on the proposed project and as a result of concerns expressed about site distance, the project driveway orientation was revised to provide for a better site distance. Caltrans also noted that any work within their right-of-way will require issuance of an encroachment permit from their office. **Condition 4** requires compliance with these recommendations.

The parcel is located in an area classified with a “High Fire Hazard” severity rating.[2] Fire protection services are provided by the California Department of Forestry and Fire Protection (CalFire) and the South Coast Fire Protection Department (SCFPD). The project application was referred to CalFire and the SCFPD for input; SCFPD did not respond, whereas CalFire responded with a recommended condition to comply with the minimum fires safety standards for Hazardous Fire Areas, per the Public Resources Code. CalFire has submitted recommended conditions of approval (CDF# 269-16) for address standards, driveway standards, and defensible space standards. **Condition 4** is recommended to achieve compliance with CDF fire safe standards.

XVII. UTILITIES AND SERVICE SYSTEMS. **Would the project:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

[2] Mendocino County Department of Planning & Building Services. No Date. *Fire Hazard Zones & Responsibility Areas* [map]

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

The project will generate domestic wastewater processed by a proposed on-site septic system, which will be required to meet local standards for septic design and location. The Mendocino County Division of Environmental Health reviewed the project application and recommended conditional approval.

The County's Stormwater Ordinance will ensure construction activities on the site will limit the project's stormwater impacts to a level that is not significant.

The site is located within an area mapped as Critical Water Resources (CWR). MCC Section 20.516.015 (B)(1) states that "approval of the creation of new parcels or additional building sites shall be contingent upon an adequate water supply during dry summer months which will accommodate the proposed parcels, and will not adversely affect the groundwater table of contiguous or surrounding areas. Demonstration of proof of water supply shall be made in accordance with policies found in the Mendocino Coastal Groundwater Study dated June 1982, as revised from time to time, and the Mendocino County Division of Environmental Health's Land Division requirements as revised." A test well was drilled on the parcel in 2000, permitted under CDP 5-2000, the test well produces adequate water to support a single family residence. The existing test well will be converted to a production well under this permit.

A septic system design has been reviewed and approved by the Mendocino County Division of Environmental Health (DEH), septic permit ST 23060. In a response from DEH they provided their clearance for the project with no further recommendations.

The South Coast Transfer Station is located approximately seven miles from the project site, providing for the disposal of solid waste resulting from the residential use. Additionally, curbside pickup is available, should the owner choose to purchase the service. Solid waste disposal is adequate to serve the proposed development.

Impacts related to utilities and service systems are less than significant.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively	☐	☐	☒	☐

considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?				
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

The project's potential to degrade the quality of the environment, as described in the first Mandatory Finding of Significance, will be less than significant provided it incorporates the mitigation measures recommended in this Initial Study.

None of the of the project mitigated impacts are cumulatively considerable because the project's potential impacts are limited to the project site, and the approval and establishment of the project will not alter the existing setting nor amend an existing regulation that would create a circumstance where the incremental effect of a probable future project will generate a potentially significant environmental impact.

The project will not generate any potential direct or indirect environmental effect that will have a substantial adverse impact on human beings including, but not limited to, exposure to geologic hazards, air quality, water quality, traffic hazards, noise and fire hazards.

DETERMINATION:

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

DATE

JULIA ACKER
SENIOR PLANNER

TAKINGS ANALYSIS

CDP_2017-0007

NOVEMBER 15, 2017

CDP_2017-0007

MICHAEL BARRON-WIKE ARCHITECT AIA
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10 March 2017

Julia Acker, Planner
County of Mendocino Planning & Building Services
120 West Fir Street
Fort Bragg, CA 95437

RE: Fallow Residence Takings Analysis

Applicant: Rod & Rebecca Fallow

Site: 32900 South Highway One
Anchor Bay, CA 95445
APN: 142-180-07-00

Dear Julia,

Enclosed is a "Takings Analysis Report" for the proposed Fallow Residence, along with the plans and application for a Coastal Development Permit. I have also included "Surroundings Development Data" taken from research information gathered by Wynn Coastal Planning for the immediate neighboring property owned by Guido & Jeannie Schwager. Their residence was recently reviewed and approved by you, as the County Staff Planner of Record, for Coastal Development Permit (CDP_2012_0017) on June 9, 2016. I was also the project architect for that residence.

The Takings Analysis Report is being submitted based on the botanical evaluation by Spade Resources (submitted separately). This report indicates that most, if not all, of the parcel is forested by Bishop Pines, which would place the parcel in the "complete ESHA category." While this project is slightly larger overall in square footage than the recently approved Schwager Residence, it has a lower lot coverage percentage, with both developments covering approximately 3.1% lot coverage.

Also, please note that unlike Schwager, the proposed Fallow Residence will not be visible from Highway One and should not impact any neighboring homes. It is located at a much lower elevation, below and much farther away from the highway and neighbors.

Feel free to call me with any other questions. Thank you.

Sincerely,

Michael Barron-Wike

Michael Barron-Wike
Project Architect

Enc: Exhibit 1 & 2

CC: Rod & Rebecca Fallow, Tom Roth

TAKINGS ANALYSIS

In this case, the Fallows Residence qualifies for a permit under the "takings" avoidance exception.

Public Resources Code § 30010, as applied by the County and the Coastal Commission previously, requires the County and the Coastal Commission to allow at least a single-family home on the Fallow site similar to previously approved homes.

The Fallows qualify for the takings exception under the *Lucas* analysis (since the entire site is ESHA), and also the *Penn Central* analysis since the Fallows had a reasonable investment-backed expectation for developing the property with a single-family residence.

The Fallows purchased the Property with the reasonable expectation of residential use (for building their home for retirement), their investment in the Property was substantial ($869,000), and the proposed development is commensurate with the reasonable investment-backed expectations for the site (*Penn Central* analysis). The Fallows purchased the site in part because it was at least 2.5 acres (the real estate agent located no other bluff top parcels that were at least 2.5 acres) and thus would allow for a slightly larger home.

The home size and footprint also is reasonable given the parcel size and given prior approval of homes in the area, including the nearby Schwager Residence approved in 2016 (CDP 2012-0017). For instance, both the Fallow Residence and the Schwager Residence have a footprint of about 3.1 percent of the total parcel.

An average of all post MCZ (1992) approvals is a total footprint of nearly 3.1 percent, thus indicating that it was reasonable for the Fallows to assume a residence footprint of the size proposed.

When the Fallows purchased the property in 2015, the property was zoned for residential use [RR-5 (Rural Residential 5-acre minimum)] and there were numerous existing homes on bluff top parcels in the area, including homes partially or fully located in ESHA. The Fallows were made aware of these other homes by their real estate agent and as a result of their own research of housing in the area.

Consequently, the Fallows had a reasonable investment-backed expectation that they were purchasing a lot that could be developed consistent with the ESHA policies of the Commission-certified LCP, and their investment reflected that the future development of a residential use could be accommodated. Given that: (1) numerous homes were in existence in the immediate area, at the time of the property purchase, including homes in the immediate proximity; (2) the property was planned and zoned for residential use; (3) other homes in the area had been approved even though located in ESHA, including Bishop Pines forest land, and (4) the Fallows planned a home footprint (in terms of percentage of site coverage) similar to other homes that had been approved, a reasonable person would have had a reasonable expectation that the parcel could be developed as a single-family home of the sized proposed.

The Fallow proposal is similar to the recently approved Schwager Residence, located nearby. The Fallow parcel is slightly larger (2.57 acres v. 2.40 acres), and thus the proposed development is larger, although the overall footprint is very similar in size (3,500 sf vs. 3,300 sf). As mentioned, both residences have a footprint that covers 3.1 percent of the site. The larger house size also is warranted since the Fallow parcel does not contain the same geographic limitations that the Schwager parcel encountered, i.e., the slope of terrain at the Schwager parcel forced that home to be stacked into three levels that would step down with the steeply sloped terrain. The Fallow Residence does not need to address any such limitation because the proposed site is mostly level and therefore more amenable to a single-family home development than the Schwager parcel.

Another advantage that the Fallow Residence has compared to other approved homes in the area is that there will be little grading except along the driveway. No soil will be taken from the site and displaced soil will be spread around the property. Also, unlike the Schwager Residence, there are no impacts to wetland buffer areas (cf., Schwager balconies will be built as cantilevered structures over the wetlands buffer area and most of the Schwager site appears to be ESHA). Fallow fits the house on the site without digging away existing topography, other than rooted topsoil, for the house and garage/guest room.

As such, the topography and geography, along with the Fallows' reasonable investment-backed expectations when purchasing the parcel in late 2015, require the approval of the proposed home, as located and configured on the site to minimize impacts to sensitive resources. Significant changes to the design and location cannot be achieved without adversely impacting the Fallow's reasonable investment-backed expectations.

The Fallows were made aware, or became aware, when they were purchasing the property that the Commission and/or County had previously approved other Mendocino County homes located in or impacting ESHA in order to avoid a taking and to comply with Public Resources Code § 30010 and the Constitution. For example, in 2012, the Commission approved Appeal No. A-1-MEN-09-034 (Marr and Marlin) which consisted of a residence with a total surface coverage of 4,759 feet and an 870-foot long driveway. The project impacted wetland ESHA, including the direct filling of 500 square feet of Coastal Act wetlands. However, the project was approved because according to Coastal staff, "To preclude a claim of takings and to assure conformance with California and United States Constitutional requirements, as provided by Coastal Act § 30010, this permit approval allows for the construction of a residential development to provide a reasonable economic use of the subject property." ". . . [S]ince any economic use of the subject property would necessitate a driveway through and adjacent to the wetland, staff recommends approval of the driveway in order to provide for a reasonable use of the property that will avoid an unconstitutional taking of private property for public use." "In view of the evidence that: (1) permanently restricting use of the property to resource dependent uses could potentially eliminate the economic value of the property; (2) residential use of a small portion of the property would provide an economic use; and (3) an applicant would have had a reasonable investment-backed expectation that a fully mitigated residential use would be allowed on the property, there is a reasonable possibility that a court might determine that the final denial of a residential use, based on the inconsistency of this use with LCP Policies and LCP Zoning would constitute a taking. Therefore, the Commission determines that the County LCP in this case does not preclude developing the proposed driveway within the wetland ESHA."

Similarly, in 2010, the Commission approved Appeal No. A-1-MEN-09-023 for a single-family home built entirely in ESHA in order to avoid a taking and to comply with Public Resources Code § 30010.

It was thus reasonable for the Fallows to expect that they would be treated similarly by the County and the Commission.

For these reasons, the Fallow Residence as proposed qualifies for the takings exception.

In further support of this analysis, we submit the following information typically requested by the County in a takings exception analysis:

INFORMATION NEEDED TO EVALUATE PROPERTY CONSISTENCY WITH COASTAL ACT SECTION 30010

1. When the property was acquired, and from whom: 09-30-2015 from Michael and Sigrid Wallach, as Trustees of the 2004 Wallach Family Trust.

2. The purchase price paid for the property: $869,000

3. The fair market value of the property at the time it was acquired and the basis upon which fair market value was derived: $869,000. Local Real Estate Comparisons by Kennedy Associates, Realtors. The Fallows also performed their own market analysis based on their review of the parcels available in the area.

4. Whether a general plan, zoning, or similar land use designations applicable to the property changed since the time the property was purchased. If so, identify the particular designation(s) and applicable change(s): NO

5. At the time the property was purchased, or at any subsequent time, whether the project has been subject to any development restriction(s) (e.g., restrictive covenants, open space easements, etc.), other than the land use designations referred to in the preceding question: NO

6. Whether the size or use of the property changed in any way since it was purchased. If so, identify the nature of the change, the circumstances, and the relative date(s): NO

7. Whether a portion of, or interest in, the property was sold or leased since the time the applicants purchased it, and the relevant date(s), sales price(s), rent assessed, and the nature of the portion or interest sold or leased: NO

8. A copy of any title report, litigation guarantee or similar document that might have been prepared in connection with all or a portion of the property, together with a statement of when the document was prepared and for what purpose (e.g., refinancing, sale, purchase, etc.): SEE ENCLOSED INFORMATION

9. The *approximate* date and *offered* price of any offers to buy all or a portion of the property since the time the applicants purchased the property: NONE

10. The costs associated with ownership of the property on an annualized basis for the last five calendar years. These costs should include, but not necessarily be limited to, the following:

    a. property taxes: (9/30/15 to date) $13,889.11 (11/15, 2/16, 7/16, 11/16)

    b. property assessments: 0

    c. debt service, including mortgage and interest costs: 0

    d. operation and management costs:

        i. Septic Design: $3331.00

        ii. Botanical Report: $5574.00

        iii. Surveyor: $2200.00

        iv. Geotechnical: $13,320.75

        v. Architectural Design & CDP Permit Analysis & Submittal: $83,200 to date

SUBMITTAL OF COUNTY PARCEL AND HOUSE SIZE DATA FOR SURROUNDING DEVELOPMENTS, Stories (Exhibits 1-2, Table 1):

a. Assessor's Parcel Number: 142-180-07-00

b. Parcel Physical Address: 32900 S. Highway One

c. Parcel Owner Name: Rod and Rebecca Fallow

d. Whether the development is single-story or 2-story: 2 story

e. Total house size, in square feet (including square footage of a second story, if applicable): 2906 sf

f. Total garage size, in square feet (including square footage of second story, if applicable): 885 sf plus a 601sf guest room above.

g. Total ground cover square footage (i.e., size of development footprints, excluding lofts and/or second stories) for house, garage, and related developments (e.g., decks, driveway, etc.) and: 2065 sf

h. Coastal Development and building permit numbers for each parcel: TBD

Table 1: Summary of Surrounding Development, updated and Comparison to Fallow Parcel

qty parcels	PARCELS	YEAR	LOT SIZE	SFR	FOOTPRINT	STORIES	GARAGE	PORCHES & SHEDS	TOTAL STRUCTURE	FOOTPRINT
47	all years	all	2.45	2,125	1,504	1.41	691	689	3,505	2,884
13	post MCZ	1992+	1.83	1,930	1,255	1.54	845	356	3,131	2,456
FALLOW SUBMITTAL:			2.57	2,906	2,065	2.00	885	592	4,383	3,542
SCHWAGER APPROVAL 6/16:			2.40	2,792	2,291	2.00	572	465	3,829	3,328

Driveway Comparisons between Fallow and the recently approved Schwager Residence is as follows:

1. Schwager New Driveway area approved: No driveways presently exist on this parcel. The proposed area for the new driveway is 5911 sf.
2. Fallow Existing Driveway and proposed: There is an existing 10-foot wide driveway with a compacted shale and gravel base. It appears that the property was used for many years for access to the bluff. Some have suggested that this point was used to "high line" (cable loading) lumber down to "dog hole schooner" ships for delivery to San Francisco prior to the construction of Hwy. One. This residential project includes the following modifications to the existing driveway to reduce the existing driveway area and ensure adequate parking and access for CDF/fire department vehicles in case of emergency:
    a. Existing Gravel Driveway: 4092 sf
    b. Existing Gravel Driveway to be removed: 1804 sf
    c. New Gravel driveway to add: 2268 with midway pullout
    d. Total Final Driveway SF: 4551 sf

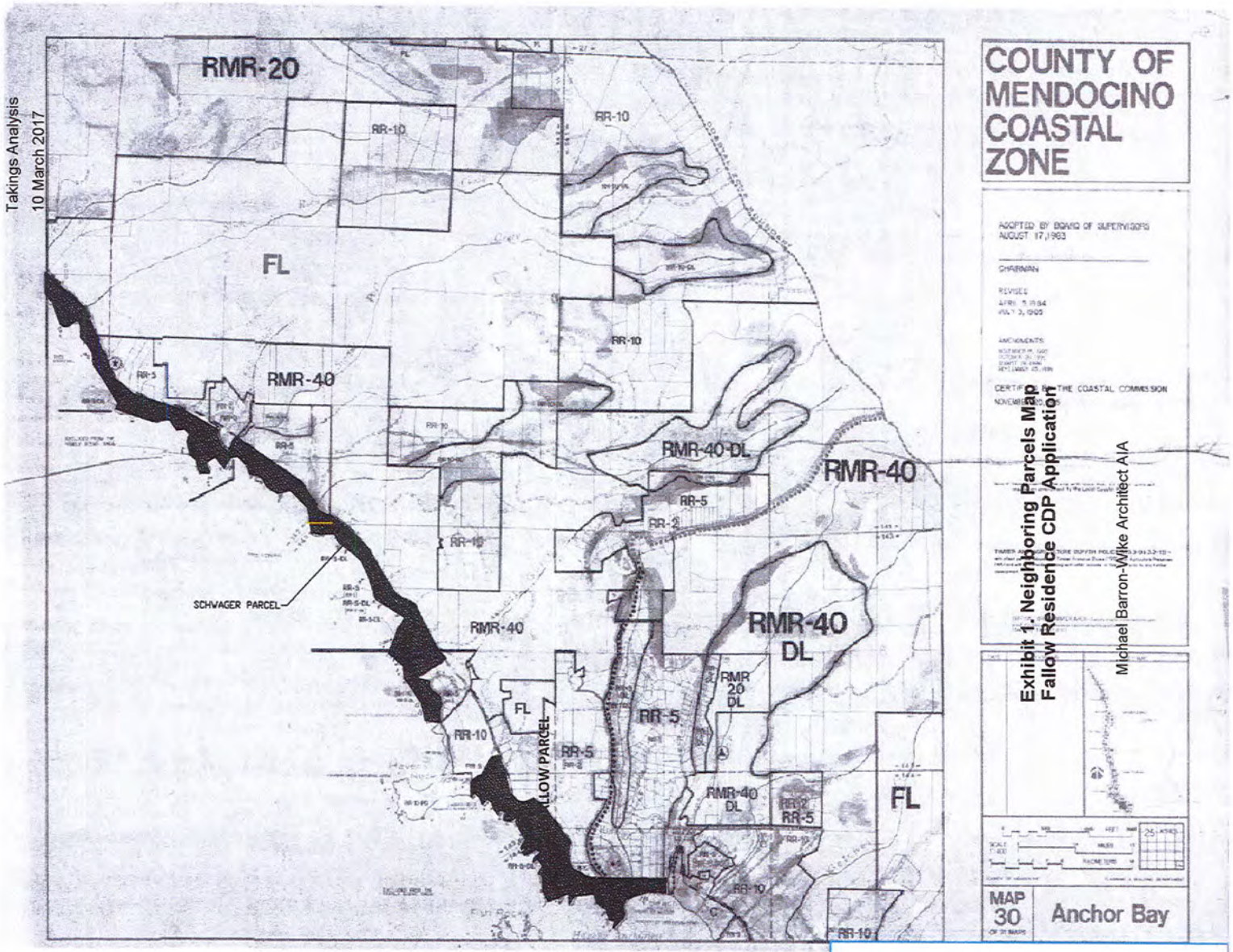


Exhibit 1. Neighboring Parcels Map
Fallow Residence CDP Application

Michael Barron-Wilke Architect AIA

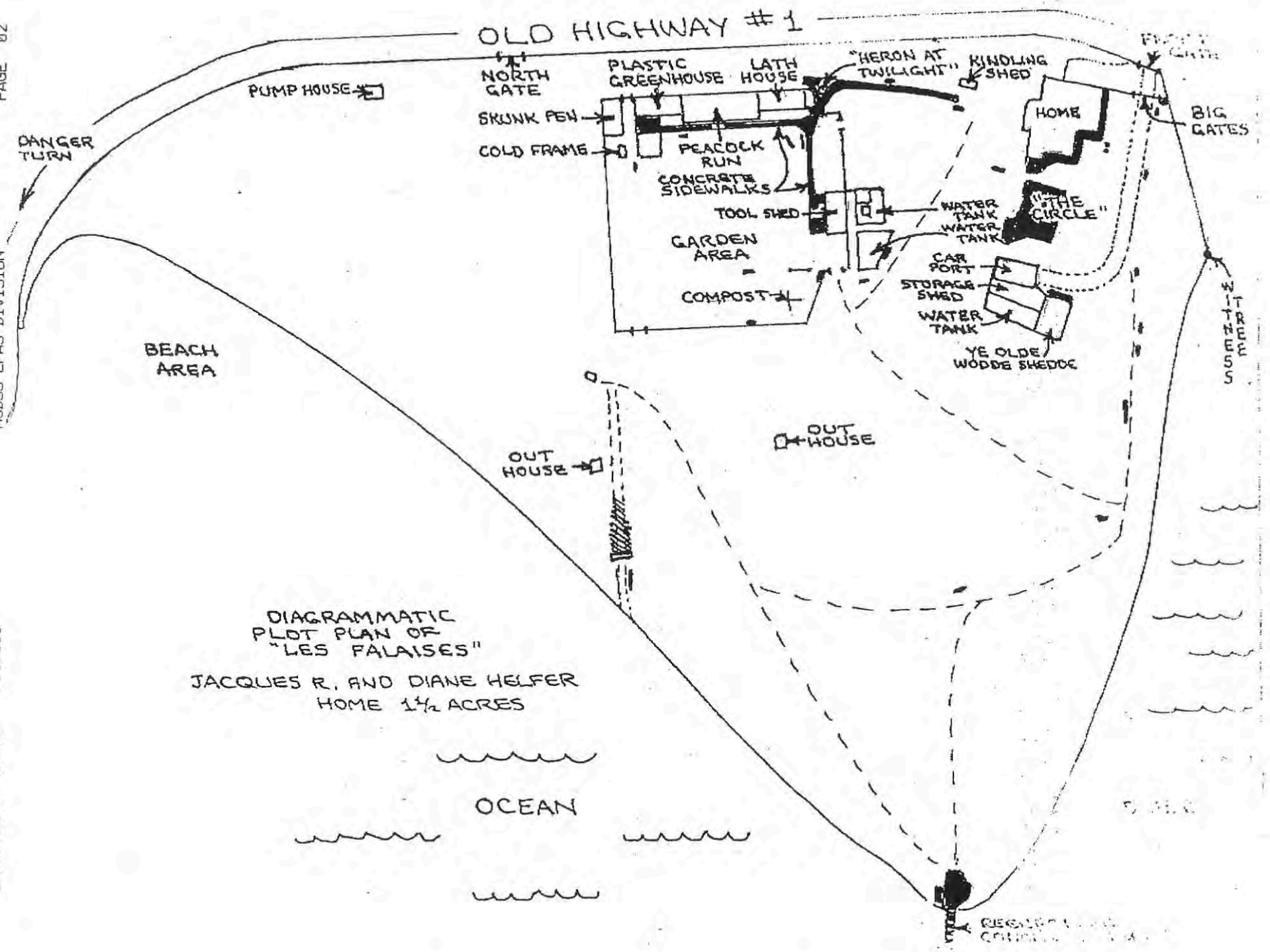
SURROUNDING DEVELOPMENT - all parcels with a zoning designation of RR-5, bluff-top

2016.01.18

ASSESSOR'S	sheet	Record #	year approved	APN	STREET #	STREET	NAME	LOT SIZE	orig SFR	ADDITION	TOTAL SFR	FOOTPRINT	BR	STORIES	HT	GAR	STORIES	ATTACHED	CARPORT	SFR+GAR	ADDITIONAL BLDG	BRIDGE	DECK/PATIO	LANDSCAPE	DRIVEWAY	(as provided in Staff Report) TOTAL STRUCTUR	CCC	CDP	COMMENTS
	2	1	2001	142-131-01	31550	S Hwy 1	Waxler	1.3	960		960		1	1.00						960	400								no plot plan
									SFR	electrical											Cabin								
									2001 bldg permit												2001 bldg permit								
1	3a-j	2	1963	142-151-01	31920	S Hwy 1	Roberson	0.9	902		902			1.00						902			256						no information in file but elec. Bldg w/ no info
																							DECK						
		3	2000	142-151-04	32000	S Hwy 1	Cross	0.83	1700		1700			2.00						1700									
									Reroof SFR																				
									2000 bldg permit																				
		4	1978	142-151-06	32100	S Hwy 1	Vannelli	1.81	1300		1300			1.00						1300									1978 Plot Plan for 3 SFR
									#1 SFR																				
									bldg permit for reroof																				
									3 SFR's Total																				
4		7	1952/1992	142-151-16	32060	S Hwy 1	Pronzini	1.32	1820	515	2335		2	1.00						2335									No information
									SFR																				
									1992 bldg permit for bath remodel																				
		8	1980	142-151-21	32150	S Hwy 1	Plath	1.85	1381		1381		2	2.00						1381									No plot plan
									1980 bldg permit																				
									2 bd/ 2 bath																				
		10	1999	142-151-24	32250	S Hwy 1	Farley	7	1560		1560	1560		1.00						1560									
									60x26 Manuf. SFR Install on fnd.																				
									inspection on Foundation																				
			2009						Reroof w/ plot plan																				
	3a-c	12	2006	142-180-03	32600	S Hwy 1	Dean	3.03	2172		2172			2.00		810				2982	619							CDP 38-04	
									SFR							garage					guest cottage								
		13	1996	142-180-06	32800	S Hwy 1	Harrison	1.62	2036		2036		2	2.00						2036								CDP 38-94	
									2 bdrm SFR w/ Addition																				
									resulting in 2036 sf																				
		14	1979	142-180-07	32900	S Hwy 1	Wallach	2.57	774		774			1.00						774									
									SFR/cabin																				
6	4	15	LAND ONLY	143-050-06	33300	S Hwy 1	Nord	1.25	LAND ONLY																				No file
		17	1974	143-050-10	33000	S Hwy 1	Hitt	2.12	2424		2424			2.00		484				2908									
									SFR							garage													
8	date only	19	1963	143-060-01	33500	S Hwy 1	Compton	9.6	1232	249	1481			2.00		225				1706	1102		288						
									SFR	SFR						garage					SRU (1999)								
9	date only	20	1948	143-060-05	33650	S Hwy 1	Windsor Propane Comp.	1.36	3500		3500			1.00						3500									
							Amerigas		Permit for Reroof	2 permits for elec. repair																			
10	date only	21	1994	143-060-08	25241	S Hwy 1	Halderman	0.95	1438		1438			2.00		837		672		2275								CDP 5-93	CDF 505-93
					33640	S Hwy 1	"= address in parcel quest"		SFR							garage		shop											
11	date only	22	1979	143-060-09	33620	S Hwy 1	Herman	0.5	1584		1584			1.00		840				2424	63								
									SFR							Garage					Storage								

																					94									
																					Office									
		23	2005	143-060-10	33600	S Hwy 1	Tosello	1.75	2000		2000			1.00		720				2720	50							CDP 18-05	
									SFR	BF 2005-1065 building elec repair					2 car detached garage & storage					tool shed									
12		24	1952	142-151-26-00	31970	S Hwy 1	Sorenson	0.88	416		416			1.00						416										
13		25	1974	142-170-05-00	32400	S Hwy 1	Campbell	1.97	2224		2224			1.00		420				2644		420								
									no information on house but ref building permit # 0227 dated 11.1.74 for gas system installation																					
		26	1979	142-170-07-00	32500	S Hwy 1	Graham	2.5	1876		1876			1.00						1876	1102	690								
										BF 96900182 for unknown footage to enclose existing space											shop and greenhouse									
		27	1995	142-170-08-00	32450	S Hwy 1	Alexander	2	2461		2461			2.00		1565				4026		867								
									CDP 67-94							Deatached two story garage and sewing room														
		28	2008	143-121-01	47000	Havens Neck	Suh	0.78	2208		2208			1.00						2208										
		29	2000	143-122-02	47070	Havens Neck	Jacobson	0.74	1430		1430			1.00		551				1981										
		30	1974	143-121-03	47080	Havens Neck	Lotter	1	1374	386	1760			1.00		484			227	2244		406								
										386 (additional bedroom 1978)																				
14		31	1970	143-121-04	33700	S. Hwy 1	Archbold	1.09	2394		2394			1.00		594	108			2988										
		32	1971	143-121-06	47120	Havens Neck	Workman	0.85	1400		1400			2.00		650	storage			2050		950								
																detached														
15		33	1962	143-121-08	47170	Havens Neck	Wolinsky	1.04	2685		2685			2.00			336			2685										
																	shop													
16		34	2001	143-121-09	47200	Havens Neck	Koploy	0.93	2918		2918			2.00		838				3756		454								
		35	1974	143-121-10-00	33680	S Hwy 1	Tonella	4.5	1980	2362	4342			2.00		500				4842		1000								
										CDP CCC 1-91-143																				
17		36	1956	143-121-11	33660	S Hwy 1	Meyer	6.4	1952		1952			2.00						1952										
										only info in file pertains to rewire in 95																				
		41	1998	143-122-08	47231	Havens Neck	Atkins	0.91	2099		2099			1.00		576				2675										
		42	1998	143-122-11	47051	Havens Neck	Dewitte	1.1	2109		2109			2.00		866				2975										
		44	1991	143-161-03	34200	S. Highway 1	Sprague	2.5	4677		4677			2.00		673				5350										
		45	pre 1984	143-161-06	34450	S. Hwy 1	Newhouse	1.78	2400		2400			2.00						2400										
22		46	1971	143-161-12	34150	S. Hwy 1	Dammann	1.6	3052		3052					624				3676		420								
										F8973; 1988																				
23		47	LAND ONLY	143-161-13	34120	S. Hwy 1	Havens Neck Preserve	8	LAND ONLY																					
24		48	1940	143-161-14	34400	S. Hwy 1	Terry	2	1624		1624			1.00		877				2501										
															second res															
25		49	1950	143-161-16	34300	S. Hwy 1	Linscheid	2	946		946			1.00						946										
									?? - SFR noted on site plan with 2 sheds... no info or data of space or time																				
		50	1991	143-161-17	34250	S. Hwy 1	Remsing	2.6	3025		3025			1.00		1200				4225			1201							
26		51	LAND ONLY	143-161-18	34160	S. Hwy 1	Dammann	6.17	LAND ONLY																					
		52	1985	143-161-19	34100	S. Hwy 1	Duffield	6.5	3525	470	3995			2.00		684				4679	360	442								
										1992 addition											office									
27		53	1964	144-011-02	34650	S. Hwy 1	Bidgood	2	850		850			1.00						850										
									No info but building exisits. Rewire permit																				
28		54	LAND ONLY	144-011-03	34700	S. Hwy 1	Smith	2.07	LAND ONLY																					
		55	1975	144-011-04	34730	S. Hwy 1	Prince	1.87	1700	136	1836			1.00		420				2256										
										1996 addition																				
		56	1981	144-011-05	34800	S. Hwy 1	Jackson	5.22	3826	604	4430			1.00						4430	1505	400								
									by 2006, noted as 3826 in app ff	2006 addition											Detached library									
		57	1978	144-011-06	34820	S. Hwy 1	Myers	2	2967	1100	4067			1.00		704				4771	800	440								
29		58	1959	144-011-07	34850	S. Hwy 1	Brennen	2	526		526			1.00						526										
																					pool house									
		59	1972	144-011-10	34950	S. Hwy 1	Stockton	0.9	1100	1198	2298			2.00						2298			400							
										1062; 1993 : 136 in 1998																				
30		60	1888	144-011-11	35000	S. Hwy 1	Steele	7.4	2374		2374			2.00		450				2824	1272									
																second residence					barn & shed									
31	date only	61	1958	144-011-12	35050	S. Hwy 1	Garlan	0.82	864		864			1.00						864										
		62	1972	144-021-30	35200	S. Hwy 1	Starr	1.24	1457	1638	3095			1.00		672				3767	900	vew								
										1986 addition											gh									
		qty parcel	year approved		year deve	STREET	NAME	LOT SIZE	SFR	ADDITION	TOTAL SFR	FOOTPRINT	BR	STORIES	HT	GAR	STORIES	ATTACHED	CARPORT	SFR+GAR	ADDITIONAL BLDG	BRIDGE	DECK/PATIO	LANDSCAPE	DRIVEWAY	TOTAL STRUCTUR	CCC	CDP	COMMENTS
		47	all		all		AVERAGE	2.45	1,941	866	2,125	1,504		1.41		691	not enough data			2,492	689		576			3,757	#DIV/0!		
		13	post MCZ		1992+		AVERAGE	1.83	1,930	-	1,930	1,255		1.54		845		672		2,450	356		661			3,467			
		16	post LCP		1985+		AVERAGE	2.16	2,270	470	2,299	1,472		1.56		847				2,682	357		741			3,980			
		8	post CA, pre LCP		1976-1984		AVERAGE	2.28	2,014	852	2,227	1,781		1.25		772				2,420	891		510			3,821			
		23	pre-CA		pre-1976		AVERAGE	2.39	1,687	926	1,969	1,509		1.30		533		222	227	2,247	1,091		460			3,798			

Exhibit 2: Surrounding Development



DIAGRAMMATIC PLOT PLAN OF "LES FALAISES"

JACQUES R. AND DIANE HELFER
HOME 1½ ACRES

John & Barbara Hanna
Tom & Katie Dickson
525 University Ave., Ste. 705
Palo Alto, CA 94301

RECEIVED
SEP 09 2005
CALIFORNIA
COASTAL COMMISSION

September 9, 2005

California Coastal Commission
North Coast District Office
710 E St., Ste. 200
Eureka, CA 95501

Via California Overnight and
Via Facsimile: (707) 445-7877

Re: Mendocino County LCP Amendment No. MEN-MAJ-1-02C (Hanna & Dickson)
Item No.: Th 12a

Dear Chairperson & Commissioners:

The owners of the property which is the subject of this hearing, cannot, unfortunately, be present for the hearing in Eureka to be held on Thursday, September 15th at 9:00 a.m. We wish to take this opportunity to present to the Commission our concerns.

First of all, we received the Notice of Hearing and the accompanying package of documents on September 8, 2005. The notice states that if we wish we may obtain a current list of commissioner's names and addresses and mail the materials directly to the commissioners, but that we must mail them so the commissioners receive the materials no later than Thursday of the week before the meeting. Since we did not receive the notice and accompanying documents until the Thursday of the week before the hearing, obviously we are not able to send the materials directly to the commissioners.

We also note, from your instructions, that the allotted time for testimony is five minutes, and even if we were able on such short notice to get up to Eureka for this hearing, to come all that way in order to be heard for five minutes seems more than a little unfair.

The single most important point that we would like the commissioners to understand is that this hearing and the report from the staff seem to be based upon a faulty premise. The entire approach of the staff is to propose a change in the coastal plan land use classification of our property from open space to rural residential. That is not a proper characterization of what is happening or what should be happening. THIS IS NOT A REZONING OF PROPERTY. THIS IS A CORRECTION OF A MAPPING ERROR. Let us explain.

Our local realtor friend, Peggy Merrill, informed us in 2001 that the Helfer property (the subject property) was being offered for sale by the county guardian, Mr. & Mrs. Helfer having died intestate. We decided to submit a written offer to the county guardian as did a number of other potential buyers. Before purchasing the property we make a trip to Ukiah and spent a half day with the county staff doing our "due diligence." We were informed that a "mapping error" had occurred some years earlier, and that the property had been mistakenly identified on a map as "open space" even though there was no intention of doing that. Apparently, someone had put the property on a list of possible acquisitions

through eminent domain, and perhaps that individual or department had assumed that the property would be condemned and may become part of the park system, and hence designated it on the map as "open space." This was despite the fact that the property was inhabited and was improved with a single family residence and other accessory structures. We were assured that this was merely an "administrative error," and that it would be corrected, and that the County would set the wheels in motion to do that if we were to be the successful buyer of the property.

We were told that the property was three and one-half acres (+/-), and indeed the survey of the property bears this out. (The acreage set forth in your staff report appears to be erroneous.)

We also let it be known that we wanted to purchase the property in order to develop a "family compound." We were told that there were actually three assessor parcels, and that Certificates of Compliance could be obtained for the three lots. We let it be known that our intention would be to merge the three lots into two lots, so that Barbara and John Hanna could build a home on one lot and Tom and Katie Dickson could build a home on the adjoining lot, and that we would share the leach field, water system, etc. Prior to taking title, we obtained a permit and drilled a well which was successful. This was part of our due diligence.

On September 18, 2001, the Department of Planning and Building Services of the County of Mendocino wrote a letter stating that the research for Certificates of Compliance has been completed and that "our conclusion is that three Certificates of Compliance can be issued, provided that the fees are paid in full." On November 5, 2001, we forwarded to the County of Mendocino, Department of Planning and Building Services our check in the amount of $500 payable to Mendocino County Planning and Building Services Dept., and a check for $33 payable to the Mendocino County Recorder together with legal descriptions of the three parcels. Having been assured that the three Certificates of Compliance would be issued, we closed escrow and took title on or about November 6, 2001. On or about December 5, 2001, the three Certificates of Compliance were issued and recorded.

We then proceeded over the next few months to obtain all of the inspections and reports that we needed, including geological, biological, soils, archeological, etc. We obtained reports and clearances for all of those items. We also had all of the soil percolation testing done, and established two leach fields sufficient in size for two homes. Since that time, we have been working with our architect, International Design Group from Pacific Grove, to design our home. We are about ready to file with the County our application for boundary line adjustment, merging the three lots into two lots, and our Coastal Development permit for the construction of the first of the two homes.

Although it took considerable time, the County did follow through on its commitment to correct the "mapping error." On May 14, 2002, the Board of Supervisors approved the request to change the Coastal Land Map classification from open space to rural residential. You have a copy of that resolution in your file. Since that time, the Coastal Commission, moving with glacial speed, has been studying the matter. I spoke with the Coastal Planner in charge of this project on May 20th of this year, after making a number of inquiries as to why the process was taking so long. I was told at the time that because the property was zoned open space that the Coastal Commission has to go through the lengthy and complicated process of analyzing whether or not the property should be rezoned to

rural residential. I attempted to explain that was not what was supposed to be happening, that the property was always zoned rural residential and only became designated on the map as open space through administrative error. I explained to the planner that there was no way in the world that anyone would pay $1.6 million for a piece of property zoned as open space and, it was only based on the assurances we got from the County that this was a mistake that would be corrected as an administrative matter, that we agreed to waive our contingencies under the Purchase Contract and close escrow. I also explained that in purchasing the property we relied upon the assurances that three Certificates of Compliance would be issued. The planner responded that she was concerned that it did not appear on the record that there was sufficient water or sewage disposal services for the three lots. I explained our intent was to merge the three into two, and that we already had the leach fields laid out for two homes, and that we had two wells, the original hand-dug well which we had lined and have restored it to working capacity, as well as the new well which we drilled before purchasing the property.

It should be noted in passing that when we received the Coastal Development permit to drill a new well, that the permit signed off on by the Coastal Permit Administrator dated April 25, 2002, states, among other things:

> "The project site is not located within a designated 'highly scenic area' and is not visible from any public viewing area; there are no known rare or endangered plant or animal species located on or in close proximity to the project site; there are no environmentally sensitive areas located within 100 feet of the proposed development; the project site is presently developed and the proposed project would not increase the intensity of use of the site. No impacts to Highway 1, local roads and circulation systems would occur; the project complies with all the zoning requirements of Division II of Title 20 of the Mendocino County Code, etc."

The County has been most cooperative with us and has fulfilled its commitments given to us at the time we were fulfilling our "due diligence." We have been bogged down for three years with the Coastal Commission staff, which staff has now presented to you a proposal which appears to be aimed at preventing us from fulfilling our dream of building two homes on this lovely piece of property. I would perhaps understand the overly zealous concern on the part of the project planner if in fact we were proposing to build three homes on this property. We have never even thought of doing that, and have made it crystal clear all the way along that our intent was to merge the three lots into two lots and build two homes (only one home in addition to the one already there). What the Staff Report does is to turn things around from a due process perspective. The Staff Report first of all treats this as a rezoning instead of the correction of an administrative error. The burden should not be upon the property owner when what is being done is to correct an administrative error and to put the property back the way it was before the error was made. The staff treats this as if the property really was open space all along, and now the Commission is being asked to change it from open space to residential. That is the major issue here.

The second flaw in the Staff Report is that it seeks to shift the burden of proof onto the property owners. The property owners obtained three Certificates of Compliance in all good faith, as part of their due diligence before committing to buy the property.

The Staff Report recommends that rather than following the County proposal to correct the zoning and to allow the three Certificates of Compliance to be recognized, that instead the property owners should be required to establish the validity of the issuance of the three Certificates of Compliance.

First of all, it should not be our burden to establish the validity of the Certificates of Compliance which were issued by the County to us in good faith, and which we insisted upon before agreeing to pay $1.6 million for the property. (Incidentally, we also pay some $15,000 annually in property taxes to the County.)

Secondly, the entire question of issuance of the three Certificates of Compliance is really "moot," because our application, which we will file within the next month with the County, will merge the three lots into two lots so there is no possibility that three homes will be built, and the existence of the three Certificates of Compliance is a temporary condition that will soon be terminated.

In summary, we respectfully request that the Commissioners adopt the amendment as proposed by the County, and certify the amendment, without the modifications suggested by the Staff Report.

Thank you for your consideration.

Very truly yours,

John Paul Hanna for
John & Barbara Hanna and
Tom & Katie Dickson

JPH:dg\CCCMENDO.909

cc: Tom & Katie Dickson, 1315 Fair Way Dr., Los Altos, CA 94024
County of Mendocino, Dept. of Planning & Building Services, 501 Low Gap Road Rm 1440, Ukiah, CA 95482; Attn: Pamela Townsend, Senior Planner
International Design Group, 721 Lighthouse Ave., Pacific Grove, CA 93951
Bud Kamb, *Via Facsimile:* (707) 937-1086
Peggy Merrill, *Via Email:* pmerrill@mcn.org

GEOTECHNICAL INVESTIGATION

PROPOSED BERTRAND/DANIEL RESIDENCE
11800 ROAD 500 D
MENDOCINO, CALIFORNIA

Project Number 12856.01

May 8, 2019

Brunsing Associates, Inc.

GEOTECHNICAL INVESTIGATION

PROPOSED BERTRAND/DANIEL RESIDENCE
11800 ROAD 500 D
MENDOCINO, CALIFORNIA

Project Number – 12696.01

prepared for

Renee Bertrand and Lavi Daniel
Post Office Box 1005
Mendocino, CA 95460

prepared by

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May 8, 2019

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1.0 INTRODUCTION

This report presents the results of the Geotechnical Investigation that Brunsing Associates, Inc. (BAI), performed for the planned Bertrand/Daniel residence at 11800 Road 500 D in Mendocino, California. The previously developed residential property, A. P. N. 118-320-02, is located on an ocean bluff about three quarters of a mile north of the town of Mendocino, as shown on the Vicinity Map, Plate 1.

The purpose of our services was to determine the subsurface soil and bedrock conditions and evaluate the geologic hazards at the subject property in order to determine foundation and grading recommendations for the planned residence. The scope of our services, as outlined in our Professional Services Agreement dated April 25, 2018, consisted of researching published geologic maps, site reconnaissance, and engineering and geologic analyses, in order to provide conclusions and recommendations regarding:

- Geologic hazards;
- Ocean bluff stability analysis;
- Site grading and drainage;
- Suitable foundation type(s) with design criteria and estimated settlement behavior;
- Seismic design criteria per California Building Code, 2016 edition;
- Support of concrete slabs-on-grade;
- Lateral earth pressures and drainage requirements for retaining and/or subsurface walls;
- Anticipated geotechnical construction problems, if appropriate;
- The need for additional geotechnical services as appropriate.

2.0 INVESTIGATION

2.1 Published 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 Previous Reconnaissance

Our Principal Engineering Geologist initially performed a reconnaissance of the site on October 3, 2001. The reconnaissance included observation of the site geomorphology, and geologic examination of soil and bedrock materials exposed on the bluff and in the building areas. The bluff toe was observed via ocean kayak during a tide of approximately plus three feet, per published tide tables. Preliminary results of our reconnaissance, including bluff setback criteria, were presented in a letter dated April 24, 2002.

Our Principal Engineering Geologist re-examined the site on July 25, 2006. He compared the current bluff conditions with the 2001 photographs in the field taken from the same locations.

2.3 Current Reconnaissance

Our Principal Engineering Geologist and Principal Geotechnical Engineer performed a reconnaissance of the property on May 11, 2018. During our 2018 reconnaissance, we compared current topographic features with those same features observed in 2001 and 2006.

2.4 Aerial Photograph Studies

We studied black and white, vertical aerial photograph prints dated June 30, 1963, June 23, 1981 and April 1, 2000. These prints were enlarged from the negatives to an approximate scale of one inch equals approximately 200 feet. Other vertical aerial photographs that we examined were obtained from Google Earth and the California Coastal Records Project (www.californiacoastline.org). The Google Earth photographs are dated September 10, 1998, June 26, 2003, December 31, 2004, June 11, 2005, April 27, 2006, May 24, 2009, April 24, 2010, May 31, 2012, August 17, 2013 and July 2, 2018. The 1998 photo is black and white, all others are in color. The California Records Project vertical aerial photographs (color) are dated April 18, 1986 and June 13, 1993.

In addition to reviewing vertical aerial photographs, we also obtained oblique-angle aerial photographs from the California Coastal Records Project (color) dated 1972, October 5, 1979, June 1987, November 14, 2002, October 4, 2005, September 27, 2009 and September 27, 2013. We qualitatively compared the aerial photographs to look for changes in the property that may be due to erosion. The 1979 and 2013 photographs are presented herein as our Coastal Oblique Aerial Photographs on Plate 2.

2.5 Subsurface Exploration

Subsurface exploration was performed at the site on July 25, 2006. The exploration consisted of drilling, logging and sampling nine exploratory test borings, borings B-1 through B-9, to depths ranging from 1 to 14.5 feet below the ground surface. The borings were drilled using a light, portable drill rig utilizing a 4-inch diameter, solid flight auger. The approximate boring locations are shown on the Site Geologic Map, Plate 3.

Our Assistant Geologist made a descriptive log of each test boring and obtained samples of the soil and bedrock encountered for visual classification and laboratory testing. Relatively undisturbed tube samples of the soil and bedrock materials encountered were obtained using a 3-inch outside diameter split-barrel modified California sampler driven by a 70-pound drop hammer falling 30 inches per blow. The inside of the sampler barrel contained 2.4-inch diameter liners for retaining the soil and bedrock materials. The blows required to drive the sampler were converted to equivalent “Standard Penetration” blow counts for correlation with empirical test data. Sampler penetration resistance (blow counts) provides a relative measure of soil and bedrock consistency and strength.

Logs of the test borings, showing the various soil and bedrock types encountered, and the depths of the samples taken, are presented on Plates 4 through 12. The soils are classified in accordance with the Unified Soil Classification System outlined on Plate 13. The soil and bedrock descriptive properties are presented on Plates 14 and 15, respectively.

2.6 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, grain size, direct shear and unconsolidated-undrained triaxial compression tests.

The laboratory test results are presented opposite the samples tested on the boring logs. A key to test data is provided on Plate 13. The direct shear and triaxial compression test data are presented on Plates 16 and 17, respectively.

3.0 SITE CONDITIONS

The subject property is on the southwest side of a small, northwest-trending peninsula. The property consists of an elevated marine terrace bounded by steep, ocean bluffs on the northwest, southwest, and southeast sides. The ocean bluffs are shown on Oblique Aerial Photographs, Plate 2, and on site photographs A, B and C Plates 18 and 19. Site photographs B and C are from the same vantage point in the years 2006 and 2018, respectively. The near-vertical bluff heights vary from approximately 40 to 50 feet at the northwest end of the property to approximately 70 feet at the southeast end. Portions of the southwest-facing bluffs are undercut, forming an over-hang of up to a couple of feet, or more. No sea caves were observed within the property bluffs. No beach is at the site, although rocks are exposed at minus tides along the bluff toes. A pine forest occupies most of the property, along with a ground-cover of grass and weeds. The upper bluff face contains scattered grasses and weeds. The lower bluffs are mostly bare bedrock.

The northerly portion of the elevated terrace has gentle to moderately steep slope gradients to the north and southwest. A densely-vegetated, northwest-trending, seasonal drainage swale empties over the bluff edge on the northwest side of the property and an accessory structure (shed).

Site Photograph D, Plate 20 shows the existing dilapidated, single-story residence and an unfinished shed that are located in the southeast corner of the property. The residence structure was built prior to the 1963 aerial photograph. The residence structure is constructed with cinder-block walls. A small knoll is located on the elevated terrace in the southeast-central portion of the property. The shed has been built into the top of the knoll, west of the existing residence. The knoll is the planned building site for the new residence. Other sheds and a wood water tank are located in the northerly portion of the property.

No surface water was observed on the elevated terrace level of the property, except for a slight flow of water within the northerly drainage ravine during our 2001 reconnaissance. Groundwater was encountered in our test borings B-5, B-6, and B-7 at 11.5, 10 and 11 feet below the ground surface, respectively. Several areas of localized groundwater seepage were observed emanating from the lower bluffs, as evidenced by small patches of green algae. On near-by sites, we have observed temporarily perched water to exist within one foot of the surface during wet weather periods.

4.0 SITE GEOLOGY AND SOIL CONDITIONS

Site bedrock, as exposed on the bluff face of the property, and encountered in our exploratory borings, consists of Cretaceous-Tertiary Period Coastal Belt Franciscan Complex sandstone and silty sandstone. The sandstone and silty sandstone encountered in our borings and exposed within the upper portions of the bluff, are orange-brown, brown and gray-brown, crushed to intensely fractured, generally friable to low in hardness with local hard zones, and deeply to moderately weathered. The bedrock exposed in the lower portions of the bluff is gray in color, and appears less fractured, harder and less weathered than the sandstone encountered in the borings.

Bedrock within the knoll portion of the property (building area) was encountered at the ground surface to approximately 1.75 feet below the ground surface. Only very thin terrace deposits were encountered in the vicinity of the knoll.

Site bedding orientation consists of a northwest-trending strike with steep to very steep dips, approximately 45 to 80 degrees from horizontal to the southwest (generally into the bluff at the subject property). The bluff erosion creating the over-hangs has occurred along bedding planes.

The property is situated on an elevated marine terrace that was formed during the Pleistocene Epoch, when glaciation caused sea level fluctuations, which created a series of steps, or terraces, cut into the coastal bedrock by wave erosion. Shallow marine sediments (Pleistocene terrace deposits) were deposited on the wave-cut, bedrock platforms while they were submerged beneath the ocean. Some of these marine deposits have been locally eroded as the terrace began to emerge from the ocean approximately 12,000 years ago. Present sea levels were achieved about 5,000 to 7,000 years ago.

Approximately 10 to 14 feet, or more, of Pleistocene, marine terrace deposits were encountered in our test borings B-5, B-6 and B-8. The poorly-consolidated terrace soils were deposited on relatively-flat, wave cut terraces created by sea level fluctuations during alternating periods of glaciation. The terrace deposits consist of three generalized units, as follows:

- From 1.5 to 2.5 feet is dark brown to brown, loose, silty sand (topsoils).
- From 1.5-2.5 feet to 5-6 feet is orange, gray, and light brown medium dense silty sand and stiff, sandy silt.
- From 5-6 feet to bedrock at 9.5 and 12.5 feet in borings B-5 and B-6 respectively, and to the maximum depths explored, 14 and 11.5 feet in borings B-7 and B-8, respectively is light brown, orange and gray medium dense, silty sand and medium dense to very dense clean (little or no clay or silt).

No landslides or active faults were found at the property and none of the published references that we reviewed show landslides or faults in the property vicinity. As typical of the Franciscan Complex, several ancient, inactive faults were exposed within the rocks on the bluff faces. The active San Andreas Fault is located offshore, approximately 3.1 miles to the southwest.

5.0 DISCUSSION AND CONCLUSIONS

5.1 General

Based on the results of our reconnaissance and subsurface exploration, we conclude that the site is geologically and geotechnically suitable for the proposed residence. The main geological/geotechnical considerations affecting the proposed construction are loose and porous near-surface soils, liquefaction potential, settlement bluff retreat, bluff stability, and strong seismic shaking from future earthquakes. These considerations and their possible mitigation measures are discussed below.

5.2 Loose/Porous Surface Soils

The planned building area has very little to no weak soils within the area of the knoll. Areas beyond the knoll are covered by approximately two to four feet of surface soils that contain roots and have a weak, porous consistency. These soils are susceptible to collapse and consolidation under light to moderate loads, and is not suitable for support of foundations or slab-on-grades in their current condition.

5.3 Settlement

Assuming foundations are designed and constructed in accordance with our recommendations, we estimate that the maximum post-construction settlement due to foundation loads will be less than 3/4 inch. We judge that post-construction differential settlement will be less than 1/2 inch between adjacent foundations.

5.4 Bluff Retreat

For our analysis, we used qualitative comparisons of the 1963 through 2018 vertical aerial photographs as well as the 1972 through 2013 oblique aerial photographs. Our qualitative comparison of the vertical and oblique aerial photographs shows minor changes to the bluff edges at the site, due to erosion and rock falls. Our site reconnaissance and quantitative review of aerial photographs indicate an average bluff retreat (erosion) rate along the ocean bluffs of approximately one-half to one inch per year.

BAI's estimated erosion rate is significantly less than the rate given in Open File Report 2007-1133 (approximately 16 inches per year) for this region. If the USGS rate were accurate, the bluff edge would have retreated over 73 feet in the last 55 years (1963 to 2018, our earliest aerial photograph up to the most current). Seventy three feet of bluff loss would be easily visible in the aerial photographs that we reviewed for this project, which clearly is not the case.

5.5 Sea Level Rise Effects on Bluff Retreat

Rapid sea-level rise of approximately 400 - 450 feet occurred between 18,000 and 8,000 years before present, according to "Rising Seas in California", Griggs, et al, 2017. Sea levels have remained relatively constant since that time. However, sea levels have started rising again. The California Coastal Commission (CCC) recently adopted the Science Update, dated November 7,

2018 to the 2015 Interpretive Guidelines for addressing Seal Level Rise in Local Coastal Programs and Coastal Development permits. The Science Update provides sea-level rise projections for the San Francisco coastal area, as follows in Table 1:

Table 1: Sea Level Rise Projections (Medium-High Risk Aversion)		
Time Period	Sea Level Rise (Feet)	Inches
2030	0.8	9.6
2040	1.3	15.6
2050	1.9	22.8
2060	2.6	31.2
2070	3.5	42.0
2080	4.5	54.0
2090	5.6	67.2
2100	6.9	82.8

The CCC requires a 75-year lifespan for new, coastal house construction or major remodel. As of 2019, we should have experienced a sea level rise of 5 inches, although we are not aware of any studies documenting such a rise. According to Dr. Mark Johnsson, former California Coastal Commission staff geologist, sea level rise on the west coast has been "lagging", but will eventually come up to expectations. Recent projections show that by 2094, the sea level will be as much as 73.4 inches higher than present (2019).

Based upon historic aerial photographs and site observations, the current historic, average bluff retreat rate appears to be less than one inch per year, which we are rounding up to 1.0 inch per year. Although the bluff toe will still be partially protected by the boulder beach (see Plate 3), the retreat rate should increase to approximately 2.5 inches per year after 2070 as the bluff toe is continually subject to strong wave activity.

Cumulative sea level rise is from 2019. Table 2 sums up the amount of projected retreat using estimated retreat rates over a 75-year span from a time of 2019 construction. This results in a total bluff retreat of 12 feet.

Table 2: Bluff Retreat Rate				
Years	Span (years)	Cumulative Sea Level Rise (inches)	Retreat Rate (inches per year)	Amount of Retreat (inches)
2019-2030	11	10"	1.0"/yr.	11
2030-2050	20	23"	1.5"/yr.	30
2050-2070	20	42"	2.0"/yr.	40
2070-2094	24	73"	2.5"/yr.	60
				141" = 12'

5.6 Tsunami Hazard

As typical of the Mendocino County coastal area, the site could be subject to large storm waves or tsunami waves. In February 1960, the Point Cabrillo Light House was damaged by an approximately 60 feet high storm wave (meteorological tsunami, or "meteotsunami"). No such waves are recorded at the light house from 1909, the year it was built, to 1960. Nor have such large waves occurred since 1960. Since the bluff at the building site is approximately 70 feet in vertical height, impact or inundation from a severe storm surge or tsunami event is considered a low risk for the site.

5.7 Seismicity and Faulting

As is typical of the Mendocino County area, the site will be subject to strong ground shaking during future, nearby, large magnitude earthquakes originating on the active San Andreas Fault, Maacama fault, or possibly other, more distant fault systems. The intensity of ground shaking at the site will depend on the distance to the causative earthquake epicenter, the magnitude of the shock, and the response characteristics of the underlying earth materials. Generally, structures founded in supporting materials and designed in accordance with current building codes are well suited to resist the effects of ground shaking.

No evidence of recent faulting was observed by BAI or shown in the site vicinity on the published geologic maps that we reviewed for this investigation. The presence of ancient faults within the coastal bluffs is common, and should not impact the proposed residence due to their inactivity. Therefore, the potential for fault rupture at the site is considered low.

5.8 Slope Stability Analysis

Our bluff stability analysis was performed to correspond, as a minimum, to the guidelines by California Coastal Commission, "Establishing Development Setbacks from Coastal Bluffs", Proceedings, California and the World Ocean '02. The document recommends a factor of safety greater than or equal to 1.5 for static conditions and 1.1 for seismic conditions and a horizontal seismic coefficient of 0.15.

We also followed the guidelines prepared by (1) American Society of Civil Engineers (ASCE) and Southern California Earthquake Center (SC/EC) "Recommended Procedures for Implementation of Division of Mines and Geology Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California", dated June 2002 and (2) California Geological Survey (CGS) "Guidelines for Evaluating and Mitigating Seismic Hazards in California" dated 2008.

Geologic Cross Section A-A', shown on Plate 21, was created using contours from a topographic map presented on Plate 3, field measurements and data from our subsurface explorations. The location of the cross-section used for our stability analyses is shown on Plate 3.

From our borings, three soil and bedrock units, with different density and strength parameters, were identified within the bluff for our stability analyses. Unit "1" are the silty sand and clean sand (terrace deposits) that are loose to medium dense. Unit "2" is the upper moderately

weathered bedrock. Unit "3" is the lower moderately to little weathered bedrock. Table 3 summarizes soil and rock parameters used.

Table 3: Soil and Bedrock Parameters			
Unit	Wet Density (pcf)	Cohesion (psf)	Friction Angle (ϕ)
1	110	0	40
2	130	1,500	0
3	135	4,000	0

The above assigned strengths were determined from blow counts and strength test results obtained from this site and adjacent sites, as well as from back-analysis of the slope stability calculations. The stability of the slope was analyzed using the computer program SLIDE 5.0 version 5.044 by Rocscience, Inc. The results of our stability analyses are presented in Appendix B. The results indicate that no specific, increased bluff setback is considered necessary due to slope stability concerns.

5.9 Liquefaction

Liquefaction results in a loss of shear strength and potential soil volume reduction in saturated sandy, silty, silty/clayey, and coarser gravelly soils below the groundwater table from earthquake shaking. Densification occurs above the groundwater table and results in partial or total loss of support during the earthquake. The occurrence of this phenomenon is dependent on many factors, including the intensity and duration of ground shaking, the soil age, density, particle size distribution and position of the groundwater table. In the area of the planned residence, shallow bedrock is present within one to two feet of the surface, therefore the potential for liquefaction is extremely low.

6.0 RECOMMENDATIONS

6.1 Setbacks

Based on our aerial photograph analysis (Table 2), we have determined a projected retreat of approximately 12 feet over the next 75 years. Using a safety factor of 2, the resulting bluff setback would be 24 feet.

6.2 Site Grading

6.2.1 Clearing and Stripping

Areas to be graded should be cleared of existing vegetation, rubbish, and debris. After clearing, surface soils that contain organic matter should be stripped. In general, the depth of required stripping will be about 4 to 6 inches; deeper stripping and grubbing may be required to remove stumps and concentrations of organic matter or roots. The cleared materials should be removed from the site; however, strippings can be stockpiled for later use in landscape areas.

6.2.2 Structural Area Preparation

Within the building area and non-structural-supported slab areas, weak and porous soils should be removed to their full depth, approximately one to two feet, as determined by BAI. Removal of these soils should extend for a minimum distance of about 5 feet beyond the perimeter of the building foundation and about 3 feet beyond exterior concrete slabs. BAI should observe the soils exposed by the recommended excavations.

Fill material, either imported or on-site, should be free of perishable matter and rocks greater than six inches in largest dimension, and should be approved by a representative of BAI before fill placement. We anticipate that the existing on-site soils to be excavated, in a "cleaned" condition (i.e., less any organics and debris) are satisfactory for reuse as compacted fill. Isolated lenses of clay, if encountered, should be thoroughly mixed with sandy soils prior to use as fill. Imported fill for use in structural areas should be of relatively low expansion potential (i.e., Expansion Index of 40 or less).

Low-expansive engineered fill, on-site or imported, should be placed in thin lifts (six to eight inches depending on compaction equipment), moisture conditioned to near optimum moisture content and compacted to at least 90 percent relative compaction to achieve planned grades.

Alternatively, the interior underslab excavations may be backfilled with a thickened layer of clean, free-draining crushed gravel (see specifications for underslab gravels in “Concrete Slab-on-Grade” below). Gravel backfill should be vibrated into place in thin lifts (six to eight inches). BAI should be contacted to observe and probe the compacted gravel layer for interlock prior to placement of reinforcing steel or concrete.

6.3 Foundation Support

The new residence can be supported on reinforced concrete spread footings founded in bedrock. Footings can be designed using an allowable bearing pressure of 3,000 pounds per square foot (psf) for dead plus live loads. A one-third increase in allowable bearing pressure is recommended when considering wind or seismic loads.

Footing elements should be founded at least 12 and 18 inches below lowest adjacent finish grade for one and two-story structures, respectively. Residence footings should be no less than 12 and 15 inches wide for one and two-story construction, respectively. Where weak soils are not removed, footing excavations should extend at least 12 inches into supporting bedrock, resulting in footing excavations that are about 18 to 30 inches deep below existing grade. Completed foundation excavations should be observed by a representative from BAI prior to the placement of reinforcing steel.

Resistance to lateral loads can be obtained using a combination of passive earth pressure against the face of foundations and frictional resistance along the base of foundations. An allowable passive pressure of 350 psf per foot of depth below soil subgrade and frictional resistance of 0.30 times the net vertical dead load, are appropriate for footing elements poured neat against supporting soils. Passive pressure should be neglected within the upper weak soils.

6.4 Seismic Design Criteria

The structures should be designed and/or 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) 2016 edition indicates that the site classification for the property is Site Class C. Accordingly, CBC indicates that the following seismic design parameters are appropriate for the site:

Table 4: Seismic Design Parameters		
Site Class	=	C
Mapped Spectral Response Acceleration at 0.2 sec	S_S =	1.640g
Mapped Spectral Response Acceleration at 1.0 sec	S_1 =	0.755g
Modified Spectral Response Acceleration at 0.2 sec	S_{MS} =	1.640g
Modified Spectral Response Acceleration at 1.0 sec	S_{M1} =	0.981g
Design Spectral Response Acceleration at 0.2 sec	S_{DS} =	1.094g
Design Spectral Response Acceleration at 1.0 sec	S_{D1} =	0.654g
Site Coefficient	F_a =	1.0
Site Coefficient	F_v =	1.3
Seismic Design Category	=	E

6.5 Concrete Slab-on-Grade

If a structural concrete slab is used (i.e., the slab is supported by and able to span between, interconnecting foundation elements without gaining support from underlying soil), then over-excavation of the near-surface weak soil zone is not required. However, topsoils containing organics should be removed beneath the planned slab (as much as four inches to six inches in depth below existing ground surface).

The weak soils in their present condition are not suitable for slab support. Concrete slab-on-grade floors not supported by foundation elements should be supported on properly compacted fill soils placed in accordance with our recommendations previously presented in Section 6.1 Site Grading.

During foundation and utility trench construction, previously compacted subgrade surfaces may be disturbed. Where this is the case, the subgrade should be moisture conditioned as necessary, and re-rolled to provide a firm, smooth, unyielding surface compacted to at least 90 percent relative compaction before construction of slabs-on-grade.

Interior slab-on-grade floors should be underlain by at least 4 inches of clean, free-draining crushed gravel, graded in size from 3/4 maximum to 1/4 inches minimum, to act as a capillary moisture break. Within traffic or vibratory loaded areas, crushed material should be used to provide a tight interior lock for the aggregates. An underslab drain should be constructed as shown on Plate 22. Where migration of moisture through the floor slab would be detrimental to its intended use, install a vapor retarder membrane. The membrane, placed upon the crushed

gravel layer, should be at least 15 mils thick (i.e., Stego® Wrap 15-mil Class A, Carlisle RMB 400 15-mil Class A, or equivalent), and installed in accordance with the manufacturer's specifications to prevent moisture migration through the seams. With a 15-mil minimum thickness membrane, the 2 inches of wetted sand typically placed upon the membrane may be omitted. Construction of moisture/vapor retarders does not guarantee the prevention of moisture moving through the floor slab.

6.6 Retaining Walls

Subsurface or retaining walls should be provided with permanent back drainage to prevent buildup of hydrostatic pressure. Drainage and backfill details are presented on Plate 23. In areas where movement of moisture/vapor through the wall would be detrimental to its intended use, installation of a vapor retarder membrane should be considered. Construction of vapor retarders does not guarantee the prevention of moisture moving through concrete walls. Quality, placement and compaction requirements for backfill behind subsurface walls are the same as previously presented for fill. Light compaction equipment should be used near the wall to avoid overstressing the walls. Retaining walls should be designed to resist the lateral earth pressures presented on Plate 24.

In addition to static loads, the retaining walls should also be designed to resist potential seismic loads, in accordance with CBC requirements. For seismic loads, a pressure increment equivalent to an inverted triangular distribution is recommended, varying from 0 (zero) pounds per square foot (psf) at the bottom of the wall to 22H psf at the top of the embedded portion, where "H" is the height of the embedded portion (resultant dynamic thrust act at 0.6H above the base of the wall). The resultant distribution of both static and seismic pressures will thus be trapezoidal.

6.7 Site Drainage

Because surface and/or subsurface water is often the cause of foundation or slope stability problems, care should be taken to intercept and divert concentrated surface flows and subsurface seepage away from the building foundations and bluff edges. Roof runoff water should be directed away from the buildings and dispersed, as much as practical, across the lot. Drainage across the lot should be by sheet-flow. Surface grades should maintain a recommended three percent gradient away from building foundations.

If a raised wood floor is used, the area under the floor should be graded to drain towards an under house drain with a conduit outlet(s) through the footings/stem walls. Two-inch or four-inch PVC sleeves, or equivalent should be placed within the forms, at or slightly below ground level, prior to concrete placement.

7.0 ADDITIONAL SERVICES

Prior to construction, BAI should review the final grading and foundation plans, and soil related specifications for conformance with our recommendations. During construction, BAI should provide periodic observations, together with the appropriate field and laboratory testing during site preparation, subdrain installations, and placement and compaction of fills. Foundation excavations should be reviewed by BAI while the excavation operations are being performed.

Our reviews and tests would allow us to check that the work is being performed in accordance with project guidelines, confirm that the soil and rock conditions are as anticipated, and to modify our recommendations, if necessary.

8.0 LIMITATIONS

This geotechnical investigation and engineering geologic reconnaissance of the ocean bluff property were 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 samples taken and tested, and the observations made, are considered to be representative of the site; however, soil 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 insure 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.

The recommendations contained in this report are based on certain specific project information regarding type of construction and current building location, which have been made available to us. If conceptual changes are undertaken during final project design, we should be allowed to review them in light of this report to determine if our recommendations are still applicable.

ILLUSTRATIONS

REFERENCE:
Mendocino Quadrangle
7.5-Minute Series, USGS, 2018

Latitude: 39.321580
Longitude: -123.803091

NORTH

APPROXIMATE SCALE (FEET)
0 1000 2000 4000

L:\Geotech Projects\12856.01 Bertrand-Daniel Property, Mendocino\INVESTIGATION REPORT\GRAPHICS\12856.01_01 VICINITY MAP.dwg

5/8/2019 11:55:30 AM save date
5/8/2019 3:34:38 PM plot date

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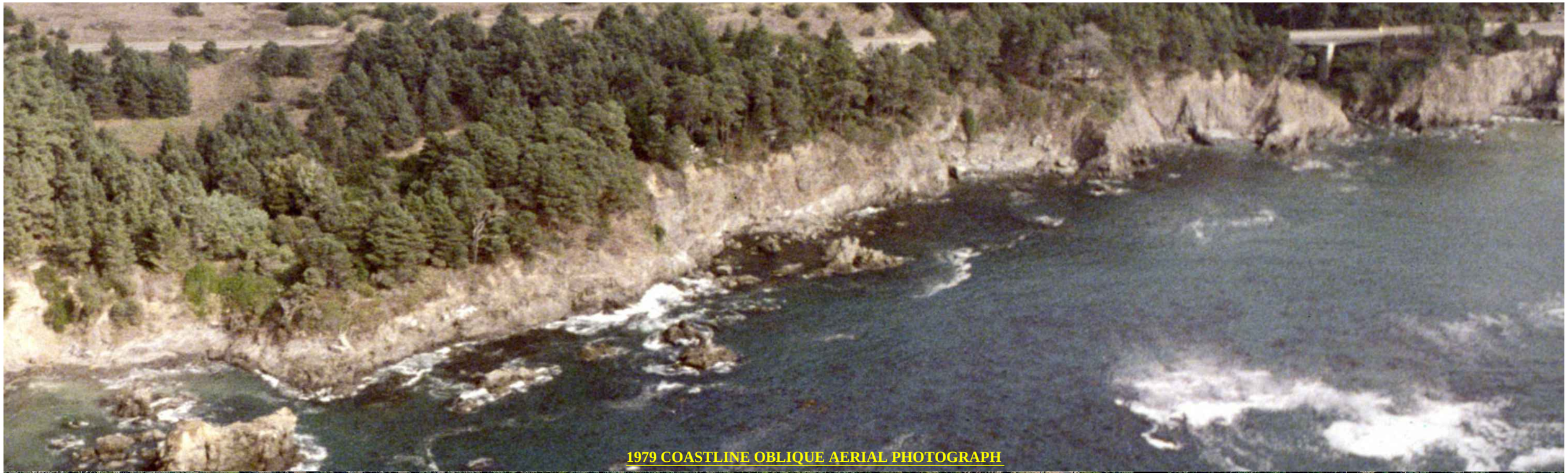
Date: 05/08/19

VICINITY MAP
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE
1



1979 COASTLINE OBLIQUE AERIAL PHOTOGRAPH

2013 COASTLINE OBLIQUE AERIAL PHOTOGRAPH

Reference:
California Coastal Records project, www.californiacoastline.org, by permission.

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1979 and 2013 COASTLINE OBLIQUE AERIAL PHOTOGRAPHS
PROPOSED BERTRAND/DANIEL RESIDENCE
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PLATE 2

5/8/2019 11:56:30 AM save date
PHOTOGRAPHS.dwg
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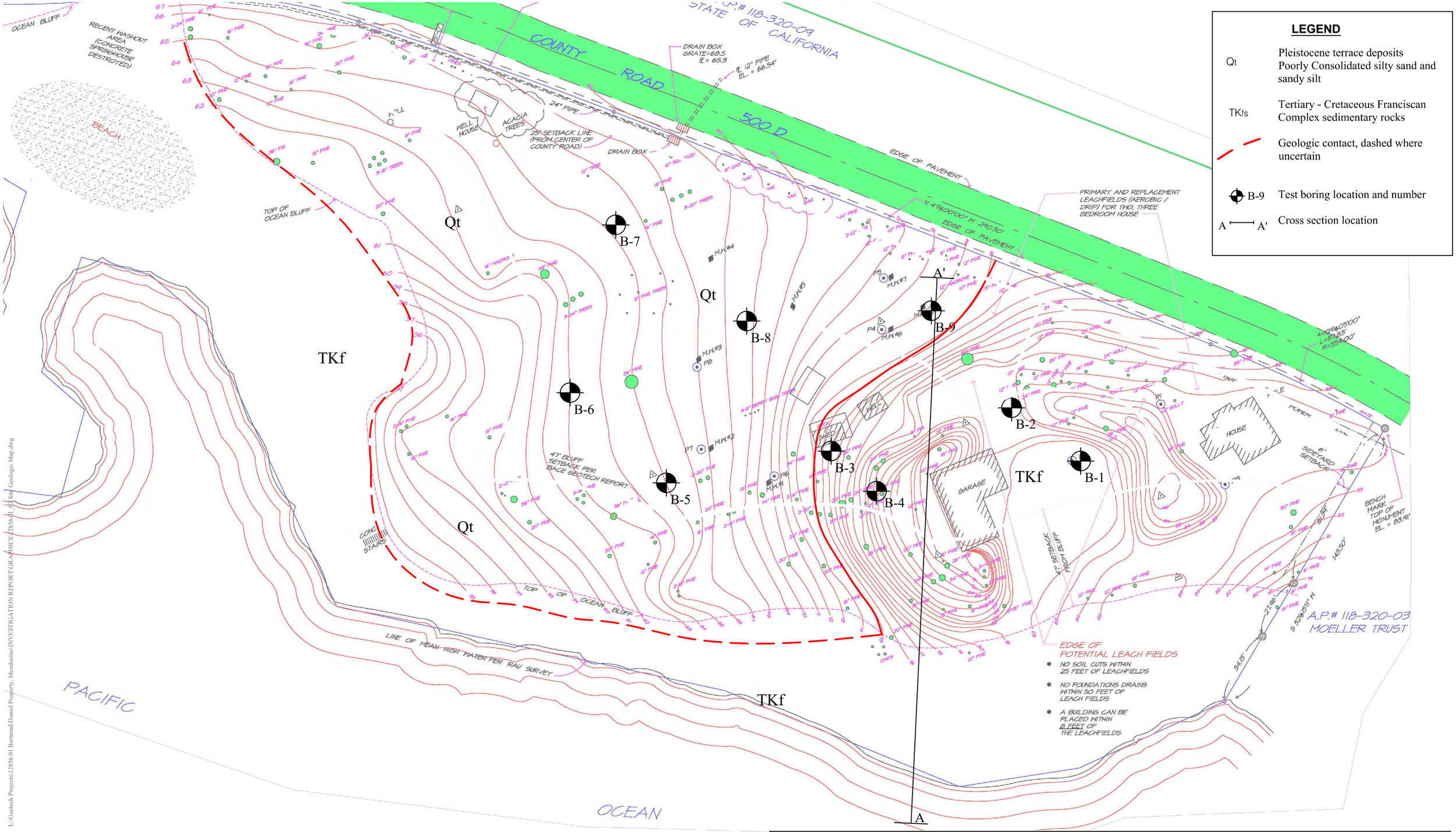

REFERENCE:
Topographical Survey, Revision dated October 2003, Prepared by Clifford M. Zimmerman, Licensed Land Surveyor

NORTH

APPROXIMATE SCALE (FEET)
0 20 40 80

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SITE GEOLOGIC MAP
PROPOSED BERTRAND/DANIEL RESIDENCE
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PLATE
3

L:\Geotech Projects\12856.01 Bertrand-Daniel Property, Mendocino\INVESTIGATION REPORT\GRAPHICS\12856.01_GI Site Geologic Map.dwg
5/8/2019 2:19:17 PM save date
5/8/2019 3:44:29 PM plot date

Log of Boring B-1

Equipment: Light Portable Drill Rig (Little Beaver)

Date: 7/25/06 **Logged By:** SCL

Elevation: 82.0 feet *** **Latitude:** 39.321495 **Longitude:** -123.802905

Sampler Type*	Blows/foot	Depth (ft.)	Sample	
CA	16/4" **			BROWN SILTY SAND (SM) loose, dry porous BROWN SILTY SANDSTONE close fracturing, modrate hardness, little weathering

Note:
1) Practical drilling refusal at 10 inches
2) No free water encountered

Latitude/Longitude estimated from Google Earth.
* See Soil Classification Chart & Key to Test Data
** Equivalent "Standard Penetration" Blow Counts.
*** Elevations interpolated from contours shown on Plate 3.

Scale: 1" = 2'

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LOG OF BORING B-1
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE 4

BORING LOG 1 PER PAGE, 12856.01 GINT.GPJ, 5/8/19

Log of Boring B-2

Equipment: Light Portable Drill Rig (Little Beaver)

Date: 7/25/06 **Logged By:** SCL

Elevation: 84.0 feet *** **Latitude:** 39.321622 **Longitude:** -123.802957

Sampler Type*	Blows/foot	Depth (ft.)	Sample	
CA	17/3.5" **			BROWN SILTY SANDSTONE close fracturing, moderate hardness, little weathering

Note:
1) Practical Drilling Refusal at 6 inches
2) No free water encountered

Latitude/Longitude estimated from Google Earth.
* See Soil Classification Chart & Key to Test Data
** Equivalent "Standard Penetration" Blow Counts.
*** Elevations interpolated from contours shown on Plate 3.

Scale: 1" = 2'

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LOG OF BORING B-2
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE 5

BORING LOG 1 PER PAGE, 12856.01 GINT.GPJ, 5/8/19

Log of Boring B-3

Equipment: Light Portable Drill Rig (Little Beaver)

Date: 7/25/06 **Logged By:** SCL

Elevation: 77.0 feet *** **Latitude:** 39.321583 **Longitude:** -123.803121

Sampler Type*	Moisture Content (%)	Dry Density (pcf)	Blows/foot	Depth (ft.)	Sample	
						BROWN SILTY SAND (SM) medium dense, damp, porous, some rootlets
CA	14.1	78	9 **	1		
CA			16/3" **	2		LIGHT BROWN SANDSTONE close to little fracturing, low to moderate hardness, moderate to little weathering
				3		

Note:
1) Practical Drilling Refusal at 3.0 feet
2) No free water encountered

Latitude/Longitude estimated from Google Earth.
* See Soil Classification Chart & Key to Test Data
** Equivalent "Standard Penetration" Blow Counts.
*** Elevations interpolated from contours shown on Plate 3.

Scale: 1" = 2'

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LOG OF BORING B-3
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE 6
SHEET 1 of 1

BORING LOG 1 PER PAGE, 12856.01 GINT.GPJ, 5/8/19

Log of Boring B-4

Equipment: Light Portable Drill Rig (Little Beaver)

Date: 7/25/06 **Logged By:** SCL

Elevation: 88.0 feet *** **Latitude:** 39.321489 **Longitude:** -123.803092

Laboratory Tests	Sampler Type*	Blows/foot	Depth (ft.)	Sample	
					BROWN SILTY SAND (SM) damp, porous, with rootlets
7% Passing #200 46% Passing #4	CA	9 **	1		LIGHT BROWN SANDSTONE intense fracturing, friable, deep weathering
			2		
	CA	16/5" **			LIGHT BROWN SANDSTONE close to little fracturing, low to moderate hardness, moderate to little weathering
			3		
			4		

Note:
1) Practical Drilling Refusal at 4.0 feet
2) No free water encountered

Latitude/Longitude estimated from Google Earth.
* See Soil Classification Chart & Key to Test Data
** Equivalent "Standard Penetration" Blow Counts.
*** Elevations interpolated from contours shown on Plate 3.

Scale: 1" = 2'

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LOG OF BORING B-4
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
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PLATE 7

BORING LOG 1 PER PAGE, 12856.01 GINT.GPJ, 5/8/19

Log of Boring B-5

Equipment: Light Portable Drill Rig (Little Beaver)

Date: 7/25/06 **Logged By:** SCL

Elevation: 65.0 feet *** **Latitude:** 39.321729 **Longitude:** -123.803589

Laboratory Tests	Sampler Type*	Moisture Content (%)	Dry Density (pcf)	Blows/foot	Depth (ft.)	Description
					1	DARK BROWN SILTY SAND (SM) loose, damp to dry, porous, rootlets at top, with some light brown sandstone fragments
	CA			9 **	2	
					3	LIGHT BROWN SILTY SAND (SM) medium dense, damp, with some rootlets
	CA			22 **	4	
					5	LIGHT BROWN POORLY GRADED SAND (SP-SM) with silt medium dense, moist
					6	
6% Passing #200		7.9	100			
Tx 2775 (1296)	CA	13.5	108	16 **	7	
					8	
					9	
	CA			24/11" **	10	BROWN SILTY SANDSTONE close fracturing, friable to low hardness, deep to moderate weathering
					11	
					12	
16% Passing #200 69% Passing #4 Tx 2047 (2160)	CA	19.2	109	15 **	13	

Note:
1) Water level at 11.5 feet at time of backfill
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 contours shown on Plate 3.

Scale: 1" = 2'

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Date: 05/08/19

LOG OF BORING B-5
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE 8
SHEET 1 of 1

BORING LOG 1 PER PAGE, 12856.01 GINT.GPJ, 5/8/19

Log of Boring B-6

Equipment: Light Portable Drill Rig (Little Beaver)

Date: 7/25/06 **Logged By:** SCL

Elevation: 63.0 feet *** **Latitude:** 39.321904 **Longitude:** -123.803722

Laboratory Tests	Sampler Type*	Moisture Content (%)	Dry Density (pcf)	Blows/foot	Depth (ft.)	Sample	
							BROWN SILTY SAND (SM) loose, dry-damp, porous, with rootlets,
					1		LIGHT BROWN SILTY SAND (SM) medium dense, moist
	CA			13 **	2		
					3		
Tx 2540 (720)	CA	20.2	104	10 **	4		MOTTLED ORANGE-GRAY CLAYEY SILT (ML) stiff, moist
					5		MOTTLED ORANGE-GRAY SAND (SP) medium dense, moist
	CA			26/11" **	6		
					7		
					8		LIGHT BROWN CLEAN SAND (SP) medium dense, moist
5% Passing #200	CA			27 **	9		
					10		
					11		
					12		YELLOW-BROWN SANDSTONE intense fracturing, soft, deep weathering
	CA			11 **	13		

Note:
1) Free water measured at 10 feet at time of backfill
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 contours shown on Plate 3.

Scale: 1" = 2'

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Date: 05/08/19

LOG OF BORING B-6
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE 9
SHEET 1 of 1

BORING LOG 1 PER PAGE, 12856.01 GINT.GPJ, 5/8/19

Log of Boring B-7

Equipment: Light Portable Drill Rig (Little Beaver)

Date: 7/25/06 **Logged By:** SCL

Elevation: 65.0 feet *** **Latitude:** 39.322131 **Longitude:** -123.803588

Sampler Type*	Blows/foot	Depth (ft.)	Description
		0–2	BROWN SILTY SAND (SM) loose, dry-damp, porous
CA	16 **	2–5.5	ORANGE-BROWN SILTY SAND (SM) medium dense, dry, with rock fragments
CA	23 **	5.5–6	ORANGE-BROWN SANDY SILT (ML) stiff, moist to wet, with rock fragments
SPT	14	6–11.5	ORANGE-BROWN CLEAN SAND (SP) medium dense to very dense, saturated
CA	16/5" ** ∇	11.5–13	ORANGE-BROWN CLEAN SAND (SP) very dense, saturated
CA	16/3" **		

Note:
1) Water level at 11 feet deep at time of backfill
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 contours shown on Plate 3.

Scale: 1" = 2'

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Appr.: EEO
Date: 05/08/19

LOG OF BORING B-7
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE 10
SHEET 1 of 1

BORING LOG 1 PER PAGE, 12856.01 GINT.GPJ, 5/8/19

Log of Boring B-8

Equipment: Light Portable Drill Rig (Little Beaver)

Date: 7/25/06 **Logged By:** SCL

Elevation: 68.0 feet *** **Latitude:** 39.321926 **Longitude:** -123.803392

Laboratory Tests	Sampler Type*	Moisture Content (%)	Dry Density (pcf)	Blows/foot	Depth (ft.)	Sample	
							BROWN SILTY SAND (SM) loose, dry-damp, porous, with rootlets,
					1		
					2		GRAY SANDY SILT (ML) stiff, dry
							LIGHT BROWN SILTY SAND (SM) medium dense, dry, with sandstone fragments
	CA			18 **	3		
					4		
					5		
					6		LIGHT BROWN SILTY SAND (SM) medium dense, moist-wet
Tx 2764 (1152) 14% Passing #200		15.1	112				
	CA			14 **	7		
					8		
					9		
					10		ORANGE-BROWN SILTY COARSE SILTY SAND (SM) loose, wet
	CA			6 **	11		

Note:
1) No caving
2) No free water encountered

Latitude/Longitude estimated from Google Earth.
* See Soil Classification Chart & Key to Test Data
** Equivalent "Standard Penetration" Blow Counts.
*** Elevations interpolated from contours shown on Plate 3.

Scale: 1" = 2'

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LOG OF BORING B-8
PROPOSED BERTRAND/DANIEL RESIDENCE
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PLATE 11
SHEET 1 of 1

BORING LOG 1 PER PAGE, 12856.01 GINT.GPJ, 5/8/19

Log of Boring B-9

Equipment: Light Portable Drill Rig (Little Beaver)

Date: 7/25/06 **Logged By:** SCL

Elevation: 74.0 feet *** **Latitude:** 39.3218 **Longitude:** -123.802997

Laboratory Tests	Sampler Type*	Moisture Content (%)	Dry Density (pcf)	Blows/foot	Depth (ft.)	Sample	
							DARK BROWN SILTY SAND (SM) loose, dry, porous with roots
					1		
33% Passing #200		18.5	73		2		rock fragments
							LIGHT ORANGE-BROWN SANDY SILT (ML) stiff, moist with rock fragments
	CA			9 **	3		
					4		
					5		
	CA			13 **	6		

Note:
1) No caving
2) No free water encountered

Latitude/Longitude estimated from Google Earth.
* See Soil Classification Chart & Key to Test Data
** Equivalent "Standard Penetration" Blow Counts.
*** Elevations interpolated from contours shown on Plate 3.

Scale: 1" = 2'

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LOG OF BORING B-9
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
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PLATE 12
SHEET 1 of 1

BORING LOG 1 PER PAGE, 12856.01 GINT.GPJ, 5/8/19

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			SYMBOLS GRAPHIC	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	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 50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	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 MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	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	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMOUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

KEY TO TEST DATA

LL - Liquid Limit
PI - Plasticity Index
Consol - Consolidation
EI - Expansion Index
Sample Retained
SA - Sieve Analysis
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 >= 4-inches / core length)

	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

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SOIL CLASSIFICATION CHART & KEY TO TEST DATA
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
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PLATE 13

SOIL CLASSIFICATION CHART COLOR, 12856.01 GINT.GPJ, 5/8/19

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

Dry	No noticeable moisture content. Requires considerable moisture to obtain optimum moisture content* for compaction.
Damp	Contains some moisture, but is on the dry side of optimum.
Moist	Near optimum moisture content for compaction.
Wet	Requires drying to obtain optimum moisture content for compaction.
Saturated	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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SOIL DESCRIPTIVE PROPERTIES
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
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PLATE 14

Generalized Graphic Bedrock Symbols

	Claystone		Siltstone		Tuff (Volcanic Ash)
	Shale		Chert		Andesite
	Sandstone		Serpentine		Basalt
	Conglomerate		Greenstone		Schist

Stratification

Bedding of Sedimentary Rocks	Thickness of Beds
Massive	No apparent bedding
Very thick bedded	Greater than 4 feet
Thick bedded	2 feet to 4 feet
Thin bedded	2 inches to 2 feet
Very thin bedded	0.5 inches to 2 inches
Laminated	0.125 inches to 0.5 inches
Thinly laminated	less than 0.125 inches

Fracturing

Fracturing Intensity	Fracture Spacing
Little	Greater than 4 feet
Occasional	1 foot to 4 feet
Moderate	6 inches to 1 foot
Close	1 inch to 6 inches
Intense	0.5 inches to 1 inch
Crushed	less than 0.5 inches

Strength

Soft	Plastic or very low strength.
Friable	Crumbles by hand.
Low hardness	Crumbles under light hammer blows.
Moderate hardness	Crumbles under a few heavy hammer blows.
Hard	Breaks into large pieces under heavy, ringing hammer blows.
Very hard	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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BEDROCK DESCRIPTIVE PROPERTIES
PROPOSED BERTRAND/DANIEL RESIDENCE
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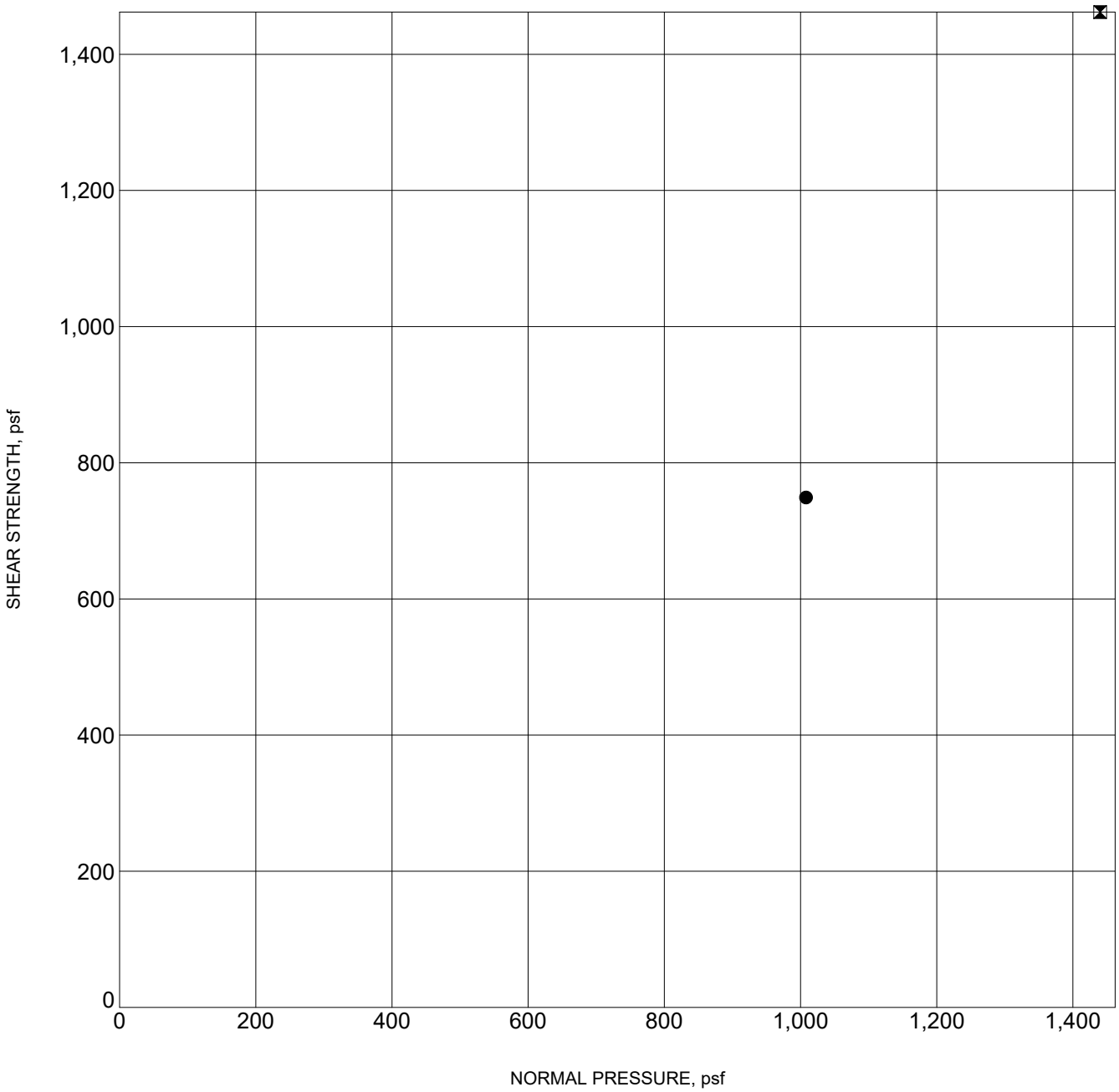
PLATE 15

ROCK DESCRIPTIVE PROPERTIES COLOR, 12856.01 GINT.GPJ, 5/8/19



Sample Source		Classification		γ_d	MC%	c	ϕ (degree)
●	B-5 at 6.5 ft	LIGHT BROWN POORLY GRADED SAND (SP-SM) with silt	Initial	97	10.2	0	37
			After	99	21.0		
⧗	B-6 at 9.0 ft	LIGHT BROWN CLEAN SAND (SP)	Initial	103	14.7	0	45
			After	102	20.0		

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DIRECT SHEAR TEST RESULTS
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
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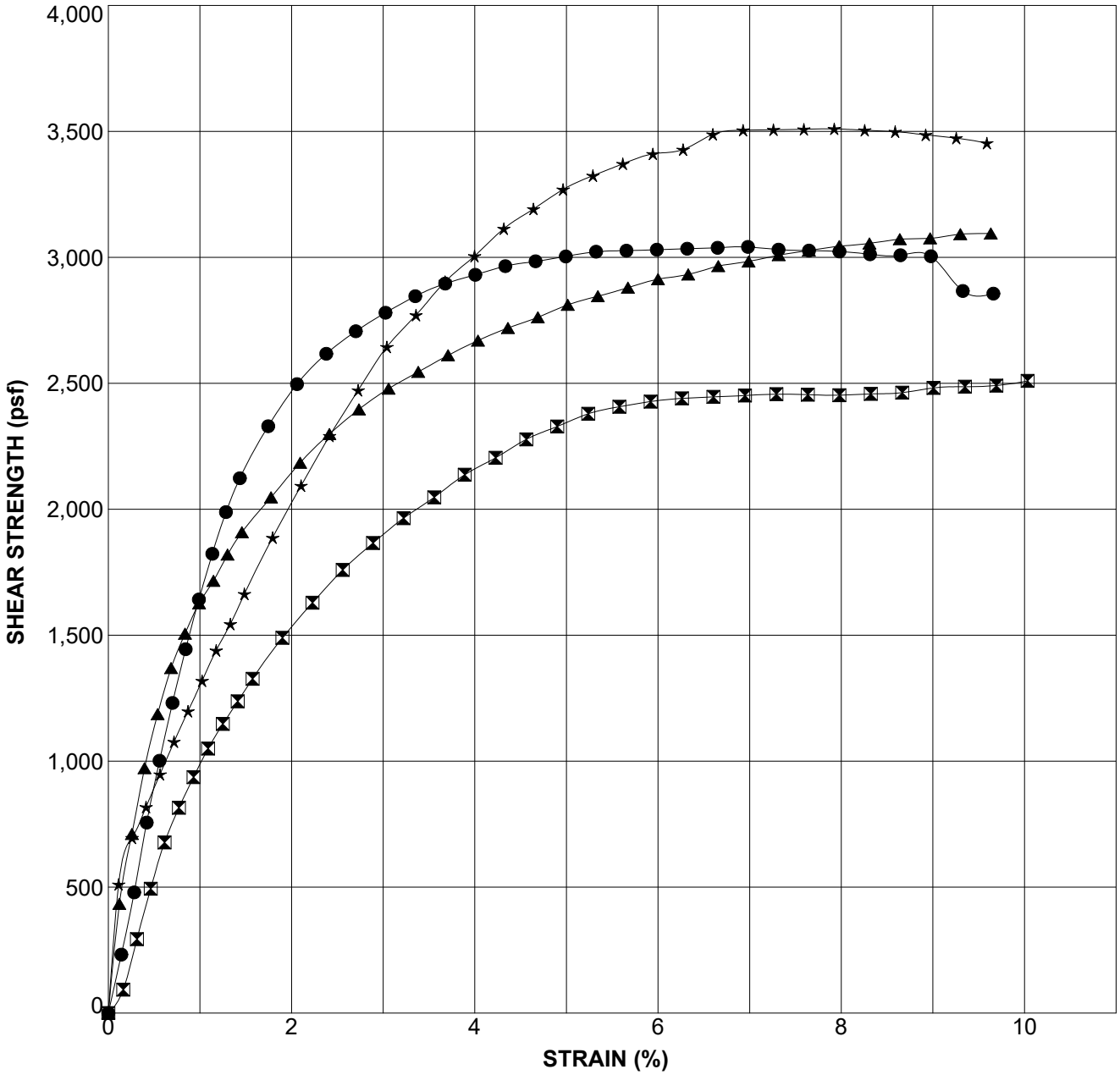
PLATE 16

DIRECT_SHEAR BAI, 12856.01 GINT.GPJ, 5/8/19



Sample Source	Classification	Confining Pressure (psf)	Yield Strength (psf)	Strain (%)	Dry Density (pcf)	Moisture Content (%)
● B-5 at 7 ft	LIGHT BROWN POORLY GRADED SAND (SP-SM) with silt	1296	2775	3.0	108	13.5
⧗ B-5 at 13 ft	BROWN SILTY SANDSTONE	2160	2047	3.4	109	19.2
▲ B-6 at 4 ft	MOTTLED ORANGE-GRAY CLAYEY SILT (ML)	720	2540	3.4	104	20.2
★ B-8 at 6.5 ft	LIGHT BROWN SILTY SAND (SM)	1152	2764	3.4	112	15.1

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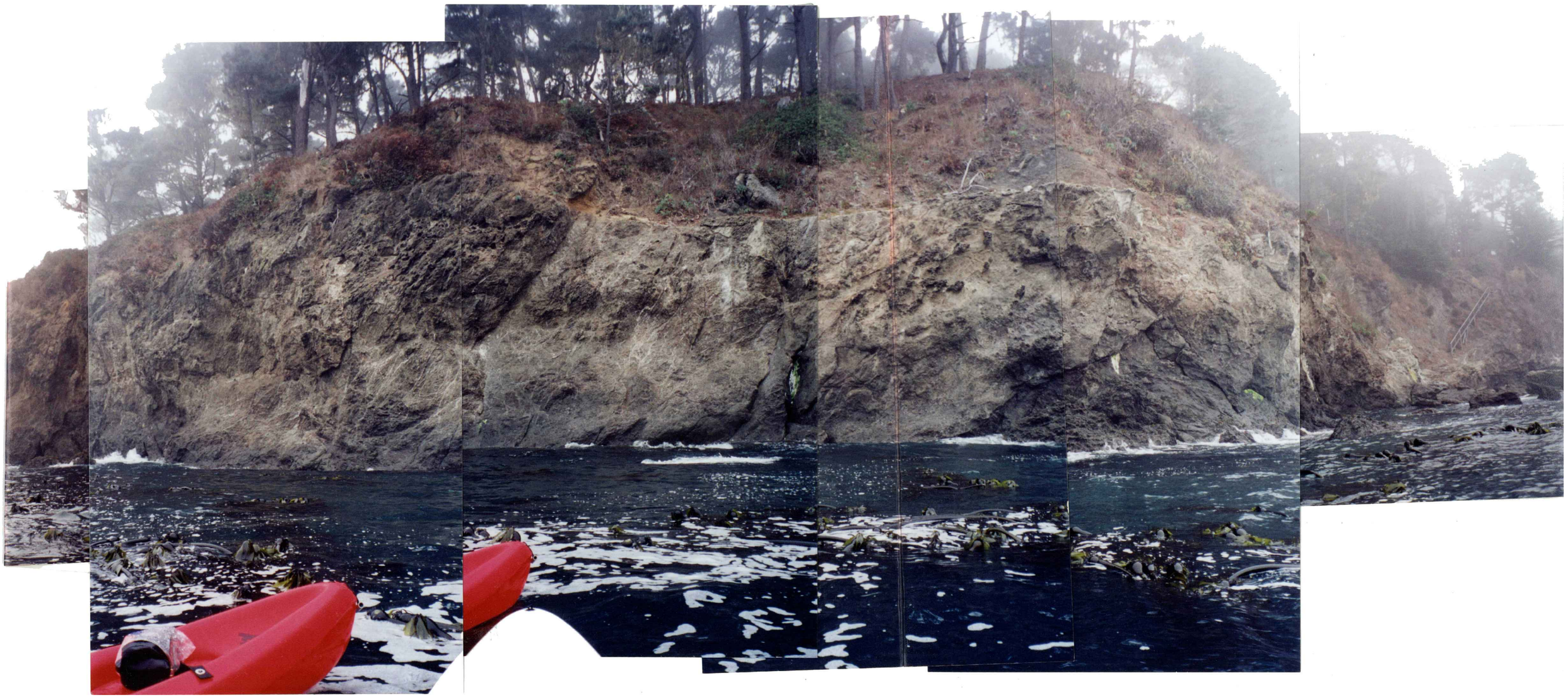
UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST RESULTS
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE 17

UNCONIFINED TRIAXIAL (YIELD), 12856.01 GINT.GPJ, 5/8/19

SITE PHOTOGRAPH A
looking northwest 2006



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SITE PHOTOGRAPH A
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE
18

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SITE PHOTOGRAPHS B and C
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
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PLATE
19

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SITE PHOTOGRAPH D
looking northwest to northeast 2006

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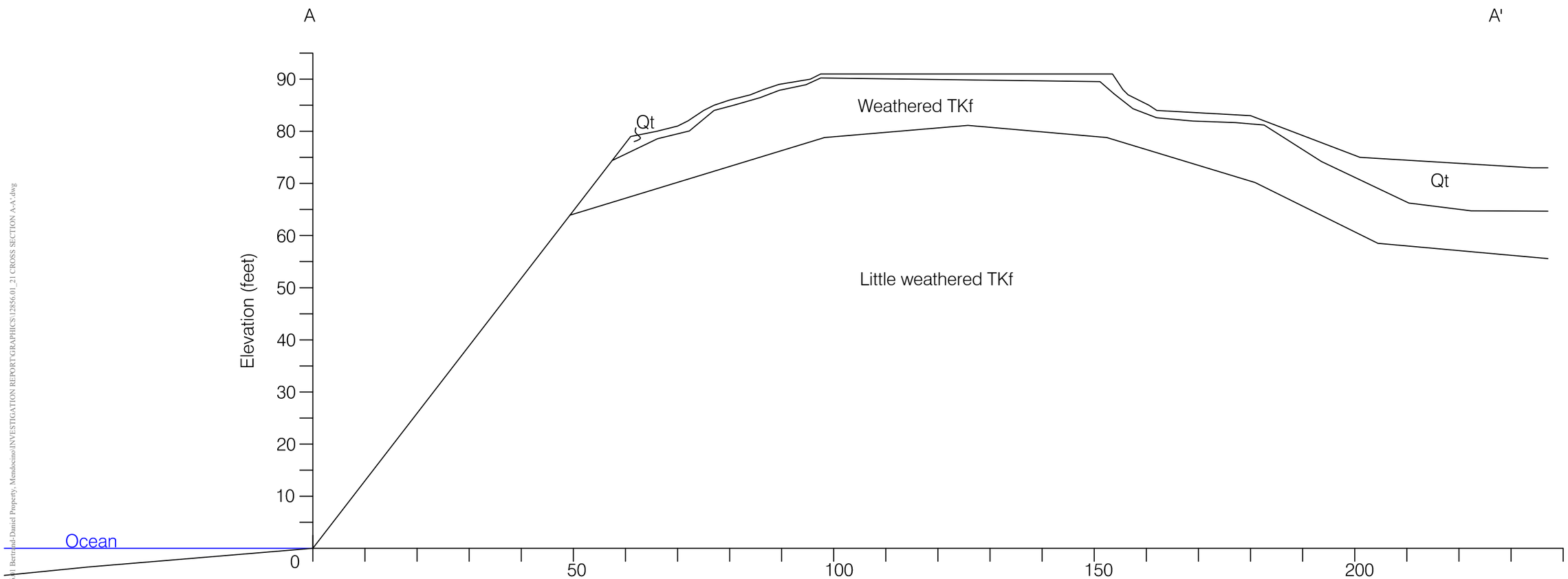
SITE PHOTOGRAPH D
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE
20

LEGEND

Qt- Pleistocene terrace deposits
Poorly consolidated silty sand and sandy silt

TKf- Tertiary- Cretaceous
Franciscan complex sedimentary rocks



Reference:
Cross section prepared from Plate 3 and our subsurface exploration and field reconnaissance.

APPROXIMATE SCALE (FEET)
0 10 20 40

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CROSS SECTION A-A'
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
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PLATE 21

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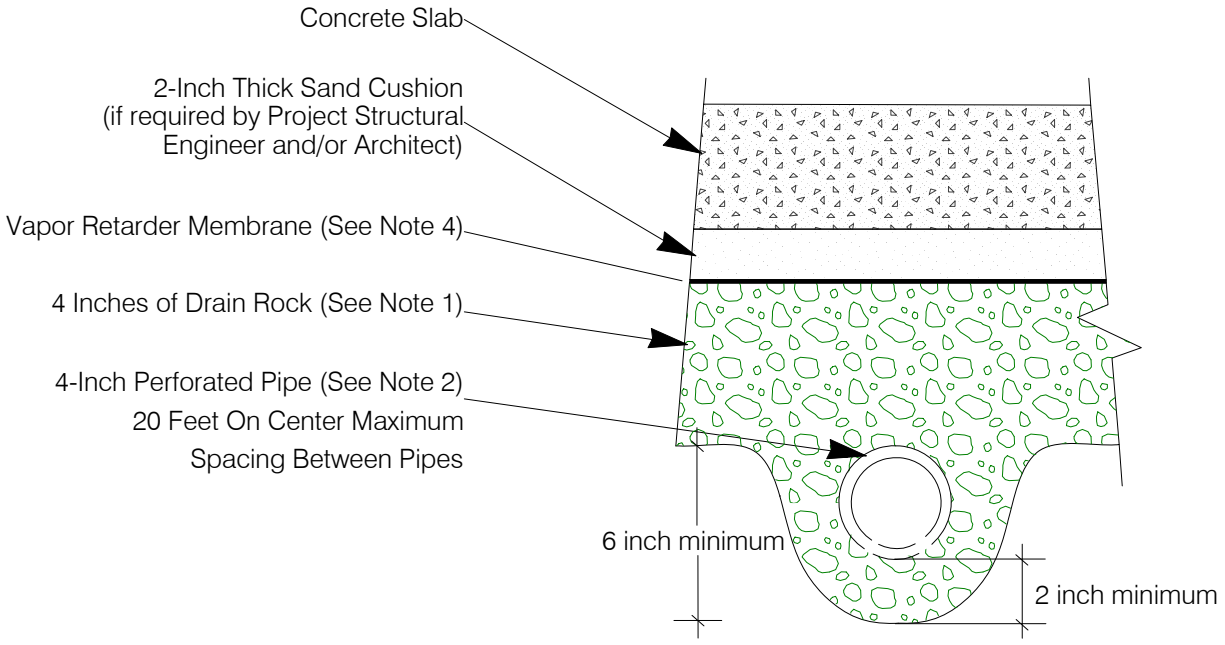

NOT TO SCALE

NOTES:

1. Drain rock should be clean, free-draining material graded in size between the No.4 and 3/4 inch sieves.
2. Pipe should be SDR 35 or equivalent, perforations placed down, sloped at least 1 percent to gravity outlet, or sump with automatic pump.
3. A clean-out pipe with cap should be installed at the up-slope end of perforated pipe.
4. Vapor retarder should be at least 15-mils thick and installed in accordance with the manufacturer's specifications.

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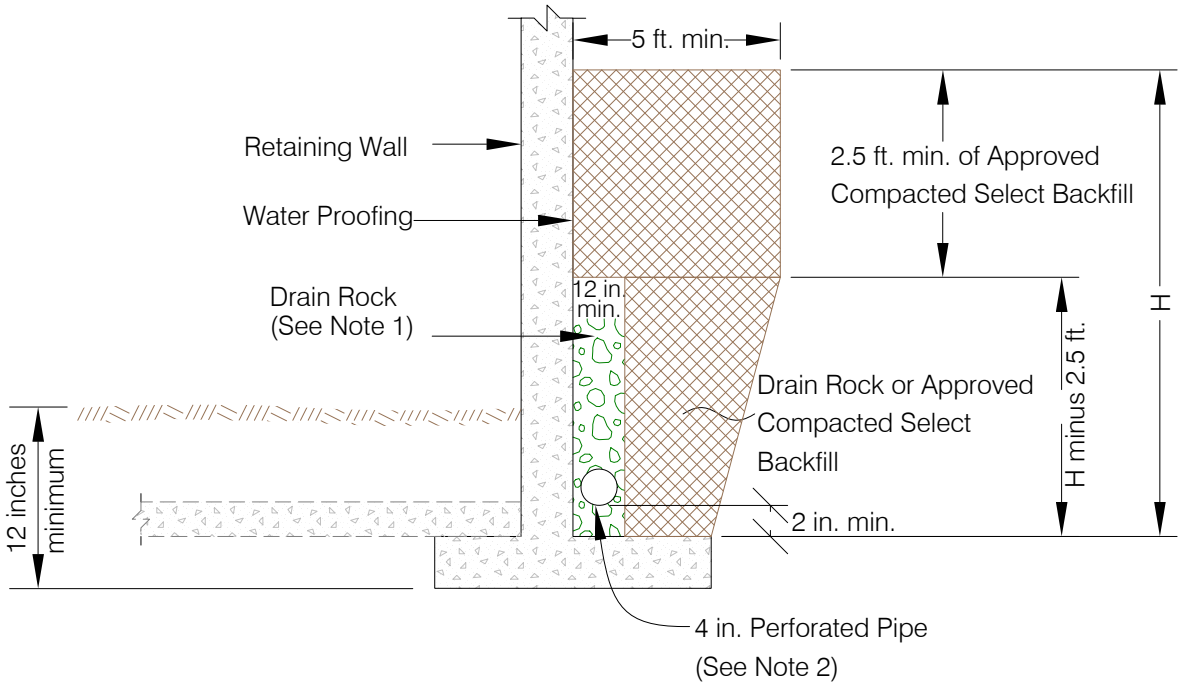
UNDERSLAB DRAINAGE DETAILS
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE 22

UNDERSLAB DRAINAGE DETAILS, 12856.01 GINT.GPJ, 5/8/19



RETAINING WALL DRAINAGE DETAIL
(Not to Scale)

NOTES:

(1) Drain rock should be clean, free-draining material graded in size between the No. 4 and 3/4 inch sieves and should be wrapped in a non-woven geotextile filter fabric (Mirafi 140N or equivalent), or Class 2 permeable material, without filter fabric, per Caltrans standard specifications, latest edition.

(2) Pipe should be SDR 35 or equivalent, placed with perforations down, and sloped at 1 percent to drain to gravity outlet or sump with automatic pump.

(3) A clean-out pipe with cap should be installed at the up-slope end of perforated pipe, and pipe elbows should be 45 degrees or less (for "snake" access).

RETAINING WALL DRAINAGE DETAIL, 12856.01 GINT.GPJ, 5/8/19

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RETAINING WALL DRAINAGE DETAIL
PROPOSED BERTRAND/DANIEL RESIDENCE
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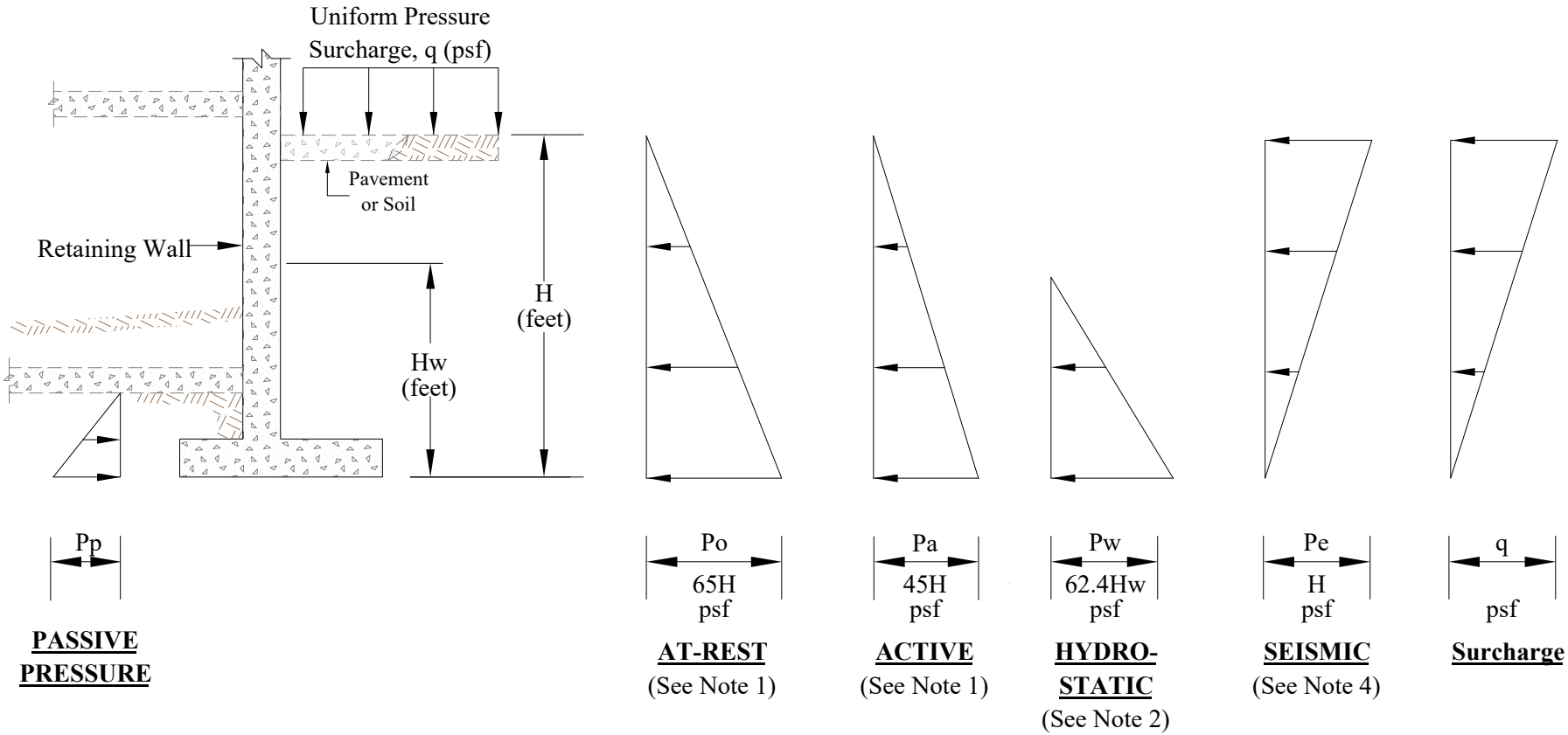
PLATE 23



NOTES:

(1) If the wall at the surface of the backfill cannot move more than about 0.1 percent of its' height, at-rest soil pressures should be used.

(2) If the wall is drained the above hydrostatic pressure does not have to be used. See Plate 23 for drainage and backfill details.

(3) The above pressures should be used where backfill slope is flatter than 3 horizontal to 1 vertical (3H:1V). Where backfill slope is between 3H:1V and 1.5H:1V, use active pressure of 55H psf and at-rest pressure of 87H psf, respectively.

(4) For additional design seismic pressures see the Retaining Walls section of this report.

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RETAINING WALL LATERAL EARTH PRESSURES

PROPOSED BERTRAND/DANIEL RESIDENCE
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PLATE 24

RETAINING WALL LATERAL EARTH PRESSURES2, 12856.01 GINT.GPJ, 5/8/19

APPENDIX A - References

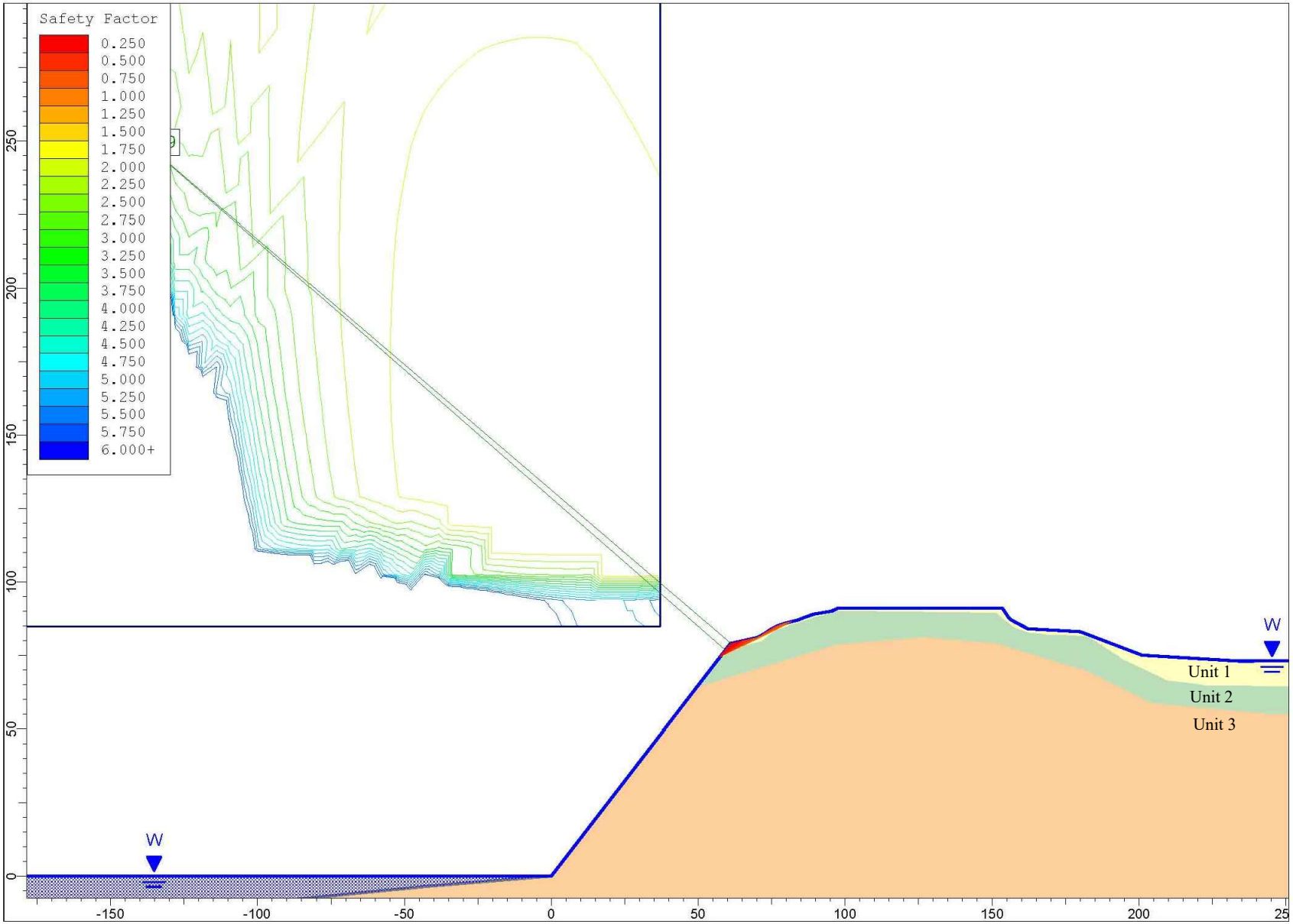
Brunsing Associates, 2001, Geotechnical Investigation, Lemley Residence Remodel, 11050 Lansing Street, Mendocino, California, dated January 23.

Brunsing Associates, Inc., 2006, Geotechnical Investigation, Proposed Landslide Mitigation, Lemley Property, 11050 Lansing Street, Mendocino, California, dated August 18.

United States Geological Survey (USGS), 2015, Mendocino Quadrangle, California, 7.5-Minute Series: Scale 1:24,000.

APPENDIX B

Slope Stability Analysis



Notes:
1. Factor of Safety is greater than 1.5
2. Static Condition
3. Minor surficial soils failing, less than 1 foot thick

APPROXIMATE SCALE (FEET)

0 25 50 100

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STATIC SLOPE STABILITY CROSS SECTION A-A'
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
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PLATE
B1

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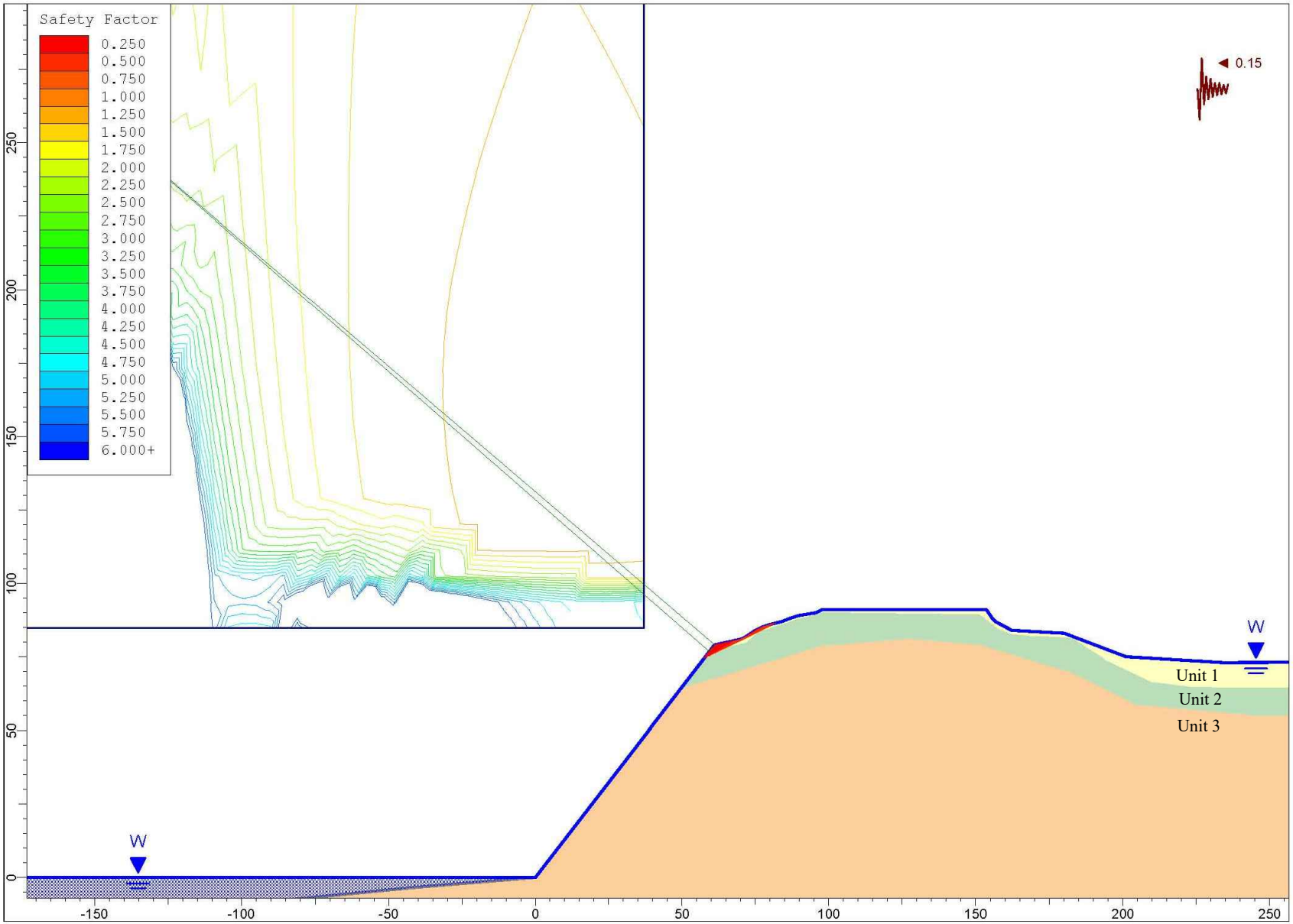

Notes:

1. Factor of Safety is greater than 1.1
2. Horizontal Seismic Coefficient 0.15
3. Minor surficial soil failing, less than 1 foot thick

APPROXIMATE SCALE (FEET)

0 25 50 100

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SEISMIC SLOPE STABILITY CROSS SECTION A-A'
PROPOSED BERTRAND/DANIEL RESIDENCE
11800 Road 500 D
Mendocino, California

PLATE
B2

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Brunsing Associates, Inc.

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November 21, 2024 13718.01

Andy and Kirsten Christensen
7944 Dante Drive
Littleton, CO 80125
biomdtr@me.com

Geotechnical Report Update, Planned Residence and Detached Guest Cottage, 11800 Road 500D, Mendocino, California

Dear Mr. and Ms. Christensen:

Brunsing Associates, Inc. (BAI) is pleased to present this update to our previous geotechnical investigation report dated May 16, 2019, for the property at 11800 Road 500D, Mendocino, California. An earlier BACE Geotechnical, division of BAI, geotechnical investigation report, dated January 8, 2010, was prepared primarily for a residence site northwest of the current building area at the property.

The current residence plans have been prepared by Newberger & Associates, project Architect. The plans show a two-story residence at the location of a dilapidated garage within an existing cut pad, with a re-located driveway off Road 500 D. There will also be a detached guest cottage west-northwest of the residence site.

Previous and Current Reconnaissances

Our Principal Engineering Geologist, Erik Olsborg initially performed a reconnaissance of the site on October 3, 2001. The reconnaissance included observation of the site geomorphology, and geologic examination of soil and bedrock materials exposed on the bluff and in the building areas. The bluff toe was observed via ocean kayak during a tide of approximately, plus three feet, per published tide tables.

Olsborg re-examined the site on July 25, 2006. Olsborg and BAI's Principal Geotechnical Engineer, Keith Colorado performed a reconnaissance of the property on May 11, 2018. During our 2018 reconnaissance, we compared the topographic features with the same features observed in 2001 and 2006.

On June 20 and August 13, 2024 Olsborg with Senior engineering geologist, Josh Kilgore, performed a site reconnaissance of the ocean bluff near the planned building site and the area appears unchanged from our 2001, 2006 and 2018 reconnnaissances.

Updated Recommendations

Our previous report conclusions and recommendations for grading, foundations and drainage remain valid and suitable for design, with the following updated criteria.

Slope Stability Analysis

Our bluff stability analyses were performed to correspond, as a minimum, to the guidelines by California Coastal Commission, "Establishing Development Setbacks from Coastal Bluffs," Proceedings, California and the World Ocean '02. The document recommends a factor of safety greater than or equal to 1.5 for static conditions and 1.1 for seismic conditions and a horizontal seismic coefficient of 0.15.

We also followed the guidelines prepared by (1) American Society of Civil Engineers (ASCE) and Southern California Earthquake Center (SC/EC) "Recommended Procedures for Implementation of Division of Mines and Geology Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California", dated June 2002 and (2) California Geological Survey (CGS) "Guidelines for Evaluating and Mitigating Seismic Hazards in California" dated 2008.

Cross Section B-B,' shown in Appendix B, was created from contours on the Site Plan – Overall, sheet A1.2, available LiDAR data, our reconnaissance, and data from our subsurface exploration as well as subsurface exploration on neighboring properties. The location of the cross section used for our stability analyses is shown on Plate 1.

From our subsurface exploration, five soil and bedrock units, with different density and strength parameters, were identified within the bluff for our stability analyses. Unit "1" silty sand topsoil, Unit "2" is the sand with little or no fines (terrace deposits), Unit "3" is the deeply weathered sandstone, Unit "4" is the moderately weathered sandstone, and Unit "5" is the little weathered sandstone. Table 1 summarizes soil and bedrock parameters used.

Table 1: Soil and Bedrock Parameters

Unit	Wet Density (pcf)	Cohesion (psf)	Friction Angle (ϕ)
1	110	400	30
2	123	0	35
3	130	1500	0
4	135	2500	0
5	140	3500	0

The above assigned strengths were determined from strength test results obtained from this site and adjacent sites in the area, as well as from back-analysis of the slope stability calculations. The stability of the bluff slope was analyzed using the computer program SLIDE 5.0 by RocScience, Inc. The results of our stability analyses are presented in Appendix A.

The results of our stability analyses indicate that cross section location B-B' has a factor of safety less than 1.5 within 10 feet of the bluff edge for static conditions and a factor of safety less than 1.1 within 10 feet of the bluff edge for pseudo-static conditions. Therefore, the erosion-related bluff setback should be increased by 10 feet to mitigate the slope stability concerns.

Liquefaction and Densification

Liquefaction results in a loss of shear strength and potential soil volume reduction in saturated sandy, silty, silty/clayey, and also coarse gravelly soils below the groundwater table from earthquake shaking. The occurrence of this phenomenon is dependent on many factors, including the intensity and duration of ground shaking, the soil age, density, particle size distribution, and position of the groundwater table.

We have evaluated the liquefaction potential for the site using site modified peak ground acceleration. The results of our analysis indicate the site has a minor potential for liquefaction in the area of boring B-8 during a design earthquake.

Where the probability of liquefaction, factor of safety, was 1.3 or less, we performed an analysis to estimate induced vertical settlement due to liquefaction. This analysis was based on procedures by Idriss and Boulanger, 2008, with 2014 update. BAI has performed an evaluation of earthquake induced settlement in dry sand. The analysis was based on procedures by Pradel, D.J., 1998, "Procedure to Evaluate Earthquake-Induced Settlements in Dry Sandy Soils". The results of our analysis are shown in Table 2 below. Liquefaction analysis results are presented in Appendix B.

Table 2: Liquefaction Settlement, Densification and Lateral Displacement

Boring	Settlement (inches)	Lateral Displacement (inches)	Settlement in Dry Sand (inches)
B-5	0	0	1.6
B-6	0	0	1.0
B-7	0	0	1.0
B-8	0.6	0	1.2

Lateral spreading is generally caused by liquefaction of marginally stable soils underlying gently to steeply-inclined slopes. In these cases, the saturated soils move toward an unsupported face, such as an incised river channel or body of water. Based on review of our borings and nearby unsupported slope faces, we conclude there is not a potential for lateral spreading in the area and shown in Table 2.

To mitigate the concern of vertical settlement due to liquefaction, the planned building should be supported on spread footings underlain by compacted fill, or the building can be supported on drilled piers penetrating the underlying bedrock. Recommendations for the foundations are presented below.

Seismic Design Criteria

The structure should be designed and/or 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. CBC indicates that the following seismic design parameters are appropriate for the site:

Table 3: Seismic Design Parameters

Site Class	=	C
Mapped Spectral Response Acceleration at 0.2 sec	S_S =	1.915g
Mapped Spectral Response Acceleration at 1.0 sec	S_1 =	0.787g
Modified Spectral Response Acceleration at 0.2 sec	S_{MS} =	2.298g
Modified Spectral Response Acceleration at 1.0 sec	S_{M1} =	1.102g
Design Spectral Response Acceleration at 0.2 sec	S_{DS} =	1.532g
Design Spectral Response Acceleration at 1.0 sec	S_{D1} =	0.734g
Site Coefficient	F_a =	1.2
Site Coefficient	F_v =	1.4
Long Period Transition Period	T_L=	12
Seismic Design Category	=	E

Bluff Setback

The bluff setback of 24 feet provided in our 2019 report was based upon our 2001, 2006 and 2018 site observations showing very little or no bluff erosion. Those observations confirmed our bluff retreat rate of 0.5 to one inch per year. That retreat rate, as modified by the potential effects of sea level rise and the results of our computer stability analysis, was used in determination of our bluff setback. The 24-foot erosional setback for the residence is still valid at this time, with an additional 10 feet setback (total of 34 feet) for slope stability concerns in the guest house vicinity.

Foundation Support

Alternate A –Footings in Compacted Fill

The guest cottage can then be supported on spread footings founded in compacted fill. The upper dark silty sand, which varies from 1.5 to 2.5 feet in depth, should be completely removed from the building area, including the zone extending five feet beyond perimeter footings. The excavated area should be covered by a geotextile stabilization fabric such as Mirafi 500X or equivalent. The geotextile should be installed in accordance with the manufacturer's specifications. The removed soils should be replaced with compacted fill as per the Site Grading section of our 2019 report. There should be a minimum thickness of 18 inches of compacted fill under the footings.

Footings founded in compacted fill should be at least 12 inches in depth for a one-story structure. Footings can be designed using an allowable soil bearing pressure of 2,500 pounds per square foot

(psf) for dead plus live loads. A 33 percent increase in bearing pressure is allowable for total loads, including wind or seismic loads. Footings should be no less than 18 inches wide, regardless of load.

Resistance to lateral loads can be obtained using a combination of passive earth pressure against the face of foundations, and frictional resistance along the base of foundations. An allowable passive pressure of 300 psf (rectangular distribution), and frictional resistance of 0.35 times the net vertical dead load, are appropriate for footing elements poured neat against approved supporting soils. Passive pressure should be neglected within the upper 6 inches of soil subgrade, unless confined by slabs or pavement.

Alternate B – Drilled Piers

Support for the guest cottage can be obtained using a cast-in-drilled-hole reinforced-concrete pier and grade beam foundation system. Drilled piers should be at least 12 inches in diameter and should be embedded a minimum of 5 feet into supporting bedrock or drilled to refusal, as determined by BAI, with a suitably powered drill rig. The drilled piers should be at least 15 feet in depth. Pier length and diameter should be determined by a structural engineer based on our recommendations.

Pier spacing should be no closer than 3 pier diameters, center to center. The drilled piers should be designed to gain support from skin friction. A skin friction value of 200 pounds per square foot (psf) of shaft area may be used in the supporting soil, for dead loads plus live loads. A skin friction value of 500 pounds per square foot (psf) of shaft area may be used in the supporting bedrock, for dead loads plus live loads. For total downward loads due to wind or seismic forces, the pier capacity can be increased 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 determined by BAI, the bottoms of the pier holes should be cleaned of loose materials. BAI should observe the drilling and final clean out of the pier holes, prior to the placement of reinforcing steel and/or concrete. Concrete should not be placed freefall or in such a manner as to hit the sidewalls of the pier hole.

Resistance to lateral loads can be obtained using passive earth pressure against the face of the foundations. An allowable passive pressure of 200 psf (rectangular distribution) can be used within the supporting soils. An allowable passive pressure of 400 psf (rectangular distribution) can be used within the supporting bedrock. Passive pressure should be neglected within the upper 2.0 to 2.5 feet where weak soils are not removed. Passive pressure can be projected over two pier diameters.

As mentioned in our 2019 report, groundwater was encountered in our borings at a depth of about 10 to 11.5 feet. If necessary, pier holes should be dewatered prior to placement of reinforcing steel and concrete. If pumping is not practical, concrete must be tremied into place with and adequate head to displace water or slurry, if groundwater has entered the pier hole.

If you have any questions, please contact Brunsing Associates, Inc. at (707) 528-6108.

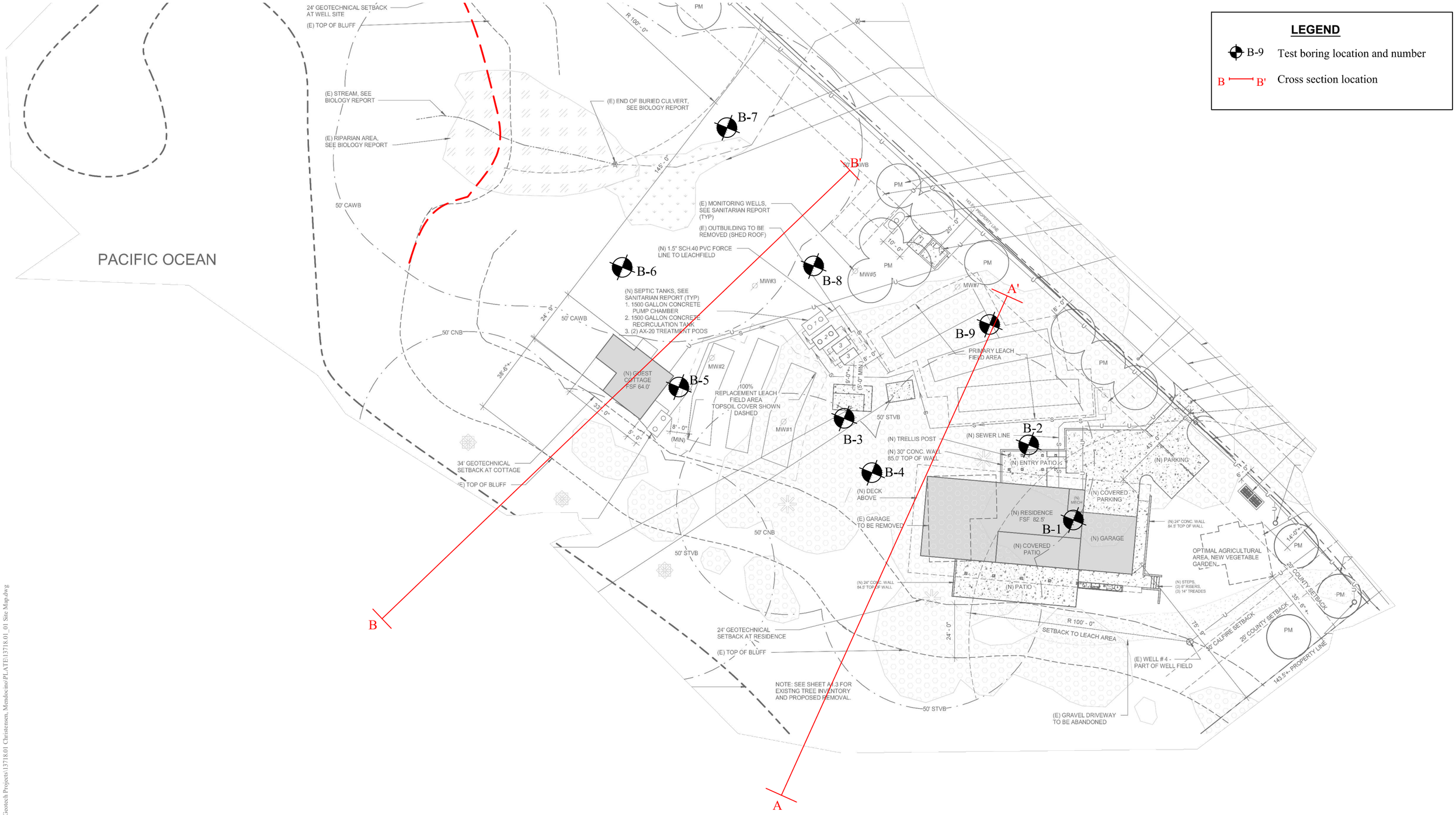
Respectfully submitted,

Keith A. Colorado
Geotechnical Engineer – 2894
kcolorado@brunsing.com

Erik E. Olsborg
Engineering Geologist – 1072
eolsborg@brunsing.com

Cc: Todd Newberger, Newberger & Associates, Inc., todd@newberger-architect.com

Attachments: Plate 1 - Site Plan



REFERENCE:
Site Plan - Overall, sheet A1.2, prepared by Newberger & Associates, dated 11.12.2024

NORTH

APPROXIMATE SCALE (FEET)
0 20 40 80

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SITE MAP
CHRISTENSEN RESIDENCE AND ADU
11800 Road 500 D
Mendocino, California

PLATE
1

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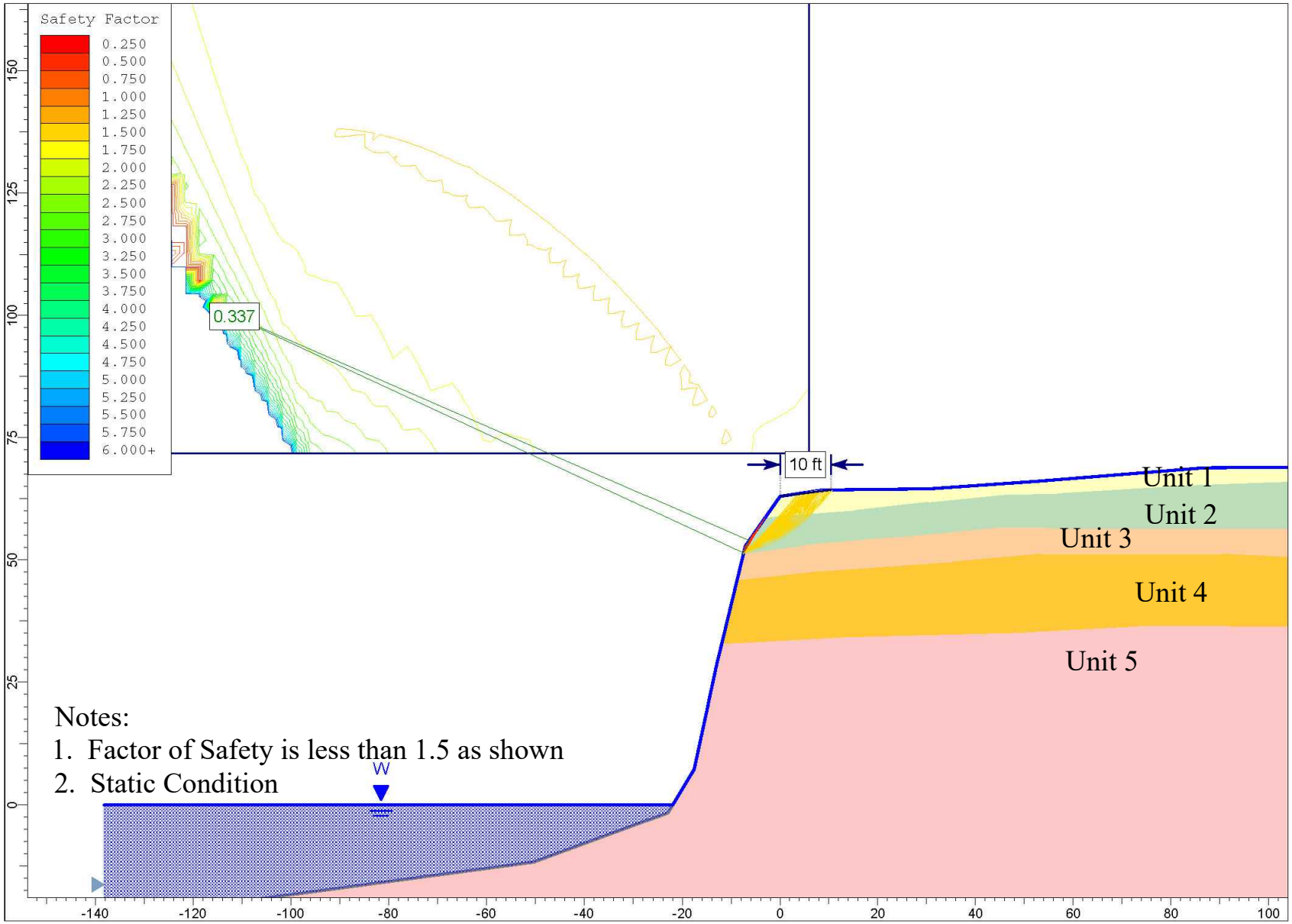
APPENDIX A

Slope Stability



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APPROXIMATE SCALE (FEET)

0 15 30 60

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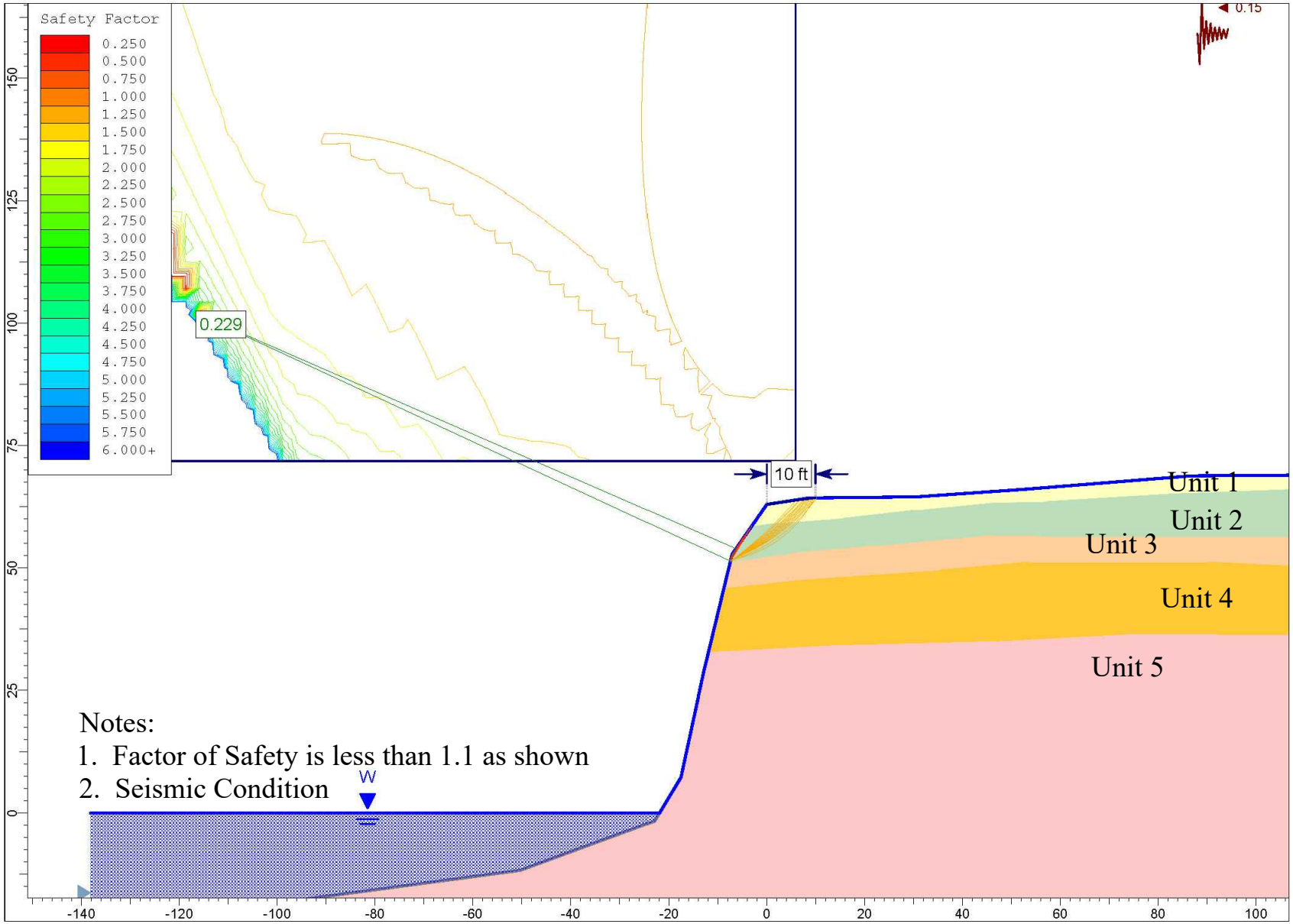
STATIC SLOPE STABILITY CROSS SECTION B-B'
CHRISTENSEN ADU
11800 Road 500D
Mendocino, California

PLATE
A1



APPROXIMATE SCALE (FEET)

0 15 30 60

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SEISMIC SLOPE STABILITY CROSS SECTION B-B'
CHRISTENSEN ADU
11800 Road 500D
Mendocino, California

PLATE
A2

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APPENDIX B

Liquefaction Analysis

Project:	Christensen Residence
Project #:	13718.01
Date:	11/20/2024
Boring:	B-5

Input Parameters:

Peak Ground Accel (g) =		0.987			
Earthquake Magnitude, M =		7.8			
Water Table Depth (m) =	3.0	10.00	(ft)		
Average γ Above Water Table (kN/m^3) =	18.1	115.0	(lb/ft^3)	Ko =	0.5
Average γ Below Water Table (kN/m^3) =	21.2	135.0	(lb/ft^3)	Nc =	18.1
Borehole Diameter (mm) =	101.60	4	(in)		
Requires Correction for Sample Liners (YES/NO):		no			
Rod Lengths Assumed Equal to the Depth Plus	1.5	m (for the above ground extension)			
Gravilty Acceleration (m/sec^2)	9.81				
Height of Exposed Face (m)	3	10	(ft)		
Boring Distance from Exposed Face (m)	18	60	(ft)		

Liquefaction Potential

SPT Sample Number	Depth (m)	Depth (ft)	Layer Thickness (m)	Midpoint of Layer (m)	Measured N	Soil Type (USCS)	Flag "nlp"	Sat/Unsat	Fines Content (%)	Energy Ratio, ER (%)	C_E	C_B	C_R	C_S	N_{60}	σ_{vc} (kPa)	$\sigma_{vc'}$ (kPa)	C_N	$(N_1)_{60}$	ΔN for Fines Content	$(N_1)_{60-cs}$	Stress Reduct. Coeff, r_d	CSR	MSF_{max}	MSF for Sand	K_σ for Sand	CRR for M=7.5 & $\sigma_{vc'}$=1atm	CRR	Factor of Safety
1	0.76	2.50	0.76	0.38	9	SM		0	30	85	1.42	1	0.75	1.00	9.6	14	14	1.70	16.26	5.4	21.62	1.00	0.643	1.6	0.95	1.10	0.227	N.A.	N.A.
2	1.52	5.00	0.76	1.14	22	SM		0	30	85	1.42	1	0.8	1.00	24.9	28	28	1.45	36.27	5.4	41.64	1.00	0.640	2.2	0.89	1.10	2.000	N.A.	N.A.
3	2.44	8.00	0.91	1.98	16	SP-SM		0	6	85	1.42	1	0.8	1.00	18.1	44	44	1.39	25.23	0.0	25.26	0.99	0.636	1.7	0.93	1.10	0.296	N.A.	N.A.
4	3.05	10.00	0.61	2.74	16	SP-SM		0	6	85	1.42	1	0.85	1.00	19.3	55	55	1.28	24.60	0.0	24.63	0.99	0.633	1.7	0.93	1.10	0.281	N.A.	N.A.
5	3.66	12.00	0.61	3.35	26	bedrock		1	16	85	1.42	1	0.85	1.00	31.3	67	61	1.16	36.38	3.6	39.96	0.98	0.691	2.2	0.89	1.10	2.000	1.95	2.00
6	4.11	13.50	0.46	3.89	15	bedrock	nlp	1	16	85	1.42	1	0.85	1.00	18.1	77	67	1.11	N.A.	N.A.	N.A.	0.98	0.725	--	--	1.10	N.A.	N.A.	N.A.

Liquefaction Induced Settlement and Lateral Spreading

Depth (m)	Depth (ft)	Limiting Shear Strain γ_{lim}	Parameter F_α	Maximum Shear Strain γ_{max}	ΔH_i (m)	ΔLDI_i (m)	ΔLDI_i (in)	Vertical Reconsol. Strain ε_v	ΔS_i (m)	ΔS_i (in)
0.76	2.50	0.132	0.430	0.000	0.76	0.000	0.0	0.000	0.000	0.00
1.52	5.00	0.006	-0.928	0.000	0.76	0.000	0.0	0.000	0.000	0.00
2.44	8.00	0.086	0.216	0.000	0.91	0.000	0.0	0.000	0.000	0.00
3.05	10.00	0.093	0.255	0.000	0.61	0.000	0.0	0.000	0.000	0.00
3.66	12.00	0.009	-0.801	0.000	0.61	0.000	0.0	0.000	0.000	0.00
4.11	13.50	0.000	0.000	0.000	0.46	0.000	0.0	0.000	0.000	0.00
					LD =	0.00 (m)	0.0 (in)	S=	0.000 (m)	0.00 (in)

Dry Sand Settlement

τ_{avg} (tsf)	Average Stress (p) (tsf)	Max Shear Modulus (Gmax) (tsf)	a	b	γ (%)	ε_{15} (%)	ε_{NC} (%)	Dry Sand Settlement (in)
0.092	0.10	385.5	0.128	26138	1.00	0.911	0.992	0.6
0.184	0.19	678.3	0.131	17245	0.37	0.151	0.165	0.1
0.292	0.31	726.3	0.136	13007	0.95	0.715	0.778	0.6
0.364	0.38	805.2	0.139	11377	0.99	0.768	0.836	0.4
0.441	0.46	1036.5	0.142	10198	0.00	0.000	0.000	0.0
0.507	0.52	0.0	0.144	9502.4	0.00	0.000	0.000	0.0
							S=	1.66 (in)

Liquefaction Potential
Dry Settlement
(1) Flag "nlp" – based on laboratory testing of fine content, plasticity index, liquid limits and potential intact moisture content.
"nlp" - no liquefacton potential

Project:	Christensen Residence
Project #:	13718.01
Date:	11/20/2024
Boring:	B-6

Input Parameters:

Peak Ground Accel (g) =		0.987			
Earthquake Magnitude, M =		7.8			
Water Table Depth (m) =	3.0	10.00	(ft)		
Average γ Above Water Table (kN/m^3) =	18.1	115.0	(lb/ft^3)	Ko =	0.5
Average γ Below Water Table (kN/m^3) =	21.2	135.0	(lb/ft^3)	Nc =	18.1
Borehole Diameter (mm) =	101.60	4	(in)		
Requires Correction for Sample Liners (YES/NO):		no			
Rod Lengths Assumed Equal to the Depth Plus	1.5	m (for the above ground extension)			
Gravity Acceleration (m/sec^2)	9.81				
Height of Exposed Face (m)	3	10	(ft)		
Boring Distance from Exposed Face (m)	18	60	(ft)		

Liquefaction Potential

SPT Sample Number	Depth (m)	Depth (ft)	Layer Thickness (m)	Midpoint of Layer (m)	Measured N	Soil Type (USCS)	Flag "nlp"	Sat/Unsat	Fines Content (%)	Energy Ratio, ER (%)	C_E	C_B	C_R	C_S	N_{60}	σ_{vc} (kPa)	$\sigma_{vc'}$ (kPa)	C_N	$(N_1)_{60}$	ΔN for Fines Content	$(N_1)_{60-cs}$	Stress Reduct. Coeff, r_d	CSR	MSF_{max}	MSF for Sand	K_σ for Sand	CRR for M=7.5 & $\sigma_{vc'}$=1atm	CRR	Factor of Safety
1	0.76	2.50	0.76	0.38	13	SM		0	30	85	1.42	1	0.75	1.00	13.8	14	14	1.70	23.48	5.4	28.84	1.00	0.643	1.9	0.91	1.10	0.421	N.A.	N.A.
2	1.52	5.00	0.76	1.14	10	SM/ML		0	50	85	1.42	1	0.8	1.00	11.3	28	28	1.69	19.11	5.6	24.73	1.00	0.640	1.7	0.93	1.10	0.284	N.A.	N.A.
3	2.44	8.00	0.91	1.98	28	SP		0	5	85	1.42	1	0.8	1.00	31.7	44	44	1.28	40.53	0.0	40.54	0.99	0.636	2.2	0.89	1.10	2.000	N.A.	N.A.
4	3.05	10.00	0.61	2.74	27	SP		0	5	85	1.42	1	0.85	1.00	32.5	55	55	1.20	39.09	0.0	39.09	0.99	0.633	2.2	0.89	1.10	2.000	N.A.	N.A.
5	3.66	12.00	0.61	3.35	27	SP		1	5	85	1.42	1	0.85	1.00	32.5	67	61	1.17	38.01	0.0	38.01	0.98	0.691	2.2	0.89	1.10	2.000	1.95	2.00
6	4.11	13.50	0.46	3.89	11	bedrock	nlp	1	30	85	1.42	1	0.85	1.00	13.2	77	67	1.11	N.A.	N.A.	N.A.	0.98	0.725	--	--	1.10	N.A.	N.A.	N.A.

Liquefaction Induced Settlement and Lateral Spreading

Depth (m)	Depth (ft)	Limiting Shear Strain γ_{lim}	Parameter F_α	Maximum Shear Strain γ_{max}	ΔH_i (m)	ΔLDI_i (m)	ΔLDI_i (in)	Vertical Reconsol. Strain ε_v	ΔS_i (m)	ΔS_i (in)
0.76	2.50	0.054	-0.012	0.000	0.76	0.000	0.0	0.000	0.000	0.00
1.52	5.00	0.092	0.249	0.000	0.76	0.000	0.0	0.000	0.000	0.00
2.44	8.00	0.008	-0.845	0.000	0.91	0.000	0.0	0.000	0.000	0.00
3.05	10.00	0.011	-0.736	0.000	0.61	0.000	0.0	0.000	0.000	0.00
3.66	12.00	0.013	-0.656	0.000	0.61	0.000	0.0	0.000	0.000	0.00
4.11	13.50	0.000	0.000	0.000	0.46	0.000	0.0	0.000	0.000	0.00
					LD =	0.00 (m)	0.0 (in)	S=	0.000 (m)	0.00 (in)

Dry Sand Settlement

τ_{avg} (tsf)	Average Stress (p) (tsf)	Max Shear Modulus (Gmax) (tsf)	a	b	γ (%)	ε_{15} (%)	ε_{NC} (%)	Dry Sand Settlement (in)
0.092	0.10	424.4	0.128	26138	0.75	0.484	0.527	0.3
0.184	0.19	570.1	0.131	17245	1.00	0.775	0.844	0.5
0.292	0.31	850.3	0.136	13007	0.39	0.169	0.184	0.1
0.364	0.38	939.3	0.139	11377	0.43	0.191	0.207	0.1
0.441	0.46	1019.4	0.142	10198	0.00	0.000	0.000	0.0
0.507	0.52	0.0	0.144	9502.4	0.00	0.000	0.000	0.0
							S=	1.05 (in)

Liquefaction Potential
Dry Settlement
(1) Flag "nlp" – based on laboratory testing of fine content, plasticity index, liquid limits and potential intact moisture content.
"nlp" - no liquefacton potential

Project:	Christensen Residence
Project #:	13718.01
Date:	11/20/2024
Boring:	B-5

Input Parameters:

Peak Ground Accel (g) =		0.987			
Earthquake Magnitude, M =		7.8			
Water Table Depth (m) =	3.0	10.00	(ft)		
Average γ Above Water Table (kN/m^3) =	18.1	115.0	(lb/ft^3)	Ko =	0.5
Average γ Below Water Table (kN/m^3) =	21.2	135.0	(lb/ft^3)	Nc =	18.1
Borehole Diameter (mm) =	101.60	4	(in)		
Requires Correction for Sample Liners (YES/NO):		no			
Rod Lengths Assumed Equal to the Depth Plus	1.5	m (for the above ground extension)			
Gravity Acceleration (m/sec^2)	9.81				
Height of Exposed Face (m)	3	10	(ft)		
Boring Distance from Exposed Face (m)	18	60	(ft)		

Liquefaction Potential

SPT Sample Number	Depth (m)	Depth (ft)	Layer Thickness (m)	Midpoint of Layer (m)	Measured N	Soil Type (USCS)	Flag "nlp"	Sat/Unsat	Fines Content (%)	Energy Ratio, ER (%)	C_E	C_B	C_R	C_S	N_{60}	σ_{vc} (kPa)	σ_{vc}' (kPa)	C_N	$(N_1)_{60}$	ΔN for Fines Content	$(N_1)_{60-cs}$	Stress Reduct. Coeff, r_d	CSR	MSF_{max}	MSF for Sand	K_σ for Sand	CRR for M=7.5 & σ_{vc}'=1atm	CRR	Factor of Safety
1	1.22	4.00	1.22	0.61	16	SM		0	30	85	1.42	1	0.75	1.00	17.0	22	22	1.67	28.43	5.4	33.79	1.00	0.641	2.2	0.89	1.10	0.874	N.A.	N.A.
2	1.98	6.50	0.76	1.60	23	SM		0	30	85	1.42	1	0.8	1.00	26.1	36	36	1.36	35.36	5.4	40.72	0.99	0.638	2.2	0.89	1.10	2.000	N.A.	N.A.
3	2.74	9.00	0.76	2.36	14	SP		0	5	85	1.42	1	0.85	1.00	16.9	50	50	1.35	22.70	0.0	22.70	0.99	0.634	1.6	0.94	1.10	0.244	N.A.	N.A.
4	3.05	10.00	0.30	2.90	38	SP		1	5	85	1.42	1	0.85	1.00	45.8	60	60	1.15	52.55	0.0	52.56	0.99	0.633	2.2	0.89	1.10	2.000	1.95	2.00
5	3.66	12.00	0.61	3.35	38	SP		1	5	85	1.42	1	0.85	1.00	45.8	69	63	1.13	51.83	0.0	51.83	0.98	0.689	2.2	0.89	1.10	2.000	1.95	2.00
6	4.11	13.50	0.46	3.89	64	SP		1	5	85	1.42	1	0.85	1.00	77.1	79	69	1.11	85.26	0.0	85.27	0.98	0.722	2.2	0.89	1.10	2.000	1.95	2.00

Liquefaction Induced Settlement and Lateral Spreading

Depth (m)	Depth (ft)	Limiting Shear Strain γ_{lim}	Parameter F_α	Maximum Shear Strain γ_{max}	ΔH_i (m)	ΔLDI_i (m)	ΔLDI_i (in)	Vertical Reconsol. Strain ε_v	ΔS_i (m)	ΔS_i (in)
1.22	4.00	0.027	-0.350	0.000	1.22	0.000	0.0	0.000	0.000	0.00
1.98	6.50	0.007	-0.859	0.000	0.76	0.000	0.0	0.000	0.000	0.00
2.74	9.00	0.117	0.368	0.000	0.76	0.000	0.0	0.000	0.000	0.00
3.05	10.00	0.000	-1.798	0.000	0.30	0.000	0.0	0.000	0.000	0.00
3.66	12.00	0.000	-1.738	0.000	0.61	0.000	0.0	0.000	0.000	0.00
4.11	13.50	0.000	-4.681	0.000	0.46	0.000	0.0	0.000	0.000	0.00
					LD =	0.00 (m)	0.0 (in)	S=	0.000 (m)	0.00 (in)

Dry Sand Settlement

τ_{avg} (tsf)	Average Stress (p) (tsf)	Max Shear Modulus (Gmax) (tsf)	a	b	γ (%)	ε_{15} (%)	ε_{NC} (%)	Dry Sand Settlement (in)
0.147	0.15	565.9	0.130	19715	0.54	0.285	0.311	0.3
0.238	0.25	767.6	0.134	14733	0.39	0.164	0.179	0.1
0.328	0.35	743.5	0.137	12120	1.00	0.859	0.935	0.6
0.394	0.38	1036.7	0.139	11377	0.00	0.000	0.000	0.0
0.453	0.46	1130.3	0.142	10198	0.00	0.000	0.000	0.0
0.519	0.52	1415.3	0.144	9502.4	0.00	0.000	0.000	0.0
							S=	0.97 (in)

Liquefaction Potential
Dry Settlement
(1) Flag "nlp" – based on laboratory testing of fine content, plasticity index, liquid limits and potential intact moisture content.
"nlp" - no liquefacton potential

Project:	Christensen Residence
Project #:	13718.01
Date:	11/20/2024
Boring:	B-8

Input Parameters:

Peak Ground Accel (g) =		0.987			
Earthquake Magnitude, M =		7.8			
Water Table Depth (m) =	3.0	10.00	(ft)		
Average γ Above Water Table (kN/m^3) =	18.1	115.0	(lb/ft^3)	Ko =	0.5
Average γ Below Water Table (kN/m^3) =	21.2	135.0	(lb/ft^3)	Nc =	18.1
Borehole Diameter (mm) =	101.60	4	(in)		
Requires Correction for Sample Liners (YES/NO):		no			
Rod Lengths Assumed Equal to the Depth Plus	1.5	m (for the above ground extension)			
Gravity Acceleration (m/sec^2)	9.81				
Height of Exposed Face (m)	3	10	(ft)		
Boring Distance from Exposed Face (m)	43	140	(ft)		

Liquefaction Potential

SPT Sample Number	Depth (m)	Depth (ft)	Layer Thickness (m)	Midpoint of Layer (m)	Measured N	Soil Type (USCS)	Flag "nlp"	Sat/Unsat	Fines Content (%)	Energy Ratio, ER (%)	C_E	C_B	C_R	C_S	N_{60}	σ_{vc} (kPa)	$\sigma_{vc'}$ (kPa)	C_N	$(N_1)_{60}$	ΔN for Fines Content	$(N_1)_{60\text{-}cs}$	Stress Reduct, r_d	CSR	MSF_{max}	MSF for Sand	K_σ for Sand	CRR for M=7.5 & $\sigma_{vc'}$=1atm	CRR	Factor of Safety
1	1.52	5.00	1.52	0.76	18	SM		0	30	85	1.42	1	0.8	1.00	20.4	28	28	1.52	30.97	5.4	36.33	1.00	0.640	2.2	0.89	1.10	1.487	N.A.	N.A.
2	2.74	9.00	1.22	2.13	14	SM		0	14	85	1.42	1	0.85	1.00	16.9	50	50	1.33	22.38	2.9	25.28	0.99	0.634	1.7	0.93	1.10	0.297	N.A.	N.A.
3	3.05	10.00	0.30	2.90	14	SM		0	14	85	1.42	1	0.85	1.00	16.9	55	55	1.28	21.54	2.9	24.45	0.99	0.633	1.7	0.93	1.10	0.278	N.A.	N.A.
4	3.51	11.50	0.46	3.28	6	SM		1	14	85	1.42	1	0.85	1.00	7.2	63	58	1.33	9.59	2.9	12.49	0.98	0.679	1.2	0.98	1.06	0.136	0.140	0.21

Liquefaction Induced Settlement and Lateral Spreading

Depth (m)	Depth (ft)	Limiting Shear Strain γ_{lim}	Parameter F_α	Maximum Shear Strain γ_{max}	ΔH_i (m)	ΔLDI_i (m)	ΔLDI_i (in)	Vertical Reconsol. Strain ε_v	ΔS_i (m)	ΔS_i (in)
1.52	5.00	0.018	-0.532	0.000	1.52	0.000	0.0	0.000	0.000	0.00
2.74	9.00	0.086	0.215	0.000	1.22	0.000	0.0	0.000	0.000	0.00
3.05	10.00	0.095	0.265	0.000	0.30	0.000	0.0	0.000	0.000	0.00
3.51	11.50	0.361	0.847	0.361	0.46	0.000	0.0	0.033	0.015	0.59
					LD =	0.00	0.0	S=	0.015	0.59
						(m)	(in)		(m)	(in)

Dry Sand Settlement

τ_{avg} (tsf)	Average Stress (p) (tsf)	Max Shear Modulus (Gmax) (tsf)	a	b	γ (%)	ε_{15} (%)	ε_{Nc} (%)	Dry Sand Settlement (in)
0.184	0.19	648.1	0.131	17245	0.47	0.229	0.249	0.3
0.328	0.35	770.6	0.137	12120	0.94	0.709	0.772	0.7
0.364	0.38	803.2	0.139	11377	1.00	0.786	0.856	0.2
0.412	0.44	688.6	0.141	10462	0.00	0.000	0.000	0.0
							S=	1.25
								(in)

Liquefaction Potential
Dry Settlement
(1) Flag "nlp" – based on laboratory testing of fine content, plasticity index, liquid limits and potential intact moisture content.
"nlp" - no liquefacton potential

Brunsing Associates, Inc.

5468 Skylane Blvd., Suite 201
Santa Rosa, CA 95403
707-528-6108
www.brunsing.com

July 1, 2025 13718.02

Andy and Kirsten Christensen
7944 Dante Drive
Littleton, CO 80125
biomdtr@me.com

Transmittal of Geotechnical Data, Planned Residence and Detached Guest Cottage, 11800 Road 500D, Mendocino, California

Dear Mr. and Ms. Christensen:

This transmittal letter presents Brunsing Associates, Inc (BAI) geotechnical data in response to the zoom meeting comments from the California Coastal Commission on June 27, 2025. The revised or new data amends our November 21, 2024, Geotechnical Report Update. The data, dated July 1, 2025, consists of the following documents:

- Plate 1 Site Map, showing topography, bluff edge, slope stability factor of safety 1.5 and bluff retreat setback lines.
- Plate 2, Topographic Map from Lidar, showing planned buildings and our cross-section lines.
- Plate A1, Static Slope Stability Cross Section A-A'.
- Plate A2, Seismic Slope Stability Cross Section A-A'.
- Plate B1, Static Slope Stability Cross Section B-B'.
- Plate B2, Seismic Slope Stability Cross Section B-B'.

Split Rail Fence

We understand that Todd Newberger; Architect, Newberger & Associates, Inc., is proposing a 30-inch high, split rail fence approximately 3 to 4 feet back from the bluff edge. A split rail fence, with wood posts 6-feet on center and 12 to 30-inches deep, should not adversely affect the bluff stability. BAI finds the near-bluff, split rail fence to be geotechnically acceptable.

Respectfully submitted,

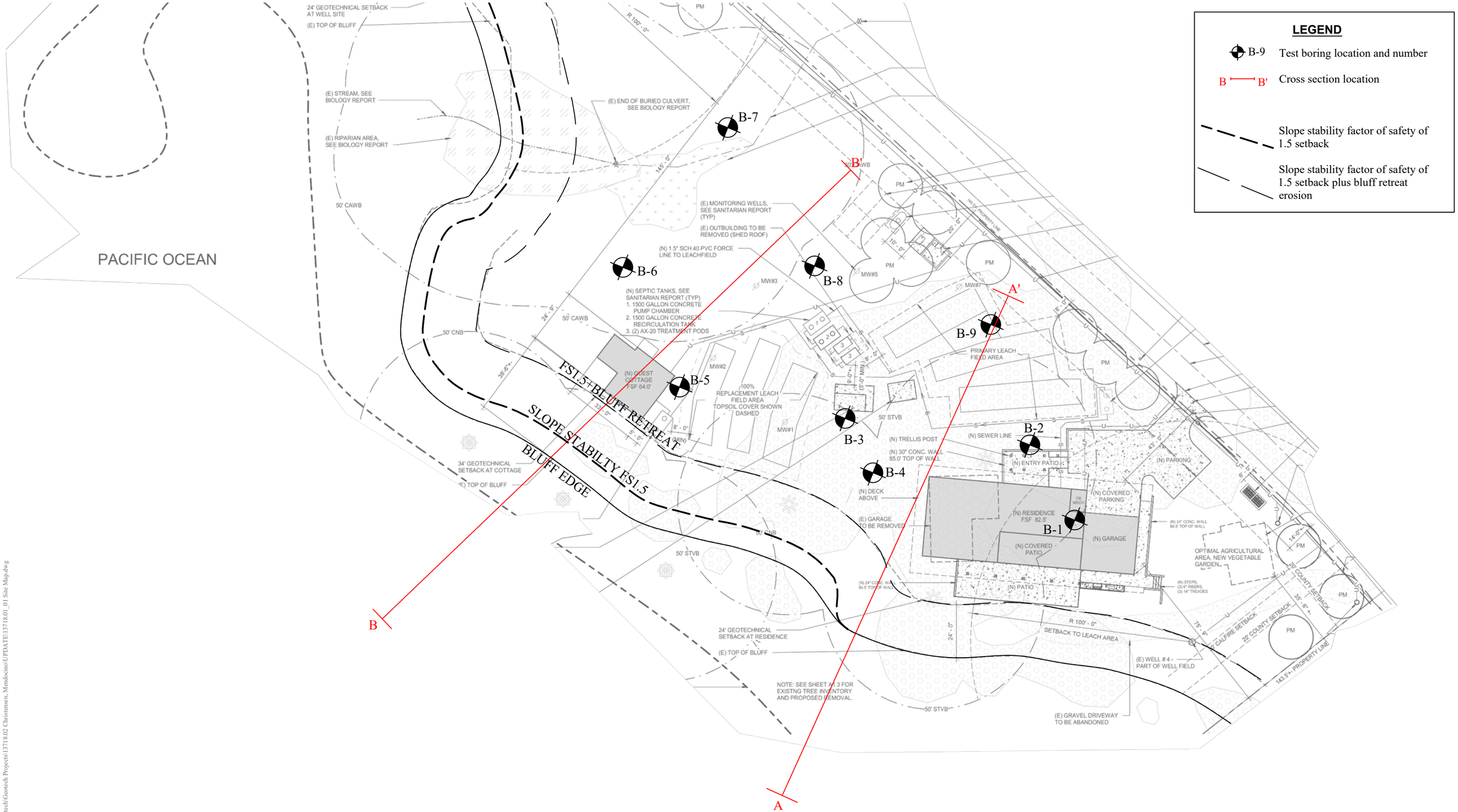
REGISTERED PROFESSIONAL ENGINEER
KEITH A. COLORADO
No.2894
GEOTECHNICAL
STATE OF CALIFORNIA

Keith A. Colorado
Geotechnical Engineer - 2894

PROFESSIONAL GEOLOGIST
ERIK E. OLSBORG
No. 1072
CERTIFIED
ENGINEERING
GEOLOGICST
STATE OF CALIFORNIA

Erik E. Olsborg
Engineering Geologist - 1072

Cc: Todd Newberger, Newberger & Associates, Inc., todd@newberger-architect.com
Meghan Durbin, Wynn Coastal Planning, meghan@wcplan.com
Amy Wynn, Wynn Coastal Planning, amy@wcplan.com



REFERENCE:
Site Plan - Overall, sheet A1.2, prepared by Newberger & Associates, dated 11.12.2024

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

Job No.: 13718.01
Appr.: EEO
Date: 07/01/25

SITE MAP
CHRISTENSEN RESIDENCE AND COTTAGE
11800 Road 500 D
Mendocino, California

PLATE
1

S:\Geotech\Geotech Projects\13718.02 Christensen, Mendocino\UPDATE\13718.01_01 Site Map.dwg
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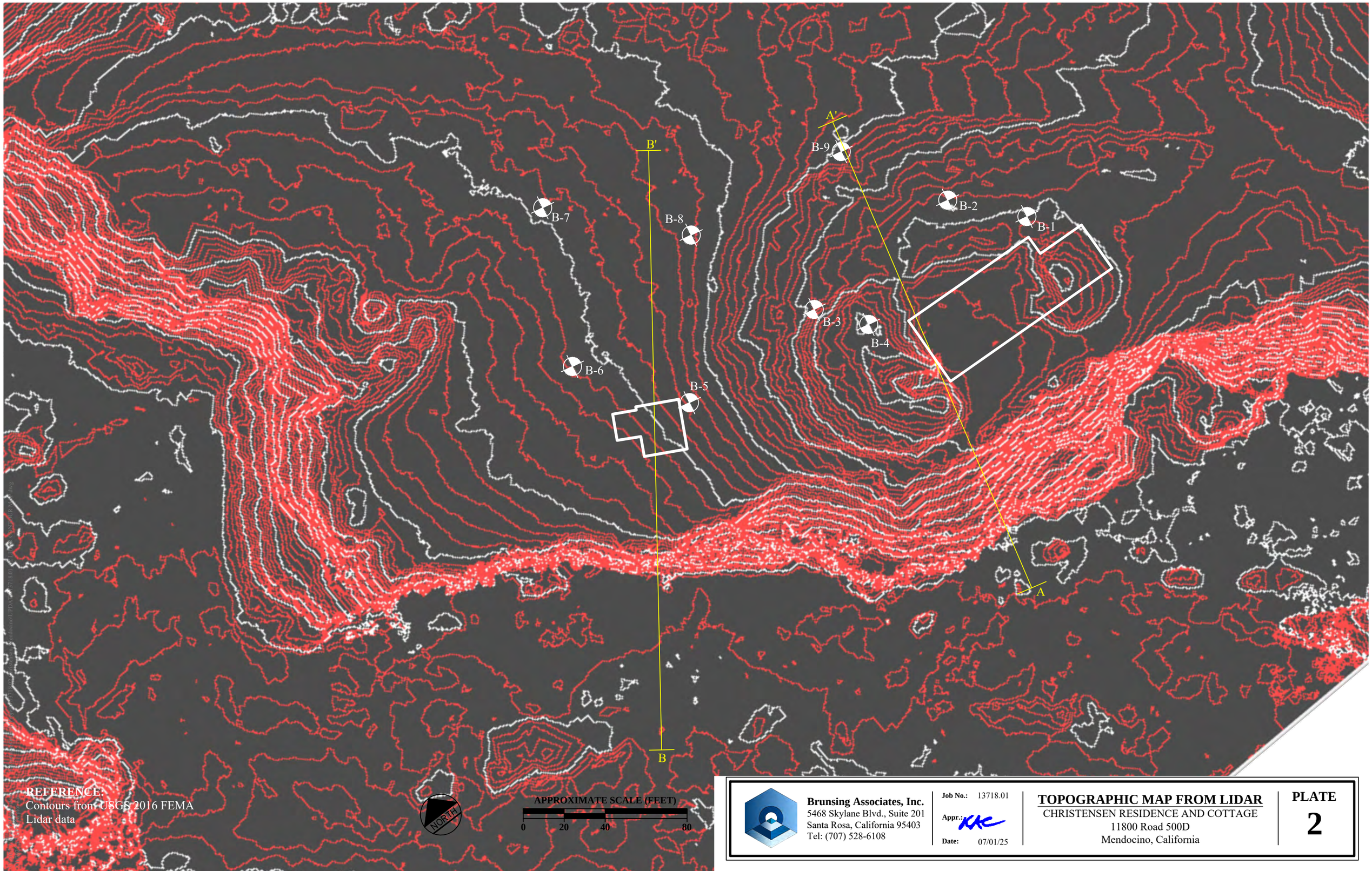

Brunsing Associates, Inc.
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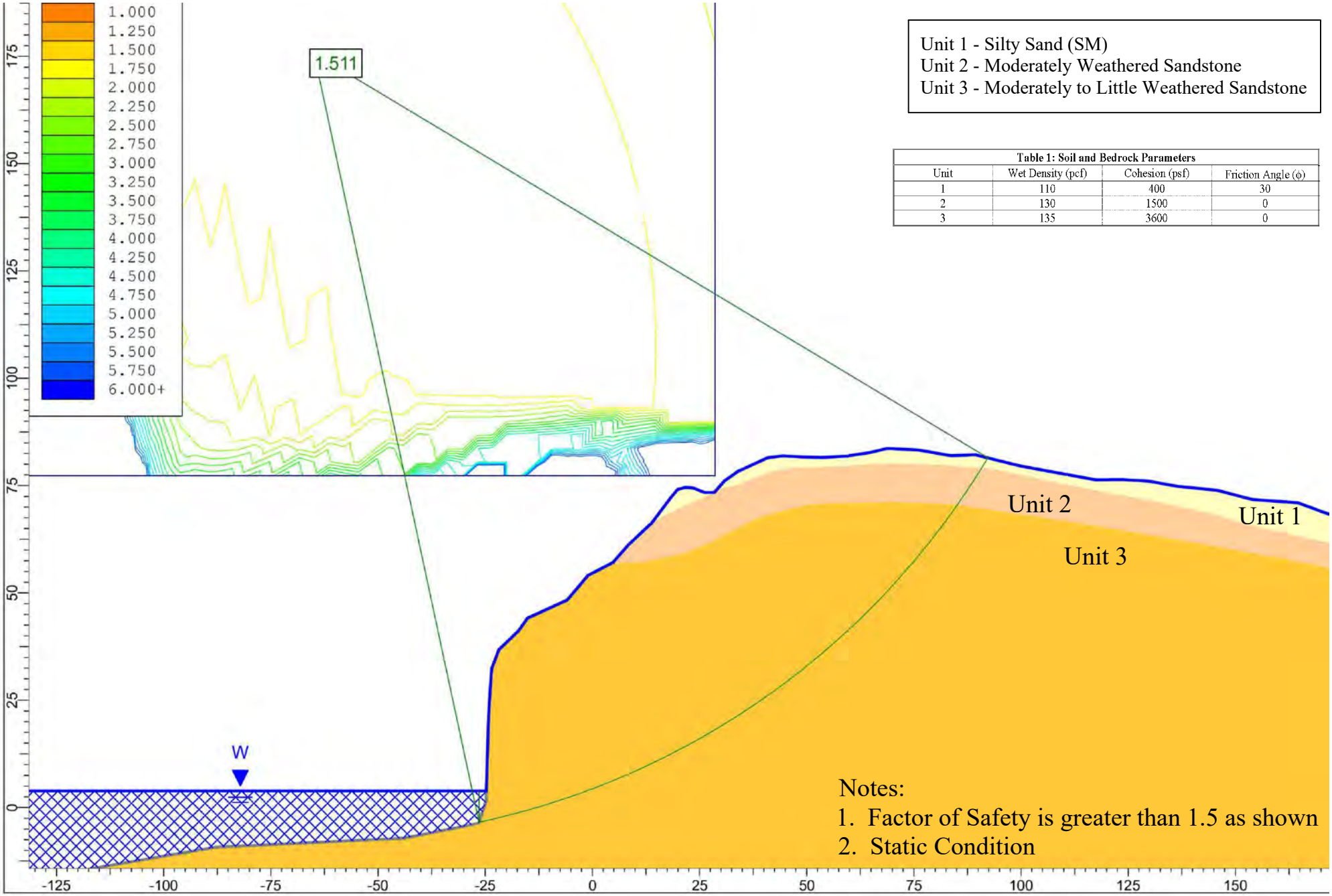
Santa Rosa, California 95403
Tel: (707) 528-6108

Job No.: 13718.01
Appr.: KK
Date: 07/01/25

TOPOGRAPHIC MAP FROM LIDAR
CHRISTENSEN RESIDENCE AND COTTAGE
11800 Road 500D
Mendocino, California

PLATE
2



Unit 1 - Silty Sand (SM)
Unit 2 - Moderately Weathered Sandstone
Unit 3 - Moderately to Little Weathered Sandstone

Table 1: Soil and Bedrock Parameters

Unit	Wet Density (pcf)	Cohesion (psf)	Friction Angle (ϕ)
1	110	400	30
2	130	1500	0
3	135	3600	0

Notes:
1. Factor of Safety is greater than 1.5 as shown
2. Static Condition

APPROXIMATE SCALE (FEET)

0 15 30 60

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

Job No.: 13718.01
Appr.: KAC
Date: 07/01/25

STATIC SLOPE STABILITY CROSS SECTION A-A'
CHRISTENSEN RESIDENCE AND COTTAGE
11800 Road 500D
Mendocino, California

PLATE
A1

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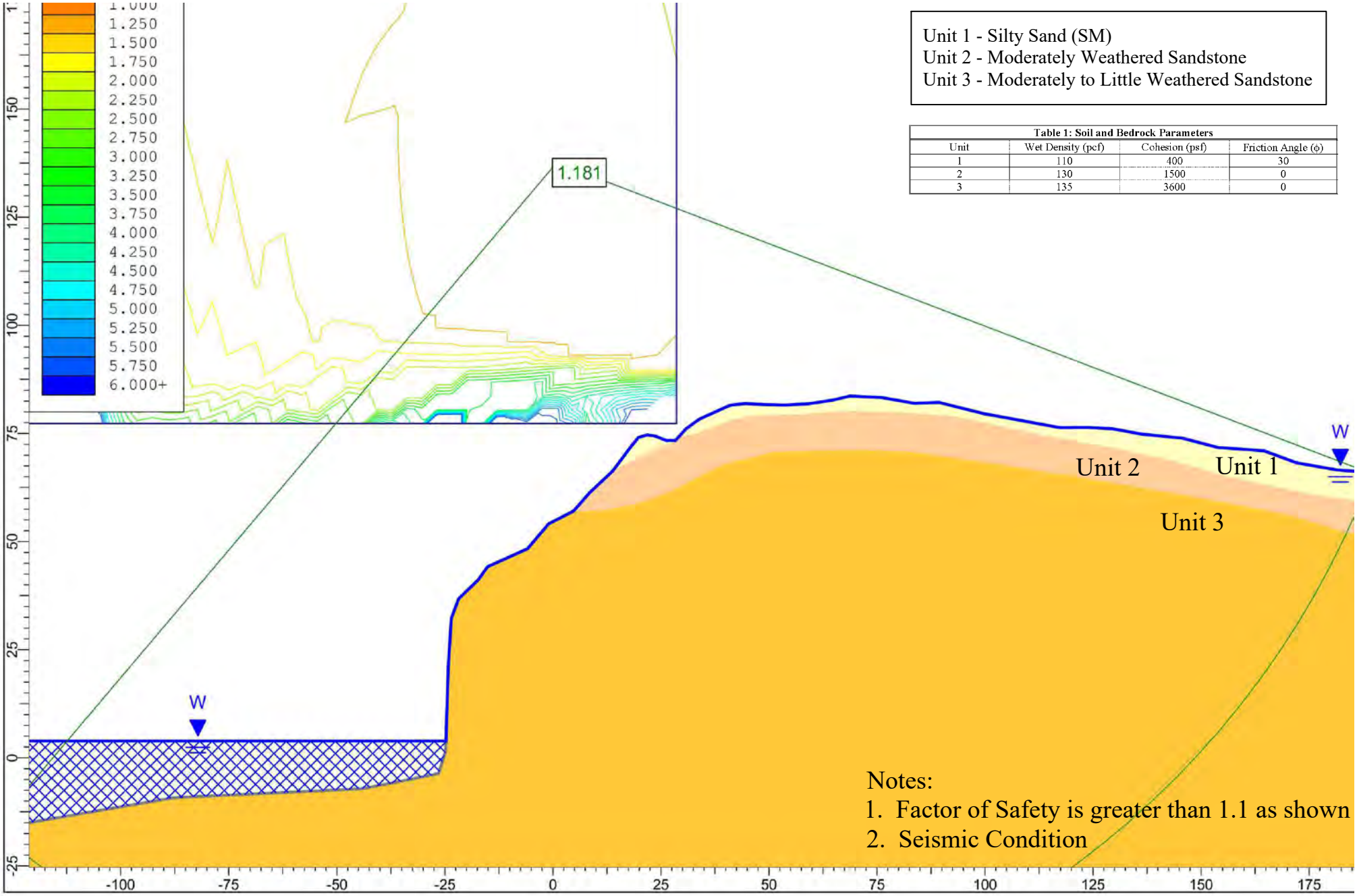

Unit 1 - Silty Sand (SM)
Unit 2 - Moderately Weathered Sandstone
Unit 3 - Moderately to Little Weathered Sandstone

Table 1: Soil and Bedrock Parameters

Unit	Wet Density (pcf)	Cohesion (psf)	Friction Angle (ϕ)
1	110	400	30
2	130	1500	0
3	135	3600	0

Notes:
1. Factor of Safety is greater than 1.1 as shown
2. Seismic Condition

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APPROXIMATE SCALE (FEET)

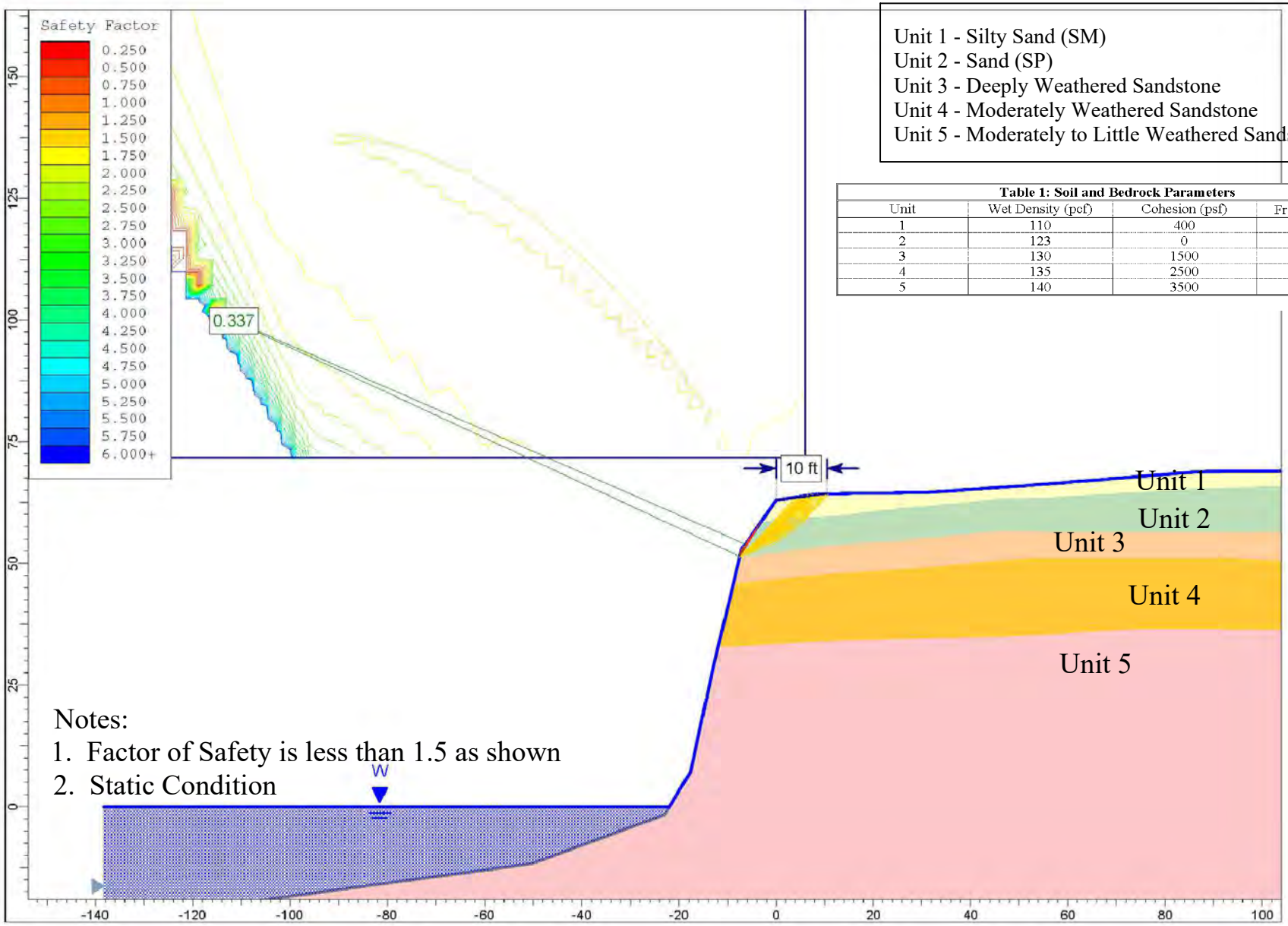
0 15 30 60

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

Job No.: 13718.01
Appr.: KAC
Date: 07/01/25

SEISMIC SLOPE STABILITY CROSS SECTION A-A'
CHRISTENSEN RESIDENCE AND COTTAGE
11800 Road 500D
Mendocino, California

PLATE
A2



Unit 1 - Silty Sand (SM)
Unit 2 - Sand (SP)
Unit 3 - Deeply Weathered Sandstone
Unit 4 - Moderately Weathered Sandstone
Unit 5 - Moderately to Little Weathered Sandstone

Table 1: Soil and Bedrock Parameters

Unit	Wet Density (pcf)	Cohesion (psf)	Friction Angle (ϕ)
1	110	400	30
2	123	0	35
3	130	1500	0
4	135	2500	0
5	140	3500	0

Notes:
1. Factor of Safety is less than 1.5 as shown
2. Static Condition

APPROXIMATE SCALE (FEET)

0 15 30 60

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

Job No.: 13718.01
Appr.: KAC
Date: 07/01/25

STATIC SLOPE STABILITY CROSS SECTION B-B'
CHRISTENSEN RESIDENCE AND COTTAGE
11800 Road 500D
Mendocino, California

PLATE
B1

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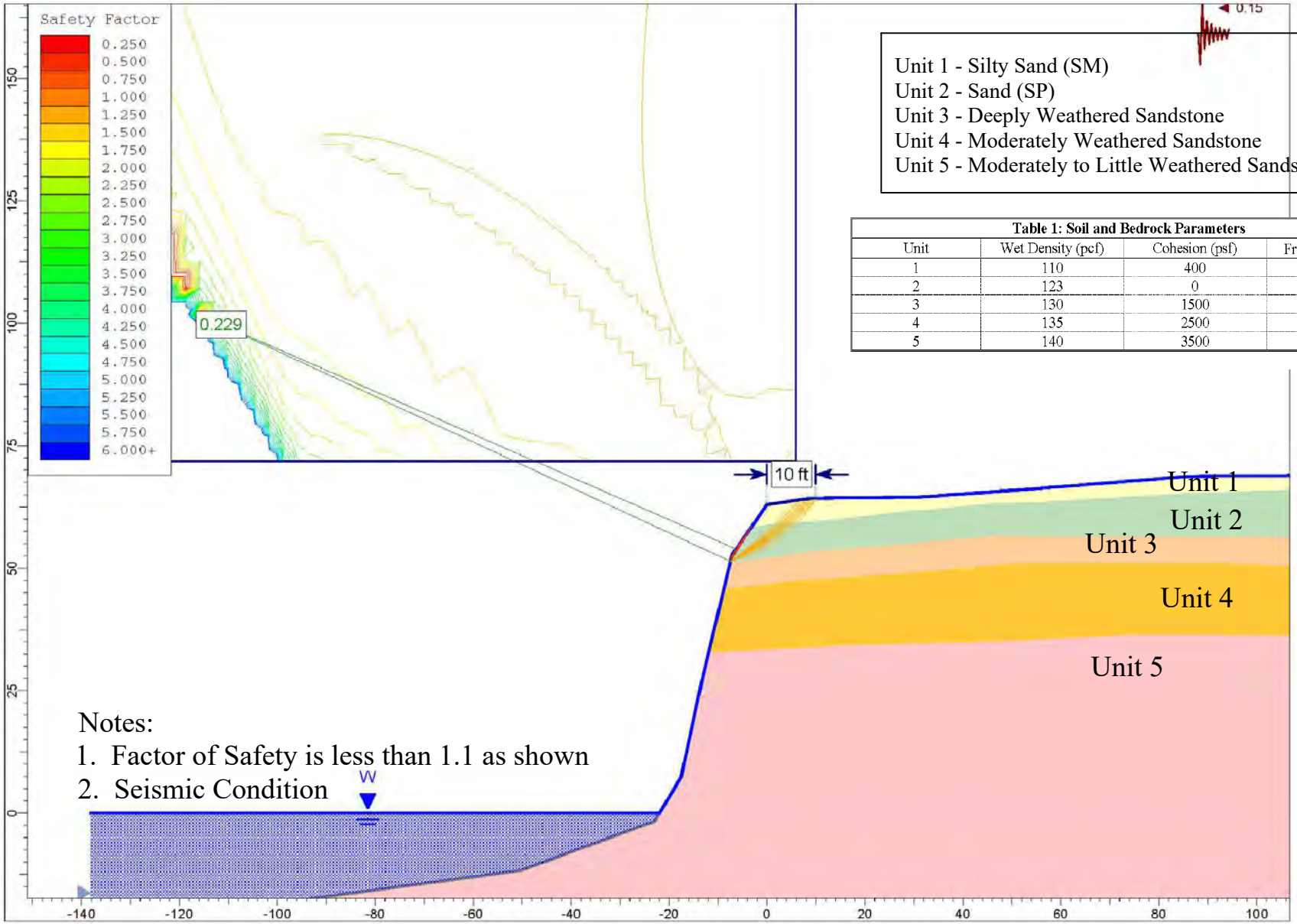

Unit 1 - Silty Sand (SM)
Unit 2 - Sand (SP)
Unit 3 - Deeply Weathered Sandstone
Unit 4 - Moderately Weathered Sandstone
Unit 5 - Moderately to Little Weathered Sandstone

Table 1: Soil and Bedrock Parameters

Unit	Wet Density (pcf)	Cohesion (psf)	Friction Angle (ϕ)
1	110	400	30
2	123	0	35
3	130	1500	0
4	135	2500	0
5	140	3500	0

Notes:
1. Factor of Safety is less than 1.1 as shown
2. Seismic Condition

APPROXIMATE SCALE (FEET)

0 15 30 60

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

Job No.: 13718/.01
Appr.: KAC
Date: 07/01/25

SEISMIC SLOPE STABILITY CROSS SECTION B-B'
CHRISTENSEN RESIDENCE AND COTTAGE
11800 Road 500D
Mendocino, California

PLATE
B2

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October 25, 2023 023029.00

Mr. Andy Christensen
7944 Dante Drive
Littleton, CO 80125

SUBJECT: PROOF-OF-WATER STUDIES FOR 11800 ROAD 500D, MENDOCINO, CALIFORNIA

INTRODUCTION & PROJECT DESCRIPTION

This letter presents the results of four proof-of-water studies for the parcel at 11800 Road 500D, Mendocino, California (**Text Figure 1**, page 2). The existing parcels (APNs 118-320-10, -11, and -12), all under the same ownership, contain four domestic water-supply wells and a single-family residence (SFR). The wells are known as Wells #1 through #4. **Figure 2** shows their locations on the property. All wells were tested to evaluate whether their cumulative yields would meet the Mendocino County requirements for one single-family residence which was incorporated into the conditions of approval of Mendocino County Local Coastal Plan (LCP) Amendment #MEN-MAJ-1-02, Part C.

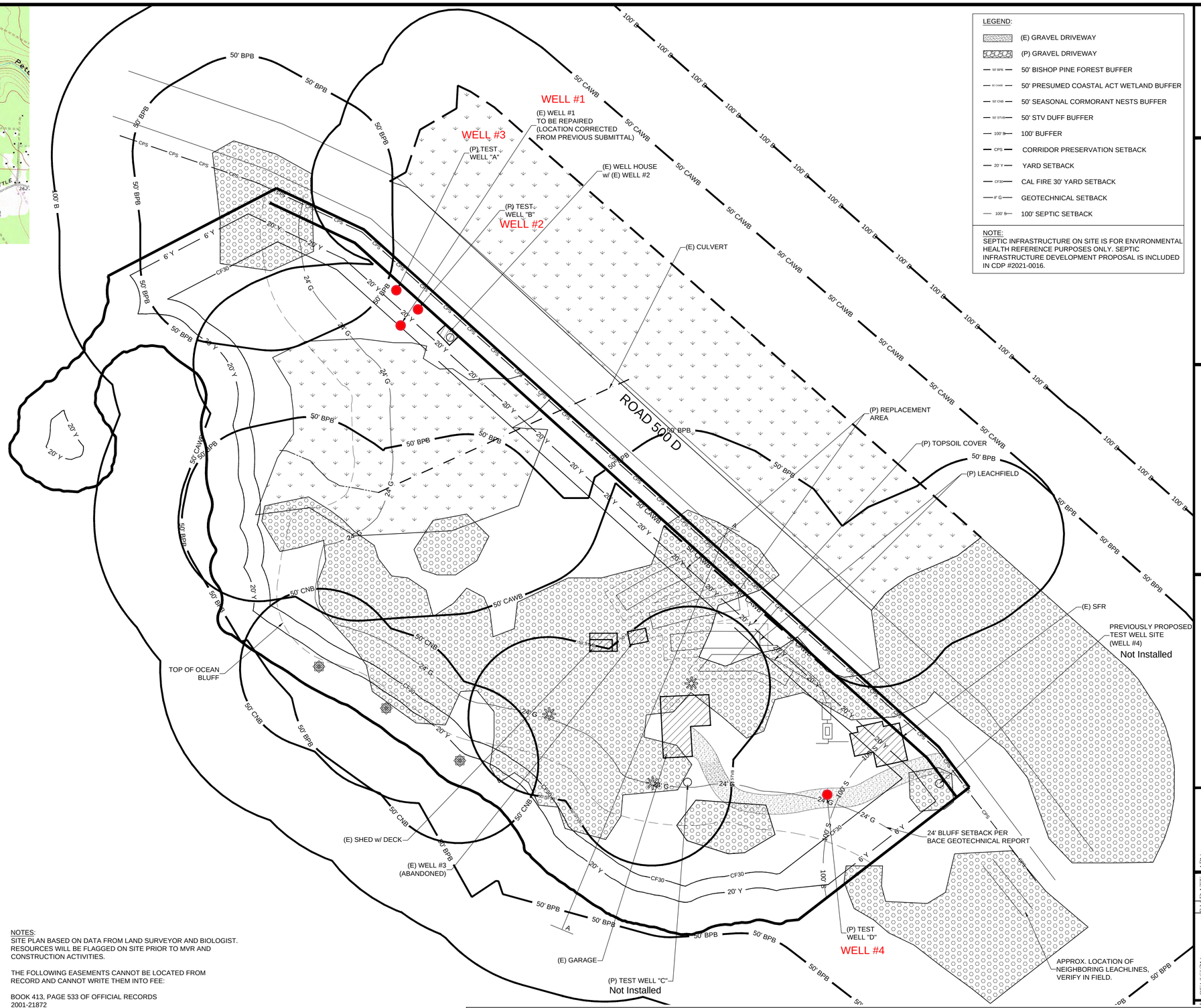
The work involved conducting four 17-hour constant-discharge aquifer tests, four recovery tests, data analysis, and report preparation. The work was conducted in accordance with *County of Mendocino Coastal Groundwater Development Guidelines* (*Guidelines*; Questa Engineering, July 1989). Although the *Guidelines* (p.3) state that "No groundwater investigation for water supply is required for individual residences on existing lots of record, except in the Town of Mendocino" and the parcels contain an existing SFR, the water-supply evaluation was conducted per the *Guidelines*.

Per the *Guidelines,* the water requirements for single family residences along the Mendocino Coast are estimated to be 180 gal/day per capita (DWR, 1982), or 540 gal/day per dwelling unit. Assuming a 2.5 peaking factor for maximum-day demand, the minimum required water supply for individual residences should be 1.0 gal/min. A minimum supply of 0.5 to 1.0 gal/min. may be acceptable for individual residences if supplemented with water storage capacity of 2,500 gallons or more. In no case will a supply of less than 0.5 gal/min. be considered acceptable for individual residences.

SUMMARY

From August 22 through 30, 2023, Mr. Richard Estabrook, of Estabrook Services LLC, conducted proof-of-water tests on the four wells. Each well was tested at a constant rate that could be sustained for the required time period, ranging from 0.30 to 0.45 gallons per minute (gpm). The pumping period for each well was 17 hours plus the additional time to pump the volume of water in each casing above the pump.

Separately, none of the wells meet the minimum required rate of 0.5 gpm (with storage) per the *Guidelines*. Operated as a well field, however, the wells would yield at least 1.13 gpm. This assumed that Wells #1 (0.38 gpm), #2 (0.45 gpm), and #4 (0.30 gpm) are operated as a well field. Because Wells #2 and #3 are so close together, we do not recommend operating them at the same time as they would mutually interfere with each other.



LEGEND:

- (E) GRAVEL DRIVEWAY
- (P) GRAVEL DRIVEWAY
- 50' BISHOP PINE FOREST BUFFER
- 50' PRESUMED COASTAL ACT WETLAND BUFFER
- 50' SEASONAL CORMORANT NESTS BUFFER
- 50' STV DUFF BUFFER
- 100' BUFFER
- CORRIDOR PRESERVATION SETBACK
- YARD SETBACK
- CAL FIRE 30' YARD SETBACK
- GEOTECHNICAL SETBACK
- 100' SEPTIC SETBACK

NOTE:
SEPTIC INFRASTRUCTURE ON SITE IS FOR ENVIRONMENTAL HEALTH REFERENCE PURPOSES ONLY. SEPTIC INFRASTRUCTURE DEVELOPMENT PROPOSAL IS INCLUDED IN CDP #2021-0016.

Design review, not meant for construction.

Wynn Coastal Planning & Biology
703 North Main Street, Fort Bragg CA 95437
ph. 707-964-2537 fx. 707-964-2622 www.WCPlan.com

BERTRAND - DANIEL

11800 Road 500 D
Mendocino, CA 95460

REVISION	BY	DATE
ADDED TE-ST WELLS	TH	12/12/22

APN: 118-320-10, 11 & 12-00
DRAWN BY: TH
DATE: 9/30/2022
SCALE: AS SHOWN
APPROVED BY: TJ

Lands of Camp Bedhead LLC
A portion of Section 19, Township 17 North,
Range 17 West, Mount Diablo Base & Meridian
Mendocino County, CA

General Notes

General Plan Designation:	RR5 (2)
Zoning District:	RR5
Urban/Rural:	Rural
Highly Scenic Area:	Yes
Proposed Land Use:	Test well, repair and maintenance of existing test well.
Appealable to Coastal Commission:	Yes
Entitlement Permit Type:	CDP
Yard Setbacks:	20' Front & Rear, 6' Side
CalFire Setbacks:	300ÃAll sides
Corridor Preservation Setback:	25'
Height Limit:	18', request exception to height
Environmental Constraints:	ESHA
Potenital Geologic Hazards:	~24' Bluff Setback
Water Source:	On-site well

CDP Lot Coverage Tabulation

Gross Site Area:	2.78Ñac (121,129.45 sf)
Maximum allowable lot coverage:	15% (18,169.42 sf)

Lot Coverage:

(E) SFR:	697 sf
(E) Garage:	928 sf
(E) Well House:	98 sf
(E) Shed:	103 sf
(E) Deck:	91 sf
Total Building Footprint:	1,917 sf
Total Lot Coverage (Footprint):	1,917 sf (1.58%)
(E) Driveway & Parking:	2,258 sf

Sensitive Resources:

Legend	Type	Distance from Development
	BISHOP PINE FOREST	0'Ñ
	PRESUMED COASTAL ACT WETLAND	82' Ñ
	SEASONAL CORMORANT NESTS	123' Ñ
	STV DUFF	10' Ñ
	STREAM	161' Ñ

NOTES:
SITE PLAN BASED ON DATA FROM LAND SURVEYOR AND BIOLOGIST. RESOURCES WILL BE FLAGGED ON SITE PRIOR TO MVR AND CONSTRUCTION ACTIVITIES.

THE FOLLOWING EASEMENTS CANNOT BE LOCATED FROM RECORD AND CANNOT WRITE THEM INTO FEE:

BOOK 413, PAGE 533 OF OFFICIAL RECORDS
2001-21872
2003-22495

TEXT FIGURE 1
SITE PLAN AND WELL LOCATIONS PROVIDED BY CLIENT

WELL LOGS

Attachment A contains the Department of Water Resources (DWR) driller's logs for Wells #2, #3, and #4; a log could not be located for Well #1. The DWR logs were supplied, and the wells identified, by the Client.

Well #1 has no log available. Based on a 2006 report (Carl Rittiman and Associates, Inc., February 24, 2006, *11800 Road 500 Water Quantity Evaluation*), Well #1 was drilled in 2002 to a depth of 236 feet below ground surface (bgs) and is cased with both 6-inch and 4-inch PVC casings.

Well #2 was drilled in February 2023 to a total depth of 278 feet bgs and cased to 278 feet bgs. It has a 21-foot deep surface seal. The casing is five-inch diameter PVC. It is slotted from 38 to 278 feet bgs; the slot size is 0.032 inches. It is gravel packed with river-run 3/8-inch gravel from 21 to 278 feet.

Well #3 was drilled in March 2023 to a total depth of 278 feet bgs and cased to 278 feet bgs. It has a 20-foot deep surface seal. The casing is five-inch diameter PVC. It is slotted from 38 to 278 feet bgs; the slot size is 0.035 inches. It is gravel packed with river-run gravel from 20 to 278 feet. Note that Wells #2 and #3 are in close proximity to each other (less than 15 feet apart).

Well #4 was drilled in June 2023 to a total depth of 305 feet bgs and cased to 305 feet bgs. It has a 50-foot deep surface seal. The casing is five-inch diameter PVC. It is slotted from 60 to 305 feet bgs; the slot size is 0.035 inches. It is gravel packed with river-run ¼-inch gravel from 50 to 305 feet.

There is one additional well on the property, a hand-dug well approximately 20 feet in depth. It was not tested, nor is it proposed to be used as a water supply.

TESTING METHODS

From August 22 through 30, 2023, Mr. Richard Estabrook, of Estabrook Services LLC, conducted the testing on the four wells. The following discussion of testing methods was provided by Mr. Estabrook.

A submersible pump was used for all tests. The discharge rate was measured by a magnetic flow meter with a range of 0 to 6.6 gallons per minute and an uncertainty of ±4.9%. The water level was measured with bubbler. The uncertainty of the depth measurements is estimated to be ±0.05 feet. During the pumping periods and in the first part of recovery periods, water levels were recorded at one-minute intervals using a pressure transducer. Periodically during pumping and in the later recovery periods, water levels were measured with an two-wire electronic sounder.

Attachment B contains graphs and data tables of the data collected. Water levels were measured from the top of the well casing. **Attachment C** contains the Mendocino County Department of Environmental Health Well Test Forms.

No precipitation occurred during the testing period.

TEST LENGTHS & CASING VOLUMES

The minimum test length per the *Guidelines* is 17 hours. Additional pumping time must be added to account for the time required to pump the volume of water in the casing above the pump. **Table 1** shows the summary of test lengths, calculations for casing volumes above each pump and the associated time required to pump that volume, and a comparison of the test lengths to the required total test length. All tests exceeded the required length of time.

TABLE 1
CALCULATION OF TEST LENGTH & CASING VOLUME

WELL #1		
Static Water Level	21.10	feet
Casing Radius	0.25	feet
Casing Storage, 1'	0.20	cu. ft.
	1.47	gallons/foot
Pump Depth	230	feet
Water Column	209	feet
Casing Volume	307	gallons
Drawdown During Test	185	feet
Casing Volume During Test	272	gallons
Pumping rate	0.375	gpm
Time to Pump Casing Volume During Test	726	minutes
	12.1	hours
Base Test Time	17.0	hours
Total Test Time	**29.1**	**hours**
Total Actual Test Time	**29.2**	**hours**
WELL #2		
Static Water Level	16.85	feet
Casing Radius	0.21	feet
Casing Storage, 1'	0.14	cu. ft.
	1.02	gallons
Pump Depth	270	feet
Water Column	253	feet
Casing Volume	258	gallons
Drawdown During Test	67	feet
Casing Volume During Test	69	gallons
Pumping rate	0.450	gpm
Time to Pump Casing Volume	153	minutes
During Test	2.5	hours
Base Test Time	17.0	hours
Total Test Time	**19.5**	**hours**
Total Actual Test Time	**20.3**	**hours**

TABLE 1
CALCULATION OF TEST LENGTH & CASING VOLUME, CON'T.

WELL #3		
Static Water Level	17.21	feet
Casing Radius	0.21	feet
Casing Storage, 1'	0.14	cu. ft.
	1.02	gallons
Pump Depth	270	feet
Water Column	253	feet
Casing Volume	258	gallons
Drawdown During Test	64	feet
Casing Volume During Test	65	gallons
Pumping rate	0.302	gpm
Time to Pump Casing Volume	216	minutes
During Test	3.6	hours
Base Test Time	17.0	hours
Total Calculated Test Time	**20.6**	**hours**
Total Actual Test Time	**28.8**	**hours**
WELL #4		
Static Water Level	41.24	feet
Casing Radius	0.21	feet
Casing Storage, 1'	0.14	cu. ft.
	1.02	gallons/foot
Pump Depth	290	feet
Water Column	249	feet
Casing Volume	254	gallons
Drawdown During Test	20.30	feet
Casing Volume During Test	21	gallons
Pumping rate	0.301	gpm
Time to Pump Casing Volume	69	minutes
During Test	1.1	hours
Base Test Time	17.0	hours
Total Test Time	**18.1**	**hours**
Total Actual Test Time	**19.0**	**hours**

DRAWDOWN, SPECIFIC CAPACITY, AND WELL YIELD

Table 2 shows a summary of the drawdown and recovery data for each well. Well #4 showed the least drawdown (approximately 20 feet) and fastest recovery (within 7 hours). Wells #2 and #3 showed a moderate amount of drawdown (64 and 67 feet, respectively) and Well #1 showed the most drawdown (approximately 185 feet). The latter three wells recovered to over 80% in about one day.

Specific capacity is an expression of the productivity of a well, obtained by dividing the rate of discharge of water from the well by the drawdown of the water level in the well and is expressed as gallons per minute per foot of drawdown (gpm/foot). Specific capacity is time dependent usually decreasing as pumping time increases and discharge dependent decreasing as the discharge rate increases. The specific capacity for all of these wells is very low, less than 0.01 gpm/foot of drawdown.

TABLE 2
DRAWDOWN AND RECOVERY DATA FOR
AQUIFER TESTS – 11800 500 D ROAD

PARAMETER	#1	#2	#3	#4
Pumping Rate (gpm)	0.38	0.45	0.30	0.30
Total Drawdown (feet)	185.46	67.30	64.08	20.30
Specific Capacity (gpm/foot of drawdown)	0.002	0.007	0.005	0.015
Recovery Water Level Target (80%)	58.20	30.31	30.03	45.30
Recovery Water Level Measured	52.83	23.31	22.82	44.93
Recovery (as percent of target)	110%	130%	132%	101%

Separately, none of the wells meet the minimum required rate of 0.5 gpm (with storage) per the *Guidelines*. Operated as a well field, however, the wells would yield at least 1.13 gpm. This assumed that Wells #1 (0.38 gpm), #2 (0.45 gpm), and #4 (0.30 gpm) are operated as a well field. Because Wells #2 and #3 are so close together, we do not recommend operating them at the same time as they would mutually interfere with each other.

Please feel free to contact me at 530-275-4800 or blampley@lwrnc.com if you have any questions regarding this report.

Sincerely,

Bonnie E. Lampley

Bonnie Lampley
Principal Hydrogeologist

CERTIFIED HYDROGEOLOGIST
BONNIE E. LAMPLEY
No. HG626
STATE OF CALIFORNIA

enc.: Attachment A. DWR Driller's Logs
Attachment B. Graphs & Data Tables
Attachment C. MCDEH Well Test Forms

ATTACHMENT A
DWR Driller's Logs

ORIGINAL
File with DWR

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

Page ___ of ___
Owner's Well No. WELL #2
Date Work Began 2/23/23 . Ended 2/23/23
Local Permit Agency environmental Health
Permit No. WW5350 Permit Date 2/6/23

DWR USE ONLY — DO NOT FILL IN
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD ___ FLUID ___

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	19	orang clay
19	21	orang sand stone
21	278	clay & Grey rock.

TOTAL DEPTH OF BORING 278 (Feet)
TOTAL DEPTH OF COMPLETED WELL 278 (Feet)

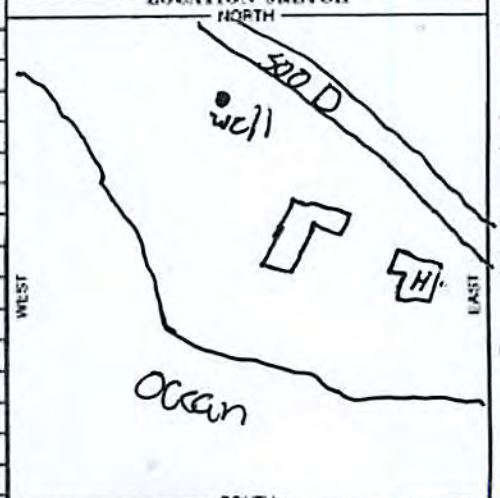
WELL OWNER

Name Cavi Daniel
Mailing Address Po Box 1005 mendocino CA
CITY STATE ZIP

WELL LOCATION

Address 11800 Rd. 500 D
City mendocino CA
County mendocino C
APN Book ___ Page ___ Parcel ___
Township ___ Range ___ Section ___
Latitude 39 32.29 NORTH (DEG. MIN. SEC.) Longitude 123 80 368 WEST (DEG. MIN. SEC.)

LOCATION SKETCH



Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and Which Way. Use additional paper if necessary. ***PLEASE BE ACCURATE & COMPLETE.***

ACTIVITY (✓)

X NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")

PLANNED USES (✓)
WATER SUPPLY
___ Domestic ___ Public
___ Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 102 (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 34 (Ft.) & DATE MEASURED 2/22/23
ESTIMATED YIELD* 105 (GPM) & TEST TYPE Air
TEST LENGTH 1 (Hrs.) TOTAL DRAWDOWN 278 (Ft.)
** May not be representative of a well's long-term yield.*

CASING(S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	38	10 3/4	X				Sch 21	5	1/4	0
38	278	7 7/8		X			Sch 21	5	1/4	.032

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	2	X			
2	21		X		
21	278			X	River 3/8

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other ___
ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME coastal well cleaning
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
ADDRESS 16481 Franklin Rd Fort Bragg CA 95437
CITY STATE ZIP
Signed [signature] 2/24/23 724784
(WELL DRILLER OR AUTHORIZED REPRESENTATIVE) DATE SIGNED C-57 LICENSE NUMBER

DWR 188 REV. 11-97 IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM 2/23/23

ORIGINAL
File with DWR

Page ___ of ___

Owner's Well No. WELL #3

Date Work Began 3/17/23 . Ended 3/20/23

Local Permit Agency Environmental Health

Permit No. WW5350 Permit Date 2/6/2023

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet
No.

DWR USE ONLY — DO NOT FILL IN
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
39 19 / 123 48 13
APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD Air FLUID ___

DEPTH FROM SURFACE Ft. to Ft.	DESCRIPTION *Describe material, grain size, color, etc*
0 – 19	orange clay
19 – 36	orange school stone
36 – 278	Grey Sand Rock / Hard sandstone

TOTAL DEPTH OF BORING 278 (Feet)
TOTAL DEPTH OF COMPLETED WELL 278 (Feet)

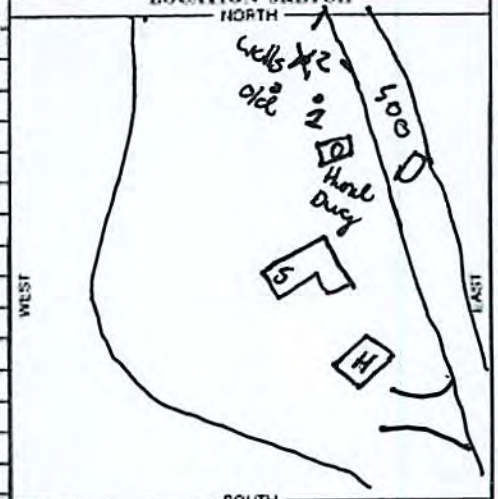
WELL OWNER

Name Levi Daniel
Mailing Address PO BOX 1005
Mendocino CA
CITY STATE ZIP

WELL LOCATION

Address 11800 Rd 500 A
City Mendocino
County Mendocino
APN Book ___ Page ___ Parcel ___
Township ___ Range ___ Section ___
Latitude ___ DEG. MIN. SEC. NORTH Longitude ___ DEG. MIN. SEC. WEST

LOCATION SKETCH



Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. ***PLEASE BE ACCURATE & COMPLETE.***

ACTIVITY (✓)

X NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")

PLANNED USES (✓)

WATER SUPPLY
___ Domestic ___ Public
___ Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 115 (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 80 ft (Ft.) & DATE MEASURED 3/20/23
ESTIMATED YIELD * .5 (GPM) & TEST TYPE ___
TEST LENGTH ___ (Hrs.) TOTAL DRAWDOWN ___ (Ft.)
** May not be representative of a well's long-term yield.*

CASING (S)

DEPTH FROM SURFACE Ft. to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0 – 38	10 3/4	X				Sch 21	5	1/4	0
38 – 278	7 7/8		X			Sch 21	5	1/4	.035

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft. to Ft.	TYPE: CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0 – 2	X			
2 – 20		X		
20 – 278			X	River Gravel

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other ___

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Coastal Well Cleaning
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
16481 Franklin Rd Fort Bragg CA 95437
ADDRESS CITY STATE ZIP
Signed ___ 3/21/23 724784
(WELL DRILLER/AUTHORIZED REPRESENTATIVE) DATE SIGNED C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL
File with DWR

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No.

DWR USE ONLY — DO NOT FILL IN
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Page ___ of ___
Owner's Well No. 4
Date Work Began 6/2/2023 Ended 6/5/2023
Local Permit Agency Environmental Health
Permit No. WWS386 Permit Date 5/25/23

GEOLOGIC LOG

ORIENTATION (∠) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD Air FLUID

DEPTH FROM SURFACE ft. to ft.	DESCRIPTION Describe material, grain size, color, etc.
0 4	Top soil
4 33	orange clay
34 42	Grey Rock
42 53	clay & Rock
53 60	Grey Rock
61 53	Clay Grey
56 58	Dark Grey Rock
58 77	Hard Grey Rock
78 80	Grey Rock with quartz
81 84	clay moister
85 100	Hard Rock
100 135	soft spots Hard Black Rock Quartz
135 170	Grey Rock Quartz
170 265	Hard Rock Quartz
265 268	soft spot
268 305	Hard Rock

TOTAL DEPTH OF BORING 305 (Feet)
TOTAL DEPTH OF COMPLETED WELL 305 (Feet)

WELL OWNER

Name Cavi Daniel
Mailing Address Po Box 1005
mendocino
CITY STATE ZIP

WELL LOCATION

Address 11800 Rd 500 Ro
City mendocino
County mendocino
APN Book ___ Page ___ Parcel ___
Township ___ Range ___ Section ___
Latitude 39 DEG 32 MIN 19 SEC NORTH Longitude 123 DEG 80 MIN 279 SEC WEST

LOCATION SKETCH

Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (∠)

X NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")

PLANNED USES (∠)
WATER SUPPLY
___ Domestic ___ Public
___ Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 87 (Ft.) & DATE MEASURED 6/6/2023
ESTIMATED YIELD * 3/4 1 (GPM) & TEST TYPE Air Lift
TEST LENGTH 1 (Hrs.) TOTAL DRAWDOWN 305 (Ft.)
* May not be representative of a well's long-term yield.

CASING (S)

DEPTH FROM SURFACE Ft. to Ft.	BORE-HOLE DIA. (Inches)	TYPE (∠) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL / GRADE	INTERVAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0 60	10 3/4	/				Sch 21	5	1/4	0
60 305	7 7/8		X			Sch 21	5	1/4	0.35

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft. to Ft.	TYPE CEMENT (∠)	BENTONITE (∠)	FILL (∠)	FILTER PACK (TYPE/SIZE)
0 2	X			
2 50		X		
50 305			X	River 1/4

ATTACHMENTS (∠)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other ___
ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

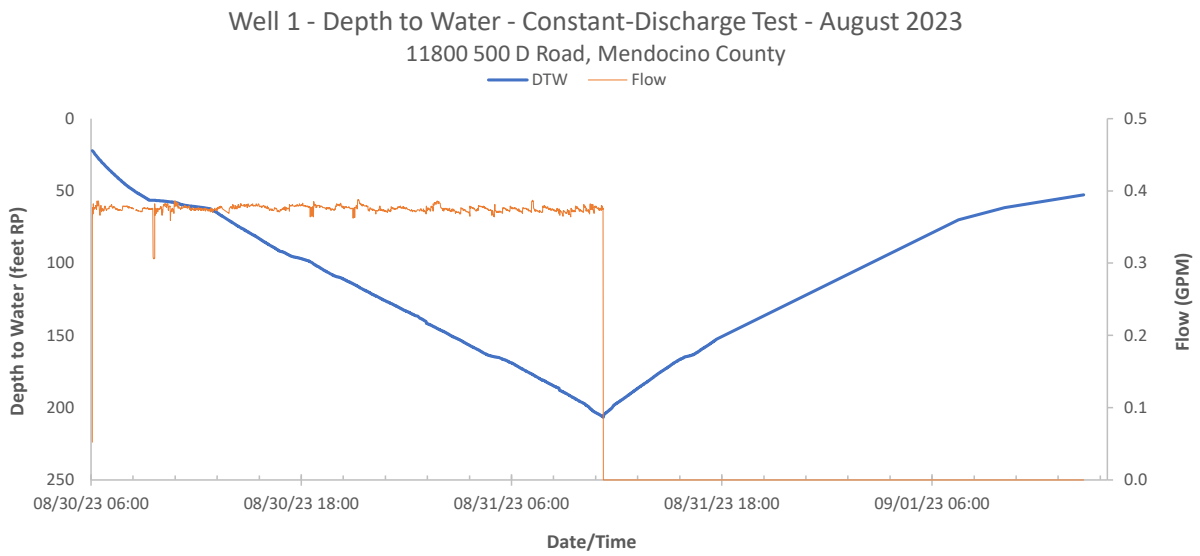
I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

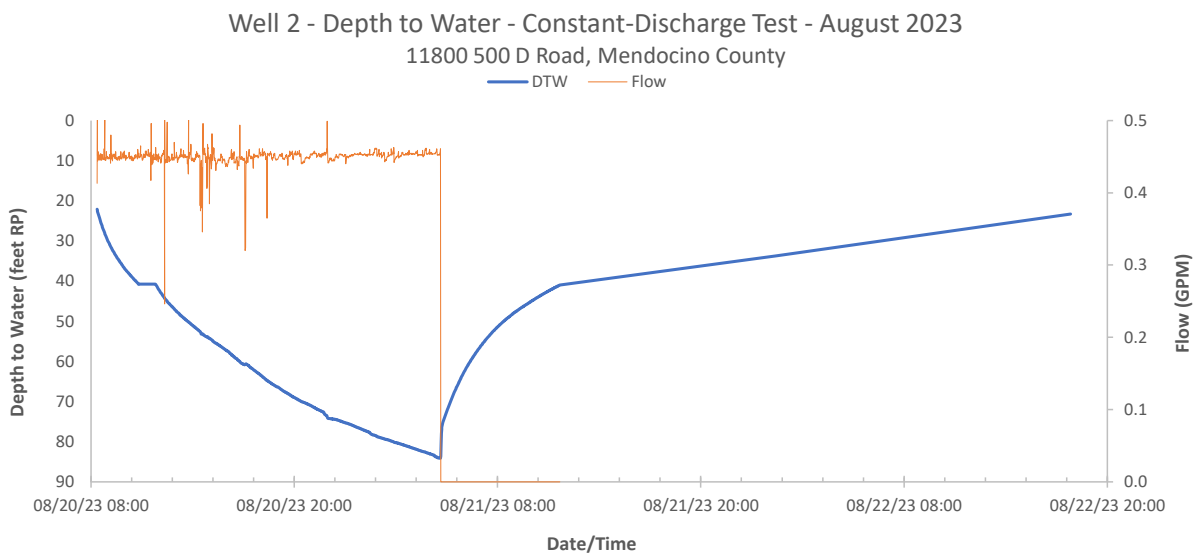
NAME Coastal well cleaning
(PERSON, FIRM, OR CORPORATION - TYPE OR PRINT)
ADDRESS 164/81 Franklin Rd CITY Fort Bragg STATE CA ZIP 95437
Signature [signature] DATE SIGNED 6 6 2023 C-57 LICENSE NUMBER 774784
(WELL BUILDER, INSTALLATION SERVICE)

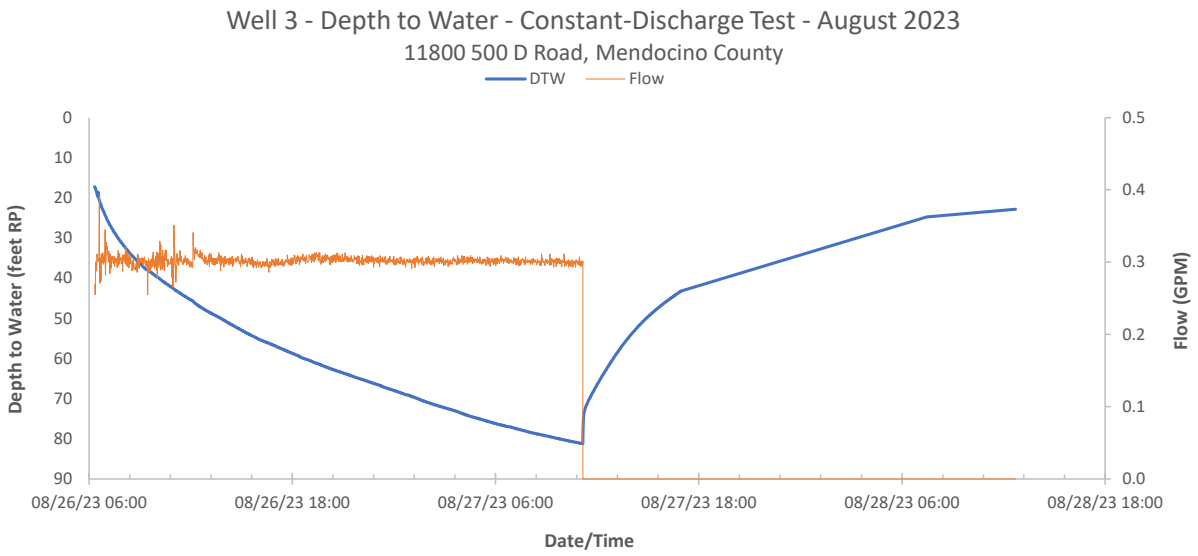
DWR 188 REV. 11-92

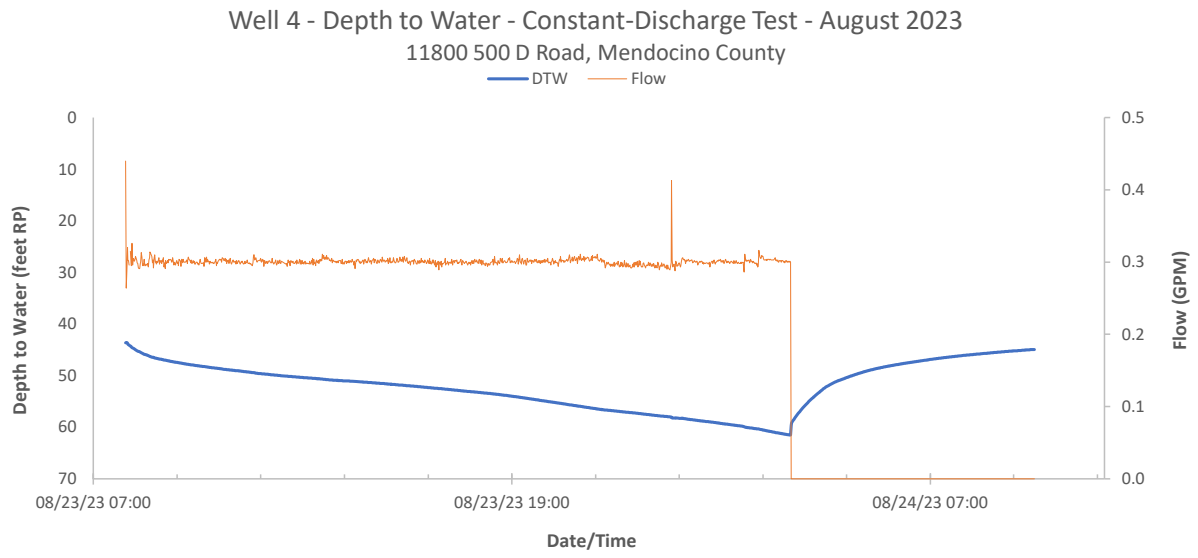
IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ATTACHMENT B
Graphs & Data Tables


Well 1 - Depth to Water - Constant-Discharge Test - August 2023
11800 500 D Road, Mendocino County
DTW
Flow
Depth to Water (feet RP)
Flow (GPM)
Date/Time
0
50
100
150
200
250
0.5
0.4
0.3
0.2
0.1
0.0
08/30/23 06:00
08/30/23 18:00
08/31/23 06:00
08/31/23 18:00
09/01/23 06:00


Well 2 - Depth to Water - Constant-Discharge Test - August 2023
11800 500 D Road, Mendocino County
DTW
Flow
Depth to Water (feet RP)
Flow (GPM)
Date/Time
0
10
20
30
40
50
60
70
80
90
0.5
0.4
0.3
0.2
0.1
0.0
08/20/23 08:00
08/20/23 20:00
08/21/23 08:00
08/21/23 20:00
08/22/23 08:00
08/22/23 20:00


Well 3 - Depth to Water - Constant-Discharge Test - August 2023
11800 500 D Road, Mendocino County
DTW
Flow
Depth to Water (feet RP)
Flow (GPM)
Date/Time
0
10
20
30
40
50
60
70
80
90
0.5
0.4
0.3
0.2
0.1
0.0
08/26/23 06:00
08/26/23 18:00
08/27/23 06:00
08/27/23 18:00
08/28/23 06:00
08/28/23 18:00


Well 4 - Depth to Water - Constant-Discharge Test - August 2023
11800 500 D Road, Mendocino County
DTW
Flow
Depth to Water (feet RP)
Flow (GPM)
Date/Time
0
10
20
30
40
50
60
70
0.5
0.4
0.3
0.2
0.1
0.0
08/23/23 07:00
08/23/23 19:00
08/24/23 07:00

Well Name:	11800 Road 500D Well 1
Test Date:	8/30/2023
Static Water Level:	21.10
Maximum Drawdown:	174.79
80% of Drawdown:	139.83
Recovery Water Level Target:	58.20
Recovery Water Level:	52.83

Date/Time (PST)	Elapsed Time (min)	Depth to Water (feet RP)	Drawdown (feet)	Flow Rate (gpm)
08/30/23 06:02	0	21.10	0.000	0.000
08/30/23 06:03	1	22.027	0.927	0.052
08/30/23 06:04	2	22.106	1.006	0.359
08/30/23 06:05	3	22.362	1.262	0.377
08/30/23 06:06	4	22.607	1.507	0.368
08/30/23 06:07	5	22.884	1.784	0.382
08/30/23 06:08	6	23.166	2.066	0.376
08/30/23 06:09	7	23.448	2.348	0.374
08/30/23 06:10	8	23.720	2.620	0.375
08/30/23 06:11	9	23.997	2.897	0.377
08/30/23 06:12	10	24.269	3.169	0.377
08/30/23 06:13	11	24.540	3.440	0.376
08/30/23 06:14	12	24.806	3.706	0.376
08/30/23 06:15	13	25.062	3.962	0.378
08/30/23 06:16	14	25.323	4.223	0.380
08/30/23 06:17	15	25.573	4.473	0.376
08/30/23 06:18	16	25.829	4.729	0.374
08/30/23 06:19	17	26.079	4.979	0.380
08/30/23 06:20	18	26.330	5.230	0.386
08/30/23 06:21	19	26.596	5.496	0.381
08/30/23 06:22	20	26.841	5.741	0.379
08/30/23 06:23	21	27.080	5.980	0.380
08/30/23 06:24	22	27.347	6.247	0.382
08/30/23 06:25	23	27.586	6.486	0.386
08/30/23 06:26	24	27.837	6.737	0.383
08/30/23 06:27	25	28.076	6.976	0.380
08/30/23 06:28	26	28.279	7.179	0.375
08/30/23 06:29	27	28.470	7.370	0.369
08/30/23 06:30	28	28.694	7.594	0.366
08/30/23 06:31	29	28.923	7.823	0.372
08/30/23 06:32	30	29.147	8.047	0.378
08/30/23 06:33	31	29.370	8.270	0.380
08/30/23 06:34	32	29.594	8.494	0.376
08/30/23 06:35	33	29.818	8.718	0.375
08/30/23 06:36	34	30.041	8.941	0.371
08/30/23 06:37	35	30.265	9.165	0.376
08/30/23 06:38	36	30.526	9.426	0.375

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 06:39	37	30.739	9.639	0.373
08/30/23 06:40	38	30.920	9.820	0.373
08/30/23 06:41	39	31.133	10.033	0.375
08/30/23 06:42	40	31.341	10.241	0.372
08/30/23 06:43	41	31.564	10.464	0.373
08/30/23 06:44	42	31.772	10.672	0.373
08/30/23 06:45	43	31.974	10.874	0.378
08/30/23 06:46	44	32.187	11.087	0.377
08/30/23 06:47	45	32.390	11.290	0.379
08/30/23 06:48	46	32.603	11.503	0.379
08/30/23 06:49	47	32.816	11.716	0.377
08/30/23 06:50	48	33.024	11.924	0.375
08/30/23 06:51	49	33.231	12.131	0.375
08/30/23 06:52	50	33.439	12.339	0.373
08/30/23 06:53	51	33.647	12.547	0.374
08/30/23 06:54	52	33.849	12.749	0.375
08/30/23 06:55	53	34.051	12.951	0.375
08/30/23 06:56	54	34.248	13.148	0.375
08/30/23 06:57	55	34.451	13.351	0.375
08/30/23 06:58	56	34.648	13.548	0.375
08/30/23 06:59	57	34.845	13.745	0.376
08/30/23 07:00	58	35.037	13.937	0.376
08/30/23 07:01	59	35.239	14.139	0.375
08/30/23 07:02	60	35.431	14.331	0.378
08/30/23 07:03	61	35.622	14.522	0.378
08/30/23 07:04	62	35.814	14.714	0.379
08/30/23 07:05	63	36.011	14.911	0.379
08/30/23 07:06	64	36.208	15.108	0.378
08/30/23 07:07	65	36.400	15.300	0.379
08/30/23 07:08	66	36.592	15.492	0.379
08/30/23 07:09	67	36.778	15.678	0.381
08/30/23 07:10	68	36.970	15.870	0.381
08/30/23 07:11	69	37.167	16.067	0.380
08/30/23 07:12	70	37.364	16.264	0.377
08/30/23 07:13	71	37.555	16.455	0.377
08/30/23 07:14	72	37.752	16.652	0.376
08/30/23 07:15	73	37.928	16.828	0.378
08/30/23 07:16	74	38.120	17.020	0.378
08/30/23 07:17	75	38.306	17.206	0.377
08/30/23 07:18	76	38.493	17.393	0.378
08/30/23 07:19	77	38.674	17.574	0.378
08/30/23 07:20	78	38.860	17.760	0.377
08/30/23 07:21	79	39.052	17.952	0.377
08/30/23 07:22	80	39.244	18.144	0.377
08/30/23 07:23	81	39.435	18.335	0.375

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 07:24	82	39.627	18.527	0.376
08/30/23 07:25	83	39.808	18.708	0.374
08/30/23 07:26	84	39.994	18.894	0.375
08/30/23 07:27	85	40.186	19.086	0.376
08/30/23 07:28	86	40.373	19.273	0.374
08/30/23 07:29	87	40.559	19.459	0.375
08/30/23 07:30	88	40.751	19.651	0.375
08/30/23 07:31	89	40.937	19.837	0.374
08/30/23 07:32	90	41.129	20.029	0.373
08/30/23 07:33	91	41.299	20.199	0.374
08/30/23 07:34	92	41.486	20.386	0.374
08/30/23 07:35	93	41.667	20.567	0.374
08/30/23 07:36	94	41.848	20.748	0.373
08/30/23 07:37	95	42.013	20.913	0.374
08/30/23 07:38	96	42.194	21.094	0.374
08/30/23 07:39	97	42.364	21.264	0.374
08/30/23 07:40	98	42.545	21.445	0.374
08/30/23 07:41	99	42.726	21.626	0.373
08/30/23 07:42	100	42.902	21.802	0.373
08/30/23 07:43	101	43.083	21.983	0.373
08/30/23 07:44	102	43.259	22.159	0.373
08/30/23 07:45	103	43.429	22.329	0.373
08/30/23 07:46	104	43.610	22.510	0.373
08/30/23 07:47	105	43.786	22.686	0.375
08/30/23 07:48	106	43.930	22.830	0.379
08/30/23 07:49	107	44.106	23.006	0.379
08/30/23 07:50	108	44.281	23.181	0.379
08/30/23 07:51	109	44.457	23.357	0.379
08/30/23 07:52	110	44.638	23.538	0.378
08/30/23 07:53	111	44.819	23.719	0.378
08/30/23 07:54	112	44.990	23.890	0.379
08/30/23 07:55	113	45.160	24.060	0.379
08/30/23 07:56	114	45.336	24.236	0.379
08/30/23 07:57	115	45.506	24.406	0.378
08/30/23 07:58	116	45.682	24.582	0.378
08/30/23 07:59	117	45.858	24.758	0.379
08/30/23 08:00	118	46.023	24.923	0.379
08/30/23 08:01	119	46.199	25.099	0.379
08/30/23 08:02	120	46.374	25.274	0.378
08/30/23 08:03	121	46.545	25.445	0.379
08/30/23 08:04	122	46.720	25.620	0.379
08/30/23 08:05	123	46.875	25.775	0.377
08/30/23 08:06	124	47.019	25.919	0.377
08/30/23 08:07	125	47.168	26.068	0.378
08/30/23 08:08	126	47.306	26.206	0.378

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 08:09	127	47.450	26.350	0.376
08/30/23 08:10	128	47.573	26.473	0.377
08/30/23 08:11	129	47.711	26.611	0.378
08/30/23 08:12	130	47.849	26.749	0.377
08/30/23 08:13	131	47.999	26.899	0.377
08/30/23 08:14	132	48.137	27.037	0.377
08/30/23 08:15	133	48.275	27.175	0.377
08/30/23 08:16	134	48.403	27.303	0.377
08/30/23 08:17	135	48.536	27.436	0.376
08/30/23 08:18	136	48.648	27.548	0.377
08/30/23 08:19	137	48.792	27.692	0.376
08/30/23 08:20	138	48.925	27.825	0.376
08/30/23 08:21	139	49.074	27.974	0.377
08/30/23 08:22	140	49.213	28.113	0.376
08/30/23 08:23	141	49.362	28.262	0.375
08/30/23 08:24	142	49.511	28.411	0.376
08/30/23 08:25	143	49.649	28.549	0.375
08/30/23 08:26	144	49.788	28.688	
08/30/23 08:27	145	49.932	28.832	
08/30/23 08:28	146	50.065	28.965	
08/30/23 08:29	147	50.214	29.114	
08/30/23 08:30	148	50.358	29.258	
08/30/23 08:31	149	50.501	29.401	
08/30/23 08:32	150	50.645	29.545	
08/30/23 08:33	151	50.784	29.684	0.373
08/30/23 08:34	152	50.922	29.822	0.374
08/30/23 08:35	153	51.055	29.955	0.373
08/30/23 08:36	154	51.188	30.088	0.374
08/30/23 08:37	155	51.332	30.232	0.373
08/30/23 08:38	156	51.460	30.360	0.373
08/30/23 08:39	157	51.593	30.493	0.372
08/30/23 08:40	158	51.710	30.610	0.372
08/30/23 08:41	159	51.822	30.722	0.372
08/30/23 08:42	160	51.934	30.834	0.373
08/30/23 08:43	161	52.046	30.946	0.372
08/30/23 08:44	162	52.158	31.058	0.372
08/30/23 08:45	163	52.270	31.170	0.372
08/30/23 08:46	164	52.387	31.287	0.372
08/30/23 08:47	165	52.504	31.404	0.372
08/30/23 08:48	166	52.616	31.516	0.372
08/30/23 08:49	167	52.743	31.643	0.371
08/30/23 08:50	168	52.861	31.761	0.372
08/30/23 08:51	169	52.988	31.888	0.371
08/30/23 08:52	170	53.138	32.038	0.372
08/30/23 08:53	171	53.265	32.165	0.372

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 08:54	172	53.383	32.283	0.371
08/30/23 08:55	173	53.500	32.400	0.372
08/30/23 08:56	174	53.612	32.512	0.376
08/30/23 08:57	175	53.723	32.623	0.376
08/30/23 08:58	176	53.835	32.735	0.376
08/30/23 08:59	177	53.958	32.858	0.376
08/30/23 09:00	178	54.080	32.980	0.377
08/30/23 09:01	179	54.197	33.097	0.376
08/30/23 09:02	180	54.314	33.214	0.376
08/30/23 09:03	181	54.432	33.332	0.377
08/30/23 09:04	182	54.554	33.454	0.377
08/30/23 09:05	183	54.671	33.571	0.376
08/30/23 09:06	184	54.799	33.699	0.376
08/30/23 09:07	185	54.927	33.827	0.375
08/30/23 09:08	186	55.060	33.960	0.376
08/30/23 09:09	187	55.193	34.093	0.375
08/30/23 09:10	188	55.326	34.226	0.376
08/30/23 09:11	189	55.459	34.359	0.376
08/30/23 09:12	190	55.593	34.493	0.376
08/30/23 09:13	191	55.726	34.626	0.377
08/30/23 09:14	192	55.859	34.759	0.375
08/30/23 09:15	193	55.981	34.881	0.376
08/30/23 09:16	194	56.104	35.004	0.375
08/30/23 09:17	195	56.226	35.126	0.374
08/30/23 09:18	196	56.343	35.243	0.376
08/30/23 09:19	197	56.407	35.307	0.374
08/30/23 09:20	198	56.418	35.318	0.375
08/30/23 09:21	199	56.413	35.313	0.375
08/30/23 09:22	200	56.407	35.307	0.374
08/30/23 09:23	201	56.407	35.307	0.375
08/30/23 09:24	202	56.407	35.307	0.375
08/30/23 09:25	203	56.413	35.313	0.376
08/30/23 09:26	204	56.407	35.307	0.375
08/30/23 09:27	205	56.407	35.307	0.375
08/30/23 09:28	206	56.418	35.318	0.374
08/30/23 09:29	207	56.434	35.334	0.375
08/30/23 09:30	208	56.455	35.355	0.376
08/30/23 09:31	209	56.471	35.371	0.376
08/30/23 09:32	210	56.482	35.382	0.308
08/30/23 09:33	211	56.487	35.387	0.307
08/30/23 09:34	212	56.498	35.398	0.306
08/30/23 09:35	213	56.509	35.409	0.306
08/30/23 09:36	214	56.519	35.419	0.307
08/30/23 09:37	215	56.535	35.435	0.307
08/30/23 09:38	216	56.588	35.488	0.382

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 09:39	217	56.572	35.472	0.366
08/30/23 09:40	218	56.551	35.451	0.370
08/30/23 09:41	219	56.615	35.515	0.376
08/30/23 09:42	220	56.626	35.526	0.371
08/30/23 09:43	221	56.636	35.536	0.369
08/30/23 09:44	222	56.652	35.552	0.372
08/30/23 09:45	223	56.674	35.574	0.375
08/30/23 09:46	224	56.690	35.590	0.376
08/30/23 09:47	225	56.706	35.606	0.371
08/30/23 09:48	226	56.711	35.611	0.371
08/30/23 09:49	227	56.738	35.638	0.375
08/30/23 09:50	228	56.753	35.653	0.374
08/30/23 09:51	229	56.769	35.669	0.375
08/30/23 09:52	230	56.785	35.685	0.375
08/30/23 09:53	231	56.807	35.707	0.374
08/30/23 09:54	232	56.833	35.733	0.375
08/30/23 09:55	233	56.855	35.755	0.376
08/30/23 09:56	234	56.871	35.771	0.376
08/30/23 09:57	235	56.892	35.792	0.378
08/30/23 09:58	236	56.908	35.808	0.375
08/30/23 09:59	237	56.929	35.829	0.378
08/30/23 10:00	238	56.951	35.851	0.375
08/30/23 10:01	239	56.967	35.867	0.375
08/30/23 10:02	240	56.982	35.882	0.371
08/30/23 10:03	241	57.004	35.904	0.366
08/30/23 10:04	242	57.009	35.909	0.374
08/30/23 10:05	243	57.025	35.925	0.370
08/30/23 10:06	244	57.036	35.936	0.378
08/30/23 10:07	245	57.057	35.957	0.379
08/30/23 10:08	246	57.073	35.973	0.381
08/30/23 10:09	247	57.100	36.000	0.380
08/30/23 10:10	248	57.121	36.021	0.379
08/30/23 10:11	249	57.142	36.042	0.382
08/30/23 10:12	250	57.169	36.069	0.382
08/30/23 10:13	251	57.195	36.095	0.381
08/30/23 10:14	252	57.217	36.117	0.382
08/30/23 10:15	253	57.243	36.143	0.382
08/30/23 10:16	254	57.265	36.165	0.378
08/30/23 10:17	255	57.286	36.186	0.379
08/30/23 10:18	256	57.307	36.207	0.377
08/30/23 10:19	257	57.334	36.234	0.382
08/30/23 10:20	258	57.366	36.266	0.382
08/30/23 10:21	259	57.387	36.287	0.380
08/30/23 10:22	260	57.414	36.314	0.382
08/30/23 10:23	261	57.440	36.340	0.376

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 10:24	262	57.467	36.367	0.374
08/30/23 10:25	263	57.488	36.388	0.373
08/30/23 10:26	264	57.510	36.410	0.378
08/30/23 10:27	265	57.536	36.436	0.379
08/30/23 10:28	266	57.568	36.468	0.379
08/30/23 10:29	267	57.590	36.490	0.378
08/30/23 10:30	268	57.622	36.522	0.379
08/30/23 10:31	269	57.622	36.522	0.359
08/30/23 10:32	270	57.648	36.548	0.371
08/30/23 10:33	271	57.669	36.569	0.372
08/30/23 10:34	272	57.691	36.591	0.372
08/30/23 10:35	273	57.707	36.607	0.375
08/30/23 10:36	274	57.744	36.644	0.373
08/30/23 10:37	275	57.765	36.665	0.371
08/30/23 10:38	276	57.781	36.681	0.376
08/30/23 10:39	277	57.803	36.703	0.376
08/30/23 10:40	278	57.829	36.729	0.374
08/30/23 10:41	279	57.851	36.751	0.374
08/30/23 10:42	280	57.882	36.782	0.373
08/30/23 10:43	281	57.909	36.809	0.369
08/30/23 10:44	282	58.191	37.091	0.384
08/30/23 10:45	283	58.053	36.953	0.386
08/30/23 10:46	284	58.080	36.980	0.382
08/30/23 10:47	285	58.095	36.995	0.378
08/30/23 10:48	286	58.138	37.038	0.382
08/30/23 10:49	287	58.159	37.059	0.386
08/30/23 10:50	288	58.186	37.086	0.380
08/30/23 10:51	289	58.218	37.118	0.381
08/30/23 10:52	290	58.250	37.150	0.380
08/30/23 10:53	291	58.287	37.187	0.384
08/30/23 10:54	292	58.319	37.219	0.378
08/30/23 10:55	293	58.367	37.267	0.378
08/30/23 10:56	294	58.410	37.310	0.382
08/30/23 10:57	295	58.468	37.368	0.383
08/30/23 10:58	296	58.585	37.485	0.376
08/30/23 10:59	297	58.708	37.608	0.377
08/30/23 11:00	298	58.820	37.720	0.378
08/30/23 11:01	299	58.910	37.810	0.378
08/30/23 11:02	300	59.001	37.901	0.376
08/30/23 11:03	301	59.097	37.997	0.376
08/30/23 11:04	302	59.171	38.071	0.376
08/30/23 11:05	303	59.240	38.140	0.376
08/30/23 11:06	304	59.310	38.210	0.374
08/30/23 11:07	305	59.363	38.263	0.377
08/30/23 11:08	306	59.416	38.316	0.377

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 11:09	307	59.480	38.380	0.378
08/30/23 11:10	308	59.533	38.433	0.376
08/30/23 11:11	309	59.581	38.481	0.376
08/30/23 11:12	310	59.624	38.524	0.376
08/30/23 11:13	311	59.672	38.572	0.376
08/30/23 11:14	312	59.714	38.614	0.377
08/30/23 11:15	313	59.762	38.662	0.377
08/30/23 11:16	314	59.800	38.700	0.378
08/30/23 11:17	315	59.837	38.737	0.378
08/30/23 11:18	316	59.879	38.779	0.379
08/30/23 11:19	317	59.917	38.817	0.377
08/30/23 11:20	318	59.954	38.854	0.380
08/30/23 11:21	319	59.997	38.897	0.379
08/30/23 11:22	320	60.029	38.929	0.379
08/30/23 11:23	321	60.061	38.961	0.378
08/30/23 11:24	322	60.087	38.987	0.377
08/30/23 11:25	323	60.124	39.024	0.378
08/30/23 11:26	324	60.156	39.056	0.377
08/30/23 11:27	325	60.183	39.083	0.378
08/30/23 11:28	326	60.210	39.110	0.377
08/30/23 11:29	327	60.242	39.142	0.376
08/30/23 11:30	328	60.274	39.174	0.376
08/30/23 11:31	329	60.300	39.200	0.377
08/30/23 11:32	330	60.327	39.227	0.379
08/30/23 11:33	331	60.359	39.259	0.379
08/30/23 11:34	332	60.380	39.280	0.377
08/30/23 11:35	333	60.407	39.307	0.377
08/30/23 11:36	334	60.428	39.328	0.379
08/30/23 11:37	335	60.449	39.349	0.375
08/30/23 11:38	336	60.476	39.376	0.374
08/30/23 11:39	337	60.503	39.403	0.376
08/30/23 11:40	338	60.529	39.429	0.374
08/30/23 11:41	339	60.550	39.450	0.373
08/30/23 11:42	340	60.572	39.472	0.375
08/30/23 11:43	341	60.598	39.498	0.373
08/30/23 11:44	342	60.620	39.520	0.375
08/30/23 11:45	343	60.641	39.541	0.375
08/30/23 11:46	344	60.662	39.562	0.376
08/30/23 11:47	345	60.684	39.584	0.374
08/30/23 11:48	346	60.705	39.605	0.377
08/30/23 11:49	347	60.726	39.626	0.374
08/30/23 11:50	348	60.753	39.653	0.374
08/30/23 11:51	349	60.779	39.679	0.374
08/30/23 11:52	350	60.801	39.701	0.373
08/30/23 11:53	351	60.822	39.722	0.374

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 11:54	352	60.854	39.754	0.376
08/30/23 11:55	353	60.875	39.775	0.374
08/30/23 11:56	354	60.902	39.802	0.373
08/30/23 11:57	355	60.923	39.823	0.374
08/30/23 11:58	356	60.950	39.850	0.373
08/30/23 11:59	357	60.977	39.877	0.376
08/30/23 12:00	358	60.998	39.898	0.376
08/30/23 12:01	359	61.030	39.930	0.375
08/30/23 12:02	360	61.062	39.962	0.374
08/30/23 12:03	361	61.088	39.988	0.375
08/30/23 12:04	362	61.115	40.015	0.376
08/30/23 12:05	363	61.136	40.036	0.375
08/30/23 12:06	364	61.163	40.063	0.373
08/30/23 12:07	365	61.190	40.090	0.377
08/30/23 12:08	366	61.216	40.116	0.375
08/30/23 12:09	367	61.237	40.137	0.375
08/30/23 12:10	368	61.259	40.159	0.376
08/30/23 12:11	369	61.291	40.191	0.374
08/30/23 12:12	370	61.323	40.223	0.376
08/30/23 12:13	371	61.349	40.249	0.376
08/30/23 12:14	372	61.371	40.271	0.374
08/30/23 12:15	373	61.397	40.297	0.373
08/30/23 12:16	374	61.424	40.324	0.375
08/30/23 12:17	375	61.445	40.345	0.376
08/30/23 12:18	376	61.477	40.377	0.374
08/30/23 12:19	377	61.509	40.409	0.373
08/30/23 12:20	378	61.530	40.430	0.375
08/30/23 12:21	379	61.568	40.468	0.374
08/30/23 12:22	380	61.594	40.494	0.375
08/30/23 12:23	381	61.626	40.526	0.374
08/30/23 12:24	382	61.653	40.553	0.373
08/30/23 12:25	383	61.685	40.585	0.375
08/30/23 12:26	384	61.717	40.617	0.373
08/30/23 12:27	385	61.749	40.649	0.376
08/30/23 12:28	386	61.781	40.681	0.375
08/30/23 12:29	387	61.818	40.718	0.375
08/30/23 12:30	388	61.850	40.750	0.374
08/30/23 12:31	389	61.882	40.782	0.376
08/30/23 12:32	390	61.919	40.819	0.372
08/30/23 12:33	391	61.956	40.856	0.374
08/30/23 12:34	392	61.988	40.888	0.375
08/30/23 12:35	393	62.020	40.920	0.375
08/30/23 12:36	394	62.052	40.952	0.374
08/30/23 12:37	395	62.095	40.995	0.375
08/30/23 12:38	396	62.127	41.027	0.373

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 12:39	397	62.159	41.059	0.374
08/30/23 12:40	398	62.185	41.085	0.372
08/30/23 12:41	399	62.217	41.117	0.373
08/30/23 12:42	400	62.249	41.149	0.373
08/30/23 12:43	401	62.281	41.181	0.374
08/30/23 12:44	402	62.313	41.213	0.373
08/30/23 12:45	403	62.350	41.250	0.373
08/30/23 12:46	404	62.382	41.282	0.374
08/30/23 12:47	405	62.420	41.320	0.371
08/30/23 12:48	406	62.505	41.405	0.371
08/30/23 12:49	407	62.585	41.485	0.371
08/30/23 12:50	408	62.734	41.634	0.376
08/30/23 12:51	409	62.942	41.842	0.372
08/30/23 12:52	410	63.117	42.017	0.375
08/30/23 12:53	411	63.256	42.156	0.376
08/30/23 12:54	412	63.405	42.305	0.372
08/30/23 12:55	413	63.549	42.449	0.372
08/30/23 12:56	414	63.645	42.545	0.370
08/30/23 12:57	415	63.687	42.587	0.374
08/30/23 12:58	416	63.756	42.656	0.373
08/30/23 12:59	417	63.836	42.736	0.374
08/30/23 13:00	418	63.921	42.821	0.374
08/30/23 13:01	419	64.007	42.907	0.374
08/30/23 13:02	420	64.097	42.997	0.376
08/30/23 13:03	421	64.204	43.104	0.376
08/30/23 13:04	422	64.278	43.178	0.376
08/30/23 13:05	423	64.379	43.279	0.374
08/30/23 13:06	424	64.491	43.391	0.373
08/30/23 13:07	425	64.592	43.492	0.374
08/30/23 13:08	426	64.704	43.604	0.373
08/30/23 13:09	427	64.837	43.737	0.376
08/30/23 13:10	428	64.987	43.887	0.374
08/30/23 13:11	429	65.120	44.020	0.373
08/30/23 13:12	430	65.269	44.169	0.377
08/30/23 13:13	431	65.407	44.307	0.376
08/30/23 13:14	432	65.546	44.446	0.376
08/30/23 13:15	433	65.679	44.579	0.377
08/30/23 13:16	434	65.817	44.717	0.377
08/30/23 13:17	435	65.961	44.861	0.375
08/30/23 13:18	436	66.105	45.005	0.378
08/30/23 13:19	437	66.249	45.149	0.378
08/30/23 13:20	438	66.392	45.292	0.378
08/30/23 13:21	439	66.542	45.442	0.376
08/30/23 13:22	440	66.675	45.575	0.379
08/30/23 13:23	441	66.818	45.718	0.377

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 13:24	442	66.957	45.857	0.378
08/30/23 13:25	443	67.090	45.990	0.377
08/30/23 13:26	444	67.218	46.118	0.377
08/30/23 13:27	445	67.335	46.235	0.378
08/30/23 13:28	446	67.447	46.347	0.377
08/30/23 13:29	447	67.548	46.448	0.376
08/30/23 13:30	448	67.655	46.555	0.375
08/30/23 13:52	470	70.530	49.430	0.369
08/30/23 13:53	471	70.610	49.510	0.375
08/30/23 13:54	472	70.743	49.643	0.376
08/30/23 13:55	473	70.871	49.771	0.377
08/30/23 13:56	474	70.999	49.899	0.377
08/30/23 13:57	475	71.127	50.027	0.378
08/30/23 13:58	476	71.255	50.155	0.377
08/30/23 13:59	477	71.382	50.282	0.377
08/30/23 14:00	478	71.515	50.415	0.378
08/30/23 14:01	479	71.638	50.538	0.376
08/30/23 14:02	480	71.776	50.676	0.376
08/30/23 14:03	481	71.904	50.804	0.375
08/30/23 14:04	482	72.037	50.937	0.376
08/30/23 14:05	483	72.165	51.065	0.381
08/30/23 14:06	484	72.293	51.193	0.380
08/30/23 14:07	485	72.426	51.326	0.380
08/30/23 14:08	486	72.554	51.454	0.376
08/30/23 14:09	487	72.676	51.576	0.376
08/30/23 14:10	488	72.794	51.694	0.375
08/30/23 14:11	489	72.927	51.827	0.375
08/30/23 14:12	490	73.049	51.949	0.380
08/30/23 14:13	491	73.182	52.082	0.380
08/30/23 14:14	492	73.326	52.226	0.379
08/30/23 14:15	493	73.454	52.354	0.378
08/30/23 14:16	494	73.587	52.487	0.375
08/30/23 14:17	495	73.715	52.615	0.378
08/30/23 14:18	496	73.843	52.743	0.376
08/30/23 14:19	497	73.981	52.881	0.375
08/30/23 14:20	498	74.104	53.004	0.376
08/30/23 14:21	499	74.237	53.137	0.379
08/30/23 14:22	500	74.365	53.265	0.379
08/30/23 14:23	501	74.487	53.387	0.380
08/30/23 14:24	502	74.610	53.510	0.381
08/30/23 14:25	503	74.721	53.621	0.378
08/30/23 14:26	504	74.833	53.733	0.377
08/30/23 14:27	505	74.950	53.850	0.379
08/30/23 14:28	506	75.068	53.968	0.377
08/30/23 14:29	507	75.179	54.079	0.377

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 14:30	508	75.297	54.197	0.377
08/30/23 14:31	509	75.392	54.292	0.382
08/30/23 14:32	510	75.467	54.367	0.379
08/30/23 14:33	511	75.579	54.479	0.382
08/30/23 14:34	512	75.696	54.596	0.381
08/30/23 14:35	513	75.818	54.718	0.380
08/30/23 14:36	514	75.941	54.841	0.380
08/30/23 14:42	520	76.560	55.460	0.379
08/30/23 14:43	521	76.794	55.694	0.381
08/30/23 14:44	522	76.927	55.827	0.380
08/30/23 14:45	523	77.045	55.945	0.381
08/30/23 14:46	524	77.167	56.067	0.378
08/30/23 14:47	525	77.295	56.195	0.378
08/30/23 14:48	526	77.417	56.317	0.380
08/30/23 14:49	527	77.550	56.450	0.380
08/30/23 14:50	528	77.668	56.568	0.380
08/30/23 14:51	529	77.774	56.674	0.381
08/30/23 14:52	530	77.886	56.786	0.380
08/30/23 14:53	531	77.982	56.882	0.380
08/30/23 14:54	532	78.088	56.988	0.377
08/30/23 14:55	533	78.195	57.095	0.381
08/30/23 14:56	534	78.312	57.212	0.381
08/30/23 14:57	535	78.424	57.324	0.382
08/30/23 14:58	536	78.541	57.441	0.380
08/30/23 14:59	537	78.669	57.569	0.379
08/30/23 15:00	538	78.786	57.686	0.380
08/30/23 15:01	539	78.914	57.814	0.379
08/30/23 15:02	540	79.031	57.931	0.378
08/30/23 15:03	541	79.159	58.059	0.378
08/30/23 15:04	542	79.281	58.181	0.379
08/30/23 15:05	543	79.409	58.309	0.380
08/30/23 15:06	544	79.531	58.431	0.380
08/30/23 15:07	545	79.659	58.559	0.380
08/30/23 15:08	546	79.776	58.676	0.381
08/30/23 15:09	547	79.904	58.804	0.381
08/30/23 15:10	548	80.027	58.927	0.381
08/30/23 15:11	549	80.133	59.033	0.380
08/30/23 15:12	550	80.256	59.156	0.380
08/30/23 15:13	551	80.352	59.252	0.382
08/30/23 15:14	552	80.437	59.337	0.380
08/30/23 15:15	553	80.527	59.427	0.379
08/30/23 15:16	554	80.629	59.529	0.380
08/30/23 15:17	555	80.735	59.635	0.379
08/30/23 15:18	556	80.836	59.736	0.379
08/30/23 15:19	557	80.943	59.843	0.380

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 15:20	558	81.060	59.960	0.380
08/30/23 15:21	559	81.182	60.082	0.380
08/30/23 15:22	560	81.305	60.205	0.379
08/30/23 15:23	561	81.433	60.333	0.379
08/30/23 15:24	562	81.560	60.460	0.379
08/30/23 15:25	563	81.683	60.583	0.382
08/30/23 15:26	564	81.816	60.716	0.381
08/30/23 15:27	565	81.939	60.839	0.380
08/30/23 15:28	566	82.066	60.966	0.380
08/30/23 15:29	567	82.194	61.094	0.379
08/30/23 15:30	568	82.327	61.227	0.379
08/30/23 15:31	569	82.455	61.355	0.381
08/30/23 15:32	570	82.594	61.494	0.382
08/30/23 15:33	571	82.721	61.621	0.382
08/30/23 15:34	572	82.855	61.755	0.381
08/30/23 15:35	573	82.982	61.882	0.381
08/30/23 15:36	574	83.115	62.015	0.378
08/30/23 15:37	575	83.249	62.149	0.378
08/30/23 15:38	576	83.382	62.282	0.378
08/30/23 15:39	577	83.510	62.410	0.378
08/30/23 15:40	578	83.653	62.553	0.379
08/30/23 15:41	579	83.781	62.681	0.379
08/30/23 15:42	580	83.914	62.814	0.378
08/30/23 15:43	581	84.053	62.953	0.377
08/30/23 15:44	582	84.191	63.091	0.377
08/30/23 15:45	583	84.324	63.224	0.379
08/30/23 15:46	584	84.457	63.357	0.378
08/30/23 15:47	585	84.585	63.485	0.378
08/30/23 15:48	586	84.724	63.624	0.378
08/30/23 15:49	587	84.846	63.746	0.380
08/30/23 15:50	588	84.979	63.879	0.380
08/30/23 15:51	589	85.097	63.997	0.379
08/30/23 15:52	590	85.224	64.124	0.379
08/30/23 15:53	591	85.352	64.252	0.379
08/30/23 15:54	592	85.475	64.375	0.377
08/30/23 15:55	593	85.592	64.492	0.377
08/30/23 15:56	594	85.725	64.625	0.379
08/30/23 15:57	595	85.842	64.742	0.378
08/30/23 15:58	596	85.965	64.865	0.378
08/30/23 15:59	597	86.082	64.982	0.376
08/30/23 16:00	598	86.204	65.104	0.376
08/30/23 16:01	599	86.327	65.227	0.376
08/30/23 16:02	600	86.444	65.344	0.376
08/30/23 16:03	601	86.566	65.466	0.379
08/30/23 16:04	602	86.694	65.594	0.376

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 16:05	603	86.811	65.711	0.375
08/30/23 16:06	604	86.939	65.839	0.377
08/30/23 16:07	605	87.062	65.962	0.376
08/30/23 16:08	606	87.179	66.079	0.376
08/30/23 16:09	607	87.307	66.207	0.375
08/30/23 16:10	608	87.418	66.318	0.375
08/30/23 16:11	609	87.536	66.436	0.373
08/30/23 16:12	610	87.642	66.542	0.373
08/30/23 16:13	611	87.754	66.654	0.375
08/30/23 16:14	612	87.866	66.766	0.374
08/30/23 16:15	613	87.978	66.878	0.374
08/30/23 16:16	614	88.100	67.000	0.375
08/30/23 16:17	615	88.217	67.117	0.374
08/30/23 16:18	616	88.334	67.234	0.374
08/30/23 16:19	617	88.452	67.352	0.373
08/30/23 16:20	618	88.563	67.463	0.375
08/30/23 16:21	619	88.675	67.575	0.373
08/30/23 16:22	620	88.787	67.687	0.373
08/30/23 16:23	621	88.899	67.799	0.373
08/30/23 16:24	622	89.000	67.900	0.373
08/30/23 16:25	623	89.117	68.017	0.373
08/30/23 16:26	624	89.218	68.118	0.374
08/30/23 16:27	625	89.341	68.241	0.376
08/30/23 16:28	626	89.469	68.369	0.377
08/30/23 16:29	627	89.607	68.507	0.376
08/30/23 16:30	628	89.740	68.640	0.375
08/30/23 16:31	629	89.879	68.779	0.376
08/30/23 16:32	630	90.007	68.907	0.376
08/30/23 16:33	631	90.145	69.045	0.375
08/30/23 16:34	632	90.273	69.173	0.376
08/30/23 16:35	633	90.406	69.306	0.375
08/30/23 16:36	634	90.539	69.439	0.374
08/30/23 16:37	635	90.672	69.572	0.371
08/30/23 16:38	636	90.800	69.700	0.373
08/30/23 16:39	637	90.933	69.833	0.372
08/30/23 16:40	638	91.050	69.950	0.372
08/30/23 16:41	639	91.178	70.078	0.373
08/30/23 16:42	640	91.295	70.195	0.371
08/30/23 16:43	641	91.418	70.318	0.372
08/30/23 16:44	642	91.535	70.435	0.371
08/30/23 16:45	643	91.652	70.552	0.371
08/30/23 16:46	644	91.769	70.669	0.371
08/30/23 16:47	645	91.822	70.722	0.374
08/30/23 16:48	646	91.886	70.786	0.374
08/30/23 16:49	647	91.918	70.818	0.373

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 16:50	648	91.961	70.861	0.373
08/30/23 16:51	649	92.004	70.904	0.374
08/30/23 16:52	650	92.057	70.957	0.374
08/30/23 16:53	651	92.099	70.999	0.375
08/30/23 16:54	652	92.158	71.058	0.375
08/30/23 16:55	653	92.217	71.117	0.374
08/30/23 16:56	654	92.275	71.175	0.376
08/30/23 16:57	655	92.328	71.228	0.374
08/30/23 16:58	656	92.387	71.287	0.377
08/30/23 16:59	657	92.467	71.367	0.377
08/30/23 17:00	658	92.563	71.463	0.377
08/30/23 17:01	659	92.669	71.569	0.374
08/30/23 17:02	660	92.781	71.681	0.377
08/30/23 17:03	661	92.888	71.788	0.378
08/30/23 17:04	662	92.999	71.899	0.373
08/30/23 17:05	663	93.133	72.033	0.377
08/30/23 17:06	664	93.228	72.128	0.373
08/30/23 17:07	665	93.335	72.235	0.376
08/30/23 17:08	666	93.436	72.336	0.376
08/30/23 17:09	667	93.548	72.448	0.377
08/30/23 17:10	668	93.649	72.549	0.376
08/30/23 17:11	669	93.750	72.650	0.375
08/30/23 17:12	670	93.857	72.757	0.376
08/30/23 17:13	671	93.958	72.858	0.375
08/30/23 17:14	672	94.080	72.980	0.376
08/30/23 17:15	673	94.192	73.092	0.376
08/30/23 17:16	674	94.309	73.209	0.376
08/30/23 17:17	675	94.459	73.359	0.376
08/30/23 17:18	676	94.560	73.460	0.372
08/30/23 17:19	677	94.666	73.566	0.381
08/30/23 17:20	678	94.778	73.678	0.379
08/30/23 17:21	679	94.885	73.785	0.380
08/30/23 17:22	680	94.980	73.880	0.379
08/30/23 17:23	681	95.082	73.982	0.379
08/30/23 17:24	682	95.130	74.030	0.380
08/30/23 17:25	683	95.204	74.104	0.379
08/30/23 17:26	684	95.268	74.168	0.380
08/30/23 17:27	685	95.337	74.237	0.380
08/30/23 17:28	686	95.396	74.296	0.381
08/30/23 17:29	687	95.454	74.354	0.380
08/30/23 17:30	688	95.513	74.413	0.380
08/30/23 17:31	689	95.572	74.472	0.379
08/30/23 17:32	690	95.630	74.530	0.379
08/30/23 17:33	691	95.683	74.583	0.379
08/30/23 17:34	692	95.737	74.637	0.379

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 17:35	693	95.790	74.690	0.379
08/30/23 17:36	694	95.833	74.733	0.379
08/30/23 17:37	695	95.875	74.775	0.378
08/30/23 17:38	696	95.912	74.812	0.379
08/30/23 17:39	697	95.955	74.855	0.380
08/30/23 17:40	698	95.998	74.898	0.380
08/30/23 17:41	699	96.035	74.935	0.379
08/30/23 17:42	700	96.077	74.977	0.380
08/30/23 17:43	701	96.109	75.009	0.379
08/30/23 17:44	702	96.157	75.057	0.380
08/30/23 17:45	703	96.205	75.105	0.381
08/30/23 17:46	704	96.243	75.143	0.380
08/30/23 17:47	705	96.291	75.191	0.379
08/30/23 17:48	706	96.338	75.238	0.380
08/30/23 17:49	707	96.392	75.292	0.379
08/30/23 17:50	708	96.434	75.334	0.379
08/30/23 17:51	709	96.477	75.377	0.380
08/30/23 17:52	710	96.525	75.425	0.380
08/30/23 17:53	711	96.578	75.478	0.382
08/30/23 17:54	712	96.626	75.526	0.381
08/30/23 17:55	713	96.690	75.590	0.380
08/30/23 17:56	714	96.743	75.643	0.380
08/30/23 17:57	715	96.796	75.696	0.379
08/30/23 17:58	716	96.855	75.755	0.380
08/30/23 17:59	717	96.919	75.819	0.381
08/30/23 18:00	718	96.977	75.877	0.380
08/30/23 18:01	719	97.041	75.941	0.381
08/30/23 18:02	720	97.111	76.011	0.380
08/30/23 18:03	721	97.180	76.080	0.382
08/30/23 18:04	722	97.249	76.149	0.383
08/30/23 18:05	723	97.318	76.218	0.382
08/30/23 18:06	724	97.382	76.282	0.379
08/30/23 18:07	725	97.446	76.346	0.379
08/30/23 18:08	726	97.510	76.410	0.379
08/30/23 18:09	727	97.574	76.474	0.379
08/30/23 18:10	728	97.633	76.533	0.380
08/30/23 18:11	729	97.691	76.591	0.379
08/30/23 18:12	730	97.755	76.655	0.380
08/30/23 18:13	731	97.819	76.719	0.378
08/30/23 18:14	732	97.877	76.777	0.378
08/30/23 18:15	733	97.941	76.841	0.378
08/30/23 18:16	734	98.005	76.905	0.379
08/30/23 18:17	735	98.064	76.964	0.378
08/30/23 18:18	736	98.112	77.012	0.379
08/30/23 18:19	737	98.160	77.060	0.378

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 18:20	738	98.229	77.129	0.379
08/30/23 18:21	739	98.277	77.177	0.378
08/30/23 18:22	740	98.335	77.235	0.379
08/30/23 18:23	741	98.405	77.305	0.377
08/30/23 18:24	742	98.469	77.369	0.378
08/30/23 18:25	743	98.554	77.454	0.378
08/30/23 18:26	744	98.634	77.534	0.378
08/30/23 18:27	745	98.724	77.624	0.377
08/30/23 18:28	746	98.836	77.736	0.377
08/30/23 18:29	747	98.937	77.837	0.378
08/30/23 18:30	748	99.065	77.965	0.364
08/30/23 18:31	749	99.161	78.061	0.377
08/30/23 18:32	750	99.289	78.189	0.377
08/30/23 18:33	751	99.401	78.301	0.377
08/30/23 18:34	752	99.555	78.455	0.377
08/30/23 18:35	753	99.683	78.583	0.365
08/30/23 18:36	754	99.811	78.711	0.377
08/30/23 18:37	755	99.944	78.844	0.378
08/30/23 18:38	756	100.093	78.993	0.376
08/30/23 18:39	757	100.226	79.126	0.376
08/30/23 18:40	758	100.364	79.264	0.365
08/30/23 18:41	759	100.487	79.387	0.364
08/30/23 18:42	760	100.625	79.525	0.385
08/30/23 18:43	761	100.822	79.722	0.382
08/30/23 18:44	762	100.956	79.856	0.380
08/30/23 18:45	763	101.083	79.983	0.379
08/30/23 18:46	764	101.211	80.111	0.381
08/30/23 18:47	765	101.334	80.234	0.380
08/30/23 18:48	766	101.445	80.345	0.381
08/30/23 18:49	767	101.563	80.463	0.379
08/30/23 18:50	768	101.696	80.596	0.377
08/30/23 18:51	769	101.824	80.724	0.378
08/30/23 18:52	770	101.951	80.851	0.377
08/30/23 18:53	771	102.069	80.969	0.380
08/30/23 18:54	772	102.175	81.075	0.380
08/30/23 18:55	773	102.271	81.171	0.380
08/30/23 18:56	774	102.351	81.251	0.379
08/30/23 18:57	775	102.447	81.347	0.380
08/30/23 18:58	776	102.543	81.443	0.380
08/30/23 18:59	777	102.660	81.560	0.380
08/30/23 19:00	778	102.793	81.693	0.380
08/30/23 19:01	779	102.931	81.831	0.380
08/30/23 19:02	780	103.059	81.959	0.380
08/30/23 19:03	781	103.182	82.082	0.377
08/30/23 19:04	782	103.320	82.220	0.379

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 19:05	783	103.443	82.343	0.379
08/30/23 19:06	784	103.565	82.465	0.379
08/30/23 19:07	785	103.682	82.582	0.379
08/30/23 19:08	786	103.810	82.710	0.379
08/30/23 19:09	787	103.927	82.827	0.378
08/30/23 19:10	788	104.050	82.950	0.378
08/30/23 19:11	789	104.177	83.077	0.378
08/30/23 19:12	790	104.316	83.216	0.377
08/30/23 19:13	791	104.449	83.349	0.377
08/30/23 19:14	792	104.582	83.482	0.377
08/30/23 19:15	793	104.705	83.605	0.377
08/30/23 19:16	794	104.838	83.738	0.377
08/30/23 19:17	795	104.960	83.860	0.377
08/30/23 19:18	796	105.088	83.988	0.377
08/30/23 19:19	797	105.211	84.111	0.377
08/30/23 19:20	798	105.338	84.238	0.376
08/30/23 19:21	799	105.455	84.355	0.376
08/30/23 19:22	800	105.567	84.467	0.376
08/30/23 19:23	801	105.669	84.569	0.376
08/30/23 19:24	802	105.775	84.675	0.374
08/30/23 19:25	803	105.882	84.782	0.377
08/30/23 19:26	804	105.972	84.872	0.377
08/30/23 19:27	805	106.084	84.984	0.375
08/30/23 19:28	806	106.185	85.085	0.377
08/30/23 19:29	807	106.292	85.192	0.377
08/30/23 19:30	808	106.398	85.298	0.377
08/30/23 19:31	809	106.499	85.399	0.376
08/30/23 19:32	810	106.616	85.516	0.375
08/30/23 19:33	811	106.728	85.628	0.377
08/30/23 19:34	812	106.824	85.724	0.376
08/30/23 19:35	813	106.947	85.847	0.375
08/30/23 19:36	814	107.053	85.953	0.375
08/30/23 19:37	815	107.170	86.070	0.377
08/30/23 19:38	816	107.277	86.177	0.375
08/30/23 19:39	817	107.383	86.283	0.376
08/30/23 19:40	818	107.500	86.400	0.374
08/30/23 19:41	819	107.602	86.502	0.373
08/30/23 19:42	820	107.713	86.613	0.375
08/30/23 19:43	821	107.884	86.784	0.375
08/30/23 19:44	822	108.001	86.901	0.375
08/30/23 19:45	823	108.113	87.013	0.374
08/30/23 19:46	824	108.219	87.119	0.375
08/30/23 19:47	825	108.315	87.215	0.375
08/30/23 19:48	826	108.406	87.306	0.374
08/30/23 19:49	827	108.507	87.407	0.374

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 19:50	828	108.597	87.497	0.374
08/30/23 19:51	829	108.688	87.588	0.373
08/30/23 19:52	830	108.779	87.679	0.373
08/30/23 19:53	831	108.853	87.753	0.375
08/30/23 19:54	832	108.928	87.828	0.375
08/30/23 19:55	833	109.013	87.913	0.374
08/30/23 19:56	834	109.114	88.014	0.379
08/30/23 19:57	835	109.173	88.073	0.379
08/30/23 19:58	836	109.242	88.142	0.378
08/30/23 19:59	837	109.311	88.211	0.378
08/30/23 20:00	838	109.370	88.270	0.382
08/30/23 20:01	839	109.434	88.334	0.382
08/30/23 20:02	840	109.492	88.392	0.381
08/30/23 20:03	841	109.545	88.445	0.381
08/30/23 20:04	842	109.593	88.493	0.380
08/30/23 20:05	843	109.641	88.541	0.381
08/30/23 20:06	844	109.684	88.584	0.380
08/30/23 20:07	845	109.726	88.626	0.381
08/30/23 20:08	846	109.785	88.685	0.380
08/30/23 20:09	847	109.838	88.738	0.380
08/30/23 20:10	848	109.892	88.792	0.381
08/30/23 20:11	849	109.945	88.845	0.379
08/30/23 20:12	850	110.019	88.919	0.379
08/30/23 20:13	851	110.078	88.978	0.383
08/30/23 20:14	852	110.142	89.042	0.382
08/30/23 20:15	853	110.206	89.106	0.382
08/30/23 20:16	854	110.291	89.191	0.380
08/30/23 20:17	855	110.392	89.292	0.378
08/30/23 20:18	856	110.499	89.399	0.378
08/30/23 20:19	857	110.600	89.500	0.377
08/30/23 20:20	858	110.701	89.601	0.379
08/30/23 20:21	859	110.808	89.708	0.379
08/30/23 20:22	860	110.914	89.814	0.378
08/30/23 20:23	861	111.005	89.905	0.377
08/30/23 20:24	862	111.116	90.016	0.376
08/30/23 20:25	863	111.218	90.118	0.378
08/30/23 20:26	864	111.324	90.224	0.375
08/30/23 20:27	865	111.420	90.320	0.376
08/30/23 20:28	866	111.526	90.426	0.378
08/30/23 20:29	867	111.633	90.533	0.378
08/30/23 20:30	868	111.729	90.629	0.378
08/30/23 20:31	869	111.846	90.746	0.378
08/30/23 20:32	870	111.952	90.852	0.377
08/30/23 20:33	871	112.064	90.964	0.377
08/30/23 20:34	872	112.187	91.087	0.378

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 20:35	873	112.293	91.193	0.377
08/30/23 20:36	874	112.405	91.305	0.377
08/30/23 20:37	875	112.512	91.412	0.377
08/30/23 20:38	876	112.618	91.518	0.377
08/30/23 20:39	877	112.709	91.609	0.377
08/30/23 20:40	878	112.783	91.683	0.377
08/30/23 20:41	879	112.863	91.763	0.378
08/30/23 20:42	880	112.938	91.838	0.378
08/30/23 20:43	881	113.023	91.923	0.377
08/30/23 20:44	882	113.087	91.987	0.377
08/30/23 20:45	883	113.177	92.077	0.377
08/30/23 20:46	884	113.273	92.173	0.376
08/30/23 20:47	885	113.374	92.274	0.375
08/30/23 20:48	886	113.486	92.386	0.376
08/30/23 20:49	887	113.587	92.487	0.376
08/30/23 20:50	888	113.689	92.589	0.376
08/30/23 20:51	889	113.795	92.695	0.375
08/30/23 20:52	890	113.896	92.796	0.376
08/30/23 20:53	891	113.997	92.897	0.376
08/30/23 20:54	892	114.093	92.993	0.376
08/30/23 20:55	893	114.221	93.121	0.376
08/30/23 20:56	894	114.338	93.238	0.375
08/30/23 20:57	895	114.429	93.329	0.362
08/30/23 20:58	896	114.514	93.414	0.376
08/30/23 20:59	897	114.615	93.515	0.375
08/30/23 21:00	898	114.711	93.611	0.376
08/30/23 21:01	899	114.823	93.723	0.377
08/30/23 21:02	900	114.935	93.835	0.363
08/30/23 21:03	901	115.057	93.957	0.377
08/30/23 21:04	902	115.174	94.074	0.377
08/30/23 21:05	903	115.302	94.202	0.377
08/30/23 21:06	904	115.419	94.319	0.378
08/30/23 21:07	905	115.505	94.405	0.380
08/30/23 21:08	906	115.632	94.532	0.380
08/30/23 21:09	907	115.749	94.649	0.378
08/30/23 21:10	908	115.819	94.719	0.375
08/30/23 21:11	909	115.829	94.729	0.375
08/30/23 21:12	910	115.957	94.857	0.385
08/30/23 21:13	911	116.090	94.990	0.388
08/30/23 21:14	912	116.213	95.113	0.387
08/30/23 21:15	913	116.341	95.241	0.388
08/30/23 21:16	914	116.468	95.368	0.387
08/30/23 21:17	915	116.591	95.491	0.386
08/30/23 21:18	916	116.735	95.635	0.383
08/30/23 21:19	917	116.921	95.821	0.382

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 21:20	918	117.022	95.922	0.383
08/30/23 21:21	919	117.123	96.023	0.382
08/30/23 21:22	920	117.225	96.125	0.383
08/30/23 21:23	921	117.326	96.226	0.381
08/30/23 21:24	922	117.448	96.348	0.382
08/30/23 21:25	923	117.560	96.460	0.380
08/30/23 21:26	924	117.677	96.577	0.381
08/30/23 21:27	925	117.789	96.689	0.379
08/30/23 21:28	926	117.901	96.801	0.379
08/30/23 21:29	927	118.002	96.902	0.381
08/30/23 21:30	928	118.103	97.003	0.380
08/30/23 21:31	929	118.215	97.115	0.380
08/30/23 21:32	930	118.322	97.222	0.381
08/30/23 21:33	931	118.433	97.333	0.380
08/30/23 21:34	932	118.540	97.440	0.380
08/30/23 21:35	933	118.636	97.536	0.379
08/30/23 21:36	934	118.737	97.637	0.379
08/30/23 21:37	935	118.833	97.733	0.379
08/30/23 21:38	936	118.929	97.829	0.379
08/30/23 21:39	937	119.025	97.925	0.379
08/30/23 21:40	938	119.120	98.020	0.379
08/30/23 21:41	939	119.222	98.122	0.379
08/30/23 21:42	940	119.323	98.223	0.380
08/30/23 21:43	941	119.413	98.313	0.378
08/30/23 21:44	942	119.509	98.409	0.379
08/30/23 21:45	943	119.610	98.510	0.378
08/30/23 21:46	944	119.722	98.622	0.378
08/30/23 21:47	945	119.834	98.734	0.379
08/30/23 21:48	946	119.946	98.846	0.373
08/30/23 21:49	947	120.052	98.952	0.373
08/30/23 21:50	948	120.159	99.059	0.374
08/30/23 21:51	949	120.281	99.181	0.372
08/30/23 21:52	950	120.388	99.288	0.372
08/30/23 21:53	951	120.484	99.384	0.373
08/30/23 21:54	952	120.585	99.485	0.374
08/30/23 21:55	953	120.691	99.591	0.377
08/30/23 21:56	954	120.819	99.719	0.375
08/30/23 21:57	955	120.958	99.858	0.375
08/30/23 21:58	956	121.091	99.991	0.375
08/30/23 21:59	957	121.197	100.097	0.375
08/30/23 22:00	958	121.315	100.215	0.374
08/30/23 22:01	959	121.426	100.326	0.375
08/30/23 22:02	960	121.538	100.438	0.373
08/30/23 22:03	961	121.639	100.539	0.374
08/30/23 22:04	962	121.741	100.641	0.375

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 22:05	963	121.842	100.742	0.373
08/30/23 22:06	964	121.943	100.843	0.374
08/30/23 22:07	965	122.033	100.933	0.374
08/30/23 22:08	966	122.135	101.035	0.374
08/30/23 22:09	967	122.230	101.130	0.374
08/30/23 22:10	968	122.348	101.248	0.373
08/30/23 22:11	969	122.449	101.349	0.373
08/30/23 22:12	970	122.550	101.450	0.373
08/30/23 22:13	971	122.657	101.557	0.372
08/30/23 22:14	972	122.752	101.652	0.368
08/30/23 22:15	973	122.784	101.684	0.373
08/30/23 22:16	974	122.880	101.780	0.373
08/30/23 22:17	975	122.981	101.881	0.373
08/30/23 22:18	976	123.072	101.972	0.373
08/30/23 22:19	977	123.157	102.057	0.373
08/30/23 22:20	978	123.253	102.153	0.372
08/30/23 22:21	979	123.365	102.265	0.372
08/30/23 22:22	980	123.477	102.377	0.373
08/30/23 22:23	981	123.583	102.483	0.373
08/30/23 22:24	982	123.690	102.590	0.374
08/30/23 22:25	983	123.759	102.659	0.373
08/30/23 22:26	984	123.871	102.771	0.377
08/30/23 22:27	985	123.993	102.893	0.378
08/30/23 22:28	986	124.110	103.010	0.379
08/30/23 22:29	987	124.243	103.143	0.379
08/30/23 22:30	988	124.366	103.266	0.377
08/30/23 22:31	989	124.483	103.383	0.373
08/30/23 22:32	990	124.574	103.474	0.375
08/30/23 22:33	991	124.685	103.585	0.373
08/30/23 22:34	992	124.792	103.692	0.373
08/30/23 22:35	993	124.899	103.799	0.373
08/30/23 22:36	994	125.005	103.905	0.374
08/30/23 22:37	995	125.117	104.017	0.373
08/30/23 22:38	996	125.229	104.129	0.373
08/30/23 22:39	997	125.330	104.230	0.372
08/30/23 22:40	998	125.436	104.336	0.372
08/30/23 22:41	999	125.559	104.459	0.374
08/30/23 22:42	1000	125.671	104.571	0.374
08/30/23 22:43	1001	125.777	104.677	0.372
08/30/23 22:44	1002	125.868	104.768	0.373
08/30/23 22:45	1003	125.958	104.858	0.373
08/30/23 22:46	1004	126.059	104.959	0.371
08/30/23 22:47	1005	126.139	105.039	0.373
08/30/23 22:48	1006	126.230	105.130	0.373
08/30/23 22:49	1007	126.336	105.236	0.372

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 22:50	1008	126.443	105.343	0.372
08/30/23 22:51	1009	126.544	105.444	0.372
08/30/23 22:52	1010	126.640	105.540	0.371
08/30/23 22:53	1011	126.736	105.636	0.372
08/30/23 22:54	1012	126.826	105.726	0.370
08/30/23 22:55	1013	126.917	105.817	0.372
08/30/23 22:56	1014	126.986	105.886	0.375
08/30/23 22:57	1015	127.055	105.955	0.375
08/30/23 22:58	1016	127.146	106.046	0.374
08/30/23 22:59	1017	127.242	106.142	0.372
08/30/23 23:00	1018	127.343	106.243	0.373
08/30/23 23:01	1019	127.433	106.333	0.373
08/30/23 23:02	1020	127.535	106.435	0.373
08/30/23 23:03	1021	127.641	106.541	0.372
08/30/23 23:04	1022	127.742	106.642	0.371
08/30/23 23:05	1023	127.849	106.749	0.374
08/30/23 23:06	1024	127.961	106.861	0.372
08/30/23 23:07	1025	128.062	106.962	0.378
08/30/23 23:08	1026	128.051	106.951	0.377
08/30/23 23:09	1027	128.131	107.031	0.376
08/30/23 23:10	1028	128.227	107.127	0.377
08/30/23 23:11	1029	128.323	107.223	0.376
08/30/23 23:12	1030	128.435	107.335	0.375
08/30/23 23:13	1031	128.541	107.441	0.377
08/30/23 23:14	1032	128.653	107.553	0.376
08/30/23 23:15	1033	128.765	107.665	0.376
08/30/23 23:16	1034	128.877	107.777	0.376
08/30/23 23:17	1035	128.988	107.888	0.374
08/30/23 23:18	1036	129.100	108.000	0.376
08/30/23 23:19	1037	129.212	108.112	0.376
08/30/23 23:20	1038	129.308	108.208	0.374
08/30/23 23:21	1039	129.409	108.309	0.375
08/30/23 23:22	1040	129.505	108.405	0.375
08/30/23 23:23	1041	129.601	108.501	0.376
08/30/23 23:24	1042	129.713	108.613	0.376
08/30/23 23:25	1043	129.814	108.714	0.375
08/30/23 23:26	1044	129.920	108.820	0.375
08/30/23 23:27	1045	130.027	108.927	0.375
08/30/23 23:28	1046	130.128	109.028	0.375
08/30/23 23:29	1047	130.235	109.135	0.376
08/30/23 23:30	1048	130.330	109.230	0.378
08/30/23 23:31	1049	130.437	109.337	0.377
08/30/23 23:32	1050	130.543	109.443	0.377
08/30/23 23:33	1051	130.639	109.539	0.378
08/30/23 23:34	1052	130.746	109.646	0.378

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/30/23 23:35	1053	130.852	109.752	0.378
08/30/23 23:36	1054	130.969	109.869	0.378
08/30/23 23:37	1055	131.081	109.981	0.377
08/30/23 23:38	1056	131.204	110.104	0.379
08/30/23 23:39	1057	131.316	110.216	0.379
08/30/23 23:40	1058	131.422	110.322	0.377
08/30/23 23:41	1059	131.539	110.439	0.376
08/30/23 23:42	1060	131.651	110.551	0.377
08/30/23 23:43	1061	131.768	110.668	0.377
08/30/23 23:44	1062	131.885	110.785	0.376
08/30/23 23:45	1063	132.013	110.913	0.376
08/30/23 23:46	1064	132.120	111.020	0.378
08/30/23 23:47	1065	132.232	111.132	0.378
08/30/23 23:48	1066	132.333	111.233	0.377
08/30/23 23:49	1067	132.429	111.329	0.376
08/30/23 23:50	1068	132.530	111.430	0.378
08/30/23 23:51	1069	132.626	111.526	0.376
08/30/23 23:52	1070	132.711	111.611	0.377
08/30/23 23:53	1071	132.801	111.701	0.376
08/30/23 23:54	1072	132.892	111.792	0.377
08/30/23 23:55	1073	132.977	111.877	0.375
08/30/23 23:56	1074	133.068	111.968	0.375
08/30/23 23:57	1075	133.153	112.053	0.375
08/30/23 23:58	1076	133.243	112.143	0.377
08/30/23 23:59	1077	133.329	112.229	0.376
08/31/23 00:00	1078	133.419	112.319	0.376
08/31/23 00:01	1079	133.504	112.404	0.376
08/31/23 00:02	1080	133.595	112.495	0.375
08/31/23 00:03	1081	133.675	112.575	0.375
08/31/23 00:04	1082	133.765	112.665	0.374
08/31/23 00:05	1083	133.845	112.745	0.374
08/31/23 00:06	1084	133.930	112.830	0.374
08/31/23 00:07	1085	134.021	112.921	0.374
08/31/23 00:08	1086	134.122	113.022	0.374
08/31/23 00:09	1087	134.223	113.123	0.374
08/31/23 00:10	1088	134.319	113.219	0.373
08/31/23 00:11	1089	134.426	113.326	0.373
08/31/23 00:12	1090	134.527	113.427	0.373
08/31/23 00:13	1091	134.633	113.533	0.373
08/31/23 00:14	1092	134.740	113.640	0.372
08/31/23 00:15	1093	134.841	113.741	0.373
08/31/23 00:16	1094	134.948	113.848	0.373
08/31/23 00:17	1095	135.049	113.949	0.374
08/31/23 00:18	1096	135.161	114.061	0.372
08/31/23 00:19	1097	135.267	114.167	0.372

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 00:20	1098	135.342	114.242	0.371
08/31/23 00:21	1099	135.443	114.343	0.373
08/31/23 00:22	1100	135.544	114.444	0.373
08/31/23 00:23	1101	135.650	114.550	0.373
08/31/23 00:24	1102	135.757	114.657	0.373
08/31/23 00:25	1103	135.863	114.763	0.373
08/31/23 00:26	1104	135.975	114.875	0.372
08/31/23 00:27	1105	136.082	114.982	0.373
08/31/23 00:28	1106	136.183	115.083	0.373
08/31/23 00:29	1107	136.290	115.190	0.371
08/31/23 00:30	1108	136.380	115.280	0.372
08/31/23 00:31	1109	136.471	115.371	0.371
08/31/23 00:38	1116	136.726	115.626	0.374
08/31/23 00:44	1122	137.961	116.861	0.373
08/31/23 00:45	1123	138.062	116.962	0.372
08/31/23 00:46	1124	138.169	117.069	0.373
08/31/23 00:47	1125	138.264	117.164	0.375
08/31/23 00:48	1126	138.360	117.260	0.374
08/31/23 00:49	1127	138.461	117.361	0.375
08/31/23 00:50	1128	138.568	117.468	0.375
08/31/23 00:51	1129	138.675	117.575	0.374
08/31/23 00:52	1130	138.776	117.676	0.372
08/31/23 00:53	1131	138.882	117.782	0.373
08/31/23 00:54	1132	138.994	117.894	0.373
08/31/23 00:55	1133	139.117	118.017	0.373
08/31/23 00:56	1134	139.228	118.128	0.373
08/31/23 00:57	1135	139.335	118.235	0.372
08/31/23 00:58	1136	139.447	118.347	0.375
08/31/23 00:59	1137	139.569	118.469	0.371
08/31/23 01:00	1138	139.686	118.586	0.372
08/31/23 01:01	1139	139.814	118.714	0.373
08/31/23 01:02	1140	139.931	118.831	0.371
08/31/23 01:03	1141	140.048	118.948	0.372
08/31/23 01:04	1142	140.166	119.066	0.370
08/31/23 01:05	1143	140.283	119.183	0.371
08/31/23 01:06	1144	140.389	119.289	0.368
08/31/23 01:07	1145	141.044	119.944	0.379
08/31/23 01:08	1146	141.699	120.599	0.371
08/31/23 01:09	1147	141.785	120.685	0.372
08/31/23 01:10	1148	141.870	120.770	0.374
08/31/23 01:11	1149	141.966	120.866	0.373
08/31/23 01:12	1150	142.051	120.951	0.376
08/31/23 01:13	1151	142.120	121.020	0.377
08/31/23 01:14	1152	142.200	121.100	0.374
08/31/23 01:15	1153	142.280	121.180	0.374

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 01:16	1154	142.360	121.260	0.375
08/31/23 01:17	1155	142.450	121.350	0.375
08/31/23 01:18	1156	142.525	121.425	0.374
08/31/23 01:19	1157	142.610	121.510	0.375
08/31/23 01:20	1158	142.690	121.590	0.373
08/31/23 01:21	1159	142.791	121.691	0.372
08/31/23 01:22	1160	142.882	121.782	0.372
08/31/23 01:23	1161	143.004	121.904	0.377
08/31/23 01:24	1162	143.089	121.989	0.379
08/31/23 01:25	1163	143.190	122.090	0.377
08/31/23 01:26	1164	143.292	122.192	0.378
08/31/23 01:27	1165	143.393	122.293	0.378
08/31/23 01:28	1166	143.489	122.389	0.378
08/31/23 01:29	1167	143.595	122.495	0.378
08/31/23 01:30	1168	143.702	122.602	0.372
08/31/23 01:31	1169	143.808	122.708	0.382
08/31/23 01:32	1170	143.915	122.815	0.381
08/31/23 01:33	1171	144.021	122.921	0.380
08/31/23 01:34	1172	144.117	123.017	0.380
08/31/23 01:35	1173	144.224	123.124	0.384
08/31/23 01:36	1174	144.325	123.225	0.382
08/31/23 01:37	1175	144.410	123.310	0.383
08/31/23 01:38	1176	144.516	123.416	0.384
08/31/23 01:39	1177	144.623	123.523	0.382
08/31/23 01:40	1178	144.745	123.645	0.381
08/31/23 01:41	1179	144.857	123.757	0.383
08/31/23 01:42	1180	144.969	123.869	0.383
08/31/23 01:43	1181	145.092	123.992	0.385
08/31/23 01:44	1182	145.198	124.098	0.385
08/31/23 01:45	1183	145.299	124.199	0.386
08/31/23 01:46	1184	145.390	124.290	0.385
08/31/23 01:47	1185	145.480	124.380	0.383
08/31/23 01:48	1186	145.582	124.482	0.382
08/31/23 01:49	1187	145.688	124.588	0.385
08/31/23 01:50	1188	145.805	124.705	0.385
08/31/23 01:51	1189	145.906	124.806	0.384
08/31/23 01:52	1190	146.008	124.908	0.383
08/31/23 01:53	1191	146.098	124.998	0.383
08/31/23 01:54	1192	146.178	125.078	0.383
08/31/23 01:55	1193	146.263	125.163	0.383
08/31/23 01:56	1194	146.380	125.280	0.379
08/31/23 01:57	1195	146.476	125.376	0.377
08/31/23 01:58	1196	146.577	125.477	0.377
08/31/23 01:59	1197	146.668	125.568	0.376
08/31/23 02:00	1198	146.774	125.674	0.376

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 02:01	1199	146.886	125.786	0.375
08/31/23 02:02	1200	146.977	125.877	0.375
08/31/23 02:03	1201	147.067	125.967	0.373
08/31/23 02:04	1202	147.147	126.047	0.376
08/31/23 02:05	1203	147.243	126.143	0.375
08/31/23 02:06	1204	147.339	126.239	0.374
08/31/23 02:07	1205	147.440	126.340	0.372
08/31/23 02:08	1206	147.525	126.425	0.373
08/31/23 02:09	1207	147.632	126.532	0.376
08/31/23 02:10	1208	147.738	126.638	0.374
08/31/23 02:11	1209	147.845	126.745	0.374
08/31/23 02:12	1210	147.962	126.862	0.375
08/31/23 02:13	1211	148.068	126.968	0.376
08/31/23 02:14	1212	148.186	127.086	0.375
08/31/23 02:15	1213	148.308	127.208	0.375
08/31/23 02:16	1214	148.420	127.320	0.375
08/31/23 02:17	1215	148.526	127.426	0.376
08/31/23 02:18	1216	148.638	127.538	0.374
08/31/23 02:19	1217	148.755	127.655	0.375
08/31/23 02:20	1218	148.873	127.773	0.373
08/31/23 02:21	1219	148.990	127.890	0.375
08/31/23 02:22	1220	149.096	127.996	0.373
08/31/23 02:23	1221	149.213	128.113	0.375
08/31/23 02:24	1222	149.325	128.225	0.373
08/31/23 02:25	1223	149.432	128.332	0.373
08/31/23 02:26	1224	149.549	128.449	0.376
08/31/23 02:27	1225	149.666	128.566	0.376
08/31/23 02:28	1226	149.783	128.683	0.372
08/31/23 02:29	1227	149.895	128.795	0.372
08/31/23 02:30	1228	150.007	128.907	0.373
08/31/23 02:31	1229	150.119	129.019	0.373
08/31/23 02:32	1230	150.236	129.136	0.371
08/31/23 02:33	1231	150.348	129.248	0.373
08/31/23 02:34	1232	150.460	129.360	0.373
08/31/23 02:35	1233	150.571	129.471	0.375
08/31/23 02:36	1234	150.683	129.583	0.373
08/31/23 02:37	1235	150.795	129.695	0.372
08/31/23 02:38	1236	150.896	129.796	0.375
08/31/23 02:39	1237	151.003	129.903	0.374
08/31/23 02:40	1238	151.115	130.015	0.372
08/31/23 02:41	1239	151.210	130.110	0.373
08/31/23 02:42	1240	151.317	130.217	0.374
08/31/23 02:43	1241	151.413	130.313	0.373
08/31/23 02:44	1242	151.503	130.403	0.373
08/31/23 02:45	1243	151.599	130.499	0.372

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 02:46	1244	151.690	130.590	0.371
08/31/23 02:47	1245	151.775	130.675	0.369
08/31/23 02:48	1246	151.865	130.765	0.370
08/31/23 02:49	1247	151.945	130.845	0.372
08/31/23 02:50	1248	152.009	130.909	0.371
08/31/23 02:51	1249	152.073	130.973	0.371
08/31/23 02:52	1250	152.148	131.048	0.370
08/31/23 02:53	1251	152.249	131.149	0.371
08/31/23 02:54	1252	152.361	131.261	0.370
08/31/23 02:55	1253	152.467	131.367	0.370
08/31/23 02:56	1254	152.568	131.468	0.370
08/31/23 02:57	1255	152.675	131.575	0.371
08/31/23 02:58	1256	152.771	131.671	0.371
08/31/23 02:59	1257	152.877	131.777	0.370
08/31/23 03:00	1258	152.968	131.868	0.369
08/31/23 03:01	1259	153.064	131.964	0.368
08/31/23 03:02	1260	153.165	132.065	0.369
08/31/23 03:03	1261	153.271	132.171	0.369
08/31/23 03:04	1262	153.373	132.273	0.370
08/31/23 03:05	1263	153.479	132.379	0.368
08/31/23 03:06	1264	153.596	132.496	0.377
08/31/23 03:07	1265	153.713	132.613	0.376
08/31/23 03:08	1266	153.831	132.731	0.375
08/31/23 03:09	1267	153.953	132.853	0.375
08/31/23 03:10	1268	154.070	132.970	0.375
08/31/23 03:11	1269	154.193	133.093	0.376
08/31/23 03:12	1270	154.310	133.210	0.375
08/31/23 03:13	1271	154.432	133.332	0.375
08/31/23 03:14	1272	154.549	133.449	0.373
08/31/23 03:15	1273	154.661	133.561	0.374
08/31/23 03:16	1274	154.784	133.684	0.373
08/31/23 03:17	1275	154.880	133.780	0.373
08/31/23 03:18	1276	154.997	133.897	0.374
08/31/23 03:19	1277	155.114	134.014	0.374
08/31/23 03:20	1278	155.231	134.131	0.374
08/31/23 03:21	1279	155.343	134.243	0.373
08/31/23 03:22	1280	155.449	134.349	0.372
08/31/23 03:23	1281	155.572	134.472	0.371
08/31/23 03:24	1282	155.689	134.589	0.371
08/31/23 03:25	1283	155.812	134.712	0.372
08/31/23 03:26	1284	155.923	134.823	0.372
08/31/23 03:27	1285	156.046	134.946	0.371
08/31/23 03:28	1286	156.163	135.063	0.371
08/31/23 03:29	1287	156.275	135.175	0.371
08/31/23 03:30	1288	156.381	135.281	0.370

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 03:31	1289	156.488	135.388	0.370
08/31/23 03:32	1290	156.589	135.489	0.370
08/31/23 03:33	1291	156.690	135.590	0.371
08/31/23 03:34	1292	156.797	135.697	0.368
08/31/23 03:35	1293	156.903	135.803	0.369
08/31/23 03:36	1294	157.010	135.910	0.365
08/31/23 03:37	1295	157.127	136.027	0.379
08/31/23 03:38	1296	157.244	136.144	0.376
08/31/23 03:39	1297	157.361	136.261	0.377
08/31/23 03:40	1298	157.468	136.368	0.377
08/31/23 03:41	1299	157.580	136.480	0.378
08/31/23 03:42	1300	157.686	136.586	0.377
08/31/23 03:43	1301	157.793	136.693	0.377
08/31/23 03:44	1302	157.899	136.799	0.376
08/31/23 03:45	1303	158.000	136.900	0.377
08/31/23 03:46	1304	158.107	137.007	0.376
08/31/23 03:47	1305	158.208	137.108	0.376
08/31/23 03:48	1306	158.304	137.204	0.377
08/31/23 03:49	1307	158.410	137.310	0.375
08/31/23 03:50	1308	158.506	137.406	0.375
08/31/23 03:51	1309	158.602	137.502	0.376
08/31/23 03:52	1310	158.703	137.603	0.376
08/31/23 03:53	1311	158.804	137.704	0.374
08/31/23 03:54	1312	158.916	137.816	0.374
08/31/23 03:55	1313	159.023	137.923	0.373
08/31/23 03:56	1314	159.129	138.029	0.373
08/31/23 03:57	1315	159.246	138.146	0.372
08/31/23 03:58	1316	159.348	138.248	0.372
08/31/23 03:59	1317	159.454	138.354	0.373
08/31/23 04:00	1318	159.550	138.450	0.374
08/31/23 04:01	1319	159.641	138.541	0.373
08/31/23 04:02	1320	159.742	138.642	0.373
08/31/23 04:03	1321	159.832	138.732	0.376
08/31/23 04:04	1322	159.933	138.833	0.373
08/31/23 04:05	1323	160.035	138.935	0.373
08/31/23 04:06	1324	160.131	139.031	0.380
08/31/23 04:07	1325	160.232	139.132	0.379
08/31/23 04:08	1326	160.349	139.249	0.378
08/31/23 04:09	1327	160.471	139.371	0.379
08/31/23 04:10	1328	160.588	139.488	0.379
08/31/23 04:11	1329	160.711	139.611	0.379
08/31/23 04:12	1330	160.833	139.733	0.378
08/31/23 04:13	1331	160.951	139.851	0.378
08/31/23 04:14	1332	161.078	139.978	0.379
08/31/23 04:15	1333	161.196	140.096	0.378

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 04:16	1334	161.318	140.218	0.378
08/31/23 04:17	1335	161.435	140.335	0.378
08/31/23 04:18	1336	161.558	140.458	0.378
08/31/23 04:19	1337	161.680	140.580	0.377
08/31/23 04:20	1338	161.797	140.697	0.378
08/31/23 04:21	1339	161.904	140.804	0.377
08/31/23 04:22	1340	162.005	140.905	0.377
08/31/23 04:23	1341	162.112	141.012	0.378
08/31/23 04:24	1342	162.213	141.113	0.379
08/31/23 04:25	1343	162.319	141.219	0.377
08/31/23 04:26	1344	162.426	141.326	0.378
08/31/23 04:27	1345	162.538	141.438	0.376
08/31/23 04:28	1346	162.655	141.555	0.377
08/31/23 04:29	1347	162.767	141.667	0.376
08/31/23 04:30	1348	162.862	141.762	0.377
08/31/23 04:31	1349	162.958	141.858	0.376
08/31/23 04:32	1350	163.049	141.949	0.375
08/31/23 04:33	1351	163.139	142.039	0.376
08/31/23 04:34	1352	163.235	142.135	0.376
08/31/23 04:35	1353	163.352	142.252	0.376
08/31/23 04:36	1354	163.464	142.364	0.375
08/31/23 04:37	1355	163.565	142.465	0.375
08/31/23 04:38	1356	163.672	142.572	0.374
08/31/23 04:39	1357	163.741	142.641	0.375
08/31/23 04:40	1358	163.800	142.700	0.373
08/31/23 04:41	1359	163.869	142.769	0.374
08/31/23 04:42	1360	163.933	142.833	0.373
08/31/23 04:43	1361	164.007	142.907	0.373
08/31/23 04:44	1362	164.039	142.939	0.373
08/31/23 04:45	1363	164.098	142.998	0.373
08/31/23 04:46	1364	164.162	143.062	0.373
08/31/23 04:47	1365	164.220	143.120	0.374
08/31/23 04:48	1366	164.274	143.174	0.374
08/31/23 04:49	1367	164.322	143.222	0.373
08/31/23 04:50	1368	164.370	143.270	0.373
08/31/23 04:51	1369	164.423	143.323	0.366
08/31/23 04:52	1370	164.476	143.376	0.366
08/31/23 04:53	1371	164.524	143.424	0.373
08/31/23 04:54	1372	164.567	143.467	0.372
08/31/23 04:55	1373	164.614	143.514	0.372
08/31/23 04:56	1374	164.662	143.562	0.366
08/31/23 04:57	1375	164.700	143.600	0.366
08/31/23 04:58	1376	164.737	143.637	0.365
08/31/23 04:59	1377	164.785	143.685	0.367
08/31/23 05:00	1378	164.822	143.722	0.364

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 05:01	1379	164.897	143.797	0.377
08/31/23 05:02	1380	164.939	143.839	0.381
08/31/23 05:03	1381	164.977	143.877	0.373
08/31/23 05:04	1382	165.009	143.909	0.373
08/31/23 05:05	1383	165.041	143.941	0.372
08/31/23 05:06	1384	165.072	143.972	0.371
08/31/23 05:07	1385	165.104	144.004	0.370
08/31/23 05:08	1386	165.136	144.036	0.372
08/31/23 05:09	1387	165.158	144.058	0.370
08/31/23 05:10	1388	165.200	144.100	0.372
08/31/23 05:11	1389	165.232	144.132	0.371
08/31/23 05:12	1390	165.275	144.175	0.370
08/31/23 05:13	1391	165.301	144.201	0.371
08/31/23 05:14	1392	165.339	144.239	0.370
08/31/23 05:15	1393	165.387	144.287	0.372
08/31/23 05:16	1394	165.435	144.335	0.371
08/31/23 05:17	1395	165.477	144.377	0.372
08/31/23 05:18	1396	165.536	144.436	0.371
08/31/23 05:19	1397	165.594	144.494	0.372
08/31/23 05:20	1398	165.664	144.564	0.370
08/31/23 05:21	1399	165.770	144.670	0.372
08/31/23 05:22	1400	165.893	144.793	0.371
08/31/23 05:23	1401	166.026	144.926	0.371
08/31/23 05:24	1402	166.116	145.016	0.371
08/31/23 05:25	1403	166.212	145.112	0.371
08/31/23 05:26	1404	166.303	145.203	0.371
08/31/23 05:27	1405	166.377	145.277	0.369
08/31/23 05:28	1406	166.457	145.357	0.370
08/31/23 05:29	1407	166.532	145.432	0.375
08/31/23 05:30	1408	166.606	145.506	0.377
08/31/23 05:31	1409	166.675	145.575	0.375
08/31/23 05:32	1410	166.745	145.645	0.376
08/31/23 05:33	1411	166.809	145.709	0.377
08/31/23 05:34	1412	166.867	145.767	0.377
08/31/23 05:35	1413	166.931	145.831	0.376
08/31/23 05:36	1414	166.990	145.890	0.376
08/31/23 05:37	1415	167.054	145.954	0.375
08/31/23 05:38	1416	167.128	146.028	0.376
08/31/23 05:39	1417	167.197	146.097	0.375
08/31/23 05:40	1418	167.277	146.177	0.374
08/31/23 05:41	1419	167.373	146.273	0.374
08/31/23 05:42	1420	167.480	146.380	0.373
08/31/23 05:43	1421	167.591	146.491	0.375
08/31/23 05:44	1422	167.703	146.603	0.373
08/31/23 05:45	1423	167.815	146.715	0.373

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 05:46	1424	167.927	146.827	0.374
08/31/23 05:47	1425	168.039	146.939	0.373
08/31/23 05:48	1426	168.140	147.040	0.373
08/31/23 05:49	1427	168.241	147.141	0.373
08/31/23 05:50	1428	168.358	147.258	0.373
08/31/23 05:51	1429	168.454	147.354	0.372
08/31/23 05:52	1430	168.545	147.445	0.371
08/31/23 05:53	1431	168.630	147.530	0.372
08/31/23 05:54	1432	168.715	147.615	0.372
08/31/23 05:55	1433	168.790	147.690	0.379
08/31/23 05:56	1434	168.827	147.727	0.377
08/31/23 05:57	1435	168.907	147.807	0.378
08/31/23 05:58	1436	168.997	147.897	0.376
08/31/23 05:59	1437	169.082	147.982	0.377
08/31/23 06:00	1438	169.173	148.073	0.377
08/31/23 06:01	1439	169.264	148.164	0.375
08/31/23 06:02	1440	169.359	148.259	0.376
08/31/23 06:03	1441	169.445	148.345	0.376
08/31/23 06:04	1442	169.540	148.440	0.377
08/31/23 06:05	1443	169.647	148.547	0.375
08/31/23 06:06	1444	169.759	148.659	0.376
08/31/23 06:07	1445	169.876	148.776	0.376
08/31/23 06:08	1446	169.998	148.898	0.376
08/31/23 06:09	1447	170.116	149.016	0.377
08/31/23 06:10	1448	170.243	149.143	0.375
08/31/23 06:11	1449	170.366	149.266	0.377
08/31/23 06:12	1450	170.494	149.394	0.375
08/31/23 06:13	1451	170.616	149.516	0.375
08/31/23 06:14	1452	170.744	149.644	0.376
08/31/23 06:15	1453	170.872	149.772	0.375
08/31/23 06:16	1454	170.994	149.894	0.376
08/31/23 06:17	1455	171.111	150.011	0.375
08/31/23 06:18	1456	171.239	150.139	0.374
08/31/23 06:19	1457	171.351	150.251	0.373
08/31/23 06:20	1458	171.474	150.374	0.373
08/31/23 06:21	1459	171.591	150.491	0.373
08/31/23 06:22	1460	171.708	150.608	0.375
08/31/23 06:23	1461	171.830	150.730	0.372
08/31/23 06:24	1462	171.948	150.848	0.375
08/31/23 06:25	1463	172.065	150.965	0.372
08/31/23 06:26	1464	172.177	151.077	0.372
08/31/23 06:27	1465	172.294	151.194	0.371
08/31/23 06:28	1466	172.411	151.311	0.373
08/31/23 06:29	1467	172.528	151.428	0.371
08/31/23 06:30	1468	172.640	151.540	0.372

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 06:31	1469	172.752	151.652	0.371
08/31/23 06:32	1470	172.864	151.764	0.372
08/31/23 06:33	1471	172.965	151.865	0.372
08/31/23 06:34	1472	173.077	151.977	0.370
08/31/23 06:35	1473	173.188	152.088	0.370
08/31/23 06:36	1474	173.300	152.200	0.370
08/31/23 06:37	1475	173.407	152.307	0.369
08/31/23 06:38	1476	173.513	152.413	0.377
08/31/23 06:39	1477	173.620	152.520	0.377
08/31/23 06:40	1478	173.726	152.626	0.377
08/31/23 06:41	1479	173.843	152.743	0.376
08/31/23 06:42	1480	173.945	152.845	0.375
08/31/23 06:43	1481	174.051	152.951	0.376
08/31/23 06:44	1482	174.163	153.063	0.376
08/31/23 06:45	1483	174.275	153.175	0.376
08/31/23 06:46	1484	174.413	153.313	0.376
08/31/23 06:47	1485	174.514	153.414	0.376
08/31/23 06:48	1486	174.621	153.521	0.376
08/31/23 06:49	1487	174.711	153.611	0.375
08/31/23 06:50	1488	174.807	153.707	0.376
08/31/23 06:51	1489	174.930	153.830	0.374
08/31/23 06:52	1490	175.047	153.947	0.375
08/31/23 06:53	1491	175.169	154.069	0.375
08/31/23 06:54	1492	175.287	154.187	0.375
08/31/23 06:55	1493	175.398	154.298	0.374
08/31/23 06:56	1494	175.510	154.410	0.373
08/31/23 06:57	1495	175.622	154.522	0.375
08/31/23 06:58	1496	175.734	154.634	0.372
08/31/23 06:59	1497	175.835	154.735	0.372
08/31/23 07:00	1498	175.936	154.836	0.372
08/31/23 07:01	1499	176.037	154.937	0.373
08/31/23 07:02	1500	176.139	155.039	0.373
08/31/23 07:03	1501	176.245	155.145	0.373
08/31/23 07:04	1502	176.346	155.246	0.372
08/31/23 07:05	1503	176.453	155.353	0.372
08/31/23 07:06	1504	176.565	155.465	0.371
08/31/23 07:07	1505	176.676	155.576	0.370
08/31/23 07:08	1506	176.788	155.688	0.385
08/31/23 07:09	1507	176.836	155.736	0.385
08/31/23 07:10	1508	176.953	155.853	0.387
08/31/23 07:11	1509	177.071	155.971	0.387
08/31/23 07:12	1510	177.193	156.093	0.385
08/31/23 07:13	1511	177.321	156.221	0.385
08/31/23 07:14	1512	177.443	156.343	0.386
08/31/23 07:15	1513	177.555	156.455	0.376

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 07:16	1514	177.662	156.562	0.376
08/31/23 07:17	1515	177.774	156.674	0.374
08/31/23 07:18	1516	177.896	156.796	0.374
08/31/23 07:19	1517	178.029	156.929	0.372
08/31/23 07:20	1518	178.152	157.052	0.373
08/31/23 07:21	1519	178.274	157.174	0.372
08/31/23 07:22	1520	178.354	157.254	0.374
08/31/23 07:23	1521	178.466	157.366	0.374
08/31/23 07:24	1522	178.588	157.488	0.372
08/31/23 07:25	1523	178.705	157.605	0.373
08/31/23 07:26	1524	178.833	157.733	0.373
08/31/23 07:27	1525	178.945	157.845	0.373
08/31/23 07:28	1526	179.057	157.957	0.373
08/31/23 07:29	1527	179.174	158.074	0.372
08/31/23 07:30	1528	179.291	158.191	0.371
08/31/23 07:31	1529	179.414	158.314	0.372
08/31/23 07:32	1530	179.536	158.436	0.372
08/31/23 07:33	1531	179.659	158.559	0.371
08/31/23 07:34	1532	179.776	158.676	0.370
08/31/23 07:35	1533	179.898	158.798	0.371
08/31/23 07:36	1534	180.005	158.905	0.373
08/31/23 07:37	1535	180.127	159.027	0.371
08/31/23 07:38	1536	180.250	159.150	0.372
08/31/23 07:39	1537	180.378	159.278	0.372
08/31/23 07:40	1538	180.500	159.400	0.371
08/31/23 07:41	1539	180.623	159.523	0.370
08/31/23 07:42	1540	180.740	159.640	0.370
08/31/23 07:43	1541	180.857	159.757	0.370
08/31/23 07:44	1542	180.974	159.874	0.370
08/31/23 07:45	1543	181.070	159.970	0.372
08/31/23 07:46	1544	181.171	160.071	0.371
08/31/23 07:47	1545	181.129	160.029	0.379
08/31/23 07:48	1546	181.091	159.991	0.377
08/31/23 07:49	1547	181.166	160.066	0.379
08/31/23 07:50	1548	181.272	160.172	0.377
08/31/23 07:51	1549	181.384	160.284	0.379
08/31/23 07:52	1550	181.512	160.412	0.380
08/31/23 07:53	1551	181.629	160.529	0.378
08/31/23 07:54	1552	181.746	160.646	0.377
08/31/23 07:55	1553	181.863	160.763	0.377
08/31/23 07:56	1554	181.986	160.886	0.378
08/31/23 07:57	1555	182.103	161.003	0.378
08/31/23 07:58	1556	182.226	161.126	0.376
08/31/23 07:59	1557	182.348	161.248	0.377
08/31/23 08:00	1558	182.465	161.365	0.377

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 08:01	1559	182.582	161.482	0.376
08/31/23 08:02	1560	182.694	161.594	0.377
08/31/23 08:03	1561	182.806	161.706	0.378
08/31/23 08:04	1562	182.913	161.813	0.377
08/31/23 08:05	1563	183.024	161.924	0.375
08/31/23 08:06	1564	183.136	162.036	0.374
08/31/23 08:07	1565	183.248	162.148	0.375
08/31/23 08:08	1566	183.349	162.249	0.376
08/31/23 08:09	1567	183.450	162.350	0.376
08/31/23 08:10	1568	183.562	162.462	0.374
08/31/23 08:11	1569	183.663	162.563	0.376
08/31/23 08:12	1570	183.765	162.665	0.375
08/31/23 08:13	1571	183.866	162.766	0.376
08/31/23 08:14	1572	183.978	162.878	0.373
08/31/23 08:15	1573	184.084	162.984	0.373
08/31/23 08:16	1574	184.196	163.096	0.374
08/31/23 08:17	1575	184.313	163.213	0.375
08/31/23 08:18	1576	184.420	163.320	0.375
08/31/23 08:19	1577	184.521	163.421	0.374
08/31/23 08:20	1578	184.627	163.527	0.374
08/31/23 08:21	1579	184.739	163.639	0.375
08/31/23 08:22	1580	184.846	163.746	0.373
08/31/23 08:23	1581	184.941	163.841	0.373
08/31/23 08:24	1582	185.043	163.943	0.373
08/31/23 08:25	1583	185.149	164.049	0.374
08/31/23 08:26	1584	185.245	164.145	0.372
08/31/23 08:27	1585	185.357	164.257	0.372
08/31/23 08:28	1586	185.447	164.347	0.373
08/31/23 08:29	1587	185.543	164.443	0.373
08/31/23 08:30	1588	185.650	164.550	0.372
08/31/23 08:31	1589	185.767	164.667	0.372
08/31/23 08:32	1590	185.879	164.779	0.372
08/31/23 08:33	1591	185.985	164.885	0.371
08/31/23 08:34	1592	186.102	165.002	0.375
08/31/23 08:35	1593	186.108	165.008	0.374
08/31/23 08:36	1594	186.129	165.029	0.376
08/31/23 08:37	1595	186.193	165.093	0.373
08/31/23 08:38	1596	186.294	165.194	0.375
08/31/23 08:39	1597	186.406	165.306	0.372
08/31/23 08:40	1598	186.518	165.418	0.370
08/31/23 08:41	1599	186.630	165.530	0.370
08/31/23 08:42	1600	186.747	165.647	0.368
08/31/23 08:43	1601	187.317	166.217	0.375
08/31/23 08:44	1602	188.036	166.936	0.369
08/31/23 08:45	1603	188.195	167.095	0.366

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 08:46	1604	188.254	167.154	0.372
08/31/23 08:47	1605	188.286	167.186	0.373
08/31/23 08:48	1606	188.392	167.292	0.371
08/31/23 08:49	1607	188.510	167.410	0.371
08/31/23 08:50	1608	188.616	167.516	0.371
08/31/23 08:51	1609	188.723	167.623	0.371
08/31/23 08:52	1610	188.834	167.734	0.369
08/31/23 08:53	1611	188.925	167.825	0.368
08/31/23 08:54	1612	189.026	167.926	0.367
08/31/23 08:55	1613	189.133	168.033	0.366
08/31/23 08:56	1614	189.244	168.144	0.365
08/31/23 08:57	1615	189.276	168.176	0.373
08/31/23 08:58	1616	189.335	168.235	0.373
08/31/23 08:59	1617	189.447	168.347	0.371
08/31/23 09:00	1618	189.575	168.475	0.372
08/31/23 09:01	1619	189.686	168.586	0.371
08/31/23 09:02	1620	189.809	168.709	0.371
08/31/23 09:03	1621	189.921	168.821	0.370
08/31/23 09:04	1622	190.033	168.933	0.370
08/31/23 09:05	1623	190.155	169.055	0.369
08/31/23 09:06	1624	190.262	169.162	0.370
08/31/23 09:07	1625	190.384	169.284	0.370
08/31/23 09:08	1626	190.491	169.391	0.369
08/31/23 09:09	1627	190.608	169.508	0.369
08/31/23 09:10	1628	190.714	169.614	0.372
08/31/23 09:11	1629	190.821	169.721	0.374
08/31/23 09:12	1630	190.927	169.827	0.372
08/31/23 09:13	1631	191.039	169.939	0.373
08/31/23 09:14	1632	191.156	170.056	0.367
08/31/23 09:15	1633	191.268	170.168	0.373
08/31/23 09:16	1634	191.385	170.285	0.373
08/31/23 09:17	1635	191.508	170.408	0.367
08/31/23 09:18	1636	191.636	170.536	0.367
08/31/23 09:19	1637	191.758	170.658	0.367
08/31/23 09:20	1638	191.870	170.770	0.367
08/31/23 09:21	1639	191.987	170.887	0.367
08/31/23 09:22	1640	192.093	170.993	0.364
08/31/23 09:23	1641	192.211	171.111	0.376
08/31/23 09:24	1642	192.322	171.222	0.374
08/31/23 09:25	1643	192.440	171.340	0.372
08/31/23 09:26	1644	192.551	171.451	0.374
08/31/23 09:27	1645	192.679	171.579	0.371
08/31/23 09:28	1646	192.786	171.686	0.373
08/31/23 09:29	1647	192.903	171.803	0.372
08/31/23 09:30	1648	193.020	171.920	0.373

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 09:31	1649	193.137	172.037	0.371
08/31/23 09:32	1650	193.265	172.165	0.372
08/31/23 09:33	1651	193.377	172.277	0.372
08/31/23 09:34	1652	193.499	172.399	0.373
08/31/23 09:35	1653	193.617	172.517	0.371
08/31/23 09:36	1654	193.739	172.639	0.372
08/31/23 09:37	1655	193.856	172.756	0.371
08/31/23 09:38	1656	193.968	172.868	0.379
08/31/23 09:39	1657	194.091	172.991	0.379
08/31/23 09:40	1658	194.208	173.108	0.378
08/31/23 09:41	1659	194.325	173.225	0.378
08/31/23 09:42	1660	194.442	173.342	0.377
08/31/23 09:43	1661	194.564	173.464	0.375
08/31/23 09:44	1662	194.671	173.571	0.378
08/31/23 09:45	1663	194.783	173.683	0.377
08/31/23 09:46	1664	194.884	173.784	0.377
08/31/23 09:47	1665	194.985	173.885	0.375
08/31/23 09:48	1666	195.102	174.002	0.375
08/31/23 09:49	1667	195.214	174.114	0.376
08/31/23 09:50	1668	195.331	174.231	0.374
08/31/23 09:51	1669	195.438	174.338	0.372
08/31/23 09:52	1670	195.555	174.455	0.374
08/31/23 09:53	1671	195.662	174.562	0.373
08/31/23 09:54	1672	195.773	174.673	0.372
08/31/23 09:55	1673	195.885	174.785	0.374
08/31/23 09:56	1674	195.997	174.897	0.373
08/31/23 09:57	1675	196.109	175.009	0.372
08/31/23 09:58	1676	196.226	175.126	0.373
08/31/23 09:59	1677	196.343	175.243	0.373
08/31/23 10:00	1678	196.460	175.360	0.372
08/31/23 10:01	1679	196.556	175.456	0.371
08/31/23 10:02	1680	196.631	175.531	0.372
08/31/23 10:03	1681	196.727	175.627	0.372
08/31/23 10:04	1682	196.828	175.728	0.371
08/31/23 10:05	1683	196.929	175.829	0.370
08/31/23 10:06	1684	197.030	175.930	0.371
08/31/23 10:07	1685	197.131	176.031	0.381
08/31/23 10:08	1686	197.232	176.132	0.379
08/31/23 10:09	1687	197.323	176.223	0.377
08/31/23 10:10	1688	197.435	176.335	0.377
08/31/23 10:11	1689	197.685	176.585	0.379
08/31/23 10:12	1690	198.047	176.947	0.378
08/31/23 10:13	1691	198.191	177.091	0.377
08/31/23 10:14	1692	198.319	177.219	0.374
08/31/23 10:15	1693	198.447	177.347	0.372

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 10:16	1694	198.564	177.464	0.376
08/31/23 10:17	1695	198.670	177.570	0.375
08/31/23 10:18	1696	198.793	177.693	0.372
08/31/23 10:19	1697	198.915	177.815	0.372
08/31/23 10:20	1698	198.995	177.895	0.372
08/31/23 10:22	1700	199.352	178.252	0.374
08/31/23 10:23	1701	199.400	178.300	0.372
08/31/23 10:24	1702	199.683	178.583	0.370
08/31/23 10:25	1703	199.922	178.822	0.372
08/31/23 10:26	1704	200.130	179.030	0.370
08/31/23 10:27	1705	200.370	179.270	0.368
08/31/23 10:28	1706	200.630	179.530	0.379
08/31/23 10:29	1707	200.796	179.696	0.382
08/31/23 10:30	1708	200.950	179.850	0.376
08/31/23 10:31	1709	201.110	180.010	0.374
08/31/23 10:32	1710	201.168	180.068	0.376
08/31/23 10:33	1711	201.259	180.159	0.377
08/31/23 10:34	1712	201.552	180.452	0.381
08/31/23 10:35	1713	201.877	180.777	0.374
08/31/23 10:36	1714	201.983	180.883	0.378
08/31/23 10:37	1715	202.100	181.000	0.377
08/31/23 10:38	1716	202.223	181.123	0.381
08/31/23 10:39	1717	202.420	181.320	0.374
08/31/23 10:40	1718	202.612	181.512	0.372
08/31/23 10:41	1719	202.755	181.655	0.373
08/31/23 10:42	1720	202.899	181.799	0.369
08/31/23 10:43	1721	203.032	181.932	0.378
08/31/23 10:44	1722	203.160	182.060	0.378
08/31/23 10:45	1723	203.277	182.177	0.379
08/31/23 10:46	1724	203.389	182.289	0.378
08/31/23 10:47	1725	203.490	182.390	0.377
08/31/23 10:48	1726	203.586	182.486	0.378
08/31/23 10:49	1727	203.703	182.603	0.379
08/31/23 10:50	1728	203.815	182.715	0.377
08/31/23 10:51	1729	203.927	182.827	0.377
08/31/23 10:52	1730	204.044	182.944	0.376
08/31/23 10:53	1731	204.156	183.056	0.376
08/31/23 10:54	1732	204.268	183.168	0.376
08/31/23 10:55	1733	204.369	183.269	0.375
08/31/23 10:56	1734	204.475	183.375	0.377
08/31/23 10:57	1735	204.566	183.466	0.374
08/31/23 10:58	1736	204.662	183.562	0.375
08/31/23 10:59	1737	204.774	183.674	0.373
08/31/23 11:00	1738	204.875	183.775	0.375
08/31/23 11:01	1739	204.971	183.871	0.376

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 11:02	1740	205.072	183.972	0.375
08/31/23 11:03	1741	205.178	184.078	0.374
08/31/23 11:04	1742	205.285	184.185	0.375
08/31/23 11:05	1743	205.391	184.291	0.376
08/31/23 11:06	1744	205.514	184.414	0.373
08/31/23 11:07	1745	205.732	184.632	0.380
08/31/23 11:08	1746	206.004	184.904	0.377
08/31/23 11:09	1747	206.110	185.010	0.374
08/31/23 11:10	1748	206.222	185.122	0.379
08/31/23 11:11	1749	206.329	185.229	0.375
08/31/23 11:12	1750	206.440	185.340	0.374
08/31/23 11:13	1751	206.558	185.458	0.376
08/31/23 11:14	1752	206.590	185.490	0.000
08/31/23 11:15	1753	205.386	184.286	0.000
08/31/23 11:16	1754	204.885	183.785	0.000
08/31/23 11:17	1755	204.603	183.503	0.000
08/31/23 11:18	1756	204.401	183.301	0.000
08/31/23 11:19	1757	204.236	183.136	0.000
08/31/23 11:20	1758	204.076	182.976	0.000
08/31/23 11:21	1759	203.922	182.822	0.000
08/31/23 11:22	1760	203.756	182.656	0.000
08/31/23 11:23	1761	203.602	182.502	0.000
08/31/23 11:24	1762	203.453	182.353	0.000
08/31/23 11:25	1763	203.320	182.220	0.000
08/31/23 11:26	1764	203.187	182.087	0.000
08/31/23 11:27	1765	203.038	181.938	0.000
08/31/23 11:28	1766	202.883	181.783	0.000
08/31/23 11:29	1767	202.723	181.623	0.000
08/31/23 11:30	1768	202.532	181.432	0.000
08/31/23 11:31	1769	202.345	181.245	0.000
08/31/23 11:32	1770	202.154	181.054	0.000
08/31/23 11:33	1771	201.956	180.856	0.000
08/31/23 11:34	1772	201.802	180.702	0.000
08/31/23 11:35	1773	201.648	180.548	0.000
08/31/23 11:36	1774	201.493	180.393	0.000
08/31/23 11:36	1774	201.451	180.351	0.000
08/31/23 11:37	1775	201.307	180.207	0.000
08/31/23 11:38	1776	201.152	180.052	0.000
08/31/23 11:39	1777	200.982	179.882	0.000
08/31/23 11:40	1778	200.833	179.733	0.000
08/31/23 11:41	1779	200.668	179.568	0.000
08/31/23 11:42	1780	200.481	179.381	0.000
08/31/23 11:43	1781	200.210	179.110	0.000
08/31/23 11:44	1782	199.906	178.806	0.000
08/31/23 11:45	1783	199.597	178.497	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 11:46	1784	199.251	178.151	0.000
08/31/23 11:47	1785	198.916	177.816	0.000
08/31/23 11:48	1786	198.703	177.603	0.000
08/31/23 11:49	1787	198.500	177.400	0.000
08/31/23 11:50	1788	198.335	177.235	0.000
08/31/23 11:51	1789	198.197	177.097	0.000
08/31/23 11:52	1790	198.042	176.942	0.000
08/31/23 11:53	1791	197.888	176.788	0.000
08/31/23 11:54	1792	197.728	176.628	0.000
08/31/23 11:55	1793	197.574	176.474	0.000
08/31/23 11:56	1794	197.430	176.330	0.000
08/31/23 11:57	1795	197.291	176.191	0.000
08/31/23 11:58	1796	197.164	176.064	0.000
08/31/23 11:59	1797	197.015	175.915	0.000
08/31/23 12:00	1798	196.876	175.776	0.000
08/31/23 12:01	1799	196.754	175.654	0.000
08/31/23 12:02	1800	196.631	175.531	0.000
08/31/23 12:03	1801	196.498	175.398	0.000
08/31/23 12:04	1802	196.370	175.270	0.000
08/31/23 12:05	1803	196.242	175.142	0.000
08/31/23 12:06	1804	196.115	175.015	0.000
08/31/23 12:07	1805	195.981	174.881	0.000
08/31/23 12:08	1806	195.838	174.738	0.000
08/31/23 12:09	1807	195.689	174.589	0.000
08/31/23 12:10	1808	195.550	174.450	0.000
08/31/23 12:11	1809	195.406	174.306	0.000
08/31/23 12:12	1810	195.268	174.168	0.000
08/31/23 12:13	1811	195.135	174.035	0.000
08/31/23 12:14	1812	195.012	173.912	0.000
08/31/23 12:15	1813	194.874	173.774	0.000
08/31/23 12:16	1814	194.741	173.641	0.000
08/31/23 12:17	1815	194.591	173.491	0.000
08/31/23 12:18	1816	194.448	173.348	0.000
08/31/23 12:19	1817	194.325	173.225	0.000
08/31/23 12:20	1818	194.192	173.092	0.000
08/31/23 12:21	1819	194.054	172.954	0.000
08/31/23 12:22	1820	193.910	172.810	0.000
08/31/23 12:23	1821	193.771	172.671	0.000
08/31/23 12:24	1822	193.628	172.528	0.000
08/31/23 12:25	1823	193.489	172.389	0.000
08/31/23 12:26	1824	193.340	172.240	0.000
08/31/23 12:27	1825	193.191	172.091	0.000
08/31/23 12:28	1826	193.036	171.936	0.000
08/31/23 12:29	1827	192.893	171.793	0.000
08/31/23 12:30	1828	192.744	171.644	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 12:31	1829	192.594	171.494	0.000
08/31/23 12:32	1830	192.451	171.351	0.000
08/31/23 12:33	1831	192.307	171.207	0.000
08/31/23 12:34	1832	192.158	171.058	0.000
08/31/23 12:35	1833	192.009	170.909	0.000
08/31/23 12:36	1834	191.865	170.765	0.000
08/31/23 12:37	1835	191.716	170.616	0.000
08/31/23 12:38	1836	191.567	170.467	0.000
08/31/23 12:39	1837	191.423	170.323	0.000
08/31/23 12:40	1838	191.268	170.168	0.000
08/31/23 12:41	1839	191.114	170.014	0.000
08/31/23 12:42	1840	190.949	169.849	0.000
08/31/23 12:43	1841	190.800	169.700	0.000
08/31/23 12:44	1842	190.651	169.551	0.000
08/31/23 12:45	1843	190.502	169.402	0.000
08/31/23 12:46	1844	190.352	169.252	0.000
08/31/23 12:47	1845	190.209	169.109	0.000
08/31/23 12:48	1846	190.060	168.960	0.000
08/31/23 12:49	1847	189.910	168.810	0.000
08/31/23 12:50	1848	189.761	168.661	0.000
08/31/23 12:51	1849	189.618	168.518	0.000
08/31/23 12:52	1850	189.468	168.368	0.000
08/31/23 12:53	1851	189.325	168.225	0.000
08/31/23 12:54	1852	189.170	168.070	0.000
08/31/23 12:55	1853	189.021	167.921	0.000
08/31/23 12:56	1854	188.867	167.767	0.000
08/31/23 12:57	1855	188.718	167.618	0.000
08/31/23 12:58	1856	188.568	167.468	0.000
08/31/23 12:59	1857	188.430	167.330	0.000
08/31/23 13:00	1858	188.297	167.197	0.000
08/31/23 13:01	1859	188.153	167.053	0.000
08/31/23 13:02	1860	188.020	166.920	0.000
08/31/23 13:03	1861	187.866	166.766	0.000
08/31/23 13:04	1862	187.722	166.622	0.000
08/31/23 13:05	1863	187.567	166.467	0.000
08/31/23 13:06	1864	187.424	166.324	0.000
08/31/23 13:07	1865	187.269	166.169	0.000
08/31/23 13:08	1866	187.131	166.031	0.000
08/31/23 13:09	1867	186.992	165.892	0.000
08/31/23 13:10	1868	186.854	165.754	0.000
08/31/23 13:11	1869	186.721	165.621	0.000
08/31/23 13:12	1870	186.577	165.477	0.000
08/31/23 13:13	1871	186.428	165.328	0.000
08/31/23 13:14	1872	186.279	165.179	0.000
08/31/23 13:15	1873	186.135	165.035	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 13:16	1874	185.980	164.880	0.000
08/31/23 13:17	1875	185.837	164.737	0.000
08/31/23 13:18	1876	185.682	164.582	0.000
08/31/23 13:19	1877	185.528	164.428	0.000
08/31/23 13:20	1878	185.384	164.284	0.000
08/31/23 13:21	1879	185.245	164.145	0.000
08/31/23 13:22	1880	185.107	164.007	0.000
08/31/23 13:23	1881	184.963	163.863	0.000
08/31/23 13:24	1882	184.835	163.735	0.000
08/31/23 13:25	1883	184.702	163.602	0.000
08/31/23 13:26	1884	184.574	163.474	0.000
08/31/23 13:27	1885	184.441	163.341	0.000
08/31/23 13:28	1886	184.313	163.213	0.000
08/31/23 13:29	1887	184.180	163.080	0.000
08/31/23 13:30	1888	184.037	162.937	0.000
08/31/23 13:31	1889	183.871	162.771	0.000
08/31/23 13:32	1890	183.738	162.638	0.000
08/31/23 13:33	1891	183.600	162.500	0.000
08/31/23 13:34	1892	183.461	162.361	0.000
08/31/23 13:35	1893	183.328	162.228	0.000
08/31/23 13:36	1894	183.195	162.095	0.000
08/31/23 13:37	1895	183.067	161.967	0.000
08/31/23 13:38	1896	182.934	161.834	0.000
08/31/23 13:39	1897	182.801	161.701	0.000
08/31/23 13:40	1898	182.673	161.573	0.000
08/31/23 13:41	1899	182.535	161.435	0.000
08/31/23 13:42	1900	182.391	161.291	0.000
08/31/23 13:43	1901	182.258	161.158	0.000
08/31/23 13:44	1902	182.119	161.019	0.000
08/31/23 13:45	1903	181.992	160.892	0.000
08/31/23 13:46	1904	181.842	160.742	0.000
08/31/23 13:47	1905	181.699	160.599	0.000
08/31/23 13:48	1906	181.550	160.450	0.000
08/31/23 13:49	1907	181.400	160.300	0.000
08/31/23 13:50	1908	181.251	160.151	0.000
08/31/23 13:51	1909	181.108	160.008	0.000
08/31/23 13:52	1910	180.953	159.853	0.000
08/31/23 13:53	1911	180.793	159.693	0.000
08/31/23 13:54	1912	180.650	159.550	0.000
08/31/23 13:55	1913	180.500	159.400	0.000
08/31/23 13:56	1914	180.357	159.257	0.000
08/31/23 13:57	1915	180.208	159.108	0.000
08/31/23 13:58	1916	180.058	158.958	0.000
08/31/23 13:59	1917	179.904	158.804	0.000
08/31/23 14:00	1918	179.744	158.644	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 14:01	1919	179.590	158.490	0.000
08/31/23 14:02	1920	179.435	158.335	0.000
08/31/23 14:03	1921	179.281	158.181	0.000
08/31/23 14:04	1922	179.132	158.032	0.000
08/31/23 14:05	1923	178.972	157.872	0.000
08/31/23 14:06	1924	178.818	157.718	0.000
08/31/23 14:07	1925	178.669	157.569	0.000
08/31/23 14:08	1926	178.525	157.425	0.000
08/31/23 14:09	1927	178.376	157.276	0.000
08/31/23 14:10	1928	178.232	157.132	0.000
08/31/23 14:11	1929	178.083	156.983	0.000
08/31/23 14:12	1930	177.923	156.823	0.000
08/31/23 14:13	1931	177.779	156.679	0.000
08/31/23 14:14	1932	177.625	156.525	0.000
08/31/23 14:15	1933	177.476	156.376	0.000
08/31/23 14:16	1934	177.321	156.221	0.000
08/31/23 14:17	1935	177.161	156.061	0.000
08/31/23 14:18	1936	177.028	155.928	0.000
08/31/23 14:19	1937	176.874	155.774	0.000
08/31/23 14:20	1938	176.730	155.630	0.000
08/31/23 14:21	1939	176.581	155.481	0.000
08/31/23 14:22	1940	176.443	155.343	0.000
08/31/23 14:23	1941	176.304	155.204	0.000
08/31/23 14:24	1942	176.171	155.071	0.000
08/31/23 14:25	1943	176.022	154.922	0.000
08/31/23 14:26	1944	175.883	154.783	0.000
08/31/23 14:27	1945	175.745	154.645	0.000
08/31/23 14:28	1946	175.617	154.517	0.000
08/31/23 14:29	1947	175.479	154.379	0.000
08/31/23 14:30	1948	175.356	154.256	0.000
08/31/23 14:31	1949	175.228	154.128	0.000
08/31/23 14:32	1950	175.111	154.011	0.000
08/31/23 14:33	1951	174.973	153.873	0.000
08/31/23 14:34	1952	174.834	153.734	0.000
08/31/23 14:35	1953	174.690	153.590	0.000
08/31/23 14:36	1954	174.547	153.447	0.000
08/31/23 14:37	1955	174.403	153.303	0.000
08/31/23 14:38	1956	174.254	153.154	0.000
08/31/23 14:39	1957	174.121	153.021	0.000
08/31/23 14:40	1958	174.004	152.904	0.000
08/31/23 14:41	1959	173.886	152.786	0.000
08/31/23 14:42	1960	173.753	152.653	0.000
08/31/23 14:43	1961	173.631	152.531	0.000
08/31/23 14:44	1962	173.492	152.392	0.000
08/31/23 14:45	1963	173.364	152.264	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 14:46	1964	173.231	152.131	0.000
08/31/23 14:47	1965	173.098	151.998	0.000
08/31/23 14:48	1966	172.970	151.870	0.000
08/31/23 14:49	1967	172.848	151.748	0.000
08/31/23 14:50	1968	172.725	151.625	0.000
08/31/23 14:51	1969	172.587	151.487	0.000
08/31/23 14:52	1970	172.443	151.343	0.000
08/31/23 14:53	1971	172.310	151.210	0.000
08/31/23 14:54	1972	172.177	151.077	0.000
08/31/23 14:55	1973	172.033	150.933	0.000
08/31/23 14:56	1974	171.895	150.795	0.000
08/31/23 14:57	1975	171.751	150.651	0.000
08/31/23 14:58	1976	171.602	150.502	0.000
08/31/23 14:59	1977	171.469	150.369	0.000
08/31/23 15:00	1978	171.320	150.220	0.000
08/31/23 15:01	1979	171.176	150.076	0.000
08/31/23 15:02	1980	171.027	149.927	0.000
08/31/23 15:03	1981	170.888	149.788	0.000
08/31/23 15:04	1982	170.744	149.644	0.000
08/31/23 15:05	1983	170.611	149.511	0.000
08/31/23 15:06	1984	170.462	149.362	0.000
08/31/23 15:07	1985	170.313	149.213	0.000
08/31/23 15:08	1986	170.159	149.059	0.000
08/31/23 15:09	1987	170.004	148.904	0.000
08/31/23 15:10	1988	169.850	148.750	0.000
08/31/23 15:11	1989	169.701	148.601	0.000
08/31/23 15:12	1990	169.546	148.446	0.000
08/31/23 15:13	1991	169.402	148.302	0.000
08/31/23 15:14	1992	169.253	148.153	0.000
08/31/23 15:15	1993	169.115	148.015	0.000
08/31/23 15:16	1994	168.992	147.892	0.000
08/31/23 15:17	1995	168.875	147.775	0.000
08/31/23 15:18	1996	168.763	147.663	0.000
08/31/23 15:19	1997	168.657	147.557	0.000
08/31/23 15:20	1998	168.545	147.445	0.000
08/31/23 15:21	1999	168.438	147.338	0.000
08/31/23 15:22	2000	168.332	147.232	0.000
08/31/23 15:23	2001	168.225	147.125	0.000
08/31/23 15:24	2002	168.119	147.019	0.000
08/31/23 15:25	2003	168.018	146.918	0.000
08/31/23 15:26	2004	167.895	146.795	0.000
08/31/23 15:27	2005	167.767	146.667	0.000
08/31/23 15:28	2006	167.634	146.534	0.000
08/31/23 15:29	2007	167.507	146.407	0.000
08/31/23 15:30	2008	167.368	146.268	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 15:31	2009	167.224	146.124	0.000
08/31/23 15:32	2010	167.086	145.986	0.000
08/31/23 15:33	2011	166.942	145.842	0.000
08/31/23 15:34	2012	166.814	145.714	0.000
08/31/23 15:35	2013	166.702	145.602	0.000
08/31/23 15:36	2014	166.601	145.501	0.000
08/31/23 15:37	2015	166.521	145.421	0.000
08/31/23 15:38	2016	166.441	145.341	0.000
08/31/23 15:39	2017	166.367	145.267	0.000
08/31/23 15:40	2018	166.292	145.192	0.000
08/31/23 15:41	2019	166.218	145.118	0.000
08/31/23 15:42	2020	166.127	145.027	0.000
08/31/23 15:43	2021	166.042	144.942	0.000
08/31/23 15:44	2022	165.952	144.852	0.000
08/31/23 15:45	2023	165.850	144.750	0.000
08/31/23 15:46	2024	165.754	144.654	0.000
08/31/23 15:47	2025	165.637	144.537	0.000
08/31/23 15:48	2026	165.515	144.415	0.000
08/31/23 15:49	2027	165.355	144.255	0.000
08/31/23 15:50	2028	165.185	144.085	0.000
08/31/23 15:51	2029	165.078	143.978	0.000
08/31/23 15:52	2030	164.998	143.898	0.000
08/31/23 15:53	2031	164.934	143.834	0.000
08/31/23 15:54	2032	164.881	143.781	0.000
08/31/23 15:55	2033	164.823	143.723	0.000
08/31/23 15:56	2034	164.775	143.675	0.000
08/31/23 15:57	2035	164.732	143.632	0.000
08/31/23 15:58	2036	164.684	143.584	0.000
08/31/23 15:59	2037	164.636	143.536	0.000
08/31/23 16:00	2038	164.594	143.494	0.000
08/31/23 16:01	2039	164.551	143.451	0.000
08/31/23 16:02	2040	164.508	143.408	0.000
08/31/23 16:03	2041	164.466	143.366	0.000
08/31/23 16:04	2042	164.428	143.328	0.000
08/31/23 16:05	2043	164.381	143.281	0.000
08/31/23 16:06	2044	164.327	143.227	0.000
08/31/23 16:07	2045	164.285	143.185	0.000
08/31/23 16:08	2046	164.242	143.142	0.000
08/31/23 16:09	2047	164.183	143.083	0.000
08/31/23 16:10	2048	164.141	143.041	0.000
08/31/23 16:11	2049	164.082	142.982	0.000
08/31/23 16:12	2050	164.024	142.924	0.000
08/31/23 16:13	2051	163.960	142.860	0.000
08/31/23 16:14	2052	163.896	142.796	0.000
08/31/23 16:15	2053	163.832	142.732	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 16:16	2054	163.768	142.668	0.000
08/31/23 16:17	2055	163.710	142.610	0.000
08/31/23 16:18	2056	163.640	142.540	0.000
08/31/23 16:19	2057	163.566	142.466	0.000
08/31/23 16:20	2058	163.491	142.391	0.000
08/31/23 16:21	2059	163.401	142.301	0.000
08/31/23 16:22	2060	163.321	142.221	0.000
08/31/23 16:23	2061	163.236	142.136	0.000
08/31/23 16:24	2062	163.145	142.045	0.000
08/31/23 16:25	2063	163.017	141.917	0.000
08/31/23 16:26	2064	162.889	141.789	0.000
08/31/23 16:27	2065	162.746	141.646	0.000
08/31/23 16:28	2066	162.613	141.513	0.000
08/31/23 16:29	2067	162.495	141.395	0.000
08/31/23 16:30	2068	162.384	141.284	0.000
08/31/23 16:31	2069	162.266	141.166	0.000
08/31/23 16:32	2070	162.133	141.033	0.000
08/31/23 16:33	2071	161.989	140.889	0.000
08/31/23 16:34	2072	161.856	140.756	0.000
08/31/23 16:35	2073	161.734	140.634	0.000
08/31/23 16:36	2074	161.638	140.538	0.000
08/31/23 16:37	2075	161.515	140.415	0.000
08/31/23 16:38	2076	161.382	140.282	0.000
08/31/23 16:39	2077	161.260	140.160	0.000
08/31/23 16:40	2078	161.111	140.011	0.000
08/31/23 16:41	2079	160.962	139.862	0.000
08/31/23 16:42	2080	160.807	139.707	0.000
08/31/23 16:43	2081	160.658	139.558	0.000
08/31/23 16:44	2082	160.509	139.409	0.000
08/31/23 16:45	2083	160.365	139.265	0.000
08/31/23 16:46	2084	160.216	139.116	0.000
08/31/23 16:47	2085	160.067	138.967	0.000
08/31/23 16:48	2086	159.923	138.823	0.000
08/31/23 16:49	2087	159.779	138.679	0.000
08/31/23 16:50	2088	159.652	138.552	0.000
08/31/23 16:51	2089	159.524	138.424	0.000
08/31/23 16:52	2090	159.407	138.307	0.000
08/31/23 16:53	2091	159.279	138.179	0.000
08/31/23 16:54	2092	159.167	138.067	0.000
08/31/23 16:55	2093	159.044	137.944	0.000
08/31/23 16:56	2094	158.922	137.822	0.000
08/31/23 16:57	2095	158.789	137.689	0.000
08/31/23 16:58	2096	158.661	137.561	0.000
08/31/23 16:59	2097	158.517	137.417	0.000
08/31/23 17:00	2098	158.384	137.284	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/31/23 17:01	2099	158.251	137.151	0.000
08/31/23 17:02	2100	158.134	137.034	0.000
08/31/23 17:03	2101	158.006	136.906	0.000
08/31/23 17:04	2102	157.884	136.784	0.000
08/31/23 17:05	2103	157.756	136.656	0.000
08/31/23 17:06	2104	157.633	136.533	0.000
08/31/23 17:07	2105	157.505	136.405	0.000
08/31/23 17:08	2106	157.378	136.278	0.000
08/31/23 17:09	2107	157.255	136.155	0.000
08/31/23 17:10	2108	157.127	136.027	0.000
08/31/23 17:11	2109	156.994	135.894	0.000
08/31/23 17:12	2110	156.866	135.766	0.000
08/31/23 17:13	2111	156.723	135.623	0.000
08/31/23 17:14	2112	156.584	135.484	0.000
08/31/23 17:15	2113	156.446	135.346	0.000
08/31/23 17:16	2114	156.302	135.202	0.000
08/31/23 17:17	2115	156.169	135.069	0.000
08/31/23 17:18	2116	156.046	134.946	0.000
08/31/23 17:19	2117	155.903	134.803	0.000
08/31/23 17:20	2118	155.769	134.669	0.000
08/31/23 17:21	2119	155.620	134.520	0.000
08/31/23 17:22	2120	155.471	134.371	0.000
08/31/23 17:23	2121	155.327	134.227	0.000
08/31/23 17:24	2122	155.178	134.078	0.000
08/31/23 17:25	2123	155.029	133.929	0.000
08/31/23 17:26	2124	154.880	133.780	0.000
08/31/23 17:27	2125	154.742	133.642	0.000
08/31/23 17:28	2126	154.598	133.498	0.000
08/31/23 17:29	2127	154.454	133.354	0.000
08/31/23 17:30	2128	154.316	133.216	0.000
08/31/23 17:31	2129	154.182	133.082	0.000
08/31/23 17:32	2130	154.033	132.933	0.000
08/31/23 17:33	2131	153.884	132.784	0.000
08/31/23 17:34	2132	153.740	132.640	0.000
08/31/23 17:35	2133	153.591	132.491	0.000
08/31/23 17:36	2134	153.442	132.342	0.000
08/31/23 17:37	2135	153.288	132.188	0.000
08/31/23 17:38	2136	153.149	132.049	0.000
08/31/23 17:39	2137	153.000	131.900	0.000
08/31/23 17:40	2138	152.862	131.762	0.000
08/31/23 17:41	2139	152.723	131.623	0.000
09/01/23 07:31	2968	70.030	48.930	0.000
09/01/23 10:08	3125	61.575	40.475	0.000
09/01/23 14:39	3396	52.833	31.733	0.000

Well Name:	11800 Road 500D Well 2
Test Date:	8/20/2023
Static Water Level:	16.85
Maximum Drawdown:	67.30
80% of Drawdown:	53.84
Recovery Water Level Target:	30.31
Recovery Water Level:	23.31

Date/Time (PST)	Elapsed Time (min)	Depth to Water (feet RP)	Drawdown (feet)	Flow Rate (gpm)
08/20/23 08:21	0	22.09	5.24	0.41
08/20/23 08:22	1	22.35	5.50	0.55
08/20/23 08:23	2	22.62	5.77	0.45
08/20/23 08:24	3	22.88	6.03	0.44
08/20/23 08:25	4	23.13	6.28	0.46
08/20/23 08:26	5	23.39	6.54	0.45
08/20/23 08:27	6	23.63	6.78	0.45
08/20/23 08:28	7	23.88	7.03	0.45
08/20/23 08:29	8	24.11	7.26	0.45
08/20/23 08:30	9	24.35	7.50	0.45
08/20/23 08:31	10	24.59	7.74	0.45
08/20/23 08:32	11	24.82	7.97	0.45
08/20/23 08:33	12	25.05	8.20	0.45
08/20/23 08:34	13	25.27	8.42	0.45
08/20/23 08:35	14	25.49	8.64	0.45
08/20/23 08:36	15	25.72	8.87	0.45
08/20/23 08:37	16	25.92	9.07	0.45
08/20/23 08:38	17	26.11	9.26	0.45
08/20/23 08:39	18	26.31	9.46	0.45
08/20/23 08:40	19	26.50	9.65	0.45
08/20/23 08:41	20	26.71	9.86	0.45
08/20/23 08:42	21	26.90	10.05	0.45
08/20/23 08:43	22	27.09	10.24	0.45
08/20/23 08:44	23	27.27	10.42	0.45
08/20/23 08:45	24	27.46	10.61	0.45
08/20/23 08:46	25	27.65	10.80	0.46
08/20/23 08:47	26	27.84	10.99	0.45
08/20/23 08:48	27	28.10	11.25	0.51
08/20/23 08:49	28	28.24	11.39	0.45
08/20/23 08:50	29	28.40	11.55	0.45
08/20/23 08:51	30	28.56	11.71	0.45
08/20/23 08:52	31	28.74	11.89	0.45
08/20/23 08:53	32	28.91	12.06	0.45
08/20/23 08:54	33	29.12	12.27	0.46
08/20/23 08:55	34	29.28	12.43	0.45
08/20/23 08:56	35	29.43	12.58	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 08:57	36	29.59	12.74	0.45
08/20/23 08:58	37	29.74	12.89	0.45
08/20/23 08:59	38	29.90	13.05	0.45
08/20/23 09:00	39	30.05	13.20	0.45
08/20/23 09:01	40	30.19	13.34	0.45
08/20/23 09:02	41	30.33	13.48	0.45
08/20/23 09:03	42	30.48	13.63	0.45
08/20/23 09:04	43	30.62	13.77	0.45
08/20/23 09:05	44	30.77	13.92	0.45
08/20/23 09:06	45	30.92	14.07	0.45
08/20/23 09:07	46	31.05	14.20	0.45
08/20/23 09:08	47	31.21	14.36	0.45
08/20/23 09:09	48	31.35	14.50	0.44
08/20/23 09:10	49	31.47	14.62	0.48
08/20/23 09:11	50	31.64	14.79	0.45
08/20/23 09:12	51	31.74	14.89	0.45
08/20/23 09:13	52	31.87	15.02	0.45
08/20/23 09:14	53	32.00	15.15	0.45
08/20/23 09:15	54	32.13	15.28	0.45
08/20/23 09:16	55	32.25	15.40	0.44
08/20/23 09:17	56	32.42	15.57	0.45
08/20/23 09:18	57	32.54	15.69	0.45
08/20/23 09:19	58	32.65	15.80	0.45
08/20/23 09:20	59	32.77	15.92	0.45
08/20/23 09:21	60	32.87	16.02	0.45
08/20/23 09:22	61	33.00	16.15	0.45
08/20/23 09:23	62	33.12	16.27	0.45
08/20/23 09:24	63	33.24	16.39	0.45
08/20/23 09:25	64	33.35	16.50	0.45
08/20/23 09:26	65	33.46	16.61	0.45
08/20/23 09:27	66	33.60	16.75	0.46
08/20/23 09:28	67	33.72	16.87	0.45
08/20/23 09:29	68	33.84	16.99	0.45
08/20/23 09:30	69	33.95	17.10	0.45
08/20/23 09:31	70	34.05	17.20	0.45
08/20/23 09:32	71	34.15	17.30	0.45
08/20/23 09:33	72	34.26	17.41	0.45
08/20/23 09:34	73	34.36	17.51	0.45
08/20/23 09:35	74	34.46	17.61	0.45
08/20/23 09:36	75	34.57	17.72	0.45
08/20/23 09:37	76	34.68	17.83	0.45
08/20/23 09:38	77	34.78	17.93	0.45
08/20/23 09:39	78	34.88	18.03	0.45
08/20/23 09:40	79	34.98	18.13	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 09:41	80	35.09	18.24	0.45
08/20/23 09:42	81	35.19	18.34	0.45
08/20/23 09:43	82	35.29	18.44	0.45
08/20/23 09:44	83	35.38	18.53	0.45
08/20/23 09:45	84	35.48	18.63	0.46
08/20/23 09:46	85	35.59	18.74	0.45
08/20/23 09:47	86	35.69	18.84	0.45
08/20/23 09:48	87	35.80	18.95	0.45
08/20/23 09:49	88	35.90	19.05	0.45
08/20/23 09:50	89	35.99	19.14	0.45
08/20/23 09:51	90	36.08	19.23	0.45
08/20/23 09:52	91	36.22	19.37	0.45
08/20/23 09:53	92	36.33	19.48	0.45
08/20/23 09:54	93	36.42	19.57	0.46
08/20/23 09:55	94	36.51	19.66	0.45
08/20/23 09:56	95	36.60	19.75	0.46
08/20/23 09:57	96	36.70	19.85	0.45
08/20/23 09:58	97	36.79	19.94	0.46
08/20/23 09:59	98	36.88	20.03	0.45
08/20/23 10:00	99	36.97	20.12	0.45
08/20/23 10:01	100	37.05	20.20	0.45
08/20/23 10:02	101	37.14	20.29	0.45
08/20/23 10:03	102	37.21	20.36	0.45
08/20/23 10:04	103	37.30	20.45	0.45
08/20/23 10:05	104	37.39	20.54	0.45
08/20/23 10:06	105	37.47	20.62	0.45
08/20/23 10:07	106	37.55	20.70	0.45
08/20/23 10:08	107	37.65	20.80	0.45
08/20/23 10:09	108	37.72	20.87	0.45
08/20/23 10:10	109	37.81	20.96	0.45
08/20/23 10:11	110	37.90	21.05	0.45
08/20/23 10:12	111	37.98	21.13	0.45
08/20/23 10:13	112	38.06	21.21	0.45
08/20/23 10:14	113	38.15	21.30	0.45
08/20/23 10:15	114	38.23	21.38	0.46
08/20/23 10:16	115	38.31	21.46	0.45
08/20/23 10:17	116	38.39	21.54	0.45
08/20/23 10:18	117	38.48	21.63	0.45
08/20/23 10:19	118	38.56	21.71	0.45
08/20/23 10:20	119	38.63	21.78	0.45
08/20/23 10:21	120	38.72	21.87	0.45
08/20/23 10:22	121	38.79	21.94	0.45
08/20/23 10:23	122	38.88	22.03	0.45
08/20/23 10:24	123	38.96	22.11	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 10:25	124	39.02	22.17	0.45
08/20/23 10:26	125	39.10	22.25	0.45
08/20/23 10:27	126	39.18	22.33	0.45
08/20/23 10:28	127	39.25	22.40	0.44
08/20/23 10:29	128	39.32	22.47	0.45
08/20/23 10:30	129	39.39	22.54	0.45
08/20/23 10:31	130	39.46	22.61	0.45
08/20/23 10:32	131	39.53	22.68	0.45
08/20/23 10:33	132	39.61	22.76	0.45
08/20/23 10:34	133	39.68	22.83	0.45
08/20/23 10:35	134	39.76	22.91	0.45
08/20/23 10:36	135	39.83	22.98	0.45
08/20/23 10:37	136	39.91	23.06	0.45
08/20/23 10:38	137	39.99	23.14	0.45
08/20/23 10:39	138	40.06	23.21	0.45
08/20/23 10:40	139	40.13	23.28	0.45
08/20/23 10:41	140	40.21	23.36	0.45
08/20/23 10:42	141	40.29	23.44	0.45
08/20/23 10:43	142	40.36	23.51	0.45
08/20/23 10:44	143	40.42	23.57	0.45
08/20/23 10:45	144	40.48	23.63	0.46
08/20/23 10:46	145	40.57	23.72	0.45
08/20/23 10:47	146	40.64	23.79	0.45
08/20/23 10:48	147	40.72	23.87	0.45
08/20/23 10:49	148	40.79	23.94	0.46
08/20/23 10:50	149	40.79	23.94	0.45
08/20/23 10:51	150	40.78	23.93	0.45
08/20/23 10:52	151	40.78	23.93	0.45
08/20/23 10:53	152	40.77	23.92	0.45
08/20/23 10:54	153	40.77	23.92	0.45
08/20/23 10:55	154	40.78	23.93	0.47
08/20/23 10:56	155	40.78	23.93	0.45
08/20/23 10:57	156	40.79	23.94	0.45
08/20/23 10:58	157	40.78	23.93	0.45
08/20/23 10:59	158	40.79	23.94	0.45
08/20/23 11:00	159	40.78	23.93	0.45
08/20/23 11:01	160	40.78	23.93	0.45
08/20/23 11:02	161	40.78	23.93	0.45
08/20/23 11:03	162	40.78	23.93	0.45
08/20/23 11:04	163	40.78	23.93	0.45
08/20/23 11:05	164	40.78	23.93	0.45
08/20/23 11:06	165	40.78	23.93	0.45
08/20/23 11:07	166	40.78	23.93	0.45
08/20/23 11:08	167	40.78	23.93	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 11:09	168	40.78	23.93	0.45
08/20/23 11:10	169	40.78	23.93	0.45
08/20/23 11:11	170	40.78	23.93	0.45
08/20/23 11:12	171	40.78	23.93	0.46
08/20/23 11:13	172	40.78	23.93	0.45
08/20/23 11:14	173	40.78	23.93	0.45
08/20/23 11:15	174	40.78	23.93	0.46
08/20/23 11:16	175	40.78	23.93	0.46
08/20/23 11:17	176	40.78	23.93	0.45
08/20/23 11:18	177	40.78	23.93	0.45
08/20/23 11:19	178	40.78	23.93	0.45
08/20/23 11:20	179	40.78	23.93	0.45
08/20/23 11:21	180	40.78	23.93	0.45
08/20/23 11:22	181	40.78	23.93	0.45
08/20/23 11:23	182	40.78	23.93	0.46
08/20/23 11:24	183	40.78	23.93	0.45
08/20/23 11:25	184	40.78	23.93	0.45
08/20/23 11:26	185	40.78	23.93	0.45
08/20/23 11:27	186	40.78	23.93	0.45
08/20/23 11:28	187	40.78	23.93	0.45
08/20/23 11:29	188	40.78	23.93	0.45
08/20/23 11:30	189	40.78	23.93	0.46
08/20/23 11:31	190	40.78	23.93	0.45
08/20/23 11:32	191	40.77	23.92	0.42
08/20/23 11:33	192	40.79	23.94	0.50
08/20/23 11:34	193	40.78	23.93	0.45
08/20/23 11:35	194	40.78	23.93	0.44
08/20/23 11:36	195	40.78	23.93	0.45
08/20/23 11:37	196	40.77	23.92	0.45
08/20/23 11:38	197	40.78	23.93	0.45
08/20/23 11:39	198	40.78	23.93	0.44
08/20/23 11:40	199	40.78	23.93	0.45
08/20/23 11:41	200	40.78	23.93	0.45
08/20/23 11:42	201	40.78	23.93	0.45
08/20/23 11:43	202	40.78	23.93	0.45
08/20/23 11:44	203	40.78	23.93	0.45
08/20/23 11:45	204	40.78	23.93	0.45
08/20/23 11:46	205	40.77	23.92	0.45
08/20/23 11:47	206	40.78	23.93	0.45
08/20/23 11:48	207	40.79	23.94	0.45
08/20/23 11:49	208	40.85	24.00	0.46
08/20/23 11:50	209	40.98	24.13	0.45
08/20/23 11:51	210	41.11	24.26	0.45
08/20/23 11:52	211	41.22	24.37	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 11:53	212	41.35	24.50	0.45
08/20/23 11:54	213	41.47	24.62	0.45
08/20/23 11:55	214	41.58	24.73	0.45
08/20/23 11:56	215	41.69	24.84	0.45
08/20/23 11:57	216	41.81	24.96	0.45
08/20/23 11:58	217	41.92	25.07	0.44
08/20/23 11:59	218	42.03	25.18	0.45
08/20/23 12:00	219	42.16	25.31	0.45
08/20/23 12:01	220	42.26	25.41	0.45
08/20/23 12:02	221	42.38	25.53	0.45
08/20/23 12:03	222	42.48	25.63	0.45
08/20/23 12:04	223	42.59	25.74	0.45
08/20/23 12:05	224	42.69	25.84	0.45
08/20/23 12:06	225	42.79	25.94	0.45
08/20/23 12:07	226	42.89	26.04	0.44
08/20/23 12:08	227	43.00	26.15	0.45
08/20/23 12:09	228	43.10	26.25	0.44
08/20/23 12:10	229	43.20	26.35	0.45
08/20/23 12:11	230	43.29	26.44	0.45
08/20/23 12:12	231	43.39	26.54	0.45
08/20/23 12:13	232	43.50	26.65	0.45
08/20/23 12:14	233	43.61	26.76	0.46
08/20/23 12:15	234	43.71	26.86	0.46
08/20/23 12:16	235	43.80	26.95	0.45
08/20/23 12:17	236	43.91	27.06	0.46
08/20/23 12:18	237	44.00	27.15	0.46
08/20/23 12:19	238	44.11	27.26	0.45
08/20/23 12:20	239	44.21	27.36	0.25
08/20/23 12:21	240	44.33	27.48	0.51
08/20/23 12:22	241	44.39	27.54	0.44
08/20/23 12:23	242	44.47	27.62	0.44
08/20/23 12:24	243	44.56	27.71	0.45
08/20/23 12:25	244	44.64	27.79	0.44
08/20/23 12:26	245	44.72	27.87	0.45
08/20/23 12:27	246	44.82	27.97	0.44
08/20/23 12:28	247	44.88	28.03	0.44
08/20/23 12:29	248	44.96	28.11	0.50
08/20/23 12:30	249	45.12	28.27	0.44
08/20/23 12:31	250	45.20	28.35	0.45
08/20/23 12:32	251	45.28	28.43	0.45
08/20/23 12:33	252	45.37	28.52	0.45
08/20/23 12:34	253	45.45	28.60	0.45
08/20/23 12:35	254	45.51	28.66	0.45
08/20/23 12:36	255	45.61	28.76	0.44

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 12:37	256	45.66	28.81	0.45
08/20/23 12:38	257	45.74	28.89	0.45
08/20/23 12:39	258	45.81	28.96	0.44
08/20/23 12:40	259	45.88	29.03	0.45
08/20/23 12:41	260	45.94	29.09	0.45
08/20/23 12:42	261	46.02	29.17	0.45
08/20/23 12:43	262	46.08	29.23	0.45
08/20/23 12:44	263	46.14	29.29	0.45
08/20/23 12:45	264	46.22	29.37	0.45
08/20/23 12:46	265	46.30	29.45	0.45
08/20/23 12:47	266	46.38	29.53	0.45
08/20/23 12:48	267	46.44	29.59	0.45
08/20/23 12:49	268	46.52	29.67	0.45
08/20/23 12:50	269	46.58	29.73	0.45
08/20/23 12:51	270	46.65	29.80	0.45
08/20/23 12:52	271	46.72	29.87	0.45
08/20/23 12:53	272	46.80	29.95	0.45
08/20/23 12:54	273	46.87	30.02	0.45
08/20/23 12:55	274	46.96	30.11	0.47
08/20/23 12:56	275	47.08	30.23	0.45
08/20/23 12:57	276	47.16	30.31	0.45
08/20/23 12:58	277	47.21	30.36	0.45
08/20/23 12:59	278	47.29	30.44	0.45
08/20/23 13:00	279	47.36	30.51	0.45
08/20/23 13:01	280	47.42	30.57	0.45
08/20/23 13:02	281	47.49	30.64	0.46
08/20/23 13:03	282	47.56	30.71	0.45
08/20/23 13:04	283	47.63	30.78	0.45
08/20/23 13:05	284	47.69	30.84	0.45
08/20/23 13:06	285	47.75	30.90	0.44
08/20/23 13:07	286	47.82	30.97	0.44
08/20/23 13:08	287	47.88	31.03	0.45
08/20/23 13:09	288	47.94	31.09	0.45
08/20/23 13:10	289	48.00	31.15	0.45
08/20/23 13:11	290	48.07	31.22	0.45
08/20/23 13:12	291	48.14	31.29	0.45
08/20/23 13:13	292	48.20	31.35	0.45
08/20/23 13:14	293	48.29	31.44	0.45
08/20/23 13:15	294	48.37	31.52	0.45
08/20/23 13:16	295	48.45	31.60	0.45
08/20/23 13:17	296	48.49	31.64	0.46
08/20/23 13:18	297	48.54	31.69	0.46
08/20/23 13:19	298	48.63	31.78	0.45
08/20/23 13:20	299	48.69	31.84	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 13:21	300	48.75	31.90	0.45
08/20/23 13:22	301	48.81	31.96	0.45
08/20/23 13:23	302	48.88	32.03	0.45
08/20/23 13:24	303	48.94	32.09	0.45
08/20/23 13:25	304	49.00	32.15	0.45
08/20/23 13:26	305	49.06	32.21	0.45
08/20/23 13:27	306	49.13	32.28	0.46
08/20/23 13:28	307	49.19	32.34	0.45
08/20/23 13:29	308	49.25	32.40	0.45
08/20/23 13:30	309	49.31	32.46	0.45
08/20/23 13:31	310	49.37	32.52	0.45
08/20/23 13:32	311	49.43	32.58	0.45
08/20/23 13:33	312	49.49	32.64	0.45
08/20/23 13:34	313	49.55	32.70	0.45
08/20/23 13:35	314	49.61	32.76	0.45
08/20/23 13:36	315	49.68	32.83	0.45
08/20/23 13:37	316	49.73	32.88	0.45
08/20/23 13:38	317	49.78	32.93	0.45
08/20/23 13:39	318	49.85	33.00	0.45
08/20/23 13:40	319	49.92	33.07	0.45
08/20/23 13:41	320	49.97	33.12	0.44
08/20/23 13:42	321	49.99	33.14	0.45
08/20/23 13:43	322	50.06	33.21	0.44
08/20/23 13:44	323	50.11	33.26	0.43
08/20/23 13:45	324	50.16	33.31	0.53
08/20/23 13:46	325	50.24	33.39	0.45
08/20/23 13:47	326	50.29	33.44	0.45
08/20/23 13:48	327	50.34	33.49	0.45
08/20/23 13:49	328	50.41	33.56	0.45
08/20/23 13:50	329	50.46	33.61	0.46
08/20/23 13:51	330	50.52	33.67	0.45
08/20/23 13:52	331	50.56	33.71	0.46
08/20/23 13:53	332	50.63	33.78	0.46
08/20/23 13:54	333	50.70	33.85	0.47
08/20/23 13:55	334	50.79	33.94	0.45
08/20/23 13:56	335	50.84	33.99	0.45
08/20/23 13:57	336	50.90	34.05	0.44
08/20/23 13:58	337	50.96	34.11	0.45
08/20/23 13:59	338	51.02	34.17	0.45
08/20/23 14:00	339	51.07	34.22	0.45
08/20/23 14:01	340	51.14	34.29	0.44
08/20/23 14:02	341	51.20	34.35	0.45
08/20/23 14:03	342	51.24	34.39	0.45
08/20/23 14:04	343	51.30	34.45	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 14:05	344	51.35	34.50	0.44
08/20/23 14:06	345	51.41	34.56	0.45
08/20/23 14:07	346	51.46	34.61	0.45
08/20/23 14:08	347	51.50	34.65	0.45
08/20/23 14:09	348	51.57	34.72	0.45
08/20/23 14:10	349	51.62	34.77	0.45
08/20/23 14:11	350	51.69	34.84	0.45
08/20/23 14:12	351	51.75	34.90	0.45
08/20/23 14:13	352	51.81	34.96	0.45
08/20/23 14:14	353	51.85	35.00	0.46
08/20/23 14:15	354	51.92	35.07	0.45
08/20/23 14:16	355	51.99	35.14	0.45
08/20/23 14:17	356	52.04	35.19	0.46
08/20/23 14:18	357	52.11	35.26	0.45
08/20/23 14:19	358	52.17	35.32	0.45
08/20/23 14:20	359	52.22	35.37	0.45
08/20/23 14:21	360	52.29	35.44	0.45
08/20/23 14:22	361	52.35	35.50	0.45
08/20/23 14:23	362	52.40	35.55	0.45
08/20/23 14:24	363	52.46	35.61	0.45
08/20/23 14:25	364	52.52	35.67	0.45
08/20/23 14:26	365	52.56	35.71	0.38
08/20/23 14:27	366	52.75	35.90	0.44
08/20/23 14:28	367	52.73	35.88	0.38
08/20/23 14:29	368	52.78	35.93	0.43
08/20/23 14:30	369	53.17	36.32	0.44
08/20/23 14:31	370	53.16	36.31	0.45
08/20/23 14:32	371	53.17	36.32	0.38
08/20/23 14:33	372	53.21	36.36	0.44
08/20/23 14:34	373	53.19	36.34	0.35
08/20/23 14:35	374	53.19	36.34	0.42
08/20/23 14:36	375	53.23	36.38	0.50
08/20/23 14:37	376	53.34	36.49	0.46
08/20/23 14:38	377	53.40	36.55	0.45
08/20/23 14:39	378	53.45	36.60	0.45
08/20/23 14:40	379	53.50	36.65	0.45
08/20/23 14:41	380	53.55	36.70	0.46
08/20/23 14:42	381	53.61	36.76	0.46
08/20/23 14:43	382	53.67	36.82	0.45
08/20/23 14:44	383	53.72	36.87	0.45
08/20/23 14:45	384	53.77	36.92	0.45
08/20/23 14:46	385	53.78	36.93	0.44
08/20/23 14:47	386	53.82	36.97	0.45
08/20/23 14:48	387	53.85	37.00	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 14:49	388	53.90	37.05	0.45
08/20/23 14:50	389	53.92	37.07	0.41
08/20/23 14:51	390	53.92	37.07	0.41
08/20/23 14:52	391	53.87	37.02	0.47
08/20/23 14:53	392	54.00	37.15	0.46
08/20/23 14:54	393	54.06	37.21	0.46
08/20/23 14:55	394	54.09	37.24	0.46
08/20/23 14:56	395	54.15	37.30	0.45
08/20/23 14:57	396	54.19	37.34	0.45
08/20/23 14:58	397	54.24	37.39	0.45
08/20/23 14:59	398	54.25	37.40	0.39
08/20/23 15:00	399	54.28	37.43	0.44
08/20/23 15:01	400	54.33	37.48	0.45
08/20/23 15:02	401	54.40	37.55	0.45
08/20/23 15:03	402	54.44	37.59	0.45
08/20/23 15:04	403	54.50	37.65	0.45
08/20/23 15:05	404	54.52	37.67	0.44
08/20/23 15:06	405	54.59	37.74	0.43
08/20/23 15:07	406	54.60	37.75	0.44
08/20/23 15:08	407	54.68	37.83	0.48
08/20/23 15:09	408	54.80	37.95	0.46
08/20/23 15:10	409	54.88	38.03	0.45
08/20/23 15:11	410	54.94	38.09	0.45
08/20/23 15:12	411	54.97	38.12	0.46
08/20/23 15:13	412	55.05	38.20	0.45
08/20/23 15:14	413	55.08	38.23	0.46
08/20/23 15:15	414	55.16	38.31	0.46
08/20/23 15:16	415	55.24	38.39	0.45
08/20/23 15:17	416	55.29	38.44	0.45
08/20/23 15:18	417	55.33	38.48	0.45
08/20/23 15:19	418	55.37	38.52	0.44
08/20/23 15:20	419	55.41	38.56	0.45
08/20/23 15:21	420	55.45	38.60	0.44
08/20/23 15:22	421	55.49	38.64	0.43
08/20/23 15:23	422	55.51	38.66	0.44
08/20/23 15:24	423	55.54	38.69	0.44
08/20/23 15:25	424	55.58	38.73	0.44
08/20/23 15:26	425	55.63	38.78	0.44
08/20/23 15:27	426	55.67	38.82	0.44
08/20/23 15:28	427	55.72	38.87	0.44
08/20/23 15:29	428	55.77	38.92	0.45
08/20/23 15:30	429	55.82	38.97	0.45
08/20/23 15:31	430	55.87	39.02	0.45
08/20/23 15:32	431	55.92	39.07	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 15:33	432	55.97	39.12	0.44
08/20/23 15:34	433	56.02	39.17	0.45
08/20/23 15:35	434	56.07	39.22	0.45
08/20/23 15:36	435	56.13	39.28	0.45
08/20/23 15:37	436	56.17	39.32	0.45
08/20/23 15:38	437	56.23	39.38	0.44
08/20/23 15:39	438	56.25	39.40	0.45
08/20/23 15:40	439	56.30	39.45	0.45
08/20/23 15:41	440	56.36	39.51	0.45
08/20/23 15:42	441	56.41	39.56	0.45
08/20/23 15:43	442	56.47	39.62	0.45
08/20/23 15:44	443	56.53	39.68	0.45
08/20/23 15:45	444	56.57	39.72	0.44
08/20/23 15:46	445	56.61	39.76	0.45
08/20/23 15:47	446	56.66	39.81	0.45
08/20/23 15:48	447	56.72	39.87	0.45
08/20/23 15:49	448	56.76	39.91	0.45
08/20/23 15:50	449	56.82	39.97	0.45
08/20/23 15:51	450	56.87	40.02	0.44
08/20/23 15:52	451	56.92	40.07	0.45
08/20/23 15:53	452	56.98	40.13	0.45
08/20/23 15:54	453	57.02	40.17	0.45
08/20/23 15:55	454	57.08	40.23	0.44
08/20/23 15:56	455	57.11	40.26	0.44
08/20/23 15:57	456	57.17	40.32	0.44
08/20/23 15:58	457	57.21	40.36	0.44
08/20/23 15:59	458	57.25	40.40	0.44
08/20/23 16:00	459	57.30	40.45	0.44
08/20/23 16:01	460	57.34	40.49	0.44
08/20/23 16:02	461	57.39	40.54	0.44
08/20/23 16:03	462	57.43	40.58	0.44
08/20/23 16:04	463	57.47	40.62	0.44
08/20/23 16:05	464	57.51	40.66	0.44
08/20/23 16:06	465	57.56	40.71	0.45
08/20/23 16:07	466	57.60	40.75	0.44
08/20/23 16:08	467	57.65	40.80	0.45
08/20/23 16:09	468	57.71	40.86	0.45
08/20/23 16:10	469	57.81	40.96	0.45
08/20/23 16:11	470	57.96	41.11	0.45
08/20/23 16:12	471	58.01	41.16	0.45
08/20/23 16:13	472	58.08	41.23	0.45
08/20/23 16:14	473	58.11	41.26	0.45
08/20/23 16:15	474	58.14	41.29	0.45
08/20/23 16:16	475	58.19	41.34	0.46

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 16:17	476	58.23	41.38	0.46
08/20/23 16:18	477	58.31	41.46	0.45
08/20/23 16:19	478	58.51	41.66	0.45
08/20/23 16:20	479	58.52	41.67	0.45
08/20/23 16:21	480	58.54	41.69	0.46
08/20/23 16:22	481	58.59	41.74	0.45
08/20/23 16:23	482	58.70	41.85	0.45
08/20/23 16:24	483	58.72	41.87	0.45
08/20/23 16:25	484	58.79	41.94	0.45
08/20/23 16:26	485	58.79	41.94	0.46
08/20/23 16:27	486	58.94	42.09	0.44
08/20/23 16:28	487	59.04	42.19	0.44
08/20/23 16:29	488	59.09	42.24	0.44
08/20/23 16:30	489	59.13	42.28	0.44
08/20/23 16:31	490	59.17	42.32	0.44
08/20/23 16:32	491	59.22	42.37	0.44
08/20/23 16:33	492	59.22	42.37	0.45
08/20/23 16:34	493	59.26	42.41	0.45
08/20/23 16:35	494	59.31	42.46	0.45
08/20/23 16:36	495	59.34	42.49	0.45
08/20/23 16:37	496	59.39	42.54	0.45
08/20/23 16:38	497	59.45	42.60	0.43
08/20/23 16:39	498	59.66	42.81	0.44
08/20/23 16:40	499	59.72	42.87	0.44
08/20/23 16:41	500	59.73	42.88	0.44
08/20/23 16:42	501	59.78	42.93	0.44
08/20/23 16:43	502	59.82	42.97	0.44
08/20/23 16:44	503	59.81	42.96	0.44
08/20/23 16:45	504	59.94	43.09	0.45
08/20/23 16:46	505	59.99	43.14	0.45
08/20/23 16:47	506	60.04	43.19	0.49
08/20/23 16:48	507	60.23	43.38	0.45
08/20/23 16:49	508	60.32	43.47	0.45
08/20/23 16:50	509	60.36	43.51	0.45
08/20/23 16:51	510	60.41	43.56	0.45
08/20/23 16:52	511	60.44	43.59	0.45
08/20/23 16:53	512	60.48	43.63	0.45
08/20/23 16:54	513	60.51	43.66	0.45
08/20/23 16:55	514	60.56	43.71	0.45
08/20/23 16:56	515	60.59	43.74	0.45
08/20/23 16:57	516	60.62	43.77	0.45
08/20/23 16:58	517	60.66	43.81	0.45
08/20/23 16:59	518	60.69	43.84	0.45
08/20/23 17:00	519	60.73	43.88	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 17:01	520	60.76	43.91	0.45
08/20/23 17:02	521	60.80	43.95	0.45
08/20/23 17:03	522	60.84	43.99	0.45
08/20/23 17:04	523	60.83	43.98	0.45
08/20/23 17:05	524	60.83	43.98	0.32
08/20/23 17:06	525	60.74	43.89	0.32
08/20/23 17:07	526	60.66	43.81	0.32
08/20/23 17:08	527	60.62	43.77	0.44
08/20/23 17:09	528	60.66	43.81	0.44
08/20/23 17:10	529	60.69	43.84	0.44
08/20/23 17:11	530	60.72	43.87	0.46
08/20/23 17:12	531	60.79	43.94	0.45
08/20/23 17:13	532	60.81	43.96	0.45
08/20/23 17:14	533	60.87	44.02	0.45
08/20/23 17:15	534	60.93	44.08	0.44
08/20/23 17:16	535	60.98	44.13	0.45
08/20/23 17:17	536	61.02	44.17	0.45
08/20/23 17:18	537	61.08	44.23	0.46
08/20/23 17:19	538	61.12	44.27	0.46
08/20/23 17:20	539	61.16	44.31	0.46
08/20/23 17:21	540	61.33	44.48	0.45
08/20/23 17:22	541	61.38	44.53	0.45
08/20/23 17:23	542	61.43	44.58	0.45
08/20/23 17:24	543	61.48	44.63	0.45
08/20/23 17:25	544	61.54	44.69	0.45
08/20/23 17:26	545	61.59	44.74	0.45
08/20/23 17:27	546	61.64	44.79	0.45
08/20/23 17:28	547	61.69	44.84	0.45
08/20/23 17:29	548	61.74	44.89	0.45
08/20/23 17:30	549	61.78	44.93	0.45
08/20/23 17:31	550	61.83	44.98	0.45
08/20/23 17:32	551	61.91	45.06	0.45
08/20/23 17:33	552	61.95	45.10	0.45
08/20/23 17:34	553	62.01	45.16	0.43
08/20/23 17:35	554	62.05	45.20	0.45
08/20/23 17:36	555	62.12	45.27	0.45
08/20/23 17:37	556	62.19	45.34	0.45
08/20/23 17:38	557	62.24	45.39	0.45
08/20/23 17:39	558	62.29	45.44	0.45
08/20/23 17:40	559	62.34	45.49	0.45
08/20/23 17:41	560	62.38	45.53	0.45
08/20/23 17:42	561	62.44	45.59	0.45
08/20/23 17:43	562	62.50	45.65	0.45
08/20/23 17:44	563	62.56	45.71	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 17:45	564	62.61	45.76	0.45
08/20/23 17:46	565	62.67	45.82	0.45
08/20/23 17:47	566	62.72	45.87	0.45
08/20/23 17:48	567	62.78	45.93	0.45
08/20/23 17:49	568	62.83	45.98	0.45
08/20/23 17:50	569	62.88	46.03	0.45
08/20/23 17:51	570	62.92	46.07	0.45
08/20/23 17:52	571	62.98	46.13	0.45
08/20/23 17:53	572	63.02	46.17	0.45
08/20/23 17:54	573	63.08	46.23	0.45
08/20/23 17:55	574	63.10	46.25	0.45
08/20/23 17:56	575	63.15	46.30	0.46
08/20/23 17:57	576	63.24	46.39	0.46
08/20/23 17:58	577	63.30	46.45	0.46
08/20/23 17:59	578	63.35	46.50	0.45
08/20/23 18:00	579	63.41	46.56	0.45
08/20/23 18:01	580	63.46	46.61	0.45
08/20/23 18:02	581	63.53	46.68	0.45
08/20/23 18:03	582	63.57	46.72	0.45
08/20/23 18:04	583	63.62	46.77	0.45
08/20/23 18:05	584	63.67	46.82	0.45
08/20/23 18:06	585	63.70	46.85	0.46
08/20/23 18:07	586	63.78	46.93	0.46
08/20/23 18:08	587	63.92	47.07	0.45
08/20/23 18:09	588	63.96	47.11	0.45
08/20/23 18:10	589	64.01	47.16	0.45
08/20/23 18:11	590	64.05	47.20	0.46
08/20/23 18:12	591	64.10	47.25	0.46
08/20/23 18:13	592	64.16	47.31	0.46
08/20/23 18:14	593	64.21	47.36	0.46
08/20/23 18:15	594	64.27	47.42	0.46
08/20/23 18:16	595	64.32	47.47	0.45
08/20/23 18:17	596	64.40	47.55	0.45
08/20/23 18:18	597	64.48	47.63	0.46
08/20/23 18:19	598	64.55	47.70	0.45
08/20/23 18:20	599	64.63	47.78	0.45
08/20/23 18:21	600	64.68	47.83	0.45
08/20/23 18:22	601	64.71	47.86	0.45
08/20/23 18:23	602	64.74	47.89	0.37
08/20/23 18:24	603	64.81	47.96	0.45
08/20/23 18:25	604	64.86	48.01	0.46
08/20/23 18:26	605	64.90	48.05	0.45
08/20/23 18:27	606	64.93	48.08	0.45
08/20/23 18:28	607	64.98	48.13	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 18:29	608	65.04	48.19	0.45
08/20/23 18:30	609	65.08	48.23	0.45
08/20/23 18:31	610	65.13	48.28	0.45
08/20/23 18:32	611	65.19	48.34	0.45
08/20/23 18:33	613	65.26	48.41	0.46
08/20/23 18:34	614	65.31	48.46	0.45
08/20/23 18:35	615	65.35	48.50	0.46
08/20/23 18:36	616	65.41	48.56	0.45
08/20/23 18:37	617	65.46	48.61	0.45
08/20/23 18:38	618	65.50	48.65	0.45
08/20/23 18:39	619	65.57	48.72	0.45
08/20/23 18:40	620	65.60	48.75	0.45
08/20/23 18:41	621	65.64	48.79	0.45
08/20/23 18:42	622	65.68	48.83	0.45
08/20/23 18:43	623	65.73	48.88	0.45
08/20/23 18:44	624	65.77	48.92	0.45
08/20/23 18:45	625	65.81	48.96	0.45
08/20/23 18:46	626	65.85	49.00	0.45
08/20/23 18:47	627	65.89	49.04	0.45
08/20/23 18:48	628	65.94	49.09	0.45
08/20/23 18:49	629	65.98	49.13	0.45
08/20/23 18:50	630	66.03	49.18	0.46
08/20/23 18:51	631	66.09	49.24	0.45
08/20/23 18:52	632	66.12	49.27	0.45
08/20/23 18:53	633	66.16	49.31	0.45
08/20/23 18:54	634	66.19	49.34	0.45
08/20/23 18:55	635	66.24	49.39	0.45
08/20/23 18:56	636	66.27	49.42	0.45
08/20/23 18:57	637	66.31	49.46	0.45
08/20/23 18:58	638	66.35	49.50	0.45
08/20/23 18:59	639	66.39	49.54	0.45
08/20/23 19:00	640	66.43	49.58	0.45
08/20/23 19:01	641	66.46	49.61	0.45
08/20/23 19:02	642	66.44	49.59	0.45
08/20/23 19:08	648	66.79	49.94	0.45
08/20/23 19:09	649	66.83	49.98	0.45
08/20/23 19:10	650	66.88	50.03	0.45
08/20/23 19:11	651	66.92	50.07	0.45
08/20/23 19:12	652	66.97	50.12	0.45
08/20/23 19:13	653	67.03	50.18	0.45
08/20/23 19:14	654	67.07	50.22	0.45
08/20/23 19:15	655	67.11	50.26	0.46
08/20/23 19:16	656	67.16	50.31	0.46
08/20/23 19:17	657	67.19	50.34	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 19:18	658	67.27	50.42	0.45
08/20/23 19:19	659	67.31	50.46	0.45
08/20/23 19:20	660	67.36	50.51	0.45
08/20/23 19:21	661	67.39	50.54	0.45
08/20/23 19:22	662	67.43	50.58	0.45
08/20/23 19:23	663	67.48	50.63	0.45
08/20/23 19:24	664	67.52	50.67	0.45
08/20/23 19:25	665	67.56	50.71	0.45
08/20/23 19:26	666	67.60	50.75	0.45
08/20/23 19:27	667	67.63	50.78	0.45
08/20/23 19:28	668	67.67	50.82	0.45
08/20/23 19:29	669	67.71	50.86	0.45
08/20/23 19:30	670	67.76	50.91	0.45
08/20/23 19:31	671	67.81	50.96	0.45
08/20/23 19:32	672	67.84	50.99	0.45
08/20/23 19:33	673	67.89	51.04	0.45
08/20/23 19:34	674	67.95	51.10	0.45
08/20/23 19:35	675	67.98	51.13	0.45
08/20/23 19:36	676	68.02	51.17	0.44
08/20/23 19:37	677	68.06	51.21	0.45
08/20/23 19:38	678	68.09	51.24	0.45
08/20/23 19:39	679	68.15	51.30	0.45
08/20/23 19:40	680	68.18	51.33	0.45
08/20/23 19:41	681	68.23	51.38	0.45
08/20/23 19:42	682	68.27	51.42	0.45
08/20/23 19:43	683	68.29	51.44	0.46
08/20/23 19:44	684	68.36	51.51	0.45
08/20/23 19:45	685	68.41	51.56	0.45
08/20/23 19:46	686	68.45	51.60	0.46
08/20/23 19:47	687	68.50	51.65	0.46
08/20/23 19:48	688	68.55	51.70	0.46
08/20/23 19:49	689	68.60	51.75	0.45
08/20/23 19:50	690	68.64	51.79	0.45
08/20/23 19:51	691	68.69	51.84	0.45
08/20/23 19:52	692	68.72	51.87	0.46
08/20/23 19:53	693	68.81	51.96	0.45
08/20/23 19:54	694	68.84	51.99	0.45
08/20/23 19:55	695	68.87	52.02	0.45
08/20/23 19:56	696	68.91	52.06	0.45
08/20/23 19:57	697	68.94	52.09	0.45
08/20/23 19:58	698	68.97	52.12	0.45
08/20/23 19:59	699	69.00	52.15	0.46
08/20/23 20:00	700	69.04	52.19	0.45
08/20/23 20:01	701	69.08	52.23	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 20:02	702	69.11	52.26	0.46
08/20/23 20:03	703	69.14	52.29	0.46
08/20/23 20:04	704	69.18	52.33	0.46
08/20/23 20:05	705	69.24	52.39	0.45
08/20/23 20:06	706	69.28	52.43	0.45
08/20/23 20:07	707	69.32	52.47	0.45
08/20/23 20:08	708	69.36	52.51	0.45
08/20/23 20:09	709	69.39	52.54	0.45
08/20/23 20:10	710	69.41	52.56	0.46
08/20/23 20:11	711	69.47	52.62	0.45
08/20/23 20:12	712	69.51	52.66	0.45
08/20/23 20:13	713	69.56	52.71	0.46
08/20/23 20:14	714	69.61	52.76	0.45
08/20/23 20:15	715	69.63	52.78	0.46
08/20/23 20:16	716	69.68	52.83	0.45
08/20/23 20:17	717	69.70	52.85	0.46
08/20/23 20:18	718	69.77	52.92	0.45
08/20/23 20:19	719	69.80	52.95	0.45
08/20/23 20:20	720	69.84	52.99	0.45
08/20/23 20:21	721	69.87	53.02	0.45
08/20/23 20:22	722	69.90	53.05	0.45
08/20/23 20:23	723	69.94	53.09	0.45
08/20/23 20:24	724	70.03	53.18	0.44
08/20/23 20:25	725	70.04	53.19	0.44
08/20/23 20:26	726	70.06	53.21	0.44
08/20/23 20:27	727	70.08	53.23	0.44
08/20/23 20:28	728	70.11	53.26	0.44
08/20/23 20:29	729	70.14	53.29	0.44
08/20/23 20:30	730	70.16	53.31	0.44
08/20/23 20:31	731	70.19	53.34	0.44
08/20/23 20:32	732	70.21	53.36	0.44
08/20/23 20:33	733	70.25	53.40	0.44
08/20/23 20:34	734	70.28	53.43	0.44
08/20/23 20:35	735	70.30	53.45	0.44
08/20/23 20:36	736	70.31	53.46	0.45
08/20/23 20:37	737	70.34	53.49	0.45
08/20/23 20:38	738	70.37	53.52	0.45
08/20/23 20:39	739	70.40	53.55	0.45
08/20/23 20:40	740	70.43	53.58	0.45
08/20/23 20:41	741	70.46	53.61	0.45
08/20/23 20:42	742	70.49	53.64	0.45
08/20/23 20:43	743	70.52	53.67	0.45
08/20/23 20:44	744	70.56	53.71	0.45
08/20/23 20:45	745	70.60	53.75	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 20:46	746	70.64	53.79	0.45
08/20/23 20:47	747	70.67	53.82	0.45
08/20/23 20:48	748	70.70	53.85	0.45
08/20/23 20:49	749	70.73	53.88	0.45
08/20/23 20:50	750	70.77	53.92	0.45
08/20/23 20:51	751	70.81	53.96	0.45
08/20/23 20:52	752	70.84	53.99	0.45
08/20/23 20:53	753	70.87	54.02	0.45
08/20/23 20:54	754	70.90	54.05	0.45
08/20/23 20:55	755	70.93	54.08	0.45
08/20/23 20:56	756	70.97	54.12	0.45
08/20/23 20:57	757	71.00	54.15	0.45
08/20/23 20:58	758	71.03	54.18	0.45
08/20/23 20:59	759	71.07	54.22	0.45
08/20/23 21:00	760	71.11	54.26	0.45
08/20/23 21:01	761	71.16	54.31	0.45
08/20/23 21:02	762	71.19	54.34	0.45
08/20/23 21:03	763	71.23	54.38	0.45
08/20/23 21:04	764	71.27	54.42	0.46
08/20/23 21:05	765	71.32	54.47	0.46
08/20/23 21:06	766	71.35	54.50	0.45
08/20/23 21:07	767	71.39	54.54	0.46
08/20/23 21:08	768	71.44	54.59	0.46
08/20/23 21:09	769	71.49	54.64	0.46
08/20/23 21:10	770	71.52	54.67	0.46
08/20/23 21:11	771	71.57	54.72	0.46
08/20/23 21:12	772	71.60	54.75	0.45
08/20/23 21:13	773	71.63	54.78	0.46
08/20/23 21:14	774	71.67	54.82	0.46
08/20/23 21:15	775	71.70	54.85	0.46
08/20/23 21:16	776	71.74	54.89	0.45
08/20/23 21:17	777	71.77	54.92	0.46
08/20/23 21:18	778	71.84	54.99	0.45
08/20/23 21:19	779	71.87	55.02	0.45
08/20/23 21:20	780	71.89	55.04	0.45
08/20/23 21:21	781	71.94	55.09	0.45
08/20/23 21:22	782	71.97	55.12	0.45
08/20/23 21:23	783	72.01	55.16	0.45
08/20/23 21:24	784	72.04	55.19	0.45
08/20/23 21:25	785	72.08	55.23	0.45
08/20/23 21:26	786	72.10	55.25	0.46
08/20/23 21:27	787	72.13	55.28	0.45
08/20/23 21:28	788	72.17	55.32	0.45
08/20/23 21:29	789	72.20	55.35	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 21:30	790	72.23	55.38	0.45
08/20/23 21:31	791	72.27	55.42	0.45
08/20/23 21:32	792	72.29	55.44	0.45
08/20/23 21:33	793	72.33	55.48	0.45
08/20/23 21:34	794	72.37	55.52	0.45
08/20/23 21:35	795	72.40	55.55	0.45
08/20/23 21:36	796	72.44	55.59	0.45
08/20/23 21:37	797	72.48	55.63	0.45
08/20/23 21:38	798	72.51	55.66	0.45
08/20/23 21:39	799	72.55	55.70	0.46
08/20/23 21:40	800	72.58	55.73	0.45
08/20/23 21:41	801	72.61	55.76	0.45
08/20/23 21:42	802	72.64	55.79	0.46
08/20/23 21:43	803	72.68	55.83	0.46
08/20/23 21:44	804	72.82	55.97	0.45
08/20/23 21:45	805	73.03	56.18	0.45
08/20/23 21:46	806	73.15	56.30	0.46
08/20/23 21:47	807	73.21	56.36	0.46
08/20/23 21:48	808	73.25	56.40	0.45
08/20/23 21:49	809	73.31	56.46	0.45
08/20/23 21:50	810	73.39	56.54	0.45
08/20/23 21:51	811	73.43	56.58	0.46
08/20/23 21:52	812	73.48	56.63	0.46
08/20/23 21:53	813	73.50	56.65	0.46
08/20/23 21:54	814	73.51	56.66	0.46
08/20/23 21:55	815	73.54	56.69	0.46
08/20/23 21:56	816	73.86	57.01	0.50
08/20/23 21:57	817	74.09	57.24	0.46
08/20/23 21:58	818	74.20	57.35	0.45
08/20/23 21:59	819	74.25	57.40	0.44
08/20/23 22:00	820	74.25	57.40	0.44
08/20/23 22:01	821	74.25	57.40	0.44
08/20/23 22:02	822	74.25	57.40	0.44
08/20/23 22:03	823	74.26	57.41	0.45
08/20/23 22:04	824	74.27	57.42	0.45
08/20/23 22:05	825	74.27	57.42	0.45
08/20/23 22:06	826	74.28	57.43	0.45
08/20/23 22:07	827	74.29	57.44	0.45
08/20/23 22:08	828	74.29	57.44	0.45
08/20/23 22:09	829	74.31	57.46	0.45
08/20/23 22:10	830	74.32	57.47	0.45
08/20/23 22:11	831	74.33	57.48	0.44
08/20/23 22:12	832	74.35	57.50	0.45
08/20/23 22:13	833	74.35	57.50	0.44

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 22:14	834	74.37	57.52	0.44
08/20/23 22:15	835	74.36	57.51	0.45
08/20/23 22:16	836	74.37	57.52	0.44
08/20/23 22:17	837	74.37	57.52	0.45
08/20/23 22:18	838	74.38	57.53	0.45
08/20/23 22:19	839	74.40	57.55	0.44
08/20/23 22:20	840	74.41	57.56	0.44
08/20/23 22:21	841	74.42	57.57	0.45
08/20/23 22:22	842	74.43	57.58	0.44
08/20/23 22:23	843	74.44	57.59	0.45
08/20/23 22:24	844	74.45	57.60	0.45
08/20/23 22:25	845	74.46	57.61	0.45
08/20/23 22:26	846	74.49	57.64	0.45
08/20/23 22:27	847	74.52	57.67	0.45
08/20/23 22:28	848	74.54	57.69	0.45
08/20/23 22:29	849	74.55	57.70	0.45
08/20/23 22:30	850	74.58	57.73	0.45
08/20/23 22:31	851	74.60	57.75	0.45
08/20/23 22:32	852	74.62	57.77	0.45
08/20/23 22:33	853	74.64	57.79	0.45
08/20/23 22:34	854	74.67	57.82	0.45
08/20/23 22:35	855	74.69	57.84	0.45
08/20/23 22:36	856	74.72	57.87	0.45
08/20/23 22:37	857	74.74	57.89	0.45
08/20/23 22:38	858	74.75	57.90	0.45
08/20/23 22:39	859	74.77	57.92	0.45
08/20/23 22:40	860	74.80	57.95	0.45
08/20/23 22:41	861	74.83	57.98	0.45
08/20/23 22:42	862	74.86	58.01	0.45
08/20/23 22:43	863	74.89	58.04	0.45
08/20/23 22:44	864	74.92	58.07	0.45
08/20/23 22:45	865	74.94	58.09	0.45
08/20/23 22:46	866	74.96	58.11	0.45
08/20/23 22:47	867	74.99	58.14	0.45
08/20/23 22:48	868	75.02	58.17	0.45
08/20/23 22:49	869	75.05	58.20	0.45
08/20/23 22:50	870	75.08	58.23	0.45
08/20/23 22:51	871	75.11	58.26	0.45
08/20/23 22:52	872	75.13	58.28	0.45
08/20/23 22:53	873	75.15	58.30	0.45
08/20/23 22:54	874	75.18	58.33	0.45
08/20/23 22:55	875	75.20	58.35	0.45
08/20/23 22:56	876	75.22	58.37	0.45
08/20/23 22:57	877	75.24	58.39	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 22:58	878	75.27	58.42	0.45
08/20/23 22:59	879	75.29	58.44	0.45
08/20/23 23:00	880	75.33	58.48	0.45
08/20/23 23:01	881	75.36	58.51	0.45
08/20/23 23:02	882	75.39	58.54	0.44
08/20/23 23:03	883	75.37	58.52	0.45
08/20/23 23:04	884	75.39	58.54	0.45
08/20/23 23:05	885	75.40	58.55	0.45
08/20/23 23:06	886	75.43	58.58	0.45
08/20/23 23:07	887	75.45	58.60	0.45
08/20/23 23:08	888	75.47	58.62	0.45
08/20/23 23:09	889	75.49	58.64	0.45
08/20/23 23:10	890	75.52	58.67	0.45
08/20/23 23:11	891	75.54	58.69	0.45
08/20/23 23:12	892	75.57	58.72	0.45
08/20/23 23:13	893	75.59	58.74	0.45
08/20/23 23:14	894	75.62	58.77	0.45
08/20/23 23:15	895	75.64	58.79	0.45
08/20/23 23:16	896	75.66	58.81	0.45
08/20/23 23:17	897	75.69	58.84	0.45
08/20/23 23:18	898	75.72	58.87	0.45
08/20/23 23:19	899	75.75	58.90	0.45
08/20/23 23:20	900	75.77	58.92	0.45
08/20/23 23:21	901	75.80	58.95	0.45
08/20/23 23:22	902	75.84	58.99	0.45
08/20/23 23:23	903	75.88	59.03	0.45
08/20/23 23:24	904	75.91	59.06	0.45
08/20/23 23:25	905	75.94	59.09	0.45
08/20/23 23:26	906	75.97	59.12	0.45
08/20/23 23:27	907	76.00	59.15	0.45
08/20/23 23:28	908	76.03	59.18	0.45
08/20/23 23:29	909	76.06	59.21	0.45
08/20/23 23:30	910	76.08	59.23	0.45
08/20/23 23:31	911	76.12	59.27	0.45
08/20/23 23:32	912	76.14	59.29	0.45
08/20/23 23:33	913	76.17	59.32	0.46
08/20/23 23:34	914	76.21	59.36	0.45
08/20/23 23:35	915	76.24	59.39	0.45
08/20/23 23:36	916	76.27	59.42	0.45
08/20/23 23:37	917	76.31	59.46	0.45
08/20/23 23:38	918	76.33	59.48	0.45
08/20/23 23:39	919	76.38	59.53	0.45
08/20/23 23:40	920	76.40	59.55	0.45
08/20/23 23:41	921	76.43	59.58	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/20/23 23:42	922	76.46	59.61	0.45
08/20/23 23:43	923	76.49	59.64	0.45
08/20/23 23:44	924	76.51	59.66	0.45
08/20/23 23:45	925	76.54	59.69	0.45
08/20/23 23:46	926	76.56	59.71	0.45
08/20/23 23:47	927	76.58	59.73	0.45
08/20/23 23:48	928	76.60	59.75	0.45
08/20/23 23:49	929	76.64	59.79	0.46
08/20/23 23:50	930	76.67	59.82	0.45
08/20/23 23:51	931	76.70	59.85	0.45
08/20/23 23:52	932	76.73	59.88	0.46
08/20/23 23:53	933	76.75	59.90	0.45
08/20/23 23:54	934	76.79	59.94	0.45
08/20/23 23:55	935	76.81	59.96	0.45
08/20/23 23:56	936	76.84	59.99	0.45
08/20/23 23:57	937	76.87	60.02	0.45
08/20/23 23:58	938	76.90	60.05	0.45
08/20/23 23:59	939	76.93	60.08	0.45
08/21/23 00:00	940	76.96	60.11	0.45
08/21/23 00:01	941	76.99	60.14	0.45
08/21/23 00:02	942	77.02	60.17	0.45
08/21/23 00:03	943	77.05	60.20	0.45
08/21/23 00:04	944	77.08	60.23	0.45
08/21/23 00:05	945	77.11	60.26	0.45
08/21/23 00:06	946	77.12	60.27	0.45
08/21/23 00:07	947	77.17	60.32	0.45
08/21/23 00:08	948	77.20	60.35	0.45
08/21/23 00:09	949	77.23	60.38	0.45
08/21/23 00:10	950	77.26	60.41	0.45
08/21/23 00:11	951	77.29	60.44	0.45
08/21/23 00:12	952	77.32	60.47	0.45
08/21/23 00:13	953	77.35	60.50	0.45
08/21/23 00:14	954	77.37	60.52	0.45
08/21/23 00:15	955	77.41	60.56	0.45
08/21/23 00:16	956	77.43	60.58	0.45
08/21/23 00:17	957	77.46	60.61	0.45
08/21/23 00:18	958	77.49	60.64	0.45
08/21/23 00:19	959	77.52	60.67	0.45
08/21/23 00:20	960	77.54	60.69	0.45
08/21/23 00:21	961	77.58	60.73	0.45
08/21/23 00:22	962	77.61	60.76	0.45
08/21/23 00:23	963	77.62	60.77	0.45
08/21/23 00:24	964	77.67	60.82	0.45
08/21/23 00:25	965	77.69	60.84	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 00:26	966	77.69	60.84	0.46
08/21/23 00:27	967	77.74	60.89	0.45
08/21/23 00:28	968	77.93	61.08	0.45
08/21/23 00:29	969	78.03	61.18	0.45
08/21/23 00:30	970	78.08	61.23	0.45
08/21/23 00:31	971	78.12	61.27	0.45
08/21/23 00:32	972	78.16	61.31	0.45
08/21/23 00:33	973	78.19	61.34	0.45
08/21/23 00:34	974	78.22	61.37	0.45
08/21/23 00:35	975	78.26	61.41	0.45
08/21/23 00:36	976	78.28	61.43	0.45
08/21/23 00:37	977	78.31	61.46	0.45
08/21/23 00:38	978	78.34	61.49	0.45
08/21/23 00:39	979	78.35	61.50	0.45
08/21/23 00:40	980	78.37	61.52	0.46
08/21/23 00:41	981	78.39	61.54	0.46
08/21/23 00:42	982	78.41	61.56	0.46
08/21/23 00:43	983	78.41	61.56	0.46
08/21/23 00:44	984	78.42	61.57	0.46
08/21/23 00:45	985	78.44	61.59	0.46
08/21/23 00:46	986	78.47	61.62	0.46
08/21/23 00:47	987	78.51	61.66	0.46
08/21/23 00:48	988	78.54	61.69	0.46
08/21/23 00:49	989	78.58	61.73	0.46
08/21/23 00:50	990	78.61	61.76	0.46
08/21/23 00:51	991	78.64	61.79	0.46
08/21/23 00:52	992	78.74	61.89	0.45
08/21/23 00:53	993	78.80	61.95	0.45
08/21/23 00:54	994	78.83	61.98	0.45
08/21/23 00:55	995	78.86	62.01	0.45
08/21/23 00:56	996	78.87	62.02	0.45
08/21/23 00:57	997	78.87	62.02	0.46
08/21/23 00:58	998	78.88	62.03	0.46
08/21/23 00:59	999	78.89	62.04	0.46
08/21/23 01:00	1000	78.96	62.11	0.45
08/21/23 01:01	1001	78.97	62.12	0.45
08/21/23 01:02	1002	78.98	62.13	0.45
08/21/23 01:03	1003	78.99	62.14	0.45
08/21/23 01:04	1004	79.01	62.16	0.45
08/21/23 01:05	1005	79.02	62.17	0.45
08/21/23 01:06	1006	79.04	62.19	0.46
08/21/23 01:07	1007	79.06	62.21	0.46
08/21/23 01:08	1008	79.08	62.23	0.46
08/21/23 01:09	1009	79.12	62.27	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 01:10	1010	79.15	62.30	0.45
08/21/23 01:11	1011	79.16	62.31	0.45
08/21/23 01:12	1012	79.18	62.33	0.45
08/21/23 01:13	1013	79.20	62.35	0.45
08/21/23 01:14	1014	79.22	62.37	0.45
08/21/23 01:15	1015	79.25	62.40	0.45
08/21/23 01:16	1016	79.26	62.41	0.46
08/21/23 01:17	1017	79.28	62.43	0.46
08/21/23 01:18	1018	79.30	62.45	0.46
08/21/23 01:19	1019	79.33	62.48	0.46
08/21/23 01:20	1020	79.40	62.55	0.44
08/21/23 01:21	1021	79.41	62.56	0.45
08/21/23 01:22	1022	79.42	62.57	0.45
08/21/23 01:23	1023	79.45	62.60	0.45
08/21/23 01:24	1024	79.45	62.60	0.45
08/21/23 01:25	1025	79.47	62.62	0.45
08/21/23 01:26	1026	79.48	62.63	0.45
08/21/23 01:27	1027	79.49	62.64	0.45
08/21/23 01:28	1028	79.50	62.65	0.45
08/21/23 01:29	1029	79.52	62.67	0.45
08/21/23 01:30	1030	79.54	62.69	0.45
08/21/23 01:31	1031	79.56	62.71	0.45
08/21/23 01:32	1032	79.56	62.71	0.46
08/21/23 01:33	1033	79.61	62.76	0.45
08/21/23 01:34	1034	79.64	62.79	0.45
08/21/23 01:35	1035	79.66	62.81	0.45
08/21/23 01:36	1036	79.68	62.83	0.45
08/21/23 01:37	1037	79.71	62.86	0.45
08/21/23 01:38	1038	79.73	62.88	0.45
08/21/23 01:39	1039	79.75	62.90	0.45
08/21/23 01:40	1040	79.79	62.94	0.45
08/21/23 01:41	1041	79.82	62.97	0.45
08/21/23 01:42	1042	79.83	62.98	0.46
08/21/23 01:43	1043	79.84	62.99	0.46
08/21/23 01:44	1044	79.90	63.05	0.46
08/21/23 01:45	1045	79.92	63.07	0.45
08/21/23 01:46	1046	79.94	63.09	0.45
08/21/23 01:47	1047	79.97	63.12	0.46
08/21/23 01:48	1048	79.99	63.14	0.46
08/21/23 01:49	1049	80.00	63.15	0.46
08/21/23 01:50	1050	80.03	63.18	0.46
08/21/23 01:51	1051	80.06	63.21	0.45
08/21/23 01:52	1052	80.08	63.23	0.46
08/21/23 01:53	1053	80.14	63.29	0.44

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 01:54	1054	80.19	63.34	0.45
08/21/23 01:55	1055	80.20	63.35	0.45
08/21/23 01:56	1056	80.21	63.36	0.45
08/21/23 01:57	1057	80.22	63.37	0.45
08/21/23 01:58	1058	80.24	63.39	0.45
08/21/23 01:59	1059	80.25	63.40	0.45
08/21/23 02:00	1060	80.27	63.42	0.45
08/21/23 02:01	1061	80.27	63.42	0.45
08/21/23 02:02	1062	80.29	63.44	0.45
08/21/23 02:03	1063	80.31	63.46	0.45
08/21/23 02:04	1064	80.33	63.48	0.45
08/21/23 02:05	1065	80.35	63.50	0.45
08/21/23 02:06	1066	80.37	63.52	0.45
08/21/23 02:07	1067	80.37	63.52	0.46
08/21/23 02:08	1068	80.40	63.55	0.46
08/21/23 02:09	1069	80.46	63.61	0.45
08/21/23 02:10	1070	80.48	63.63	0.45
08/21/23 02:11	1071	80.49	63.64	0.45
08/21/23 02:12	1072	80.51	63.66	0.45
08/21/23 02:13	1073	80.52	63.67	0.45
08/21/23 02:14	1074	80.55	63.70	0.45
08/21/23 02:15	1075	80.58	63.73	0.45
08/21/23 02:16	1076	80.60	63.75	0.45
08/21/23 02:17	1077	80.62	63.77	0.45
08/21/23 02:18	1078	80.63	63.78	0.45
08/21/23 02:19	1079	80.67	63.82	0.45
08/21/23 02:20	1080	80.69	63.84	0.45
08/21/23 02:21	1081	80.70	63.85	0.46
08/21/23 02:22	1082	80.75	63.90	0.45
08/21/23 02:23	1083	80.77	63.92	0.46
08/21/23 02:24	1084	80.79	63.94	0.45
08/21/23 02:25	1085	80.83	63.98	0.45
08/21/23 02:26	1086	80.85	64.00	0.45
08/21/23 02:27	1087	80.86	64.01	0.45
08/21/23 02:28	1088	80.88	64.03	0.45
08/21/23 02:29	1089	80.91	64.06	0.45
08/21/23 02:30	1090	80.93	64.08	0.45
08/21/23 02:31	1091	80.95	64.10	0.45
08/21/23 02:32	1092	80.97	64.12	0.45
08/21/23 02:33	1093	81.00	64.15	0.46
08/21/23 02:34	1094	81.02	64.17	0.45
08/21/23 02:35	1095	81.04	64.19	0.45
08/21/23 02:36	1096	81.07	64.22	0.45
08/21/23 02:37	1097	81.09	64.24	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 02:38	1098	81.12	64.27	0.45
08/21/23 02:39	1099	81.14	64.29	0.46
08/21/23 02:40	1100	81.16	64.31	0.45
08/21/23 02:41	1101	81.19	64.34	0.46
08/21/23 02:42	1102	81.22	64.37	0.45
08/21/23 02:43	1103	81.25	64.40	0.45
08/21/23 02:44	1104	81.27	64.42	0.45
08/21/23 02:45	1105	81.26	64.41	0.46
08/21/23 02:46	1106	81.28	64.43	0.46
08/21/23 02:47	1107	81.33	64.48	0.45
08/21/23 02:48	1108	81.36	64.51	0.46
08/21/23 02:49	1109	81.39	64.54	0.45
08/21/23 02:50	1110	81.41	64.56	0.45
08/21/23 02:51	1111	81.44	64.59	0.46
08/21/23 02:52	1112	81.46	64.61	0.46
08/21/23 02:53	1113	81.48	64.63	0.45
08/21/23 02:54	1114	81.50	64.65	0.46
08/21/23 02:55	1115	81.53	64.68	0.45
08/21/23 02:56	1116	81.56	64.71	0.45
08/21/23 02:57	1117	81.57	64.72	0.45
08/21/23 02:58	1118	81.61	64.76	0.45
08/21/23 02:59	1119	81.63	64.78	0.45
08/21/23 03:00	1120	81.65	64.80	0.46
08/21/23 03:01	1121	81.67	64.82	0.45
08/21/23 03:02	1122	81.70	64.85	0.45
08/21/23 03:03	1123	81.72	64.87	0.45
08/21/23 03:04	1124	81.74	64.89	0.45
08/21/23 03:05	1125	81.76	64.91	0.45
08/21/23 03:06	1126	81.79	64.94	0.45
08/21/23 03:07	1127	81.80	64.95	0.46
08/21/23 03:08	1128	81.82	64.97	0.46
08/21/23 03:09	1129	81.85	65.00	0.46
08/21/23 03:10	1130	81.88	65.03	0.46
08/21/23 03:11	1131	81.90	65.05	0.46
08/21/23 03:12	1132	81.92	65.07	0.46
08/21/23 03:13	1133	81.95	65.10	0.46
08/21/23 03:14	1134	81.98	65.13	0.46
08/21/23 03:15	1135	81.98	65.13	0.46
08/21/23 03:16	1136	82.05	65.20	0.45
08/21/23 03:17	1137	82.07	65.22	0.45
08/21/23 03:18	1138	82.08	65.23	0.45
08/21/23 03:19	1139	82.11	65.26	0.45
08/21/23 03:20	1140	82.14	65.29	0.45
08/21/23 03:21	1141	82.15	65.30	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 03:22	1142	82.21	65.36	0.45
08/21/23 03:23	1143	82.23	65.38	0.45
08/21/23 03:24	1144	82.25	65.40	0.45
08/21/23 03:25	1145	82.28	65.43	0.45
08/21/23 03:26	1146	82.30	65.45	0.45
08/21/23 03:27	1147	82.31	65.46	0.45
08/21/23 03:28	1148	82.33	65.48	0.45
08/21/23 03:29	1149	82.35	65.50	0.45
08/21/23 03:30	1150	82.38	65.53	0.45
08/21/23 03:31	1151	82.40	65.55	0.45
08/21/23 03:32	1152	82.42	65.57	0.45
08/21/23 03:33	1153	82.45	65.60	0.45
08/21/23 03:34	1154	82.43	65.58	0.46
08/21/23 03:35	1155	82.49	65.64	0.45
08/21/23 03:36	1156	82.51	65.66	0.45
08/21/23 03:37	1157	82.53	65.68	0.45
08/21/23 03:38	1158	82.55	65.70	0.45
08/21/23 03:39	1159	82.57	65.72	0.45
08/21/23 03:40	1160	82.58	65.73	0.45
08/21/23 03:41	1161	82.58	65.73	0.46
08/21/23 03:42	1162	82.59	65.74	0.46
08/21/23 03:43	1163	82.63	65.78	0.46
08/21/23 03:44	1164	82.65	65.80	0.46
08/21/23 03:45	1165	82.68	65.83	0.46
08/21/23 03:46	1166	82.70	65.85	0.46
08/21/23 03:47	1167	82.75	65.90	0.45
08/21/23 03:48	1168	82.78	65.93	0.45
08/21/23 03:49	1169	82.81	65.96	0.45
08/21/23 03:50	1170	82.82	65.97	0.45
08/21/23 03:51	1171	82.84	65.99	0.45
08/21/23 03:52	1172	82.87	66.02	0.45
08/21/23 03:53	1173	82.90	66.05	0.45
08/21/23 03:54	1174	82.91	66.06	0.46
08/21/23 03:55	1175	82.94	66.09	0.45
08/21/23 03:56	1176	82.96	66.11	0.46
08/21/23 03:57	1177	82.98	66.13	0.46
08/21/23 03:58	1178	83.00	66.15	0.46
08/21/23 03:59	1179	83.05	66.20	0.45
08/21/23 04:00	1180	83.06	66.21	0.46
08/21/23 04:01	1181	83.08	66.23	0.46
08/21/23 04:02	1182	83.11	66.26	0.46
08/21/23 04:03	1183	83.13	66.28	0.46
08/21/23 04:04	1184	83.16	66.31	0.46
08/21/23 04:05	1185	83.18	66.33	0.45

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 04:06	1186	83.21	66.36	0.46
08/21/23 04:07	1187	83.23	66.38	0.45
08/21/23 04:08	1188	83.26	66.41	0.46
08/21/23 04:09	1189	83.28	66.43	0.45
08/21/23 04:10	1190	83.31	66.46	0.45
08/21/23 04:11	1191	83.33	66.48	0.45
08/21/23 04:12	1192	83.36	66.51	0.45
08/21/23 04:13	1193	83.37	66.52	0.45
08/21/23 04:14	1194	83.40	66.55	0.45
08/21/23 04:15	1195	83.43	66.58	0.45
08/21/23 04:16	1196	83.52	66.67	0.45
08/21/23 04:17	1197	83.67	66.82	0.46
08/21/23 04:18	1198	83.73	66.88	0.46
08/21/23 04:19	1199	83.76	66.91	0.45
08/21/23 04:20	1200	83.79	66.94	0.46
08/21/23 04:21	1201	83.80	66.95	0.46
08/21/23 04:22	1202	83.83	66.98	0.46
08/21/23 04:23	1203	83.83	66.98	0.46
08/21/23 04:24	1204	83.85	67.00	0.46
08/21/23 04:25	1205	83.88	67.03	0.46
08/21/23 04:26	1206	83.98	67.13	0.45
08/21/23 04:27	1207	84.03	67.18	0.45
08/21/23 04:28	1208	84.05	67.20	0.45
08/21/23 04:29	1209	84.06	67.21	0.45
08/21/23 04:30	1210	84.08	67.23	0.45
08/21/23 04:31	1211	84.09	67.24	0.45
08/21/23 04:32	1212	84.10	67.25	0.45
08/21/23 04:33	1213	84.12	67.27	0.45
08/21/23 04:34	1214	84.12	67.27	0.45
08/21/23 04:35	1215	84.12	67.27	0.46
08/21/23 04:36	1216	84.15	67.30	0.46
08/21/23 04:37	1217	84.15	67.30	0.46
08/21/23 04:38	1218	83.63	66.78	0.00
08/21/23 04:39	1219	80.55	63.70	0.00
08/21/23 04:40	1220	77.95	61.10	0.00
08/21/23 04:41	1221	76.98	60.13	0.00
08/21/23 04:42	1222	76.42	59.57	0.00
08/21/23 04:43	1223	75.96	59.11	0.00
08/21/23 04:44	1224	75.61	58.76	0.00
08/21/23 04:45	1225	75.29	58.44	0.00
08/21/23 04:46	1226	75.05	58.20	0.00
08/21/23 04:47	1227	74.85	58.00	0.00
08/21/23 04:48	1228	74.64	57.79	0.00
08/21/23 04:49	1229	74.43	57.58	0.00

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 04:50	1230	74.22	57.37	0.00
08/21/23 04:51	1231	74.03	57.18	0.00
08/21/23 04:52	1232	73.84	56.99	0.00
08/21/23 04:53	1233	73.65	56.80	0.00
08/21/23 04:54	1234	73.46	56.61	0.00
08/21/23 04:55	1235	73.27	56.42	0.00
08/21/23 04:56	1236	73.08	56.23	0.00
08/21/23 04:57	1237	72.89	56.04	0.00
08/21/23 04:58	1238	72.70	55.85	0.00
08/21/23 04:59	1239	72.52	55.67	0.00
08/21/23 05:00	1240	72.32	55.47	0.00
08/21/23 05:01	1241	72.13	55.28	0.00
08/21/23 05:02	1242	71.95	55.10	0.00
08/21/23 05:03	1243	71.77	54.92	0.00
08/21/23 05:04	1244	71.58	54.73	0.00
08/21/23 05:05	1245	71.40	54.55	0.00
08/21/23 05:06	1246	71.21	54.36	0.00
08/21/23 05:07	1247	71.03	54.18	0.00
08/21/23 05:08	1248	70.86	54.01	0.00
08/21/23 05:09	1249	70.68	53.83	0.00
08/21/23 05:10	1250	70.50	53.65	0.00
08/21/23 05:11	1251	70.33	53.48	0.00
08/21/23 05:12	1252	70.16	53.31	0.00
08/21/23 05:15	1255	69.54	52.69	0.00
08/21/23 05:16	1256	69.40	52.55	0.00
08/21/23 05:17	1257	69.24	52.39	0.00
08/21/23 05:18	1258	69.06	52.21	0.00
08/21/23 05:19	1259	68.89	52.04	0.00
08/21/23 05:20	1260	68.72	51.87	0.00
08/21/23 05:21	1261	68.55	51.70	0.00
08/21/23 05:22	1262	68.39	51.54	0.00
08/21/23 05:23	1263	68.22	51.37	0.00
08/21/23 05:24	1264	68.05	51.20	0.00
08/21/23 05:25	1265	67.89	51.04	0.00
08/21/23 05:26	1266	67.73	50.88	0.00
08/21/23 05:27	1267	67.57	50.72	0.00
08/21/23 05:28	1268	67.40	50.55	0.00
08/21/23 05:29	1269	67.25	50.40	0.00
08/21/23 05:30	1270	67.09	50.24	0.00
08/21/23 05:31	1271	66.93	50.08	0.00
08/21/23 05:32	1272	66.78	49.93	0.00
08/21/23 05:33	1273	66.62	49.77	0.00
08/21/23 05:34	1274	66.47	49.62	0.00
08/21/23 05:35	1275	66.31	49.46	0.00

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 05:36	1276	66.16	49.31	0.00
08/21/23 05:37	1277	66.01	49.16	0.00
08/21/23 05:38	1278	65.86	49.01	0.00
08/21/23 05:39	1279	65.71	48.86	0.00
08/21/23 05:40	1280	65.57	48.72	0.00
08/21/23 05:41	1281	65.41	48.56	0.00
08/21/23 05:42	1282	65.26	48.41	0.00
08/21/23 05:43	1283	65.12	48.27	0.00
08/21/23 05:44	1284	64.97	48.12	0.00
08/21/23 05:45	1285	64.83	47.98	0.00
08/21/23 05:46	1286	64.69	47.84	0.00
08/21/23 05:47	1287	64.54	47.69	0.00
08/21/23 05:48	1288	64.39	47.54	0.00
08/21/23 05:49	1289	64.26	47.41	0.00
08/21/23 05:50	1290	64.11	47.26	0.00
08/21/23 05:51	1291	63.96	47.11	0.00
08/21/23 05:52	1292	63.82	46.97	0.00
08/21/23 05:53	1293	63.68	46.83	0.00
08/21/23 05:54	1294	63.54	46.69	0.00
08/21/23 05:55	1295	63.40	46.55	0.00
08/21/23 05:56	1296	63.26	46.41	0.00
08/21/23 05:57	1297	63.13	46.28	0.00
08/21/23 05:58	1298	62.99	46.14	0.00
08/21/23 05:59	1299	62.86	46.01	0.00
08/21/23 06:00	1300	62.73	45.88	0.00
08/21/23 06:01	1301	62.59	45.74	0.00
08/21/23 06:02	1302	62.47	45.62	0.00
08/21/23 06:03	1303	62.34	45.49	0.00
08/21/23 06:04	1304	62.21	45.36	0.00
08/21/23 06:05	1305	62.07	45.22	0.00
08/21/23 06:06	1306	61.95	45.10	0.00
08/21/23 06:07	1307	61.82	44.97	0.00
08/21/23 06:08	1308	61.70	44.85	0.00
08/21/23 06:09	1309	61.57	44.72	0.00
08/21/23 06:10	1310	61.45	44.60	0.00
08/21/23 06:11	1311	61.33	44.48	0.00
08/21/23 06:12	1312	61.21	44.36	0.00
08/21/23 06:13	1313	61.09	44.24	0.00
08/21/23 06:14	1314	60.97	44.12	0.00
08/21/23 06:15	1315	60.86	44.01	0.00
08/21/23 06:16	1316	60.74	43.89	0.00
08/21/23 06:17	1317	60.63	43.78	0.00
08/21/23 06:18	1318	60.52	43.67	0.00
08/21/23 06:19	1319	60.41	43.56	0.00

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 06:20	1320	60.28	43.43	0.00
08/21/23 06:21	1321	60.16	43.31	0.00
08/21/23 06:22	1322	60.04	43.19	0.00
08/21/23 06:23	1323	59.93	43.08	0.00
08/21/23 06:24	1324	59.82	42.97	0.00
08/21/23 06:25	1325	59.71	42.86	0.00
08/21/23 06:26	1326	59.60	42.75	0.00
08/21/23 06:27	1327	59.49	42.64	0.00
08/21/23 06:28	1328	59.39	42.54	0.00
08/21/23 06:29	1329	59.29	42.44	0.00
08/21/23 06:30	1330	59.19	42.34	0.00
08/21/23 06:31	1331	59.08	42.23	0.00
08/21/23 06:32	1332	58.97	42.12	0.00
08/21/23 06:33	1333	58.86	42.01	0.00
08/21/23 06:34	1334	58.75	41.90	0.00
08/21/23 06:35	1335	58.64	41.79	0.00
08/21/23 06:36	1336	58.54	41.69	0.00
08/21/23 06:37	1337	58.44	41.59	0.00
08/21/23 06:38	1338	58.33	41.48	0.00
08/21/23 06:39	1339	58.22	41.37	0.00
08/21/23 06:40	1340	58.12	41.27	0.00
08/21/23 06:41	1341	58.02	41.17	0.00
08/21/23 06:42	1342	57.92	41.07	0.00
08/21/23 06:43	1343	57.82	40.97	0.00
08/21/23 06:44	1344	57.71	40.86	0.00
08/21/23 06:45	1345	57.61	40.76	0.00
08/21/23 06:46	1346	57.52	40.67	0.00
08/21/23 06:47	1347	57.42	40.57	0.00
08/21/23 06:48	1348	57.32	40.47	0.00
08/21/23 06:49	1349	57.22	40.37	0.00
08/21/23 06:50	1350	57.11	40.26	0.00
08/21/23 06:51	1351	57.02	40.17	0.00
08/21/23 06:52	1352	56.92	40.07	0.00
08/21/23 06:53	1353	56.82	39.97	0.00
08/21/23 06:54	1354	56.73	39.88	0.00
08/21/23 06:55	1355	56.63	39.78	0.00
08/21/23 06:56	1356	56.54	39.69	0.00
08/21/23 06:57	1357	56.45	39.60	0.00
08/21/23 06:58	1358	56.35	39.50	0.00
08/21/23 06:59	1359	56.25	39.40	0.00
08/21/23 07:00	1360	56.16	39.31	0.00
08/21/23 07:01	1361	56.07	39.22	0.00
08/21/23 07:02	1362	55.98	39.13	0.00
08/21/23 07:03	1363	55.89	39.04	0.00

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 07:04	1364	55.80	38.95	0.00
08/21/23 07:05	1365	55.71	38.86	0.00
08/21/23 07:06	1366	55.61	38.76	0.00
08/21/23 07:07	1367	55.53	38.68	0.00
08/21/23 07:08	1368	55.44	38.59	0.00
08/21/23 07:09	1369	55.35	38.50	0.00
08/21/23 07:10	1370	55.26	38.41	0.00
08/21/23 07:11	1371	55.18	38.33	0.00
08/21/23 07:12	1372	55.09	38.24	0.00
08/21/23 07:13	1373	55.00	38.15	0.00
08/21/23 07:14	1374	54.92	38.07	0.00
08/21/23 07:15	1375	54.83	37.98	0.00
08/21/23 07:16	1376	54.74	37.89	0.00
08/21/23 07:17	1377	54.66	37.81	0.00
08/21/23 07:18	1378	54.58	37.73	0.00
08/21/23 07:19	1379	54.49	37.64	0.00
08/21/23 07:20	1380	54.41	37.56	0.00
08/21/23 07:21	1381	54.33	37.48	0.00
08/21/23 07:22	1382	54.25	37.40	0.00
08/21/23 07:23	1383	54.16	37.31	0.00
08/21/23 07:24	1384	54.08	37.23	0.00
08/21/23 07:25	1385	53.99	37.14	0.00
08/21/23 07:26	1386	53.91	37.06	0.00
08/21/23 07:27	1387	53.83	36.98	0.00
08/21/23 07:28	1388	53.74	36.89	0.00
08/21/23 07:29	1389	53.66	36.81	0.00
08/21/23 07:30	1390	53.58	36.73	0.00
08/21/23 07:31	1391	53.50	36.65	0.00
08/21/23 07:32	1392	53.41	36.56	0.00
08/21/23 07:33	1393	53.33	36.48	0.00
08/21/23 07:34	1394	53.25	36.40	0.00
08/21/23 07:35	1395	53.18	36.33	0.00
08/21/23 07:36	1396	53.11	36.26	0.00
08/21/23 07:37	1397	53.03	36.18	0.00
08/21/23 07:38	1398	52.95	36.10	0.00
08/21/23 07:39	1399	52.87	36.02	0.00
08/21/23 07:40	1400	52.80	35.95	0.00
08/21/23 07:41	1401	52.72	35.87	0.00
08/21/23 07:42	1402	52.64	35.79	0.00
08/21/23 07:43	1403	52.57	35.72	0.00
08/21/23 07:44	1404	52.50	35.65	0.00
08/21/23 07:45	1405	52.42	35.57	0.00
08/21/23 07:46	1406	52.35	35.50	0.00
08/21/23 07:47	1407	52.28	35.43	0.00

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 07:48	1408	52.20	35.35	0.00
08/21/23 07:49	1409	52.13	35.28	0.00
08/21/23 07:50	1410	52.06	35.21	0.00
08/21/23 07:51	1411	51.99	35.14	0.00
08/21/23 07:52	1412	51.92	35.07	0.00
08/21/23 07:53	1413	51.85	35.00	0.00
08/21/23 07:54	1414	51.78	34.93	0.00
08/21/23 07:55	1415	51.71	34.86	0.00
08/21/23 07:56	1416	51.64	34.79	0.00
08/21/23 07:57	1417	51.57	34.72	0.00
08/21/23 07:58	1418	51.51	34.66	0.00
08/21/23 07:59	1419	51.43	34.58	0.00
08/21/23 08:00	1420	51.37	34.52	0.00
08/21/23 08:01	1421	51.30	34.45	0.00
08/21/23 08:02	1422	51.24	34.39	0.00
08/21/23 08:03	1423	51.16	34.31	0.00
08/21/23 08:04	1424	51.10	34.25	0.00
08/21/23 08:05	1425	51.04	34.19	0.00
08/21/23 08:06	1426	50.98	34.13	0.00
08/21/23 08:07	1427	50.90	34.05	0.00
08/21/23 08:08	1428	50.84	33.99	0.00
08/21/23 08:09	1429	50.77	33.92	0.00
08/21/23 08:10	1430	50.71	33.86	0.00
08/21/23 08:11	1431	50.64	33.79	0.00
08/21/23 08:12	1432	50.57	33.72	0.00
08/21/23 08:13	1433	50.51	33.66	0.00
08/21/23 08:14	1434	50.45	33.60	0.00
08/21/23 08:15	1435	50.38	33.53	0.00
08/21/23 08:16	1436	50.32	33.47	0.00
08/21/23 08:17	1437	50.26	33.41	0.00
08/21/23 08:18	1438	50.20	33.35	0.00
08/21/23 08:19	1439	50.13	33.28	0.00
08/21/23 08:20	1440	50.07	33.22	0.00
08/21/23 08:21	1441	50.00	33.15	0.00
08/21/23 08:22	1442	49.95	33.10	0.00
08/21/23 08:23	1443	49.88	33.03	0.00
08/21/23 08:24	1444	49.82	32.97	0.00
08/21/23 08:25	1445	49.76	32.91	0.00
08/21/23 08:26	1446	49.70	32.85	0.00
08/21/23 08:27	1447	49.64	32.79	0.00
08/21/23 08:28	1448	49.57	32.72	0.00
08/21/23 08:29	1449	49.52	32.67	0.00
08/21/23 08:30	1450	49.46	32.61	0.00
08/21/23 08:31	1451	49.40	32.55	0.00

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 08:32	1452	49.34	32.49	0.00
08/21/23 08:33	1453	49.28	32.43	0.00
08/21/23 08:34	1454	49.23	32.38	0.00
08/21/23 08:35	1455	49.18	32.33	0.00
08/21/23 08:36	1456	49.12	32.27	0.00
08/21/23 08:37	1457	49.06	32.21	0.00
08/21/23 08:38	1458	49.01	32.16	0.00
08/21/23 08:39	1459	48.95	32.10	0.00
08/21/23 08:40	1460	48.90	32.05	0.00
08/21/23 08:41	1461	48.85	32.00	0.00
08/21/23 08:42	1462	48.79	31.94	0.00
08/21/23 08:43	1463	48.74	31.89	0.00
08/21/23 08:44	1464	48.68	31.83	0.00
08/21/23 08:45	1465	48.62	31.77	0.00
08/21/23 08:46	1466	48.57	31.72	0.00
08/21/23 08:47	1467	48.51	31.66	0.00
08/21/23 08:48	1468	48.45	31.60	0.00
08/21/23 08:49	1469	48.40	31.55	0.00
08/21/23 08:50	1470	48.35	31.50	0.00
08/21/23 08:51	1471	48.27	31.42	0.00
08/21/23 08:52	1472	48.22	31.37	0.00
08/21/23 08:53	1473	48.15	31.30	0.00
08/21/23 08:54	1474	48.10	31.25	0.00
08/21/23 08:55	1475	48.04	31.19	0.00
08/21/23 08:56	1476	47.99	31.14	0.00
08/21/23 08:57	1477	47.93	31.08	0.00
08/21/23 08:58	1478	47.89	31.04	0.00
08/21/23 08:59	1479	47.84	30.99	0.00
08/21/23 09:00	1480	47.79	30.94	0.00
08/21/23 09:01	1481	47.74	30.89	0.00
08/21/23 09:02	1482	47.69	30.84	0.00
08/21/23 09:03	1483	47.64	30.79	0.00
08/21/23 09:04	1484	47.59	30.74	0.00
08/21/23 09:05	1485	47.55	30.70	0.00
08/21/23 09:06	1486	47.49	30.64	0.00
08/21/23 09:07	1487	47.45	30.60	0.00
08/21/23 09:08	1488	47.39	30.54	0.00
08/21/23 09:09	1489	47.34	30.49	0.00
08/21/23 09:10	1490	47.30	30.45	0.00
08/21/23 09:11	1491	47.24	30.39	0.00
08/21/23 09:12	1492	47.20	30.35	0.00
08/21/23 09:13	1493	47.14	30.29	0.00
08/21/23 09:14	1494	47.10	30.25	0.00
08/21/23 09:15	1495	47.05	30.20	0.00

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 09:16	1496	46.99	30.14	0.00
08/21/23 09:17	1497	46.95	30.10	0.00
08/21/23 09:18	1498	46.90	30.05	0.00
08/21/23 09:19	1499	46.85	30.00	0.00
08/21/23 09:20	1500	46.80	29.95	0.00
08/21/23 09:21	1501	46.75	29.90	0.00
08/21/23 09:22	1502	46.70	29.85	0.00
08/21/23 09:23	1503	46.65	29.80	0.00
08/21/23 09:24	1504	46.61	29.76	0.00
08/21/23 09:25	1505	46.56	29.71	0.00
08/21/23 09:26	1506	46.52	29.67	0.00
08/21/23 09:27	1507	46.47	29.62	0.00
08/21/23 09:28	1508	46.43	29.58	0.00
08/21/23 09:29	1509	46.38	29.53	0.00
08/21/23 09:30	1510	46.34	29.49	0.00
08/21/23 09:31	1511	46.29	29.44	0.00
08/21/23 09:32	1512	46.25	29.40	0.00
08/21/23 09:33	1513	46.19	29.34	0.00
08/21/23 09:34	1514	46.15	29.30	0.00
08/21/23 09:35	1515	46.10	29.25	0.00
08/21/23 09:36	1516	46.06	29.21	0.00
08/21/23 09:37	1517	46.01	29.16	0.00
08/21/23 09:38	1518	45.97	29.12	0.00
08/21/23 09:39	1519	45.93	29.08	0.00
08/21/23 09:40	1520	45.88	29.03	0.00
08/21/23 09:41	1521	45.85	29.00	0.00
08/21/23 09:42	1522	45.80	28.95	0.00
08/21/23 09:43	1523	45.76	28.91	0.00
08/21/23 09:44	1524	45.71	28.86	0.00
08/21/23 09:45	1525	45.67	28.82	0.00
08/21/23 09:46	1526	45.62	28.77	0.00
08/21/23 09:47	1527	45.58	28.73	0.00
08/21/23 09:48	1528	45.53	28.68	0.00
08/21/23 09:49	1529	45.49	28.64	0.00
08/21/23 09:50	1530	45.45	28.60	0.00
08/21/23 09:51	1531	45.40	28.55	0.00
08/21/23 09:52	1532	45.35	28.50	0.00
08/21/23 09:53	1533	45.30	28.45	0.00
08/21/23 09:54	1534	45.26	28.41	0.00
08/21/23 09:55	1535	45.21	28.36	0.00
08/21/23 09:56	1536	45.16	28.31	0.00
08/21/23 09:57	1537	45.11	28.26	0.00
08/21/23 09:58	1538	45.07	28.22	0.00
08/21/23 09:59	1539	45.02	28.17	0.00

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 10:00	1540	44.98	28.13	0.00
08/21/23 10:01	1541	44.93	28.08	0.00
08/21/23 10:02	1542	44.88	28.03	0.00
08/21/23 10:03	1543	44.83	27.98	0.00
08/21/23 10:04	1544	44.79	27.94	0.00
08/21/23 10:05	1545	44.74	27.89	0.00
08/21/23 10:06	1546	44.70	27.85	0.00
08/21/23 10:07	1547	44.65	27.80	0.00
08/21/23 10:08	1548	44.61	27.76	0.00
08/21/23 10:09	1549	44.56	27.71	0.00
08/21/23 10:10	1550	44.51	27.66	0.00
08/21/23 10:11	1551	44.48	27.63	0.00
08/21/23 10:12	1552	44.43	27.58	0.00
08/21/23 10:13	1553	44.38	27.53	0.00
08/21/23 10:14	1554	44.34	27.49	0.00
08/21/23 10:15	1555	44.30	27.45	0.00
08/21/23 10:16	1556	44.26	27.41	0.00
08/21/23 10:17	1557	44.21	27.36	0.00
08/21/23 10:18	1558	44.17	27.32	0.00
08/21/23 10:19	1559	44.12	27.27	0.00
08/21/23 10:20	1560	44.08	27.23	0.00
08/21/23 10:21	1561	44.04	27.19	0.00
08/21/23 10:22	1562	43.99	27.14	0.00
08/21/23 10:23	1563	43.96	27.11	0.00
08/21/23 10:24	1564	43.91	27.06	0.00
08/21/23 10:25	1565	43.87	27.02	0.00
08/21/23 10:26	1566	43.82	26.97	0.00
08/21/23 10:27	1567	43.79	26.94	0.00
08/21/23 10:28	1568	43.74	26.89	0.00
08/21/23 10:29	1569	43.70	26.85	0.00
08/21/23 10:30	1570	43.66	26.81	0.00
08/21/23 10:31	1571	43.61	26.76	0.00
08/21/23 10:32	1572	43.57	26.72	0.00
08/21/23 10:33	1573	43.52	26.67	0.00
08/21/23 10:34	1574	43.48	26.63	0.00
08/21/23 10:35	1575	43.45	26.60	0.00
08/21/23 10:36	1576	43.40	26.55	0.00
08/21/23 10:37	1577	43.37	26.52	0.00
08/21/23 10:38	1578	43.33	26.48	0.00
08/21/23 10:39	1579	43.28	26.43	0.00
08/21/23 10:40	1580	43.24	26.39	0.00
08/21/23 10:41	1581	43.20	26.35	0.00
08/21/23 10:42	1582	43.17	26.32	0.00
08/21/23 10:43	1583	43.12	26.27	0.00

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 10:44	1584	43.08	26.23	0.00
08/21/23 10:45	1585	43.03	26.18	0.00
08/21/23 10:46	1586	43.00	26.15	0.00
08/21/23 10:47	1587	42.96	26.11	0.00
08/21/23 10:48	1588	42.92	26.07	0.00
08/21/23 10:49	1589	42.87	26.02	0.00
08/21/23 10:50	1590	42.84	25.99	0.00
08/21/23 10:51	1591	42.79	25.94	0.00
08/21/23 10:52	1592	42.76	25.91	0.00
08/21/23 10:53	1593	42.72	25.87	0.00
08/21/23 10:54	1594	42.68	25.83	0.00
08/21/23 10:55	1595	42.65	25.80	0.00
08/21/23 10:56	1596	42.60	25.75	0.00
08/21/23 10:57	1597	42.56	25.71	0.00
08/21/23 10:58	1598	42.52	25.67	0.00
08/21/23 10:59	1599	42.49	25.64	0.00
08/21/23 11:00	1600	42.45	25.60	0.00
08/21/23 11:01	1601	42.41	25.56	0.00
08/21/23 11:02	1602	42.37	25.52	0.00
08/21/23 11:03	1603	42.34	25.49	0.00
08/21/23 11:04	1604	42.29	25.44	0.00
08/21/23 11:05	1605	42.25	25.40	0.00
08/21/23 11:06	1606	42.22	25.37	0.00
08/21/23 11:07	1607	42.18	25.33	0.00
08/21/23 11:08	1608	42.14	25.29	0.00
08/21/23 11:09	1609	42.10	25.25	0.00
08/21/23 11:10	1610	42.07	25.22	0.00
08/21/23 11:11	1611	42.02	25.17	0.00
08/21/23 11:12	1612	41.99	25.14	0.00
08/21/23 11:13	1613	41.94	25.09	0.00
08/21/23 11:14	1614	41.92	25.07	0.00
08/21/23 11:15	1615	41.89	25.04	0.00
08/21/23 11:16	1616	41.84	24.99	0.00
08/21/23 11:17	1617	41.81	24.96	0.00
08/21/23 11:18	1618	41.76	24.91	0.00
08/21/23 11:19	1619	41.73	24.88	0.00
08/21/23 11:20	1620	41.69	24.84	0.00
08/21/23 11:21	1621	41.66	24.81	0.00
08/21/23 11:22	1622	41.62	24.77	0.00
08/21/23 11:23	1623	41.59	24.74	0.00
08/21/23 11:24	1624	41.55	24.70	0.00
08/21/23 11:25	1625	41.51	24.66	0.00
08/21/23 11:26	1626	41.47	24.62	0.00
08/21/23 11:27	1627	41.44	24.59	0.00

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/21/23 11:28	1628	41.41	24.56	0.00
08/21/23 11:29	1629	41.37	24.52	0.00
08/21/23 11:30	1630	41.33	24.48	0.00
08/21/23 11:31	1631	41.30	24.45	0.00
08/21/23 11:32	1632	41.25	24.40	0.00
08/21/23 11:33	1633	41.23	24.38	0.00
08/21/23 11:34	1634	41.19	24.34	0.00
08/21/23 11:35	1635	41.16	24.31	0.00
08/21/23 11:36	1636	41.13	24.28	0.00
08/21/23 11:37	1637	41.08	24.23	0.00
08/21/23 11:38	1638	41.06	24.21	0.00
08/21/23 11:39	1639	41.02	24.17	0.00
08/22/23 00:25	1924	33.74	16.894	0.00
08/22/23 17:50	2969	23.31	6.458	0.00

Well Name:	11800 Road 500D Well 3
Test Date:	8/26/2023
Static Water Level:	17.21
Maximum Drawdown:	64.08
80% of Drawdown:	51.26
Recovery Water Level Target:	30.03
Recovery Water Level:	22.82

Date/Time	Elapsed Time (min)	Depth to Water (feet RP)	Drawdown (feet)	Flow Rate (gpm)
08/26/23 06:19	0	17.21	0	
08/26/23 06:20	1	17.25	0.037	0.269
08/26/23 06:21	2	17.48	0.265	0.255
08/26/23 06:22	3	17.69	0.483	0.286
08/26/23 06:23	4	17.96	0.748	0.299
08/26/23 06:24	5	18.24	1.029	0.301
08/26/23 06:25	6	18.47	1.258	0.288
08/26/23 06:26	7	18.69	1.475	0.301
08/26/23 06:27	8	18.92	1.714	0.310
08/26/23 06:28	9	19.17	1.959	0.311
08/26/23 06:29	10	19.41	2.198	0.305
08/26/23 06:30	11	19.63	2.421	0.301
08/26/23 06:31	12	18.83	1.624	
08/26/23 06:32	13	18.62	1.412	
08/26/23 06:33	14	20.05	2.835	0.304
08/26/23 06:34	15	20.27	3.058	0.301
08/26/23 06:35	16	20.53	3.318	0.392
08/26/23 06:36	17	20.72	3.509	0.301
08/26/23 06:37	18	20.92	3.711	0.293
08/26/23 06:38	19	21.13	3.923	0.271
08/26/23 06:39	20	21.34	4.125	0.306
08/26/23 06:40	21	21.53	4.321	0.303
08/26/23 06:41	22	21.75	4.544	0.274
08/26/23 06:42	23	21.93	4.720	0.311
08/26/23 06:43	24	22.12	4.906	0.303
08/26/23 06:44	25	22.29	5.081	0.302
08/26/23 06:45	26	22.48	5.267	0.299
08/26/23 06:46	27	22.65	5.436	0.306
08/26/23 06:47	28	22.83	5.617	0.310
08/26/23 06:48	29	23.00	5.792	0.313
08/26/23 06:49	30	23.17	5.962	0.298
08/26/23 06:50	31	23.33	6.116	0.297
08/26/23 06:51	32	23.50	6.286	0.299
08/26/23 06:52	33	23.66	6.445	0.309
08/26/23 06:53	34	23.82	6.605	0.300
08/26/23 06:54	35	23.98	6.769	0.307

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 06:55	36	24.13	6.918	0.305
08/26/23 06:56	37	24.28	7.072	0.345
08/26/23 06:57	38	24.48	7.274	0.282
08/26/23 06:58	39	24.58	7.369	0.298
08/26/23 06:59	40	24.72	7.507	0.301
08/26/23 07:00	41	24.89	7.682	0.327
08/26/23 07:01	42	25.07	7.863	0.325
08/26/23 07:02	43	25.23	8.017	0.320
08/26/23 07:03	44	25.38	8.171	0.318
08/26/23 07:04	45	25.52	8.314	0.322
08/26/23 07:05	46	25.67	8.458	0.311
08/26/23 07:06	47	25.82	8.612	0.306
08/26/23 07:07	48	25.97	8.755	0.300
08/26/23 07:08	49	26.11	8.898	0.313
08/26/23 07:09	50	26.25	9.036	0.315
08/26/23 07:10	51	26.38	9.169	0.302
08/26/23 07:11	52	26.52	9.307	0.310
08/26/23 07:12	53	26.66	9.451	0.305
08/26/23 07:13	54	26.80	9.589	0.284
08/26/23 07:14	55	26.88	9.674	0.311
08/26/23 07:15	56	27.00	9.785	0.306
08/26/23 07:16	57	27.12	9.913	0.291
08/26/23 07:17	58	27.24	10.029	0.294
08/26/23 07:18	59	27.35	10.141	0.307
08/26/23 07:19	60	27.48	10.268	0.302
08/26/23 07:20	61	27.59	10.375	0.299
08/26/23 07:21	62	27.72	10.513	0.308
08/26/23 07:22	63	27.83	10.619	0.306
08/26/23 07:23	64	27.95	10.741	0.306
08/26/23 07:24	65	28.07	10.858	0.303
08/26/23 07:25	66	28.20	10.985	0.302
08/26/23 07:26	67	28.30	11.091	0.298
08/26/23 07:27	68	28.43	11.224	0.298
08/26/23 07:28	69	28.54	11.330	0.308
08/26/23 07:29	70	28.62	11.410	0.301
08/26/23 07:30	71	28.72	11.511	0.294
08/26/23 07:31	72	28.84	11.628	0.305
08/26/23 07:32	73	28.95	11.739	0.299
08/26/23 07:33	74	29.06	11.845	0.305
08/26/23 07:34	75	29.16	11.951	0.306
08/26/23 07:35	76	29.27	12.063	0.304
08/26/23 07:36	77	29.37	12.164	0.304
08/26/23 07:37	78	29.50	12.286	0.301
08/26/23 07:38	79	29.59	12.382	0.296

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 07:39	80	29.70	12.488	0.292
08/26/23 07:40	81	29.81	12.599	0.307
08/26/23 07:41	82	29.90	12.690	0.302
08/26/23 07:42	83	30.01	12.801	0.316
08/26/23 07:43	84	30.12	12.907	0.308
08/26/23 07:44	85	30.22	13.008	0.295
08/26/23 07:45	86	30.32	13.114	0.303
08/26/23 07:46	87	30.42	13.205	0.298
08/26/23 07:47	88	30.53	13.321	0.312
08/26/23 07:48	89	30.63	13.417	0.305
08/26/23 07:49	90	30.73	13.518	0.305
08/26/23 07:50	91	30.83	13.619	0.303
08/26/23 07:51	92	30.92	13.714	0.306
08/26/23 07:52	93	31.01	13.799	0.304
08/26/23 07:53	94	31.11	13.895	0.298
08/26/23 07:54	95	31.20	13.990	0.298
08/26/23 07:55	96	31.29	14.075	0.306
08/26/23 07:56	97	31.38	14.171	0.298
08/26/23 07:57	98	31.46	14.245	0.297
08/26/23 07:58	99	31.54	14.330	0.287
08/26/23 07:59	100	31.63	14.415	0.310
08/26/23 08:00	101	31.72	14.505	0.307
08/26/23 08:01	102	31.81	14.601	0.305
08/26/23 08:02	103	31.91	14.702	0.304
08/26/23 08:03	104	31.99	14.782	0.306
08/26/23 08:04	105	32.09	14.882	0.301
08/26/23 08:05	106	32.17	14.957	0.304
08/26/23 08:06	107	32.27	15.063	0.311
08/26/23 08:07	108	32.36	15.153	0.298
08/26/23 08:08	109	32.46	15.249	0.321
08/26/23 08:09	110	32.53	15.318	0.300
08/26/23 08:10	111	32.68	15.466	0.318
08/26/23 08:11	112	32.76	15.546	0.296
08/26/23 08:12	113	32.82	15.605	0.298
08/26/23 08:13	114	32.91	15.700	0.295
08/26/23 08:14	115	32.98	15.774	0.302
08/26/23 08:15	116	33.06	15.854	0.314
08/26/23 08:16	117	33.15	15.944	0.294
08/26/23 08:17	118	33.26	16.051	0.313
08/26/23 08:18	119	33.34	16.125	0.300
08/26/23 08:19	120	33.43	16.220	0.297
08/26/23 08:20	121	33.50	16.289	0.292
08/26/23 08:21	122	33.55	16.343	0.294
08/26/23 08:22	123	33.64	16.433	0.300

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 08:23	124	33.72	16.507	0.311
08/26/23 08:24	125	33.80	16.592	0.303
08/26/23 08:25	126	33.88	16.666	0.304
08/26/23 08:26	127	33.97	16.762	0.298
08/26/23 08:27	128	34.04	16.831	0.306
08/26/23 08:28	129	34.12	16.911	0.303
08/26/23 08:29	130	34.20	16.990	0.299
08/26/23 08:30	131	34.28	17.070	0.297
08/26/23 08:31	132	34.34	17.134	0.288
08/26/23 08:32	133	34.42	17.213	0.292
08/26/23 08:33	134	34.48	17.266	0.296
08/26/23 08:34	135	34.57	17.362	0.301
08/26/23 08:35	136	34.65	17.436	0.292
08/26/23 08:36	137	34.73	17.521	0.304
08/26/23 08:37	138	34.81	17.601	0.304
08/26/23 08:38	139	34.88	17.665	0.296
08/26/23 08:39	140	34.94	17.734	0.290
08/26/23 08:40	141	35.02	17.808	0.292
08/26/23 08:41	142	35.09	17.882	0.290
08/26/23 08:42	143	35.16	17.951	0.293
08/26/23 08:43	144	35.23	18.015	0.293
08/26/23 08:44	145	35.30	18.089	0.289
08/26/23 08:45	146	35.37	18.164	0.296
08/26/23 08:46	147	35.44	18.228	0.299
08/26/23 08:47	148	35.51	18.302	0.299
08/26/23 08:48	149	35.58	18.371	0.293
08/26/23 08:49	150	35.65	18.440	0.286
08/26/23 08:50	151	35.76	18.546	0.311
08/26/23 08:51	152	35.83	18.620	0.305
08/26/23 08:52	153	35.92	18.705	0.300
08/26/23 08:53	154	35.96	18.753	0.292
08/26/23 08:54	155	36.03	18.822	0.310
08/26/23 08:55	156	36.11	18.897	0.298
08/26/23 08:56	157	36.17	18.960	0.299
08/26/23 08:57	158	36.24	19.029	0.291
08/26/23 08:58	159	36.29	19.082	0.304
08/26/23 08:59	160	36.36	19.151	0.299
08/26/23 09:00	161	36.43	19.220	0.305
08/26/23 09:01	162	36.49	19.284	0.302
08/26/23 09:02	163	36.57	19.358	0.300
08/26/23 09:03	164	36.64	19.428	0.304
08/26/23 09:04	165	36.70	19.491	0.299
08/26/23 09:05	166	36.78	19.566	0.306
08/26/23 09:06	167	36.84	19.629	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 09:07	168	36.91	19.704	0.306
08/26/23 09:08	169	36.98	19.767	0.300
08/26/23 09:09	170	37.04	19.831	0.296
08/26/23 09:10	171	37.11	19.900	0.305
08/26/23 09:11	172	37.17	19.964	0.302
08/26/23 09:12	173	37.23	20.022	0.295
08/26/23 09:13	174	37.31	20.097	0.305
08/26/23 09:14	175	37.38	20.166	0.303
08/26/23 09:15	176	37.43	20.224	0.307
08/26/23 09:16	177	37.50	20.288	0.301
08/26/23 09:17	178	37.58	20.373	0.301
08/26/23 09:18	179	37.64	20.431	0.298
08/26/23 09:19	180	37.71	20.495	0.295
08/26/23 09:20	181	37.74	20.527	0.302
08/26/23 09:21	182	37.74	20.527	0.298
08/26/23 09:22	183	37.75	20.537	0.294
08/26/23 09:23	184	37.78	20.574	0.298
08/26/23 09:24	185	37.84	20.628	0.302
08/26/23 09:25	186	37.89	20.675	0.300
08/26/23 09:26	187	37.92	20.712	0.295
08/26/23 09:27	188	37.97	20.760	0.255
08/26/23 09:28	189	38.03	20.819	0.297
08/26/23 09:29	190	38.07	20.861	0.287
08/26/23 09:30	191	38.16	20.946	0.305
08/26/23 09:31	192	38.22	21.010	0.296
08/26/23 09:32	193	38.26	21.047	0.294
08/26/23 09:33	194	38.30	21.089	0.301
08/26/23 09:34	195	38.36	21.148	0.299
08/26/23 09:35	196	38.41	21.201	0.287
08/26/23 09:36	197	38.45	21.243	0.293
08/26/23 09:37	198	38.50	21.291	0.290
08/26/23 09:38	199	38.54	21.328	0.303
08/26/23 09:39	200	38.59	21.376	0.292
08/26/23 09:40	201	38.64	21.429	0.304
08/26/23 09:41	202	38.68	21.472	0.302
08/26/23 09:42	203	38.75	21.541	0.302
08/26/23 09:43	204	38.77	21.562	0.297
08/26/23 09:44	205	38.89	21.684	0.309
08/26/23 09:45	206	38.93	21.716	0.294
08/26/23 09:46	207	39.00	21.785	0.314
08/26/23 09:47	208	39.05	21.843	0.310
08/26/23 09:48	209	39.10	21.891	0.298
08/26/23 09:49	210	39.17	21.955	0.303
08/26/23 09:50	211	39.22	22.013	0.293

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 09:51	212	39.26	22.050	0.291
08/26/23 09:52	213	39.30	22.088	0.295
08/26/23 09:53	214	39.36	22.146	0.297
08/26/23 09:54	215	39.41	22.199	0.305
08/26/23 09:55	216	39.45	22.242	0.308
08/26/23 09:56	217	39.52	22.305	0.293
08/26/23 09:57	218	39.56	22.348	0.300
08/26/23 09:58	219	39.61	22.396	0.299
08/26/23 09:59	220	39.65	22.438	0.289
08/26/23 10:00	221	39.71	22.502	0.314
08/26/23 10:01	222	39.76	22.550	0.278
08/26/23 10:02	223	39.79	22.576	0.306
08/26/23 10:03	224	39.85	22.640	0.307
08/26/23 10:04	225	39.90	22.688	0.309
08/26/23 10:05	226	39.92	22.714	0.293
08/26/23 10:06	227	39.97	22.762	0.312
08/26/23 10:07	228	40.04	22.831	0.306
08/26/23 10:08	229	40.08	22.873	0.297
08/26/23 10:09	230	40.12	22.911	0.297
08/26/23 10:10	231	40.18	22.969	0.329
08/26/23 10:11	232	40.32	23.112	0.298
08/26/23 10:12	233	40.33	23.123	0.289
08/26/23 10:13	234	40.38	23.171	0.324
08/26/23 10:14	235	40.47	23.261	0.299
08/26/23 10:15	236	40.52	23.314	0.303
08/26/23 10:16	237	40.57	23.357	0.299
08/26/23 10:17	238	40.59	23.383	0.307
08/26/23 10:18	239	40.64	23.426	0.290
08/26/23 10:19	240	40.67	23.458	0.304
08/26/23 10:20	241	40.76	23.553	0.316
08/26/23 10:21	242	40.82	23.612	0.302
08/26/23 10:22	243	40.87	23.659	0.307
08/26/23 10:23	244	40.92	23.707	0.294
08/26/23 10:24	245	40.97	23.760	0.299
08/26/23 10:25	246	41.03	23.819	0.294
08/26/23 10:26	247	41.04	23.829	0.288
08/26/23 10:27	248	41.09	23.877	0.312
08/26/23 10:28	249	41.14	23.925	0.308
08/26/23 10:29	250	41.20	23.994	0.317
08/26/23 10:30	251	41.26	24.047	0.303
08/26/23 10:31	252	41.31	24.100	0.310
08/26/23 10:32	253	41.35	24.143	0.302
08/26/23 10:33	254	41.42	24.206	0.316
08/26/23 10:34	255	41.46	24.249	0.304

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 10:35	256	41.52	24.307	0.304
08/26/23 10:36	257	41.57	24.360	0.302
08/26/23 10:37	258	41.61	24.397	0.294
08/26/23 10:38	259	41.65	24.440	0.303
08/26/23 10:39	260	41.70	24.488	0.296
08/26/23 10:40	261	41.75	24.535	0.303
08/26/23 10:41	262	41.79	24.583	0.298
08/26/23 10:42	263	41.81	24.604	0.299
08/26/23 10:43	264	41.87	24.658	0.299
08/26/23 10:44	265	41.92	24.705	0.298
08/26/23 10:45	266	41.96	24.748	0.297
08/26/23 10:46	267	42.01	24.801	0.297
08/26/23 10:47	268	42.06	24.849	0.300
08/26/23 10:48	269	42.09	24.881	0.300
08/26/23 10:49	270	42.13	24.923	0.304
08/26/23 10:50	271	42.19	24.976	0.301
08/26/23 10:51	272	42.22	25.013	0.308
08/26/23 10:52	273	42.28	25.072	0.302
08/26/23 10:53	274	42.31	25.104	0.279
08/26/23 10:54	275	42.39	25.178	0.305
08/26/23 10:55	276	42.44	25.226	0.295
08/26/23 10:56	277	42.48	25.268	0.265
08/26/23 10:57	278	42.54	25.327	0.290
08/26/23 10:58	279	42.57	25.364	0.278
08/26/23 10:59	280	42.61	25.396	0.302
08/26/23 11:00	281	42.68	25.465	0.351
08/26/23 11:01	282	42.80	25.592	0.322
08/26/23 11:02	283	42.87	25.656	0.321
08/26/23 11:03	284	42.93	25.719	0.297
08/26/23 11:04	285	42.98	25.767	0.295
08/26/23 11:05	286	43.01	25.799	0.289
08/26/23 11:06	287	43.04	25.831	0.296
08/26/23 11:07	288	43.07	25.863	0.272
08/26/23 11:08	289	43.12	25.911	0.308
08/26/23 11:09	290	43.17	25.964	0.309
08/26/23 11:10	291	43.23	26.017	0.301
08/26/23 11:11	292	43.28	26.070	0.312
08/26/23 11:12	293	43.32	26.112	0.299
08/26/23 11:13	294	43.36	26.150	0.297
08/26/23 11:14	295	43.39	26.181	0.298
08/26/23 11:15	296	43.46	26.245	0.306
08/26/23 11:16	297	43.49	26.277	0.300
08/26/23 11:17	298	43.55	26.335	0.295
08/26/23 11:18	299	43.58	26.373	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 11:19	300	43.61	26.404	0.303
08/26/23 11:20	301	43.68	26.473	0.305
08/26/23 11:21	302	43.71	26.500	0.316
08/26/23 11:22	303	43.77	26.558	0.301
08/26/23 11:23	304	43.80	26.590	0.302
08/26/23 11:24	305	43.85	26.638	0.301
08/26/23 11:25	306	43.92	26.707	0.308
08/26/23 11:26	307	43.97	26.755	0.307
08/26/23 11:27	308	44.01	26.803	0.303
08/26/23 11:28	309	44.07	26.856	0.300
08/26/23 11:29	310	44.11	26.904	0.298
08/26/23 11:30	311	44.16	26.946	0.297
08/26/23 11:31	312	44.20	26.989	0.300
08/26/23 11:32	313	44.25	27.036	0.297
08/26/23 11:33	314	44.28	27.073	0.299
08/26/23 11:34	315	44.34	27.127	0.303
08/26/23 11:35	316	44.38	27.169	0.301
08/26/23 11:36	317	44.42	27.206	0.305
08/26/23 11:37	318	44.45	27.243	0.299
08/26/23 11:38	319	44.51	27.302	0.300
08/26/23 11:39	320	44.55	27.344	0.307
08/26/23 11:40	321	44.59	27.381	0.309
08/26/23 11:41	322	44.66	27.445	0.303
08/26/23 11:42	323	44.68	27.472	0.301
08/26/23 11:43	324	44.74	27.525	0.300
08/26/23 11:44	325	44.78	27.567	0.303
08/26/23 11:45	326	44.83	27.615	0.296
08/26/23 11:46	327	44.87	27.663	0.306
08/26/23 11:47	328	44.92	27.711	0.305
08/26/23 11:48	329	44.96	27.748	0.298
08/26/23 11:49	330	45.00	27.790	0.304
08/26/23 11:50	331	45.04	27.833	0.300
08/26/23 11:51	332	45.08	27.870	0.297
08/26/23 11:52	333	45.14	27.928	0.301
08/26/23 11:53	334	45.18	27.971	0.302
08/26/23 11:54	335	45.22	28.013	0.300
08/26/23 11:55	336	45.26	28.045	0.295
08/26/23 11:56	337	45.30	28.088	0.293
08/26/23 11:57	338	45.32	28.114	0.294
08/26/23 11:58	339	45.35	28.141	0.301
08/26/23 11:59	340	45.39	28.183	0.295
08/26/23 12:00	341	45.45	28.236	0.295
08/26/23 12:01	342	45.49	28.284	0.296
08/26/23 12:02	343	45.54	28.332	0.298

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 12:03	344	45.58	28.369	0.300
08/26/23 12:04	345	45.62	28.411	0.292
08/26/23 12:05	346	45.66	28.449	0.296
08/26/23 12:06	347	45.66	28.454	0.295
08/26/23 12:07	348	45.70	28.491	0.295
08/26/23 12:08	349	45.83	28.619	0.341
08/26/23 12:09	350	45.89	28.682	0.322
08/26/23 12:10	351	45.97	28.762	0.318
08/26/23 12:11	352	46.03	28.815	0.316
08/26/23 12:12	353	46.09	28.884	0.303
08/26/23 12:13	354	46.15	28.937	0.316
08/26/23 12:14	355	46.22	29.006	0.318
08/26/23 12:15	356	46.28	29.065	0.314
08/26/23 12:16	357	46.33	29.118	0.312
08/26/23 12:17	358	46.38	29.165	0.320
08/26/23 12:18	359	46.44	29.229	0.312
08/26/23 12:19	360	46.50	29.288	0.315
08/26/23 12:20	361	46.55	29.341	0.315
08/26/23 12:21	362	46.60	29.394	0.313
08/26/23 12:22	363	46.65	29.436	0.312
08/26/23 12:23	364	46.71	29.500	0.317
08/26/23 12:24	365	46.75	29.542	0.311
08/26/23 12:25	366	46.79	29.580	0.310
08/26/23 12:26	367	46.85	29.638	0.309
08/26/23 12:27	368	46.89	29.675	0.310
08/26/23 12:28	369	46.94	29.728	0.307
08/26/23 12:29	370	46.99	29.781	0.311
08/26/23 12:30	371	47.03	29.824	0.308
08/26/23 12:31	372	47.08	29.872	0.309
08/26/23 12:32	373	47.12	29.914	0.306
08/26/23 12:33	374	47.18	29.967	0.316
08/26/23 12:34	375	47.23	30.015	0.308
08/26/23 12:35	376	47.27	30.057	0.306
08/26/23 12:36	377	47.30	30.089	0.313
08/26/23 12:37	378	47.34	30.127	0.307
08/26/23 12:38	379	47.38	30.169	0.305
08/26/23 12:39	380	47.41	30.201	0.313
08/26/23 12:40	381	47.46	30.249	0.304
08/26/23 12:41	382	47.50	30.291	0.308
08/26/23 12:42	383	47.55	30.344	0.307
08/26/23 12:43	384	47.60	30.392	0.304
08/26/23 12:44	385	47.64	30.434	0.303
08/26/23 12:45	386	47.68	30.466	0.301
08/26/23 12:46	387	47.72	30.514	0.303

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 12:47	388	47.77	30.562	0.305
08/26/23 12:48	389	47.81	30.604	0.306
08/26/23 12:49	390	47.85	30.642	0.310
08/26/23 12:50	391	47.90	30.689	0.298
08/26/23 12:51	392	47.94	30.732	0.305
08/26/23 12:52	393	47.98	30.769	0.299
08/26/23 12:53	394	48.03	30.817	0.307
08/26/23 12:54	395	48.08	30.865	0.300
08/26/23 12:55	396	48.11	30.902	0.301
08/26/23 12:56	397	48.15	30.944	0.300
08/26/23 12:57	398	48.19	30.976	0.302
08/26/23 12:58	399	48.23	31.019	0.296
08/26/23 12:59	400	48.26	31.045	0.302
08/26/23 13:00	401	48.31	31.098	0.299
08/26/23 13:01	402	48.35	31.141	0.300
08/26/23 13:02	403	48.38	31.173	0.305
08/26/23 13:03	404	48.43	31.215	0.310
08/26/23 13:04	405	48.47	31.257	0.300
08/26/23 13:05	406	48.51	31.295	0.294
08/26/23 13:06	407	48.55	31.342	0.304
08/26/23 13:07	408	48.59	31.380	0.312
08/26/23 13:08	409	48.63	31.417	0.305
08/26/23 13:09	410	48.66	31.454	0.301
08/26/23 13:10	411	48.70	31.491	0.303
08/26/23 13:11	412	48.74	31.528	0.301
08/26/23 13:12	413	48.78	31.565	0.311
08/26/23 13:13	414	48.82	31.608	0.300
08/26/23 13:14	415	48.86	31.645	0.303
08/26/23 13:15	416	48.89	31.677	0.306
08/26/23 13:16	417	48.92	31.714	0.297
08/26/23 13:17	418	48.96	31.751	0.302
08/26/23 13:18	419	48.99	31.783	0.306
08/26/23 13:19	420	49.04	31.826	0.304
08/26/23 13:20	421	49.07	31.863	0.300
08/26/23 13:21	422	49.10	31.889	0.296
08/26/23 13:22	423	49.15	31.937	0.300
08/26/23 13:23	424	49.17	31.958	0.305
08/26/23 13:24	425	49.21	32.001	0.297
08/26/23 13:25	426	49.24	32.033	0.302
08/26/23 13:26	427	49.28	32.070	0.296
08/26/23 13:27	428	49.33	32.118	0.305
08/26/23 13:28	429	49.36	32.150	0.298
08/26/23 13:29	430	49.40	32.187	0.305
08/26/23 13:30	431	49.43	32.219	0.305

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 13:31	432	49.46	32.245	0.304
08/26/23 13:32	433	49.49	32.282	0.300
08/26/23 13:33	434	49.55	32.335	0.298
08/26/23 13:34	435	49.58	32.367	0.301
08/26/23 13:35	436	49.61	32.399	0.300
08/26/23 13:36	437	49.65	32.436	0.307
08/26/23 13:37	438	49.68	32.473	0.302
08/26/23 13:38	439	49.73	32.516	0.313
08/26/23 13:39	440	49.76	32.548	0.303
08/26/23 13:40	441	49.81	32.596	0.310
08/26/23 13:41	442	49.85	32.638	0.308
08/26/23 13:42	443	49.89	32.675	0.300
08/26/23 13:43	444	49.92	32.712	0.298
08/26/23 13:44	445	49.95	32.744	0.298
08/26/23 13:45	446	50.00	32.787	0.288
08/26/23 13:46	447	50.04	32.829	0.309
08/26/23 13:47	448	50.08	32.866	0.301
08/26/23 13:48	449	50.12	32.909	0.296
08/26/23 13:49	450	50.16	32.951	0.296
08/26/23 13:50	451	50.19	32.983	0.301
08/26/23 13:51	452	50.24	33.026	0.306
08/26/23 13:52	453	50.28	33.068	0.299
08/26/23 13:53	454	50.32	33.105	0.302
08/26/23 13:54	455	50.36	33.148	0.303
08/26/23 13:55	456	50.40	33.190	0.306
08/26/23 13:56	457	50.44	33.233	0.305
08/26/23 13:57	458	50.48	33.270	0.293
08/26/23 13:58	459	50.52	33.312	0.300
08/26/23 13:59	460	50.57	33.355	0.306
08/26/23 14:00	461	50.60	33.387	0.302
08/26/23 14:01	462	50.63	33.424	0.308
08/26/23 14:02	463	50.68	33.472	0.300
08/26/23 14:03	464	50.74	33.525	0.298
08/26/23 14:04	465	50.78	33.573	0.299
08/26/23 14:05	466	50.83	33.615	0.302
08/26/23 14:06	467	50.87	33.663	0.298
08/26/23 14:07	468	50.92	33.705	0.301
08/26/23 14:08	469	50.95	33.742	0.305
08/26/23 14:09	470	51.00	33.785	0.300
08/26/23 14:10	471	51.03	33.822	0.302
08/26/23 14:11	472	51.08	33.870	0.301
08/26/23 14:12	473	51.12	33.907	0.298
08/26/23 14:13	474	51.15	33.944	0.296
08/26/23 14:14	475	51.20	33.987	0.302

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 14:15	476	51.23	34.024	0.305
08/26/23 14:16	477	51.28	34.066	0.297
08/26/23 14:17	478	51.32	34.109	0.306
08/26/23 14:18	479	51.36	34.146	0.297
08/26/23 14:19	480	51.40	34.188	0.301
08/26/23 14:20	481	51.44	34.231	0.299
08/26/23 14:21	482	51.48	34.268	0.306
08/26/23 14:22	483	51.52	34.305	0.304
08/26/23 14:23	484	51.55	34.342	0.303
08/26/23 14:24	485	51.60	34.385	0.298
08/26/23 14:25	486	51.63	34.422	0.303
08/26/23 14:26	487	51.69	34.475	0.308
08/26/23 14:27	488	51.72	34.512	0.294
08/26/23 14:28	489	51.75	34.544	0.300
08/26/23 14:29	490	51.79	34.581	0.295
08/26/23 14:30	491	51.84	34.634	0.304
08/26/23 14:31	492	51.87	34.661	0.297
08/26/23 14:32	493	51.91	34.698	0.297
08/26/23 14:33	494	51.96	34.746	0.302
08/26/23 14:34	495	51.99	34.783	0.304
08/26/23 14:35	496	52.04	34.826	0.304
08/26/23 14:36	497	52.07	34.857	0.304
08/26/23 14:37	498	52.12	34.905	0.306
08/26/23 14:38	499	52.15	34.942	0.305
08/26/23 14:39	500	52.19	34.980	0.303
08/26/23 14:40	501	52.23	35.017	0.300
08/26/23 14:41	502	52.27	35.059	0.302
08/26/23 14:42	503	52.31	35.096	0.300
08/26/23 14:43	504	52.34	35.128	0.306
08/26/23 14:44	505	52.38	35.171	0.305
08/26/23 14:45	506	52.42	35.208	0.303
08/26/23 14:46	507	52.47	35.256	0.308
08/26/23 14:47	508	52.50	35.288	0.305
08/26/23 14:48	509	52.54	35.330	0.302
08/26/23 14:49	510	52.58	35.372	0.303
08/26/23 14:50	511	52.61	35.404	0.300
08/26/23 14:51	512	52.66	35.452	0.300
08/26/23 14:52	513	52.68	35.473	0.298
08/26/23 14:53	514	52.73	35.521	0.302
08/26/23 14:54	515	52.77	35.558	0.302
08/26/23 14:55	516	52.81	35.601	0.294
08/26/23 14:56	517	52.85	35.638	0.300
08/26/23 14:57	518	52.89	35.680	0.298
08/26/23 14:58	519	52.94	35.728	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 14:59	520	52.98	35.771	0.311
08/26/23 15:00	521	53.01	35.797	0.301
08/26/23 15:01	522	53.06	35.845	0.309
08/26/23 15:02	523	53.09	35.877	0.303
08/26/23 15:03	524	53.12	35.914	0.297
08/26/23 15:04	525	53.16	35.951	0.304
08/26/23 15:05	526	53.20	35.994	0.298
08/26/23 15:06	527	53.25	36.036	0.302
08/26/23 15:07	528	53.29	36.079	0.304
08/26/23 15:08	529	53.32	36.105	0.298
08/26/23 15:09	530	53.36	36.148	0.301
08/26/23 15:10	531	53.39	36.180	0.302
08/26/23 15:11	532	53.43	36.217	0.303
08/26/23 15:12	533	53.47	36.259	0.302
08/26/23 15:13	534	53.51	36.296	0.299
08/26/23 15:14	535	53.54	36.334	0.306
08/26/23 15:15	536	53.58	36.371	0.306
08/26/23 15:16	537	53.61	36.397	0.299
08/26/23 15:17	538	53.66	36.445	0.301
08/26/23 15:18	539	53.69	36.477	0.300
08/26/23 15:19	540	53.72	36.509	0.294
08/26/23 15:20	541	53.76	36.546	0.301
08/26/23 15:21	542	53.80	36.588	0.299
08/26/23 15:22	543	53.83	36.620	0.301
08/26/23 15:23	544	53.87	36.657	0.304
08/26/23 15:24	545	53.91	36.700	0.301
08/26/23 15:25	546	53.94	36.732	0.302
08/26/23 15:26	547	53.97	36.764	0.306
08/26/23 15:27	548	54.02	36.811	0.299
08/26/23 15:28	549	54.06	36.849	0.299
08/26/23 15:29	550	54.10	36.886	0.297
08/26/23 15:30	551	54.13	36.923	0.299
08/26/23 15:31	552	54.17	36.960	0.302
08/26/23 15:32	553	54.20	36.992	0.304
08/26/23 15:33	554	54.24	37.029	0.297
08/26/23 15:34	555	54.28	37.072	0.300
08/26/23 15:35	556	54.31	37.103	0.302
08/26/23 15:36	557	54.35	37.135	0.307
08/26/23 15:37	558	54.38	37.172	0.296
08/26/23 15:38	559	54.41	37.199	0.294
08/26/23 15:39	560	54.45	37.236	0.297
08/26/23 15:40	561	54.48	37.273	0.303
08/26/23 15:41	562	54.52	37.311	0.303
08/26/23 15:42	563	54.56	37.353	0.292

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 15:43	564	54.60	37.390	0.298
08/26/23 15:44	565	54.63	37.417	0.298
08/26/23 15:45	566	54.66	37.454	0.296
08/26/23 15:46	567	54.70	37.491	0.301
08/26/23 15:47	568	54.74	37.528	0.297
08/26/23 15:48	569	54.77	37.555	0.296
08/26/23 15:49	570	54.80	37.592	0.300
08/26/23 15:50	571	54.84	37.629	0.300
08/26/23 15:51	572	54.88	37.666	0.294
08/26/23 15:52	573	54.91	37.698	0.292
08/26/23 15:53	574	54.95	37.735	0.295
08/26/23 15:54	575	54.98	37.772	0.300
08/26/23 15:55	576	55.03	37.815	0.303
08/26/23 15:56	577	55.07	37.857	0.298
08/26/23 15:57	578	55.11	37.895	0.299
08/26/23 15:58	579	55.14	37.932	0.299
08/26/23 15:59	580	55.17	37.964	0.297
08/26/23 16:00	581	55.21	37.995	0.293
08/26/23 16:01	582	55.24	38.033	0.300
08/26/23 16:02	583	55.29	38.075	0.297
08/26/23 16:03	584	55.33	38.118	0.300
08/26/23 16:04	585	55.35	38.144	0.301
08/26/23 16:05	586	55.39	38.176	0.298
08/26/23 16:06	587	55.40	38.192	0.300
08/26/23 16:07	588	55.43	38.224	0.296
08/26/23 16:08	589	55.46	38.245	0.293
08/26/23 16:09	590	55.49	38.282	0.292
08/26/23 16:10	591	55.51	38.303	0.296
08/26/23 16:11	592	55.54	38.325	0.295
08/26/23 16:12	593	55.57	38.357	0.294
08/26/23 16:13	594	55.60	38.394	0.294
08/26/23 16:14	595	55.63	38.420	0.298
08/26/23 16:15	596	55.66	38.452	0.301
08/26/23 16:16	597	55.69	38.484	0.296
08/26/23 16:17	598	55.72	38.505	0.295
08/26/23 16:18	599	55.74	38.532	0.300
08/26/23 16:19	600	55.77	38.558	0.297
08/26/23 16:20	601	55.79	38.580	0.296
08/26/23 16:21	602	55.82	38.606	0.294
08/26/23 16:22	603	55.84	38.633	0.299
08/26/23 16:23	604	55.87	38.664	0.295
08/26/23 16:24	605	55.91	38.696	0.301
08/26/23 16:25	606	55.93	38.723	0.297
08/26/23 16:26	607	55.96	38.749	0.300

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 16:27	608	55.98	38.771	0.295
08/26/23 16:28	609	56.02	38.808	0.298
08/26/23 16:29	610	56.04	38.834	0.301
08/26/23 16:30	611	56.08	38.866	0.305
08/26/23 16:31	612	56.10	38.893	0.299
08/26/23 16:32	613	56.13	38.919	0.297
08/26/23 16:33	614	56.16	38.946	0.293
08/26/23 16:34	615	56.18	38.967	0.297
08/26/23 16:35	616	56.20	38.994	0.287
08/26/23 16:36	617	56.23	39.020	0.286
08/26/23 16:37	618	56.26	39.047	0.300
08/26/23 16:38	619	56.28	39.073	0.301
08/26/23 16:39	620	56.32	39.105	0.301
08/26/23 16:40	621	56.35	39.137	0.293
08/26/23 16:41	622	56.38	39.169	0.299
08/26/23 16:42	623	56.41	39.201	0.293
08/26/23 16:43	624	56.44	39.227	0.295
08/26/23 16:44	625	56.46	39.249	0.299
08/26/23 16:45	626	56.50	39.286	0.301
08/26/23 16:46	627	56.52	39.312	0.295
08/26/23 16:47	628	56.54	39.334	0.304
08/26/23 16:48	629	56.57	39.360	0.302
08/26/23 16:49	630	56.61	39.403	0.302
08/26/23 16:50	631	56.64	39.434	0.300
08/26/23 16:51	632	56.67	39.461	0.299
08/26/23 16:52	633	56.70	39.487	0.303
08/26/23 16:53	634	56.73	39.519	0.296
08/26/23 16:54	635	56.76	39.551	0.300
08/26/23 16:55	636	56.79	39.578	0.302
08/26/23 16:56	637	56.81	39.604	0.299
08/26/23 16:57	638	56.84	39.631	0.299
08/26/23 16:58	639	56.87	39.663	0.294
08/26/23 16:59	640	56.92	39.705	0.304
08/26/23 17:00	641	56.95	39.742	0.305
08/26/23 17:01	642	56.98	39.769	0.296
08/26/23 17:02	643	57.01	39.801	0.303
08/26/23 17:03	644	57.04	39.833	0.297
08/26/23 17:04	645	57.07	39.864	0.296
08/26/23 17:05	646	57.11	39.896	0.304
08/26/23 17:06	647	57.15	39.944	0.302
08/26/23 17:07	648	57.18	39.971	0.298
08/26/23 17:08	649	57.22	40.008	0.295
08/26/23 17:09	650	57.24	40.034	0.300
08/26/23 17:10	651	57.28	40.072	0.306

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 17:11	652	57.31	40.098	0.296
08/26/23 17:12	653	57.33	40.119	0.296
08/26/23 17:13	654	57.36	40.151	0.298
08/26/23 17:14	655	57.39	40.178	0.296
08/26/23 17:15	655	57.41	40.204	0.298
08/26/23 17:16	656	57.43	40.220	0.300
08/26/23 17:17	657	57.46	40.252	0.300
08/26/23 17:18	658	57.49	40.284	0.301
08/26/23 17:19	659	57.52	40.305	0.297
08/26/23 17:20	660	57.54	40.326	0.296
08/26/23 17:21	661	57.58	40.369	0.301
08/26/23 17:22	662	57.61	40.395	0.303
08/26/23 17:23	663	57.64	40.427	0.303
08/26/23 17:24	664	57.67	40.464	0.304
08/26/23 17:25	665	57.70	40.491	0.296
08/26/23 17:26	666	57.73	40.523	0.295
08/26/23 17:27	667	57.76	40.549	0.299
08/26/23 17:28	668	57.80	40.587	0.300
08/26/23 17:29	669	57.82	40.613	0.294
08/26/23 17:30	670	57.86	40.650	0.298
08/26/23 17:31	671	57.89	40.677	0.298
08/26/23 17:32	672	57.91	40.703	0.296
08/26/23 17:33	673	57.95	40.741	0.301
08/26/23 17:34	674	57.98	40.767	0.299
08/26/23 17:35	675	58.01	40.799	0.303
08/26/23 17:36	676	58.04	40.831	0.301
08/26/23 17:37	677	58.07	40.857	0.300
08/26/23 17:38	678	58.10	40.889	0.302
08/26/23 17:39	679	58.13	40.921	0.301
08/26/23 17:40	680	58.16	40.953	0.302
08/26/23 17:41	681	58.20	40.985	0.304
08/26/23 17:42	682	58.23	41.017	0.310
08/26/23 17:43	683	58.26	41.049	0.309
08/26/23 17:44	684	58.29	41.075	0.299
08/26/23 17:45	685	58.31	41.102	0.304
08/26/23 17:46	686	58.34	41.128	0.298
08/26/23 17:47	687	58.37	41.160	0.297
08/26/23 17:48	688	58.40	41.192	0.303
08/26/23 17:49	689	58.43	41.224	0.303
08/26/23 17:50	690	58.47	41.256	0.296
08/26/23 17:51	691	58.49	41.277	0.300
08/26/23 17:52	692	58.52	41.309	0.296
08/26/23 17:53	693	58.55	41.335	0.302
08/26/23 17:54	694	58.58	41.367	0.299

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 17:55	695	58.60	41.394	0.306
08/26/23 17:56	696	58.63	41.415	0.300
08/26/23 17:57	697	58.66	41.447	0.296
08/26/23 17:58	698	58.68	41.468	0.295
08/26/23 17:59	699	58.71	41.500	0.299
08/26/23 18:00	700	58.75	41.537	0.299
08/26/23 18:01	701	58.77	41.558	0.306
08/26/23 18:02	702	58.80	41.590	0.302
08/26/23 18:03	703	58.83	41.617	0.298
08/26/23 18:04	704	58.86	41.649	0.300
08/26/23 18:05	705	58.89	41.675	0.301
08/26/23 18:06	706	58.91	41.702	0.310
08/26/23 18:07	707	58.94	41.733	0.306
08/26/23 18:08	708	58.98	41.771	0.307
08/26/23 18:09	709	59.01	41.797	0.309
08/26/23 18:10	710	59.04	41.829	0.305
08/26/23 18:11	711	59.08	41.866	0.298
08/26/23 18:12	712	59.10	41.893	0.301
08/26/23 18:13	713	59.13	41.919	0.298
08/26/23 18:14	714	59.16	41.946	0.305
08/26/23 18:15	715	59.19	41.978	0.307
08/26/23 18:16	716	59.22	42.010	0.302
08/26/23 18:17	717	59.25	42.041	0.304
08/26/23 18:18	718	59.28	42.068	0.301
08/26/23 18:19	719	59.31	42.100	0.309
08/26/23 18:20	720	59.34	42.126	0.306
08/26/23 18:21	721	59.36	42.153	0.308
08/26/23 18:22	722	59.39	42.180	0.302
08/26/23 18:23	723	59.42	42.211	0.306
08/26/23 18:24	724	59.46	42.254	0.301
08/26/23 18:25	725	59.57	42.355	0.296
08/26/23 18:26	726	59.60	42.387	0.304
08/26/23 18:27	727	59.65	42.440	0.299
08/26/23 18:28	728	59.68	42.466	0.307
08/26/23 18:29	729	59.71	42.503	0.304
08/26/23 18:30	730	59.73	42.519	0.303
08/26/23 18:31	731	59.79	42.578	0.307
08/26/23 18:32	732	59.82	42.610	0.305
08/26/23 18:33	733	59.83	42.620	0.304
08/26/23 18:34	734	59.86	42.647	0.303
08/26/23 18:35	735	59.88	42.668	0.303
08/26/23 18:36	736	59.90	42.689	0.305
08/26/23 18:37	737	59.94	42.726	0.311
08/26/23 18:38	738	59.97	42.758	0.304

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 18:39	739	59.99	42.779	0.302
08/26/23 18:40	740	60.03	42.817	0.303
08/26/23 18:41	741	60.05	42.843	0.305
08/26/23 18:42	742	60.08	42.870	0.302
08/26/23 18:43	743	60.12	42.907	0.307
08/26/23 18:44	744	60.13	42.918	0.303
08/26/23 18:45	745	60.15	42.939	0.301
08/26/23 18:46	746	60.16	42.949	0.298
08/26/23 18:47	747	60.18	42.965	0.303
08/26/23 18:48	748	60.20	42.992	0.307
08/26/23 18:49	749	60.22	43.008	0.304
08/26/23 18:50	750	60.23	43.024	0.310
08/26/23 18:51	751	60.26	43.045	0.308
08/26/23 18:52	752	60.28	43.072	0.301
08/26/23 18:53	753	60.30	43.087	0.299
08/26/23 18:58	758	60.45	43.235	0.302
08/26/23 18:59	759	60.47	43.256	0.310
08/26/23 19:00	760	60.50	43.293	0.310
08/26/23 19:01	761	60.53	43.320	0.308
08/26/23 19:02	762	60.56	43.346	0.307
08/26/23 19:03	763	60.58	43.373	0.306
08/26/23 19:04	764	60.62	43.410	0.303
08/26/23 19:05	765	60.64	43.431	0.308
08/26/23 19:06	766	60.68	43.469	0.306
08/26/23 19:07	767	60.71	43.500	0.305
08/26/23 19:08	768	60.74	43.532	0.299
08/26/23 19:09	769	60.77	43.559	0.307
08/26/23 19:10	770	60.81	43.596	0.311
08/26/23 19:11	771	60.83	43.617	0.302
08/26/23 19:12	772	60.87	43.660	0.310
08/26/23 19:13	773	60.89	43.681	0.305
08/26/23 19:14	774	60.92	43.713	0.309
08/26/23 19:15	775	60.94	43.734	0.307
08/26/23 19:16	776	60.99	43.776	0.311
08/26/23 19:17	777	61.02	43.808	0.300
08/26/23 19:18	778	61.04	43.830	0.306
08/26/23 19:19	779	61.07	43.861	0.313
08/26/23 19:20	780	61.10	43.888	0.303
08/26/23 19:21	781	61.13	43.920	0.310
08/26/23 19:22	782	61.14	43.930	0.307
08/26/23 19:23	783	61.17	43.957	0.310
08/26/23 19:24	784	61.21	44.000	0.307
08/26/23 19:25	785	61.23	44.021	0.313
08/26/23 19:26	786	61.25	44.037	0.309

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 19:27	787	61.26	44.047	0.310
08/26/23 19:28	788	61.28	44.074	0.307
08/26/23 19:29	789	61.30	44.090	0.308
08/26/23 19:30	790	61.33	44.122	0.309
08/26/23 19:31	791	61.36	44.153	0.311
08/26/23 19:32	792	61.39	44.180	0.302
08/26/23 19:33	793	61.41	44.201	0.309
08/26/23 19:34	794	61.43	44.223	0.306
08/26/23 19:35	795	61.46	44.254	0.313
08/26/23 19:36	796	61.49	44.276	0.303
08/26/23 19:37	797	61.52	44.313	0.313
08/26/23 19:38	798	61.54	44.334	0.299
08/26/23 19:39	799	61.57	44.361	0.303
08/26/23 19:40	800	61.60	44.387	0.301
08/26/23 19:41	801	61.63	44.419	0.297
08/26/23 19:42	802	61.65	44.435	0.302
08/26/23 19:43	803	61.68	44.467	0.303
08/26/23 19:44	804	61.71	44.504	0.307
08/26/23 19:45	805	61.74	44.530	0.299
08/26/23 19:46	806	61.78	44.573	0.309
08/26/23 19:47	807	61.80	44.589	0.304
08/26/23 19:48	808	61.83	44.615	0.302
08/26/23 19:49	809	61.85	44.642	0.307
08/26/23 19:50	810	61.88	44.669	0.299
08/26/23 19:51	811	61.91	44.695	0.302
08/26/23 19:52	812	61.95	44.738	0.306
08/26/23 19:53	813	61.98	44.769	0.310
08/26/23 19:54	814	62.00	44.791	0.309
08/26/23 19:55	815	62.04	44.833	0.303
08/26/23 19:56	816	62.06	44.854	0.300
08/26/23 19:57	817	62.09	44.881	0.311
08/26/23 19:58	818	62.12	44.907	0.310
08/26/23 19:59	819	62.14	44.934	0.304
08/26/23 20:00	820	62.17	44.961	0.302
08/26/23 20:01	821	62.20	44.987	0.306
08/26/23 20:02	822	62.22	45.014	0.310
08/26/23 20:03	823	62.25	45.035	0.310
08/26/23 20:04	824	62.28	45.067	0.310
08/26/23 20:05	825	62.30	45.093	0.304
08/26/23 20:06	826	62.34	45.125	0.305
08/26/23 20:07	827	62.35	45.141	0.305
08/26/23 20:08	828	62.38	45.173	0.305
08/26/23 20:09	829	62.40	45.189	0.307
08/26/23 20:10	830	62.43	45.221	0.303

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 20:11	831	62.45	45.242	0.305
08/26/23 20:12	832	62.46	45.253	0.301
08/26/23 20:13	833	62.49	45.279	0.296
08/26/23 20:14	834	62.53	45.316	0.305
08/26/23 20:15	835	62.55	45.338	0.303
08/26/23 20:16	836	62.57	45.364	0.303
08/26/23 20:17	837	62.60	45.385	0.308
08/26/23 20:18	838	62.63	45.417	0.303
08/26/23 20:19	839	62.65	45.444	0.307
08/26/23 20:20	840	62.68	45.470	0.299
08/26/23 20:21	841	62.71	45.502	0.304
08/26/23 20:22	842	62.72	45.513	0.310
08/26/23 20:23	843	62.75	45.539	0.300
08/26/23 20:24	844	62.79	45.576	0.306
08/26/23 20:25	845	62.81	45.603	0.302
08/26/23 20:26	846	62.84	45.630	0.301
08/26/23 20:27	847	62.86	45.646	0.310
08/26/23 20:28	848	62.88	45.672	0.302
08/26/23 20:29	849	62.89	45.683	0.307
08/26/23 20:30	850	62.94	45.725	0.308
08/26/23 20:31	851	62.95	45.736	0.310
08/26/23 20:32	852	62.99	45.778	0.305
08/26/23 20:33	853	62.99	45.784	0.310
08/26/23 20:34	854	63.03	45.821	0.299
08/26/23 20:35	855	63.05	45.837	0.303
08/26/23 20:36	856	63.08	45.869	0.312
08/26/23 20:37	857	63.10	45.890	0.310
08/26/23 20:38	858	63.14	45.927	0.303
08/26/23 20:39	859	63.16	45.953	0.306
08/26/23 20:40	860	63.19	45.975	0.305
08/26/23 20:41	861	63.21	46.001	0.312
08/26/23 20:42	862	63.24	46.028	0.303
08/26/23 20:43	863	63.25	46.044	0.302
08/26/23 20:44	864	63.29	46.076	0.301
08/26/23 20:45	865	63.30	46.092	0.308
08/26/23 20:46	866	63.33	46.123	0.301
08/26/23 20:47	867	63.36	46.145	0.309
08/26/23 20:48	868	63.37	46.161	0.306
08/26/23 20:49	869	63.39	46.176	0.308
08/26/23 20:50	870	63.40	46.192	0.301
08/26/23 20:51	871	63.43	46.219	0.305
08/26/23 20:52	872	63.45	46.240	0.301
08/26/23 20:53	873	63.49	46.277	0.301
08/26/23 20:54	874	63.51	46.299	0.304

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 20:55	875	63.54	46.325	0.301
08/26/23 20:56	876	63.56	46.346	0.310
08/26/23 20:57	877	63.59	46.378	0.311
08/26/23 20:58	878	63.62	46.410	0.303
08/26/23 20:59	879	63.65	46.437	0.303
08/26/23 21:00	880	63.66	46.453	0.301
08/26/23 21:01	881	63.69	46.479	0.306
08/26/23 21:02	882	63.73	46.516	0.301
08/26/23 21:03	883	63.74	46.532	0.303
08/26/23 21:04	884	63.77	46.559	0.307
08/26/23 21:05	885	63.79	46.575	0.303
08/26/23 21:06	886	63.82	46.607	0.304
08/26/23 21:07	887	63.82	46.612	0.313
08/26/23 21:08	888	63.84	46.633	0.304
08/26/23 21:09	889	63.87	46.660	0.303
08/26/23 21:10	890	63.89	46.681	0.308
08/26/23 21:11	891	63.90	46.686	0.305
08/26/23 21:12	892	63.91	46.697	0.301
08/26/23 21:13	893	63.93	46.718	0.301
08/26/23 21:14	894	63.96	46.745	0.306
08/26/23 21:15	895	63.99	46.782	0.307
08/26/23 21:16	896	64.00	46.792	0.300
08/26/23 21:17	897	64.03	46.824	0.307
08/26/23 21:18	898	64.06	46.851	0.300
08/26/23 21:19	899	64.08	46.872	0.304
08/26/23 21:20	900	64.11	46.904	0.302
08/26/23 21:21	901	64.15	46.936	0.301
08/26/23 21:22	902	64.17	46.962	0.304
08/26/23 21:23	903	64.20	46.994	0.306
08/26/23 21:24	904	64.22	47.010	0.302
08/26/23 21:25	905	64.25	47.037	0.301
08/26/23 21:26	906	64.27	47.058	0.304
08/26/23 21:27	907	64.31	47.095	0.303
08/26/23 21:28	908	64.33	47.116	0.309
08/26/23 21:29	909	64.35	47.143	0.304
08/26/23 21:30	910	64.38	47.169	0.305
08/26/23 21:31	911	64.41	47.196	0.302
08/26/23 21:32	912	64.44	47.228	0.300
08/26/23 21:33	913	64.46	47.254	0.303
08/26/23 21:34	914	64.49	47.276	0.302
08/26/23 21:35	915	64.51	47.297	0.300
08/26/23 21:36	916	64.54	47.329	0.302
08/26/23 21:37	917	64.56	47.350	0.303
08/26/23 21:38	918	64.59	47.382	0.303

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 21:39	919	64.61	47.398	0.309
08/26/23 21:40	920	64.64	47.430	0.304
08/26/23 21:41	921	64.68	47.467	0.303
08/26/23 21:42	922	64.70	47.493	0.304
08/26/23 21:43	923	64.73	47.515	0.304
08/26/23 21:44	924	64.75	47.541	0.305
08/26/23 21:45	925	64.78	47.568	0.307
08/26/23 21:46	926	64.81	47.599	0.303
08/26/23 21:47	927	64.82	47.610	0.300
08/26/23 21:48	928	64.85	47.642	0.298
08/26/23 21:49	929	64.87	47.658	0.303
08/26/23 21:50	930	64.88	47.674	0.307
08/26/23 21:51	931	64.90	47.690	0.298
08/26/23 21:52	932	64.93	47.722	0.309
08/26/23 21:53	933	64.94	47.732	0.301
08/26/23 21:54	934	64.97	47.759	0.305
08/26/23 21:55	935	64.99	47.775	0.301
08/26/23 21:56	936	65.01	47.801	0.297
08/26/23 21:57	937	65.04	47.828	0.308
08/26/23 21:58	938	65.06	47.854	0.295
08/26/23 21:59	939	65.09	47.876	0.299
08/26/23 22:00	940	65.09	47.881	0.299
08/26/23 22:01	941	65.12	47.913	0.302
08/26/23 22:02	942	65.16	47.945	0.301
08/26/23 22:03	943	65.17	47.955	0.300
08/26/23 22:04	944	65.19	47.976	0.300
08/26/23 22:05	945	65.21	48.003	0.306
08/26/23 22:06	946	65.22	48.014	0.301
08/26/23 22:07	947	65.26	48.045	0.296
08/26/23 22:08	948	65.27	48.061	0.310
08/26/23 22:09	949	65.28	48.072	0.305
08/26/23 22:10	950	65.32	48.109	0.302
08/26/23 22:11	951	65.34	48.125	0.301
08/26/23 22:12	952	65.36	48.146	0.296
08/26/23 22:13	953	65.38	48.173	0.299
08/26/23 22:14	954	65.40	48.194	0.304
08/26/23 22:15	955	65.44	48.226	0.304
08/26/23 22:16	956	65.47	48.258	0.304
08/26/23 22:17	957	65.48	48.274	0.302
08/26/23 22:18	958	65.51	48.295	0.301
08/26/23 22:19	959	65.53	48.322	0.306
08/26/23 22:20	960	65.55	48.343	0.300
08/26/23 22:21	961	65.58	48.369	0.300
08/26/23 22:22	962	65.61	48.401	0.303

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 22:23	963	65.63	48.417	0.300
08/26/23 22:24	964	65.66	48.449	0.309
08/26/23 22:25	965	65.68	48.465	0.299
08/26/23 22:26	966	65.70	48.491	0.307
08/26/23 22:27	967	65.73	48.518	0.301
08/26/23 22:28	968	65.75	48.539	0.298
08/26/23 22:29	969	65.78	48.566	0.298
08/26/23 22:30	970	65.80	48.587	0.308
08/26/23 22:31	971	65.82	48.608	0.302
08/26/23 22:32	972	65.85	48.635	0.302
08/26/23 22:33	973	65.87	48.661	0.307
08/26/23 22:34	974	65.90	48.693	0.300
08/26/23 22:35	975	65.93	48.715	0.301
08/26/23 22:36	976	65.95	48.741	0.307
08/26/23 22:37	977	65.98	48.773	0.304
08/26/23 22:38	978	66.00	48.794	0.304
08/26/23 22:39	979	66.03	48.821	0.305
08/26/23 22:40	980	66.05	48.842	0.300
08/26/23 22:41	981	66.07	48.863	0.309
08/26/23 22:42	982	66.11	48.895	0.300
08/26/23 22:43	983	66.13	48.922	0.301
08/26/23 22:44	984	66.15	48.938	0.301
08/26/23 22:45	985	66.17	48.959	0.307
08/26/23 22:46	986	66.20	48.991	0.305
08/26/23 22:47	987	66.22	49.007	0.302
08/26/23 22:48	988	66.24	49.028	0.293
08/26/23 22:49	989	66.26	49.054	0.300
08/26/23 22:50	990	66.28	49.070	0.299
08/26/23 22:51	991	66.30	49.091	0.298
08/26/23 22:52	992	66.31	49.097	0.305
08/26/23 22:53	993	66.33	49.123	0.306
08/26/23 22:54	994	66.34	49.134	0.302
08/26/23 22:55	995	66.37	49.161	0.305
08/26/23 22:56	996	66.39	49.182	0.302
08/26/23 22:57	997	66.41	49.203	0.302
08/26/23 22:58	998	66.42	49.214	0.302
08/26/23 22:59	999	66.46	49.245	0.306
08/26/23 23:00	1000	66.49	49.283	0.299
08/26/23 23:01	1001	66.51	49.304	0.304
08/26/23 23:02	1002	66.54	49.330	0.302
08/26/23 23:03	1003	66.55	49.341	0.307
08/26/23 23:04	1004	66.58	49.368	0.304
08/26/23 23:05	1005	66.61	49.399	0.304
08/26/23 23:06	1006	66.62	49.410	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 23:07	1007	66.66	49.447	0.298
08/26/23 23:08	1008	66.68	49.474	0.302
08/26/23 23:09	1009	66.72	49.506	0.294
08/26/23 23:10	1010	66.75	49.543	0.309
08/26/23 23:11	1011	66.79	49.580	0.308
08/26/23 23:12	1012	66.81	49.601	0.302
08/26/23 23:13	1013	66.84	49.628	0.300
08/26/23 23:14	1014	66.88	49.665	0.304
08/26/23 23:15	1015	66.90	49.691	0.306
08/26/23 23:16	1016	66.94	49.729	0.300
08/26/23 23:17	1017	66.97	49.761	0.301
08/26/23 23:18	1018	67.00	49.787	0.302
08/26/23 23:19	1019	67.02	49.808	0.307
08/26/23 23:20	1020	67.05	49.835	0.301
08/26/23 23:21	1021	67.08	49.872	0.304
08/26/23 23:22	1022	67.11	49.899	0.304
08/26/23 23:23	1023	67.14	49.925	0.304
08/26/23 23:24	1024	67.16	49.952	0.300
08/26/23 23:25	1025	67.18	49.973	0.299
08/26/23 23:26	1026	67.22	50.005	0.302
08/26/23 23:27	1027	67.24	50.026	0.306
08/26/23 23:28	1028	67.27	50.063	0.307
08/26/23 23:29	1029	67.30	50.090	0.304
08/26/23 23:30	1030	67.32	50.106	0.308
08/26/23 23:31	1031	67.34	50.132	0.301
08/26/23 23:32	1032	67.36	50.148	0.297
08/26/23 23:33	1033	67.38	50.169	0.301
08/26/23 23:34	1034	67.41	50.196	0.302
08/26/23 23:35	1035	67.43	50.222	0.297
08/26/23 23:36	1036	67.45	50.244	0.300
08/26/23 23:37	1037	67.48	50.270	0.303
08/26/23 23:38	1038	67.49	50.276	0.303
08/26/23 23:39	1039	67.51	50.302	0.302
08/26/23 23:40	1040	67.54	50.329	0.305
08/26/23 23:41	1041	67.57	50.355	0.299
08/26/23 23:42	1042	67.59	50.376	0.300
08/26/23 23:43	1043	67.61	50.403	0.305
08/26/23 23:44	1044	67.63	50.424	0.306
08/26/23 23:45	1045	67.65	50.440	0.308
08/26/23 23:46	1046	67.68	50.472	0.304
08/26/23 23:47	1047	67.69	50.483	0.300
08/26/23 23:48	1048	67.72	50.509	0.303
08/26/23 23:49	1049	67.74	50.525	0.301
08/26/23 23:50	1050	67.75	50.541	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/26/23 23:51	1051	67.79	50.578	0.301
08/26/23 23:52	1052	67.80	50.589	0.303
08/26/23 23:53	1053	67.83	50.615	0.303
08/26/23 23:54	1054	67.85	50.642	0.302
08/26/23 23:55	1055	67.88	50.668	0.300
08/26/23 23:56	1056	67.91	50.695	0.303
08/26/23 23:57	1057	67.93	50.722	0.299
08/26/23 23:58	1058	67.95	50.743	0.299
08/26/23 23:59	1059	67.98	50.769	0.308
08/27/23 00:00	1060	68.00	50.791	0.296
08/27/23 00:01	1061	68.02	50.812	0.300
08/27/23 00:02	1062	68.05	50.838	0.303
08/27/23 00:03	1063	68.08	50.870	0.302
08/27/23 00:04	1064	68.10	50.886	0.299
08/27/23 00:05	1065	68.13	50.918	0.299
08/27/23 00:06	1066	68.15	50.939	0.299
08/27/23 00:07	1067	68.17	50.960	0.296
08/27/23 00:08	1068	68.20	50.987	0.305
08/27/23 00:09	1069	68.22	51.008	0.298
08/27/23 00:10	1070	68.24	51.030	0.302
08/27/23 00:11	1071	68.27	51.061	0.300
08/27/23 00:12	1072	68.29	51.083	0.302
08/27/23 00:13	1073	68.32	51.114	0.300
08/27/23 00:14	1074	68.35	51.136	0.305
08/27/23 00:15	1075	68.37	51.157	0.299
08/27/23 00:16	1076	68.39	51.184	0.300
08/27/23 00:17	1077	68.42	51.210	0.301
08/27/23 00:18	1078	68.45	51.242	0.298
08/27/23 00:19	1079	68.47	51.258	0.298
08/27/23 00:20	1080	68.50	51.290	0.300
08/27/23 00:21	1081	68.53	51.316	0.298
08/27/23 00:22	1082	68.54	51.327	0.307
08/27/23 00:23	1083	68.56	51.353	0.298
08/27/23 00:24	1084	68.59	51.380	0.304
08/27/23 00:25	1085	68.62	51.407	0.307
08/27/23 00:26	1086	68.64	51.433	0.301
08/27/23 00:27	1087	68.66	51.454	0.301
08/27/23 00:28	1088	68.69	51.481	0.303
08/27/23 00:29	1089	68.71	51.497	0.300
08/27/23 00:30	1090	68.74	51.529	0.297
08/27/23 00:31	1091	68.77	51.555	0.297
08/27/23 00:32	1092	68.79	51.582	0.302
08/27/23 00:33	1093	68.82	51.614	0.299
08/27/23 00:34	1094	68.85	51.640	0.296

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 00:35	1095	68.88	51.667	0.305
08/27/23 00:36	1096	68.90	51.688	0.303
08/27/23 00:37	1097	68.93	51.720	0.298
08/27/23 00:38	1098	68.96	51.746	0.300
08/27/23 00:39	1099	68.97	51.762	0.300
08/27/23 00:40	1100	69.00	51.789	0.300
08/27/23 00:41	1101	69.03	51.821	0.293
08/27/23 00:42	1102	69.05	51.842	0.299
08/27/23 00:43	1103	69.05	51.837	0.301
08/27/23 00:44	1104	69.06	51.847	0.299
08/27/23 00:45	1105	69.07	51.863	0.304
08/27/23 00:46	1106	69.07	51.858	0.301
08/27/23 00:47	1107	69.10	51.890	0.302
08/27/23 00:48	1108	69.12	51.906	0.302
08/27/23 00:49	1109	69.13	51.922	0.303
08/27/23 00:50	1110	69.16	51.948	0.302
08/27/23 00:51	1111	69.19	51.975	0.300
08/27/23 00:52	1112	69.21	52.001	0.299
08/27/23 00:53	1113	69.23	52.022	0.299
08/27/23 00:54	1114	69.25	52.044	0.305
08/27/23 00:55	1115	69.29	52.081	0.302
08/27/23 00:56	1116	69.31	52.097	0.302
08/27/23 00:57	1117	69.35	52.139	0.300
08/27/23 00:58	1118	69.38	52.166	0.303
08/27/23 00:59	1119	69.41	52.198	0.299
08/27/23 01:00	1120	69.43	52.224	0.302
08/27/23 01:01	1121	69.46	52.245	0.299
08/27/23 01:02	1122	69.50	52.288	0.291
08/27/23 01:03	1123	69.51	52.304	0.303
08/27/23 01:04	1124	69.55	52.336	0.302
08/27/23 01:05	1125	69.56	52.346	0.300
08/27/23 01:06	1126	69.58	52.373	0.300
08/27/23 01:07	1127	69.61	52.399	0.303
08/27/23 01:08	1128	69.62	52.410	0.300
08/27/23 01:09	1129	69.65	52.437	0.298
08/27/23 01:10	1130	69.66	52.453	0.305
08/27/23 01:11	1131	69.68	52.474	0.300
08/27/23 01:12	1132	69.72	52.506	0.302
08/27/23 01:13	1133	69.75	52.537	0.306
08/27/23 01:14	1134	69.77	52.564	0.292
08/27/23 01:15	1135	69.80	52.591	0.303
08/27/23 01:16	1136	69.82	52.612	0.297
08/27/23 01:17	1137	69.86	52.649	0.305
08/27/23 01:18	1138	69.89	52.676	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 01:19	1139	69.91	52.697	0.300
08/27/23 01:20	1140	69.93	52.723	0.302
08/27/23 01:21	1141	69.96	52.745	0.302
08/27/23 01:22	1142	69.98	52.771	0.308
08/27/23 01:23	1143	70.01	52.798	0.303
08/27/23 01:24	1144	70.04	52.830	0.301
08/27/23 01:25	1145	70.07	52.856	0.306
08/27/23 01:26	1146	70.10	52.888	0.297
08/27/23 01:27	1147	70.13	52.920	0.302
08/27/23 01:28	1148	70.16	52.946	0.302
08/27/23 01:29	1149	70.19	52.983	0.299
08/27/23 01:30	1150	70.22	53.010	0.302
08/27/23 01:31	1151	70.25	53.042	0.302
08/27/23 01:32	1152	70.28	53.068	0.300
08/27/23 01:33	1153	70.32	53.106	0.305
08/27/23 01:34	1154	70.34	53.132	0.305
08/27/23 01:35	1155	70.36	53.153	0.304
08/27/23 01:36	1156	70.40	53.191	0.302
08/27/23 01:37	1157	70.43	53.222	0.303
08/27/23 01:38	1158	70.46	53.249	0.297
08/27/23 01:39	1159	70.49	53.276	0.304
08/27/23 01:40	1160	70.50	53.291	0.307
08/27/23 01:41	1161	70.53	53.318	0.303
08/27/23 01:42	1162	70.56	53.345	0.304
08/27/23 01:43	1163	70.58	53.366	0.295
08/27/23 01:44	1164	70.60	53.387	0.300
08/27/23 01:45	1165	70.62	53.408	0.299
08/27/23 01:46	1166	70.66	53.451	0.300
08/27/23 01:47	1167	70.68	53.472	0.299
08/27/23 01:48	1168	70.70	53.493	0.297
08/27/23 01:49	1169	70.73	53.520	0.298
08/27/23 01:50	1170	70.75	53.541	0.301
08/27/23 01:51	1171	70.77	53.562	0.302
08/27/23 01:52	1172	70.80	53.589	0.305
08/27/23 01:53	1173	70.83	53.621	0.299
08/27/23 01:54	1174	70.85	53.642	0.305
08/27/23 01:55	1175	70.88	53.668	0.306
08/27/23 01:56	1176	70.91	53.700	0.298
08/27/23 01:57	1177	70.94	53.727	0.297
08/27/23 01:58	1178	70.96	53.753	0.299
08/27/23 01:59	1179	70.99	53.775	0.306
08/27/23 02:00	1180	71.00	53.785	0.302
08/27/23 02:01	1181	71.02	53.806	0.308
08/27/23 02:02	1182	71.04	53.833	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 02:03	1183	71.06	53.849	0.299
08/27/23 02:04	1184	71.08	53.870	0.301
08/27/23 02:05	1185	71.11	53.897	0.305
08/27/23 02:06	1186	71.13	53.923	0.305
08/27/23 02:07	1187	71.15	53.939	0.298
08/27/23 02:08	1188	71.18	53.971	0.301
08/27/23 02:09	1189	71.21	54.003	0.297
08/27/23 02:10	1190	71.23	54.024	0.302
08/27/23 02:11	1191	71.25	54.040	0.300
08/27/23 02:12	1192	71.28	54.072	0.296
08/27/23 02:13	1193	71.31	54.099	0.299
08/27/23 02:14	1194	71.34	54.125	0.302
08/27/23 02:15	1195	71.36	54.146	0.299
08/27/23 02:16	1196	71.38	54.173	0.305
08/27/23 02:17	1197	71.40	54.194	0.297
08/27/23 02:18	1198	71.44	54.226	0.303
08/27/23 02:19	1199	71.46	54.252	0.300
08/27/23 02:20	1200	71.48	54.274	0.300
08/27/23 02:21	1201	71.51	54.295	0.307
08/27/23 02:22	1202	71.53	54.322	0.299
08/27/23 02:23	1203	71.55	54.343	0.294
08/27/23 02:24	1204	71.57	54.359	0.301
08/27/23 02:25	1205	71.59	54.380	0.300
08/27/23 02:26	1206	71.61	54.401	0.302
08/27/23 02:27	1207	71.63	54.422	0.303
08/27/23 02:28	1208	71.65	54.438	0.301
08/27/23 02:29	1209	71.66	54.449	0.305
08/27/23 02:30	1210	71.69	54.476	0.300
08/27/23 02:31	1211	71.72	54.507	0.303
08/27/23 02:32	1212	71.73	54.518	0.304
08/27/23 02:33	1213	71.76	54.545	0.304
08/27/23 02:34	1214	71.78	54.571	0.303
08/27/23 02:35	1215	71.80	54.587	0.300
08/27/23 02:36	1216	71.84	54.629	0.304
08/27/23 02:37	1217	71.86	54.645	0.301
08/27/23 02:38	1218	71.88	54.667	0.301
08/27/23 02:39	1219	71.89	54.683	0.306
08/27/23 02:40	1220	71.91	54.699	0.298
08/27/23 02:41	1221	71.92	54.714	0.301
08/27/23 02:42	1222	71.96	54.746	0.303
08/27/23 02:43	1223	71.98	54.773	0.301
08/27/23 02:44	1224	72.00	54.789	0.304
08/27/23 02:45	1225	72.02	54.810	0.305
08/27/23 02:46	1226	72.04	54.826	0.307

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 02:47	1227	72.05	54.842	0.304
08/27/23 02:48	1228	72.07	54.858	0.298
08/27/23 02:49	1229	72.11	54.895	0.301
08/27/23 02:50	1230	72.12	54.906	0.303
08/27/23 02:51	1231	72.14	54.932	0.299
08/27/23 02:52	1232	72.15	54.943	0.302
08/27/23 02:53	1233	72.18	54.969	0.304
08/27/23 02:54	1234	72.21	55.001	0.304
08/27/23 02:55	1235	72.23	55.017	0.306
08/27/23 02:56	1236	72.25	55.044	0.295
08/27/23 02:57	1237	72.28	55.065	0.299
08/27/23 02:58	1238	72.29	55.076	0.301
08/27/23 02:59	1239	72.31	55.097	0.300
08/27/23 03:00	1240	72.33	55.123	0.299
08/27/23 03:01	1241	72.34	55.134	0.300
08/27/23 03:02	1242	72.37	55.155	0.296
08/27/23 03:03	1243	72.39	55.176	0.303
08/27/23 03:04	1244	72.41	55.198	0.301
08/27/23 03:05	1245	72.43	55.219	0.299
08/27/23 03:06	1246	72.45	55.240	0.301
08/27/23 03:07	1247	72.47	55.256	0.300
08/27/23 03:08	1248	72.49	55.277	0.303
08/27/23 03:09	1249	72.50	55.293	0.303
08/27/23 03:10	1250	72.52	55.314	0.304
08/27/23 03:11	1251	72.55	55.341	0.297
08/27/23 03:12	1252	72.56	55.346	0.294
08/27/23 03:13	1253	72.58	55.368	0.301
08/27/23 03:14	1254	72.61	55.399	0.299
08/27/23 03:15	1255	72.62	55.410	0.299
08/27/23 03:16	1256	72.65	55.442	0.301
08/27/23 03:17	1257	72.67	55.458	0.296
08/27/23 03:18	1258	72.68	55.474	0.303
08/27/23 03:19	1259	72.71	55.495	0.300
08/27/23 03:20	1260	72.72	55.511	0.301
08/27/23 03:21	1261	72.75	55.543	0.302
08/27/23 03:22	1262	72.76	55.553	0.298
08/27/23 03:23	1263	72.78	55.569	0.299
08/27/23 03:24	1264	72.81	55.601	0.300
08/27/23 03:25	1265	72.84	55.628	0.297
08/27/23 03:26	1266	72.85	55.644	0.302
08/27/23 03:27	1267	72.88	55.665	0.303
08/27/23 03:28	1268	72.90	55.686	0.303
08/27/23 03:29	1269	72.92	55.707	0.302
08/27/23 03:30	1270	72.94	55.729	0.307

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 03:31	1271	72.96	55.750	0.304
08/27/23 03:32	1272	72.98	55.771	0.303
08/27/23 03:33	1273	73.01	55.798	0.303
08/27/23 03:34	1274	73.02	55.808	0.301
08/27/23 03:35	1275	73.05	55.840	0.304
08/27/23 03:36	1276	73.08	55.867	0.301
08/27/23 03:37	1277	73.10	55.888	0.304
08/27/23 03:38	1278	73.12	55.909	0.302
08/27/23 03:39	1279	73.15	55.936	0.301
08/27/23 03:40	1280	73.18	55.968	0.301
08/27/23 03:41	1281	73.19	55.978	0.296
08/27/23 03:42	1282	73.22	56.010	0.296
08/27/23 03:43	1283	73.25	56.037	0.299
08/27/23 03:43	1284	73.26	56.052	0.302
08/27/23 03:44	1285	73.29	56.079	0.309
08/27/23 03:45	1286	73.31	56.100	0.306
08/27/23 03:46	1287	73.33	56.116	0.297
08/27/23 03:47	1288	73.35	56.143	0.303
08/27/23 03:48	1289	73.38	56.169	0.303
08/27/23 03:49	1290	73.41	56.201	0.306
08/27/23 03:50	1291	73.43	56.222	0.298
08/27/23 03:51	1292	73.46	56.254	0.302
08/27/23 03:52	1293	73.49	56.281	0.303
08/27/23 03:53	1294	73.52	56.313	0.304
08/27/23 03:54	1295	73.55	56.339	0.303
08/27/23 03:55	1296	73.58	56.366	0.300
08/27/23 03:56	1297	73.60	56.387	0.302
08/27/23 03:57	1298	73.62	56.414	0.299
08/27/23 03:58	1299	73.65	56.435	0.299
08/27/23 03:59	1300	73.68	56.467	0.302
08/27/23 04:00	1301	73.70	56.493	0.309
08/27/23 04:01	1302	73.72	56.514	0.302
08/27/23 04:02	1303	73.76	56.552	0.304
08/27/23 04:03	1304	73.79	56.578	0.301
08/27/23 04:04	1305	73.81	56.599	0.301
08/27/23 04:05	1306	73.84	56.626	0.297
08/27/23 04:06	1307	73.87	56.658	0.303
08/27/23 04:07	1308	73.89	56.679	0.308
08/27/23 04:08	1309	73.92	56.711	0.305
08/27/23 04:09	1310	73.95	56.743	0.308
08/27/23 04:10	1311	73.97	56.759	0.299
08/27/23 04:11	1312	73.99	56.780	0.302
08/27/23 04:12	1313	74.03	56.817	0.301
08/27/23 04:13	1314	74.05	56.838	0.302

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 04:14	1315	74.08	56.870	0.300
08/27/23 04:15	1316	74.11	56.897	0.306
08/27/23 04:16	1317	74.13	56.918	0.306
08/27/23 04:17	1318	74.15	56.939	0.307
08/27/23 04:18	1319	74.17	56.960	0.303
08/27/23 04:19	1320	74.19	56.982	0.297
08/27/23 04:20	1321	74.21	57.003	0.302
08/27/23 04:21	1322	74.23	57.019	0.307
08/27/23 04:22	1323	74.25	57.040	0.300
08/27/23 04:23	1324	74.27	57.061	0.300
08/27/23 04:24	1325	74.30	57.093	0.303
08/27/23 04:25	1326	74.32	57.109	0.299
08/27/23 04:26	1327	74.35	57.136	0.306
08/27/23 04:27	1328	74.37	57.162	0.301
08/27/23 04:28	1329	74.39	57.183	0.306
08/27/23 04:29	1330	74.42	57.210	0.301
08/27/23 04:30	1331	74.44	57.231	0.302
08/27/23 04:31	1332	74.46	57.252	0.309
08/27/23 04:32	1333	74.48	57.274	0.301
08/27/23 04:33	1334	74.49	57.284	0.302
08/27/23 04:34	1335	74.51	57.300	0.300
08/27/23 04:35	1336	74.53	57.321	0.305
08/27/23 04:36	1337	74.56	57.348	0.307
08/27/23 04:37	1338	74.57	57.364	0.304
08/27/23 04:38	1339	74.60	57.385	0.300
08/27/23 04:39	1340	74.61	57.401	0.298
08/27/23 04:40	1341	74.63	57.422	0.305
08/27/23 04:41	1342	74.65	57.444	0.301
08/27/23 04:42	1343	74.68	57.465	0.302
08/27/23 04:43	1344	74.70	57.486	0.305
08/27/23 04:44	1345	74.71	57.502	0.299
08/27/23 04:45	1346	74.74	57.534	0.300
08/27/23 04:46	1347	74.76	57.550	0.303
08/27/23 04:47	1348	74.77	57.560	0.302
08/27/23 04:48	1349	74.79	57.582	0.304
08/27/23 04:49	1350	74.82	57.614	0.304
08/27/23 04:50	1351	74.83	57.619	0.304
08/27/23 04:51	1352	74.86	57.645	0.304
08/27/23 04:52	1353	74.88	57.667	0.303
08/27/23 04:53	1354	74.89	57.683	0.299
08/27/23 04:54	1355	74.91	57.698	0.304
08/27/23 04:55	1356	74.92	57.714	0.307
08/27/23 04:56	1357	74.95	57.741	0.304
08/27/23 04:57	1358	74.98	57.768	0.300

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 04:58	1359	74.99	57.783	0.303
08/27/23 04:59	1360	75.02	57.805	0.300
08/27/23 05:00	1361	75.04	57.831	0.304
08/27/23 05:01	1362	75.05	57.842	0.301
08/27/23 05:02	1363	75.07	57.863	0.299
08/27/23 05:03	1364	75.11	57.895	0.298
08/27/23 05:04	1365	75.12	57.906	0.307
08/27/23 05:05	1366	75.14	57.932	0.301
08/27/23 05:06	1367	75.15	57.943	0.300
08/27/23 05:07	1368	75.17	57.964	0.300
08/27/23 05:08	1369	75.20	57.991	0.302
08/27/23 05:09	1370	75.21	58.001	0.297
08/27/23 05:10	1371	75.23	58.022	0.298
08/27/23 05:11	1372	75.25	58.044	0.300
08/27/23 05:12	1373	75.28	58.065	0.300
08/27/23 05:13	1374	75.31	58.097	0.300
08/27/23 05:14	1375	75.32	58.113	0.300
08/27/23 05:15	1376	75.35	58.139	0.304
08/27/23 05:16	1377	75.37	58.155	0.298
08/27/23 05:17	1378	75.39	58.176	0.304
08/27/23 05:18	1379	75.40	58.192	0.303
08/27/23 05:19	1380	75.42	58.214	0.300
08/27/23 05:20	1381	75.45	58.235	0.303
08/27/23 05:21	1382	75.48	58.267	0.301
08/27/23 05:22	1383	75.49	58.277	0.304
08/27/23 05:23	1384	75.51	58.304	0.304
08/27/23 05:24	1385	75.53	58.320	0.302
08/27/23 05:25	1386	75.56	58.346	0.295
08/27/23 05:26	1387	75.58	58.368	0.297
08/27/23 05:27	1388	75.60	58.394	0.302
08/27/23 05:28	1389	75.62	58.410	0.300
08/27/23 05:29	1390	75.65	58.437	0.303
08/27/23 05:30	1391	75.67	58.458	0.307
08/27/23 05:31	1392	75.69	58.479	0.302
08/27/23 05:32	1393	75.72	58.506	0.301
08/27/23 05:33	1394	75.73	58.516	0.297
08/27/23 05:34	1395	75.75	58.537	0.306
08/27/23 05:35	1396	75.77	58.559	0.304
08/27/23 05:36	1397	75.78	58.569	0.304
08/27/23 05:37	1398	75.80	58.591	0.298
08/27/23 05:38	1399	75.82	58.612	0.305
08/27/23 05:39	1400	75.83	58.617	0.305
08/27/23 05:40	1401	75.85	58.638	0.294
08/27/23 05:41	1402	75.87	58.660	0.300

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 05:42	1403	75.89	58.681	0.299
08/27/23 05:43	1404	75.92	58.707	0.301
08/27/23 05:44	1405	75.94	58.729	0.304
08/27/23 05:45	1406	75.96	58.750	0.303
08/27/23 05:46	1407	75.98	58.766	0.300
08/27/23 05:47	1408	75.99	58.782	0.305
08/27/23 05:48	1409	76.01	58.803	0.305
08/27/23 05:49	1410	76.03	58.824	0.303
08/27/23 05:50	1411	76.06	58.845	0.300
08/27/23 05:51	1412	76.07	58.856	0.298
08/27/23 05:52	1413	76.08	58.872	0.296
08/27/23 05:53	1414	76.11	58.898	0.302
08/27/23 05:54	1415	76.13	58.920	0.305
08/27/23 05:55	1416	76.15	58.936	0.298
08/27/23 05:56	1417	76.17	58.962	0.300
08/27/23 05:57	1418	76.19	58.978	0.304
08/27/23 05:58	1419	76.21	58.999	0.301
08/27/23 05:59	1420	76.23	59.021	0.305
08/27/23 06:00	1421	76.25	59.042	0.295
08/27/23 06:01	1422	76.27	59.058	0.300
08/27/23 06:02	1423	76.29	59.084	0.306
08/27/23 06:03	1424	76.32	59.111	0.300
08/27/23 06:04	1425	76.34	59.127	0.301
08/27/23 06:05	1426	76.35	59.143	0.298
08/27/23 06:06	1427	76.39	59.175	0.306
08/27/23 06:07	1428	76.41	59.196	0.304
08/27/23 06:08	1429	76.43	59.217	0.300
08/27/23 06:09	1430	76.44	59.233	0.303
08/27/23 06:10	1431	76.46	59.254	0.303
08/27/23 06:11	1432	76.48	59.270	0.304
08/27/23 06:12	1433	76.50	59.291	0.301
08/27/23 06:13	1434	76.53	59.318	0.298
08/27/23 06:14	1435	76.53	59.323	0.301
08/27/23 06:15	1436	76.53	59.323	0.301
08/27/23 06:16	1437	76.55	59.339	0.302
08/27/23 06:17	1438	76.57	59.355	0.305
08/27/23 06:18	1439	76.58	59.366	0.309
08/27/23 06:19	1440	76.59	59.376	0.301
08/27/23 06:20	1441	76.60	59.392	0.300
08/27/23 06:21	1442	76.63	59.419	0.305
08/27/23 06:22	1443	76.66	59.445	0.304
08/27/23 06:23	1444	76.66	59.451	0.305
08/27/23 06:24	1445	76.69	59.477	0.302
08/27/23 06:25	1446	76.70	59.493	0.302

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 06:26	1447	76.72	59.514	0.301
08/27/23 06:27	1448	76.75	59.536	0.298
08/27/23 06:28	1449	76.77	59.557	0.304
08/27/23 06:29	1450	76.78	59.573	0.303
08/27/23 06:30	1451	76.80	59.594	0.301
08/27/23 06:31	1452	76.82	59.605	0.303
08/27/23 06:32	1453	76.84	59.626	0.304
08/27/23 06:33	1454	76.85	59.642	0.303
08/27/23 06:34	1455	76.87	59.663	0.304
08/27/23 06:35	1456	76.89	59.679	0.307
08/27/23 06:36	1457	76.91	59.700	0.300
08/27/23 06:37	1458	76.93	59.716	0.300
08/27/23 06:38	1459	76.94	59.732	0.300
08/27/23 06:39	1460	76.95	59.737	0.303
08/27/23 06:40	1461	76.96	59.753	0.299
08/27/23 06:41	1462	76.96	59.753	0.306
08/27/23 06:42	1463	76.97	59.759	0.302
08/27/23 06:43	1464	76.97	59.764	0.299
08/27/23 06:44	1465	76.99	59.780	0.306
08/27/23 06:45	1466	77.00	59.790	0.300
08/27/23 06:46	1467	77.02	59.806	0.305
08/27/23 06:47	1468	77.03	59.822	0.298
08/27/23 06:48	1469	77.05	59.838	0.303
08/27/23 06:49	1470	77.06	59.854	0.300
08/27/23 06:50	1471	77.09	59.875	0.301
08/27/23 06:51	1472	77.09	59.881	0.301
08/27/23 06:52	1473	77.11	59.897	0.303
08/27/23 06:53	1474	77.12	59.913	0.302
08/27/23 06:54	1475	77.14	59.929	0.302
08/27/23 06:55	1476	77.15	59.944	0.299
08/27/23 06:56	1477	77.19	59.976	0.303
08/27/23 06:57	1478	77.20	59.992	0.301
08/27/23 06:58	1479	77.23	60.024	0.301
08/27/23 06:59	1480	77.26	60.045	0.301
08/27/23 07:00	1481	77.27	60.061	0.301
08/27/23 07:01	1482	77.29	60.083	0.298
08/27/23 07:02	1483	77.31	60.098	0.301
08/27/23 07:03	1484	77.33	60.120	0.306
08/27/23 07:04	1485	77.34	60.130	0.301
08/27/23 07:05	1486	77.36	60.152	0.306
08/27/23 07:06	1487	77.38	60.173	0.301
08/27/23 07:07	1488	77.41	60.199	0.300
08/27/23 07:08	1489	77.42	60.210	0.302
08/27/23 07:09	1490	77.45	60.242	0.303

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 07:10	1491	77.47	60.258	0.303
08/27/23 07:11	1492	77.49	60.284	0.296
08/27/23 07:12	1493	77.51	60.295	0.305
08/27/23 07:13	1494	77.54	60.327	0.301
08/27/23 07:14	1495	77.55	60.337	0.298
08/27/23 07:15	1496	77.57	60.364	0.299
08/27/23 07:16	1497	77.59	60.375	0.297
08/27/23 07:17	1498	77.61	60.396	0.304
08/27/23 07:18	1499	77.62	60.412	0.298
08/27/23 07:19	1500	77.64	60.428	0.303
08/27/23 07:20	1501	77.65	60.438	0.307
08/27/23 07:21	1502	77.68	60.470	0.295
08/27/23 07:22	1503	77.70	60.486	0.298
08/27/23 07:23	1504	77.71	60.502	0.302
08/27/23 07:24	1505	77.73	60.518	0.302
08/27/23 07:25	1506	77.75	60.539	0.295
08/27/23 07:26	1507	77.76	60.550	0.297
08/27/23 07:27	1508	77.78	60.566	0.299
08/27/23 07:28	1509	77.79	60.582	0.301
08/27/23 07:29	1510	77.81	60.603	0.303
08/27/23 07:30	1511	77.83	60.624	0.297
08/27/23 07:31	1512	77.85	60.640	0.301
08/27/23 07:32	1513	77.87	60.661	0.302
08/27/23 07:33	1514	77.89	60.677	0.304
08/27/23 07:34	1515	77.90	60.688	0.305
08/27/23 07:35	1516	77.93	60.720	0.303
08/27/23 07:36	1517	77.94	60.730	0.303
08/27/23 07:37	1518	77.96	60.752	0.303
08/27/23 07:38	1519	77.99	60.778	0.301
08/27/23 07:39	1520	78.00	60.794	0.299
08/27/23 07:40	1521	78.02	60.810	0.303
08/27/23 07:41	1522	78.04	60.831	0.296
08/27/23 07:42	1523	78.05	60.842	0.297
08/27/23 07:43	1524	78.07	60.863	0.303
08/27/23 07:44	1525	78.09	60.879	0.297
08/27/23 07:45	1526	78.11	60.900	0.305
08/27/23 07:46	1527	78.13	60.921	0.307
08/27/23 07:47	1528	78.15	60.937	0.299
08/27/23 07:48	1529	78.17	60.959	0.300
08/27/23 07:49	1530	78.19	60.980	0.301
08/27/23 07:50	1531	78.21	60.996	0.301
08/27/23 07:51	1532	78.23	61.017	0.302
08/27/23 07:52	1533	78.25	61.044	0.303
08/27/23 07:53	1534	78.27	61.060	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 07:54	1535	78.29	61.075	0.299
08/27/23 07:55	1536	78.31	61.097	0.302
08/27/23 07:56	1537	78.32	61.107	0.301
08/27/23 07:57	1538	78.34	61.129	0.302
08/27/23 07:58	1539	78.36	61.150	0.301
08/27/23 07:59	1540	78.39	61.176	0.302
08/27/23 08:00	1541	78.40	61.192	0.299
08/27/23 08:01	1542	78.42	61.213	0.299
08/27/23 08:02	1543	78.43	61.224	0.301
08/27/23 08:03	1544	78.46	61.245	0.297
08/27/23 08:04	1545	78.47	61.261	0.297
08/27/23 08:05	1546	78.49	61.283	0.303
08/27/23 08:06	1547	78.50	61.293	0.301
08/27/23 08:07	1548	78.52	61.309	0.299
08/27/23 08:08	1549	78.54	61.330	0.304
08/27/23 08:09	1550	78.56	61.346	0.298
08/27/23 08:10	1551	78.57	61.357	0.297
08/27/23 08:11	1552	78.59	61.378	0.303
08/27/23 08:12	1553	78.60	61.389	0.299
08/27/23 08:13	1554	78.62	61.410	0.305
08/27/23 08:14	1555	78.63	61.421	0.304
08/27/23 08:15	1556	78.65	61.437	0.300
08/27/23 08:16	1557	78.66	61.447	0.301
08/27/23 08:17	1558	78.68	61.468	0.300
08/27/23 08:18	1559	78.70	61.490	0.302
08/27/23 08:19	1560	78.71	61.500	0.303
08/27/23 08:20	1561	78.73	61.516	0.302
08/27/23 08:21	1562	78.75	61.537	0.300
08/27/23 08:22	1563	78.77	61.559	0.300
08/27/23 08:23	1564	78.78	61.569	0.300
08/27/23 08:24	1565	78.80	61.590	0.297
08/27/23 08:25	1566	78.82	61.606	0.296
08/27/23 08:26	1567	78.83	61.617	0.299
08/27/23 08:27	1568	78.85	61.638	0.304
08/27/23 08:28	1569	78.85	61.644	0.299
08/27/23 08:29	1570	78.87	61.660	0.302
08/27/23 08:30	1571	78.89	61.675	0.299
08/27/23 08:31	1572	78.90	61.691	0.300
08/27/23 08:32	1573	78.91	61.702	0.301
08/27/23 08:33	1574	78.92	61.713	0.302
08/27/23 08:34	1575	78.93	61.723	0.298
08/27/23 08:35	1576	78.95	61.739	0.296
08/27/23 08:36	1577	78.97	61.755	0.296
08/27/23 08:37	1578	78.98	61.766	0.298

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 08:38	1579	79.00	61.787	0.295
08/27/23 08:39	1580	79.01	61.803	0.302
08/27/23 08:40	1581	79.03	61.824	0.300
08/27/23 08:41	1582	79.05	61.835	0.295
08/27/23 08:42	1583	79.07	61.856	0.311
08/27/23 08:43	1584	79.08	61.872	0.300
08/27/23 08:44	1585	79.09	61.883	0.303
08/27/23 08:45	1586	79.11	61.904	0.304
08/27/23 08:46	1587	79.13	61.920	0.306
08/27/23 08:47	1588	79.15	61.936	0.303
08/27/23 08:48	1589	79.17	61.957	0.301
08/27/23 08:49	1590	79.18	61.973	0.299
08/27/23 08:50	1591	79.20	61.989	0.301
08/27/23 08:51	1592	79.22	62.005	0.300
08/27/23 08:52	1593	79.23	62.021	0.300
08/27/23 08:53	1594	79.24	62.026	0.298
08/27/23 08:54	1595	79.26	62.052	0.295
08/27/23 08:55	1596	79.28	62.068	0.299
08/27/23 08:56	1597	79.29	62.084	0.302
08/27/23 08:57	1598	79.31	62.095	0.302
08/27/23 08:58	1599	79.32	62.106	0.304
08/27/23 08:59	1600	79.33	62.121	0.302
08/27/23 09:00	1601	79.34	62.127	0.299
08/27/23 09:01	1602	79.36	62.148	0.301
08/27/23 09:02	1603	79.37	62.159	0.303
08/27/23 09:03	1604	79.39	62.175	0.302
08/27/23 09:04	1605	79.40	62.190	0.298
08/27/23 09:05	1606	79.42	62.206	0.301
08/27/23 09:06	1607	79.43	62.222	0.301
08/27/23 09:07	1608	79.45	62.238	0.300
08/27/23 09:08	1609	79.46	62.249	0.301
08/27/23 09:09	1610	79.48	62.270	0.303
08/27/23 09:10	1611	79.49	62.281	0.302
08/27/23 09:11	1612	79.51	62.297	0.295
08/27/23 09:12	1613	79.53	62.323	0.311
08/27/23 09:13	1614	79.54	62.334	0.298
08/27/23 09:14	1615	79.56	62.350	0.297
08/27/23 09:15	1616	79.58	62.366	0.300
08/27/23 09:16	1617	79.60	62.387	0.296
08/27/23 09:17	1618	79.61	62.398	0.300
08/27/23 09:18	1619	79.62	62.413	0.302
08/27/23 09:19	1620	79.64	62.429	0.305
08/27/23 09:20	1621	79.66	62.445	0.300
08/27/23 09:21	1622	79.67	62.461	0.302

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 09:22	1623	79.69	62.477	0.303
08/27/23 09:23	1624	79.70	62.493	0.302
08/27/23 09:24	1625	79.72	62.509	0.296
08/27/23 09:25	1626	79.74	62.525	0.293
08/27/23 09:26	1627	79.75	62.536	0.302
08/27/23 09:27	1628	79.76	62.552	0.303
08/27/23 09:28	1629	79.78	62.567	0.299
08/27/23 09:29	1630	79.79	62.583	0.300
08/27/23 09:30	1631	79.82	62.605	0.304
08/27/23 09:31	1632	79.83	62.621	0.301
08/27/23 09:32	1633	79.85	62.642	0.303
08/27/23 09:33	1634	79.86	62.652	0.294
08/27/23 09:34	1635	79.88	62.668	0.294
08/27/23 09:35	1636	79.89	62.684	0.301
08/27/23 09:36	1637	79.91	62.700	0.306
08/27/23 09:37	1638	79.93	62.716	0.301
08/27/23 09:38	1639	79.94	62.732	0.305
08/27/23 09:39	1640	79.96	62.748	0.298
08/27/23 09:40	1641	79.97	62.764	0.305
08/27/23 09:41	1642	79.99	62.780	0.303
08/27/23 09:42	1643	80.01	62.801	0.299
08/27/23 09:43	1644	80.03	62.817	0.303
08/27/23 09:44	1645	80.04	62.833	0.301
08/27/23 09:45	1646	80.06	62.854	0.300
08/27/23 09:46	1647	80.08	62.870	0.305
08/27/23 09:47	1648	80.10	62.891	0.298
08/27/23 09:48	1649	80.11	62.902	0.303
08/27/23 09:49	1650	80.12	62.913	0.301
08/27/23 09:50	1651	80.14	62.934	0.298
08/27/23 09:51	1652	80.16	62.950	0.302
08/27/23 09:52	1653	80.18	62.966	0.298
08/27/23 09:53	1654	80.19	62.982	0.298
08/27/23 09:54	1655	80.20	62.992	0.294
08/27/23 09:55	1656	80.21	63.003	0.300
08/27/23 09:56	1657	80.23	63.019	0.303
08/27/23 09:57	1658	80.24	63.029	0.301
08/27/23 09:58	1659	80.25	63.040	0.300
08/27/23 09:59	1660	80.27	63.056	0.301
08/27/23 10:00	1661	80.28	63.072	0.300
08/27/23 10:01	1662	80.30	63.088	0.299
08/27/23 10:02	1663	80.32	63.109	0.311
08/27/23 10:03	1664	80.34	63.130	0.303
08/27/23 10:04	1665	80.35	63.141	0.294
08/27/23 10:05	1666	80.37	63.157	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 10:06	1667	80.38	63.167	0.300
08/27/23 10:07	1668	80.40	63.189	0.300
08/27/23 10:08	1669	80.42	63.205	0.301
08/27/23 10:09	1670	80.43	63.215	0.295
08/27/23 10:10	1671	80.44	63.231	0.298
08/27/23 10:11	1672	80.45	63.242	0.301
08/27/23 10:12	1673	80.47	63.258	0.301
08/27/23 10:13	1674	80.49	63.279	0.302
08/27/23 10:14	1675	80.49	63.284	0.301
08/27/23 10:15	1676	80.51	63.300	0.298
08/27/23 10:16	1677	80.53	63.316	0.302
08/27/23 10:17	1678	80.54	63.332	0.293
08/27/23 10:18	1679	80.55	63.343	0.300
08/27/23 10:19	1680	80.58	63.369	0.303
08/27/23 10:20	1681	80.60	63.385	0.299
08/27/23 10:21	1682	80.61	63.396	0.297
08/27/23 10:22	1683	80.62	63.412	0.295
08/27/23 10:23	1684	80.64	63.428	0.301
08/27/23 10:24	1685	80.65	63.438	0.297
08/27/23 10:25	1686	80.66	63.454	0.294
08/27/23 10:26	1687	80.68	63.465	0.295
08/27/23 10:27	1688	80.70	63.486	0.300
08/27/23 10:28	1689	80.71	63.497	0.300
08/27/23 10:29	1690	80.72	63.507	0.300
08/27/23 10:30	1691	80.73	63.523	0.303
08/27/23 10:31	1692	80.75	63.539	0.294
08/27/23 10:32	1693	80.75	63.544	0.296
08/27/23 10:33	1694	80.78	63.566	0.293
08/27/23 10:34	1695	80.79	63.576	0.300
08/27/23 10:35	1696	80.80	63.587	0.300
08/27/23 10:36	1697	80.82	63.608	0.301
08/27/23 10:37	1698	80.83	63.624	0.297
08/27/23 10:38	1699	80.84	63.629	0.299
08/27/23 10:39	1700	80.85	63.640	0.299
08/27/23 10:40	1701	80.86	63.651	0.302
08/27/23 10:41	1702	80.88	63.672	0.301
08/27/23 10:42	1703	80.89	63.682	0.293
08/27/23 10:43	1704	80.90	63.693	0.298
08/27/23 10:44	1705	80.92	63.709	0.300
08/27/23 10:45	1706	80.92	63.714	0.303
08/27/23 10:46	1707	80.95	63.741	0.303
08/27/23 10:47	1708	80.96	63.752	0.301
08/27/23 10:48	1709	80.97	63.762	0.299
08/27/23 10:49	1710	80.98	63.773	0.299

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 10:50	1711	81.00	63.789	0.297
08/27/23 10:51	1712	81.02	63.810	0.302
08/27/23 10:52	1713	81.03	63.815	0.299
08/27/23 10:53	1714	81.05	63.842	0.301
08/27/23 10:54	1715	81.06	63.852	0.300
08/27/23 10:55	1716	81.08	63.874	0.296
08/27/23 10:56	1717	81.11	63.895	0.307
08/27/23 10:57	1718	81.12	63.906	0.300
08/27/23 10:58	1719	81.13	63.916	0.295
08/27/23 10:59	1720	81.14	63.932	0.300
08/27/23 11:00	1721	81.15	63.943	0.301
08/27/23 11:01	1722	81.17	63.964	0.298
08/27/23 11:02	1723	81.19	63.980	0.294
08/27/23 11:03	1724	81.21	64.001	0.298
08/27/23 11:04	1725	81.22	64.012	0.297
08/27/23 11:05	1726	81.24	64.033	0.302
08/27/23 11:06	1727	81.26	64.054	0.299
08/27/23 11:07	1728	81.27	64.059	0.296
08/27/23 11:08	1729	81.29	64.075	0.301
08/27/23 11:09	1730	79.87	62.663	0.000
08/27/23 11:10	1731	76.42	59.212	0.000
08/27/23 11:11	1732	74.49	57.279	0.000
08/27/23 11:12	1733	73.80	56.589	0.000
08/27/23 11:13	1734	73.37	56.159	0.000
08/27/23 11:14	1735	73.06	55.851	0.000
08/27/23 11:15	1736	72.81	55.596	0.000
08/27/23 11:16	1737	72.59	55.378	0.000
08/27/23 11:17	1738	72.39	55.182	0.000
08/27/23 11:18	1739	72.22	55.006	0.000
08/27/23 11:19	1740	72.02	54.810	0.000
08/27/23 11:20	1741	71.84	54.629	0.000
08/27/23 11:21	1742	71.68	54.465	0.000
08/27/23 11:22	1743	71.52	54.311	0.000
08/27/23 11:23	1744	71.36	54.152	0.000
08/27/23 11:24	1745	71.21	53.998	0.000
08/27/23 11:25	1746	71.05	53.844	0.000
08/27/23 11:26	1747	70.90	53.690	0.000
08/27/23 11:27	1748	70.75	53.536	0.000
08/27/23 11:28	1749	70.60	53.387	0.000
08/27/23 11:29	1750	70.46	53.249	0.000
08/27/23 11:30	1751	70.31	53.100	0.000
08/27/23 11:31	1752	70.17	52.962	0.000
08/27/23 11:32	1753	70.03	52.824	0.000
08/27/23 11:33	1754	69.89	52.681	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 11:34	1755	69.75	52.543	0.000
08/27/23 11:35	1756	69.62	52.410	0.000
08/27/23 11:36	1757	69.48	52.272	0.000
08/27/23 11:37	1758	69.34	52.134	0.000
08/27/23 11:38	1759	69.21	52.001	0.000
08/27/23 11:39	1760	69.08	51.868	0.000
08/27/23 11:40	1761	68.98	51.768	0.000
08/27/23 11:41	1762	68.85	51.640	0.000
08/27/23 11:42	1763	68.71	51.502	0.000
08/27/23 11:43	1764	68.60	51.391	0.000
08/27/23 11:44	1765	68.46	51.247	0.000
08/27/23 11:45	1766	68.33	51.120	0.000
08/27/23 11:46	1767	68.20	50.987	0.000
08/27/23 11:47	1768	68.08	50.865	0.000
08/27/23 11:48	1769	67.94	50.732	0.000
08/27/23 11:49	1770	67.82	50.605	0.000
08/27/23 11:50	1771	67.69	50.477	0.000
08/27/23 11:51	1772	67.57	50.355	0.000
08/27/23 11:52	1773	67.44	50.228	0.000
08/27/23 11:53	1774	67.31	50.100	0.000
08/27/23 11:54	1775	67.18	49.973	0.000
08/27/23 11:55	1776	67.07	49.856	0.000
08/27/23 11:56	1777	66.94	49.729	0.000
08/27/23 11:57	1778	66.82	49.607	0.000
08/27/23 11:58	1779	66.69	49.479	0.000
08/27/23 11:59	1780	66.57	49.357	0.000
08/27/23 12:00	1781	66.45	49.235	0.000
08/27/23 12:01	1782	66.32	49.113	0.000
08/27/23 12:02	1783	66.20	48.991	0.000
08/27/23 12:03	1784	66.07	48.863	0.000
08/27/23 12:04	1785	65.95	48.741	0.000
08/27/23 12:05	1786	65.82	48.614	0.000
08/27/23 12:06	1787	65.71	48.497	0.000
08/27/23 12:07	1788	65.58	48.369	0.000
08/27/23 12:08	1789	65.47	48.258	0.000
08/27/23 12:09	1790	65.34	48.125	0.000
08/27/23 12:10	1791	65.22	48.008	0.000
08/27/23 12:11	1792	65.10	47.886	0.000
08/27/23 12:12	1793	64.99	47.775	0.000
08/27/23 12:13	1794	64.86	47.647	0.000
08/27/23 12:14	1795	64.74	47.530	0.000
08/27/23 12:15	1796	64.62	47.408	0.000
08/27/23 12:16	1797	64.51	47.297	0.000
08/27/23 12:17	1798	64.39	47.180	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 12:18	1799	64.27	47.058	0.000
08/27/23 12:19	1800	64.16	46.946	0.000
08/27/23 12:20	1801	64.04	46.830	0.000
08/27/23 12:21	1802	63.92	46.713	0.000
08/27/23 12:22	1803	63.81	46.596	0.000
08/27/23 12:23	1804	63.69	46.484	0.000
08/27/23 12:24	1805	63.57	46.362	0.000
08/27/23 12:25	1806	63.47	46.256	0.000
08/27/23 12:26	1807	63.35	46.139	0.000
08/27/23 12:27	1808	63.24	46.028	0.000
08/27/23 12:28	1809	63.13	45.922	0.000
08/27/23 12:29	1810	63.03	45.821	0.000
08/27/23 12:30	1811	62.91	45.704	0.000
08/27/23 12:31	1812	62.81	45.598	0.000
08/27/23 12:32	1813	62.69	45.481	0.000
08/27/23 12:33	1814	62.59	45.375	0.000
08/27/23 12:34	1815	62.47	45.258	0.000
08/27/23 12:35	1816	62.36	45.146	0.000
08/27/23 12:36	1817	62.25	45.035	0.000
08/27/23 12:37	1818	62.13	44.923	0.000
08/27/23 12:38	1819	62.02	44.807	0.000
08/27/23 12:39	1820	61.91	44.700	0.000
08/27/23 12:40	1821	61.80	44.589	0.000
08/27/23 12:41	1822	61.69	44.477	0.000
08/27/23 12:42	1823	61.58	44.371	0.000
08/27/23 12:43	1824	61.47	44.260	0.000
08/27/23 12:44	1825	61.37	44.159	0.000
08/27/23 12:45	1826	61.26	44.047	0.000
08/27/23 12:46	1827	61.15	43.936	0.000
08/27/23 12:47	1828	61.05	43.835	0.000
08/27/23 12:48	1829	60.93	43.723	0.000
08/27/23 12:49	1830	60.83	43.617	0.000
08/27/23 12:50	1831	60.73	43.516	0.000
08/27/23 12:51	1832	60.62	43.405	0.000
08/27/23 12:54	1835	60.29	43.081	0.000
08/27/23 12:55	1836	60.18	42.970	0.000
08/27/23 12:56	1837	60.07	42.864	0.000
08/27/23 12:57	1838	59.96	42.752	0.000
08/27/23 12:58	1839	59.87	42.657	0.000
08/27/23 12:59	1840	59.76	42.545	0.000
08/27/23 13:00	1841	59.64	42.434	0.000
08/27/23 13:01	1842	59.54	42.333	0.000
08/27/23 13:02	1843	59.44	42.227	0.000
08/27/23 13:03	1844	59.33	42.120	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 13:04	1845	59.22	42.014	0.000
08/27/23 13:05	1846	59.12	41.913	0.000
08/27/23 13:06	1847	59.03	41.818	0.000
08/27/23 13:07	1848	58.92	41.711	0.000
08/27/23 13:08	1849	58.82	41.611	0.000
08/27/23 13:09	1850	58.71	41.504	0.000
08/27/23 13:10	1851	58.62	41.409	0.000
08/27/23 13:11	1852	58.52	41.308	0.000
08/27/23 13:12	1853	58.42	41.207	0.000
08/27/23 13:13	1854	58.32	41.106	0.000
08/27/23 13:14	1855	58.22	41.005	0.000
08/27/23 13:15	1856	58.12	40.910	0.000
08/27/23 13:16	1857	58.02	40.814	0.000
08/27/23 13:17	1858	57.92	40.713	0.000
08/27/23 13:18	1859	57.83	40.618	0.000
08/27/23 13:19	1860	57.73	40.522	0.000
08/27/23 13:20	1861	57.63	40.421	0.000
08/27/23 13:21	1862	57.54	40.326	0.000
08/27/23 13:22	1863	57.43	40.219	0.000
08/27/23 13:23	1864	57.33	40.119	0.000
08/27/23 13:24	1865	57.23	40.018	0.000
08/27/23 13:25	1866	57.12	39.912	0.000
08/27/23 13:26	1867	57.02	39.811	0.000
08/27/23 13:27	1868	56.93	39.715	0.000
08/27/23 13:28	1869	56.84	39.625	0.000
08/27/23 13:29	1870	56.75	39.535	0.000
08/27/23 13:30	1871	56.65	39.444	0.000
08/27/23 13:31	1872	56.56	39.354	0.000
08/27/23 13:32	1873	56.47	39.264	0.000
08/27/23 13:33	1874	56.38	39.168	0.000
08/27/23 13:34	1875	56.29	39.083	0.000
08/27/23 13:35	1876	56.20	38.993	0.000
08/27/23 13:36	1877	56.11	38.903	0.000
08/27/23 13:37	1878	56.03	38.818	0.000
08/27/23 13:38	1879	55.93	38.722	0.000
08/27/23 13:39	1880	55.84	38.627	0.000
08/27/23 13:40	1881	55.75	38.542	0.000
08/27/23 13:41	1882	55.66	38.451	0.000
08/27/23 13:42	1883	55.57	38.361	0.000
08/27/23 13:43	1884	55.49	38.276	0.000
08/27/23 13:44	1885	55.40	38.186	0.000
08/27/23 13:45	1886	55.31	38.096	0.000
08/27/23 13:46	1887	55.22	38.011	0.000
08/27/23 13:47	1888	55.13	37.920	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 13:48	1889	55.04	37.830	0.000
08/27/23 13:49	1890	54.96	37.745	0.000
08/27/23 13:50	1891	54.87	37.655	0.000
08/27/23 13:51	1892	54.78	37.565	0.000
08/27/23 13:52	1893	54.70	37.485	0.000
08/27/23 13:53	1894	54.61	37.395	0.000
08/27/23 13:54	1895	54.52	37.310	0.000
08/27/23 13:55	1896	54.44	37.225	0.000
08/27/23 13:56	1897	54.35	37.140	0.000
08/27/23 13:57	1898	54.26	37.050	0.000
08/27/23 13:58	1899	54.18	36.965	0.000
08/27/23 13:59	1900	54.09	36.880	0.000
08/27/23 14:00	1901	54.01	36.795	0.000
08/27/23 14:01	1902	53.92	36.710	0.000
08/27/23 14:02	1903	53.84	36.630	0.000
08/27/23 14:03	1904	53.75	36.540	0.000
08/27/23 14:04	1905	53.67	36.460	0.000
08/27/23 14:05	1906	53.59	36.375	0.000
08/27/23 14:06	1907	53.50	36.290	0.000
08/27/23 14:07	1908	53.42	36.211	0.000
08/27/23 14:08	1909	53.35	36.136	0.000
08/27/23 14:09	1910	53.27	36.057	0.000
08/27/23 14:10	1911	53.19	35.977	0.000
08/27/23 14:11	1912	53.11	35.897	0.000
08/27/23 14:12	1913	53.03	35.818	0.000
08/27/23 14:13	1914	52.95	35.738	0.000
08/27/23 14:14	1915	52.87	35.664	0.000
08/27/23 14:15	1916	52.80	35.589	0.000
08/27/23 14:16	1917	52.72	35.510	0.000
08/27/23 14:17	1918	52.64	35.425	0.000
08/27/23 14:18	1919	52.56	35.345	0.000
08/27/23 14:19	1920	52.49	35.276	0.000
08/27/23 14:20	1921	52.41	35.197	0.000
08/27/23 14:21	1922	52.33	35.117	0.000
08/27/23 14:22	1923	52.25	35.043	0.000
08/27/23 14:23	1924	52.18	34.968	0.000
08/27/23 14:24	1925	52.10	34.894	0.000
08/27/23 14:25	1926	52.04	34.825	0.000
08/27/23 14:26	1927	51.97	34.756	0.000
08/27/23 14:27	1928	51.89	34.676	0.000
08/27/23 14:28	1929	51.81	34.597	0.000
08/27/23 14:29	1930	51.74	34.527	0.000
08/27/23 14:30	1931	51.66	34.453	0.000
08/27/23 14:31	1932	51.59	34.384	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 14:32	1933	51.53	34.315	0.000
08/27/23 14:33	1934	51.45	34.241	0.000
08/27/23 14:34	1935	51.36	34.151	0.000
08/27/23 14:35	1936	51.29	34.076	0.000
08/27/23 14:36	1937	51.21	34.002	0.000
08/27/23 14:37	1938	51.13	33.922	0.000
08/27/23 14:38	1939	51.06	33.853	0.000
08/27/23 14:39	1940	50.99	33.784	0.000
08/27/23 14:40	1941	50.93	33.715	0.000
08/27/23 14:41	1942	50.85	33.641	0.000
08/27/23 14:42	1943	50.79	33.577	0.000
08/27/23 14:43	1944	50.72	33.508	0.000
08/27/23 14:44	1945	50.65	33.439	0.000
08/27/23 14:45	1946	50.58	33.365	0.000
08/27/23 14:46	1947	50.51	33.301	0.000
08/27/23 14:47	1948	50.44	33.232	0.000
08/27/23 14:48	1949	50.37	33.158	0.000
08/27/23 14:49	1950	50.30	33.089	0.000
08/27/23 14:50	1951	50.23	33.020	0.000
08/27/23 14:51	1952	50.17	32.956	0.000
08/27/23 14:52	1953	50.09	32.881	0.000
08/27/23 14:53	1954	50.03	32.818	0.000
08/27/23 14:54	1955	49.96	32.749	0.000
08/27/23 14:55	1956	49.90	32.685	0.000
08/27/23 14:56	1957	49.83	32.621	0.000
08/27/23 14:57	1958	49.76	32.552	0.000
08/27/23 14:58	1959	49.70	32.489	0.000
08/27/23 14:59	1960	49.64	32.425	0.000
08/27/23 15:00	1961	49.57	32.356	0.000
08/27/23 15:01	1962	49.50	32.292	0.000
08/27/23 15:02	1963	49.44	32.228	0.000
08/27/23 15:03	1964	49.38	32.165	0.000
08/27/23 15:04	1965	49.31	32.096	0.000
08/27/23 15:05	1966	49.25	32.037	0.000
08/27/23 15:06	1967	49.19	31.979	0.000
08/27/23 15:07	1968	49.13	31.920	0.000
08/27/23 15:08	1969	49.07	31.857	0.000
08/27/23 15:09	1970	49.00	31.793	0.000
08/27/23 15:10	1971	48.94	31.729	0.000
08/27/23 15:11	1972	48.88	31.671	0.000
08/27/23 15:12	1973	48.81	31.602	0.000
08/27/23 15:13	1974	48.75	31.538	0.000
08/27/23 15:14	1975	48.69	31.480	0.000
08/27/23 15:15	1976	48.63	31.416	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 15:16	1977	48.57	31.363	0.000
08/27/23 15:17	1978	48.51	31.299	0.000
08/27/23 15:18	1979	48.45	31.241	0.000
08/27/23 15:19	1980	48.39	31.182	0.000
08/27/23 15:20	1981	48.33	31.124	0.000
08/27/23 15:21	1982	48.27	31.060	0.000
08/27/23 15:22	1983	48.21	30.997	0.000
08/27/23 15:23	1984	48.15	30.938	0.000
08/27/23 15:24	1985	48.08	30.874	0.000
08/27/23 15:25	1986	48.03	30.816	0.000
08/27/23 15:26	1987	47.97	30.758	0.000
08/27/23 15:27	1988	47.91	30.699	0.000
08/27/23 15:28	1989	47.85	30.635	0.000
08/27/23 15:29	1990	47.79	30.577	0.000
08/27/23 15:30	1991	47.72	30.513	0.000
08/27/23 15:31	1992	47.67	30.455	0.000
08/27/23 15:32	1993	47.61	30.397	0.000
08/27/23 15:33	1994	47.55	30.338	0.000
08/27/23 15:34	1995	47.49	30.280	0.000
08/27/23 15:35	1996	47.43	30.221	0.000
08/27/23 15:36	1997	47.37	30.163	0.000
08/27/23 15:37	1998	47.32	30.110	0.000
08/27/23 15:38	1999	47.26	30.051	0.000
08/27/23 15:39	2000	47.20	29.988	0.000
08/27/23 15:40	2001	47.15	29.935	0.000
08/27/23 15:41	2002	47.08	29.871	0.000
08/27/23 15:42	2003	47.03	29.818	0.000
08/27/23 15:43	2004	46.97	29.759	0.000
08/27/23 15:44	2005	46.91	29.701	0.000
08/27/23 15:45	2006	46.85	29.643	0.000
08/27/23 15:46	2007	46.81	29.595	0.000
08/27/23 15:47	2008	46.75	29.536	0.000
08/27/23 15:48	2009	46.69	29.478	0.000
08/27/23 15:49	2010	46.64	29.425	0.000
08/27/23 15:50	2011	46.58	29.372	0.000
08/27/23 15:51	2012	46.53	29.319	0.000
08/27/23 15:52	2013	46.47	29.260	0.000
08/27/23 15:53	2014	46.41	29.202	0.000
08/27/23 15:54	2015	46.35	29.143	0.000
08/27/23 15:55	2016	46.31	29.096	0.000
08/27/23 15:56	2017	46.25	29.043	0.000
08/27/23 15:57	2018	46.19	28.984	0.000
08/27/23 15:58	2019	46.15	28.936	0.000
08/27/23 15:59	2020	46.09	28.883	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 16:00	2021	46.05	28.836	0.000
08/27/23 16:01	2022	45.99	28.777	0.000
08/27/23 16:02	2023	45.93	28.719	0.000
08/27/23 16:03	2024	45.88	28.671	0.000
08/27/23 16:04	2025	45.83	28.618	0.000
08/27/23 16:05	2026	45.78	28.565	0.000
08/27/23 16:06	2027	45.73	28.517	0.000
08/27/23 16:07	2028	45.67	28.459	0.000
08/27/23 16:08	2029	45.62	28.405	0.000
08/27/23 16:09	2030	45.57	28.358	0.000
08/27/23 16:10	2031	45.52	28.310	0.000
08/27/23 16:11	2032	45.47	28.262	0.000
08/27/23 16:12	2033	45.41	28.198	0.000
08/27/23 16:13	2034	45.36	28.151	0.000
08/27/23 16:14	2035	45.31	28.097	0.000
08/27/23 16:15	2036	45.26	28.050	0.000
08/27/23 16:16	2037	45.21	27.997	0.000
08/27/23 16:17	2038	45.15	27.943	0.000
08/27/23 16:18	2039	45.11	27.896	0.000
08/27/23 16:19	2040	45.05	27.843	0.000
08/27/23 16:20	2041	45.01	27.795	0.000
08/27/23 16:21	2042	44.96	27.747	0.000
08/27/23 16:22	2043	44.91	27.699	0.000
08/27/23 16:23	2044	44.86	27.646	0.000
08/27/23 16:24	2045	44.81	27.598	0.000
08/27/23 16:25	2046	44.76	27.551	0.000
08/27/23 16:26	2047	44.71	27.503	0.000
08/27/23 16:27	2048	44.67	27.455	0.000
08/27/23 16:28	2049	44.62	27.407	0.000
08/27/23 16:29	2050	44.57	27.359	0.000
08/27/23 16:30	2051	44.52	27.312	0.000
08/27/23 16:31	2052	44.47	27.264	0.000
08/27/23 16:32	2053	44.43	27.216	0.000
08/27/23 16:33	2054	44.37	27.158	0.000
08/27/23 16:34	2055	44.32	27.110	0.000
08/27/23 16:35	2056	44.27	27.062	0.000
08/27/23 16:36	2057	44.22	27.014	0.000
08/27/23 16:37	2058	44.18	26.967	0.000
08/27/23 16:38	2059	44.13	26.919	0.000
08/27/23 16:39	2060	44.08	26.866	0.000
08/27/23 16:40	2061	44.03	26.823	0.000
08/27/23 16:41	2062	43.99	26.775	0.000
08/27/23 16:42	2063	43.94	26.728	0.000
08/27/23 16:43	2064	43.89	26.680	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/27/23 16:44	2065	43.84	26.627	0.000
08/27/23 16:45	2066	43.79	26.579	0.000
08/27/23 16:46	2067	43.74	26.531	0.000
08/27/23 16:47	2068	43.69	26.483	0.000
08/27/23 16:48	2069	43.65	26.436	0.000
08/27/23 16:49	2070	43.60	26.393	0.000
08/27/23 16:50	2071	43.55	26.340	0.000
08/27/23 16:51	2072	43.50	26.292	0.000
08/27/23 16:52	2073	43.46	26.250	0.000
08/27/23 16:53	2074	43.42	26.207	0.000
08/27/23 16:54	2075	43.37	26.159	0.000
08/27/23 16:55	2076	43.32	26.112	0.000
08/27/23 16:56	2077	43.27	26.059	0.000
08/27/23 16:57	2078	43.22	26.011	0.000
08/27/23 16:58	2079	43.18	25.968	0.000
08/27/23 16:59	2080	43.13	25.920	0.000
08/28/23 07:28	2948	24.75	7.541	0.000
08/28/23 12:42	3262	22.82	5.609	0.000

Well Name:	11800 Road 500D Well 4
Test Date:	8/22/2023
Static Water Level:	41.24
Maximum Drawdown:	20.30
80% of Drawdown:	16.24
Recovery Water Level Target:	45.30
Recovery Water Level:	44.93

Date/Time	Elapsed Time (min)	Depth to Water (feet RP)	Drawdown (feet)	Flow Rate (gpm)
08/23/23 07:55	0	43.63	2.393	0.440
08/23/23 07:56	1	43.61	2.372	0.264
08/23/23 07:57	2	43.61	2.366	0.288
08/23/23 07:58	3	43.74	2.499	0.320
08/23/23 07:59	4	43.89	2.653	0.303
08/23/23 08:00	5	44.00	2.764	0.302
08/23/23 08:01	6	44.11	2.865	0.296
08/23/23 08:02	7	44.20	2.961	
08/23/23 08:03	8	44.31	3.067	0.315
08/23/23 08:04	9	44.37	3.125	0.300
08/23/23 08:05	10	44.44	3.199	0.295
08/23/23 08:06	11	44.56	3.321	0.326
08/23/23 08:07	12	44.66	3.417	0.296
08/23/23 08:08	13	44.73	3.486	0.305
08/23/23 08:09	14	44.78	3.544	0.303
08/23/23 08:10	15	44.86	3.618	0.301
08/23/23 08:11	16	44.93	3.687	0.303
08/23/23 08:12	17	44.99	3.751	0.308
08/23/23 08:13	18	45.08	3.836	0.305
08/23/23 08:14	19	45.14	3.9	0.302
08/23/23 08:15	20	45.19	3.953	0.299
08/23/23 08:16	21	45.25	4.011	0.298
08/23/23 08:17	22	45.32	4.075	0.292
08/23/23 08:18	23	45.36	4.122	0.291
08/23/23 08:19	24	45.42	4.175	0.291
08/23/23 08:20	25	45.45	4.213	0.298
08/23/23 08:21	26	45.51	4.266	0.300
08/23/23 08:22	27	45.60	4.356	0.313
08/23/23 08:23	28	45.67	4.43	0.307
08/23/23 08:24	29	45.72	4.478	0.295
08/23/23 08:25	30	45.76	4.515	0.297
08/23/23 08:26	31	45.80	4.563	0.295
08/23/23 08:27	32	45.87	4.632	0.304
08/23/23 08:28	33	45.91	4.669	0.295
08/23/23 08:29	34	45.95	4.711	0.295
08/23/23 08:30	35	45.97	4.732	0.297

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 08:31	36	46.00	4.764	0.296
08/23/23 08:32	37	46.05	4.812	0.296
08/23/23 08:33	38	46.09	4.854	0.298
08/23/23 08:34	39	46.13	4.892	0.293
08/23/23 08:35	40	46.21	4.971	0.303
08/23/23 08:36	41	46.25	5.008	0.306
08/23/23 08:37	42	46.32	5.077	0.314
08/23/23 08:38	43	46.35	5.114	0.312
08/23/23 08:39	44	46.39	5.146	0.310
08/23/23 08:40	45	46.42	5.183	0.308
08/23/23 08:41	46	46.46	5.215	0.299
08/23/23 08:42	47	46.47	5.226	0.303
08/23/23 08:43	48	46.47	5.226	0.292
08/23/23 08:44	49	46.55	5.311	0.305
08/23/23 08:45	50	46.59	5.353	0.310
08/23/23 08:46	51	46.61	5.374	0.300
08/23/23 08:47	52	46.64	5.396	0.301
08/23/23 08:48	53	46.66	5.417	0.297
08/23/23 08:49	54	46.68	5.438	0.301
08/23/23 08:50	55	46.71	5.465	0.299
08/23/23 08:51	56	46.74	5.496	0.302
08/23/23 08:52	57	46.76	5.518	0.306
08/23/23 08:53	58	46.79	5.549	0.297
08/23/23 08:54	59	46.82	5.576	0.302
08/23/23 08:55	60	46.83	5.587	0.300
08/23/23 08:56	61	46.85	5.608	0.302
08/23/23 08:57	62	46.86	5.624	0.298
08/23/23 08:58	63	46.89	5.65	0.303
08/23/23 08:59	64	46.93	5.687	0.301
08/23/23 09:00	65	46.95	5.714	0.306
08/23/23 09:01	66	46.98	5.735	0.293
08/23/23 09:02	67	47.00	5.762	0.299
08/23/23 09:03	68	47.02	5.778	0.291
08/23/23 09:04	69	47.03	5.793	0.302
08/23/23 09:05	70	47.07	5.825	0.298
08/23/23 09:06	71	47.09	5.852	0.299
08/23/23 09:07	72	47.11	5.868	0.302
08/23/23 09:08	73	47.14	5.9	0.299
08/23/23 09:09	74	47.16	5.915	0.304
08/23/23 09:10	75	47.18	5.942	0.303
08/23/23 09:11	76	47.21	5.974	0.303
08/23/23 09:12	77	47.24	6	0.304
08/23/23 09:13	78	47.26	6.022	0.303
08/23/23 09:14	79	47.28	6.043	0.300

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 09:15	80	47.29	6.053	0.300
08/23/23 09:16	81	47.31	6.069	0.306
08/23/23 09:17	82	47.33	6.091	0.301
08/23/23 09:18	83	47.36	6.117	0.296
08/23/23 09:19	84	47.38	6.138	0.300
08/23/23 09:20	85	47.41	6.165	0.297
08/23/23 09:21	86	47.42	6.181	0.296
08/23/23 09:22	87	47.43	6.191	0.300
08/23/23 09:23	88	47.45	6.207	0.302
08/23/23 09:24	89	47.47	6.228	0.298
08/23/23 09:25	90	47.50	6.26	0.300
08/23/23 09:26	91	47.51	6.266	0.295
08/23/23 09:27	92	47.52	6.282	0.304
08/23/23 09:28	93	47.54	6.303	0.302
08/23/23 09:29	94	47.56	6.324	0.302
08/23/23 09:30	95	47.59	6.345	0.294
08/23/23 09:31	96	47.62	6.377	0.304
08/23/23 09:32	97	47.63	6.388	0.304
08/23/23 09:33	98	47.64	6.398	0.299
08/23/23 09:34	99	47.67	6.43	0.304
08/23/23 09:35	100	47.69	6.451	0.300
08/23/23 09:36	101	47.70	6.462	0.300
08/23/23 09:37	102	47.73	6.494	0.300
08/23/23 09:38	103	47.74	6.504	0.300
08/23/23 09:39	104	47.77	6.526	0.301
08/23/23 09:40	105	47.78	6.542	0.303
08/23/23 09:41	106	47.80	6.563	0.298
08/23/23 09:42	107	47.82	6.579	0.305
08/23/23 09:43	108	47.84	6.595	0.307
08/23/23 09:44	109	47.85	6.61	0.304
08/23/23 09:45	110	47.87	6.632	0.303
08/23/23 09:46	111	47.89	6.653	0.301
08/23/23 09:47	112	47.91	6.669	0.299
08/23/23 09:48	113	47.93	6.685	0.303
08/23/23 09:49	114	47.95	6.706	0.298
08/23/23 09:50	115	47.96	6.717	0.299
08/23/23 09:51	116	47.97	6.727	0.302
08/23/23 09:52	117	47.99	6.748	0.299
08/23/23 09:53	118	48.00	6.759	0.301
08/23/23 09:54	119	48.02	6.78	0.297
08/23/23 09:55	120	48.03	6.791	0.297
08/23/23 09:56	121	48.05	6.812	0.300
08/23/23 09:57	122	48.07	6.828	0.300
08/23/23 09:58	123	48.08	6.844	0.300

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 09:59	124	48.10	6.86	0.297
08/23/23 10:00	125	48.11	6.87	0.298
08/23/23 10:01	126	48.13	6.892	0.296
08/23/23 10:02	127	48.15	6.908	0.300
08/23/23 10:03	128	48.16	6.918	0.304
08/23/23 10:04	129	48.19	6.945	0.301
08/23/23 10:05	130	48.19	6.95	0.298
08/23/23 10:06	131	48.20	6.961	0.298
08/23/23 10:07	132	48.22	6.977	0.298
08/23/23 10:08	133	48.23	6.992	0.299
08/23/23 10:09	134	48.25	7.008	0.299
08/23/23 10:10	135	48.26	7.019	0.294
08/23/23 10:11	136	48.28	7.035	0.306
08/23/23 10:12	137	48.29	7.051	0.300
08/23/23 10:13	138	48.31	7.067	0.305
08/23/23 10:14	139	48.33	7.088	0.307
08/23/23 10:15	140	48.34	7.099	0.300
08/23/23 10:16	141	48.35	7.114	0.304
08/23/23 10:17	142	48.37	7.13	0.301
08/23/23 10:18	143	48.38	7.141	0.301
08/23/23 10:19	144	48.40	7.162	0.297
08/23/23 10:20	145	48.41	7.173	0.301
08/23/23 10:21	146	48.43	7.189	0.299
08/23/23 10:22	147	48.45	7.21	0.300
08/23/23 10:23	148	48.47	7.226	0.299
08/23/23 10:24	149	48.48	7.242	0.299
08/23/23 10:25	150	48.49	7.252	0.300
08/23/23 10:26	151	48.51	7.268	0.298
08/23/23 10:27	152	48.52	7.279	0.298
08/23/23 10:28	153	48.54	7.3	0.299
08/23/23 10:29	154	48.55	7.305	0.301
08/23/23 10:30	155	48.55	7.311	0.304
08/23/23 10:31	156	48.57	7.327	0.295
08/23/23 10:32	157	48.58	7.337	0.299
08/23/23 10:33	158	48.60	7.358	0.298
08/23/23 10:34	159	48.62	7.38	0.301
08/23/23 10:35	160	48.63	7.385	0.302
08/23/23 10:36	161	48.64	7.396	0.304
08/23/23 10:37	162	48.65	7.412	0.304
08/23/23 10:38	163	48.67	7.433	0.303
08/23/23 10:39	164	48.68	7.438	0.304
08/23/23 10:40	165	48.71	7.47	0.300
08/23/23 10:41	166	48.72	7.481	0.306
08/23/23 10:42	167	48.74	7.496	0.305

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 10:43	168	48.75	7.507	0.305
08/23/23 10:44	169	48.77	7.534	0.302
08/23/23 10:45	170	48.78	7.544	0.302
08/23/23 10:46	171	48.80	7.56	0.305
08/23/23 10:47	172	48.80	7.56	0.301
08/23/23 10:48	173	48.82	7.576	0.304
08/23/23 10:49	174	48.84	7.597	0.298
08/23/23 10:50	175	48.84	7.603	0.302
08/23/23 10:51	176	48.86	7.624	0.301
08/23/23 10:52	177	48.88	7.64	0.303
08/23/23 10:53	178	48.89	7.65	0.298
08/23/23 10:54	179	48.91	7.672	0.303
08/23/23 10:55	180	48.92	7.682	0.305
08/23/23 10:56	181	48.93	7.687	0.299
08/23/23 10:57	182	48.94	7.703	0.297
08/23/23 10:58	183	48.95	7.709	0.300
08/23/23 10:59	184	48.97	7.725	0.301
08/23/23 11:00	185	48.98	7.735	0.303
08/23/23 11:01	186	48.99	7.751	0.300
08/23/23 11:02	187	49.00	7.756	0.300
08/23/23 11:03	188	49.02	7.783	0.301
08/23/23 11:04	189	49.03	7.788	0.301
08/23/23 11:05	190	49.05	7.809	0.297
08/23/23 11:06	191	49.06	7.82	0.302
08/23/23 11:07	192	49.07	7.831	0.298
08/23/23 11:08	193	49.08	7.836	0.300
08/23/23 11:09	194	49.08	7.841	0.302
08/23/23 11:10	195	49.10	7.862	0.302
08/23/23 11:11	196	49.12	7.884	0.300
08/23/23 11:12	197	49.13	7.889	0.297
08/23/23 11:13	198	49.15	7.905	0.299
08/23/23 11:14	199	49.16	7.921	0.301
08/23/23 11:15	200	49.17	7.931	0.300
08/23/23 11:16	201	49.18	7.942	0.301
08/23/23 11:17	202	49.20	7.958	0.298
08/23/23 11:18	203	49.21	7.969	0.297
08/23/23 11:19	204	49.23	7.985	0.298
08/23/23 11:20	205	49.24	8	0.301
08/23/23 11:21	206	49.26	8.016	0.298
08/23/23 11:22	207	49.26	8.022	0.300
08/23/23 11:23	208	49.27	8.032	0.299
08/23/23 11:24	209	49.30	8.059	0.303
08/23/23 11:25	210	49.31	8.069	0.299
08/23/23 11:26	211	49.32	8.08	0.298

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 11:27	212	49.33	8.091	0.298
08/23/23 11:28	213	49.35	8.107	0.299
08/23/23 11:29	214	49.36	8.117	0.297
08/23/23 11:30	215	49.37	8.128	0.298
08/23/23 11:31	216	49.38	8.144	0.297
08/23/23 11:32	217	49.39	8.154	0.296
08/23/23 11:33	218	49.41	8.17	0.295
08/23/23 11:34	219	49.41	8.17	0.299
08/23/23 11:35	220	49.44	8.202	0.310
08/23/23 11:36	221	49.45	8.213	0.310
08/23/23 11:37	222	49.48	8.244	0.303
08/23/23 11:38	223	49.50	8.26	0.304
08/23/23 11:39	224	49.52	8.282	0.306
08/23/23 11:40	225	49.54	8.298	0.302
08/23/23 11:41	226	49.56	8.319	0.300
08/23/23 11:42	227	49.58	8.335	0.301
08/23/23 11:43	228	49.58	8.34	0.302
08/23/23 11:44	229	49.59	8.345	0.302
08/23/23 11:45	230	49.60	8.361	0.302
08/23/23 11:46	231	49.61	8.372	0.303
08/23/23 11:47	232	49.62	8.382	0.305
08/23/23 11:48	233	49.64	8.398	0.301
08/23/23 11:49	234	49.65	8.409	0.300
08/23/23 11:50	235	49.65	8.409	0.304
08/23/23 11:51	236	49.66	8.42	0.301
08/23/23 11:52	237	49.68	8.441	0.303
08/23/23 11:53	238	49.70	8.457	0.294
08/23/23 11:54	239	49.69	8.451	0.302
08/23/23 11:55	240	49.71	8.473	0.301
08/23/23 11:56	241	49.72	8.478	0.298
08/23/23 11:57	242	49.73	8.489	0.300
08/23/23 11:58	243	49.74	8.504	0.301
08/23/23 11:59	244	49.75	8.51	0.298
08/23/23 12:00	245	49.76	8.52	0.299
08/23/23 12:01	246	49.79	8.547	0.301
08/23/23 12:02	247	49.79	8.547	0.302
08/23/23 12:03	248	49.80	8.557	0.301
08/23/23 12:04	249	49.82	8.579	0.300
08/23/23 12:05	250	49.83	8.589	0.299
08/23/23 12:06	251	49.84	8.595	0.299
08/23/23 12:07	252	49.85	8.605	0.305
08/23/23 12:08	253	49.86	8.621	0.299
08/23/23 12:09	254	49.87	8.626	0.299
08/23/23 12:10	255	49.88	8.637	0.297

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 12:11	256	49.89	8.653	0.299
08/23/23 12:12	257	49.90	8.664	0.300
08/23/23 12:13	258	49.91	8.674	0.303
08/23/23 12:14	259	49.94	8.695	0.297
08/23/23 12:15	260	49.94	8.695	0.296
08/23/23 12:16	261	49.95	8.711	0.298
08/23/23 12:17	262	49.96	8.717	0.302
08/23/23 12:18	263	49.97	8.733	0.298
08/23/23 12:19	264	49.98	8.743	0.299
08/23/23 12:20	265	49.99	8.748	0.303
08/23/23 12:21	266	49.99	8.754	0.299
08/23/23 12:22	267	50.02	8.775	0.298
08/23/23 12:23	268	50.02	8.78	0.301
08/23/23 12:31	276	50.11	8.87	0.297
08/23/23 12:32	277	50.12	8.881	0.298
08/23/23 12:33	278	50.13	8.892	0.294
08/23/23 12:34	279	50.13	8.892	0.298
08/23/23 12:35	280	50.15	8.908	0.303
08/23/23 12:36	281	50.15	8.913	0.299
08/23/23 12:37	282	50.16	8.924	0.301
08/23/23 12:38	283	50.17	8.929	0.295
08/23/23 12:39	284	50.19	8.945	0.301
08/23/23 12:40	285	50.19	8.95	0.302
08/23/23 12:41	286	50.20	8.955	0.300
08/23/23 12:42	287	50.21	8.966	0.299
08/23/23 12:43	288	50.22	8.977	0.301
08/23/23 12:44	289	50.22	8.982	0.299
08/23/23 12:45	290	50.23	8.992	0.298
08/23/23 12:46	291	50.25	9.008	0.298
08/23/23 12:47	292	50.25	9.014	0.300
08/23/23 12:48	293	50.26	9.019	0.301
08/23/23 12:49	294	50.28	9.035	0.297
08/23/23 12:50	295	50.28	9.035	0.303
08/23/23 12:51	296	50.29	9.051	0.299
08/23/23 12:52	297	50.30	9.056	0.298
08/23/23 12:53	298	50.30	9.061	0.299
08/23/23 12:54	299	50.32	9.077	0.302
08/23/23 12:55	300	50.33	9.093	0.304
08/23/23 12:56	301	50.34	9.104	0.297
08/23/23 12:57	302	50.34	9.104	0.302
08/23/23 12:58	303	50.37	9.125	0.297
08/23/23 12:59	304	50.37	9.13	0.302
08/23/23 13:00	305	50.38	9.136	0.298
08/23/23 13:01	306	50.39	9.152	0.300

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 13:02	307	50.40	9.157	0.297
08/23/23 13:03	308	50.41	9.168	0.300
08/23/23 13:04	309	50.42	9.178	0.301
08/23/23 13:05	310	50.42	9.183	0.297
08/23/23 13:06	311	50.43	9.189	0.298
08/23/23 13:07	312	50.45	9.205	0.299
08/23/23 13:08	313	50.45	9.205	0.298
08/23/23 13:09	314	50.46	9.215	0.298
08/23/23 13:10	315	50.46	9.221	0.298
08/23/23 13:11	316	50.48	9.237	0.297
08/23/23 13:12	317	50.48	9.242	0.301
08/23/23 13:13	318	50.49	9.247	0.298
08/23/23 13:14	319	50.50	9.263	0.297
08/23/23 13:15	320	50.50	9.258	0.302
08/23/23 13:16	321	50.51	9.274	0.299
08/23/23 13:17	322	50.52	9.284	0.305
08/23/23 13:18	323	50.53	9.29	0.296
08/23/23 13:19	324	50.54	9.3	0.304
08/23/23 13:20	325	50.56	9.316	0.298
08/23/23 13:21	326	50.56	9.321	0.299
08/23/23 13:22	327	50.57	9.332	0.295
08/23/23 13:23	328	50.58	9.337	0.301
08/23/23 13:24	329	50.58	9.337	0.303
08/23/23 13:25	330	50.60	9.359	0.299
08/23/23 13:26	331	50.64	9.396	0.301
08/23/23 13:27	332	50.63	9.39	0.302
08/23/23 13:28	333	50.63	9.39	0.298
08/23/23 13:29	334	50.63	9.39	0.303
08/23/23 13:30	335	50.65	9.406	0.304
08/23/23 13:31	336	50.66	9.417	0.301
08/23/23 13:32	337	50.68	9.438	0.304
08/23/23 13:33	338	50.68	9.438	0.302
08/23/23 13:34	339	50.69	9.454	0.311
08/23/23 13:35	340	50.71	9.47	0.305
08/23/23 13:36	341	50.72	9.475	0.309
08/23/23 13:37	342	50.73	9.491	0.304
08/23/23 13:38	343	50.74	9.496	0.305
08/23/23 13:39	344	50.75	9.512	0.307
08/23/23 13:40	345	50.76	9.523	0.304
08/23/23 13:41	346	50.78	9.544	0.309
08/23/23 13:42	347	50.79	9.55	0.304
08/23/23 13:43	348	50.80	9.555	0.306
08/23/23 13:44	349	50.82	9.576	0.306
08/23/23 13:45	350	50.82	9.581	0.305

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 13:46	351	50.84	9.597	0.302
08/23/23 13:47	352	50.84	9.603	0.303
08/23/23 13:48	353	50.86	9.619	0.301
08/23/23 13:49	354	50.86	9.624	0.303
08/23/23 13:50	355	50.87	9.629	0.305
08/23/23 13:51	356	50.88	9.64	0.299
08/23/23 13:52	357	50.89	9.645	0.303
08/23/23 13:53	358	50.89	9.645	0.301
08/23/23 13:54	359	50.90	9.661	0.301
08/23/23 13:55	360	50.91	9.672	0.301
08/23/23 13:56	361	50.92	9.677	0.300
08/23/23 13:57	362	50.92	9.682	0.301
08/23/23 13:58	363	50.93	9.687	0.299
08/23/23 13:59	364	50.94	9.698	0.301
08/23/23 14:00	365	50.94	9.703	0.301
08/23/23 14:01	366	50.95	9.709	0.299
08/23/23 14:02	367	50.97	9.73	0.302
08/23/23 14:03	368	50.97	9.73	0.302
08/23/23 14:04	369	50.97	9.73	0.302
08/23/23 14:05	370	50.98	9.741	0.302
08/23/23 14:06	371	50.98	9.741	0.298
08/23/23 14:07	372	50.99	9.751	0.298
08/23/23 14:08	373	51.00	9.756	0.304
08/23/23 14:09	374	51.01	9.767	0.297
08/23/23 14:10	375	51.02	9.778	0.299
08/23/23 14:11	376	51.02	9.778	0.297
08/23/23 14:12	377	51.03	9.788	0.300
08/23/23 14:13	378	51.03	9.794	0.301
08/23/23 14:14	379	51.04	9.799	0.301
08/23/23 14:15	380	51.04	9.799	0.298
08/23/23 14:16	381	51.04	9.804	0.301
08/23/23 14:17	382	51.06	9.815	0.300
08/23/23 14:18	383	51.06	9.815	0.299
08/23/23 14:19	384	51.06	9.815	0.302
08/23/23 14:20	385	51.07	9.825	0.299
08/23/23 14:21	386	51.07	9.831	0.302
08/23/23 14:22	387	51.08	9.836	0.302
08/23/23 14:23	388	51.09	9.847	0.300
08/23/23 14:24	389	51.09	9.847	0.300
08/23/23 14:25	390	51.10	9.857	0.304
08/23/23 14:26	391	51.11	9.868	0.301
08/23/23 14:27	392	51.11	9.873	0.300
08/23/23 14:28	393	51.12	9.884	0.296
08/23/23 14:29	394	51.12	9.884	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 14:30	395	51.15	9.905	0.291
08/23/23 14:31	396	51.15	9.91	0.299
08/23/23 14:32	397	51.16	9.921	0.303
08/23/23 14:33	398	51.16	9.921	0.301
08/23/23 14:34	399	51.17	9.932	0.303
08/23/23 14:35	400	51.18	9.937	0.304
08/23/23 14:36	401	51.19	9.947	0.303
08/23/23 14:37	402	51.20	9.958	0.300
08/23/23 14:38	403	51.20	9.963	0.301
08/23/23 14:39	404	51.20	9.963	0.298
08/23/23 14:40	405	51.21	9.974	0.300
08/23/23 14:41	406	51.23	9.985	0.299
08/23/23 14:42	407	51.23	9.99	0.301
08/23/23 14:43	408	51.25	10.006	0.302
08/23/23 14:44	409	51.26	10.016	0.303
08/23/23 14:45	410	51.26	10.022	0.297
08/23/23 14:46	411	51.27	10.032	0.301
08/23/23 14:47	412	51.28	10.043	0.304
08/23/23 14:48	413	51.29	10.048	0.302
08/23/23 14:49	414	51.29	10.054	0.299
08/23/23 14:50	415	51.30	10.059	0.301
08/23/23 14:51	416	51.32	10.075	0.299
08/23/23 14:52	417	51.32	10.08	0.302
08/23/23 14:53	418	51.32	10.08	0.306
08/23/23 14:54	419	51.34	10.101	0.302
08/23/23 14:55	420	51.34	10.101	0.300
08/23/23 14:56	421	51.35	10.112	0.301
08/23/23 14:57	422	51.36	10.122	0.302
08/23/23 14:58	423	51.38	10.138	0.297
08/23/23 14:59	424	51.39	10.149	0.302
08/23/23 15:00	425	51.39	10.149	0.303
08/23/23 15:01	426	51.41	10.165	0.303
08/23/23 15:02	427	51.42	10.176	0.305
08/23/23 15:03	428	51.42	10.181	0.299
08/23/23 15:04	429	51.42	10.181	0.304
08/23/23 15:05	430	51.43	10.191	0.303
08/23/23 15:06	431	51.45	10.207	0.302
08/23/23 15:07	432	51.45	10.207	0.299
08/23/23 15:08	433	51.46	10.223	0.298
08/23/23 15:09	434	51.47	10.234	0.303
08/23/23 15:10	435	51.47	10.234	0.301
08/23/23 15:11	436	51.49	10.25	0.299
08/23/23 15:12	437	51.49	10.25	0.299
08/23/23 15:13	438	51.51	10.266	0.303

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 15:14	439	51.52	10.276	0.304
08/23/23 15:15	440	51.53	10.287	0.301
08/23/23 15:16	441	51.53	10.292	0.300
08/23/23 15:17	442	51.54	10.303	0.307
08/23/23 15:18	443	51.55	10.308	0.303
08/23/23 15:19	444	51.55	10.313	0.301
08/23/23 15:20	445	51.56	10.324	0.303
08/23/23 15:21	446	51.58	10.34	0.302
08/23/23 15:22	447	51.59	10.351	0.300
08/23/23 15:23	448	51.60	10.361	0.301
08/23/23 15:24	449	51.61	10.367	0.302
08/23/23 15:25	450	51.61	10.372	0.301
08/23/23 15:26	451	51.64	10.398	0.305
08/23/23 15:27	452	51.63	10.393	0.298
08/23/23 15:28	453	51.64	10.404	0.303
08/23/23 15:29	454	51.66	10.42	0.300
08/23/23 15:30	455	51.67	10.425	0.306
08/23/23 15:31	456	51.68	10.436	0.299
08/23/23 15:32	457	51.69	10.446	0.300
08/23/23 15:33	458	51.69	10.451	0.299
08/23/23 15:34	459	51.70	10.462	0.301
08/23/23 15:35	460	51.71	10.473	0.300
08/23/23 15:36	461	51.72	10.483	0.306
08/23/23 15:37	462	51.73	10.494	0.302
08/23/23 15:38	463	51.74	10.499	0.300
08/23/23 15:39	464	51.75	10.51	0.299
08/23/23 15:40	465	51.76	10.52	0.299
08/23/23 15:41	466	51.77	10.526	0.301
08/23/23 15:42	467	51.77	10.531	0.305
08/23/23 15:43	468	51.79	10.547	0.303
08/23/23 15:44	469	51.80	10.563	0.300
08/23/23 15:45	470	51.81	10.573	0.300
08/23/23 15:46	471	51.82	10.579	0.301
08/23/23 15:47	472	51.82	10.584	0.307
08/23/23 15:48	473	51.84	10.6	0.304
08/23/23 15:49	474	51.85	10.611	0.301
08/23/23 15:50	475	51.85	10.605	0.304
08/23/23 15:51	476	51.86	10.621	0.301
08/23/23 15:52	477	51.87	10.632	0.307
08/23/23 15:53	478	51.89	10.648	0.300
08/23/23 15:54	479	51.90	10.664	0.305
08/23/23 15:55	480	51.91	10.669	0.308
08/23/23 15:56	481	51.92	10.68	0.304
08/23/23 15:57	482	51.93	10.685	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 15:58	483	51.94	10.701	0.303
08/23/23 15:59	484	51.95	10.706	0.306
08/23/23 16:00	485	51.96	10.717	0.299
08/23/23 16:01	486	51.97	10.727	0.299
08/23/23 16:02	487	51.97	10.733	0.298
08/23/23 16:03	488	51.98	10.743	0.301
08/23/23 16:04	489	51.99	10.749	0.301
08/23/23 16:05	490	52.00	10.764	0.296
08/23/23 16:06	491	52.01	10.77	0.300
08/23/23 16:07	492	52.02	10.78	0.301
08/23/23 16:08	493	52.03	10.791	0.302
08/23/23 16:09	494	52.04	10.796	0.301
08/23/23 16:10	495	52.05	10.807	0.302
08/23/23 16:11	496	52.06	10.817	0.297
08/23/23 16:12	497	52.07	10.828	0.304
08/23/23 16:13	498	52.08	10.844	0.302
08/23/23 16:14	499	52.09	10.849	0.301
08/23/23 16:15	500	52.10	10.86	0.298
08/23/23 16:16	501	52.12	10.876	0.297
08/23/23 16:17	502	52.12	10.881	0.297
08/23/23 16:18	503	52.13	10.892	0.302
08/23/23 16:19	504	52.14	10.902	0.301
08/23/23 16:20	505	52.15	10.908	0.298
08/23/23 16:21	506	52.16	10.924	0.302
08/23/23 16:22	507	52.17	10.934	0.300
08/23/23 16:23	508	52.18	10.939	0.299
08/23/23 16:24	509	52.21	10.966	0.305
08/23/23 16:25	510	52.20	10.961	0.300
08/23/23 16:26	511	52.22	10.977	0.302
08/23/23 16:27	512	52.22	10.982	0.300
08/23/23 16:28	513	52.24	10.998	0.301
08/23/23 16:29	514	52.25	11.008	0.299
08/23/23 16:30	515	52.26	11.019	0.303
08/23/23 16:31	516	52.28	11.035	0.301
08/23/23 16:32	517	52.28	11.04	0.300
08/23/23 16:33	518	52.30	11.056	0.298
08/23/23 16:34	519	52.31	11.067	0.299
08/23/23 16:35	520	52.31	11.072	0.303
08/23/23 16:36	521	52.33	11.088	0.301
08/23/23 16:37	522	52.34	11.099	0.298
08/23/23 16:38	523	52.35	11.109	0.305
08/23/23 16:39	524	52.36	11.12	0.298
08/23/23 16:40	525	52.37	11.125	0.301
08/23/23 16:41	526	52.38	11.141	0.297

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 16:42	527	52.39	11.146	0.298
08/23/23 16:43	528	52.40	11.162	0.303
08/23/23 16:44	529	52.41	11.168	0.299
08/23/23 16:45	530	52.42	11.178	0.303
08/23/23 16:46	531	52.43	11.194	0.298
08/23/23 16:47	532	52.44	11.199	0.296
08/23/23 16:48	533	52.45	11.21	0.302
08/23/23 16:49	534	52.46	11.221	0.293
08/23/23 16:50	535	52.47	11.226	0.299
08/23/23 16:51	536	52.49	11.247	0.296
08/23/23 16:52	537	52.49	11.253	0.300
08/23/23 16:53	538	52.50	11.263	0.301
08/23/23 16:54	539	52.51	11.274	0.289
08/23/23 16:55	540	52.52	11.284	0.300
08/23/23 16:56	541	52.53	11.29	0.300
08/23/23 16:57	542	52.54	11.3	0.296
08/23/23 16:58	543	52.55	11.311	0.301
08/23/23 16:59	544	52.56	11.316	0.293
08/23/23 17:00	545	52.57	11.327	0.298
08/23/23 17:01	546	52.59	11.348	0.297
08/23/23 17:02	547	52.59	11.348	0.298
08/23/23 17:03	548	52.60	11.364	0.299
08/23/23 17:04	549	52.62	11.375	0.300
08/23/23 17:05	550	52.63	11.385	0.305
08/23/23 17:06	551	52.64	11.396	0.296
08/23/23 17:07	552	52.64	11.401	0.298
08/23/23 17:08	553	52.66	11.417	0.298
08/23/23 17:09	554	52.67	11.433	0.301
08/23/23 17:10	555	52.67	11.433	0.298
08/23/23 17:11	556	52.70	11.459	0.296
08/23/23 17:12	557	52.72	11.475	0.300
08/23/23 17:13	558	52.73	11.486	0.299
08/23/23 17:14	559	52.73	11.491	0.300
08/23/23 17:15	560	52.74	11.502	0.298
08/23/23 17:16	561	52.75	11.512	0.304
08/23/23 17:17	562	52.76	11.523	0.302
08/23/23 17:18	563	52.78	11.539	0.296
08/23/23 17:19	564	52.79	11.55	0.301
08/23/23 17:20	565	52.79	11.55	0.302
08/23/23 17:21	566	52.81	11.571	0.299
08/23/23 17:22	567	52.82	11.581	0.302
08/23/23 17:23	568	52.83	11.592	0.302
08/23/23 17:24	569	52.84	11.603	0.301
08/23/23 17:25	570	52.86	11.619	0.303

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 17:26	571	52.86	11.624	0.298
08/23/23 17:27	572	52.88	11.64	0.300
08/23/23 17:28	573	52.89	11.645	0.298
08/23/23 17:29	574	52.90	11.656	0.299
08/23/23 17:30	575	52.90	11.661	0.300
08/23/23 17:31	576	52.93	11.688	0.302
08/23/23 17:32	577	52.93	11.693	0.304
08/23/23 17:33	578	52.95	11.714	0.300
08/23/23 17:34	579	52.96	11.719	0.296
08/23/23 17:35	580	52.97	11.73	0.302
08/23/23 17:36	581	52.98	11.741	0.301
08/23/23 17:37	582	53.00	11.756	0.299
08/23/23 17:38	583	53.01	11.767	0.298
08/23/23 17:39	584	53.02	11.778	0.299
08/23/23 17:40	585	53.02	11.783	0.300
08/23/23 17:41	586	53.04	11.799	0.301
08/23/23 17:42	587	53.05	11.81	0.299
08/23/23 17:43	588	53.06	11.82	0.297
08/23/23 17:44	589	53.07	11.831	0.296
08/23/23 17:45	590	53.08	11.841	0.298
08/23/23 17:46	591	53.09	11.847	0.300
08/23/23 17:47	592	53.10	11.863	0.298
08/23/23 17:48	593	53.11	11.868	0.300
08/23/23 17:49	594	53.12	11.879	0.296
08/23/23 17:50	595	53.13	11.889	0.299
08/23/23 17:51	596	53.13	11.894	0.302
08/23/23 17:52	597	53.15	11.91	0.298
08/23/23 17:53	598	53.17	11.926	0.302
08/23/23 17:54	599	53.17	11.926	0.298
08/23/23 17:55	600	53.18	11.937	0.300
08/23/23 17:56	601	53.19	11.947	0.304
08/23/23 17:57	602	53.20	11.963	0.301
08/23/23 17:58	603	53.21	11.969	0.300
08/23/23 17:59	604	53.23	11.99	0.303
08/23/23 18:00	605	53.24	11.995	0.301
08/23/23 18:01	606	53.24	11.995	0.300
08/23/23 18:02	607	53.26	12.016	0.298
08/23/23 18:03	608	53.27	12.027	0.303
08/23/23 18:04	609	53.27	12.032	0.304
08/23/23 18:05	610	53.29	12.048	0.298
08/23/23 18:06	611	53.29	12.054	0.300
08/23/23 18:07	612	53.30	12.064	0.303
08/23/23 18:08	613	53.32	12.08	0.296
08/23/23 18:09	614	53.34	12.096	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 18:10	615	53.34	12.101	0.302
08/23/23 18:11	616	53.34	12.101	0.297
08/23/23 18:12	617	53.37	12.133	0.298
08/23/23 18:13	618	53.37	12.128	0.297
08/23/23 18:14	619	53.39	12.149	0.295
08/23/23 18:15	620	53.40	12.16	0.299
08/23/23 18:16	621	53.41	12.17	0.298
08/23/23 18:17	622	53.42	12.181	0.297
08/23/23 18:18	623	53.43	12.192	0.294
08/23/23 18:19	624	53.44	12.202	0.298
08/23/23 18:20	625	53.45	12.213	0.296
08/23/23 18:21	626	53.46	12.218	0.297
08/23/23 18:22	627	53.48	12.239	0.296
08/23/23 18:23	628	53.49	12.245	0.299
08/23/23 18:24	629	53.51	12.266	0.300
08/23/23 18:25	630	53.51	12.271	0.300
08/23/23 18:26	631	53.52	12.282	0.301
08/23/23 18:27	632	53.54	12.303	0.304
08/23/23 18:28	633	53.55	12.314	0.296
08/23/23 18:29	634	53.58	12.335	0.298
08/23/23 18:30	635	53.58	12.34	0.308
08/23/23 18:31	636	53.60	12.361	0.299
08/23/23 18:32	637	53.61	12.367	0.300
08/23/23 18:33	638	53.62	12.377	0.299
08/23/23 18:34	639	53.63	12.388	0.299
08/23/23 18:35	640	53.64	12.398	0.296
08/23/23 18:36	641	53.66	12.42	0.302
08/23/23 18:37	642	53.67	12.43	0.299
08/23/23 18:38	643	53.68	12.441	0.299
08/23/23 18:39	644	53.69	12.451	0.298
08/23/23 18:40	645	53.71	12.467	0.305
08/23/23 18:41	646	53.73	12.489	0.302
08/23/23 18:42	647	53.75	12.505	0.300
08/23/23 18:43	648	53.76	12.52	0.305
08/23/23 18:44	649	53.77	12.531	0.299
08/23/23 18:45	650	53.78	12.542	0.299
08/23/23 18:46	651	53.80	12.558	0.301
08/23/23 18:47	652	53.81	12.568	0.302
08/23/23 18:48	653	53.83	12.589	0.301
08/23/23 18:49	654	53.84	12.6	0.300
08/23/23 18:50	655	53.85	12.611	0.299
08/23/23 18:51	656	53.86	12.616	0.300
08/23/23 18:52	657	53.87	12.632	0.300
08/23/23 18:53	658	53.89	12.648	0.303

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 18:54	659	53.91	12.674	0.305
08/23/23 18:55	660	53.94	12.696	0.303
08/23/23 18:56	661	53.95	12.706	0.306
08/23/23 18:57	662	53.96	12.722	0.299
08/23/23 18:58	663	53.97	12.733	0.301
08/23/23 18:59	664	53.99	12.754	0.300
08/23/23 19:00	665	54.00	12.764	0.302
08/23/23 19:01	666	54.03	12.786	0.300
08/23/23 19:02	667	54.03	12.791	0.300
08/23/23 19:03	668	54.05	12.807	0.300
08/23/23 19:04	669	54.06	12.823	0.301
08/23/23 19:05	670	54.08	12.844	0.300
08/23/23 19:06	671	54.10	12.855	0.298
08/23/23 19:07	672	54.11	12.865	0.300
08/23/23 19:08	673	54.12	12.881	0.301
08/23/23 19:09	674	54.15	12.908	0.305
08/23/23 19:10	675	54.16	12.918	0.304
08/23/23 19:11	676	54.17	12.929	0.297
08/23/23 19:12	677	54.20	12.955	0.303
08/23/23 19:13	678	54.21	12.966	0.310
08/23/23 19:14	679	54.22	12.982	0.300
08/23/23 19:15	680	54.24	13.003	0.300
08/23/23 19:16	681	54.26	13.019	0.297
08/23/23 19:17	682	54.27	13.03	0.304
08/23/23 19:18	683	54.29	13.051	0.305
08/23/23 19:19	684	54.31	13.072	0.301
08/23/23 19:20	685	54.32	13.083	0.297
08/23/23 19:21	686	54.34	13.099	0.301
08/23/23 19:22	687	54.36	13.115	0.302
08/23/23 19:23	688	54.37	13.131	0.303
08/23/23 19:24	689	54.39	13.146	0.296
08/23/23 19:25	690	54.40	13.157	0.296
08/23/23 19:26	691	54.42	13.178	0.305
08/23/23 19:27	692	54.43	13.189	0.304
08/23/23 19:28	693	54.45	13.21	0.300
08/23/23 19:29	694	54.47	13.231	0.300
08/23/23 19:30	695	54.49	13.247	0.302
08/23/23 19:31	696	54.50	13.258	0.303
08/23/23 19:32	697	54.51	13.274	0.301
08/23/23 19:33	698	54.54	13.3	0.303
08/23/23 19:34	699	54.55	13.306	0.298
08/23/23 19:35	700	54.57	13.327	0.302
08/23/23 19:36	701	54.58	13.337	0.302
08/23/23 19:37	702	54.60	13.359	0.300

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 19:37	702	54.61	13.369	0.300
08/23/23 19:38	703	54.63	13.39	0.304
08/23/23 19:39	704	54.65	13.412	0.301
08/23/23 19:40	705	54.67	13.428	0.301
08/23/23 19:41	706	54.68	13.438	0.304
08/23/23 19:42	707	54.69	13.454	0.300
08/23/23 19:43	708	54.72	13.475	0.299
08/23/23 19:44	709	54.73	13.486	0.302
08/23/23 19:45	710	54.74	13.502	0.302
08/23/23 19:46	711	54.77	13.534	0.299
08/23/23 19:47	712	54.80	13.555	0.302
08/23/23 19:48	713	54.81	13.566	0.298
08/23/23 19:49	714	54.82	13.581	0.302
08/23/23 19:50	715	54.83	13.592	0.302
08/23/23 19:51	716	54.85	13.613	0.299
08/23/23 19:52	717	54.87	13.629	0.302
08/23/23 19:53	718	54.89	13.645	0.300
08/23/23 19:54	719	54.91	13.666	0.303
08/23/23 19:55	720	54.92	13.677	0.300
08/23/23 19:56	721	54.93	13.693	0.304
08/23/23 19:57	722	54.95	13.709	0.300
08/23/23 19:58	723	54.97	13.73	0.301
08/23/23 19:59	724	54.99	13.751	0.303
08/23/23 20:00	725	55.00	13.762	0.301
08/23/23 20:01	726	55.02	13.778	0.305
08/23/23 20:02	727	55.04	13.799	0.299
08/23/23 20:03	728	55.06	13.815	0.299
08/23/23 20:04	729	55.08	13.836	0.300
08/23/23 20:05	730	55.09	13.852	0.300
08/23/23 20:06	731	55.11	13.868	0.296
08/23/23 20:07	732	55.12	13.884	0.300
08/23/23 20:08	733	55.14	13.9	0.301
08/23/23 20:09	734	55.16	13.921	0.305
08/23/23 20:10	735	55.18	13.937	0.302
08/23/23 20:11	736	55.19	13.953	0.297
08/23/23 20:12	737	55.21	13.969	0.301
08/23/23 20:13	738	55.22	13.979	0.299
08/23/23 20:14	739	55.24	14.001	0.302
08/23/23 20:15	740	55.25	14.011	0.299
08/23/23 20:16	741	55.27	14.027	0.300
08/23/23 20:17	742	55.29	14.054	0.299
08/23/23 20:18	743	55.31	14.07	0.299
08/23/23 20:19	744	55.34	14.096	0.294
08/23/23 20:20	745	55.34	14.101	0.300

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 20:21	746	55.36	14.123	0.304
08/23/23 20:22	747	55.36	14.123	0.302
08/23/23 20:23	748	55.39	14.154	0.308
08/23/23 20:24	749	55.41	14.165	0.300
08/23/23 20:25	750	55.43	14.186	0.303
08/23/23 20:26	751	55.45	14.207	0.302
08/23/23 20:27	752	55.46	14.218	0.302
08/23/23 20:28	753	55.48	14.239	0.300
08/23/23 20:29	754	55.50	14.255	0.302
08/23/23 20:30	755	55.51	14.266	0.300
08/23/23 20:31	756	55.53	14.287	0.301
08/23/23 20:32	757	55.55	14.314	0.302
08/23/23 20:33	758	55.57	14.33	0.303
08/23/23 20:34	759	55.59	14.345	0.304
08/23/23 20:35	760	55.61	14.367	0.301
08/23/23 20:36	761	55.62	14.377	0.302
08/23/23 20:37	762	55.64	14.398	0.306
08/23/23 20:38	763	55.66	14.42	0.310
08/23/23 20:39	764	55.68	14.436	0.308
08/23/23 20:40	765	55.69	14.446	0.299
08/23/23 20:41	766	55.70	14.462	0.302
08/23/23 20:42	767	55.72	14.478	0.304
08/23/23 20:43	768	55.74	14.499	0.307
08/23/23 20:44	769	55.76	14.52	0.301
08/23/23 20:45	770	55.76	14.52	0.303
08/23/23 20:46	771	55.79	14.547	0.306
08/23/23 20:47	772	55.80	14.563	0.308
08/23/23 20:48	773	55.82	14.579	0.302
08/23/23 20:49	774	55.84	14.595	0.303
08/23/23 20:50	775	55.85	14.611	0.303
08/23/23 20:51	776	55.88	14.637	0.306
08/23/23 20:52	777	55.89	14.648	0.298
08/23/23 20:53	778	55.91	14.669	0.305
08/23/23 20:54	779	55.91	14.674	0.308
08/23/23 20:55	780	55.94	14.696	0.304
08/23/23 20:56	781	55.95	14.711	0.303
08/23/23 20:57	782	55.97	14.727	0.311
08/23/23 20:58	783	55.99	14.749	0.304
08/23/23 20:59	784	56.01	14.765	0.302
08/23/23 21:00	785	56.02	14.78	0.305
08/23/23 21:01	786	56.04	14.796	0.305
08/23/23 21:02	787	56.06	14.818	0.303
08/23/23 21:03	788	56.07	14.828	0.308
08/23/23 21:04	789	56.10	14.855	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 21:05	790	56.11	14.871	0.306
08/23/23 21:06	791	56.12	14.881	0.304
08/23/23 21:07	792	56.15	14.913	0.305
08/23/23 21:08	793	56.16	14.918	0.305
08/23/23 21:09	794	56.17	14.934	0.307
08/23/23 21:10	795	56.19	14.95	0.306
08/23/23 21:11	796	56.21	14.971	0.306
08/23/23 21:12	797	56.23	14.987	0.303
08/23/23 21:13	798	56.25	15.009	0.301
08/23/23 21:14	799	56.26	15.019	0.303
08/23/23 21:15	800	56.28	15.04	0.303
08/23/23 21:16	801	56.30	15.056	0.308
08/23/23 21:17	802	56.31	15.072	0.302
08/23/23 21:18	803	56.34	15.099	0.309
08/23/23 21:19	804	56.35	15.109	0.306
08/23/23 21:20	805	56.36	15.12	0.306
08/23/23 21:21	806	56.38	15.141	0.306
08/23/23 21:22	807	56.40	15.162	0.308
08/23/23 21:23	808	56.41	15.173	0.307
08/23/23 21:24	809	56.45	15.205	0.305
08/23/23 21:25	810	56.46	15.221	0.306
08/23/23 21:26	811	56.47	15.231	0.311
08/23/23 21:27	812	56.49	15.247	0.303
08/23/23 21:28	813	56.50	15.263	0.303
08/23/23 21:29	814	56.52	15.279	0.302
08/23/23 21:30	815	56.54	15.3	0.301
08/23/23 21:31	816	56.55	15.311	0.303
08/23/23 21:32	817	56.56	15.316	0.305
08/23/23 21:33	818	56.57	15.332	0.304
08/23/23 21:34	819	56.60	15.359	0.300
08/23/23 21:35	820	56.61	15.369	0.303
08/23/23 21:36	821	56.63	15.385	0.303
08/23/23 21:37	822	56.64	15.401	0.300
08/23/23 21:38	823	56.66	15.417	0.302
08/23/23 21:39	824	56.67	15.428	0.298
08/23/23 21:40	825	56.68	15.444	0.292
08/23/23 21:41	826	56.69	15.454	0.295
08/23/23 21:42	827	56.70	15.46	0.300
08/23/23 21:43	828	56.71	15.47	0.297
08/23/23 21:44	829	56.72	15.481	0.298
08/23/23 21:45	830	56.74	15.497	0.300
08/23/23 21:46	831	56.74	15.502	0.298
08/23/23 21:47	832	56.75	15.513	0.296
08/23/23 21:48	833	56.76	15.518	0.297

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 21:49	834	56.77	15.528	0.294
08/23/23 21:50	835	56.78	15.544	0.297
08/23/23 21:51	836	56.80	15.56	0.295
08/23/23 21:52	837	56.81	15.571	0.297
08/23/23 21:53	838	56.82	15.576	0.294
08/23/23 21:54	839	56.83	15.592	0.297
08/23/23 21:55	840	56.84	15.603	0.300
08/23/23 21:56	841	56.85	15.613	0.294
08/23/23 21:57	842	56.88	15.635	0.296
08/23/23 21:58	843	56.89	15.645	0.298
08/23/23 21:59	844	56.89	15.651	0.299
08/23/23 22:00	845	56.91	15.672	0.297
08/23/23 22:01	846	56.92	15.677	0.296
08/23/23 22:02	847	56.93	15.693	0.301
08/23/23 22:03	848	56.94	15.704	0.297
08/23/23 22:04	849	56.96	15.719	0.293
08/23/23 22:05	850	56.97	15.73	0.296
08/23/23 22:06	851	56.99	15.746	0.294
08/23/23 22:07	852	56.99	15.751	0.300
08/23/23 22:08	853	57.01	15.767	0.295
08/23/23 22:09	854	57.02	15.783	0.299
08/23/23 22:10	855	57.03	15.794	0.293
08/23/23 22:11	856	57.04	15.804	0.296
08/23/23 22:12	857	57.06	15.815	0.296
08/23/23 22:13	858	57.07	15.826	0.302
08/23/23 22:14	859	57.08	15.841	0.294
08/23/23 22:15	860	57.09	15.852	0.293
08/23/23 22:16	861	57.10	15.863	0.299
08/23/23 22:17	862	57.11	15.868	0.293
08/23/23 22:18	863	57.13	15.889	0.295
08/23/23 22:19	864	57.14	15.895	0.298
08/23/23 22:20	865	57.14	15.9	0.293
08/23/23 22:21	866	57.16	15.916	0.294
08/23/23 22:22	867	57.17	15.926	0.296
08/23/23 22:23	868	57.18	15.937	0.293
08/23/23 22:24	869	57.19	15.953	0.292
08/23/23 22:25	870	57.21	15.969	0.292
08/23/23 22:26	871	57.21	15.969	0.293
08/23/23 22:27	872	57.22	15.979	0.297
08/23/23 22:28	873	57.24	15.995	0.293
08/23/23 22:29	874	57.25	16.006	0.299
08/23/23 22:30	875	57.25	16.011	0.293
08/23/23 22:31	876	57.26	16.022	0.300
08/23/23 22:32	877	57.27	16.032	0.296

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 22:33	878	57.29	16.048	0.299
08/23/23 22:34	879	57.30	16.064	0.296
08/23/23 22:35	880	57.32	16.075	0.301
08/23/23 22:36	881	57.33	16.091	0.293
08/23/23 22:37	882	57.34	16.101	0.296
08/23/23 22:38	883	57.35	16.112	0.302
08/23/23 22:39	884	57.36	16.123	0.296
08/23/23 22:40	885	57.39	16.149	0.301
08/23/23 22:41	886	57.39	16.154	0.296
08/23/23 22:42	887	57.41	16.165	0.293
08/23/23 22:43	888	57.43	16.186	0.294
08/23/23 22:44	889	57.44	16.202	0.293
08/23/23 22:45	890	57.45	16.213	0.298
08/23/23 22:46	891	57.46	16.223	0.299
08/23/23 22:47	892	57.48	16.239	0.296
08/23/23 22:48	893	57.49	16.245	0.294
08/23/23 22:49	894	57.50	16.261	0.292
08/23/23 22:50	895	57.52	16.277	0.294
08/23/23 22:51	896	57.53	16.287	0.296
08/23/23 22:52	897	57.54	16.303	0.296
08/23/23 22:53	898	57.55	16.308	0.295
08/23/23 22:54	899	57.56	16.319	0.300
08/23/23 22:55	900	57.58	16.34	0.296
08/23/23 22:56	901	57.59	16.351	0.295
08/23/23 22:57	902	57.60	16.361	0.299
08/23/23 22:58	903	57.62	16.377	0.296
08/23/23 22:59	904	57.64	16.399	0.294
08/23/23 23:00	905	57.64	16.404	0.297
08/23/23 23:01	906	57.66	16.42	0.297
08/23/23 23:02	907	57.67	16.43	0.294
08/23/23 23:03	908	57.69	16.446	0.298
08/23/23 23:04	909	57.70	16.457	0.296
08/23/23 23:05	910	57.71	16.467	0.292
08/23/23 23:06	911	57.72	16.483	0.293
08/23/23 23:07	912	57.74	16.499	0.296
08/23/23 23:08	913	57.75	16.51	0.293
08/23/23 23:09	914	57.76	16.521	0.292
08/23/23 23:10	915	57.77	16.531	0.300
08/23/23 23:11	916	57.79	16.547	0.298
08/23/23 23:12	917	57.80	16.558	0.295
08/23/23 23:13	918	57.80	16.563	0.289
08/23/23 23:14	919	57.82	16.579	0.294
08/23/23 23:15	920	57.84	16.595	0.296
08/23/23 23:16	921	57.84	16.6	0.294

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/23/23 23:17	922	57.85	16.611	0.299
08/23/23 23:18	923	57.86	16.621	0.296
08/23/23 23:19	924	57.86	16.621	0.294
08/23/23 23:20	925	57.88	16.643	0.297
08/23/23 23:21	926	57.90	16.658	0.297
08/23/23 23:22	927	57.91	16.674	0.293
08/23/23 23:23	928	57.93	16.685	0.292
08/23/23 23:24	929	57.93	16.69	0.293
08/23/23 23:25	930	57.95	16.706	0.296
08/23/23 23:26	931	57.95	16.712	0.290
08/23/23 23:27	932	57.96	16.722	0.296
08/23/23 23:28	933	57.97	16.733	0.294
08/23/23 23:29	934	57.99	16.754	0.291
08/23/23 23:30	935	58.00	16.759	0.290
08/23/23 23:31	936	58.02	16.775	0.289
08/23/23 23:32	937	58.02	16.781	0.294
08/23/23 23:33	938	58.03	16.786	0.299
08/23/23 23:34	939	58.04	16.802	0.413
08/23/23 23:35	940	58.22	16.977	0.303
08/23/23 23:36	941	58.22	16.977	0.293
08/23/23 23:37	942	58.21	16.971	0.296
08/23/23 23:38	943	58.21	16.966	0.297
08/23/23 23:39	944	58.22	16.977	0.294
08/23/23 23:40	945	58.22	16.982	0.288
08/23/23 23:41	946	58.20	16.961	0.301
08/23/23 23:42	947	58.22	16.977	0.300
08/23/23 23:43	948	58.23	16.993	0.294
08/23/23 23:44	949	58.24	17.003	0.296
08/23/23 23:45	950	58.25	17.009	0.295
08/23/23 23:46	951	58.27	17.03	0.298
08/23/23 23:47	952	58.28	17.035	0.299
08/23/23 23:48	953	58.27	17.03	0.296
08/23/23 23:49	954	58.27	17.025	0.293
08/23/23 23:50	955	58.28	17.035	0.295
08/23/23 23:51	956	58.28	17.035	0.301
08/23/23 23:52	957	58.25	17.014	0.305
08/23/23 23:53	958	58.29	17.051	0.306
08/23/23 23:54	959	58.31	17.067	0.304
08/23/23 23:55	960	58.33	17.094	0.303
08/23/23 23:56	961	58.34	17.104	0.304
08/23/23 23:57	962	58.37	17.125	0.302
08/23/23 23:58	963	58.39	17.147	0.298
08/23/23 23:59	964	58.40	17.157	0.303
08/24/23 00:00	965	58.42	17.184	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 00:01	966	58.43	17.194	0.302
08/24/23 00:02	967	58.45	17.21	0.303
08/24/23 00:03	968	58.47	17.226	0.304
08/24/23 00:04	969	58.48	17.242	0.301
08/24/23 00:05	970	58.50	17.258	0.301
08/24/23 00:06	971	58.52	17.279	0.302
08/24/23 00:07	972	58.52	17.284	0.302
08/24/23 00:08	973	58.55	17.306	0.303
08/24/23 00:09	974	58.56	17.316	0.303
08/24/23 00:10	975	58.57	17.332	0.299
08/24/23 00:11	976	58.59	17.353	0.300
08/24/23 00:12	977	58.60	17.364	0.300
08/24/23 00:13	978	58.62	17.38	0.302
08/24/23 00:14	979	58.63	17.391	0.301
08/24/23 00:15	980	58.65	17.412	0.300
08/24/23 00:16	981	58.66	17.417	0.300
08/24/23 00:17	982	58.68	17.438	0.301
08/24/23 00:18	983	58.69	17.454	0.301
08/24/23 00:19	984	58.71	17.47	0.296
08/24/23 00:20	985	58.72	17.481	0.298
08/24/23 00:21	986	58.74	17.497	0.300
08/24/23 00:22	987	58.75	17.507	0.300
08/24/23 00:23	988	58.76	17.523	0.301
08/24/23 00:24	989	58.77	17.534	0.300
08/24/23 00:25	990	58.79	17.55	0.301
08/24/23 00:26	991	58.80	17.56	0.301
08/24/23 00:27	992	58.82	17.576	0.298
08/24/23 00:28	993	58.83	17.587	0.300
08/24/23 00:29	994	58.84	17.598	0.297
08/24/23 00:30	995	58.85	17.613	0.299
08/24/23 00:31	996	58.87	17.629	0.298
08/24/23 00:32	997	58.89	17.645	0.298
08/24/23 00:33	998	58.90	17.656	0.299
08/24/23 00:34	999	58.91	17.672	0.299
08/24/23 00:35	1000	58.92	17.677	0.299
08/24/23 00:36	1001	58.93	17.693	0.298
08/24/23 00:37	1002	58.94	17.704	0.297
08/24/23 00:38	1003	58.96	17.72	0.298
08/24/23 00:39	1004	58.98	17.735	0.300
08/24/23 00:40	1005	58.99	17.746	0.293
08/24/23 00:41	1006	59.00	17.757	0.298
08/24/23 00:42	1007	59.01	17.773	0.300
08/24/23 00:43	1008	59.02	17.783	0.301
08/24/23 00:44	1009	59.04	17.799	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 00:45	1010	59.05	17.81	0.298
08/24/23 00:46	1011	59.07	17.826	0.301
08/24/23 00:47	1012	59.09	17.847	0.303
08/24/23 00:48	1013	59.10	17.857	0.299
08/24/23 00:49	1014	59.11	17.873	0.297
08/24/23 00:50	1015	59.13	17.889	0.300
08/24/23 00:51	1016	59.15	17.905	0.300
08/24/23 00:52	1017	59.17	17.926	0.301
08/24/23 00:53	1018	59.18	17.937	0.302
08/24/23 00:54	1019	59.19	17.953	0.301
08/24/23 00:55	1020	59.21	17.974	0.303
08/24/23 00:56	1021	59.23	17.99	0.302
08/24/23 00:57	1022	59.24	18.001	0.303
08/24/23 00:58	1023	59.26	18.022	0.304
08/24/23 00:59	1024	59.28	18.038	0.300
08/24/23 01:00	1025	59.29	18.048	0.301
08/24/23 01:01	1026	59.31	18.07	0.302
08/24/23 01:02	1027	59.33	18.086	0.300
08/24/23 01:03	1028	59.34	18.096	0.302
08/24/23 01:04	1029	59.35	18.107	0.298
08/24/23 01:05	1030	59.37	18.128	0.300
08/24/23 01:06	1031	59.38	18.144	0.302
08/24/23 01:07	1032	59.40	18.16	0.304
08/24/23 01:08	1033	59.41	18.17	0.301
08/24/23 01:09	1034	59.43	18.186	0.299
08/24/23 01:10	1035	59.44	18.202	0.301
08/24/23 01:11	1036	59.45	18.213	0.300
08/24/23 01:12	1037	59.47	18.229	0.301
08/24/23 01:13	1038	59.49	18.245	0.300
08/24/23 01:14	1039	59.50	18.261	0.298
08/24/23 01:15	1040	59.52	18.277	0.300
08/24/23 01:16	1041	59.53	18.287	0.301
08/24/23 01:17	1042	59.54	18.303	0.301
08/24/23 01:18	1043	59.55	18.314	0.300
08/24/23 01:19	1044	59.57	18.33	0.300
08/24/23 01:20	1045	59.59	18.346	0.298
08/24/23 01:21	1046	59.60	18.356	0.302
08/24/23 01:22	1047	59.61	18.372	0.300
08/24/23 01:23	1048	59.63	18.393	0.298
08/24/23 01:24	1049	59.64	18.404	0.300
08/24/23 01:25	1050	59.66	18.42	0.302
08/24/23 01:26	1051	59.68	18.436	0.299
08/24/23 01:27	1052	59.69	18.452	0.298
08/24/23 01:28	1053	59.70	18.462	0.299

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 01:29	1054	59.72	18.483	0.300
08/24/23 01:30	1055	59.74	18.499	0.298
08/24/23 01:31	1056	59.75	18.51	0.298
08/24/23 01:32	1057	59.77	18.526	0.298
08/24/23 01:33	1058	59.78	18.537	0.300
08/24/23 01:34	1059	59.79	18.547	0.298
08/24/23 01:35	1060	59.81	18.568	0.300
08/24/23 01:36	1061	59.82	18.579	0.299
08/24/23 01:37	1062	59.84	18.6	0.300
08/24/23 01:38	1063	59.89	18.648	0.288
08/24/23 01:39	1064	59.89	18.648	0.286
08/24/23 01:40	1065	59.98	18.738	0.311
08/24/23 01:41	1066	60.02	18.781	0.304
08/24/23 01:42	1067	60.04	18.796	0.301
08/24/23 01:43	1068	60.05	18.807	0.303
08/24/23 01:44	1069	60.07	18.828	0.301
08/24/23 01:45	1070	60.08	18.839	0.302
08/24/23 01:46	1071	60.10	18.86	0.302
08/24/23 01:47	1072	60.12	18.876	0.303
08/24/23 01:48	1073	60.13	18.892	0.299
08/24/23 01:49	1074	60.13	18.892	0.301
08/24/23 01:50	1075	60.15	18.913	0.304
08/24/23 01:51	1076	60.17	18.929	0.301
08/24/23 01:52	1077	60.18	18.94	0.301
08/24/23 01:53	1078	60.20	18.956	0.299
08/24/23 01:54	1079	60.21	18.972	0.301
08/24/23 01:55	1080	60.23	18.993	0.300
08/24/23 01:56	1081	60.25	19.014	0.300
08/24/23 01:57	1082	60.27	19.03	0.298
08/24/23 01:58	1083	60.29	19.046	0.298
08/24/23 01:59	1084	60.30	19.056	0.299
08/24/23 02:00	1085	60.31	19.072	0.296
08/24/23 02:01	1086	60.33	19.088	0.298
08/24/23 02:02	1087	60.34	19.104	0.293
08/24/23 02:03	1088	60.35	19.109	0.294
08/24/23 02:04	1089	60.37	19.125	0.316
08/24/23 02:05	1090	60.41	19.173	0.310
08/24/23 02:06	1091	60.43	19.194	0.308
08/24/23 02:07	1092	60.46	19.216	0.305
08/24/23 02:08	1093	60.48	19.242	0.305
08/24/23 02:09	1094	60.49	19.253	0.309
08/24/23 02:10	1095	60.53	19.285	0.308
08/24/23 02:11	1096	60.55	19.311	0.308
08/24/23 02:12	1097	60.58	19.338	0.305

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 02:13	1098	60.60	19.359	0.303
08/24/23 02:14	1099	60.62	19.38	0.303
08/24/23 02:15	1100	60.64	19.401	0.303
08/24/23 02:16	1101	60.66	19.422	0.303
08/24/23 02:17	1102	60.68	19.444	0.304
08/24/23 02:18	1103	60.71	19.47	0.302
08/24/23 02:19	1104	60.73	19.486	0.304
08/24/23 02:20	1105	60.75	19.507	0.304
08/24/23 02:21	1106	60.77	19.529	0.304
08/24/23 02:22	1107	60.79	19.55	0.303
08/24/23 02:23	1108	60.81	19.571	0.304
08/24/23 02:24	1109	60.84	19.598	0.304
08/24/23 02:25	1110	60.85	19.613	0.303
08/24/23 02:26	1111	60.88	19.635	0.303
08/24/23 02:27	1112	60.89	19.651	0.303
08/24/23 02:28	1113	60.91	19.672	0.303
08/24/23 02:29	1114	60.93	19.693	0.303
08/24/23 02:30	1115	60.96	19.72	0.303
08/24/23 02:31	1116	60.98	19.735	0.304
08/24/23 02:32	1117	61.01	19.767	0.305
08/24/23 02:33	1118	61.03	19.794	0.306
08/24/23 02:34	1119	61.06	19.82	0.302
08/24/23 02:35	1120	61.08	19.842	0.303
08/24/23 02:36	1121	61.10	19.858	0.301
08/24/23 02:37	1122	61.11	19.873	0.303
08/24/23 02:38	1123	61.14	19.895	0.300
08/24/23 02:39	1124	61.16	19.916	0.300
08/24/23 02:40	1125	61.17	19.932	0.302
08/24/23 02:41	1126	61.20	19.964	0.302
08/24/23 02:42	1127	61.23	19.985	0.302
08/24/23 02:43	1128	61.24	19.995	0.300
08/24/23 02:44	1129	61.26	20.022	0.302
08/24/23 02:45	1130	61.28	20.038	0.302
08/24/23 02:46	1131	61.30	20.059	0.302
08/24/23 02:47	1132	61.32	20.08	0.300
08/24/23 02:48	1133	61.34	20.102	0.301
08/24/23 02:49	1134	61.36	20.123	0.299
08/24/23 02:50	1135	61.38	20.139	0.300
08/24/23 02:51	1136	61.40	20.16	0.302
08/24/23 02:52	1137	61.42	20.181	0.302
08/24/23 02:53	1138	61.44	20.197	0.300
08/24/23 02:54	1139	61.46	20.218	0.301
08/24/23 02:55	1140	61.44	20.202	0.300
08/24/23 02:56	1141	61.48	20.239	0.301

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 02:57	1142	61.50	20.255	0.300
08/24/23 02:58	1143	61.52	20.282	0.301
08/24/23 02:59	1144	61.54	20.303	0.300
08/24/23 03:00	1145	59.75	18.505	0.000
08/24/23 03:01	1146	59.25	18.006	0.000
08/24/23 03:02	1147	58.99	17.751	0.000
08/24/23 03:03	1148	58.80	17.56	0.000
08/24/23 03:04	1149	58.63	17.385	0.000
08/24/23 03:05	1150	58.47	17.231	0.000
08/24/23 03:06	1151	58.31	17.072	0.000
08/24/23 03:07	1152	58.16	16.924	0.000
08/24/23 03:08	1153	58.01	16.77	0.000
08/24/23 03:09	1154	57.85	16.605	0.000
08/24/23 03:10	1155	57.69	16.446	0.000
08/24/23 03:11	1156	57.52	16.282	0.000
08/24/23 03:12	1157	57.38	16.139	0.000
08/24/23 03:13	1158	57.24	15.995	0.000
08/24/23 03:14	1159	57.10	15.857	0.000
08/24/23 03:15	1160	56.97	15.73	0.000
08/24/23 03:16	1161	56.84	15.597	0.000
08/24/23 03:17	1162	56.71	15.465	0.000
08/24/23 03:18	1163	56.57	15.327	0.000
08/24/23 03:19	1164	56.45	15.205	0.000
08/24/23 03:20	1165	56.32	15.078	0.000
08/24/23 03:21	1166	56.20	14.961	0.000
08/24/23 03:22	1167	56.07	14.834	0.000
08/24/23 03:23	1168	55.95	14.706	0.000
08/24/23 03:24	1169	55.84	14.595	0.000
08/24/23 03:25	1170	55.71	14.473	0.000
08/24/23 03:26	1171	55.59	14.351	0.000
08/24/23 03:27	1172	55.46	14.223	0.000
08/24/23 03:28	1173	55.35	14.112	0.000
08/24/23 03:29	1174	55.23	13.985	0.000
08/24/23 03:30	1175	55.09	13.847	0.000
08/24/23 03:31	1176	54.98	13.735	0.000
08/24/23 03:32	1177	54.86	13.624	0.000
08/24/23 03:33	1178	54.76	13.518	0.000
08/24/23 03:34	1179	54.65	13.412	0.000
08/24/23 03:35	1180	54.56	13.316	0.000
08/24/23 03:36	1181	54.45	13.205	0.000
08/24/23 03:37	1182	54.35	13.109	0.000
08/24/23 03:38	1183	54.24	13.003	0.000
08/24/23 03:39	1184	54.15	12.908	0.000
08/24/23 03:40	1185	54.05	12.812	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 03:41	1186	53.95	12.711	0.000
08/24/23 03:42	1187	53.86	12.616	0.000
08/24/23 03:43	1188	53.77	12.526	0.000
08/24/23 03:44	1189	53.67	12.43	0.000
08/24/23 03:45	1190	53.58	12.335	0.000
08/24/23 03:46	1191	53.47	12.234	0.000
08/24/23 03:47	1192	53.37	12.133	0.000
08/24/23 03:48	1193	53.28	12.043	0.000
08/24/23 03:49	1194	53.19	11.953	0.000
08/24/23 03:50	1195	53.10	11.863	0.000
08/24/23 03:51	1196	53.02	11.778	0.000
08/24/23 03:52	1197	52.92	11.677	0.000
08/24/23 03:53	1198	52.82	11.581	0.000
08/24/23 03:54	1199	52.73	11.486	0.000
08/24/23 03:55	1200	52.64	11.396	0.000
08/24/23 03:56	1201	52.55	11.306	0.000
08/24/23 03:57	1202	52.47	11.226	0.000
08/24/23 03:58	1203	52.38	11.141	0.000
08/24/23 03:59	1204	52.30	11.062	0.000
08/24/23 04:00	1205	52.23	10.993	0.000
08/24/23 04:01	1206	52.16	10.924	0.000
08/24/23 04:02	1207	52.09	10.849	0.000
08/24/23 04:03	1208	52.02	10.78	0.000
08/24/23 04:04	1209	51.95	10.711	0.000
08/24/23 04:05	1210	51.89	10.648	0.000
08/24/23 04:06	1211	51.82	10.584	0.000
08/24/23 04:07	1212	51.76	10.52	0.000
08/24/23 04:08	1213	51.70	10.462	0.000
08/24/23 04:09	1214	51.64	10.398	0.000
08/24/23 04:10	1215	51.58	10.34	0.000
08/24/23 04:11	1216	51.52	10.276	0.000
08/24/23 04:12	1217	51.46	10.223	0.000
08/24/23 04:13	1218	51.41	10.165	0.000
08/24/23 04:14	1219	51.35	10.112	0.000
08/24/23 04:15	1220	51.30	10.064	0.000
08/24/23 04:16	1221	51.25	10.006	0.000
08/24/23 04:17	1222	51.20	9.958	0.000
08/24/23 04:18	1223	51.15	9.905	0.000
08/24/23 04:19	1224	51.10	9.857	0.000
08/24/23 04:20	1225	51.06	9.82	0.000
08/24/23 04:21	1226	51.03	9.788	0.000
08/24/23 04:22	1227	50.99	9.746	0.000
08/24/23 04:23	1228	50.94	9.703	0.000
08/24/23 04:24	1229	50.90	9.661	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 04:25	1230	50.86	9.619	0.000
08/24/23 04:26	1231	50.81	9.565	0.000
08/24/23 04:27	1232	50.76	9.523	0.000
08/24/23 04:28	1233	50.72	9.481	0.000
08/24/23 04:29	1234	50.68	9.438	0.000
08/24/23 04:30	1235	50.64	9.396	0.000
08/24/23 04:31	1236	50.59	9.348	0.000
08/24/23 04:32	1237	50.54	9.3	0.000
08/24/23 04:33	1238	50.50	9.263	0.000
08/24/23 04:34	1239	50.46	9.221	0.000
08/24/23 04:35	1240	50.42	9.183	0.000
08/24/23 04:36	1241	50.38	9.141	0.000
08/24/23 04:37	1242	50.34	9.104	0.000
08/24/23 04:38	1243	50.30	9.061	0.000
08/24/23 04:39	1244	50.26	9.019	0.000
08/24/23 04:40	1245	50.22	8.977	0.000
08/24/23 04:41	1246	50.17	8.934	0.000
08/24/23 04:42	1247	50.14	8.897	0.000
08/24/23 04:43	1248	50.10	8.86	0.000
08/24/23 04:44	1249	50.05	8.812	0.000
08/24/23 04:45	1250	50.02	8.775	0.000
08/24/23 04:46	1251	49.97	8.733	0.000
08/24/23 04:47	1252	49.94	8.695	0.000
08/24/23 04:48	1253	49.90	8.658	0.000
08/24/23 04:49	1254	49.86	8.621	0.000
08/24/23 04:50	1255	49.82	8.584	0.000
08/24/23 04:51	1256	49.78	8.542	0.000
08/24/23 04:52	1257	49.75	8.51	0.000
08/24/23 04:53	1258	49.71	8.473	0.000
08/24/23 04:54	1259	49.68	8.435	0.000
08/24/23 04:55	1260	49.64	8.398	0.000
08/24/23 04:56	1261	49.60	8.361	0.000
08/24/23 04:57	1262	49.57	8.329	0.000
08/24/23 04:58	1263	49.53	8.292	0.000
08/24/23 04:59	1264	49.50	8.255	0.000
08/24/23 05:00	1265	49.46	8.223	0.000
08/24/23 05:01	1266	49.43	8.186	0.000
08/24/23 05:02	1267	49.39	8.154	0.000
08/24/23 05:03	1268	49.36	8.122	0.000
08/24/23 05:04	1269	49.33	8.085	0.000
08/24/23 05:05	1270	49.29	8.053	0.000
08/24/23 05:06	1271	49.25	8.011	0.000
08/24/23 05:07	1272	49.23	7.985	0.000
08/24/23 05:08	1273	49.19	7.953	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 05:09	1274	49.16	7.921	0.000
08/24/23 05:10	1275	49.13	7.894	0.000
08/24/23 05:11	1276	49.10	7.862	0.000
08/24/23 05:12	1277	49.07	7.831	0.000
08/24/23 05:13	1278	49.04	7.804	0.000
08/24/23 05:14	1279	49.01	7.767	0.000
08/24/23 05:15	1280	48.98	7.74	0.000
08/24/23 05:16	1281	48.95	7.709	0.000
08/24/23 05:17	1282	48.92	7.682	0.000
08/24/23 05:18	1283	48.90	7.656	0.000
08/24/23 05:19	1284	48.86	7.624	0.000
08/24/23 05:20	1285	48.84	7.597	0.000
08/24/23 05:21	1286	48.82	7.576	0.000
08/24/23 05:22	1287	48.78	7.544	0.000
08/24/23 05:23	1288	48.75	7.512	0.000
08/24/23 05:24	1289	48.73	7.486	0.000
08/24/23 05:25	1290	48.70	7.459	0.000
08/24/23 05:26	1291	48.67	7.433	0.000
08/24/23 05:27	1292	48.65	7.406	0.000
08/24/23 05:28	1293	48.63	7.385	0.000
08/24/23 05:29	1294	48.60	7.358	0.000
08/24/23 05:30	1295	48.58	7.337	0.000
08/24/23 05:31	1296	48.55	7.311	0.000
08/24/23 05:32	1297	48.53	7.29	0.000
08/24/23 05:33	1298	48.50	7.263	0.000
08/24/23 05:34	1299	48.48	7.236	0.000
08/24/23 05:35	1300	48.45	7.21	0.000
08/24/23 05:36	1301	48.43	7.194	0.000
08/24/23 05:37	1302	48.41	7.168	0.000
08/24/23 05:38	1303	48.39	7.146	0.000
08/24/23 05:39	1304	48.36	7.12	0.000
08/24/23 05:40	1305	48.34	7.099	0.000
08/24/23 05:41	1306	48.32	7.077	0.000
08/24/23 05:42	1307	48.30	7.056	0.000
08/24/23 05:43	1308	48.28	7.035	0.000
08/24/23 05:44	1309	48.25	7.014	0.000
08/24/23 05:45	1310	48.22	6.982	0.000
08/24/23 05:46	1311	48.21	6.966	0.000
08/24/23 05:47	1312	48.18	6.939	0.000
08/24/23 05:48	1313	48.16	6.923	0.000
08/24/23 05:49	1314	48.14	6.902	0.000
08/24/23 05:50	1315	48.12	6.881	0.000
08/24/23 05:51	1316	48.10	6.86	0.000
08/24/23 05:52	1317	48.08	6.844	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 05:53	1318	48.06	6.823	0.000
08/24/23 05:54	1319	48.04	6.801	0.000
08/24/23 05:55	1320	48.02	6.78	0.000
08/24/23 05:56	1321	48.00	6.764	0.000
08/24/23 05:57	1322	47.98	6.743	0.000
08/24/23 05:58	1323	47.96	6.717	0.000
08/24/23 05:59	1324	47.94	6.701	0.000
08/24/23 06:00	1325	47.92	6.679	0.000
08/24/23 06:01	1326	47.90	6.664	0.000
08/24/23 06:02	1327	47.88	6.642	0.000
08/24/23 06:03	1328	47.86	6.621	0.000
08/24/23 06:04	1329	47.85	6.605	0.000
08/24/23 06:05	1330	47.83	6.589	0.000
08/24/23 06:06	1331	47.81	6.568	0.000
08/24/23 06:07	1332	47.79	6.547	0.000
08/24/23 06:08	1333	47.77	6.531	0.000
08/24/23 06:09	1334	47.75	6.51	0.000
08/24/23 06:10	1335	47.73	6.494	0.000
08/24/23 06:11	1336	47.71	6.467	0.000
08/24/23 06:12	1337	47.69	6.446	0.000
08/24/23 06:13	1338	47.67	6.43	0.000
08/24/23 06:14	1339	47.65	6.414	0.000
08/24/23 06:15	1340	47.64	6.398	0.000
08/24/23 06:16	1341	47.62	6.377	0.000
08/24/23 06:17	1342	47.60	6.361	0.000
08/24/23 06:18	1343	47.59	6.345	0.000
08/24/23 06:19	1344	47.56	6.324	0.000
08/24/23 06:20	1345	47.55	6.313	0.000
08/24/23 06:21	1346	47.53	6.292	0.000
08/24/23 06:22	1347	47.52	6.276	0.000
08/24/23 06:23	1348	47.50	6.26	0.000
08/24/23 06:24	1349	47.48	6.244	0.000
08/24/23 06:25	1350	47.46	6.223	0.000
08/24/23 06:26	1351	47.44	6.202	0.000
08/24/23 06:27	1352	47.43	6.186	0.000
08/24/23 06:28	1353	47.41	6.17	0.000
08/24/23 06:29	1354	47.39	6.154	0.000
08/24/23 06:30	1355	47.38	6.138	0.000
08/24/23 06:31	1356	47.36	6.117	0.000
08/24/23 06:32	1357	47.34	6.101	0.000
08/24/23 06:33	1358	47.33	6.085	0.000
08/24/23 06:34	1359	47.31	6.069	0.000
08/24/23 06:35	1360	47.29	6.053	0.000
08/24/23 06:36	1361	47.28	6.038	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 06:37	1362	47.26	6.022	0.000
08/24/23 06:38	1363	47.24	6	0.000
08/24/23 06:39	1364	47.23	5.99	0.000
08/24/23 06:40	1365	47.21	5.969	0.000
08/24/23 06:41	1366	47.19	5.947	0.000
08/24/23 06:42	1367	47.17	5.931	0.000
08/24/23 06:43	1368	47.16	5.915	0.000
08/24/23 06:44	1369	47.14	5.9	0.000
08/24/23 06:45	1370	47.12	5.884	0.000
08/24/23 06:46	1371	47.11	5.868	0.000
08/24/23 06:47	1372	47.09	5.852	0.000
08/24/23 06:48	1373	47.08	5.836	0.000
08/24/23 06:49	1374	47.06	5.815	0.000
08/24/23 06:50	1375	47.04	5.799	0.000
08/24/23 06:51	1376	47.02	5.783	0.000
08/24/23 06:52	1377	47.01	5.772	0.000
08/24/23 06:53	1378	46.99	5.746	0.000
08/24/23 06:54	1379	46.98	5.735	0.000
08/24/23 06:55	1380	46.96	5.719	0.000
08/24/23 06:56	1381	46.94	5.703	0.000
08/24/23 06:57	1382	46.92	5.682	0.000
08/24/23 06:58	1383	46.91	5.666	0.000
08/24/23 06:59	1384	46.89	5.65	0.000
08/24/23 07:00	1385	46.88	5.64	0.000
08/24/23 07:01	1386	46.86	5.624	0.000
08/24/23 07:02	1387	46.85	5.608	0.000
08/24/23 07:03	1388	46.83	5.592	0.000
08/24/23 07:04	1389	46.82	5.576	0.000
08/24/23 07:05	1390	46.80	5.56	0.000
08/24/23 07:06	1391	46.78	5.544	0.000
08/24/23 07:07	1392	46.76	5.523	0.000
08/24/23 07:08	1393	46.75	5.512	0.000
08/24/23 07:09	1394	46.74	5.496	0.000
08/24/23 07:10	1395	46.72	5.48	0.000
08/24/23 07:11	1396	46.71	5.47	0.000
08/24/23 07:12	1397	46.69	5.454	0.000
08/24/23 07:13	1398	46.68	5.438	0.000
08/24/23 07:14	1399	46.66	5.422	0.000
08/24/23 07:15	1400	46.65	5.406	0.000
08/24/23 07:16	1401	46.63	5.39	0.000
08/24/23 07:17	1402	46.61	5.374	0.000
08/24/23 07:18	1403	46.60	5.364	0.000
08/24/23 07:19	1404	46.59	5.348	0.000
08/24/23 07:20	1405	46.57	5.332	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 07:21	1406	46.56	5.321	0.000
08/24/23 07:22	1407	46.55	5.305	0.000
08/24/23 07:23	1408	46.54	5.295	0.000
08/24/23 07:24	1409	46.51	5.274	0.000
08/24/23 07:25	1410	46.50	5.263	0.000
08/24/23 07:26	1411	46.49	5.252	0.000
08/24/23 07:27	1412	46.48	5.242	0.000
08/24/23 07:28	1413	46.47	5.226	0.000
08/24/23 07:29	1414	46.45	5.21	0.000
08/24/23 07:30	1415	46.43	5.194	0.000
08/24/23 07:31	1416	46.42	5.183	0.000
08/24/23 07:32	1417	46.41	5.173	0.000
08/24/23 07:33	1418	46.40	5.157	0.000
08/24/23 07:34	1419	46.38	5.141	0.000
08/24/23 07:35	1420	46.37	5.13	0.000
08/24/23 07:36	1421	46.36	5.12	0.000
08/24/23 07:37	1422	46.34	5.104	0.000
08/24/23 07:38	1423	46.33	5.088	0.000
08/24/23 07:39	1424	46.32	5.077	0.000
08/24/23 07:40	1425	46.31	5.067	0.000
08/24/23 07:41	1426	46.30	5.056	0.000
08/24/23 07:42	1427	46.28	5.04	0.000
08/24/23 07:43	1428	46.26	5.024	0.000
08/24/23 07:44	1429	46.25	5.014	0.000
08/24/23 07:45	1430	46.24	5.003	0.000
08/24/23 07:46	1431	46.23	4.992	0.000
08/24/23 07:47	1432	46.22	4.976	0.000
08/24/23 07:48	1433	46.21	4.966	0.000
08/24/23 07:49	1434	46.20	4.955	0.000
08/24/23 07:50	1435	46.19	4.945	0.000
08/24/23 07:51	1436	46.17	4.934	0.000
08/24/23 07:52	1437	46.16	4.918	0.000
08/24/23 07:53	1438	46.14	4.902	0.000
08/24/23 07:54	1439	46.13	4.892	0.000
08/24/23 07:55	1440	46.12	4.876	0.000
08/24/23 07:56	1441	46.11	4.865	0.000
08/24/23 07:57	1442	46.09	4.854	0.000
08/24/23 07:58	1443	46.08	4.844	0.000
08/24/23 07:59	1444	46.07	4.833	0.000
08/24/23 08:00	1445	46.06	4.823	0.000
08/24/23 08:01	1446	46.05	4.812	0.000
08/24/23 08:02	1447	46.04	4.801	0.000
08/24/23 08:03	1448	46.03	4.785	0.000
08/24/23 08:04	1449	46.02	4.78	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 08:05	1450	46.00	4.764	0.000
08/24/23 08:06	1451	46.00	4.759	0.000
08/24/23 08:07	1452	45.99	4.748	0.000
08/24/23 08:08	1453	45.98	4.738	0.000
08/24/23 08:09	1454	45.97	4.727	0.000
08/24/23 08:10	1455	45.96	4.717	0.000
08/24/23 08:11	1456	45.94	4.701	0.000
08/24/23 08:12	1457	45.94	4.695	0.000
08/24/23 08:13	1458	45.93	4.685	0.000
08/24/23 08:14	1459	45.91	4.674	0.000
08/24/23 08:15	1460	45.90	4.658	0.000
08/24/23 08:16	1461	45.89	4.648	0.000
08/24/23 08:17	1462	45.87	4.632	0.000
08/24/23 08:18	1463	45.87	4.626	0.000
08/24/23 08:19	1464	45.86	4.616	0.000
08/24/23 08:20	1465	45.85	4.605	0.000
08/24/23 08:21	1466	45.83	4.594	0.000
08/24/23 08:22	1467	45.82	4.584	0.000
08/24/23 08:23	1468	45.82	4.579	0.000
08/24/23 08:24	1469	45.81	4.568	0.000
08/24/23 08:25	1470	45.80	4.557	0.000
08/24/23 08:26	1471	45.79	4.547	0.000
08/24/23 08:27	1472	45.78	4.536	0.000
08/24/23 08:28	1473	45.77	4.526	0.000
08/24/23 08:29	1474	45.76	4.515	0.000
08/24/23 08:30	1475	45.74	4.504	0.000
08/24/23 08:31	1476	45.73	4.494	0.000
08/24/23 08:32	1477	45.72	4.483	0.000
08/24/23 08:33	1478	45.72	4.478	0.000
08/24/23 08:34	1479	45.70	4.462	0.000
08/24/23 08:35	1480	45.70	4.457	0.000
08/24/23 08:36	1481	45.68	4.441	0.000
08/24/23 08:37	1482	45.68	4.435	0.000
08/24/23 08:38	1483	45.67	4.425	0.000
08/24/23 08:39	1484	45.65	4.409	0.000
08/24/23 08:40	1485	45.64	4.404	0.000
08/24/23 08:41	1486	45.63	4.388	0.000
08/24/23 08:42	1487	45.62	4.377	0.000
08/24/23 08:43	1488	45.61	4.366	0.000
08/24/23 08:44	1489	45.60	4.356	0.000
08/24/23 08:45	1490	45.59	4.345	0.000
08/24/23 08:46	1491	45.58	4.335	0.000
08/24/23 08:47	1492	45.56	4.324	0.000
08/24/23 08:48	1493	45.55	4.313	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 08:49	1494	45.55	4.308	0.000
08/24/23 08:50	1495	45.54	4.297	0.000
08/24/23 08:51	1496	45.53	4.287	0.000
08/24/23 08:52	1497	45.52	4.276	0.000
08/24/23 08:53	1498	45.50	4.26	0.000
08/24/23 08:54	1499	45.50	4.255	0.000
08/24/23 08:55	1500	45.48	4.244	0.000
08/24/23 08:56	1501	45.48	4.239	0.000
08/24/23 08:57	1502	45.47	4.228	0.000
08/24/23 08:58	1503	45.46	4.218	0.000
08/24/23 08:59	1504	45.45	4.213	0.000
08/24/23 09:00	1505	45.44	4.197	0.000
08/24/23 09:01	1506	45.43	4.191	0.000
08/24/23 09:02	1507	45.42	4.181	0.000
08/24/23 09:03	1508	45.42	4.175	0.000
08/24/23 09:04	1509	45.41	4.165	0.000
08/24/23 09:05	1510	45.39	4.154	0.000
08/24/23 09:06	1511	45.38	4.144	0.000
08/24/23 09:07	1512	45.38	4.138	0.000
08/24/23 09:08	1513	45.36	4.122	0.000
08/24/23 09:09	1514	45.35	4.112	0.000
08/24/23 09:10	1515	45.34	4.101	0.000
08/24/23 09:11	1516	45.34	4.096	0.000
08/24/23 09:12	1517	45.33	4.085	0.000
08/24/23 09:13	1518	45.32	4.08	0.000
08/24/23 09:14	1519	45.32	4.075	0.000
08/24/23 09:15	1520	45.30	4.059	0.000
08/24/23 09:16	1521	45.29	4.053	0.000
08/24/23 09:17	1522	45.29	4.048	0.000
08/24/23 09:18	1523	45.27	4.032	0.000
08/24/23 09:19	1524	45.27	4.027	0.000
08/24/23 09:20	1525	45.26	4.016	0.000
08/24/23 09:21	1526	45.25	4.011	0.000
08/24/23 09:22	1527	45.24	3.995	0.000
08/24/23 09:23	1528	45.24	3.995	0.000
08/24/23 09:24	1529	45.22	3.984	0.000
08/24/23 09:25	1530	45.22	3.979	0.000
08/24/23 09:26	1531	45.21	3.968	0.000
08/24/23 09:27	1532	45.20	3.958	0.000
08/24/23 09:28	1533	45.19	3.953	0.000
08/24/23 09:29	1534	45.18	3.942	0.000
08/24/23 09:30	1535	45.18	3.937	0.000
08/24/23 09:31	1536	45.17	3.926	0.000
08/24/23 09:32	1537	45.16	3.915	0.000

Date/Time	Elapsed Time	Depth to Water	Drawdown	Flow Rate
08/24/23 09:33	1538	45.15	3.905	0.000
08/24/23 09:34	1539	45.14	3.9	0.000
08/24/23 09:35	1540	45.13	3.894	0.000
08/24/23 09:36	1541	45.12	3.878	0.000
08/24/23 09:37	1542	45.12	3.878	0.000
08/24/23 09:38	1543	45.11	3.868	0.000
08/24/23 09:39	1544	45.09	3.852	0.000
08/24/23 09:40	1545	45.08	3.841	0.000
08/24/23 09:41	1546	45.08	3.841	0.000
08/24/23 09:42	1547	45.07	3.831	0.000
08/24/23 09:43	1548	45.06	3.82	0.000
08/24/23 09:44	1549	45.05	3.809	0.000
08/24/23 09:45	1550	45.04	3.804	0.000
08/24/23 09:46	1551	45.04	3.799	0.000
08/24/23 09:47	1552	45.03	3.788	0.000
08/24/23 09:48	1553	45.02	3.783	0.000
08/24/23 09:49	1554	45.01	3.772	0.000
08/24/23 09:50	1555	45.00	3.762	0.000
08/24/23 09:51	1556	45.00	3.756	0.000
08/24/23 09:52	1557	44.99	3.746	0.000
08/24/23 09:53	1558	44.99	3.746	0.000
08/24/23 09:54	1559	44.98	3.735	0.000
08/24/23 09:55	1560	44.96	3.719	0.000
08/24/23 09:56	1561	44.96	3.719	0.000
08/24/23 09:57	1562	44.94	3.703	0.000
08/24/23 09:58	1563	44.94	3.698	0.000
08/24/23 09:59	1564	44.93	3.693	0.000

ATTACHMENT C

MCDEH Well Test Forms

MENDOCINO COUNTY Environmental Health

Water Quantity Report

Owner Name: Andy Christensen
Site Address: 11800 Road 500D (Well 1)
APN: 118-320-12
Subdivision #:
Well Location: See Figure 1 of report
Total Depth of Well: 240 feet

Test Date: 8/30-31/2023
Recorded by: Estabrook Services LLC
Bore Dia: 10 inches (assumed)
Casing Dia.: 6 inches
Vol/ft.: 1.47 gal/ft
Depth to Static Water: 21.10 feet

Time	Elapsed Time	Total Time	Depth to H2O	Draw down	Meter Reading	Total Gallons	GPM	GPM Per FT
DRAWDOWN								
7:05 AM	0	0	21.1	0.0	0	0	0.38	-
8:05 AM	60	60	36.0	14.9	23	23	0.38	0.025
9:05 AM	60	120	46.9	25.8	46	46	0.38	0.015
10:05 AM	60	180	54.7	33.6	54	54	0.38	0.011
11:05 AM	60	240	57.0	35.9	76	76	0.38	0.011
12:05 PM	60	300	59.2	38.1	98	98	0.38	0.010
1:05 PM	60	360	61.1	40.0	121	121	0.38	0.009
2:05 PM	60	420	64.4	43.3	143	143	0.38	0.009
3:26 PM	81	501	74.8	53.7	174	174	0.38	0.007
4:31 PM	65	566	82.5	61.4	199	199	0.38	0.006
5:31 PM	60	626	89.9	68.8	221	221	0.38	0.006
6:31 PM	60	686	95.6	74.5	244	244	0.38	0.005
7:31 PM	60	746	99.2	78.1	267	267	0.38	0.005
8:31 PM	60	806	106.5	85.4	289	289	0.38	0.004
9:31 PM	60	866	111.8	90.7	312	312	0.38	0.004
10:31 PM	60	926	118.2	97.1	335	335	0.38	0.004
11:31 PM	60	986	124.5	103.4	357	357	0.38	0.004
12:31 AM	60	1046	130.4	109.3	379	379	0.38	0.004
1:31 AM	60	1106	136.5	115.4	402	402	0.38	0.003
2:42 AM	71	1178	145.0	123.9	429	429	0.38	0.003
3:42 AM	60	1238	151.3	130.2	451	451	0.38	0.003
4:42 AM	60	1298	157.7	136.6	473	473	0.38	0.003
5:42 AM	60	1358	163.9	142.8	496	496	0.38	0.003
6:42 AM	60	1418	167.5	146.4	518	518	0.38	0.003
7:42 AM	60	1478	173.9	152.8	541	541	0.38	0.002
8:42 AM	60	1538	180.7	159.6	563	563	0.38	0.002
9:42 AM	60	1598	186.7	165.6	586	586	0.38	0.002

10:42 AM	60	1658	194.4	173.3	608	608	0.38	0.002
11:43 AM	61	1719	203.0	181.9	631	631	0.38	0.002
12:13 PM	30	1749	206.6	185.5	642	642	0.38	0.002
RECOVERY								
1:12 PM	59	1808	195.3	174.2	642	642	0	-
2:12 PM	60	1868	186.6	165.5	642	642	0	-
3:12 PM	60	1928	177.9	156.8	642	642	0	-
4:12 PM	60	1988	169.5	148.4	642	642	0	-
5:12 PM	60	2048	164.0	142.9	642	642	0	-
6:12 PM	60	2108	156.9	135.8	642	642	0	-
8:30 AM	858	2966	70.0	48.9	642	642	0	-
11:08 AM	158	3124	61.7	40.5	642	642	0	-
3:38 PM	270	3394	52.8	31.7	642	642	0	-

This table is representative of data collected. Actual data was collected every second. A spreadsheet of the actual data is available on request.

Show calculations for volume of the developed well in Gallons per Foot:

$$V = \left(\frac{D_i}{12}\right)^2 x \frac{\pi}{4} x\, 7.48 \frac{gal}{ft^3}$$

where D_i = inside diameter of casing, in inches

$$V = \left(\frac{6}{12}\right)^2 x \frac{\pi}{4} x\, 7.48 \frac{gal}{ft^3} = 1.47 \frac{gal}{ft}$$

I certify that the test was carried out by the procedures specified by the Mendocino County Division of Environmental Health. I declare under penalty of perjury that the foregoing is true and correct:

Signed: 9/21/2023

MENDOCINO COUNTY Environmental Health

Water Quantity Report

Owner Name: Andy Christensen
Site Address: 11800 Road 500D (Well 2)
APN: 118-320-12
Subdivision #:
Well Location: See Figure 1 of report
Total Depth of Well: 278 feet

Test Date: 8/20-21/2023
Recorded by: Estabrook Services LLC
Bore Dia: 7 7/8 inches
Casing Dia.: 5 inches
Vol/ft.: 1.02 gal/ft
Depth to Static Water: 16.85 feet

Time	Elapsed Time	Total Time	Depth to H2O	Draw down	Meter Reading	Total Gallons	GPM	GPM Per FT
DRAWDOWN								
9:22 AM	0	0	16.9	0	0	0	0.45	-
10:22 AM	60	60	33.0	16.2	28	28	0.45	0.03
11:22 AM	60	120	38.8	21.9	55	55	0.45	0.02
12:22 PM	60	180	40.8	23.9	82	82	0.45	0.02
1:22 PM	60	240	44.4	27.5	108	108	0.45	0.02
2:22 PM	60	300	48.8	32.0	135	135	0.45	0.01
3:22 PM	60	360	52.3	35.5	162	162	0.45	0.01
4:22 PM	60	420	55.5	38.6	189	189	0.45	0.01
5:22 PM	60	480	58.6	41.7	216	216	0.45	0.01
6:22 PM	60	540	61.4	44.5	242	242	0.45	0.01
7:22 PM	60	600	64.7	47.9	269	269	0.45	0.01
8:27 PM	66	667	67.6	50.8	299	299	0.45	0.01
9:27 PM	60	727	70.1	53.2	326	326	0.45	0.01
10:27 PM	60	787	72.1	55.3	353	353	0.45	0.01
11:27 PM	60	847	74.5	57.7	380	380	0.45	0.01
12:27 AM	60	907	76.0	59.1	407	407	0.45	0.01
1:27 AM	60	967	77.7	60.9	434	434	0.45	0.01
2:27 AM	60	1027	79.5	62.6	461	461	0.45	0.01
3:27 AM	60	1087	80.9	64.0	488	488	0.45	0.01
4:27 AM	60	1147	82.3	65.5	516	516	0.45	0.01
5:27 AM	60	1207	84.0	67.2	543	543	0.45	0.01
5:37 AM	10	1217	84.1	67.3	547	547	0.45	0.01
RECOVERY								
6:39 AM	62	1279	65.7	48.9	547	547	0	-
7:39 AM	60	1339	58.2	41.4	547	547	0	-

8:39 AM	60	1399	52.9	36.0	547	547	0	-
9:39 AM	60	1459	49.0	32.1	547	547	0	-
10:39 AM	60	1519	45.9	29.1	547	547	0	-
11:39 AM	60	1579	43.3	26.4	547	547	0	-
12:39 PM	60	1639	41.0	24.2	547	547	0	-
10:49 AM	1330	2969	23.3	6.5	547	547	0	-

This table is representative of data collected. Actual data was collected every second. A spreadsheet of the actual data is available on request.

Show calculations for volume of the developed well in Gallons per Foot:

$$V = \left(\frac{D_i}{12}\right)^2 x \frac{\pi}{4} x\, 7.48 \frac{gal}{ft^3}$$

where D_i = inside diameter of casing, in inches

$$V = \left(\frac{5}{12}\right)^2 x \frac{\pi}{4} x\, 7.48 \frac{gal}{ft^3} = 1.02 \frac{gal}{ft}$$

I certify that the test was carried out by the procedures specified by the Mendocino County Division of Environmental Health.
I declare under penalty of perjury that the foregoing is true and correct:

Signed: [illegible] 9/21/2023

MENDOCINO COUNTY Environmental Health

Water Quantity Report

Owner Name: Andy Christensen
Site Address: 11800 Road 500D (Well 3)
APN: 118-320-12
Subdivision #:
Well Location: See Figure 1 of report
Total Depth of Well: 278 feet

Test Date: 8/26-27/2023
Recorded by: Estabrook Services LLC
Bore Dia: 7 7/8 inches
Casing Dia.: 5 inches
Vol/ft.: 1.02 gal/ft
Depth to Static Water: 17.21 feet

Time	Elapsed Time	Total Time	Depth to H2O	Draw down	Meter Reading	Total Gallons	GPM	GPM Per FT
DRAWDOWN								
7:20 AM	0	0	17.2	0	0	0	0	-
8:20 AM	60	60	27.6	10.4	18	18	0.3	0.029
9:20 AM	60	120	33.5	16.3	36	36	0.3	0.018
10:20 AM	60	180	37.7	20.5	54	54	0.3	0.015
11:20 AM	60	240	40.8	23.6	72	72	0.3	0.013
12:20 PM	60	300	43.7	26.5	90	90	0.3	0.011
1:20 PM	60	360	46.6	29.3	108	108	0.3	0.010
2:20 PM	60	420	49.1	31.9	126	126	0.3	0.009
3:20 PM	60	480	51.4	34.2	144	144	0.3	0.009
4:20 PM	60	540	53.8	36.5	162	162	0.3	0.008
5:20 PM	60	600	55.8	38.6	180	180	0.3	0.008
6:20 PM	59	660	57.5	40.3	198	198	0.3	0.007
7:20 PM	60	720	59.3	42.1	216	216	0.3	0.007
8:24 PM	64	784	61.2	44.0	236	236	0.3	0.007
9:24 PM	60	844	62.8	45.6	254	254	0.3	0.007
10:24 PM	60	904	64.2	47.0	272	272	0.3	0.006
11:24 PM	60	964	65.7	48.4	290	290	0.3	0.006
12:24 AM	60	1024	67.2	50.0	309	309	0.3	0.006
1:24 AM	60	1084	68.6	51.4	327	327	0.3	0.006
2:24 AM	60	1144	70.0	52.8	345	345	0.3	0.006
3:24 AM	60	1204	71.6	54.4	363	363	0.3	0.006
4:24 AM	60	1264	72.8	55.6	381	381	0.3	0.005
5:23 AM	59	1324	74.3	57.1	399	399	0.3	0.005
6:23 AM	60	1384	75.5	58.3	417	417	0.3	0.005
7:23 AM	60	1444	76.7	59.5	435	435	0.3	0.005
8:23 AM	60	1504	77.7	60.5	453	453	0.3	0.005
9:23 AM	60	1564	78.8	61.6	471	471	0.3	0.005

10:23 AM	60	1624	79.7	62.5	489	489	0.3	0.005
11:23 AM	60	1684	80.6	63.4	507	507	0.3	0.005
12:07 PM	44	1728	81.3	64.1	520	520	0.3	0.005
RECOVERY								
1:07 PM	60	1788	65.6	48.4	520	520	0	-
2:09 PM	62	1850	58.7	41.5	520	520	0	-
3:09 PM	60	1910	53.3	36.1	520	520	0	-
4:09 PM	60	1970	49	31.8	520	520	0	-
5:09 PM	60	2030	45.6	28.4	520	520	0	-
1:41 PM	1232	3262	22.8	5.6	520	520	0	-

This table is representative of data collected. Actual data was collected every second. A spreadsheet of the actual data is available on request.

Show calculations for volume of the developed well in Gallons per Foot:

$$V = \left(\frac{D_i}{12}\right)^2 x \frac{\pi}{4} x\, 7.48 \frac{gal}{ft^3}$$

where D_i= inside diameter of casing, in inches

$$V = \left(\frac{5}{12}\right)^2 x \frac{\pi}{4} x\, 7.48 \frac{gal}{ft^3} = 1.02 \frac{gal}{ft}$$

I certify that the test was carried out by the procedures specified by the Mendocino County Division of Environmental Health.
I declare under penalty of perjury that the foregoing is true and correct:

Signed: [illegible] 9/21/2023

MENDOCINO COUNTY Environmental Health

Water Quantity Report

Owner Name: Andy Christensen
Site Address: 11800 Road 500D (Well 4)
APN: 118-320-11
Subdivision #:
Well Location: See Figure 1 of report
Total Depth of Well: 305 feet

Test Date: 8/23-24/2023
Recorded by: Estabrook Services LLC
Bore Dia: 7 7/8 inches
Casing Dia.: 5 inches
Vol/ft.: 1.02 gal/ft
Depth to Static Water: 41.24 feet

Time	Elapsed Time	Total Time	Depth to H2O	Draw down	Meter Reading	Total Gallons	GPM	GPM Per FT
DRAWDOWN								
8:56 AM	0	0	41.2	0	0	0	0.4	0.19
9:56 AM	60	60	46.8	5.6	17	17	0.3	0.05
10:56 AM	60	120	48.1	6.8	35	35	0.3	0.04
11:56 AM	60	180	48.9	7.7	53	53	0.3	0.04
12:56 PM	60	240	49.7	8.5	71	71	0.3	0.04
2:03 PM	67	308	50.4	9.2	91	91	0.3	0.03
3:03 PM	60	368	51.0	9.7	109	109	0.3	0.03
4:03 PM	60	428	51.4	10.2	127	127	0.3	0.03
5:03 PM	60	488	52.0	10.7	145	145	0.3	0.03
6:03 PM	60	548	52.6	11.4	163	163	0.3	0.03
7:03 PM	60	608	53.3	12.0	181	181	0.3	0.02
8:03 PM	60	668	54.0	12.8	199	199	0.3	0.02
9:02 PM	60	727	55.0	13.8	217	217	0.3	0.02
10:02 PM	60	787	56.1	14.8	235	235	0.3	0.02
11:02 PM	60	847	56.9	15.7	253	253	0.3	0.02
12:02 AM	60	907	57.7	16.4	271	271	0.3	0.02
1:02 AM	60	967	58.5	17.2	289	289	0.3	0.02
2:02 AM	60	1027	59.3	18.1	307	307	0.3	0.02
3:02 AM	60	1087	60.3	19.1	325	325	0.3	0.02
3:59 AM	56	1144	61.5	20.3	342	342	0.3	0.01
RECOVERY								
4:59 AM	60	1204	52.3	11.1	342	342	0	-
5:59 AM	60	1264	49.5	8.3	342	342	0	-
6:59 AM	60	1324	47.9	6.7	342	342	0	-
7:59 AM	60	1384	46.9	5.7	342	342	0	-
8:59 AM	60	1444	46.1	4.8	342	342	0	-
9:59 AM	60	1504	45.5	4.2	342	342	0	-

10:59 AM	60	1564	44.9	3.7	342	342	0	-

This table is representative of data collected. Actual data was collected every second. A spreadsheet of the actual data is available on request.

Show calculations for volume of the developed well in Gallons per Foot:

$$V = \left(\frac{D_i}{12}\right)^2 x \frac{\pi}{4} x\, 7.48 \frac{gal}{ft^3}$$

where D_i= inside diameter of casing, in inches

$$V = \left(\frac{5}{12}\right)^2 x \frac{\pi}{4} x\, 7.48 \frac{gal}{ft^3} = 1.02 \frac{gal}{ft}$$

I certify that the test was carried out by the procedures specified by the Mendocino County Division of Environmental Health.
I declare under penalty of perjury that the foregoing is true and correct:

Signed: [illegible] 9/2/2023

LAWRENCE
& ASSOCIATES
ENGINEERS & GEOLOGISTS

June 24, 2025 023029.01

Mr. Andy Christensen
7944 Dante Drive
Littleton, CO 80125

SUBJECT: EVALUATION OF POTENTIAL WELL-PUMPING EFFECT ON WETLANDS, 11800 ROAD 500D, MENDOCINO, CALIFORNIA

INTRODUCTION

This letter presents the results of an evaluation of the potential effect of pumping Wells #1 and #2 on water level in the wetland to the south of the wells (Text Figure 1, p. 2). Per an email from Ms. Meghan Durbin of Wynn Coastal Planning, the California Coastal Commission (CCC) had the following question:

> 5. **Effects of Groundwater Withdrawal on Adjacent Wetlands.** What analysis, if any, has been conducted to date to evaluate potential effects to the wetland that could be caused by operating the well field in such close proximity to the wetland? In particular, the project should evaluate whether the use of the well field in close proximity to the wetland could result in groundwater drawdown that could interfere with the hydrology supporting the wetland feature, and identify measures that will be undertaken to ensure drawdown impacts on groundwater supply do not adversely affect wetlands.

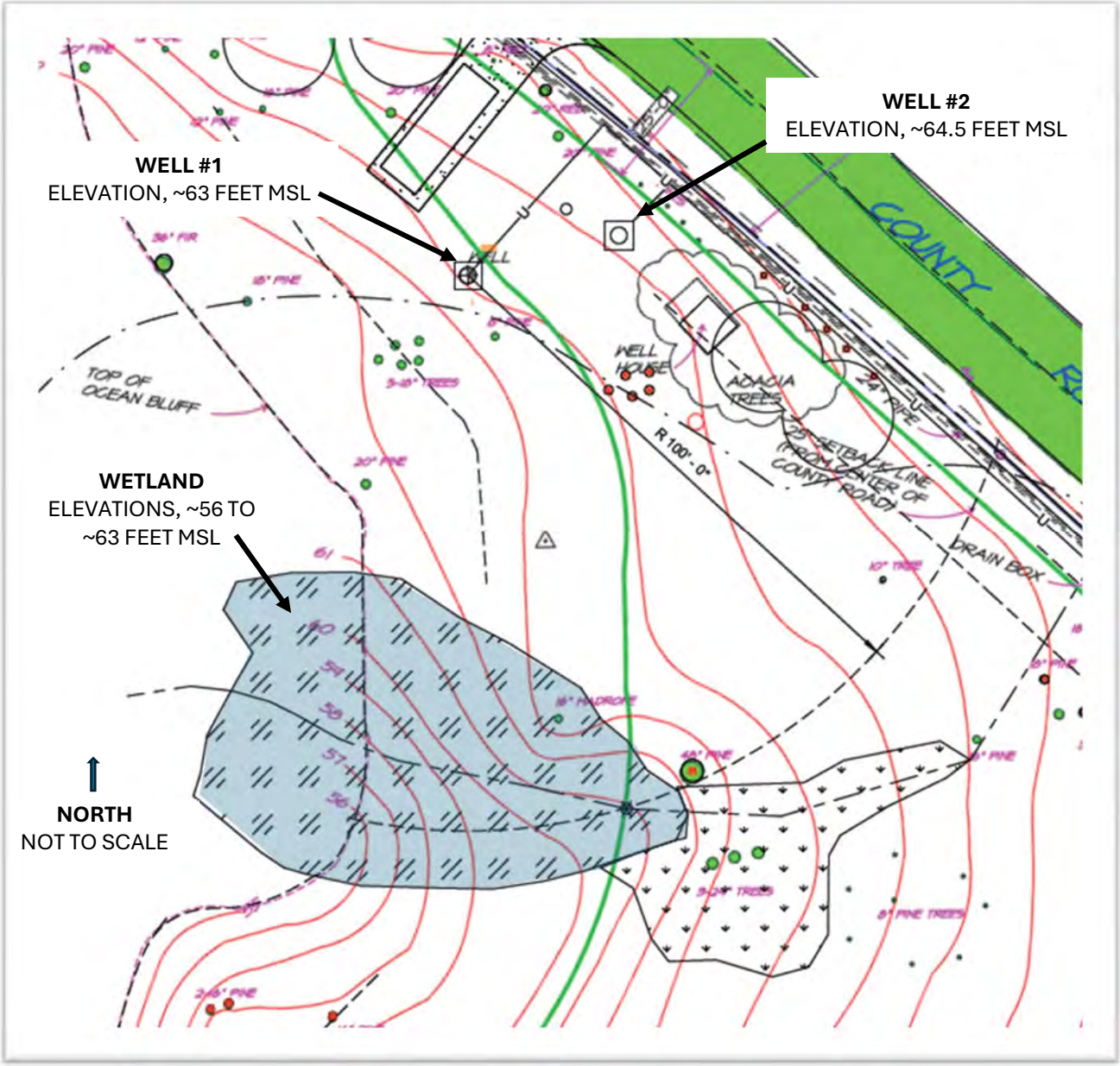
SUMMARY

To evaluate whether pumping Wells #1 and #2 would affect water levels in the wetland, it is necessary to compare (1) the water surfaces in wells vs. that of the wetland and (2) the saturated zones that provide water to the wells vs. that of the wetland.

Comparing the static water level in the wells to that of the wetlands shows that the well water level is approximately 8 to 18 feet below that of the wetland.

More importantly, the zone that supplied Well #2 with water is at an elevation of approximately -50 feet MSL, or more than 100 feet below the wetland. Although there is no log for Well #1, it is likely that it is supplied by a zone of similar elevation. The saturated zones that supply the wells are not hydraulically connected to the wetland.

Therefore, pumping of Wells #1 and #2 will not affect the water level in the wetland because the wells pump from a zone that is not hydraulically connected to the wetland.



TEXT FIGURE 1
PORTION OF SITE PLAN SHOWING WELL LOCATIONS, WETLANDS, AND GROUND-SURFACE ELEVATION CONTOURS
PROVIDED BY CLIENT

DISCUSSION

To evaluate whether pumping Wells #1 and #2 would affect water levels in the wetland, it is necessary to compare the relative elevations of (1) the water surfaces in wells and wetland and (2) the saturated zones that provide water to the wells vs. that of the wetlands.

Water levels in Well #1 and #2 were at 21.10 and 16.85 feet below ground surface bgs in August 2023. In February 2006 the water level in Well #1 was at 18 feet bgs. The approximate elevations of Wells #1 and #2 are 63 and 64.4 feet MSL. Subtracting the depth to water from the ground-surface elevations gives water-level elevations of approximately 45 to 48 feet MSL.

Well #1 has no log available and we do not know its stratigraphy or depth to first water (the saturated zone that provides water to the well). Based on a 2006 report (Carl Rittiman and Associates, Inc., February 24, 2006, *11800 Road 500 Water Quantity Evaluation*), Well #1 was drilled in 2002 to a depth of 236 feet bgs.

Well #2 was drilled in February 2023 to a total depth of 278 feet bgs and cased to 278 feet bgs. It has a 21-foot deep surface seal. The stratigraphy for Well #2 consisted of clay from ground surface to 19 feet bgs, "weathered sandstone" from 19 – 21 feet bgs, and hard rock below 21 feet. Depth to first water was 115 feet bgs (approximately -50 feet MSL).

The elevation of the wetlands ranges from 56 to 63 feet MSL. The depth of the wetted/saturated interval of the wetlands is not known, but it is likely that the water that supports the wetland is perched on the relatively low permeability soil at the site (clay and hard rock).

Comparing the static water level in the wells to that of the wetlands shows that the well water level is approximately 8 to 18 feet below that of the wetland.

More importantly, the zone that supplied Well #2 with water is at an elevation of approximately -50 feet MSL, or more than 100 feet below the wetland. Although there is no log for Well #1, it is likely that it is supplied by a zone of similar elevation.

Therefore, pumping of Wells #1 and #2 will not affect the water level in the wetland.

Please feel free to contact me at 530-275-4800 or blampley@lwrnc.com if you have any questions regarding this report.

Sincerely,

Bonnie E. Lampley

Bonnie Lampley
Principal Hydrogeologist

CERTIFIED HYDROGEOLOGIST
BONNIE E. LAMPLEY
No. HG626
STATE OF CALIFORNIA