



**COUNTY OF MENDOCINO**  
**DEPARTMENT OF PLANNING AND BUILDING SERVICES**  
860 NORTH BUSH STREET • UKIAH • CALIFORNIA • 95482  
120 WEST FIR STREET • FT. BRAGG • CALIFORNIA • 95437

BRENT SCHULTZ, DIRECTOR  
TELEPHONE: 707-234-6650  
FAX: 707-463-5709  
FB PHONE: 707-964-5379  
FB FAX: 707-961-2427  
pbs@mendocinocounty.org  
www.mendocinocounty.org/pbs

February 19, 2019

Planning – Fort Bragg  
Department of Transportation  
Environmental Health - Fort Bragg  
Building Inspection - Fort Bragg  
Forestry Advisor  
Air Quality Management  
Caltrans

CalFire – Resource Management  
Department of Fish and Wildlife  
Department of Conservation  
State Lands Commission  
Native Plant Society  
NOAA Fisheries  
Division of Mine Reclamation

Coastal Commission  
RWQCB  
Army Corps of Engineers  
Cloverdale Rancheria  
Redwood Valley Rancheria  
Sherwood Valley Band of Pomo Indians

**CASE#:** REC\_2018-0001

**DATE FILED:** 3/28/2018

**OWNER:** PARKER TEN MILE RANCH

**APPLICANT:** GEO AGGREGATES

**AGENT:** LINWOOD GILL

**REQUEST:** Reclamation Plan Renewal and Modification to extend existing hillside quarry mining operation for an additional 5 years. The proposed modification is to remove Bench 1 at a 1:1 slope angle to elevation 25ft. ASML, creating an 50± ft. high (1:1) slope at the bottom of the quarry; consistent with Benches 4 and 6. The operation, for which a vested right has been granted; includes the extraction of up to 40,000 cy of material per year, and the processing (screening and washing) of 51,000± cy per year.

**LOCATION:** In the Coastal Zone, 8± miles north of Fort Bragg, 3.5± miles east of State Highway 1 (SH 1), accessed via a private logging road 2.5± miles east of the State Hwy 1 intersection with Camp 2 Ten Mile Road (CR 428), lying on the south and east sides of the Ten Mile River (APNs: 015-140-51, -75, -78, & -87).

**STAFF PLANNER:** EDUARDO HERNANDEZ

**RESPONSE DUE DATE:** March 5, 2019

**PROJECT INFORMATION CAN BE FOUND AT:**

<https://www.mendocinocounty.org/government/planning-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](mailto: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 \_\_\_\_\_

OWNER:

PARKER TEN MILE RANCH

APPLICANT:

GEO AGGREGATES

AGENT:

LINWOOD GILL

REQUEST:

REVISED REQUEST (01/14/2019): Reclamation Plan Renewal and Modification to extend existing hillside quarry mining operation for an additional 5 years. The proposed modification is to remove Bench 1 at a 1:1 slope angle to elevation 25' ASML, creating an approximately 50-foot high (1:1) slope at the bottom of the quarry; consistent with Benches 4 and 6. The operation, for which a vested right has been granted; includes the extraction of up to 40,000 cubic yards of material per year, and the processing (screening and washing) of approximately 51,000 cubic yards per year.

SUPERSEDED REQUEST: Reclamation Plan Renewal to extend existing hillside quarry mining operation for an additional 5 years. The operation, for which a vested right has been granted; includes the extraction of up to 40,000 cubic yards of material per year, and the processing (screening and washing) of approximately 51,000 cubic yards per year.

LOCATION:

8± miles north of Fort Bragg, 3.5± miles east of Hwy. 1 (Hwy 1), accessed via a private logging road located 2.5± miles east of the intersection of Hwy. 1 and Camp 2 Ten Mile Rd. (CR 428), on the south and east sides of the Ten Mile River, Fort Bragg (APNs: 015-140-51, 75, 78, & 87).

ACREAGE:

14.9± acres within a 622.50± acre property

GENERAL PLAN:

Forestland (FL:160)

ZONING:

Timberland Production (TP-160)

EXISTING USES:

Quarry

SUPERVISORIAL DISTRICT:

4

COASTAL ZONE:

YES

TOWNSHIP:

20N

RANGE:

17W

SECTION:

35

USGS QUAD#:

28

**RELATED CASES ON SITE:** Certificate of Compliance #CC 14-88, Coastal Development Use Permit #CDU 8-92, Vested Rights #VR 1-94, Administrative Appeal #AA 3-94, and Reclamation Plan #REC 1-2004  
**RELATED CASES IN VICINITY:** N/A

	ADJACENT GENERAL PLAN	ADJACENT ZONING	ADJACENT LOTS ACREAGES ±	ADJACENT USES
NORTH:	FL:160	TP-160	66.03, 102.5, 80, 78, 480	Timberland
EAST:	FL:160	TP-160	16, 86, 9.5, 40, 77, 0.96, 160, 89, 19	Timberland
SOUTH:	FL:160	TP-160	61, 98.75, 350, 34.26, 1.3	Timberland
WEST:	FL:160	TP-160	83.98, 119.51, 160	Timberland

REFERRAL AGENCIES:

☒ Planning (Fort Bragg)

☒ Department of Transportation

☒ Environmental Health (Fort Bragg)

☒ Building Inspection (Fort Bragg) Advisor

☒ Air Quality Management District

☒ Regional Water Quality Control Board

☒ Coastal Commission

☒ CalFire

☒ Caltrans

☒ Department of Fish & Wildlife

☒ Department of Conservation

☒ Division of Mine Reclamation

☒ State Lands Commission

☒ Native Plant Society

☒ NOAA Fisheries

☒ U.S. Army Corps of Engineers

☒ Redwood Valley Rancheria

☒ Forestry

☒ Cloverdale Rancheria

☒ Sherwood Valley Band of Pomo Indians

**ADDITIONAL INFORMATION:** CDU 8-92 was approved in 1993 to allow on-site quarry operations for 5 years. VR 1-94 granted the operator a vested right to mine the quarry, nullifying the need for a use permit. The reclamation plan included in CDU 8-92 expired in 1998. REC 1-2004 was approved in 2008, and expired in 2017. CDB 69-2007 reconfigured the boundaries between 4 parcels, modifying 3 of the project's assessor's parcels numbers and acreages.

**ASSESSOR'S PARCEL #s:** 015-140-51, 015-140-75, 015-140-78, 015-140-87

ENVIRONMENTAL DATA

COUNTY WIDE		
Yes	No	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	1. Alquist-Priolo Earthquake Fault Zone – Geotechnical Report N/R
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Floodplain/Floodway Map –Flood Hazard Development Permit # TBD
NO / YES		3. Within/Adjacent to Agriculture Preserve / Timberland Production Entire site is Timberland Production Zoned
<input type="checkbox"/>	<input checked="" type="checkbox"/>	4. Within/Near Hazardous Waste Site
<input checked="" type="checkbox"/>	<input type="checkbox"/>	5. Natural Diversity Data Base Multiple species along property
<input type="checkbox"/>	<input checked="" type="checkbox"/>	6. Airport CLUP Planning Area
<input type="checkbox"/>	<input checked="" type="checkbox"/>	7. Adjacent to State Forest/Park/Recreation Area
<input type="checkbox"/>	<input checked="" type="checkbox"/>	8. Adjacent to Equestrian/Hiking Trail
<input type="checkbox"/>	<input checked="" type="checkbox"/>	9. Hazard/Landslides Map
<input checked="" type="checkbox"/>	<input type="checkbox"/>	10. Require Water Efficient Landscape Plan As part of the reclamation plan, revegetation with short-term monitoring is mandatory
<input checked="" type="checkbox"/>	<input type="checkbox"/>	11. Biological Resources/Natural Area Map Special treatment area
<input checked="" type="checkbox"/>	<input type="checkbox"/>	12. Fire Hazard Severity Classification: <input type="checkbox"/> LRA <input checked="" type="checkbox"/> SRA-CDF# 62-05 High Fire Hazard. CDF File # remains the same, project hasn't change since last application.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	13. Soil Type(s)/Pygmy Soils Not on a Naturally Occurring Asbestos area. Soils: 101,112,113,114,118,131,172,173,197,220
<input type="checkbox"/>	<input checked="" type="checkbox"/>	14. Wild and Scenic River
<input type="checkbox"/>	<input checked="" type="checkbox"/>	15. Specific Plan Area
<input type="checkbox"/>	<input checked="" type="checkbox"/>	16. State Permitting Required/State Clearinghouse Review
<input type="checkbox"/>	<input checked="" type="checkbox"/>	17. Oak Woodland Area

COASTAL ZONE		
Yes	No	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	16. Exclusion Map
Critical Bedrock HS		17. Coastal Groundwater Study Zone
		18. Highly Scenic Area/Special Communities
<input checked="" type="checkbox"/>	<input type="checkbox"/>	19. Land Capabilities/Natural Hazards Map Flooding along Ten Mile River
<input checked="" type="checkbox"/>	<input type="checkbox"/>	20. Habitats/ESHA/Resources Map See attached LCP Habitats & Resources Map
<input checked="" type="checkbox"/>	<input type="checkbox"/>	21. Appealable Area/Original Jurisdiction Map
9: Ten Mile River		22. LCP Map
<input type="checkbox"/>	<input checked="" type="checkbox"/>	23. Ocean Front Parcel (Blufftop Geology)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	24. Adjacent to beach/tidelands/submerged land/Public Trust Land
<input type="checkbox"/>	<input checked="" type="checkbox"/>	25. Noyo Harbor/Albion Harbor



Planning and Building  
Services

Case No: REC-2018-0001

CalFire No: 62-05

Date Filed: 12/28/2017

Fee: \$5,591.00

Receipt No: PRJ-018775

Received By: Eduardo Hernandez

Office use only

## APPLICATION FORM

**APPLICANT:**

Name: Geo Aggregates

Phone: (707) 964-4033

Mailing Address: 1221 N. Main Street

City: Fort Bragg State/Zip: CA / 95437 email: beth@geoagg.net

**PROPERTY OWNER**

Name: Parker Ten Mile Ranch

Phone: (707) 961-0377

Mailing Address: P.O. Box 198

City: Fort Bragg State/Zip: CA 95437 email: linwood@mcn.org

**AGENT**

Name: Linwood Gill

Phone: (707) 961-0377

Mailing Address: P.O. Box 198

City: Fort Bragg State/Zip: CA 95437 email: linwood@mcn.org

Parcel Size: See below (Sq. feet/Acres) Address of Property: 2.5+ mi. N of of Hwy. 1 & Little Valley Rd.

Assessor Parcel Number(s): Quarry: 15-140-51 (160 ac), 15-140-65 (75 ac); Plant: 15-140-46 (240 ac), 15-140-64 (207 ac)

**TYPE OF APPLICATION:**

- ☒ Administrative Permit
- ☐ Agricultural Preserve
- ☐ Airport Land Use
- ☐ CDP- Admin
- ☐ CDP- Standard
- ☐ Certificate of Compliance
- ☐ Development Review
- ☐ Exception

- ☐ Flood Hazard
- ☐ General Plan Amendment
- ☐ Land Division-Minor
- ☐ Land Division- Major
- ☐ Land Division-Parcel
- ☐ Land Division-Resubdivision
- ☒ Modification of Conditions
- ☐ Reversion to Acreage

- ☐ Rezoning
- ☐ Use Permit-Cottage
- ☐ Use Permit-Minor
- ☒ Use Permit-Major
- ☐ Variance
- ☒ Other

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

*Beth Kinwa* 12/22/17  
Signature of Applicant/Agent Date

*Jan K. Demister* 12/30/17  
Signature of Owner Date  
Member of Parker Timber LLC



## **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.

Minor modification to the conditions of approval for Rec 1-2004 to extend the expiration date identified in Condition 26 from December 31, 2017 to December 31, 2022. In addition to the extension of time, request for minor modification to the final slope configuration based on recommendations from a Professional Geologist.

The proposed amendments do not represent a "substantial deviation" to the approved Reclamation Plan and are consistent with the allowances of Mendocino County Zoning Code Section 22.16.170 relating to Minor Reclamation Plan Modifications.

See application and supplements (06/07/18 and 01/02/19) for additional detail.

2. Structures/Lot Coverage	Number of Units		Square Footage		
	Existing	Proposed	Existing	Proposed	Total
<input type="checkbox"/> Single Family <input type="checkbox"/> Mobile Home <input type="checkbox"/> Duplex <input type="checkbox"/> Multifamily <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____					
<b>Total Structures Paved</b> <b>Area Landscaped Area</b> <b>Unimproved Area</b>					
<b>GRAND TOTAL (Equal to gross area of Parcel) No change</b>					

## 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.

Minor modification to the conditions of approval for Rec 1-2004 to extend the expiration date identified in Condition 26 from December 31, 2017 to December 31, 2022. The extension does not require an amendment to the approved Reclamation Plan as the short extension of time does not rise to level of a "substantial deviation" to the approved Reclamation Plan.

See attached Project Justification for additional detail.

2. Structures/Lot Coverage	Number of Units		Square Footage		
	Existing	Proposed	Existing	Proposed	Total
<input type="checkbox"/> Single Family					
<input type="checkbox"/> Mobile Home					
<input type="checkbox"/> Duplex					
<input type="checkbox"/> Multifamily					
<input type="checkbox"/> Other: _____					
<input type="checkbox"/> Other: _____					
Total Structures Paved					
Area Landscaped Area					
Unimproved Area					
<b>GRAND TOTAL (Equal to gross area of Parcel) No change</b>					

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

Estimated employees per shift: No change

Estimated shifts per day: \_\_\_\_\_

Type of loading facilities proposed: \_\_\_\_\_

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

No change to reclamation phasing

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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5. Will vegetation be removed on areas other than the building sites and roads? ☐ Yes ☐ No Explain:

No change

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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6. Will the project involve the use or disposal of potentially hazardous materials such as toxic substances, flammables, or explosives? ☐ Yes ☐ No If yes, explain:

No change

\_\_\_\_\_

\_\_\_\_\_

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

	Number	Size
Number of covered spaces	<u>No change</u>	_____
Number of uncovered spaces	_____	_____
Number of standard spaces	_____	_____
Number of handicapped spaces	_____	_____
Existing Number of Spaces	_____	
Proposed Additional Spaces	_____	
Total	_____	

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8. Is any road construction or grading planned? ☐ Yes ☐ No If yes, grading and drainage plans may be required. Also, describe the terrain to be traversed (e.g., steep, moderate slope, flat, etc.).

No change

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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

A. Amount of cut No change \_\_\_\_\_ cubic yards

B. Amount of fill \_\_\_\_\_ cubic yards

C. Maximum height of fill slope \_\_\_\_\_ feet

D. Maximum height of cut slope \_\_\_\_\_ feet

E. Amount of import or export \_\_\_\_\_ cubic yards

F. Location of borrow or disposal site \_\_\_\_\_

10. Does the project involve sand removal, mining or gravel extraction? ☒ Yes ☐ No  
If yes, detailed extraction, reclamation and monitoring plans may be required?

11. 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.

12. Will the development provide public or private recreational opportunities? ☐ Yes ☒ No  
If yes, explain below:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

<p>13. Is the proposed development visible from State Highway 1 or other scenic route? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>14. Is the proposed development visible from a park, beach or other recreational area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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15. Does the development involve diking, filling, dredging or placing structures in open coastal water, wetlands, estuaries or lakes?

Diking : ☐ Yes ☐ No

Filling: ☐ Yes ☐ No

Dredging: ☐ Yes ☐ No

Placement of structures in:

☐ open coastal waters

☐ wetlands

☐ estuaries

☐ lakes

If so, amount of material to be dredged or filled? \_\_\_\_\_ cubic yards.

Location of dredged material disposal site? No change

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

16. Will there be any exterior lighting? ☐ Yes ☐ No If yes, describe below and identify the location of all exterior lighting on the plot plan and building plans.  
No change  
\_\_\_\_\_

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

A. Electricity:

☐ Utility Company (service exists to the parcel)

☐ Utility Company (requires extension of service to site: \_\_\_\_\_ feet \_\_\_\_\_ miles)

☐ On Site Generation - Specify: No change

B. Gas:

☐ Utility Company/Tank

☐ On Site Generation - Specify: No change

☐ None

C. Telephone: ☐ Yes ☐ No

18. What will be the method of sewage disposal?

☐ Community sewage system - Specify supplier No change

☐ Septic Tank

☐ Other - Specify: \_\_\_\_\_

19. What will be the domestic water source:

☐ Community water system - Specify supplier No change

☐ Well

☐ Spring

☐ Other - Specify: \_\_\_\_\_

20. Are there any associated projects and/or adjacent properties under your ownership?  
☐ Yes ☐ No If yes, explain (e.g., Assessor's Parcel Number, address, etc.):  
 No change  
 \_\_\_\_\_  
 \_\_\_\_\_

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:  
 No additional permits required for extension  
 \_\_\_\_\_  
 \_\_\_\_\_

22. Describe the location of the site in terms of readily identifiable landmarks (e.g., mailboxes, mile posts, street intersections, etc.):  
 Approximately 8 miles north of Fort Bragg and 3.5+ miles east of State Highway 1, accessed via a private logging road 2.5+ miles north of the intersection of Highway 1 and Little Valley Road.  
 \_\_\_\_\_  
 \_\_\_\_\_

23. Are there existing structures on the property? ☐ Yes ☐ No  
 If yes, describe below, and identify the use of each structure on the plot plan or tentative map if the proposal is for a subdivision.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

24. Will any existing structures be demolished or removed? ☐ Yes ☐ No  
 If yes, describe the type of development to be demolished or removed, including the relocation site, if applicable.  
 No change  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

25. Project Height. Maximum height of existing structures \_\_\_\_\_ feet. Maximum height of proposed structures \_\_\_\_\_ feet.

26. Gross floor area of existing structures \_\_\_\_\_ square feet (including covered parking and accessory buildings). Gross floor area of proposed structures \_\_\_\_\_ square feet (including covered parking and accessory buildings).

27. Lot area (within property lines): \_\_\_\_\_ ☐ square feet ☐ acres.

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 mining and processing sites  
 \_\_\_\_\_  
 \_\_\_\_\_

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.  
 Surrounding timber land  
 \_\_\_\_\_  
 \_\_\_\_\_

30. Indicate the surrounding land uses:

	North	East	South	West
Vacant	No change			
Residential				
Agricultural				
Commercial				
Industrial				
Institutional				
Timberland				
Other				



**CERTIFICATION AND SITE VIEW AUTHORIZATION- SUBMIT ONLY ONE COPY**

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

Mark K. Demister, Member 12/30/17  
Owner/Authorized Agent Date  
of Parker Timber LLC

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

**AUTHORIZATION OF AGENT**

I hereby authorize \_\_\_\_\_ to act as my representative and to bind me in all matters concerning this application.

\_\_\_\_\_  
Owner

\_\_\_\_\_  
Date

**MAIL DIRECTION**

To facilitate proper handling of this application, please indicate the names and mailing addresses of individuals to whom you wish correspondence and/or staff reports mailed if different from those identified on Page 1 of the application form.

Name	Name	Name
Mailing Address	Mailing Address	Mailing Address

**INDEMNIFICATION AND HOLD HARMLESS**

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

**INDEMNIFICATION AGREEMENT**

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

Applicant: Mark K. Demister Date: 12/22/17



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

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

AP# 000-000-00 LASTNAME, FIRSTNAME STREET ADDRESS CITY, STATE ZIP	AP# 015-140-58 Lyme Redwood Timberlands LLC No Address Fort Bragg, CA 95437	AP# 015-140-75 Parker Ten Mile Ranch No Address Fort Bragg, CA 95437
AP# 015-140-80 Haggensmit Jan 2900 Camp 2 Fort Bragg, Ca 95437	AP# 015-140-71 Lyme Redwood Timberlands LLC No Address Fort Bragg, CA 95437	AP# 015-140-51 Parker Ten Mile Ranch 28811 N. Hwy 1 Fort Bragg, CA 95437
AP# 015-140-80 Haggensmit Jan 2900 Camp 2 Fort Bragg, Ca 95437	AP# 015-140-47 Lyme Redwood Timberlands LLC No Address Fort Bragg, CA 95437	AP# 015-140-87 Parker Ten Mile Ranch No Address Fort Bragg, CA 95437
AP# 015-140-80 Haggensmit Jan 2900 Camp 2 Fort Bragg, Ca 95437	AP# 015-140-48 Lyme Redwood Timberlands LLC No Address Fort Bragg, CA 95437	AP# 015-140-53 Parker Ten Mile Ranch No Address Fort Bragg, CA 95437
AP# 069-030-05 Lyme Redwood Timberlands LLC No Address Fort Bragg, CA 95437	AP# 015-140-39 Lyme Redwood Timberlands LLC No Address Fort Bragg, CA 95437	AP #015-140-38 Parker Ten Mile Ranch No Address Fort Bragg, CA 95437
AP# 069-030-02 Lyme Redwood Timberlands LLC No Address Fort Bragg, CA 95437	AP# 015-140-38 Lyme Redwood Timberlands LLC No Address Fort Bragg, CA 95437	AP# 015-140-52 Parker Ten Mile Ranch No Address Fort Bragg, CA 95437
AP# 069-030-04 Lyme Redwood Timberlands LLC No Address Fort Bragg, CA 95437	AP# 069-030-03 Lyme Redwood Timberlands LLC No Address Fort Bragg, CA 95437	AP# 015-140-79 Parker Ten Mile Ranch No Address Fort Bragg, CA 95437
AP# 015-140-66 Lyme Redwood Timberlands LLC No Address Fort Bragg, CA 95437		

COMPLETE FOR  
PROJECTS LOCATED IN  
THE COASTAL ZONE ONLY

### DECLARATION OF POSTING

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

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

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

Extension to the reclamation plan currently  
in place

(Description of development)

Located at:

28811 N. Hwy 1 APN 015-140-51 15-140-46  
015-140-65 15-140-64

(Address of development and Assessor's Parcel Number)

The public notice was posted at: the gate

On a tree at the main entrance  
to the rock quarry

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

Paul K. Demeter, Member of  
Owner/Authorized Representative  
Parker Timber LLC

12/30/17  
Date

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

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

COMPLETE FOR  
PROJECTS LOCATED IN  
THE COASTAL ZONE ONLY

## NOTICE OF PENDING PERMIT

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

PROPOSED DEVELOPMENT: <sup>Request</sup> Extension of the  
Reclamation Plan.

LOCATION:

APPLICANT: Geo Aggregates - Beth Kirwan

ASSESSOR'S PARCEL NUMBER:

DATE NOTICE POSTED:

### FURTHER INFORMATION IS AVAILABLE AT:

COUNTY OF MENDOCINO  
DEPARTMENT OF PLANNING & BUILDING SERVICES  
[www.co.mendocino.ca.us/planning](http://www.co.mendocino.ca.us/planning)  
860 North Bush Street, Ukiah, CA 95482, 707-234-6650  
120 West Fir Street, Fort Bragg, CA 95437, 707-964-5379  
HOURS: 8:00 - 5:00

**Project Justification  
Extension of Time for Rec 1-2004  
December 22, 2017**

The Ten Mile Second Crossing Quarry has vested rights to mine pursuant to a 1995 Board of Supervisors decision. As such, a use permit is not required in connection with the mining operation, but a Reclamation Plan is required consistent with the Surface Mining and Reclamation Act ("SMARA"). Reclamation Plan 1-2004 was approved by the Mendocino County Planning Commission on March 20, 2008, and contained various conditions of approval. Condition 26 contains an expiration date for the Reclamation Plan of December 31, 2017. Given that the site is vested, and a Reclamation Plan is a requirement of state law and County Code, the applicant desires to merely extend the existing Reclamation Plan with no additional changes proposed to the reclamation approach or operation.

A mere extension of the date of reclamation does not require an amendment to the approved Reclamation Plan. SMARA only requires approval by the Lead Agency (the County) if the Lead Agency determines that there is a "substantial deviation" from the approved plan. Public Resources Code section 2777; see also California Code of Regulations section 3502(d), (g).

The following factors apply to evaluate whether there is a "substantial deviation":

- A substantial increase in surface area or maximum depth of mining
- A substantial extension of termination date as set out in the approved reclamation plan
- Change that would substantially affect the approved end use
- Consistency with previously adopted environmental determinations
- Other changes that the Lead Agency deems substantial

The County Code requirements related to reclamation plans are consistent with this approach. Chapter 22.16 of the County Code incorporates by reference SMARA and its implementing regulations, cited above. Section 22.16.080 of County Code only requires a reclamation plan to contain "...expected ending dates for each phase." (Emphasis added.) It is common that mining operations extend well-beyond the original estimated time schedule presented in a reclamation plan.

Based upon the following factors, there is no "substantial deviation" requiring an amendment to the Reclamation Plan:

- Geo Aggregates proposes no increase in annual or total production levels, methods of mining, hours of operation, area subject to mining, truck traffic, transportation patterns, or mining depths.

- Geo Aggregates proposed extension of time is only for five years, and in light of the fact that there is no change in operations, this time extension is not considered to be “substantial” because there is no change or expansion to a surface mining operation that substantially affects the end use or scope of reclamation.
- The proposed extension of time will not affect the end use or scope of reclamation.



3140 PEACEKEEPER WAY  
SUITE 102  
MCCLELLAN, CA 95652  
TEL: 916.825.4997  
WWW.COMPASSLAND.NET

January 2, 2019

Eduardo Hernandez  
County of Mendocino  
Planning Department  
860 North Bush Street  
Ukiah, CA 95482

**SUBJECT: Ten Mile Second Crossing Quarry Reclamation Plan Extension (REC\_2018-0001)  
Additional Amendment Request – Final Slope Modifications**

Dear Mr. Hernandez:

The County of Mendocino is currently processing an application from Geo Aggregates for an extension of the Ten Mile Second Crossing Quarry Reclamation Plan (REC\_2018-0001). This letter supplements the application to include a request for minor modification to the final slope configuration based on recommendations from a Professional Geologist.

As described in the attached report titled "Final Slope Modifications, Ten Mile Second Crossing Quarry, Mendocino County, California" Professional Geologist Jeff Light has recommended the removal of Bench 1 at a 1:1 slope angle to elevation 25' AMSL. This modification will create an approximately 50-foot high (1:1) (H:V) slope at the bottom of the quarry consistent with Benches 4 and 6. The Professional Geologist determined that the proposed configuration is stable, and will allow for the construction of the sediment basin at the base of the quarry slope as shown in the 2008 Grading and Drainage Plan developed by Michael Butler, C.E..

Please feel free to contact me at 408-210-5929 with any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "J Main", with a stylized flourish at the end.

Jordan Main  
Managing Partner, Compass Land Group  
[jmain@compassland.net](mailto:jmain@compassland.net)

Encl.

cc: Brian Hurt, Geo Aggregates



**FINAL SLOPE MODIFICATIONS  
TEN MILE SECOND CROSSING QUARRY  
MENDOCINO COUNTY, CALIFORNIA**

PREPARED FOR:      GEOAGGREGATES  
                             1221 N. MAIN STREET  
                             FORT BRAGG, CA 95437  
                             ATTN: BRIAN HURT

PREPARED BY:      JEFF LIGHT, GEOLOGIST  
                             P.G. #7661  
                             15217 DE LA PENA CIRCLA  
                             RANCHO MURIETA, CA. 95683

DATE:                DECEMBER 21, 2018

## **Introduction**

This report summarizes on-site geologic observations and slope re-configuration recommendations based on two site visits and review of technical documents from the Ten Mile Second Crossing Quarry, in Mendocino County, CA. The site is located within Section 35 of T20N, R17W and is approximately 8.5 miles north-northeast of Fort Bragg, CA.

Site visits to the quarry were conducted by JLGC on 11/14/2018 and 12/14/2018. The benches were surveyed on 12/14/2018 with a Trimble Geo 7x handheld GPS unit (site transverse shown in Figure 1). Cross section work and site modeling was conducted in the CAD mining software package SURPAC under licensed sentinel #32309.

Site observations and cross section work indicate that an additional bench can be removed from the quarry at the toe of the existing face. This modification would create an approximately 50 foot high (1:1 H:V) slope at the bottom of the quarry, just above a planned sediment basin (consistent with Reese and Associates 2017 findings, Pg 2, end of the 1<sup>st</sup> paragraph). This geometry is also consistent with the two benches (Bench 4 and 6 in Figure 2) above Bench 2 that have been in service for at least 2 and 5 years respectively. Benches 4 and 6 have similar ~50ft high, 1:1 slopes. This new configuration would result in an overall slope of 1.2:1 through the entire fresh rock section from approximately elevations between 50' AMSI to 200' AMSL (Figure 4). This geometry appears stable in benches 4 and 6 and should be appropriate for the removal of Bench 1. This would also allow for construction of the sediment basin at the base of the quarry slope as shown in the 2008 Grading and Drainage Plan developed by Michael Butler, C.E..

## **Observations**

The geology, bedding and discontinuity orientations described by Reese and Associates in two separate reports 2013 and 2017 at the quarry are consistent with JLGC observations. The main body of the quarry consists of a meta-sandstone with a slight to highly weathered section sitting on top of the deposit (Figure 3). The main sources of structural weakness to the rock are bedding planes. The strike and dip of bedding planes and discontinuities observed along the quarry benches are consistent with those recorded by Reese and Associates. These structures trend to the north and dip 60-70 degrees to the west. This orientation is favorable to the stability of the quarry walls (Figure 3).

There are two sections of the highwall where a 25' tall bench has been removed to create a single 50' high bench. Figure 2 shows where benches 3 and 5 have been excavated out. Reese and Associates also notes that Bench 5 had been removed pre-2013 and recommends in 2017 that Bench 3 be removed. The resulting 50' tall benches, 4 and 6 in Figure 2, appear stable. There was no observed bench cracking or bulging or any water seeps or ponding evidence in benches 4 or 6.

## **Recommendations**

JLGC recommends the removal of Bench 1 at a 1:1 slope down to an elevation of 25' AMSL. This will result in Bench 2 extending at a 1:1 down to 25' AMSL and backfilled to 45' for sediment basin construction. Benches 2, 4 and 6 will have an overall slope of 1.2:1 while benches 7, 8, 9 and 10 will have an overall slope of 2:1 both consistent with the site slope conditions presented in the 2008 Grading and Drainage Plan.

## **Limitations**

Professional statements and illustrations presented in this report are based on evaluations of the technical data and information available at this time. Conclusions are based on sound geologic judgment. These interpretations and conclusions may change with the presentation of previously undisclosed data, the acquisition of new data, or changes in site conditions. No warranty is made, expressed or implied, on this work.

Respectfully submitted.

Jeff Light  
Professional Geologist  
#7661

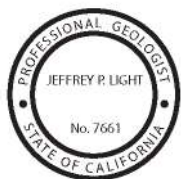




survey transverse



location of observed benches



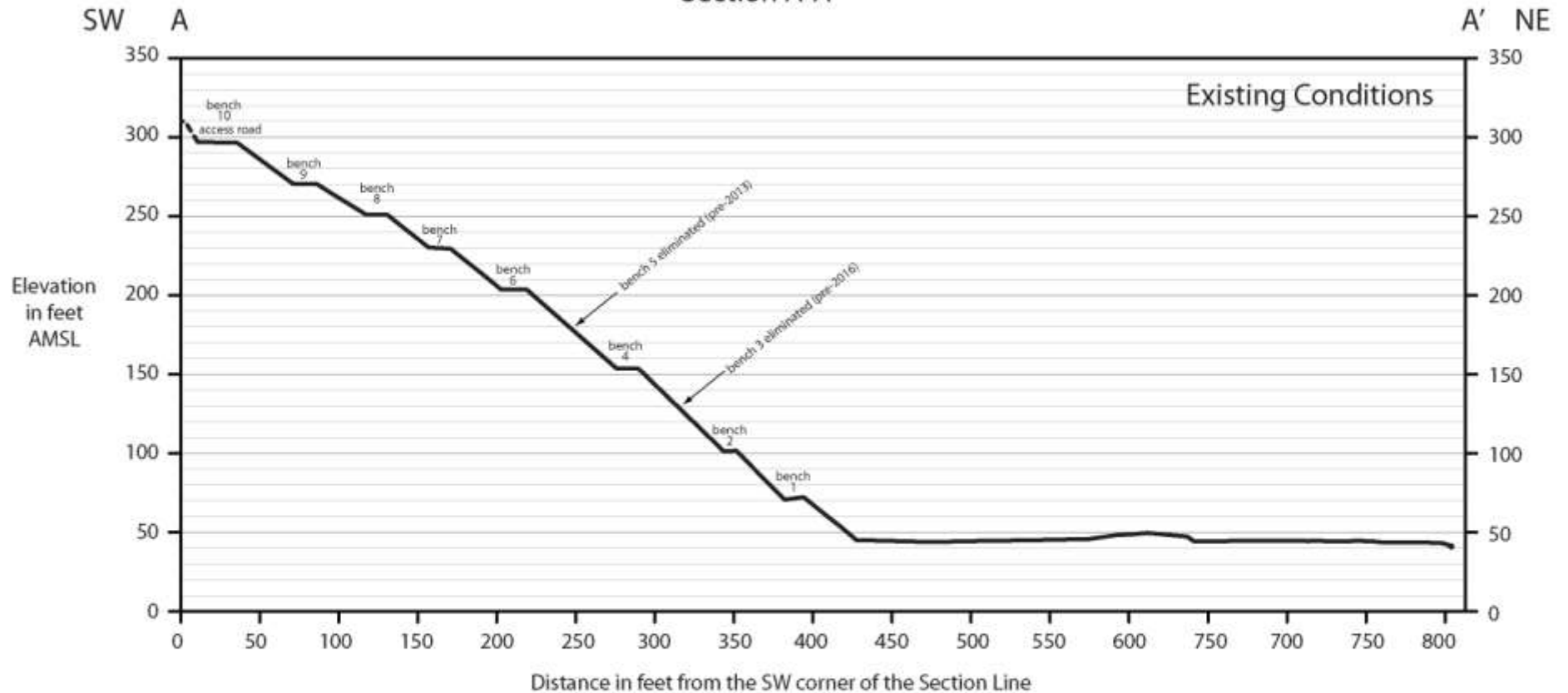
Aerial Photo and Section Line Map  
Cross Section A-A'  
Ten Mile Second Crossing Quarry  
Mendocino County, CA.  
CA Mine ID# 91-23-0028

Figure 1

Jeff Light Geologic Consultation (JLGC)  
12/20/2018

see physical scale on map

Ten Mile Second Crossing Quarry  
Mendocino County, CA.  
Section A-A'



Existing Conditions  
Cross Section A-A'  
Ten Mile Second Crossing Quarry  
Mendocino County, CA.  
CA Mine ID# 91-23-0028

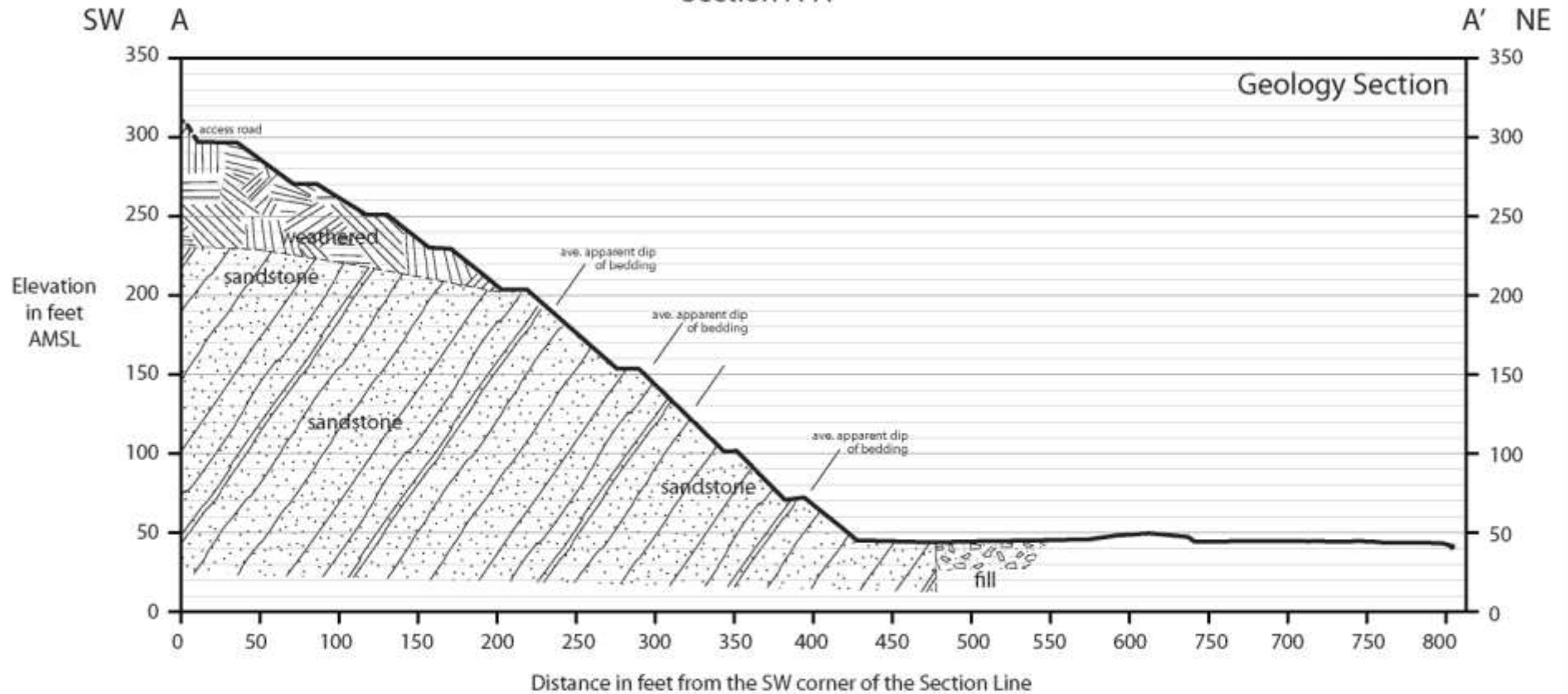
Figure 2

Jeff Light Geologic Consultation (JLGC)  
12/20/2018

1" = 100' when printed on 8.5" x 11" paper,  
no vertical exaggeration



Ten Mile Second Crossing Quarry  
Mendocino County, CA.  
Section A-A'



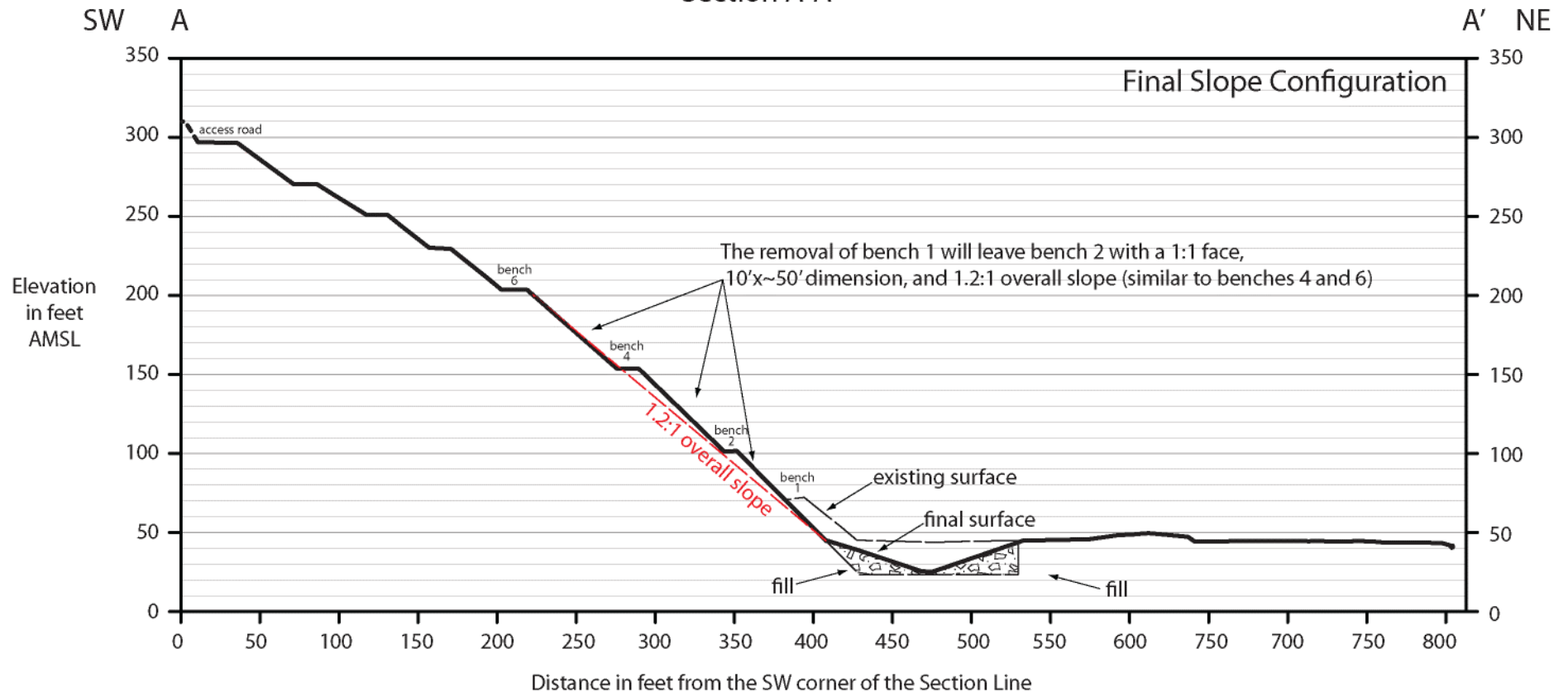
Geology Section  
Cross Section A-A'  
Ten Mile Second Crossing Quarry  
Mendocino County, CA.  
CA Mine ID# 91-23-0028

Figure 3

Jeff Light Geologic Consultation (JLGC)  
12/20/2018

1" = 100' when printed on 8.5" x 11" paper,  
no vertical exaggeration

Ten Mile Second Crossing Quarry  
Mendocino County, CA.  
Section A-A'



notes:

- 1) No modifications to the slope above bench 1 are suggested.
- 2) No analysis of benches 2 through 10 was conducted.
- 2) An evaluation of the overall stability of the quarry was not performed.



Final Slope Configuration  
Cross Section A-A'  
Ten Mile Second Crossing Quarry  
Mendocino County, CA.  
CA Mine ID# 91-23-0028

Figure 4

Jeff Light Geologic Consultation (JLGC)  
12/20/2018

1" = 100' when printed on 8.5" x 11" paper,  
no vertical exaggeration



Application  
for  
Approval of a Reclamation Plan Amendment

**Reclamation Plan**  
  
**for the**  
  
**Ten Mile Second Crossing Quarry**  
**and**  
**Ten Mile Screening Plant**

(California Mine ID #91-23-0020)

Submitted to:  
  
County of Mendocino

Submitted by:  
  
Baxman Gravel Co., Inc.

April 2007

## **FOREWORD**

This document contains a reclamation plan for two separate sites operated by Baxman Gravel Co., Inc. in the Ten Mile River watershed north of Fort Bragg in Mendocino County, California. The two sites include the Ten Mile Second Crossing Quarry and the Ten Mile River Screening Plant located approximately one mile upstream from the quarry site.

Background data and technical reports covering both sites are included as appendices.

A Financial Assurance Cost Estimate (FACE) is not included with this document, but will be provided separately to the County at a later date.

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## **Exhibits (in one location following page 28)**

Exhibit 1:	Regional Location
Exhibit 2A:	Land Ownership: Second Crossing Quarry
Exhibit 2B:	Land Ownership: Ten Mile River Screening Plant
Exhibit 3A:	Existing Conditions: Second Crossing Quarry
Exhibit 3B:	Existing Conditions: Ten Mile River Screening Plant
Exhibit 4A:	Grading Plan: Second Crossing Quarry
Exhibit 4B:	Grading Section: Second Crossing Quarry
Exhibit 4C:	Grading Plan: Ten Mile River Screening Plant
Exhibit 5A:	Reclamation Plan: Second Crossing Quarry
Exhibit 5B:	Reclamation Plan: Ten Mile River Screening Plant

## **APPENDICES**

Appendix A:	Geologic & Geotechnical Reports
Appendix B:	Hydrology and Drainage
Appendix C:	Biological Resources
Appendix D:	Reclamation Specifications
Appendix E:	Assessor's Parcel Maps
Appendix F:	Statement of Reclamation Responsibility and Evidence of Landowner Notification
Appendix G:	Correspondence with National Marine Fisheries Service Regarding the Ten Mile Screening Plant

**COUNTY OF MENDOCINO**  
**DEPT OF PLANNING AND BUILDING SERVICES**  
**501 LOW GAP ROAD, ROOM 1440**  
**UKIAH, CA 95482**  
**Telephone: 707-463-4281**

Case No(s) \_\_\_\_\_  
CDF No(s) \_\_\_\_\_  
Date Filed \_\_\_\_\_  
Fee \$ \_\_\_\_\_  
Receipt No. \_\_\_\_\_  
Received by \_\_\_\_\_

Office Use Only

### APPLICATION FORM

<b>Name of Applicant</b> Baxman Gravel Co., Inc.	<b>Name of Owner(s)</b> Charles Baxman Steve Baxman	<b>Name of Agent</b> Elizabeth Moses
<b>Mailing Address</b> 1221 N. Main St. Fort Bragg, CA 95437	<b>Mailing Address</b> Same	<b>Mailing Address</b> Same
<b>Telephone Number</b> 707-964-4033	<b>Telephone Number</b> Same	<b>Telephone Number</b> Same



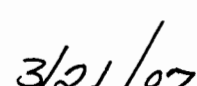

**Assessor's Parcel Number(s)** Quarry: #15-140-51 (160 ac) and #15-140-65 (75 ac)  
Screening Plant: #15-140-46 (240 ac) and #15-140-64 (206.76 ac)

<b>Parcel Size</b> See above <input type="checkbox"/> Square feet <input checked="" type="checkbox"/> Acres	<b>Street Address of Project</b> Ten Mile Road
--	---

#### TYPE OF APPLICATION (Check Appropriate Boxes)

- |   |  |
|---|--|
| <input type="checkbox"/> Rezoning                     | <input type="checkbox"/> Use Permit                                      |
| <input type="checkbox"/> Land Division: Minor         | <input type="checkbox"/> Variance  |
| <input type="checkbox"/> Land Division: Major         | <input type="checkbox"/> General Plan Amendment                          |
| <input type="checkbox"/> Land Division: Parcel        | <input type="checkbox"/> Agricultural Preserve                           |
| <input type="checkbox"/> Land Division: Resubdivision | <input type="checkbox"/> Reversion to Acreage                            |
| <input type="checkbox"/> Exception                    | <input type="checkbox"/> Certificate of Compliance                       |
| <input type="checkbox"/> Modification of Conditions   | <input checked="" type="checkbox"/> Other: Amendment to Reclamation Plan |

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

 Signature of Applicant/Agent	 Signature of Owner
 Date	 Date

## RECLAMATION PLAN

For Compliance with Section 2772, State of California  
Surface Mining and Reclamation Act of 1975

<b>1. Name (if any) of Mineral Property (e.g. "Woodruf Bar").</b>  Ten Mile Second Crossing Quarry Ten Mile Screening Plant (no mining at this site)		<b>2. Owners of Mineral Rights. Check here <input checked="" type="checkbox"/> if owner of property is owner of Mineral rights. (Name, address and telephone number).</b>  Parker Ten Mile Ranch, LLP 1950 Primrose Ave. South Pasadena, CA 91030 (626) 441-3335	
<b>3. Operator (Name, address and telephone number). Check here <input checked="" type="checkbox"/> if applicant is Operator.</b>		<b>4. Agent of Process (Name, address and telephone number). Check here <input checked="" type="checkbox"/> if applicant is Agent of Process. (Person designated by operator as his agent for the service of process).</b>	
<b>5. Location.</b> Ten Mile Road (private)  Quarry: 39°33.112' N, 123°43.276 W Screening Plant: 39°33.570' N, 123°43.462' W			
<b>5(A) Total acreage of ownership(s)</b>  681.76 acres	<b>5(B) Acreage (to be) affected by this operation</b>  14.9	<b>5(C)</b> Section <u>26 and 35</u> Township <u>20N</u> Range <u>17W</u> <u>Mount Diablo</u> <b>B &amp; M</b>	
<b>6(A) Describe the access route to the operation site from the public road (Please note any landmarks that would aid in the location of the site in the field).</b>  Ten Mile Road off of Highway 1 approximately 7 miles north of Fort Bragg. Quarry is approximately 3 road miles west of Highway 1; Screening Plant is approximately 4 road miles west of Highway 1. (See Exhibit 1 of Reclamation Plan)			
<b>6(B) Address of Project:</b>  Ten Mile Road			
<b>7. Attach Location and Vicinity Map. It is suggested that this be shown on a USGS 7-1/2 minute topographic quadrangle sheet (scale: 1" = 2000'). If these are not available, or if the operation is extensive, 15 minute sheets (scale: 1" = 1 mile) may be used. Roads, adjacent towns, etc., should be shown, as well as the site of operation.</b>			
<b>8. What is the present use of this site? Has material been extracted from this site before? If so, when?</b>  Quarry site and Screening Plant site are existing operations presently used for aggregate extraction and processing.			



<p><b>9(A) Brief description of environmental setting of the site and the surrounding areas. Describe existing area, land use, vegetation, and surface water flows on and around the site. Note the number of dwellings within 1/4, 1/2, and 1 mile of the site.</b></p> <p>See Reclamation Plan</p>		
<p><b>9(B) Briefly describe the project site as it exists before the project, including information on topography, soil stability, plants and animals, and any cultural, historical or scenic aspects. Describe any existing structures on the site, and the use of the structures. Attach any photographs of the site that you feel would be helpful.</b></p> <p>See Reclamation Plan</p>		
<p><b>10(A) Proposed starting date of operation.</b></p> <p>Existing operation started 1950</p>	<p><b>10(B) Proposed completion date of operation.</b></p> <p>Estimated 2017</p>	<p><b>10(C) Estimated life of operation.</b></p> <p>Approximately 10 years from 2007</p>
<p><b>11. Will project be phased? If yes, list duration of phases and activities associated with each phase.</b></p> <p>Yes -- See Reclamation Plan</p>		
<p><b>12. Operation will be:</b></p> <p><input type="checkbox"/> Continuous</p> <p><input checked="" type="checkbox"/> Seasonal</p> <p><input type="checkbox"/> Intermittent</p>	<p><b>13. Mineral commodity to be mined:</b></p> <p><input type="checkbox"/> Streamside gravel</p> <p><input checked="" type="checkbox"/> Quarry Rock</p> <p><input type="checkbox"/> Other - Please describe:</p>	
<p><b>14(A) Mineral commodities to be removed per year (cubic yards/year).</b></p> <p>20,000 - 40,000 depending on market demand</p>	<p><b>14(B) Waste retained on the site per year (cubic yards/year).</b></p> <p>None</p>	
<p><b>14(C) Waste disposed of off site per year (cubic yards/year).</b></p> <p>None</p>	<p><b>14(D) Maximum anticipated depth per year (feet/year).</b></p> <p>Not Applicable (not a pit quarry)</p>	

**15. Mining Method (Check all applicable):**

- |   |  |   |
|---|--|---|
| <input checked="" type="checkbox"/> Quarry    | <input type="checkbox"/> Gravel/Sand Pit     | <input type="checkbox"/> Other - Specify: |
| <input type="checkbox"/> Hill Top             | <input type="checkbox"/> Drill and Blast     |   |
| <input checked="" type="checkbox"/> Side Hill | <input type="checkbox"/> Gravel Bar Skimming |   |

**16. If processing of extracted materials is planned to be conducted at or adjacent to the site, briefly describe the nature of the processing and explain disposal method of the tailings or waste from processing.**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Screen | <input type="checkbox"/> Concrete Batch Plant | <input type="checkbox"/> Crusher          |
| <input checked="" type="checkbox"/> Wash   | <input type="checkbox"/> Asphalt Batch Plant  | <input type="checkbox"/> Other - Specify: |

**17. Attach a map of the mined lands and/or suitable aerial photograph showing:**

- (a) Boundaries and topographic details of the site;
- (b) Location of all streams, roads, railroads, water wells, and utility facilities within 500 feet of the site;
- (c) Location of all currently proposed access roads to be constructed in conducting the surface mining operation(s);
- (d) Location of areas (to be) mined, and of waste dumps and sediment ponds.
- (e) The source of map base, orientation (North arrow), and scale (e.g. 1" = 500') of the map.
- (f) Indicate on an overlay of map or by color or by symbol on map those areas to be covered by reclamation plan.
- (g) Acreage \_\_\_\_\_ See Reclamation Plan

**18. Describe the ultimate physical condition of the site and specify proposed use(s), or potential uses, of the mined lands as reclaimed.**

Sites are proposed to revert to open/undeveloped in keeping with surrounding areas and existing timber production.

**19. Provide evidence that all owners of a possessory interest in the land have been notified of the proposed use(s) (Signatures on the application are sufficient).** Evidence provided under separate cover

**20. Describe soil conditions and proposed soil salvage plan.**

See Reclamation Plan

**21. Describe the methods, their sequence and timing, to be used in bringing the reclamation of land to its end state. Indicate on map (Item Number 17) or on diagrams as necessary. Include discussion of the pertinent items listed below:**

- (a) Backfilling and grading.
- (b) Stabilization of slopes.
- (c) Stabilization of permanent waste dumps, tailings, etc.
- (d) Rehabilitation of pre-mining drainage.
- (e) Removal, disposal, or utilization of residual equipment, structures, refuse, etc.
- (f) Control of contaminants, especially with regard to surface runoff and ground water.
- (g) Treatment of streambeds and streambanks to control erosion and sedimentation.
- (h) Removal or minimization of residual hazards.
- (i) Resoiling, revegetation with evidence that selected plants can survive given the site's topography, soil and climate.

See Reclamation Plan

22. If applicant has selected a short term phasing of this reclamation plan, describe in detail the specific reclamation to be accomplished during the first phase.

See Reclamation Plan

23. Describe how reclamation of this site in this manner may affect future mining at this site and in the surrounding area.

Reclamation would not affect future mining at this site or in surrounding areas.

24. List and describe any other related permits and other public approvals required for this project, including those required by county, city, regional, state and federal agencies:

- ☐ Department of Fish and Game: \_\_\_\_\_
- ☐ Army Corps of Engineers: \_\_\_\_\_
- ☐ Regional Water Quality Control Board: \_\_\_\_\_
- ☐ Other: \_\_\_\_\_

The undersigned accepts all responsibility for reclaiming the mined lands in accordance with this Reclamation Plan:

Signature

Date

3/21/07

## AIR QUALITY MANAGEMENT DISTRICT

County Case Number: \_\_\_\_\_

**Applicant's Name & Address:**

Baxman Gravel Co., Inc.  
1221 N. Main Street  
Fort Bragg, CA 95437

**Site:**

Ten Mile Quarry and Screening Plant  
(separate sites)

In order to evaluate the aggregate processing of gravel and any related material processing which may require compliance with the Air Quality Management District Regulations, we will need the following information. Please check the appropriate box indicating the processes that will take place at or near the site described and indicate the amount processed.

☐ Gravel Extraction

☐ Stream \_\_\_\_\_ Cubic Yards Per Day  
☐ Dry Bar \_\_\_\_\_ Cubic Yards Per Day

☒ Screening

☒ Rock, Gravel (all sizes) Approx. 300 Cubic Yards Per Day  
☒ Sand Approx. 125 Cubic Yards Per Day

☒ Crushing 300 Cubic Yards Per Day

☐ Cement Storage

☐ At Site \_\_\_\_\_ Cubic Yard Capacity

☐ Asphalt Batch \_\_\_\_\_ Cubic Yard Capacity

**OPERATION SCHEDULE:**

5.5 Months/Years  
5 Days/Week  
6 Hours/Day

Signature

Date

3/21/07

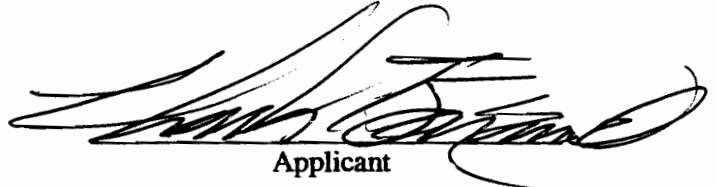
## **INDEMNIFICATION AND HOLD HARMLESS**

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

### **INDEMNIFICATION AGREEMENT**

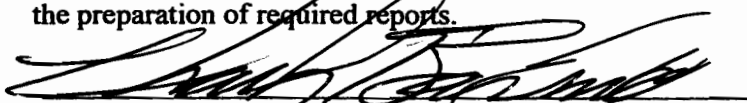
As part of this application, applicant agrees to defend, indemnify, release and hold harmless the County of Mendocino, its agents, officers, attorneys, employees, boards and commissions, as more particularly set forth in Mendocino County Code Section 1.04.120, from any claim, action or proceeding brought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

Date: 3/21/07

  
Applicant

## CERTIFICATION AND SITE VIEW AUTHORIZATION

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

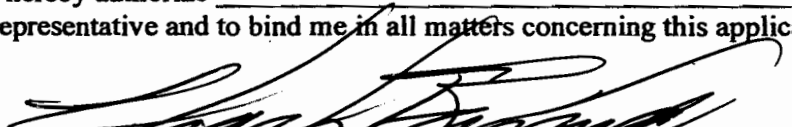
  
Owner/Authorized Agent

3/21/07  
Date

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

### AUTHORIZATION OF AGENT

I hereby authorize \_\_\_\_\_ to act as my representative and to bind me in all matters concerning this application.

  
Owner

3/21/07  
Date

## MAIL DIRECTION

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

Name	Name	Name
Mailing Address	Mailing Address	Mailing Address

**RECLAMATION PLAN**  
**Ten Mile Second Crossing Quarry and Ten Mile Screening Plant**

**Baxman Gravel Co., Inc.**  
**April 2007**

**INTRODUCTION AND BACKGROUND**

Baxman Gravel Co., Inc (Baxman) has prepared this reclamation plan for the existing Ten Mile Second Crossing Quarry and Ten Mile Screening Plant sites in the unincorporated area of Mendocino County north of Fort Bragg. This application is within the scope of the Surface Mining and Reclamation Act (SMARA) and the Mendocino County Surface Mining and Reclamation Ordinance. The purpose of this application is to obtain approval of an amendment to the current reclamation plan that was approved in 1993. For practical purposes and pursuant to the requirements of Section 3502 (d)-(i) of the SMARA Regulations, the amendment would replace the 1993 reclamation plan. Also pursuant to SMARA Regulations, the new Reclamation Plan is designed to comply with current reclamation standards.

This application is supported by several technical studies, which are attached as appendices. A team of consultants, including the following firms and principal individuals, prepared the reclamation plan and related technical studies:

- **Zitney & Associates** (Greg Zitney, Environmental Planner and Certified Wildlife Biologist) – Project Management, SMARA Compliance
- **2M Associates** (Patrick Miller, Landscape Architect; Jane Miller, Horticulturist) – Reclamation Plan, Revegetation Plan and Specifications, Plan Graphics
- **Miller-Pacific Engineering Group** (Mike Dwyer, Engineering Geologist) – Geotechnical Investigations, Reclamation Plan Specifications
- **Balance Hydrologics, Inc.** (Barry Hecht, Principal Hydrogeologist; Mark Woyshner, Hydrologist/Hydrogeologist) – Hydrology, Drainage, and Water Quality Baseline
- **Green Valley Engineering**, (Damon Eric Morelli, Registered Professional Engineer) - Grading Plan
- **Lucy Macmillan**, Wetlands and Regulatory Compliance Specialist – Wetlands, Sensitive Species, Biological Constraints Analysis
- **Ecosystems West Consulting Group** (Roy Buck, Senior Botanist) – Botany, Rare Plant Surveys, Biological Constraints Analysis



Ten Mile Second Crossing Quarry is located approximately eight miles northeast of Fort Bragg in Mendocino County, California. The site has been in operation as a quarry since the 1950's. The reclamation area covers about 9.4 acres on two larger parcels.

The Ten Mile Screening Plant is located approximately eight miles northeast of Fort Bragg in Mendocino County, California, and approximately one mile upstream of the quarry site. The Screening Plant has been in operation since about 1950. The reclamation area covers 5.5 acres on two larger parcels.

The remainder of this document contains information about the project sites and the proposed Reclamation Plan, as well as summaries of the environmental setting and key issues. Exhibits referenced are contained in one location at the end of this document. Technical reports are attached as appendices.

## **REGIONAL LOCATION, AFFECTED PARCELS, AND OWNERSHIP**

The locations of the two sites are shown on Exhibit 1 – Regional Location. Affected parcels and ownership are shown in Table 1 later in the Reclamation Plan section.

All landowners of a possessory interest have been notified of the proposed reclamation plan and end uses for the affected parcels. Evidence of such notice will be provided to the County separately.

## **PROJECT APPLICANT AND OPERATOR**

The project applicant and operator is:

Baxman Gravel Co., Inc.  
1221 N. Main Street  
Fort Bragg, CA 95437

Representative: Elizabeth Moses (Telephone 707-964-4033)

## **GENERAL DESCRIPTION OF ENVIRONMENTAL SETTING**

### **Land Use**

The two sites are located in the Coastal Zone. Existing zoning on the affected parcels is TP-160:FP (Timberland Production District). Mendocino County General Plan designation is FL-160 (Forest Lands - one dwelling unit per 160 acres). The region surrounding the two sites is largely undeveloped and forested.

### **Climate**

The Ten Mile River watershed is located in a Mediterranean-type climate with abundant rainfall and cool temperatures during the winter, and dry, hot summers punctuated with cool breezes and fog along the coast. Long-term rainfall at the nearby Fort Bragg rain gage (National Weather Service station number 043161) averages 40.4 inches per year. The wettest water year was 1998 with a total of 77.3 inches; the driest was 1977 with 16.6 inches. Water year 1988 was also quite dry with only 17.5 inches recorded.

Rainfall increases inland in this part of coastal California. Precipitation nearly doubles across the Ten Mile River watershed from its mouth to the headwater divides.

### **Geology**

#### Quarry Site

The quarry site is within the coastal belt of the Franciscan Complex. Rugged, heavily forested mountains of moderate relief that have been incised by deep canyons characterize the terrain of the coastal belt and the quarry. Rainfall in the coastal belt typically varies between about 24 and 48 inches). Road cuts and streams provide most bedrock exposures. The geology of the quarry area consists of bedrock types common to the coastal belt Franciscan. Within the area of the exposed quarry face these rocks are predominantly sandstone with minor argillite. Three less extensive surficial units were also mapped on the site. They are, Artificial Fill (af), Colluvium (Qc), and Landslides (Qls).

#### Screening Plant Site

The screening plant is located within the northern part of the regional Coast Range Geomorphic Province of California. Topographically, the Province is characterized by northwest-southeast trending mountain ranges of moderate relief with intervening deep canyons or narrow stream valleys. The province is known for its active seismicity, landsliding and erosion. Within the Province there are occasional larger, alluvium-filled, basin-shaped valleys. Along the coastline there is a series of nearly flat marine terraces that topographically ascend easterly in a rough stair-

step fashion. The older and higher of these terraces are less well preserved due to erosion and often deformed by mountain building processes. The town of Fort Bragg and environs are built upon one of the youngest, most well preserved of these terraces. The terraces result from the long-term interaction between changes in sea level and coastal uplift due to a regional component of tectonic compression along the San Andreas Fault.

For more detailed discussion of the geology of the two sites and the area to be mined, see Appendix A: Geologic & Geotechnical Reports.

## **Geomorphology**

### Quarry Site

The geomorphology surrounding the quarry site is controlled by variations in the resistance to erosion of the bedrock and the regional tectonics active in the area. The overall topography surrounding the quarry face is rugged and characteristic of the general region, with many natural slopes ranging from slightly steeper to slightly less than 1:1 (horizontal:vertical). Slopes on wider ridge tops and on river terraces are flat to nearly flat. Slopes on the quarry face range from about 2:1 to very near vertical, with an average of 1.3:1. Slopes immediately above the top of the quarry face average about 1.2:1, while slopes on the quarry floor are very close to flat. A principal geomorphic feature in the vicinity is the narrow, well incised, stream valley of Ten Mile River that meanders northeast to southwest across the northwest structural grain of the region. It empties into the ocean a few miles from the quarry. Principal ridgelines of the region trend northwest, reflecting the geologic grain or structure of the region. Low, relatively wide river terraces border the active channel of the river and, along with the quarry floor, provide a buffer separating the active channel of the river from the quarry face and mining activities. There are no drainage channels through or abutting the quarry face. In general, the direction of surface water runoff does not appear to have been significantly altered by mining.

### Screening Plant Site

The principal geomorphic feature of the area surrounding the screening plant site is the relatively narrow, well incised, stream valley of Ten Mile River that meanders northeast to southwest across the northwest structural grain of the region. It empties into the ocean a few miles from the plant site. Principal ridgelines of the region trend northwest, reflecting the geologic grain or structure of the region. Low, relatively wide river terraces border the active channel of the river and provide a narrow buffer separating the active channel of the river from the processing activities of the plant. The geomorphology of the area is controlled by variations in the resistance to erosion of the bedrock and the regional tectonics active in the area. The overall topography of the region is rugged, with many of the nearby canyon slopes ranging from slightly steeper to slightly less than 1:1 (horizontal:vertical).

See Appendix A: Geologic & Geotechnical Reports for additional discussion.

## **Soils**

### Quarry Site

At the quarry site, dense vegetation and colluvial soils cover the slopes beyond the area disturbed by mining. Natural soils within the quarry have generally been removed and, as a result, some of the quarry face is essentially bare rock, except for thin deposits of loose colluvial rock ravel and slough that has worked its way down slope. Colluvial soils also can be seen in old road cuts to the east and slightly beyond the top of the quarry. At these locations, the colluvium was observed to be from three to over six feet in thickness, to contain several percent of weathered rock fragments and to overlie severely weathered sandstone. The soils are very light brown to slightly reddish brown in color, mostly firm to locally crumbly and porous and field classified as gravelly, clayey silts. In their undisturbed state they are covered with a few to several inches of darker colored organic matter. These soils could be highly susceptible to accelerated erosion if subjected to concentrated runoff, especially if protective vegetative cover is removed. Unconsolidated soil-like materials are not present on the quarry face, except for the described loose accumulations of rock ravel (colluvium) locally present on slightly flatter slopes.

### Screening Plant Site

Natural soils at the screening plant site have been covered by a layer of crushed rock and sand to provide a suitable working surface for heavy equipment. Soils beneath and exposed on terrace surfaces up and downstream are predominantly Bigriver loamy sand, 0 to 5% slopes. On a regional basis, the soil is a pale brown and very pale brown loamy sand less than a foot thick. The subsoil is variegated, brown, yellowish brown and grayish brown, stratified loamy sand. Permeability is moderately rapid and available water capacity is moderate. Surface runoff is slow and the hazard of erosion is slight. Note that the soil thicknesses are based on regional information and local conditions adjacent to the plant may vary from regional values.

For a more detailed description of soils on the two sites, see Appendix A: Geologic & Geotechnical Reports.

## **Hydrology/Drainage**

### Quarry Site

Mean annual precipitation at the quarry site is approximately 50 inches per year, less than the basin wide average of 63 inches per year. Comparing the Middle Fork Ten Mile River mean annual runoff of 36 inches with the mean annual basin precipitation, regional runoff is estimated at 57 percent of precipitation. Runoff from lands within the quarry boundaries should be

somewhat higher, given steep slopes over most of the site, plus exposed rock and compacted fill slopes.

The majority of storm runoff from the existing quarry hillside currently collects in the pit at the base of the hillside, and then infiltrates, evaporates, or is pumped off when necessary. The northern lowermost slopes drain to the one-acre flat to gently sloping fill at the entrance to the site, which infiltrates into the fill and drains to the Ten Mile River. A roadside ditch channels offsite runoff westward, through culverts beneath the Ten Mile Road, and to a broad floodplain meadow adjacent to the Ten Mile River.

When reclaimed, surface drainage from the 13-acre quarry site will flow to a minimum 2 acre-foot sediment retention basin, located at the toe of the mined slope. The pond is designed for retention of coarse sediment and will be periodically emptied and maintained for this purpose. The upper benched cut slopes will drain along the benches and to a minimum 18" diameter pipe, located in the south side of the remaining area to be mined. The pipe transmits runoff to the sediment basin.

Time of concentration of surface drainage to the sediment basin is less than 10 minutes. A 100-year recurrence storm for the 10-minute time of concentration will yield peak flow of 49 cubic feet per second (cfs). Although the sediment basin is not designed for flow retention following reclamation, a 100-year storm would fill the basin in approximately 30 minutes.

When full, outflow from the sediment basin will flow through a minimum 1-1/2 foot wide channel to the existing roadside drainage ditch, and through culverts beneath the road to the floodplain meadow to the northwest. A 100-year storm would likely flow onto Ten Mile River Road.

On a seasonal basis, little effect will be seen from either the existing condition or the reclaimed conditions. Given the low infiltration rate of the reclaimed quarry, runoff from the site is estimated at 90 percent of precipitation, equivalent to about 56 acre-feet annually, on average. Mean annual runoff from Ten Mile River above Second Crossing Quarry is about 160,000 acre-feet, dwarfing runoff from the site, which is less than 0.04 of 1 percent of the average watershed yield.

### Screening Plant Site

Mean annual precipitation at the screening plant site is approximately 50 inches per year. Basin wide, precipitation averages 63 inches per year, and when compared to the Middle Fork Ten Mile River mean annual runoff of 36 inches, regional runoff is estimated at 57 percent of precipitation. Runoff from the screening plant site could be somewhat lower than the basin value, given the slightly lower precipitation and the gently sloping site, resulting in relatively higher infiltration. However, given that the site is located on the floodplain, during very wet periods and large storms the water table could rise to or very near the surface for a limited period of time,

resulting in temporarily-saturated conditions and transient runoff rates approaching 100 percent for a portion of major storms.

Slopes at the 5.5-acre screening plant site are gentle, averaging about 2 percent. Existing surface drainage from the relatively flat site flows to a sediment retention pond located on the northern portion of the site. Pond water is periodically pumped through a 4-inch pipe to a drainage ditch on the west boundary of the site. Water then gravity flows south and offsite to the floodplain meadow that adjoins the site. When reclaimed, the site will be ripped to a 1-foot depth and graded at a 2 percent slope (Exhibit 5B).

The drainage area of the site is about 0.01 percent of the contributing upstream drainage area of the Ten Mile River. Given the flat to gently sloping topography of the site, when reclaimed with grass and young alders, runoff from the site is estimated to be at most 30 percent of mean annual precipitation, equivalent to about 7 acre-feet per year. An estimated seven acre-feet per year is expected to infiltrate into the soils and flow subsurface to the river, also augmenting base flows.

For more information on hydrology of the two sites, see Appendix B: Hydrology and Drainage.

## **Biological Resources**

### Quarry Site

No special-status plant species were observed on the quarry site during surveys conducted in 2004 and 2005. Because of the highly disturbed nature of most of the site, no special-status species were expected there. However, the upper portion of the quarry site, at the edge of mature mixed redwood/Douglas fir forest, may have provided suitable habitat for special-status species of forest habitats, including Bolander's reed grass (*Calamagrostis bolanderi*), coast lily (*Lilium maritimum*), running-pine (*Lycopodium clavatum*), leafy-stemmed mitrewort (*Mitella caulescens*), great burnet (*Sanguisorba officinalis*), and maple-leaved checkerbloom (*Sidalcea malachroides*). Focused surveys conducted during the appropriate time of year in 2005 did not reveal the presence of any of these species in forest habitats that would be affected by the quarry, so no impacts to special-status plants are likely to occur, and no mitigation is required.

Regarding special-status wildlife, only the western tailed frog, foothill yellow-legged frog, Del Norte salamander, and raptors have the potential for being affected by disturbance to the forest habitat at the top of the quarry. Pre-disturbance surveys for nesting birds and coordination with CDFG would determine the need for mitigation.

### Screening Plant Site

No special-status plant species were observed on the screening plant site during the August 16, 2004 reconnaissance. It is very unlikely that the site supports any special-status plants because of its highly disturbed condition.

Regarding special-status wildlife, no species have been identified that could potentially be adversely impacted by the reclamation plan for the screening plant site.

For a detailed discussion of biological resources of the two sites, see Appendix C: Biological Resources.

### **Water Use and Quality**

#### Quarry Site

A minor amount of water is trucked from the screening plant site and is used for dust control; otherwise, water is not supplied or used on the quarry site.

Water quality appears to be suitable for all uses. Groundwater salinities are typically very low and do not constrain future use of the water. No naturally occurring constituents of concern have been identified.

Turbidity in storm runoff is expected to be substantially lower following reclamation because: (a) existing roads and other disturbed surfaces will be revegetated, with no further disruption planned; (b) grading of the slopes, in response to recommendations of the project geotechnical engineer, will minimize future slides, slip-outs, and slope disturbances; (c) installation of the drainage system will reduce erosion from existing rilled drainages; (d) reclamation grading will eliminate existing compacted or rutted drainages, slowing flow into the sediment retention pond, and allowing sediment to settle before entering the pond; and (e) periodic maintenance, emptying, re-grading and improving the pond and drainage system will allow additional settlement in the pond.

#### Screening Plant Site

Water is used at the screening plant to wash graded material. Approximately 20,000 gallons of water per day is pumped from the Ten Mile River and used in the screening and washing process. The rinse water is drained through a 12-inch buried pipe and storm runoff from the 5.5-acre site is collected in a sediment basin located at the northern portion of the site. Water pumped from the pond is used to irrigate grassy fields adjoining the site and for dust control at both the screening plant site and quarry site. About 2,000 gallons per day is used for dust control. Sediment retained in the pond is removed as necessary and either used in reclamation of



nearby mined lands, sold directly from the site, or is relocated to existing storage areas at the Baxman Fort Bragg operations for sale at a later time.

Mineral water quality appears to be suitable for all uses. Groundwater salinities are typically very low and do not constrain future use of the water. No naturally occurring constituents of concern have been identified.

Refer to Appendix B: Hydrology and Drainage for additional information.

## **RECLAMATION PLAN**

This Reclamation Plan is for two sites located in Mendocino County, California along the Ten Mile River that are owned and operated by Baxman Gravel Co. Inc. (Baxman). These sites are: (1) the Second Crossing Quarry; and (2) the Ten Mile River Screening Plant (see Exhibit 1 - Regional Location).

### **Plan Organization**

This Reclamation Plan provides an overview of reclamation activities and specific reclamation descriptions organized around the “Reclamation Plan Review Checklist” of the California Department of Conservation’s Office of Mine Reclamation (OMR), as referenced in Mendocino County’s Surface Mining and Reclamation Ordinance Chapter 22.16.

This Reclamation Plan reflects the requirements associated with the reclamation of mined sites contained in the following:

- California Surface Mining and Reclamation Act (SMARA) of 1975 as amended and associated regulations (Revised October 2006).
- Mendocino County Surface Mining and Reclamation Ordinance Chapter 22.16.

### **Area Covered Under Reclamation Plan**

This Reclamation Plan covers all areas of the Second Crossing Quarry site and Ten Mile River Screening Plant site that are disturbed by mining/processing activities. The two sites are connected by the private Ten Mile Haul Road. Additionally, there is a bridge across the Ten Mile River that provides access to the screening plant site. The Ten Mile Haul Road and bridge are not part of this Reclamation Plan.

### **Reclamation And Finish Grading Plan Exhibits**

The Reclamation Plan includes the following exhibits:

Exhibit 1: Regional Location

- Exhibit 2A: Land Ownership: Second Crossing Quarry
- Exhibit 2B: Land Ownership: Ten Mile River Screening Plant
- Exhibit 3A: Existing Conditions: Second Crossing Quarry
- Exhibit 3B: Existing Conditions: Ten Mile River Screening Plant
- Exhibit 4A: Grading Plan: Second Crossing Quarry
- Exhibit 4B: Grading Section: Second Crossing Quarry
- Exhibit 4C: Grading Plan: Ten Mile River Screening Plant
- Exhibit 5A: Reclamation Plan: Second Crossing Quarry
- Exhibit 5B: Reclamation Plan: Ten Mile River Screening Plant

## **Reclamation Overview**

### **Reclaimed Landscapes**

#### **A: Second Crossing Quarry Site**

Reclamation of the Second Crossing Quarry Site will involve creating three general landscapes. These are:

**Terraced Cut Slopes:** Terraced cut slopes with a gradient not steeper than 1.5:1 (horizontal: vertical) will be created directly through mining activities (see Exhibits 4A and 4B). Finished slopes will be open rock. A minimum of 1 foot of topsoil will be placed on all benches and hydroseeded with a native erosion control mixture of grasses and other herbaceous species. Approximately 110,000 cubic yards of material that will not be used in reclamation of the quarry site will be available for processing as marketable gravel.

**Exposed Rock Slopes:** Existing exposed rock slopes located near the center of the quarried hillside will be retained in their present condition.

**Quarry Floor:** The existing quarry floor will be contoured in such a way as to create a sediment basin at the base of the mined slopes. A gradient not steeper than 3:1 (horizontal:vertical) will be created (see Exhibits 4A and 5A). The remaining quarry floor will be ripped to a 12" depth. A minimum of 1 foot of topsoil will be placed on the quarry floor and hydroseeded with a native erosion control mixture of grasses and other herbaceous species.

#### **B: Ten Mile River Screening Plant**

After reclamation, the Ten Mile River Screening Plant site will be a relatively level to gently sloping meadow similar to other floodplain meadows up and downstream along the river in the vicinity of the site (See Exhibit 5B).

### **Lands Included in Reclamation Plan**

Exhibits 2A and 2B illustrate parcels both on-site and adjacent to the project sites. All lands involved with mining and reclamation activities are leased from the Parker Trust. Table 1 lists all the parcels leased by Baxman Gravel Co. Inc. as well as their status/action relative to the Reclamation Plan.

## **Reclamation Phasing**

Reclamation at the Second Crossing Quarry will occur concurrently with those mining activities that remain. Reclamation at the Ten Mile River Screening Plant will take place the first summer after operations are concluded. The steps illustrated in the exhibits and the associated reclamation activities are outlined in Table 2.

**TABLE 1: Ownership**

<b>Second Crossing Quarry Assessor Parcel No. / Owner</b>	<b>Parcel / Lease Area Acreage</b>	<b>Status/Action</b>
APN 15-140-51(portion) Parker Ten Mile Ranch LLP	<b>Lease Area:</b> 6.8 acres in reclamation area	<ul style="list-style-type: none"> <li>• Leased lands</li> <li>• Existing Vested Right mine</li> <li>• Removal of all mining equipment</li> <li>• Terracing, regrading of mined floor and revegetation of disturbed areas per Reclamation Plan</li> </ul>
APN 15-140-65 (portion) Parker Ten Mile Ranch LLP	<b>Lease Area:</b> 3.1 acres in reclamation area	<ul style="list-style-type: none"> <li>• Leased lands</li> <li>• Existing Vested Right mine</li> <li>• Continued mining with concurrent reclamation</li> <li>• Terracing, regrading, and revegetation of disturbed areas per Reclamation Plan</li> </ul>
<b>Ten Mile River Screening Plant Assessor Parcel No. / Owner</b>	<b>Parcel / Lease Area Acreage</b>	<b>Status/Action</b>
AP 15-140-46 (portion) Parker Ten Mile Ranch LLP	<b>Lease Area:</b> 3.2 acres in reclamation area	<ul style="list-style-type: none"> <li>• Leased lands</li> <li>• Existing Vested Right screening site</li> <li>• Removal of processing equipment</li> <li>• Ripping, resoiling, regrading, and revegetation of disturbed areas per Reclamation Plan</li> </ul>
AP 15-140-64 (portion) Parker Ten Mile Ranch LLP	<b>Lease Area:</b> 2.6 acres in reclamation area	<ul style="list-style-type: none"> <li>• Leased lands</li> <li>• Existing Vested Right screening site</li> <li>• Removal of processing equipment</li> <li>• Ripping, resoiling, regrading, and revegetation of disturbed areas per Reclamation Plan</li> </ul>

**TABLE 2: Reclamation Phasing**

<b>Reclamation Phase/Timing</b>	<b>Reclamation Activities</b>
Initial Activities - Dry Season (May 1 to October 15) through approximately 2012	<u>Second Crossing Quarry</u> <ul style="list-style-type: none"> <li>• Construct safety fence</li> <li>• Clearing and stockpiling of topsoil and overburden to initiate ongoing mining activities in upper slope areas</li> <li>• Stockpiling initial overburden and topsoil at designated areas</li> <li>• Construction of the sediment basin at lower elevations of the mined quarry floor and drainage discharge system along Ten Mile Haul Road</li> <li>• Annual monitoring activities related to constructed sedimentation basin and drainage discharge system</li> <li>• Concurrent reclamation of mined terraced slopes and filled slopes in quarry floor</li> <li>• Interim hydroseeding/mulching of constructed slopes and stockpiled materials per Reclamation Plan.</li> <li>• Hydroseeding/mulching all disturbed lands not under active mining per Reclamation Plan and Specifications</li> <li>• Annual monitoring report</li> </ul> <u>Ten Mile River Screening Plant</u> <ul style="list-style-type: none"> <li>• Annual monitoring report</li> </ul>
Step 2 – Dry Season (May 1 to October 15) through approximately 2013.	<u>Second Crossing Quarry</u> <p>Removal of all equipment and facilities except property line and safety fencing, entrance gate and road, and sediment basin and drainage facilities</p> <ul style="list-style-type: none"> <li>• Ripping quarry floor area to a depth of 12”</li> <li>• Hydroseeding/mulching all remaining disturbed lands per Reclamation Plan and Specifications</li> <li>• Annual monitoring report</li> </ul> <u>Ten Mile River Screening Plant</u> <ul style="list-style-type: none"> <li>• Removal of all structures and facilities except property line fencing, entrance gate and road</li> <li>• Filling of sedimentation basin and finished grading</li> <li>• Ripping plant area to a depth of 12”</li> <li>• Hydroseeding/mulching all disturbed lands not under active mining per Reclamation Plan and Specifications</li> <li>• Annual monitoring report</li> </ul>
Step 3 – from the end of mining / active reclamation activities in approximately 2013 through 2017.	<u>Second Crossing Quarry and Ten Mile River Screening Plant</u> <ul style="list-style-type: none"> <li>• Annual monitoring activities related revegetation program</li> </ul>

**Surface Mining And Reclamation Act Checklist****SMARA 2772(c)(1) Name and address of operator/agent.****Project:** Ten Mile River Reclamation Plan**Location:** Ten Mile Road, Mendocino County, California (private road) (see also Exhibit 1 - Regional Location)

**Owner:** Baxman Gravel Co. Inc.

**Address:** 1221 N. Main Street  
Fort Bragg, CA 95437

### **Mining Operations and Closure**

#### **SMARA 2770.5                      100-year flood, Caltrans contact.**

The project sites are located adjacent to Ten Mile River. The Second Crossing Quarry site is located outside of the 100-year floodplain of the river. The majority of the Ten Mile Screening Plant site is located within the 100-year floodplain of the river. Appendix B describes the hydrological characteristics of the area.

#### **SMARA 2772(c)(2)    Quantity & type of minerals to be mined.**

Continued mining will produce approximately 110,000 cubic yards of aggregate materials over the remaining life of the project (See Appendix A : Geologic & Geotechnical Reports).

#### **SMARA 2772(c)(3)    Initiation and termination date.**

Based on the estimate of reserves available, mining would be completed in approximately 2012, or possibly sooner depending on market demand. At the Second Crossing Quarry site reclamation will be conducted concurrently with mining activities. Final reclamation activities expected to be completed by the first dry season after mining ceases. Monitoring of revegetated areas will extend for a period of five years. Reclamation monitoring is expected to be completed by approximately 2017 assuming all success criteria are met.

#### **SMARA 2772(c)(4)    Maximum anticipated depth of mining.**

The historic upper limit of mining occurred at approximately the 375' elevation. Future mining will not extend above approximately the 325' elevation to the quarry floor at elevation 40'. Past mining has occurred to approximately the 20' elevation below the existing quarry floor.

#### **SMARA 2772(c)(5)    Size, legal description, including map with boundaries, topography, geology, streams, channel cross-sections, topsoil stockpiles, roads, equipment storage, RR, utilities within or adjacent to mine.**

Existing mining operations occur within APN 15-140-51 and APN 15-140-65 (see Exhibit 2A - Land Ownership and Exhibit 3A - Existing Conditions). A mining lease exists on portions of the parcels. At the Ten Mile Screening Plant site, existing operations occur within APN 15-140-46 and APN 15-140-64 (see Exhibit 2B - Land Ownership and Exhibit 3B - Existing Conditions). A mining lease exists on portions of the parcels. Appendix E provides Assessor's maps for involved parcels. Descriptions of regional and site geology are provided in Appendix A

**SMARA 2772(c)(6) Mining plan and time schedule that provides for completion of mining on each segment so that reclamation can be concurrent or phased ASAP.**

Mining and reclamation phasing is described in Table 2.

**SMARA 2772(c)(9) Impact of reclamation on future mining.**

As part of the Reclamation Plan, all mining facilities with the exception of property line and safety fencing, entrance gate and road, and the sediment basin and drainage facilities will be removed from the Second Crossing Quarry site. Reclamation of the property would not preclude future on-site mining. However, given the property owners' current wishes, future mining in the general area is unlikely.

**CCR 3502 (b)(2) Public health and safety (exposure).**

**CCR 3713(b) All portals, shafts, tunnels, or openings, gated or protected from public entry, but preserve access for wildlife.**

The Second Crossing Quarry site is accessed via the Ten Mile Haul Road (a private road). It is located approximately 2.75 miles from Highway 1, the nearest public road. The Ten Mile Screening plant is located approximately 0.8 miles beyond the Second Crossing Quarry site. Both sites are gated and locked when not operational. "No Trespassing" signs are located at the gate.

All existing on-site facilities will be removed upon completion of mining activities, with the exception of safety and property line fencing, entrance gates and access routes, and the sediment basin and drainage facilities at the Second Crossing Quarry site.

**CCR 3502 (b)(5) Disposition of old equipment.**

**CCR 3509(a) Equipment stored in designated area and waste disposed of according to ordinance.**

Not applicable.

**CCR 3509(b) Structures and equipment dismantled and removed.**

All existing on-site facilities will be removed upon completion of mining activities, with the exception of safety and property line fencing, entrance gates and access routes, and the sediment basin and drainage facilities at the Second Crossing Quarry site.

**CCR 3713(a) Drill holes, water wells, monitoring wells completed or abandoned in accordance with laws.**

No wells exist on the project sites.

## **End Land Use**

### **SMARA 2772(c)(7) Description of proposed subsequent use or potential use.**

Mendocino County's land use designation for the project sites is Timberland Production (TP). The reclaimed end land use is open/undeveloped. This Reclamation Plan does not preclude future consideration for other allowable uses based on Mendocino County's land use designation for the site.

### **SMARA 2772(c)(8) Description of reclamation measures adequate for proposed end use.**

The following reclamation measures related to the proposed end use of open/undeveloped for the project sites will be implemented.

#### **Second Crossing Quarry and Ten Mile Screening Plant sites:**

- Protecting and preserving existing native trees and shrubs outside the reclamation boundary.
- Dismantling and removing all existing facilities on the sites with the exception of safety and property line fencing, entrance gates and access roads, and the sediment basin and drainage facilities at the Second Crossing Quarry site.
- Installing effective erosion control measures to prevent on-site surface erosion and manage on and off-site water quality.
- Ripping compacted areas (quarry floor and screening plant area) to a depth of 12".
- Hydroseeding/mulching all disturbed areas with appropriate erosion control seed mixes.

#### **Second Crossing Quarry:**

- Contouring and tapering the edges of terraced slopes to meet safe slope stability requirements and blend into the existing setting as seen from middleground views.
- Stockpiling, placement, and recontouring soils on the mined terraced slopes and the quarry floor in a way that blends with the existing topography of the area.
- Placement of soil to a depth of 12" over terraced benches.
- Expanding a berm and installing screening plants parallel to the Ten Mile Haul Road to restrict views into the site as seen from Ten Mile Haul Road.

#### **Ten Mile Screening Plant:**

- Backfilling the existing sediment basin to conform with surrounding grades such that an open meadow landscape may be established.

### **CCR 3707 Performance Standards for Prime Agricultural Land.**

Not applicable.

### **CCR 3708 Performance Standards for Other Agricultural Land**

Not applicable



## **Geotechnical Requirements**

### **CCR 3502(b)(3) Final slopes: consider physical properties and landscaping. Stability analysis for final slopes that approach critical gradient.**

After reclamation, the Second Crossing Quarry site may be characterized as comprising three general zones as illustrated on Exhibit 5A. These are:

- (1) Terraced Cut Slopes: Terraced cut slope areas with a 1.5:1 gradient (horizontal to vertical) with benches averaging 15 feet wide (including drainage channels) every 30 feet vertically. See Exhibits 4A and 4B, and Appendix A: Geologic & Geotechnical Reports. The area is approximately 2.1 acres in size.
- (2) Cut Slopes: Exposed rock slopes (existing). Due to its height, steepness (overall approximately 1.3:1), and long-term satisfactory performance, the geotechnical consultant judges that the existing quarry face is below its Critical Gradient and thus can be left as-is. Slough that periodically moves down the face will be captured by the proposed catchment basin along the base of the face. The capacity of this catchment is also sufficiently large to capture slide debris that may be generated by failure of the large incipient slide located upslope of the top of the quarry face.
- Slopes in this area average an overall gradient of approximately 1.3:1 Slough that periodically moves down the face will be captured by the proposed catchment basin along the base of the face. See Appendix A: Geologic & Geotechnical Reports.
- (3) Quarry Floor: a relatively level area draining to the sediment basin with slopes on the north, east, and south sides of a 3:1 gradient. The quarry floor and sediment basin is approximately 3.3 acres.

### **CCR 3704(f) Final cut slopes have minimum factor of safety for end use and conform with surrounding topography.**

Final cut slopes at the Second Crossing Quarry will be created through the mining process (see Exhibits 4A and 4B). These slopes will not exceed a 1.5:1 average gradient. Existing, open rock slopes will be retained. Sediment basin slopes on the north, east, and south sides will not exceed a 3:1 gradient and are cut slopes. These slopes are based on the recommendations made in Appendix A: Geologic & Geotechnical Reports. These final slopes are compatible with the open/undeveloped end use.

### **CCR 3502(b)(4) Disposition of fill materials considered. Foundation fills for end use in conformance with current engineering technology.**

The proposed end use is open/undeveloped. No structures requiring foundations are proposed as part of this reclamation plan.

**CCR 3704(a) For urban use, fill compacted in accordance with UBC, local grading ordinance, or other methods approved by the lead agency.**

The end use is open/undeveloped consisting of open meadows and stable hillside slopes that are not intended to support any urban uses.

**CCR 3704(b) For resource conservation, compact to standard for that end use.**

The end use is open/undeveloped. The reclamation intent is to create safe, stable slopes and open meadow areas that can support herbaceous plant growth.

**CCR 3704(d) Final reclamation fill slopes not to exceed 2:1, except when allowed by site-specific engineering analysis, and can be revegetated.**

As depicted on Exhibit 4A - Grading Plan: Second Crossing Quarry, the fill slope areas to be created will not exceed a 2:1 (horizontal to vertical) gradient. There will be no fill slopes at the Ten Mile Screening Plant site.

**CCR 3704(e) At closure, final landforms of fills conform with surrounding topography or end use.**

The general angles and edges of cut slopes will be contoured to blend naturally with the existing topography and avoid sharp-appearing angles (see Exhibit 4A - Grading Plan: Second Crossing Quarry, and Exhibit 4C - Grading Plan: Ten Mile River Screening Plant).

## **Hydrology and Water Quality**

**CCR 3710(a) Surface and groundwater protected in accordance with Porter-Cologne and Clean Water Acts (RWQCB/SWRCB).**

During operations, onsite drainage at both sites is directed to sediment basins where sediments are removed from runoff before it exits the site. At the Screening Plant site, winterization steps include removal of vehicles and portable motor equipment from the floodplain.

**CCR 3706(b) Water quality, recharge, and groundwater storage that is accessed by others shall not be diminished, except as allowed by plan.**

**CCR 3503(b)(2) Substantially prevent siltation of groundwater recharge areas.**

With continued operation and maintenance of the sediment basins at both sites, water quality and quantity of groundwater will be unaffected and siltation of groundwater recharge areas will not occur.

**SMARA 2773(a) Site-specific sediment and erosion control criteria for monitoring compliance with approved reclamation plan.**

**CCR 3503(a)(3) Erosion control facilities constructed and maintained where necessary.**

At the Second Crossing Quarry site, the sediment and erosion control features include: terraced benches with constructed drainage channels, a storm drain system, sediment basin, overflow channel, and erosion control hydroseeding/mulching (see Exhibits 4A and 5A). After reclamation, the Ten Mile Screening Plant site will consist of a relatively level to gently sloping meadow. The existing sediment basin will be filled and brought to grade with the surrounding landscape (see Exhibits 4C and 5B). No additional erosion control facilities are required.

**CCR 3503(b)(1) Settling ponds used where they will provide significant benefit to water quality.**

At the Second Crossing Quarry site, runoff from the terraced slopes will be collected and diverted into an approximately 8-acre-foot sediment basin (see Exhibits 4A and 5A). The remainder of the quarry floor will be graded to also flow into the sediment basin. Overflow drainage from the pond will be directed via a new drainage channel to an existing channel located along the shoulder of Ten Mile Haul Road where stormwater is then diverted to an existing 18" diameter culvert that passes under the road. Stormwater is discharged into an open meadow with the discharge point set back approximately 325 feet from Ten Mile River. The Ten Mile Screening Plant site will be graded so that it will sheet drain in a southwesterly direction downstream toward Ten Mile River (see Exhibits 4C and 5B). No additional erosion control facilities are required.

**CCR 3503(e) Grading and revegetation to minimize erosion and convey surface runoff to natural drainage courses or interior basins. Spillway protection.**

All drainage from the Second Crossing Quarry site now is directed to an existing channel located along the shoulder of Ten Mile Haul Road where it is discharged into an open meadow with the discharge point set back approximately 325 feet from Ten Mile River. After reclamation, this drainage pattern will remain with an approximately 8-acre-foot sediment basin created through which all drainage from the terraced slopes and quarry floor will be directed. An appropriately sized overflow channel will be installed to direct storm runoff from the basin into the existing drainage facilities along the Ten Mile Haul Road. (see Exhibit 4A).

After reclamation, the Ten Mile Screening Plant site will sheet drain through an open meadow landscape in a southwesterly direction downstream toward Ten Mile River (see Exhibit 5A).

Appendix B describes the hydrological characteristics of the area and design parameters for the storm drainage facilities.

**CCR3706(c) Erosion and sedimentation controlled during all phases of construction, operation, reclamation, and closure of surface mining operation to minimize siltation of lakes and water courses per RWQCB/SWRCB.**

Ongoing erosion control measures include:

- Disturbed areas not within active mining areas to receive annual hydroseeding/mulching with a native erosion control mix.
- Use of straw bales, straw rolls, and erosion control blankets where necessary.
- The overflow point of the Second Crossing Quarry sediment basin will be protected from erosion by use of rip-rap and straw bales. To prevent escape of silt or sediment, silt fences or equivalent structures would be placed around all interim soil and silt stockpiles and at the overflow and discharge points of the sediment basins.

To further prevent erosion and sedimentation, all grading activities will be limited to the dry season (May 15 to October 15). All areas disturbed by mining or reclamation activities will be hydroseeded prior to October 15 of each year.

For inspection purposes, performance criteria for erosion control are as follows: Any area larger than 500 square feet on the site that receives an average evaluation score of Class 2 as stated in Table 3 (or higher) that persists for more than one year will be investigated. The investigator will determine the need for remedial measures. Areas receiving an average score of Class 3 or higher will receive treatment to correct the problem as set forth in the discussion of remedial measures (Table 4). Any observable reason for failure will be noted and the appropriate remedial measure stated as part of the annual monitoring report.

**Table 3: Qualitative Descriptions of Soil Surface Status**

CLASS 1:	No soil loss or erosion; topsoil layer intact, vegetation established.
CLASS 2:	Soil movement slight and difficult to recognize; small deposits of soil in form of fans or cones at end of small gullies or fills, or as accumulations back of grass plugs.
CLASS 3:	Soil movement or loss more noticeable; topsoil loss evident, with some plants on pedestals or in hummocks; rill marks evident. Poorly dispersed litter and bare spots not protected by litter.
CLASS 4:	Soil movement and loss readily recognizable; topsoil remnants with vertical sides and exposed plant roots, roots frequently exposed, litter in relatively small amounts and washed into erosion protected patches.
CLASS 5:	Advanced erosion; active gullies and rills greater in cross section than 12 square inches exceeding 10 feet in length, steep sidewalls on active gullies; well-developed erosion pavement on gravelly soils, litter mostly washed away.

**Table 4: Remedial Measures For Erosion Control**

CLASS 1:	No action required. Continue observation.
CLASS 2:	Document and continue observation. Mulch limited critical areas with weed-free straw or rice mix @ 2000 lbs per acre on slopes less than a 3:1 gradient or at rate of 3000 lbs. per acre on 3:1 gradient slopes or steeper. Use straw bales, straw rolls, and erosion control blankets where necessary.
CLASS 3:	Mulch entire area with weed-free straw or rice mix @ 3000 lbs per acre. Use of straw bales, straw rolls, and erosion control blankets where necessary.
CLASS 4:	Regrade area to distribute and prevent concentration of surface flows. Direct runoff to established swales. Mulch intervening bare areas. Use straw bales, straw rolls, and erosion control blankets where necessary.
CLASS 5:	Regrade area to distribute and prevent concentration of surface flows. Direct runoff to established swales. Arrest gully development by placement of graded rock interceptors or straw bales to slow concentrated runoff within 1 week following any rainfall event. Mulch intervening bare areas and heavy equipment-impacted areas. Use straw bales, straw rolls, and erosion control blankets where necessary.

**CCR 3706(d) Surface runoff and drainage controlled to protect surrounding land and water resources. Erosion control methods designed for not less than 20 year/1 hour intensity storm event.**

At the Second Crossing Quarry site, an appropriately sized overflow channel designed for not less than 20 year/1 hour intensity storm event will be constructed to direct storm runoff out of the sediment basin into the existing drainage facilities along Ten Mile Haul Road (see Exhibits 4A and 4B). After reclamation, the Ten Mile Screening Plant site will sheet drain

toward Ten Mile River through a shallow gradient open meadow landscape (see Exhibit 4C). Appendix B describes the hydrological characteristics of the area.

**CCR3706(e) Altered drainages shall not cause increased erosion or sedimentation.**

At the Second Crossing Quarry site the existing drainage patterns leaving the site will be retained. The sediment basin is intended to reduce erosion potential and sedimentation into Ten Mile River. The grading of the Ten Mile Screening Plant site will consist of a shallow gradient, open meadow landscape that will sheet drain in a downstream direction toward Ten Mile River. (see Exhibit 4C).

**SMARA 2773(a) Sediment and erosion control monitoring plan specific to property.**

During mining and reclamation activities throughout the life of the quarry and processing sites, site inspections will be made after the first heavy rains of the season to determine the effectiveness of erosion control measures and if any remedial actions are warranted. Afterward, inspections will be made monthly or as necessary during the rainy season.

**SMARA 2772(c)(8)(A) Description of contaminant control and mine waste disposal.**

**CCR 3503(d) Disposal of mine waste and overburden shall be stable and not restrict natural drainage without suitable provisions for diversion.**

**CCR 3503(a)(2) Overburden stockpiles managed to minimize water and wind erosion.**

**CCR 3712 Mine waste and tailings, and mine waste disposal units governed by SWRCB/IWMB (Article 1, Subchapter 1, Chapter 7, Title 27, CCR).**

The continued mining of the Second Crossing Quarry site will not generate any new mining waste. Trees from the area of the project to be mined will be harvested and removed from the site. Slash will either be mulched and spread over the final slopes, or buried in nearby timber-harvest landing areas. Initial overburden and topsoil to be removed for mining will be stockpiled and hydroseeded/mulched to minimize water and wind erosion. All reclamation grading activities will occur during the dry summer months. Winterization steps include removal of vehicles and portable motor equipment from the floodplain. All hydroseeding/mulching will occur prior to October 15 of each year.

**CCR 3710(b) In-stream mining conducted in accordance with Fish and Game Code Section 1600 et seq, Section 404 of the Clean Water Act, and Section 10 of the Rivers and Harbors Act of 1899.**

Not applicable.

## **Environmental Setting and Protection of Fish and Wildlife Habitat**

### **CCR 3502(b)(1) Environmental setting and impact of reclamation on surrounding land uses. (Identify sensitive species, wildlife habitat, sensitive natural communities, e.g. wetlands, riparian zones, etc.)**

Exhibits 2A and 2B illustrate surrounding land ownership and uses. The reclamation of the site to the open/undeveloped end use will not impact any surrounding land uses. Biological resources of the project site are described in Appendix C: Biological Resources.

Central California Coast coho salmon (*Oncorhynchus kisutch*), Northern California steelhead (*O. mykiss*), and California Coastal Chinook salmon (*O. tshawytscha*) are listed as threatened under the Endangered Species Act (ESA) of 1973, as amended, and are known to spawn and rear in the Ten Mile River. The Second Crossing Quarry site is located outside the floodplain of the river. Storm runoff from the site is discharged into an existing open meadow with the discharge point set back approximately 325 feet from Ten Mile River. After reclamation, the Ten Mile Screening Plant site, which is in the floodplain of the river, will be graded to be a shallow gradient meadow sloping evenly toward the river. The existing sediment basin and earth berm on the northern side of the sediment basin, which have been designed to prevent flood flows from entering the sediment basin, will both be removed. The current location and design of the sediment basin and berm, as well as maintenance procedures, at the Ten Mile Screening Plant site were developed in consultation with National Marine Fisheries Service in order to minimize the potential for sediments to reach Ten Mile River during flood flows (see Appendix G)

### **CCR 3705(a) Vegetative cover, suitable to end use, self-sustaining. Baseline studies documenting cover, density and species richness.**

Areas to be reclaimed at the two sites are illustrated on Exhibits 5A and 5B. Disturbed lands will generally be reclaimed to grassland. An area parallel to the Ten Mile Haul Road at the Second Crossing Quarry site will be revegetated with native screening plants. The Reclamation Technical Specifications provide specifications for seeding and planting associated with revegetation. Seed compositions were chosen to be self-regenerating and native to the region.

### **CCR 3503(c) Protection of fish and wildlife habitat (all reasonable measures).**

#### **CCR 3703(a) Sensitive species conserved or mitigated.**

The Ten Mile Screening Plant site is located adjacent to the Ten Mile River. In 2006, consultation with National Marine Fisheries Service (NMFS) was undertaken to develop site design modifications that would minimize the potential for adverse impact to listed salmonid species habitat in the river during flood flows. These improvements are reflected on Exhibit 3B and are documented in correspondence contained in Appendix G. Drainage from disturbed areas at the Second Crossing Quarry site is directed to a sediment basin and then flows to a nearby open meadow area to prevent sediments from reaching the river.



**CCR 3703(b) Wildlife habitat at least as good as pre-project, if approved end use is habitat.**

The proposed end use is open/undeveloped land in keeping with the existing zoning. Quarry benches are proposed to be revegetated with grasses while cut slopes will consist of exposed rock. Meadows at the Second Crossing Quarry floor and the Ten Mile Screening plant site will be open meadows useful for mammal grazing and raptor foraging.. Proposed revegetation is consistent with the vegetation type diversity in the region.

**CCR 3703(c) Wetlands avoided or mitigated at 1:1 minimum.**

Not applicable.

**CCR 3704(g) Piles or dumps not placed in wetlands without mitigation.**

All stockpiled materials will be removed from the project sites. No wetlands will be filled on the site.

**CCR 3710(d) In-stream mining not cause fish to be trapped in pools or off-channel pits, or restrict migratory or spawning activities.**

Not applicable.

**CCR 3713(b) All portals, shafts, tunnels, openings, gated or protected from public entry, but preserve access for wildlife.**

The Second Crossing Quarry site is accessed via the Ten Mile Haul Road (a private road). It is located approximately 2.75 miles from Highway 1, the nearest public road. The Ten Mile Screening Plant is located approximately 0.8 miles beyond the Second Crossing Quarry site. Both sites are gated and locked when not operational. "No Trespassing" signs are located at the gate.

**Resoiling and Revegetation**

**CR 3503(f) Resoiling (fine material on top plus mulches).**

**CCR 3704(c) Mine waste stockpiled to facilitate phased reclamation and separate from growth media.**

At the Second Crossing Quarry site, initial overburden and/or topsoil generated from mining the upper slopes will be stockpiled for later use in reclamation (See Exhibit 5A). Subsequently removed overburden will be used immediately for reclamation of newly created benches.

Silt removed from the sediment-retention basin at the Ten Mile Screening Plant site will be used as a cover material for reclamation at both project sites.

**CCR 3711(a) All salvageable topsoil removed. Topsoil and vegetation removal not precede mining by more than one year.**

Topsoil will be removed annually during the summer months for the area that is to be mined the following year. At the Second Crossing Quarry site, topsoil will initially be stockpiled in a designated area and hydroseeded prior to October 15. Similarly, as mining proceeds through completion of the project, topsoil will be removed and immediately used to cover recently mined slopes concurrently with mining.

**CCR 3711(b) Topsoil resources mapped prior to stripping, locations of stockpiles on map. Topsoil and growth media in separate stockpiles.**

**CCR 3711(c) Soil salvage and phases set forth in plan, minimize disturbance, designed to achieve revegetation success.**

**CCR 3711(d) Topsoil phased ASAP. Topsoil stockpiles not be disturbed until needed. Topsoil stockpiles clearly identified and planted with vegetation or otherwise protected.**

**CCR 3711(e) Topsoil redistributed in stable site and consistent thickness.**

**CCR 3707(b) Segregate and replace topsoil by horizon.**

No mapping of topsoil has been conducted at the Second Crossing Quarry site. Much of the area to be mined is vegetated. The initial one foot of soil will be stockpiled separately as topsoil. This will be used as the final fill layer over mined cut slopes. Existing forest understory vegetation and slash from tree removal will be mulched where possible. Initially the mulch will be stockpiled adjacent to the topsoil (but segregated from it) and ultimately used as an amendment to the topsoil in the final layering of fill. There is little usable topsoil remaining at the Ten Mile Screening Plant site, with the exception of the material contained in the existing earth berm.

**CCR 3705(e) Soil altered or other than native topsoil, requires soil analysis. Amend if necessary.**

The existing soil on the Second Crossing Quarry floor and Ten Mile Screening Plant site is in a compacted state. It will be ripped to a depth of one foot and disked. The choice of the species mix called for in the hydroseed specifications (see Reclamation Technical Specifications) assumes that the quality of the soil will be minimal and was chosen for the species' nitrogen-fixing capabilities.

**CCR 3707(d) Fertilizers and amendments not contaminate water.**

No fertilizers will be used in site revegetation. A mycorrhizal inoculant will be used in all hydroseeding applications to stimulate plant productivity.

**SMARA 2773(a) Revegetation plan specific to property. Monitoring plan.**

**CCR 3503(a)(1) Removal of vegetation and overburden preceding mining kept to a minimum.**

Existing vegetation, topsoil, and overburden at the Second Crossing Quarry mining area will be removed during the summer months for the area that is to be mined. For the first year of mining, these materials will be stockpiled in a designated area and hydroseeded prior to

October 15 (See Exhibit 5A). Where possible, existing vegetation will be mulched for use as a soil amendment. Initially the mulch will be stockpiled adjacent to the topsoil (but segregated from it). As mining proceeds through completion of the project, vegetation will be stripped and mulched, topsoil will be stripped, the two combined and replaced as the final layer of fill on mined lands being reclaimed.

There is no existing vegetation or overburden that will be removed from the Ten Mile Screening Plant site.

**CCR 3503(g) Revegetation and plant survival (use available research).**

Grassland revegetation with sediment basin fines has taken place for many years. Fines have been spread on upstream meadows at the request of the property owner (example illustrated in the photo below). Douglas Fir and Toyon will be used for the screening vegetation at the Second Crossing Quarry site. Both of these species are naturally abundant in the area and self propagate.



PHOTO: Typical meadow where sediment basin fines from the screening plant have historically been spread and seeded.

**CCR 3705(a) Vegetative cover, suitable end use, self-sustaining. Baseline studies documenting cover, density and species richness.**

The two sites will not be reclaimed to conditions that existed prior to mining activities. Revegetation of disturbed areas consists of hydroseeding native grasses and herbaceous plants. Where screening plants will be installed parallel to Ten Mile Haul Road at the Second Crossing Quarry site, installation of woody species from cuttings, liners, and containers will occur. Transplanting of native Douglas Fir and Toyon from nearby areas may take place.

Species selection (see Appendix D: Reclamation Specifications) was based on anticipated soil conditions, functional qualities to provide erosion control, and ability to be self-generating without dependence on long-term irrigation, soil amendment, or fertilizers. Additional criteria

for tree and shrub species selection included low canopy and ease of establishment without dependency on extended irrigation.

**CCR 3705(b) Test plots if success has not been proven previously.**

A test plot measuring 15 feet x 100 feet will be developed for Seed Mixture A that will be used on the terrace benches (see Exhibit 5A). A test plot measuring 50 feet x 100 feet will be developed for Seed Mixture B that will be used on the Second Crossing Quarry floor and Ten Mile Screening Plant site.

**CCR 3705(c) Decompaction of site.**

The soil around the Second Crossing Quarry floor and Ten Mile Screening Plant site will be ripped to a depth of one foot and disked. The choice of the species mix called for in the hydroseed specifications (see Seed Mixture B in Appendix D: Reclamation Specifications) assumes that the quality of the soil will be minimal and was chosen for the species' nitrogen-fixing capabilities.

**CCR 3705(d) Roads stripped of road base materials, resoiled and revegetated, unless exempted.**

With the exception of the existing access road and landings as shown in Exhibits 5A and 5B, all road materials within the project sites will be removed and/or relocated for use in the service access routes. Where not used, subgrade soils will be ripped, disked, and, where appropriate, reseeded.

**CCR 3705(f) Temporary access not bladed. Barriers installed.**

No temporary access routes are proposed as part of reclamation. Access routes that lead away from the project sites are part of a privately owned timber haul road system.

**CCR 3705(g) Use native plant species, unless exotic species meet end use.**

The planned reclamation use is open/undeveloped. Only native species will be used in reclamation.

**CCR 3705(h) Plant during correct season.**

Hydroseeding will occur in the late summer / early fall of each year following site grading. All hydroseeding will be completed prior to October 15. All screening plants at the Second Crossing Quarry site will be planted between mid-November and mid-December.

**CCR 3705(i) Use soil stabilizing practices and irrigation when necessary to establish vegetation.**

Topsoil fill used within the quarry floor and side slopes of the sediment basin will be track walked using heavy equipment (D-6 or larger) with tracks perpendicular to the direction of the slope. (see Appendix A: Geologic & Geotechnical Reports). Average annual rainfall in Fort Bragg, approximately 8 miles southwest of the project sites, is 40.4 inches per year

(source: National Weather Service station number 043161). Rainfall increases inland in this part of coastal California. Precipitation nearly doubles across the Ten Mile River watershed from its mouth to the headwater divides. Because of the north-facing aspect of the site, annual rainfall, and cool coastal climate, irrigation of screening plants would likely not be necessary to assure sustainable plant growth if plants were installed at the beginning of the rainy season. However, if irrigation is required, a water tank and temporary irrigation system will be installed (see Exhibit 5A). Monitoring of the test plots will also provide information regarding the need for supplemental irrigation.

**CCR 3705(j) If irrigated, demonstrate self-sustaining without for two-year minimum.**

The established plant monitoring period (see Reclamation Technical Specifications) is five years. This will allow determination of whether hydroseeding and screening vegetation are self-sustaining, whether irrigated or not.

**CCR 3705(k) Weeds managed.**

During the monitoring period, noxious weeds within reclaimed areas will be removed annually using mechanical or other means as approved by Mendocino County.

**CCR 3705(l) Plant protection measures, fencing, caging.**

Fencing or caging is not anticipated to be required because no grazing occurs on lands to be revegetated. However, if such measures are determined to be necessary as a result of monitoring, they will be implemented to assure success.

**CCR 3705(m) Success quantified by cover, density, and species richness. Standards proposed in plan. Sample method set forth in plan and sample size provide 80 percent confidence level, as minimum.**

SMARA performance standards for revegetation require that vegetative cover, density, and species richness shall be used as success standards for revegetation. The end use of mined lands has been identified as open/undeveloped.

Performance criteria for seed specifications are found in Tables 3 and 4. Table 5 presents preliminary performance criteria for screening plants. These criteria will be refined and submitted to Mendocino County based on the results of the test plots to be planted and evaluated prior to final reclamation.

**TABLE 5: Success Criteria (1)**

<b>HYDROSEED MIX (see also Technical Specifications)</b>	<b>VEGETATIVE COVER (2)</b>	<b>DENSITY (3)</b>	<b>PLANT SPECIES COMPOSITION / SPECIES RICHNESS (2)</b>
Seed Mix A - Terraced benches <u>Soil Condition</u> : Level to slightly sloping areas	See Tables 3 and 4		
Seed Mix B – Quarry floor and Screening Plant site <u>Soil Condition</u> : Level to moderately sloping areas	See Tables 3 and 4		
Screening Plants – Sedimentation Basin (natural colonization)	<u>Target goal (year 5)</u> : 35% of area covered <u>Monitoring plot size</u> : designated planting area	<u>Target goal (year 5)</u> : 100 plants in designated planting area <u>Monitoring plot size</u> : designated planting area	<u>Target goal (year 5)</u> : 2 species present <u>Monitoring plot size</u> : designated planting area

(1) Prior to reclamation, test plots will be established to determine optimal seeding mixtures to be used to ensure species success and diversity. Success criteria may be adjusted based on the results of the test plot program.

(2) Definitions:

- Vegetative Cover - the vertical projection of the crown or shoot area of a species to the ground surface expressed as a percentage of the reference area (percentage can be greater than 100 percent).
- Vegetative Density - the number of individuals or stems of each species rooted within the given reference area.
- Vegetative Species Richness - the number of different plant species within the given reference area.

(3) Reference Section 6.2.2.2 of the Rehabilitation of Disturbed Lands In California: A Manual For Decision-Making Rehabilitation (Newton, Gail A. and Claassen, V.P., California Department of Conservation, California Geological Survey, 2003).

Source: 2M Associates

# **Exhibits**

**Reclamation Plan  
Ten Mile Second Crossing Quarry and Ten Mile Screening Plant**



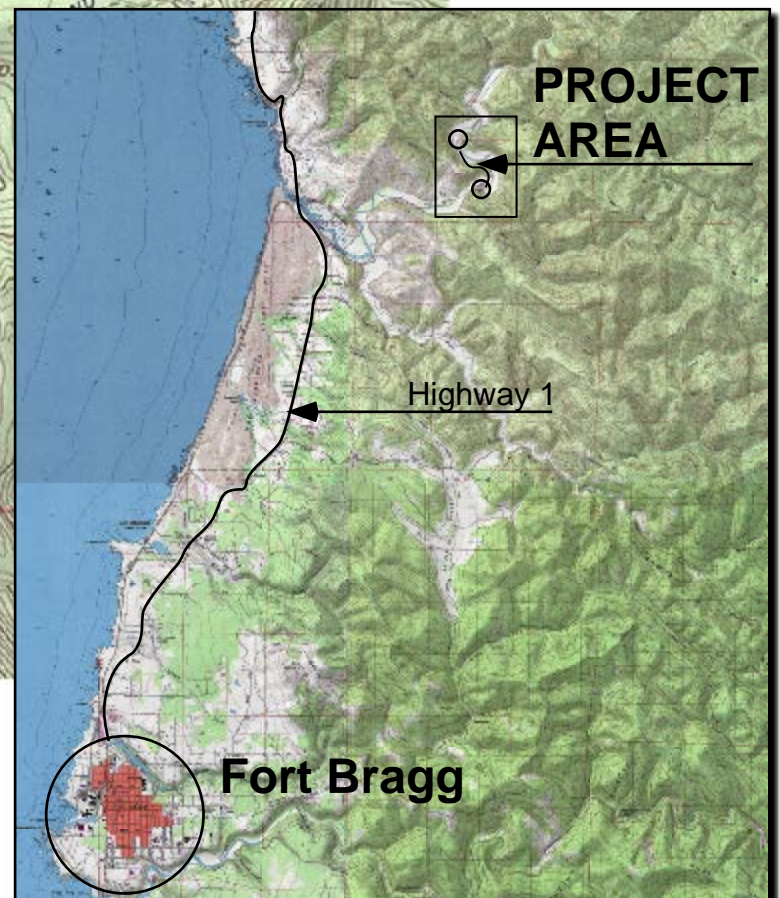
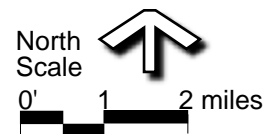
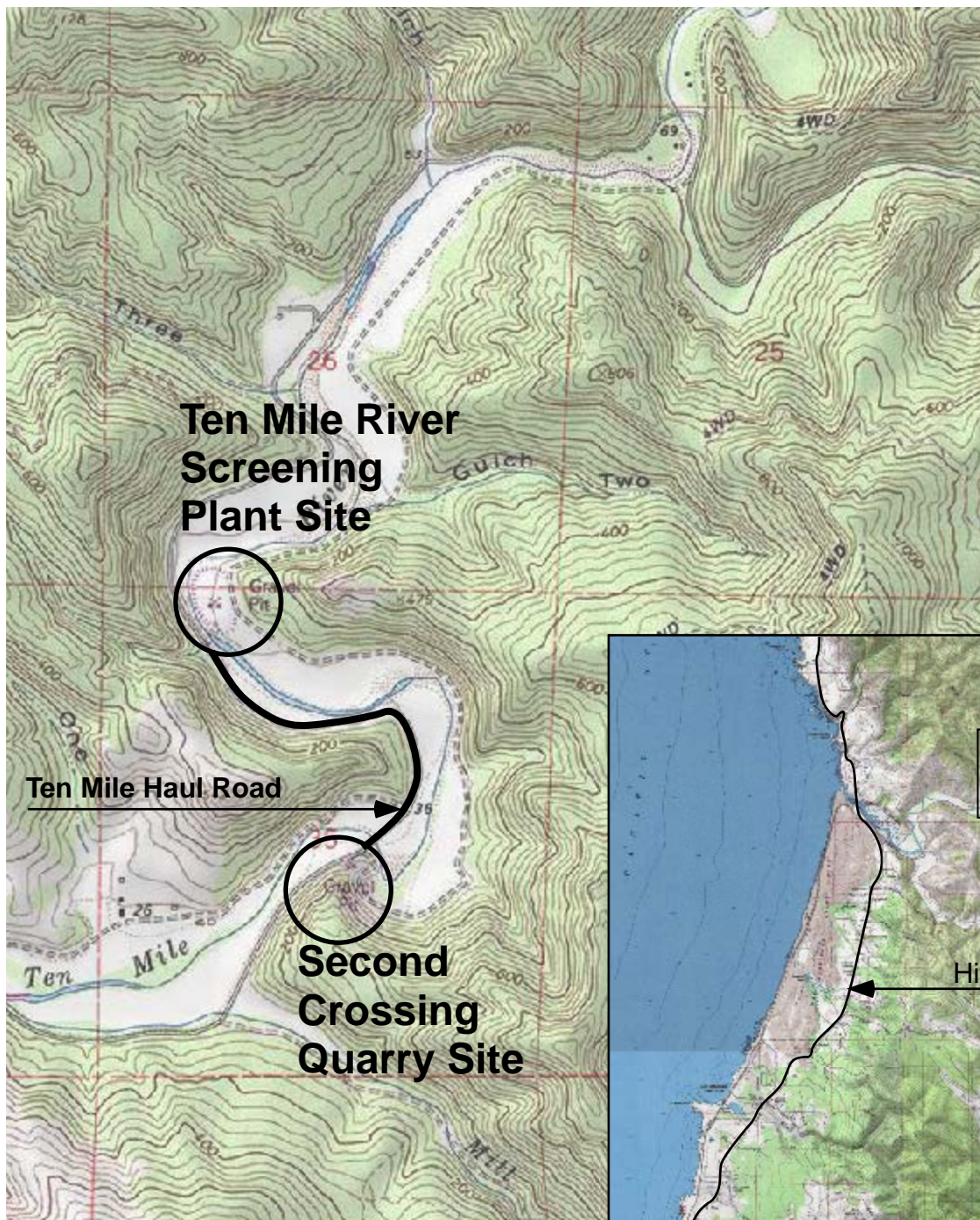


Exhibit 1

## Regional Location

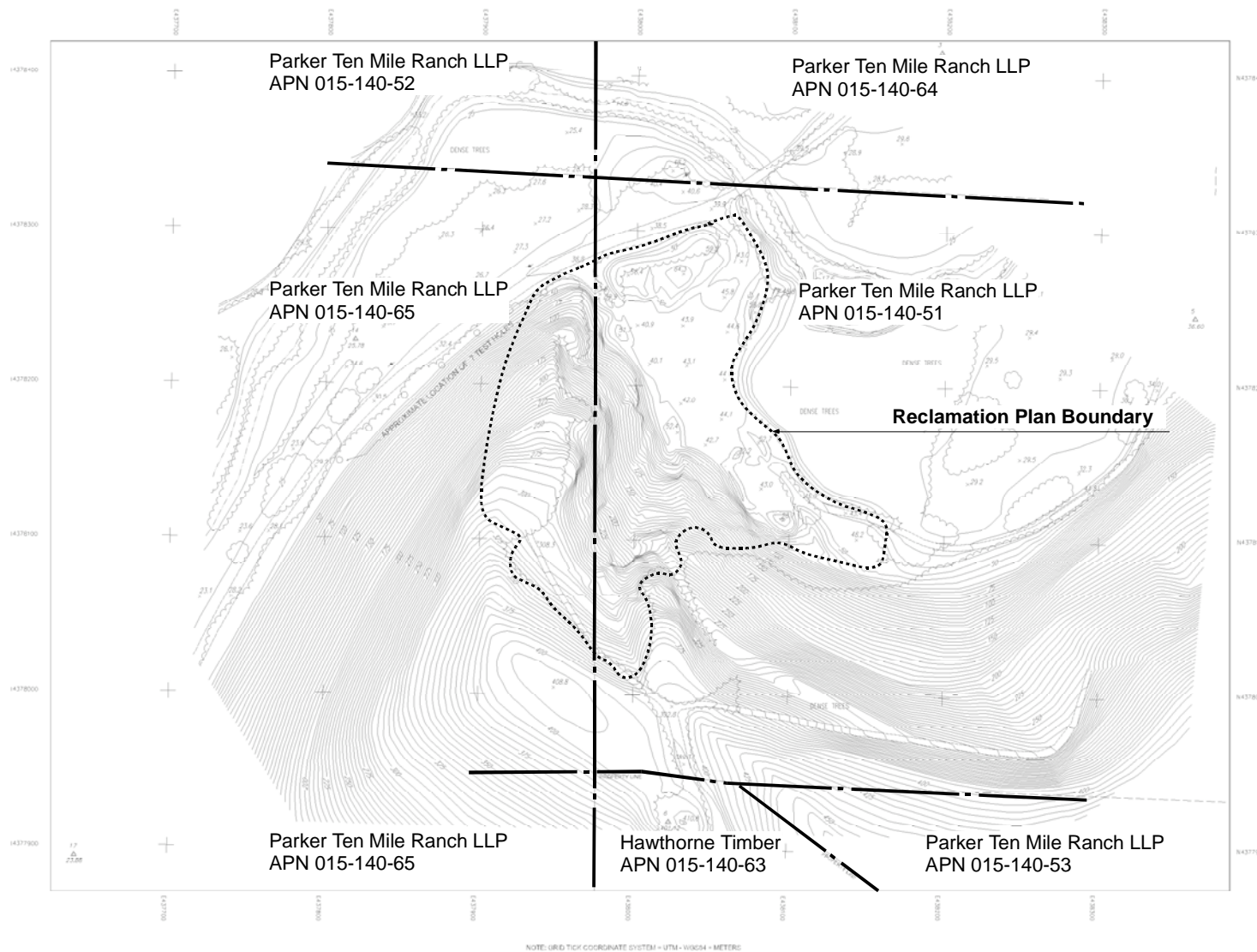
### Ten Mile River Reclamation Plan

Baxman Gravel Co. Inc.  
1221 N. Main St.  
Fort Bragg, Ca. 95437

This drawing is conceptual and for planning and permit-processing purposes only. Program information, scale, location of areas, and other information shown are subject to field evaluation and modification.







# Ten Mile River Reclamation Plan: Second Crossing Quarry

Baxman Gravel Co. Inc.  
1221 N. Main St.  
Fort Bragg, Ca. 95437

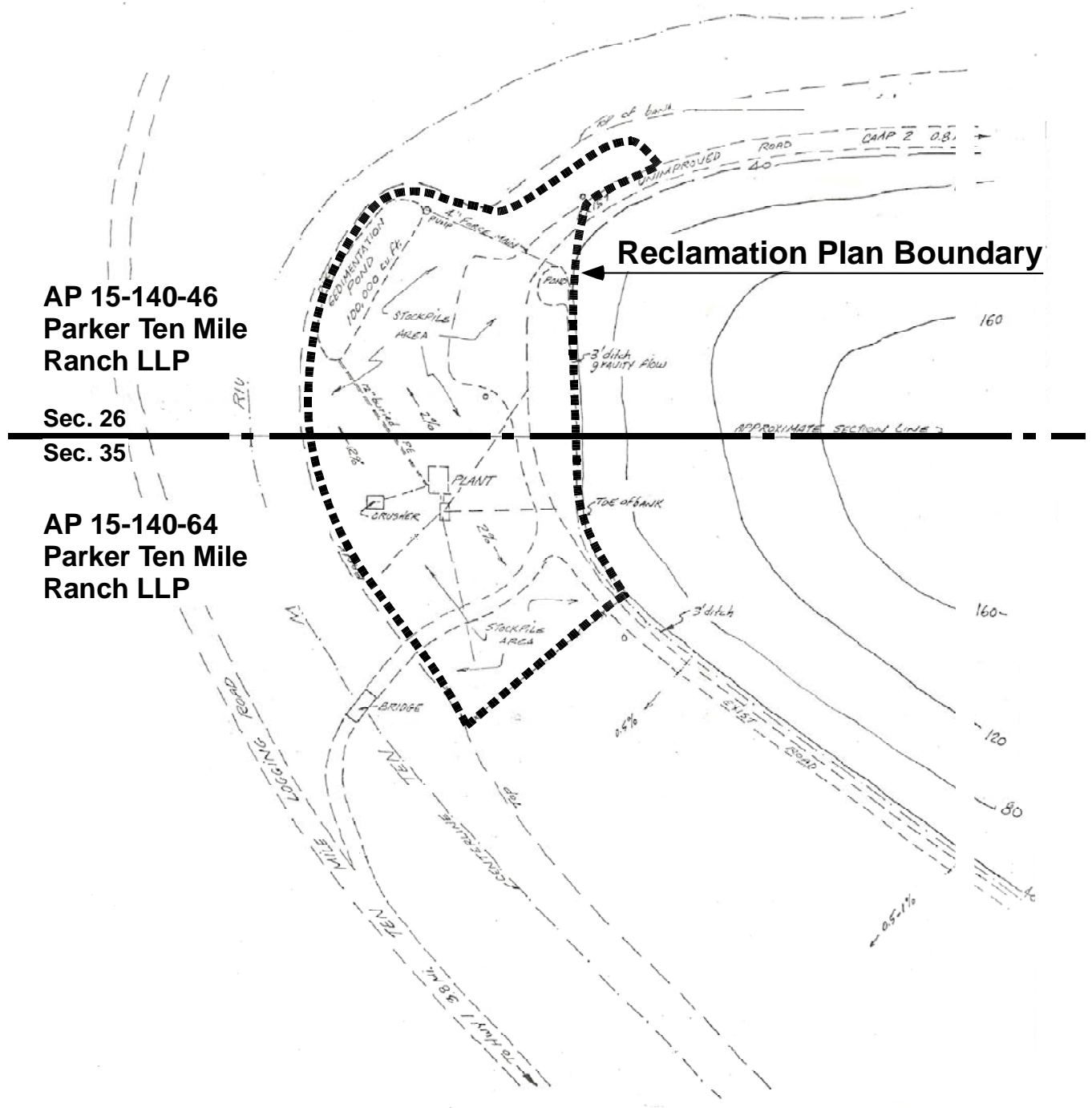
Exhibit 2A  
**Land Ownership**  
(see text for explanation)

Date of Topographic Survey: August, 2006 based on aerial  
photography dated 7-5-06  
Prepared by:  
W.R. Coombs - R.P.L.S. 4518  
601 W. Mill Street, Ukiah, CA



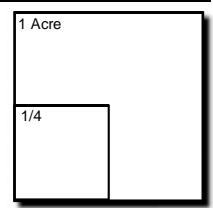
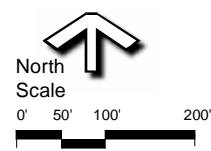
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Base Map prepared by: Clifford M. Zimmerman, Licensed Land Surveyor, 3220 Westwood Drive, Fort Bragg, CA 95437

4/2/07



This drawing is conceptual and for planning and permit-processing purposes only. Program information, scale, location of areas, and other information shown are subject to field evaluation and modification.



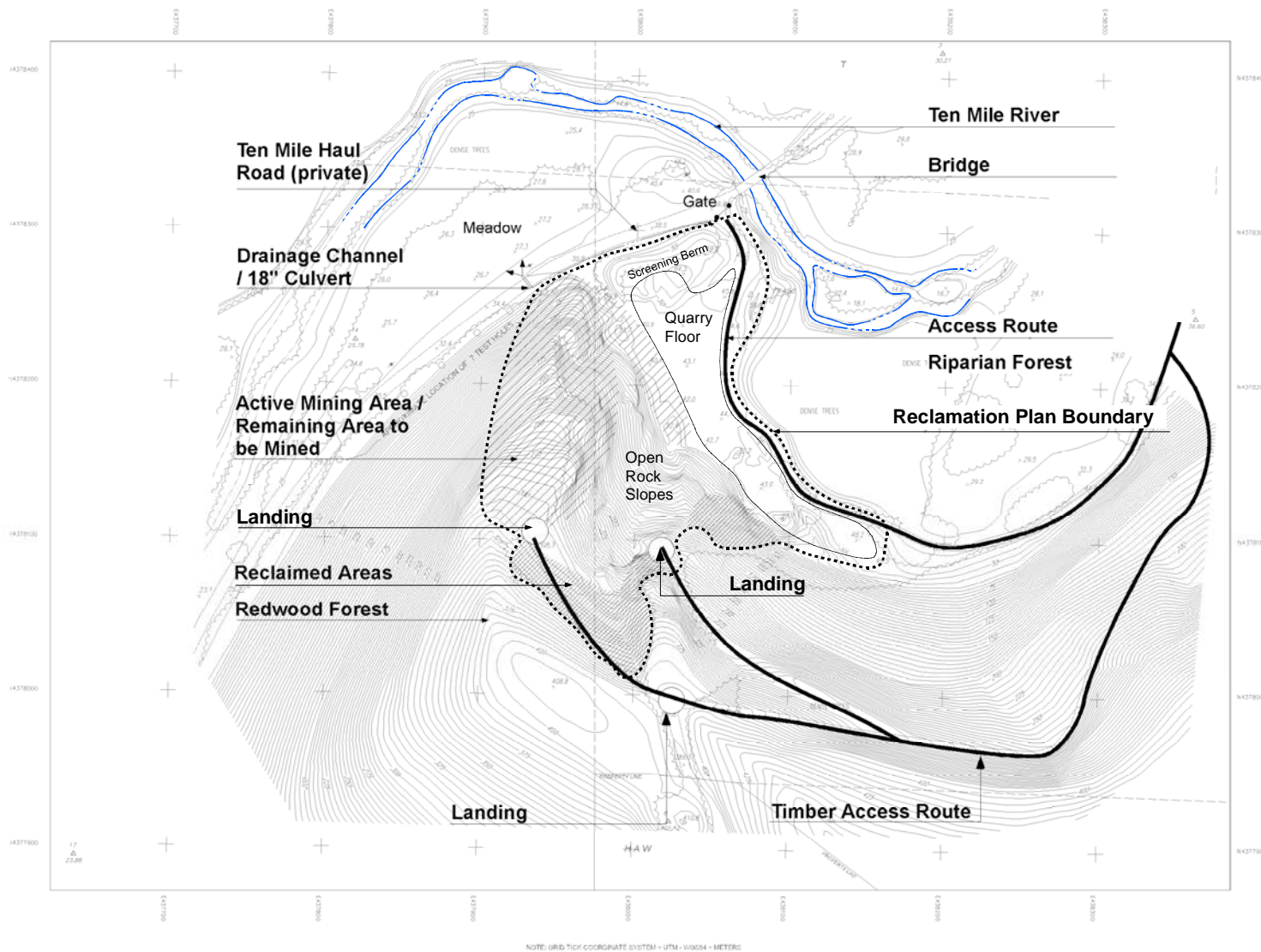
Exhibit 2B

## Land Ownership

(see text for explanation)

## Ten Mile River Reclamation Plan: Screening Plant

Baxman Gravel Co. Inc.  
1221 N. Main St.  
Fort Bragg, Ca. 95437

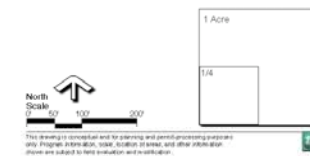


# Ten Mile River Reclamation Plan: Second Crossing Quarry

Baxman Gravel Co. Inc.  
1221 N. Main St.  
Fort Bragg, Ca. 95437

Exhibit 3A  
**Quarry Site:**  
**Existing**  
**Conditions**  
(see text for explanation)

Date of Topographic Survey: August, 2006 based on aerial  
photography dated 7-5-06.  
Prepared by:  
W.R. Coats - R.P.L.S. 4518  
601 W. Mill Street, Ukiah, CA



This drawing is intended for use in planning and permit processing and is not a final design. It is not to be used for construction or other purposes without the approval of the designer. The designer assumes no responsibility for the accuracy or completeness of the information provided.



Grass Berm

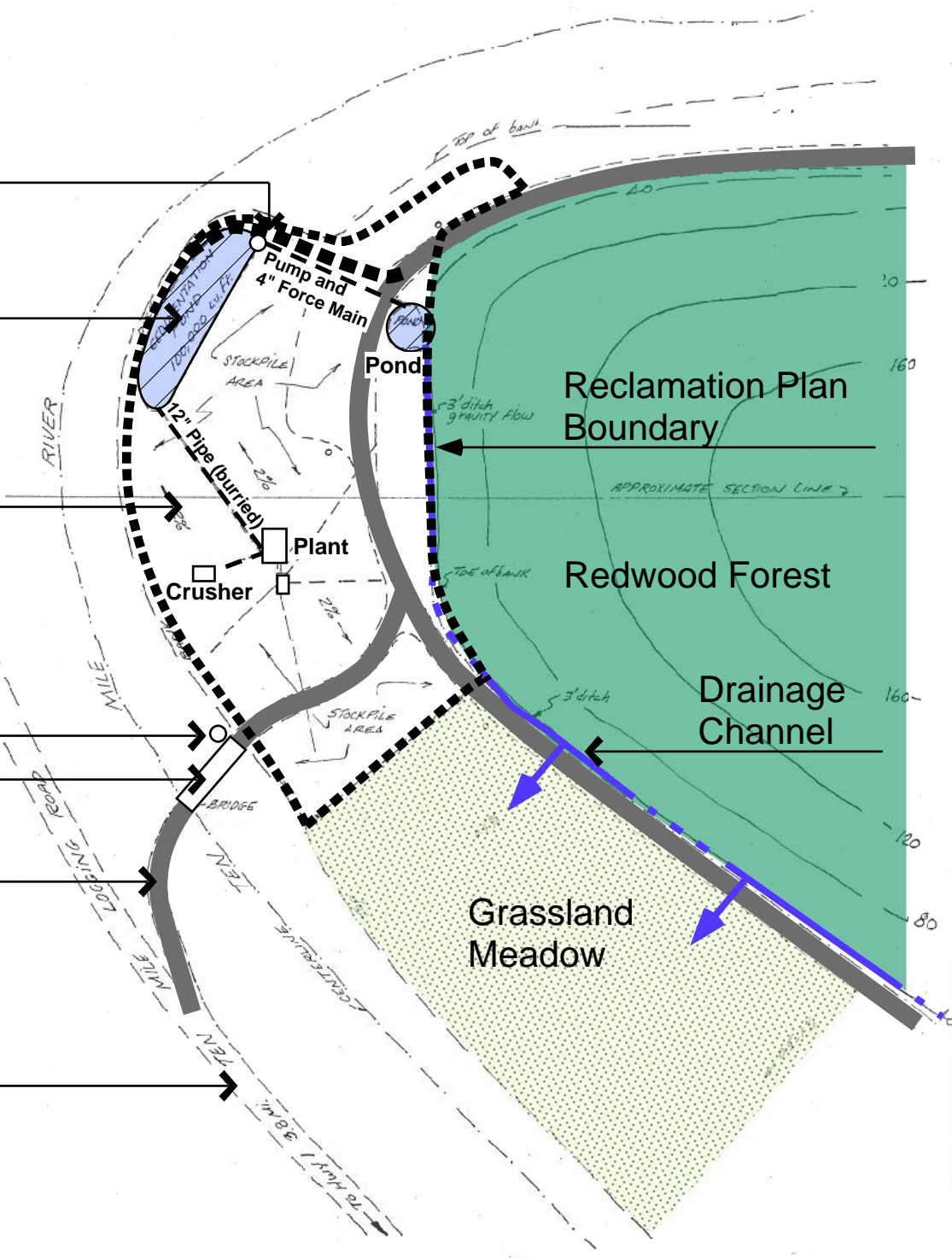
Sediment -  
Retention Basin

Disturbed Area /  
Ruderal

Portable Pump  
Bridge

Access Road

Ten Mile Haul  
Road (private)



Base Map prepared by: Clifford M. Zimmerman, Licensed Land  
Surveyor, 3220 Westwood Drive, Fort Bragg, CA 95437

Exhibit 3B

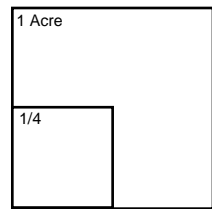
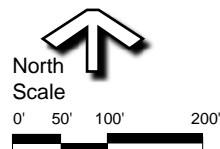
## Existing Conditions

(see text for explanation)

### Ten Mile River Reclamation Plan: Screening Plant

Baxman Gravel Co. Inc.  
1221 N. Main St.  
Fort Bragg, Ca. 95437

4/2/07



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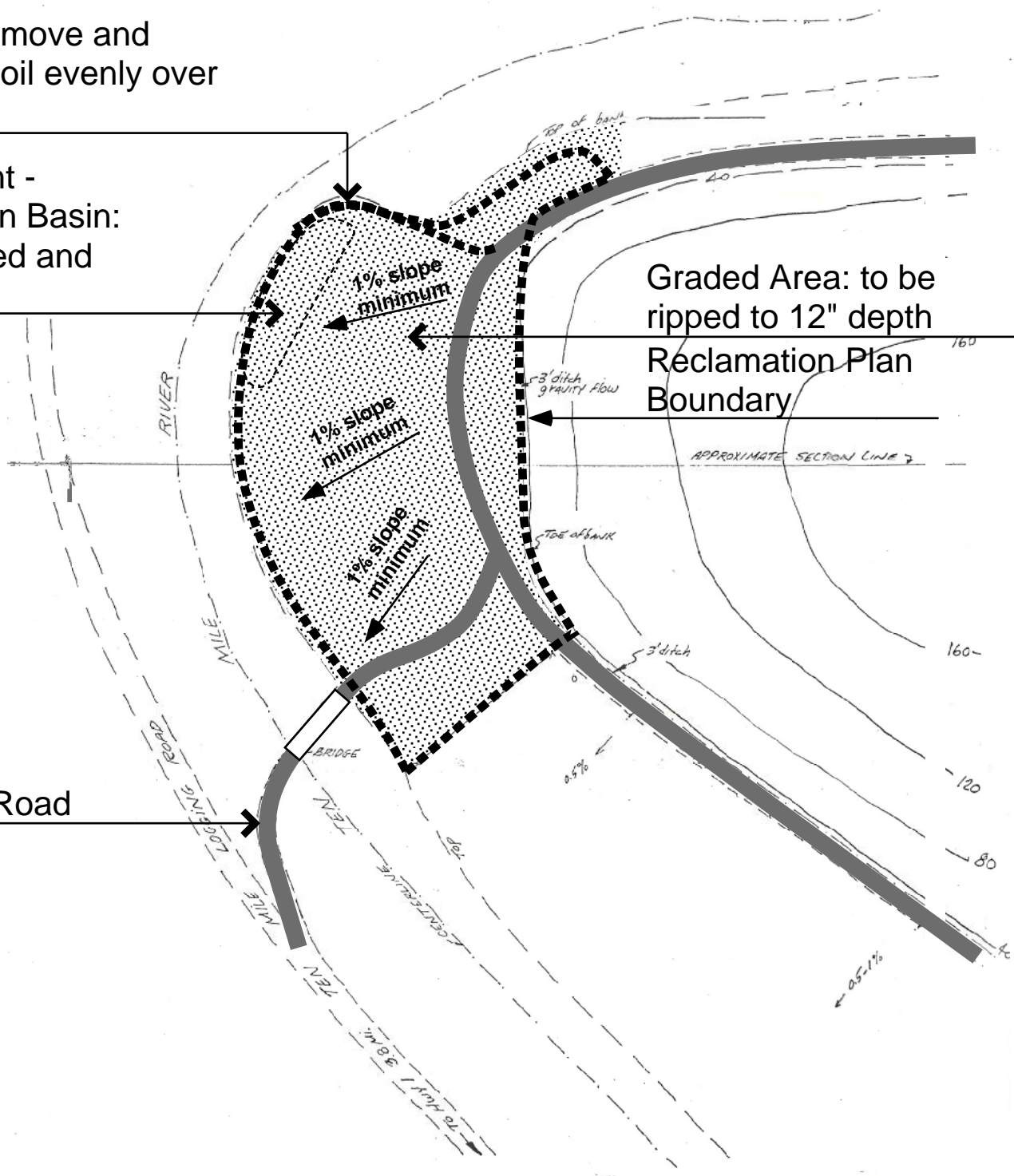


Berm: remove and spread soil evenly over site

Sediment - Retention Basin: to be filled and leveled

Graded Area: to be ripped to 12" depth  
Reclamation Plan Boundary

Access Road



Base Map prepared by: Clifford M. Zimmerman, Licensed Land Surveyor, 3220 Westwood Drive, Fort Bragg, CA 95437

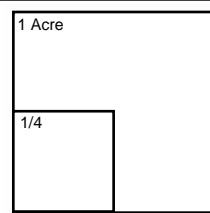
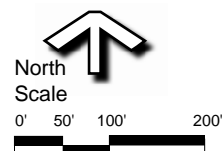
4/2/07

Exhibit 4C  
**Grading**

(see text for explanation)

**Ten Mile River Reclamation Plan:  
Screening Plant**

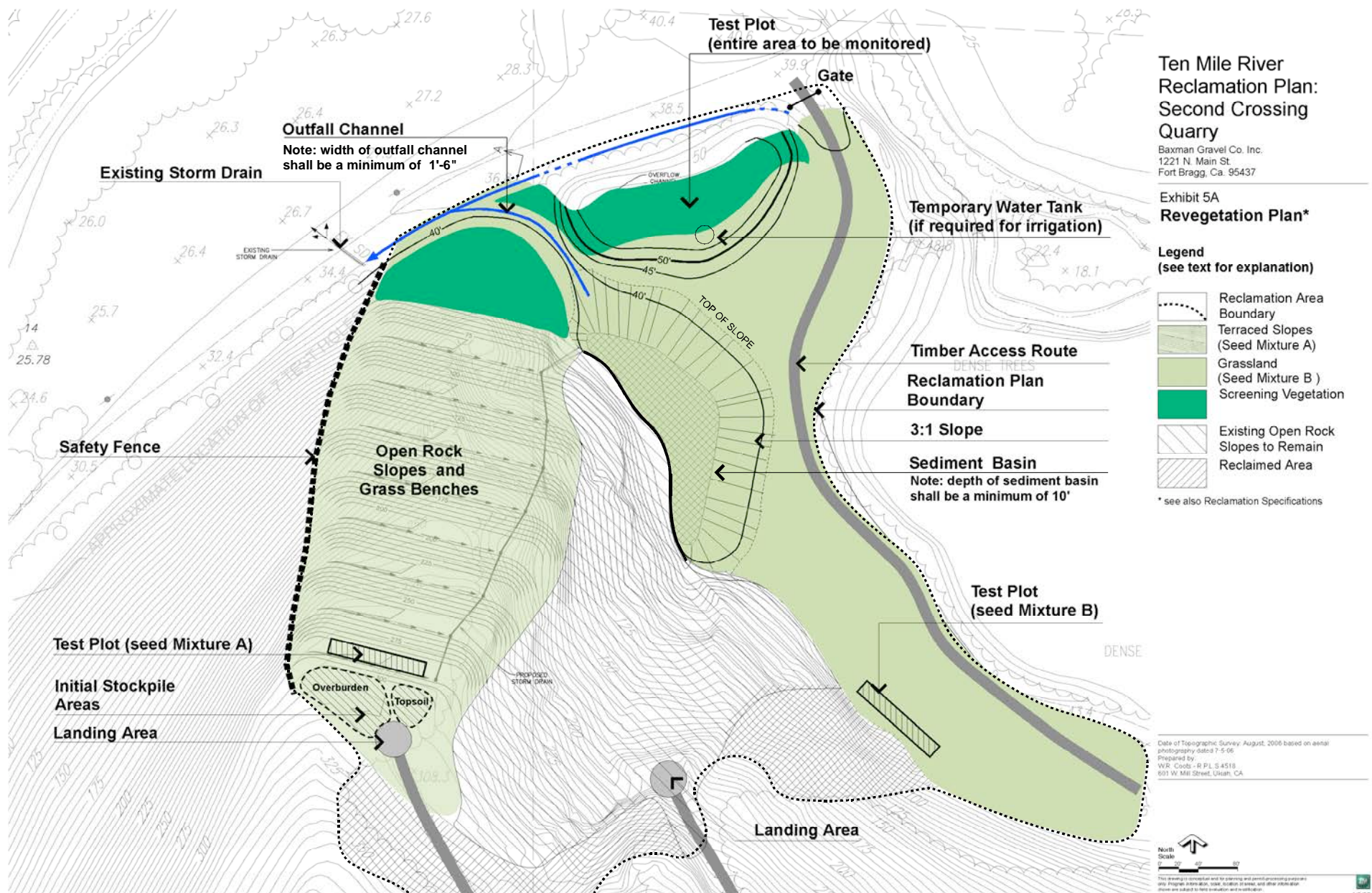
Baxman Gravel Co. Inc.  
1221 N. Main St.  
Fort Bragg, Ca. 95437



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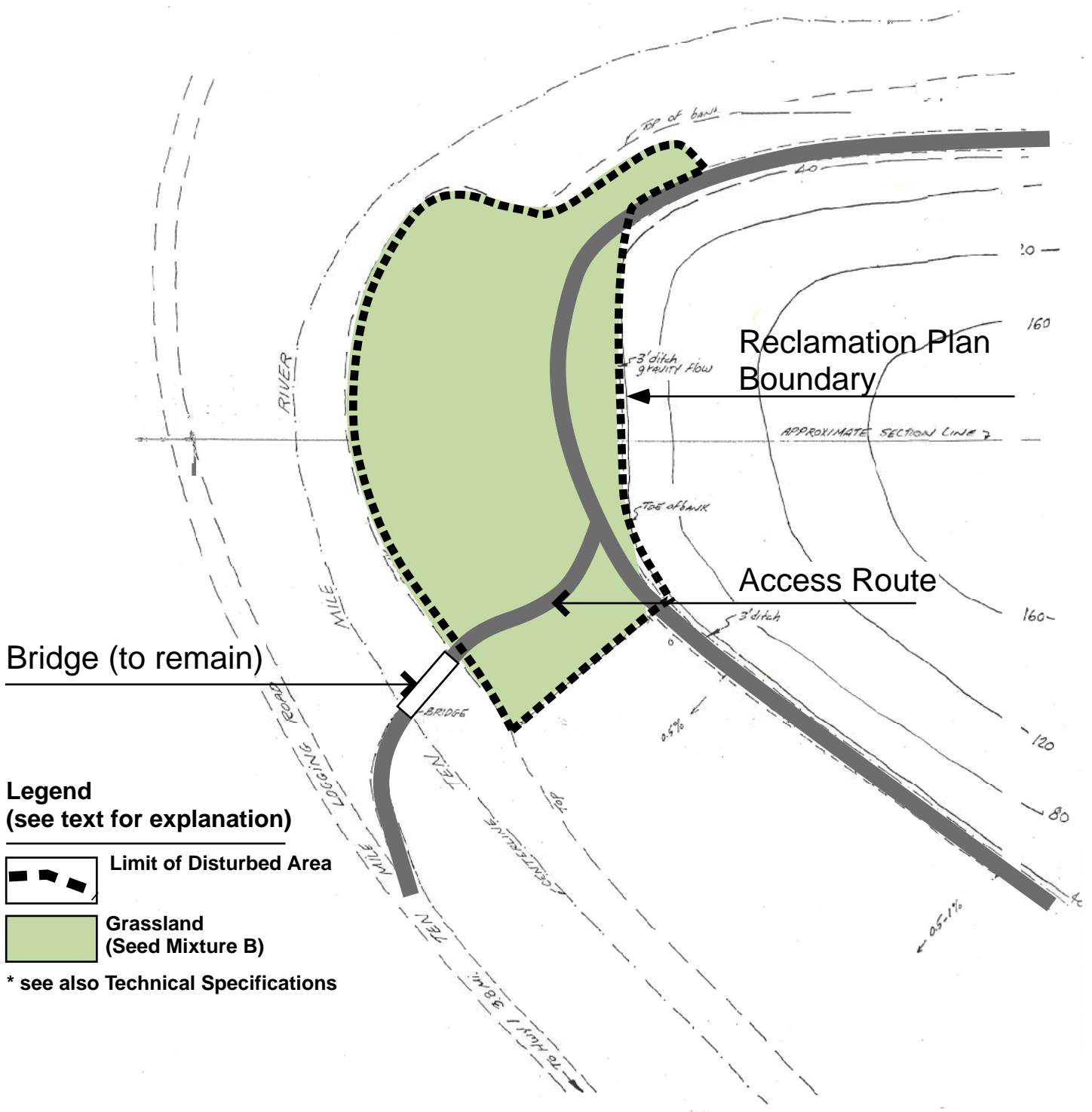






See Figure 3A for extent of existing reclaimed area





Base Map prepared by: Clifford M. Zimmerman, Licensed Land Surveyor, 3220 Westwood Drive, Fort Bragg, CA 95437

Exhibit 5B

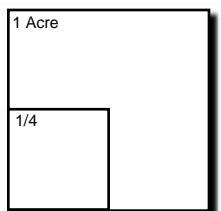
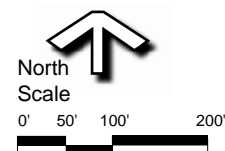
## Revegetation

(see text for explanation)

### Ten Mile River Reclamation Plan: Screening Plant

Baxman Gravel Co. Inc.  
1221 N. Main St.  
Fort Bragg, Ca. 95437

4/2/07



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# **Appendices**

# **Appendix A**

## **Geologic & Geotechnical Reports**

- 1. Ten Mile Second Crossing Quarry**
- 2. Ten Mile Screening Plant**

# **Geologic and Geotechnical Report**

**Ten Mile Second Crossing Quarry**

504 Redwood Blvd.

Suite 220

Novato, California 94947

T 415 / 382-3444

F 415 / 382-3450

**GEOLOGIC & GEOTECHNICAL REPORT  
MINING AND RECLAMATION PLAN  
SECOND CROSSING QUARRY ON TEN MILE  
RIVER  
RURAL MENDOCINO COUNTY, CALIFORNIA**

March 12, 2007

Project 1170.02

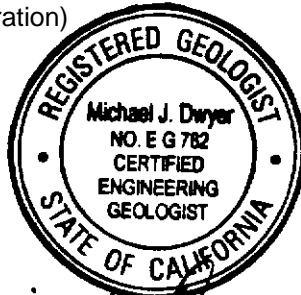
Prepared For:  
Baxman Gravel Co. Inc.  
1221 North Main Street  
Fort Bragg California 95437

Attn: Elizabeth Moses  
Environmental Compliance/Safety Manager

**CERTIFICATION**

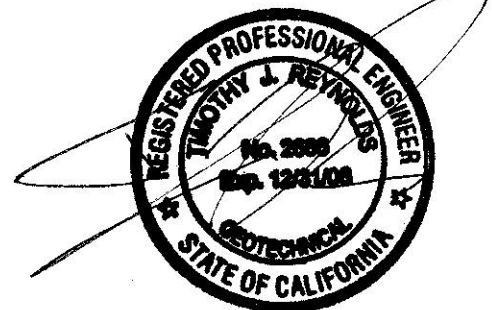
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MILLER PACIFIC ENGINEERING GROUP  
(a California corporation)



*Michael J. Dwyer*  
Michael J. Dwyer  
Engineering Geologist No. 782  
(Expires 3/31/09)

REVIEWED BY



Timothy J Reynolds  
Geotechnical Engineer 2686  
(Expires 12/31/08)

GEOLOGIC & GEOTECHNICAL REPORT  
MINING AND RECLAMATION PLAN  
SECOND CROSSING QUARRY ON TEN MILE RIVER  
RURAL MENDOCINO COUNTY, CALIFORNIA

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GEOLOGIC & GEOTECHNICAL REPORT  
MINING AND RECLAMATION PLAN  
SECOND CROSSING QUARRY ON TEN MILE RIVER  
RURAL MENDOCINO COUNTY, CALIFORNIA

I. INTRODUCTION

A. Purpose and Scope of Services

The purpose of this report is to provide recommendations for the geologic and geotechnical aspects of the mining and reclamation plan for Second Crossing Quarry of Baxman Gravel Company, located on Ten Mile River in rural Mendocino County, California. The California Surface Mining and Reclamation Act of 1975 and the Mendocino County Surface Mining and Reclamation Ordinance #s 3263, 3283, and 3890 require these services. Our work was performed as outlined in our Agreement for Professional Services dated June 19, 2006. The specific subjects covered in this report are:

1. A select review of pertinent published literature including geologic maps, soil surveys, the pre-existing reclamation plan, and governmental ordinances/regulations that affect the project.
2. A review and interpretation of stereo-paired aerial photographs covering the site.
3. The results of geologic reconnaissance and field mapping of the site.
4. Descriptions of the regional and site specific geology including the preparation of a site geologic map covering the existing mining operation and the planned expansion area.
5. Preliminary geotechnical engineering recommendations.
6. Data Analysis.
7. Meetings.
8. Report Preparation with final recommendations.

B. Background

Second Crossing Quarry is located approximately six miles north and three miles east of Fort Bragg, in rural Mendocino County, California. The site was first quarried several decades ago. Baxman Gravel Company subsequently took over operation of the quarry and has been mining to the present time. Currently, the operation covers about 13 acres. The configuration of the existing quarry is a steep, mined rock face, which is no longer being actively mined. A re-entrant area into the face, resulting from historic mining activities, occupies the center of the



quarry. The quarry face is about 260 feet high and between 250 and 400 feet wide. The face has an average slope of about 1.3:1 (horizontal to vertical), with shorter intervals of nearly vertical slopes. It extends from the nearly flat quarry floor at elevation 42 feet to the top at about elevation 300 feet. A continuous benching system is not present across the face. The location of the existing quarry face and proposed quarry expansion area is shown on Figure 1, Site Location Map. Details of the quarry topography and surrounding terrain are shown on Figure 2, Site and Reclamation Plan. The subject of this report is the proposed expansion area located immediately west of the existing face.

C. Geologic Reconnaissance

The field mapping was done in July and August of 2004 and October 2006. Approximately four days were spent in the field. Site topography was prepared by the Point Company of Fair Oaks, California based on surveying data provided by W. R. Coots, Licensed Land Surveyor, Ukiah California. The map was prepared at a scale of 1 inch = 100 feet with 5-foot contours. We used this map as a base for the bulk of our fieldwork. Civil plans showing areas to be mined and their reclamation configuration were prepared by Green Valley Consulting Engineers. Our completed geologic map of the mining area is shown on Figure 3 and a soils map of the same area is shown on Figure 4. We used standard geologic mapping techniques with locations determined from map features and aerial photographs.

Field mapping was supplemented by interpretation of a set of stereo-paired aerial photographs. The photographs reviewed are shown below.

<b>Date</b>	<b>Scale</b>	<b>ID Number</b>	<b>Source</b>
May 4, 2004	1"= 600'	141307	Point Co., Fair Oaks, CA

## II. REGIONAL GEOLOGY & SEISMICITY

### A. Regional Geology

Second Crossing Quarry is located within the northern part of the regional Coast Range Geomorphic Province of California. Topographically, the Province is characterized by northwest-southeast trending mountain ranges of moderate relief, with intervening deep canyons, or narrow stream valleys. The province is known for its active seismicity, landsliding and high rates of erosion. Within the Province there are occasional larger, alluvium-filled, basin-shaped valleys. In Mendocino County, these include the valleys occupied by the communities of Ukiah, Willits and Laytonville. Most of these valleys are associated with known or suspected active, strike slip faults that appear to have formed in part by extensional down dropping associated with suspected step-over movements along these faults. Along the coastline there is a series of nearly flat marine terraces that topographically ascend easterly in a rough stair-step fashion. The older and higher of these terraces are less well preserved due to erosion and often deformed by mountain building processes. The town of Fort Bragg and environs are built upon one of the youngest, most well preserved of these terraces. The terraces result from the long-term interaction between changes in sea level and coastal uplift due to a regional component of tectonic compression along the San Andreas Fault.

The Franciscan Complex is the basement (deepest known) rock of the Province and it consists of a diverse assemblage of rock units, including sandstone, shale, greenstone (altered, submarine volcanic rocks), chert, and lesser amounts of conglomerate, and hard schistose rocks of the Jurassic-Cretaceous Age (65-190 million years ago) (Huffman & Armstrong, 1980). In northern California the Complex has been subdivided into three, regional, irregular, northwest trending zones, referred to as the eastern, central, and coastal belts (Jayko, 2001). Geologically, the coastal belt is located south of the Mendocino Triple Junction and east of the San Andreas Fault. These three structurally complex belts are distinguished by their contrasting age, structural style, and metamorphic grade. Of the above described rock types, the most prevalent is sandstone, which is massively bedded, and has occasional shale interbeds. Masses of serpentinite of various dimensions are locally present, mostly within the central and eastern belts. The serpentinite has been intruded and faulted into the Complex during long and ongoing tectonic processes.

Second Crossing Quarry is located within the coastal belt immediately south of Ten Mile River, about six miles north and three miles east of Fort Bragg. Regionally, the coastal belt is

composed of a relatively homogeneous sequence of interbedded arkosic sandstone and argillite (shaley rocks) with scarce pebble and cobble conglomerate. Even more scarce is pelagic (deep water) limestone, chert and basalt (probably greenstone-altered submarine volcanic rock). The coastal belt rocks have been mildly metamorphosed to the zeolite grade facies and the soft, white zeolite mineral, laumontite is found as irregular, discontinuous veins in much of the sandstone and argillite.

## B. Seismicity

Background The project site is located within a seismically active area and will therefore experience the effects of future earthquakes. Earthquakes are the product of the build-up and sudden release of strain along a “fault” or zone of weakness in the earth's crust.

Within north coastal California, faults are concentrated along the San Andreas Fault zone. The movement between formations along either side of a fault may be horizontal, vertical, or a combination and is radiated outward in the form of energy waves. The earthquake force is transmitted through hard rock in short, rapid vibrations, while this energy movement becomes a long, high-amplitude motion when moving through soft ground materials. Long, high amplitude motions are typically more destructive.

An “active” fault is one that shows displacement within the last 11,000 years and, therefore, is considered more likely to generate a future earthquake than a fault that shows no sign of recent rupture. The locations of the currently known active faults relative to the project site are shown on Figure 5, Active Fault Map.

The Richter or Moment Magnitude Scale provides a method to deduce the magnitude of an earthquake from seismologic instruments. The measurement of magnitude provides a rating that is independent of the place of observation and thus allows a comparison of seismic events. Magnitude is measured on a logarithmic scale; every one-unit increase indicates an increment of roughly 30 times the energy. For example, an 8.0 magnitude earthquake would have an energy level 30 times that of a 7.0 magnitude and 900 times that of a 6.0 magnitude earthquake.

Historic Fault Activity The potential for strong seismic shaking at the project site is high. Due to its close proximity, the San Andreas Fault presents the highest potential for severe ground shaking. The San Andreas is one of the world’s longest and active faults. It caused the Great

San Francisco Earthquake of 1906. Surface rupture from the earthquake extended along this fault at least as far north as Shelter Cove in Humboldt County. It resulted in very extensive ground shaking damage to Fort Bragg, which at that time was a community of only 1600 people. The significant adverse impact associated with strong seismic shaking is potential damage to working and reclaimed slopes at the quarry. Earthwork recommendations that will reduce the impact of seismic shaking are presented in later this report.

Numerous earthquakes have occurred in the region within historic times. The results of our computer database search indicate that 28 earthquakes (Richter Magnitude 5.0 or larger) have originated within 100 kilometers of the site area between 1735 and 2007. Using empirical attenuation relationships, the maximum historic acceleration at the ground surface (median peak) at the project site is approximately 0.44g. The five most significant historic earthquakes to affect the project site are summarized in Table A.

---

TABLE A  
SIGNIFICANT HISTORIC EARTHQUAKE ACTIVITY  
TEN MILE SECOND CROSSING QUARRY  
FORT BRAGG, CALIFORNIA

<u>Epicenter (Latitude, Longitude)</u>	<u>Historic Richter Magnitude</u>	<u>Year</u>	<u>Distance (km)</u>	<u>Peak Site Acceleration</u>
39.44, -123.96	8.3	1906	13	0.44
39.20, -123.80	6.4	1898	39	0.08
40.24, -124.35	6.2	1991	91	0.02
40.23, -124.27	5.9	1968	87	0.02
40.10, -124.00	5.8	1878	64	0.02

References: Sources: USGS (2004), Abrahamson and Silva (1997 – Rock Sites)

---

The calculated site accelerations should only be considered as reasonable estimates. Many factors (soil conditions, orientation to the fault, etc.) can influence the actual ground surface accelerations. Significant deviations from the values presented are possible due to geotechnical and geologic variations from the typical conditions used in the empirical correlations.

Seismic Ground Shaking The intensity of ground shaking depends on the characteristics of the causative fault, distance from the fault, the earthquake magnitude and duration, and site-specific geologic conditions. Estimates of peak bedrock accelerations are based on either deterministic or probabilistic methods. For many types of improvements, deterministic methods are more commonly used.

Deterministic methods use empirical relations developed from data collected during previous earthquakes to provide estimates of median peak ground accelerations. A summary of the active faults that could most significantly affect the Ten Mile Second Crossing earthworks structures, the maximum credible magnitude, closest distance to the site, and probable peak accelerations are summarized in Table B.

---

TABLE B  
ESTIMATED PEAK GROUND ACCELERATIONS  
TEN MILE SECOND CROSSING QUARRY  
FORT BRAGG, CALIFORNIA

<u>Fault</u>	<u>Maximum Credible Moment Magnitude</u>	<u>Distance to Fault (km)</u>	<u>Median Peak Ground Acceleration (g)<sup>1</sup></u>
San Andreas	7.9	16	0.33
Maacama	7.1	24	0.17
Bartlett Springs	7.1	64	0.06
Rogers Creek	7.1	111	0.04
Hayward	7.1	161	0.03

(1) Determined from attenuation relationship by Abrahamson and Silva (1997) for rock sites.

Reference: CDMG (1998), USGS (1999)

---

The calculated accelerations should only be considered as reasonable estimates. Many factors (soil conditions, distance, orientation to the fault, etc.) can influence the actual ground surface accelerations. The locations of the principal active faults and other significant faults are shown on the Active Fault Map, Figure 5.

As Table B indicates, the San Andreas Fault presents the greatest potential for significant seismic shaking at the project site. The principal adverse impact associated with seismic shaking is potential damage to earthworks structures, including slope failures in both cuts and fills.

Seismic Design The site will experience strong ground shaking similar to other areas of the seismically active San Francisco Bay Region. Mitigation of ground shaking includes implementing the various geotechnical design recommendations contained in the latter sections of this report.

### III. SITE GEOLOGY

#### A. General

Second Crossing Quarry is within the coastal belt of the Franciscan Complex. Rugged, heavily forested mountains of moderate relief that have been incised by deep canyons characterize the terrain of the coastal belt and the quarry. Annual rainfall in the coastal belt typically varies between 60 and 120 cm (about 24 to 48 inches). Road cuts and streams provide most of the natural bedrock exposures.

The geology of the quarry area consists of bedrock types common to the coastal belt. Within the area of continuously exposed rock in the existing quarry face, and the discontinuous exposures over the expansion area to the west, these rocks are predominantly sandstone with minor argillite. Three surficial units were also mapped at the site. They are, Artificial Fill (af), Colluvium (Qc), and Landslides (Qls). For locations of the mapped geologic units see Figure 3, Geologic Map. For a diagrammatic view of anticipated subsurface geologic conditions see Figure 6, Generalized Geologic Cross Section.

#### B. Geomorphology

The geomorphology surrounding the site is largely controlled by the predominant, northwest trending structural grain and active transpressional tectonics of the region, and by variation in resistance to erosion of the bedrock units. The overall topography surrounding the quarry face is rugged and characteristic of the region. Principle ridge lines of the region trend northwest, reflecting the structural grain. Many natural slopes range from slightly steeper to slightly less than 1:1 (horizontal:vertical). Slopes on wider ridge tops and on river terraces are flat to nearly flat. Slopes on the existing quarry face range from about 2:1 to very near vertical, with an average of 1.3:1. Slopes immediately above the top of the quarry face average about 1.2:1. Slopes on the quarry floor are very close to flat. Slopes of the expansion area are natural and average 2:1 overall, with a 3.2:1 average in the upper part and a 1.3:1 average in the lower part.

The principal geomorphic feature in the proximity of the project is the narrow, well incised, stream valley of Ten Mile River that meanders northeast to southwest across the structural grain. It empties into the ocean a few miles from the quarry. The low, relatively wide river terraces that border the active channel of the river, along with the quarry floor; provide a buffer separating the active channel of the river from the quarry and mining activities. There are no drainage channels through or abutting the existing quarry face or expansion area. In general,

the direction of surface water runoff does not appear to have been significantly altered by mining.

### C. Bedrock Geology

Sandstone Field observations reveal the sandstone exposed within the quarry face is medium gray and massively to occasionally well bedded. It is moderately to closely fractured, and hard when fresh. It is moderately hard to soft when more highly fractured and weathered. It locally contains small shears and shear zones of intensely fractured to crushed rock that is of poor quality. The harder, less fractured rock is of good quality, but yields a relatively high percentage of fines when processed (Whipple, verbal communication, 2004). This better rock is mostly difficult to extract with an excavator without first loosening by ripping. When continuously struck with a rock hammer, much of the better quality rock will eventually break down along preexisting, tight micro-fractures into fragments that are predominantly one to four inches in maximum dimension. Less fractured rock is also present.

The upper west boundary of the existing quarry face, which borders the expansion area, consists of an exposed zone of light brown highly weathered rock that has developed on a localized area of more gently sloping terrain that extends into the upper part of the expansion area. Maximum overburden thickness over this less steeply sloping area could be as great as 10 to 20 feet. Such material is probably only suitable for general fill. Steeper slopes within the expansion area are expected to have only a few feet or less of overburden material, consisting of weathered rock beneath thin soil.

The sandstone locally contains numerous narrow veins of white mineralization. Based on field observation, this mineralization appears to be, or to include laumontite, a hydrous calcium aluminum silicate of the zeolite group. The laumontite is probably an alteration product of feldspar in the sandstone resulting from the low-grade metamorphism that characterizes coastal belt rocks.

Subordinate units of argillite are included within the sandstone. They occur as discontinuous layers of very dark gray, often fissile (crumbly), soft, closely fractured rock, often containing thin sandstone interbeds. The units often pinch and swell along trend and are relatively thin (few inches to few feet). One thick unit (about 20 feet) is exposed near the floor of the existing quarry and projects into the lower part of the expansion area. The argillite displays a well-developed, crenulated shear foliation which predisposes it to easily scale or part parallel to the



foliation direction. The argillite represents what was once shale with thin sandstone units within the massive sandstone prior to the low-grade metamorphism that formed the foliation. This rock is waste material or possibly general fill.

Geologic Structure Bedrock structure within the quarry is characterized by a consistent northwest strike (bearing) and steep northeast to near vertical dips to the bedding, shears, and to the dominant jointing (fractures). Other jointing directions include northeast strikes and steep southeast dips. As described above, the quarry face rock is closely but variably fractured to locally sheared. The shearing and the direction of bedding, as well as the rock types encountered in the quarry face and immediately nearby are generally characteristic of that reported for the Coastal Belt Franciscan (Jayko, 2001). Regionally, the coastal belt rocks are reported to be tightly folded and faulted (Jayko, 2001). Folds were not identified in the quarry face. A number of small faults were observed offsetting bedding. One of these is shown on Figure 3. It strikes northeast with a near vertical dip.

Regional mapping (Jayko, 2001) shows a continuous, inactive fault passing adjacent to the quarry about 1000 feet to the southwest. The same mapping also shows a zone of shearing projecting toward the quarry from the northwest, but terminating or nearly terminating in close proximity to the quarry. Bedding plane shear zones exposed across the quarry may be the terminal strands of that regional shear. The location, strike/dip of bedding, joints, and foliation, and the trend of shears are shown on Figure 3, Geologic Map. A generalization of bedrock structural relationships is shown on Figure 6, Generalized Geologic Cross Section.

#### D. Soils

Dense vegetation and colluvial soils cover the slopes beyond the area disturbed by mining, including the expansion area. Natural soils within the quarry have been removed and as a result, the quarry face is essentially bare rock, except for thin deposits of loose colluvial rock ravel and slough that have worked their way down slope. Colluvial soils are also exposed in old road cuts to the east and slightly beyond the top of the quarry. At these locations, the colluvium was observed to be from three to over six feet in thickness, to contain several percent of weathered rock fragments and to overlie severely weathered sandstone. The soils are very light brown to slightly reddish brown in color, mostly firm to locally crumbly and porous and field classified as gravelly, clayey silts. In their undisturbed state they are covered with a few to several inches of darker colored organic matter. We interpret these soils to be highly susceptible to accelerated erosion if subjected to concentrated runoff, especially if protective

vegetative cover is removed. Unconsolidated soil-like materials are not present on the quarry face, except for the described loose, accumulations of rock ravel (colluvium) locally present on slightly flatter slopes. Similar soils mantle most of the expansion area.

In general, the soils observed match the Soil Survey for Western Mendocino County of 1998 (U.S.NRCS). A map showing the locations of soils identified by the Soil Survey is shown on Figure 4, Soils Map. Descriptions of the soils identified by the Survey are summarized below, with slight modifications to reflect the quarry. Note that the soil thicknesses are based on regional information and local conditions adjacent to the quarry may not always reflect those of the Soil Survey.

Branscomb-Usual complex (50 to 75 percent slopes) This is the soil complex present on either side of the quarry and slightly above. It mainly supports redwood and Douglas-fir trees. The complex is about 50 percent Branscomb very gravelly loam and 30 percent Usual gravelly loam. The soils are light brown, deep to moderately deep to bedrock (sandstone), well drained and have moderate permeability. Sandstone and sandstone/shale bedrock is generally encountered between 30 and 50 inches below the soil surface. Available water capacity is low. Surface runoff is high and the hazard of water erosion is very high for these soils, particularly if the surface is left bare.

Irmulco-Tramway complex (30 to 50 percent slopes) This is the soil complex that is present from slightly above the top of the quarry to the top of the ridge a few hundred feet to the southwest. It mainly supports redwood and Douglas-fir trees. The complex consists of about 70 percent Irmulco loam and 30 percent Tramway loam. The soils are light brown to light brownish gray, moderately deep to deep to bedrock (soft sandstone), well drained, and have moderate permeability. Sandstone bedrock is generally encountered between about 30 and 60 inches below the soil surface. Available water capacity ranges from high to low. Surface runoff is high and the hazard of water erosion is very high, particularly if the surface is left bare.

#### E. Landslides and Slope Stability

Minor rock raveling and sloughing is occurring on the existing quarry face. This has resulted in thin, patchy deposits (Qc) of rock rubble with diameters of a few inches to occasionally one-foot. These materials are incrementally moving down the quarry face. Rarely, larger fragments (up to a few feet) may detach. If some of these larger fragments detach from the upper part of the quarry face, they might roll or bound down the face and progress out onto the quarry floor.

Neither the existing quarry face or expansion area exhibit visual evidence of past or incipient gross rock instability, such as deep seated, planar or wedge failures or massive topples. This overall stability is primarily due to the presence of fresh, competent bedrock that comprises most of the quarry face and which, due to its close proximity, is strongly anticipated to underlie the expansion area. Stability is enhanced by tight, discontinuous fractures, predominantly massive bedding, and only a few significant zones of shearing and soft argillite. Additionally, bedding and many jointing planes dip too steeply to present unfavorable dip-slope conditions. There are however bedding planes and some joint plane orientations which present the potential for minor, planar and wedge-type failures. There is also the possibility of minor topples if steeply dipping argillite layers or zones are exposed during mining. Based on the satisfactory long-term performance of the existing quarry face, the potential for post-reclamation large rock failures appears to be slight. Similar performance is anticipated for the expansion area, based on geologic observation and its close proximity to the existing quarry face.

The exception to overall stability is the top +/- 10 feet of the existing quarry face and extending back for several feet beyond the top to the south. In this small, gently sloping wedged-shaped area, we mapped numerous fresh, open ground fissures and low, continuous scarps. These recent, incipient slope failure features have developed in soil and underlying severely weathered, soft, fractured rock present along the quarry top. The cause of their failure appears to be a lack of lateral support due to the steep, immediately adjacent quarry face. In the short term (next few years), this relatively small volume material (several tens to possibly a few hundred cubic yards) will progressively fail, probably during the wet season, and topple or slide onto the quarry face and work its way down to the quarry floor as loose rubble.

Of more concern from an overall stability standpoint is the mapped presence of a relatively recent (about last five years), continuous, long and well-developed ground fissure located about 130 lateral feet upslope of the top of the quarry face (see Figure 4). The fissure is dilated and displaced downward two to three feet on its down slope side. The flanks of the fissure at either end are curved and can be observed extending part way down slope toward the top of the existing quarry face. This fissure-feature represents a moderately large soil/decomposed rock landslide in its early stages of failure. This slide was likely triggered by previous quarry excavation directly below. Slope geometry and the depth to firm rock exposed in the quarry face suggest the thickness of the slide may be 15 +/- 5 feet. Further development of this slide could translate a substantial volume (several hundred cubic yards or more) of soil and weathered rock debris onto and down the quarry face. Depending on the volume and rate of failure, the debris could

move down onto and across part of the quarry floor. The locations of mapped slides are shown on Figure 3, Site Geologic Map.

F. Springs and Seepage

Our site geologic mapping (August, 2004) did not reveal springs or seepages on the quarry face or upslope. However, the relatively high annual rainfall and the presence of water-loving vegetation indicate that a seasonally shallow groundwater table is possibly present up slope beyond the top of the existing quarry face.

#### IV. MINING PLAN GEOTECHNICAL CONSIDERATIONS & RECOMMENDATIONS

##### A. General

Based on our work we conclude that, with the incorporation of the recommendations provided in this report, the expansion, operation, and reclamation of Second Crossing Quarry is feasible from a geologic and geotechnical standpoint. The primary geotechnical issues are: stability of future and reclaimed slopes, seismicity and its impact on slope instability and the potential for accelerated erosion of unprotected slopes in soil or severely weathered rock.

##### B. Extent, Depth, Quantity, and Type of Rock to be Mined

The target resource of the quarry is fresh, massive, less fractured, Franciscan sandstone. Once processed and free of fines, this rock is relatively high quality aggregate (Whipple-verbal communication, 2004). Based on review of regional geologic maps and our site geologic mapping, large volumes of this rock type (with varying, but small amounts of undesirable argillite) are present in the immediate vicinity of the quarry and well beyond. In all likelihood, this rock type extends to great depths beneath the quarry floor and adjacent ridges.

The proposed expansion area extends approximately 200 to 250 feet west of the existing quarry face and consists of a variably-sloping ridge line. The toe of the expansion area is along the west edge of the existing quarry floor. Its lower, northwestern corner abuts the southeastern edge of the County Road. From top to bottom, the expansion area is about 500 feet long and varies in elevation from about 40 feet on the quarry floor to about 315 feet at the top of the ridge line.

##### C. Mining Methods and Operation

Recent Operations Mining operations consist of removing rock from the existing quarry floor with an excavator and loading it onto haul trucks for transport to the processing plant located about one road-mile to the northeast. While the rock is marginally excavatable due to its hardness and tightness of fractures, blasting is not currently being used to loosen the rock. During mining, dust is suppressed by spray from a water truck.

Following processing the fresh sandstone is sold as aggregate for concrete and asphalt, and as drain rock. Sand, which is a byproduct of the processing, is sold for use in concrete and asphalt. Overburden from the small active pit is currently stockpiled immediately to the north on the quarry floor and is used for reclamation of the small pit.

Working Slope Recommendations: The existing quarry face and floor-will not be further mined. Thus, working slope recommendations are not necessary for these areas. Future mining will only be in the proposed expansion area.

Expansion Area Slope Recommendations: Based on the location, size and identified slope stability issues of the expansion area, the following recommendations are made:

- For overall safety and maintaining control of the excavation, the expansion area should be mined from its upslope boundary downward. This will reduce the risk of a large slope failure by limiting cut slope heights during mining activity.
- Slopes in lightly weathered and fresh rock may be excavated as steep as 1:1, as found necessary.
- Benches no narrower than 10 feet wide should be constructed across the mined slopes for every 30 feet of cut height.
- In order to prevent accelerated erosion of permanent reclaimed slopes, intermediate benches should be angled back into the slope at a minimum of 2 percent and also slope slightly to the east along the contour to drain.
- A Certified Engineering Geologist or Geotechnical Engineer should observe the excavation on at least an annual basis to assess its progress and make additional recommendations as necessary. The inspecting engineer or geologist may recommend more frequent inspections based on his/her site observations.
- All working slopes must conform to the applicable requirements and guidelines set forth in the most current versions of the Federal Mine Safety and Health Administration Program (MSHA) and the California Division of Occupation Safety and Health (OSHA).

## V. RECLAMATION

A. Area Covered Under Reclamation Plan: The existing quarry face (inactive) covers about 8.7 acres. The quarry floor, including the small area currently being mined at the base of the face occupies about 1.1 acres. The described expansion area occupies about 3.1 acres. Thus, the total area that ultimately will have been mined is roughly 12.9 acres. The expansion area will be under the same ownership as the existing mine area. The reclamation plan covers this entire area and is shown on Figure 2.

B. Reclamation Components

The reclamation components are shown on Figure 2, Site and Reclamation Plan. There are three primary, physical components to the reclamation plan. These are:

- The existing, inactive quarry face.
- The proposed expansion area.
- The existing quarry floor.

Existing Quarry Face: Due to its height, steepness (overall approximately 1.3:1), and long-term satisfactory performance, we judge that the existing quarry face is below its Critical Gradient and thus can be left as-is. Slough that periodically moves down the face will be captured by the proposed catchment basin along the base of the face. The capacity of this catchment is also sufficiently large to capture slide debris that may be generated by failure of the large incipient slide located upslope of the top of the quarry face.

Expansion Area: The cut slopes of the expansion area will be excavated at the reclamation cut slope ratio. This ratio is 1:1 (horizontal: vertical). The cuts will be excavated with intermediate benches no less than 10-feet wide every 30 feet vertically. This will be the reclaimed configuration of the expansion area. Good long-term stability is anticipated because the slope cut faces will be in fresh, predominately competent rock. The intermediate benches will capture minor rock ravel. A permanent safety fence will be installed along the west side of the quarry cut to capture larger rock fragments that might detach and roll towards the west edge. We recommend a heavy-duty wire mesh fence (Sentry Secura or similar), five-foot high, minimum. Intermediate benches will intercept other rock ravel.

Quarry Floor: Reclamation of the floor will consist of the excavation of a large catchment basin. The intent of the catchment is to prevent detached material from rolling or bounding down to the

reclaimed quarry floor and possibly causing a safety or property damage risk by impacting the working area at the base of the existing face. The catchment area can also be used as a sediment basin for the sites drainage plan. The purpose of the catchment will also be to provide protection should the incipient slide mass above the existing quarry face fail and progress down-face. In order to provide adequate volume for protection against migration of the slide mass (estimated at approximately 7,000 cubic yards) the catchment basin should be a minimum of 10 feet deep, have a level base a minimum of 60 feet wide and 200 feet long with graded side slopes inclined at 3:1, or flatter. The existing quarry cut face may be used as part of the basin without the need to modify its current inclination.

This basin will also reclaim the quarry floor, but will leave some flat space on the northeast to maintain existing vehicular access and on the northwest to provide a buffer at the base of the expansion area.

Reclamation of the above-described components is intended to take place concurrently with mining over a period of several years. If concurrently done, it will eliminate the need to develop and implement recommendations for erosion protection of long-term (over one year) stockpiles of un-compacted, erodible overburden.

#### C. Soil/Subsoil Overburden Salvage

Field observation suggests organic-rich topsoil (A horizon) is thin (less than six inches) to absent over most of the expansion area. Most of the expansion area top soil is anticipated to be on the upper slopes, which are relatively flatter and more deeply weathered. Topsoil is totally absent from the quarry face and floor. Beneath the topsoil, subsoil is locally exposed. It consists of sandy silt, to silty sand with clay and variable amounts of angular rock fragments. Given the moderately steep-to-steep slopes over much the expansion area, these materials are likely colluvial, and are slowly creeping down-slope. Based on our observations and experience, topsoil and upper subsoil (colluvium) may be a suitable medium for re-vegetation.

#### D. Reclaimed Cut and Fill Slope Recommendations

Recommendations for final reclaimed cut slopes in the expansion area include:

- Since it is intended that the mined slope configuration will also be the reclaimed slope configuration, the reclaimed slopes shall be at least mined down to a depth where firm, stable material is encountered. Such material is present beneath the soil and underlying mantle of highly discolored (reddish to yellowish brown), decomposed rock and consists



of fresh to slightly weathered rock. It will be recognized as material that becomes increasingly more difficult to excavate using heavy-duty grading equipment, such as the excavator used onsite.

- Our geologic observations indicate that the final 1:1 cut slopes in fresh rock will perform in a satisfactory manner from a slope stability standpoint. Observations of the existing cut face and study of its bedding and joint data support this conclusion.
- Minimum 10-foot wide drainage/catchment benches should be constructed every 30 vertical feet.
- In order to prevent accelerated erosion of permanent reclaimed slopes, intermediate benches should be angled back into the slope at a minimum of 2% and sloped slightly to the east parallel to the face contours to allow drainage.
- V-ditches should be constructed along the inside edge of the benches.
- A rock-lined V-ditch or earth swale should be built along the top of the expansion area cut to collect any runoff from continuing down the cut faces.
- The benches and V-ditches should be sloped to convey the collected runoff into an approved drainage system designed by the project Civil Engineer.
- The top of the overall cut slope should be rounded off to prevent a sharp edge that will be susceptible to accelerated erosion or sliding.
- Soil/subsoil and overburden should be separately stockpiled and re-vegetated to minimize erosion. Stockpile slopes shall be no steeper than 3:1 (H:V). At the conclusion of mining, the soil and overburden will be applied to areas to be re-vegetated and then seeded.
- A Certified Engineering Geologist or licensed Geotechnical Engineer should periodically observe the cut excavation during its construction to provide recommendations as found necessary for the stability and overall performance. Following the occurrence of an earthquake, an inspection should be made of all working and reclaimed slopes. Experienced, onsite mining personnel should perform the inspections. The intent shall be to identify any failure or incipient failures that require correction for safety or ongoing mining. In the event of large failures, a Certified Engineering Geologist or licensed Geotechnical Engineer should be retained to recommend repair procedures.

Recommendations for the catchment basin to be constructed on the quarry floor are as follows:

- Fill material used shall be reasonably free of organics and other deleterious material and shall be sufficiently moist to achieve compaction as described below.
- For safety and to provide adequate volume, cut or fill slopes for the catchment basin should be constructed at an inclination of 3:1 or flatter. For fill slopes, this would require less compaction than commonly specified 2:1 slopes and could be achieved by thoroughly track-walking the fill material with a dozer (85% compaction is desirable). A field technician would not be required for inspection and testing in this case.
- Since the existing quarry floor presents a broad, flat and apparently firm base, a keyway for new fills will not be necessary. The floor should first be scarified to a depth of 8-10 inches before fill placement is initiated.
- To prevent surface erosion and gulying of the slopes, the surfaces of the fills should be protected by vegetation as discussed elsewhere in this reclamation document.
- If construction takes place over more than one year, it should be winterized at the end of each construction season. The intention is to prevent erosion damage to new slopes, to minimize the generation of eroded sediment, and to maintain eroded sediment within the reclamation area and away from nearby streams. Winterization typically includes hydroseeding along with the strategic positioning and adequate anchoring of a sufficient number of straw bales, waddles, etc., and the construction of short-term runoff retention and filtering structures. These and related facilities should be in place before the first heavy rains of the season, preferably by mid-late October.
- A Certified Engineering Geologist or licensed Geotechnical Engineer should periodically observe the fill during construction to provide supplemental recommendations as found necessary.

Recommendations for the quarry floor are as follows:

Reclamation of the quarry floor will be accomplished through construction of the described catchment basin. The buffer area at the base of the expansion area shall be planted with “screening” cover, and the access roads shall be ripped and disked prior to reseeding. No other geotechnical recommendations for quarry floor reclamation are necessary. However, for facilities to be located on or below the quarry floor, the following is recommended:

- Where subdrains, or other structures used for drainage or water retention are either buried in or rest on top of reclaimed fill on the quarry floor, the compaction of the fill

under and around these structures should be designed to minimize the settlement of the fill to limit damage or decreased performance over the long term.

- Gravity flow storm drains, open channels, or other improvements with minimal slopes toward outfalls may be adversely impacted by settlement of loosely compacted fill and should be designed accordingly.
- The existing, large visual berm of artificial fill located along the north end of the quarry floor can remain, be extended, or modified as needed.
- The safety fence should be extended around the outside edge of the final quarry floor once mining is completed. This will provide long-term protection for the county road from loose rock.

The proposed end use does not call for any structures to be built on the site and our recommendations for reclamation of the quarry floor reflect this. Fill placed as described above will not be suitable for the construction of buildings because some fill settlement is expected over time. If structures are ever proposed on the site, a complete geotechnical and geologic evaluation must be conducted to determine feasibility and provide design recommendations.

#### E. Monitoring

The services of a Certified Engineering Geologist should be retained on an annual basis for no less than five years following reclamation to assess the success of the recommendations set forth in this report, especially with respect to the stability of the final reclaimed cut slopes, and to make recommendations for changes as necessary.

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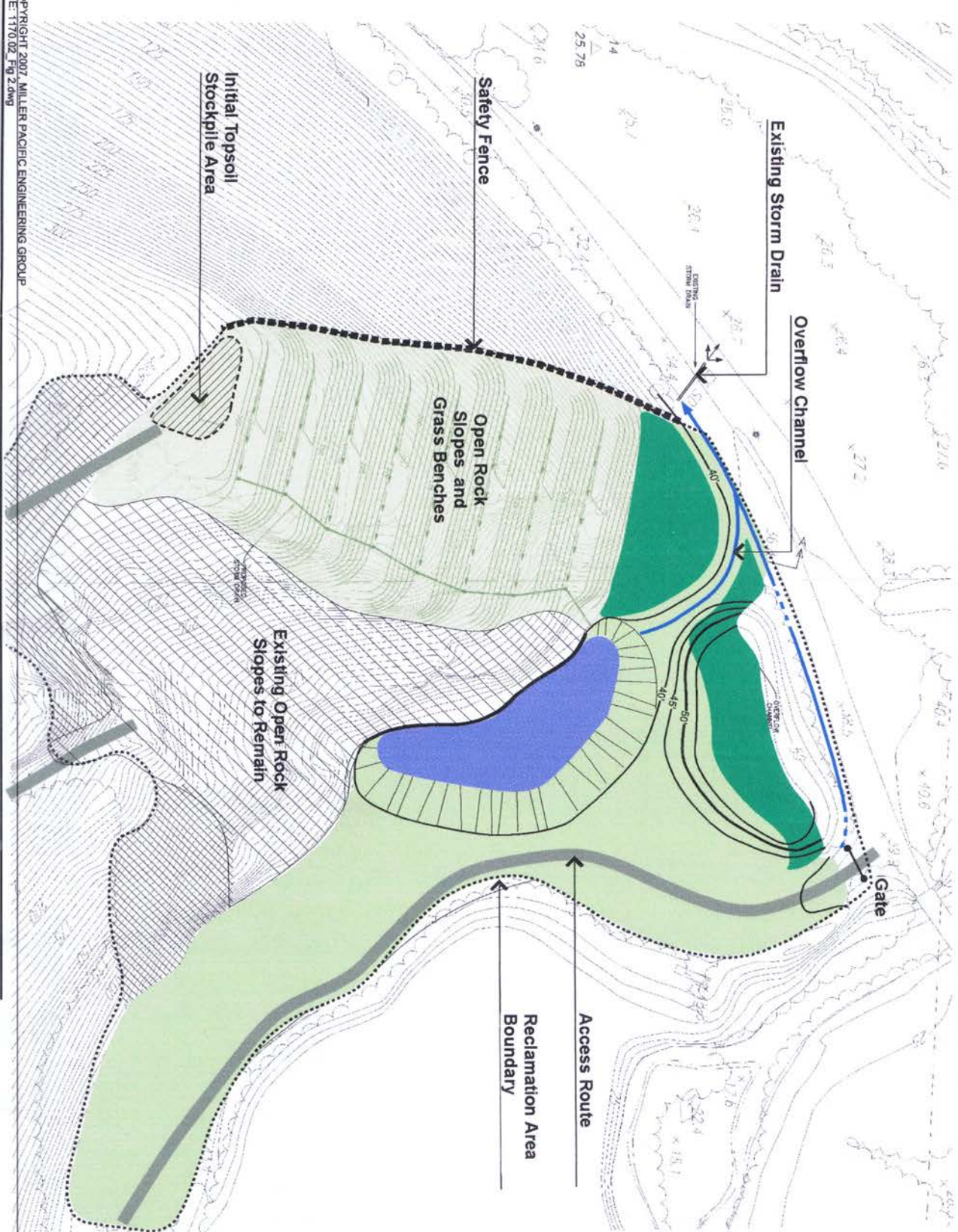
**Ten Mile River  
Reclamation Plan:  
Second Crossing  
Quarry**

Bayman Gravel Co. Inc.  
1221 N. Main St.  
Fort Bragg, Ca. 95437

**Exhibit 5A  
Revegetation Plan\***

**Legend**  
(see text for explanation)

-  Reclamation Area Boundary
  -  Grassland
  -  Screening Vegetation
  -  Sediment Basin
- \* see also Reclamation Specifications

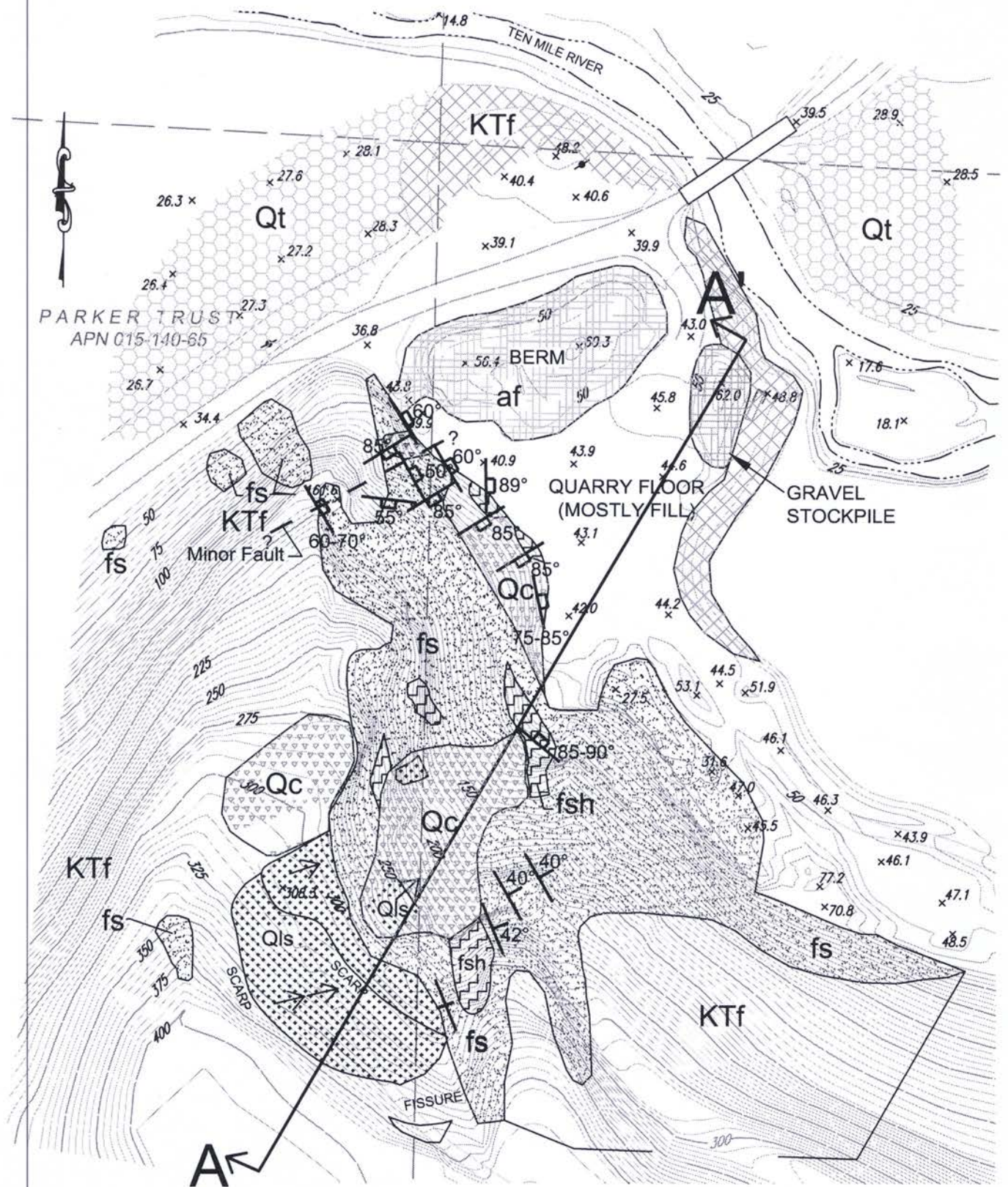


Date of Topographic Survey: August, 2008 based on aerial photography dated 7-8-08  
Prepared by: R.P.L.S. & A.S. B.  
1031 W. Main Street, Ukiah, CA

North  
0 10 20 Feet

3/9/07





NOTE: For Map Legend see Figure 6  
 REFERENCE: Point Co., 2004  
 COPYRIGHT 2004, MILLER PACIFIC ENGINEERING GROUP  
 FILE: 1170.02\_Fig3.dwg

SCALE  
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**Miller Pacific**  
 ENGINEERING GROUP

GEOLOGIC MAP  
 Ten Mile Second Crossing Quarry  
 Fort Bragg, California

3

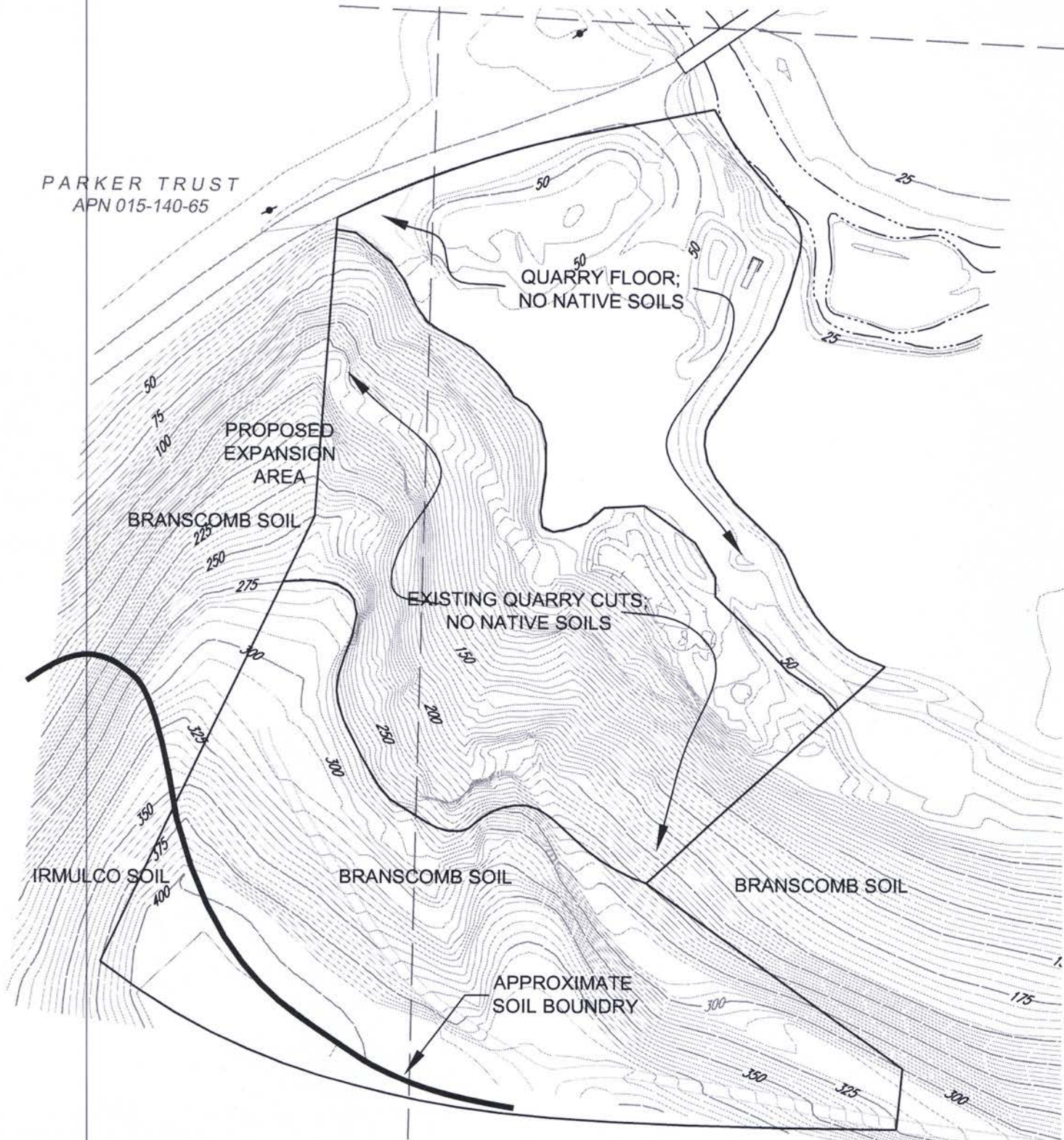
Project No. 1170.02

Date 3/9/07

Approved By:

Figure





REFERENCE: Point Company Photogrammetric Services, May 4, 2004  
 USNRCS, Soil Survey of Western Mendocino Co., 1998

SCALE

0 75 150 300 FEET

FILE: 1170.02\_Fig4.dwg

**Miller Pacific**  
 ENGINEERING GROUP

SOIL MAP  
 Ten Mile Second Crossing Quarry  
 Fort Bragg, California

4

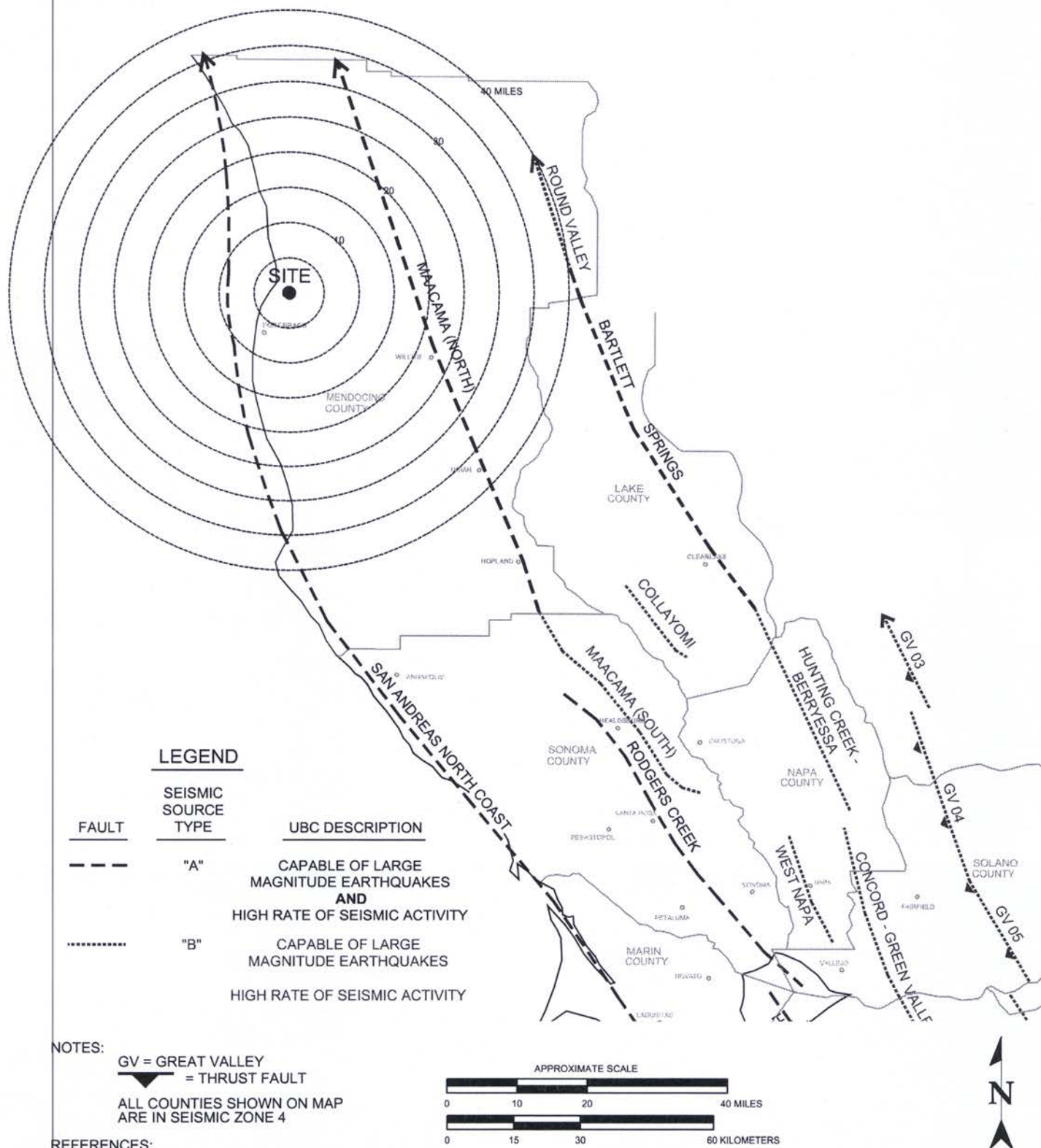
Project No. 1170.02

Date 3/9/07

Approved By:

Figure





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**Miller Pacific**  
 ENGINEERING GROUP

**ACTIVE FAULT MAP**  
 Ten Mile Second Crossing Quarry  
 Fort Bragg, California

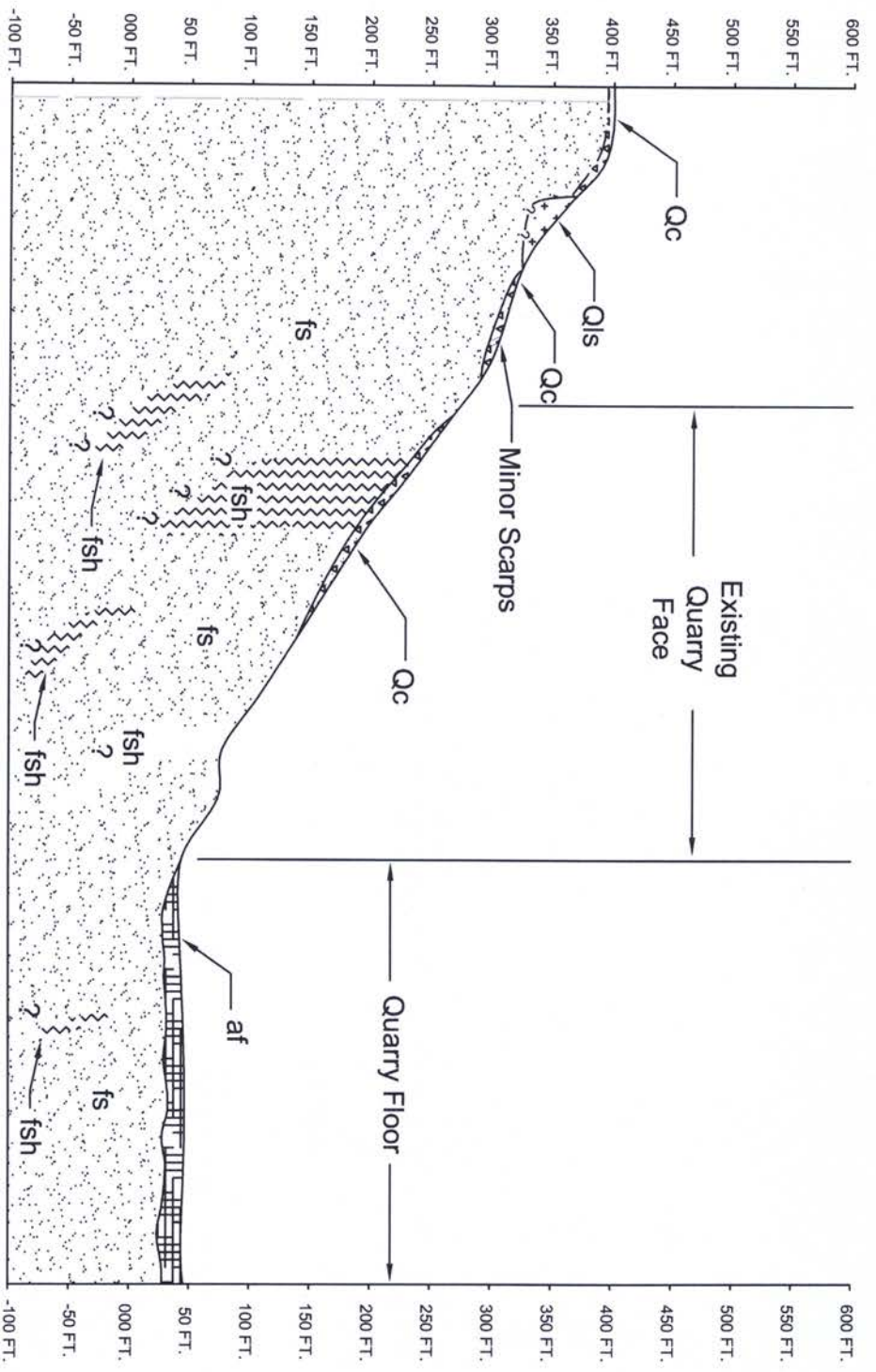
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Project No. 1170.02

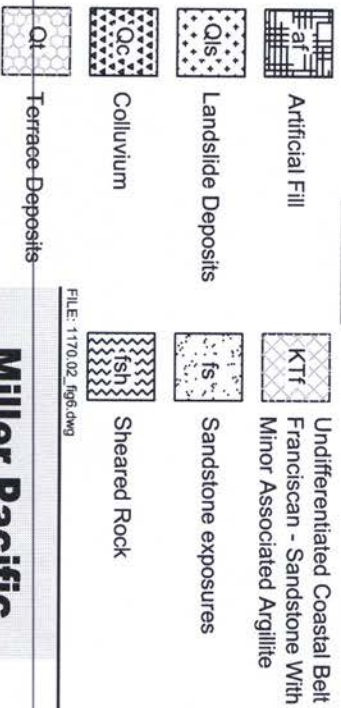
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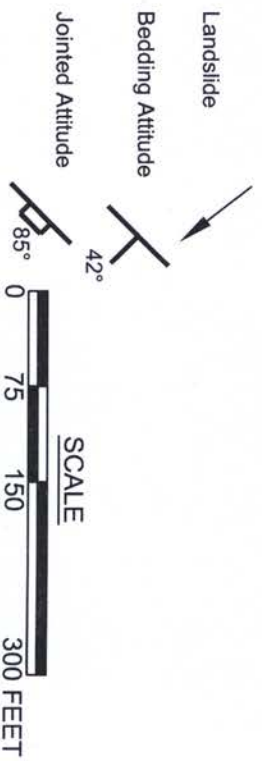
**Figure**



# LEGEND



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**Miller Pacific**  
ENGINEERING GROUP

GENERALIZED GEOLOGIC CROSS SECTION  
Baxman Quarry  
Fort Bragg, California

6

Project No. 1170.02

Date 3/9/07

Approved By:

Figure

# **Geologic and Geotechnical Report**

## **Ten Mile Screening Plant**

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**GEOLOGIC & GEOTECHNICAL REPORT  
SCREENING PLANT RECLAMATION PLAN  
ON TEN MILE RIVER  
RURAL MENDOCINO COUNTY, CALIFORNIA**

December 10, 2004,

Project 1170.01

Prepared For:  
Baxman Gravel Co. Inc.  
1221 North Main Street  
Fort Bragg California 95437

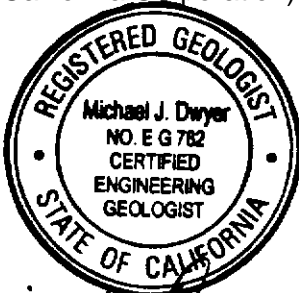
Attn: Sherry Luoma  
Environmental Compliance/Safety Manager

**CERTIFICATION**

This document is an instrument of service, prepared by or under the direction of the undersigned professionals, in accordance with the current ordinary standard of care. The service specifically excludes the investigation of radon, asbestos, toxic mold and other biological pollutants, and other hazardous materials. The document is for the sole use of the client and consultants on this project. Use by third parties or others is expressly prohibited without written permission. If the project changes, or more than two years have passed since issuance of this report, the findings and recommendations must be reviewed by the undersigned.

**MILLER PACIFIC ENGINEERING GROUP**  
(a California Corporation)

**REVIEWED BY:**



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GEOLOGIC & GEOTECHNICAL REPORT  
SCREENING PLANT RECLAMATION PLAN  
ON TEN MILE RIVER  
RURAL MENDOCINO COUNTY, CALIFORNIA

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GEOLOGIC & GEOTECHNICAL REPORT  
PROCESSING PLANT RECLAMATION PLAN  
ON TEN MILE RIVER  
RURAL MENDOCINO COUNTY, CALIFORNIA

I. INTRODUCTION

A. Purpose and Scope of Services

The purpose of this report is to provide background information and make recommendations for the geologic and geotechnical aspects of the reclamation plan for the screening plant of Baxman Gravel Company, located on Ten Mile River in rural Mendocino County, California. The California Surface Mining and Reclamation Act of 1975 and the Mendocino County Surface Mining and Reclamation Ordinance #s 3263, 3283, and 3890 require these services. Our work was performed as outlined in our Agreement for Professional Services dated July 28, 2004. The specific subjects covered in this report are:

1. A select review of pertinent published literature including geologic maps, soil surveys, the pre-existing reclamation plan, and governmental ordinances/regulations that affect the project.
2. A review and interpretation of stereo-paired aerial photographs covering the site.
3. The results of geologic reconnaissance and field mapping of the site.
4. Descriptions of the regional and site-specific geology including the preparation of a site geologic map covering the plant.
5. Geotechnical engineering recommendations.
6. Data Analysis.
7. Meetings.
8. Report Preparation.

B. Background

The Baxman screening plant is located approximately six miles north and 3 miles east of Fort Bragg, in rural Mendocino County, California. The plant has been in operation for several years and occupies about 5.1 acres. The plant is located on a flat to gently sloping river terrace immediately adjacent to the east side of Ten Mile River. The elevation is roughly between 200 and 220 feet. The location of the plant is shown on Figure 1, Site Location Map.

C. Geologic Reconnaissance

A geologic field reconnaissance at the site was done in August of 2004. The field reconnaissance was supplemented by interpretation of a set of stereo-paired aerial photographs. The photographs reviewed are listed below.

<b>Date</b>	<b>Scale</b>	<b>ID Number</b>	<b>Source</b>
May 4, 2004	1"= 600'	141307	Point Co., Fair Oaks, CA



## II. REGIONAL GEOLOGY & SEISMICITY

### A. Regional Geology

The subject screening plant is located within the northern part of the regional Coast Range Geomorphic Province of California. Topographically, the Province is characterized by northwest-southeast trending mountain ranges of moderate relief, with intervening deep canyons, or narrow stream valleys. The province is known for its active seismicity, landsliding and erosion. Within the Province there are occasional larger, alluvium-filled, basin-shaped valleys. In Mendocino County, these include the valleys occupied by the communities of Ukiah, Willits and Laytonville. Most of these valleys are associated with known or suspected active, strike slip faults that appear to have formed in part by extensional down dropping associated with suspected step-over movements along these faults. Along the coastline there is a series of nearly flat marine terraces that topographically ascend easterly in a rough stair-step fashion. The older and higher of these terraces are less well preserved due to erosion and often deformed by mountain building processes. The town of Fort Bragg and environs are built upon one of the youngest, most well preserved of these terraces. The terraces result from the long-term interaction between changes in sea level and coastal uplift due to a regional component of tectonic compression along the San Andreas Fault.

The lower reaches of many of the major streams in westernmost Mendocino County have deeply incised, meandering bedrock canyons. The canyon bottoms have formed into stream valleys do to high erosion rates and a rise in sea level during latest Pleistocene and Holocene times (roughly about the last 15,000 years). The resulting deposits of silt, sand and gravel have resulted in valleys that are locally several hundred feet wide. The modern stream channels occupying these valleys meander back and forth across them. Most of these streams have cut down several feet into the alluvium resulting in the formation of low, elevated terraces to either side of the stream channels. Many of these terraces are sufficiently above the active channel to offer flat locations for agriculture, recreation and commercial/industrial activities.

The Franciscan Complex is the basement (deepest known) rock of the Province and it consists of a diverse assemblage of rock units, including sandstone, shale, greenstone (altered, submarine volcanic rocks), chert, and lesser amounts of conglomerate, and hard schistose rocks of the Jurassic-Cretaceous Age (65-190 million years ago) (Huffman & Armstrong, 1980). In northern California the Complex has been subdivided into three, regional, irregular, northwest



trending zones, referred to as the Eastern, Central, and Coastal belts (Jayko, 2001). Geologically, the Coastal belt is located south of the Mendocino Triple Junction and east of the San Andreas Fault. These three structurally complex belts are distinguished by their contrasting age, structural style, and metamorphic grade. Of these rock types, the most prevalent is sandstone, which is massively bedded, and has occasional shale interbeds. Masses of serpentinite of various dimensions are locally present, mostly within the central and eastern belts. The serpentinite has been intruded and faulted into the Complex during long and ongoing tectonic processes.

The subject screening plant is located within the Coastal belt immediately east of Ten Mile River, about six miles north and three miles east of Fort Bragg. The Coastal belt is composed of a relatively homogeneous sequence of interbedded arkosic sandstone and argillite (shaley) with scarce pebble and cobble conglomerate. Even more scarce is pelagic (deep water) limestone, chert and basalt (probably greenstone-altered submarine volcanic rock). The Coastal belt rocks have been mildly metamorphosed to the zeolite grade facies and the soft, white zeolite mineral, laumontite is found as veins in much of the sandstone and argillite.

## B. Seismicity

Background The project site is located within a seismically active area and will therefore experience the effects of future earthquakes. Earthquakes are the product of the build-up and sudden release of strain along a “fault” or zone of weakness in the earth's crust.

Within north-coastal California, faults are concentrated along the San Andreas Fault zone. The movement between formations along either side of a fault may be horizontal, vertical, or a combination and is radiated outward in the form of energy waves. The earthquake force is transmitted through hard rock in short, rapid vibrations, while this energy movement becomes a long, high-amplitude motion when moving through soft ground materials. Long, high amplitude motions are typically more destructive.

For most purposes, an “active” fault is defined as one that shows displacement within the last 11,000 years and, therefore, is considered more likely to generate a future earthquake than a fault that shows no sign of such geologically recent rupture. The locations of the currently known active faults relative to the project site are shown on Figure 2, Fault Map. No known active faults pass through the screening plant area (Hart and Bryant, 1997). The nearest major

fault to the quarry is the San Andreas Fault (northern segment), which is approximately 11 miles to the west. The San Andreas is one of the worlds largest transform (strike slip) faults. It has the potential for a maximum earthquake magnitude of about 8.0 – a very major earthquake. The southern Maacama Fault is characterized as a predominately strike-slip fault with a maximum potential earthquake magnitude of 6.9 – a large earthquake. The 1997 Uniform Building Code (UBC) classifies the northern San Andreas as a Type A, which means it has a high rate of seismic activity *and* is capable of generating large magnitude earthquakes. The Maacama Fault classified as a Type B fault, which means the fault is capable of generating large magnitude earthquakes *or* a high rate of seismic activity.

The Richter or Moment Magnitude Scale provides a method to deduce the magnitude of an earthquake from seismologic instruments. The measurement of magnitude provides a rating that is independent of the place of observation and thus allows a comparison of seismic events. Magnitude is measured on a logarithmic scale; every one-unit increase indicates an increment of roughly 30 times the energy. For example, an 8.0 magnitude earthquake would have an energy level 30 times that of a 7.0 magnitude and 900 times that of a 6.0 magnitude earthquake.

Historic Fault Activity The potential for strong seismic shaking at the project site is high. Due to its close proximity, the San Andreas Fault presents the highest potential for severe ground shaking. The San Andreas is one of the world's longest and active faults. It caused the Great San Francisco Earthquake of 1906. Surface rupture from the earthquake extended along this fault at least as far north as Shelter Cove in Humboldt County. It resulted in very extensive ground shaking damage to Fort Bragg, which at that time was a community of only 1600 people. The significant adverse impact associated with strong seismic shaking is potential damage to processing facilities at the plant site. Recommendations that will reduce the impact of seismic shaking on the facilities are presented in later this report.

Numerous earthquakes have occurred in the region within historic times. The results of our computer database search indicate that 28 earthquakes (Richter Magnitude 5.0 or larger) have originated within 100 kilometers of the site area between 1735 and 2004. Using empirical attenuation relationships, the maximum historic acceleration at the ground surface (median peak) at the project site is approximately 0.44g. The five most significant historic earthquakes to affect the project site are summarized in Table A.

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TABLE A  
SIGNIFICANT HISTORIC EARTHQUAKE ACTIVITY  
SCREENING PLANT ON TEN MILE RIVER  
FORT BRAGG, CALIFORNIA

<u>Epicenter (Latitude, Longitude)</u>	<u>Historic Richter Magnitude</u>	<u>Year</u>	<u>Distance</u>	<u>Peak Site Acceleration</u>
39.44, -123.96	8.3	1906	13	0.44
39.20, -123.80	6.4	1898	39	0.13
40.24, -124.35	6.2	1991	91	0.05
40.23, -124.27	5.9	1968	87	0.05
40.10, -124.00	5.8	1878	64	0.05

Reference: CDMG (1998), USGS (1999), USGS (2004), Abrahamson and Silva (1997 – Rock Sites), Seed et. al. (1997)

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The calculated site accelerations should only be considered as reasonable estimates. Many factors (soil conditions, orientation to the fault, etc.) can influence the actual ground surface accelerations. Significant deviations from the values presented are possible due to geotechnical and geologic variations from the typical conditions used in the empirical correlations.

Seismic Ground Shaking The intensity of ground shaking depends on the characteristics of the causative fault, distance from the fault, the earthquake magnitude and duration, and site-specific geologic conditions. Estimates of peak bedrock accelerations are based on either deterministic or probabilistic methods. For many types of improvements, deterministic methods are more commonly used.

Deterministic methods use empirical relations developed from data collected during previous earthquakes to provide estimates of median peak ground accelerations. A summary of the active faults that could most significantly affect the Ten Mile Screening Plant site, the maximum credible magnitude, closest distance to the site, and probable peak accelerations are summarized in Table B.

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TABLE B  
ESTIMATED PEAK GROUND ACCELERATIONS  
SCREENING PLANT ON TEN MILE RIVER  
FORT BRAGG, CALIFORNIA

<u>Fault</u>	<u>Maximum Credible Moment Magnitude</u>	<u>Distance to Fault (km)</u>	<u>Median Peak Ground Acceleration (g)</u>
San Andreas	7.9	16	0.36
Maacama	7.1	24	0.22
Bartlett Springs	7.1	64	0.10
Rogers Creek	7.1	111	0.06
Hayward	7.1	161	0.05

Reference: CDMG (1998), USGS (1999), USGS (2004), Abrahamson and Silva (1997 – Rock Sites), Seed et. al. (1997)

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The calculated accelerations should only be considered as reasonable estimates. Many factors (soil conditions, distance, orientation to the fault, etc.) can influence the actual ground surface accelerations. The locations of the principal active faults and other significant faults are shown on the Active Fault Map, Figure 2.

As Table B indicates, the San Andreas Fault presents the greatest potential for significant seismic shaking at the project site. The principal adverse impact associated with seismic shaking is potential damage to processing plant facilities.

### III. SITE GEOLOGY

#### A. General

The processing plant is within the Coastal belt of the Franciscan Complex. Rugged, heavily forested mountains of moderate relief that have been incised by deep canyons characterize the terrain of the coastal belt and the quarry. Rainfall in the coastal belt typically varies between 60 and 120 cm (about 24 to 48 inches). Road cuts and streams provide most available bedrock exposures.

The bedrock geology surrounding and including the screening plant consists of rock types common to the Coastal belt Franciscan, which predominantly of massive sandstone with minor argillite. These rocks are present beneath the stream terrace upon which the entire plant site is located and they occupy the steep hill slopes that rise above the terrace to the east. The stream terrace deposits consist of elevated, unconsolidated gravels, sands and silts. Less extensive surficial units were also observed at or immediately adjacent to the site. They are artificial fill and colluvium.

#### B. Geomorphology

The principal geomorphic feature of the area surrounding the plant site is the relatively narrow, well incised, stream valley of Ten Mile River that meanders northeast to southwest across the northwest structural grain of the region. It empties into the ocean a few miles from the plant site. Principal ridgelines of the region trend northwest, reflecting the geologic grain or structure of the region. Low, relatively wide river terraces border the active channel of the river, and at the site, provide a narrow buffer separating the active channel of the river from the processing activities of the plant. The geomorphology of the area is controlled by variations in the resistance to erosion of the bedrock and the regional tectonics active in the area. The overall topography of the region is rugged, with many of the nearby canyon slopes ranging from slightly steeper to slightly less than 1:1 (horizontal:vertical).

The stream terrace, upon which the plant is located, consists of a continuous, broad, very gently sloping bench or flat above and adjacent to the east side of Ten Mile River. The plant site terrace is approximately 15 to 17 feet above the channel of Ten Mile River. There are no stream channels draining through the plant site and the direction of surface water runoff does not appear to have been significantly altered by the plant. Immediately in back of the plant (east),

canyon bottom slopes rise abruptly and steeply upward along the inside edge of the stream terrace.

#### C. Bedrock Geology

##### Sandstone

Review of published geologic maps (Jayko, et.al, 1989) and our geologic mapping reveal that sandstone and associated argillite underlay the stream terrace deposits comprising the site. The sandstone is medium gray, and predominantly massively bedded. It is moderately to closely fractured, and moderately hard to hard when fresh. It locally contains small shears and shear zones of intensely fractured to crushed rock. The associated argillite occurs as mostly thin zones of very dark gray, often fissile (crumbly), soft, and closely fractured to sheared rock. Prior to regional metamorphism of the Coastal Belt rocks, the argillite was a shale or mudstone interbedded within the sandstone.

##### Geologic Structure

Bedrock structure (beneath the terrace) is characterized by a consistent northwest strike (bearing) and steep northeast to near vertical dips to the bedding, shears, and to the dominant jointing (fractures). Other jointing directions include northeast strikes and steep southeast dips. The rock is closely fractured to locally sheared. The shearing and the direction of bedding, as well as the rock types exposed in the general area are generally characteristic of that reported for the Coastal Belt Franciscan. Regionally, the coastal belt rocks are reported to be tightly folded and faulted.

#### D. Soils

Natural soils at the plant site have been covered by a layer crushed rock and sand to provide a suitable working surface for heavy equipment. Soils beneath and exposed on terrace surfaces up and downstream are predominantly Bigriver loamy sand, 0 to 5% slopes (USNRCS,1998). On a regional basis, the soil is a pale brown and very pale brown loamy sand less than a foot thick. The subsoil is variegated, brown, yellowish brown and grayish brown, stratified loamy sand. Permeability is moderately rapid and available water capacity is moderate. Surface runoff is slow and the hazard of erosion is slight. Note that the soil thicknesses are based on regional information USNRCS (1989) and local conditions adjacent to the plant may vary from regional values.

E. Landslides and Slope Stability

The plant site is flat and not subject to slope instability. The base of the steep slopes immediately to the east did not display identifiable indication of gross instability.

F. Springs and Seepage

Our plant site reconnaissance mapping (August, 2004) did not reveal springs or seepages within the plant site.

#### IV. PLANT GEOTECHNICAL CONSIDERATIONS & RECOMMENDATIONS

##### A. General

Our work shows there are minimal geologic and geotechnical issues related to plant operation and reclamation. We conclude that, with the incorporation of the recommendations provided in this report, the continued operation and reclamation of the plant is feasible. The primary geotechnical issue is: The potential impact of seismic shaking on the plant facilities. Due to the limited scope of our evaluation we cannot form an opinion on other geotechnical hazards, such as liquefaction or seismically induced settlement.

##### B. Plant Operation

The plant crushes and screens sandstone quarried from the Ten Mile Second Crossing Quarry located about one road-mile to the south. Truck access is provided by paved road from the quarry. The target resource of the quarry is fresh, massive, less fractured, Franciscan sandstone. Once processed and free of fines, this rock is relatively high quality aggregate (Whipple-verbal communication, 2004). Following processing, it is sold as aggregate for concrete and asphalt, and as drain rock. Sand, which is a byproduct of the processing, is sold for use in concrete and asphalt. Plant facilities consist of crushers, screens, conveyor systems, a siltation pond, stockpiles of processed and unprocessed resource, heavy equipment, storage sheds, and ancillary facilities, such as buried pipelines, water pumps, etc.



## V. RECLAMATION

### A. Area Covered Under Reclamation Plan

The area covered under this reclamation plan consists of 5.1-acre site occupied by the processing plant.

### B. Reclamation Recommendations

Reclamation of the screening plant site primarily involves revegetation and hydrology recommendations for erosion control, which are described elsewhere in this document. We understand the site is not currently planned for redevelopment. If new structures or developments are planned, the reclamation should be performed to accommodate the new facilities. Geologic/geotechnical recommendations for plant operations and reclamation are provided as follows:

- Quarry processing equipment, especially conveyors with their high center of gravity, may pose a safety hazard during strong seismic shaking. To reduce this potential hazard during the remaining life of the plant, the equipment should be inspected to insure that it is securely anchored to the quarry floor. Typically this involves securing the base of the equipment to deep footings or shallow piers that are constructed according to current building code standards that take into consideration the potential for seismic shaking at the site (see Table B in the Seismicity section of this report).
- The existing sand and gravel berm constructed along the periphery of the site is not of consistent height. For aesthetic and minor flood control purposes, the berm should be upgraded and maintained at its maximum height, which is about 3.5 feet.
- Upon closure, the site shall be reclaimed to its predevelopment stream terrace configuration. This will require only minimal grading without significant cut or fill. The configuration will consist of a generally smooth surface, graded to drain at approximately 2% toward the channel of Ten Mile River.
- The siltation pond shall be cleaned out, the materials dried and then replaced in 6 to 12 inch lifts thorough trackwalking to produce a surface that will not be subject to excessive

settlement and resultant ponding of surface runoff. As an alternative to cleaning out the pond, the silt could be left to dry for a period of time sufficient to support a dozer. The surface could then be scarified and backfilled with compacted, native, terrace deposits. Compaction would be achieved by working the fill material onto the dried surface in 6 to 12 inch lifts and thoroughly trackwalking it to achieve compaction. The surface of the fill would extend above grade as a low mound to compensate for future settlement of the partially dried silt. This mound should be sloped to drain at no flatter than a 5% slope.

- Existing underground improvements, such as pipelines or foundation should be removed and the resulting excavations backfilled with compacted soils. The soils should be compacted to at least 85% relative compaction.
- Following the occurrence of an earthquake, an inspection should be made of all operating, overhead facilities to assess any earthquake damage. The inspections should be done by experienced, onsite mining personnel. The intent shall be to identify any failure or incipient failures that require correction for safety or ongoing rock processing.
- Near the completion of reclamation grading, an engineering geologist or geotechnical engineer should observe the results of the grading to see if it conforms to reclamation recommendations.

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# **Appendix B**

## **Hydrology and Drainage**

Note: The discussion under "Quarry Site" in this report applies to an earlier quarry site plan with respect to the sediment basin design. While the overall drainage area of the quarry site remains, the same sediment basin in the current site plan has been expanded to provide substantially greater capacity. This appendix has been included with this application, however, because of the hydrologic baseline information it contains.

## Regional Hydrology and Climate

### *Climate*

The Ten Mile River watershed is located in a Mediterranean-type climate, with abundant rainfall and cool temperatures during the winter, and dry hot summers punctuated with cool breezes and fog along the coast. Long-term rainfall at the nearby Fort Bragg rain gage (National Weather Service station number 043161) averages 40.4 inches per year (Table A1). Figure A3 illustrates the variation in annual and monthly precipitation. The wettest water year<sup>1</sup> was 1998 with a total of 77.3 inches; the driest was 1977 with 16.6 inches. Water year 1988 was also quite dry with only 17.5 inches recorded.

Rainfall increases inland in this part of coastal California. Precipitation nearly doubles across the Ten Mile River watershed precipitation nearly doubles from its mouth to the headwater divides (Figure A2).

The length of the irrigation season in the region varies from year to year, depending primarily on the amount of rainfall during February, March and April (Parfitt and Germain, 1982). Another source of information of water use in grassed areas along the central Mendocino coast came from members of families (Biaggis, Stornettas) with multi-generational roots in the local agricultural community, who told us their understanding of seasonal and long-term patterns. First irrigation normally comes in mid-May but can differ by as much as three weeks. Irrigation ends with the first major rainfall of the season, which is commonly mid- to late-October. During the driest years, irrigation can continue through Thanksgiving weekend.

### *Regional Hydrology*

Ten Mile River drains an area of about 120 square miles and flows west to the coast (Figure A1). Its watershed is situated between the catchments of the Eel River to the north and the Noyo River to the south. It shares ridges with Wages Creek and the South Fork of the Eel River on the north, and to the south it shares Ramsey Ridge with Pudding Creek and Sherwood Ridge with the North Fork of the Noyo River. Ten Mile River has three forks. Bucha Ridge divides the North Fork from the Middle Fork, and Smith Ridge, the Middle Fork from the South Fork. All three forks have roughly equivalent size drainage basins (Table 5), with the Middle Fork being slightly smaller (33 square miles). The US Geological Survey operated a stream gage on the Middle Fork of the Ten Mile River from September 1964 through September 1973 (Table A3), a period deviating little from annual mean precipitation (Figure A3). Longer term, the Noyo River has

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<sup>1</sup> Most hydrologic measurements and analyses in California are conducted on a water-year basis, beginning October 1 and ending September 30 of the named year. For example, water year 1998 ("WY1998") began on October 1, 1997, and ended on September 30, 1998

been gaged since late 1949, continuing to the present (Table A2). Comparing the mean annual runoff of 36 inches at the Middle Fork gage (Table A3) with the mean annual basin precipitation (63 inches, Figure A2), regional runoff is estimated at 57 percent of incident precipitation

Little information is available regarding the distribution and seasonal fluctuation of ground water. A portion of both sites is probably originally stream terrace deposits, where summer water levels are typically 5 to 12 feet below ground surface (bgs) (Parfitt and Germain, 1982), and usually shallower in winter, with 3 to 5 feet bgs being typical. These values are consistent with those reported in one comprehensive hydrogeologic analysis now underway of the Newman Creek watershed, about 10 miles to the south, where terrace-deposit permeabilities of 3 to 10 feet per day are reported (Lampley, 2004). Deeper ground water and permeabilities two to three orders of magnitude lower are reported from the arkosic sandstones (Dwyer and Morisoli, 2004) in which the Second Crossing quarry was developed. Ground-water salinities, expressed as specific conductance, are typically very low, in the range of 100 to 200  $\mu\text{mhos/cm}$ , and do not constrain use of the water in any way. No naturally-occurring constituents of concern have been identified in the ground waters of this type, despite many water-quality analyses in numerous wells in the region (Parfitt and Germain, 1982).



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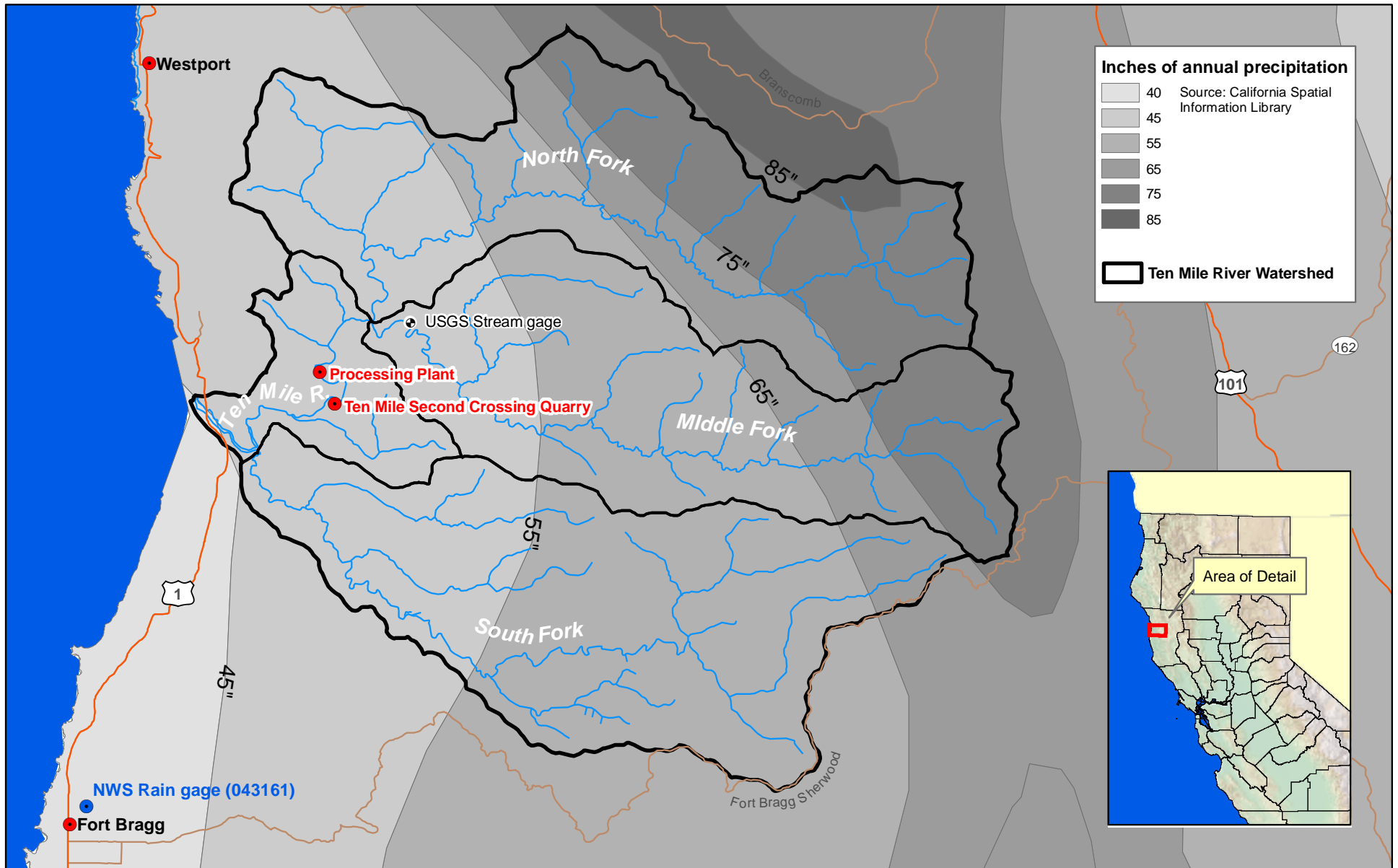


**Balance  
Hydrologics, Inc.**

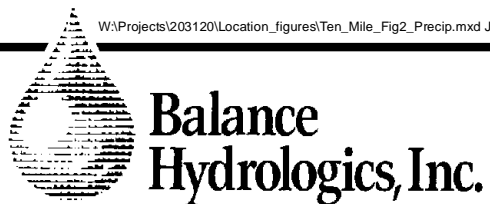
**Figure A1. Ten Mile River watershed and project locations, Mendocino County, California.**

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Miles

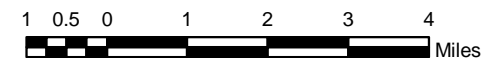




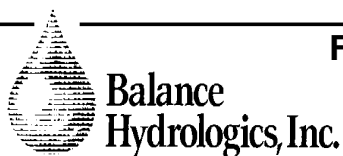
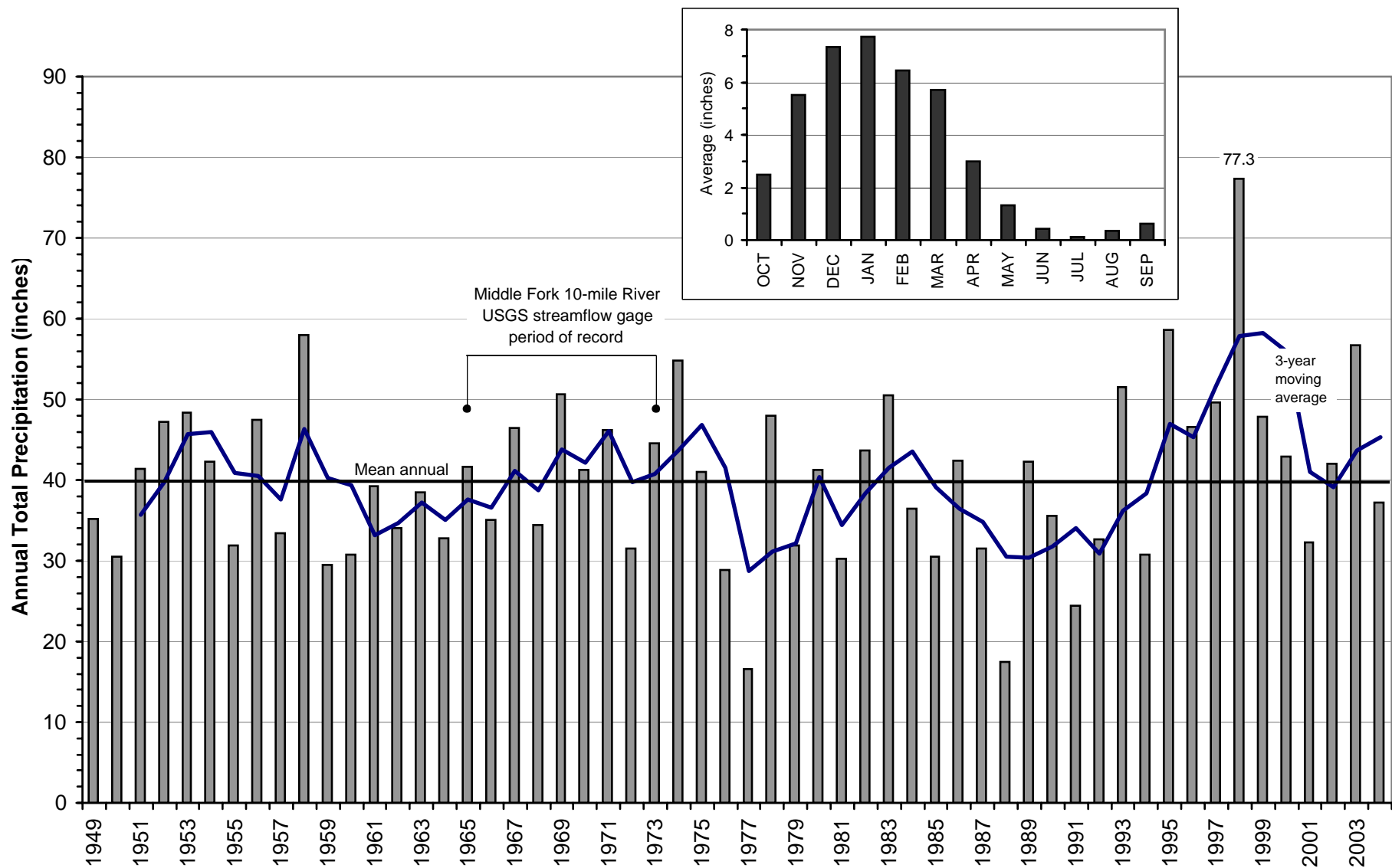
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**Figure A2. Mean annual precipitation (inches), Ten Mile River watershed and project locations, Mendocino County, California.**  
Source: California Spatial Information Library

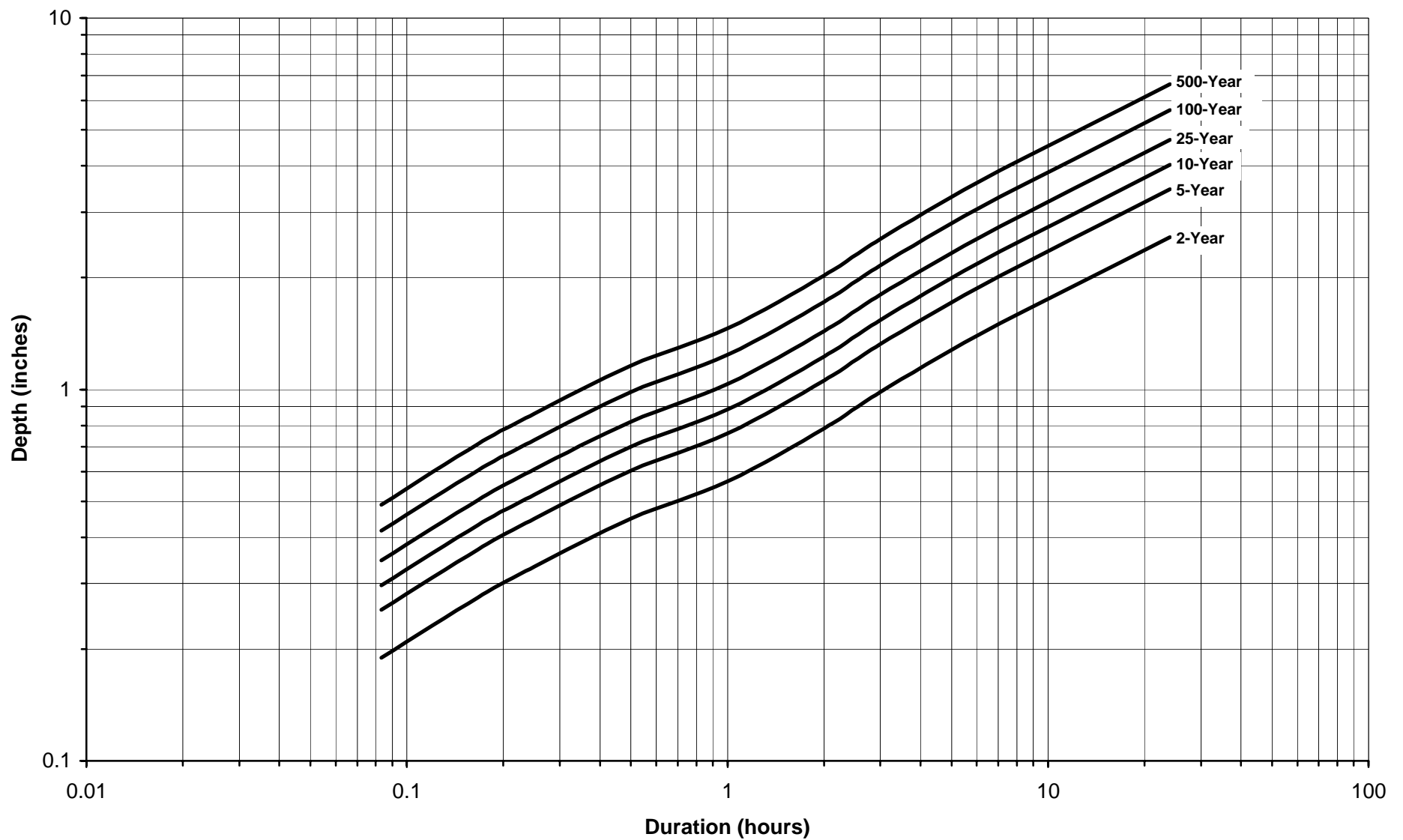






**Figure A3. Annual and monthly precipitation at Fort Bragg, CA, water years 1949 to 2004.**

Average water-year precipitation is 40.4 inches and the 3-year moving average indicates that, though waning, we are still in a period of wetter than normal precipitation. The preceding period from 1976 to 1994 had generally been dryer than normal. Water year is defined as the period October 1 to September 30. Data source: Western Regional Climate Center, station no. 043161.



**Balance  
Hydrologics, Inc.**

**Figure A4. Depth-duration-frequency curves for Fort Bragg, CA.**

Data provided by Mendocino County Public Works.

Source data: California Department of Water Resources.

**Table A1. Monthly precipitation (inches) at Fort Bragg, CA, station no. 04316<sup>1</sup> water years 1949 to 2004<sup>2</sup>**

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANN
1949	1.49	2.74	6.58	1.82	7.02	13.61	0.32	1.28	0.11	0.10	0.03	0.07	35.17
1950	0.92	2.46	3.08	9.48	4.76	6.79	1.86	0.80	0.21	0.00	0.04	0.09	30.49
1951	7.15	5.09	6.11	9.96	6.44 a	3.20	1.49	1.85	0.02	0.03	0.03	0.04	41.41
1952	3.44	6.60	13.41	10.00	4.90	4.23	1.99	0.90	1.69	0.00	0.01	0.10	47.27
1953	0.14	4.20	14.97	12.94	1.21	5.14	4.82	2.50	1.48	0.00	0.94	0.02	48.36
1954	2.49	6.77	2.57	11.64	3.85	5.81	4.36	0.00	2.21	0.02	2.45	0.15	42.32
1955	1.56	7.69	9.28	4.59 f	2.19	0.91	5.09	0.00	0.02	0.01	0.00	0.61	31.95 <sup>3</sup>
1956	1.49	7.75	13.40	14.92	7.05	0.93	0.71	0.70	0.44	0.00	0.00	0.02	47.41
1957	3.67	0.43	1.70	5.08	5.24	7.84	2.59	4.57	0.08	0.20	0.00	2.05	33.45
1958	7.36	3.03	5.24	8.31	19.53	6.90	5.63	0.50	1.20	0.06	0.08	0.18	58.02
1959	0.22	2.04	2.54	11.93	7.27	2.65	0.41	0.35	0.07	0.03	0.04	1.89	29.44
1960	0.87	0.08	2.53	7.22	7.89	7.71	2.16	2.02	0.00	0.09	0.09	0.06	30.72
1961	2.09	6.20	6.37	4.24	7.03	7.38	2.15	2.66	0.24	0.05	0.27	0.51	39.19
1962	1.79 c	6.48 a	4.61	3.44	7.18	5.53	1.44	0.39	0.03	0.09	1.98	1.07	34.03
1963	6.43	3.16	4.35	2.79	3.86	7.02	9.43	0.98	0.14	0.01	0.07	0.19	38.43
1964	5.30	10.10	2.18	7.58	0.79	3.99	0.64	1.29	0.60	0.18	0.07	0.06	32.78
1965	2.57	9.63	14.58	5.27	1.87	2.06	4.96	0.13	0.14	0.11	0.24	0.14	41.70
1966	0.73	10.31	3.94	8.39	4.83	3.71	2.18	0.22	0.10	0.03	0.22	0.44	35.10
1967	0.12	9.92	7.22	9.28	1.03	9.33	7.59	1.12	0.33	0.06	0.02	0.45	46.47
1968	3.60	3.90	6.51	8.05	4.33	4.43	0.56	1.19	0.09	0.05	1.34	0.43	34.48
1969	1.84	4.88	12.81	13.50	10.67	2.33	3.23	0.29	0.44	0.02	0.03	0.58	50.62
1970	2.77	2.76	14.30	13.43	3.28	3.25	0.59	0.40	0.37	0.00	0.03	0.07	41.25
1971	3.32	8.76	10.81	8.56	1.54	8.35	2.33	0.83	0.48	0.03	0.76	0.47	46.24
1972	1.16	3.89	5.79	4.78	5.79	3.83	2.17	0.71	0.50	0.04	0.22	2.69	31.57
1973	3.18	8.02	6.28	10.80	7.87	5.30	0.92	0.49	0.06	0.08	0.16	1.46	44.62
1974	5.67	12.98	7.39	7.60	5.18	9.84	4.37	0.31	0.34	0.85	0.18	0.13	54.84
1975	2.41	1.92	6.62	4.32	10.22	11.38	2.47	0.34	0.17	0.53	0.49	0.12	40.99
1976	4.72	2.59	3.96	1.31	7.56	2.30	4.08	0.19	0.05	0.36	1.58	0.10	28.80
1977	0.19	2.61	0.68	1.94	2.43	2.45	0.57	1.93	0.06	0.03	0.58	3.09	16.56
1978	2.38	3.83	8.37	11.24	6.59	5.60	6.23	0.69	0.07	0.07	0.40	2.48	47.95
1979	0.04	1.26	2.11	7.73	10.84	4.91	2.37	1.91	0.03	0.35	0.01	0.31	31.87
1980	6.00	9.72	4.78	3.23	9.42	3.31	3.90	0.50	0.26	0.03	0.01	0.12	41.28
1981	2.41	1.49	4.47	8.89	4.73	3.98	0.58	1.87	0.14	0.00 z	0.06	1.63	30.25 <sup>3</sup>
1982	4.55	8.25	8.10	5.70 a	4.31	7.16	4.75	0.01	0.43	0.06	0.06	0.29	43.67
1983	4.73	9.34	7.42 a	7.36	11.67	0.00 z	4.84	1.10	0.16	0.46	3.00	0.37	50.45
1984	0.86	11.44 a	13.53 z	0.55	3.63	3.67	0.00 z	1.32	0.76	0.04	0.09	0.51	36.40 <sup>3</sup>
1985	3.54	13.64 a	0.00	1.26	3.82	6.46	0.24	0.39	0.06	0.10	0.14	0.91	30.56
1986	2.58	4.78	4.09	6.81	11.83	7.91	0.98	0.68	0.28	0.00	0.07	2.40	42.41
1987	1.70	1.39	5.34	7.54 a	5.28	8.25	0.68	0.77	0.17	0.28	0.06	0.00	31.46
1988	0.88	5.24	11.30	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.09 p	17.51 <sup>3</sup>
1989	1.22	11.46	5.41	3.08	1.89	12.53	2.49	0.96	0.57	0.00	0.24	2.40	42.25
1990	6.96	1.97	0.32	7.85	3.72	3.31	1.32	9.46 b	0.21	0.06	0.16	0.22	35.56
1991	1.92 c	0.98	2.45 b	1.49 a	3.65	10.06	1.57	1.43 d	0.50	0.12	0.28	0.02	24.47
1992	1.95	2.21	4.71 a	4.01	9.88	5.39	2.43	0.00	1.82	0.13	0.08	0.09	32.70
1993	3.58	1.88 c	12.42	12.14	5.72	5.67	3.54	5.25	1.17 e	0.03	0.11	0.03	51.54 <sup>3</sup>
1994	0.52	1.93	7.01	6.59	7.71	1.55	3.47	1.74	0.18	0.04	0.02	0.05	30.81
1995	0.41	6.20	5.65	20.67	2.30	14.40 a	5.74	1.74 a	1.34	0.16	0.00	0.00	58.61
1996	0.11	1.07	14.37	9.29	9.46	4.42	4.79	2.31	0.03	0.09	0.03	0.67	46.64
1997	1.86	3.61	18.72 c	10.77	3.05	3.04	3.43	1.93	1.27	0.00 c	1.14	0.86	49.68 <sup>3</sup>
1998	3.60	9.74	6.17 c	21.50	16.83	11.09 a	3.68 a	4.25	0.27	0.09	0.01	0.08 f	77.31 <sup>3</sup>
1999	1.51	8.17	4.68	5.74	14.54	9.17	2.97	0.48	0.22	0.10	0.11	0.11	47.80
2000	1.72	8.77	2.32	9.65	11.10	2.81	2.98	2.59 b	0.41	0.08 a	0.03	0.45	42.91
2001	4.78	2.16	2.51	4.82	9.33	4.11	2.23 g	0.28	1.70	0.11	0.24 c	0.04	32.31 <sup>3</sup>
2002	0.75	10.48 b	13.32	6.63	5.34	3.51	1.20	0.53	0.00	0.02	0.15	0.05	41.98
2003	0.09	5.22	21.60 c	6.42	4.41	5.86	11.64	0.88	0.04 a	0.02	0.03	0.54	56.75
2004	0.00	4.64	12.06 z	7.08	9.76	1.86	1.58	0.23	0.05 m	0.00 z	0.00 z	0.00 z	37.26 <sup>3</sup>
Period of Record Statistics <sup>4</sup>													
MEAN	2.49	5.50	7.33	7.72	6.43	5.71	2.99	1.31	0.44	0.10	0.34	0.62	40.38
S.D.	2.00	3.58	4.80	4.38	3.93	3.22	2.33	1.58	0.54	0.15	0.63	0.81	8.84
SKEW	0.82	0.43	0.88	0.88	1.07	0.82	1.44	3.03	1.68	2.98	2.72	1.60	0.02
MAX	7.36	13.64	21.60	21.50	19.53	14.40	11.64	9.46	2.21	0.85	3.00	3.09	77.31
MIN	0.00	0.08	0.32	0.55	0.79	0.91	0.24	0.00	0.00	0.00	0.00	0.00	16.56
NO YRS	56	56	55	54	55	54	53	55	54	54	55	54	46

Notes: 1 Source: Western Regional Climate Center; <http://www.wrcc.dri.edu>

2 a = 1 day missing, b = 2 days missing, c = 3 days, ..etc., z = 26 or more days missing.

3 Years with more than five days missing

4 If more than 5 days are missing, then individual months not used for annual or monthly statistics, except for maximum precipitation.

**Table A2. Mean discharge (cubic feet second) for Noyo River near Fort Bragg, CA, water years 1952-2003** <sup>1</sup>

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	Annual
1952	16.9	94.3	1,330.0	1,034.0	833.0	417.0	96.3	53.1	29.9	16.5	8.5	5.9	329.1
1953	5.7	22.8	804.0	1,890.0	148.0	424.0	169.0	154.0	102.0	32.0	17.7	11.3	319.0
1954	14.2	138.0	200.0	1,185.0	505.0	368.0	380.0	56.2	34.6	17.5	12.2	10.6	242.4
1955	11.7	84.5	266.0	367.0	84.6	70.9	182.0	75.5	24.3	12.3	6.0	4.9	99.5
1956	7.5	60.5	1,532.0	1,374.0	782.0	261.0	60.6	37.7	21.0	10.4	6.4	4.3	348.4
1957	20.3	22.2	18.4	121.0	320.0	704.0	158.0	277.0	53.7	19.4	9.7	11.2	144.0
1958	105.0	172.0	430.0	659.0	2,114.0	550.0	743.0	61.3	37.3	18.3	8.6	6.6	396.6
1959	5.8	17.9	22.6	614.0	628.0	117.0	85.0	25.2	13.6	6.6	3.1	5.9	125.7
1960	5.6	5.3	11.7	103.0	820.0	653.0	129.0	67.4	32.7	12.0	6.4	5.8	152.3
1961	7.9	61.3	333.0	128.0	644.0	565.0	131.0	113.0	40.9	14.3	7.5	5.0	168.2
1962	8.5	53.6	155.0	169.0	679.0	451.0	68.4	31.7	17.4	8.5	9.6	4.7	134.7
1963	166.0	89.4	376.0	142.0	434.0	262.0	877.0	96.6	35.8	18.3	10.2	5.8	207.1
1964	15.3	327.0	89.7	598.0	105.0	111.0	61.5	30.4	17.7	8.3	3.8	3.4	114.7
1965	5.6	124.0	2,293.0	899.0	148.0	82.5	271.0	58.9	26.7	13.3	7.5	4.9	331.8
1966	5.6	42.2	83.3	995.0	453.0	296.0	137.0	41.3	14.8	9.1	5.4	4.6	173.0
1967	6.2	112.0	347.0	625.0	230.0	448.0	522.0	108.0	39.1	18.2	7.9	5.1	205.9
1968	13.0	28.4	150.0	403.0	515.0	274.0	66.2	27.9	13.5	3.9	7.9	3.3	124.8
1969	8.3	31.2	653.0	1,485.0	850.0	326.0	101.0	45.8	24.4	11.9	6.3	5.0	293.9
1970	5.8	10.8	468.0	1,850.0	467.0	212.0	50.4	25.8	14.0	5.6	3.2	2.2	260.5
1971	12.5	183.0	878.0	909.0	88.4	713.0	191.0	65.0	31.8	15.3	8.3	7.4	261.7
1972	8.2	25.4	175.0	332.0	295.0	307.0	132.0	39.5	20.8	11.3	5.7	9.9	113.5
1973	13.3	116.0	392.0	1,058.0	571.0	389.0	154.0	42.8	21.8	10.8	5.7	9.0	230.9
1974	38.6	750.0	635.0	1,548.0	444.0	1,398.0	810.0	87.0	35.4	22.8	11.8	6.5	483.5
1975	10.9	17.0	140.0	281.0	1,158.0	1,255.0	167.0	65.9	26.6	15.4	8.5	6.4	257.6
1976	24.9	49.4	106.0	53.5	385.0	214.0	145.0	33.1	16.9	7.7	8.6	4.7	86.4
1977	4.6	11.3	9.3	16.6	18.1	38.0	11.7	9.5	3.9	1.9	1.4	5.5	10.9
1978	7.2	36.3	340.0	945.0	641.0	497.0	284.0	75.9	27.2	14.5	6.7	10.9	238.8
1979	3.0	9.6	14.8	172.0	522.0	318.0	105.0	123.0	26.4	12.0	5.1	4.2	107.0
1980	32.4	277.0	183.0	751.0	568.0	390.0	157.0	55.9	26.2	13.7	6.4	4.5	205.0
1981	7.3	8.9	95.3	312.0	295.0	264.0	85.1	33.0	14.8	6.6	3.2	2.9	93.1
1982	23.8	451.0	995.0	555.0	718.0	516.0	866.0	78.5	34.2	17.0	8.5	5.8	352.9
1983	22.4	346.0	1,009.0	819.0	1,452.0	1,406.0	486.0	220.0	51.8	28.0	15.6	12.7	484.0
1984	10.4	548.0	1,038.0	201.0	275.0	254.0	172.0	82.2	35.0	17.5	9.0	6.0	221.3
1985	15.3	606.0	214.0	72.1	328.0	267.0	115.0	33.2	18.1	7.9	5.2	6.2	138.6
1986	12.4	48.2	164.0	356.0	1,897.0	804.0	80.5	43.6	19.8	11.5	6.8	11.7	277.5
1987	13.2	15.3	54.0	246.0	426.0	482.0	70.2	29.4	14.3	8.8	5.2	3.5	112.4
1988	4.1	16.8	493.0	576.0	82.0	32.4	28.0	21.4	15.5	6.4	3.8	2.9	108.3
1989	5.4	222.0	203.0	287.0	64.2	955.0	225.0	42.8	22.3	14.2	7.1	8.8	172.8
1990	21.7	21.1	11.3	298.0	276.0	149.0	39.4	377.0	159.0	27.1	11.6	8.9	116.0
1991	7.4	9.6	17.8	17.5	54.5	470.0	71.7	31.2	16.4	9.1	5.3	4.4	60.0
1992	7.4	12.3	29.8	83.0	473.0	225.0	74.8	27.1	13.8	9.8	4.5	5.0	79.1
1993	8.5	15.7	544.0	1,670.0	533.0	487.0	243.0	114.0	170.0	30.1	16.4	10.4	320.7
1994	8.7	9.6	55.1	169.0	443.0	64.2	49.5	41.2	15.7	7.9	4.1	2.8	70.1
1995	3.5	28.8	88.0	1,755.0	340.0	1,365.0	297.0	194.0	50.7	25.3	12.1	7.9	350.1
1996	5.6	7.8	372.0	1,047.0	794.0	465.0	239.0	156.0	54.4	23.0	13.0	8.4	265.3
1997	8.3	31.4	1,088.0	1,252.0	292.0	198.0	125.0	62.7	36.2	19.1	11.2	10.0	263.2
1998	19.8	118.0	236.0	1,555.0	1,607.0	649.0	333.0	128.0	85.5	29.7	14.7	9.7	391.7
1999	9.9	94.4	274.0	353.0	1,356.0	671.0	319.0	74.4	35.4	18.0	12.9	6.0	261.4
2000	7.5	52.7	94.4	394.0	853.0	371.0	96.2	55.8	30.8	17.2	8.5	5.5	163.5
2001	13.9	18.4	29.9	87.6	389.0	203.0	51.1	25.4	14.8	6.8	3.6	2.5	68.4
2002	2.8	119.0	893.0	759.0	395.0	220.0	74.4	37.2	19.6	9.9	4.6	2.8	211.7
2003	3.1	18.6	1,366.0	549.0	199.0	307.0	651.0	268.0	47.6	22.5	10.2	6.8	289.3
Period of record statistics													
MEAN	16.0	111.4	419.2	656.2	557.5	441.1	216.1	80.0	34.7	14.5	7.9	6.4	212
MAX.	166.0	750.0	2,293.0	1,890.0	2,114.0	1,406.0	877.0	377.0	170.0	32.0	17.7	12.7	484
MIN.	2.8	5.3	9.3	16.6	18.1	32.4	11.7	9.5	3.9	1.9	1.4	2.2	10.9
cfs/ mi <sup>2</sup>	0.2	1.1	4.0	6.2	5.3	4.2	2.0	0.8	0.3	0.1	0.1	0.1	2.0
ac-ft/day	31.8	220.9	831.6	1,301.5	1,105.9	874.9	428.6	158.7	68.9	28.8	15.7	12.6	421

Mean annual runoff (acre-feet) = 153,791

Mean annual unit runoff (cfs/mi<sup>2</sup>) = 2.0

Mean annual unit runoff (inches) = 27.2

Notes: 1. Data for USGS Gage No. 11468500; drainage area = 106 sq. mi.

**Table A3. Mean discharge (cubic feet second) for Middle Fork of the Ten Mile River, CA, water years 1965-1973** <sup>1</sup>

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	Annual
1964	--	--	--	--	--	--	--	--	--	--	--	2.5	--
1965	3.7	82.5	756.0	342.0	60.2	37.8	117.0	24.6	12.3	8.3	5.3	3.5	122.3
1966	3.4	37.3	50.6	322.0	116.0	129.0	56.1	19.4	9.9	6.2	3.8	2.9	63.0
1967	2.8	59.3	171.0	234.0	89.7	165.0	187.0	47.6	19.5	8.9	5.6	4.1	83.0
1968	7.5	12.6	87.2	167.0	186.0	107.0	25.9	12.5	7.5	3.9	4.2	3.0	51.9
1969	4.3	13.4	283.0	478.0	314.0	112.0	41.4	18.8	11.3	6.2	3.6	3.0	106.7
1970	5.4	9.0	193.0	642.0	151.0	76.8	21.1	12.3	7.8	4.7	2.8	1.8	94.4
1971	5.3	106.0	325.0	306.0	38.8	291.0	78.6	29.5	14.7	7.7	3.6	4.1	101.9
1972	4.7	20.6	98.9	187.0	156.0	166.0	57.4	22.9	11.7	7.0	4.2	6.3	62.0
1973	13.3	57.7	148.0	390.0	207.0	151.0	65.5	23.7	12.6	6.4	3.8	5.8	90.0
Period of record statistics													
MEAN	5.6	44.3	234.7	340.9	146.5	137.3	72.2	23.5	11.9	6.6	4.1	3.7	86
MAX.	13.3	106.0	756.0	642.0	314.0	291.0	187.0	47.6	19.5	8.9	5.6	6.3	122
MIN.	2.8	9.0	50.6	167.0	38.8	37.8	21.1	12.3	7.5	3.9	2.8	1.8	51.9
cfs/ mi <sup>2</sup>	0.2	1.3	7.1	10.4	4.5	4.2	2.2	0.7	0.4	0.2	0.1	0.1	2.6
ac-ft/day	11.1	87.8	465.6	676.2	290.6	272.3	143.3	46.6	23.6	13.0	8.1	7.4	171
Mean annual runoff (acre-feet) =				62,403									
Mean annual unit runoff (cfs/mi <sup>2</sup> ) =				2.6		Mean annual unit runoff (inches) =				35.6			

Note: 1. Data for USGS Gage No. 11468600; drainage area = 32.9 sq. mi.

## Quarry Site

### Location

The Ten Mile Second Crossing Quarry is located about four miles upstream from the mouth of Ten Mile River, and about two-and-a-half miles downstream from the confluence of the Middle Fork Ten Mile River – about a half mile upstream of Gulch One on the north and Mill Creek on the south.

### Hydrology and Drainage

Mean annual precipitation at the site is approximately 50 inches per year, less than the basin wide average of 63 inches per year. Comparing the Middle Fork Ten Mile River mean annual runoff of 36 inches with the mean annual basin precipitation, regional runoff is estimated at 57 percent of precipitation (Table 1). Runoff from lands within the Second Crossing Quarry boundaries should be somewhat higher, given steep slopes over most of the site, plus exposed rock and compacted fill slopes.

The majority of storm runoff from the existing quarry hillside currently collects in the actively-mined quarry pit at the base of the hillside, and then infiltrates, evaporates, or is pumped off when necessary. The northern lowermost slopes drain to the one-acre flat to gently sloping fill at the entrance to the site, which infiltrates into the fill and drains to the Ten Mile River. A roadside ditch channels offsite runoff westward, through culverts beneath the Ten Mile Road, and to a broad floodplain meadow adjacent to the Ten Mile River.

When reclaimed, surface drainage from the 15-acre quarry site will flow to a 1 acre-foot sediment retention pond, located at the northern portion of the site, adjacent to the access road just beyond the entrance (Exhibit 4). The pond is designed for retention of coarse sediment and should be periodically emptied and maintained for this purpose. The upper 1.5:1 benched cut slopes, center undisturbed slopes, and lower 1.5:1 benched fill slopes will drain along the benches and to a 24-inch diameter pipe, located in the center of the site. The pipe transmits runoff to the pond. Time of concentration of surface drainage to the pond is less than 10 minutes. Infiltration into the fill slopes is estimated to be less than 2 inches per hour, and negligible rates on the cut and undisturbed slopes (Table 2). A 100-year recurrence storm for the 10-minute time of concentration will yield peak flow of 49 cubic feet per second (cfs). Although the pond is not designed for flow retention following reclamation, a 100-year storm will fill the pond in 15 minutes (Table 1). When full, outflow from the pond will flow offsite to the existing roadside drainage ditch, and through culverts beneath the road to the floodplain meadow to the northwest. A 100-year storm will likely flow onto Ten Mile River Road.

On a seasonal basis, little effect will be seen from either the existing condition or the reclamation alternative. Given the low infiltration rate of the reclaimed quarry, runoff from site is estimated at 90 percent of precipitation, equivalent to about 56 acre-feet annually, on average. Mean annual runoff from Ten Mile River above Second Crossing Quarry is about 160,000 acre-feet (Table 1), dwarfing runoff from the site, which is less than 0.04 of 1 percent of the average watershed yield.

**Table 1. Drainage and water balance calculations, Ten Mile Second Crossing Quarry, CA**

<b>Drainage areas</b>	
Ten Mile River	120 square miles
North Fork Ten Mile River	39 square miles
Middle Fork Ten Mile River	33 square miles
South Fork Ten Mile River	39 square miles
Ten Mile River above Second Crossing Quarry	85 square miles
Second Crossing Quarry	15 acres
Second Crossing Quarry	0.03% of Ten Mile River upstream of site
<b>Precipitation</b>	
Mean annual precipitation of Middle Fork Ten Mile River	63 inches
Mean annual precipitation at Second Crossing Quarry	50 inches
<b>Runoff</b>	
Mean annual unit runoff of Middle Fork Ten Mile River (USGS gage #11468600)	36 inches
Runoff factor, Middle Fork Ten Mile River	57% of precipitation
Mean annual runoff from Ten Mile River above Second Crossing Quarry (36 inches on 85 square miles)	161434 acre-feet
25-year storm at Second Crossing Quarry (90% runoff, 0.50 inches in 10-min time of concentration)	41 cfs 18 minutes to fill the 1 ac-ft pond
100-year storm at Second Crossing Quarry (90% runoff, 0.61 inches in 10-min time of concentration)	49 cfs 15 minutes to fill the 1 ac-ft pond
<b>Reclaimed quarry site water balance</b>	
Precipitation (see Appendix A)	50 inches per year
Evapotranspiration (20 inches, 25% cover)	5 inches per year
Runoff (90% of precipitation)	45 inches per year
Infiltration	negligible



**Table 2. Recharge and water-holding properties of surficial soils**  
**Ten Mile Second Crossing Quarry, Mendocino County, CA**

Map Symbol	Soil Series <sup>1</sup>	Parent Material	Hydrologic Soil Group	Depth Zone  (inches)	Permeability  (inches/hour)	Available Water Capacity <sup>3</sup>		Remarks
						Per Inch (in./in. of soil)	Profile (total, in)	
Qaf	Artificial fill	Site overburden engineered on reclaimed slopes	C	36	0.63 to 2.0	0.16 to 0.20	6.5	Mainly located on the lower portion of the quarry, and at the processing site
RoG, Rck	Rock land	Stony steep slopes and ridges, and actively mined areas		0	0.01	0	0	Mainly located in the upper portion of quarry

**Notes**

- 1) Information taken from the most-recent USDA soil survey. The soil survey generally does not distinguish areas smaller than about 20 to 40 acres.
- 2) USCS = Unified Soils Classification System, commonly used in geotechnical or soil-foundation investigations, and in routine engineering geologic logging.
- 3) Available Water Capacity = Held water available for use by most plants, usually defined as the difference between the amount of soil water at field capacity (one day of drainage after a rain or recharge event) and the amount at the wilting point.

## Screening Plant Site

### Location

The screening plant site is located about five miles upstream from the mouth of Ten Mile River, and about a mile and a half downstream from the confluence of the Middle Fork Ten Mile River – about a half mile downstream of Gulch Two.

### Hydrology and Drainage

Mean annual precipitation at the site is approximately 50 inches per year. Basin wide, precipitation averages 63 inches per year, and when compared to the Middle Fork Ten Mile River mean annual runoff of 36 inches, regional runoff is estimated at 57 percent of precipitation (Table 1). Runoff from screening plant site could be somewhat lower than the basin value, given the slightly lower precipitation and the gently sloping site, resulting in relatively higher infiltration. However, given that the site is apparently located on the floodplain, during very wet periods and large storms the water table could rise to or very near the surface for a limited period of time, resulting in temporarily-saturated conditions and transient runoff rates approaching 100 percent for portion of major storms.

Slopes at the 5.8-acre screening plant site are gentle, averaging about 2 percent. Existing surface drainage from the relatively flat, averaging about 2 percent, flows to a 2 acre-foot sediment-retention pond located on the northern portion of the site. Pond water is periodically pumped through a 4-inch pipe to a drainage ditch on the west boundary of the site. Water then gravity flows south and offsite to the floodplain meadow that adjoins the site. When reclaimed, the site will be ripped to a 1-foot depth and graded at a 2 percent slope to several low areas sited beyond a 25-foot riparian setback. Runoff from the newly-revegetated areas will collect in depressions and lower-lying areas to enhance wetland and riparian habitat.

The drainage area of the site is about 0.01 percent of the contributing upstream drainage area of the Ten Mile River (Table 1). Given the flat to gently sloping topography of the site, when reclaimed with grass and young alders, runoff from the site is estimated to be at most 30 percent of mean annual precipitation (Table 1), equivalent to about 7 acre-feet per year. An estimated seven acre-feet per year is expected to infiltrate into the soils and flow subsurface to the river, also augmenting base flows.

**Table 1. Drainage and water balance calculations, Ten Mile Screening Plant Site, CA**

<b><i>Drainage areas</i></b>		
Ten Mile River	120 square miles	
North Fork Ten Mile River	39 square miles	
Middle Fork Ten Mile River	33 square miles	
South Fork Ten Mile River	39 square miles	
Ten Mile River above Screening Plant Site	85 square miles	
Screening Plant Site	5.8 acres	
Screening Plant Site	0.01% of Ten Mile River upstream of site	
<b><i>Precipitation</i></b>		
Mean annual precipitation of Middle Fork Ten Mile River	63 inches	
Mean annual precipitation at Screening Plant Site	50 inches	
<b><i>Runoff</i></b>		
Mean annual unit runoff of Middle Fork Ten Mile River (USGS gage #11468600)	36 inches	
Runoff factor, Middle Fork Ten Mile River	57% of precipitation	
Mean annual runoff from Ten Mile River above Screening Plant Site (36 inches on 85 square miles)	161434 acre-feet	
25-year storm at Second Crossing Quarry (30% runoff, 0.50 inches in 10-min time of concentration)	5 cfs	139 minutes to fill the 1 ac-ft pond
100-year storm at Second Crossing Quarry (30% runoff, 0.61 inches in 10-min time of concentration)	6 cfs	114 minutes to fill the 1 ac-ft pond
<b><i>Reclaimed screening plant site water balance</i></b>		
Precipitation (see Appendix A)	50 inches per year	
Evapotranspiration (adapted from Leeden and others, 1990)	20 inches per year	
Runoff (30% of precipitation)	15 inches per year	
Infiltration (P-Et-R)	15 inches per year	

**Table 2. Recharge and water-holding properties of surficial soils**  
**Ten Mile Screening Plant Site, Mendocino County, CA**

Map Symbol	Soil Series <sup>1</sup>	Parent Material	Hydrologic Soil Group	Depth Zone  (inches)	Permeability  (inches/hour)	Available Water Capacity <sup>3</sup>		Remarks
						Per Inch (in./in. of soil)	Profile (total, in)	
Yna	Yolo loam	recent alluvium from sandstone and shale	B	60	0.63 to 2.0	0.16 to 0.18	10.8	Underlying effectively all of site

**Notes**

- 1) Information taken from the most-recent USDA soil survey. The soil survey generally does not distinguish areas smaller than about 20 to 40 acres.
- 2) USCS = Unified Soils Classification System, commonly used in geotechnical or soil-foundation investigations, and in routine engineering geologic logging.
- 3) Available Water Capacity = Held water available for use by most plants, usually defined as the difference between the amount of soil water at field capacity (one day of drainage after a rain or recharge event) and the amount at the wilting point.

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# **Appendix C**

## **Biological Resources**

**Biological Constraints Analysis  
2005 Botanical Survey**

## **Biological Constraints Analysis**



**BIOLOGICAL CONSTRAINTS ANALYSIS**  
**Ten Mile Second Crossing Quarry and Processing Plant Reclamation Plans**  
**Mendocino County, California**

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## 1.0 INTRODUCTION

This report presents the results of a biological constraints analysis conducted for the Ten Mile 2<sup>nd</sup> Crossing Quarry and Processing Plant Reclamation Plan project sites located approximately 8 miles north of Fort Bragg in Mendocino County, California. The project sites consist of the Ten Mile 2<sup>nd</sup> Crossing quarry (quarry) and associated gravel washing processing plant (processing plant) and include Assessor Parcel Numbers 15-140-51, -46 and -64. The quarry and processing plant occur on the Dutchmans Knoll U.S.G.S quadrangle. The quarry site occurs in the northwest portion of the southeast quadrant of Section 35 on the south side of the Ten Mile River, and the processing plant occurs on the northeast portion of the northwest quadrant of Section 35 and the southern portion of the southwest quadrant of Section 25.

The purpose of the biological constraints analysis is to identify special-status plant and animal species that have the potential to occur on or within the vicinity of the project sites and to determine if the proposed reclamation plan may affect these species. Sensitive habitats occurring on the project sites are also identified and evaluated, followed by a discussion of mitigation measures designed to offset potential impacts to any special-status species and sensitive habitats.

## 2.0 SITE DESCRIPTION

The project site is located approximately 8 miles north of Fort Bragg on the south and east sides of the Ten Mile River approximately 3.5 miles east of State Highway 1, via a private road approximately 2.5 miles north of its intersection with Little Valley Road (CR#813r). The quarry and associated processing plant have been in operation since approximately 1986 (County of Mendocino, 1992) and cover approximately 13 and 6 acres, respectively.

The quarry and processing plant occur in the North Coastal Forest Plant Community with a dominant overstory consisting of redwood (*Sequoia sempervirens*) and Douglas fir (*Pseudotsuga menziesii*). Other conifers in the area that are less prevalent include grand fir (*Abies grandis*), California nutmeg (*Torreya californica*), and western hemlock (*Tsuga heterophylla*). Overstory vegetation associated with the Ten Mile River corridor is dominated by red alder (*Alnus rubra*) and a variety of willow species (*Salix* spp.) (Ambrose and Hines, 1998), with a thick understory comprised of Himalayan blackberry (*Rubus discolor*).

Elevations on the quarry site range from approximately 39 feet mean sea level (MSL) immediately south of the Ten Mile River to approximately 300 feet MSL along the undeveloped ridge which forms the southern portion of the quarry. The processing plant is located immediately east of the Ten Mile River at approximately 30 feet MSL.

### 3.0 METHODS OF ANALYSIS

Special-status plants and animals are legally protected under the State and Federal Endangered Species Acts or other regulations, and species that are considered rare by the scientific community. They are defined as:

- Plants and animals that are listed or proposed for listing as threatened or endangered under the California Endangered Species Act (Fish and Game Code 1995 §2050 *et seq.*; 14 CCR §670.1 *et seq.*) (California Department of Fish and Game [CDFG] 2003 a, b) and/or the Federal Endangered Species Act (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; and various notices in the Federal Register [FR] for proposed species) (U. S. Fish and Wildlife Service [USFWS] 2003a, b, c, d, e).
- Plants and animals that are Candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.12 for plants; 59 FR 58982 November 15, 1994 for animals) (USFWS 2003e).
- Plants and animals that are considered Federal Species of Concern (formerly C2 candidate species).
- Plants and animals that meet the definition of rare or endangered under the California Environmental Quality Act (CEQA) (14 CCR §15380), which includes species not found on State or Federal Endangered Species lists.
- Plants occurring on Lists 1A, 1B, 2, 3, and 4 of the *California Native Plant Society's* (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (Tibor 2001; CNPS 2003). CDFG recognizes that Lists 1A, 1B, and 2 of the CNPS *Inventory* contain plants that are generally considered to qualify for state listing, and species on these lists fall under state regulatory authority under the CEQA Guidelines. Plants occurring on CNPS Lists 3 and 4 are "plants about which more information is necessary," and "plants of limited distribution," respectively (Tibor 2001; CNPS 2003), and may be included as special-status species on the basis of local significance and/or recent biological information. These species generally do not fall under federal or state regulatory authority.
- Animals that are designated as "Species of Special Concern" by CDFG (CDFG 2003c).
- Animal species that are "fully protected" in California (Fish and Game Code, §3511, §4700, §5050 and §5515).
- Animal species that are considered sensitive by California Department of Forestry (14 CCR §895.1 pursuant to 14 CCR §898.2[d]) and plants and animals that are considered as sensitive by the U. S. Forest Service (Forest Service Manual §2670) and the U. S. Bureau of Land Management (BLM 6840 Manual).

### 3.1 SPECIAL-STATUS PLANT AND WILDLIFE SPECIES

The California Department of Fish and Game's Natural Diversity Data Base (CDFG, 2004) was reviewed (Dutchmans Knoll and surrounding quadrangles) to identify special-status wildlife species potentially occurring on or within the vicinity of the project sites. Other environmental consultants and biologists from the California Department of Fish and Game (CDFG) were also contacted for information relating to special-status fish and wildlife species. A variety of environmental reports relating to the project area in general and previously prepared for the processing plant site specifically were also reviewed to identify special-status species that may occur in the project area.

In addition, to identify special-status plant species and sensitive habitat types with potential to occur in the study area, various sources were consulted, including county and USGS quadrangle occurrence records for the Dutchmans Knoll quadrangle and the eight quadrangles surrounding it in the CNPS *Inventory of Rare and Endangered Vascular Plants of California* (Tibor 2001; CNPS 2003); and standard floras (Abrams 1923, 1944, 1951; Abrams and Ferris 1960; Munz and Keck 1973; Hickman 1993; Best et. al. 1996). Target lists of special-status plants and animals with potential to occur in the project vicinity were developed based on the above source. We also consulted the list of habitats considered "high priority" (i.e., sensitive) by CNDDB (Holland 1986; CDFG).

Reconnaissance-level habitat assessments were conducted on the quarry and processing plant sites on August 2 and 16, 2004 to characterize the habitat types and to determine if any of these habitats have the potential to support special-status plants and animals. A qualified botanist conducted a site visit to the two survey areas on August 16, 2004 to generally characterize the habitat types in the survey areas and to assess the potential for the survey areas to support special-status plants. Because the botanical survey was conducted in the summer, many special-status plant species with potential to occur on both sites would not have been identifiable, and many plant species occurring on the sites could not be positively identified. More detailed botanical surveys will be conducted on both sites at appropriate times during the 2005 season.

Each survey was conducted on foot. We identified all vascular plant species encountered at the quarry and processing plant sites that were identifiable at the time the survey was conducted to species or infraspecific taxon, using keys and descriptions in standard floras.

We characterized all habitat types occurring on the quarry and processing plant sites, and recorded data on physiognomy, dominant and characteristic species, topographic position, slope, aspect, substrate conditions, hydrologic regime, and evident disturbance for each habitat type. Lists of characteristic species are tentative and may be incomplete, due to the time of year the survey was conducted. In classifying the habitat types on both sites, we consulted the generalized plant community classification schemes of Holland (1986); Sawyer and Keeler-Wolf (1995); and CDFG (2003d). Our final classification and characterization of the habitat types of the study areas was based on field

observations. We then evaluated the potential for each habitat type occurring on the quarry and processing plant sites to support special-status plants.

### **3.2 WETLANDS**

A reconnaissance-level jurisdictional wetlands assessment was conducted on and immediately adjacent to the quarry and processing plant sites to generally characterize the nature and extent of habitat types potentially subject to U.S. Army Corps of Engineers' (Corps) and Regional Water Quality Control Board (RWQCB) jurisdictions pursuant to Sections 404 and 401 of the Clean Water Act respectively, and areas potentially subject to California Department of Fish and Game (CDFG) jurisdiction pursuant to Sections 1601-1616 of the California Fish and Game Code. A description of these agencies' jurisdictional criteria is provided below.

#### *Corps jurisdictional criteria*

Unless exempt from regulation, all proposed discharges of dredged or fill material into waters of the United States require U.S. Army Corps of Engineers (Corps) authorization under Section 404 of the Clean Water Act (33 U.S.C. 1344). Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), wetlands (excluding isolated wetlands), and farmed wetlands.

In streams, the extent of "waters" is determined by the "ordinary high water mark" - a point on the stream above which high water normally does not rise. Such a point may be determined in the field through observation of scour marks, drift lines, stream deposition patterns, or it may be established through historical records, photographic interpretation, hydrological calculations, or other means.

The Corps identifies wetlands using a "multi-parameter approach" which requires positive wetland indicators in three distinct environmental categories: hydrology, soils, and vegetation. According to the Corps Federal Wetlands Delineation Manual (Environmental Laboratory, 1987), except in certain situations, all three parameters must be satisfied for an area to be considered a jurisdictional wetland. While the Corps does not regulate isolated wetlands, these areas may be regulated by the Regional Water Quality Control Board and are essentially delineated in the field using the methods and procedures prescribed in the Corps manual.

#### *CDFG jurisdictional criteria*

The limit of CDFG jurisdiction over stream and river habitats is defined by the top of bank or the outer limits of riparian vegetation, whichever is wider.

## 4.0 RESULTS

### 4.1 SPECIAL-STATUS PLANTS

A total of 35 special-status plant species were initially identified for the target list of special-status plants with potential to occur on the quarry and processing plant sites. These species, their preferred habitats, and federal and state status designations are listed in Tables 1A and 1B respectively.

We did not observe any special-status plant species on the quarry or processing plant sites during our August 16 site visit. Most of the quarry site is unsuitable for the occurrence of any special-status plant species due to intensive disturbance. Although we believe it unlikely that the quarry area supports any special-status plant species, the upper portion of the quarry site, at the edge of the mature redwood forest, may provide suitable, although marginal (in part because of disturbance) habitat for several special-status species of forest habitats. These species include Bolander's reed grass (*Calamagrostis bolanderi*), coast lily (*Lilium maritimum*), running-pine (*Lycopodium clavatum*), leafy-stemmed mitrewort (*Mitella caulescens*), great burnet (*Sanguisorba officinalis*), and maple-leaved checkerbloom (*Sidalcea malachroides*). It is essentially certain that no special-status plant species occur on the processing plant site because the entire site is intensively disturbed. More specific descriptions of the two sites are provided below.

#### 4.1.1 QUARRY SITE

We identified a total of 50 species of vascular plants on the quarry site, including 37 native species and 13 non-native species. The only habitat type on the quarry site that is predominantly “natural” (in the sense that it is not primarily associated with heavy, ongoing or repeated human disturbance) is redwood forest. This habitat type occurs only along the upper (southwest) margin of the site. Between the redwood forest and the quarry proper there is a zone of what could be called disturbed forest. Most of the quarry site, consisting of the quarry proper, is excavated and heavily disturbed, and represents a disturbed/ruderal habitat type.

It is expected that substantially more species will be identified on the site during surveys to be conducted in spring and summer 2005. A list of plant species observed on the quarry site is provided in Table 3.

Brief descriptions of each habitat type on the quarry site are presented below.

**Redwood forest.** This habitat type corresponds to the upland redwood forest habitat type of Holland (1986), to the redwood series of Sawyer and Keeler-Wolf (1995), and to the redwood forest alliance of CDFG (2003). Redwood forest occurs only along the upper

(southwest) margin of the quarry site, beyond the top of the cliff-like quarry face. This redwood forest is the edge of a large area of more or less undisturbed (although second-growth) redwood forest extending off the site to the southwest.

This redwood forest is a mostly dense, closed-canopy forest primarily dominated by redwood (*Sequoia sempervirens*). Associated tree species include tanoak (*Lithocarpus densiflora*), California-nutmeg (*Torreya californica*), and Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*). Characteristic understory shrubs include thimbleberry (*Rubus parviflorus*), California hazelnut (*Corylus cornuta* var. *californica*), and California huckleberry (*Vaccinium ovatum*). Characteristic herbs, all native, include iris (*Iris* cf. *douglasiana*), rigid hedge-nettle (*Stachys ajugoides* var. *rigida*), bracken fern (*Pteridium aquilinum* var. *pubescens*), redwood sorrel (*Oxalis oregana*), and long-tailed wild-ginger (*Asarum caudatum*).

**Disturbed forest.** This habitat type occupies a zone between the mature redwood forest and the edge of the quarry face. The mature forest overstory was removed from this zone at some time in the past, probably within the last decade or two. At present, this disturbed forest area is dominated by a relatively dense growth of young, large sapling sized red alder trees (*Alnus rubra*), a species that occurs locally in the adjacent mature redwood forest. Some small Douglas-firs are associated, along with the native shrubs coyote brush (*Baccharis pilularis*) and thimbleberry. The woody vine Pacific blackberry (*Rubus ursinus*) is also associated. The native herb pearly everlasting (*Anaphalis margaritacea*) is quite abundant; other associated herbs include iris and rigid hedge-nettle.

**Disturbed/ruderal.** The remainder of the quarry site is occupied by the quarry proper, whose original topography has been altered and is now subject to ongoing disturbance from excavating, grading, and vehicle traffic. The bottom of the quarry is mostly unvegetated except for a few widely scattered individual plants, mostly of weedy non-native species. The quarry face is also largely unvegetated, except for scattered small red alders that appear to have colonized crevices in the rock.

#### 4.1.2 PROCESSING PLANT SITE

We identified a total of 33 species of vascular plants on the processing plant site, including 11 native species and 22 non-native species. The processing plant site is entirely occupied by disturbed/ruderal habitat with an adjacent riparian zone comprised of alder and willow. It is unlikely that more species will be identified on the site during surveys to be conducted in spring and summer 2005. A list of plant species observed on the processing plant site is provided in Table 4.

A brief description of the habitat type on the processing plant site is presented below.



**Disturbed/ruderal.** Where not occupied by buildings or equipment, the processing plant site has been entirely altered and is unvegetated or sparsely vegetated, mostly by weedy species on dirt piles. Near the settling pond, we observed giant horsetail (*Equisetum telmateia* ssp. *braunii*), a native perennial fern ally generally found in wet habitats or habitats with abundant subsurface moisture growing in dirt piles. The soil apparently contained rhizomes of this species when piled up, and the plants have been able to persist in this ruderal habitat.

**Riparian zone.** The riparian zone is located west of and adjacent to the limits of the processing plant. This area is densely vegetated with red alder, willow, and blackberry with an herbaceous cover of flat nut sedge (*Cyperus eragrostis*), horsetail, and pennyroyal (*Mentha pulegium*). The riparian zone provides as a buffer between the processing plant and the Ten Mile River and averages approximately 25 feet in width.

## 4.2 SPECIAL-STATUS WILDLIFE

22 special-status animal species were listed on the CNDDDB and in other environmental documents pertaining to the project areas (CDFG, 2004; Gould, 2004; State of California Board of Forestry Impact Assessment, 2001). Based on the habitat characteristics of the quarry and processing plant sites, it was determined that 14 of these species have the potential to occur on or within the vicinity of the quarry site and 18 species have the potential to occur on or within the vicinity of the processing plant site (Tables 2A and 2B).

### 4.2.1 QUARRY SITE

Species potentially occurring on or within the vicinity of the quarry site include western tailed frog (*Ascaphus truei*), foothill yellow-legged frog (*Rana boylei*), Del Norte salamander (*Plethodon elongates*), purple martin (*Progne subis*), northern goshawk (*Accipiter gentilis*), northern spotted owl (*Strix occidentalis*), osprey (*Pandion haliaetus*), peregrine falcon (*Falco peregrinus*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), great blue heron (*Ardea herodias*), great egret (*Casmerodius albus*), marbled murrelet (*Brachyramphus marmoratus*), and red tree vole (*Arborimus pomo*). All of these species and their habitat preferences are described below.

#### Western tailed frog

The western tailed frog is considered a state Species of Concern by CDFG. This species lives in montane hardwood-conifer, redwood, Douglas fir and ponderosa pine habitats from sea level to 1970 meters. It is restricted to perennial streams in steep-walled valleys with dense vegetation (Zeiner et al, 1990) and has been locally found in tributaries to the Ten Mile River (CDFG, 2004). The western tailed frog requires permanent water for reproduction because aquatic larvae require 2-3 years to transform (Zeiner et al, 1990).

The forest areas on the quarry site provide potential dispersal habitat for the western tailed frog. There is no breeding habitat for this species on the project site.

### **Foothill yellow-legged frog**

The foothill yellow-legged frog is considered a state Species of Special Concern by CDFG and a federal species of concern by USFWS. This species is found in or near rocky streams in a variety of habitats, including valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, and wet meadow types (Zeiner et al, 1990). Egg masses are attached to gravel or rocks in cool, flowing water in rivers and streams in woodlands and forest habitats.

Local occurrences of foothill yellow-legged frog have been recorded on the Dutchmans Knoll quadrangle (CDFG, 2004). The Ten Mile River in the vicinity of the quarry site may provide suitable breeding habitat for this species, therefore the adjacent woodlands associated with the quarry site may provide dispersal habitat for this species.

### **Del Norte Salamander**

The Del Norte salamander is considered a state Species of Concern by CDFG and is found in Del Norte, Siskiyou, western Trinity, and Humboldt Counties. This species lives in a variety of habitats ranging from open-to-dense, sapling-to-mature stages of valley foothill riparian, montane hardwood conifer, Douglas fir and redwood habitats (Zeiner et al, 1990). The Del Norte salamander breeds on moist soil and does not require standing water for egg production.

The wooded areas on or in the vicinity of the quarry provide potential breeding and dispersal habitat for this species.

### **Purple martin**

The purple martin is a CDFG state Species of Concern and is considered an uncommon to rare local summer resident in California. This species generally nests in woodlands, low elevation coniferous forests of Douglas fir, Ponderosa pine, and Monterey pine, often using old woodpecker cavities for nesting sites. The purple martin often forages over riparian areas, forest, and woodland and is found in a variety of open habitats during migration (Zeiner et al 1990).

The undisturbed forest habitats on the quarry site provide potential nesting and foraging habitat for this species.

### **Northern goshawk**

The northern goshawk is a CDFG state Species of Concern and is an uncommon permanent resident in the mountains of California in the Sierra south at least as far as Tulare County and in the Coast Range south as far as Mendocino County. There are no

data on Goshawk population trends in California, but this reclusive species is reported infrequently, and the total population breeding within California is probably quite small and vulnerable (<http://www.dfg.ca.gov>). The northern goshawk prefers middle and higher elevations in mature dense conifer forests. Nests are usually constructed on north slopes near water, in the densest part of the forest but near openings (Zeiner et al, 1990).

The forests on and adjacent to the quarry site provide potential nesting and foraging habitat for this species.

### **Northern spotted owl**

The northern spotted owl is a CDFG state Species of Concern and federally listed as threatened by the USFWS. In northern California, the spotted owl resides in dense, old-growth, multi-layered mixed conifer, redwood, and Douglas fir habitats from sea level to nearly 2300 meters (Zeiner et al, 1990). The spotted owl usually nests in tree or snag cavities, or in broken tops of large trees. Mature, multi-layered forest canopies are required for breeding.

There are 10 recorded occurrences of the northern spotted owl near the mouth of Ten Mile River (Gould, 2004). All of these sites are within the 1.3-1.5 mile radius to the quarry site used by the USFWS in determining the proximal impacts of a project. The forest areas on and adjacent to the quarry site provide potential nesting and foraging habitat for the spotted owl.

### **Osprey**

The osprey is a CDFG state Species of Concern and is listed as sensitive by the California Department of Forestry. This species breeds in northern California from the Cascade Ranges south to Lake Tahoe, and along the coast south to Marin County. It is associated strictly with large, fish-bearing waters, primarily in ponderosa pine through mixed conifer habitats (Zeiner et al, 1990). The osprey typically nests in the tops of large trees, snags, cliffs, and often human-made structures (such as telephone poles). Clear, open water is required for feeding (Zeiner et al, 1990).

The quarry site provides potential foraging and marginal nesting habitat for this species.

### **American peregrine falcon**

The American peregrine falcon is a state and federal endangered species and is considered a California fully protected species. It is known to be a very uncommon breeding resident and an uncommon migrant in California (Zeiner et al 1990). This species breeds mostly in woodland, forest and coastal habitats and frequents riparian, coastal, and wetland habitats as well. Preferred breeding habitats include areas near wetlands, lakes, rivers, or other water, on high cliffs and banks. The peregrine also nests on human-made structures and occasionally uses holes in trees or snags, or nests of other raptors (Zeiner et al, 1990).

The forests on and adjacent to the quarry site may provide potential wintering, foraging, and possibly nesting habitat for this species.

### **Bald eagle**

The bald eagle is a federally threatened and state endangered species. It is a permanent resident, and uncommon winter migrant, now restricted to breeding mostly in Butte, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties of California (Zeiner et al, 1990). It typically nests and winters in ocean shore, lake margins, and river habitats using large, old-growth, or dominant live trees with open branches, especially Ponderosa pine.

The forest habitats on and within the vicinity of the quarry, especially the coniferous forests, may provide potential nesting and/or wintering habitat for the bald eagle.

### **Golden eagle**

The golden eagle is a CDFG state Species of Concern and a California Fully Protected species. The golden eagle is an uncommon permanent resident and migrant throughout most of California and occurs in ranges from sea level to as high as 3800 meters. This species typically prefers rolling foothills, mountain areas, sage-juniper flats, and desert environments (Zeiner et al, 1990).

The redwood forest on the quarry site provides potential foraging, roosting, and marginal nesting habitat for this species.

### **Great Blue Heron**

Great blue heron are considered “sensitive” by the California Department of Forestry (CDFS). This species is found in saltwater marshes, estuaries, mudflats, lagoons, freshwater marshes, rivers and flooded fields. Nesting usually occurs in secluded groves of live or dead trees near shallow-water feeding areas (Zeiner et al, 1990). Along the north coast, rookeries occur in conifer forests, most commonly in Douglas fir trees.

Given its proximity to the Ten Mile River, the redwood forest on the quarry site provides potential roosting and marginal nesting habitat for this species.

### **Great Egret**

The great egret is considered “sensitive” by the CDFS and is a common yearlong resident throughout California except for high mountains and deserts. The egret uses fresh and saltwater wetlands and areas along the margins of estuaries, lakes, slow-moving streams, and other waterbodies for feeding (Zeiner et al, 1990). Large trees provide nesting and roosting habitat.

Given its proximity to the Ten Mile River, the redwood forest on the quarry site provides potential roosting and marginal nesting habitat for this species.

### **Marbled Murrelet**

The marbled murrelet is a state and federally endangered species that occurs year-round in marine sub-tidal and pelagic habitats from Oregon to Santa Barbara County, California. During nesting season, the murrelet may fly inland (typically as far as 5 miles) to roost and nest in older forests of Douglas fir and redwood. In California, this species nests on large, horizontal moss- or duff- and litter-covered limbs in older trees with horizontal limbs that are sufficiently large, wide, and flat to support a nest (State of California Board of Forestry Impact Assessment, 2001).

There are no CNDDDB records of local occurrences for the marbled murrelet (CDFG, 2004); however, the forest habitats on and adjacent to the quarry may provide nesting habitat for this species.

### **Red tree vole**

The red tree vole is a CDFG state Species of Concern and occurs in old-growth and other forests, primarily Douglas fir, redwood, and montane hardwood-conifer habitats. In California, they range from the Oregon border southward to Sonoma County along the coast, and in the coastal mountain ranges southward to about Mt. Sanhedrin in Mendocino County (<http://www.dfg.ca.gov/>). This species uses needles on Douglas fir and grand fir for nest construction and food (Zeiner et al, 1990).

The forests on and adjacent to the quarry project site provide potential habitat for this species. Local occurrences of the red tree vole have been recorded along the Ten Mile River in the immediate vicinity of the project site between Gulch 1 and Gulch 2.

## **4.2.2 PROCESSING PLANT SITE**

Species potentially occurring on or within the vicinity of the processing plant site include western tailed frog (*Ascaphus truei*), foothill yellow-legged frog (*Rana boylii*), northwestern pond turtle (*Clemmys marmorata marmorata*), Del Norte salamander (*Plethodon elongates*), southern torrent salamander (*Rhyacotriton variegates*), purple martin (*Progne subis*), northern goshawk (*Accipiter gentilis*), northern spotted owl (*Strix occidentalis*), osprey (*Pandion haliaetus*), peregrine falcon (*Falco peregrinus*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), great blue heron (*Ardea herodias*), great egret (*Casmerodius albus*), marbled murrelet (*Brachyramphus marmoratus*), coho salmon (*Oncorhynchus kisutch*), chinook salmon (*Oncorhynchus tshawytscha*), and steelhead trout (*Oncorhynchus mykiss*), and red tree vole (*Arborimus pomo*). All of these species and their habitat preferences are described below.

### **Western tailed frog**

The western tailed frog is considered a state Species of Concern by CDFG. This species lives in montane hardwood-conifer, redwood, Douglas fir and ponderosa pine habitats from sea level to 1970 meters. It is restricted to perennial streams in steep-walled valleys with dense vegetation (Zeiner et al, 1990) and has been locally found in tributaries to the Ten Mile River (CDFG, 2004). The western tailed frog requires permanent water for reproduction because aquatic larvae require 2-3 years to transform (Zeiner et al, 1990).

The Ten Mile River in the vicinity of the processing plant provides potential breeding habitat for the western tailed frog.

### **Foothill yellow-legged frog**

The foothill yellow-legged frog is considered a state Species of Special Concern by CDFG and a federal species of concern by USFWS. This species is found in or near rocky streams in a variety of habitats, including valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, and wet meadow types (Zeiner et al, 1990). Egg masses are attached to gravel or rocks in cool, flowing water in rivers and streams in woodlands and forest habitats.

Local occurrences of foothill yellow-legged frog have been recorded on the Dutchmans Knoll quadrangle (CDFG, 2004). The Ten Mile River in the vicinity of the processing plant may provide suitable habitat for this species, and the adjacent woodlands may provide dispersal habitat as well.

### **Northwestern pond turtle**

The northwestern pond turtle is considered a federal Species of Concern by USFWS and a Species of Special Concern by CDFG. The western pond turtle is found in a variety of habitats and is normally associated with permanent ponds, lakes, streams, irrigation ditches or pools along intermittent streams. Nesting occurs on stream banks in a variety of soil types. Pond turtles require basking sites such as partially submerged logs, rocks, or open mud banks (Zeiner et al, 1988).

The Ten Mile River and associated riparian area in the vicinity of the processing plant provide potential breeding and foraging habitat for this species.

### **Del Norte Salamander**

The Del Norte salamander is considered a state Species of Concern by CDFG and is found in Del Norte, Siskiyou, western Trinity, and Humboldt Counties. This species lives in a variety of habitats ranging from open-to-dense, sapling-to-mature stages of valley foothill riparian, montane hardwood conifer, Douglas fir and redwood habitats (Zeiner et

al, 1990). The Del Norte salamander breeds on moist soil and does not require standing water for egg production.

The wooded areas adjacent to the processing plant provide potential habitat for this species.

### **Southern torrent salamander**

The southern torrent salamander is considered a state Species of Concern by CDFG and prefers cold, permanent seeps and small streams with rocky substrate habitats. Relatively recent work has linked this species to seeps, small streams, and waterfalls in wet or mesic, coastal old-growth habitats. Larvae may be found in somewhat larger streams (especially in the splash zone of waterfalls), but are more commonly found in seeps (<http://www.dfg.ca.gov/>).

Local occurrences of the southern torrent salamander have been recorded along the Ten Mile River and associated tributaries (CDFG, 2004). The Ten Mile River and associated riparian areas in the vicinity of the processing plant provide potential habitat for this species.

### **Purple martin**

The purple martin is a CDFG state Species of Concern and is considered an uncommon to rare local summer resident in California. This species generally nests in woodlands, low elevation coniferous forests of Douglas fir, Ponderosa pine, and Monterey pine, often using old woodpecker cavities for nesting sites. The purple martin often forages over riparian areas, forest, and woodland and is found in a variety of open habitats during migration (Zeiner et al 1990).

The undisturbed riparian areas adjacent to the processing plant site may provide potential nesting and foraging habitat for this species.

### **Northern goshawk**

The northern goshawk is a CDFG state Species of Concern and is an uncommon permanent resident in the mountains of California in the Sierra south at least as far as Tulare County and in the Coast Range south as far as Mendocino County. There are no data on Goshawk population trends in California, but this reclusive species is reported infrequently, and the total population breeding within California is probably quite small and vulnerable (<http://www.dfg.ca.gov/>). The northern goshawk prefers middle and higher elevations in mature dense conifer forests. Nests are usually constructed on north slopes near water, in the densest part of the forest but near openings (Zeiner et al, 1990).

The riparian areas adjacent to the processing plant sites provide potential nesting and foraging habitat for this species.

### **Northern spotted owl**

The northern spotted owl is a CDFG state Species of Concern and federally listed as threatened by the USFWS. In northern California, the spotted owl resides in dense, old-growth, multi-layered mixed conifer, redwood, and Douglas fir habitats from sea level to nearly 2300 meters (Zeiner et al, 1990). The spotted owl usually nests in tree or snag cavities, or in broken tops of large trees. Mature, multi-layered forest canopies are required for breeding.

There are 10 recorded occurrences of the northern spotted owl near the mouth of Ten Mile River (Gould, 2004). All of these sites are within the 1.3-1.5 mile radius to the processing plant used by the USFWS in determining the proximal impacts of a project. The forest areas on and adjacent to the processing plant provide potential nesting and foraging habitat for the spotted owl.

### **Osprey**

The osprey is a CDFG state Species of Concern and is listed as sensitive by the California Department of Forestry. This species breeds in northern California from the Cascade Ranges south to Lake Tahoe, and along the coast south to Marin County. It is associated strictly with large, fish-bearing waters, primarily in ponderosa pine through mixed conifer habitats (Zeiner et al, 1990). The osprey typically nests in the tops of large trees, snags, cliffs, and often human-made structures (such as telephone poles). Clear, open water is required for feeding (Zeiner et al, 1990).

The Ten Mile River and surrounding woodlands adjacent to the processing plant provide potential foraging and nesting habitat for this species.

### **American peregrine falcon**

The American peregrine falcon is a state and federal endangered species and is considered a California fully protected species. It is known to be a very uncommon breeding resident and an uncommon migrant in California (Zeiner et al 1990). This species breeds mostly in woodland, forest and coastal habitats and frequents riparian, coastal, and wetland habitats as well. Preferred breeding habitats include areas near wetlands, lakes, rivers, or other water, on high cliffs and banks. The peregrine also nests on human-made structures and occasionally uses holes in trees or snags, or nests of other raptors (Zeiner et al, 1990).

The forests on and adjacent to the processing plant provide potential wintering and/or foraging habitat for this species.



### **Bald eagle**

The bald eagle is a federally threatened and state endangered species. It is a permanent resident, and uncommon winter migrant, now restricted to breeding mostly in Butte, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties of California (Zeiner et al, 1990). It typically nests and winters in ocean shore, lake margins, and river habitats using large, old-growth, or dominant live trees with open branches, especially Ponderosa pine.

The forest habitats on and within the vicinity of the processing plant may provide potential nesting and/or wintering habitat for the bald eagle.

### **Golden eagle**

The golden eagle is a CDFG state Species of Concern and a California Fully Protected species. The golden eagle is an uncommon permanent resident and migrant throughout most of California and occurs in ranges from sea level to as high as 3800 meters. This species typically prefers rolling foothills, mountain areas, sage-juniper flats, and desert environments (Zeiner et al, 1990).

The Ten Mile River corridor in the vicinity of the processing plant provides potential nesting, foraging and roosting habitat for this species.

### **Great Blue Heron**

Great blue heron are considered “sensitive” by the California Department of Forestry (CDFS). This species is found in saltwater marshes, estuaries, mudflats, lagoons, freshwater marshes, rivers and flooded fields. Nesting usually occurs in secluded groves of live or dead trees near shallow-water feeding areas (Zeiner et al, 1990). Along the north coast, rookeries occur in conifer forests, most commonly in Douglas fir trees.

The Ten Mile River corridor in the vicinity of the processing plant provides potential nesting, foraging and roosting habitat for this species.

### **Great Egret**

The great egret is considered “sensitive” by the CDFS and is a common yearlong resident throughout California except for high mountains and deserts. The egret uses fresh and saltwater wetlands and areas along the margins of estuaries, lakes, slow-moving streams, and other waterbodies for feeding (Zeiner et al, 1990). Large trees provide nesting and roosting habitat.

The Ten Mile River corridor in the vicinity of the processing plant provides potential nesting, foraging and roosting habitat for this species.

## **Marbled Murrelet**

The marbled murrelet is a state and federally endangered species that occurs year-round in marine sub-tidal and pelagic habitats from Oregon to Santa Barbara County, California. During nesting season, the murrelet may fly inland (typically as far as 5 miles) to roost and nest in older forests of Douglas fir and redwood. In California, this species nests on large, horizontal moss- or duff- and litter-covered limbs in older trees with horizontal limbs that are sufficiently large, wide, and flat to support a nest (State of California Board of Forestry Impact Assessment, 2001).

There are no records of local occurrences for the marbled murrelet (CDFG, 2004); however, the forest habitats on and adjacent to the processing plant may provide suitable nesting habitat for this species.

## **Fish**

The Ten Mile River watershed is a cold water fishery that supports coho salmon (*Oncorhynchus kisutch*), chinook salmon (*Oncorhynchus tshawytscha*), and steelhead trout (*Oncorhynchus mykiss*). These species and their habitat requirements are described in greater detail below.

### **Coho salmon**

The coho salmon was listed by the National Oceanic and Air Administration National Marine Fisheries Service (NOAA) as a federally threatened species on October 31, 1996 and is part of the Central California Coast Evolutionary Significant Unit (ESU). The ESU includes all naturally spawned populations of coho salmon from Punta Gorda in northern California south to and including the San Lorenzo River in central California, as well as populations in tributaries to San Francisco Bay, excluding the Sacramento-San Joaquin River system (<http://www.nwr.noaa.gov/1salmon/salmesa/cohocca.htm>).

Critical habitat for this species was listed in 1999 and designated to include all river reaches accessible to listed coho salmon from Punta Gorda in northern California south to the San Lorenzo River in central California, including Mill Valley (Arroyo Corte Madera Del Presidio) and Corte Madera Creeks, tributaries to San Francisco Bay. Excluded are areas above specific dams or above longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years). Major river basins containing spawning and rearing habitat for this ESU comprise approximately 4,152 square miles in California. The following counties lie partially or wholly within these basins: Lake, Marin, Mendocino, San Mateo, Santa Clara, Santa Cruz, and Sonoma. All coho salmon stocks in the Central California Coast ESU are extremely depressed relative to past abundance (<http://www.nwr.noaa.gov/1salmon/salmesa/cohocca.htm>).

The Ten Mile River adjacent to the processing plant is included within the range of the Central California Coast ESU and is considered a main coho salmon stock (Federal Register, 1999).

### **Chinook salmon**

Chinook salmon in the Ten Mile River are part of the California Coastal Chinook ESU and were listed as threatened by NOAA in September 16, 1999. The chinook salmon spends most of its life in the open ocean but migrates through estuaries and then upstream to spawn in the upper reaches of its home river. In order to reproduce successfully, these fish require cold (6°-13°C or 43°-56°F), clean, fast-flowing rivers with gravel bottoms to lay their eggs in (<http://www.dfg.ca.gov>).

The Ten Mile River adjacent to the processing plant provides potential habitat for the chinook salmon which has been recorded to occur there (State of California Board of Forestry, 2001).

### **Steelhead Trout**

Steelhead trout in the Ten Mile River are part of the Central California Coast ESU; this species was listed as federally threatened on June 7, 2000. In the 1960s, the Ten Mile River was estimated to have a total steelhead population of 9,000 fish. More recent data, including electro-fishing, out-migrant, and spawning surveys indicate fairly stable populations of steelhead throughout the watershed. An estimated 905,169 steelhead trout have occupied the basin from 1993-1997. This is 100 times greater than the 9,000 steelhead trout estimated to occupy the basin in the 1960s (State of California Board of Forestry, 2001).

The Ten Mile River in the vicinity of the processing plant provides habitat for steelhead trout.

## **4.3 WETLAND HABITATS**

The Ten Mile River is the primary aquatic habitat identified within the vicinity of the quarry and processing plant sites. A discussion of habitats potentially subject to Corps and CDFG jurisdiction in relation to the Ten Mile River and the quarry and processing plant sites is provided below.

### **4.3.1 QUARRY SITE**

The quarry site is located approximately 100 feet south and west of the Ten Mile River and occurs outside the limits of the river's riparian canopy. There are no potential wetland habitats on the quarry site proper.

In the vicinity of the quarry operation and at the 2<sup>nd</sup> Crossing Bridge, the Ten Mile River averages approximately 40 feet at the ordinary high water mark which defines the limit of potential Corps jurisdiction.

The riparian canopy associated with the Ten Mile River in the area of the 2<sup>nd</sup> Crossing Bridge measures approximately 70 feet from the top of bank to the outermost drip-line on the southwestern edge. The outer limit of the riparian canopy represents the extent of potential CDFG jurisdiction in this area.

#### **4.3.2 PROCESSING PLANT SITE**

The processing plant occurs east of the Ten Mile River corridor. A settling pond, used for washing quarry gravel, is located approximately 20 feet south and east of the riparian canopy on the eastern bank of the Ten Mile River. An earthen berm provides a buffer between the riparian corridor and the settling pond. Sand and gravel are stored in piles that abut the riparian forest several hundred feet downstream from the settling pond. Within the vicinity of the processing plant, the Ten Mile River averages approximately 40 feet wide at the ordinary high water mark (California Coastal Commission, 1993) and the dimensions of the riparian canopy vary.

In addition, riparian wetland habitat occurs on the northern portion of the site on either side of the access road that traverses the processing plant in a north-south direction. The wetland areas are dominated by red alder and willow, with herbaceous species consisting of flat nut sedge (*Cyperus eragrostis*), horsetail (*Equisetum* sp.), and pennyroyal (*Mentha pulegium*). While located immediately adjacent to the existing processing plant, these areas remain relatively undisturbed and may have developed with establishment of the processing plant in the 1980s.

### **5.0 CONCLUSIONS & MITIGATION**

Provided below is a summary discussion of the potential for occurrence of special-status species and the presence of sensitive habitats on the quarry and processing plant sites. Potential mitigation measures that may include off-site and on-site mitigation for impacts to special-status species and sensitive habitats are also discussed.

#### **5.1 QUARRY SITE**

##### **5.1.1 SPECIAL-STATUS PLANTS**

No special-status plant species were observed on the quarry site during the August 16 reconnaissance. Although we believe it unlikely that the quarry area supports any special-status plant species, the upper portion of the quarry site, at the edge of mature redwood forest, may provide suitable habitat for special-status species of forest habitats, including Bolander's reed grass (*Calamagrostis bolanderi*), coast lily (*Lilium maritimum*), running-

pine (*Lycopodium clavatum*), leafy-stemmed mitrewort (*Mitella caulescens*), great burnet (*Sanguisorba officinalis*), and maple-leaved checkerbloom (*Sidalcea malachroides*). Therefore, focused surveys targeting these species should be conducted in the spring and summer of 2005. If special-status species are observed and are determined to be affected by the proposed reclamation plan, mitigation measures will be developed in coordination with CDFG through the California Environmental Quality Act review process.

### **5.1.2 SPECIAL-STATUS WILDLIFE**

#### **Western tailed frog**

The western-tailed frog is a state species of special concern. There is no breeding habitat for this species on the quarry site, therefore, no impacts to breeding habitat will occur as a result of the proposed reclamation plan. Impacts to the redwood forest habitat may reduce dispersal habitat for this species. Mitigation measures, if required by CDFG, may be developed through the CEQA process.

#### **Foothill yellow-legged frog**

The foothill yellow-legged frog is a federal species of concern and a state species of special concern; it is also considered sensitive by the Bureau of Land Management. The quarry site may provide suitable dispersal habitat for the foothill yellow-legged frog. Impacts to the redwood forest habitat may reduce dispersal habitat for this species. Mitigation measures, if required by CDFG, may be developed through the CEQA process.

#### **Del Norte salamander**

The Del Norte salamander is a state Species of Concern and reproduces in moist soils in wooded habitats. The quarry site may provide suitable breeding habitat for the Del Norte salamander. Mitigation measures for potential impacts to potential breeding habitat, if required by CDFG, may be developed through the CEQA process.

#### **Nesting birds and raptors**

The quarry site may provide potential habitat for the purple martin, northern goshawk, northern spotted owl, osprey, American peregrine falcon, bald eagle, golden eagle, great blue heron, great egret, and marbled murrelet. Prior to implementation of reclamation on the site, particularly in the redwood forest and disturbed forest areas, pre-construction surveys should be conducted to determine presence/absence of these species and any nesting birds and raptors. The nesting periods of the special-status species referenced above range from February through September and are detailed in Table 2A attached.

If any active nests are found, reclamation activities that may result in disturbing the young must be postponed until a qualified biologist has determined that the young have

fledged (left the nest), and are flying well enough to avoid project construction zones. Once the young have successfully fledged, no further mitigation would be required.

### **5.1.3 WETLANDS**

Because there are no wetlands on the quarry site no impacts to wetland habitats will occur as a result of the proposed reclamation plan; therefore, no mitigation measures are required.

## **5.2 PROCESSING PLANT SITE**

### **5.2.1 SPECIAL-STATUS PLANTS**

No special-status plant species were observed on the processing plant site during the August 16 reconnaissance. We believe it very unlikely that the processing plant supports any special-status plants, however, this area will be re-surveyed in the spring and summer of 2005 at the same time the quarry site is surveyed.

### **5.2.2 SPECIAL-STATUS WILDLIFE**

#### **Northwestern pond turtle**

The northwestern pond turtle is considered a federal species of concern by the USFWS and a species of special concern by CDFG. The proposed reclamation plan calls for reducing the plant area size by 25 feet along the Ten Mile River which will allow the existing riparian zone to naturally colonize further inland. There will be no direct impacts to turtle habitat and expansion of the riparian zone may actually increase dispersal habitat for this species. As a result, no mitigation measures for the turtle are required.

#### **Southern torrent salamander**

The southern torrent salamander is a state Species of Concern and has been recorded to occur in the vicinity of the Ten Mile River in the project area. The proposed reclamation plan calls for reducing the plant size by approximately 25-feet along the Ten Mile River thereby creating more riparian area potentially suitable for this species. No direct impacts to southern torrent salamander habitat are expected; therefore, no mitigation measures are required.

#### **Western tailed frog**

The western-tailed frog is a state species of special concern. The proposed reclamation plan calls for reducing the plant size by approximately 25-feet along the Ten Mile River thereby creating more riparian area potentially suitable for this species. No direct

impacts to western tailed frog habitat are expected; therefore, no mitigation measures are required.

### **Foothill yellow-legged frog**

The foothill yellow-legged frog is a federal species of concern and a state species of special concern; it is also considered sensitive by the Bureau of Land Management. The Ten Mile River in the vicinity of the processing plant site may provide suitable breeding habitat for this species. The proposed reclamation plan calls for reducing the plant size by approximately 25-feet along the Ten Mile River thereby creating more riparian area potentially suitable for this species. No direct impacts to foothill yellow-legged frog habitat are expected; therefore, no mitigation measures are required.

### **Del Norte salamander**

The Del Norte salamander is a state Species of Concern and reproduces in moist soils in wooded habitats. The riparian areas adjacent to the processing plant may provide potential breeding habitat for this species. The proposed reclamation plan calls for reducing the plant size by approximately 25-feet along the Ten Mile River thereby creating more riparian area potentially suitable for this species. No direct impacts to Del Norte salamander habitat are expected; therefore, no mitigation measures are required.

### **Nesting birds and raptors**

The processing plant site may provide potential habitat for the purple martin, northern goshawk, northern spotted owl, osprey, American peregrine falcon, bald eagle, golden eagle, great blue heron, great egret, and marbled murrelet. The proposed reclamation plan calls for reducing the plant size by approximately 25-feet along the Ten Mile River thereby creating more wooded area potentially suitable for these and other bird species. No direct impacts to birds and raptors are expected; therefore, no mitigation measures are required.

### **Fish**

Coho salmon, Chinook salmon, and steelhead trout are listed as federally threatened in the project area. The proposed reclamation plan does not call for direct impacts to the Ten Mile River and includes a 25-foot riparian setback. Therefore, direct impacts to the coho salmon, Chinook salmon, and steelhead trout are not expected. Therefore, no mitigation measures are required at this time.

## **5.2.3 WETLANDS**

The Ten Mile River and associated riparian wetlands in vicinity of the processing plant were identified as areas potentially subject to Corps jurisdiction pursuant to Section 404 of the Clean Water Act. In addition, the riparian corridor along the Ten Mile River in the vicinity of the processing plant is potentially subject to California department of Fish and

Game jurisdiction pursuant to Section 1602 of the California Fish and Game Code. However, given that the proposed reclamation plan calls for a 25-foot setback from the riparian zone, no direct impacts to the Ten Mile River or its riparian corridor are expected. Therefore, no mitigation measures are prescribed at this time.



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## **TABLES**

**TABLE 1A**  
**Status, distribution and habitat of special-status plants potentially occurring within vicinity of**  
**Ten Mile 2<sup>nd</sup> Crossing Quarry Site**  
**Mendocino County, California**

Plant Species	Status	Habitat	Flowering Period	Potential for Occurrence on Project Site
Blasdale's bent grass ( <i>Agrostis blasdalei</i> )	CNPS 1B	Coastal bluff scrub, coastal dunes, coastal prairie.	May-June	Suitable, but marginal, habitat may exist on site; probability of occurrence low.
Marsh sandwort ( <i>Arenaria paludicola</i> )	FE, SE, CNPS 1B	Freshwater marshes.	May-August	No suitable habitat exists on project site.
Point Reyes blennosperma ( <i>Blennosperma nanum</i> var. <i>robustum</i> )	CNPS 1B	Coastal prairie, coastal scrub.	February-April	Suitable habitat exists on project site.
Bolander's reed grass ( <i>Calamagrostis bolanderi</i> )	CNPS 1B	Bogs and fens, closed-cone coniferous forest, coastal scrub, meadows, (mesic), marshes and swamps (freshwater), north coast coniferous forest.	May-August	Suitable, but marginal, habitat may exist on site; probability of occurrence low.
Thurber's reed grass ( <i>Calamagrostis crassiglumis</i> )	CNPS 2	Coastal scrub, freshwater marsh. Usually in swales surrounded by grassland or coastal scrub.	May-July	No suitable habitat exists on project site.
Swamp harebell ( <i>Campanula californica</i> )	CNPS 1B	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows, freshwater marsh, north coast coniferous forest.	June-October	No suitable habitat exists on project site.
California sedge ( <i>Carex californica</i> )	CNPS 2	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows, margins of marshes and swamps.	May-August	No suitable habitat exists on project site.

Plant Species	Status	Habitat	Flowering Period	Potential for Occurrence on Project Site
Lyngbye's sedge ( <i>Carex lyngbyei</i> )	CNPS 2	Brackish or freshwater marshes.	May-August	Suitable habitat exists on project site; known localities approximately 3.3 miles SW and 4.5 miles SE.
Deceiving sedge ( <i>Carex saliniformis</i> )	CNPS 1B	Coastal prairie, coastal scrub, meadows, coastal salt marshes.	June	Suitable habitat exists on project site; known locality approximately 1.8 miles NNE.
Green sedge ( <i>Carex viridula</i> var. <i>viridula</i> )	CNPS 2	Bogs and fens, freshwater marshes and swamps, moist places in north coast coniferous forest.	June-September	Suitable habitat may exist on project site.
Oregon coast Indian paintbrush ( <i>Castilleja affinis</i> ssp. <i>litoralis</i> )	CNPS 2	Sandy soil, coastal bluff scrub, coastal dunes, coastal scrub.	June	Suitable habitat exists on project site.
Mendocino coast Indian paintbrush ( <i>Castilleja mendocinensis</i> )	CNPS 1B	Coastal bluff scrub, closed-cone coniferous forest, coastal dunes, coastal prairie, coastal scrub.	April-August	No suitable habitat exists on project site.
Howell's spineflower ( <i>Chorizanthe howellii</i> )	FE, ST, CNPS 1B	Sandy soil, coastal dunes, coastal prairie, coastal scrub.	May-July	Suitable habitat may exist on project site, but outside known range.
Whitney's farewell-to-spring ( <i>Clarkia amoena</i> ssp. <i>whitneyi</i> )	CNPS 1B	Coastal bluff scrub, coastal scrub.	June-August	No suitable habitat exists on project site.
Pygmy cypress ( <i>Cupressus goveniana</i> ssp. <i>pigmaea</i> )	CNPS 1B	Closed-cone coniferous forest, broadleafed upland forest, north coast coniferous forest, especially on podzol-like soil.	N/A	No suitable habitat exists on project site.

Plant Species	Status	Habitat	Flowering Period	Potential for Occurrence on Project Site
Roderick's fritillary ( <i>Fritillaria roderickii</i> )	SE, CNPS 1B	Coastal bluff scrub, coastal prairie, valley and foothill grassland.	March-May	Suitable, but marginal, habitat may exist on site; probability of occurrence low.
Pacific gilia ( <i>Gilia capitata</i> ssp. <i>pacifica</i> )	CNPS 1B	Coastal bluff scrub, coastal scrub, coastal prairie.	May-August	No suitable habitat exists on project site.
Hayfield tarplant ( <i>Hemizonia congesta</i> ssp. <i>leucocephala</i> )	CNPS 3	Coastal scrub, valley and foothill grassland.	April-October	Suitable, but marginal, habitat may exist on site; probability of occurrence low.
Short-leaved evax ( <i>Hesperevax sparsiflora</i> var. <i>brevifolia</i> )	CNPS 2	Sandy soil, coastal bluff scrub, coastal dunes.	March-June	No suitable habitat exists on project site.
Point Reyes horkelia ( <i>Horkelia marinensis</i> )	CNPS 1B	Sandy soil, coastal dunes, coastal prairie, coastal scrub	May-September	No suitable habitat exists on project site.
Hair-leaved rush ( <i>Juncus supiniformis</i> )	CNPS 2	Bogs and fens, freshwater marshes and swamps.	April-June	Suitable habitat may exist on project site, but outside known range.
Baker's goldfields ( <i>Lasthenia macrantha</i> ssp. <i>bakeri</i> )	CNPS 1B	Coastal scrub, coastal prairie, openings in closed-cone coniferous forest.	April-October	No suitable habitat exists on project site.
Perennial goldfields ( <i>Lasthenia macrantha</i> ssp. <i>macrantha</i> )	CNPS 1B	Coastal bluff scrub, coastal dunes, coastal scrub.	January-November	No suitable habitat exists on project site.
Coast lily ( <i>Lilium maritimum</i> )	CNPS 1B	Broadleafed upland forest, closed-cone coniferous forest, coastal prairie, coastal scrub, north coast coniferous forest, freshwater marshes and swamps, hummocks in bogs.	May-July	Suitable, but marginal, habitat may exist on site; probability of occurrence low.

Plant Species	Status	Habitat	Flowering Period	Potential for Occurrence on Project Site
Running-pine ( <i>Lycopodium clavatum</i> )	CNPS 2	Marshes and swamps, moist places in north coast coniferous forest, sometimes growing on trees.	July-August	No suitable habitat exists on project site.
Leafy-stemmed mitrewort ( <i>Mitella caulescens</i> )	CNPS 2	Moist places, broadleafed upland forest, lower montane coniferous forest, meadows, north coast coniferous forest.	May-July	No suitable habitat exists on project site.
North Coast phacelia ( <i>Phacelia insularis</i> var. <i>continentis</i> )	CNPS 1B	Sandy soil, coastal dunes, coastal bluff scrub.	N/A	Suitable habitat exists on project site; known locality approximately 2 miles WNW.
Bolander's beach pine ( <i>Pinus contorta</i> ssp. <i>bolanderi</i> )	CNPS 1B	Podzol-like soil, closed-cone coniferous forest.	March-June	Site is at lower edge of elevation range, but suitable habitat exists on site.
North Coast semaphore grass ( <i>Pleuropogon hooverianus</i> )	ST, CNPS 1B	Vernal pools, freshwater marshes and swamps, moist places in broadleafed upland forest, meadows, north coast coniferous forest.	May-August	Suitable, but marginal, habitat may exist on site; probability of occurrence low.
Nuttall's pondweed ( <i>Potamogeton epihydrus</i> ssp. <i>nuttallii</i> )	CNPS 2	Ponds, other shallow freshwater habitats, including artificial habitats.	May-August	No suitable habitat exists on project site.
White beaked-rush ( <i>Rhynchospora alba</i> )	CNPS 2	Bogs and fens, broadleafed upland forest, meadows, marshes and swamps (freshwater).	July-August	No suitable habitat exists on project site.
Great burnet ( <i>Sanguisorba officinalis</i> )	CNPS 2	Bogs and fens, meadows, marshes and swamps, north coast coniferous forest, riparian forest, often serpentinite soil.	July-October	No suitable habitat exists on project site.



Plant Species	Status	Habitat	Flowering Period	Potential for Occurrence on Project Site
Maple-leaved checkerbloom ( <i>Sidalcea malachroides</i> )	CNPS 1B	Broadleafed upland forest, coastal prairie, coastal scrub, north coast coniferous forest, often in disturbed places.	April-August	No suitable habitat exists on project site.
Purple-stemmed checkerbloom ( <i>Sidalcea malviflora</i> [ <i>malvaeflora</i> ] ssp. <i>valida</i> )	CNPS 1B	Open broadleafed upland forest, coastal prairie.	May	No suitable habitat exists on project site.
Marsh violet ( <i>Viola palustris</i> )	CNPS 1B	Moist, often brushy places, bogs and fens, coastal scrub.	March-August	No suitable habitat exists on project site.

List of sensitive species has been compiled based on plant species listed in the CNDDDB for the Dutchmans Knoll and eight surrounding, California quadrangles (June 6, 2004).

Note: FE = federally listed as endangered; PE = federally proposed for listing as endangered. PT = federally proposed as threatened; FSOC = U.S. Fish and Wildlife Service Species of Concern; FC = federal candidate for listing; SE = state listed as endangered under the California Endangered Species Act and the California Native Plant Protection Act; ST = state listed as threatened; CR = state listed as rare; CSC = California species of special concern. CNPS 1B = Rare, threatened, or endangered in California and elsewhere; CNPS 2 = Rare, threatened or endangered in California, but more common elsewhere; CNPS 3 = More information is needed.

**TABLE 1B**  
**Status, distribution and habitat of special-status plants potentially occurring within vicinity of**  
**Ten Mile 2<sup>nd</sup> Processing Plant**  
**Mendocino County, California**

Plant Species	Status	Habitat	Flowering Period	Potential for Occurrence on Project Site
Blasdale's bent grass ( <i>Agrostis blasdalei</i> )	CNPS 1B	Coastal bluff scrub, coastal dunes, coastal prairie.	May-June	No suitable habitat exists on project site
Marsh sandwort ( <i>Arenaria paludicola</i> )	FE, SE, CNPS 1B	Freshwater marshes.	May-August	No suitable habitat exists on project site.
Point Reyes blennosperma ( <i>Blennosperma nanum</i> var. <i>robustum</i> )	CNPS 1B	Coastal prairie, coastal scrub.	February-April	No suitable habitat exists on project site.
Bolander's reed grass ( <i>Calamagrostis bolanderi</i> )	CNPS 1B	Bogs and fens, closed-cone coniferous forest, coastal scrub, meadows, (mesic), marshes and swamps (freshwater), north coast coniferous forest.	May-August	Potential for occurrence in riparian zone along Ten Mile River.
Thurber's reed grass ( <i>Calamagrostis crassiglumis</i> )	CNPS 2	Coastal scrub, freshwater marsh. Usually in swales surrounded by grassland or coastal scrub.	May-July	No suitable habitat exists on project site.
Swamp harebell ( <i>Campanula californica</i> )	CNPS 1B	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows, freshwater marsh, north coast coniferous forest.	June-October	Potential for occurrence in riparian zone along Ten Mile River.
California sedge ( <i>Carex californica</i> )	CNPS 2	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows, margins of marshes and swamps.	May-August	Potential for occurrence in riparian zone along Ten Mile River.

Plant Species	Status	Habitat	Flowering Period	Potential for Occurrence on Project Site
Lyngbye's sedge ( <i>Carex lyngbyei</i> )	CNPS 2	Brackish or freshwater marshes.	May-August	No suitable habitat exists on project site
Deceiving sedge ( <i>Carex saliniformis</i> )	CNPS 1B	Coastal prairie, coastal scrub, meadows, coastal salt marshes.	June	No suitable habitat exists on project site
Green sedge ( <i>Carex viridula</i> var. <i>viridula</i> )	CNPS 2	Bogs and fens, freshwater marshes and swamps, moist places in north coast coniferous forest.	June-September	Potential for occurrence in riparian zone along Ten Mile River.
Oregon coast Indian paintbrush ( <i>Castilleja affinis</i> ssp. <i>litoralis</i> )	CNPS 2	Sandy soil, coastal bluff scrub, coastal dunes, coastal scrub.	June	No suitable habitat exists on project site
Mendocino coast Indian paintbrush ( <i>Castilleja mendocinensis</i> )	CNPS 1B	Coastal bluff scrub, closed-cone coniferous forest, coastal dunes, coastal prairie, coastal scrub.	April-August	No suitable habitat exists on project site.
Howell's spineflower ( <i>Chorizanthe howellii</i> )	FE, ST, CNPS 1B	Sandy soil, coastal dunes, coastal prairie, coastal scrub.	May-July	No suitable habitat exists on project site
Whitney's farewell-to-spring ( <i>Clarkia amoena</i> ssp. <i>whitneyi</i> )	CNPS 1B	Coastal bluff scrub, coastal scrub.	June-August	No suitable habitat exists on project site.
Pygmy cypress ( <i>Cupressus goveniana</i> ssp. <i>pigmaea</i> )	CNPS 1B	Closed-cone coniferous forest, broadleafed upland forest, north coast coniferous forest, especially on podzol-like soil.	N/A	No suitable habitat exists on project site.
Roderick's fritillary ( <i>Fritillaria roderickii</i> )	SE, CNPS 1B	Coastal bluff scrub, coastal prairie, valley and foothill grassland.	March-May	No suitable habitat exists on project site
Pacific gilia ( <i>Gilia capitata</i> ssp. <i>pacifica</i> )	CNPS 1B	Coastal bluff scrub, coastal scrub, coastal prairie.	May-August	No suitable habitat exists on project site.

Plant Species	Status	Habitat	Flowering Period	Potential for Occurrence on Project Site
Hayfield tarplant ( <i>Hemizonia congesta</i> ssp. <i>leucocephala</i> )	CNPS 3	Coastal scrub, valley and foothill grassland.	April-October	No suitable habitat exists on project site
Short-leaved evax ( <i>Hesperevax sparsiflora</i> var. <i>brevifolia</i> )	CNPS 2	Sandy soil, coastal bluff scrub, coastal dunes.	March-June	No suitable habitat exists on project site.
Point Reyes horkelia ( <i>Horkelia marinensis</i> )	CNPS 1B	Sandy soil, coastal dunes, coastal prairie, coastal scrub	May-September	No suitable habitat exists on project site.
Hair-leaved rush ( <i>Juncus supiniformis</i> )	CNPS 2	Bogs and fens, freshwater marshes and swamps.	April-June	Potential for occurrence in riparian zone along Ten Mile River.
Baker's goldfields ( <i>Lasthenia macrantha</i> ssp. <i>bakeri</i> )	CNPS 1B	Coastal scrub, coastal prairie, openings in closed-cone coniferous forest.	April-October	No suitable habitat exists on project site.
Perennial goldfields ( <i>Lasthenia macrantha</i> ssp. <i>macrantha</i> )	CNPS 1B	Coastal bluff scrub, coastal dunes, coastal scrub.	January-November	No suitable habitat exists on project site.
Coast lily ( <i>Lilium maritimum</i> )	CNPS 1B	Broadleafed upland forest, closed-cone coniferous forest, coastal prairie, coastal scrub, north coast coniferous forest, freshwater marshes and swamps, hummocks in bogs.	May-July	Potential for occurrence in riparian zone along Ten Mile River.
Running-pine ( <i>Lycopodium clavatum</i> )	CNPS 2	Marshes and swamps, moist places in north coast coniferous forest, sometimes growing on trees.	July-August	Potential for occurrence in riparian zone along Ten Mile River.
Leafy-stemmed mitrewort ( <i>Mitella caulescens</i> )	CNPS 2	Moist places, broadleafed upland forest, lower montane coniferous forest, meadows, north coast coniferous forest.	May-July	Potential for occurrence in riparian zone along Ten Mile River.

Plant Species	Status	Habitat	Flowering Period	Potential for Occurrence on Project Site
North Coast phacelia ( <i>Phacelia insularis</i> var. <i>continentis</i> )	CNPS 1B	Sandy soil, coastal dunes, coastal bluff scrub.	N/A	No suitable habitat exists on project site
Bolander's beach pine ( <i>Pinus contorta</i> ssp. <i>bolanderi</i> )	CNPS 1B	Podzol-like soil, closed-cone coniferous forest.	March-June	No suitable habitat exists on project site
North Coast semaphore grass ( <i>Pleuropogon hooverianus</i> )	ST, CNPS 1B	Vernal pools, freshwater marshes and swamps, moist places in broadleafed upland forest, meadows, north coast coniferous forest.	May-August	Potential for occurrence in riparian zone along Ten Mile River.
Nuttall's pondweed ( <i>Potamogeton epihydrus</i> ssp. <i>nuttallii</i> )	CNPS 2	Ponds, other shallow freshwater habitats, including artificial habitats.	May-August	Potential for occurrence in riparian zone along Ten Mile River.
White beaked-rush ( <i>Rhynchospora alba</i> )	CNPS 2	Bogs and fens, broadleafed upland forest, meadows, marshes and swamps (freshwater).	July-August	Potential for occurrence in riparian zone along Ten Mile River.
Great burnet ( <i>Sanguisorba officinalis</i> )	CNPS 2	Bogs and fens, meadows, marshes and swamps, north coast coniferous forest, riparian forest, often serpentinite soil.	July-October	Potential for occurrence in riparian zone along Ten Mile River.
Maple-leaved checkerbloom ( <i>Sidalcea malachroides</i> )	CNPS 1B	Broadleafed upland forest, coastal prairie, coastal scrub, north coast coniferous forest, often in disturbed places.	April-August	No suitable habitat exists on project site.
Purple-stemmed checkerbloom ( <i>Sidalcea malviflora</i> [ <i>malvaeiflora</i> ] ssp. <i>valida</i> )	CNPS 1B	Open broadleafed upland forest, coastal prairie.	May	No suitable habitat exists on project site.

Plant Species	Status	Habitat	Flowering Period	Potential for Occurrence on Project Site
Marsh violet ( <i>Viola palustris</i> )	CNPS 1B	Moist, often brushy places, bogs and fens, coastal scrub.	March-August	No suitable habitat exists on project site.

List of sensitive species has been compiled based on plant species listed in the CNDDDB for the Dutchmans Knoll and eight surrounding, California quadrangles (June 6, 2004).

Note: FE = federally listed as endangered; PE = federally proposed for listing as endangered. PT = federally proposed as threatened; FSOC = U.S. Fish and Wildlife Service Species of Concern; FC = federal candidate for listing; SE = state listed as endangered under the California Endangered Species Act and the California Native Plant Protection Act; ST = state listed as threatened; CR = state listed as rare; CSC = California species of special concern. CNPS 1B = Rare, threatened, or endangered in California and elsewhere; CNPS 2 = Rare, threatened or endangered in California, but more common elsewhere; CNPS 3 = More information is needed.

**Table 2A**  
**Special-status Animal Species Potentially Occurring within Vicinity of Project Site**  
**Ten Mile 2<sup>nd</sup> Crossing Quarry Project**  
**Mendocino County, California**

<b>Animal*</b>	<b>Status</b>	<b>Habitat</b>	<b>Potential for Occurrence on Project Site</b>
<b>Amphibians and Reptiles</b>			
Western tailed frog ( <i>Ascaphus truei</i> )	CSC	Montane hardwood-conifer, redwood, Douglas-fir and ponderosa pine habitats. Elevation sea level to 1970 meters. Restricted to perennial streams in steep-walled valleys with dense vegetation. Locally found in tributaries to Ten Mile River.	Forested areas may provide potential dispersal habitat. No potential breeding habitat on site.
Foothill yellow-legged frog ( <i>Rana boylei</i> )	FSC, CSC BLMS	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Microhabitat needs at least some cobble-sized substrate for egg-laying and 15 weeks to attain metamorphosis.	Forested areas may provide potential dispersal habitat. No potential breeding habitat on site.
Northwestern pond turtle ( <i>Clemmys marmorata marmorata</i> )	FSC, CSC BLMS	Associated with permanent or nearly permanent water in a variety of habitats.	No suitable habitat on site.
Del Norte salamander ( <i>Plethodon elongatus</i> )	CSC	Found in Del Norte, Siskiyou, western Trinity, and Humboldt counties. Open-to-dense, sapling-to-mature stages of valley foothill riparian, montane hardwood conifer, Douglas-fir and redwood habitats. Breeds on moist soil; does not require standing water.	Potential for occurrence in woods on or adjacent to project site.

<b>Animal*</b>	<b>Status</b>	<b>Habitat</b>	<b>Potential for Occurrence on Project Site</b>
Southern torrent salamander ( <i>Rhyacotriton variegatus</i> )	CSC	Occurs throughout humid coastal drainages from Pt. Arena, southern Mendocino Co., up to (and beyond) the Oregon border in the coniferous belt. A single record exists from the Sacramento River drainage near Dunsmuir, Siskiyou Co. Habitat includes cold, clear well-shaded streams, waterfalls and seepages, particularly those running through talus and under rocks. <i>R. variegatus</i> is found primarily on north-facing slopes in the southern part of their range where forests are warmer and drier.	Potential dispersal habitat on project site. No breeding habitat on site.
<b>Birds**</b>			
Purple martin ( <i>Progne subis</i> )	CSC	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. Nest often located in tall, isolated tree/snag. Local occurrence west side of Mill Creek, 0.7 mile southeast of Ten Mile Creek.	Undisturbed, forest habitats on project site provide potential nesting sites. Nesting occurs from April into August, with peak activity in June.
Northern goshawk ( <i>Accipiter gentilis</i> )	CSC	Breeds in North Coast Ranges. Prefers middle and higher elevations, and mature dense conifer forests.	Undisturbed, forest habitats on project site provide potential nesting sites. Nesting begins as early as mid-April through June.



Animal*	Status	Habitat	Potential for Occurrence on Project Site
Western snowy plover ( <i>Charadrius aleandrius nivosus</i> )	FT, CSC	Nests beside or near tidal waters, and includes all nesting colonies on the mainland coast, peninsulas, offshore islands, adjacent bays and estuaries from southern Washington to southern Baja California, Mexico. Habitats used by nesting and non-nesting birds include sandy coastal beaches, salt pans, coastal dredged spoils sites, dry salt ponds, salt pond levees and gravel bars.	No suitable habitat occurs on project site.
Northern spotted owl ( <i>Strix occidentalis</i> )	FT, CSC	In northern California resides in dense, old-growth, multi-layered mixed conifer, redwood, and Douglas-fir habitats, from sea level to nearly 2300 meters. Local occurrences in project area.	Undisturbed forest habitats in and adjacent to project site provide suitable habitat. Breeds from early March through June, with peak activity in April and May.
Osprey ( <i>Pandion haliaetus</i> )	CSC, CDFS	Nesting: ocean shore, bays, freshwater lakes, and larger streams. Large nests built in tree tops within 15 miles of good fish-producing body of water.	Undisturbed forest habitats on and adjacent to project site provide suitable habitat. Breeds March through September.
American peregrine falcon ( <i>Falco peregrinus</i> )	FE, SE	Breeds mostly in woodland, forest and coastal habitats and frequents riparian, coastal, and wetland habitats as well. Preferred breeding habitats include areas near wetlands, lakes, rivers, or other water, on high cliffs and banks. The peregrine also nests on human-made structures and occasionally uses holes in trees or snags, or nests of other raptors.	Potential for occurrence on site. Breeds early March through late August.

Animal*	Status	Habitat	Potential for Occurrence on Project Site
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	FT, SE, SFP	A permanent resident, and uncommon winter migrant, now restricted to breeding mostly in Butte, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties of California. It typically nests and winters in ocean shore, lake margins, and river habitats using large, old-growth, or dominant live trees with open branches, especially Ponderosa pine.	Potential for occurrence on site. Breeds February through March with peak activity March to June.
Golden eagle ( <i>Aquila chrysaetos</i> )	CSC, SFP	Uncommon permanent resident and migrant throughout most of California and occurs in ranges from sea level to as high as 3800 meters. Prefers rolling foothills, mountain areas, sage-juniper flats, and desert environments.	Potential for occurrence in forest areas on and adjacent to site. Breeds from late January through August, with peak activity in March through July.
Great blue heron ( <i>Ardea herodias</i> )	CDFS	Found in saltwater marshes, estuaries, mudflats, lagoons, freshwater marshes, rivers and flooded fields. Nesting usually occurs in secluded groves of live or dead trees near shallow-water feeding areas (Zeiner et al, 1990). Along the north coast, rookeries occur in conifer forests, most commonly in Douglas fir trees which are also used for roosting.	Potential for occurrence on site. Arrives to nesting areas in February and begins laying eggs in late February or March.

<b>Animal*</b>	<b>Status</b>	<b>Habitat</b>	<b>Potential for Occurrence on Project Site</b>
Great egret ( <i>Casmerodius albus</i> )	CDFS	Common yearlong resident throughout California except for high mountains and deserts. The egret uses fresh and saltwater wetlands and areas along the margins of estuaries, lakes, slow-moving streams, and other waterbodies for feeding (Zeiner et al, 1990). Large trees provide nesting and roosting habitat.	Potential for occurrence on site. Nests mainly March through July.
Marbled murrelet ( <i>Brachyramphus marmoratus</i> )	FE, SE	Occurs year-round in marine subtidal and pelagic habitats from Oregon to Santa Barbara County, California. During nesting season may fly inland to nest in older forests of Douglas fir and redwood.	Forests on and in vicinity of project site may provide nesting habitat. Lay eggs from mid-May to mid-June, incubates from mid-June to mid-August.
<b>Fish</b>			
Coho salmon ( <i>Oncorhynchus kisutch</i> )	FT, SE	Federal listing: populations between Punta Gorda and San Lorenzo River. State listing: populations south of San Francisco Bay only. Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	No suitable habitat on project site.
Chinook salmon	FT	Spends most of its life in the open ocean but migrates through estuaries and then upstream to spawn in the upper reaches of its home river. In order to reproduce successfully, these fish require cold (6°-13°C or 43°-56°F), clean, fast-flowing rivers with gravel bottoms to lay their eggs in.	No suitable habitat on project site.

Steelhead trout	FT	Anadromous. Juveniles may rear in lower Ten Mile River before moving out to sea.	No suitable habitat on project site.
Tidewater goby ( <i>Eucyclogobius newberryi</i> )	FE, CSC	Habitat consists of brackish shallow lagoons and lower stream reaches where water is fairly still but not stagnant.	No suitable habitat on project site.
<b>Mammals</b>			
Red tree vole ( <i>Arborimus pomo</i> )	CSC	Occurs in old-growth and other forests, mainly Douglas-fir, redwood, and montane hardwood-conifer habitats. Known occurrences in project vicinity.	Potential for occurrence in evergreen forests located on and adjacent to project site.

\*List of special-status species has been compiled based on animal species listed in the CNDDDB (Dutchmans Knoll and surrounding quadrangles, 2004) and general knowledge of project area. Note: FSC = U.S. Fish and Wildlife Service Species of Concern; FE = federally listed as endangered; FT = federally listed as threatened; BLMS = listed as sensitive by the Bureau of Land Management; USFS listed as sensitive by the Forest Service; SE = state listed as endangered; ST = state listed as threatened; SFP = State fully protected (may not be taken or possessed without a permit from the Fish and Game Commission and/or CDFG). CSC = California species of special concern. CDFS = listed as sensitive by California Department of Forestry and Fire Protection.

\*\* All migratory birds are protected by the Migratory Bird Treaty Act (50 CFR 10), which makes it unlawful to take, possess, buy, sell, purchase or barter any migratory bird, including feathers or other parts, nests, eggs or products, except as allowed by implementing regulations (50 CFR 21). In addition, Section 2080 of the California Fish and Game Code prohibits the killing of a listed species, and Sections 3503, 3503.5, and 3800 of the Fish and Game Code prohibit the take, possession, or destruction of birds, their nests, or eggs. Therefore, prior to development of the site, pre-construction surveys should be conducted to determine presence/absence of nesting birds. Any active nest sites should be avoided during construction under the supervision of a qualified biologist.

**Table 2B**  
**Special-status Animal Species Potentially Occurring within Vicinity of Project Site**  
**Ten Mile 2<sup>nd</sup> Crossing Quarry Project**  
**Mendocino County, California**

<b>Animal*</b>	<b>Status</b>	<b>Habitat</b>	<b>Potential for Occurrence on Project Site</b>
<b>Amphibians and Reptiles</b>			
Western tailed frog ( <i>Ascaphus truei</i> )	CSC	Montane hardwood-conifer, redwood, Douglas-fir and ponderosa pine habitats. Elevation sea level to 1970 meters. Restricted to perennial streams in steep-walled valleys with dense vegetation. Locally found in tributaries to Ten Mile River.	Forested areas may provide potential dispersal habitat. Ten Mile River adjacent to project site provides potential breeding habitat.
Foothill yellow-legged frog ( <i>Rana boylei</i> )	FSC, CSC BLMS	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Microhabitat needs at least some cobble-sized substrate for egg-laying and 15 weeks to attain metamorphosis.	Forested areas may provide potential dispersal habitat. Ten Mile River adjacent to project site provides potential breeding habitat.
Northwestern pond turtle ( <i>Clemmys marmorata marmorata</i> )	FSC, CSC BLMS	Associated with permanent or nearly permanent water in a variety of habitats.	Ten Mile River adjacent to project site provides potential breeding habitat.
Del Norte salamander ( <i>Plethodon elongatus</i> )	CSC	Found in Del Norte, Siskiyou, western Trinity, and Humboldt counties. Open-to-dense, sapling-to-mature stages of valley foothill riparian, montane hardwood conifer, Douglas-fir and redwood habitats. Breeds on moist soil; does not require standing water.	Potential for occurrence in woods on or adjacent to project site.

<b>Animal*</b>	<b>Status</b>	<b>Habitat</b>	<b>Potential for Occurrence on Project Site</b>
Southern torrent salamander ( <i>Rhyacotriton variegatus</i> )	CSC	Occurs throughout humid coastal drainages from Pt. Arena, southern Mendocino Co., up to (and beyond) the Oregon border in the coniferous belt. A single record exists from the Sacramento River drainage near Dunsmuir, Siskiyou Co. Habitat includes cold, clear well-shaded streams, waterfalls and seepages, particularly those running through talus and under rocks. <i>R. variegatus</i> is found primarily on north-facing slopes in the southern part of their range where forests are warmer and drier.	Potential dispersal habitat on project site. Ten Mile River adjacent to project site provides potential breeding habitat.
<b>Birds**</b>			
Purple martin ( <i>Progne subis</i> )	CSC	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. Nest often located in tall, isolated tree/snag. Local occurrence west side of Mill Creek, 0.7 mile southeast of Ten Mile Creek.	Undisturbed, forest habitats adjacent to project site provide potential nesting sites. Nesting occurs from April into August, with peak activity in June.
Northern goshawk ( <i>Accipiter gentilis</i> )	CSC	Breeds in North Coast Ranges. Prefers middle and higher elevations, and mature dense conifer forests.	Undisturbed, forest habitats adjacent to project site provide potential nesting sites. Nesting begins as early as mid-April through June.

Animal*	Status	Habitat	Potential for Occurrence on Project Site
Western snowy plover ( <i>Charadrius aleandrius nivosus</i> )	FT, CSC	Nests beside or near tidal waters, and includes all nesting colonies on the mainland coast, peninsulas, offshore islands, adjacent bays and estuaries from southern Washington to southern Baja California, Mexico. Habitats used by nesting and non-nesting birds include sandy coastal beaches, salt pans, coastal dredged spoils sites, dry salt ponds, salt pond levees and gravel bars.	No suitable habitat occurs on project site.
Northern spotted owl ( <i>Strix occidentalis</i> )	FT, CSC	In northern California resides in dense, old-growth, multi-layered mixed conifer, redwood, and Douglas-fir habitats, from sea level to nearly 2300 meters. Local occurrences in project area.	Undisturbed forest habitats adjacent to project site provide suitable habitat. Breeds from early March through June, with peak activity in April and May.
Osprey ( <i>Pandion haliaetus</i> )	CSC, CDFS	Nesting: ocean shore, bays, freshwater lakes, and larger streams. Large nests built in tree tops within 15 miles of good fish-producing body of water.	Undisturbed forest habitats adjacent to project site provide suitable habitat. Breeds March through September.
American peregrine falcon ( <i>Falco peregrinus</i> )	FE, SE	Breeds mostly in woodland, forest and coastal habitats and frequents riparian, coastal, and wetland habitats as well. Preferred breeding habitats include areas near wetlands, lakes, rivers, or other water, on high cliffs and banks. The peregrine also nests on human-made structures and occasionally uses holes in trees or snags, or nests of other raptors.	Undisturbed forest habitats adjacent to project site provide suitable habitat. Breeds early March through late August.

Animal*	Status	Habitat	Potential for Occurrence on Project Site
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	FT, SE, SFP	A permanent resident, and uncommon winter migrant, now restricted to breeding mostly in Butte, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties of California. It typically nests and winters in ocean shore, lake margins, and river habitats using large, old-growth, or dominant live trees with open branches, especially Ponderosa pine.	Undisturbed forest habitats adjacent to project site provide suitable habitat. Breeds February through March with peak activity March to June.
Golden eagle ( <i>Aquila chrysaetos</i> )	CSC, SFP	Uncommon permanent resident and migrant throughout most of California and occurs in ranges from sea level to as high as 3800 meters. Prefers rolling foothills, mountain areas, sage-juniper flats, and desert environments.	Potential for occurrence in forest areas adjacent to site. Breeds from late January through August, with peak activity in March through July.
Great blue heron ( <i>Ardea herodias</i> )	CDFS	Found in saltwater marshes, estuaries, mudflats, lagoons, freshwater marshes, rivers and flooded fields. Nesting usually occurs in secluded groves of live or dead trees near shallow-water feeding areas (Zeiner et al, 1990). Along the north coast, rookeries occur in conifer forests, most commonly in Douglas fir trees which are also used for roosting.	Potential for occurrence on site. Arrives to nesting areas in February and begins laying eggs in late February or March.



<b>Animal*</b>	<b>Status</b>	<b>Habitat</b>	<b>Potential for Occurrence on Project Site</b>
Great egret ( <i>Casmerodius albus</i> )	CDFS	Common yearlong resident throughout California except for high mountains and deserts. The egret uses fresh and saltwater wetlands and areas along the margins of estuaries, lakes, slow-moving streams, and other waterbodies for feeding (Zeiner et al, 1990). Large trees provide nesting and roosting habitat.	Potential for occurrence on site. Nests mainly March through July.
Marbled murrelet ( <i>Brachyramphus marmoratus</i> )	FE, SE	Occurs year-round in marine subtidal and pelagic habitats from Oregon to Santa Barbara County, California. During nesting season may fly inland to nest in older forests of Douglas fir and redwood.	Forests in vicinity of project site may provide nesting habitat. Lays eggs from mid-May to mid-June, incubates from mid-June to mid-August.
<b>Fish</b>			
Coho salmon ( <i>Oncorhynchus kisutch</i> )	FT, SE	Federal listing: populations between Punta Gorda and San Lorenzo River. State listing: populations south of San Francisco Bay only. Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	Ten Mile River adjacent to project site provides habitat.
Chinook salmon	FT	Spends most of its life in the open ocean but migrates through estuaries and then upstream to spawn in the upper reaches of its home river. In order to reproduce successfully, these fish require cold (6°-13°C or 43°-56°F), clean, fast-flowing rivers with gravel bottoms to lay their eggs in.	Ten Mile River adjacent to project site provides habitat.

Steelhead trout	FT	Anadromous. Juveniles may rear in lower Ten Mile River before moving out to sea.	Ten Mile River adjacent to project site provides habitat.
Tidewater goby ( <i>Eucyclogobius newberryi</i> )	FE, CSC	Habitat consists of brackish shallow lagoons and lower stream reaches where water is fairly still but not stagnant.	No suitable habitat on project site.
<b>Mammals</b>			
Red tree vole ( <i>Arborimus pomo</i> )	CSC	Occurs in old-growth and other forests, mainly Douglas-fir, redwood, and montane hardwood-conifer habitats. Known occurrences in project vicinity.	Potential for occurrence in evergreen forests adjacent to project site.

\*List of special-status species has been compiled based on animal species listed in the CNDDDB (Dutchmans Knoll and surrounding quadrangles, 2004) and general knowledge of project area. Note: FSC = U.S. Fish and Wildlife Service Species of Concern; FE = federally listed as endangered; FT = federally listed as threatened; BLMS = listed as sensitive by the Bureau of Land Management; USFS listed as sensitive by the Forest Service; SE = state listed as endangered; ST = state listed as threatened; SFP = State fully protected (may not be taken or possessed without a permit from the Fish and Game Commission and/or CDFG). CSC = California species of special concern. CDFS = listed as sensitive by California Department of Forestry and Fire Protection.

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TABLE 3  
Vascular Plant Species Observed in the Baxman Quarry  
Main Quarry Survey Area, Mendocino County, California

FERNS AND FERN-ALLIES	Anaphalis margaritacea
BLECHNACEAE	Baccharis pilularis
Blechnum spicant	*Cirsium vulgare
DENNSTAEDTIACEAE	*Erechtites minima
Pteridium aquilinum var. pubescens	Gnaphalium stramineum
PTERIDACEAE	*Hypochaeris radicata
Adiantum aleuticum	*Lactuca saligna
	*Lactuca serriola
	*Lactuca virosa
	*Leucanthemum vulgare
	Madia sativa
	*Senecio jacobaea
CONE-BEARING PLANTS (GYMNOSPERMAE)	BETULACEAE
PINACEAE	Alnus rubra
Pseudotsuga menziesii var. menziesii	Corylus cornuta var. californica
TAXACEAE	CUCURBITACEAE
Torreya californica	Marah sp.
TAXODIACEAE	ERICACEAE
Sequoia sempervirens	Gaultheria shallon
	Vaccinium ovatum
	Vaccinium parvifolium
FLOWERING PLANTS (ANGIOSPERMAE - DICOTYLEDONEAE)	EUPHORBIACEAE
ANACARDIACEAE	*Euphorbia peplus
Toxicodendron diversilobum	FABACEAE
APIACEAE	*Trifolium glomeratum
Osmorhiza chilensis	GENTIANACEAE
Sanicula crassicaulis	Centaurium muehlenbergii
ARISTOLOCHIACEAE	LAMIACEAE
Asarum caudatum	Prunella vulgaris var. lanceolata
ASTERACEAE	Stachys ajugoides var. rigida
	MYRICACEAE
	Myrica californica
	ONAGRACEAE

*Epilobium brachycarpum*  
*Epilobium cf. ciliatum*

OXALIDACEAE

*Oxalis oregana*

PHILADELPHACEAE

*Whipplea modesta*

ROSACEAE

*Fragaria vesca*  
*Rubus parviflorus*  
*Rubus ursinus*

RUBIACEAE

*Galium triflorum*

SALICACEAE

*Salix lasiolepis*

URTICACEAE

*Urtica dioica* ssp. *gracilis*

FLOWERING PLANTS  
(ANGIOSPERMAE -  
MONOCOTYLEDONEAE)

IRIDACEAE

*Iris cf. douglasiana*

POACEAE

\**Aira caryophylla*  
*Bromus carinatus*  
\**Cortaderia jubata*  
*Hierochloa occidentalis*  
\**Polypogon monspeliensis*  
\**Vulpia bromoides*

\*Species introduced or naturalized in the  
study area.

Table 4  
Vascular Plant Species Observed in the Baxman  
Processing Plant Survey Area, Mendocino County, California

FERNS AND FERN-ALLIES

EQUISETACEAE

*Equisetum telmateia* ssp. *braunii*

FLOWERING PLANTS  
(ANGIOSPERMAE -  
DICOTYLEDONEAE)

APIACEAE

\**Torilis arvensis*

ASTERACEAE

*Baccharis pilularis*

\**Carduus pycnocephalus*

*Conyza canadensis*

\**Leontodon taraxacoides* ssp.  
*taraxacoides*

*Madia sativa*

\**Senecio jacobaea*

\**Sonchus oleraceus*

BETULACEAE

*Alnus rubra*

BRASSICACEAE

\**Raphanus sativus*

DIPSACACEAE

\**Dipsacus fullonum*

FABACEAE

\**Medicago polymorpha*

\* *Melilotus alba*

\**Melilotus indica*

GROSSULARIACEAE

*Ribes* sp.

LAMIACEAE

\**Mentha pulegium*

PLANTAGINACEAE

\**Plantago lanceolata*

POLYGONACEAE

*Rumex salicifolius* var.  
*transitorius*

ROSACEAE

\**Rubus discolor*

FLOWERING PLANTS  
(ANGIOSPERMAE -  
MONOCOTYLEDONEAE)

CYPERACEAE

*Carex subfusca*

*Cyperus eragrostis*

POACEAE

\**Avena* sp.

*Bromus carinatus*

\**Bromus stamineus*

\**Cynosurus echinatus*

\**Gastridium ventricosum*

\**Holcus lanatus*

\**Lolium multiflorum*

\**Polypogon monspeliensis*

\**Vulpia bromoides*

\**Vulpia myuros* var. *myur*

## **2005 Botanical Survey**

**Botanical Survey of the Ten Mile Quarry and Screening Plant Sites,  
Mendocino County, California**

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## **1.0 INTRODUCTION**

This report presents the approach, methodologies, and findings of botanical surveys conducted by EcoSystems West for Baxman Gravel Company, Inc., of two sites located adjacent to the Ten Mile River north-northeast of Fort Bragg in Mendocino County, California. The two sites are the Baxman Quarry site and a processing plant site located approximately 0.7 miles north of the quarry site. The purposes of the botanical surveys were (1) To characterize the habitat types (plant communities) of the study areas; (2) To determine whether any special-status plant species, or suitable habitat for any special status plant species, occur within the study areas; and (3) To determine whether any sensitive habitat types occur within the study areas.

## **2.0 SITE DESCRIPTION**

The Baxman Quarry site and the processing plant site are both located at and near the bottom of the canyon of the Ten Mile River, approximately 8-8.5 miles north-northeast of Fort Bragg. Access to both sites is via a gravel private road heading east from Highway 1 north of the community of Inglenook. The quarry site covers approximately 9.4 acres and the screening plant covers approximately 5.5 acres. The sites are located on the Dutchmans Knoll USGS 7.5' quadrangle.

The Baxman Quarry site is bounded on the north by the gravel road. The site encompasses the heavily disturbed area from the quarry entrance through the main quarry pit to the near-vertical, bare rock quarry face cut into the steep lower canyon slope, and also encompasses a strip of redwood forest above the top of the quarry face, at the extreme south end of the site. All of the area within the site boundary has been heavily disturbed by quarrying activities except this strip of forest at the south end.

The processing plant site extends from the Ten Mile River, which curves around the site on the west and north sides, to the base of the canyon slope to the east. A 100-200 foot wide strip of riparian forest, which is mostly free of evident recent disturbance, borders the river and separates it from the processing plant site proper; this strip of forest is included in the study area. The processing plant site proper has all been heavily and repeatedly disturbed by grading, excavating, and filling, and is partly occupied by machinery and buildings. A large settling pond is located in the northwestern portion of the site, bordering the riparian forest.

## **3.0 METHODS**

### **3.1 Review of Literature and Data Sources**

EcoSystems West botanists reviewed literature and special-status species data bases in order to identify special-status plant species and sensitive habitat types with potential to occur in the study areas. Sources reviewed include California Natural Diversity Data Base (CNDDB) occurrence records for the Dutchmans Knoll USGS 7.5' quadrangle and the eight quadrangles surrounding it (2005); county and USGS quadrangle occurrence records in the California Native Plant Society's (CNPS) *Inventory of Rare and*

*Endangered Vascular Plants of California* (Tibor 2001; CNPS 2005) for the same nine quadrangles; and standard floras (Abrams 1923, 1944, 1951; Abrams and Ferris 1960; Munz and Keck 1973; Hickman 1993).

Sources consulted for up-to-date agency status information include U.S. Fish and Wildlife Service (USFWS) (2005a, b, c) for federally listed species (including Proposed and Candidate species) and California Department of Fish and Game (CDFG) (2005) for State of California listed species. Special-status species also include species listed on List 1A (Plants Presumed Extinct in California), List 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere), or List 2 (Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere) of the CNPS *Inventory* (Tibor 2001; CNPS 2005). These species fall under state regulatory review under the provisions of the California Environmental Quality Act (CEQA) Guidelines.

Also considered as special-status species are those included on List 3 (Plants About Which We Need More Information—A Review List) and List 4 (Plants of Limited Distribution—A Watch List) of the CNPS *Inventory*. These species are considered to be of lower sensitivity, and generally do not fall under specific state or federal regulatory authority. Specific mitigation considerations are generally not required for species in these categories.

Based on information from the above sources, we developed a target list of special-status plants with potential to occur in the vicinity of the study area (Table 1) (CNPS List 4 species are not included.)

Scientific nomenclature for plants in this report follows Hickman (1993); Tibor (2001); and CNPS (2005). Common names follow Abrams (1923, 1944, 1951); Abrams and Ferris (1960); Hickman (1993); and the U.S. Department of Agriculture (USDA) PLANTS database (USDA 2006), except for special-status species, which follow Tibor (2001) and CNPS (2005).

Sensitive habitats include: riparian corridors, wetlands, habitats for legally protected species and CDFG Species of Special Concern, areas of high biological diversity, areas providing important wildlife habitat, and unusual or regionally restricted habitat types. Habitat types considered sensitive include those listed on the CNDDDB working list of “high priority” habitats for inventory (i.e., those habitats that are rare or endangered within the borders of California) (Holland 1986; CDFG 2003). EcoSystems West botanists reviewed the CNDDDB list of “high priority” habitats.

### **3.2 Field Survey**

EcoSystems West botanist Roy Buck conducted field surveys of the Baxman Quarry and processing plant sites on 16 August 2004 and 20 May 2005. During each field visit, both sites were thoroughly surveyed on foot, with the exception of the riparian forest on the processing plant site, which was not included in the study area in 2004 and was, therefore, surveyed only during the 2005 visit. All vascular plant species in identifiable

condition at the times the surveys were conducted, regardless of regulatory status, were identified to species or infraspecific taxon using keys and descriptions in Abrams (1923,

**Table 1. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Baxman Quarry and processing plant sites, Mendocino County, California**

PLANT SPECIES	Status	Habitat	Flowering Period	Potential for Occurrence on Project Sites
Blasdale's bent grass ( <i>Agrostis blasdalei</i> )	CNPS 1B	Coastal bluff scrub, coastal dunes, coastal prairie.	May-June	No suitable habitat exists on project sites.
Narrow-leaved water-plantain ( <i>Alisma gramineum</i> )	CNPS 2	Assorted shallow freshwater habitats.	June-August	No suitable habitat exists on project sites.
Humboldt milk-vetch ( <i>Astragalus agnicidus</i> )	SE, CNPS 1B	Broadleaved upland forest, north coast coniferous forest, often disturbed places.	June-September	Suitable, but marginal, habitat may exist on both sites; not observed during surveys; probability of occurrence low.
Point Reyes blennosperma ( <i>Blennosperma nanum</i> var. <i>robustum</i> )	CNPS 1B	Coastal prairie, coastal scrub.	February-April	No suitable habitat exists on project sites.
Thurber's reed grass ( <i>Calamagrostis crassiglumis</i> )	CNPS 2	Coastal scrub, freshwater marsh. Usually in swales surrounded by grassland or coastal scrub.	May-July	No suitable habitat exists on project sites.
Swamp harebell ( <i>Campanula californica</i> )	CNPS 1B	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows, freshwater marsh, north coast coniferous forest.	June-October	No suitable habitat exists on project sites.
California sedge ( <i>Carex californica</i> )	CNPS 2	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows, margins of marshes and swamps.	May-August	No suitable habitat exists on project sites.
Lakeshore sedge ( <i>Carex lenticularis</i> var. <i>limnophila</i> )	CNPS 2	Bogs and fens, marshes and swamps, wet places in north coast coniferous forest.	June-August	No suitable habitat exists on project sites.
Lyngbye's sedge ( <i>Carex lyngbyei</i> )	CNPS 2	Brackish or freshwater marshes.	May-August	No suitable habitat exists on project sites.

**Table 1 (continued)**

PLANT SPECIES	Status	Habitat	Flowering Period	Potential for Occurrence on Project Sites
Deceiving sedge ( <i>Carex saliniformis</i> )	CNPS 1B	Moist places, coastal prairie, coastal scrub, meadows, coastal salt marshes.	June	No suitable habitat exists on project sites.
Green sedge ( <i>Carex viridula</i> var. <i>viridula</i> )	CNPS 2	Bogs and fens, freshwater marshes and swamps, moist places in north coast coniferous forest.	June-September	No suitable habitat exists on project sites.
Oregon coast Indian paintbrush ( <i>Castilleja affinis</i> ssp. <i>litoralis</i> )	CNPS 2	Sandy soil, coastal bluff scrub, coastal dunes, coastal scrub.	June	No suitable habitat exists on project sites.
Mendocino coast Indian paintbrush ( <i>Castilleja mendocinensis</i> )	CNPS 1B	Coastal bluff scrub, closed-cone coniferous forest, coastal dunes, coastal prairie, coastal scrub.	April-August	No suitable habitat exists on project sites.
Howell's spineflower ( <i>Chorizanthe howellii</i> )	FE, ST, CNPS 1B	Sandy soil, coastal dunes, coastal prairie, coastal scrub.	May-July	No suitable habitat exists on project sites.
Whitney's farewell-to-spring ( <i>Clarkia amoena</i> ssp. <i>whitneyi</i> )	CNPS 1B	Coastal bluff scrub, coastal scrub.	June-August	No suitable habitat exists on project sites.
Pygmy cypress ( <i>Cupressus goveniana</i> ssp. <i>pigmaea</i> )	CNPS 1B	Closed-cone coniferous forest, broadleafed upland forest, north coast coniferous forest, especially on podzol-like soil.	N/A	No suitable habitat exists on project sites.
Roderick's fritillary ( <i>Fritillaria roderickii</i> )	SE, CNPS 1B	Coastal bluff scrub, coastal prairie, valley and foothill grassland.	March-May	No suitable habitat exists on project sites.
Pacific gilia ( <i>Gilia capitata</i> ssp. <i>pacifica</i> )	CNPS 1B	Coastal bluff scrub, coastal scrub, coastal prairie.	May-August	No suitable habitat exists on project sites.
Hayfield tarplant ( <i>Hemizonia congesta</i> ssp. <i>leucocephala</i> )	CNPS 3	Coastal scrub, valley and foothill grassland, often in disturbed places.	April-October	No suitable habitat exists on project sites.
Short-leaved evax ( <i>Hesperevax sparsiflora</i> var. <i>brevifolia</i> )	CNPS 2	Sandy soil, coastal bluff scrub, coastal dunes.	March-June	No suitable habitat exists on project sites.

**Table 1 (continued)**

PLANT SPECIES	Status	Habitat	Flowering Period	Potential for Occurrence on Project Sites
Point Reyes horkelia ( <i>Horkelia marinensis</i> )	CNPS 1B	Sandy soil, coastal dunes, coastal prairie, coastal scrub	May-September	No suitable habitat exists on project sites.
Hair-leaved rush ( <i>Juncus supiniformis</i> )	CNPS 2	Bogs and fens, freshwater marshes and swamps.	April-June	No suitable habitat exists on project sites.
Baker's goldfields ( <i>Lasthenia macrantha</i> ssp. <i>bakeri</i> )	CNPS 1B	Coastal scrub, coastal prairie, openings in closed-cone coniferous forest.	April-October	No suitable habitat exists on project sites.
Perennial goldfields ( <i>Lasthenia macrantha</i> ssp. <i>macrantha</i> )	CNPS 1B	Coastal bluff scrub, coastal dunes, coastal scrub.	January-November	No suitable habitat exists on project sites.
Coast lily ( <i>Lilium maritimum</i> )	CNPS 1B	Broadleafed upland forest, closed-cone coniferous forest, coastal prairie, coastal scrub, north coast coniferous forest, freshwater marshes and swamps, hummocks in bogs.	May-July	Suitable, but marginal, habitat may exist on quarry site; not observed during surveys; probability of occurrence low.
Running-pine ( <i>Lycopodium clavatum</i> )	CNPS 2	Marshes and swamps, moist places in north coast coniferous forest, sometimes growing on trees.	July-August	Suitable, but marginal, habitat may exist on quarry site; not observed during surveys; probability of occurrence low.
Leafy-stemmed mitrewort ( <i>Mitella caulescens</i> )	CNPS 2	Moist places, broadleafed upland forest, lower montane coniferous forest, meadows, north coast coniferous forest.	May-July	Suitable, but marginal, habitat may exist on quarry site; not observed during surveys; probability of occurrence low.
North Coast phacelia ( <i>Phacelia insularis</i> var. <i>continentis</i> )	CNPS 1B	Sandy soil, coastal dunes, coastal bluff scrub.	March-May	No suitable habitat exists on project sites.

**Table 1 (continued)**

<b>PLANT SPECIES</b>	<b>Status</b>	<b>Habitat</b>	<b>Flowering Period</b>	<b>Potential for Occurrence on Project Sites</b>
Bolander's beach pine ( <i>Pinus contorta</i> ssp. <i>bolanderi</i> )	CNPS 1B	Podzol-like soil, closed-cone coniferous forest.	N/A	No suitable habitat exists on project sites.
North Coast semaphore grass ( <i>Pleuropogon hooverianus</i> )	ST, CNPS 1B	Vernal pools, freshwater marshes and swamps, moist places in broadleaved upland forest, meadows, north coast coniferous forest.	May-August	No suitable habitat exists on project sites.
Nuttall's pondweed ( <i>Potamogeton epihydrus</i> ssp. <i>nuttallii</i> )	CNPS 2	Ponds, other shallow freshwater habitats, including artificial habitats.	July-August	No suitable habitat exists on project sites.
White beaked-rush ( <i>Rhynchospora alba</i> )	CNPS 2	Bogs and fens, broadleaved upland forest, meadows, marshes and swamps (freshwater).	July-August	No suitable habitat exists on project sites.
Great burnet ( <i>Sanguisorba officinalis</i> )	CNPS 2	Bogs and fens, meadows, marshes and swamps, north coast coniferous forest, riparian forest, often serpentinite soil.	July-October	Suitable, but marginal, habitat may exist on processing plant site; not observed during surveys; probability of occurrence low.
Maple-leaved checkerbloom ( <i>Sidalcea malachroides</i> )	CNPS 1B	Broadleaved upland forest, coastal prairie, coastal scrub, north coast coniferous forest, often in disturbed places.	April-August	Suitable, but marginal, habitat may exist on both sites; not observed during surveys; probability of occurrence low.
Purple-stemmed checkerbloom ( <i>Sidalcea malviflora</i> [malvaeflora] ssp. <i>purpurea</i> )	CNPS 1B	Open broadleaved upland forest, coastal prairie.	May	No suitable habitat exists on project sites.
Marsh violet ( <i>Viola palustris</i> )	CNPS 2	Moist, often brushy places, bogs and fens, coastal scrub.	March-August	No suitable habitat exists on project sites.

### **Table 1 (continued)**

List of sensitive species has been compiled based on plant species listed in the California Natural Diversity Data Base (2005) and the California Native Plant Society (CNPS) *Inventory* (Tibor 2001; CNPS 2005) for the Dutchmans Knoll USGS 7.5' quadrangle and surrounding quadrangles. Federal status (USFWS 2005a, b): FE = federally listed as Endangered. State of California status (California Department of Fish and Game 2005): SE = state listed as endangered; ST = state listed as threatened. CNPS status (Tibor 2001; CNPS 2005): CNPS 1B = Rare, threatened, or endangered in California and elsewhere; CNPS 2 = Rare, threatened or endangered in California, but more common elsewhere; CNPS 3 = More information is needed.



1944, 1951); Abrams and Ferris (1960); Munz and Keck (1973); and Hickman (1993). The timing of the two visits was adequate for positive identification of most of the plant species occurring on the study sites, including most of the special-status species with potential to occur on the sites (Table 1).

We also characterized all habitat types occurring on the site, and recorded data on physiognomy, dominant and characteristic species, topographic position, slope, aspect, substrate conditions, hydrologic regime, and evident disturbance for each habitat type. In classifying the habitat types on the site, we consulted the generalized plant community classification schemes of Holland (1986); Sawyer and Keeler-Wolf (1995); and CDFG (2003). Our final classification and characterization of the habitat types of the study area was based on field observations.

## 4.0 RESULTS

### 4.1 Baxman Quarry Site

#### 4.1.1 Floristic Inventory and Habitat Characterization

We identified a total of 112 species of vascular plants growing without cultivation on the quarry site, including 65 native species and 45 non-native species. For two species, cleavers (*Galium aparine*) and common water cress (*Rorippa nasturtium-aquaticum*), standard floras disagree on whether or not the species is native. A list of plant species observed on the site is provided in Appendix A.

The only habitat type on the quarry site that is predominantly “natural” in the sense that it is not primarily associated with heavy, ongoing or repeated human disturbance is redwood forest. This habitat type occurs only along the upper (southwest) margin of the site. Between the redwood forest and the quarry proper there is a zone of what could be called disturbed forest. Another area of disturbed forest is located at the north end of the site near the quarry entrance. Most of the quarry site, consisting of the quarry proper, is excavated and heavily disturbed, and represents a disturbed/ruderal habitat type.

Brief descriptions of these habitat types are presented below.

**Redwood forest.** This habitat type corresponds to the upland redwood forest habitat type of Holland (1986), to the redwood series of Sawyer and Keeler-Wolf (1995), and to the redwood forest alliance of CDFG (2003). Redwood forest occurs only along the upper (southwest) margin of the quarry site, beyond the top of the cliff-like quarry face. This redwood forest is the edge of a large area of more or less undisturbed (although second-growth) redwood forest extending off the site to the southwest. The exact boundary of the site on this side is not defined; we assumed that the site extends into the margin of the undisturbed redwood forest.

This redwood forest is a mostly dense, closed-canopy forest primarily dominated by redwood (*Sequoia sempervirens*). Associated tree species include tanoak (*Lithocarpus densiflora*), California-nutmeg (*Torreya californica*), and Douglas-fir (*Pseudotsuga*

*menziesii* var. *menziesii*). Characteristic understory shrubs include thimbleberry (*Rubus parviflorus*), California hazelnut (*Corylus cornuta* var. *californica*), and California huckleberry (*Vaccinium ovatum*). The herb and vine density on the forest floor varies from sparse to dense. Characteristic species, all native, include the woody vine Pacific blackberry (*Rubus ursinus*) and the herbs Douglas' iris (*Iris douglasiana*), rigid hedge-nettle (*Stachys ajugoides* var. *rigida*), bracken fern (*Pteridium aquilinum* var. *pubescens*), redwood sorrel (*Oxalis oregana*), sword fern (*Polystichum munitum*), candy flower (*Claytonia sibirica*), sweet-scented bedstraw (*Galium triflorum*), long-tailed wild-ginger (*Asarum caudatum*), and yerba de selva (*Whipplea modesta*).

**Disturbed forest.** This habitat type designation is used for two areas on the site that are similar in occurring on disturbed sites and in being dominated by young, large sapling sized trees of red alder (*Alnus rubra*), a species that occurs locally in the mature redwood forest on and adjacent to the site. One area of disturbed forest occupies a zone between the mature redwood forest and the edge of the quarry face. The mature forest overstory was removed from this zone at some time in the past, probably within the last decade or two. At present, this disturbed forest area is dominated by a relatively dense growth of young red alders. Some small Douglas-firs and Sitka willows (*Salix sitchensis*) are associated, along with the native shrubs coyote brush (*Baccharis pilularis*) and thimbleberry and the vines Pacific blackberry and hairy honeysuckle (*Lonicera hispidula* var. *vacillans*). The native herb pearly everlasting (*Anaphalis margaritacea*) is quite abundant; other associated herbs include the native species wood strawberry (*Fragaria vesca*, locally abundant), Douglas' iris, and rigid hedge-nettle; the non-native species silver hairgrass (*Aira caryophyllea*) and hairy cat's-ear (*Hypochaeris radicata*); and cleavers (*Galium aparine*), whose nativity is uncertain.

A small, disturbed open area at the west end of this habitat area is vegetated with a variety of mostly non-native grasses and herbs, including six-weeks fescue (*Vulpia bromoides*), rattail fescue (*Vulpia myuros* var. *myuros*), silver hairgrass, velvet grass (*Holcus lanatus*), and a weedy clover that could not be satisfactorily identified, similar to *Trifolium pratense*.

The other area of disturbed forest is adjacent to the quarry entrance at the lower (north) end of the site, occupying part of a small ridge of elevated land that was probably cleared and graded at some time in the past. The young alders are mostly very dense in this stand, and are associated with tall shrubs of coyote brush, and relatively abundant thimbleberry. The woody vine Pacific blackberry, the native perennial grass California brome (*Bromus carinatus* var. *carinatus*), and the weedy non-native herbs spreading hedge-parsley (*Torilis arvensis*) and ox-eye daisy (*Leucanthemum vulgare*) are relatively abundant associates.

**Disturbed/ruderal.** The remainder of the quarry site is occupied by the quarry proper, whose original topography has been completely altered and which is subject to heavy, repeated, ongoing disturbance from excavating, grading, and vehicle traffic. The bottom of the quarry is unvegetated or vegetated only by widely scattered individual plants or, in some areas where dirt has been piled, a sparse cover, mostly of weedy non-native species. Typical species include tiny vetch (*Vicia hirsuta*), prickly lettuce (*Lactuca serriola*),

panicled willow-herb (*Epilobium brachycarpum*, native but often weedy), narrow-leaved vetch (*Vicia sativa* ssp. *nigra*), silver hairgrass, Italian thistle (*Carduus pycnocephalus*), bur-clover (*Medicago polymorpha*), lesser hawkbit (*Leontodon taraxacoides* ssp. *longirostris*), and Jersey cudweed (*Gnaphalium luteo-album*). The quarry face is also largely unvegetated, except for scattered small red alders that appear to have colonized crevices in the rock.

#### 4.1.2 Special-Status Plant Species

We did not observe any special-status plant species on the Baxman Quarry site during the field surveys. Because the surveys were conducted at the appropriate season for identification of most of the special-status plant species with potential to occur on the site (Table 1), and because most of the site has been heavily and repeatedly disturbed, it is very unlikely that any special-status plant species occurs on the site.

#### 4.1.3 Sensitive Habitats

No habitats recognized as sensitive occur on the Baxman Quarry site. Although mature forests dominated by red alder are recognized as “high priority” by the CNDDDB (Holland 1986; CDFG 2003), the small red alder-dominated disturbed forest stands on the quarry site are not recognized as sensitive because they are obviously early successional in nature on previously disturbed sites, and thus do not represent stable plant communities.

### **4.2 Processing Plant Site**

#### 4.2.1 Floristic Inventory and Habitat Characterization

We identified a total of 120 species of vascular plants growing without cultivation on the processing plant site, including 54 native species and 64 non-native species. For two species, it could not be determined if the species is native or non-native. In one case, cleavers, standard references disagree on the species’ nativity. We tentatively identified the other species as slender bird's-foot trefoil (*Lotus angustissimus*), a non-native species, but the identification is uncertain. A list of plant species observed on the site is provided in Appendix A.

The only predominantly “natural” habitat type on the processing plant site is a strip of red alder riparian forest located between the processing plant itself and the Ten Mile River. The remainder of the site has been entirely altered by development and repeated heavy disturbance, and represents a disturbed/ruderal habitat type.

Brief descriptions of these habitat types are presented below.

**Red alder riparian forest.** This habitat type is recognized as the red alder riparian forest habitat type of Holland (1986), the red alder series of Sawyer and Keeler-Wolf (1995), and the red alder riparian forest association of CDFG (2003). The red alder riparian forest on the site occupies a strip 100-200 feet wide that curves around the western and northern margins of the site following the curve of the river, and separating the heavily disturbed portion of the site from the river. This riparian forest is a dense, more or less

closed-canopy forest largely dominated by mature red alders, with arroyo willow (*Salix lasiolepis*) and Sitka willow as frequent tree/arborescent shrub associates, and bigleaf maple (*Acer macrophyllum*) a less abundant tree associate. Thimbleberry is a common understory shrub. The invasive non-native woody vine Himalayan blackberry (*Rubus discolor*) is abundant in the understory, along with the native woody vine Pacific blackberry and the native herbaceous vine wild cucumber (*Marah* sp.). Characteristic herbs include the non-native species poison-hemlock (*Conium maculatum*) and the native species American stinging nettle (*Urtica dioica* ssp. *gracilis*), giant horsetail (*Equisetum telmateia* ssp. *braunii*, local), Douglas' mugwort (*Artemisia douglasiana*, local), sweet coltsfoot (*Petasites frigidus* var. *palmatus*, local), and small-fruited bulrush (*Scirpus microcarpus*, local in lowest-lying places).

**Disturbed/ruderal.** Where not occupied by buildings or equipment, the processing plant site has been entirely altered and is unvegetated or sparsely vegetated, mostly by weedy non-native species on dirt piles. The non-native shrub bush lupine (*Lupinus arboreus*, native further south in California, but not in the project vicinity) is widely scattered. Characteristic herbs and grasses include California brome (native but sometimes ruderal), spreading hedge-parsley, hairy cat's-ear, bur-clover, white clover (*Trifolium repens*), rattail fescue, pennyroyal (*Mentha pulegium*), slender wild oat (*Avena barbata*), prickly sow-thistle (*Sonchus asper*), sour-clover (*Melilotus indica*), soft chess (*Bromus hordeaceus*), and shamrock clover (*Trifolium dubium*). Near the settling pond, we observed giant horsetail, a native perennial fern ally occurring in the understory of the adjacent riparian forest and generally found in wet habitats or habitats with abundant subsurface moisture, growing in dirt piles. The soil apparently contained rhizomes of this species when piled up, and the plants have been able to persist in this ruderal habitat.

#### 4.2.2 Special-Status Plant Species

We did not observe any special-status plant species on the Baxman Quarry site during the field surveys. The history of heavy and repeated disturbance on most of the site precludes any likelihood of special-status plant species occurring in those areas. Although the red alder riparian forest on the site has mostly not been subject to recent disturbance (except periodic flooding), such dense riparian forests generally do not provide suitable habitat for special-status plant species. Because the surveys were conducted at the appropriate season for identification of most of the special-status plant species with potential to occur on the site (Table 1), it is very unlikely that any special-status plant species occurs on the site.

#### 4.2.3 Sensitive Habitats

The red alder riparian forest on the site is recognized as a sensitive habitat. This habitat type is designated a "high priority" habitat type by CNDDDB (Holland 1986; CDFG 2003). This riparian forest, or portions of it, as well as the channel of the Ten Mile River, have also been identified as being potentially subject to U.S. Army Corps of Engineers jurisdiction pursuant to Section 404 of the federal Clean Water Act; the riparian corridor is also potentially subject to California Department of Fish and Game jurisdiction

pursuant to Section 1602 of the California Fish and Game Code (Macmillan and Buck 2004).

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## APPENDIX A

### Vascular Plant Species Observed on the Baxman Quarry Main Quarry and Processing Plant Sites, Mendocino County, California

	Quarry	Proc. Plant
<b>FERNS AND FERN-ALLIES</b>		
BLECHNACEAE		
Blechnum spicant	X	
DENNSTAEDTIACEAE		
Pteridium aquilinum var. pubescens	X	
DRYOPTERIDACEAE		
Polystichum munitum	X	X
EQUISETACEAE		
Equisetum arvense		X
Equisetum laevigatum		X
Equisetum telmateia ssp. braunii		X
PTERIDACEAE		
Adiantum aleuticum	X	
<b>CONE-BEARING PLANTS (GYMNOSPERMAE)</b>		
PINACEAE		
Pseudotsuga menziesii var. menziesii	X	X
TAXACEAE		
Torreya californica	X	X
TAXODIACEAE		
Sequoia sempervirens	X	X
<b>FLOWERING PLANTS (ANGIOSPERMAE - DICOTYLEDONEAE)</b>		

	Quarry	Proc. Plant
ACERACEAE		
Acer macrophyllum	X	X
ANACARDIACEAE		
Toxicodendron diversilobum	X	
APIACEAE		
*Conium maculatum		X
Heracleum lanatum	X	X
Osmorhiza chilensis	X	
Sanicula crassicaulis	X	X
*Torilis arvensis	X	X
APOCYNACEAE		
*Vinca major		X
ARISTOLOCHIACEAE		
Asarum caudatum	X	
ASTERACEAE		
Anaphalis margaritacea	X	
Artemisia douglasiana		X
Baccharis pilularis	X	X
*Carduus pycnocephalus	X	X
*Chamomilla suaveolens		X
*Cirsium vulgare	X	X
Conyza canadensis		X
*Conyza floribunda		X
*Cotula coronopifolia		X
*Erechtites minima	X	X
*Gnaphalium luteo-album	X	X
Gnaphalium stramineum	X	
Helenium sp.		X
*Hypochaeris radicata	X	X
*Lactuca saligna	X	
*Lactuca serriola	X	
*Leontodon taraxacoides ssp. longirostris	X	X
*Leucanthemum vulgare	X	
Madia gracilis	X	



	Quarry	Proc. Plant
Madia sativa	X	X
Petasites frigidus var. palmatus		X
Psilocarphus tenellus var. tenellus		X
*Senecio jacobaea	X	X
*Senecio vulgaris		X
*Sonchus asper	X	X
*Sonchus oleraceus		X
*Taraxacum officinale		X
BETULACEAE		
Alnus rubra	X	X
Corylus cornuta var. californica	X	
BORAGINACEAE		
*Myosotis latifolia		X
Plagiobothrys tener		X
BRASSICACEAE		
Cardamine californica	X	
Cardamine oligosperma	X	X
*Coronopus didymus		X
*Raphanus sativus		X
(*) Rorippa nasturtium-aquaticum	X	
*Sisymbrium officinale	X	X
CAPRIFOLIACEAE		
Lonicera hispidula var. vacillans	X	X
CARYOPHYLLACEAE		
*Cerastium glomeratum	X	X
*Polycarpon tetraphyllum	X	
*Spergularia rubra	X	X
*Stellaria media		X
CONVOLVULACEAE		
Calystegia purpurata ssp. purpurata		X
CRASSULACEAE		
*Crassula tillaea	X	

	Quarry	Proc. Plant
CUCURBITACEAE		
Marah sp.	X	X
DIPSACACEAE		
*Dipsacus fullonum		X
ERICACEAE		
Gaultheria shallon	X	
Vaccinium ovatum	X	
Vaccinium parvifolium	X	
FABACEAE		
Lathyrus vestitus	X	
(*?) Lotus angustissimus (?)		X
*Lotus corniculatus		X
Lotus micranthus	X	
*Lupinus arboreus	X	X
*Medicago polymorpha	X	X
* Melilotus alba		X
* Melilotus indica		X
Trifolium bifidum var. decipiens		X
*Trifolium campestre	X	X
*Trifolium dubium	X	X
*Trifolium glomeratum	X	X
Trifolium gracilentum var. gracilentum		X
*Trifolium pratense (?)	X	
*Trifolium repens	X	X
Vicia americana var. americana		X
Vicia hassei	X	
*Vicia hirsuta	X	X
*Vicia sativa ssp. nigra	X	X
FAGACEAE		
Lithocarpus densiflora	X	
GENTIANACEAE		
Centaurium muehlenbergii	X	X
GERANIACEAE		

	Quarry	Proc. Plant
*Geranium dissectum	X	X
GROSSULARIACEAE		
Ribes menziesii	X	
HYDROPHYLLACEAE		
Phacelia bolanderi	X	X
LAMIACEAE		
*Mentha pulegium		X
Prunella vulgaris var. lanceolata	X	
Satureja douglasii	X	
Stachys ajugoides var. rigida	X	X
LAURACEAE		
Umbellularia californica	X	
LINACEAE		
*Linum bienne		X
MYRICACEAE		
Myrica californica	X	
ONAGRACEAE		
Epilobium brachycarpum	X	X
Epilobium ciliatum ssp. ciliatum	X	X
OXALIDACEAE		
Oxalis oregana	X	
PAPAVERACEAE		
Eschscholzia californica	X	
PHILADELPHACEAE		
Whipplea modesta	X	
PLANTAGINACEAE		
*Plantago coronopus		X
*Plantago lanceolata	X	X

	Quarry	Proc. Plant
POLEMONIACEAE		
Navarretia cf. squarrosa	X	X
POLYGONACEAE		
*Polygonum arenastrum	X	
*Rumex acetosella		X
*Rumex pulcher		X
Rumex salicifolius var. transitorius		X
PORTULACEAE		
Claytonia perfoliata		X
Claytonia sibirica	X	
PRIMULACEAE		
*Anagallis arvensis	X	X
RANUNCULACEAE		
Aquilegia formosa	X	
*Ranunculus parviflorus		X
ROSACEAE		
Fragaria vesca	X	X
Holodiscus discolor		X
*Rubus discolor		X
Rubus parviflorus	X	X
Rubus ursinus	X	X
RUBIACEAE		
(*) Galium aparine	X	X
Galium triflorum	X	X
*Sherardia arvensis	X	
SALICACEAE		
Salix lasiolepis	X	X
Salix sitchensis	X	X
SAXIFRAGACEAE		
Lithophragma campanulatum	X	
Tolmiea menziesii		X

	Quarry	Proc. Plant
SCROPHULARIACEAE		
*Digitalis purpurea		X
Mimulus guttatus	X	X
Scrophularia californica ssp. californica		X
Veronica americana		X
URTICACEAE		
Urtica dioica ssp. gracilis	X	X
<b>FLOWERING PLANTS (ANGIOSPERMAE - MONOCOTYLEDONEAE)</b>		
CYPERACEAE		
Carex subfusca		X
Cyperus eragrostis		X
Scirpus microcarpus		X
IRIDACEAE		
Iris douglasiana	X	
JUNCACEAE		
Juncus bufonius var. bufonius	X	X
Juncus effusus var. brunneus		X
Juncus patens		X
Luzula comosa	X	
Luzula parviflora	X	
POACEAE		
*Aira caryophyllea	X	X
*Aira praecox	X	
*Avena barbata		X
*Briza maxima	X	X
*Briza minor	X	X
Bromus carinatus var. carinatus	X	X
*Bromus diandrus	X	X
*Bromus stamineus		X
*Cortaderia jubata	X	
*Cynosurus echinatus		X
*Dactylis glomerata	X	X

	Quarry	Proc. Plant
Deschampsia elongata	X	
*Festuca arundinacea		X
*Gastridium ventricosum		X
Hierochloe occidentalis	X	
*Holcus lanatus	X	X
*Lolium multiflorum	X	X
Melica subulata	X	
*Phalaris aquatica	X	
*Poa annua	X	X
Poa kelloggii	X	X
*Polypogon interruptus		X
*Polypogon monspeliensis	X	X
*Vulpia bromoides	X	X
*Vulpia myuros var. myuros	X	X

\*Species introduced or naturalized in the study area.

# **Appendix D**

## **Reclamation Specifications**

**TEN MILE RIVER**  
**RECLAMATION SPECIFICATIONS**  
April, 2007

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SECTION 02370  
EROSION AND SEDIMENTATION CONTROL

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SECTION 02370  
EROSION AND SEDIMENTATION CONTROL

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. This section includes permanent erosion control installation to be performed upon completion of grading. Section includes:

1. Site preparation
2. Inoculation
3. Seed application
4. Hydromulching
5. Straw mulching
6. Rolled Erosion Control Products (RECPs)

Related Sections:

1. Section 02935, Establishment Period Maintenance
- B. Measurement and Payment: Pricing for completed erosion control shall be on a per acre unit basis unless otherwise noted. Acre measurements shall be taken off the grading plans with reference points identified in the field. These measurements shall be cross checked with materials invoices for proper quantities of seed and mulch per acre. Payment will be lump sum.

**1.2 REFERENCES**

- A. Federal Seed Act

**1.3 DEFINITIONS**

- A. Owner: Baxman Gravel Co. Inc. (lessee) with the Parker Ten Mile Ranch LLP. (lessor)
- B. Contractor: The firm under contract with this scope of work and its subcontractors.
- C. Revegetation Specialist (RS): An individual who has experience in native plants establishment and whose qualifications are acceptable to Mendocino County.
- D. Pure live seed (PLS): Pounds of raw material x percent purity x percent germination.
- E. Weed-free straw: Certified as weed free by a State or County Agricultural commissioner.

**1.4 SYSTEM DESCRIPTION**

- A. All areas of bare soil shall receive seed and mulch. Compacted or crusted soils shall be loosened. Seed mixes and mulches shall be applied according to zones identified on the revegetation master map (Sheet 1).
- B. Design Requirements: Reclaimed lands shall receive the seed mix as indicated below.
- C., Performance Requirement: Complete, even coverage is required at the rates and quantities specified.

**1.5 SUBMITTALS**

- A. Quality Assurance/Control Submittals: Certificates
1. Before any seed is applied, Contractor shall supply RS with a copy of the receipt for seed from the vendor. RS will also inspect seed bag tags (to remain on the bags). Seed batches with noxious weeds shall be rejected. Seed batches with more than 2% *Folium* species or other aggressive or invasive exotic seed shall be rejected. Each seed bag must be labeled with the following information:
    - a. Kind (scientific name of species)
    - b. Variety (if named)
    - c. % purity
    - d. % germination with test date (must be tested within nine months of delivery)
    - e. % other crop
    - f. % inert material
    - g. % weed seeds
    - h. statement "no (state) noxious weed seeds"

2. Before inoculum is applied, RS shall inspect the materials and the shipping invoice from supplier of mycorrhizal inocula. Shipping date shall not be more than nine months old.
  3. Before any mulching is applied, Contractor shall supply RS with product receipts and agricultural inspection tags which shall indicate that straw or hydromulch products are certified weed free. Contaminated products shall be rejected.
  4. All other material invoice copies to be submitted to Owner within 30 days of receipt or earlier if requested.
  5. Annual percent cover measurements by general classification: native or exotic annual grasses, native or exotic perennial grasses, broadleaf weeds, and other.
- B. Closeout Submittals:
1. Invoices for straw, seed, and other products installed.
  2. Measurements for unit price payments.

#### **1.6 QUALITY ASSURANCE**

- A. It shall be the responsibility of Contractor to notify Owner at least 5 days prior to start of work.
- B. Qualifications: Contractor shall have experience with hydroseeding, hydromulching, broadcast seeding, and straw blowing.
- C. Certifications: Contractor shall have a current California Class C-27 Contractor's license.
- D. Field Samples: Owner or RS shall be on site during application to observe seed coverage of approximately 80 seeds per square foot and mulch coverage.
- E. Pre-Installation Meetings: Immediately prior to seeding, Owner or RS and Contractor shall meet on site to inspect seed and site conditions.

#### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Packing, Shipping, Handling, and Unloading: Seed shall be mixed at the vendor's warehouse and kept in the original packages until used. Seed and mulch shall be kept dry.
- B. Acceptance at Site: Seed shall have original complete seed identification tags on each bag when delivered to the site or it shall be returned to the vendor. Straw and hydromulch shall be dry and weed free. Inoculum shall have labels attached and be dry.
- C. Storage and Protection: Seed and inoculum shall be kept in cool, dry storage until used. Seed shall not be stored for more than one year before use. Straw and hydromulch shall be kept dry. Upon completion of permanent erosion control measures, 0.5 ton of rice straw bales, to be used for emergency erosion control as necessary, will be kept on site above flood levels and protected from rain.
- D. Waste Management and Disposal: Any bags or garbage shall be removed from the site and disposed of in an approved disposal facility.

#### **1.8 PROJECT CONDITIONS**

- A. Project Environmental Requirements: Seeding and mulching shall be performed when winds are less than 15 miles per hour and soil moisture is well below field capacity.

#### **1.9 SEQUENCING**

- A. Compacted or crusted soils are first ripped or scarified. Seed is applied, then mulch is applied on top of the seed within 24 hours.

#### **1.10 SCHEDULING**

- A. Prior to seeding and mulching, finish grading shall be complete.
- B. Scarification shall be performed 0 to 7 days prior to seeding, and no later than October 10. Should significant rainfall occur after scarification and before seeding, re-scarification shall be required.
- C. Permanent erosion control must be completed before October 15.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- A. Inoculum: AM-120 (or approved equal) containing one or more species of mycorrhizal fungi at a minimum rate of 120 propagules per cubic centimeter.
- B. Seed Mix (pounds of pure live seed (PLS):

<b>NATIVE GRASS SEED MIX A – QUARRY TERRACES</b>			
% of mix	species		PLS Pounds/acre
25%	<i>Bromus carinatus</i> *	California Brome grass ***	15
30%	<i>Elymus glaucus</i> *	Blue Wild Rye	18.5
5%	<i>Eschscholzia californica</i>	California Poppy	1.5
15%	<i>Festuca rubra</i> (molate)	Molate Red Fescue	6.5
25%	<i>Nassella pulchra</i> *	Purple Needle Grass	10
<b>100%</b>			
<b>NATIVE GRASS SEED MIX B – QUARRY FLOOR AND SCREENING PLANT SITE</b>			
% of mix	species		PLS Pounds/acre
25%	<i>Bromus carinatus</i> *	California Brome grass ***	15
20%	<i>Elymus glaucus</i> *	Blue Wild Rye	18.5
5%	<i>Eschscholzia californica</i>	California Poppy	1.5
10%	<i>Festuca rubra</i> (molate)	Molate Red Fescue	6.5
10%	<i>Hordeum brachyantherum</i> *	Meadow Barley	18.5
15%	<i>Nassella pulchra</i> *	Purple Needle Grass	10
15%	<i>Trifolium wildenovii</i> **	Tomcat Clover	5
<b>100%</b>			
	* coastal variety only		
	** pre-inoculated		
	*** not 'Cucamonga' brome		

- C. Straw: Certified weed free rice straw.
- D. Hydromulch: Natural wood fiber (example: Conwed Fibers Hydromulch 1000).
  - 1. Materials: 100% wood fiber, optional food grade dye
  - 2. pH range 5.5 – 7
  - 3. Moisture content: 12 +/- 3%
  - 4. Organic content: 99.2 +/- 0.4%
  - 5. Ash content: 0.8 +/- 0.4%
  - 6. Water holding capacity: 1200% minimum
  - 7. Packaging: 50 to 60 pound UV resistant bags
- E. Tachifier: Derived from guar of psillium seed (example: M-Binder).
- F. Water: Clean and free of deleterious materials.
- G. Fertilizer: No fertilizer is to be added.
- H. RECPs (to be determined).
- I. Other: rock.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. All previously paved or overly compacted areas used as haul roads or other operational areas shall be cross-ripped to a depth of at least 12 inches, cultivated and smoothed.
- B. All areas of bare soil to be seeded shall have loose, friable surface soil to a minimum depth of two inches. Scarification may be accomplished by disc harrow, chain harrow, or other tools approved by RS.
- C. Broadcast seeding: Broadcasting may be used in selected areas. Broadcasting shall be either by hand or mechanical means. Mechanical broadcasting shall be performed in two directions, perpendicular to one another. Seed shall be raked or rolled into the soil surface after broadcasting. Seeding rate is 50 pounds PLS per acre.
- D. Hydroseeding: Areas may be hydroseeded as an alternative to broadcast seeding. If hydroseeding is used, a slurry of wood fiber hydromulch shall be mixed with the seed at a rate of no more than 500 pounds per acre to carry and cushion the seed. Seed shall not remain in the hydroseeder tank for more than 1 hour. Mix water and mulch in proportions compatible with machinery and manufacturer's recommendations. Seeding rate for hydroseeding is 50 PLS per acre.
- E. Inoculation: Inoculation with a mycorrhizal Inoculum shall be applied at 60 pounds per acre.
  - 1. Application by hydroseed equipment: If applied by hydroseeder, Inoculum shall be applied before or in the same application as the seeds. Inoculum must be applied within one hour of addition to the mixing tank. If temperatures will exceed 90 degrees F, mulches must be applied within three hours of application of Inoculum.
  - 2. Application of Inoculum by dry broadcasting: Inoculum shall be evenly spread on site prior to seeding and incorporated into the soil by light disking, tilling, or track walking so that 80% of the Inoculum granules are incorporated to a depth of 1 to 4 inches.
- F. Within 24 hours after seed is applied in all areas, mulch shall be applied, unless temperatures are expected to exceed 90 degrees F (see above).
  - 1. Straw with hydromulch tackifier: Areas 1, 2, 5, 6 & 7. Distribute 3,000 pounds per acre of rice straw evenly over area. Immediately tackify in place with 900 pounds per acre of hydromulch and 100 pounds per acre tackifier mixed together.
  - 2. Hydromulch: Area 3. Apply 3,000 pounds per acre of hydromulch with 100 pounds per acre of tackifier over seeded area. Mix water and mulch in proportions compatible with machinery and manufacturer's recommendations.
- G. Biotechnical: The need for biotechnical remedies for erosion control will be determined in the field prior to October 10 of each year.

### **3.2 REPAIR/RESTORATION**

- A. Treated areas shall be inspected after significant rainfall events. Small areas may be repaired or re-mulched with straw by hand. Larger repairs may need to be performed during a prolonged dry spell to allow equipment access.
- B. See Section 02935, Establishment Period Maintenance.
- C. For all seeded areas there shall be 60% plant cover at the end of year one, 70% cover by year two. If cover falls below 60% in any year up to the end of year three, Contractor shall re-seed and mulch area with Owner approved seed and mulch.

### **3.3 FIELD QUALITY CONTROL**

- A. Inspection:
  - 1. Seed, mulches, and other materials shall be inspected by RS prior to installation. Rejected mulch shall be replaced with approved mulch at Contractor's expense.
  - 2. Quantities of seed and mulch applied shall be confirmed on site by RS.
  - 3. Biotechnical repairs shall be inspected during construction by the design engineer. Non-conformance to design specifications shall be corrected by Contractor prior to October 15 at no additional expense to Owner.

END OF SECTION

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(Note: if required for screening plants)

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SECTION 02810  
IRRIGATION SYSTEM

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes: work to furnish all labor, equipment, material, and supplies for the design, installation, operation and maintenance of the irrigation system during the plant installation period (see Section 02930, Installation of Container-Grown Plants). The system will also be used during the establishment period (see Section 02935, Establishment Period Maintenance). This work relates to selected drainage areas of the reclaimed mined basin floor and to plant screening areas.
- B. Related Sections:
  - 1. Section 02930, Installation of Container-Grown Plants
  - 2. Section 02935, Establishment Period Maintenance
- C. Measurement and Payment: Measurement for this Section will be an installed and functioning irrigation system for each planting area. Payment will be lump sum.

**1.2 DEFINITIONS**

- A. Owner: Baxman Gravel Co. Inc. (lessee) with the Parker Ten Mile Ranch LLP. (lessor)
- B. Contractor: The firm under contract with this scope of work and its subcontractors.

**1.3 SYSTEM DESCRIPTION**

The irrigation system shall deliver water to woody plants being established by Contractor. After the plants have been established, the irrigation system will no longer be required. The estimated operational life of the irrigation system is 3 to 5 years. The irrigation system will remain the property of Contractor and shall be removed from the site after Contractor has completed all work.

- A. Design Requirements
  - 1. The irrigation system shall be designed by Contractor.
  - 2. The irrigation system shall supply water to all cuttings and container plants installed by Contractor.
  - 3. Except in any area where overhead irrigation is used, the irrigation system shall be designed such that the application of water to plants shall not exceed 2 gallons per hour (gph) per plant.
- B. Performance Requirements
  - 1. Irrigation system will deliver water in such a manner that no soil erosion will occur as a result of flows from the irrigation system.
  - 2. The irrigation system and related operations shall not release petroleum-based products to the site.
  - 3. The irrigation system shall be capable of delivering water in sufficient quantity, quality and frequency necessary to meet the minimum requirements specified in Section 02911, Establishment Period Maintenance.

**1.4 SUBMITTALS**

- A. Shop Drawings: Drawings of the irrigation system shall be submitted to Owner a minimum of 5 days prior to the beginning of irrigation system installation. Include the locations of water intakes, filters, floats, pumps, mainlines, distribution lines and other key elements of the system structure. The irrigation system drawings may be made on copies of the plans. Include notes describing filter and pump types and sizes, sizes of pipes, tubing, and emitters, and whether pipe will be on the surface or buried.
- B. Description of Operation: Submit a description of basic operation of the irrigation system. This shall include the frequency of operation, whether or not the pumps and/or other components will remain on

site or be removed when system is not in operation, and related instructions that will guide the individual(s) operating the irrigation system.

C. **Quality Assurance Submittals**

1. Submit results to Owner of all irrigation system tests performed by Contractor. Submit test results within 5 days of the performance of the test.
2. Submit a schedule of dates to Owner showing dates and times when Contractor will be performing irrigation system tests. Submit schedule for all test dates 5 days or more before the performance of the first irrigation system test. If, after submittal, the schedule of dates must be modified, submit the modification 5 days or more before either the new date for the test, or the previously scheduled date for the test, whichever is earlier. The purpose of the schedule submittal is to afford Owner the opportunity to observe the system test while in progress.

**1.5 QUALITY ASSURANCE**

- A. **Design:** The irrigation system design shall present a system that is sufficient to meet the watering requirements of the establishment period. If Owner questions the adequacy of the irrigation design, Contractor shall modify design such that Owner's questions are resolved or submit a statement assuring Owner that the system will perform as needed and presenting Contractor's reasoning for such assurance.
- B. **Performance Tests by Contractor:** Upon initial start-up of the system, and again in April, June, and August of each year of the establishment period, Contractor shall test the function of the irrigation system. After each test, Contractor shall prepare a record of the test including the date, time, and findings of the test.
  1. Where using a drip irrigation or other direct delivery system: The test shall sample the rate of flow from the last emitter in each line while the system is in operation, plus 1% of the other emitters (randomly selected), including emitters identified by Owner, up to the 1% threshold. The test shall evaluate the observed rate of flow relative to the normal duration of operation of the system and determine whether or not the minimum number of gallons per plant per watering is being applied.
  2. Where using overhead spray or sprinklers: The test shall measure the rate of application in inches of water applied to the ground surface per period of time while the system is in operation. The tester shall make observations of the uniformity of application. The test shall evaluate the observed rate of flow relative to the normal duration of operation of the system and determine whether or not the minimum amount of water is being applied with each irrigation cycle.
- C. **Performance Tests by Owner:** During any time when the irrigation system is in operation, Owner may measure the rate of flow being delivered by the system at any point.
- D. **Bi-weekly Observations:** Once every other week or more frequently, while the irrigation system is operating, Contractor shall observe water delivery at each plant to determine if water is being delivered to each plant.
- E. See Article 3.3 REPAIR/RESTORATION and Article 3.4 ADJUSTING, below in this Section.

**1.6 PROJECT CONDITIONS**

- A. **Project Environmental Requirements:**
  1. Contractor shall not drive a vehicle on the site when soil moisture conditions are such that wheel ruts will develop from vehicle passage.
  2. Where necessary, a temporary water storage tank(s) will be provided by contractor.

**1.7 SCHEDULING**

- A. Irrigation system shall be operational prior to April 1 following plant installation, and prior to April 1 of each subsequent year of the establishment period, unless otherwise scheduled with the approval of Owner.

**1.7.1 MAINTENANCE**



- A. Contractor shall maintain the irrigation system in good working order at no additional cost to Owner.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.1 APPLICATION**

- A. Contractor is responsible for application of water via operation of the irrigation system during plant establishment period. Contractor shall apply irrigation water to plants installed under this revegetation contract. See Article 1.2 SYSTEM DESCRIPTION, above.

**3.2 CONSTRUCTION**

- A. Contractor is responsible for construction of the irrigation system in substantial conformance with the irrigation system design submitted by Contractor to Owner.

**3.3 REPAIR/RESTORATION**

- A. If testing or observations indicate that the irrigation system is damaged such that it is not delivering water in conformance with the requirements of this section or the other sections of these specifications, Contractor shall repair the irrigation system as needed to restore irrigation system performance. Repair of irrigation system shall be at no extra cost to Owner.

**3.4 ADJUSTING**

- A. The irrigation system shall be adjusted as needed to ensure that the irrigation requirements are met. See Section 02935, Establishment Period Maintenance.

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SECTION 02915  
PLANT COLLECTION AND PROPAGATION FOR CONTAINER-GROWN PLANTS

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. This selection addresses work relating to propagating plants to be installed within selected drainage areas of the reclaimed mined basin floor and in plant screening areas: Section includes:
  - 1. Collection of seeds and cuttings required to propagate container-grown plants at a qualified native plant nursery.
  - 2. Types of containers in which various plants are to be grown at the nursery.
  - 3. Size and quality of plants to be delivered by the nursery for planting at the job site.
- B. Products supplied but not installed under this section included container-grown plants.
- C. Related Sections:
  - 1. Section 02930, Installation of Container-Grown Plants
  - 2. Section 02935, Establishment Period Maintenance

**1.2 DEFINITIONS**

- A. Owner: Baxman Gravel Co. Inc. (lessee) with the Parker Ten Mile Ranch LLP. (lessor)
- B. Contractor: The firm under contract with this scope of work and its subcontractors.

**1.3 REFERENCES**

- A. Seeds of Woody Plants in the United States, U.S. Department of Agriculture Forest Service, Agricultural Handbook No. 450. Library of Congress Catalogue Card Number 73-600133

**1.4 SUBMITTALS**

- A. Plant Nursery Statement of Experience: For the nursery being used to grow the native plant materials for this project, Contractor shall submit to Owner the name, location, nursery license number, and a description of the nursery's experience in growing northern coastal California native plants in Treepots™ and Deepots™. If requested, Contractor shall provide Owner a letter of recommendation for the nursery from a County, State, or Federal agency, or from a California licensed landscape contractor.
- B. Plant Materials Collection Foreman Resume: Contractor shall submit to Owner the resume of the plant materials collection foreman 5 days or more before the beginning of plant materials collection. See paragraph 1.3A below.
- C. Product Data: Plant nursery invoice and delivery invoice copies shall be submitted to Owner within 30 days of receipt or within 5 days of Owner's request after receipt, whichever is sooner.
- D. Within 5 days of the award of this contract, Contractor shall submit a plant materials collection schedule showing start and end dates for plant materials collection by species, plant propagule type to be collected (seed or cutting), storage method of collected plant materials, and completion dates for sowing seed into growing containers.
- E. By January 31, 2005, Contractor shall submit a written declaration from the nursery stating whether or not the requirements of article 1.7 WARRANTY will be met.

**1.5 QUALITY ASSURANCE**

- A. Plant Materials Collection Crew Foreman Qualifications: Plant materials collection foreman or other key persons working on the plant materials collection crew shall have a minimum of 3 years of experience collection California native plant materials for propagation, shall have a working knowledge of the taxonomic characteristics and reproductive mechanisms of the plant materials being collected, shall be able to identify the plant materials to be collected, and shall have a working knowledge of plant propagation materials handling techniques. All other plant materials collection crew members shall be able to distinguish the species being collected from the other species of plants in the vicinity of the collection, and shall know and use the collection, handling, transportation

and storage techniques being used for each species. Collection of seeds and cuttings, and growing of plants shall be performed by native plant nursery personnel.

- B. Native Plant Nursery Qualifications: The native plant nursery business, or current owner, or a key employee of the nursery shall have a minimum of 5 years of experience growing northern coastal California native plants in Treepots™ and Deepots™. The nursery shall have a current California nursery license. The native plant nursery shall have a reputation for being reliable and competent in the growing of California native plants. Nursery shall have on file or be able to obtain a letter of recommendation or positive acknowledgment for the nursery from a County, State, or Federal agency, or from a California licensed landscape contractor.
- C. Owner may reject any native plant nursery that does not meet the above qualifications.
- D. Pre-Delivery Inspections: Owner may inspect the Project plant materials at the nursery, Contractor's facilities, Project site, or other location where being stored or grown at any time during business hours.
- E. If at any time, Owner finds that plant propagation progress is not reasonably satisfactory, including a finding that collection and/or propagation is not proceeding in conformance with Contractor's submitted schedule, Owner may request and Contractor shall provide a statement of assurance that plant materials will be ready when needed and the reasoning for such conclusion, or identify one or more alternative sources for acceptable plant materials.
- F. Owner may reject any plant not meeting all of the requirements of this contract.

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Packing, Shipping, Handling, and Unloading
  - 1. Seeds and Cuttings: Propagules collected shall be packed, shipped and handled in accordance with industry standards for each species.
  - 2. Container-Grown Plants: The nursery responsible for growing the container plants shall pack all plants in an upright position into a covered truck or van with sufficient ventilation to maintain temperatures below 90 degrees F during transport. Plants shall be kept adequately moist at all times. Plants shall be shipped and delivered in such a manner that will not cause shock or damage to branches, trunk, or root systems. Plants shall be unloaded immediately upon delivery to the site. Unloaders shall not drop plants on the ground from a height of more than one inch.
- B. Acceptance at Site: Container-grown plants shall be inspected upon delivery. Substandard plants shall be returned to the delivery truck and deducted from the invoice.
- C. Storage and Protection: Seeds and cuttings shall be stored in accordance with the needs of the individual species. Their viability for propagation shall be maintained at the maximum level possible. Cuttings shall be kept moist and cool (40 to 50 degrees F). Seeds shall be stored in accordance with Seeds of Woody Plants of the United States or other reasonable protocol proposed by the nursery facility. Seeds and cuttings shall be protected from damage from animals and molds.
- D. Waste Management and Disposal
  - 1. Organic material from the plants being collected at the Project site may be left at the site of the collection spread uniformly over the ground. Organic waste left on site shall be within 6 inches of the ground and outside planting areas as shown on the drawings. All other debris and waste associated with plant materials collection shall be removed from the site daily during periods of plant materials collection.
  - 2. For off-site plant collection, waste shall be handled in accord with the requirements of the owner of the plant materials collection site.

#### **1.7 SCHEDULING**

- A. Seed collection typically begins in summer and extends through fall. Seed storage and processing occurs during the winter. Seeding into containers occurs in the winter through early spring. Delivery of plant materials to the site shall be at the time of installation, which typically begins in November, approximately one year after seed collection.

## 1.8 WARRANTY

- A. Special Warranty: Nursery shall guarantee the delivery of the full amount of plants specified. Should the nursery be unable to provide the total number of any species, the Contractor shall inform Owner as soon as this becomes apparent. Contractor may purchase plants (if available) from other nurseries as approved by Owner at no additional cost to Owner. If necessary, species substitution within Table 1 may be allowed subject to approval by Owner.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Species, Containers, and Number of Plants: Plants listed in Table 1 shall be grown in the containers indicated. The number of plants will be determined based on field conditions at the time. Nursery will grow 120% or more of each species to assure that the proper number of acceptable plants can be provided. See article 1.7 WARRANTY, above.

PLANT		
Scientific Name	Common Name	Size
Trees		
<i>Pseudotsuga menziesii</i>	Douglas Fir	14" Treepot
Shrubs		
<i>Heteromeles arbutifolia</i>	Toyon	10" Deepot

- B. Plant Materials Source: The geographical source of all plant propagules shall be Mendocino County within the Ten Mile River watershed.
- C. Plant Propagation and Growth: Plants delivered to the site shall meet the following criteria or be rejected:
1. Tree species – Trees shall be grown from seed. All tree species shall be grown in 14-inch deep Treepots™ for at least nine months, shall have root systems which fill the containers but which are not root bound, and roots shall show active white growing tips. The minimum stem caliper of the main trunk shall be 0.2 inches at one inch above the crown. Tops shall be at least 6 inches tall and have healthy live buds and/or leaves, with no broken leaders.
  2. Shrub and vine species – Shrubs and vines shall be grown from seeds or cuttings, except elderberry that shall be grown from seed. Shrubs and vines shall be grown in 10-inch deep Deepots™ for at least nine months, shall have root systems which fill the containers but which are not root bound, and roots shall show active white growing tips. The minimum stem caliper of the main trunk of elderberries shall be 0.2 inches at one inch above the root crown. All other species shall either have a similar caliper or have sufficient number of stems of a sufficient size to be equivalent to a 0.2 caliper single stem. Tops shall have healthy live buds and/or leaves.
  3. Plants shall show no signs of deleterious infection from bacteria, fungus, or insects. Plants showing signs of deleterious infection shall be rejected and placed back on the delivery truck for return to the nursery.

### 2.2 SOURCE QUALITY CONTROL

- A. Inspection: Contractor shall inform Owner five days or more in advance of the start of seed collection. Owner may choose to accompany the seed collection crew on any seed collection trip to assure quality and species conformity.

## PART 3 EXECUTION

### 3.1 PROTECTION

- A. Owner shall provide security at the site. Contractor shall report any trespass or vandalism to Owner. Contractor shall not be responsible for losses or damage due to trespass or vandalism.

END OF SECTION

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**SECTION 02930  
INSTALLATION OF CONTAINER-GROWN PLANTS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. This selection addresses installation of container plants in screening areas adjacent to the ten-Mile Haul Road. Section includes:
  - 1. Layout of individual planting spots with color-coded pinflags.
  - 2. Planting of container-grown trees and shrubs to be provided by Contractor.
  - 3. Installation of plant protectors, weed mats, inoculants, and related materials specified on the drawings to be provided by Contractor.
  - 4. Plant maintenance during installation phase.
- B. Products installed but not supplied under this section: Container-grown trees, shrubs, and vines.
- C. Related Sections:
  - 1. Section 02915, Plant Collection and Propagation for Container-grown Plants
  - 2. Section 02810, Irrigation System
  - 3. Section 02935, Establishment Period Maintenance

**1.2 DEFINITIONS**

- A. Owner: Baxman Gravel Co. Inc. (lessee) with the Parker Ten Mile Ranch LLP. (lessor)
- B. Contractor: The firm under contract with this scope of work and its subcontractors.
- C. Field Capacity: The maximum amount of water that a soil can retain after excess water from saturated conditions has been drained by the force of gravity.
- D. Inoculum: Soil amendment used to increase biological activity in the root zone.
- E. Plant or Plants: The words plant or plants shall include all container-grown plants.
- F. Planting: Includes the installation of container-grown plants.
- G. J-rooted: A plant that has been installed in such a fashion as to cause the bottom of the root mass to be turned back towards itself similar to the shape of the letter J; considered to be an unacceptable condition.
- H. Root bound: A condition of excessively compact or constrained roots within a plant growing container; indicated by roots that are growing in a circular fashion around the bottom or outside of the root mass and by a root mass that is difficult to loosen by hand.

**1.3 SYSTEM DESCRIPTION**

- A. Plants installed under this section are designed to contribute to permanent erosion control at the site.
- B. Design Requirements:
  - 1. Planting Locations: Planting areas, planting densities, plant quantities, and species mixes are shown on the drawings. Individual plant locations shall be selected by Contractor. Contractor shall identify individual planting sites with color-coded pin flags. Owner shall approve planting locations before plants are installed by Contractor.
  - 2. As-Planted Spreadsheet: Contractor shall prepare a spreadsheet of actual number of plants by species planted in each planting area.
- C. Performance Requirements: See Section 02935, Establishment Period Maintenance.

**1.4 SUBMITTALS**

- A. Product Data: Copies of all materials invoices shall be submitted to Owner within 30 days of receipt.
- B. Notification of Planting Start and Completion Dates: Within 30 days of the award of contract, Contractor shall provide Owner notification of the Contractor's planned dates for the start and

completion of planting. If Contractor changes the start of planting date, Contractor shall notify Owner 5 days or more prior to the new or previous start of planting date, whichever is earlier.

- C. Color Code: Contractor shall submit to Owner 5 days before the beginning of planting, the Contractor's color code system for plant layout (see Article 3.3 LAYOUT).
- D. Notification of Completion of Planting: Contractor shall notify Owner of the completion of planting within 5 days of completing the plant installation.
- E. Closeout Submittals: Within 30 days of the completion of planting, Contractor shall submit "As-Planted" Plans and Spreadsheet (paragraph 1.2.B.2).

## **1.5 QUALITY ASSURANCE**

- A. Qualifications:
  - 1. Foreman: Contractor's planting crew foreman shall have demonstrated experience in planting and establishing native plants in non-urban, wildland environments, shall be able to identify each plant by species, and shall be conversant in common considerations associated with California native plant installation and establishment in wildland settings. If Contractor's foreman does not meet these qualifications, and if Owner requests that the foreman be replaced, Contractor shall replace the plant installation foreman with an individual who does meet these minimum qualifications before proceeding with plant installation.
  - 2. Plant Layout Individuals(s): Contractor's personnel who layout (pin flag) the individual planting locations (see Article 3.3 PLANT LAYOUT) shall have educational background and demonstrated experience in revegetation with California native woody plant species. Owner may accept individuals who can otherwise demonstrate competency in layout of plant revegetation. If Contractor's layout personnel do not meet these qualifications, and if Owner requests that layout personnel be replaced, Contractor shall replace each unqualified individual with an individual who does meet these minimum qualifications before proceeding with plant layout.
- B. Field Samples: Owner may sample plants to determine quality of plantings. Sampling may include visual inspection of plants for above-ground characteristics such as depth of planting and other planting details as shown on the drawings. Sampling may also include excavating up to 0.5% of the installed plants to determine if plants are properly installed, including inspections for J-rooted plants and proper planting depth. Excavated plants shall be replanted by Contractor at no additional cost to Owner. If more than 10% of plants in any planting area that have been inspected are found to be J-rooted or missing Inoculum, Owner may require that all plants in the planting area be replanted at no additional cost to Owner.
- C. Pre-Installation Meeting: Contractor and Owner shall meet on site prior to plant installation. A sample area of approximately 5% of the planting spots shall be pin flagged at that time.
- D. Pre-Installation Inspections of Layout: All pin flag locations shall be inspected and approved by Owner before planting at each spot occurs. Owner will inspect individual planting spot layout within working 3 days of a request by Contractor.

## **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Packing, Shipping, Handling, and Unloading: The nursery responsible for growing the container plants shall pack all plants in an upright position into a covered truck or van with sufficient ventilation to maintain temperatures below 90 degrees F during transport. Plants shall not be desiccated at any time. Plants shall be shipped and delivered in such a manner that will not cause shock or damage to branches, trunk, or root systems. Plants shall be unloaded immediately upon delivery to the site. Individuals unloading plant materials shall not drop plants on the ground from a height of more than one inch.
- B. Acceptance at Site: Plants shall be inspected upon delivery. Substandard plants shall be returned to the delivery truck and deducted from the invoice. Owner may reject plants that do not meet quality assurance standards and/or have not been stored and handled as required herein.
- C. Storage and Protection:
  - 1. Container-grown plants shall be stored under 50% or more of the root ball. Plants shall be watered to maintain moist soil in the lower 3/4 or more of the root ball. Root balls shall not be kept in a waterlogged condition; they shall be allowed to drain freely after watering. Plants



shall be protected from damage by animals. Plants damaged by animals may be rejected by Owner. Inoculant shall be stored in accordance with manufacturer's instructions.

E. Waste Management and Disposal:

1. Empty containers for the plants shall be collected at one central location for return to the nursery. All other planting-generated waste shall be collected and removed to an approved disposal facility.

## 1.7 SEQUENCING

- A. Container-grown plants shall be installed after all earthwork, grass seeding, installation of mulch, and installation of any erosion control blankets has been completed in a planting area.
- B. Plants may be installed before or after the irrigation system has been installed.

## 1.8 SCHEDULING

- A. Container-grown plants shall be installed between December 1 and January 15.
- B. Weed mats shall be installed between November 1 and March 31.
- C. Plant protectors shall be installed before April 15.
- D. If needed, replacement planting will be performed between November 1 and January 15 (see Section 02935, Establishment Period Maintenance).

## 1.9 WARRANTY

- A. Contractor shall warrant that 100% of installed plants are alive when installation of all plants is 100% complete.

# PART 2 PRODUCTS

## 2.1 MANUFACTURERS

- A. Container-grown plants: Nurseries that are known to supply the types and quantities of plant materials required for the Project include: Cornflower Farms in Elk Grove or Circuit Rider Productions in Windsor. Other nurseries must be approved by Owner.
- B. Weed mats: Vispore™ is available from Reforestation Technologies International. WeedBlock™ is available from Forestry Suppliers, Inc.
- C. Seedling protectors: Photo-degradable rigid diamond mesh seedling protectors and stakes are available from Forestry Suppliers Inc., Ben Meadows Co., and elsewhere.
- D. Inoculant: "EndoNet" is available from BioNet; "VAM80 Inoculum" is available from Tree of Life Nursery; and "Myco-Pak™ tea bags" are available from Reforestation Technologies International.

## 2.2 MATERIALS

- A. Native tree species as specified grown in 14-inch Treepot™ containers. See Section 02915, Plant Collection and Propagation for Container-Grown Plants.
- B. Native shrub species as specified grown in 10-inch Deepot™ containers. See Section 02915, Plant Collection and Propagation for Container-Grown Plants.
- C. Vispore™, WeedBlock™, or approved equivalent-type degradable 3-foot weed mats and 6-inch metal staples. Weed mats shall be UV-stabilized 2.5 mil thick black polyethylene with approximately 400 heat-molded micro-funnels per square inch.
- D. Seedling protectors shall be photo-degradable rigid diamond mesh plastic protectors 36 inches tall and 4 inches wide or wider supported by two 4-foot long 7/16-inch diameter bamboo stakes as shown on drawings.
- E. Mycorrhizal inoculant packs shall contain one or more species of endo-mycorrhizal Inoculum including *Glomus intraradices* at a minimum of 100 propagules per pack and a suite of the follow ectomycorrhizal species: *Pisolithus tinctorius* and four species of *Rhizopogon* & *Scleroderma* at a minimum quantity of 800,000 spores.
- F. All other parts as shown on the drawings.

## 2.3 SOURCE QUALITY CONTROL

- A. Container-grown plants shall be vigorous and healthy, with roots that have active white tips. Root growth shall be sufficient to hold together the soil in which the root mass is growing when the plant is removed from the container. Plants shall not be root bound.
- B. Inspection: Remove a randomly selected sample of plants from containers before acceptance of delivery. Remove 0.1% or more plants from the containers for inspection. Return plants to container after inspection.

### PART 3 EXECUTION

#### 3.1 INSTALLERS

- A. Installers shall be trained by Contractor regarding the Project requirements for planting Deepots™ and Treepots™ at the Project site. Installers shall be able to distinguish the different species of plant from one another and be able to associate the proper species of plant with the each pin flag. Installers shall handle the plants such that plants do not become desiccated or otherwise damaged.

#### 3.2 EXAMINATION

- A. Site Verification of Conditions: prior to plant installation, Contractor shall inspect the site to verify that the site is accessible and soil conditions are proper for planting. Soil moisture shall be at or below field capacity at the time of planting.

#### 3.3 PLANT SCHEDULE AND LAYOUT

- A. Contractor shall develop a color code system for designating, by species, the location of individual planting spots.
- B. Contractor shall use color-coded pin flags to identify the planting location and species of each plant.
- C. Contractor shall obtain the approval of planting locations from Owner after layout and before installation of container-grown plants.
- D. Plant layout shall conform to the requirements illustrated in the reclamation plans and summarized in the Plant Schedule below to include, but not limited to, species associations, species mixes, and spacing.

**Plant Schedule\***

Scientific Name	Common Name	% within Total Planted Area	Type	Size	Spacing

#### Screening Vegetation

<i>Pseudotsuga menziesii</i>	Douglas Fir	70%	container	14" Treepot	15' o.c.
<i>Heteromeles arbutifolia</i>	Toyon	30%	container	10" Deepot	8' o.c.

Source: 2M Associates

#### 3.4 INSTALLATION OF CONTAINER-GROWN PLANTS

- A. Sequences of Operation: In order of completion – pin flag planting spots, inspection by Owner, clear weeds at planting spot, prepare hole, install plant, install inoculant, backfill, create berm, install weed fabric, and install plant protector.
- B. Site Tolerances: All plants shall be installed within a one-foot radius of color-coded pin flag used to designate the location of each species. Root crowns shall be set slightly above grade as shown on the drawings. All other conditions shall conform to drawings.
- C. A 3-foot by 3-foot area at each planting location shall be scraped clean of vegetation and debris.
- D. Holes for container plants shall be excavated to a depth equal to the depth of the root mass and at least three times as wide as the width of the root mass.
- E. Container plants shall be installed with the root crown 1/2 inch above grade. Native backfill material shall be firmed into place around the root mass. The inoculant shall be placed in the planting hole at a

depth of one half the length of the root mass. Backfill shall be placed to the elevation of the root crown and not above the root crown.

- F. On slopes, a watering berm shall be constructed on the downhill side of the plant as shown on the drawings.
- G. Within 4 hours of the installation of the plant, each plant shall be watered-in. Each plant shall receive a minimum of 2 gallons of water at the time that the plant is watered-in. The purpose of watering plants at the time of planting is to settle the backfill around the plant to eliminate air pockets and to reduce desiccation stress potential.
- H. After plants have been watered-in, additional backfill shall be placed around the plant if the root crown becomes exposed. If the root crown of the plant has settled below the surrounding grade, the plant shall be re-installed.
- I. Weed mats (3 feet square) shall be installed around each container plant (both trees and shrubs) and secured with one 6-inch staple at each corner.
- J. A 36-inch tall diamond mesh plastic browse protector shall be installed around each container tree species with two 4-foot tall bamboo stakes woven through the mesh and pushed 6 to 12 inches into the ground.
- K. After installation, Contractor shall irrigate installed container-grown plants until November 15 of the year of installation or until 3 inches of rainfall (cumulative), whichever occurs first. Plants shall be irrigated every other day with sufficient water for the root ball of the plant to be fully wetted. Irrigation shall not cause erosion.

### **3.5 REPAIR/RESTORATION**

- A. Browse protectors shall be repaired, refastened, or replaced as needed.
- B. Weed mats shall be repaired, refastened, or replaced as needed.
- C. Maintain plants according to Section 02935, Establishment Period Maintenance.

### **3.6 RE-INSTALLATION**

- A. Container plants installed with root crowns below grade shall be replanted so that root crowns are slightly above grade as shown on the drawings.
- B. Areas of container-grown plants that are found to be J-rooted that are not planted deep enough, shall be replanted. (See Article 1.5 QUALITY ASSURANCE.)
- C. Any plant rejected at inspection by Owner for failing to meet the requirements of this contract shall be re-installed by Contractor at no additional cost to Owner.

### **3.7 FIELD QUALITY CONTROL**

- A. Site Tests: Owner may excavate a sample of plants (no more than 0.5 percent of the total number) to determine the quality of plantings while Contractor is installing plants. Roots shall not be J-rooted, backfill shall be firm with no air pockets; root crown shall be above grade. (See Article 1.5 QUALITY ASSURANCE.)
- B. Inspection:
  - 1. Owner and Contractor shall inspect the container plants at the nursery one month prior to installation to determine the actual quantity of acceptable plants.
  - 2. Plants may be inspected by Owner prior to installation. Substandard container plants shall be rejected and replaced by Contractor.
  - 3. Owner may inspect plants during installation and immediately after installation. Broken and /or dead plants shall be replaced by Contractor. Improperly planted plants shall be replanted by Contractor. Weed mats shall be tightly secured and protectors firmly installed.

### **3.8 CLEANING**

- A. All excess materials and all garbage shall be removed from the site and disposed of in an approved location prior to the winter floods and prior to acceptance of installation.

**3.9 PROTECTION**

- A. Owner will provide security at the site. Contractor shall report any trespass or vandalism to Owner. Contractor will not be responsible for losses or damage to plants or plant protection materials due to trespass or vandalism.
- B. Contractor shall protect plants from animal damage prior to installation. Any plants that are damaged by animals prior to installation shall be replaced by Contractor at no additional cost to Owner.

END OF SECTION

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SECTION 02935  
ESTABLISHMENT PERIOD MAINTENANCE

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Work to furnish all labor, equipment, materials and supplies for plant establishment period maintenance associated with container stock. Establishment period maintenance work is required for 3 years.
  - 2. Monitoring plant survival, preparation and submittal of monitoring reports. Monitoring and reporting are required for 5 years.
- B. Related Sections:
  - 1. Section 02930, Installation of Container-Grown Plants
  - 2. Section 02810, Irrigation System
  - 3. Section 02915, Plant Collection and Propagation for Container-Grown Plants

**1.2 DEFINITIONS**

- A. Owner: Baxman Gravel Co. Inc. (lessee) with the Parker Ten Mile Ranch LLP. (lessor)
- B. Contractor: The firm under contract with this scope of work and its subcontractors.
- C. Establishment Period: The establishment period begins immediately after the installation of containers and continues for two years after plants are removed from any irrigation.
- D. Establishment Period Maintenance: Watering (irrigating), weeding, browse protection and related work undertaken to maintain plant survival until the plants are established on the site and can survive without establishment period maintenance.
- E. Establishment Period Year: A 12-month period beginning on November 1 and ending on October 31 of the following calendar year.
- F. Field capacity: See definition in Section 02930, Installation of Container-Grown Plants.

**1.3 SUBMITTALS**

- A. Product Data: Pesticide/herbicide: Prior to use of any pesticide or herbicide, Contractor shall submit a request to Owner to use the pesticide/herbicide, including reason for the use, the product(s) to be used, and a licensed Pest Control Advisors written recommendation for the intended application including the applicability of its use in or around water, and the Material Safety Data Sheet for each product. Owner may choose to reject use of any or all pesticides or herbicides. Owner will respond to request within 30 days of written request.
- B. Yearly Report: Contractor shall submit report on or before October 1 of each establishment period year (See Article 3.3 RECORD KEEPING, MONITORING AND REPORTING).
- C. Daily maintenance record form and completed records (See Article 3.3 RECORD KEEPING, MONITORING AND REPORTING).

**1.4 QUALITY ASSURANCE**

- A. Qualifications:
  - 1. Contractor's manager directing establishment period maintenance shall have three years or more experience with establishment of California native plants in wildland revegetation settings.
  - 2. Survival and Noxious Weed Monitor: Individual(s) collecting survival data shall be able to identify each species planted by Contractor. Individual(s) monitoring noxious weeds shall be able to identify each species being monitored. Monitor(s) shall have at least one semester of college level instruction in plant identification or equivalent experience that is accepted by Owner.
  - 3. If Contractor's personnel do not meet these qualifications, Contractor shall replace each unqualified person with a qualified person within 30 days of a request by Owner.

## **1.5 PROJECT CONDITIONS**

- A. Existing Conditions
  - 1. The site is located in a remote area. Owner will maintain a lockable gate at the primary entrance to the site.
  - 2. Owner is not responsible for establishment period operational difficulties nor damage to Contractor's equipment and material from flooding or vandalism or other conditions present at the Project site.

## **1.6 SCHEDULE**

- A. Revegetation of selected areas within the Project site will begin after the first winter rains and typically occur in December of each year. Establishment period work is scheduled as shown in Article 3.8. See related sections of this specification for additional scheduling detail for plant materials collection, propagation, and plant installation.

## **1.7 SURVIVAL REQUIREMENT**

- A. The survival requirements are:
  - 1. End of establishment period year 1: 80% of the container-grown plants installed by Contractor are to be alive.
  - 2. End of establishment period year 2: 70% of all plants initially installed by Contractor are to be alive.
  - 3. End of establishment period year 3: 60% of all plants initially installed by Contractor are to be alive.
- B. If at the end of any establishment period year there is 100% cover by California native plants of species installed by Contractor over a significant portion (25% or more) of a planting area, then the survival requirement for that portion of that planting area will be met, regardless of the number of individual plants surviving.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- A. Water: Water used for irrigation shall be clear and free of toxics.
- B. Plant material for replacement planting shall be as per Section 02930, Installation of Container-Grown Plants and Section 02915, Plant Collection and Propagation for Container-Grown Plants.
- C. Mycorrhizal inoculum shall be as per Section 02930, Installation of Container-Grown Plants.
- D. Browse guards and weed fabric shall be as per Section 02930, Installation of Container-Grown Plants.

## **PART 3 EXECUTION**

### **3.1 MAINTENANCE OF PLANTS**

- A. Irrigation: During the establishment period, Contractor shall provide water to container plants installed. Irrigation shall occur as described below or until Owner determines further irrigation is not necessary, whichever comes first. Water shall not be applied at rates that will cause erosion or damage to the plant(s) or cause runoff.
  - 1. Establishment Year 1: Irrigation shall begin in the first week of April or in the first week thereafter that soil moisture drops below field capacity. Irrigation shall continue through the last week of October or until 6 inches of rain has fallen on the site, whichever occurs first. Each container grown plant shall receive a minimum of two (2) applications every seven (7) days at least three (3) days apart. Each application shall include a minimum of three (3) gallons per plant

2. Establishment Year 2: Irrigation shall begin in the first week of April or in the first week thereafter that soil moisture drops below field capacity. Irrigation shall continue through the last week of October or until 6 inches of rain has fallen on the site, whichever occurs first. Each container-grown plant shall receive a minimum of two (2) applications every seven (7) days at least three (3) days apart. Each application shall include a minimum of three (3) gallons per container-grown plant.
  3. Establishment Year 3: Irrigation shall begin in the first week of April or in the first week thereafter that soil moisture drops below field capacity. Irrigation shall continue through the last week of October or until 6 inches of rain has fallen on the site, whichever occurs first. Each container-grown plant shall receive a minimum of one (1) application every seven (7) days during the months of April through October. Each application shall include a minimum of five (5) gallons per plant.
- B. Weeding:
1. Contractor shall maintain an 18-inch diameter area around the stem of each installed container-grown plant free of herbaceous plants. Weeding shall be performed on an as-needed basis beginning in February and continuing through the last week of October of each establishment period year that a plant receives irrigation. Weeding shall be performed by hand unless otherwise authorized by Owner (See Article 1.3 SUBMITTALS).
  2. Weeding shall not damage either volunteer native vegetation or installed plants.
- C. Mowing: Mowing shall occur on an as-needed basis beginning in March and continuing through October. When approved by Owner, delay the start of mowing in areas where ground moisture is above field capacity or where ruts would develop from wheels on trucks or mowers. Mowing shall be done in such a fashion as to not damage installed container-grown plants or native plants that have volunteered onto the site.
1. Mow in areas where container-grown plants are installed. Maintain plant growth height between 4 and 12 inches.
- D. Browse Damage Prevention: Contractor shall maintain effective animal browse protectors on all container-grown plants until the termination of establishment period maintenance.

### **3.2 REPLACEMENT PLANTING**

- A. Replacement planting is required in each planting area where the survival requirement has not been met (See Article 1.7 SURVIVAL REQUIREMENT).
- B. When replacement planting is required in a planting area, Contractor shall replace each dead plant originally installed by Contractor under this contract with a live plant of the same species and container size.
- C. If approved by Owner, Contractor may use a different species or container size for replacement plants provided that all replacement plants are of a species originally specified or are a locally-occurring California native species.
- D. Each replacement plant shall be installed in accord with the requirements of Section 02930, Installation of Container-Grown Plants.

### **3.3 RECORD KEEPING, MONITORING AND REPORTING**

- A. Daily Maintenance Record:
  1. Form: Contractor shall make a form for keeping a daily record of the establishment period maintenance for each day that maintenance is performed. The daily maintenance record form shall include the date, name of individuals performing the work, weather conditions present at the site, areas irrigated, duration of irrigation by area, description of weeding or mowing performed, description of browse protection maintenance performed, description of tasks that need to be completed at the next maintenance visit, observations of plant health, descriptions of problems.



2. Record: Contractor shall complete the form for each day that maintenance or inspection work is done on the site and maintain a complete and up-to-date file of the daily maintenance record.
- B. Annual Monitoring and Yearly Reporting:
1. Each September of each Establishment Period Year beginning with initial plantings of container stock, Contractor shall monitor the survival of the plants installed in each planting area and prepare a survival report. Survival shall be counted by species in each planting area shown on the plans. The percentage of survival shall be calculated by dividing the total number of individual alive plants at the time of the survey by the total number of individual alive plants originally planted.
  2. If the survival in any area is below the survival requirement (Article 1.7 SURVIVAL REQUIREMENT), Contractor shall determine the number of individual plants by species per planting area that will need to be replanted to meet the replacement planting requirements. Contractor shall determine if any species and size substitutions are desirable (See Article 3.2 REPLACEMENT PLANTING).
  3. Noxious Weed Monitoring: In September of each Establishment Period Year, Contractor shall monitor the planting areas for the presence of yellow star thistle (*Centaurea solstitialis*) and giant reed (*Arundo donax*). The monitoring shall include a determination of the boundaries of individual stands of each species and an estimate of the percent cover within the stand occupied by each species. The boundary of each stand shall be shown on a copy of as-planted plans.
  4. A report (Yearly Report) shall be submitted to Owner by October 1 of each Establishment Period Year. The report shall briefly summarize maintenance activities and conditions throughout the year that may have had a significant impact on plant survival; present plant survival in tables showing plants originally installed, plants dead, plants alive, and survival percentage; and include a summary table comparing survival for each year to date. For Establishment Period Years 1 through 4, the report shall include replacement plant needs by species and area. The report shall present the findings of the noxious weed monitoring.

### 3.4 CLEAN UP:

- A. During Establishment Maintenance: Contractor shall maintain the site clean of all installation and maintenance-related waste throughout the establishment period.
- B. After Completion of Establishment Maintenance: After Owner has approved the termination of establishment period maintenance, Contractor shall remove and dispose of all equipment and non-plant materials used during the plant installation or establishment period maintenance. Items to be removed from the site include: all irrigation equipment and materials, flags and stakes, browse guards, weed control fabric, pins, fasteners, and any other materials or equipment used for plant installation and establishment. Equipment and material removed from the site shall be handled and disposed of in compliance with all applicable regulations.

### 3.5 REPAIR/RESTORATION

- A. Contractor is liable for damage to the site caused by Contractor including damage from fire caused by Contractor, damage to roads, native woody plants present on the site, and plants installed under this contract. Contractor shall repair and restore damage caused by Contractor in a timely manner.
- B. Equipment used in establishment period maintenance, including passenger and cargo transportation vehicles, shall not leak any petroleum-based fluids, and shall be in compliance with all State and Federal regulations including but not limited to fire prevention and protection of air and water quality. Contractor shall clean up all petroleum-based fluid spills and restore area affected by such spills and spill cleanup to its pre-spill condition.
- C. Contractor shall repair all damage to all plant browse protection and weed protection.

### 3.6 FIELD QUALITY CONTROL

- A. Inspection: Inspections of the site by owner may be done at any time. Inspections by Owner and Contractor shall include:

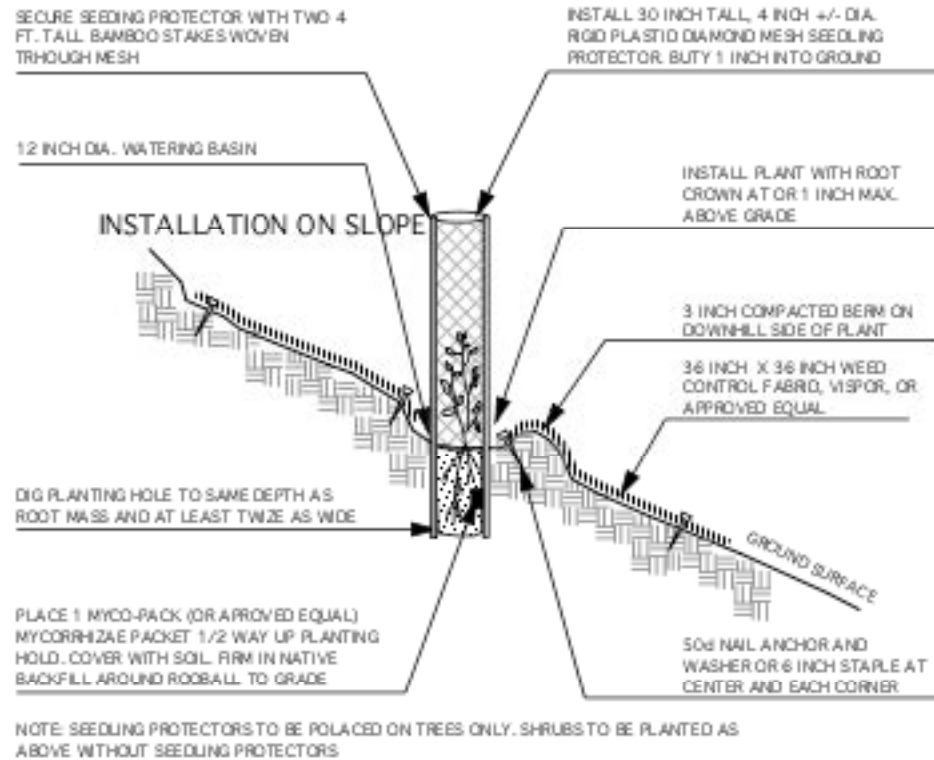
1. In July of years 1, 2, and 3 of the establishment period.
2. In September of each Establishment Period Year.
3. Immediately before and after replacement planting.

### **3.7 SCHEDULE**

- A. Establishment Year
  1. April-October: Irrigate all container plants installed by Contractor.
  2. September: Monitor survival of container plants installed by Contractor and submit monitoring report.
- B. Establishment Year 2
  1. November-January 15: Install replacement container plants, if needed (install container plants as required by Section 02930, Installation of Container-Grown Plants).
  2. February-May: Weed and mow.
  3. April-October: Irrigate all container plants installed by Contractor.
  4. September: Monitor survival and submit monitoring report.
- C. Establishment Year 3
  1. November-January 15: Install replacement container plants, if needed..
  2. February-May: Weed and mow.
  3. April-October: Irrigate all container plants installed by Contractor.
  4. September: Monitor survival and submit monitoring report.
- D. Establishment Years 4 and 5 (November 2008 to October 2009)
  1. September: Monitor survival and submit monitoring report.

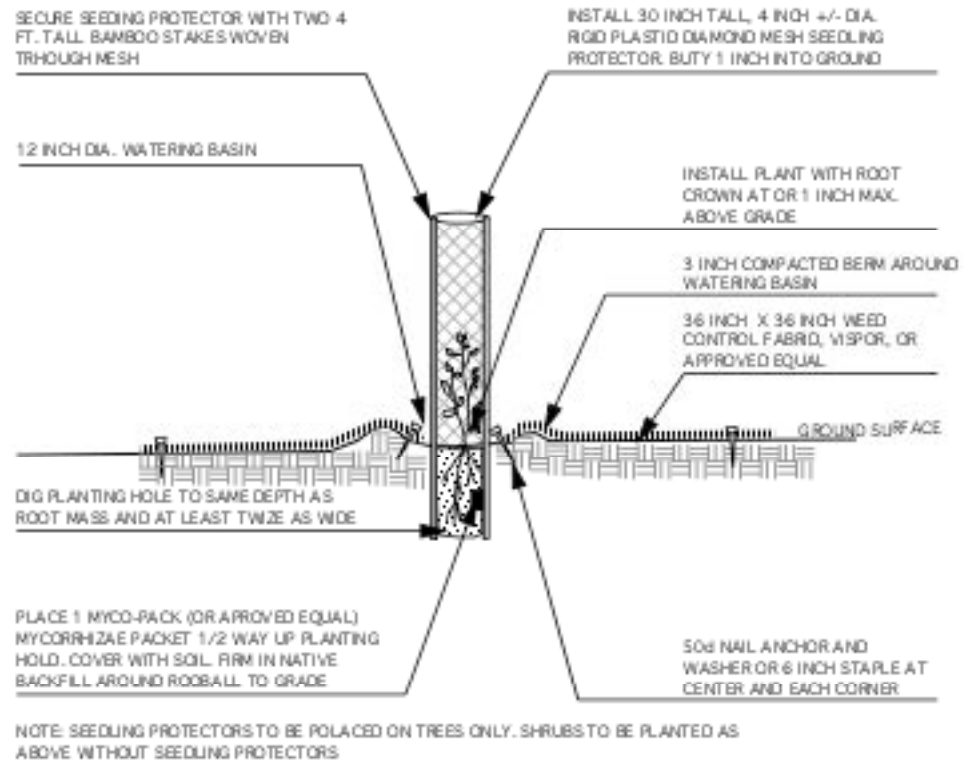
END OF SECTION

## PLANTING DETAILS



## CONTAINER PLANTS - HILLSIDE INSTALLATION

NO SCALE



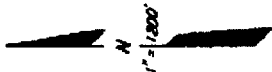
## CONTAINER PLANTS - LEVEL GROUND INSTALLATION

NO SCALE

# **Appendix E**

## **Assessor's Parcel Maps**

15 - 14



76-005  
76-017

Secs 25, 26, 27, 34, 35 & 36, T20N. R17W, MDBAM

8

76-017

76-005

76-017

76-005

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76-005

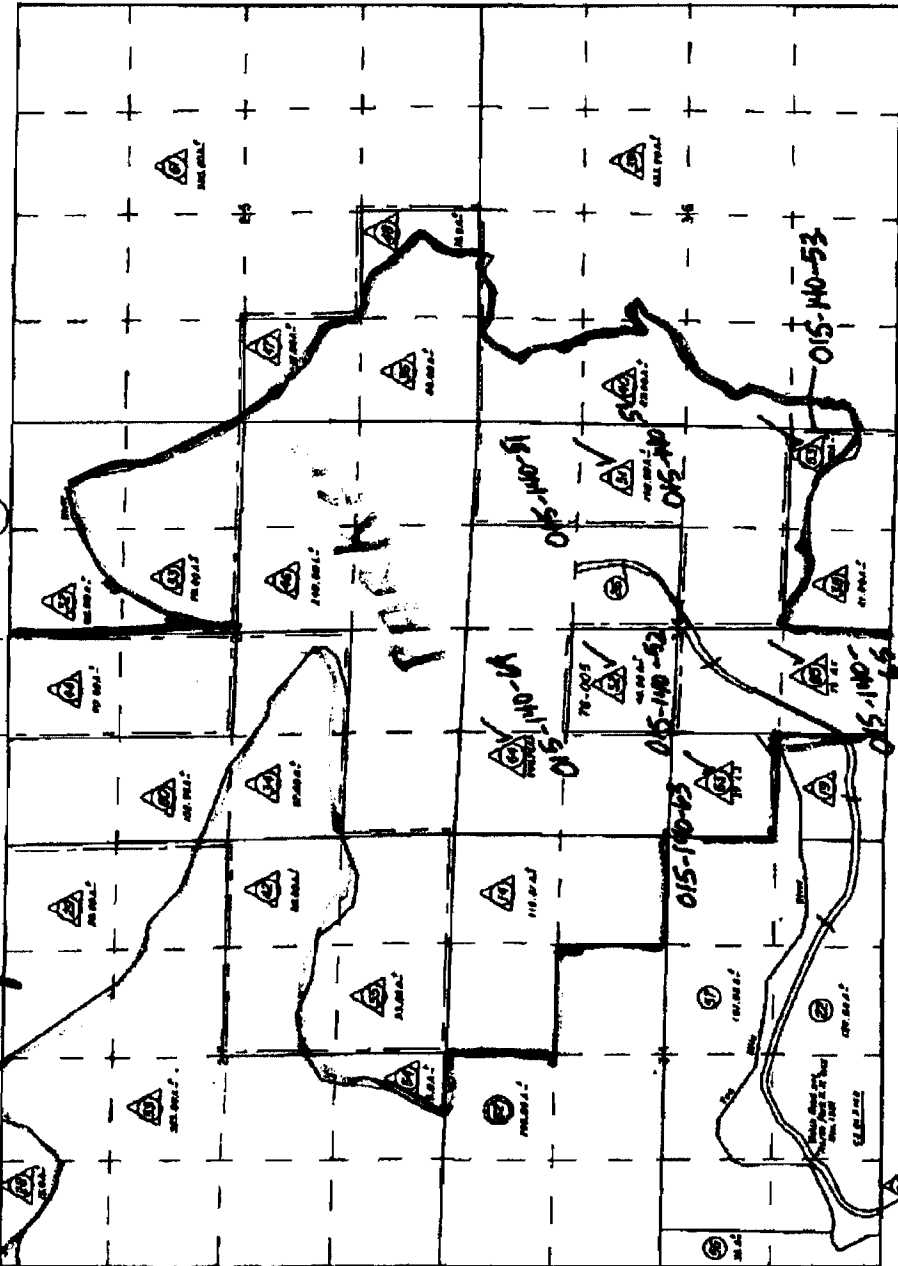
76-017

76-005

76-017

76-005

76-017



Assessor's Map  
County of Mendocino, Calif.  
March, 1974

69  
03

76-017 76-005

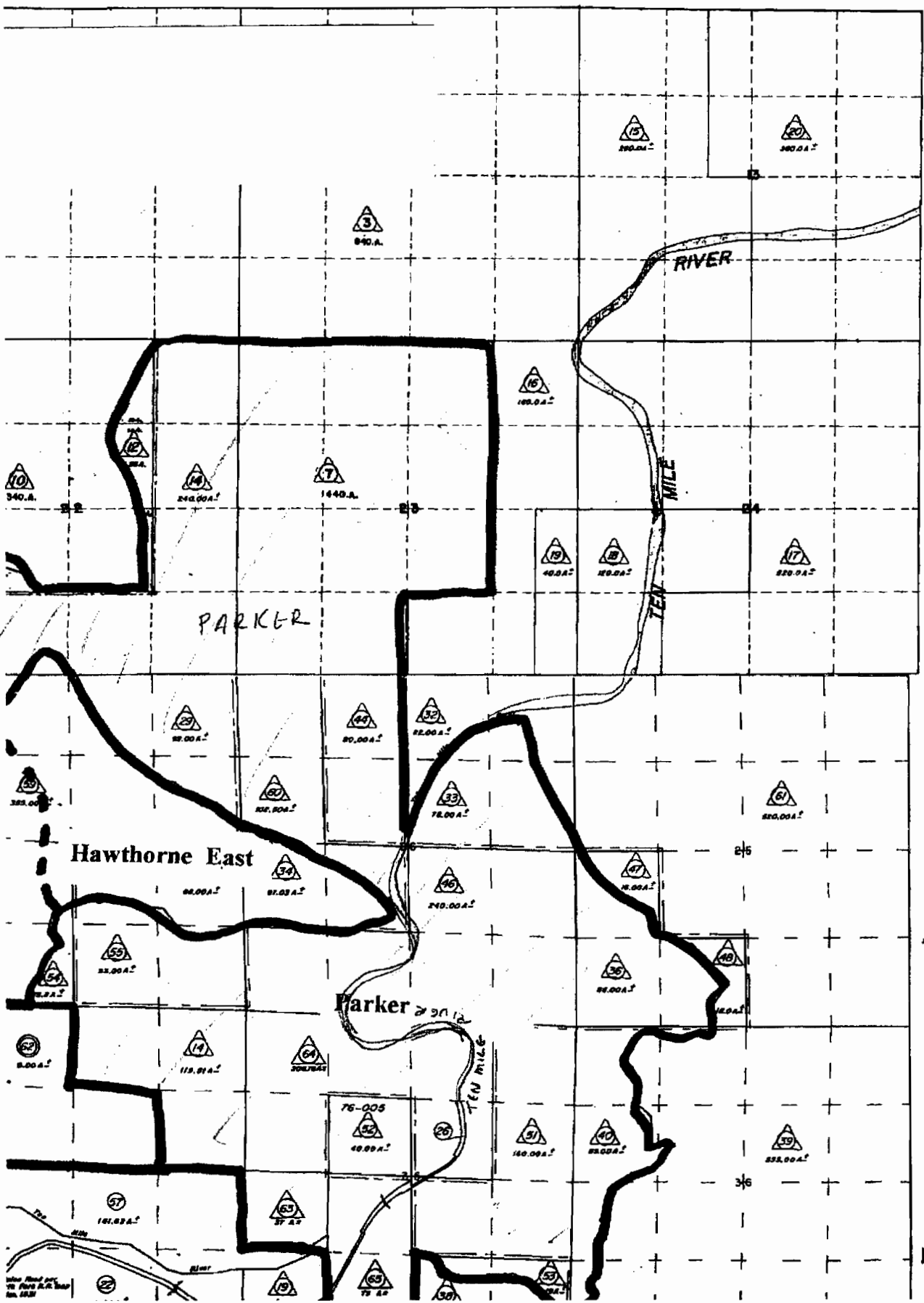
69  
03

NOTE: This map was prepared for  
assessor's purposes only. No liability  
is assumed for the data obtained  
therefrom.

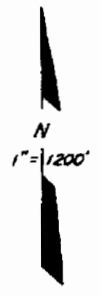
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02

MAP #1 w/ assessor parcels I.D.

02



08



MAP #2

15

PARKER  
RANCH =  
///

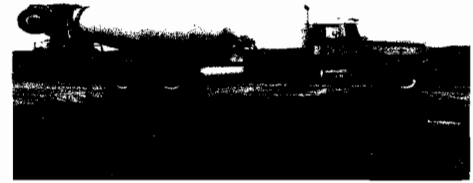
15-14

# **Appendix F**

## **Statement of Reclamation Responsibility and Evidence of Landowner Notification**



Baxman Gravel Co. Inc.  
1221 North Main Street  
Fort Bragg, CA., 95437




**March 20, 2007**

**RE: Statement of Reclamation Responsibility**

**Relative to the application to the County of Mendocino for approval of an amendment to the reclamation plan for the Ten Mile Second Crossing quarry and screening plant sites:**

**Baxman Gravel Co., Inc. hereby agrees to accept full responsibility for reclamation of all mined lands as described and submitted herein and in conformance with the applicable requirements of Articles 1 and 9 (commencing with Sections 3500 ct seq. and 3700 ct seq. respectively) of Chapter 8 of Division 2 of Title 14 of the California Code of regulations, the Surface Mining and Reclamation Act commencing with Section 2710 ct seq. and with any modifications requested by the administering agency as conditions of approval.**

Signed:   
**Steven Baxman**  
**Vice President**  
**Baxman Gravel Co. Inc.**

Primary Business Address  
1221 North Main Street  
Fort Bragg, Ca 95437

Phone: 707-964-4033  
Fax: 707-964-7011  
Email: elizabethmoses@msn.com

**Parker Ten Mile Ranch  
Fort Bragg, California  
Business Address: 1950 Primrose Avenue  
South Pasadena, California 91030  
(626)441-3335, (626)441-3635 Fax  
ndeniston@earthlink.net**

.....

March 26, 2007

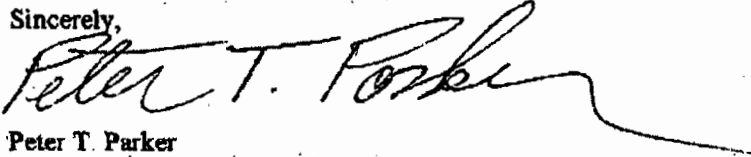
Mr. John Speka, Planner II  
Mendocino County Planning and Building Services  
501 Low Gap Road, Room 1440  
Ukiah, CA 95482

Re: Baxman Gravel Company's application for amended reclamation plan

Dear Mr. Speka,

This is to certify that Parker Ten Mile Ranch, a limited partnership, is aware of the application by Baxman Gravel Company, to amend its reclamation plan for continued quarry and processing operations at two sites on our property.

Sincerely,



Peter T. Parker  
President

Cc: Greg Zitney

# **Appendix G**

**Correspondence with National Marine Fisheries Service  
Regarding the Ten Mile Screening Plant**



ENVIRONMENTAL PLANNING

## Memorandum

**To:** Tom Daugherty, National Marine Fisheries Service  
**From:** Greg Zitney  
**Date:** August 29, 2006  
**Subject:** Baxman Gravel Company — Ten Mile Processing Facility Site  
Modifications for Fishery Concerns

The purpose of this memo is to summarize site modifications at the above-referenced facility operated by Baxman Gravel Co., Inc. These modifications were discussed with you during a site visit on June 23, 2006 and are intended to address concerns regarding potential impacts to salmonids that the facility may have in its current configuration. This processing facility has been in operation for several decades in its present configuration; however, Baxman is willing to implement these modifications voluntarily in order to minimize potential impacts to protected salmonids.

Attached for your reference is a map reflecting the site modifications described below:

- The sediment pond and the berm on its western side will be moved inward so that there will be at least 25 feet separating the berm and the existing edge of riparian vegetation. This will provide greater separation (buffer) between the sediment pond and the river, and allow for expansion of riparian vegetation within that buffer.
- The berm on the northern side of the sediment pond will be extended to the east as shown on the map to prevent flood flows from entering the sediment pond at this location. In implementing this extension, the existing vegetation in the vicinity will be preserved to the greatest extent feasible. The existing access road will be abandoned and the area will be allowed to revegetate.

- The sediment basin will be cleaned out on a regular basis each year. This clean-out will be scheduled so that all sediment will be excavated from the pond, dried in piles nearby, and then removed to an approved disposal area no later than October 31st. This date was obtained through consultation with Bill Cox of the Department of Fish and Game.
- During operation of the sediment basin, water from it will continue to be pumped out and transported to the grassland/meadow area located to the southeast of the processing site (see attached map), as we observed during our site visit with you. The discharge site will be checked at least once per month to verify that channels are not forming which could prevent even distribution of the water throughout the meadow area.

Please let me know if this does not accurately reflect the actions we discussed in the field as you remember them, or if you have anything else to add. On behalf of Baxman and myself, we appreciate your participation and cooperation.

Attachment: Site Map

cc: Elizabeth Moses, Baxman Gravel  
John Speka, County of Mendocino  
Patrick Miller, 2M Associates

New dike / access route to be constructed to direct creek waters away from sediment/retention basin; location to avoid existing vegetation south of existing access route and be a minimum 25 feet from existing riparian zone edge

Reconfigure sediment / retention basin 25 feet from existing riparian edge

Existing vegetation

Abandon existing access route

Portable Pump

Bridge

Access Road

Ten Mile Haul Road (private)

Plant Site

Redwood Forest

Grassland Meadow

Ten Mile River Riparian Zone

Base Map prepared by: Clifford M. Zimmerman, Licensed Land Surveyor, 3220 Westwood Drive, Fort Bragg, CA 95437

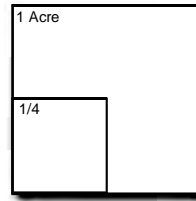
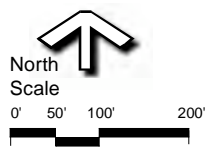
6/29/06

## 6/23/06 Field Review

(see text for explanation)

## Ten Mile River Screening Plant Reclamation Plan

Baxman Gravel Co. Inc.  
1221 N. Main St.  
Fort Bragg, Ca. 95437



This drawing is conceptual and for planning and permit-processing purposes only. Program information, scale, location of areas, and other information shown are subject to field evaluation and modification.



**Subject:** Re: Memo Regarding Our 6/29/06 Site Meeting -- Baxman's Ten Mile Processing Facility

**Date:** Wednesday, August 30, 2006 2:38 PM

**From:** Tom Daugherty <Tom.Daugherty@noaa.gov>

**To:** Greg Zitney <GZitney@comcast.net>

**Cc:** <dick.butler@noaa.gov>

Greg,

Thank you for the Memorandum dated August 29, 2006 regarding the Baxman Gravel Operation located adjacent to the Ten Mile River. I have reviewed the memo, and agree that the modifications proposed are likely to minimize potential impacts to federally listed salmonids. NMFS thanks Baxman Gravel for implementing the measures voluntarily. This email correspondence concludes technical assistance with NMFS for Baxman Gravel Operations on the Ten Mile River, located in Mendocino County, California. The technical assistance does not authorize take of federally listed salmonids. If you have questions regarding these comments please call me at 707 468-4057, or reply to this email.

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--B\_3239780970\_334878

Content-type: text/plain; charset="US-ASCII"

Content-transfer-encoding: 7bit

Tom:

Attached is a memo and accompanying map documenting the site modifications and operational procedures that Baxman Gravel will implement voluntarily in order to address concerns that NMFS had regarding potential impacts to fish in the Ten Mile River.

Thank you for your participation in addressing these issues. Please contact me if you have any questions.

Greg

---

Greg R. Zitney  
Zitney & Associates  
7 Villa Vista Court  
Novato, CA 94947  
Phone 415.892.3343  
Fax 415.897.5479  
E-mail GZitney@comcast.net

**DEPARTMENT OF CONSERVATION****OFFICE OF MINE RECLAMATION**

MRRC-1 (4/97) Page 1 of 5 (Rev. 07/13)

**SURFACE MINING INSPECTION REPORT**

(See reverse side of each form page for completion instructions)

I. Mine Name (As Shown on Approved Reclamation Plan) <b>Ten Mile Second Crossing</b>	Inspection Date: <b>10/25/2018</b>	CA MINE ID# <b>91- 23-0020</b>
---	---------------------------------------	-----------------------------------

II. Mine Operator <b>Wylatti Enterprises LLC, DBA Geo Aggregates</b>		Telephone <b>(707) 964-4033</b>
Onsite Contact Person <b>Brian Hurt</b>		Telephone <b>(707) 489-1463</b>
Mailing Address <b>1221 N. Main Street</b>		
City <b>Fort Bragg</b>	State <b>CA</b>	ZIP Code <b>95437</b>
E-mail Address (optional) <b>wylatti@gmail.com</b>		

III. Designated Agent <b>Brian Hurt</b>		Telephone <b>(707) 983-8135</b>
Mailing Address <b>1221 N. Main Street</b>		
City <b>Fort Bragg</b>	State <b>CA</b>	ZIP Code <b>95437</b>
E-mail Address (optional) <b>wylatti@gmail.com</b>		

IV. SMARA Lead Agency Name (City, County, BCDC, or SMGB) <b>Mendocino County</b>		
Inspector <b>Eduardo Hernandez</b>		Telephone <b>(707) 234-6699</b>
Title <b>Planner II</b>	Organization <b>Mendocino County Planning and Building Services</b>	
Mailing Address <b>860 North Bush Street</b>		
City <b>Ukiah</b>	State <b>CA</b>	ZIP Code <b>95482</b>
E-mail Address (optional) <b>hernandeze@mendocinocounty.org</b>		

V. Does the operation have:	P	NR	No	Yes
A Permit to Mine	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Permit # - Start and Expiration Dates
Vested Right to Mine	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Year of Lead Agency determination 1995 (Case# VR 1-94)
A Reclamation Plan	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	RP# <b>REC 1-2004</b> Date Approved <b>03/20/2008</b>
Reclamation Plan Amendment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	RP Amendment # (as applies) Date Approved or Status of Amendment
Has the Operator filed a Mining Operation Annual Report (Form MRRC-2) this Year? Check One:				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Year of Most Recent Filed Annual Report: <b>2017</b>

VI. Is this Operation on Federal Land? Check One: If "Yes," Provide One or Both of the Federal Mine Land Identification Numbers Below:		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
California Mining Claim Number (CAMC#): <b>N/A</b>	Latitude/Longitude at Mine Entrance (Decimal Degrees): <b>39.553530, -123.719406</b>	
U.S. Forest Service or BLM Identification Number (Plan of Operations #) : <b>N/A</b>	Status of Plan of Operations (Current/Expired/In Process): <b>N/A</b>	

DISTRIBUTION: Lead Agency sends copies of Inspection Notice &amp; completed MRRC-1 to operator, operator's designated agent, BLM or USFS (if required) &amp; retains original.



# INSTRUCTIONS FOR COMPLETING SURFACE MINING INSPECTION REPORT

Form MRRC-1 (4/97) Page 1 (Rev. 07/13)

This report is intended to comply with the requirements of California's Surface Mining and Reclamation Act (SMARA – Public Resources Code Sections §§ 2710 et seq., and the associated California Code of Regulations found in Title 14, division 2, beginning at § 3500, hereinafter respectively "PRC" or "CCR") and specifically PRC § 2774(b) and CCR § 3504.5 for operations located on private land and/or partly or solely on Bureau of Land Management (BLM) and U.S. Forest Service (USFS) lands (Title 43, parts 3500, 3600, and 3800 of the Code of Federal Regulations). A Memorandum of Understanding between the U.S. Department of Interior, BLM; U.S. Department of Agriculture, USFS; the State of California, Department of Conservation; and the State Mining and Geology Board (SMGB), discusses implementation of SMARA on Federal lands in California that are under the jurisdiction of the BLM and/or the USFS.

As required by PRC § 2774(b) and CCR § 3504.5(g), Lead Agencies shall file an Inspection Notice that includes a statement regarding compliance with SMARA, a copy of this Surface Mining Inspection Report (MRRC-1) and any other supporting documentation with the Department within 30 days of completion of the inspection. The Lead Agency shall also forward a copy of the Inspection Notice, MRRC-1, and any supporting documentation to the operator.

BLOCK I: Enter the name of the Mining Operation, the date of the inspection, and the California Mine ID number.

BLOCK II: Enter the name of the Mine Operator, mailing address, phone number, name, and email address (optional) of the person to serve as the onsite contact.

BLOCK III: Enter the name, mailing address, phone number, and email (optional) of the Designated Agent who, under PRC § 2772(c)(1) and 2207(a)(1), will serve as a contact for any follow-up correspondence or discussions regarding the inspection or noted violations.

BLOCK IV: For "Lead Agency," enter the name of the certified SMARA Lead Agency that is conducting this inspection. Acceptable entries include the name of the city, county, Bay Conservation and Development Commission (BCDC), or State Mining and Geology Board (SMGB). For "Organization," enter the name of the agency, firm or other organization that employs the inspector.

BLOCK V: Check the appropriate boxes.

P	Pending (on appeal or awaiting approval by Lead Agency)
NR, No, Yes	Not required for this operation at the time this inspection was completed
	No
	Yes, supply information

Note: Where appropriate, to aid in determining when the lead agency recognized that the operation has vested mining rights, inspectors are advised to review older agency correspondence, minutes of lead agency hearings, including agendas and staff reports associated with approvals of any kind related to the mining operation.

BLOCK VI: Indicate if the operation is on federal Land; if operation is on federal land, include a California Mining Claim Number and/or a BLM/USFS Identification Number and Plan of Operations Number, if applicable. Give the status of the BLM/USFS Plan of Operations, as indicated. Give the latitude and longitude at the mine entrance in decimal degrees.

---

## DISTRIBUTION INSTRUCTIONS:

One copy of the inspection notice and this completed Inspection Report (all pages) shall be given to the Mine Operator and the operator's designated agent by the lead agency (PRC Section 7374(b)).

The Lead Agency must retain the original copy of this Inspection Report and submit one copy of this Inspection Report, along with an original inspection report notice (PRC Subsection 2774(b)), within 30-days of the completion of the inspection, to:

Department of Conservation  
Office of Mine Reclamation  
801 K St MS 09-06 Sacramento, CA 95814-3529

If any part of the operation inspected is on BLM or USFS land, one copy of this Inspection Report should be forwarded to the appropriate BLM or USFS office.

**DEPARTMENT OF CONSERVATION****OFFICE OF MINE RECLAMATION**

MRRC-1 (4/97) Page 2 of 5 (Rev. 07/13)

**SURFACE MINING INSPECTION REPORT**

VII. Financial Assurance		Inspection Date: 10/25/2018	CA MINE ID#: 91- 23-0020	
Type of Financial Assurance Mechanism(s)	Financial Assurance Mechanism Number(s)	Amount of Mechanism	Date of Expiration	Date of Lead Agency Approval of Mechanism
Letter of Credit, through Tri Counties Bank	7220109860	\$130,000.00	07/26/2019, auto-renewal	10/12/2018
Total Amount of Mechanism(s)		\$130,000.00		

☐ Financial Assurance Mechanism Pending Review by Lead Agency? If yes, provide date submitted/explanation and amount of pending mechanism:

N/A

Has there been a change of operator since last inspection? If yes provide the date of notice.  <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  Date of Change: 07/27/2018	If yes, has the new operator posted a Financial Assurance Mechanism? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  If not, describe status of new operators Financial Assurance Mechanism: N/A	Does new operator's Notice of Change include a statement of responsibility for reclamation?  <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
--	---	--

Date and Amount of Most Recent Approved Financial Assurance Cost Estimate:	Date: 05/06/2018	Amount: \$107,948
<input type="checkbox"/> Financial Assurance Cost Estimate Pending Review with Lead Agency?	Date Submitted/Explanation/Amount of pending estimate: N/A	
<input type="checkbox"/> Financial Assurance Cost Estimate Appealed by Operator?	Date Submitted to State Mining and Geology Board or Lead Agency for Appeal/Explanation: N/A	
<input checked="" type="checkbox"/> Other?	The operator is working on a new FACE	

# INSTRUCTIONS FOR COMPLETING SURFACE MINING INSPECTION REPORT

Form MRRC-1 (4/97) Page 2 (Rev. 07/13)

**BLOCK VII:** Type of Financial Assurance Mechanism(s): Fill in the type of mechanism(s) that are on file. PRC § 3803 and SMGB Financial Assurance Guideline number 10 describe Surety Bonds, Trust Funds, or Irrevocable Letters of Credit as acceptable financial assurance mechanisms for non-governmental entity operators. For surface mining operations owned and operated by state and local government entities, Surety Bonds, Trust Funds, Irrevocable Letters of Credit, Pledges of Revenue, and Budget Set Aside are acceptable financial assurance mechanisms.

State the Financial Assurance Mechanism(s) document number(s). State the dollar amount of each Financial Assurance Mechanism(s) currently on file. State the date of expiration of the Financial Assurance Mechanism(s) currently on file. State the date of approval for the most recent lead agency approved Financial Assurance Mechanism(s) on file. State the total dollar amount of mechanisms held for reclamation.

Indicate if any Financial Assurance Mechanisms are pending review by the lead agency and the date and amount of submittal to the lead agency.

Indicate if there has been a change of operator of record since the last inspection and, if so, note the date the change occurred and whether the new operator has signed any document acknowledging reclamation responsibility under the approved reclamation plan and if the new operator has posted a Financial Assurance Mechanism. If a replacement Financial Assurance Mechanism has not been posted, indicate the status of the new operator's replacement Financial Assurance Mechanism. Per PRC § 2773.1(c) and Guideline number 19 of the SMGB's Financial Assurance Guidelines, when operatorship is transferred, "the original financial assurance must remain in effect until the lead agency has approved, following department review, the replacement assurances provided by the successor operator."

The Financial Assurance amount must be adjusted and approved annually to account for new lands disturbed by surface mining operations and lands to be disturbed in coming year, inflation, and reclamation of lands accomplished in accordance with the approved Reclamation Plan (PRC § 2773.1(a)(3) and SMGB Financial Assurance Guideline #16). In order to determine what adjustments, if any, are appropriate to the Financial Assurance Mechanism amount, each mine operator must submit annually a revision of the written Financial Assurance Cost Estimate to the Lead Agency (PRC § 3804(c)). Provide the date of the operator's most recent revision of the Financial Assurance Cost Estimate to the Lead Agency and where appropriate, provide a status of the pending Financial Assurance Cost Estimate. Provide the date and amount of the most recently approved Financial Assurance Cost Estimate.

Also indicate if the Financial Assurance Cost Estimate is under appeal to the lead agency or whether it has been appealed to State Mining and Geology Board as described in PRC § 2770(e).

Use the Financial Assurance "Other" and "Explanation" blocks to provide any other pertinent information regarding the status of Financial Assurance(s). If the operation does not have a sufficient Financial Assurance Cost Estimate and/or Financial Assurance Mechanism, explain in detail.

## SURFACE MINING INSPECTION REPORT

VIII. Non-SMARA facility operations conditions solely of local concern (e.g. hours of operation) do not need to be noted here. See Instructions for Block VIII on reverse side of page. <b>[Use separate sheet(s) where necessary. Refer to item numbers below]</b>		CA MINE ID # <div style="font-size: 1.2em; font-weight: bold;">91- 23-0020</div>	
Potential Reclamation Plan Requirements:	List Reclamation Plan Requirements (Recommended to be filled out prior to field inspection)	Note Site Conditions and Compliance Issues (Note additional comments on Page 5 as necessary)	VN?
<b>1) General Information</b>			<input type="checkbox"/>
a) Permitted Mineral Product(s)	a) Quarry rock	Production has been in compliance with permit.	
b) Approved Production Amount (Annual/Gross)	b) 20,000 - 40,000 cubic yards a year		
c) End Date of Operations Per RP	c) 2012		
d) Permit end date	d) Vested Rights. Reclamation Plan expired on 12/31/2017	No extraction during 2018 year, only removal of already crushed material.	
e) End Use	e) Timberland Production Zoning Open Space		
<b>2) Boundaries</b>			<input type="checkbox"/>
a) Property Boundary	a) 622.5± acres	No change since last inspection: in compliance with permit boundaries	
b) Permit Boundary	b) & c) 14.9 acres		
c) Rec. Plan Boundary (RPB)	d) 25-ft from riparian zone		
d) Setbacks			
<b>3) Slopes – Grading</b>			<input type="checkbox"/>
a) Fill Slopes – Note Condition of:	a-ii) Not to exceed 2H:1V, per "Exhibit 4A - Grading Plan: Second Crossing Quarry," there will be no fill slopes at Plant Site.	No slope stability concerns observed at time of inspection	
i) Slopes – Working (max/current)			
ii) Slopes – Reclaimed			
iii) Compaction			
b) Cut Slopes – Note Condition of:	b-ii) Terrace Cut Slopes of 1.5H:1V with benches averaging 15-ft wide every 30-ft vertically. Existing exposed rock slopes are 1.3H:V±.		
i) Slopes – Working (max./current)			
ii) Slopes – Reclaimed			
<b>4) Erosion Control</b>			<input type="checkbox"/>
a) BMPs	Annual hydroseeding/mulching for disturbed areas not within active mining area. Use of straw bales, straw rolls, and erosion control blankets where necessary. Quarry's floor sediment basin overflow to be protected from erosion by use of rip-rap and straw bales. Silt fences or equivalents, to be used if necessary.	No concerns noted at this time: proper grading, spacing, soil in good conditions	
b) Grading			
c) Vegetation			
<b>5) Ponds</b>			<input type="checkbox"/>
a) Design – Function	a) Quarry site (one) sediment basin: 3H:1V gradient	a) & b) Sediment basin not yet built	
b) Capacity (area/depth/volume)	b) Quarry site (one) sediment basin: minimum of 2 acres, and 10-ft deep; see Exhibit 5A	c) Sediment pond was cleaned. A stockpile of sediments was spotted; it was recommended to cover it with hay, operator complied. Compare inspection photo #6 with Operator's Post-Inspection photos dated 11/20/2018.	
c) Maintenance	c) Wash plant sediment settling pond to be cleaned annually prior to winter		
<b>6) Stream &amp; Wetland Protection</b>			<input type="checkbox"/>
a) Buffers (distance to channel)	Quarry floor and wash plant are within 100-year flood elevation.	Adequate preventive measures:	
b) Berms (distance/length/height)		a) Riparian buffer is untouched	
c) Best Management Practices	a) 25-ft riparian buffer	b) Berms installed and shown adequate	
d) Drainage	b) A berm between riparian zone and sediment pond. A 3.5-ft berm on northern portion of quarry site	d) Sediment pond was noted with enough space to contain winter's rainwater. Water bars adequately installed at both edges of the access road to wash plant area.	
e) Grading & Slopes	d) Wash plant sediment settling pond	e) & f) Inwards grading at both areas, and adequate quarry face and stockpile slopes	
f) Stockpiles			
g) Stream Diversions			
<b>7) Sensitive Wildlife &amp; Plant Protection</b>			<input type="checkbox"/>
a) List Species	Per Reclamation Plan's Appendix C Biological Resources and Environmental Review:	No sensitive species of concern noted	
b) Protection Measures	No mitigation measures are required.		

# INSTRUCTIONS FOR COMPLETING SURFACE MINING INSPECTION REPORT

Form MRRC-1 (4/97) Page 3 and 4 (Rev. 07/13)

## BLOCK VIII: INSTRUCTIONS FOR EACH DATA COLUMN:

**Potential Reclamation Plan Requirements** (Column 1): Under CCR § 3504.5(f), "Inspections may include, but shall not be limited to the following: the operation's horizontal and vertical dimensions, volumes of materials stored on the site; slope angles of stock piles, waste piles and quarry walls; potential geological hazards; equipment and other facilities; samples of materials; photographic or other electronic images of the operation; any measurements or observations deemed necessary by the inspector or the lead agency to ensure the operation is in compliance with Public Resources Code Chapter 9." Column 1 provides a list of items that may be included in the approved reclamation plan, either expressly or by reference as described in PRC § 2772(d), which may include conditions of approval, other permit requirements and supplementary documents, including environmental documents, prepared for the project pursuant to Division 13 (commencing with Section 21000).

It is not expected that all reclamation plans will include each item of Section VIII, or be limited to the items listed. Items in Column 1 that are not operative requirements in the reclamation plan may not need to be addressed by the inspection. Operative reclamation plan requirements not listed in Items 1 through 12 may be listed in Item 13, under "Other Reclamation Plan Requirements."

**Reclamation Plan Requirements** (Column 2): Prior to field inspection, it is recommended that the inspector review the approved reclamation plan and any amendments, as well as any other documents included by reference, including conditions of approval, other permit requirements and supplementary documents, such as environmental documents prepared for the project pursuant to Division 13 (commencing with Section 21000) that specifically relate to reclamation of the mine site. The most recently approved Financial Assurance Cost Estimate and any pending or ongoing enforcement actions should also be reviewed. Conditions of approval that relate to facility operations solely of local concern, such as hours of operation, noise, and dust control are not subject to the inspection.

Column 2 is intended to provide the inspector a place to match any items noted in Column 1 with those items included in the approved reclamation plan either expressly or by reference as described in PRC § 2772(d), which may include conditions of approval, other permit requirements and supplementary documents, including environmental documents prepared for the project pursuant to Division 13 (commencing with § 21000). Also note any Interim Management Plan (IMP) requirements where the mine is subject to an IMP pursuant to PRC § 2770(h).

Indicate the source document for the reclamation plan requirements at the end of the entry in parenthesis; i.e. (COA) (POO) (EIR) (WDR) (SWPPP), etc. Conditions of approval that relate to facility operations solely of local concern, such as hours of operation, noise, and dust control should not be included in Column 2. If items listed in Column 1 of Section VIII of the form are not included in the reclamation plan or other documents included by reference, write not applicable or "NA" in Column 2.

Specific reclamation requirements may not apply to an operation at the time of inspection, but they are important to be aware of to ensure current activity at the site will not prohibit reclamation in accordance with the approved reclamation plan.

A copy of the Surface Mining and Reclamation Act of 1975 and 1993 SMGB regulations may be obtained at <http://www.conservation.ca.gov/omr/lawsandregulations/Pages/SMARA.aspx>.

**Site Conditions and Compliance Issues** (Column 3): Describe current site conditions and compliance issues noted for both operating and reclaimed surfaces that pertain to the reclaimed condition of the mining site. Block IX is provided for additional space to describe site conditions and/or compliance issues. Attach additional sheets as necessary. Evaluations of slope stability and engineered compaction should be prepared by qualified professionals only. PRC § 2774(b) states "The lead agency may cause an inspection to be conducted by a state licensed geologist, state licensed civil engineer, state licensed landscape architect, or state licensed forester, who is experienced in land reclamation and who has not been employed by a surface mining operation within the jurisdiction of the lead agency in any capacity during the previous 12 months."

**VN?** (Column 4): Use this box to indicate if violations were noted for any of the specific items under the corresponding item group heading (e.g., Boundaries, Slopes-Grading, etc.) during field inspection of the site. Enter number of violations in the box.

## SURFACE MINING INSPECTION REPORT

VIII. Non-SMARA facility operations conditions solely of local concern (e.g. hours of operation) do not need to be noted here. See Instructions for Block VIII on reverse side of page. <b>[Use separate sheet(s) where necessary. Refer to item numbers below]</b>		CA MINE ID # <b>91- 23-0020</b>	
Potential Reclamation Plan Requirements:	List Reclamation Plan Requirements (Recommended to be filled out prior to field inspection)	Note Site Conditions and Compliance Issues (Note additional comments on Page 5 as necessary)	VN?
<b>8) Soil/Overburden Stockpile Management</b>	Stockpiles not to exceed 2H:1V during non-operating months              c) Minimum 1 foot on reclaimed benches of hydroseeding/mulching	Stockpiles appropriately sloped and BMPs adequate for sediment erosion control at both Quarry and Wash Plant sites. Visible on inspection photos #1 through #5.              c) Reclamation progress is visible at quarry site with upper benches being vegetated, properly sloped, and benched. See inspection photo #1.	<input type="checkbox"/>
a) Topsoil			
i) Location			
ii) Slope Stability			
iii) BMPs			
b) Overburden			
i) Location			
ii) Slope Stability			
iii) BMPs			
c) Topsoil Application			
i) Amendments			
ii) Depth			
iii) Moisture			
iv) Application Methods			
<b>9) Revegetation</b>	a) Test plots only identified for quarry site, see Exhibit 5A b) & g) See Appendix D c) Sedimentation Basin: 100 plants d) Sedimentation Basin: 35% e) Sedimentation Basin: 2 species f) N/A - No grazing on area h) Monitored at least once a year	As mentioned in above Section VIII-8, quarry's upper benches are showing re-vegetation.           h) No invasive species noted	<input type="checkbox"/>
a) Test Plots			
b) Species Mix			
c) Density			
d) Percent Cover			
e) Species Richness			
f) Protection			
g) Success Monitoring			
h) Invasive Species Control			
<b>10) Structures</b>	No structures with foundations	No structures on-site. All equipment is portable.	<input type="checkbox"/>
<b>11) Equipment</b>	Heavy equipment and processing equipment	Quarry dozer, loader and other light equipment stored at wash plant. A 3-axle truck and some parts on quarry site.	<input type="checkbox"/>
<b>12) Closure of Adits</b>	N/A - Surface mining only	N/A - No adits observed on-site	<input type="checkbox"/>
<b>13) Other Reclamation Plan Requirements</b>	N/A	N/A	<input type="checkbox"/>

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## SURFACE MINING INSPECTION REPORT

<p>IX. List comments/description/sketches to support observations of mine site conditions, including violations. Where any violations are noted, list in numerical order, along with suggested corresponding corrective actions. Also describe preventative measures recommended by the inspector to avoid or remedy potential violations. Indicate if you have attached photos, sketches, and/or notice(s) of violation(s) or other documents to this form.  <b>(Add additional sheets as necessary)</b></p> <p>The operation consists of two separated areas; the quarry site and the wash plant "screening" area. The operation has vested rights, and the current operator is working towards reclamation and mine closure in the next 5 (five) years.</p> <p>The Quarry site is still being excavated mainly at the lower face. A sediment basin, which is part of the final reclamation, is not yet constructed. A road will be re-contoured. Upper slopes and re-vegetation is looking good towards reclamation.</p> <p>The Wash Plant still has plenty of stored equipment in there, many is for sale now. The area is graded towards the inside of the operation and the sediment basin, to avoid siltation. The sediment settling basin was recently emptied out. Stockpiled sediments were observed, and a recommendation made and complied for. See details at last year's inspection violation #1.</p> <p>Last year's report noted violations, all solved:</p> <p>#1 - Excavated pond sediments stockpiled along NW berm could be subject to winter erosion and were not properly winterized at time of 10/25/17 inspection.        &gt; Solved by action and photo documentation provided by operator, it was routed to LACO (consultant firm hired for that inspection). It was agreed the violation was now cleared. See attached e-mail thread dated 03/27/2018 and prior.        &gt;&gt; During this year's inspection, it was noted a similar stockpile was around the same area. It was noted the likeliness for these sediments to get towards the river was zero, since the stockpile location and site's grade would push the sediments back into the wash sediment settling pond.        Therefore, it was purely recommended to Steve Thiesen (on-site contact, and inspection attendee) to spread hay over the stockpile to prevent air-propagation of the sediments. Steve provided photo documentation of action, complying with the recommendation. As mentioned on Section VIII-5, see Operator's Post-Inspection photos dated 11/20/2018.        Steve also confirmed via phone conversation on 02/05/2018, that such sediments were washed back into the sediment settling pond by past winter rains.</p> <p>#2 - Status of 2016 quarry slope inspection and report by CEG/GE unknown. Not resolved at time of 10/25/17 inspection.        A report prepared by Reese &amp; Associates, dated 01/03/2017 was provided to the County, such report was reviewed by LACO and the violation was deemed cleared. See attached e-mail thread from 07/26/2018 and prior, and Reese report.</p> <p>Additional sheets/documents: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>CA MINE ID #  <b>91- 23-0020</b></p> <hr/> <p>Inspection Date:  <b>10/25/2018</b></p> <hr/> <p>Weather Code(s):  <b>CR</b></p> <hr/> <p>Duration of Inspection: 1 hour and 15 minutes        Start Time: <b>11:35 a.m.</b>        End Time: <b>12:50 p.m.</b></p> <hr/> <p>Status of Mine Code(s):  <b>NOP-NC</b></p> <hr/> <p>Status of Reclamation Code(s):  <b>R</b>        Approximate Acreage Under Reclamation:  <b>1 acre</b>  <small>Approximate Acreage the lead agency has determined reclaimed in accordance with the approved reclamation plan: 0 (zero acres)</small></p> <hr/> <p>Approximate Total Disturbed Acreage:  <b>18 acres</b>        Approximate Pre-SMARA Disturbed Acreage:  <b>Unknown</b></p> <hr/> <p>Disturbed Acreage Identified in Most Recent Financial Assurance Cost Estimate:  <b>Not identified</b></p> <hr/> <p>Previous Inspection Date (and Number of Violations then Noted):  <b>10/25/2017 (2)</b>        Violations Corrected? (explain in block to left)  <b>Yes (previously notified to DMR)</b></p> <hr/> <p>Inspection Attendees and Affiliations:  <b>Steve Thiesen,          Wylatti Enterprises LLC,          DBA Geo Aggregates</b>   <b>Eduardo Hernandez and          Ignacio Gonzalez,          MCPBS</b></p>
--	--

X. Number of Current Violations: <div style="font-size: 2em; font-weight: bold;">0 (zero)</div>	Inspectors Signature: <hr/> Date Signed: <b>02/05/2019</b>	If inspector is a contractor for the lead agency give license type and number:
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# INSTRUCTIONS FOR COMPLETING SURFACE MINING INSPECTION REPORT

Form MRRC-1 (4/97) Page 5 (Rev. 05/13)

## BLOCK IX

Inspectors may use the large open block for comments to describe violations, corresponding corrective actions, or preventative measure(s) suggested by the inspector to address noted violations or avoid potential violations, and to explain any limitations on the inspection conducted. The inspector can also use this space to describe the status of any pending or current enforcement actions. Separate violations that are the subject of existing enforcement actions from violations observed during the current inspection.

Enter California Mine ID Number and Date of Inspection.

Weather Codes: CR = Clear; CL = Cloudy; RN = Rain; SN = Snow; WD = Windy

For "Duration of Inspection," indicate the start and end times of the inspection (do not include travel time).

SMARA Status Codes (based on annual report and reported production under CCR § 3695, indicate the appropriate status code):

NP = Newly Permitted (surface mining operation not begun)  
OP = Operation Not Idle (Per § 2727.1) or abandoned (Per §2770 (h)(6))  
I = Idle (Per § 2727.1)  
AB = Abandoned (Per § 2700 (h)(6))  
NOP-NC = Not in Operation, Reclamation NOT Completed  
NOP-C = Not in Operation, Reclamation Completed

If idle, indicate either the date operation became idle as defined by PRC Section 2727.1, the date an IMP was approved, or the status of any pending IMP.

Status of Reclamation Codes:

RN = Reclamation not begun  
R = Reclamation in progress  
P = Post reclamation monitoring  
RC = Reclamation complete

Enter approximate acreage under reclamation (the number of acres actively being reclaimed in accordance with the approved reclamation plan).

Enter approximate acreage determined to be reclaimed in accordance with the approved reclamation plan by Lead Agency.

Enter approximate total disturbed acreage. This includes all acreage disturbed by the surface mining operation, as defined by PRC § 2729: "Mined Lands" includes the surface, subsurface, and ground water of an area in which surface mining operations will be, are being, or have been conducted, including private ways and roads appurtenant to any such area, land excavations, workings, mining waste, and areas in which structures, facilities, equipment, machines, tools or other materials or property which result from, or are used in, surface mining operations are located." This should include acreage under reclamation that has not been determined to be reclaimed in accordance with the approved reclamation plan by the Lead Agency.

Enter the total number of acres within or adjacent to the disturbance area of the operation disturbed pre-SMARA (disturbance before January 1, 1976, that has not had mining related disturbance after January 1, 1976).

Enter the disturbed acreage identified in the most recent Financial Assurance Cost Estimate (i.e., the disturbed acreage that was used to calculate the most recent Financial Assurance Cost Estimate.

Enter the date of the previous lead agency inspection and number of violations noted during that inspection.

Attendees: Provide the names and affiliations of parties in attendance at the inspection.

## BLOCK X:

Enter the number of violations noted during the inspection. Sign and date the Inspection Report. If the inspector is a consultant to the lead agency, include the inspector's certification (PE, PG, CEG, etc.) and license number, if applicable. The lead agency may cause an inspection to be performed by contracting with private consultants, specifically: state licensed geologist, state licensed civil engineer, state licensed landscape architect, or state licensed forester per § 2774(b).

## Ten Mile Second Crossing - 2018 Inspection Photos



Photo #1 - View from quarry floor, looking southwest. Quarry face with multiple benches, and some vegetation on upper section observed.



Photo #2 - View from quarry floor, looking west. Details on lower face slopes and mounds to be re-contoured on the right shown. Aggregate stockpile at the bottom of the picture.



## Ten Mile Second Crossing - 2018 Inspection Photos



Photo #3 - View closer to the quarry face, looking northwest. Slopes grade, small aggregate stockpiles, a stationary 3-axle truck shown, and some pampas grass (invasive species) shown.



Photo #4 - View from quarry floor and close to quarry face, looking southeast. Proper lower quarry face and stockpile slopes observed.



## Ten Mile Second Crossing - 2018 Inspection Photos



Photo #5 - View from wash plant, looking northwest. Processing equipment and stockpiles with adequate sloping observed.



Photo #6 - Stockpiled sediments removed from sediment settling pond observed at pond's perimeter. As discussed in Sections VIII-5 and IX, it was recommended to spread hay on it. Compare with post-inspection photos by operator dated 11/20/2018.



# Ten Mile Second Crossing

2018 Inspection Photo Locations (Quarry site)



Google Earth

300 ft





# Ten Mile Second Crossing

2018 Inspection Photo Locations (Wash Plant)





## Ten Mile Second Crossing - Post-2018 Inspection Photos by Operator

**From:** Steve Thiesen <steve@geoagg.net>  
**To:** "Eduardo Hernandez" <hernandeze@mendocinocounty.org>  
**Date:** 11/20/2018 7:53 AM  
**Subject:** Pond diggings. Here is the pics sorry about the delay  
**Attachments:** IMG\_0632.jpg; IMG\_0633.jpg; IMG\_0634.jpg





## Ten Mile Second Crossing - Post-2018 Inspection Photos by Operator

**From:** Steve Thiesen <steve@geoagg.net>  
**To:** "Eduardo Hernandez" <hernandeze@mendocinocounty.org>  
**Date:** 11/20/2018 7:53 AM  
**Subject:** Pond diggings. Here is the pics sorry about the delay  
**Attachments:** IMG\_0632.jpg; IMG\_0633.jpg; IMG\_0634.jpg





## Eduardo Hernandez - RE: Ten Mile Violation Update (CA MINE ID # 91-23-0030)

---

**From:** "Slaughter, Christopher@DOC" <Christopher.Slaughter@conservation.ca.gov>  
**To:** Eduardo Hernandez <hernandeze@mendocinocounty.org>  
**Date:** 3/27/2018 8:01 AM  
**Subject:** RE: Ten Mile Violation Update (CA MINE ID # 91-23-0030)  
**Cc:** "Rader, David@DOC" <David.Rader@conservation.ca.gov>  
**Attachments:** FW: 10mile plant

---

Thank you Eduardo.

I am forwarding this message to our Geologist David Rader who is assigned to Mendocino County.

Thank you.

Sincerely,



*Christopher Slaughter*

Division of Mine Reclamation

Phone: [\(916\) 319-0336](tel:(916)319-0336)

Fax: [\(916\) 322-0975](tel:(916)322-0975)

[Christopher.Slaughter@conservation.ca.gov](mailto:Christopher.Slaughter@conservation.ca.gov)

---

**From:** Eduardo Hernandez [[hernandeze@mendocinocounty.org](mailto:hernandeze@mendocinocounty.org)]  
**Sent:** Monday, March 26, 2018 4:27 PM  
**To:** Slaughter, Christopher@DOC <Christopher.Slaughter@conservation.ca.gov>  
**Subject:** Ten Mile Violation Update (CA MINE ID # 91-23-0030)

Hi Christopher,

I just received this e-mail from our consultant Inspectors/Geologists in regards to Violation #1 from the recently submitted 2017 MRRC-1 report for the subject mine.

The County concurs with our consultants and considers this violation to be cleared. Violation #2 for a slope analysis remains active.

Please let me know should you have any additional comments or questions.

Regards,

**Eduardo Hernandez**, Planner II

**County of Mendocino Planning Department**

860 N. Bush St.

Ukiah, CA 95482

(T) [707-234-6650](tel:707-234-6650)

(E) [hernandeze@mendocinocounty.org](mailto:hernandeze@mendocinocounty.org)

(W) [www.mendocinocounty.org/pbs](http://www.mendocinocounty.org/pbs)

**Check your zoning, permit, and project status:**

<https://etrakit.co.mendocino.ca.us/eTRAKiT3/>

**From:** "Morgan G. Jones" <jonesm@lacoassociates.com>  
**To:** "Eduardo Hernandez (hernandeze@mendocinocounty.org)" <hernandeze@mendoci...  
**CC:** "Olivia K. Welch" <welcho@lacoassociates.com>, "Frank Bickner, P.G." <Bi...  
**Date:** 3/26/2018 3:00 PM  
**Subject:** FW: 10mile plant  
**Attachments:** IMG\_0515.jpg; ATT00001.txt

Hi Eduardo,

Please see photo documentation attached, forwarded from Steve Thiesen at GeoAggregates. LACO considers this sufficient to remove current violation #1 as noted on the inspection report dated 3/21/18 for ten mile wash plant.

Regards,

Morgan G. Jones, P.G.  
Senior Geologist  
LACO Associates  
Eureka | Ukiah | Santa Rosa  
Advancing the quality of life for generations to come  
707 462 0222 | 510 828 3608 mobile  
<http://www.lacoassociates.com>

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-----Original Message-----

From: Steve Thiesen [<mailto:steve@geoagg.net>]  
Sent: Friday, March 23, 2018 3:14 PM  
To: Morgan G. Jones  
Subject: 10mile plant

As you can see we move the pond mud off the levy. As you can see the mud will drain back into the pond. Let me know if you got this email.



## SURFACE MINING INSPECTION REPORT

<p>IX. List comments/description/sketches to support observations of mine site conditions, including violations. Where any violations are noted, list in numerical order, along with suggested corresponding corrective actions. Also describe preventative measures recommended by the inspector to avoid or remedy potential violations. Indicate if you have attached photos, sketches, and/or notice(s) of violation(s) or other documents to this form.  <b>(Add additional sheets as necessary)</b></p> <p>Ten Mile wash plant --          Previous violation (2015):          Ponds at wash plant need sediment removal for winter discharge.          Resolved - Pond maintenance was conducted September 2016.</p> <p>Sediment retention ponds have been maintained, wash water and storm water catchment and drainage features are operating as designed, and BMPs are in place to prevent off-site discharge to watercourse.</p> <p>Current Violation 1: Excavated pond sediments stockpiled along NW berm could be subject to winter erosion and were not properly winterized at time of 10/25/17 inspection.</p> <p>Second Crossing Quarry --          Previous violation (2015):          Notice of Violation dated 11/6/2015 requiring assessment of quarry slope stability by a Certified Engineering Geologist or Geotechnical Engineer, an evaluation of the modified slope design, and maintenance of erosion and sedimentation controls, no later than 12/6/2015.          Resolved: Per email from John Speka (County Planner at the time) dated 6/16/2016.</p> <p>Previous recommendation (2016):          Move lower wall and benches along SW side of quarry back to south to align with more NW alignment in 2016.          Resolved - the proposed realignment of the southern quarry face and benches was completed in 2016. Rock berm also installed on quarry floor to retain potential sloughing off quarry face. Berm installed at time of 10/25/17 inspection.</p> <p>Quarry is shut down for winter. BMPs in place, site graded and bermed to retain and infiltrate majority of runoff. Limited off-site runoff managed with oversized gravel check dams and water bars at both potential discharge points (access road and logging road entrances). No evidence of slope instability noted. No change since last inspection.</p> <p>Current Violation 2: Status of 2016 quarry slope inspection and report by CEG/GE unknown. Not resolved at time of 10/25/17 inspection.</p> <p>Vested rights and Reclamation permits expired on December, 2017. Operator has applied for an extension for the reclamation of this site.</p> <p>Additional sheets/documents attached: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>CA MINE ID #  <b>91- 23-0020</b></p> <hr/> <p>Inspection Date:  <b>10/25/17</b></p> <hr/> <p>Weather Code(s):  <b>CL</b></p> <hr/> <p>Duration of Inspection: <b>2.</b>          Start Time: <b>1:30 pm</b>          End Time: <b>3:30 pm</b></p> <hr/> <p>Status of Mine Code(s):  <b>OP</b></p> <hr/> <p>Status of Reclamation Code(s):  <b>R</b>          Approximate Acreage Under Reclamation:  <b>~ 1 acre</b>          Approximate Acreage the lead agency has determined reclaimed in accordance with the approved reclamation plan:          Approximate Total Disturbed Acreage:  <b>+/- 18 acres (quarry + wash plant)</b>          Approximate Pre-SMARA Disturbed Acreage:  <b>Unknown</b></p> <hr/> <p>Disturbed Acreage Identified in Most Recent Financial Assurance Cost Estimate:  <b>Unknown</b></p> <hr/> <p>Previous Inspection Date (and Number of Violations then Noted):  <b>10/26/2016 (0)</b>          Violations Corrected? (explain in block to left)  <b>N/A</b></p> <hr/> <p>Inspection Attendees and Affiliations:  <b>Frank Bickner, PG          LACO</b>    <b>Olivia Welch          LACO</b></p>
---	---

X. Number of Current Violations: <div style="font-size: 2em; font-weight: bold; text-align: center;">2</div>	Inspectors Signature: <div style="text-align: center;">           Date Signed: <b>3/21/2018</b> </div>	If inspector is a contractor for the lead agency give license type and number: <div style="font-size: 1.5em; font-weight: bold; text-align: center;">PG 7428</div>
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**Eduardo Hernandez - RE: MRRC-1 for Ten Mile 2nd X-in ready for final sign-off**

---

**From:** "Morgan G. Jones" <jonesm@lacoassociates.com>  
**To:** Eduardo Hernandez <hernandeze@mendocinocounty.org>  
**Date:** 3/23/2018 12:01 PM  
**Subject:** RE: MRRC-1 for Ten Mile 2nd X-in ready for final sign-off  
**Cc:** "Frank Bickner, P.G." <BicknerF@lacoassociates.com>, "Olivia K. Welch" <...>

---

Eduardo,

Just an FYI that Steve Thiessen with Geo-Agg called after receiving your letter regarding Ten Mile 2<sup>nd</sup> Crossing. He stated the violation at the wash plant has already been resolved. I requested he send photo documentation of the corrections to me for forwarding to PBS.

He stated he will work on getting a geologist's report for the quarry slope.

Best,  
Morgan



Morgan G. Jones, P.G.  
Senior Geologist  
LACO Associates  
Eureka | Ukiah | Santa Rosa  
*Advancing the quality of life for generations to come*  
707 462 0222 | 510 828 3608 mobile  
<http://www.lacoassociates.com>

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---

**From:** Olivia K. Welch  
**Sent:** Wednesday, March 21, 2018 2:21 PM  
**To:** Eduardo Hernandez  
**Cc:** Frank Bickner, P.G.; Morgan G. Jones  
**Subject:** RE: MRRC-1 for Ten Mile 2nd X-in ready for final sign-off

Hi Eduardo,

The report was reviewed by Frank and Morgan. The number of violations in the 'Number of Current Violations' box was changed from 1 to 2, to reflect the 2 violations noted in section IX. I've attached our revised and signed report.



Thank you,  
Olivia



Olivia Welch, EIT, QISP  
Assistant Engineer  
LACO Associates  
Eureka | **Ukiah** | Santa Rosa  
*Advancing the quality of life for generations to come*  
[707 462 0222](tel:7074620222)  
<http://www.lacoassociates.com>

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---

**From:** Eduardo Hernandez [<mailto:hernandeze@mendocinocounty.org>]  
**Sent:** Tuesday, March 20, 2018 3:47 PM  
**To:** Olivia K. Welch <[welcho@lacoassociates.com](mailto:welcho@lacoassociates.com)>  
**Cc:** Frank Bickner, P.G. <[BicknerF@lacoassociates.com](mailto:BicknerF@lacoassociates.com)>  
**Subject:** MRRC-1 for Ten Mile 2nd X-in ready for final sign-off

Hi Olivia and Frank,

Same as the previous e-mail I sent you for Sherwood Road Quarry; here is the link now for Ten Mile 2nd Crossing <https://drive.google.com/open?id=1fmpSXRkNappi-W-FVmOmDJHmoYSuZOPr>. Please review, sign, if any other modifications are made please let me know, and share it with me at your earliest convenience.

Thanks again,

**Eduardo Hernandez**, Planner II  
**County of Mendocino Planning Department**  
860 N. Bush St.  
Ukiah, CA 95482  
(T) [707-234-6650](tel:707-234-6650)  
(E) [hernandeze@mendocinocounty.org](mailto:hernandeze@mendocinocounty.org)  
(W) [www.mendocinocounty.org/pbs](http://www.mendocinocounty.org/pbs)

**Check your zoning, permit, and project status:**

<https://etrakit.co.mendocino.ca.us/eTRAKiT3/>

**Eduardo Hernandez - Ten Mile (CA MINE ID# 91-23-0020) 2017 Inspection Violations Clearance**

---

**From:** Eduardo Hernandez  
**To:** Christopher Slaughter; David Rader  
**Date:** 7/26/2018 12:58 PM  
**Subject:** Ten Mile (CA MINE ID# 91-23-0020) 2017 Inspection Violations Clearance  
**Attachments:** FW: Reese Geotechnical Site Observation

---

Hi Chris and Dave,

This e-mail follows an e-mail sent earlier this year on March 26th in regards to the clearance of a violation for the Ten Mile operation (CA MINE ID# 91-23-0020).

In the previous e-mail it was shown how the labeled "current violation 1" of the 2017 MRRC-1 was deemed cleared by our former consultant agency "LACO."

This e-mail has an attachment in which, according to LACO, another violation labeled as "current violation 2" was also cleared.

With these exhibits, the County considers the site to not have any violations at this time. Please let me know should you have any comments.

In addition to the above mentioned violations clarification, I would like to inform you I am currently working on the renewal of the Reclamation Plan for this site and it will be sent out for referral soon by our Administration Staff.

Your Division will receive an invite to comment on it.

Let me know should you have any comments or questions.

Warm regards,

**Eduardo Hernandez**, Planner II  
**County of Mendocino Planning Department**

860 N. Bush St.

Ukiah, CA 95482

(T) [707-234-6650](tel:707-234-6650)

(E) [hernandeze@mendocinocounty.org](mailto:hernandeze@mendocinocounty.org)

(W) [www.mendocinocounty.org/pbs](http://www.mendocinocounty.org/pbs)

**Check your zoning, permit, and project status:**

<https://etrakit.co.mendocino.ca.us/eTRAKiT3/>

## Eduardo Hernandez - FW: Reese Geotechnical Site Observation

---

**From:** "Frank Bickner, P.G." <BicknerF@lacoassociates.com>  
**To:** "Morgan G. Jones" <jonesm@lacoassociates.com>, Eduardo Hernandez <hernan...>  
**Date:** 4/3/2018 11:08 AM  
**Subject:** FW: Reese Geotechnical Site Observation  
**Attachments:** Ten Mile Second Crossing.pdf

---

Hello all,

I spoke with Beth at Geo-aggregates and we discussed the attached geotechnical report prepared by Reese Engineering.

Attached is the Geotechnical Report for Ten Mile 2<sup>nd</sup> Crossing. The violation can be removed from the Inspection Report.

Sincerely,

LACO



Frank R. Bickner, PG  
Vice President  
LACO Associates  
Eureka | Ukiah | Santa Rosa  
*Advancing the quality of life for generations to come*  
[707 443 5054](tel:7074435054)  
<http://www.lacoassociates.com>

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**From:** Beth Kirwan [[beth@geoagg.net](mailto:beth@geoagg.net)]  
**Sent:** Tuesday, April 3, 2018 10:39 AM  
**To:** Frank Bickner, P.G.  
**Subject:** Reese Geotechnical Site Observation

Frank,

Thank you for your help and the quick call back... I really appreciate it!

Attached is the Geotechnical Site Observation. Thank you for forwarding this to the appropriate person so we can clear the 2016 question regarding the quarry slopes.



Please confirm you received this email and the attachment. I think I had your email address incorrect the first time.

*Beth*

**Beth Kirwan**

**Geo Aggregates**

Paving ▪ Grading ▪ Excavating ▪ Asphalt ▪ Concrete ▪ Rock ▪ Sand ▪ Landscape Material

1221 N Main Street Fort Bragg, CA 95437 | Tel [707.964.4033](tel:707.964.4033) | Cell [707-291-4868](tel:707-291-4868) |

[Beth@GeoAgg.net](mailto:Beth@GeoAgg.net) | [www.GeoAgg.net](http://www.GeoAgg.net)

134 LYSTRA COURT  
TELEPHONE (707) 528-3078

**REESE** CONSULTING  
GEOTECHNICAL  
& ASSOCIATES ENGINEERS

SANTA ROSA, CA 95403  
FACSIMILE (707) 528-2837

January 3, 2017

Job No. 569.1.3

Baxman Gravel Company  
1221 North Main Street  
Fort Bragg, CA 95437  
Attention: Dennis Kirwan

Report  
Geotechnical Site Observation  
and Reconnaissance  
California Mine ID #91-23-0028  
Ten Mile Second Crossing Quarry  
Mendocino County, California

This letter summarizes our onsite geotechnical observation and reconnaissance of the quarry slopes at the Ten Mile Second Crossing Quarry, northeast of Fort Bragg, in Mendocino County, California. The site is located on the south side of Ten Mile Creek, within Section 35, T20N, R17W, in the Dutchman's Knoll 7.5-Minute Quadrangle, (geographic coordinates of 39.51238 and -123.721515). The existing quarry area is shown on the Site Location Map, Plate 1.

### **Background**

The site was reportedly first quarried several decades ago. A Mining and Reclamation Plan and addendum were prepared by Miller Pacific Engineering Group in 2004 and 2007, respectively. The plan indicates that the operation covers approximately 13 acres. The quarry consists of a relatively steep rock face about 230 feet high, ranging from about 250 to 400 feet in width. Recommendations provided by Miller Pacific indicate that:

- 1) Slopes in soil and decomposed rock should be mined at a ratio no steeper than two horizontal to one vertical (2:1). Lightly weathered and fresh rock quarry slopes may be excavated as steep as 1:1;

Baxman Gravel Company  
January 3, 2017  
Page Two

- 2) Benches no narrower than 10 feet wide should be constructed across the mined slopes for every 25 feet of cut height and;
- 3) Benches should be angled back into the slope at a minimum of 2 percent and also slope slightly along the center to drain.

Michael Butler Civil Engineer prepared a Grading and Drainage Plan (Sheet C1) and Profiles and Cross Sections (Sheet C2) for the quarry dated October 10, 2008. The plans depict a final quarry face consisting of 1:1 slopes, separated by nine (9) benches, each 14 to 15 feet wide. The slope height between benches generally ranges from 25 to 30 feet, with an approximate planned 52-foot high slope at the bottom of the quarry, just above a planned sediment basin.

August 12, 2013, we prepared a report that addressed the geologic and geotechnical site review, and review of modifications made to the quarry slopes and benches. As indicated in our report, in order to make the toe of final quarry slope conform to the location of the planned sediment pond, the fifth bench (as measured from the bottom of slope) was eliminated, creating an approximately 52 foot high, 1:1 slope. We concluded that, based on field measurements of bedding and fracturing in the area of benches 4 to 6, the likelihood of large scale, joint or bedding controlled failure appears unlikely.

### **Purpose and Scope**

The purpose of our current assessment was to provide an evaluation of the exposed quarry slope excavated downslope from the previous bench, verify the slope was excavated in conformance with the approved reclamation plan, and previous modification in slopes addressed in our letter dated August 12, 2013, in order to satisfy the County of Mendocino Department of Planning and Building Services yearly inspection report request.

To assess the previous recommendations set forth in the Mining and Reclamation Plan and previous slope modification the following scope of work was performed:

- 1) Review of the Mining and Reclamation Plan and addendum (Miller Pacific, 2004 and 2007) and other published geologic literature pertinent to the subject site.  
The data reviewed are included in the attached References.

Baxman Gravel Company  
January 3, 2017  
Page Three

- 2) Site reconnaissance by our project geologist and principal engineer, accompanied by the quarry owner, to observe and map the exposed features between benches 3 and 4.
- 3) Review the exposed conditions within the area of the modified quarry slope face between benches 3 and 4 to assess the general effects on slope stability. The field data were plotted and presented on the attached Site Plan, Plate 3. The data gathered were evaluated to provide conclusions and recommendations regarding:
  - Potential impacts that might be caused by the modifications to the quarry face, primarily associated with slope stability; and
  - Recommendations for mitigating the potential impacts, if appropriate.

A detailed description of the Regional Geologic setting and site geologic conditions was provided in our previous report dated August 12, 2013. Subsurface investigation was not performed as part of the current review. Our current review was focused on the area below the removed bench, as shown on Plate 4 (Bench 5). An evaluation of the overall stability of the quarry slopes was not performed.

#### **Site Conditions**

The conditions observed during our site reconnaissance of December 2016 are shown on the updated Site Plan and Geologic Map, Plate 3. The cut slope observed between benches 3 and 4 has been excavated at an inclination of approximately 1:1 and is about 50 feet tall. The 2004 Mining and Reclamation Plan describes the bedrock in the quarry face as consisting mainly of massively bedded, closely fractured sandstone. The bedrock structure within the quarry face was described as having a consistent northwest strike and steep northeast to vertical dip in bedding, shears, and jointing (fractures). During our field mapping in the vicinity between Benches 3 and 4 (see Plate 3) we observed bedding orientations in bedrock were generally confirmed to strike from about Due North to about 15 to 20 degrees west of north, and to dip steeply, predominantly southwest, or favorably into the slope. Bedrock is generally closely to moderately fractured and little weathered in the area between Benches 3 and 4. A cross-section of the quarry face is provided on Plate 4.

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January 3, 2017  
Page Four

The 2004 Mine and Reclamation Plan identified several zones of sheared rock that generally appeared to strike to the north in the quarry face. During our 2013 site visit, we noted a zone of shearing within the quarry face that varied in strike from about Due North to about 5 degrees east of north, and dipped from vertical to very steeply to the west. This shear zone appears to be continuous and was mapped to extend at least partially below Bench 3. The shear zone appeared to consist mainly of moderately hard shale.

### **Conclusions**

Conditions observed in the quarry face were generally consistent with those described in the 2004 Mining and Reclamation Plan and slope modification recommendations provided in our 2013 report. Overall, we noted that sandstone and shale strata generally dip steeply into or across the quarry face. Field measurements of bedding and fracturing in the area between Benches 3 and 4 did not reveal indications of large-scale, adversely oriented geologic features. Therefore, we judge the likelihood of large scale, joint or bedding controlled failures in this area of the quarry face appears low. Also, we did not observe evidence of recent slope instability between benches 3 and 4.

### **Supplemental Evaluation**

This evaluation consisted of reviewing our previous work at the site and our December 2016 site reconnaissance. Conceivably, areas of small landslides or instability may be present in the quarry face between benches 3 and 4 that were not observed during our reconnaissance. If areas of instability are found during the quarry, we should review the exposed conditions to provide supplemental recommendations, as needed.

### **LIMITATIONS**

We have performed the site reconnaissance and prepared this report in accordance with generally accepted standards of the geotechnical engineering profession. No warranty, either express or implied, is given.

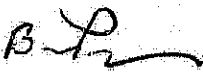
Baxman Gravel Company  
January 3, 2017  
Page Five

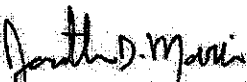
We trust this provides the information needed at this time. If you have questions or wish to discuss this in more detail, please do not hesitate to contact us. The following plates are attached and complete this report.

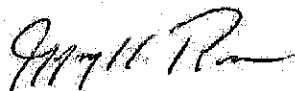
Plate 1	Site Location Map
Plate 2	Vicinity Geologic Map
Plate 3	Updated Site Plan and Geologic Map
Plate 4	Cross-Section of Quarry Slope

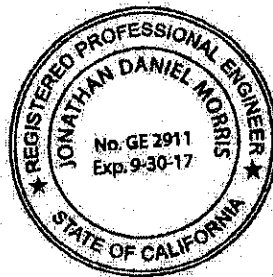
Yours very truly,

REESE & ASSOCIATES

  
Brian F. Piazza  
Project Geologist

  
Jonathan D. Morris  
Geotechnical Engineer No. 2911

  
Jeffrey K. Reese  
Civil Engineer No. 47753



BFP/JKR:nay/ra/Job No. 569.1.3  
Copies Submitted: 3

Baxman Gravel Company  
January 3, 2017  
Page Six

### REFERENCES

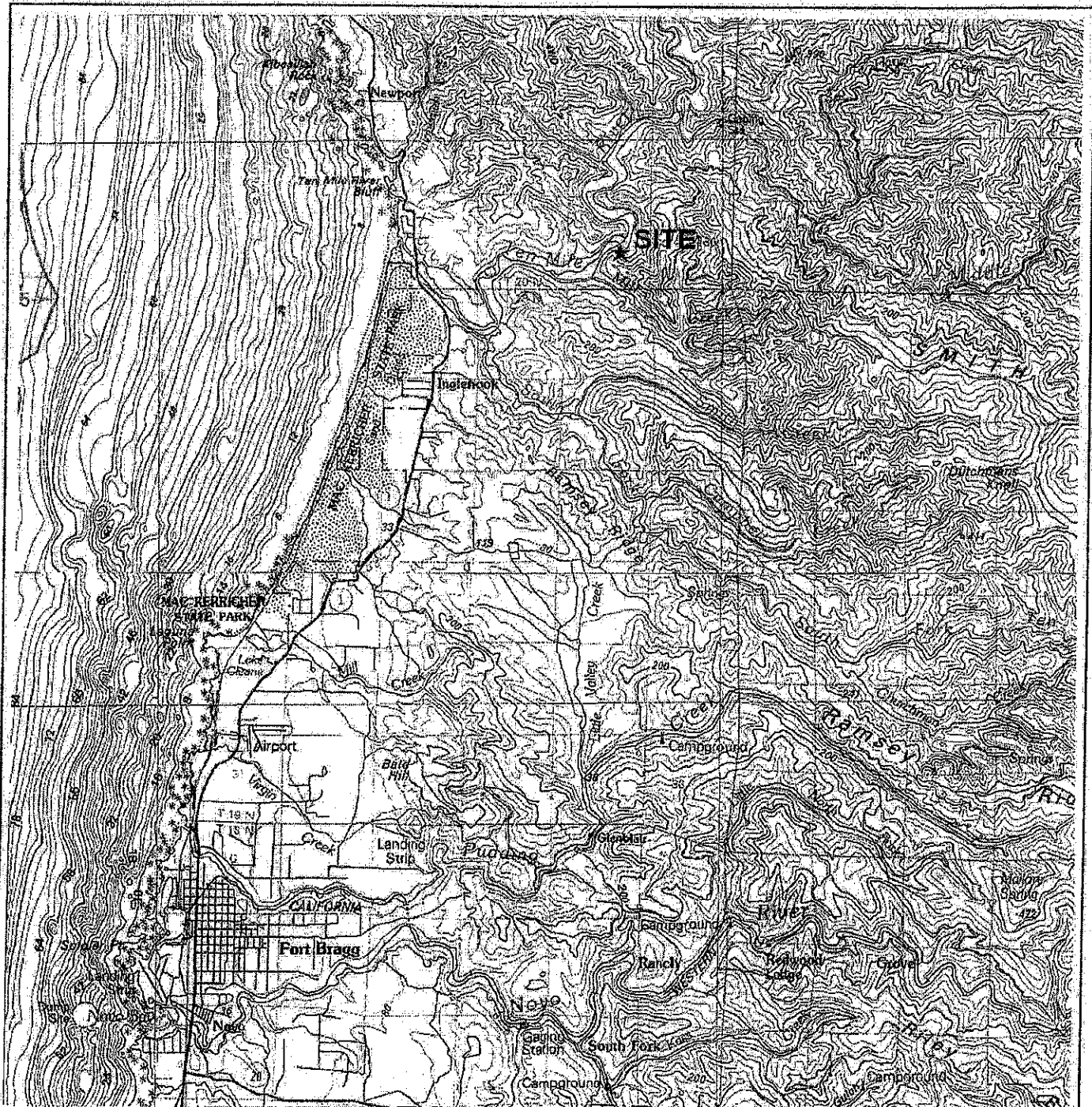
California Division of Mines and Geology, 1997, Factors Affecting Landslides in Forested Terrain: CDMG Note 50, 5p., revised June 1997.

Kelley, F.R., 1983, Geology and Geomorphic Features Related to Landsliding, Dutchman's Knoll 7.5' Quadrangle, Mendocino County, California: California Division of Mines and Geology, North Coast Watersheds Mapping, DMG Open File Report 83-33, Scale 1:24,000 (also reproduced on DMG CD 99-002).

Miller Pacific Engineering Group, 2004, Geologic & Geotechnical Report, Mining and Reclamation Plan, Second Crossing Quarry on Ten Mile River, Rural Mendocino County, California: unpublished consultant's report to Baxman Gravel Co. Inc., dated December 11, 2004, 21p, with illustrations.

Miller Pacific Engineering Group, 2007, Addendum to the Reclamation Plan for the Ten Mile Second Crossing Quarry and Ten Mile Screening Plant. Responses to Comments by the State Department of Conservation, Office of Mine Reclamation.

Reese & Associates, August 12, 2013, Geologic and Geotechnical Site Review. Modifications to 56 peas and Birching. Ten Mile Second Crossing Quarry, Mendocino County, California.



0 1 2  
SCALE IN MILES



**REESE &  
ASSOCIATES**  
CONSULTING  
GEOTECHNICAL  
ENGINEERS

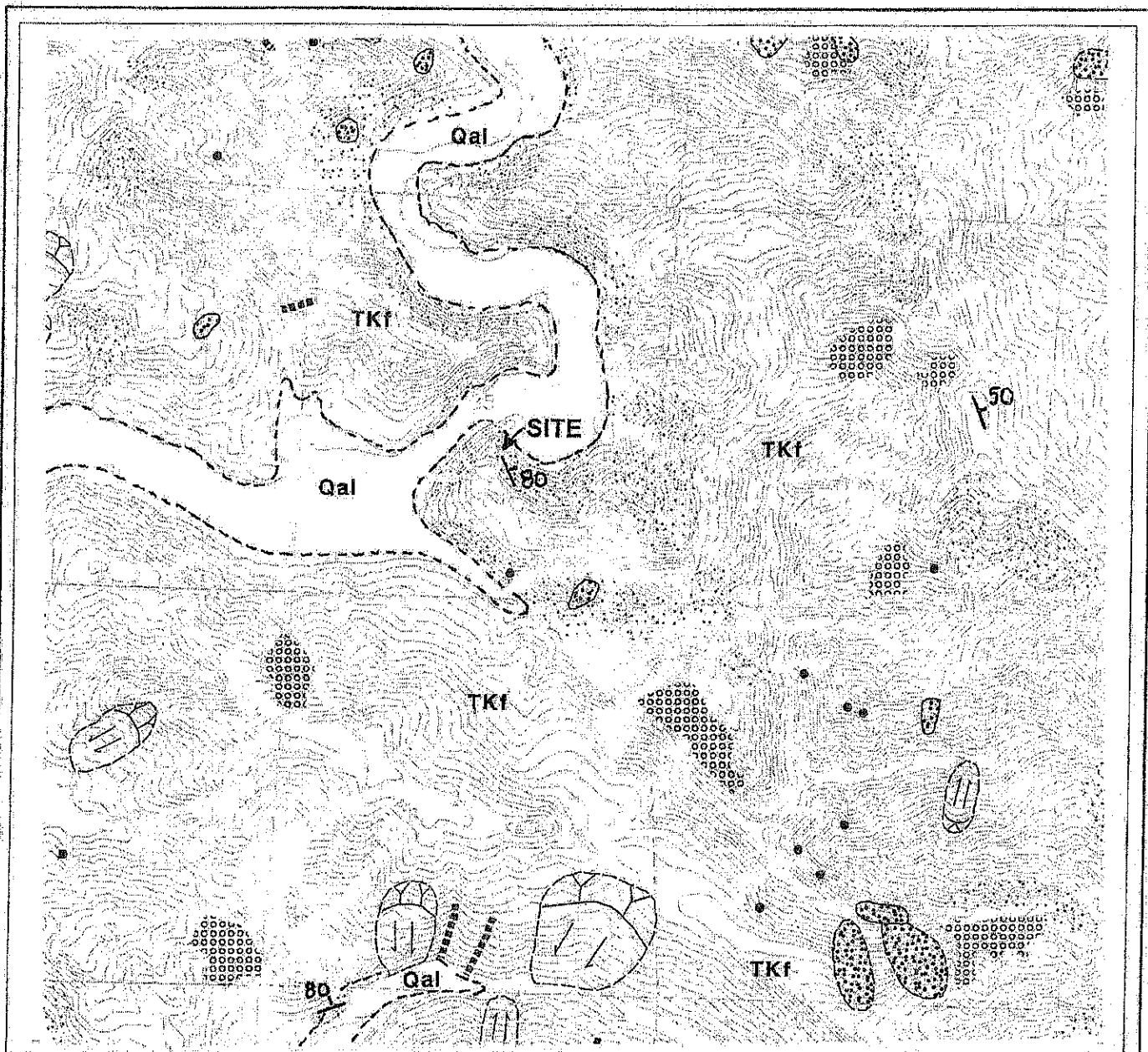
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Date: 01-03-17  
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LOCATION MAP  
TEN MILE SECOND CROSSING QUARRY  
FORT BRAGG, CALIFORNIA

PLATE

**1**





**EXPLANATION:**

Reference: Kelley, 2004, CDMG.

Qal - Alluvium

TKf - Franciscan Complex bedrock  
(Coastal Belt Unit)

--- Contact between units  
(approximate)

10 Attitude of bedding



Landslide, arrows show inferred  
direction of movement



Amphitheater Slopes



Debris Slides



Disrupted Ground

0 2,000

SCALE IN FEET

N

**REESE &  
ASSOCIATES**  
CONSULTING  
GEOTECHNICAL  
ENGINEERS

Job No: 569.13

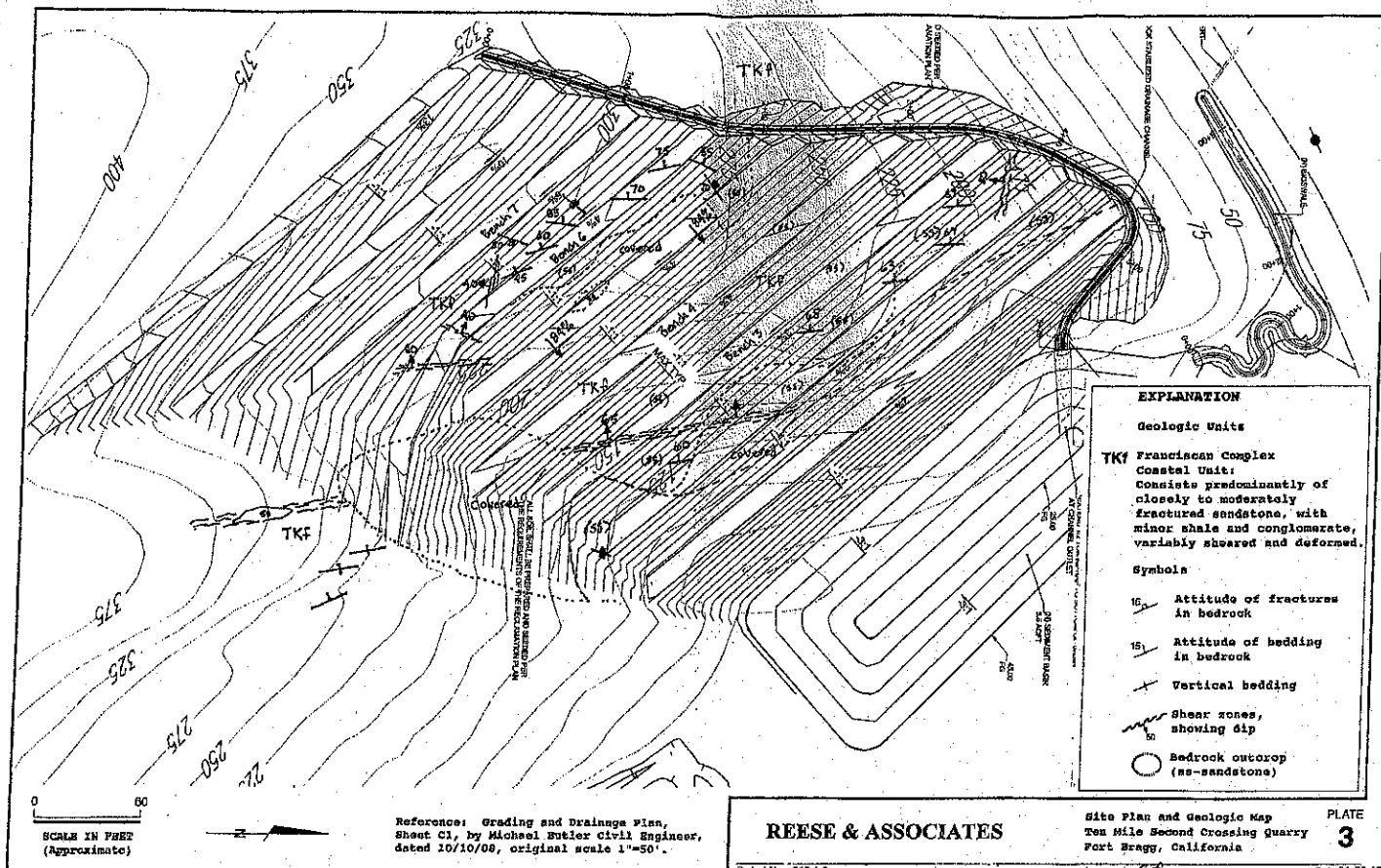
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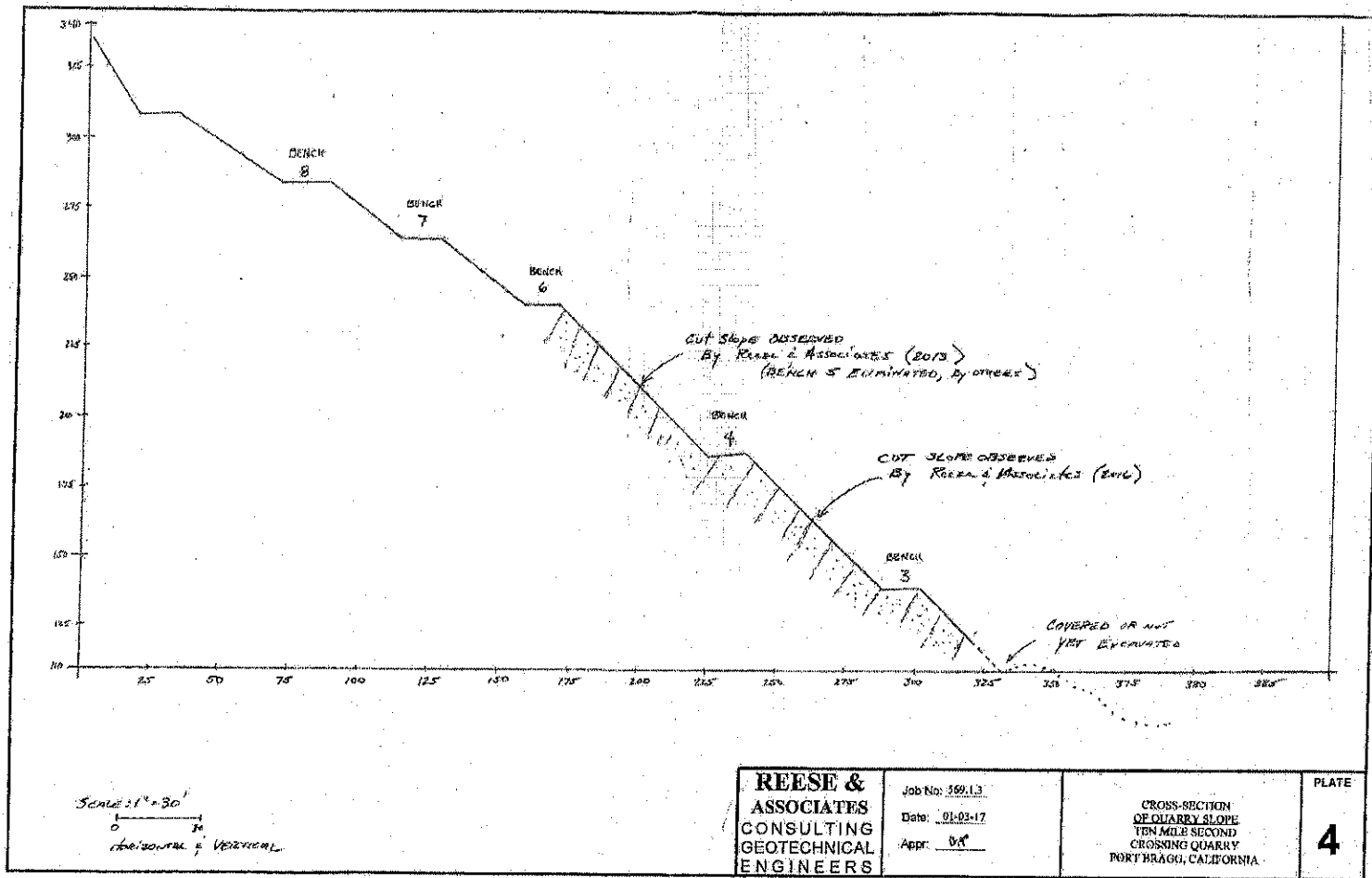
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VICINITY GEOLOGIC MAP  
TEN MILE SECOND CROSSING QUARRY  
FORT BRAGG, CALIFORNIA

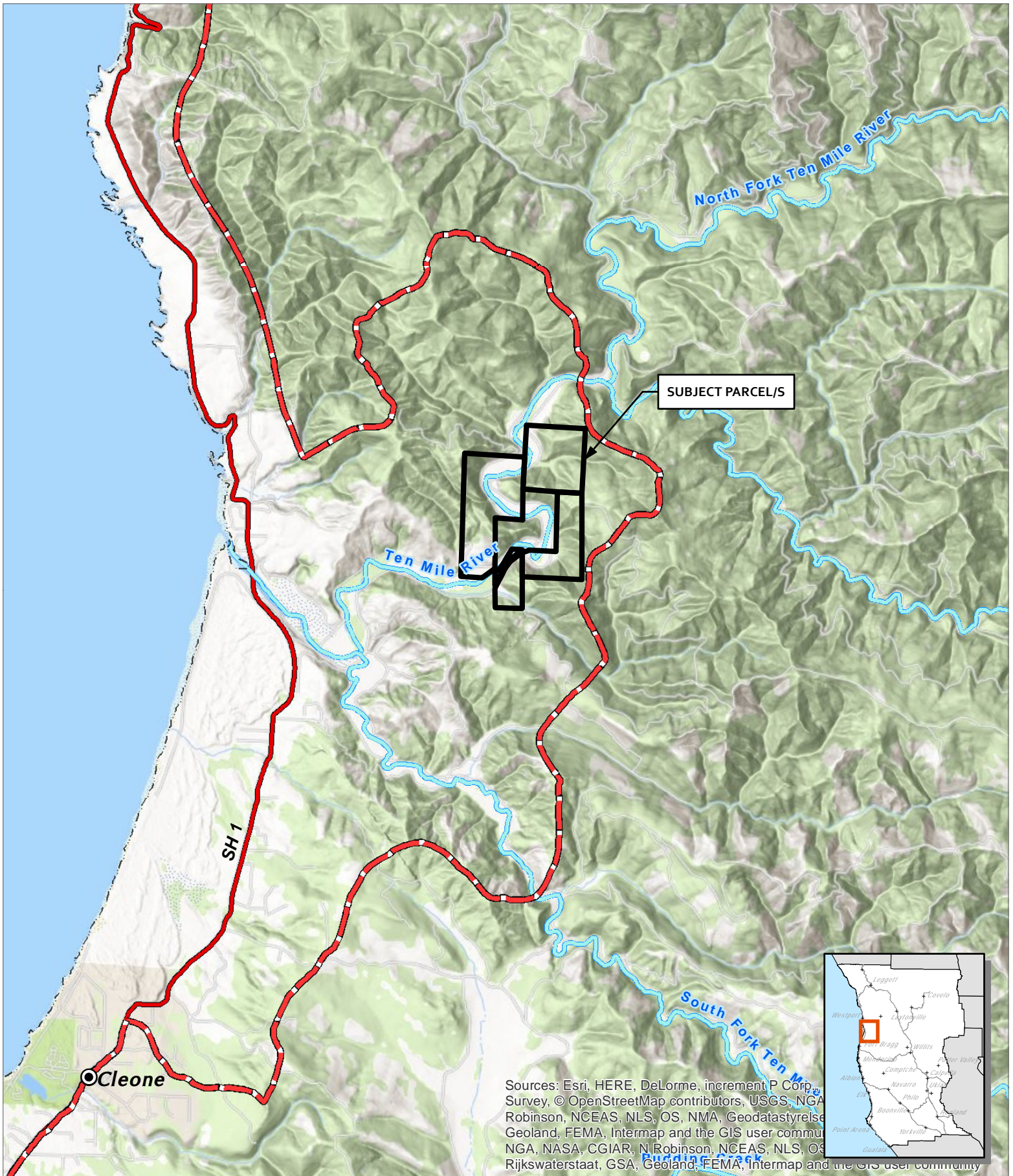
PLATE

**2**



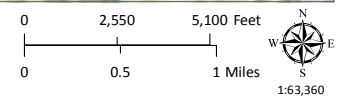






CASE: REC 2018-0001  
 OWNER: Parker Ten Mile Ranch  
 APN: 015-140-51, ET AL  
 APLCT: Geo Aggregates  
 AGENT: Linwood Gill  
 ADDRESS: 28811 N. Hwy. 1, Fort Bragg

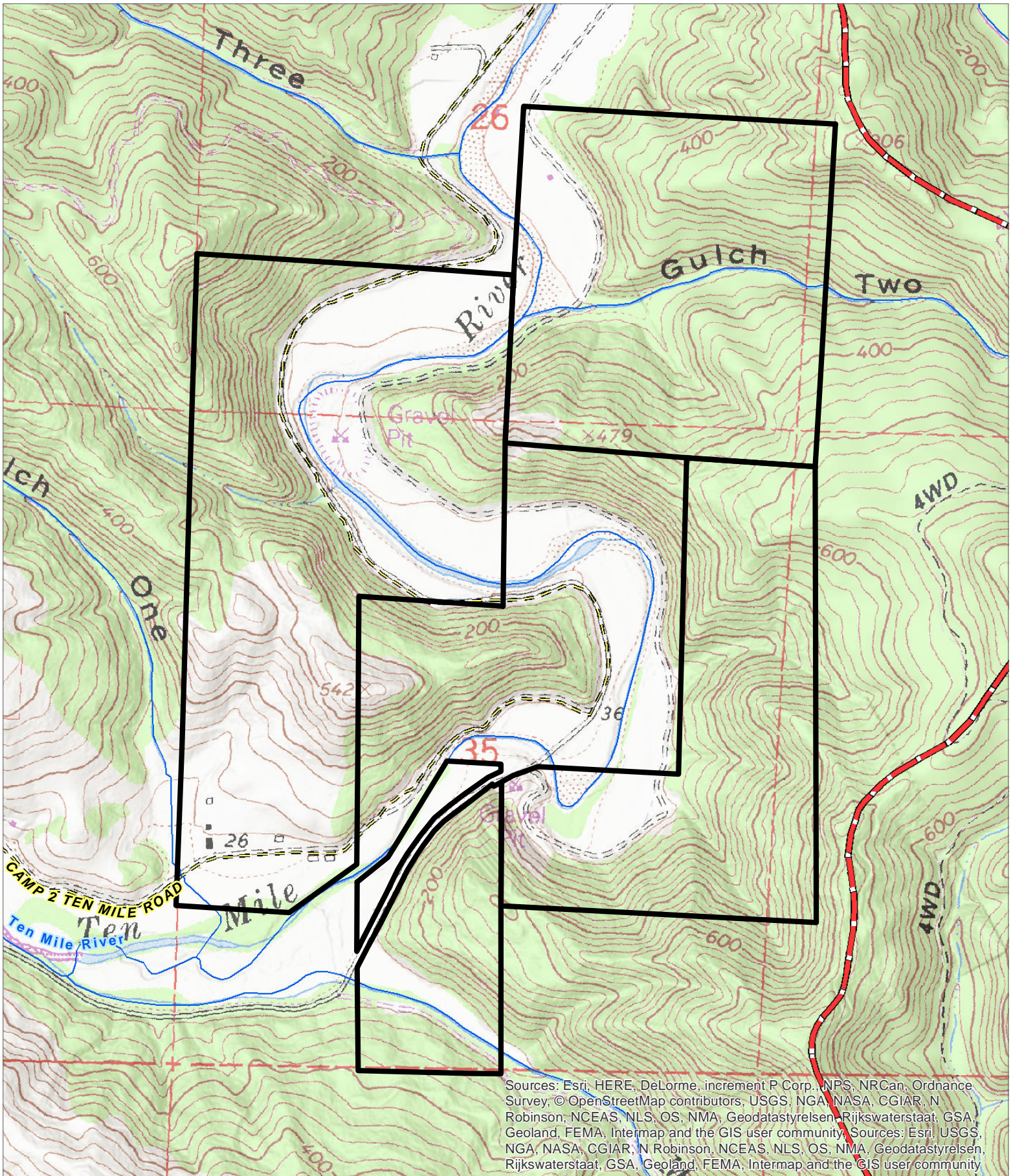
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- Highways
- ▬ Coastal Zone Boundary
- ~ Major Rivers



LOCATION MAP

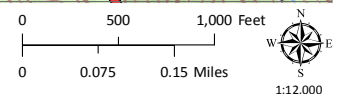
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 ADDRESS: 28811 N. Hwy. 1, Fort Bragg

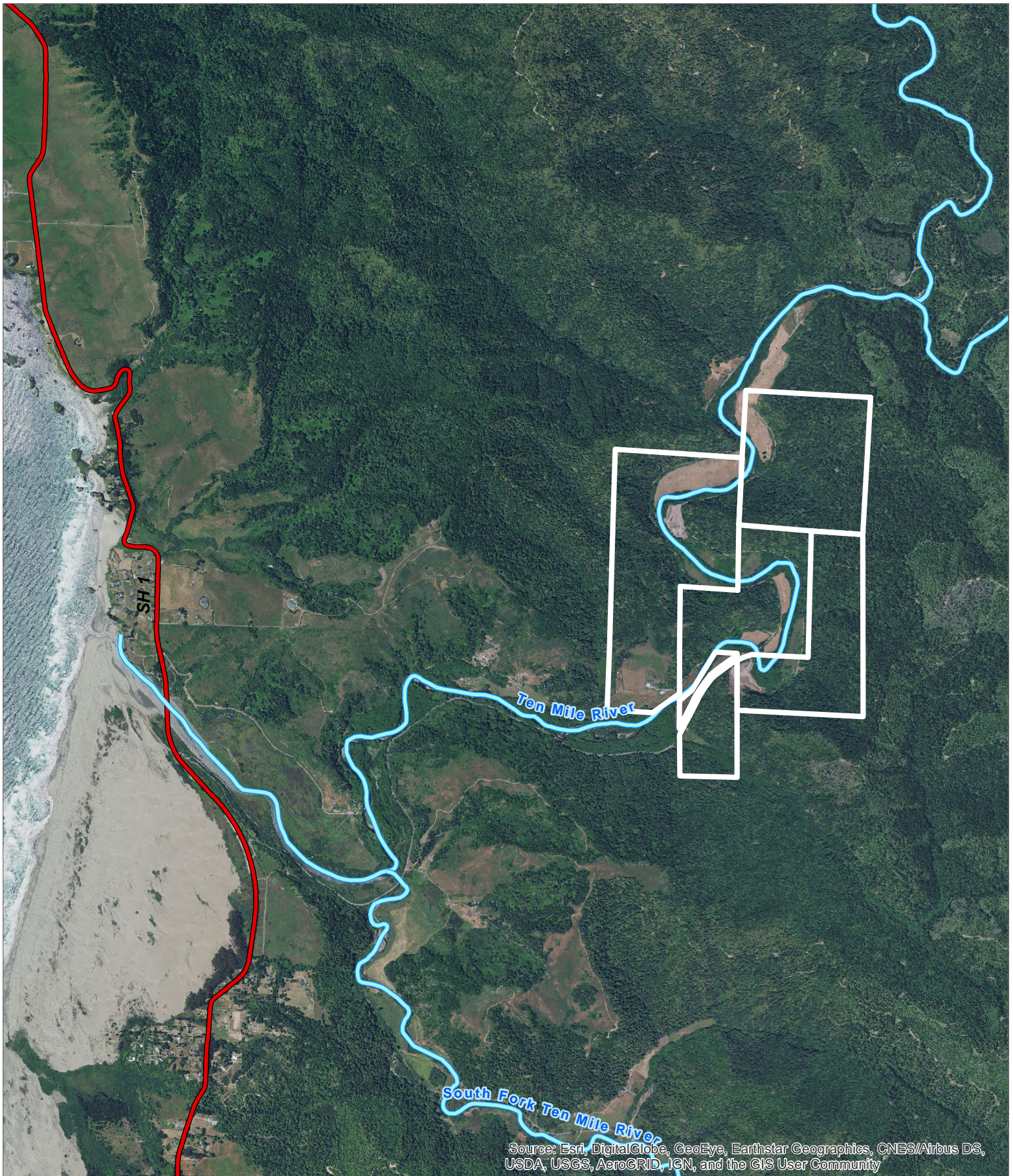
- Coastal Zone Boundary
- Major Rivers
- Named Rivers
- Private Roads
- Driveways/Unnamed Roads





**TOPOGRAPHIC MAP**  
 CONTOUR INTERVAL IS 40 FEET

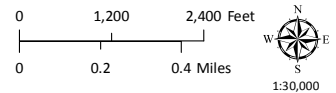
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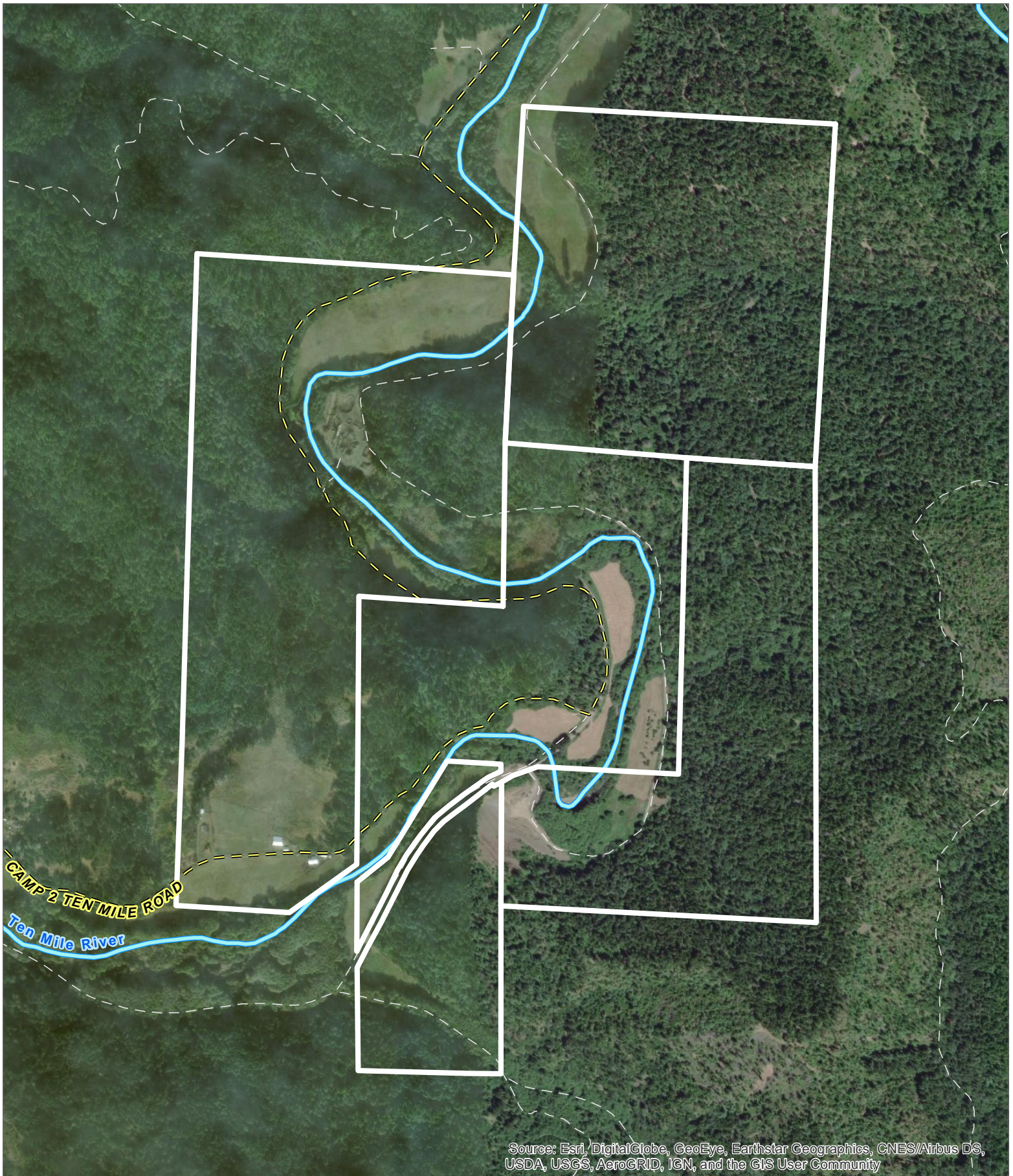
 Major Rivers  
 Highways



AERIAL IMAGERY

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OWNER: Parker Ten Mile Ranch

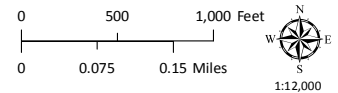
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APLCT: Geo Aggregates

AGENT: Linwood Gill

ADDRESS: 28811 N. Hwy. 1, Fort Bragg

-  Major Rivers
-  Named Rivers
-  Private Roads
-  Driveways/Unnamed Roads



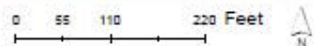
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**COMPASS LAND**  
GROUP

**Legend:**

- Approximate Reclamation Boundary
- Approximate Active Mining Area
- Approximate area of in-progress or completed reclamation
- Existing Road
- Drainage Channel
- River

## Ten Mile Quarry

Reclamation Plan Renewal  
Existing Site Conditions  
Mining Area

Mendocino County, California

CASE: REC 2018-0001

OWNER: Parker Ten Mile Ranch

APN: 015-140-51, ET AL

APLCT: Geo Aggregates

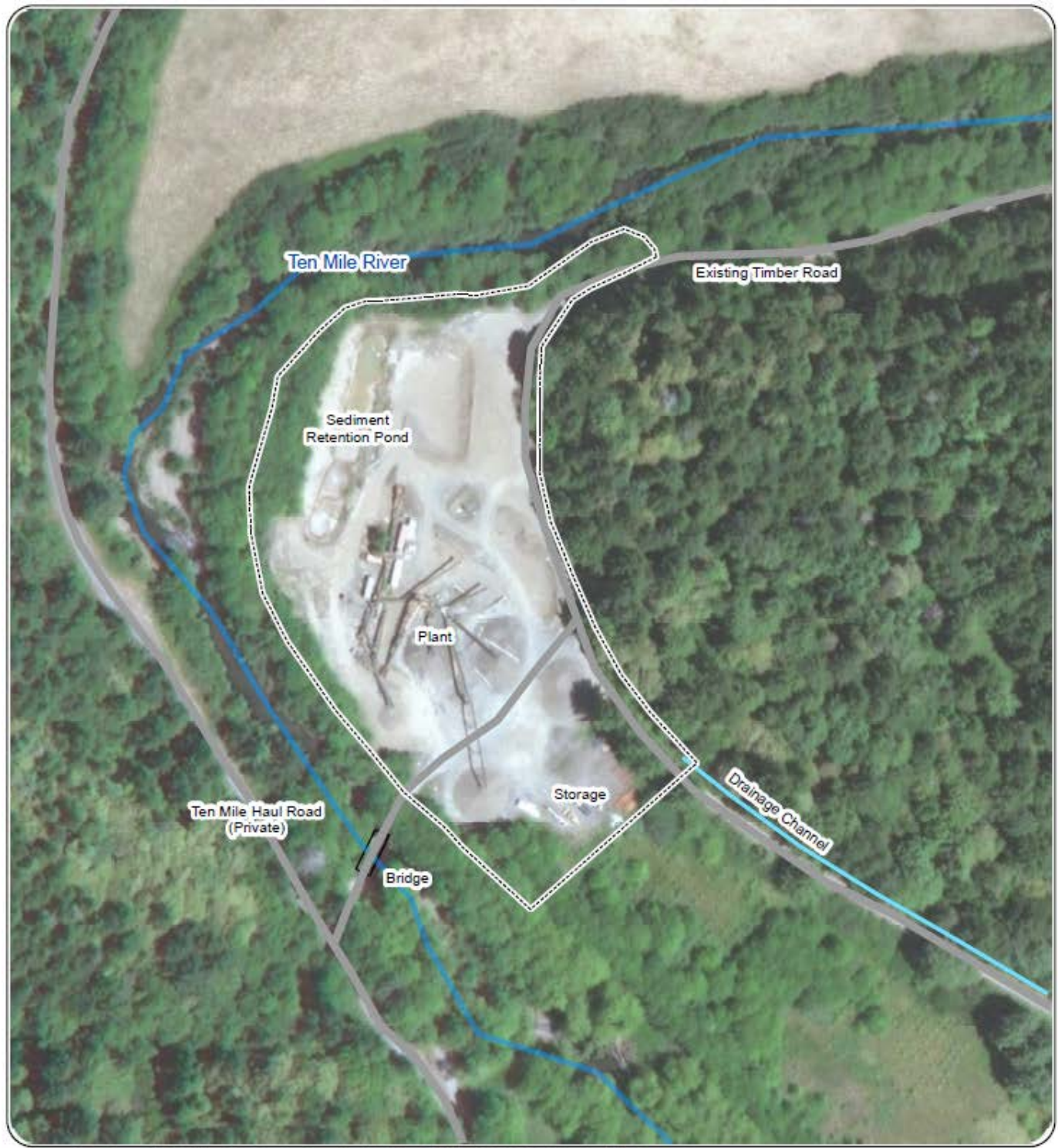
AGENT: Linwood Gill

ADDRESS: 28811 N. Hwy. 1, Fort Bragg

SITE PLAN: MINING AREA

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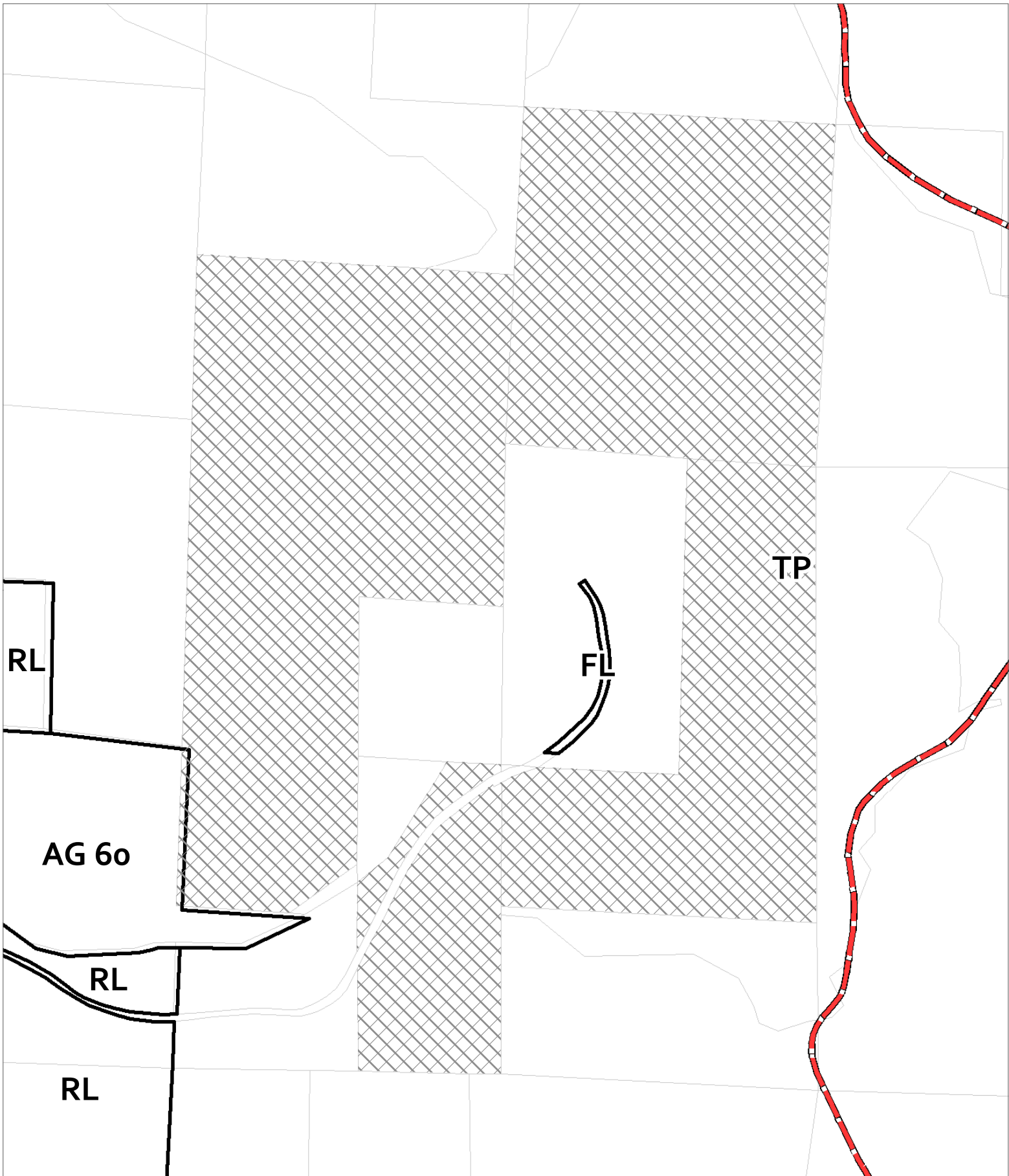
- Legend:**
- [ ] Approximate Reclamation Boundary
  - Existing Road
  - Drainage Channel
  - River

**Ten Mile Quarry**  
 Reclamation Plan Renewal  
 Existing Site Conditions  
 Processing Area  
 Mendocino County, California



CASE: REC 2018-0001  
 OWNER: Parker Ten Mile Ranch  
 APN: 015-140-51, ET AL  
 APLCT: Geo Aggregates  
 AGENT: Linwood Gill  
 ADDRESS: 28811 N. Hwy. 1, Fort Bragg

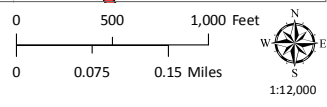
SITE PLAN: PROCESSING AREA

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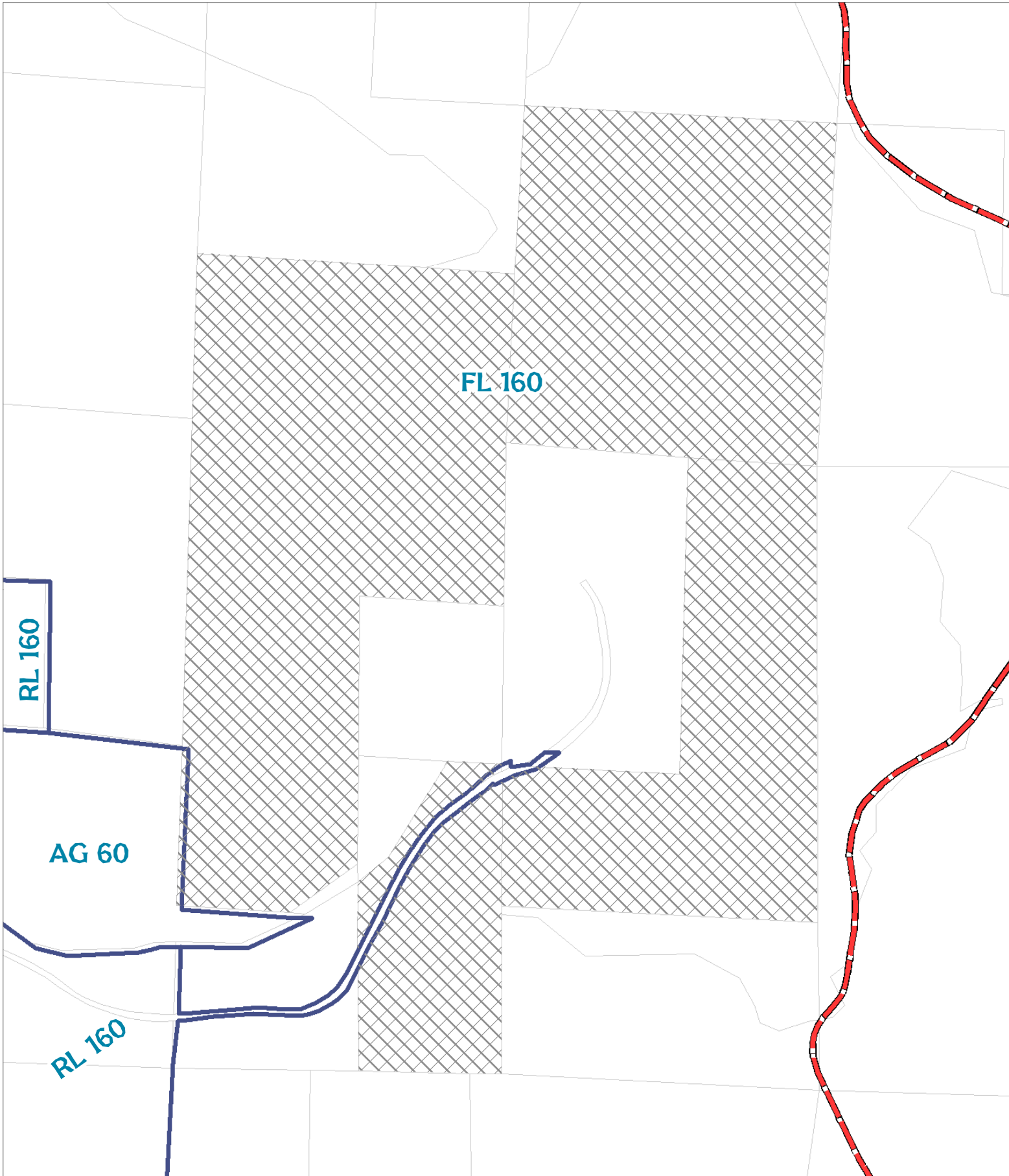
CASE: REC 2018-0001  
OWNER: Parker Ten Mile Ranch  
APN: 015-140-51, ET AL  
APLCT: Geo Aggregates  
AGENT: Linwood Gill  
ADDRESS: 28811 N. Hwy. 1, Fort Bragg

 Coastal Zone Boundary  
 Zoning Districts





**ZONING DISPLAY MAP**

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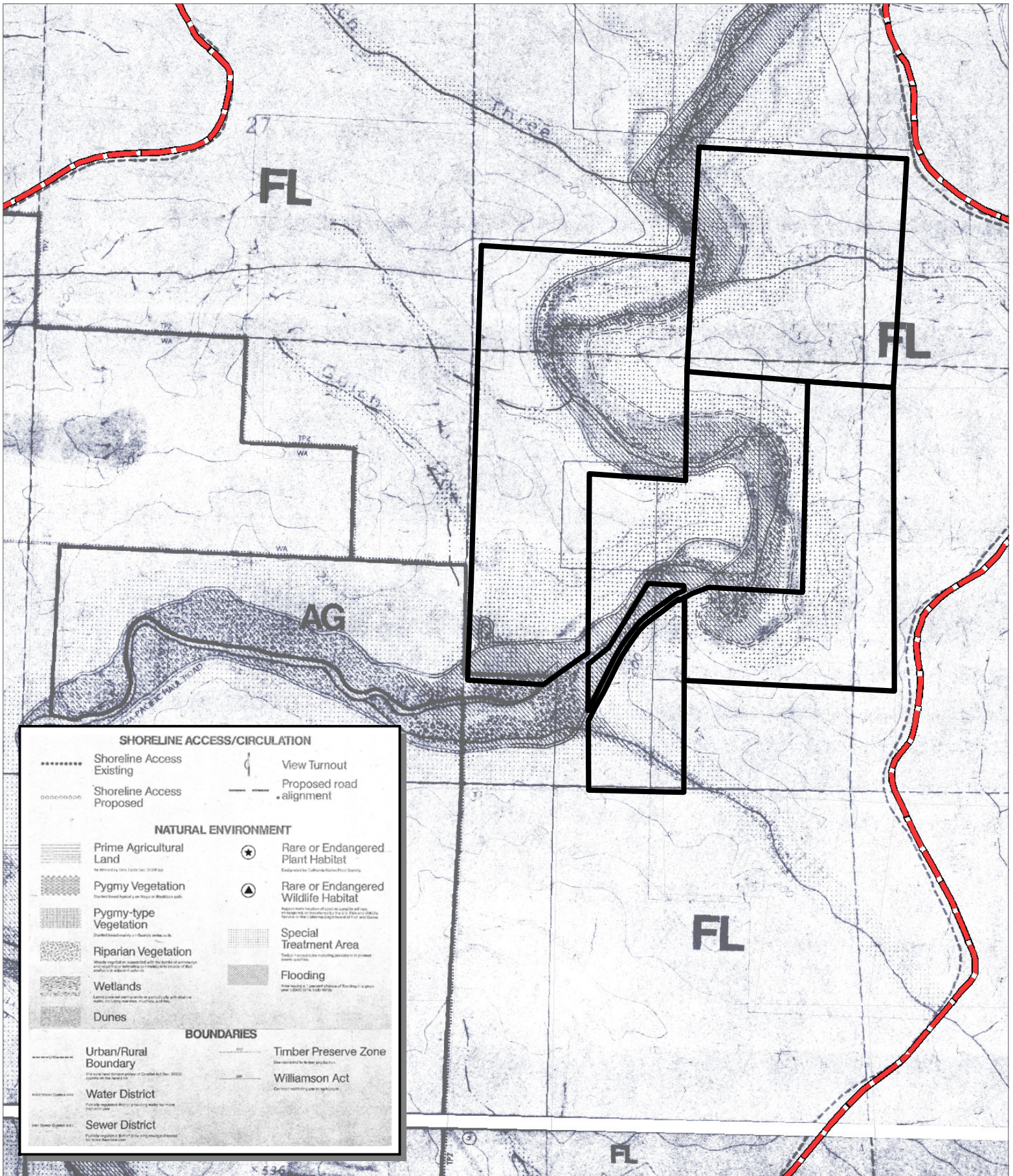
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OWNER: Parker Ten Mile Ranch  
APN: 015-140-51, ET AL  
APLCT: Geo Aggregates  
AGENT: Linwood Gill  
ADDRESS: 28811 N. Hwy. 1, Fort Bragg

 Coastal Zone Boundary  
 General Plan Classes

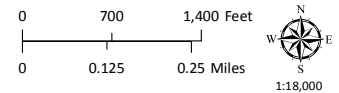
GENERAL PLAN CLASSIFICATIONS

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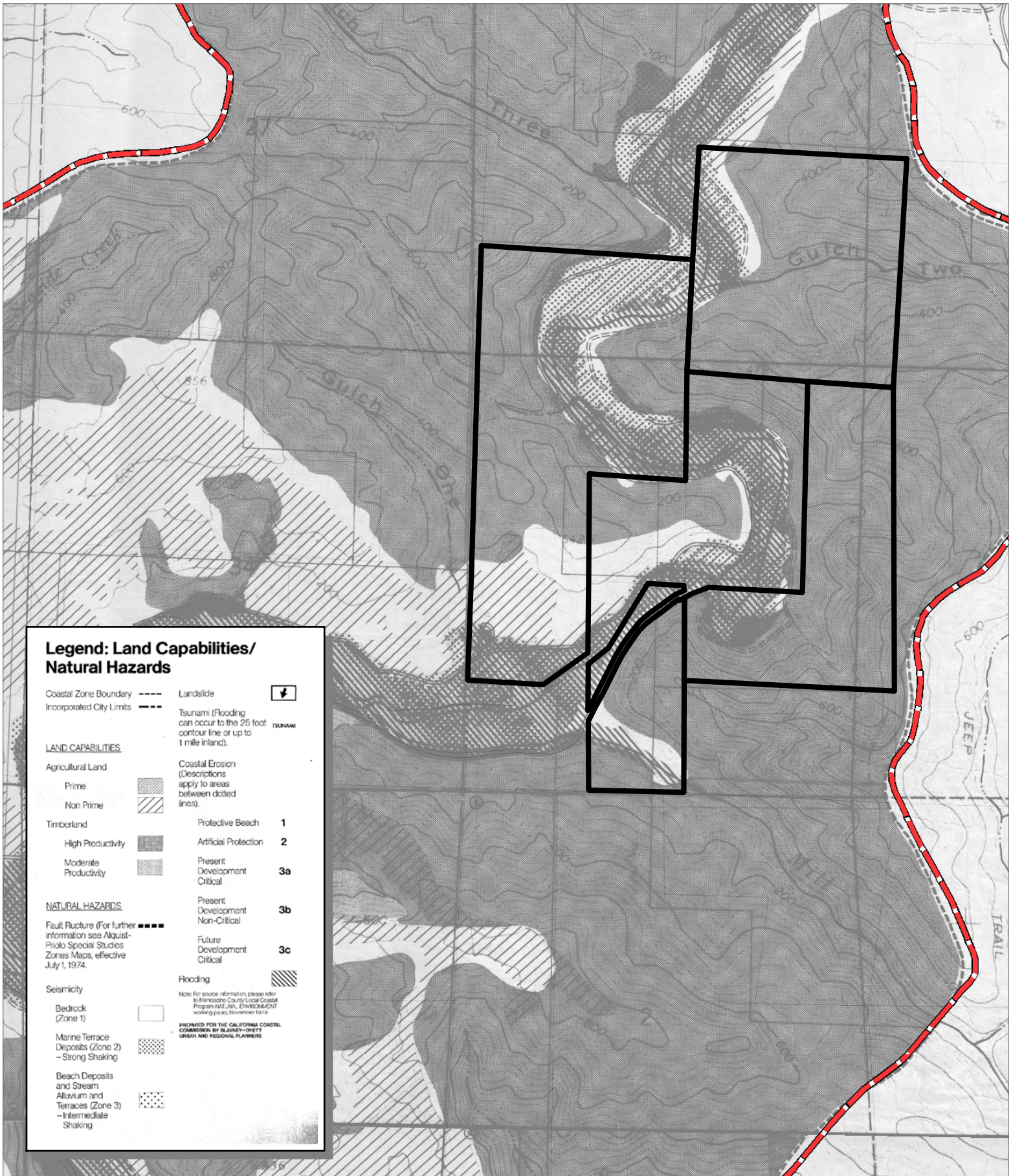
CASE: REC 2018-0001  
 OWNER: Parker Ten Mile Ranch  
 APN: 015-140-51, ET AL  
 APLCT: Geo Aggregates  
 AGENT: Linwood Gill  
 ADDRESS: 28811 N. Hwy. 1, Fort Bragg



LCP LAND USE MAP 9: TEN MILE RIVER

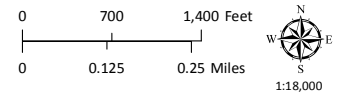
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CASE: REC 2018-0001  
OWNER: Parker Ten Mile Ranch  
APN: 015-140-51, ET AL  
APLCT: Geo Aggregates  
AGENT: Linwood Gill  
ADDRESS: 28811 N. Hwy. 1, Fort Bragg

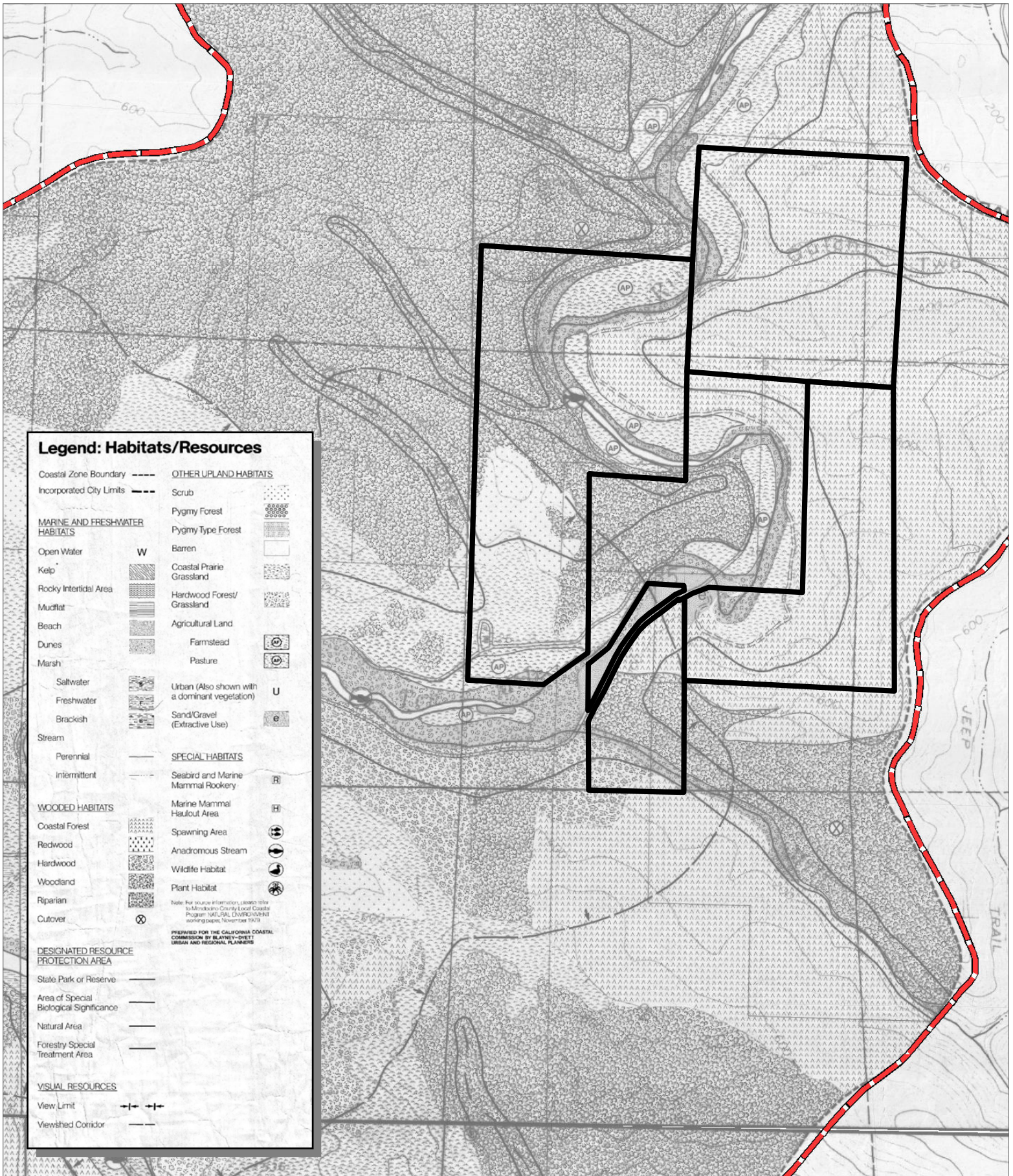
Coastal Zone Boundary



LCP LAND CAPABILITIES & NATURAL HAZARDS

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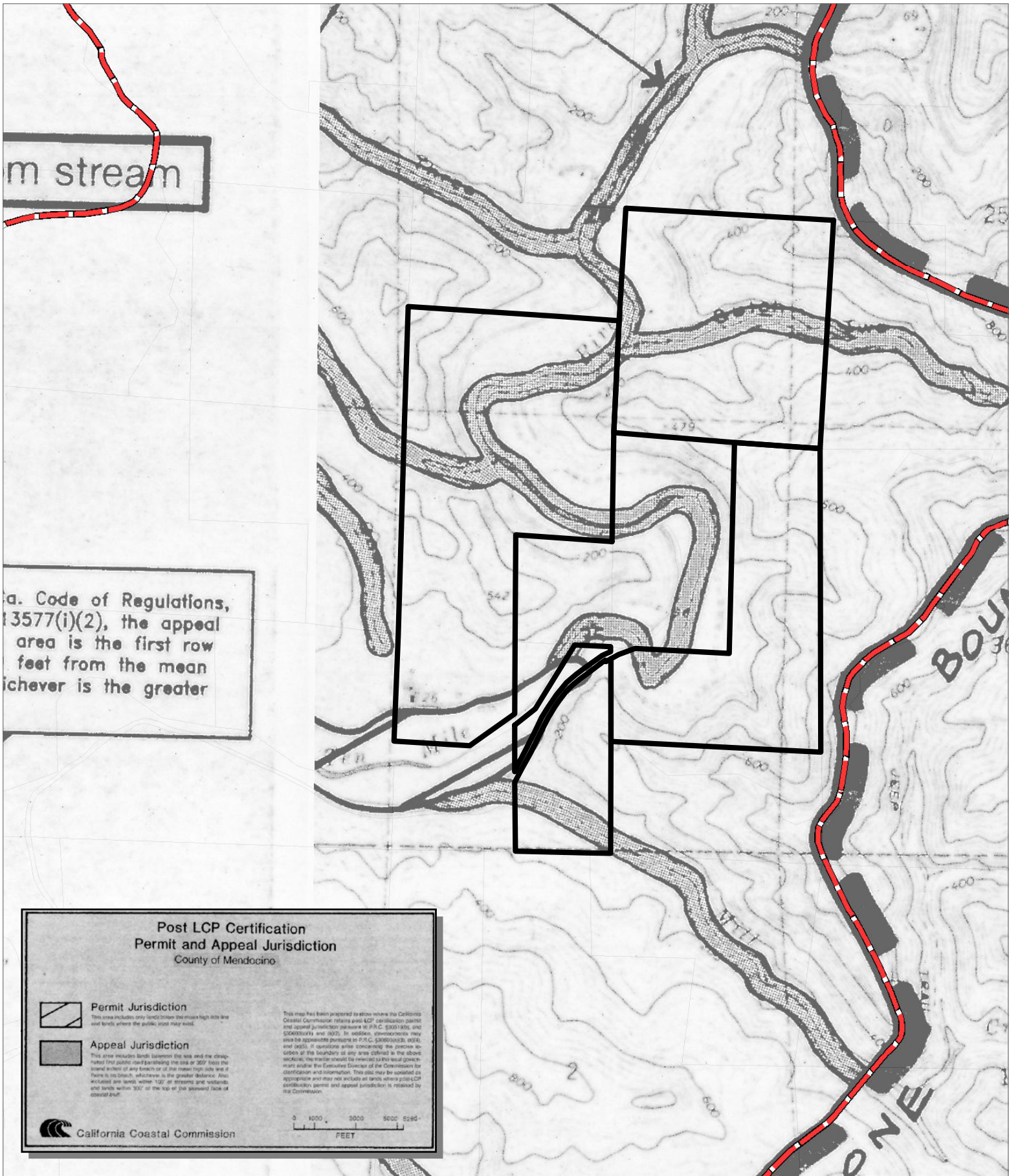


CASE: REC 2018-0001  
 OWNER: Parker Ten Mile Ranch  
 APN: 015-140-51, ET AL  
 APLCT: Geo Aggregates  
 AGENT: Linwood Gill  
 ADDRESS: 28811 N. Hwy. 1, Fort Bragg

LCP HABITATS & RESOURCES

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





m stream

a. Code of Regulations,  
13577(i)(2), the appeal  
area is the first row  
feet from the mean  
whichever is the greater

**Post LCP Certification  
Permit and Appeal Jurisdiction  
County of Mendocino**




**Permit Jurisdiction**  
This area includes only lands above the mean high tide line and lands where the public shore may exist.



**Appeal Jurisdiction**  
This area includes lands between the sea and the designated first public road paralleling the sea or 300' from the land extent of any beach or of the mean high tide line if there is no beach, whichever is the greater distance. Also included are lands within 150' of streams and wetlands and lands within 300' of the top of the seaward face of coastal bluff.


This map has been prepared to show where the California Coastal Commission retains post LCP certification permit and appeal jurisdiction pursuant to P.C. §30519.05, and §30600.04(a) and (b)(2). In addition, developments may also be appropriate pursuant to P.C. §30600.03(b), (c)(3), and (d)(5). It is requested that the permit holder or the applicant of the boundary of any area defined in the above sections, the matter should be referred to the local government and the Executive Director of the Commission for clarification and information. This area may be located as appropriate and may not include all lands where post LCP certification permit and appeal jurisdiction is retained by the Commission.



California Coastal Commission

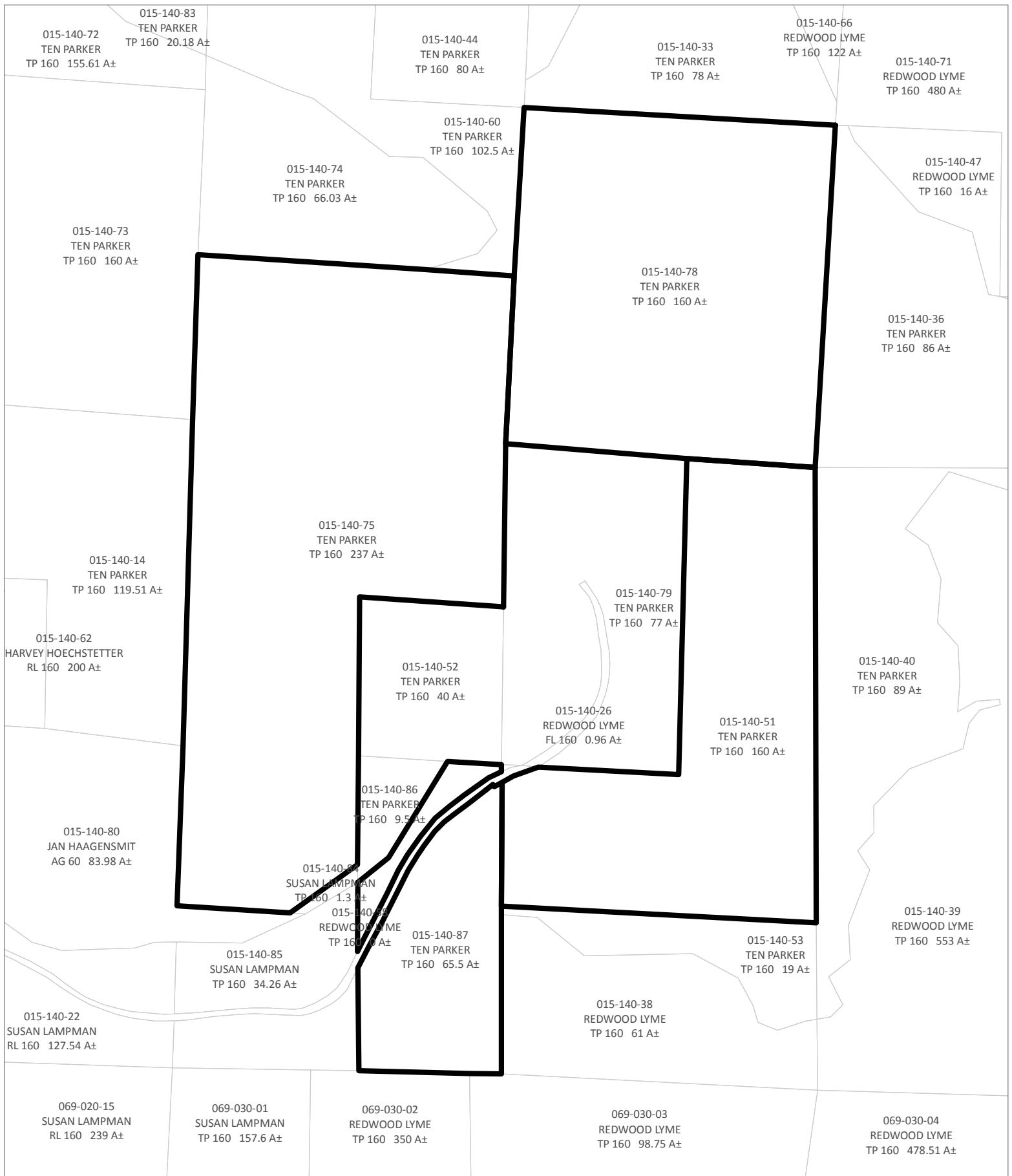
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FEET

CASE: REC 2018-0001  
OWNER: Parker Ten Mile Ranch  
APN: 015-140-51, ET AL  
APLCT: Geo Aggregates  
AGENT: Linwood Gill  
ADDRESS: 28811 N. Hwy. 1, Fort Bragg

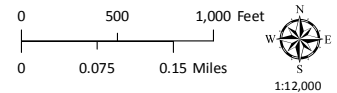
 Coastal Zone Boundary

APPEALABLE AREAS

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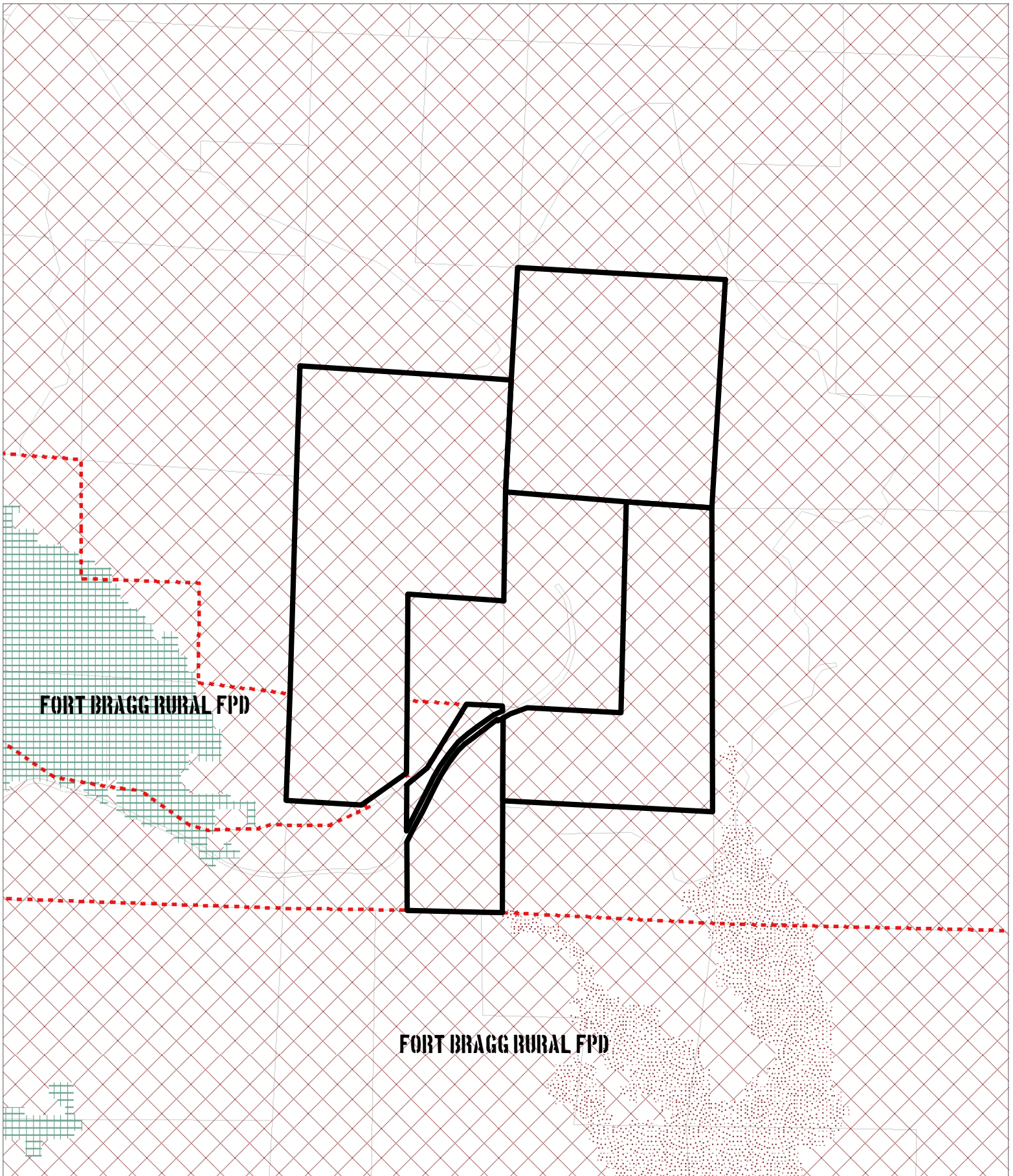
CASE: REC 2018-0001  
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 ADDRESS: 28811 N. Hwy. 1, Fort Bragg



ADJACENT PARCELS

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County Fire Districts



Moderate Fire Hazard



Very High Fire Hazard

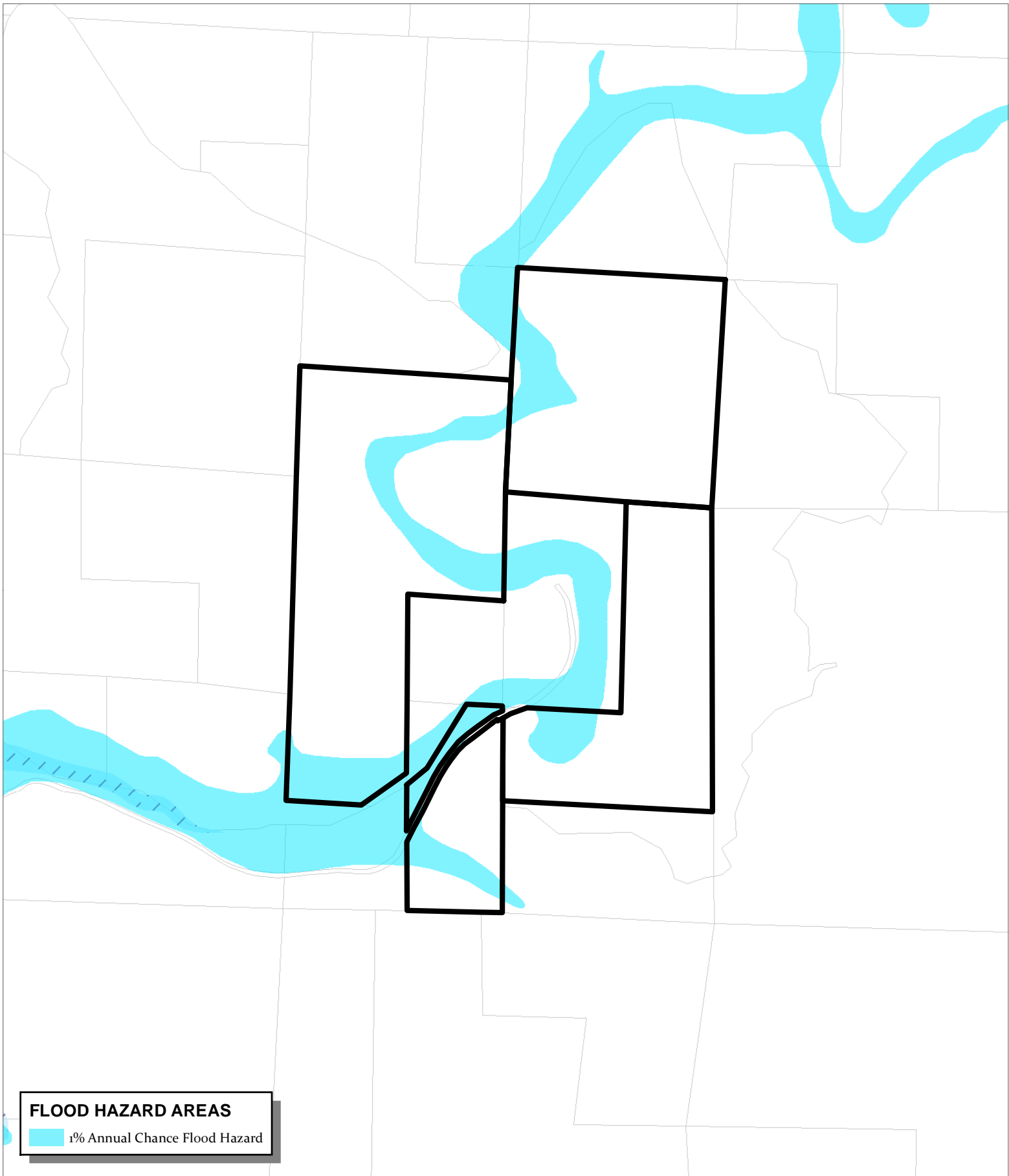


High Fire Hazard

**FIRE HAZARD ZONES & RESPONSIBILITY AREAS**

STATE RESPONSIBILITY AREA

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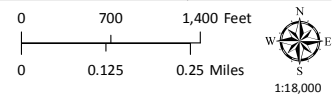


**FLOOD HAZARD AREAS**

1% Annual Chance Flood Hazard

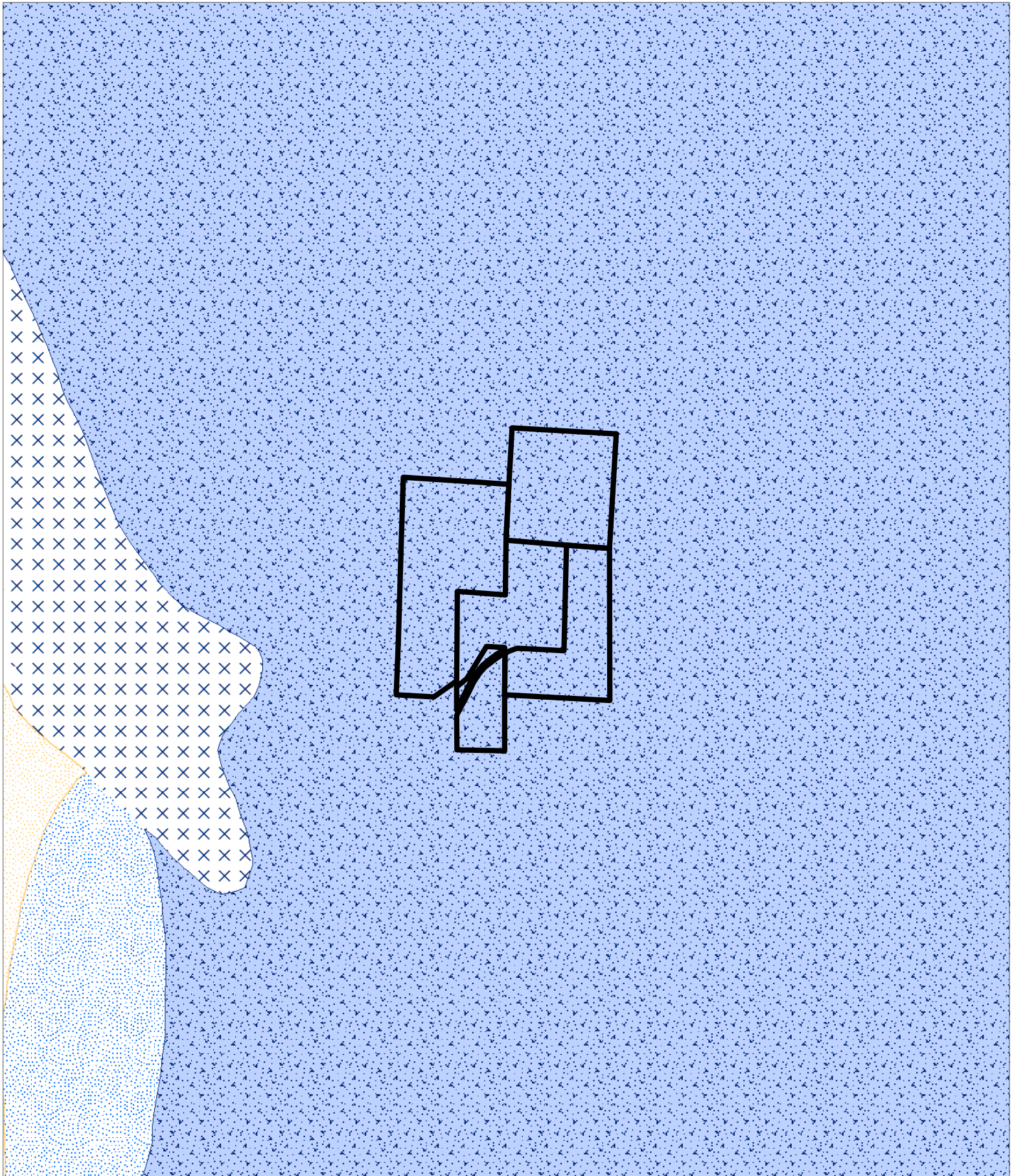
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Tsunami Inundation Zones






**SPECIAL FLOOD HAZARD AREAS**

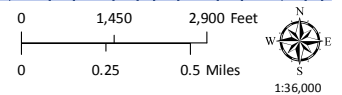
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-  Critical Water Areas
-  Sufficient Water Resources
-  Critical Water Resources Bedrock

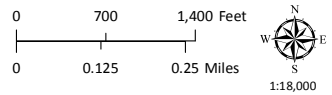
 Dunes



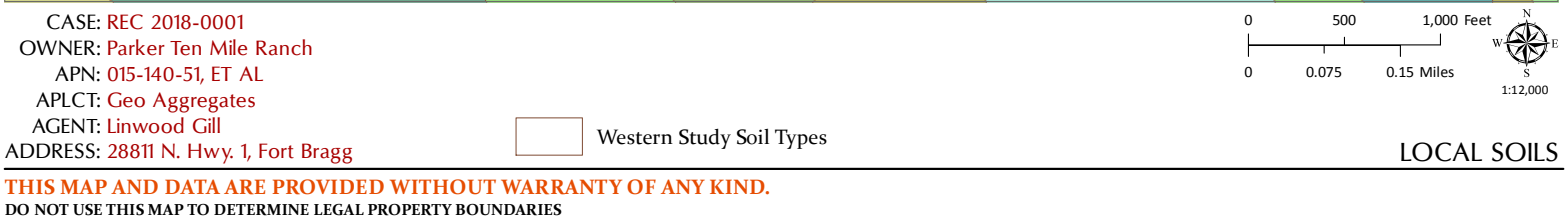
## GROUND WATER RESOURCES

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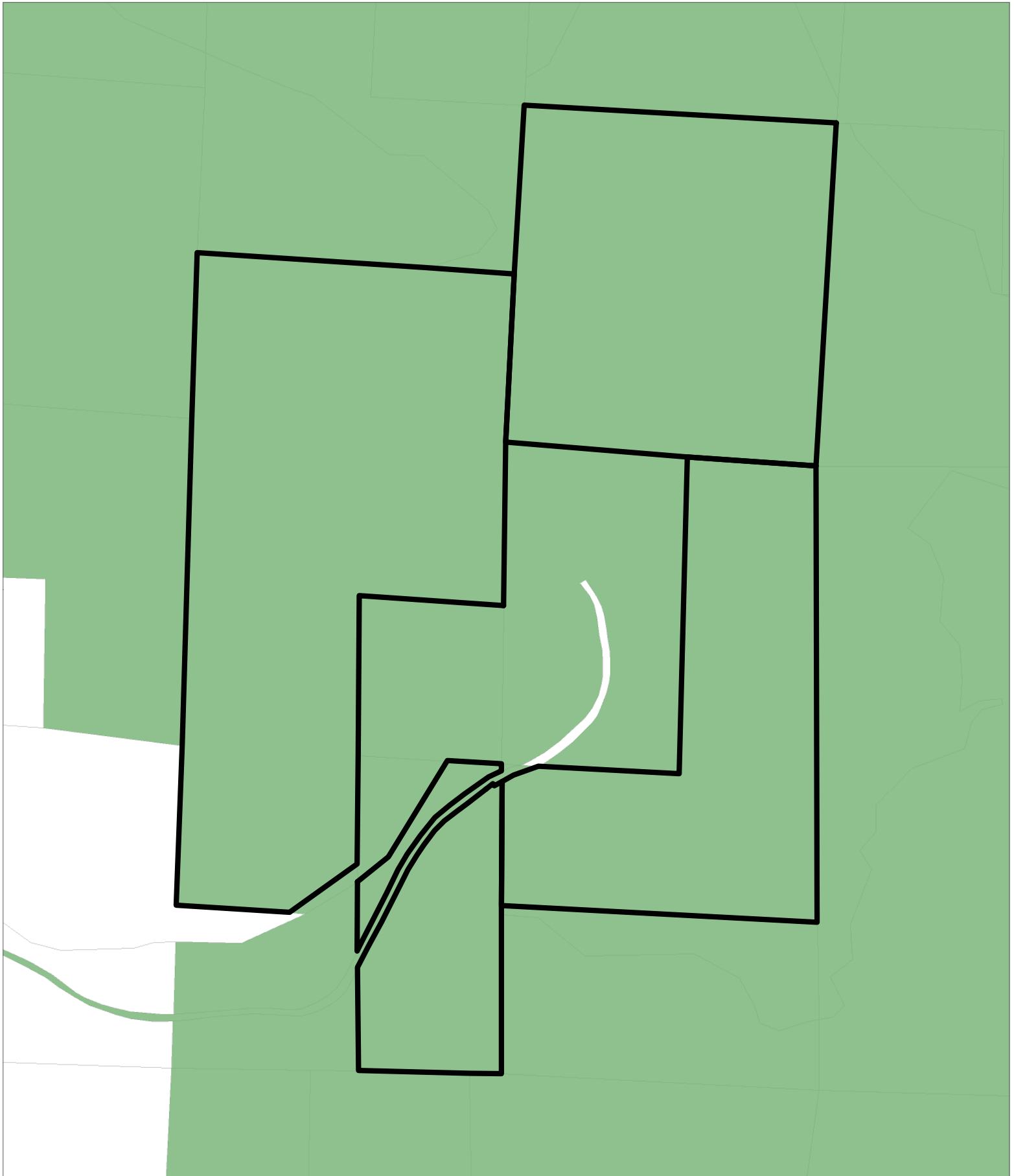


 Highly Scenic Area

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OWNER: Parker Ten Mile Ranch

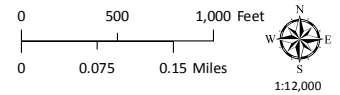
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APLCT: Geo Aggregates

AGENT: Linwood Gill

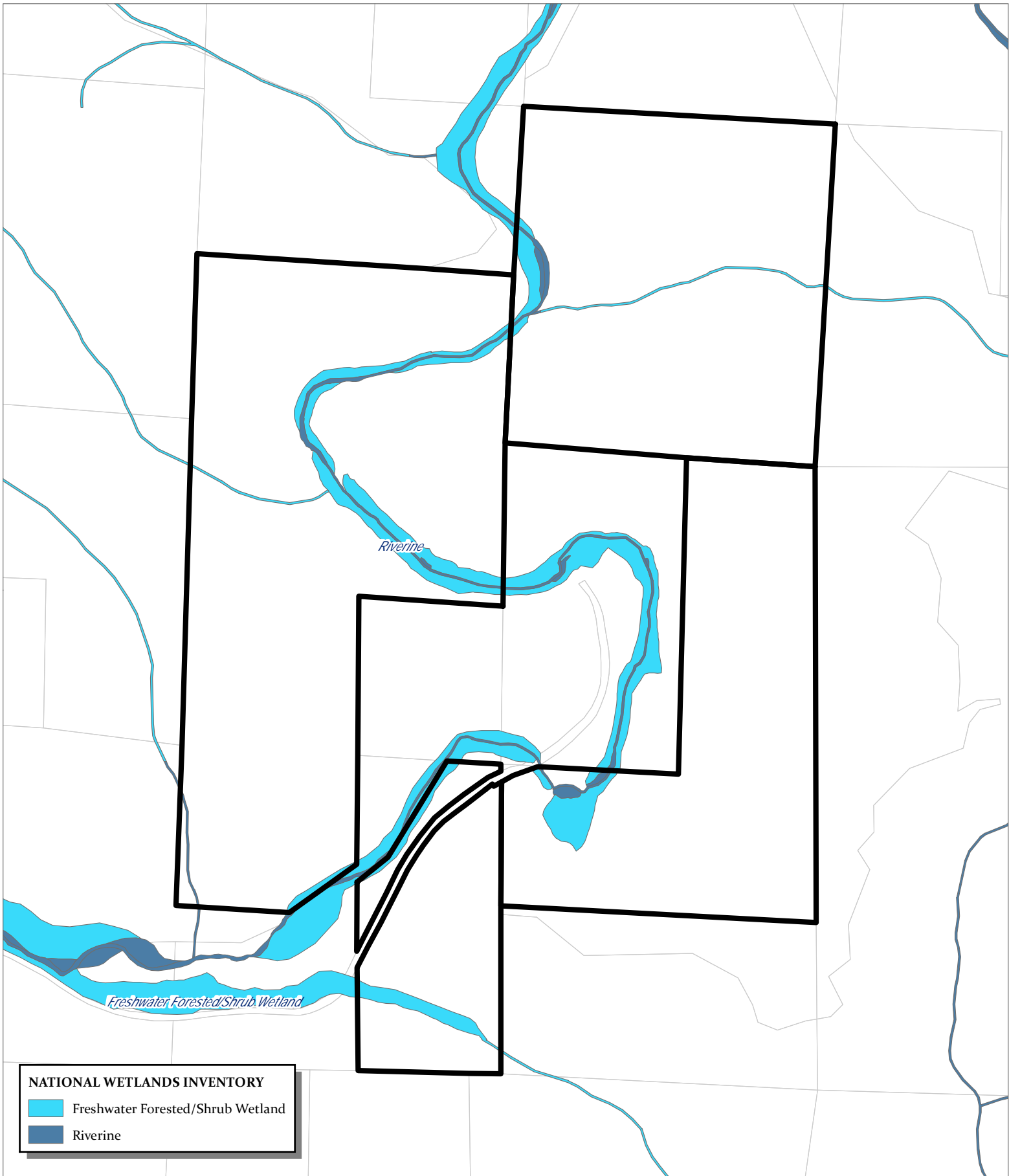
ADDRESS: 28811 N. Hwy. 1, Fort Bragg

TPZ 2017



TIMBER PRODUCTION ZONES

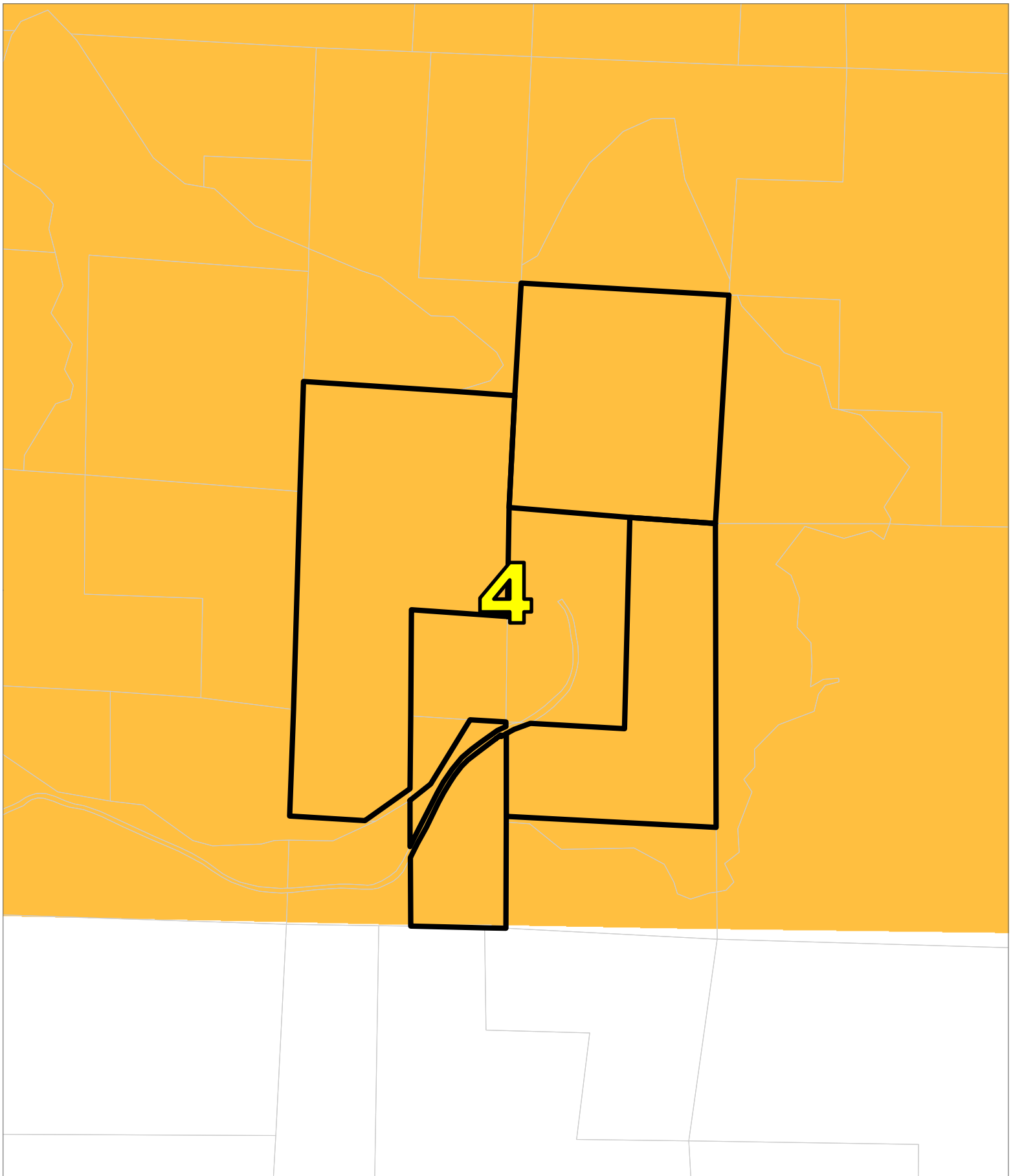
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

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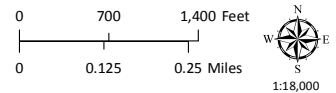
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 Supervisorial Districts 2010  
 Westport MAC



MISC

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