

HUMBOLDT COUNTY DEPARTMENT OF PUBLIC WORKS  
ROAD EVALUATION REPORT



**PART A:** *Part A may be completed by the applicant*

Applicant Name: HUMBOLDT HEALING COLLECTIVE APN: 316-063-006  
Planning & Building Department Case/File No.: SP16-243 App# 11517  
Road Name: MAPLE LEAF RD (USFS 06N23) (complete a separate form for each road)  
From Road (Cross street): BRANNAN MOUNTAIN RD  
To Road (Cross street): 316-063-006  
Length of road segment: 1.3 miles Date Inspected: 12/28/17  
Road is maintained by: ☐ County ☒ Other PRIVATE  
(State, Forest Service, National Park, State Park, BLM, Private, Tribal, etc)

Check one of the following:

- Box 1** ☐ The entire road segment is developed to Category 4 road standards (20 feet wide) or better. If checked, then the road is adequate for the proposed use without further review by the applicant.
- Box 2** ☐ The entire road segment is developed to the equivalent of a road category 4 standard. If checked, then the road is adequate for the proposed use without further review by the applicant.

*An equivalent road category 4 standard is defined as a roadway that is generally 20 feet in width, but has pinch points which narrow the road. Pinch points include, but are not limited to, one-lane bridges, trees, large rock outcroppings, culverts, etc. Pinch points must provide visibility where a driver can see oncoming vehicles through the pinch point which allows the oncoming vehicle to stop and wait in a 20 foot wide section of the road for the other vehicle to pass.*

- Box 3** ☒ The entire road segment is not developed to the equivalent of road category 4 or better. The road may or may not be able to accommodate the proposed use and further evaluation is necessary. Part B is to be completed by a Civil Engineer licensed by the State of California.

The statements in PART A are true and correct and have been made by me after personally inspecting and measuring the road.

Ethan Aronson  
Signature

1/29/18  
Date

Ethan Aronson  
Name Printed

Important: Read the instructions before using this form. If you have questions, please call the Dept. of Public Works Land Use Division at 707.445.7205.

**PART B: Only complete Part B if Box 3 is checked in Part A. Part B is to be completed by a Civil Engineer licensed by the State of California. Complete a separate form for each road.**

Road Name: MAPLE LEAF RD (USFS 06N23) Date Inspected: 12/28/17 APN: 316-063-006  
From Road: BRANNAN MOUNTAIN RD (Post Mile 5.5) Planning & Building  
To Road: 316-063-006 (Post Mile 1.3) Department Case/File No.: SP16-243

1. What is the Average Daily Traffic (ADT) of the road (including other known cannabis projects)?

Number of other known cannabis projects included in ADT calculations:

(Contact the Planning & Building Department for information on other nearby projects.) 1

ADT: 8 Date(s) measured: 12/28/17, 1/3/18, 1/7/18

Method used to measure ADT: ☐ Counters ☐ Estimated using ITE Trip Generation Book

Is the ADT of the road less than 400? ☒ Yes ☐ No

If YES, then the road is considered very low volume and shall comply with the design standards outlined in the American Association of State Highway and Transportation Officials (AASHTO) *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400)*. Complete sections 2 and 3 below.

If NO, then the road shall be reviewed per the applicable policies for the design of local roads and streets presented in AASHTO *A Policy on Geometric Design of Highways and Streets*, commonly known as the "Green Book". Complete section 3 below.

2. Identify site specific safety problems with the road that include, but are not limited to: (Refer to Chapter 3 in AASHTO *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400)* for guidance.)

- A. Pattern of curve related crashes.

Check one: ☒ No. ☐ Yes, see attached sheet for Post Mile (PM) locations.

- B. Physical evidence of curve problems such as skid marks, scarred trees, or scarred utility poles

Check one: ☒ No. ☐ Yes, see attached sheet for PM locations.

- C. Substantial edge rutting or encroachment.

Check one: ☒ No. ☐ Yes, see attached sheet for PM locations.

- D. History of complaints from residents or law enforcement.

Check one: ☒ No. ☐ Yes (☐ check if written documentation is attached)

- E. Measured or known speed substantially higher than the design speed of the road (20+ MPH higher)

Check one: ☒ No. ☐ Yes.

- F. Need for turn-outs.

Check one: ☒ No. ☐ Yes, see attached sheet for PM locations.

3. Conclusions/Recommendations per AASHTO. Check one:

☒ The roadway can accommodate the cumulative increased traffic from this project and all known cannabis projects identified above.

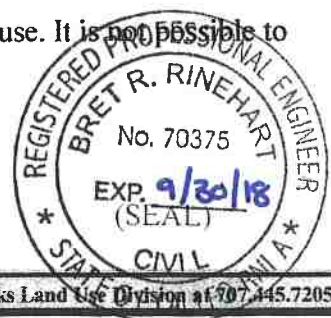
☐ The roadway can accommodate the cumulative increased traffic from this project and all known cannabis projects identified above, if the recommendations on the attached report are done. (☐ check if a *Neighborhood Traffic Management Plan* is also required and is attached.)

☐ The roadway cannot accommodate increased traffic from the proposed use. It is not possible to address increased traffic.

A map showing the location and limits of the road being evaluated in PART B is attached. The statements in PART B are true and correct and have been made by me after personally evaluating the road.

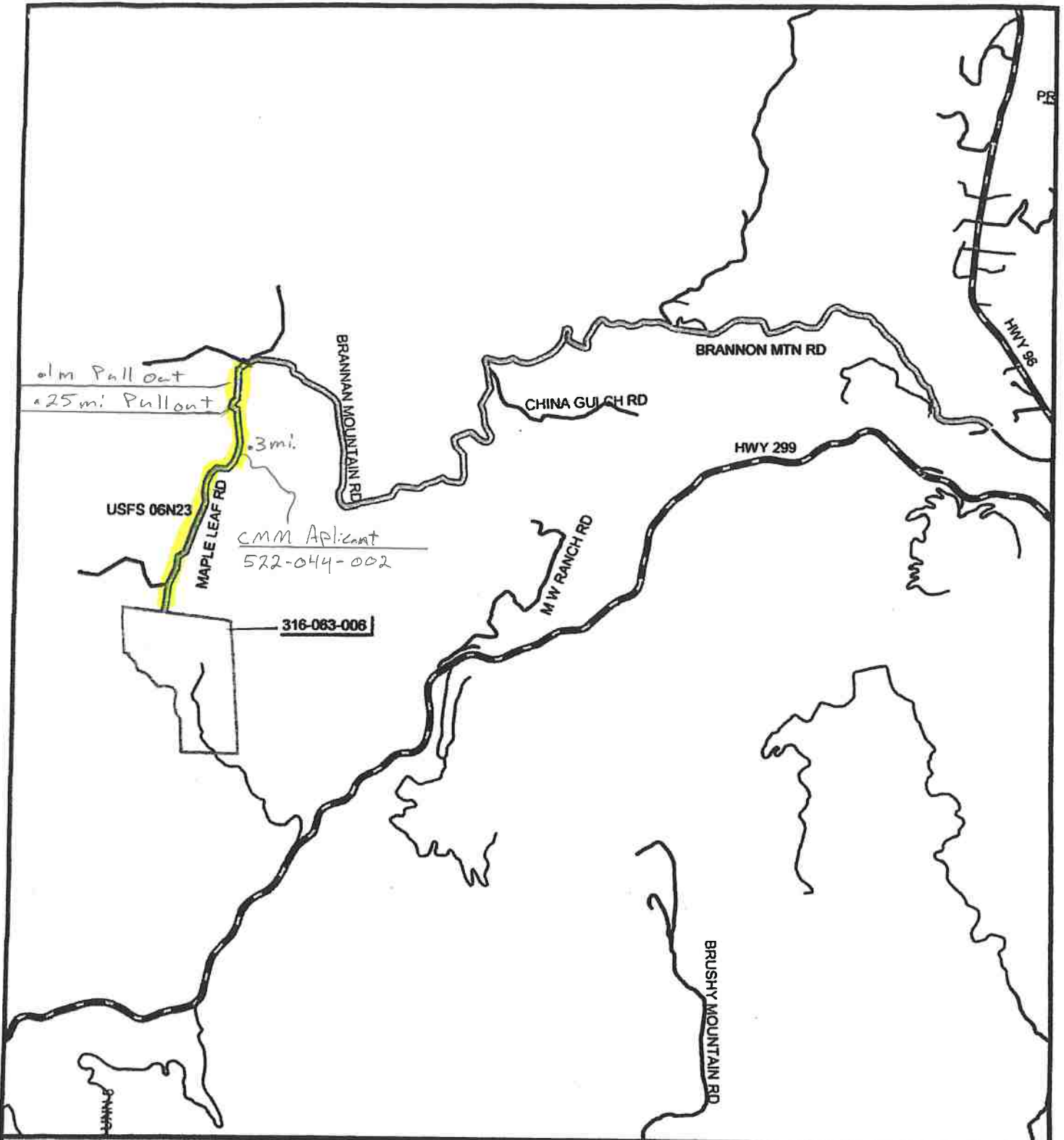
Bret Rinehart  
Signature of Civil Engineer


1/29/18  
Date

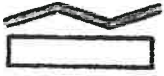


Important: Read the instructions before using this form. If you have questions, please call the Dept. of Public Works Land Use Division at 707.445.7205.





  
 2000 0 2000 4000 Feet  
 RF - 1:38000  
**Map Disclaimer:**  
 While every effort has been made to assure the accuracy of this information, it should be understood that it does not have the force and effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.

Humboldt County Department of Public Works - Land Use Division  
 Diagram of road(s) that need to be evaluated  
 Planning & Building Department File/Case No.: SP16-243  

 Indicates the access road(s) that need to be evaluated  
 Indicates the Project Area  
 Printed 16:57 Tue May 16 2017 on PWRJ372  
 APP# 11517

# Road Evaluation Report for Brannan Mountain Road

PM 0.4 to PM 5.85

Willow Creek, California

June 2018



*Prepared for:*

Humboldt County Public Works Land Use Division  
Humboldt County Commercial Medical Marijuana Land Use Ordinance (CMMLUO)  
Special Permit Apps # 12853 and Apps # 11517  
APN 522-044-002, APN 522-051-006 and  
APN 316-063-006

*Prepared by:*

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## Part B

**PART B: Only complete Part B if Box 3 is checked in Part A. Part B is to be completed by a Civil Engineer licensed by the State of California. Complete a separate form for each road.**

Road Name: Brannan Mt. Rd Date Inspected: 5-10-18 APN: 522-044-002  
From Road: SR 96 / Stagecoach Ln. (Post Mile 0.4) Planning & Building 522-051-006  
To Road: end of public road (Post Mile 5.85) Department Case/File No.: # 12853 and #11517

1. What is the Average Daily Traffic (ADT) of the road (including other known cannabis projects)?

Number of other known cannabis projects included in ADT calculations:  
(Contact the Planning & Building Department for information on other nearby projects.)

ADT: 4400 Date(s) measured: \_\_\_\_\_

Method used to measure ADT: ☐ Counters ☐ Estimated using ITE Trip Generation Book ☒ other (see report)

Is the ADT of the road less than 400? ☒ Yes ☐ No

If YES, then the road is considered very low volume and shall comply with the design standards outlined in the American Association of State Highway and Transportation Officials (AASHTO) Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT  $\leq 400$ ). Complete sections 2 and 3 below.

If NO, then the road shall be reviewed per the applicable policies for the design of local roads and streets presented in AASHTO A Policy on Geometric Design of Highways and Streets, commonly known as the "Green Book". Complete section 3 below.

2. Identify site specific safety problems with the road that include, but are not limited to: (Refer to Chapter 3 in AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT  $\leq 400$ ) for guidance.)

A. Pattern of curve related crashes.

Check one: ☒ No. ☐ Yes, see attached sheet for Post Mile (PM) locations.

B. Physical evidence of curve problems such as skid marks, scarred trees, or scarred utility poles

Check one: ☐ No. ☒ Yes, see attached sheet for PM locations.

C. Substantial edge rutting or encroachment.

Check one: ☒ No. ☐ Yes, see attached sheet for PM locations.

D. History of complaints from residents or law enforcement.

Check one: ☒ No. ☐ Yes (☐ check if written documentation is attached)

E. Measured or known speed substantially higher than the design speed of the road (20+ MPH higher)

Check one: ☒ No. ☐ Yes.

F. Need for turn-outs.

Check one: ☒ No. ☐ Yes, see attached sheet for PM locations.

3. Conclusions/Recommendations per AASHTO. Check one:

☒ The roadway can accommodate the cumulative increased traffic from this project and all known cannabis projects identified above.

☐ The roadway can accommodate the cumulative increased traffic from this project and all known cannabis projects identified above, if the recommendations on the attached report are done. (☐ check if a Neighborhood Traffic Management Plan is also required and is attached.)

☐ The roadway cannot accommodate increased traffic from the proposed use. It is not possible to address increased traffic.

A map showing the location and limits of the road being evaluated in PART B is attached. The statements in PART B are true and correct and have been made by me after personally evaluating the road.

Nancy Ann Aronson  
Signature of Civil Engineer

6-6-18  
Date

**Important: Read the instructions before using this form. If you have questions, please call the Dept. of Public Works Land Use Division at 707.445.7205.**

s:\public works\road evaluation report form (02-24-2017).docx



## Part B Attachment

PM	PM	Concern	Recommendation
0.4		unexpected conditions	install W14-2 "no outlet"
1.2		visibility	annual mowing
2.4		visibility	annual mowing
2.8		hair pin curve	install W1-1 curve warning
2.8		scarred tree	install Type 3 object marker
3.38		change in horizontal alignment	install W1-5 curve warning
4.7		change in road surface	install W8-3 pavement ends
4.7	4.8	visibility	install Type 2 object marker
4.9	5.2	passing	coordination with users
5.75		road ends at gate	install Type 4 object marker



## **Road Evaluation Report for Brannan Mountain Road**

### **Introduction**

This road assessment, evaluation, and report is in support of the Humboldt County Commercial Medical Marijuana Land Use Ordinance (CMMLUO) Conditional Use Permit applications for David Slamkowski (aka Humboldt Old Guy, Apps #12853, SP16-676, APN 522-044-002 and APN 522-051-006) at 4887 Brannan Mountain Road (BMR), Willow Creek, CA, and Ethan Aronson (aka Humboldt Healing Collective, Apps #11517, SP16-243, APN 316-063-006) on New 3 Creeks Road, Willow Creek, CA. These applicants have been required to document the condition of the access road (Brannan Mountain Road PM 0.4 to PM 5.65) serving the subject property for their cannabis projects. The purpose of this report is to allow Public Works staff to determine if the roadway network is suitable to accommodate the proposed use on the subject property. Data collected by PWA and presented herein, and the evaluation of a licensed civil engineer, result in recommendations to improve safety.

On August 18, 2017, the Humboldt County Planning and Building Department received a response from the Humboldt County Land Use Division Assistant Engineer, Ken Freed, directing the Planning Department to request the applicant (David Slamkowski) to submit a completed Public Works Road Evaluation Report Part B (see attached Appendix A) for Application No. 12853 on APN 522-044-002, for Brannan Mountain Road (starting at Stagecoach Lane) and USFS 6N23 and USFS 7N71, if used.

Humboldt County has determined that the Category 4 road standard is adequate to accommodate commercial cannabis operation traffic volumes and vehicle types (e.g., passenger vehicles, small trucks, large service trucks). This standard provides 18-foot to 20-foot wide travel lanes, 2-foot wide bladed shoulders (where required by the County), 25-mile to 40-mile per hour design speed, and visibility requirements for safe passage. The Humboldt County Land Use Division has published a table included in interoffice memoranda ("Exhibit D") identifying which roads, or portions thereof, do not meet Category 4 standards. This table identifies that Brannan Mountain Road beyond Stagecoach Lane fails to meet Humboldt County Roadway Category 4 as described in the Department of Public Works Roadway Design Standards Manual (1971) and Figure 7-302D for Roadway Category 4 (two-lane-narrow traveled way) with a traveled way width of 18-20 feet.

APN 522-044-002 (Slamkowski) is accessed from Highway 96 in Willow Creek to Brannan Mountain Road and thence to 4887 Brannan Mountain Road, approximately 5.1 miles from Highway 96. APN 316-063-006 (Aronson) can be accessed via Brannan Mountain Road. Brannan Mountain road is maintained by Humboldt County and has a ROW of 50 feet according to Book 6 of Parcel Maps page 102 (6/4/76). It has a federal functional classification of "Local Road". "Local" roads are not intended for use in long distance travel, except at the origin or destination end of the trip, due to their provision of direct access to abutting land.





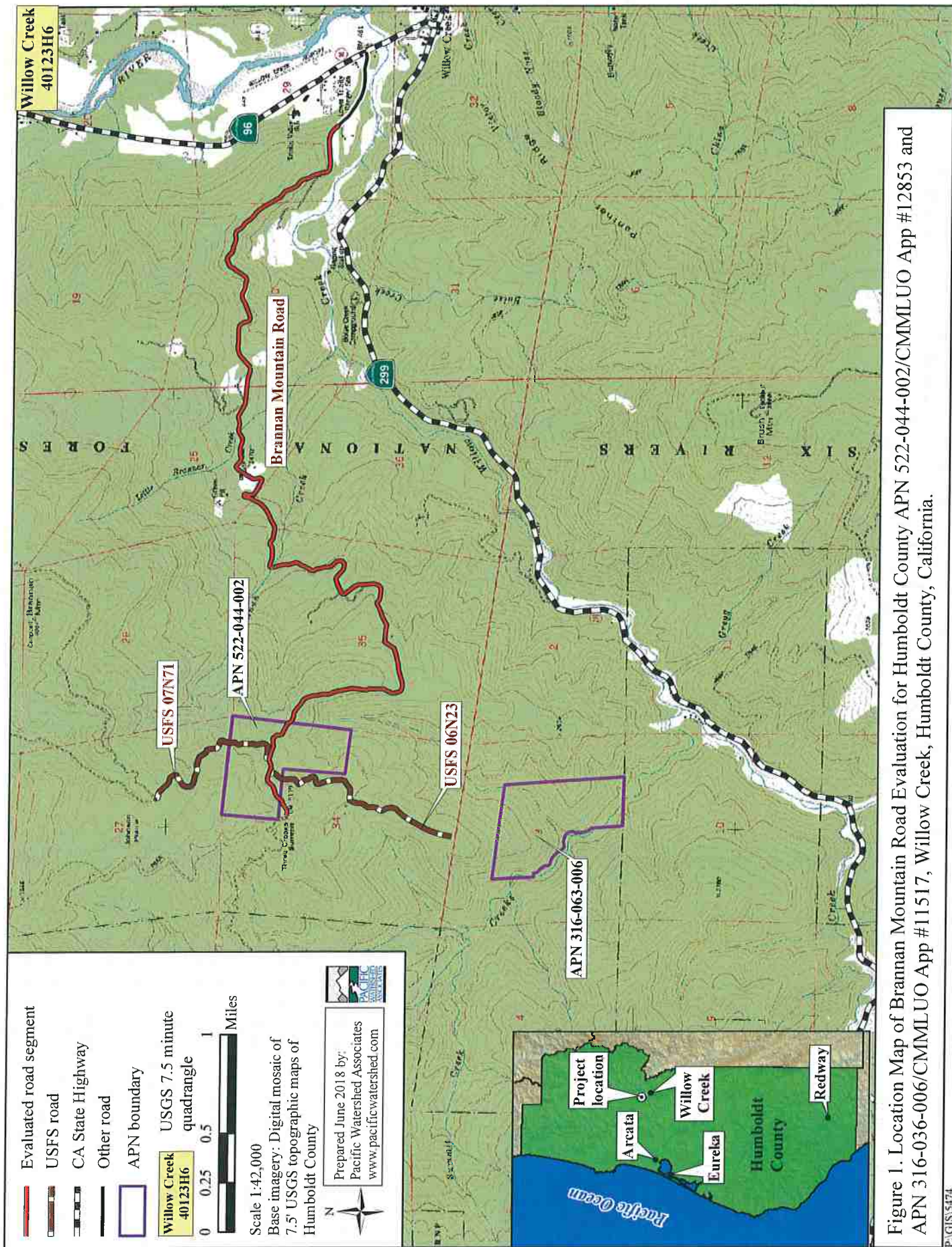


Figure 1. Location Map of Brannan Mountain Road Evaluation for Humboldt County APN 522-044-002/CMMLUO App #12853 and APN 316-036-006/CMMLUO App #11517, Willow Creek, Humboldt County, California.





The road was paved from MP 0.0 to MP 4.3 prior to 1976, the date of the above parcel map. An additional segment from 4.3 to 4.7 was paved later on. As well as serving adjacent private land owners, an important use for this route has been to transport timber from Six Rivers National Forest. The Humboldt County road log has 2 entries for Brannan Mountain Road. The County maintains 5.89 miles starting at the edge of ROW for Hwy 96.

BMR was used for logging operations in Six Rivers National Forest in the past. The number of pullouts in the narrow sections (13-15 ft.), the mild grades, and the asphalt surface of road attests to the ability of this road to serve loaded logging trucks along with other vehicles.

The September 2017 Draft EIR for the Amendments to Humboldt County Code Regulating Commercial Cannabis Activities (SCH# 2017042022) prepared for Humboldt County Planning & Building Department addresses existing cannabis operations that intend to comply with County standards and/or propose to retire existing cultivation sites, remediate existing cultivation site, or relocate to new properties. The EIR states that these operations (above) are existing and part of the baseline traffic conditions of the County. Thus, no new transportation operational impacts would occur from permitting of existing commercial cannabis operations. The EIR also determined that an increase in trips associated with construction at commercial cannabis operations would be minimal, dispersed throughout the larger roadway network serving the County, and staggered over an extended period of time.

## Methodology

### **Field work**

On May 10, 2018, PWA geologists and scientists, Michelle Robinson and Greyson Adams, collected road width, slope, and observations of site safety concerns, as identified in Part B of the Public Works Road Evaluation Report Form (02-24-2017). Data was collected on a tablet computer using Avenza Maps software. Photos were taken at most points of interest. Appendix A provides the specifics on locations along Brannan Mountain Road.

### **Estimating ADT using ITE Trip Generation Book Methodology**

Part B of the Road Evaluation Report data form requests an analysis of the Average Daily Trips (ADT) on the road under consideration in order to determine the design standards that the road must meet. Average daily traffic or ADT, and sometimes known as mean daily traffic, is the average number of vehicles two-way passing a specific point in a 24-hour period, normally measured throughout a year. Since commercial cannabis cultivation is typically not carried out during the winter months, a year-long average would provide an inaccurate ADT.

We have assumed that for all existing projects, the number of workers will remain the same, no new services will be offered, and the hours of operation will remain the same. No adjustments for mode split or vehicle occupancy were included in the analysis.

Ideally, an estimate of the number of trips to be generated by a commercial enterprise is based on the development of relationships between vehicle trips and land use characteristics. During a conversation

with staff at the Department of Public Works Land Use Division and a discussion of land use characteristics for commercial cannabis operations it was agreed that Institute of Transportation Engineers (ITE) Code 818: Nursery (Wholesale) was more similar to commercial cannabis operations than any other ITE Code. Data and analysis presented in the ITE Trip Generation Book for this land use are based on limited studies (6-8) performed in the 1980's.

“A wholesale nursery is a free-standing building with a yard of planting or landscape stock. The nurseries surveyed primarily serve contractors and suppliers. Some have large greenhouses and offer landscaping services. Most have office storage and shipping facilities. Nurseries are characterized by seasonal variations in trip characteristics (from ITE Code 818: Nursery Wholesale from Volume 2: Trip Generation Rates, Plots and Equations from “Trip Generation User's Guide, 8<sup>th</sup> Edition).”

The data collected by ITE is for a facility/land use that serves contractors and suppliers, while cannabis cultivation sites do not sell directly to the public or to commercial resellers at the site. ITE common trip generation rates for wholesale nursery generates are 5.17 per 1,000 ft<sup>2</sup> for the PM Peak Hour, based on the Trip Generation Manual, 9<sup>th</sup> Edition. Using the “per employee” estimate of the prediction of trips, a wholesale nursery generates 47 trips for two employees. This ITE code does not appear to be similar enough to the cannabis cultivation land use to be useful in estimating the projected use of the road (ADT).

### Operation Plan Data from Application Files

Prior to receiving access to the Operations Plans, PWA staff accessed information on each of the projects identified by the County on the public information request by logging onto “OnTrack”, Humboldt County's online permit management system. Of the thirteen projects identified in the public information request, only one had applied for “new” cultivation. All of the other applications were for cultivation that was “existing” prior to January 1, 2016.

On May 14, 2018, Humboldt County Planning and Building staff were requested to provide information on all CMMLUO permit applicants using Brannan Mountain Road for their commercial cannabis operations, as directed. Information requested included the number of employees and the number of people living on each of the project sites. Planning and Building staff identified thirteen (13) projects with applications along that route. Only eight of the original thirteen applications are active and have been included in this analysis.

The following table summarizes the data obtained from operations plans for those remaining active eight applications. Most (92%) of the cultivation area on those sites is existing, and the assumption is that the continuation of licensed cultivation operations on these sites will not increase road use (see “Previous Assessment of Traffic Impacts from Existing Commercial Cannabis Operations”, above). The one active application seeking a permit for new cultivation area has reported no employees. Five of the projects are located on land zoned TPZ, and are not expected to ever expand in size from what will be defined as “existing”. If Humboldt County revises the restriction on cannabis cultivation on property with the TPZ land use, this report may need to be reviewed.

The eight active applications identified by Humboldt County Planning and Building Department applying for a land use permit for commercial cannabis cultivation activities have submitted operations plans. Of the eight active operations plans, two state that there will be no employees, and one states that processing using employees will be performed onsite. One of the parcels has two applications.

*Table 1. Cultivation Operations Plans Summary*

# of Employees		Cultivation Size	
Regular	Peak	Existing (sf)	New (sf)
23	32	129,378	10,000

## Results

A nominal amount of additional traffic will be generated by issuing the permits for existing cannabis cultivation at APN Slamkowski - APN 522-044-002, APN 522-051-006 and Aronson - APN 316-063-006. The road is assessed as "very low volume" or <400 ADT. Warning signage for low-volume roads is appropriate.





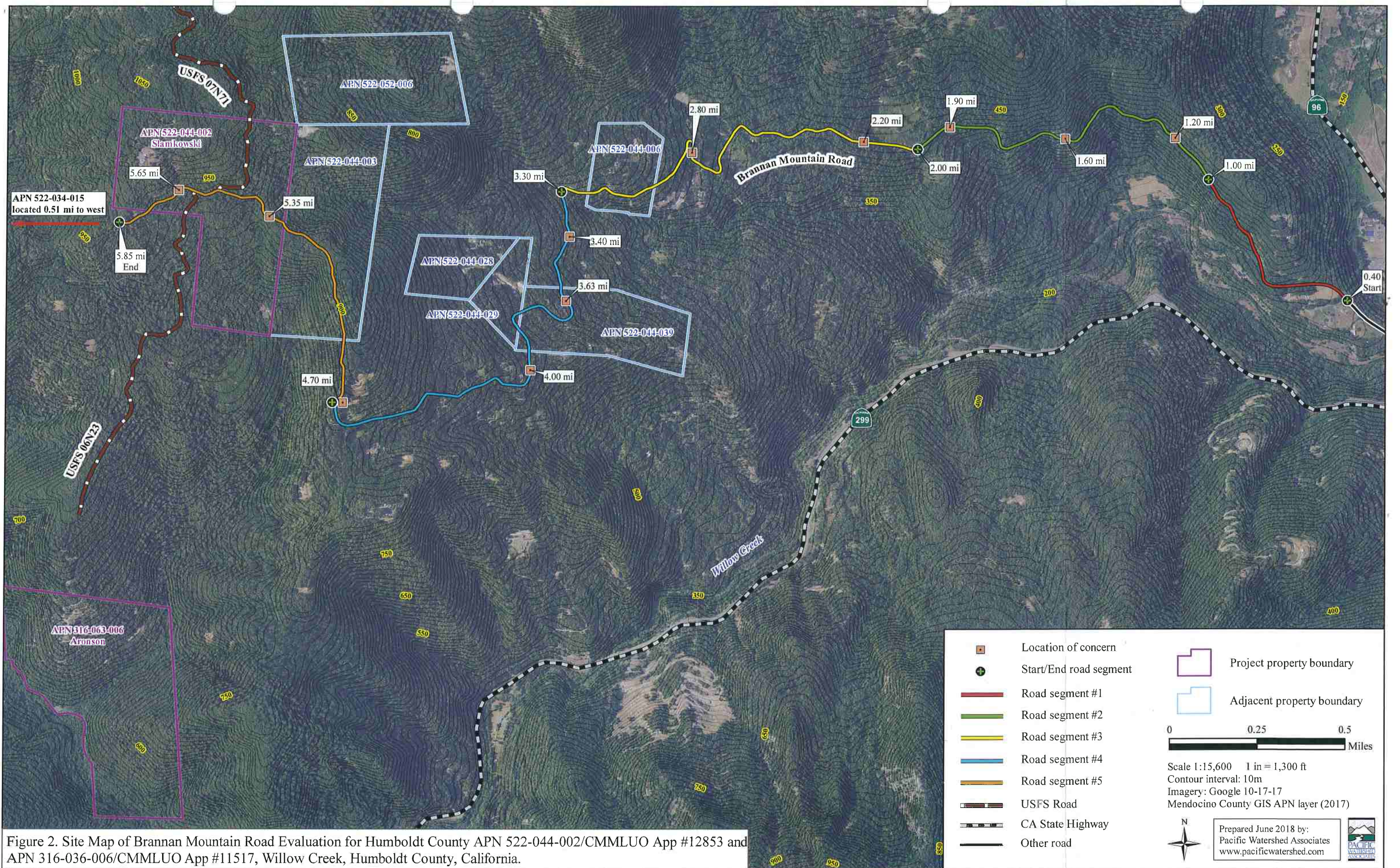


Figure 2. Site Map of Brannan Mountain Road Evaluation for Humboldt County APN 522-044-002/CMMLUO App #12853 and APN 316-036-006/CMMLUO App #11517, Willow Creek, Humboldt County, California.



## Site Specific Safety Concerns

### **History of Complaints**

Road Maintenance Humboldt County Department of Public Works was contacted to find out if the scarred tree at BMR PM 2.8 (Photo 26, below) was a known source of concern. This location was not identified in dispatch records for 2018.

### **Summary of Field Data**

A summary of road characteristics of the Brannan Mountain Road (BMR) project area is depicted in Table 1, and selected photos are included below. All post miles (PM) are approximate and were measured using a vehicle odometer. Measured widths of asphalt surface along BMR do not include 2-3 feet of unpaved shoulder unless otherwise specified or shown in site photos

BMR was divided into five segments according to overall road width and surface characteristics. Segment One (BMR PM 0.4 to PM 1.0) has an 18-ft. to 20 ft. asphalt road width. Segment Two (BMR PM 1.0 to PM 2.0) has a 15-ft. asphalt road width. Segment Three (BMR PM 2.0 to PM 3.3) has a 20-ft. asphalt road width and more curves than the other segments. Segment Four (BMR PM 3.3 to PM 4.7) has a 15-ft. to 20 ft. gravel road width with fewer curves.

*Table 2. Summary of Road Characteristics for Brannan Mountain Road*

BMR PM Start End		BMR Pinch Pt	Distance (mi)	Surface*	Grade (%)	Width (ft.)	Pinch Points and Narrow Sections	Pullouts
0.4	1		0.6	A	11	18-20	None	2
1.0	2		1	A	8	15		9
		1.2			7	13	Power pole and rock outcrop	
		1.6			8	14.5	failing outside fill	
		1.9			9	16	Landslide	
2.0	3.3		1.3	A	2-10	20		4
		2.2			2	12	Power pole	
		2.8			7	12	Tree with scarring	
3.3	4.7		1.4	A	5-10	18-20		1
		3.4			>5	15	Power pole	
		3.63			11	11	Rock outcropping on cutbank	
3.63	3.67		0.04		11	15	Curve	
		4.0			12	13	Power pole	
4.70	5.85		1.15	G	7	13-20		2
4.7	4.8		0.5		7	13	Narrow section	
4.9	5.2		0.3			13	Narrow section	
5.4	5.5		0.1			15	Narrow section with pullout	
5.65	5.85		0.2			15	Narrow section with pullout	

\*A-asphalt, G-gravel

### Details for Specific Locations of Concern

The following photos show specific locations (PM approx.) where the road does not meet Category 4 specifications for the 18-20 width, but can accommodate traffic from the proposed use. There are 3 ft. to 4 ft. wide shoulders along most narrow sections, unless noted.



BMR PM 1.0, 15-ft. wide asphalt surface with longitudinal slope of 8% and no shoulder (Photo 9). There are nine (9) pullouts between BMR PM 1.0 and 2.0. Adequate pullouts exist at pinch points, including at PM 1.2, 1.6 and 1.9, for visibility and to allow passing.



BMR PM 1.17, 15-ft. wide asphalt surface with longitudinal slope of 7 % narrows at utility pole and bedrock on cutbank to 13-ft. wide (Photo 10). A pullout is located to the west of the utility pole.





BMR MP 1.2, 15-ft wide asphalt surface with a longitudinal slope of 7%, and 3-ft. wide and 30-ft. long pullout allows for sight distance at utility pole at mile 1.17. Note white arrow showing location of utility pole (Photo 11).



BMR PM 2.8, Brannan Mountain Road characteristics at this location are described on Book 10 of Parcel Maps, page 141 and 142 as Courses 121, 123 and 125. The curve along these courses has a change in horizontal alignment of greater than 135 degrees, so can be classified as a "hairpin curve". The road width of 20 ft. narrows to 12 ft. with a 4 foot shoulder at a tree located at the beginning of the curve (Photo 21). Recent scarring was noted on the trunk of the tree, which appears to be within Humboldt County ROW. There is a change in grade mid-curve.



BMR PM 3.63, 18-ft. wide asphalt surface with a longitudinal slope of 11%, narrows to 11-ft. wide with no shoulder at a rock outcropping on the cutbank and proceeds for 250 feet at 15-ft. wide. Visibility is limited to 120 ft. around the curve (Photo 26). Road resumes 18-ft. width past the curve.



BMR PM 4.7 to PM 4.8, 13-ft. wide gravel surface with a longitudinal slope of 7% at end of asphalt surface. Trees limit visibility (Photo 28).

BMR PM 4.9 to PM 5.2, 13-ft. wide gravel road with a longitudinal slope of 7%.

BMR PM 5.4 to 5.5, 15-ft. wide gravel road a longitudinal slope of 7% east of curve with a pullout.

PM 5.65 to 5.75, 15-ft. wide gravel road with a longitudinal slope of 7% with a pullout

## Recommendations

As the “development” proposed on APN 522-044-002, APN522-051-006 and APN 316-063-006 is defined as “existing”, and the September 2017 Draft EIR for the Amendments to Humboldt County Code Regulating Commercial Cannabis Activities (SCH# 2017042022) states that no new transportation operational impacts would occur from permitting of existing commercial cannabis operations, we have suggestions for road warning signage and maintenance for safety at specific locations.

Brannon Mountain Road does not continue past PM 5.65, unless you have access to gated USFS roads. A warning sign at PM 0.4 stating “No Outlet” (W14-2) could be posted near the beginning of the road.

Annual vegetation removal (mowing) of the roadside verges will improve visibility at BMR PM 1.2 and PM 2.4.

We recommend that an object marker be located east of the tree in the shoulder at BMR PM 2.8 based on the anecdotal evidence of scarring, or the tree could be removed with the caveat that the adjacent cut slope remains stable and the 4-ft. shoulder is preserved.

Signage could be installed to assist drivers in knowing when the road curves, and when it narrows. A “curve ahead” (W1-1) sign could be placed at PM 2.8, even though the road width through the curve is 20 ft. with a 4-ft. shoulder. A “winding road” sign (W1-5) could be installed at BRM PM 3.38 to alert drivers to conditions for the next mile (approx.). A “pavement ends” sign (W8-3) could be installed prior to the start of the gravel roadway ahead. A Type 2 object marker could be installed on trees encroaching the edge of the traveled way between PM 4.7 and PM 4.8. A Type 4 object marker could be installed at the USFS gate. All warning signs would be required to meet Manual of Uniform Traffic Control Devices (MUTCD Part 5) standards for low-volume roads, and Humboldt County Public Works Standards for local roads.

As an alternative, removal of trees on APN 522-044-017 from BMR PM 4.7 to PM 4.8, would improve visibility, although for the most part, the road is linear and vehicles have visibility and clearance to pass. This section is located beyond the asphalt surface, and is part of Six Rivers National Forest.

Also, because the narrower and farthest west section of Brannan Mountain Road passes through two properties with applications for commercial cannabis cultivation, a method of communication could be developed to share this section of road, as well as coordinate with the two applicants to the west.

Part B of the Road Evaluation summarizes these recommendations in the attached list.



## Appendix A - Road Characteristic Data for Brannan Mountain Road

Segment and site photos and road characteristic data, organized by mile post (MP) were collected by PWA staff on May 10, 2018.

### Overview

Overall, Brannan Mountain Road appears to be in good condition. The road surface transitions from an asphalt surface to a gravel surface at PM 4.7 (see Figure 2 and Photo 28) where the County-maintained portion of the road ends. We identified several narrow, constricted sections of the road (pinch points), most of which are accompanied by pullouts or shoulders. Minor ruts on the shoulders were observed at several locations, and we observed one location of vehicle scarring on a tree before a pinch point (see Photo 21) and several locations where visibility is limited, shoulders are absent, and power poles are encroaching on the traveled width.



Photo 1. Brannan Mountain Road (BMR) PM 0.0, 36-ft. wide paved surface with a longitudinal slope of less than 5% at the intersection with Highway 96, Willow Creek, CA.





Photo 2. PM 0.1, 20 ft. wide, asphalt surface with a longitudinal slope of 6%, 9-ft. wide shoulder extending approx. 270 ft. west with visible wheel ruts.



Photo 3. BMR PM 0.2, 21 ft.-wide asphalt surface with a longitudinal slope of 10%, view looking downslope (east) with 10-ft. wide shoulder.



Photo 4. BMR PM 0.5, 20-ft. wide asphalt surface looking west, with a 10% longitudinal slope.



Photo 5. BMR PM 0.65, 20-ft. wide asphalt surface with a longitudinal slope of 10%, looking east with vegetation on the cutbank. Visibility is approx. 150 ft. through the curve.



Photo 6. BMR PM 0.75, 20-ft wide asphalt surface with a longitudinal slope of 10%, with 14ft. by 80ft. pullout.



Photo 7. BMR PM 0.8, 30-ft wide asphalt surface with a longitudinal slope of 11% for a distance of 20 ft. and then narrowing to 20 ft. wide.





Photo 8. BMR PM 0.9, 20-ft wide asphalt surface with a longitudinal slope of 11%.



Photo 9. BMR PM 1.0, 15-ft. wide asphalt surface with longitudinal slope of 8% and no shoulder.





Photo 10. BMR PM 1.17, 15-ft. wide asphalt surface narrows at utility pole and bedrock on cutbank to 13-ft. wide, longitudinal slope of 7%.



Photo 11. BMR MP 1.2, 15-ft wide asphalt surface with a longitudinal slope of 7%, and 3-ft. wide and 30-ft. long pullout allows for visibility around utility pole at mile 1.17. Note white arrow showing location of far utility pole.



Photo 12. BMR MP 1.3, asphalt surface with a longitudinal slope of 4%, widens to 22-ft wide at 6 ft.-wide by 75 ft.-long pull-out.



Photo 13. BMR PM 1.4, asphalt surface with a longitudinal slope of 4% narrows to 16 ft. and 14-ft. by 40-ft. pullout on edge of fill slope.



Photo 14. Mile 1.5, 19-ft. wide asphalt surface with a longitudinal slope of 10%, 6 ft. wide and 55 ft. long pullout before a mild curve with a steep rocky cutbank and brush, approx. 120 ft. of visibility.



Photo 15. BMR PM 1.55, 14.5-wide cracking asphalt surface, longitudinal slope of 8%, narrowing to. at a fill failure and steep drop off. A culvert was observed near the fill failure. The road continues as 24-ft. wide after the pinch point, including a 15-ft. wide by 83-ft. long pullout to the west.





Photo 16. BMR PM 1.8, 33-ft. wide asphalt surface with a longitudinal slope of 14% narrowing to 22 ft. after a wide curve, with 14-ft.-wide and 55-ft.-long pullout with approx. 100 ft. of visibility.



Photo 17. BMR PM 1.93, 20-ft. wide asphalt surface with a longitudinal slope of 9%, narrows to 16 ft. wide at a slope failure, east of the pinch point there is a 6 ft. wide by 30 ft. long pullout along the cutbank, and west, a 7-ft. wide by 35-ft. long pullout to allow passing.





Photo 18. BMR MP 2.1, 20-ft.-wide asphalt surface with a longitudinal slope of 2% narrows to 12 ft. wide at a utility pole. A 13-ft. by 40-ft. pullout is located 150 ft. upslope (west) from the pinch point with 150 ft. of clear visibility for eastbound traffic. Note the white arrow showing the utility pole.



Photo 19. BMR PM 2.4, 20-ft. wide asphalt surface with a longitudinal slope of 10% widens to 30 ft. wide at curve, sight distance is approx. 110 ft. Sparse vegetation on the cutbank slope is a slight impairment to visibility.



Photo 20. BMR PM 2.75, 30-ft wide asphalt surface with a longitudinal slope of 10% with a 10-ft. by 30-ft. pullout along the fill slope of a tight curve, resuming the 20-ft. width after the curve.



Photo 21. BMR PM 2.8, 20-ft. wide asphalt surface with a longitudinal slope of 7% narrowing to 12 ft. wide with a 4-ft. wide shoulder. The narrowest section of the road is on the approach to a hair pin curve (see Photo 22). Recent scarring was noted on the trunk of the tree. The tree appears to be located within Humboldt County ROW.



Photo 22. BMR PM 2.87, 20-ft. wide asphalt surface with a longitudinal slope of x%, with 4-ft. shoulder along the edge of the fill slope throughout curve.

BMR PM 3.24 (no photo) 20-ft wide, asphalt surface with a longitudinal slope of 7%, with a 15-ft. wide by 60-ft. long pullout along the cutbank.



Photo 23. BMR PM 3.37, 15-ft. by 60-ft. pullout east of Brannan Mountain Creek.





Photo 24. BMR PM 3.37, 20-ft. wide asphalt surface with a longitudinal slope of less than 5%, narrows to 18 ft. at Brannon Creek.



Photo 25. BMR PM 3.4, 18 to 20-ft. wide asphalt surface with a longitudinal slope of less than 5%, 15 ft. asphalt surface and 3-ft. shoulder at utility pole, visibility limited due to mild curve.



Photo 26. BMR PM 3.63, 18-ft. wide asphalt surface with a longitudinal slope of 11%, narrows to 11-ft. wide at a rock outcropping on the cutbank and proceeds for 250 feet at 15-ft. wide. Visibility is limited to 120 ft. around the curve. Road resumes 18-ft. width past the curve.



Photo 27. BMR PM 4.0, 18-ft. wide asphalt surface with a longitudinal slope of 12%, narrowing to 13-ft. of asphalt surface and 3 ft. of shoulder at a utility pole.

BMR PM 4.1 (no photo)  
20-ft. wide asphalt surface with a longitudinal slope of 10%.

BMR PM 4.35 (no photo)  
20-ft. wide asphalt surface with a longitudinal slope of 10% and 8-ft. wide  
by 45-ft. long pullout.



Photo 28. BMR PM 4.7, gravel surface with a longitudinal slope of 7%, 13-ft. wide at end of asphalt surface. Trees limit visibility.

Mile 5.2 (no photo)  
18-ft. gravel surface with a longitudinal slope of 7%.





Photo 29. BMR PM 5.34, 18-ft. wide gravel surface with a longitudinal slope of 7% and gravel road features 16 ft. by 50 ft. pullout along north side of road before road narrows to 15 ft. at curve. A 16 ft. wide by 50 ft. long pullout is located east of curve with approx. 80 ft. of visibility through curve. The road resumes an 18-ft. width west of the curve.

BMR PM 5.46 (no photo) 20-ft. wide gravel surface with a longitudinal slope of 6%.

BMR PM 5.65 (no photo) 15-ft. wide gravel surface with a longitudinal slope of 6%. 12 ft. wide by 80 ft. long pullout.



Photo 30. Mile 5.85, 15-ft. wide gravel surface with a longitudinal slope of 6%. Public access ends at a locked United States Forest Service gate.