

October 5, 2018

Ken Freed
Humboldt County Department of Public Works
1106 Second Street
Eureka, CA 95501-0579

RE: Road Evaluation Reports for APN 221-141-037 (Carl Property)

Dear Mr. Freed,

Enclosed are five Road Evaluation Reports covering the road accessing APN 221-141-037. Two of these Road Evaluation Reports were originally prepared for the Blido property (Road Segments 1 & 2 for APN 221-081-004) and one was prepared for the Hill property (Road Segments 3 for APN 221-131-012). Two additional reports (Road Segments 4 & 5) were prepared specifically for the Carl property (APN 221-141-037). Note that these road evaluation reports are also intended to be utilized by neighboring APNs including but not limited to 212-013-021 and 212-013-011.

The road was divided into five segments based on physical characteristics and major intersections with the expectation that subsequent properties seeking permitting for cannabis projects may utilize one or more of these Road Evaluation Reports.

Some high priority road maintenance needs were identified for Segment 5 (as described in the Road Evaluation Report) and many of those recommendations have been addressed since the road evaluation was conducted. The work has included extensive brush removal, road widening, and placement of road surface gravel.

In addition to the work that has already been conducted on Segment 5, most of the substantial maintenance projects needed to improve safety on the access road are located on the Humboldt County-maintained road segments (Segment 1 and Segment 2) which are used to access many parcels (>247) and over 79 cannabis projects. Based on our evaluation and the expectation that numerous cannabis permits within the Salmon Creek community will be processed to completion over the upcoming year, we recommend that a public-private partnership should be developed between Humboldt County and residents/cultivators within the Salmon Creek community. An example of this type of partnership is the Humboldt County Rural Transportation & Access Partnership (RTAP), with a goal of working together to improve County-maintained access road segments. Community contribution could be calculated based on a sliding scale that takes into consideration the size of cultivation and length of County-maintained road utilized. We recommend that the applicant prepare to contribute to projects on the County-maintained segments of access road in the future.

Please don't hesitate to contact me with any questions.

Sincerely,



Joel Monschke, PE
Civil Engineer
jmonschke@stillwatersci.com
cell: 707-496-7075

**HUMBOLDT COUNTY DEPARTMENT OF PUBLIC WORKS
ROAD EVALUATION REPORT**

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

Applicant Name: _____ APN: _____

Planning & Building Department Case/File No.: _____

Road Name: _____ *(complete a separate form for each road)*

From Road (Cross street): _____

To Road (Cross street): _____

Length of road segment: _____ miles Date Inspected: _____

Road is maintained by: ☐ County ☐ Other _____
(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.

Signature Paul Monette _____

Date _____

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: _____ Date Inspected: _____ APN: _____
From Road: _____ (Post Mile _____) Planning & Building
To Road: _____ (Post Mile _____) Department Case/File No.: _____

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: _____ Date(s) measured: _____

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.

Signature of Civil Engineer

Date

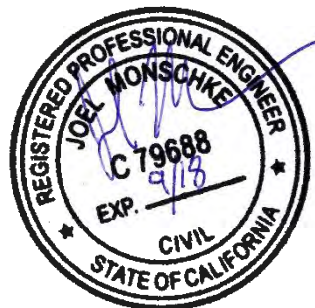
Important: Read the instructions before using this form. If you have questions, please call the Dept. of Public Works Land Use Division at 707.445.7205.

TECHNICAL MEMORANDUM

DATE: 13 October 2017
TO: Humboldt County Department of Public Works
FROM: Joel Monschke, Stillwater Sciences
SUBJECT: Road Evaluation for APN 221-081-004 (Blido Property):
Segment 1 - 1.7 miles of Humboldt County maintained Salmon Creek Road from
Maple Hills Road junction to Thomas Road turnoff

I hereby state that all work described in the attached Technical Memorandum follows accepted engineering practice and was completed under my direction. This Technical Memorandum summarizes results from an evaluation conducted on the access road leading to APN 221-081-004 per guidance from the Humboldt County Department of Public Works. The Blido property is located approximately 8 miles from US-101 and approximately 2 miles from mile 4.1 of Thomas Road where the county-maintained road ends. Based on physical characteristics of the access road, the 7.8-mile access road to the Blido property has been divided into 4 segments as follows:

- **Segment 1 (Subject of this Technical Memorandum)** – 1.7 miles of County-maintained road (Salmon Creek Road) from Maple Hills Road junction to the Thomas Road junction.
- **Segment 2** – 4.1 miles of county-maintained Thomas Road, from Salmon Creek Road junction to end of County-maintained segment.
- **Segment 3** – 1.6 miles of private community-maintained road (Thomas Road) from Mile 4.1 of Thomas Road to Salmon Creek School.
- **Segment 4** – 0.4 miles of private community-maintained road from Thomas Road to Blido property.



Joel Monschke, P.E.
Civil Engineer
Stillwater Sciences

1 INTRODUCTION

Stillwater Sciences has been contracted to conduct road evaluation the proposed cannabis project on APN 221-081-004. On 3 October 2017, the field evaluation was conducted by Stillwater Sciences engineer (Joel Monschke). Information in this Technical Memorandum pertains to Segment 1 (See Figure 1) covering 1.7 miles of County-maintained road from Salmon Creek Road/Maple Hills Road to the Thomas Road junction.

2 EXPECTED INCREASE IN USE DUE TO CANNABIS PROJECT

2.1 Cannabis Project on APN 221-081-004

The cannabis project proposed on APN 221-081-004 has the potential to increase traffic on the roads evaluated herein because cultivation covers ~40,000 SF. However, the applicant strives to reduce impacts to all access roads by reusing soil, storing all water onsite (no water deliveries), and utilizing an onsite gravel quarry to maintain the roads on the property.

2.2 Other Cannabis Projects in the Vicinity

Areas accessed by Salmon Creek Road were delineated into eight sub-areas so that projected use could be estimated along the various road segments evaluated in this project. Humboldt County Department of Public Works provided Stillwater with a list of cannabis permit applications in the vicinity. The number of cannabis applicants and number of parcels were tallied by sub-area and are shown in Table 1.

Table 1. Access road area users.

Sub-area	Description of sub-area	Cannabis permit applications	Parcels
Lower Salmon Creek Road	Salmon Creek Road from Maple Hills Road to Thomas Road/Salmon Creek Road split	4	29
Upper Salmon Creek Road	Salmon Creek Road from Thomas Road/Salmon Creek Road split to terminus	9	44
Thomas Trunk Road	Thomas Road from Thomas Road/Salmon Creek Road split to Main/Upper Thomas Road split	14	49
Lower Thomas Road	Main Thomas Road from Main/Upper Thomas Road split to Salmon Creek School	16	41
Upper Thomas Road	Lower Thomas Road from Main/Lower Thomas Road split to terminus	17	36
Main Thomas Road	Upper Thomas Road from Main/Upper Thomas Road split to terminus	7	14
Lower Samuels Ranch Loop	Lower Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	12	52
Upper Samuels Ranch Loop	Upper Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	13	55

All of these sub-areas are accessed by the road (Segment 1) evaluated in this Technical Memorandum. Therefore, all 92 cannabis permit applications and 320 parcels contribute to use of Segment 1. Most of the cannabis applications involve permitting existing cultivation, so the traffic is not likely to significantly increase from those projects compared to the last several years. However, it is expected that the cumulative impacts of all these projects will result in incremental increases in road use considering that there are multiple new permit applications and that as farmers come into compliance they often significantly upgrade their operations.

2.3 Average Daily Traffic Estimate

Stillwater Sciences' engineer estimated average daily trips based on traffic observations during the road evaluation, number of properties utilizing the access road, and engineering judgement. There are approximately 320 parcels that utilize Segment 1. If each parcel accounts for two trips per day, that equates to approximately 640 total trips per day (~50 trips per hour during a typical 12-hour day (8 am to 8 pm). This is generally consistent with the observations made during the road evaluation. While there are likely busier times of day, and busier periods of the year, we believe that this is a reasonably accurate estimate for this road evaluation.



Figure 1. Road evaluation overview map.

3 FIELD OBSERVATIONS

3.1 General Observations

Overall, the 1.7 miles of County Road is in relatively good condition. There is evidence of skid marks at several locations. The greatest safety concerns on the segment are one pinch point at mile 0.3 and a narrow segment with blind curves from miles 0.8 to 1.0.

3.2 Description of Specific Road Segments

A detailed map of the road segment is shown on Figure 2. The beginning of the segment from mile 0 to 0.7 was generalized as a sub-segment because of its uniform characteristics. Measurements were taken along the road segment after mile 0.7 at 0.1 mile intervals as shown in Figure 2:

- Mile 0 to 0.7 (Beginning at Maple Hills Road): Paved, with yellow stripe, 18–24 foot (ft) width with 2-ft gravel shoulders, “equivalent category 4 road” with exception of one pinch point at mile 0.3 (14 ft width with no shoulders) caused by recent debris slide and tree (see photo in Appendix A). The pinch point is at a blind corner making it dangerous.
- Mile 0.8: relatively narrow section, 16-ft road width, no shoulder, deep ditch.
- Mile 0.9: Relatively narrow section, 15-ft road width with 1-ft shoulders.
- Mile 1.0: 18-ft road width with 1-ft shoulders.
- Mile 1.1: 20-ft road width with 1-ft shoulders.
- Mile 1.2: 24-ft road width with 1-ft shoulders.
- Mile 1.3: 16-ft road width with 1-ft shoulders—pinch point with decent visibility.
- Mile 1.4: 22-ft road width with 2-ft shoulders.
- Mile 1.45: 28-ft width bridge with no shoulder.
- Mile 1.5: 24-ft road width with 2-ft shoulders.
- Mile 1.6: 24-ft road width with 2-ft shoulders.
- Mile 1.7: Thomas Road/Salmon Creek Road split, 32-ft road width with 2-ft ft shoulders (end of Segment 1)

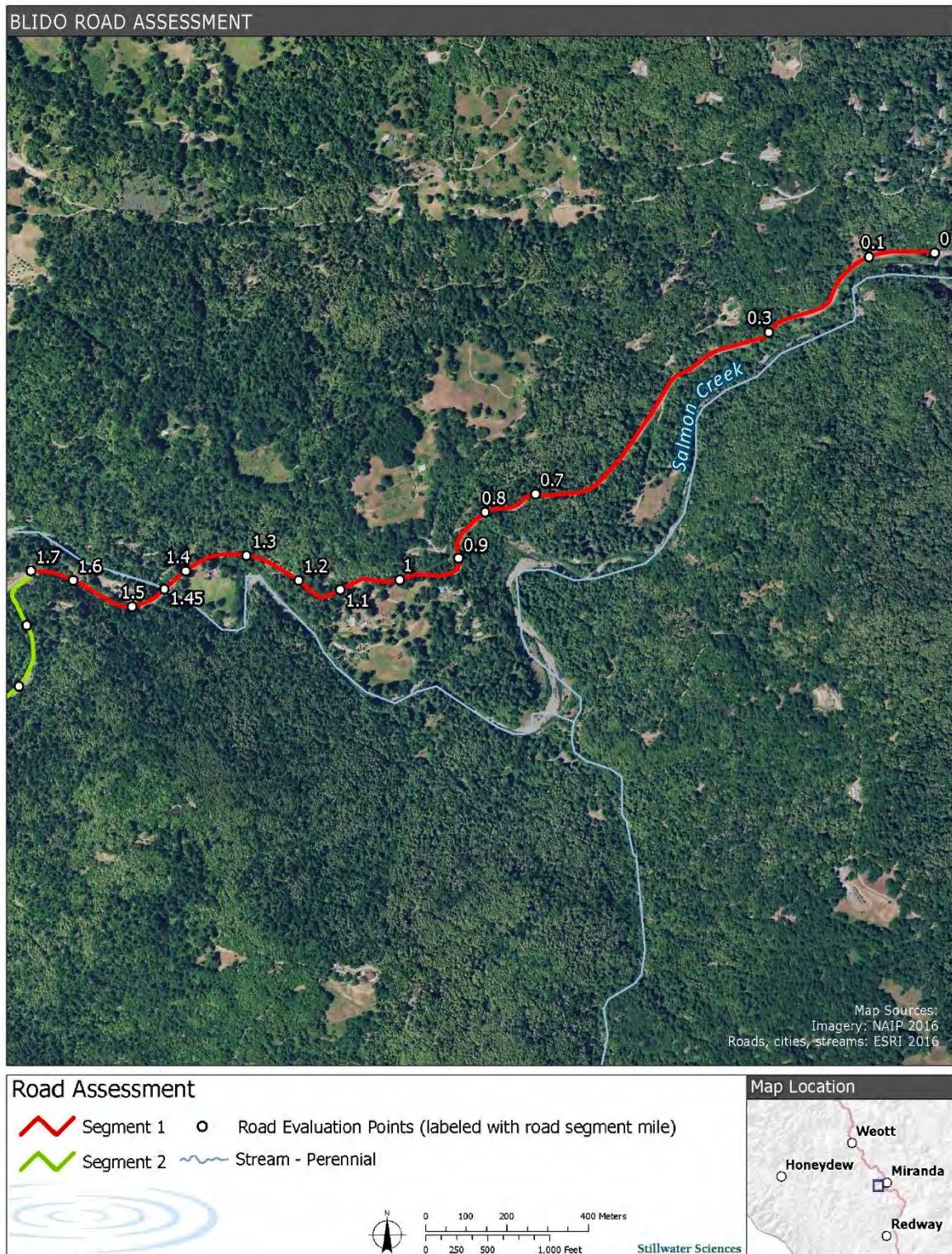


Figure 2. Road Segment 1 map.

4 RECOMMENDATIONS

4.1 Specific Recommendations for this Road Segment

- Mile 0.3: We recommend removing trees and dirt that has slumped off cut slope. Widening roadway to 20 feet with shoulders, need to consider environmental impact (high priority).
- Mile 0.8 to 1: This is a trickier road segment to widen due to a deep landslide in the vicinity. However, minor improvements to the roadway could improve safety and width including paving work to stabilize the inboard ditch and outboard edge of the roadway at select locations and fix pavement edges that are broken and treacherous at numerous locations.

It is unrealistic to expect one or several cannabis cultivators to make the road improvements recommended herein. Therefore, we suggest developing a public-private partnership between Humboldt County and residents/cultivators within the Salmon Creek community to work together to improve the County-maintained access road. As necessary, cultivator contribution could be calculated based on a sliding scale that takes into consideration the square footage of cultivation area and length of County-maintained road utilized.

Appendix A

Photos



Photo 1. Mile 0.1 Category 4 segment with yellow stripe, typical of segment from 0.0 to 0.7.



Photo 2. Mile 0.3: Pinch point at recent debris slide and tree; 14' width, no shoulder, blind corner, dangerous spot.



Photo 3. Mile 0.8: relatively narrow section, 16' width, no shoulder, deep ditch.



Photo 4. Mile 0.9: relatively narrow section, 15' width, 1' shoulders.



Photo 5. Mile 1.0: 18' width, 1' shoulder.



Photo 6. Mile 1.1: 20' width, 1' shoulders.



Photo 7. Mile 1.1: Logging truck on road.



Photo 8. Mile 1.2: 24' width, 1' shoulders.



Photo 9. Mile 1.3: 16' width, 1' shoulders pinch point, OK visibility.



Photo 10. Mile 1.4: 22' width, 2' shoulders.



Photo 11. Mile 1.45: 28' width bridge, no shoulders.



Photo 12. Mile 1.5: 24' width, 2' shoulders.



Photo 13. Mile 1.6: 24' width, 2' shoulders.



Photo 14. Mile 1.7: Thomas/ Salmon Creek Road split, 32' width, 2' shoulders (end of Segment 1).

**HUMBOLDT COUNTY DEPARTMENT OF PUBLIC WORKS
ROAD EVALUATION REPORT**

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

Applicant Name: _____ APN: _____

Planning & Building Department Case/File No.: _____

Road Name: _____ *(complete a separate form for each road)*

From Road (Cross street): _____

To Road (Cross street): _____

Length of road segment: _____ miles Date Inspected: _____

Road is maintained by: ☐ County ☐ Other _____
(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.

Signature Paul Monahan _____

Date _____

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: _____ Date Inspected: _____ APN: _____
From Road: _____ (Post Mile _____) Planning & Building
To Road: _____ (Post Mile _____) Department Case/File No.: _____

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: _____ Date(s) measured: _____

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.

John M. Smith

Signature of Civil Engineer

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.

TECHNICAL MEMORANDUM

DATE: 13 October 2017
TO: Humboldt County Department of Public Works
FROM: Joel Monschke, Stillwater Sciences
SUBJECT: Road Evaluation for APN 221-081-004 (Blido Property):
Segment 2 -4.1 miles of County-maintained Thomas Road from Salmon Creek Road junction to end of County-maintained segment.

I hereby state that all work described in the attached Technical Memorandum follows accepted engineering practice and was completed under my direction. This Technical Memorandum summarizes results from an evaluation conducted on the access road leading to APN 221-081-004 per guidance from the Humboldt County Department of Public Works. The Blido property is located approximately 8 miles from US-101 and approximately 2 miles from mile 4.1 of Thomas Road where the county-maintained road ends. Based on physical characteristics of the access road, the 7.8-mile access road to the Blido property has been divided into 4 segments as follows:

- **Segment 1** – 1.7 miles of County-maintained road (Salmon Creek Road) from Maple Hills Road junction to the Thomas Road junction.
- **Segment 2 (Subject of this Technical Memorandum)** – 4.1 miles of county-maintained Thomas Road, from Salmon Creek Road junction to end of County-maintained segment.
- **Segment 3** – 1.6 miles of private community-maintained road (Thomas Road) from Mile 4.1 of Thomas Road to Salmon Creek School.
- **Segment 4** – 0.4 miles of private community-maintained road from Thomas Road to Blido property.



Joel Monschke, P.E.
Civil Engineer
Stillwater Sciences

1 INTRODUCTION

Stillwater Sciences has been contracted to conduct road evaluation the proposed cannabis project on APN 221-081-004. On 3 October 2017, the field evaluation was conducted by Stillwater Sciences engineer (Joel Monschke). Information in this Technical Memorandum pertains to Segment 2 (See Figure 1) covering 4.1 miles of county-maintained Thomas Road from the Salmon Creek Road junction to mile 4.1 where Thomas Road becomes community-maintained.

2 EXPECTED INCREASE IN USE DUE TO CANNABIS PROJECT

2.1 Cannabis Project on APN 221-081-004

The cannabis project proposed on APN 221-081-004 has the potential to increase traffic on the roads evaluated herein because cultivation covers ~40,000 SF. However, the applicant strives to reduce impacts to all access roads by reusing soil, storing all water onsite (no water deliveries), and utilizing an onsite gravel quarry to maintain the roads on the property.

2.2 Other Cannabis Projects in the Vicinity

Areas accessed by Salmon Creek Road were delineated into eight sub-areas so that projected use could be estimated along the various road segments evaluated in this project. Humboldt County Department of Public Works provided Stillwater with a list of cannabis permit applications in the vicinity. The number of cannabis applicants and number of parcels were tallied by sub-area and are shown in Table 1.

Table 1. Access road area users.

Sub-area	Description of sub-area	Cannabis permit applications	Parcels
Lower Salmon Creek Road	Salmon Creek Road from Maple Hills Road to Thomas Road/Salmon Creek Road split	4	29
Upper Salmon Creek Road	Salmon Creek Road from Thomas Road/Salmon Creek Road split to terminus	9	44
Thomas Trunk Road	Thomas Road from Thomas Road/Salmon Creek Road split to Main/Upper Thomas Road split	14	49
Lower Thomas Road	Main Thomas Road from Main/Upper Thomas Road split to Salmon Creek School	16	41
Upper Thomas Road	Lower Thomas Road from Main/Lower Thomas Road split to terminus	17	36
Main Thomas Road	Upper Thomas Road from Main/Upper Thomas Road split to terminus	7	14
Lower Samuels Ranch Loop	Lower Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	12	52
Upper Samuels Ranch Loop	Upper Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	13	55

Six of these sub-areas (Thomas Trunk Road, Lower Thomas Road, Upper Thomas Road, Main Thomas Road, Lower Samuels Ranch Loop and Upper Samuels Ranch Loop) are accessed by the road (Segment 2) evaluated in this Technical Memorandum. Therefore, 79 cannabis permit applications and 247 parcels contribute to use of Segment 1. Most of the cannabis applications involve permitting existing cultivation, so the traffic is not likely to significantly increase from those projects compared to the last several years. However, it is expected that the cumulative impacts of all these projects will result in incremental increases in road use considering that there are multiple new permit applications and that as farmers come into compliance they often significantly upgrade their operations.

2.3 Average Daily Traffic (ADT) Estimate

Stillwater Sciences' engineer estimated average daily trips based on traffic observations during the road evaluation, number of properties utilizing the access road, and engineering judgement. There are approximately 247 parcels that utilize Segment 2. If each parcel accounts for two trips per day, that equates to approximately 494 total trips per day (~40 trips per hour during a typical 12-hour day (8 am to 8 pm). This is generally consistent with the observations made during the road evaluation. While there are likely busier times of day, and busier periods of the year, we believe that this is a reasonably accurate estimate for this road evaluation.



Figure 1. Road evaluation overview map.

3 FIELD OBSERVATIONS

3.1 General Observations

Overall, the 4.1 miles of paved county-maintained road is in relatively good condition and appears to be accommodating the current traffic load. There was no evidence of skid marks or scarred trees. This segment of road ranges in width from 15' to 20' wide except for several narrower pinch points as shown in the photos in Appendix A and described in Section 3.2 below.

3.2 Description of Specific Road Segments

The following measurements were taken along this road segment at 0.1 mile intervals as shown on Figure 2:

- Mile 0.1: Pinch point at tree; 15-ft road width with 1-ft shoulders. The visibility is fair.
- Mile 0.2: 18-ft road width with 1-ft shoulder.
- Mile 0.3: 18-ft road width with 1-ft shoulder.
- Mile 0.4: 18-ft road width with 1-ft shoulder.
- Mile 0.45: Pinch point at tree; 16-ft road width with decent visibility.
- Mile 0.5: 18-ft road width with 1-ft shoulder.
- Mile 0.6: 24-ft road width with 2-ft shoulder.
- Mile 0.7: 20-ft road width with 2-ft shoulder.
- Mile 0.8: 30-ft road width with 1-ft shoulder.
- Mile 0.9: 24-ft road width with 2-ft shoulder.
- Mile 1.0: 15-ft-wide pinch point with 1-ft shoulder caused by tree at blind corner.
- Mile 1.1: 20-ft road width with 1-ft shoulder.
- Mile 1.2: 20-ft road width with 1-ft shoulder.
- Mile 1.3: 22-ft road width with 2-ft shoulder.
- Mile 1.4: 22-ft road width with 1-ft shoulder.
- Mile 1.5: 20-ft road width with 1-ft shoulder.
- Mile 1.6: 20-ft road width with 2-ft shoulder.
- Mile 1.7: 20-ft road width with 1-ft shoulder.
- Mile 1.8: 20-ft road width with 2-ft shoulder.
- Mile 1.9: 18-ft road width with 1-ft shoulder.
- Mile 2.0: 15-ft road width with 1-ft shoulder.
- Mile 2.1: 18-ft road width with 1-ft shoulder.
- Mile 2.15: 15-ft-wide pinch point with 1-ft shoulder.
- Mile 2.2: 20-ft road width with 1-ft shoulder.
- Mile 2.3: 20-ft road width with 2-ft shoulder.
- Mile 2.35: ~15-ft-wide pinch point at partial road failure
- Mile 2.4: 16-ft road width with 1-ft shoulder. Dangerous blind corner.
- Mile 2.5: 18-ft road width with 2-ft shoulder.

- Mile 2.6: The culvert at this location was recently repaired. The short segment over the culvert is gravel and 18-ft wide with 2-ft shoulder.
- Mile 2.7: 20-ft road width and 2-ft shoulder.
- Mile 2.8: 18-ft road width with 1-ft shoulder.
- Mile 2.9: 18-ft road width with 1-ft shoulder.
- Mile 3.0: 15-ft road width with 1-ft shoulder.
- Mile 3.1: 20-ft road width with 1-ft shoulder.
- Mile 3.15: Dangerous pinch point at blind corner. The road is 15-ft wide with 1-ft shoulder.
- Mile 3.2: 20-ft road width with 2-ft shoulder.
- Mile 3.3: 16-ft-wide bridge with no shoulder. Limited visibility at western edge of bridge due to vegetation.
- Mile 3.4: 16-ft road width with 1-ft shoulder. Pinch point at downgradient at downgradient extent of blind corner.
- Mile 3.5: 18-ft road width with 1-ft shoulder. Very steep, sharp corner where large trucks often get stuck.
- Mile 3.6: 12-ft road width with 2-ft shoulder. Pinch point but decent visibility with turnouts.
- Mile 3.65: 12-ft road width with 1-ft shoulder. Blind corner.
- Mile 3.7: 12-ft road width with 10ft shoulder. Partially blind corner with deep ditch.
- Mile 3.8: 18-ft road width with 1-ft shoulder.
- Mile 3.9: 15-ft road width with 2-ft shoulder, broken pavement edges make segment more treacherous.
- Mile 4.0: 15-ft road width with 2-ft shoulder, broken pavement edges make segment more treacherous.
- Mile 4.1: 20-ft road width with 2-ft shoulders at intersection with Upper Thomas Road. End of County-maintained road (and end of segment 2).

4 RECOMMENDATIONS

4.1 Specific Recommendations for this Road Segment

- Mile 0.1: Cut vegetation to improve visibility, upgrade pavement to allow for minimal 18' wide driving surface width where feasible
- Mile 1.0: We recommend widening the roadway including removal of a Douglas Fir tree to improve the road width and visibility at the blind corner.
- Mile 1.9 to mile 2.2: There are some pinch points along this segment, but the segment traverses steep terrain so widening would be difficult and have potentially significant environmental impacts. Recommend signage reminding drivers to slow down and stay on their side of the road.
- Mile 2.4: We recommend widening the corner on the inside to improve width and visibility at the blind corner. Also nearby at mile 2.35, need to repair slumping outboard edge of road.

- Mile 3.15: We recommend widening corner on inside to improve road width and visibility on dangerous blind corner. This is probably the most dangerous corner on the road.
- Mile 3.3: We recommend removing vegetation on western extent of bridge to improve visibility.
- Mile 3.4: We recommend widening corner on inside to improve width and visibility at blind corner.
- Mile 3.5: Although the width and visibility on this corner is adequate, it is very steep and dangerous because large trucks frequently get stuck. We recommend re-engineering the corner to reduce grade and lengthen radius of curve. This work could potentially utilize the cut material from the other road widening sites.
- Mile 3.65 to mile 3.7: Potential locations to widen several corners on inside to improve road width and visibility at blind curves.
- Mile 3.7: Potential location to widen corner on inside to improve road width and visibility at partially blind curve.

It is unrealistic to expect one or several cannabis cultivators to make the road improvements recommended herein. Therefore, we suggest developing a public-private partnership between Humboldt County and residents/cultivators within the Salmon Creek community to work together to improve the County-maintained access road. As necessary, cultivator contribution could be calculated based on a sliding scale that takes into consideration the square footage of cultivation area and length of County-maintained road utilized.



Figure 2. Road Segment 2map.

Appendix A

Photos



Photo 1. Mile 0.1: Pinch point at tree: 15-ft road width with 1-ft shoulders, decent visibility.



Photo 2. Mile 0.2: 18-ft road width with 1-ft shoulders.



Photo 3. Mile 0.3: 18-ft road width with 1-ft shoulders.



Photo 4. Mile 0.4: 18-ft road width with 1-ft shoulders.



Photo 5. Mile 0.45: Pinch point at tree, 16-ft road width, decent visibility.



Photo 6. Mile 0.5: 18-ft road width with 1-ft shoulders.



Photo 7. Mile 0.6: 24-ft road width with 2-ft shoulders.



Photo 8. Mile 0.7: 20-ft road width with 2-ft shoulders.



Photo 9. Mile 0.8: 30-ft road width with 1-ft shoulders.



Photo 10. Mile 0.9: 24-ft road width with 2-ft shoulders.



Photo 11. Mile 1.0: Pinch point at tree on blind corner; 15-ft road width with 1-ft shoulder. Recommend widening.



Photo 12. Mile 1.1: 20-ft road width with 2-ft shoulders.



Photo 13. Mile 1.2: 20-ft road width with 1-ft shoulders.



Photo 14. Mile 1.3: 22-ft road width with 2-ft shoulders.



Photo 15. Mile 1.4: 22-ft road width with 1-ft shoulders.



Photo 16. Mile 1.5: 20-ft road width with 1-ft shoulders.



Photo 17. Mile 1.6: 20-ft road width with 2-ft shoulders.



Photo 18. Mile 1.7: 20-ft road width with 1-ft shoulders.



Photo 19. Mile 1.8: 20-ft road width with 2-ft shoulders.



Photo 20. Mile 1.9: 18-ft road width with 2-ft shoulders.



Photo 21. Mile 2.0: 15-ft road width with 1-ft shoulders.



Photo 22. Mile 2.1: 18-ft road width with 1-ft shoulders.



Photo 23. Mile 2.15: Pinch point at tree, 15-ft road width, 1-ft shoulder.



Photo 24. Mile 2.2: 20-ft road width with 1-ft shoulders.



Photo 25. Mile 2.3: 20-ft road width with 2-ft shoulders.



Photo 26. Mile 2.35: ~15-ft road width pinch point at partial road failure.



Photo 27. Mile 2.37: ~15-ft road width pinch point past partial road failure.



Photo 28. Mile 2.4: 16-ft road width with 1-ft shoulders at blind corner. Potential spot to widen corner on the inside to improve width and visibility.



Photo 29. Mile 2.5: 18-ft road width with 2-ft shoulders.



Photo 30. Mile 12.6: Recent culver repair, short gravel segment. 18-ft road width with 2-ft shoulders.



Photo 31. Mile 2.7: 20-ft road width with 2-ft shoulders.



Photo 32. Mile 2.8: 18-ft road width with 1-ft shoulders.



Photo 33. Mile 2.9: 18-ft road width with 1-ft shoulders.



Photo 34. Mile 3.0: 15-ft road width with 1-ft shoulders.



Photo 35. Mile 3.1: 20-ft road width with 1-ft shoulders.



Photo 36. Mile 3.15: Dangerous pinch point at blind corner. 15-ft road width with 1-ft shoulders. Potential spot to widen corner on inside to improve width and visibility.



Photo 37. Mile 3.2: 20-ft road width with 2-ft shoulders.



Photo 38. Mile 3.3: 16-ft wide bridge, no shoulders. Recommend removing vegetation on west extent of bridge to improve visibility.



Photo 39. Mile 3.4: 16-ft road width with 1-ft shoulder. Pinch point at downgradient extent of blind corner. Potential spot to widen corner on inside to improve width and visibility.



Photo 40. Mile 3.5: 18-ft road width with 1-ft shoulder. Very steep, sharp corner where trucks often get stuck. Consider re-engineering grade and curve radius.



Photo 41. Mile 3.6: 12-ft road width with 2-ft shoulders. Pinch point but decent visibility with turnouts.



Photo 42. Mile 3.65: Blind corner - 12-ft road width with 1-ft shoulders. Potential location to widen corner on inside to improve width and visibility.



Photo 43. Mile 3.7: 12-ft road width with 1-ft shoulder. Partially blind corner with deep ditch. Potential spot to widen corner on inside to improve width and visibility.



Photo 44. Mile 3.8: 18-ft road width with 1-ft shoulders.



Photo 45. Mile 3.85: Blind corner at intersection with Lower Thomas Road. 16-ft road width with 1-ft shoulders. Potential location to widen corner on inside to improve visibility.



Photo 46. Mile 3.9: 15-ft road width with 2-ft shoulders. Broken pavement edges make segment more treacherous.



Photo 47. Mile 4.0: 15-ft road width with 2-ft shoulders. Broken pavement edges make segment more treacherous.



Photo 48. Mile 4.1: 20-ft road width with 2-ft shoulders. Intersection with Upper Thomas Road and end of County-maintained road. End of Segment 2.

**HUMBOLDT COUNTY DEPARTMENT OF PUBLIC WORKS
ROAD EVALUATION REPORT**

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

Applicant Name: _____ APN: _____

Planning & Building Department Case/File No.: _____

Road Name: _____ *(complete a separate form for each road)*

From Road (Cross street): _____

To Road (Cross street): _____

Length of road segment: _____ miles Date Inspected: _____

Road is maintained by: ☐ County ☐ Other _____
(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.

Paul Marshall

Signature

Date

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: _____ Date Inspected: _____ APN: _____
 From Road: _____ (Post Mile _____) Planning & Building
 To Road: _____ (Post Mile _____) Department Case/File No.: _____

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: _____ Date(s) measured: _____
 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.

Signature of Civil Engineer _____

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.

TECHNICAL MEMORANDUM

DATE: 11 September 2018
TO: Humboldt County Department of Public Works
FROM: Joel Monschke, Stillwater Sciences
SUBJECT: Road Evaluation for APN 221-131-012 (Hill Property):
Segment 3 - 0.85 miles of community-maintained road (Upper Thomas Road) from Thomas Road junction to driveway.

I hereby state that all work described in the attached Technical Memorandum follows accepted engineering practice and was completed under my direction. This Technical Memorandum summarizes results from an evaluation conducted on the access road leading to APN 221-131-012 per guidance from the Humboldt County Department of Public Works. The Hill property is located approximately 8.4 miles from US-101 and approximately 2.6 miles from county-maintained Thomas Road. Based on physical characteristics of the roads, the access road to the Hill property has been divided into 5 segments as follows:

- **Segment 1** – 1.7 miles of County-maintained road (Salmon Creek Road) from Maple Hills Road junction to the Thomas Road junction.
- **Segment 2** – 4.1 miles of county-maintained Thomas Road, from Salmon Creek Road junction to end of County-maintained segment (past Lower Thomas Road junction).
- **Segment 3 (Subject of this Technical Memorandum)** – 0.85 miles of community-maintained road (Upper Thomas Road) from Thomas Road junction to driveway intersection.
- **Segment 4** – 1.0 miles of private driveway beginning at Upper Thomas Road and terminating at end of all-season road.
- **Segment 5** – 0.7 miles of seasonal private driveway beginning at end of all-season road and terminating at Hill property boundary.



Joel Monschke, P.E.
Civil Engineer
Stillwater Sciences

1 INTRODUCTION

Stillwater Sciences has been contracted to conduct a road evaluation for the proposed cannabis project on APN 221-131-012. On 10 May 2018, the field evaluation was conducted by Stillwater Sciences engineer (Joel Monschke). Information in this Technical Memorandum pertains to Segment 3 (See Figure 1) covering 0.85 miles of community-maintained road (Upper Thomas Road) from Thomas Road junction to the private driveway.

2 EXPECTED INCREASE IN USE DUE TO CANNABIS PROJECT

2.1 Cannabis Project on APN 221-131-012

The cannabis project proposed on APN 221-131-012 is unlikely to significantly increase traffic on the roads evaluated herein because cultivation only covers 14,000 SF and is conducted in a very low impact manner. Additionally, the applicant strives to reduce impacts to all access roads by reusing soil and storing all water onsite (no water deliveries).

2.2 Other Cannabis Projects in the Vicinity

Areas accessed by Salmon Creek Road were delineated into eight sub-areas so that projected use could be estimated along the various road segments evaluated in this project. Humboldt County Department of Public Works provided Stillwater with a list of cannabis permit applications in the vicinity. The number of cannabis applicants and number of parcels were tallied by sub-area and are shown in Table 1.

Table 1. Access road area users.

Sub-area	Description of sub-area	Cannabis permit applications	Parcels
Lower Salmon Creek Road	Salmon Creek Road from Maple Hills Road to Thomas Road/Salmon Creek Road split	4	29
Upper Salmon Creek Road	Salmon Creek Road from Thomas Road/Salmon Creek Road split to terminus	9	44
Thomas Trunk Road	Thomas Road from Thomas Road/Salmon Creek Road split to Main/Upper Thomas Road split	14	49
Lower Thomas Road	Main Thomas Road from Main/Upper Thomas Road split to Salmon Creek School	16	41
Upper Thomas Road	Lower Thomas Road from Main/Lower Thomas Road split to terminus	17	36
Main Thomas Road	Upper Thomas Road from Main/Upper Thomas Road split to terminus	7	14
Lower Samuels Ranch Loop	Lower Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	12	52
Upper Samuels Ranch Loop	Upper Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	13	55

The Upper Thomas Road sub-area is access by the road segment (Segment 3) evaluated in this Technical Memorandum. Therefore, 17 cannabis permit applications and 36 parcels contribute to use of Segment 3. Many of the cannabis applications involve permitting existing cultivation, so the traffic is not likely to significantly increase from those projects compared to the last several years. However, it is expected that the cumulative impacts of all these projects will result in incremental increases in road use considering that there are multiple new permit applications and that as farmers come into compliance they often significantly upgrade their operations.

2.3 Average Daily Traffic Estimate

Stillwater Sciences' engineer estimated average daily trips based on traffic observations during the road evaluation, number of properties utilizing the access road, and engineering judgement. There are approximately 36 parcels that utilize Segment 3. If each parcel accounts for two trips per day, that equates to approximately 72 total trips per day (~6 trips per hour during a typical 12-hour day (8 a.m. to 8 p.m.)). This is generally consistent with the observations made during the road evaluation. While there are likely busier times of day, and busier periods of the year, we believe that this is a reasonably accurate estimate for this road evaluation.

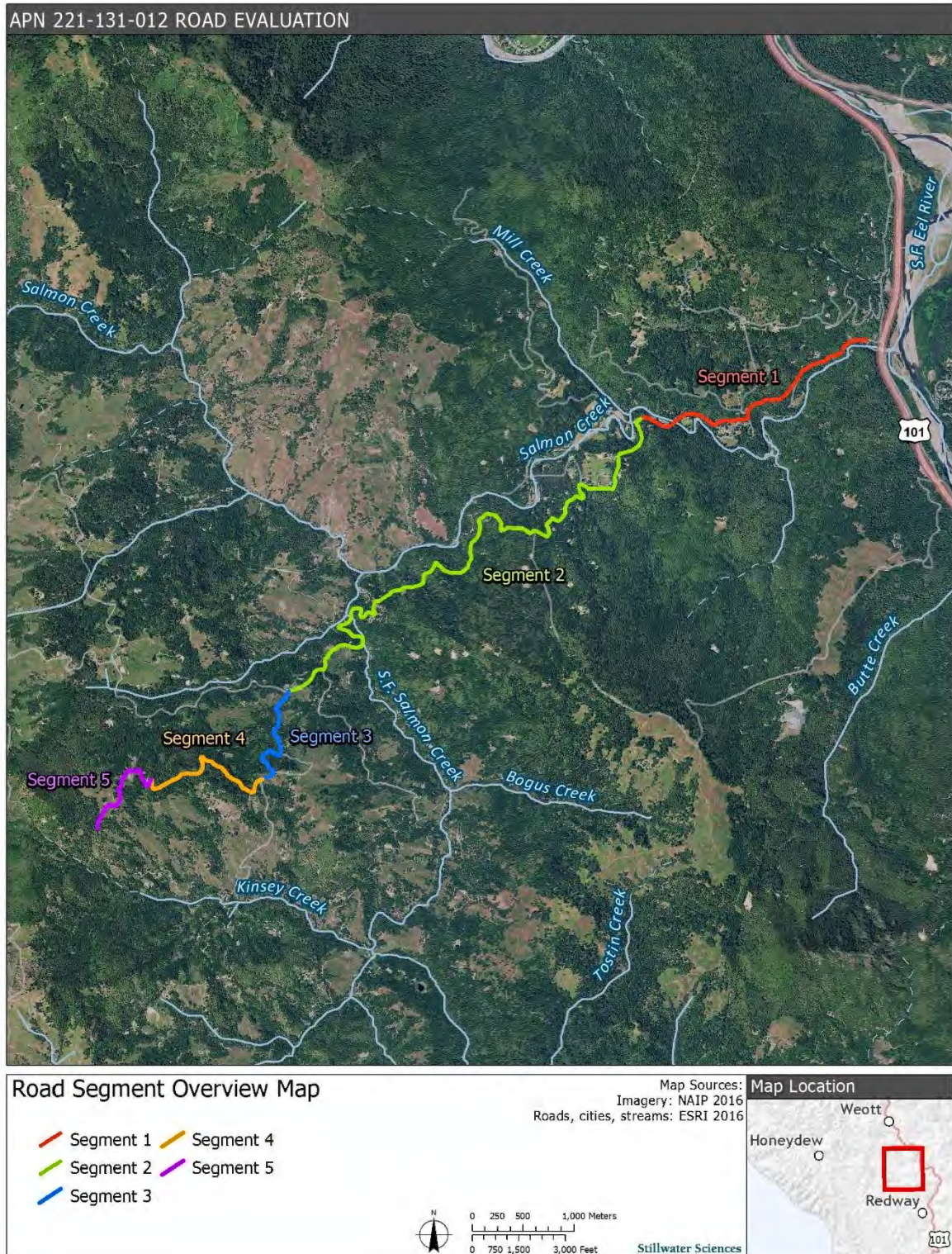


Figure 1. Road evaluation overview map.

3 FIELD OBSERVATIONS

3.1 General Observations

Overall, the 0.85 miles of Lower Thomas Road is in relatively good condition. There is no evidence of skid marks at on the segment. There are several narrow sections where brush clearing is advised to improve visibility and some other segments where minor widening could improve safety.

3.2 Description of Specific Road Segments

A detailed map of the road segment is shown on Figure 2. Measurements were taken along the road segment after mile at 0.1-mile intervals as shown in Figure 2:

- Mile 0.1: 16' width, 1' shoulders; road crosses geologically unstable area with some wider turnouts and brush impairing visibility.
- Mile 0.15: 14' width, 1' shoulders at blind corner with deep ditch. improve inside of turn
- Mile 0.2: 18' width, 1' shoulders.
- Mile 0.3: 18' width, 1' shoulders.
- Mile 0.32: 16' width, no shoulders at pinch point at culvert crossing; good visibility and turnouts on both sides of crossing.
- Mile 0.4: 18' width, 1' shoulders.
- Mile 0.5: 18' width, 1' shoulders.
- Mile 0.6: 18' width, 1' shoulders.
- Mile 0.65: ~16' width pinch point with deep ditch.
- Mile 0.7: 16' width, 1' shoulders at blind corner, road is traversing steep area so difficult to widen.
- Mile 0.8: 18' width, 2' shoulders.
- Mile 0.85: End Segment 3.



Figure 2. Road Segment 3 map.

4 RECOMMENDATIONS

4.1 Specific Recommendations for this Road Segment

- Miles 0.0 to 0.2: Brush road to improve visibility between turnouts.
- Mile 0.15: Widen road on inside of turn to increase width and improve visibility.
- Mile 0.65 to 0.75: Difficult to widen several pinch points due to steep topography; brush road to improve visibility; consider installing signage.

Appendix A

Photos



Photo 1. Mile 0.1: 16' width, 1' shoulders; road crosses geologically unstable area with some wider turnouts and brush impairing visibility.



Photo 2. Mile 0.15: 14' width, 1' shoulders at blind corner with deep ditch. improve inside of turn.



Photo 3. Mile 0.2: 18' width, 1' shoulders.



Photo 4. Mile 0.3: 18' width, 1' shoulders.



Photo 5. Mile 0.32: 16' width, no shoulders at pinch point at culvert crossing; good visibility and turnouts on both sides of crossing.



Photo 6. Mile 0.4: 18' width, 1' shoulders.



Photo 7. Mile 0.5: 18' width, 1' shoulders.



Photo 8. Mile 0.6: 18' width, 1' shoulders.



Photo 9. Mile 0.65: ~16' width pinch point with deep ditch.



Photo 10. Mile 0.7: 16' width, 1' shoulders at blind corner, road is traversing steep area so difficult to widen.



Photo 11. Mile 0.8: 18' width, 2' shoulders.



Photo 12. Mile 0.85: End Segment 3 at driveway.

**HUMBOLDT COUNTY DEPARTMENT OF PUBLIC WORKS
ROAD EVALUATION REPORT**

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

Applicant Name: _____ APN: _____

Planning & Building Department Case/File No.: _____

Road Name: _____ *(complete a separate form for each road)*

From Road (Cross street): _____

Jul Morales

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: _____ Date Inspected: _____ APN: _____
 From Road: _____ (Post Mile _____) Planning & Building
 To Road: _____ (Post Mile _____) Department Case/File No.: _____

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: _____ Date(s) measured: _____
 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.

Signature of Civil Engineer

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.

TECHNICAL MEMORANDUM

DATE: 5 October 2018
TO: Humboldt County Department of Public Works
FROM: Joel Monschke, Stillwater Sciences
SUBJECT: Road Evaluation for APNs 221-141-037 (Carl Property):
Segment 4 - 1.2 miles of community-maintained road (Upper Thomas Road) from Mile 0.85 to just past Dogtrack Bridge.

I hereby state that all work described in the attached Technical Memorandum follows accepted engineering practice and was completed under my direction. This Technical Memorandum summarizes results from an evaluation conducted on the access road leading to APN 221-141-037 per guidance from the Humboldt County Department of Public Works. The Carl property is located approximately 9 miles from US-101 and approximately 3.2 miles from county-maintained Thomas Road. Based on physical characteristics of the roads, the access road to the Carl property has been divided into 5 segments as follows:

- **Segment 1** – 1.7 miles of County-maintained road (Salmon Creek Road) from Maple Hills Road junction to the Thomas Road junction.
- **Segment 2** – 4.1 miles of county-maintained Thomas Road, from Salmon Creek Road junction to end of County-maintained segment (past Lower Thomas Road junction).
- **Segment 3** – 0.85 miles of community-maintained road (Upper Thomas Road) from Thomas Road junction to driveway intersection.
- **Segment 4 – (Subject of this Technical Memorandum)** 1.2 miles of community-maintained road (Upper Thomas Road) from mile 0.85 to major fork just past Dogtrack Bridge.
- **Segment 5** – 1.25 miles of community-maintained road (Upper Thomas Road) from major fork just past Dogtrack Bridge to double bridges over Hacker and SF Salmon Creeks.



Joel Monschke, P.E.
Civil Engineer
Stillwater Sciences

1 INTRODUCTION

Stillwater Sciences has been contracted to conduct a road evaluation for the proposed cannabis project on APN 221-141-037. On 17 August 2018, the field evaluation was conducted by Stillwater Sciences engineer (Joel Monschke). Information in this Technical Memorandum pertains to Segment 4 (See Figure 1) covering 1.2 miles of community-maintained road (Upper Thomas Road) from mile 0.85 to the major fork just past Dogtrack Bridge.

2 EXPECTED INCREASE IN USE DUE TO CANNABIS PROJECT

2.1 Cannabis Projects on APNs 221-141-037

The cannabis projects proposed on APNs 221-141-037 is unlikely to significantly increase traffic on the roads evaluated herein because the project involves permitting of existing cultivation. Additionally, the applicants strive to reduce impacts to all access roads by reusing soil and storing all water onsite (no water deliveries).

2.2 Other Cannabis Projects in the Vicinity

Areas accessed by Salmon Creek Road were delineated into eight sub-areas so that projected use could be estimated along the various road segments evaluated in this project. Humboldt County Department of Public Works provided Stillwater with a list of cannabis permit applications in the vicinity. The number of cannabis applicants and number of parcels were tallied by sub-area and are shown in Table 1.

Table 1. Access road area users.

Sub-area	Description of sub-area	Cannabis permit applications	Parcels
Lower Salmon Creek Road	Salmon Creek Road from Maple Hills Road to Thomas Road/Salmon Creek Road split	4	29
Upper Salmon Creek Road	Salmon Creek Road from Thomas Road/Salmon Creek Road split to terminus	9	44
Thomas Trunk Road	Thomas Road from Thomas Road/Salmon Creek Road split to Main/Upper Thomas Road split	14	49
Lower Thomas Road	Main Thomas Road from Main/Upper Thomas Road split to Salmon Creek School	16	41
Upper Thomas Road	Lower Thomas Road from Main/Lower Thomas Road split to terminus	17	36
Main Thomas Road	Upper Thomas Road from Main/Upper Thomas Road split to terminus	7	14
Lower Samuels Ranch Loop	Lower Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	12	52
Upper Samuels Ranch Loop	Upper Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	13	55

A portion of the Upper Thomas Road sub-area is access by the road segment (Segment 4) evaluated in this Technical Memorandum. Approximately 13 cannabis permit applications and 24 parcels contribute to use of Segment 4. Many of the cannabis applications involve permitting existing cultivation, so the traffic is not likely to significantly increase from those projects compared to the last several years. However, it is expected that the cumulative impacts of all these projects will result in incremental increases in road use considering that there are multiple new permit applications and that as farmers come into compliance they often significantly upgrade their operations.

2.3 Average Daily Traffic Estimate

Stillwater Sciences' engineer estimated average daily trips based on traffic observations during the road evaluation, number of properties utilizing the access road, and engineering judgement. There are approximately 24 parcels that utilize Segment 4. If each parcel accounts for two trips per day, that equates to approximately 48 total trips per day (~4 trips per hour during a typical 12-hour day (8 a.m. to 8 p.m.)). This is generally consistent with the observations made during the road evaluation. While there are likely busier times of day, and busier periods of the year, we believe that this is a reasonably accurate estimate for this road evaluation.



Figure 1. Road evaluation overview map.

3 FIELD OBSERVATIONS

3.1 General Observations

Overall, the 1.2 miles of Lower Thomas Road is in relatively good condition. There is no evidence of skid marks at on the segment. There are several narrow sections where brush clearing is advised to improve visibility and some other segments where minor widening could improve safety.

3.2 Description of Specific Road Segments

A detailed map of the road segment is shown on Figure 2. Measurements were taken along the road segment after mile at 0.1-mile intervals as shown in Figure 2:

- Mile 0.1: 18' width 1' shoulders.
- Mile 0.2: 18' width, 1' shoulders.
- Mile 0.25: 15' pinchpoint at culvert crossing.
- Mile 0.3: 18' width, 1' shoulders, some narrower adjacent segments but good visibility.
- Mile 0.4: 18' width, 1' shoulders.
- Mile 0.5: 14' width, 1' shoulders, good visibility with wider segments.
- Mile 0.6: 18' width, 2' shoulders.
- Mile 0.7: 18' width, 1' shoulders.
- Mile 0.75: Eroding inboard ditch.
- Mile 0.8: 12' width, 1' shoulders, good visibility.
- Mile 0.9: 18' no shoulders, good visibility at deep culvert crossing.
- Mile 1.0: 15' width, 1' shoulders, generally ok visibility.
- Mile 1.1: 12' bridge.
- Mile 1.2: 18' width, 1' shoulders; end segment four at major intersection.



Figure 2. Road Segment 4 map.

4 RECOMMENDATIONS

4.1 Specific Recommendations for this Road Segment

- Mile 0.1: Minor brushing to improve visibility.
- Mile 0.25: Brush road to improve visibility at narrow culvert crossing.
- Mile 0.75: Recommend installation of ditch relief culvert to prevent ditch erosion that is narrowing road.
- Mile 1.0: Minor brushing to improve visibility.
- Mile 1.1: Recommend minor widening on northern bridge approach to improve turnout, brushing on south bridge approach to improve visibility.

Appendix A

Photos



Photo 1. Mile 0.1: 18' width 1' shoulders.



Photo 2. Mile 0.2: 18' width, 1' shoulders.



Photo 3. Mile 0.25: 15' pinchpoint at culvert crossing.



Photo 4. Mile 0.3: 18' width, 1' shoulders, some narrower adjacent segments but good visibility.



Photo 5. Mile 0.4: 18' width, 1' shoulders.



Photo 6. Mile 0.5: 14' width, 1' shoulders, good visibility with wider segments.



Photo 7. Mile 0.6: 18' width, 2' shoulders.



Photo 8. Mile 0.7: 18' width, 1' shoulders.



Photo 9. Mile 0.75: Eroding inboard ditch.



Photo 10. Mile 0.8: 12' width, 1' shoulders, good visibility.



Photo 11. Mile 0.9: 18' no shoulders, good visibility at deep culvert crossing.

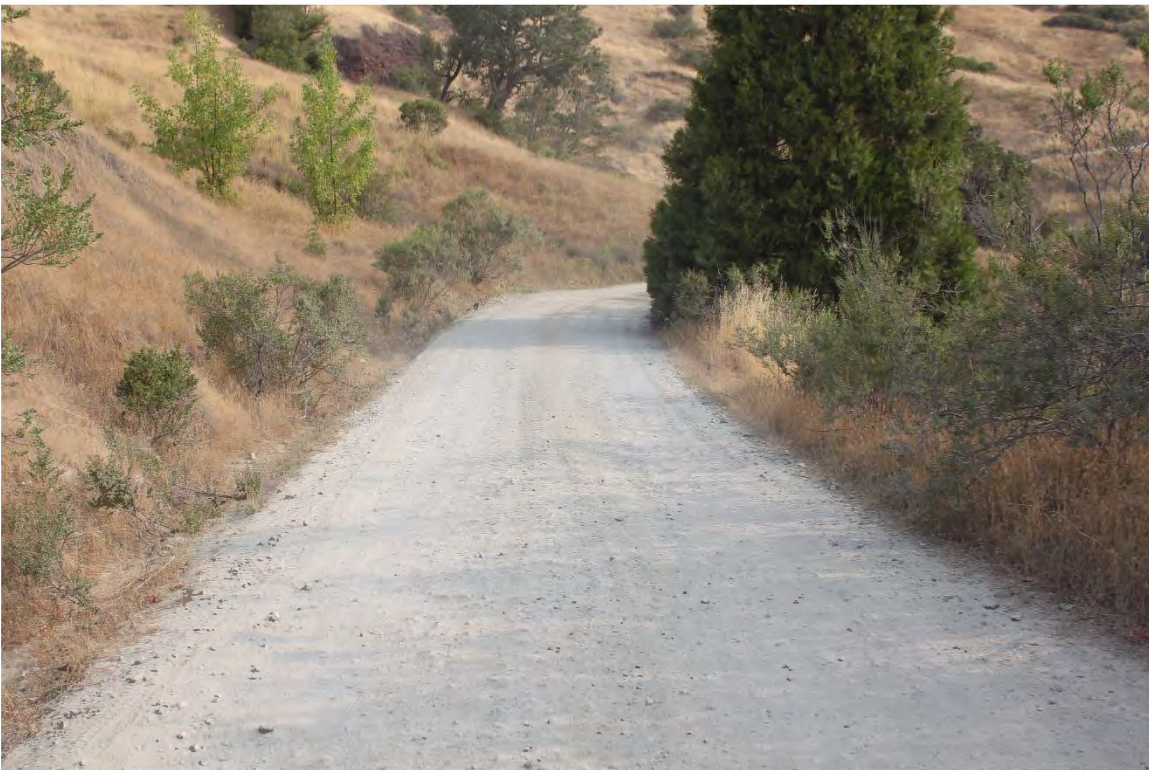


Photo 12. Mile 1.0: 15' width, 1' shoulders, generally ok visibility.



Photo 13. Mile 1.1: 12' bridge.



Photo 14. Mile 1.2: 18' width, 1' shoulders; end segment four at major intersection.

**HUMBOLDT COUNTY DEPARTMENT OF PUBLIC WORKS
ROAD EVALUATION REPORT**

PART A: Part A may be completed by the applicant

Applicant Name: _____ APN: _____

Planning & Building Department Case/File No.: _____

Road Name: _____ (complete a separate form for each road)

From Road (Cross street): _____

To Road (Cross street): _____

Length of road segment: _____ miles Date Inspected: _____

Road is maintained by: ☐ County ☐ Other _____
(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

Paul Marshall

Signature _____

Date _____

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: _____ Date Inspected: _____ APN: _____
From Road: _____ (Post Mile _____) Planning & Building
To Road: _____ (Post Mile _____) Department Case/File No.: _____

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: _____ Date(s) measured: _____
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.

Signature of Civil Engineer _____

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.

TECHNICAL MEMORANDUM

DATE: 5 October 2018
TO: Humboldt County Department of Public Works
FROM: Joel Monschke, Stillwater Sciences
SUBJECT: Road Evaluation for APNs 221-141-037 (Carl Property):
Segment 5 - 1.25 miles of community-maintained road (Upper Thomas Road) from major fork past Dogtrack Bridge to double bridges over Hacker and SF Salmon Creek.

I hereby state that all work described in the attached Technical Memorandum follows accepted engineering practice and was completed under my direction. This Technical Memorandum summarizes results from an evaluation conducted on the access road leading to APNs 221-141-037 per guidance from the Humboldt County Department of Public Works. The Carl property is located approximately 9 miles from US-101 and approximately 3.2 miles from county-maintained Thomas Road. Based on physical characteristics of the roads, the access road to the Carl property has been divided into 5 segments as follows:

- **Segment 1** – 1.7 miles of County-maintained road (Salmon Creek Road) from Maple Hills Road junction to the Thomas Road junction.
- **Segment 2** – 4.1 miles of county-maintained Thomas Road, from Salmon Creek Road junction to end of County-maintained segment (past Lower Thomas Road junction).
- **Segment 3** – 0.85 miles of community-maintained road (Upper Thomas Road) from Thomas Road junction to driveway intersection.
- **Segment 4** – 1.2 miles of community-maintained road (Upper Thomas Road) from mile 0.85 to major fork just past Dogtrack Bridge.
- **Segment 5 – (Subject of this Technical Memorandum)** 1.25 miles of community-maintained road (Upper Thomas Road) from major fork just past Dogtrack Bridge to double bridges over Hacker and SF Salmon Creek.



Joel Monschke, P.E.
Civil Engineer
Stillwater Sciences

1 INTRODUCTION

Stillwater Sciences has been contracted to conduct a road evaluation for the proposed cannabis project on APN 221-141-037. On 17 August 2018, the field evaluation was conducted by Stillwater Sciences engineer (Joel Monschke). Information in this Technical Memorandum pertains to Segment 4 (See Figure 1) covering 1.2 miles of community-maintained road (Upper Thomas Road) from mile 0.85 to the major fork just past Dogtrack Bridge.

2 EXPECTED INCREASE IN USE DUE TO CANNABIS PROJECT

2.1 Cannabis Projects on APNs 221-141-037

The cannabis projects proposed on APN 221-141-037 is unlikely to significantly increase traffic on the roads evaluated herein because the project involves permitting of existing cultivation. Additionally, the applicants strive to reduce impacts to all access roads by reusing soil and storing all water onsite (no water deliveries).

2.2 Other Cannabis Projects in the Vicinity

Areas accessed by Salmon Creek Road were delineated into eight sub-areas so that projected use could be estimated along the various road segments evaluated in this project. Humboldt County Department of Public Works provided Stillwater with a list of cannabis permit applications in the vicinity. The number of cannabis applicants and number of parcels were tallied by sub-area and are shown in Table 1.

Table 1. Access road area users.

Sub-area	Description of sub-area	Cannabis permit applications	Parcels
Lower Salmon Creek Road	Salmon Creek Road from Maple Hills Road to Thomas Road/Salmon Creek Road split	4	29
Upper Salmon Creek Road	Salmon Creek Road from Thomas Road/Salmon Creek Road split to terminus	9	44
Thomas Trunk Road	Thomas Road from Thomas Road/Salmon Creek Road split to Main/Upper Thomas Road split	14	49
Lower Thomas Road	Main Thomas Road from Main/Upper Thomas Road split to Salmon Creek School	16	41
Upper Thomas Road	Lower Thomas Road from Main/Lower Thomas Road split to terminus	17	36
Main Thomas Road	Upper Thomas Road from Main/Upper Thomas Road split to terminus	7	14
Lower Samuels Ranch Loop	Lower Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	12	52
Upper Samuels Ranch Loop	Upper Samuels Ranch Loop Road (Thomas Road) from School to Serendipity sign	13	55

A portion of the Upper Thomas Road sub-area is access by the road segment (Segment 5) evaluated in this Technical Memorandum. Approximately 6 cannabis permit applications and 10 parcels contribute to use of Segment 5. Many of the cannabis applications involve permitting existing cultivation, so the traffic is not likely to significantly increase from those projects compared to the last several years. However, it is expected that the cumulative impacts of all these projects will result in incremental increases in road use considering that there are multiple new permit applications and that as farmers come into compliance they often significantly upgrade their operations.

2.3 Average Daily Traffic Estimate

Stillwater Sciences' engineer estimated average daily trips based on traffic observations during the road evaluation, number of properties utilizing the access road, and engineering judgement. There are approximately 10 parcels that utilize Segment 5. If each parcel accounts for two trips per day, that equates to approximately 20 total trips per day (~2 trips per hour during a typical 12-hour day (8 a.m. to 8 p.m.)). This is generally consistent with the observations made during the road evaluation. While there are likely busier times of day, and busier periods of the year, we believe that this is a reasonably accurate estimate for this road evaluation.



Figure 1. Road evaluation overview map.

3 FIELD OBSERVATIONS

3.1 General Observations

Overall, the 1.25 miles of Lower Thomas Road is in relatively good condition. There is no evidence of skid marks at on the segment. During the field evaluation, numerous narrow segments were identified and since the time of the field assessment, road widening, and brush removal has been conducted to improve visibility and safety of the roadway.

3.2 Description of Specific Road Segments

A detailed map of the road segment is shown on Figure 2. Measurements were taken along the road segment after mile at 0.1-mile intervals as shown in Figure 2:

- Mile 0.05: 12' width, no shoulders at location where road has slumped.
- Mile 0.1: 16' width, 2' shoulders.
- Mile 0.15: 12' width, no shoulders, pinch point at culvert crossing, good turnouts on both sides, but vegetation impedes visibility.
- Mile 0.2: 14' width, 1' shoulders at blind corner with vegetation encroachment into roadway.
- Mile 0.3: 18' width, 2' shoulders; blind corner to west with vegetation encroachment into roadway.
- Mile 0.4: 12' width, 2' shoulders, geologically unstable area, with vegetation encroachment into roadway.
- Mile 0.5: 12' width, 2' shoulders, with vegetation encroachment into roadway.
- Mile 0.6: 14' width, 2' shoulders, with vegetation encroachment into roadway.
- Mile 0.7: 14' width, 2' shoulders, with vegetation encroachment into roadway.
- Mile 0.8: 18' width, 2' shoulders.
- Mile 0.9: 14' width, 2' shoulders, with vegetation encroachment into roadway.
- Mile 1.0: 14' width, 1' shoulders, with vegetation encroachment into roadway.
- Mile 1.1: 14' width, 1' shoulders, with vegetation encroachment into roadway.
- Mile 1.2: 16' width, 1' shoulders.
- Mile 1.22: 12' width bridge with turnouts on both sides and good visibility.
- Mile 1.25: 10' width bridge, with turnouts on both sides and good visibility (end Segment 5).



Figure 2. Road Segment 5 map.

4 RECOMMENDATIONS

4.1 Specific Recommendations for this Road Segment

- Mile 0.05: At location where road has slumped, brush road to improve visibility and add gravel to improve road surface.
- Mile 0.15: Pinch point at culvert crossing, good turnouts on both sides, brush to improve visibility
- Mile 0.2 to 1.1: Extensive brush removal necessary to improve visibility.

As previously described, extensive roadwork has been conducted since the time of the field-based road assessment to address many of the recommendations described herein.

Appendix A

Photos



Photo 1. Mile 0.05: 12' width, no shoulders at location where road has slumped.



Photo 2. Mile 0.1: 16' width, 2' shoulders.



Photo 3. Mile 0.15: 12' width, no shoulders, pinch point at culvert crossing, good turnouts on both sides, but vegetation impedes visibility.



Photo 4. Mile 0.2: 14' width, 1' shoulders at blind corner with vegetation encroachment into roadway.



Photo 5. Mile 0.3: 18' width, 2' shoulders; blind corner to west with vegetation encroachment into roadway.



Photo 6. Mile 0.4: 12' width, 2' shoulders, geologically unstable area, with vegetation encroachment into roadway.



Photo 7. Mile 0.5: 12' width, 2' shoulders, with vegetation encroachment into roadway.



Photo 8. Mile 0.6: 14' width, 2' shoulders, with vegetation encroachment into roadway.



Photo 9. Mile 0.7: 14' width, 2' shoulders, with vegetation encroachment into roadway.



Photo 10. Mile 0.8: 18' width, 2' shoulders.



Photo 11. Mile 0.9: 14' width, 2' shoulders, with vegetation encroachment into roadway.



Photo 12. Mile 1.0: 14' width, 1' shoulders, with vegetation encroachment into roadway.



Photo 13. Mile 1.1: 14' width, 1' shoulders, with vegetation encroachment into roadway.



Photo 14. Mile 1.2: 16' width, 1' shoulders.



Photo 15. Mile 1.22: 12' width bridge with turnouts on both sides and good visibility.



Photo 16. Mile 1.25: 10' width bridge, with turnouts on both sides and good visibility (end Segment 5).