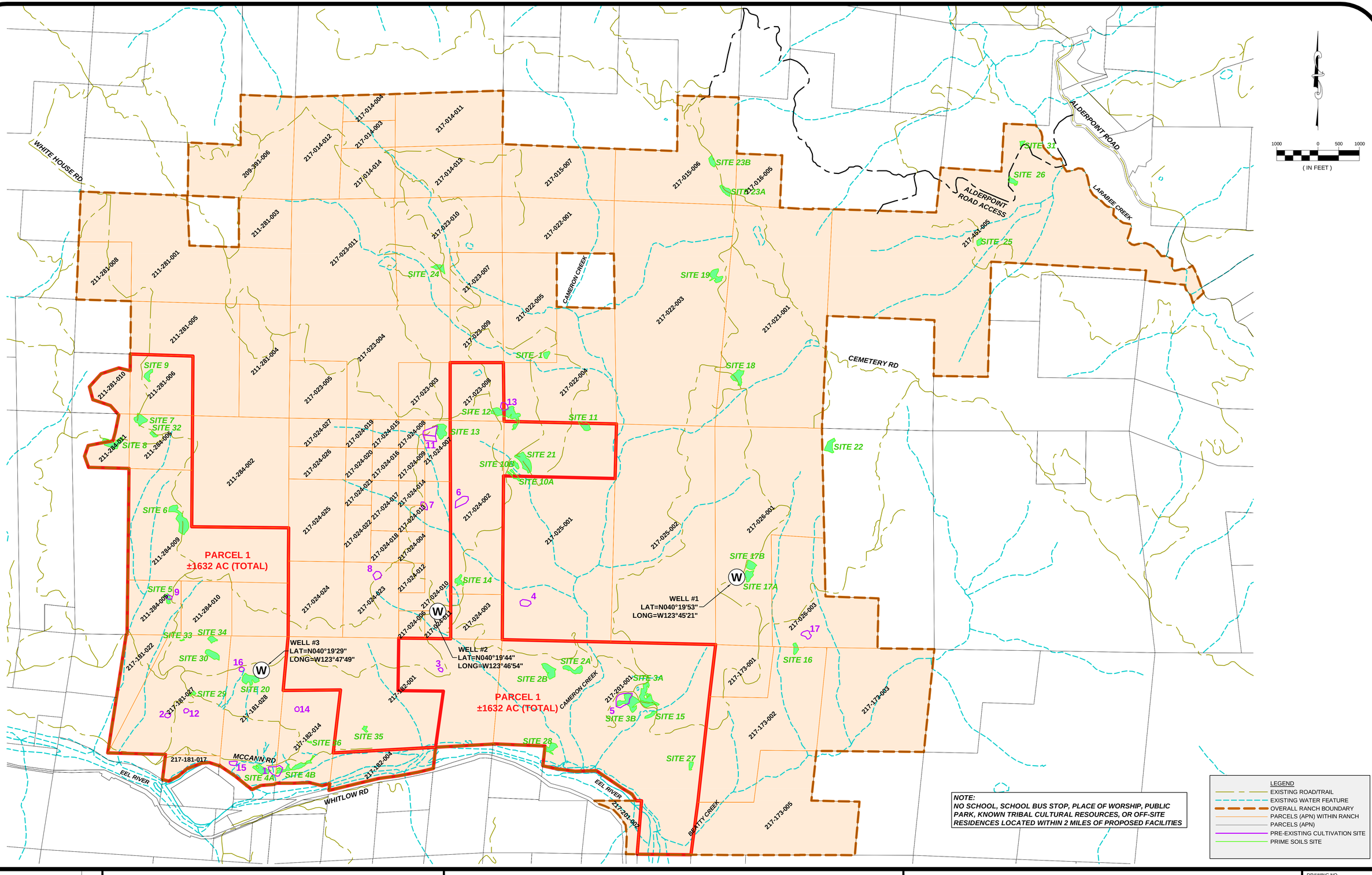
Appendix A

Plot Plans; BSE Consultants, INC.



NOTE:
NO SCHOOL, SCHOOL BUS STOP, PLACE OF WORSHIP, PUBLIC PARK, KNOWN TRIBAL CULTURAL RESOURCES, OR OFF-SITE RESIDENCES LOCATED WITHIN 2 MILES OF PROPOSED FACILITIES

LEGEND
- EXISTING ROAD/TRAIL
- EXISTING WATER FEATURE
- OVERALL RANCH BOUNDARY
- PARCELS (APN) WITHIN RANCH
- PARCELS (APN)
- PRE-EXISTING CULTIVATION SITE
- PRIME SOILS SITE

DESIGN/DRAWN: SMG/DRB 11/08/19

ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING
312 SOUTH HARBOR CITY BOULEVARD, SUITE 4
MELBOURNE, FLORIDA 32901 PHONE: (321) 725-3674 FAX: (321) 723-1159
CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905
CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905

OVERALL CANNABIS DEVELOPMENT

DRAWING NO. 11367_200_003
SHEET 1 of 1
PROJECT NO. 11367

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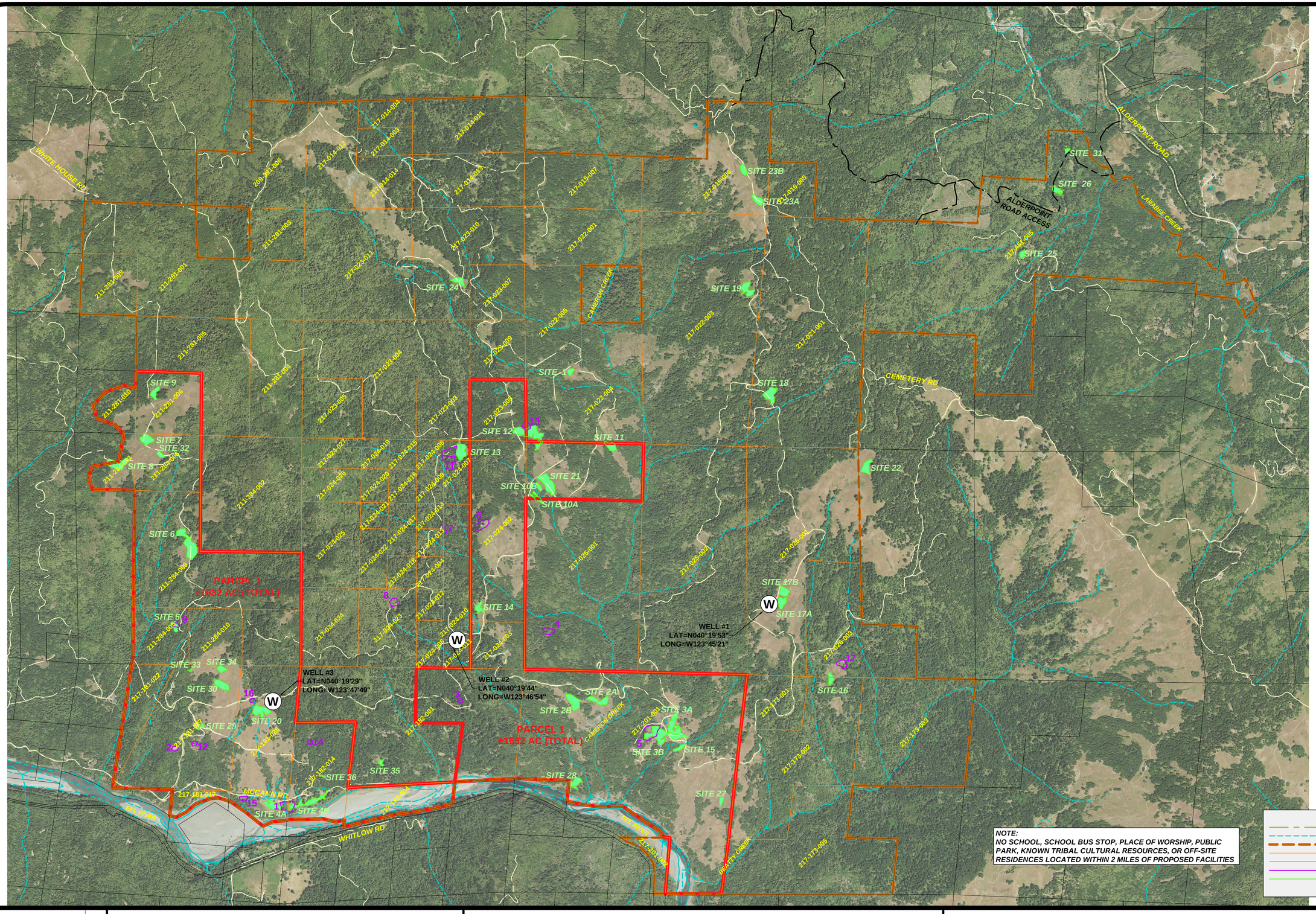

NOTE:
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- EXISTING WATER FEATURE
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- PRIME SOILS SITE

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DESIGN/DRAWN: SMG/DRB 11/08/19

ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING
312 SOUTH HARBOR CITY BOULEVARD, SUITE 4
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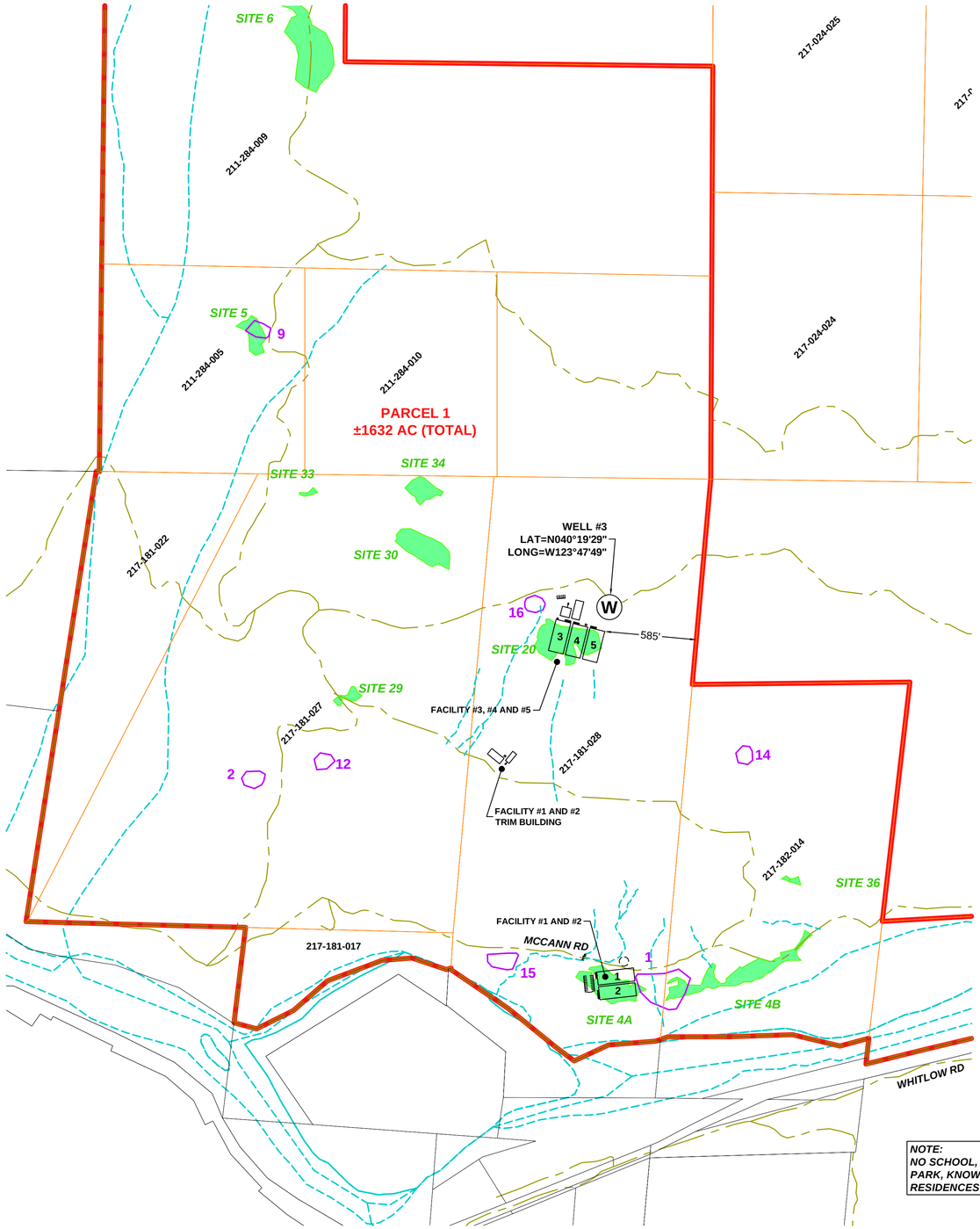
OVERALL CANNABIS DEVELOPMENT (AERIAL)

DRAWING NO. 11367_200_003
SHEET 1 of 1
PROJECT NO. 11367



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(IN FEET)

NOTE:
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- PARCELS (APN)
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DESIGN/DRAWN: SMG/DRB 11/08/19

ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

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PARCEL 1
FACILITY #1 THROUGH #5

DRAWING NO. 11367_200_003
SHEET 1 of 1
PROJECT NO. 11367

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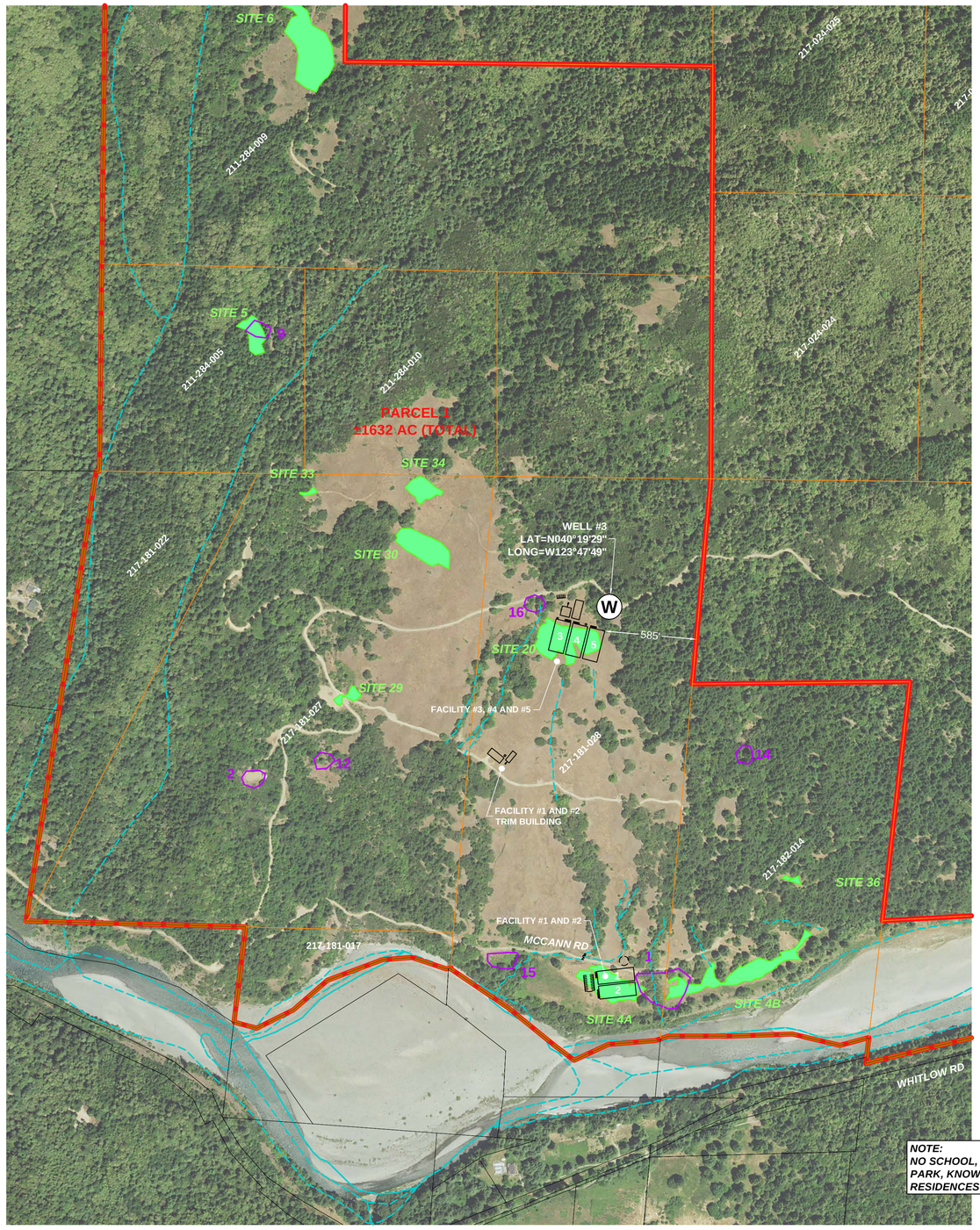

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- PARCELS (APN)
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- PRIME SOILS SITE

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ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING
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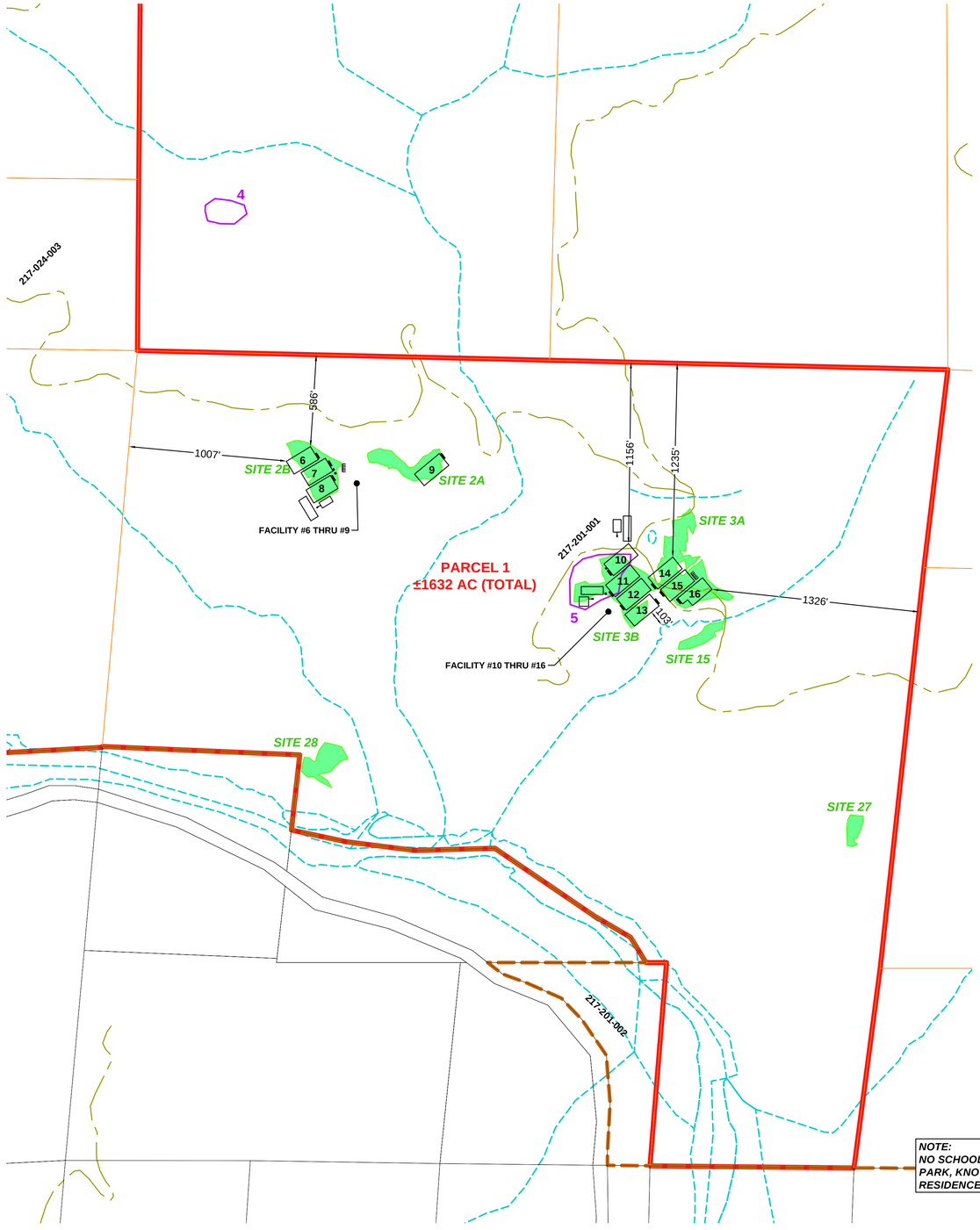
CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905

PARCEL 1 (AERIAL)
FACILITY #1 THROUGH #5

DRAWING NO. 11367_200_003
SHEET 1 of 1
PROJECT NO. 11367



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- EXISTING ROAD/TRAIL
- EXISTING WATER FEATURE
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- PARCELS (APN)
- PRE-EXISTING CULTIVATION SITE
- PRIME SOILS SITE

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ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING
312 SOUTH HARBOR CITY BOULEVARD, SUITE 4
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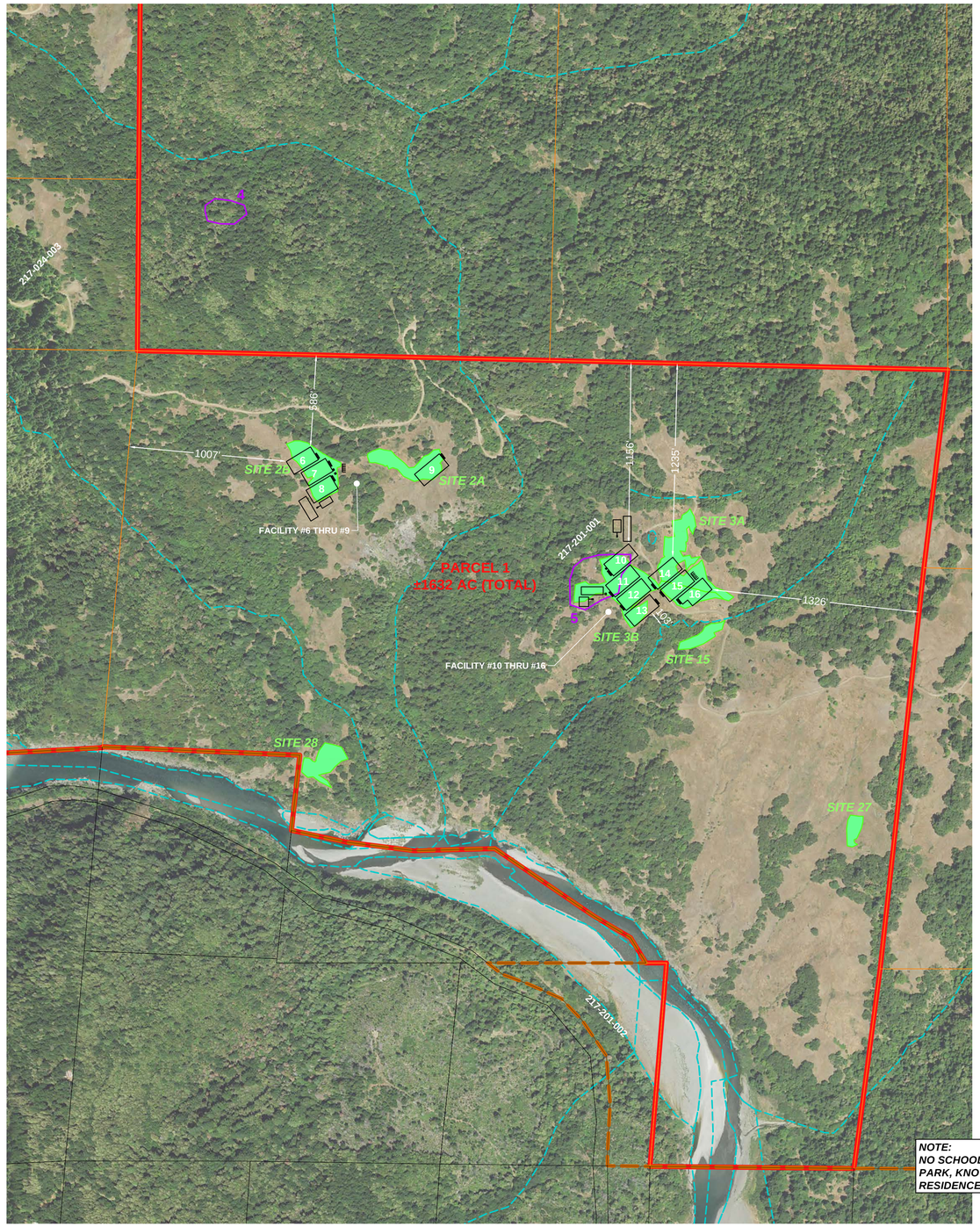
CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905
CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905

PARCEL 1
FACILITY #6 THROUGH #16

DRAWING NO. 11367_200_003
SHEET 1 of 1
PROJECT NO. 11367



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(IN FEET)

NOTE:
NO SCHOOL, SCHOOL BUS STOP, PLACE OF WORSHIP, PUBLIC PARK, KNOWN TRIBAL CULTURAL RESOURCES, OR OFF-SITE RESIDENCES LOCATED WITHIN 2 MILES OF PROPOSED FACILITIES

LEGEND
- EXISTING ROAD/TRAIL
- EXISTING WATER FEATURE
- OVERALL RANCH BOUNDARY
- PARCELS (APN) WITHIN RANCH
- PARCELS (APN)
- PRE-EXISTING CULTIVATION SITE
- PRIME SOILS SITE

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2		
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ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING
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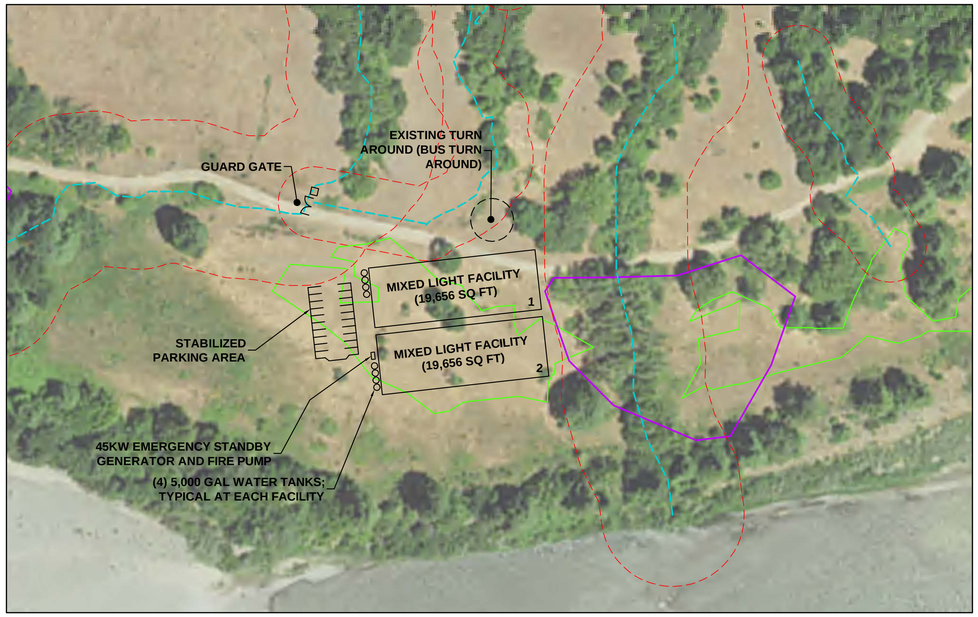
CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905
CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905

PARCEL 1 (AERIAL)
FACILITY #6 THROUGH #16

DRAWING NO.
11367_200_003
SHEET
1 of 1
PROJECT NO.
11367



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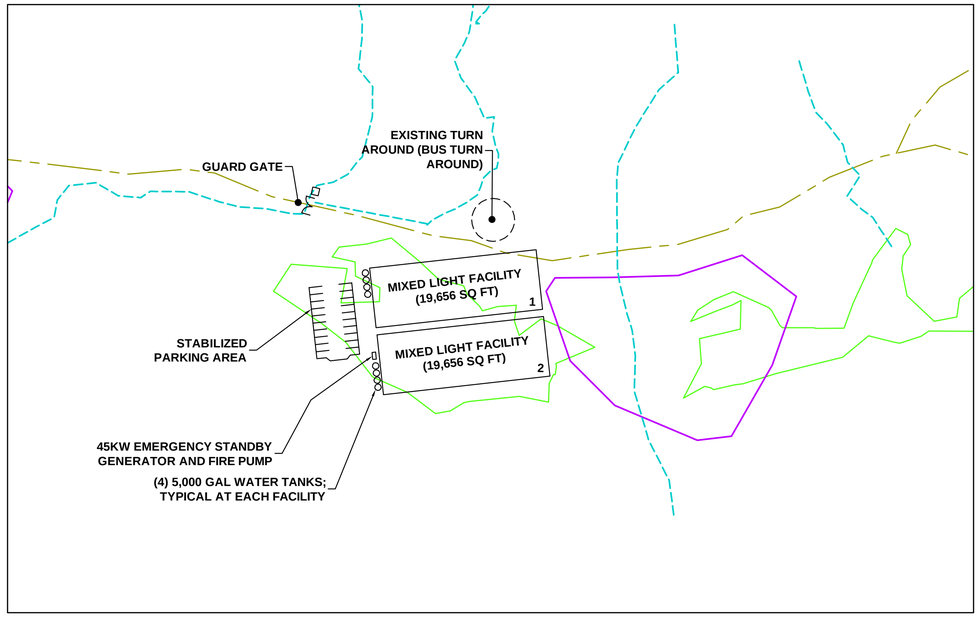

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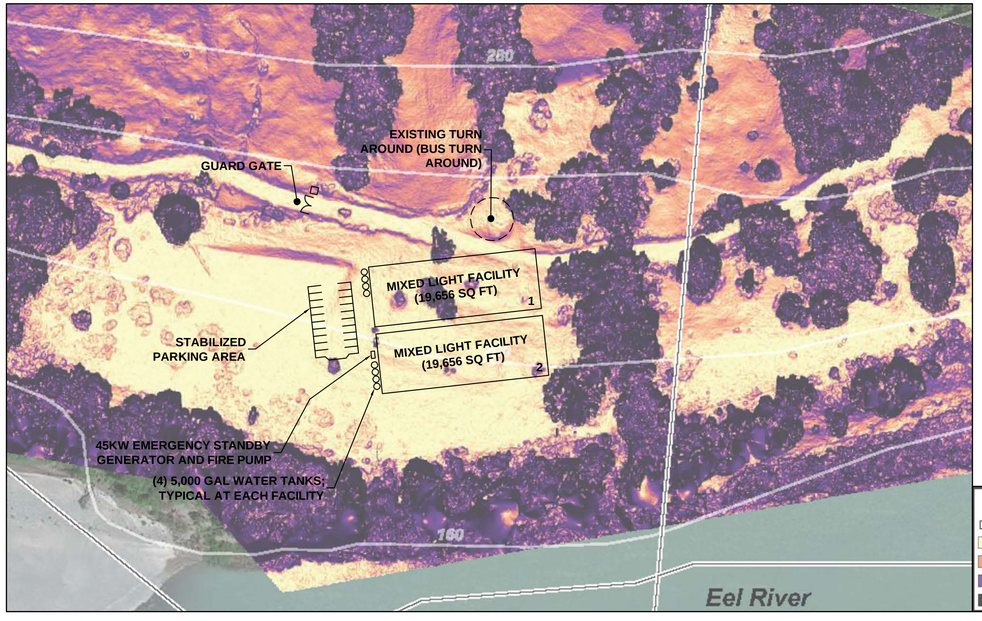
NOTE: SITE FACILITIES TO BE ENCLOSED BY PERIMETER FENCING



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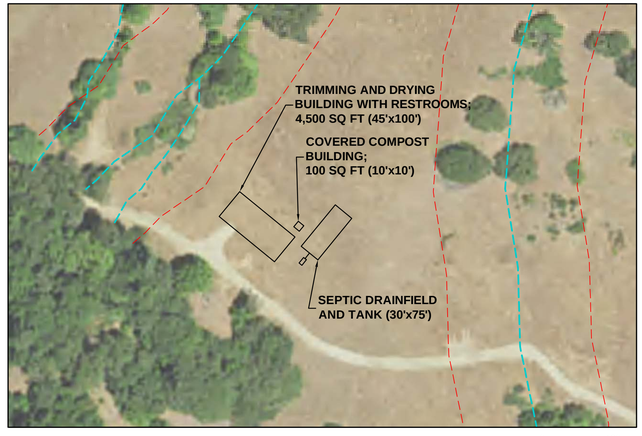
(IN FEET)

Legend
DEM Slope Analysis
5% or less
5% to 15%
15% to 30%
30% or more

LEGEND
EXISTING ROAD/TRAIL
EXISTING WATER FEATURE
OVERALL RANCH BOUNDARY
PARCELS (APN) WITHIN RANCH
PARCELS (APN)
PRE-EXISTING CULTIVATION SITE
PRIME SOILS SITE
STREAM AND WETLAND BUFFER



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(IN FEET)

BACKGROUND AERIAL IMAGE AND SLOPE DATA PROVIDED BY PLAN IT TECHS, LLC DEC. 2019; JOSHUA ALLEN; FAA PART 107 #4152800

DISCLAIMER: THIS IS NOT A LEGAL MAP. IMAGERY DERIVED FROM ON-SITE UAS PHOTOGRAMMETRY ACQUIRED WITH A DJI INSPIRE PRO 17MM LENS AND ANALYZED BY A LICENSED FAA UAS REMOTE PILOT WHO IS A QUALIFIED PLANNER WITH EXPERIENCE IN GEOGRAPHIC INFORMATION SYSTEMS (GIS).

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ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING
312 SOUTH HARBOR CITY BOULEVARD, SUITE 4
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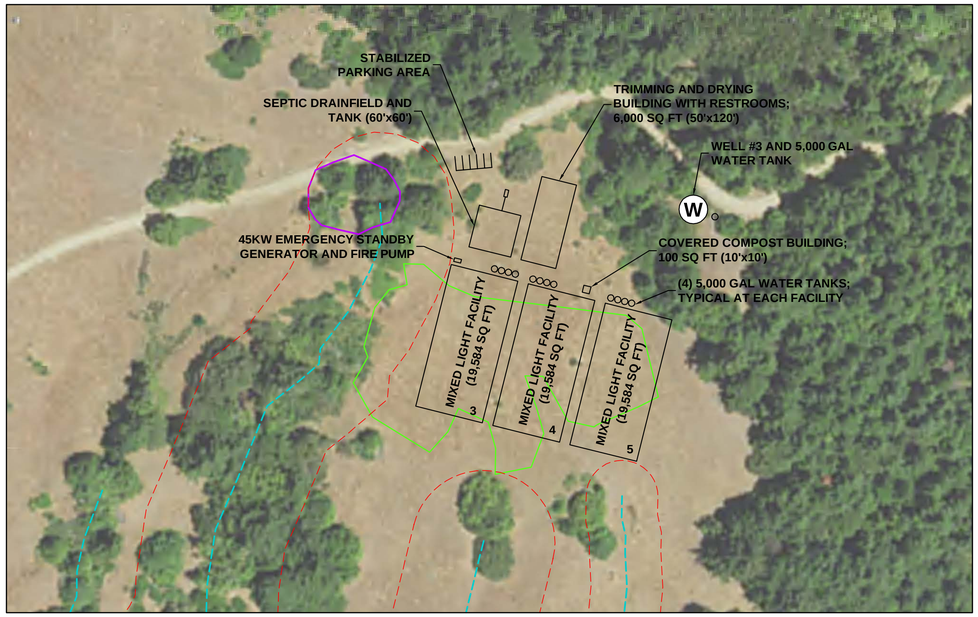
CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905
CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905

FACILITY #1 AND #2 DETAILS

DRAWING NO. 11367_200_003
SHEET 1 of 1
PROJECT NO. 11367



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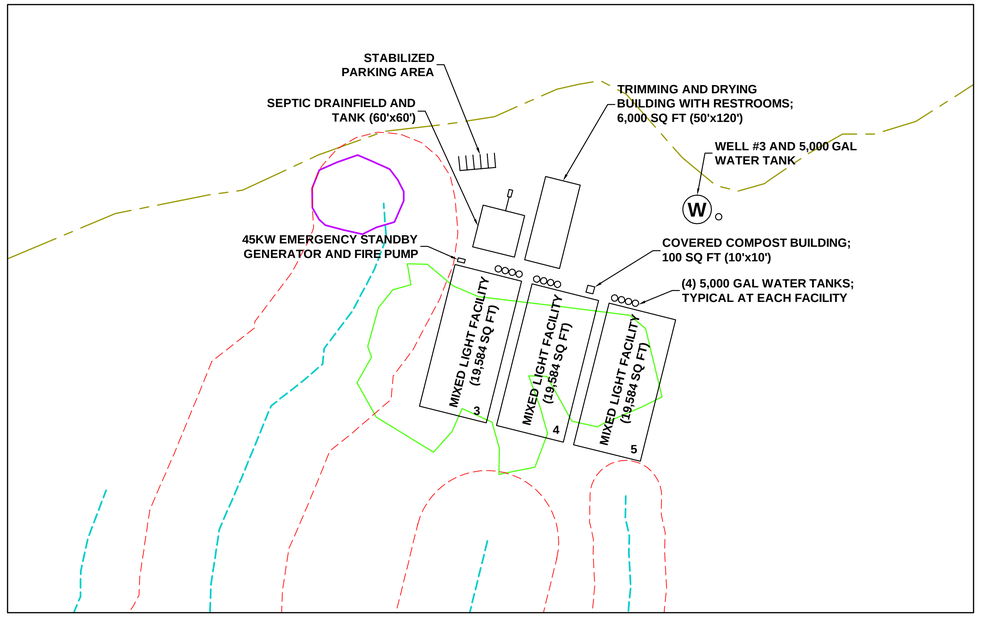

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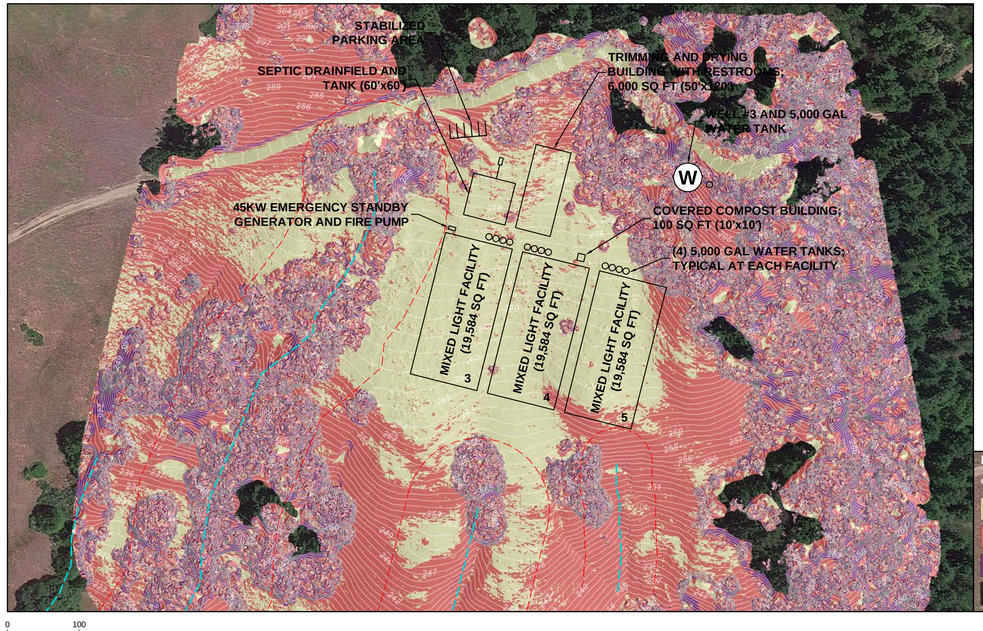
(IN FEET)

NOTE: SITE FACILITIES TO BE ENCLOSED BY PERIMETER FENCING



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(IN FEET)

LEGEND
- EXISTING ROAD/TRAIL
- EXISTING WATER FEATURE
- OVERALL RANCH BOUNDARY
- PARCELS (APN) WITHIN RANCH
- PARCELS (APN)
- PRE-EXISTING CULTIVATION SITE
- PRIME SOILS SITE
- STREAM AND WETLAND BUFFER

BACKGROUND AERIAL IMAGE AND SLOPE DATA PROVIDED BY PLAN IT TECHS, LLC DEC. 2019; JOSHUA ALLEN; FAA PART 107 #4152800

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DESIGN/DRAWN: SMG/DRB 11/08/19

ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING
312 SOUTH HARBOR CITY BOULEVARD, SUITE 4
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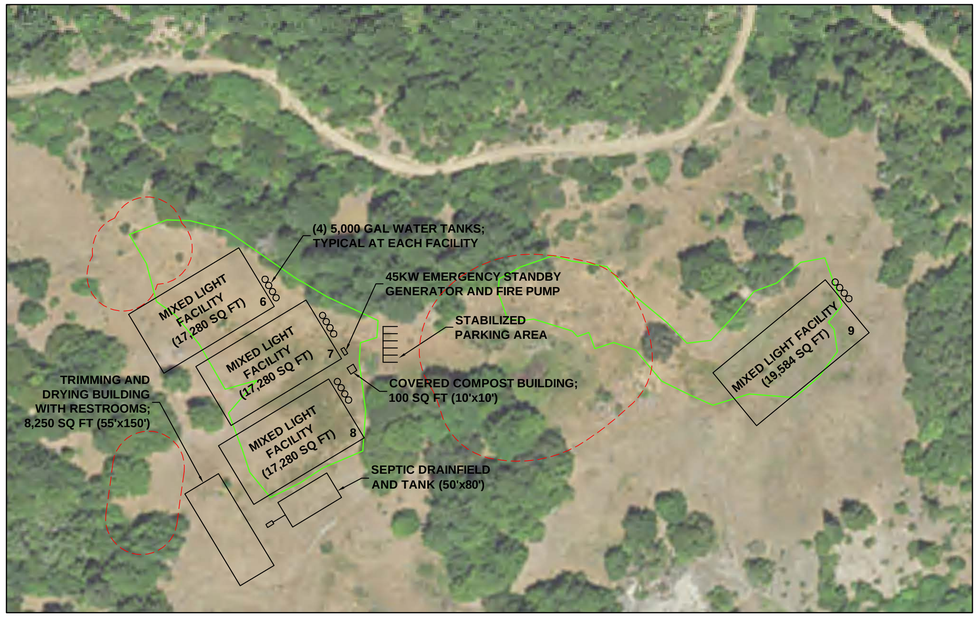
CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905
CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905

FACILITY #3, #4, AND #5 DETAILS

DRAWING NO. 11367_200_003
SHEET 1 of 1
PROJECT NO. 11367



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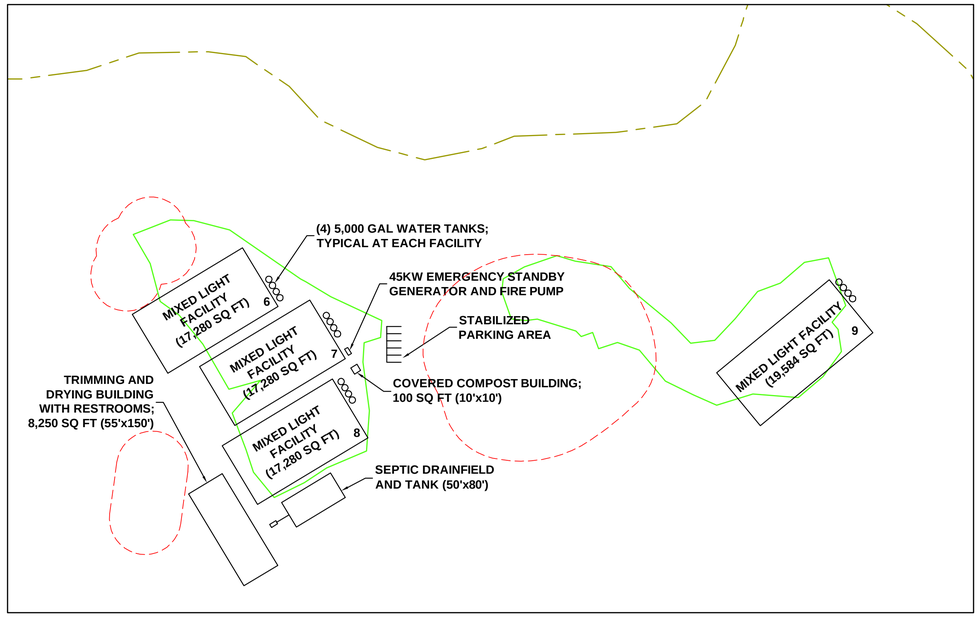

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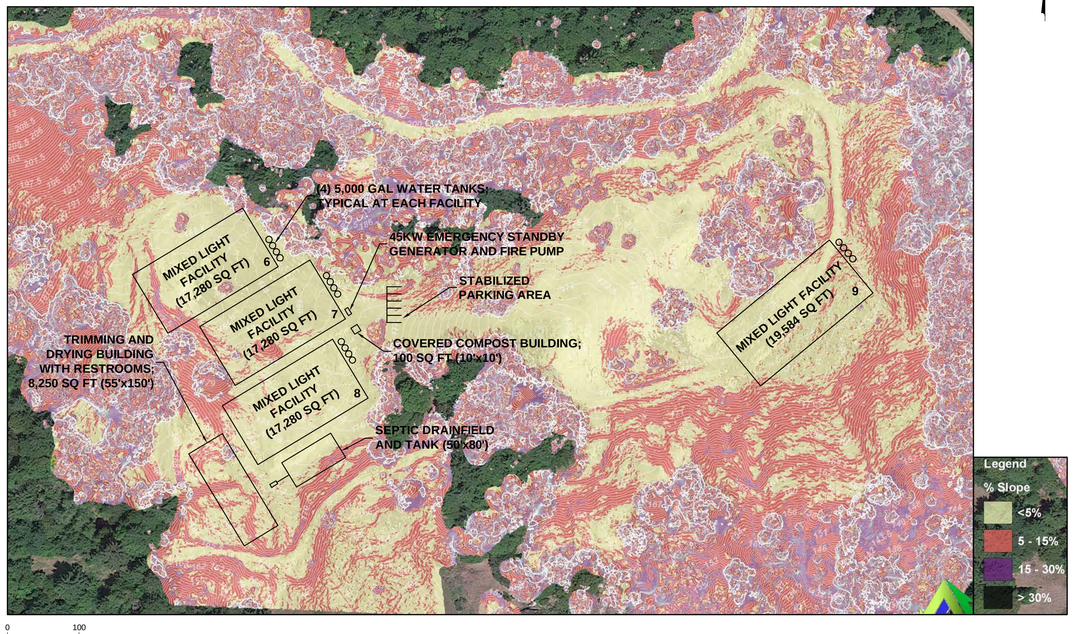
NOTE: SITE FACILITIES TO BE ENCLOSED BY PERIMETER FENCING



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(IN FEET)

LEGEND
- EXISTING ROAD/TRAIL
- EXISTING WATER FEATURE
- OVERALL RANCH BOUNDARY
- PARCELS (APN) WITHIN RANCH
- PARCELS (APN)
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- PRIME SOILS SITE
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DESIGN/DRAWN: SMG/DRB 11/08/19

ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING
312 SOUTH HARBOR CITY BOULEVARD, SUITE 4
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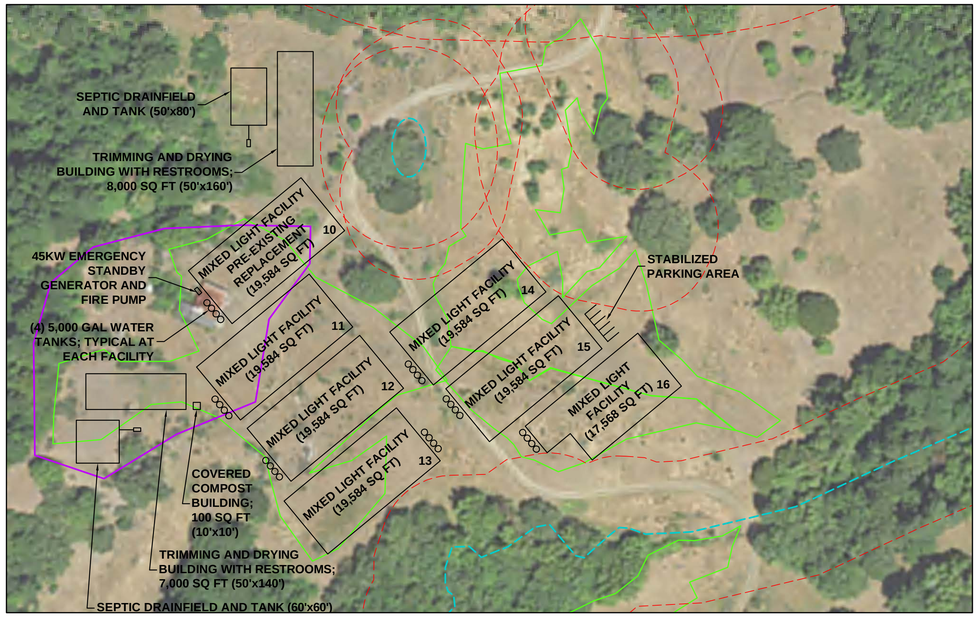
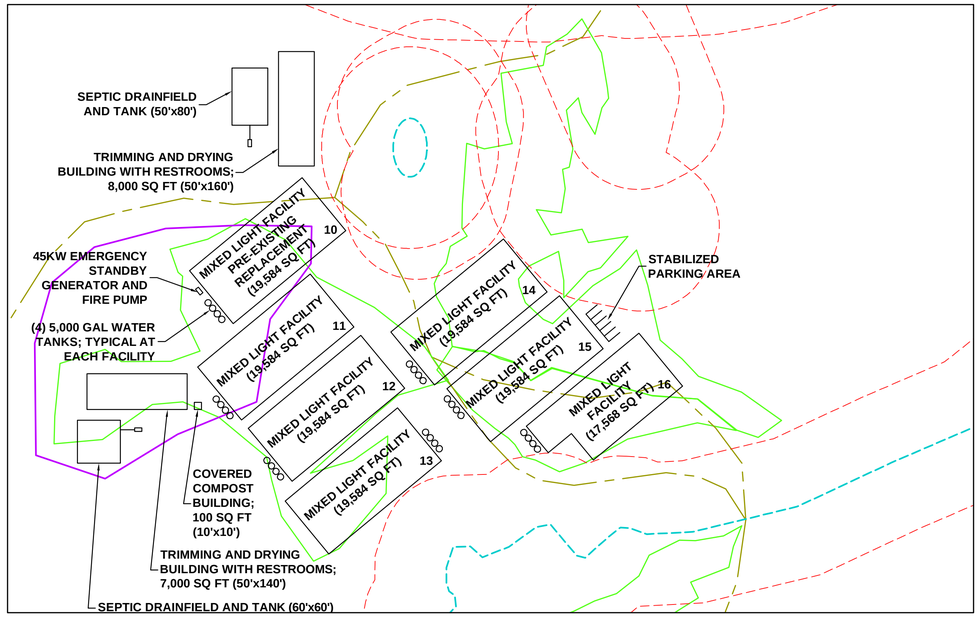
FACILITY #6 THRU #9 DETAILS

DRAWING NO. 11367_200_003
SHEET 1 of 1
PROJECT NO. 11367





NOTE: SITE FACILITIES TO BE ENCLOSED BY PERIMETER FENCING

LEGEND
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- EXISTING WATER FEATURE
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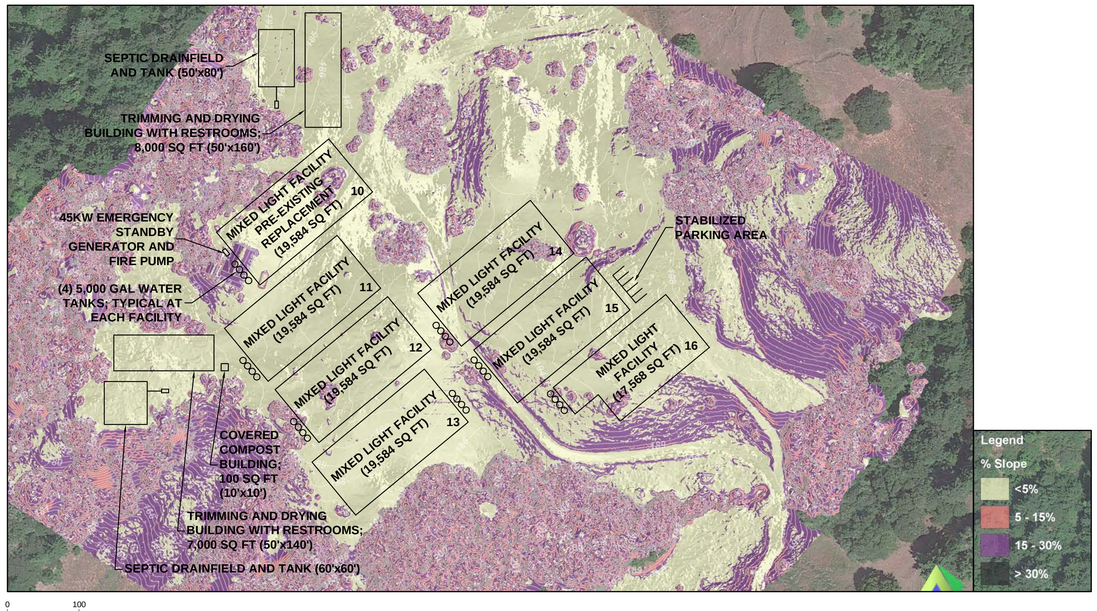

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DESIGN/DRAWN: SMG/DRB 12/13/19

ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING
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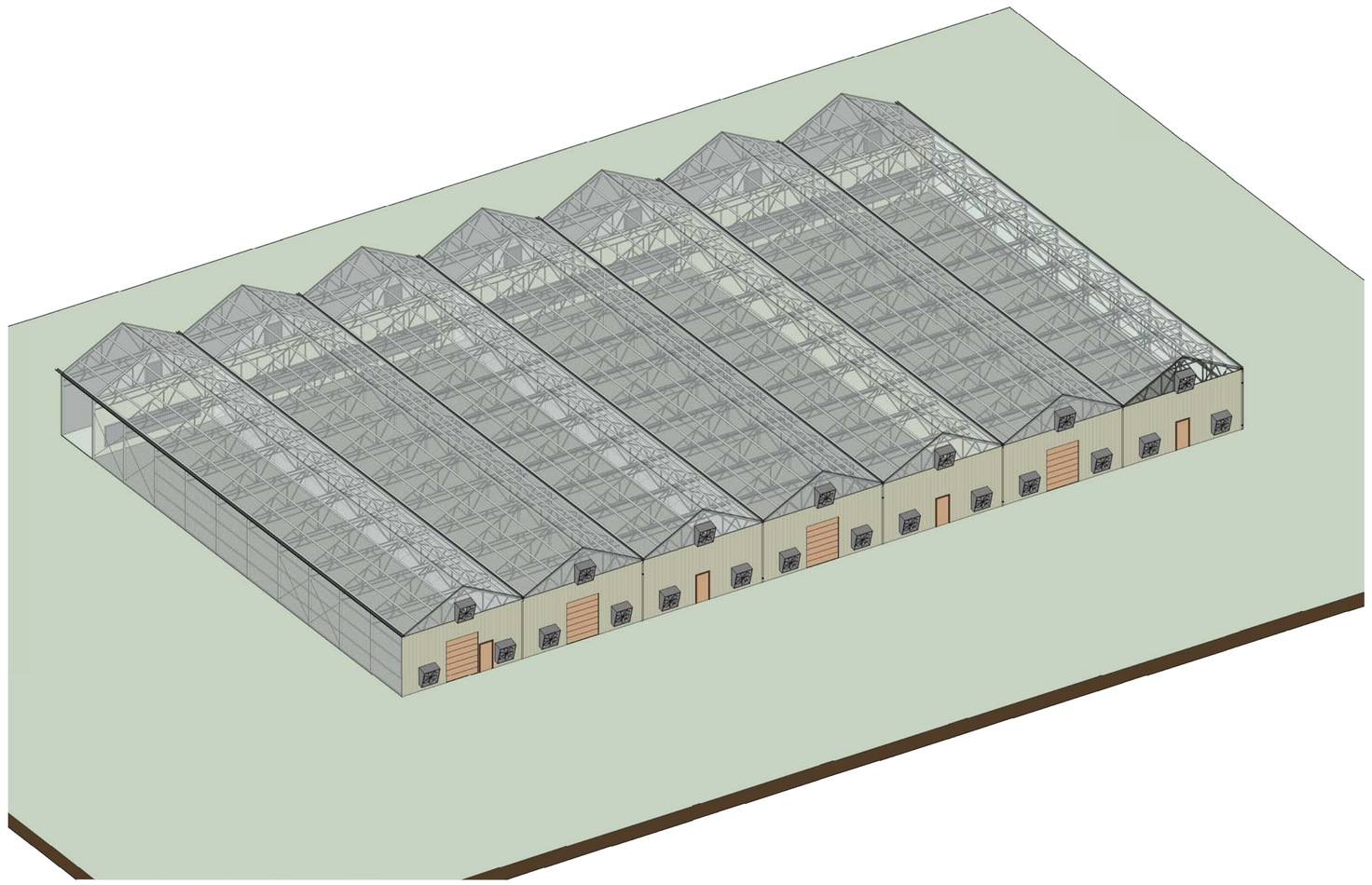
FACILITIES #10 THRU #16 DETAILS

DRAWING NO. 11367_200_003
SHEET 1 of 1
PROJECT NO. 11367



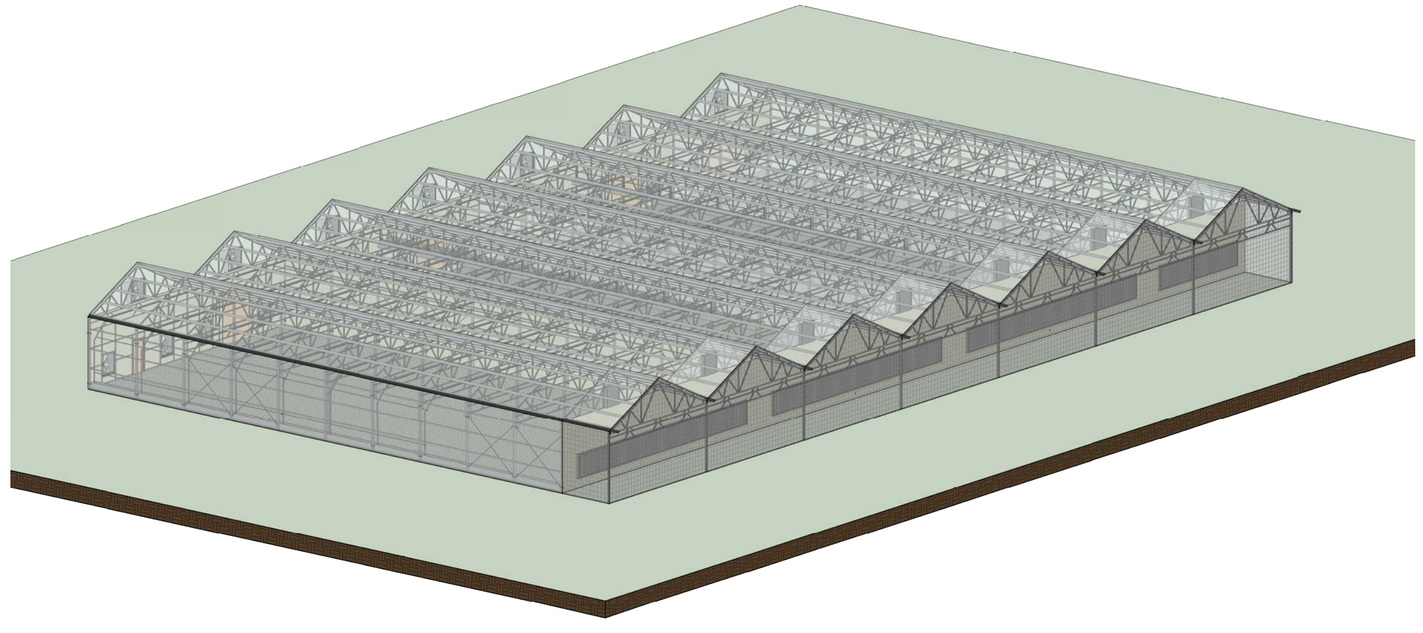
1 Fan Wall

Gro-Tech SYSTEMS INC.

CALIFORNIA BUILDING PLANS

Alpine Series (7) 30x120
3D Perspectives

PR1.1



1 Bug Screen / Cooling Wall

Gro-Tech SYSTEMS INC.

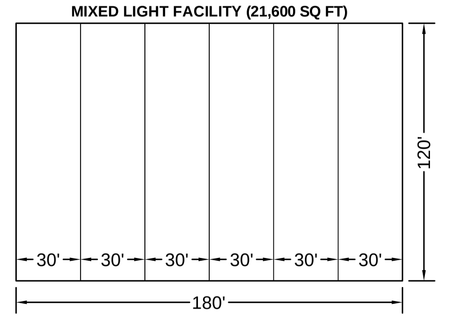
CALIFORNIA BUILDING PLANS

Alpine Series (7) 30x120
3D Perspectives

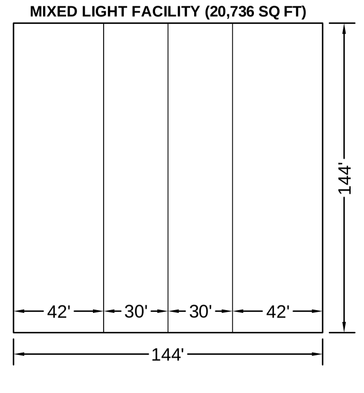
PR1.3

FACILITY BAYS
WIDTH = 30' OR 42'
LENGTH = 12' + INCREMENTS OF 12' (MAX OF 144')

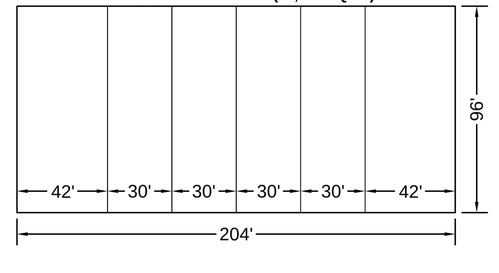
MIXED LIGHT FACILITY (21,600 SQ FT)



MIXED LIGHT FACILITY (20,736 SQ FT)



MIXED LIGHT FACILITY (19,584 SQ FT)



EXAMPLE FACILITY BAY CONFIGURATIONS

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2		
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5		
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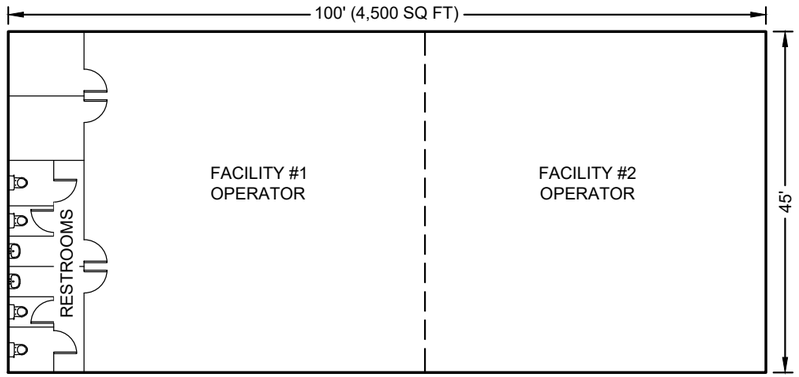
7		
DESIGN/DRAWN: SMG/DRB	11/08/19	

ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING
312 SOUTH HARBOR CITY BOULEVARD, SUITE 4
MELBOURNE, FLORIDA 32901 PHONE: (321) 725-3674 FAX: (321) 723-1159
CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905
CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905

FACILITY BUILDING DETAILS

DRAWING NO.
11367_200_003
SHEET
1 of 1
PROJECT NO.
11367



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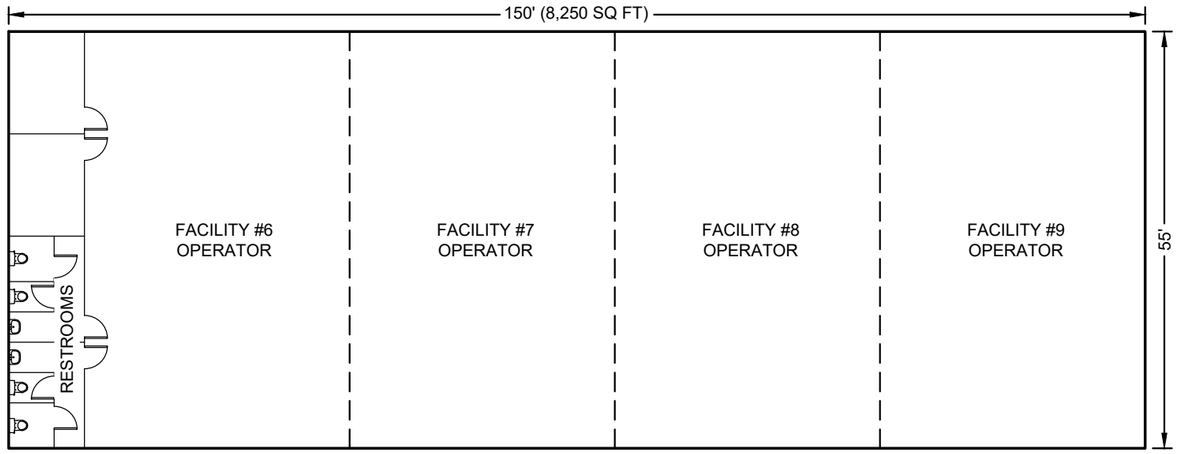
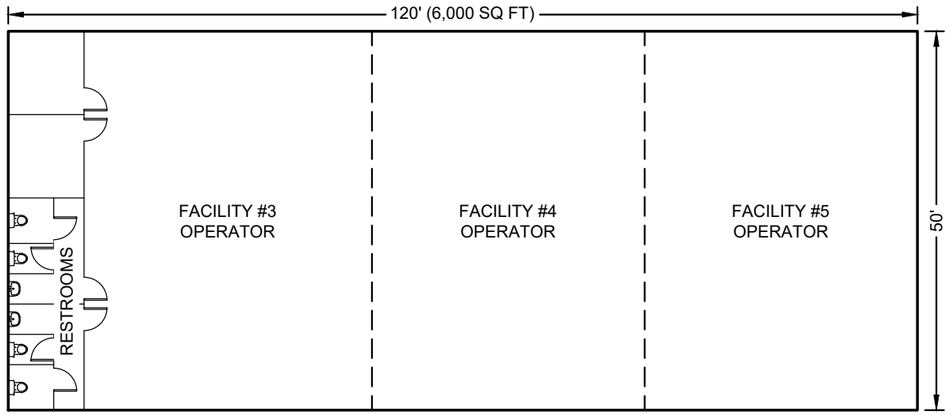
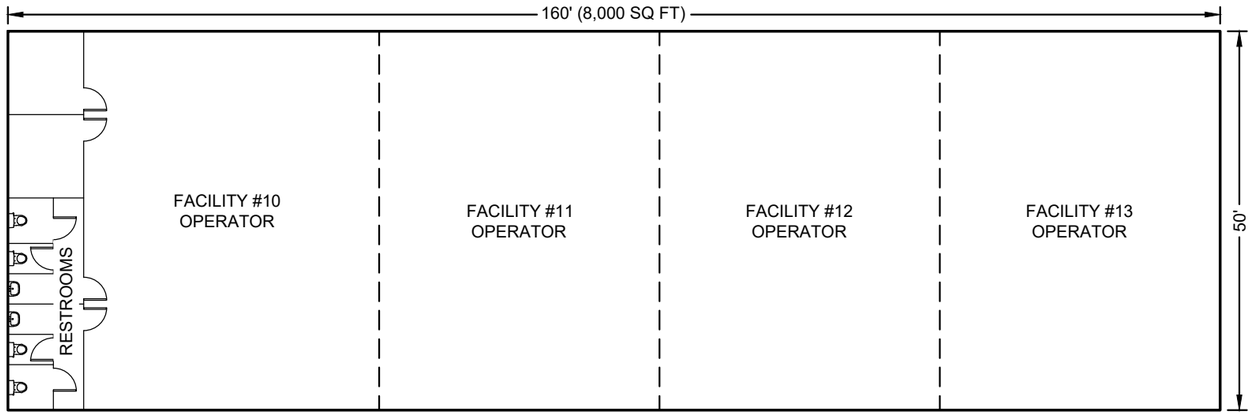
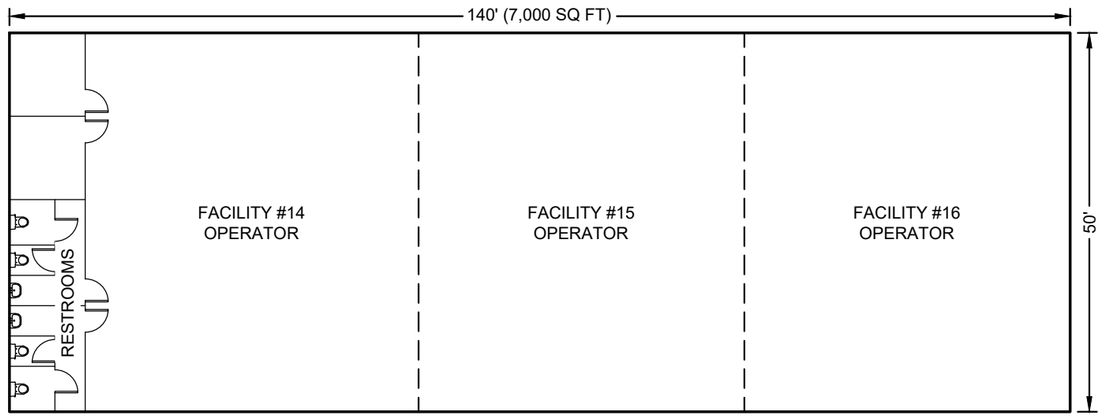


TRIMMING AND DRYING BUILDING WITH RESTROOMS AT FACILITY #6, #7, #8, AND #9



TRIMMING AND DRYING BUILDING WITH RESTROOMS AT FACILITY #3, #4 AND #5





TRIMMING AND DRYING BUILDING WITH RESTROOMS AT FACILITY #10 THRU #16

TRIMMING AND DRYING BUILDING DETAILS

DATE: 10/08/20
DESIGN/DRAWN: SMG/DRB
DRAWING# 11367_200_007
PROJECT# 11367
SHEET 1 OF 1

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING
312 SOUTH HARBOR CITY BOULEVARD, SUITE 4 MELBOURNE, FL 32901
PHONE: (321) 725-3674 FAX: (321) 723-1159
CERTIFICATE OF BUSINESS AUTHORIZATION: 4905
CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905

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(IN FEET)

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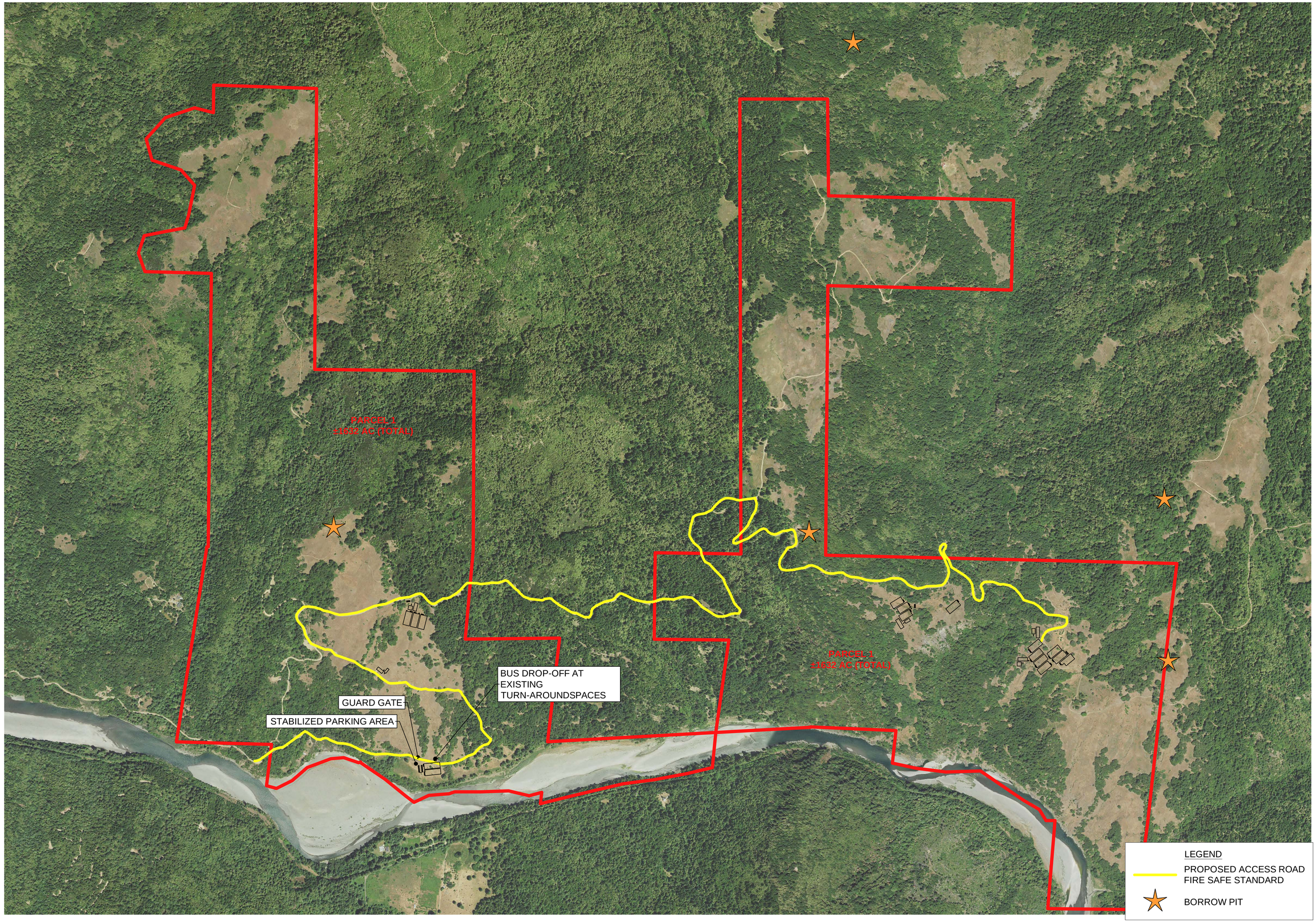

B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING

312 SOUTH HARBOR CITY BOULEVARD, SUITE 4
MELBOURNE, FLORIDA 32901
PHONE: (321) 725-3674 FAX: (321) 723-1159

CERTIFICATE OF PROFESSIONAL ENGINEERS
BUSINESS AUTHORIZATION: 4905
CERTIFICATE OF LAND SURVEYING
BUSINESS AUTHORIZATION: LB0004905

SCOTT M. GLAUBITZ, P.E. & P.L.S.
STATE OF FLORIDA, No. 33659 No. 4151

HASSAN A. KAMAL, P.E.
STATE OF FLORIDA, No. 41951

600 0 300 600
(IN FEET)

6	
5	
4	
3	
2	REVISED FACILITY LOCATIONS 06/02/20
1	REVISED FACILITY LOCATIONS 12/13/19
0	REVISED FACILITY LOCATIONS 11/08/19
A	REVISED FACILITY LOCATIONS 02/15/19
B	REVISED FACILITY LOCATIONS 01/07/19
DATE:	12/19/18
DESIGN/DRAWN:	SMG/AH

PROJECT TITLE

ROLLING MEADOW RANCH HUMBOLDT COUNTY, CA

SHEET TITLE

ACCESS ROAD EXHIBIT

PROJECT NO. 11367

DRAWING NO. 11367_200_005

SHEET 1 of 1

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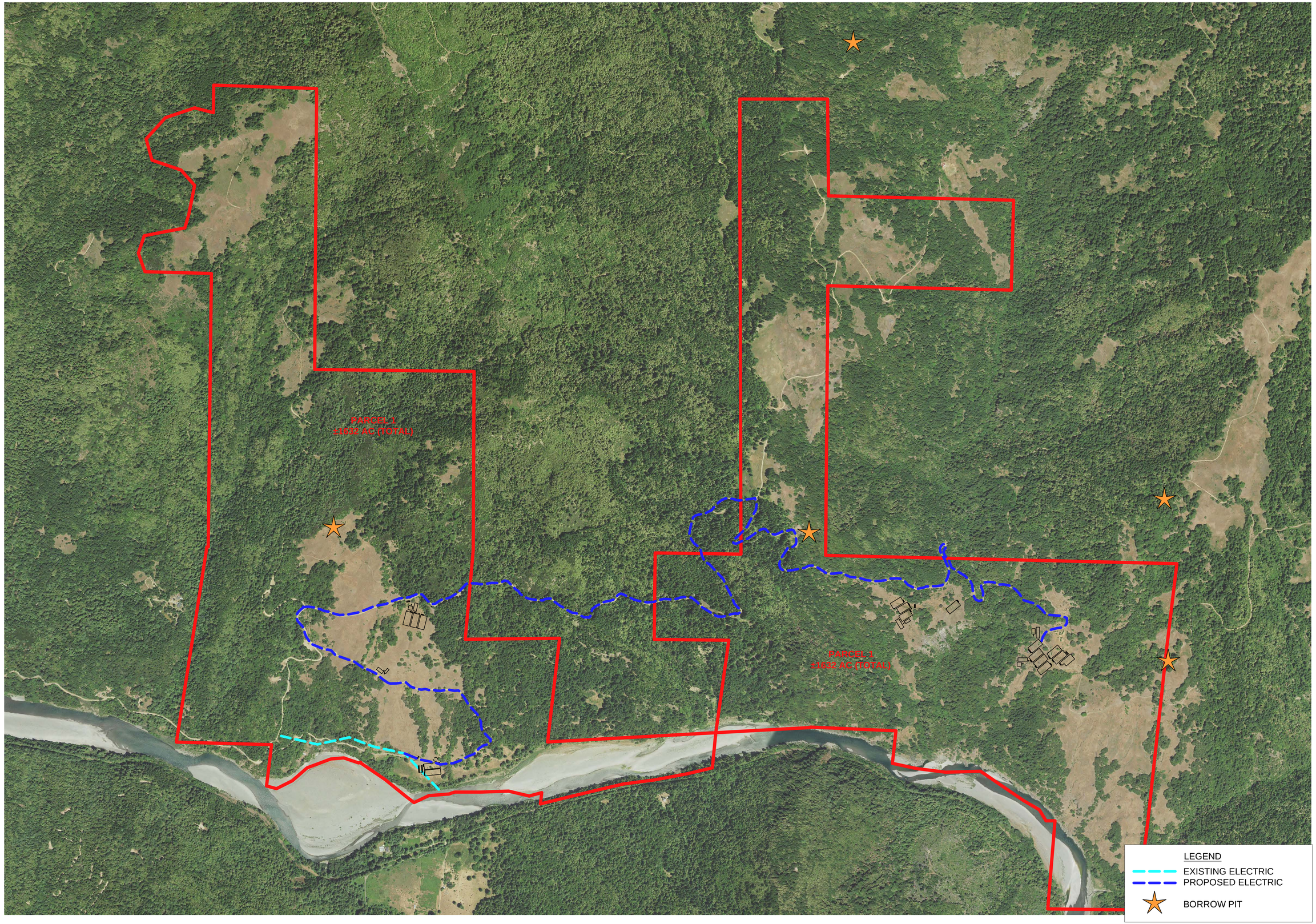
SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET.



B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING - LAND SURVEYING

312 SOUTH HARBOR CITY BOULEVARD, SUITE 4
MELBOURNE, FLORIDA 32901
PHONE: (321) 725-3674 FAX: (321) 723-1159

CERTIFICATE OF PROFESSIONAL ENGINEERS
BUSINESS AUTHORIZATION: 4905
CERTIFICATE OF LAND SURVEYING
BUSINESS AUTHORIZATION: LB0004905

SCOTT M. GLAUBITZ, P.E. & P.L.S.
STATE OF FLORIDA, No. 33659 No. 4151

HASSAN A. KAMAL, P.E.
STATE OF FLORIDA, No. 41951

600 0 300 600
(IN FEET)

REVISED FACILITY LOCATIONS	06/02/20
REVISED FACILITY LOCATIONS	12/13/19
REVISED FACILITY LOCATIONS	11/08/19
REVISED FACILITY LOCATIONS	02/15/19
REVISED FACILITY LOCATIONS	01/07/19
DATE:	12/19/18
DESIGN/DRAWN:	SMG/AH

PROJECT TITLE

ROLLING MEADOW RANCH HUMBOLDT COUNTY, CA

SHEET TITLE

ELECTRIC EXHIBIT

PROJECT NO. 11367

DRAWING NO. 11367_200_005

SHEET 1 of 1

SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET.

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Appendix B

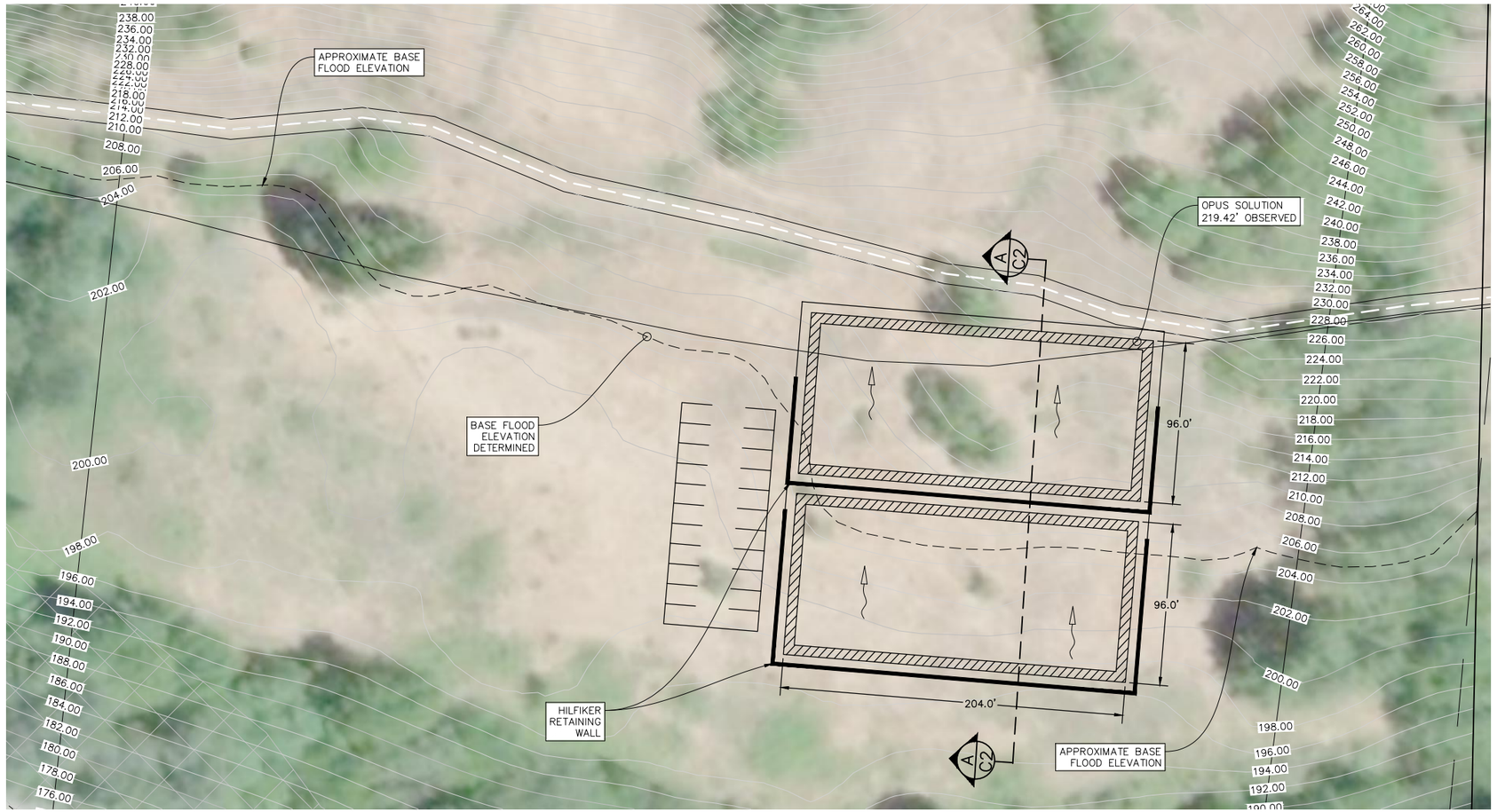
Grading

1. Cultivation Site 4A Preliminary Grading Plan; Northpoint Consulting Group, Oct 2020.
2. Grading for Proposed Greenhouse Sites; Oscar Larson and Associates, 2019

ROLLING MEADOWS, LLC

CULTIVATION SITE 4A PRELIMINARY GRADING PLAN

APN: 217-181-028



22x34 SHEET: 1"=40'
11x17 SHEET: 1"=80'

0 20 40 80

N

DRAWN BY	
REVISIONS	
DATE	

NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

ROLLING MEADOWS RANCH, INC.
MCCANN ROAD
APPROXIMATE GRADING PLAN

PROJ. MGR.: POW
DRAWN BY: YNR
DATE: 10-14-20
SCALE: AS SHOWN

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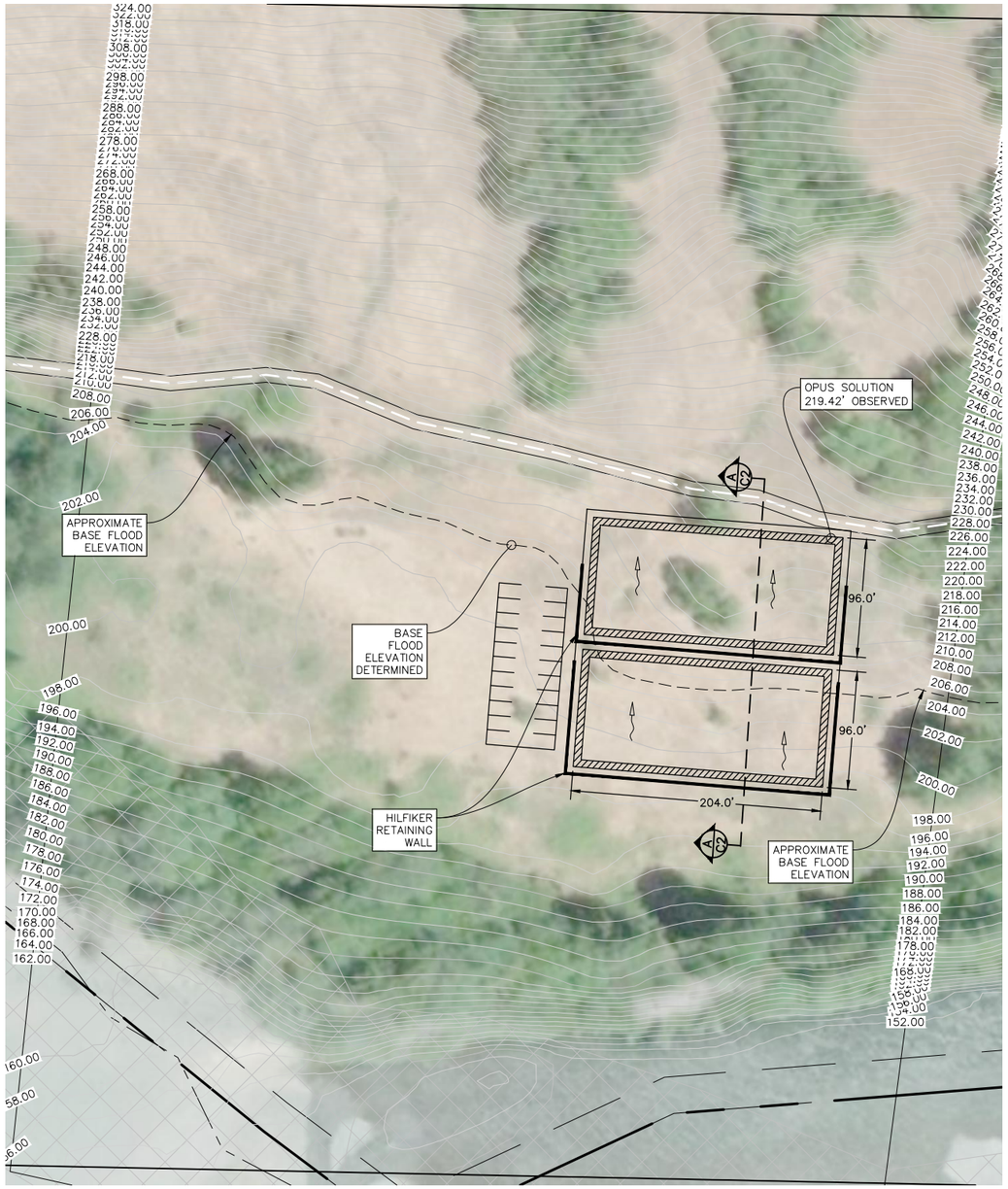
October 15, 2020 - 11:32 Dwg Name: P:\Mendocino Andy - Rolling Meadows - 20-063\CAD\ROLLING MEADOWS FLOOD CERT FLOTPLAN.dwg Updated By: Yosef Rona

EXISTING SITE PLAN



PROPOSED SITE PLAN

22x34 SHEET: 1"=60'
11x17 SHEET: 1"=120'
0 30 60 120

N

DATE	REVISIONS	DRAWN BY

NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

ROLLING MEADOWS RANCH, INC.
MCCANN ROAD
EXISTING AND PROPOSED MAPPING

PROJ. MGR.: POW
DRAWN BY: YNR
DATE: 10/14/20
SCALE: AS SHOWN

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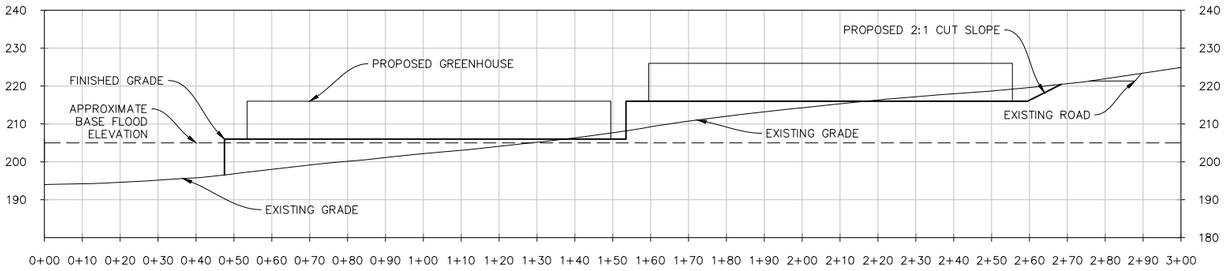
October 15, 2020 - 11:32 Dwg Name: P:\Mapping Arch - Rolling Meadows - 20-043\CAD\ROLLING MEADOWS FLOOD CERT PLOTPLAN_1.dwg Updated By: Yosd Rono



SECTION VIEW A-A

NTS

TOTAL GRADING CUT/FILL VOLUMES

TOTAL CUT VOLUME = 900 CU. YD.
TOTAL FILL VOLUME = 2000 CU. YD.

DRAWN BY
REVISIONS
DATE

NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

ROLLING RANCH MEADOW, INC.
MCCANN ROAD
SECTION VIEWS

PROJ. MGR.: POW
DRAWN BY: YNR
DATE: 10/14/20
SCALE: AS SHOWN

SHEET
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October 15, 2020 - 11:32 Dwg Name: P:\Mechelle, Andy - Rollins Meadows - 20-063\CAD\WORKING MEADOWS FLOOD CERT PLOTPLAN_1.dwg Updated By: Yosd Rosa

Oscar Larson & Associates
Consulting Engineers, Inc.
317 Third Street • 2nd Floor • Eureka • CA 95501

phone: 707-445-2043 • phone: 800-660-2043
fax: 707-445-8230
e-mail: larson@olarson.com
website: www.olarson.com

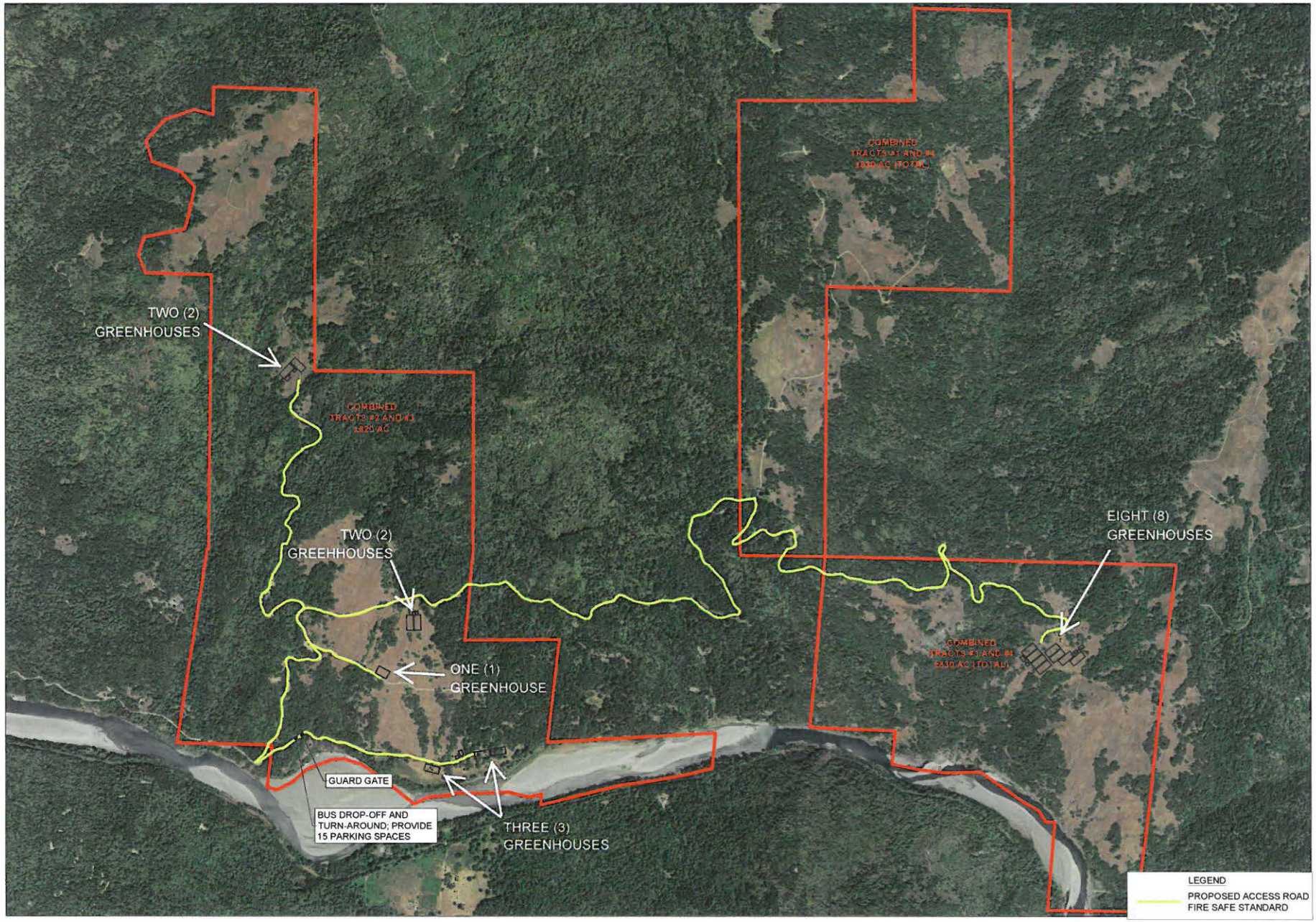
Rolling Meadow Ranch
Humboldt County, California
Grading for Proposed Greenhouse Sites

On 3/28/2018, and in late December 2018 and early January 2019, Oscar Larson & Associates (OLA) made visual observations of the proposed greenhouse sites within the Rolling Meadow Ranch, located within Humboldt County, California. Locations of the proposed greenhouses are shown on the attached Exhibit ("Access Road Exhibit"). Based on the above mentioned visual observations, it appears that the grading for the proposed greenhouse sites can be balanced on site. Final grading plans and design are to be based on topographic survey.

1/11/2019

Gregory M. Hall, PE

Copyright 2019 Oscar Larson & Associates



B.S.E. CONSULTANTS, INC.
CONSULTING - ENGINEERING -
LAND SURVEYING

SCOTT M. GLAUBITZ, P.E. & P.L.S
STATE OF FLORIDA, No. 33559 No. 4151

HASSAN A. KAMAL, P.E.
STATE OF FLORIDA, No. 41951

(IN FEET)

DATE: 11/19/18
DESIGN/DRAWN: SMG/AH

PROJECT TITLE
ROLLING MEADOW RANCH
HUMBOLDT COUNTY, CA

SHEET TITLE
ACCESS ROAD EXHIBIT

PROJECT NO.
11367

DRAWING NO.
11367_200_005

SHEET
1 of 1

SYMBOLS SHOWN ARE GRAPHIC IN NATURE, DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET

Appendix C

Road Evaluations

1. Access Assessment: McCann Road; Northpoint Consulting Group, Oct 2020
2. Access Assessment: Rolling Meadow Internal Roads; Northpoint Consulting Group, Oct 2020
3. Alder Point Access Evaluation Letter (2018) and forms (2017); Manhard Consulting
4. Alder Point to McCann, Road Evaluation, 2018; Oscar Larson and Associates
5. Supplemental Field Investigation, Internal Access Road Evaluation, 2019; Oscar Larson and Associates

NORTHPOINT
CONSULTING GROUP, INC.

Rolling Meadows Ranch, INC

Access Assessment for Compliance with Humboldt County Code Section 3112-12 – Fire Safe Regulations

Project: PLN-12529-CUP

APNs: 217-022-004 et al

Humboldt county, CA

REVISED

October 2020

10-8-20

Contents

1.0 Introduction & Site Description 3
2.0 Road Points 3
3.0 Roadway (McCann Road) 3
4.0 Gate Entrances 4
5.0 Conclusion and Recommendations 4
7.0 References 5

Table 1: Road Points located on the Roadway (McCann Road). 4

Attachments

Appendix A: Access Assessment Drawings

Appendix B: Access Assessment Photos

1.0 Introduction & Site Description

This Access Assessment contains a detailed overview of the roadway that are used to access the subject parcels (Project), APNs: 217-022-004 et al. The roadway and emergency vehicle turn arounds have been assessed for conformance with Humboldt County Code Section 3112-12, the Fires Safe Regulations (Chapter 2 – Emergency Access).

The road system that is used to access the Project is comprised of a portion of McCann Road, which is a county maintained public roadway. See the attached Access Assessment drawings for full details of the roadway that is included in this assessment.

Following the recommendations set forth in this report, the entire roadway will meet the standards of a minimum of twelve (12) foot width, with turnouts at a minimum spacing of 1,320 feet (0.25 mile), and with adequate sight distance and turnouts on either side of pinch points to allow for safe access to and from the project site.

2.0 Road Points

Road Points (RPs) were located along the road system, leading to the subject parcel(s). RPs are defined as interest points along the subject travel ways; locations of pinch points, locations of sight distance restrictions, locations of turnouts and SRA turnarounds, stream crossings or intersections. The road widths were measured, photos were taken, and recommendations were prescribed at each RP. The recommendations are based on achieving the desired roadway category, or functional equivalency. See the attached Road Evaluation Photographs for photos of each RP.

See Table 1 for a full description of the RPs along the roadway.

3.0 Roadway (McCann Road)

The roadway is comprised of a portion of McCann Road (County maintained).

The entire through access roadway has been determined to meet Category 2 Road standard, with the implementation of our recommendations shown in Table 1 and due to the extremely low traffic volumes. Although there are pinch points present along the roadway, the roadway is on average 12 feet in width, with adequate turnouts located at 0.25-mile intervals.

Table 1 below contains all the RPs that are located along the roadway. The table contains a description of the RPs, the Latitude and Longitude, the measure road width, and describes if there in a turnout present within an appropriate distance to RPs that present pinch points or visibility restrictions. The table also describe the recommended prescription for each RP. See sheet R0 on the Access Assessment drawings (Appendix A) for the locations of the RPs along the roadway. See Appendix B for photographs of each RP.

Table 1: Road Points located on the Roadway (McCann Road).

	RP	Lat., Long.	Measured Road Width	Description	Turn Out Provided?	Photo # in Appendix B	Recommended Improvements
McCann Road (State Road No. 6D090)	1	40.322, -123.8233	18	Start of Road Assessment. Intersection of McCann Road and Private Road (not associated with proposed project). No sight distance restrictions.	N/A	1-2	N/A
	2	40.3216, -123.8202	11	Pinch point. Land slide resulting in narrow roadway, for approximately 150 feet in length. Humboldt County Type 2 Barriers present. No sight distance restrictions.	Yes	3-6	Maintain existing road width and turnouts on either side of pinch point.
	3	40.3215, -123.8187	16	Stream crossing. Failed culvert causing narrow roadway. Humboldt County Type 2 Barriers present. No sight distance restrictions.	Yes	7	Maintain existing road width and turnouts on either side of pinch point.
	4	4.3208, -123.8167	12	M\moderately steep section for approximately 200 feet in length. Road is >16% in grade. No sight distance restrictions.	Yes	8-11	Maintain existing road width and sight distance.
	5	40.3207, -123.8147	14	Pinch point. Gate & cattle guard. Gate appeared to not be in use at time of assessment. Gate measured 12' in width. No sight distance restrictions.	Yes	12-13	Remove gate, or modify gate to achieve 14 foot width.
	6	40.3200, -123.8120	18	Typical section of McCann Road. No sight distance restrictions.	N/A	14-15	Maintain existing road width and sight distance.
	7	40.3187, -123.8080	12	Typical section of McCann Road. No sight distance restrictions.	No	16-17	Maintain existing road width and sight distance.
	8	40.3183, -123.8072	20	Intersection of a private road and McCann Road. No sight distance restrictions.	N/A	18-19	Maintain existing road width, turnout and sight distance.

4.0 Gate Entrances

Per Humboldt County Code Section 3112-13: Gate entrances shall be at least two (2) feet wider than the width of the traffic lane(s) serving the gate, and a minimum width of fourteen (14) feet of unobstructed horizontal clearance and unobstructed vertical clearance of fifteen (15) feet.

There is one (1) gate within the subject road system, RP 5. The gate at RP 5 measures 12’ in width and appeared to not be in use at the time of inspection. It is recommended to modify the existing gate to achieve a minimum of 14 feet of horizontal clearance, or remove the gate.

5.0 Conclusion and Recommendations

In conclusion, the roadway, that is used to access the project location has been determined to be within conformance of Humboldt County Code Section 3112-12, the Fires Safe Regulations (Chapter 2 – Emergency Access), with the recommended improvements included in this report.

The entire roadway meets Roadway Category 2 standard and is functionally equivalent to a Category 4 Road, with the recommended improvements included in this report and the extremely low traffic volumes.

7.0 References

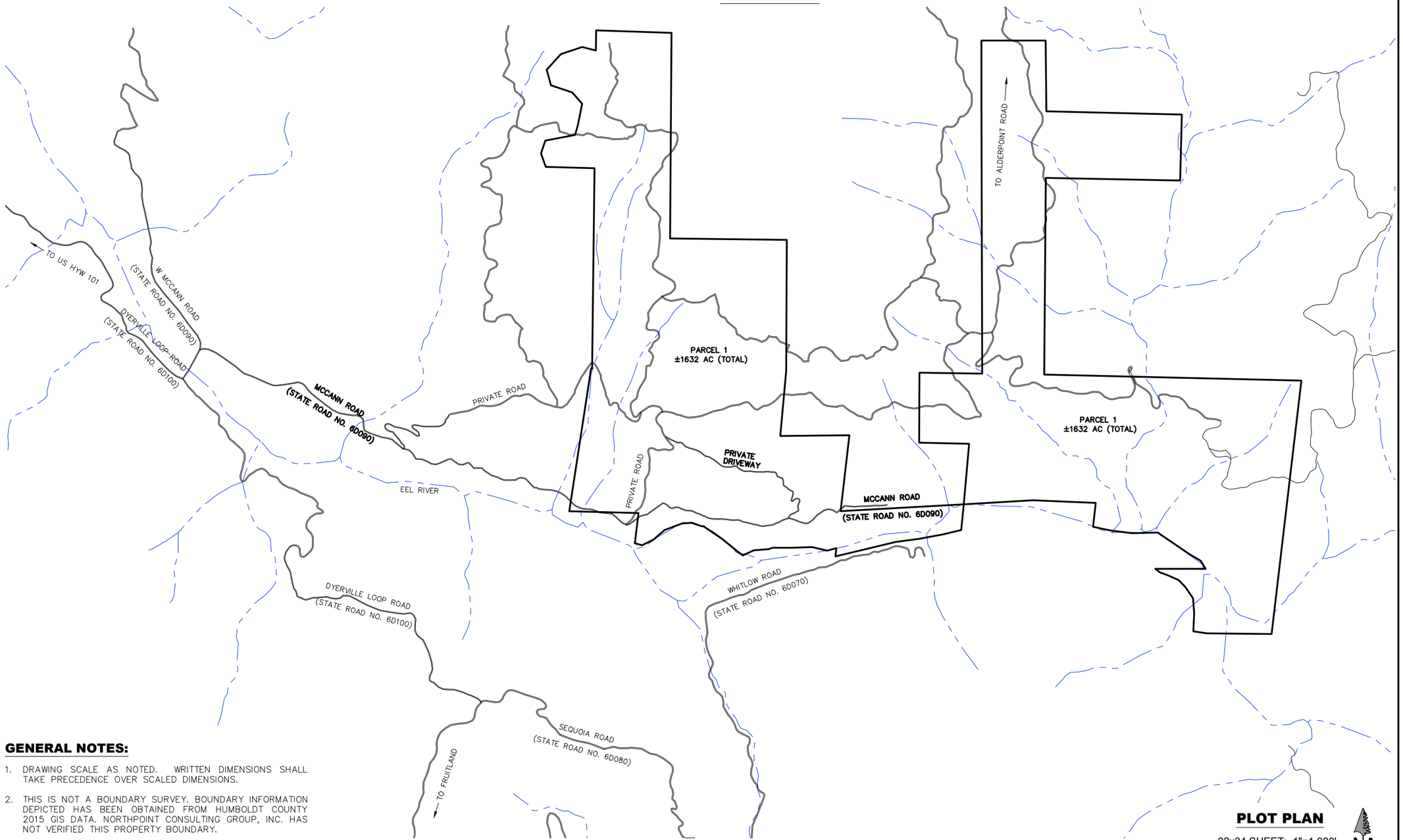
1. Humboldt County Web GIS. Humboldt County Planning and Building Department. Retrieved from http://webgis.co.humboldt.ca.us/HCEGIS2.0/

2. Humboldt County Code - A Codification of the General Ordinances of Humboldt County, California

ROLLING MEADOWS, LLC

ACCESS ASSESSMENT

PARCEL 1



GENERAL NOTES:

1. DRAWING SCALE AS NOTED. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
2. THIS IS NOT A BOUNDARY SURVEY. BOUNDARY INFORMATION DEPICTED HAS BEEN OBTAINED FROM HUMBOLDT COUNTY 2015 GIS DATA. NORTHPOINT CONSULTING GROUP, INC. HAS NOT VERIFIED THIS PROPERTY BOUNDARY.
3. ROAD NAMES AND STATE ROAD NUMBERS OBTAINED FROM HUMBOLDT COUNTY GIS DATA.
4. WATERCOURSES OBTAINED FROM HUMBOLDT COUNTY GIS DATA

PLOT PLAN

22x34 SHEET: 1"=1,000'
11x17 SHEET: 1"=2,000'

0 500 1,000 2,000

REVISIONS	DATE	DRAWN BY

NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

ROLLING MEADOWS RANCH, INC
McCANN, CA
ACCESS ASSESSMENT

PROJ. MGR.: POW
DRAWN BY: DDR
DATE: 10/08/2020
SCALE: AS SHOWN

SHEET
R0

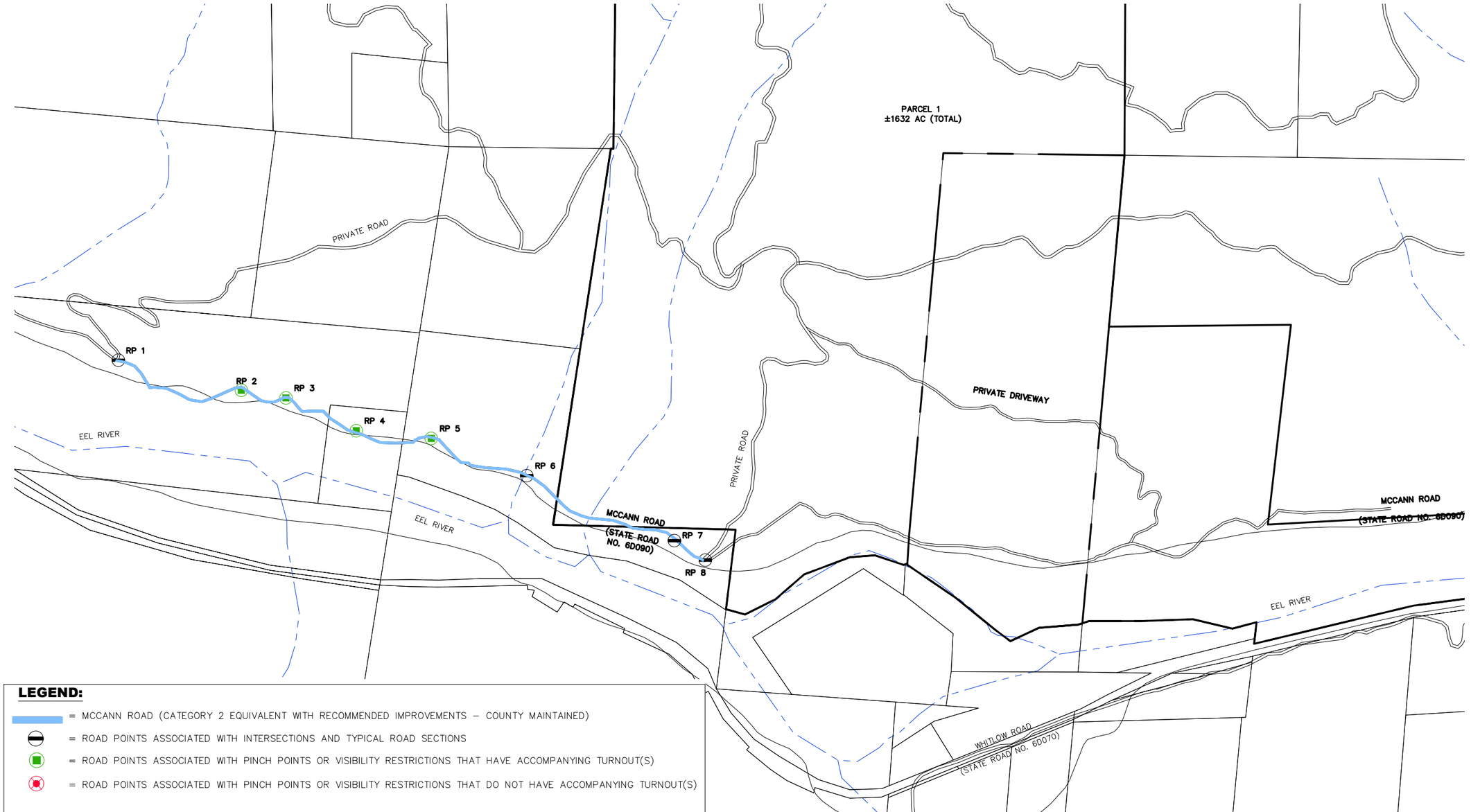
20-063

October 8, 2020 - 16:41 Dwg Name: P:\Projects\Andy - Rolling Meadows - 20-063\CAD\20I063 - ROLLING MEADOWS ROAD ASSESSMENT - McCANN ROAD ONLY.dwg Updated By: Derek Roelle

ROLLING MEADOWS, LLC

ACCESS ASSESSMENT

PARCEL 1



LEGEND:

- = MCCANN ROAD (CATEGORY 2 EQUIVALENT WITH RECOMMENDED IMPROVEMENTS – COUNTY MAINTAINED)
- = ROAD POINTS ASSOCIATED WITH INTERSECTIONS AND TYPICAL ROAD SECTIONS
- = ROAD POINTS ASSOCIATED WITH PINCH POINTS OR VISIBILITY RESTRICTIONS THAT HAVE ACCOMPANYING TURNOUT(S)
- = ROAD POINTS ASSOCIATED WITH PINCH POINTS OR VISIBILITY RESTRICTIONS THAT DO NOT HAVE ACCOMPANYING TURNOUT(S)

22x34 SHEET: 1"=400'
11x17 SHEET: 1"=800'

0 200 400 800

N

DRAWN BY | REVISIONS | DATE

NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

ROLLING MEADOWS RANCH, INC
McCANN, CA
ACCESS ASSESSMENT

PROJ. MGR.: POW
DRAWN BY: DDR
DATE: 10/08/2020
SCALE: AS SHOWN

SHEET
R1
20-063

October 8, 2020 - 16:41 Dwg Name: P:\Mockets_Andy - Rolling Meadows - 20-063\CAD\20I008 - ROLLING MEADOWS ROAD ASSESSMNT - McCANN ROAD ONLY.dwg Updated By: Derek Roadie

Rolling Meadows, LLC

Appendix B: Access Assessment Photos

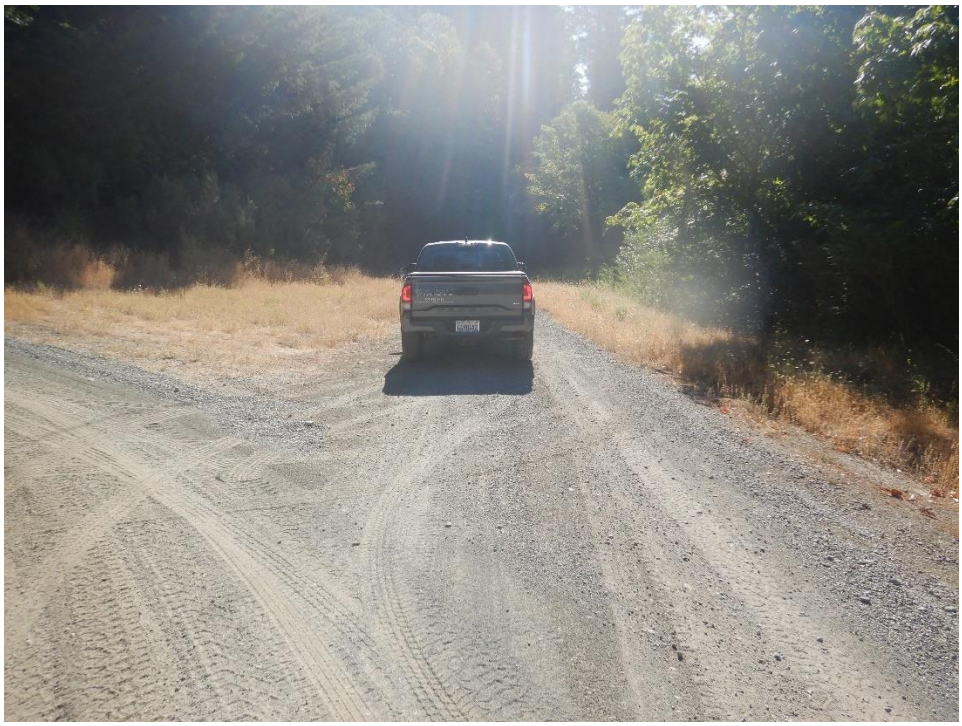


Figure 1: RP 1. Vehicle traveling east. Photo taken facing east.

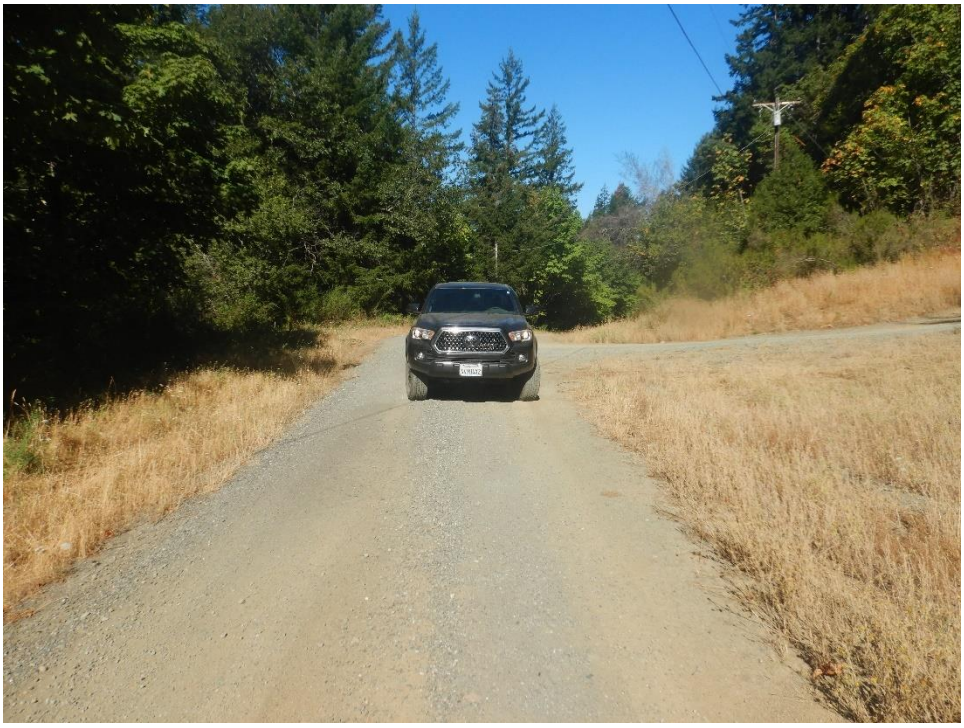


Figure 2: RP 1. Vehicle traveling east. Photo taken facing west.

Figure 3: RP 2. Vehicle traveling east. Photo taken facing east.

Figure 4: RP 2. Vehicle traveling east. Photo taken facing west.

Figure 5: RP 2. Vehicle traveling east. Photo taken facing east.

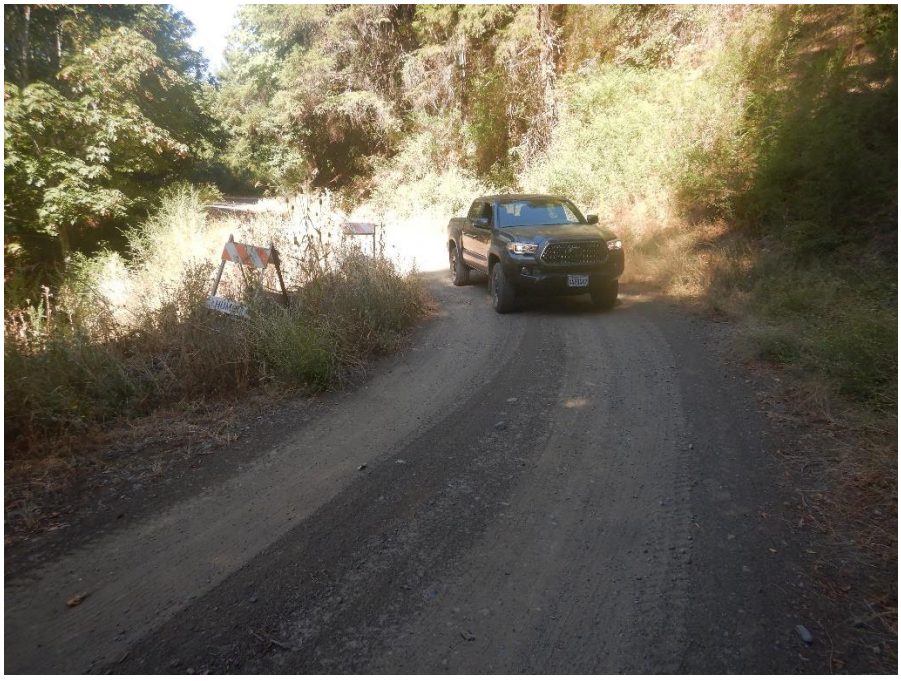


Figure 6: RP 2. Vehicle traveling east. Photo taken facing west.

Figure 7: RP 3. Vehicle traveling east. Photo taken facing east.

Figure 8: RP 4. Vehicle traveling east. Photo taken facing east.

Figure 9: RP 4. Vehicle traveling east. Photo taken facing west.

Figure 10: RP 4. Vehicle traveling east. Photo taken facing east.

Figure 11: RP 4. Vehicle traveling east. Photo taken facing west.

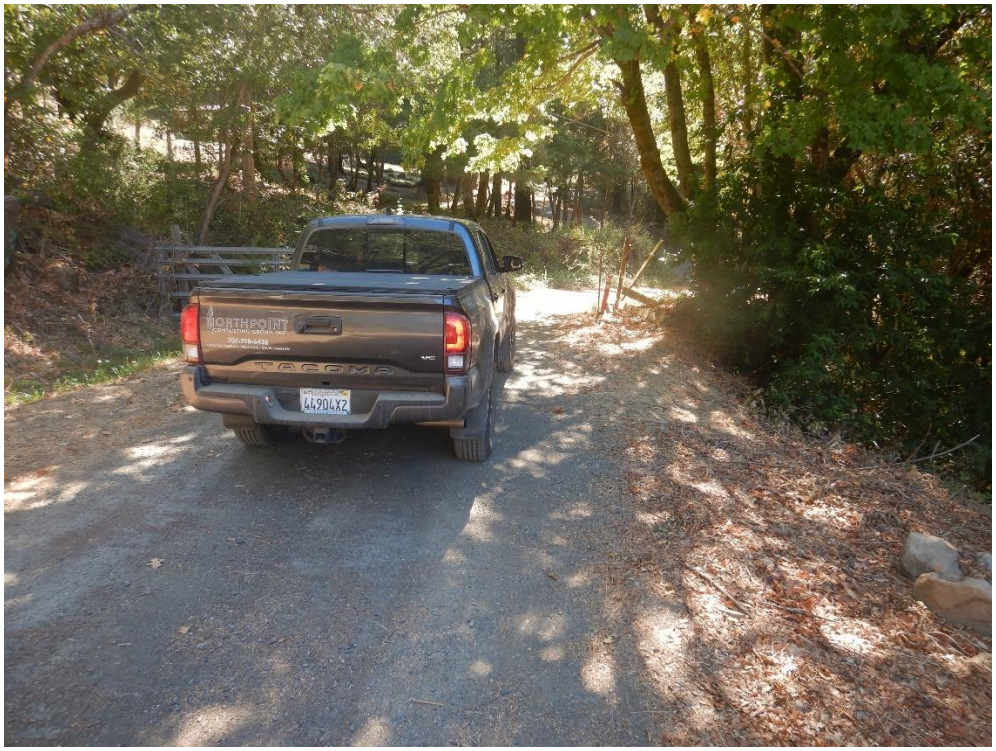


Figure 12: RP 5. Vehicle traveling east. Photo taken facing east.

Figure 13: RP 5. Vehicle traveling east. Photo taken facing west.

Figure 14: RP 6. Vehicle traveling east. Photo taken facing east.

Figure 15: RP 6. Vehicle traveling east. Photo taken facing west.

Figure 16: RP 7. Vehicle traveling east. Photo taken facing east.

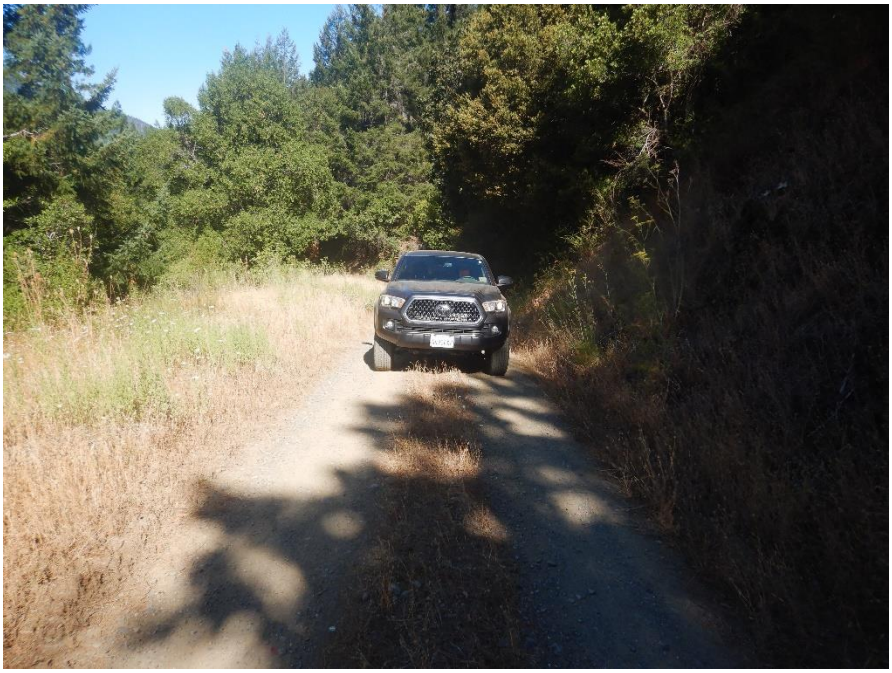


Figure 17: RP 7. Vehicle traveling east. Photo taken facing west.

Figure 18: RP 8. Vehicle traveling east. Photo taken facing east.

Figure 19: RP 8. Vehicle traveling east. Photo taken facing west.

NORTHPOINT
CONSULTING GROUP, INC.

Rolling Meadows Ranch, INC

Access Assessment for Compliance with Humboldt County Code Section 3112-12 – Fire Safe Regulations

Project: PLN-12529-CUP

APNs: 217-022-004, et al

Humboldt county, CA

10-7-20

REVISED

October 2020

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2.0 Road Points 3
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Table 2: Road Points located on the Winter Access Road. 8

Attachments

Appendix A: Access Assessment Drawings

Appendix B: Access Assessment Photos

1.0 Introduction & Site Description

This Access Assessment contains a detailed overview of the roadway that is used to access the subject parcels (Project), APNs: 217-022-004 et al associated with Humboldt County Planning and Building Department application number 12529. The roadway and emergency vehicle turn arounds have been assessed for conformance with Humboldt County Code Section 3112-12, the Fires Safe Regulations (Chapter 2 – Emergency Access).

The road system that is used to access the Project is comprised of private roadways, which lead off from McCann Road and Alderpoint Road, both county maintained. See the attached Access Assessment drawings for full details of the roadways that are included in this assessment.

The Project is located in McCann California, which is adjacent to the Eel River. During the summer months, the Project site is accessed via McCann road, which has a low water bridge crossing over the Eel River. This low water bridge is only navigable during the summer months when the flows in the river are low (typically March through October). When the bridge is not navigable, and before the McCann bridge replacement project is constructed, the Project will be accessed via Alderpoint Road if required. The access route from Alderpoint Road is considered a "Winter Access Road" and will only be used to access the Project site during winter months. The Winter Access Road is comprised of private roads which are used to access private timber lands and are also used for timber harvesting operations that are not related to the Project. See the attached Access Assessment Drawings for the routes that are used to access the Project. While both access roads are suitable to accommodate traffic demands for the proposed project, the Main Access Road provides more direct access to proposed activity sites, compared to the proposed Winter Access Road.

Following the recommendations set forth in this report, the entire roadway will meet the standards of a minimum of twelve (12) foot width, with turnouts at a minimum spacing of 1,320 feet (0.25 mile), and with adequate sight distance and turnouts on either side of pinch points to allow for safe access to and from the project site.

2.0 Road Points

Road Points (RPs) were located along the entire roadway. RPs are defined as interest points along the subject travel ways; locations of pinch points, locations of sight distance restrictions, locations of turnouts and SRA turnarounds, stream crossings or intersections. The road widths were measured, photos were taken, and recommendations were prescribed at each RP. The recommendations are based on achieving the standard described above. The recommendations to achieve the Standard are based on avoiding impact to potentially sensitive habitat, such as oak woodlands and wetlands.

See Tables 1a, 1b and 2 for a full description of the RPs along the roadways. See the attached Road Evaluation Photographs for photos of select RP.

3.0 Roadways

The through access roadway is comprised of the Main Access Road and the Winter Access Road. The Main Access Road is comprised of a portion of McCann Road and a series of private access roads. The Winter Access Road is comprised of a series of private access roads.

The entire through access roadway has been determined to meet Category 2 Road standard, with the implementation of our recommendations shown in Tables 1a, 1b and 2. Although there are pinch points present along the roadway, the roadway is on average 12 feet in width, with adequate turnouts located at 0.25-mile intervals.

All recommended improvements, excluding RP 4, RP 6 through RP 16, and RP 53, can be performed within the existing road prism and disturbed areas. The access road section between RP 6 and RP 16 will need minor re-alignment in some sections and widening that will require earthwork. RP 53 is associated with a crossing across Larabee Creek. The current crossing structure is an old bridge that is not fit for use. It is recommended that the bridge be replaced. Tables 1a, 1b and 2 describe the recommendations, along with the improvements required to achieve Category 2 Road standard, and the functional equivalence of a Category 4 Road based on the extremely low traffic volumes.

The roadway has been assessed in the past. The following reports related to this roadway have been performed, and can be referred to for additional information:

- Road Evaluation Forms and Letter addressing a portion of the Winter Access Road performed by Manhard Consulting, dated 10/25/2017 and 01/10/2018.
- "*Engineer's Report of Rolling Meadows Ranch - Internal Access Road Evaluation*," performed by Oscar Larson & Associates, dated 04/03/2018.
- "*Stream Crossing Evaluation Summary*," prepared by Natural Resources Management Corp. (NRM), dated 09/01/2020.
- "*Access Assessment for Compliance with Humboldt County Code Section 3112-12-Fire Safe Regulations*," performed by NorthPoint Consulting Group, dated 09/04/2020.

Table 1a: Road Points located on the Main Access Road.

	RP	Current Description	Issue	Recommended Solution	Approximate Length of Roadway Requiring Improvement * (ft)	Approximate Area of Disturbance Associated With Prescribed Improvements * (ft^2)
Main Access Road	1	Start of 'Main Access Road'	N/A	N/A	N/A	N/A
	2	10' roadway. 16' road prism.	Visibility restrictions due to vegetation.	Brush clearing on either side of roadway.	N/A	N/A
	3	Gate. Existing turnouts on either side of gate. Gate measures 14' in width.	N/A	N/A	N/A	N/A
	4	10' roadway width.	Narrow roadway for approx. 200' in length.	Widen roadway by extending cut slope on north side of roadway.	200	2,000
	5	Turnaround area.	Vegetation in turnout area.	Clear vegetation in turnaround area.	N/A	N/A
	5.1	Typical section of Main Access Road.	N/A	N/A	N/A	N/A
	5.2	Typical section of Main Access Road.	N/A	N/A	N/A	N/A
	6	Narrow, steep section of roadway, leading to tight turn.	Roadway >18% in grade. Turn radius <50' diameter.	Realign roadway to allow 50' turn radius and turnout area. Reduce roadway grade to extent possible.	150	2,250
	7	Narrow, steep section of roadway, leading to tight turn.	Roadway >18% in grade. Turn radius <50' diameter. Visibility restrictions due to embankment/through cut	Realign roadway to allow 12' width and 50' turn radius. Remove existing embankment/through cut knob.	35	350
	8	Tight turn.	Turn radius <50' diameter. Visibility restrictions.	Realign road and remove debris on inside of existing turn to achieve 50' turn radius and improve visibility.	35	250
	9	Narrow roadway. Proposed location of turnout area.	Visibility restrictions.	Install turnout area on south side of existing roadway.	60	1,050
	10	Narrow section of roadway. Stream crossing.	Narrow roadway for approx. 60' in length. Culvert needs replacement. (Crossing 31 in NRM's report)	Realign and widen roadway to achieve minimum 12' width. Replace culvert following NRM's recommendation.	175	1,150
	11	Narrow section of roadway traversing across grassland prairie.	Narrow Roadway for approx. 275' in length.	Widen roadway to achieve 12' minimum width. Install turnout.	275	1,050
	12	Pinch point. Stream crossing.	Pinch point. 10' roadway width. (Crossing 29 in NRM's report)	Follow NRM's recommendation for culvert replacement and widen road to a minimum of 12' width, or install turnouts on either side of pinch point.	N/A	N/A
	13	Narrow section of roadway traversing across grassland prairie.	Narrow Roadway for approx. 750' in length (From RP 12 to RP 13).	Widen roadway to achieve 12' minimum width.	750	3,150

** See Sheet A4 in Appendix A for details of the locations of potential disturbance*

Table 1b: Road Points located on the Main Access Road.

	RP	Current Description	Issue	Recommended Solution	Approximate Length of Roadway Requiring Improvement * (ft)	Approximate Area of Disturbance Associated With Prescribed Improvements * (ft^2)
Main Access Road	14	Pinch point. Two stream crossings adjacent to each other.	Pinch point. 10' roadway width. (Crossing 27 & 28 NRM's report)	Follow NRM's recommendation for culvert replacements and widen road to a minimum of 12' width, or install turnouts on either side of pinch point.	N/A	N/A
	15	Narrow section of roadway traversing across grassland prairie.	Narrow Roadway for approx. 525' in length (from RP 15 to RP 16).	Widen roadway to achieve 12' minimum width.	525	2,100
	16	Intersection of Main Access Road and private access road. Location of turnout.	N/A	N/A	N/A	N/A
	17	Steep section of roadway.	Road grade >16% grade for approx. 75' in length. Turnout provided at top of steep section.	N/A	N/A	N/A
	18	Typical section of the Main Access Road. 12' minimum road width provided.	N/A	N/A	N/A	N/A
	19	Narrow roadway.	Tree causes pinch point in roadway. 11' roadway width No sight distance restrictions. Turnout provided adjacent to pinch point.	N/A	N/A	N/A
	20	Exiting turnout area.	Turnout area is uneven and has excess vegetation.	Clear vegetation and level turnaround area.	N/A	N/A
	21	Active land slide.	Active slide across roadway. 12' minimum roadway width provided. No sight distance restrictions.	Routinely inspect slide to ensure stability	N/A	N/A
	22	Existing turnout area.	N/A	N/A	N/A	N/A
	23	Existing turnout area.	N/A	N/A	N/A	N/A
	24	Existing turnout area.	N/A	N/A	N/A	N/A
	25	Existing turnout area.	N/A	N/A	N/A	N/A
	26	Active land slide.	Active slide causing narrow roadway. Turnout provided adjacent to pinch point.	Routinely inspect slide to ensure stability	N/A	N/A
	27	Typical section of the Main Access Road. 13' roadway width.	N/A	N/A	N/A	N/A
	28	Existing turnout area.	N/A	N/A	N/A	N/A
	29	Existing turnout area.	N/A	N/A	N/A	N/A
	30	Existing turnout area.	N/A	N/A	N/A	N/A
	31	Existing turnout area.	N/A	N/A	N/A	N/A
	32	Typical section of the Main Access Road. 13' roadway width.	N/A	N/A	N/A	N/A
	33	Existing turnout area.	N/A	N/A	N/A	N/A
	34	Bridge. 13.5' in width. Turnouts provided on either side of bridge.	N/A	N/A	N/A	N/A
	35	Existing turnout area.	N/A	N/A	N/A	N/A
	36	End of the Main Access Road. Intersection of the Main Access Road and the Winter Access Road.	N/A	N/A	N/A	N/A

** See Sheet A4 in Appendix A for details of the locations of potential disturbance*

Table 2 below contains all the RPs that are located along the Winter Access Road. The table contains a description of the RPs, describes if there is any issue associated with the RP, the recommended solution to solve the issue and the approximated disturbance associated with the recommended solution. See the Access Assessment Drawings (Appendix A) for the locations of the RPs along the roadway. See Appendix B for photographs of select RPs.

Table 2: Road Points located on the Winter Access Road.

	RP	Current Description	Issue	Recommended Solution	Approximate Length of Roadway Requiring Improvement (ft)	Approximate Area of Disturbance Associated With Prescribed Improvements (ft^2)
Winter Access Road	36	Intersection of the Main Access Road and the Winter Access Road	N/A	N/A	N/A	N/A
	37	Existing turnout area.	N/A	N/A	N/A	N/A
	38	Steep section of roadway.	Road grade >16% for approx. 150' in length.	N/A	N/A	N/A
	39	Narrow and steep section of roadway.	Road width <12'. Road grade >16% for approx. 200' in length.	Widen roadway to achieve 12' minimum width.	N/A	N/A
	40	Existing turnout area.	N/A	N/A	N/A	N/A
	41	Steep section of roadway.	Road grade >16% for approx. 300' in length.	N/A	N/A	N/A
	42	Existing turnout area.	N/A	N/A	N/A	N/A
	43	Existing turnout area.	N/A	N/A	N/A	N/A
	44	Narrow roadway. Slight visibility restrictions.	Road width <12'. Visibility restriction present due to vegetation.	Widen roadway to achieve 12' minimum width. Install 'LOOK FOR ONCOMING TRAFFIC' sign.	N/A	N/A
	45	Existing turnout area.	N/A	N/A	N/A	N/A
	46	Existing turnout area.	N/A	N/A	N/A	N/A
	47	Gate. Turn outs provided on either side of gate. Gate measures 15' in width.	N/A	N/A	N/A	N/A
	48	Existing turnout area.	N/A	N/A	N/A	N/A
	49	Existing turnout area.	N/A	N/A	N/A	N/A
	50	Steep road grade.	Road grade >16% for short distance.	N/A	N/A	N/A
	51	Steep road grade.	Road grade >16% for short distance.	N/A	N/A	N/A
	52	Gate. Turn outs provided on either side of gate. Gate measures 15' in width.	N/A	N/A	N/A	N/A
	53	Bridge.	Larabee Creek crossing. Current bridge is not structurally sufficient to support a vehicle.	Replace bridge.	TBD	TBD
	54	Intersection of the Winter Access Road and Alderpoint Road. Gate. Turnouts provided on either side of gate. Gate measures 15' in width.	N/A	N/A	N/A	N/A

A portion of the Winter Access Road is also used for private timber harvest operations, which are not associated with the subject Project. At the time of the roadway inspection, timber harvest activities were underway and large machinery was in operation within the roadway. It is assumed that this section of the Winter Access road will be responsibly maintained as a permanent timber access road by the timber operator, following timber harvest activities.

4.0 Gate Entrances

> *Per Humboldt County Code Section 3112-13: Gate entrances shall be at least two (2) feet wider than the width of the traffic lane(s) serving the gate, and a minimum width of fourteen (14) feet of unobstructed horizontal clearance and unobstructed vertical clearance of fifteen (15) feet.*

There are a total of three (3) gates within the subject road system, RP 3, RP 47 and RP 55. All gates are a minimum of 14' wide and have, at least 15' of vertical clearance.

5.0 Roadway Structures

> *Per Humboldt County Code Section 3112-9: All driveway, road, street, and private lane roadway structures shall be constructed to carry at least the maximum load and provide the minimum vertical clearance as required in California Vehicle Code Sections 35250, 35550, and 35750. Where a bridge, culvert or an elevated surface is part of a fire apparatus access road, the roadway structure shall be constructed and maintained in accordance with the American Association of State and Highway Transportation Officials Standard Specifications for Highway Bridges, 17th Edition, published 202 (known as AASHTO HB-17), hereby incorporated by reference, or an equivalent or greater AASHTO standard as may be from time to time adopted. Roadway structures shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. The minimum vertical clearance shall be 15 feet at all points on the surface of the roadway. (Ord. 1952, § 1, 12/17/1991; Ord. 2540, Section 1, 11/17/2015)*

There are two (2) bridges within the subject road system, RP 34 and RP 54. The bridge at RP 34 is a single lane steel bridge, measures 13.5 feet in width, and has a minimum of 15 feet of vertical clearance. The bridge is structurally sufficient to carry loads imposed by emergency vehicles, has unobstructed visibility and turnouts on either side.

The bridge at RP 54 is not structurally sufficient to carry a vehicle and will need to be replaced. It is recommended that all work to replace the bride is done by qualified personnel.

Note: California Department of Fish and Wildlife was issued a Final Lake or Streambed Alteration Agreement (LSAA) for this bridge replacement.

6.0 Conclusion and Recommendations

In conclusion, the roadway, that is used to access the project location has been determined to be within conformance of Humboldt County Code Section 3112-12, the Fires Safe Regulations (Chapter 2 – Emergency Access), with the recommended improvements included in this report.

The entire roadway meets Roadway Category 2 standard and is functionally equivalent to a Category 4 Road, with the recommended improvements included in this report and the extremely low traffic volumes.

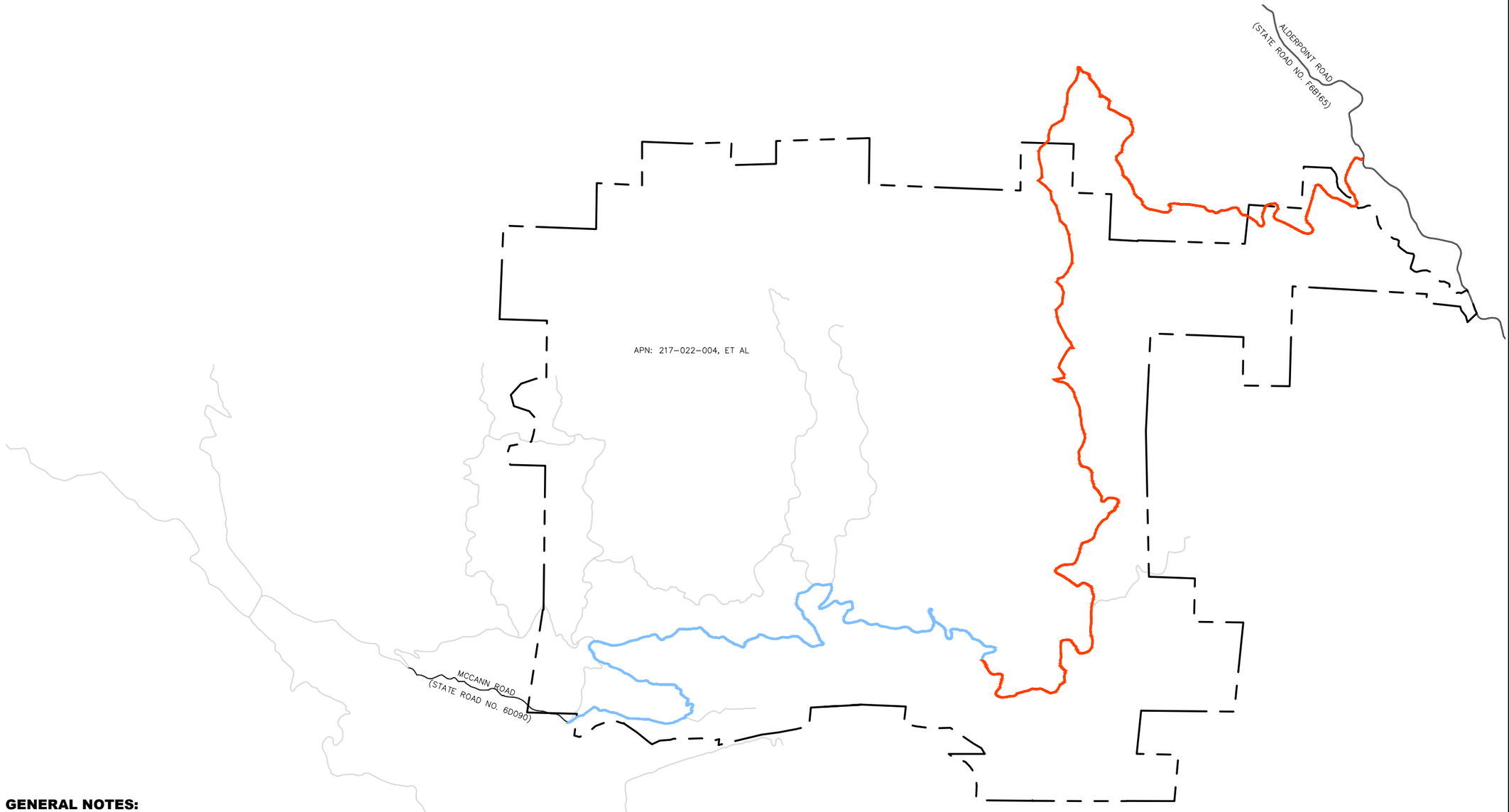
7.0 References

1. Humboldt County Web GIS. Humboldt County Planning and Building Department. Retrieved from http://webgis.co.humboldt.ca.us/HCEGIS2.0/
2. Humboldt County Code - A Codification of the General Ordinances of Humboldt County, California

Appendix A: Access Assessment Drawings

ROLLING MEADOWS RANCH, INC

ACCESS ASSESSMENT



GENERAL NOTES:

1. DRAWING SCALE AS NOTED. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
2. THIS IS NOT A BOUNDARY SURVEY. BOUNDARY INFORMATION DEPICTED HAS BEEN OBTAINED FROM HUMBOLDT COUNTY 2015 GIS DATA. NORTHPOINT CONSULTING GROUP, INC. HAS NOT VERIFIED THIS PROPERTY BOUNDARY.
3. ROAD NAMES AND STATE ROAD NUMBERS OBTAINED FROM HUMBOLDT COUNTY GIS DATA.
4. WATERCOURSES OBTAINED FROM HUMBOLDT COUNTY GIS DATA

LEGEND:

= MAIN ACCESS ROAD (CATEGORY 2 EQUIVALENT WITH RECOMMENDED IMPROVEMENTS)

= WINTER ACCESS ROAD (CATEGORY 2 EQUIVALENT WITH RECOMMENDED IMPROVEMENTS)

PLOT PLAN

22x34 SHEET: 1"=1,500'
11x17 SHEET: 1"=3,000'

0 750 1,500 3,000

N

DRAWN BY | REVISIONS | DATE

NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

ROLLING MEADOWS RANCH, INC
McCANN, CA
ACCESS ASSESSMENT

PROJ. MGR.: POW
DRAWN BY: DDR
DATE: 10/06/2020
SCALE: AS SHOWN

SHEET
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20-063

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ROLLING MEADOWS RANCH, INC

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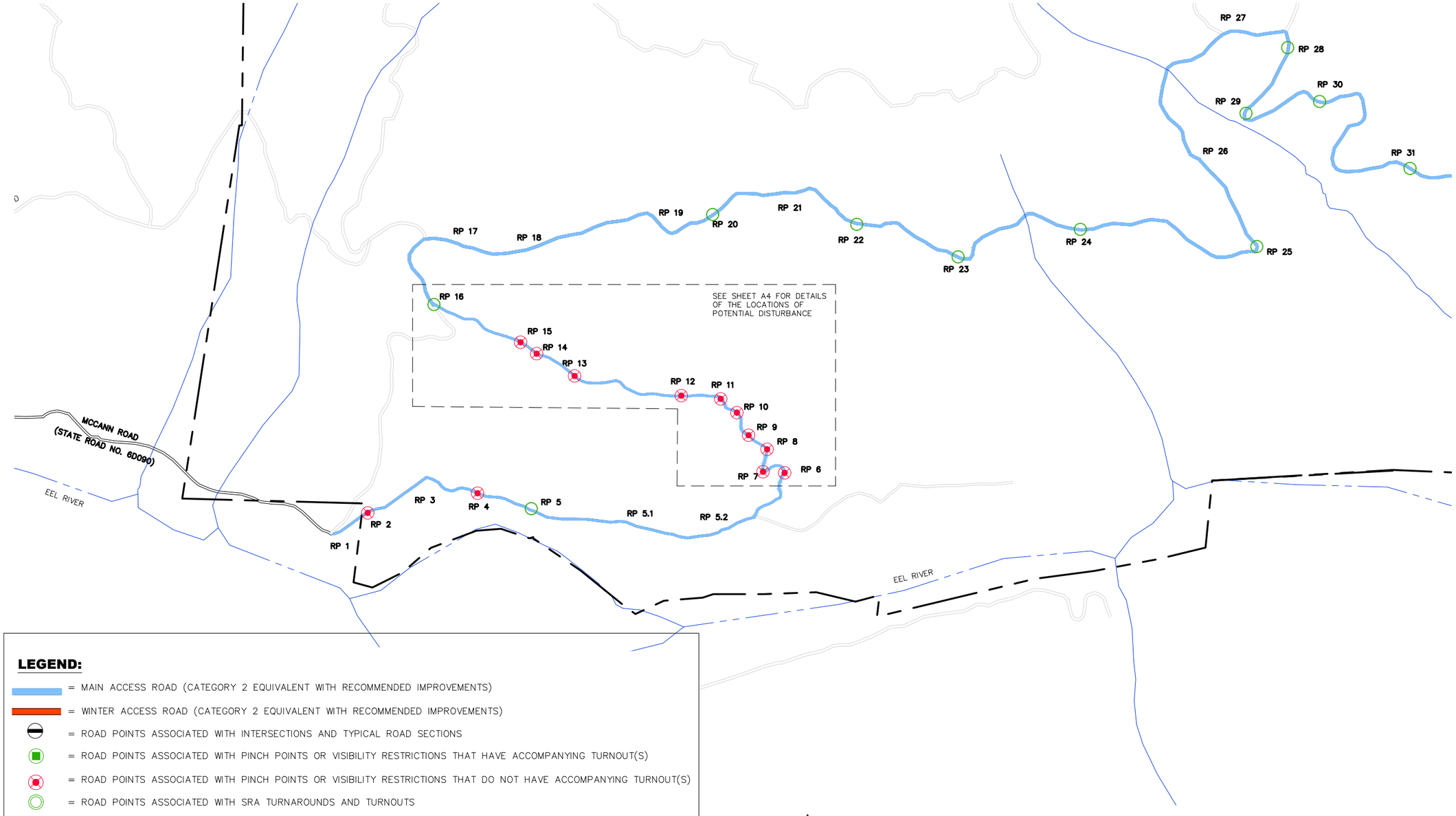

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- = WINTER ACCESS ROAD (CATEGORY 2 EQUIVALENT WITH RECOMMENDED IMPROVEMENTS)
- = ROAD POINTS ASSOCIATED WITH INTERSECTIONS AND TYPICAL ROAD SECTIONS
- = ROAD POINTS ASSOCIATED WITH PINCH POINTS OR VISIBILITY RESTRICTIONS THAT HAVE ACCOMPANYING TURNOUT(S)
- = ROAD POINTS ASSOCIATED WITH PINCH POINTS OR VISIBILITY RESTRICTIONS THAT DO NOT HAVE ACCOMPANYING TURNOUT(S)
- = ROAD POINTS ASSOCIATED WITH SRA TURNAROUNDS AND TURNOUTS

22x34 SHEET: 1"=400'
11x17 SHEET: 1"=800'

0 200 400 800

GRAPHIC SCALE

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NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

ROLLING MEADOWS RANCH, INC
McCANN, CA
ACCESS ASSESSMENT

PROJ. MGR.: POW
DRAWN BY: DDR
DATE: 10/06/2020
SCALE: AS SHOWN

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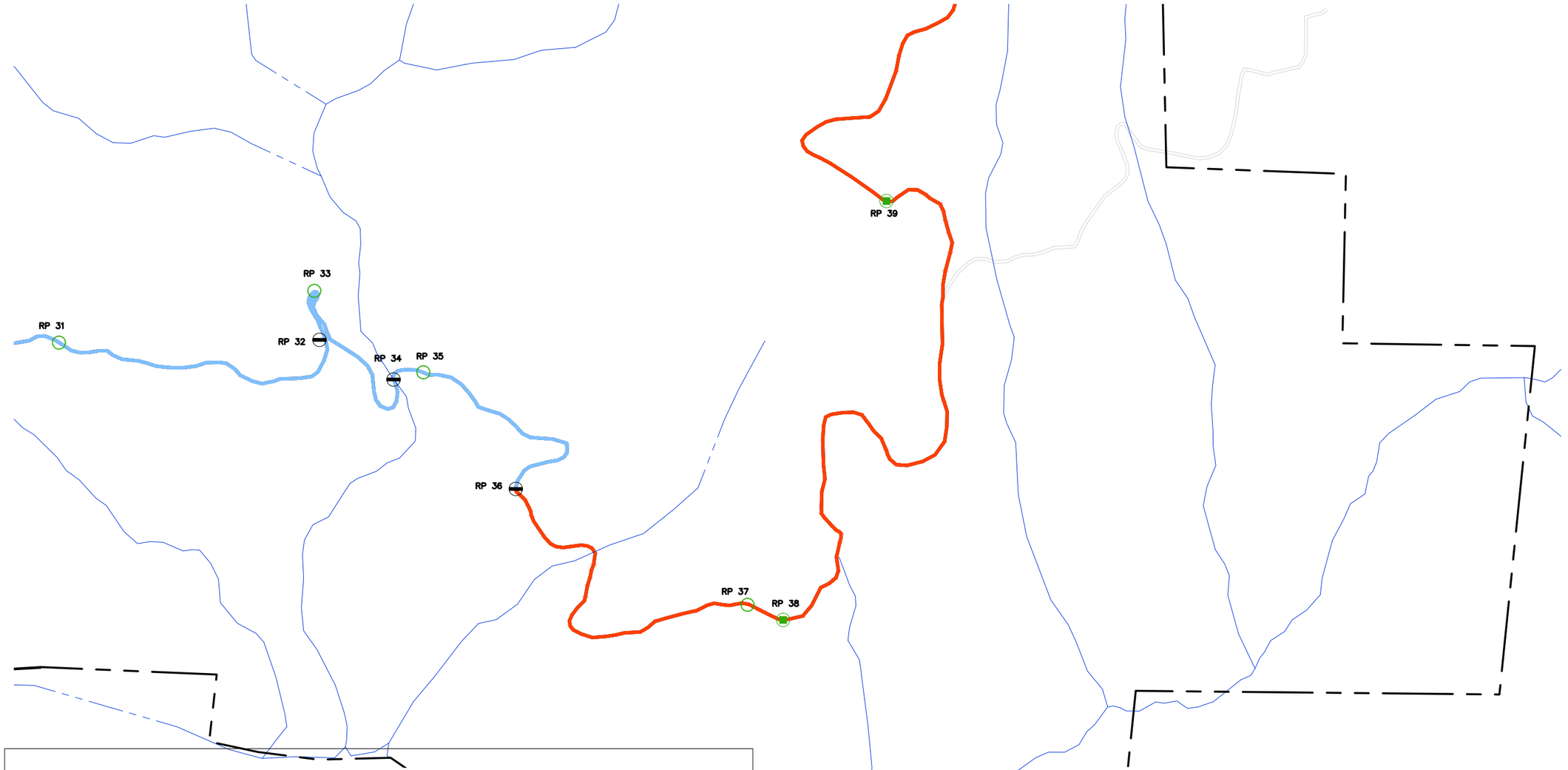

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- = ROAD POINTS ASSOCIATED WITH PINCH POINTS OR VISIBILITY RESTRICTIONS THAT DO NOT HAVE ACCOMPANYING TURNOUT(S)
- = ROAD POINTS ASSOCIATED WITH SRA TURNAROUNDS AND TURNOUTS

22x34 SHEET: 1"=400'
11x17 SHEET: 1"=800'

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DATE	REVISIONS	DRAWN BY

NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

ROLLING MEADOWS RANCH, INC
McCANN, CA
ACCESS ASSESSMENT

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ROLLING MEADOWS RANCH, INC

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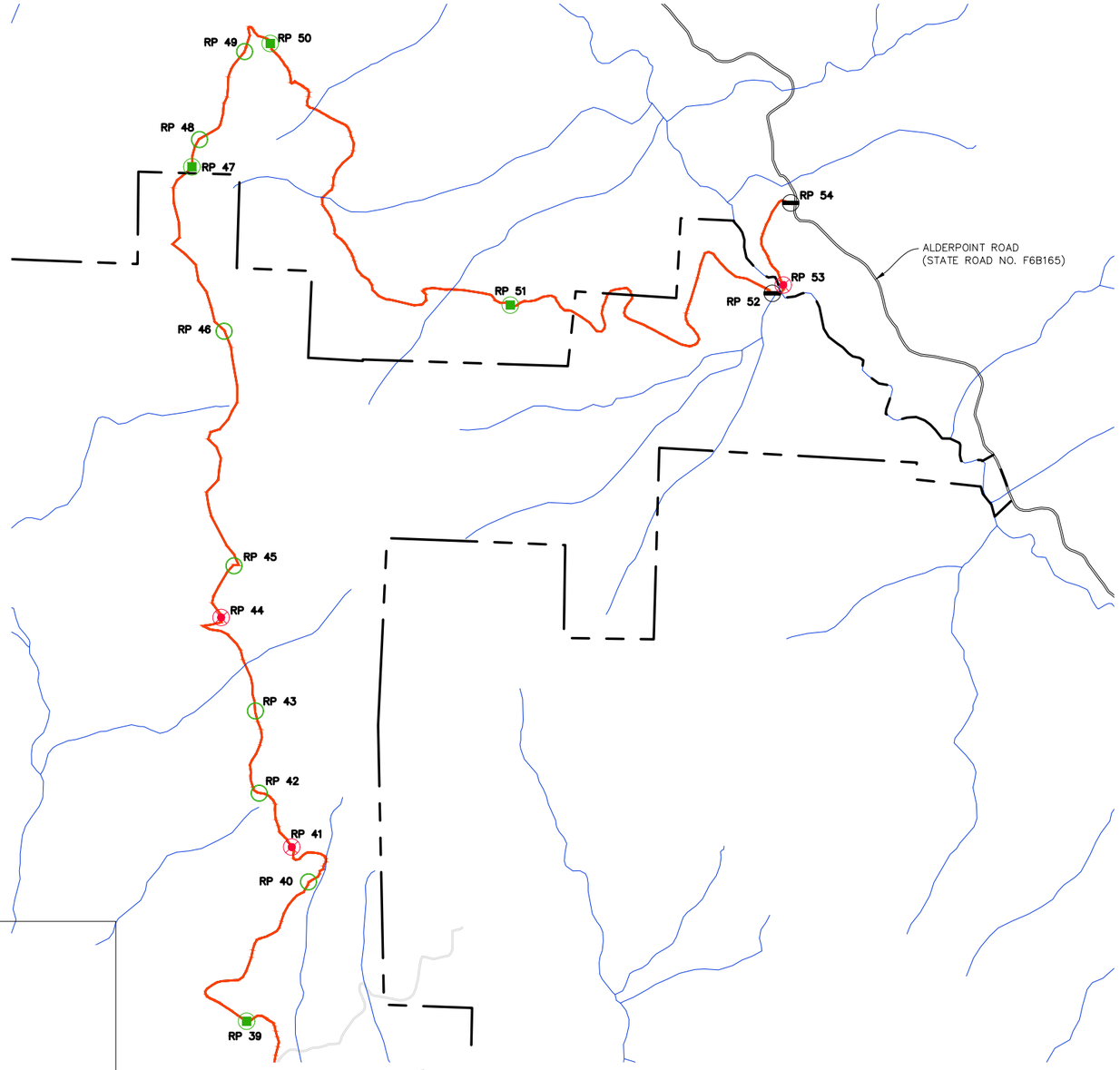

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= WINTER ACCESS ROAD (CATEGORY 2 EQUIVALENT WITH RECOMMENDED IMPROVEMENTS)

= ROAD POINTS ASSOCIATED WITH INTERSECTIONS AND TYPICAL ROAD SECTIONS

= ROAD POINTS ASSOCIATED WITH PINCH POINTS OR VISIBILITY RESTRICTIONS THAT HAVE ACCOMPANYING TURNOUT(S)

= ROAD POINTS ASSOCIATED WITH PINCH POINTS OR VISIBILITY RESTRICTIONS THAT DO NOT HAVE ACCOMPANYING TURNOUT(S)

= ROAD POINTS ASSOCIATED WITH SRA TURNAROUNDS AND TURNOUTS

22x34 SHEET: 1"=1,000'
11x17 SHEET: 1"=2,000'

0 500 1,000 2,000

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NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

ROLLING MEADOWS RANCH, INC
McCANN, CA
ACCESS ASSESSMENT

PROJ. MGR.: POW
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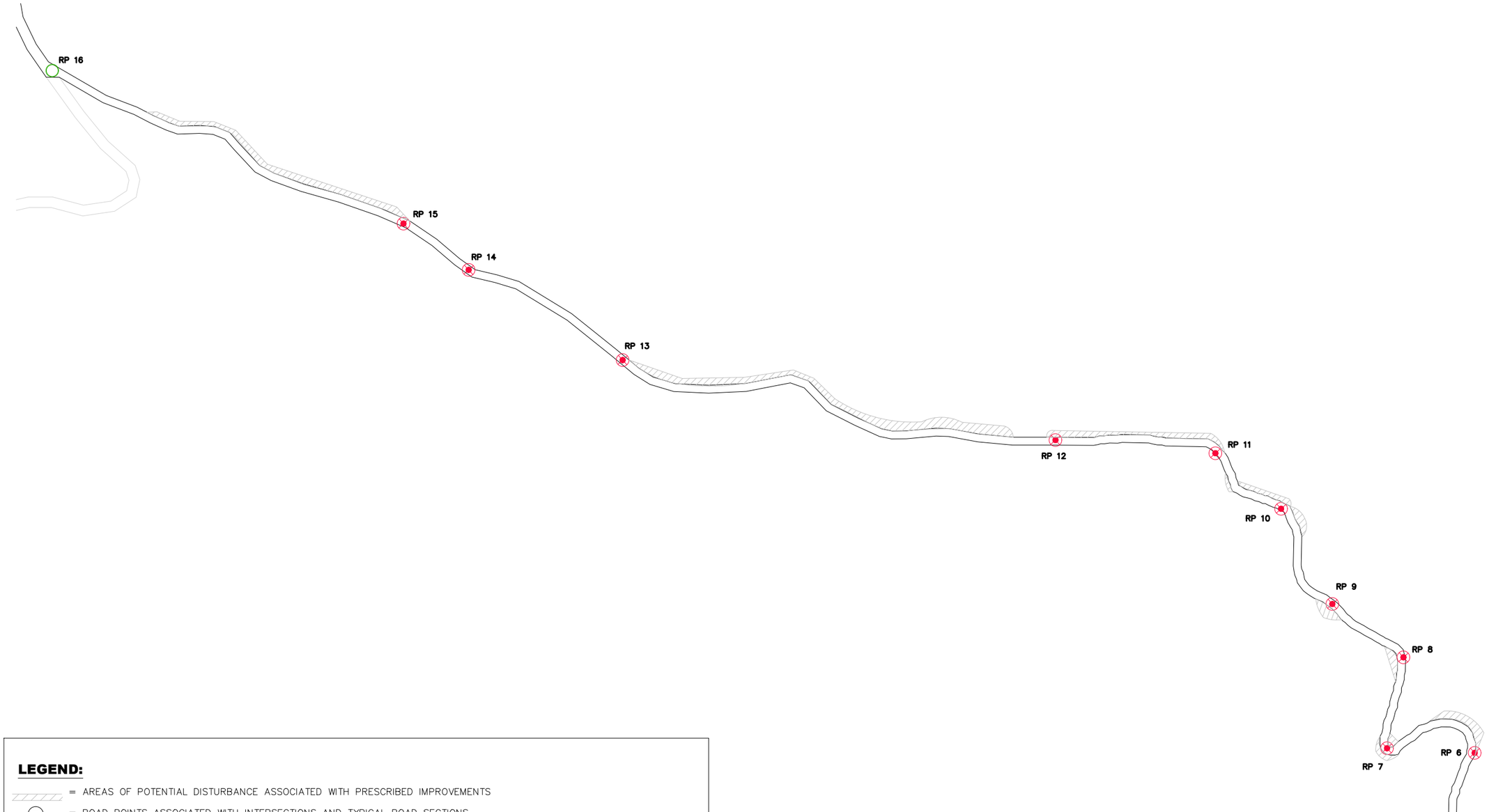
ROLLING MEADOWS RANCH, INC

ACCESS ASSESSMENT



LEGEND:

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= ROAD POINTS ASSOCIATED WITH PINCH POINTS OR VISIBILITY RESTRICTIONS THAT DO NOT HAVE ACCOMPANYING TURNOUT(S)

= ROAD POINTS ASSOCIATED WITH SRA TURNAROUNDS AND TURNOUTS

22x34 SHEET: 1"=100'
11x17 SHEET: 1"=200'

0 50 100 200

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DRAWN BY:
REVISIONS
DATE

NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

ROLLING MEADOWS RANCH, INC
McCANN, CA
ACCESS ASSESSMENT DETAILS

PROJ. MGR.: POW
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DATE: 10/06/2020
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20-063

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Appendix B: Access Assessment Photos

Appendix B: Access Assessment Photos

RP 2

RP 3

RP 3

RP 4

RP 4

RP 5

Appendix B: Access Assessment Photos

RP 5	RP 6	
RP 6	RP 6	RP 7
RP 7	RP 8	RP 8

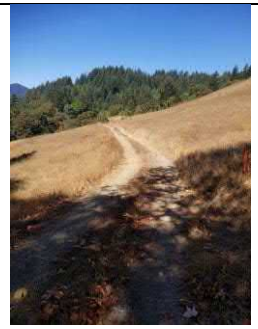
RP 9

RP 10

RP 10

RP 11

RP 11

RP 12	RP 13	RP 13
		
RP 14	RP 15	RP 16

RP 16	RP 17	RP 17
RP 18	RP 18	

RP 19

RP 19

RP 20

RP 21

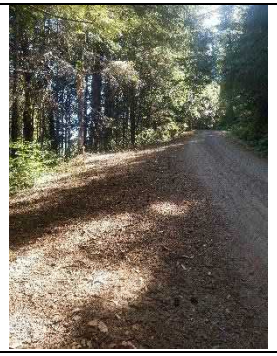
RP 22

RP 22

RP 23

RP 24

RP 25



RP 26

RP 26

RP 26

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<tr><td colspan="2">RP 27</td><td colspan="2">RP 29</td></tr>
<tr><td colspan="2"> </td><td colspan="2"> </td></tr>
<tr><td colspan="2">RP 29</td><td colspan="2">RP 30</td></tr>
<tr><td> </td><td> </td></tr>
<tr><td>RP 31</td><td>RP 32</td></tr>
</table>

RP 33

RP 34

RP 34

RP 35

RP 38

RP 43

RP 47

RP 48

RP 49

RP 50

RP 54

Manhard CONSULTING

Civil Engineering
Surveying
Water Resources Management
Construction Management
Landscape Architecture
Land Planning
Rural Property Services

Date: January 10, 2018

To: Humboldt County Planning Department
3015 H Street
Eureka, CA 95501
(707)445-7541

Subject: Rolling Meadows Ranch Inc
APN: 217-451-005

Cannabis Planner,

A field evaluation was completed for the subject application.

The alternate Alderpoint Road access roadway qualifies as a very low volume local road (less than 400 vehicles average daily traffic) as it is only accessed by the proposed development and the adjacent properties owned by Sierra Pacific. The AASHTO guidelines for geometric design of very low volume local roads allows for the existing design of the roads (width, elevation, sight distance, curvature, etc.) to remain in place unless evidence exists of site specific safety problems.

Our field evaluation did not identify evidence of crashes, collisions or other incidents and we have provided recommendations to mitigate these risks if issues arise. The Sierra Pacific properties adjacent to the access road was logged within recent years and have been left to naturally re-stock. No logging traffic can be expected for 20 to 30 years.

The proposed development would only use this road in case the primary access across McCann Road is inaccessible due to flooding or high water. Transportation would be provided for employees in the morning and evening, in no more than six to eight vehicle trips. A security guard will be posted at the access road in use and will be able to communicate and coordinate traffic on the road so the risk of conflict will be limited.

Please do not hesitate to contact me at (707)627-2911 pwhite@manhard.com with questions or any additional information.

Sincerely,

Praj O. White
Regional Manager

1-10-18

HUMBOLDT COUNTY DEPARTMENT OF PUBLIC WORKS
ROAD EVALUATION REPORT

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

Applicant Name: Rolling Meadows Ranch APN: APNs shown on appended page

Planning & Building Department Case/File No.: N/A

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

From Road (Cross street): 40.362401°, -123.761173°

To Road (Cross street): Alderpoint Rd

Length of road segment: ±3.74 miles Date Inspected: 10/23/2017

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.

David Rask
Signature

10/25/17
Date

DAVID RASK
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.

HUMBOLDT COUNTY DEPARTMENT OF PUBLIC WORKS
ROAD EVALUATION REPORT

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

Applicant Name: Rolling Meadow Ranch Inc APN: APNs shown on appended page

Planning & Building Department Case/File No.: N/A

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

From Road (Cross street): McCann Rd and Dyerville Loop Rd

To Road (Cross street): Property line of 217-181-027 and 217-181-017

Length of road segment: 2 mi miles Date Inspected 11-14-17

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.

David Rask 11/16/17

Signature Date

David Rask

Name Printed

Oscar Larson & Associates
Consulting Engineers, Inc.
317 Third Street • 2nd Floor • Eureka • CA 95501

phone: 707-445-2043 • phone: 800-660-2043
fax: 707-445-8230
e-mail: larson@olarson.com
website: www.olarson.com

Engineer's Report of
Rolling Meadow Ranch
Internal Access Road Evaluation

On 3/28/2018 Oscar Larson & Associates (OLA) performed a site investigation to evaluate the internal access roads that will be used to access the proposed facilities within the Rolling Meadow Ranch, located within Humboldt County, California. The roads were evaluated per County criteria, and are identified on Sheet 1 of the attached drawings.

The field investigation, and documents provided to us, revealed no evidence of historic roadway radius problems, curve related crashes, substantial edge rutting, or other observations that would indicate site-specific roadway problems. As the ranch is the only user of the roads and the owner has committed to only allow controlled traffic, which is estimated at approximately eight trips per day, the estimated average daily traffic (ADT) will be lower than 400 ADT, and therefore the road is considered very-low volume per County standards and AASHTO guidelines. Per the AASHTO publication, "Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400)," no changes to roadway or roadside geometrics are indicated to be required for these existing very low-volume local roads with no sign of historical site-specific roadway issues.

It is our understanding that employees will be bused to the work sites in approximately six to eight trips per day. Access to the property will be controlled at manned kiosks at the entrances to the property. The permittee intends to require that all traffic on the property will communicate by radio among one another and with the manned kiosks to mitigate risk of traffic conflicts and to control access. Based on our understanding of the proposed use, as provided to us by the permit applicant, and our field evaluation, we find that the road is suitable for the intended use. However, our evaluation noted a need for routine attention to general road maintenance and upkeep, which should occur on an as needed basis. It is recommended that the following maintenance be completed prior to use of the roads. Due to steep road grades in some locations, measured to be over 20%, and not measured but estimated to be up to approximately 30% for short distances, it is recommended that appropriate type vehicles be used when using the roads.

Recommended Maintenance:

1. Perform routine road maintenance to repair settlement, scour, and other damages caused by winter storms, including, but not limited to:
    a. Re-grade and gravel roads as necessary.

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   b. Remove downed trees, branches, and all other storm debris from full road sections.
2. Cut back encroaching vegetation to the full width of roads, including width of turnouts.
3. Install a porous base gravel up to ±12 inches deep, as required, by ±12 feet wide at locations shown on the attached drawing. It is recommended that the base gravel meet the requirements of Class 2 Permeable Material of the Caltrans Standard Specifications, or as approved by an Engineer.
4. Remove accumulated sediment from approximately 300 feet of inboard ditch at the location shown on the attached drawing, and verify that the existing culvert cross drain is free draining.
5. Perform cleanout maintenance of any culverts where they may collect sediments during winter storms to achieve free flow.

Attachments:

- Rolling Meadows Ranch, Humboldt County, CA, Internal Access Road, Road Evaluation, March 2018; Sheet 1 of 5 – Aerial Image from Google Earth with Legend and Notes
- Rolling Meadows Ranch, Humboldt County, CA, Internal Access Road, Road Evaluation, March 2018; Sheet 2 of 5 – Photos 1 – 14
- Rolling Meadows Ranch, Humboldt County, CA, Internal Access Road, Road Evaluation, March 2018; Sheet 3 of 5 – Photos 15 – 28
- Rolling Meadows Ranch, Humboldt County, CA, Internal Access Road, Road Evaluation, March 2018; Sheet 4 of 5 – Photos 29 – 42
- Rolling Meadows Ranch, Humboldt County, CA, Internal Access Road, Road Evaluation, March 2018; Sheet 5 of 5 – Photos 43 – 47

4/3/2018

Gregory M. Hall, PE

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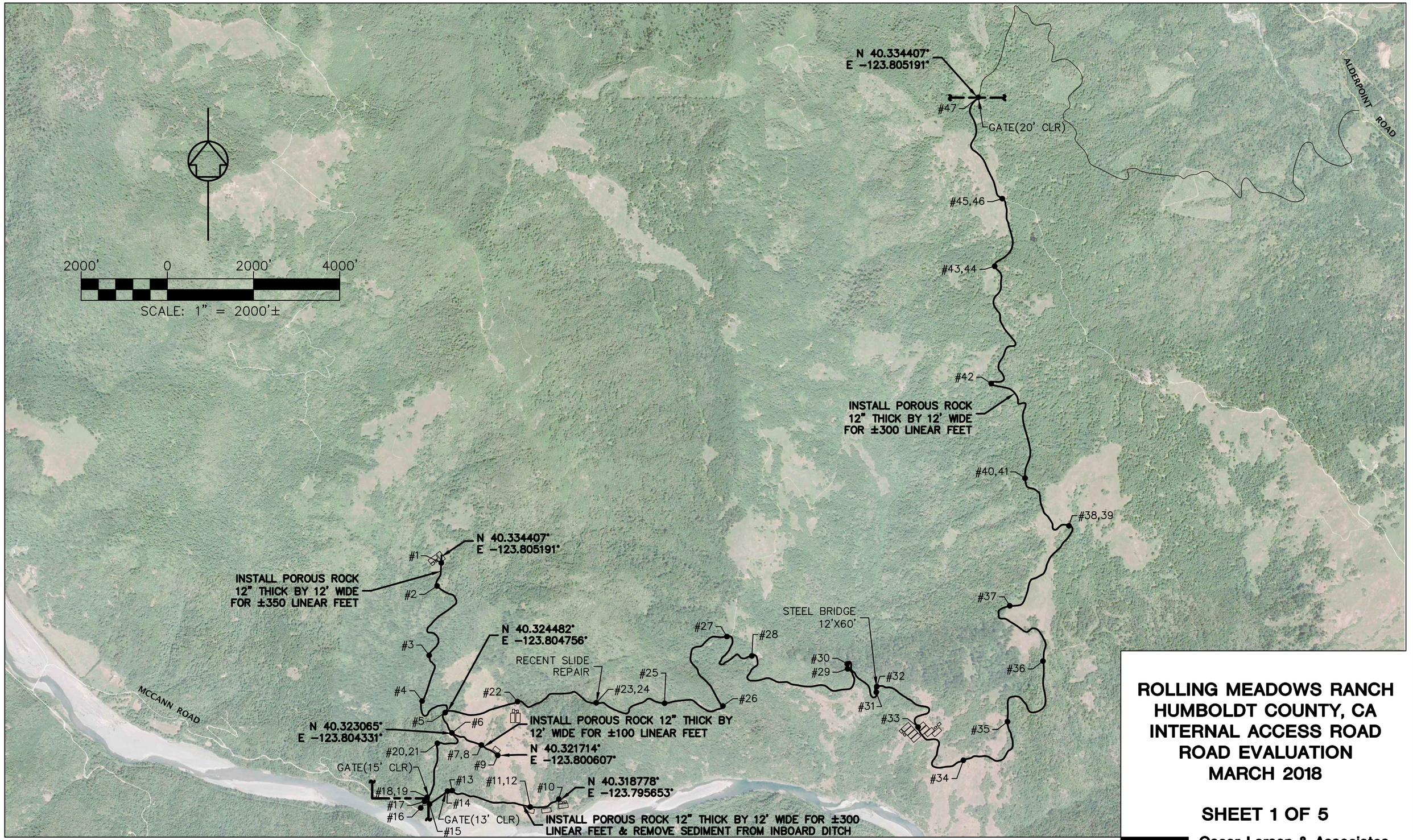

ROLLING MEADOWS RANCH
HUMBOLDT COUNTY, CA
INTERNAL ACCESS ROAD
ROAD EVALUATION
MARCH 2018

SHEET 1 OF 5

Oscar Larson & Associates
317 Third Street
Eureka, California 95501
(707) 445-2043

LEGEND

- RANCH BOUNDARY (APPROXIMATE)
- RANCH ROADS EVALUATED
- #4 PHOTOGRAPH LOCATION AND NUMBER

NOTES

1. AERIAL IMAGE FROM GOOGLE EARTH, DATED MAY 26, 2016.
2. SITE INVESTIGATION PERFORMED MARCH 28, 2018.
3. LOCATIONS OF IMPROVEMENTS SHOWN HEREON ARE APPROXIMATE.

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PHOTO #1
(FACING NORTH)

PHOTO #2
(FACING NORTHWEST)

PHOTO #3
(FACING NORTH)

PHOTO #4
(FACING NORTHEAST)

PHOTO #5
(FACING SOUTHEAST)

PHOTO #6
(FACING SOUTH)

PHOTO #7
(FACING WEST)

PHOTO #8
(FACING EAST)

PHOTO #9
(FACING WEST)

PHOTO #10
(FACING EAST)

PHOTO #11
(FACING WEST)

PHOTO #12
(FACING EAST)

PHOTO #13
(FACING EAST)

PHOTO #14
(FACING NORTHEAST)

ROLLING MEADOWS RANCH
HUMBOLDT COUNTY, CA
INTERNAL ACCESS ROAD
ROAD EVALUATION
MARCH 2018

SHEET 2 OF 5

Oscar Larson & Associates
317 Third Street
Eureka, California 95501
(707) 445-2043

NOTE

1. VEHICLE IN PHOTOGRAPHS (HONDA PIONEER 1000) IS ±5'3" WIDE WITH DOORS CLOSED AND ±11' WIDE WITH DOORS OPEN.

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PHOTO #15
(FACING NORTHEAST)

PHOTO #16
(FACING NORTHEAST)

PHOTO #17
(FACING SOUTHWEST)

PHOTO #18
(FACING SOUTHWEST)

PHOTO #19
(FACING NORTHEAST)

PHOTO #20
(FACING SOUTHWEST)

PHOTO #21
(FACING NORTHEAST)

PHOTO #22
(FACING WEST)

PHOTO #23
(FACING WEST)

PHOTO #24
(FACING EAST)

PHOTO #25
(FACING WEST)

PHOTO #26
(FACING SOUTHWEST)

PHOTO #27
(FACING WEST)

PHOTO #28
(FACING NORTHEAST)

NOTE

1. VEHICLE IN PHOTOGRAPHS (HONDA PIONEER 1000) IS ±5'3" WIDE WITH DOORS CLOSED AND ±11' WIDE WITH DOORS OPEN.

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ROLLING MEADOWS RANCH
HUMBOLDT COUNTY, CA
INTERNAL ACCESS ROAD
ROAD EVALUATION
MARCH 2018

SHEET 3 OF 5

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Eureka, California 95501
(707) 445-2043

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PHOTO #29
(FACING SOUTH)

PHOTO #30
(FACING NORTHEAST)

PHOTO #31
(FACING SOUTH)

PHOTO #32
(FACING NORTHEAST)

PHOTO #33
(FACING NORTHEAST)

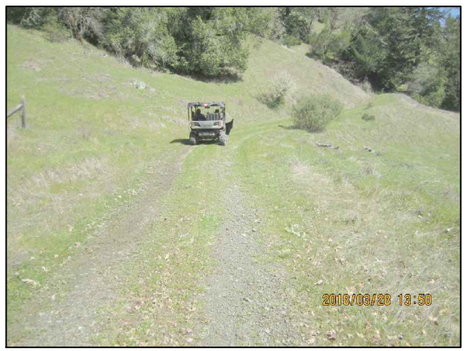

PHOTO #34
(FACING NORTHWEST)

PHOTO #35
(FACING SOUTH)

PHOTO #36
(FACING SOUTH)

PHOTO #37
(FACING WEST)

PHOTO #38
(FACING SOUTHEAST)

PHOTO #39
(FACING WEST)

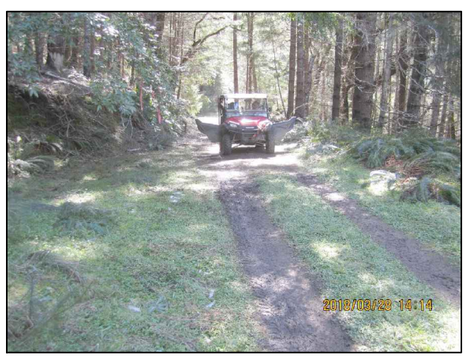

PHOTO #40
(FACING SOUTH)

PHOTO #41
(FACING NORTH)

PHOTO #42
(FACING EAST)

ROLLING MEADOWS RANCH
HUMBOLDT COUNTY, CA
INTERNAL ACCESS ROAD
ROAD EVALUATION
MARCH 2018

SHEET 4 OF 5

Oscar Larson & Associates
317 Third Street
Eureka, California 95501
(707) 445-2043

NOTE

1. VEHICLE IN PHOTOGRAPHS (HONDA PIONEER 1000) IS ±5'3" WIDE WITH DOORS CLOSED AND ±11' WIDE WITH DOORS OPEN.

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PHOTO #43
(FACING SOUTH)

PHOTO #44
(FACING NORTHEAST)

PHOTO #45
(FACING SOUTHEAST)

PHOTO #46
(FACING NORTHWEST)

PHOTO #47
(FACING SOUTHWEST)

NOTE

1. VEHICLE IN PHOTOGRAPHS (HONDA PIONEER 1000) IS ±5'3" WIDE WITH DOORS CLOSED AND ±11' WIDE WITH DOORS OPEN.

ROLLING MEADOWS RANCH
HUMBOLDT COUNTY, CA
INTERNAL ACCESS ROAD
ROAD EVALUATION
MARCH 2018

SHEET 5 OF 5

Oscar Larson & Associates
317 Third Street
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Oscar Larson & Associates
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phone: 707-445-2043 • phone: 800-660-2043
fax: 707-445-8230
e-mail: larson@olarson.com
website: www.olarson.com

Supplemental Field Investigation
Rolling Meadow Ranch
Internal Access Road Evaluation
January 14, 2019

On 3/28/2018 Oscar Larson & Associates (OLA) performed a site investigation to evaluate the internal access roads that will be used to access the proposed facilities within the Rolling Meadow Ranch, located within Humboldt County, California. Further field investigations were performed in December 2018 and January 2019 to evaluate current physical conditions of the roads identified on the attached Access Road Exhibit, and to identify the types of upgrades and improvements which characterize found existing field conditions for use in future design.

Specific criteria for the evaluation are from Humboldt County Road Standards and Fire Safe Regulations in Title III – Land Use and Development, Division 11, summarized as follows:

From Fire Safe Regulations:

I. Unobstructed access to conventional drive vehicles including sedans and fire engines using County Road Category 2 standard for surfacing. Category 2 roadway width is to be 12 feet.

II. Roadway turnouts are 10' wide, 80' long and tapered 25' from both ends.

III. Turnarounds to be provided every 1,320 feet, at any structures and at the end of the road.

IV. Grades over 16% to be in conformance with the County Roadway Design Manual.

V. Curve radius requirements vary but, in general, curves should not be sharper than 200 foot radius. Additional surface width of four (4) feet to be added to curves of 50-100 feet radius. Additional surface width of two (2) feet added to curves of 100-200 feet.

VI. Bridges and culverts built to carry a minimum load of 40,000 lbs. and:

- A. Minimum 15' vertical clearance.
- B. Signing showing bridge capacity, clearance, single lane access or other limitations.
- C. One lane bridge has unobstructed visibility from both ends and intervisible turnouts at each end.
- D. "Flatcar" bridge width of 9' minimum and same visibility criteria as above.

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From County Road Standards:

I. Roadway Category #2:
   - A. Single lane, 10 to 12 feet wide, with intervisible turnouts not to exceed 1/4 mile spacing.
   - B. No parking on traveled way.
   - C. Serves a maximum of ten (10) parcels having no more than one dwelling unit per parcel.
   - D. Rural area only.
   - E. Low speed - 25 mph design.
   - F. Surface of native earth, gravel or seal coat.
   - G. Grade not to exceed 12%, except may be up to 18% for short distances and/or as approved by Humboldt County Department of Public Works.

The following tables summarize areas where the above criteria are not met.

Road 1 (R1):

Bases of stationing for Road 1 is the tree with "Private Road" sign attached, located at Station 1+00.

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R1 Station	Criteria Not Met	Comments
0+00 to 5+00	Grade over 16%	Road grade up to ±20%. Re-grade or stabilize road.
2+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
3+30	Road width less than 12 feet	Road narrows to ±10 feet wide for ±12 feet due to slide on road fill side. Widen road to 12 foot minimum width.
4+40	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
6+20	Turnout Required	Install new turnout for traffic at gate.
11+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
12+00	Turnaround	Install turnaround at existing landing.
12+50 to 15+25	Grade over 16%	Road grade up to ±24%. Re-grade or stabilize road.
15+50	Turnout Required	Install new turnout.
16+50	Turnaround	Install turnaround at existing landing.
22+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
22+50 to 24+00	Grade over 16%	Road grade up to ±20%. Re-grade or stabilize road.
24+50	Turnaround	Install turnaround at intersection with Road 3.
24+70 to 43+00	Roadway Surface	Ruts and surface erosion up to ±10 inches deep. Grade and resurface.
26+75 to 28+50	Grade over 16%	Road grade up to ±20%. Re-grade or stabilize road.
29+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
30+90	Turnaround	Install turnaround at intersection with Road 4.
31+00 to 33+00	Grade over 16%	Road grade up to ±20%. Re-grade

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R1 Station	Criteria Not Met	Comments
		or stabilize road.
35+00 to 36+00	Grade over 16%	Road grade up to ±17%. Re-grade road.
36+25	Turnout Required	Road widens. Turnout may or may not be required.
39+75	Turnout Required	Road widens. Turnout may or may not be required.
46+00	Turnaround	Install turnaround at proposed facility location.
48+25	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
49+00 to 51+00	Grade over 16%	Road grade up to ±17%. Re-grade road.
51+30	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
55+00	Turnaround	Install turnaround at existing landing.
56+90	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
57+00 to 58+50	Grade over 16%	Road grade up to ±17%. Re-grade road.
59+40	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
60+00 to 61+65	Grade over 16%	Road grade up to ±20%. Re-grade or stabilize road.
61+75	Road width less than 12 feet	Road narrows for ±50 feet at location of recent slide. Widen road to 12 foot minimum width.
62+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
64+00 to 64+60	Grade over 16%	Road grade up to ±17%. Re-grade road.
64+75	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
67+75	Turnaround	Install turnaround at existing

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R1 Station	Criteria Not Met	Comments
		landing.
69+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
72+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
74+75	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
77+30	Turnaround	Install turnaround at existing landing.
79+75	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
83+50	Turnout Required	Install new turnout.
85+20	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
88+00	Turnaround	Install turnaround at existing landing.
89+50	Turnout Required	Install new turnout.
91+70	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
93+80	Turnout Required	Install new turnout.
97+00 to 99+00	Roadway Surface	Ruts and surface erosion up to ±4 inches deep. Grade and resurface.
101+00	Road width less than 12 feet	Road narrows to ±9 feet wide for ±40. Widen road to 12 foot minimum width.
102+40	Turnaround	Install turnaround at existing landing.
108+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
109+75 to 111+50	Grade over 16%	Road grade up to ±18%. Re-grade road.
110+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.

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R1 Station	Criteria Not Met	Comments
113+50	Turnaround	Install turnaround at existing landing.
116+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
118+50	Turnout Required	Install new turnout.
121+50	Turnaround	Install turnaround at road junction.
123+50	Turnout Required	Install new turnout.
128+50	Turnaround	Install turnaround at road junction.
129+50 to 131+50	Grade over 16%	Road grade up to ±20%. Re-grade or stabilize road.
132+70	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
133+00 to 134+75	Grade over 16%	Road grade up to ±18%. Re-grade road.
136+00	Turnaround	Install turnaround at existing landing.
136+00	Roadway Radius	Realign and/or widen road as required.
136+00	Grade over 16%	Road grade up to ±18% for ±100 feet around curve. Re-grade or stabilize road.
138+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
141+30	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
142+80	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
143+85 to 145+30	Grade over 16%	Road grade up to ±25% for ±50 foot section. Re-grade or stabilize road.
144+00 to 145+00	Roadway Surface	Ruts and surface erosion. Grade and resurface.
144+20	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.

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R1 Station	Criteria Not Met	Comments
144+65	Road width less than 12 feet	Road narrows to ±8 feet wide at 12" CMP culvert. Widen road to 12 foot minimum width.
146+00	Turnaround	Install turnaround at existing landing.
148+20	Turnout Required	Install new turnout.
149+40	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
151+65	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
153+00	Turnaround	Install turnaround at existing landing.
155+50 to 156+75	Roadway Surface	Ruts and surface erosion. Grade and resurface.
157+65	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
159+60	Turnaround	Install turnaround within stretch of wide road section.
160+30	Turnout Required	Install new turnout.
161+50 to 163+00	Grade over 16%	Road grade up to ±18%. Re-grade road.
161+75 to 171+00	Roadway Surface	Ruts and surface erosion. Grade and resurface.
163+40	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
167+25	Turnout Required	Install new turnout.
168+65	Turnaround	Install turnaround at existing landing.
170+00 to 171+25	Grade over 16%	Road grade up to ±17%. Re-grade road.
170+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
172+50	Turnout Required	Install new turnout.
173+65	Turnout Required	Install new turnout.
175+00	Turnout Required	Install new turnout.

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R1 Station	Criteria Not Met	Comments
175+80	Road width less than 12 feet	Road narrows to ±10 feet wide for ±5 feet due to washout on road fill side. Widen road to 12 foot minimum width. Resolve drainage.
177+50	Turnaround	Install turnaround at road junction.
179+90	Turnout Required	Install new turnout.
182+90	Turnout Required	Install new turnout at junction with spur road.
184+00	Roadway Radius	Realign and/or widen road as required.
184+00	Grade over 16%	Road grade up to ±18% around curve. Re-grade or stabilize road.
184+50	Turnaround	Install turnaround at existing landing on curve.
187+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
189+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
191+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
193+00 to 197+75	Grade over 16%	Road grade up to ±18%. Re-grade road.
195+00	Roadway Radius	Realign and/or widen road as required.
195+00	Turnout Required	Install new turnout.
195+50	Turnout Required	Install new turnout.
196+40	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
197+75	Turnout Geometry and/or Surface	Verify dimensions of existing turnout at approach to bridge. Grade and resurface as required.

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R1 Station	Criteria Not Met	Comments
197+85 to 198+45	Signage for Bridge	1) Provide signage showing bridge weight capacity for the 12 foot wide x 60 foot long steel bridge. 2) Provide single lane access signage. 3) Verify bridge load capacity. 4) Remove accumulated sediment from bridge surface.
198+50	Turnaround	Install turnaround at existing landing.
199+50 to 200+50	Grade over 16%	Road grade up to ±20%. Re-grade or stabilize road.
200+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
201+00 to 204+00	Grade over 16%	Road grade up to ±20%. Re-grade or stabilize road.
202+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
205+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
207+00 to 209+00	Grade over 16%	Road grade up to ±18%. Re-grade road.
207+00 to 209+00	Roadway Surface	Ruts and surface erosion. Grade and resurface.
209+00	Turnout Required	Install new turnout.
212+00	Turnout Required	Install new turnout at junction with spur road.
213+25	Turnaround	Install turnaround at road junction.
217+75	Turnaround	Install end of road turnaround.

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Road 2 (R2):

Basis of stationing for Road 2 is the white paddle marker on the easterly side of the road at beginning of road, located at Station 0+00.

R2 Station	Criteria Not Met	Comments
2+15 to 2+75	Road width less than 12 feet	Road narrows to ±10 feet wide for ±60 feet. Widen road to 12 foot minimum width.
4+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
6+50	Turnaround	Install turnaround at existing landing.
7+50	Clearance at gate	±12 foot clearance through gate. Replace gate.
8+00	Turnout Required	Install new turnout for traffic at gate.
8+75	Turnout Required	Install turnout at road junction.
10+75	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.

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R2 Station	Criteria Not Met	Comments
11+00 to 11+60	Roadway Surface	Ruts and surface erosion up to ±8 inches deep. Grade and resurface.
11+75 to 13+50	Road width less than 12 feet	Road narrows to ±9-10 feet wide. Widen road to 12 foot minimum width.
14+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
15+90 to 16+10	Road width less than 12 feet	Road narrows to ±10 feet wide at culvert. Widen road to 12 foot minimum width.
17+00	Turnaround	Install turnaround at existing landing.
20+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
25+00	Turnout Required	Install new turnout.
25+90 to 27+75	Roadway Surface	Cleanout inboard ditch to improve drainage and reduce silt and standing water on road surface. Grade and resurface road.
28+00	Turnaround	Install turnaround at proposed facility location.
29+00	Turnout Required	Install new turnout.
30+00 to 30+30	Road width less than 12 feet	Road narrows to ±10 feet wide at culvert. Widen road to 12 foot minimum width.
31+00	Turnaround	Install turnaround at proposed facility location.
31+25 to 32+50	Road width less than 12 feet	Road narrows to ±10 feet wide. Widen road to 12 foot minimum width.
32+75	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
34+75	Turnaround	Install end of road turnaround at proposed facilities.

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Road 3 (R3):

Basis of stationing for Road 3 is the intersection of Road 3 with Road 1, located at Station 0+00.

R3 Station	Criteria Not Met	Comments
0+00 to 11+00	Roadway Width and Surface	Widen and resurface road to provide 12 foot width.
2+80	Roadway Surface	Standing water on road surface. Resolve drainage.
3+60	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
5+70	Roadway Surface	Standing water on road surface. Resolve drainage.
6+60	Roadway Surface	Standing water on road surface. Resolve drainage.
7+50	Turnout Required	Install new turnout.
7+80	Roadway Surface	Standing water on road surface. Resolve drainage.
10+00	Turnout Required	Install new turnout.
11+00	Turnaround	Install end of road turnaround at proposed facilities.

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Road 4 (R4):

Basis of stationing for Road 4 is a large flattop boulder located in-line with Station 0+00, approximately 60 feet to the east of the road.
Note: Station 53+00 is located at the intersection with Road 1.

R4 Station	Criteria Not Met	Comments
0+00	Turnaround	Install end of road turnaround at proposed facilities.
0+00 to 53+00	Roadway Surface	Resurface road full length and width.
0+00 to 20+50	Road width less than 12 feet	Widen road to 12 foot minimum width.
1+50 to 2+00	Grade over 16%	Road grade up to ±18%. Re-grade road.
4+00	Turnout Required	Install new turnout.
4+00 to 10+00	Roadway Surface	Rough roadway w/ ruts and deep water bars. Grade and resurface road full 12' width.
4+25 to 10+00	Grade over 16%	Road grade up to ±22%. Re-grade or stabilize road.

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R4 Station	Criteria Not Met	Comments
6+60	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
10+15	Turnout Required	Install new turnout.
12+25	Turnout Required	Install new turnout.
12+25 to 24+00	Grade over 16%	Road grade up to ±18%. Re-grade road.
14+60	Turnaround	Install turnaround at existing landing.
16+50	Turnout Required	Install new turnout.
19+00	Turnout Required	Install new turnout.
19+00 to 19+30	Roadway Surface	Ruts and surface erosion. Grade and resurface.
20+75	Turnout Required	Install new turnout.
22+40	Turnout Required	Install new turnout.
24+15	Turnaround	Install turnaround at existing landing.
24+75 to 25+50	Grade over 16%	Road grade up to ±17%. Re-grade road.
26+00 to 27+00	Grade over 16%	Road grade up to ±19%. Re-grade or stabilize road.
26+50	Turnout Required	Install new turnout.
28+00 to 37+00	Road width less than 12 feet	Widen road to 12 foot minimum width.
28+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
29+50 to 31+00	Grade over 16%	Road grade up to ±19%. Re-grade or stabilize road.
32+00	Turnaround	Install new turnaround.
35+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
35+75 to 39+50	Grade over 16%	Road grade up to ±20%. Re-grade or stabilize road.
37+75	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
40+00	Turnout Required	Install new turnout.
41+75	Turnaround	Install turnaround at road

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R4 Station	Criteria Not Met	Comments
		junction.
42+00	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
43+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
45+50	Turnout Geometry and/or Surface	Verify dimensions of existing turnout. Grade and resurface as required.
46+60 to 49+75	Grade over 16%	Road grade up to ±18%. Re-grade road.
50+00	Turnout Required	Install new turnout.
53+00	Turnaround	Install turnaround at intersection with Road 1.

Actions recommended to be taken where criteria are not met are as follows:

I. Where grade criteria are not met, survey and design of improvements are required. In locations where re-grading will not achieve grades of 16% or less, improvements may include slight realignment of the road and/or stabilizing the road depending on specific conditions.

II. Where turnout or turnaround criteria are not met, a new turnout or turnaround is to be constructed. If there is an existing turnout or turnaround that does not meet the criteria for a turnout or turnaround, the existing turnout or turnaround needs to be modified to meet the criteria. In either case, survey and design are required. Creating or modifying a turnout or turnaround is likely to require grading and surfacing, as well as removal of vegetation in some locations.

III. Where the roadway width does not meet criteria, survey and design of roadway width improvements will be required. In some cases, where the improvements would involve cutting into steep banks for example, engineering investigations may be needed to establish criteria for cut bank or fill slopes.

IV. At gate entrances with insufficient clearance, survey and design improvements to provide sufficient clearance.

V. Where curves are less than 200 foot radius, survey and design for realignment to increase the road radius or road width may be required.

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VI. Other improvements that may be required include general regrading/resurfacing of rutted road sections and drainage improvements.

1/14/2019

Gregory M. Hall, P.E.

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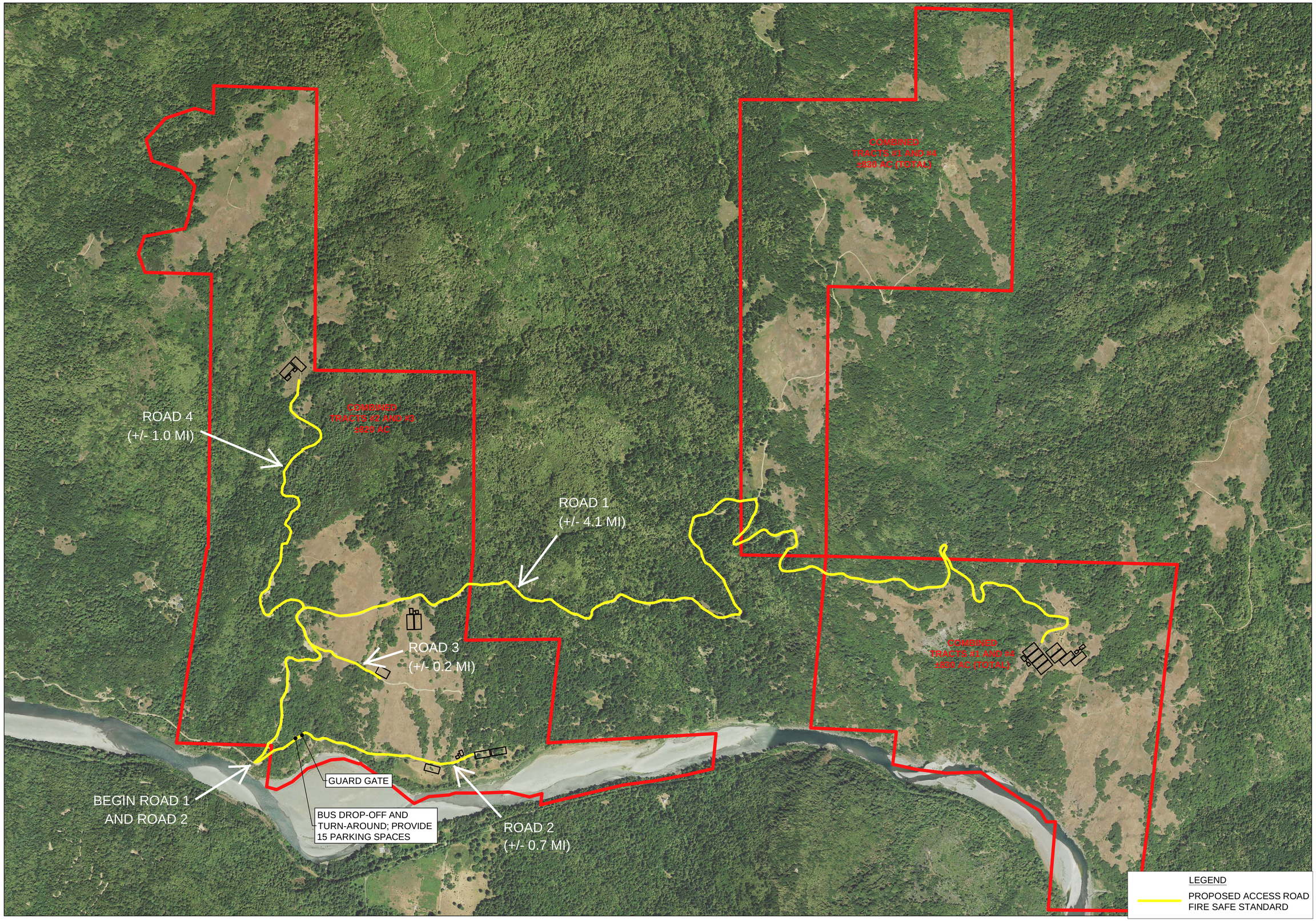

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CERTIFICATE OF LAND SURVEYING
BUSINESS AUTHORIZATION: LB0004905

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STATE OF FLORIDA, No. 33659 No. 4151

HASSAN A. KAMAL, P.E.
STATE OF FLORIDA, No. 41951

600 0 300 600
(IN FEET)

DATE:	11/19/18
DESIGN/DRAWN:	SMG/AH

PROJECT TITLE

ROLLING MEADOW RANCH HUMBOLDT COUNTY, CA

SHEET TITLE

ACCESS ROAD EXHIBIT

PROJECT NO.
11367

DRAWING NO.
11367_200_005

SHEET
1 of 1

H:\Projects Folder\11367\Drawings\11367_200\11367_200_005.dwg November 19, 2018 1:44:52 PM DB

SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET.

Appendix D

Greenhouse Design Schematic and Components

1. GrowTech Greenhouse Sample Schematic
2. QuietAire Fan Detail: decibel results; CRS Supply Group
3. QuietAire Fan Performance; CRS Supply Group

PROJECT SUMMARY

THE PROJECT IS FOR A NEW GRO-TECH GREENHOUSE. GRO-TECH's PROPRIETARY BUILDING SYSTEM UTILIZES (4) INTERCONNECTED BUILDING MODULES WITH METAL SIDING AND POLYCARBONATE ROOF, EACH BUILDING IS 30-3/4 FEET, RESULTING IN A TOTAL WIDTH OF 120 FEET, EACH OF THE (4) BUILDINGS HAS ITS OWN INTEGRATED LIGHT DEPRIVATION SYSTEM.

APPLICABLE CODES

2016 CALIFORNIA BUILDING CODE (2016 CBC)
STEEL CONSTRUCTION MANUAL, 14 ED. (AISC 14 ED.)

GOVERNING AGENCY

TBD

PROJECT INFORMATION

PROJECT ENGINEER

MICHAEL J NICKLIN
LINCHPIN STRUCTURAL ENGINEERING
530.563.6341 EXT. 801

CLIENT

TBD

CONTRACTOR

TED

SHEET INDEX

SHEET NUMBER	SHEET NAME
A-000	COVER PAGE
A-100	FLOOR PLAN
A-200	ELEVATIONS
A-300	SECTIONS
A-400	TYP. & LIGHT DEPRIVATION DETAILS
E-100	ELECTRICAL PLAN
E-101	LIGHT DEPRIVATION PLAN
S-100	FOUNDATION PLAN
S-101	ANCHOR SETTING PLAN & TEMPLATES
S-200	ROOF FRAMING PLAN
S-300	STRUCTURAL ELEVATIONS
S-301	STRUCTURAL ELEVATIONS - CORRIDOR
S-410	FOUNDATION DETAILS
S-420	TRUSS DETAILS
S-421	TRUSS FRAMING FABRICATION
S-430	DETAILS

STRUCTURAL ABBREVIATIONS

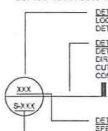
AB - ANCHOR BOLT
ABV - ABOVE
ADDL - ADDITIONAL
ADJ - ADJACENT
ARCH - ARCHITECTURAL
BLKG - BLOCKING
BLW - BELOW
BN - BOUNDARY NAILS
BTWN - BETWEEN
CBC - CALIFORNIA BUILDING CODE
CJ - CONSTRUCTION JOINT
CL - CENTERLINE
COL - COLUMN
CONC - CONCRETE
CONT - CONTINUOUS
DIAM - DIAMETER
DL - DEAD LOAD
DN - DOWN
E - EXISTING
ELECT - ELECTRICAL
ENGR - ENGINEER
ES - EACH SIDE
EW - EACH WAY
FDN - FOUNDATION
FF - FINISH FLOOR
FS - FAR SIDE
GA - GAGE
GALV - GALVANIZED
GC - GENERAL CONTRACTOR
HORIZ - HORIZONTAL
HSS - HOLLOW STRUCTURAL SECTION
INTER - INTERMEDIATE
INV - INVERTED
K - KIPS
LL - LIVE LOAD
LLV - LONG LEG VERTICAL
LLH - LONG LEG HORIZONTAL
LWT - LIGHTWEIGHT
MAX - MAXIMUM
MECH - MECHANICAL
MFR - MANUFACTURER
MIN - MINIMUM
MISC - MISCELLANEOUS
NS - NEAR SIDE
OC - ON CENTER
OCEW - ON CENTER EACH WAY
OF - OUTER FACE
OH - OPPOSITE HAND
OPNG - OPENING
PL - PLATE
PLF - POUNDS PER LINEAR FOOT
PSF - POUNDS PER SQUARE FOOT
PW - PLYWOOD
REINF - REINFORCEMENT
SCHED - SCHEDULE
SIM - SIMILAR
SMS - SHEET METAL SCREW
SOG - SLAB ON GRADE
STAG - STAGGERED
STD HK - STANDARD HOOK
STIFF - STIFFENER
STL - STEEL
SYM - SYMMETRICAL
T&B - TOP & BOTTOM
THRU - THROUGH
TN - TOE NAIL
TS - TUBE STEEL
TYP - TYPICAL
UBC - UNIFORM BUILDING CODE
UNO - UNLESS NOTED OTHERWISE
VERT - VERTICAL
VIF - VERIFY IN FIELD
w/ - WITH
WWF - WELDED WIRE FABRIC

STRUCTURAL PLANS & DETAILS LEGEND

SHEET NUMBER DESCRIPTION

S-XXX
- SHEET SEQUENCE NUMBER SUB-GROUP OF DESIGNATORS USED WHEN MORE THAN ONE SHEET OF SAME TYPE IS REQUIRED
- DETAIL TYPE DESIGNATOR
  0 - TYPICAL DETAILS
  1 - FOUNDATION DETAILS
  2 - FRAMING DETAILS
  3 - SHEAR DETAILS
  4 - STEEL DETAILS
  5 - MASONRY DETAILS
  6 - CUSTOM DETAILS
- SHEET TYPE DESIGNATOR
  0 - SPECIFICATIONS
  1 - FOUNDATION PLANS
  2 - FRAMING PLANS
  3 - SHEAR PLANS
  4 - DETAILS
  5 - STRUCTURAL ELEVATIONS
  6 - SK DETAILS / CONSTRUCTION ADMIN
- STRUCTURAL SHEETS

DETAIL CALL OUT DESCRIPTION



- DETAIL BUBBLE LOCATION OF STRUCTURAL DETAIL OR SECTION
- DETAIL CUT LINE DETAIL CUT LOOKING IN THE DIRECTION OF THE SECTION CUT. THE SECTION IS CONTINUOUS UNO.
- DETAIL NUMBER SPECIFIC TO EACH DETAIL
- DETAIL LOCATION NUMBER SHEET LOCATION, SEE SHEET NUMBER DESCRIPTION

GENERAL NOTES

1. UNLESS EXPLICITLY STATED IN THESE CONSTRUCTION DOCUMENTS, BY NOTE OR CLARIFICATION LETTER, THE ENTIRE SCOPE OF WORK REPRESENTED BY THESE DOCUMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

2. THESE CONSTRUCTION DOCUMENTS REPRESENT THE DESIGN INTENT OF THE DESIGN TEAM BASED ON DIMENSIONS OF EXISTING SITE AND/OR FIELD CONDITIONS. ACTUAL CONDITIONS MAY REQUIRE MODIFICATIONS OF THE CONSTRUCTION DETAILS TO ACHIEVE THE DESIGN INTENT. CONTRACTOR SHALL NOTIFY DESIGN TEAM IN WRITING OF ANY DISCREPANCIES RELATED TO EXISTING SITE AND/OR FIELD CONDITIONS PRIOR TO CONTINUING ANY WORK.

3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO RECORD ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE CONSTRUCTION DOCUMENTS AND TO BRING THEM TO THE ATTENTION OF THE DESIGN TEAM PRIOR TO COMMENCING ANY WORK. ANY DEVIATION FROM THE CONDITIONS SHOWN IN THESE CONSTRUCTION DOCUMENTS SHALL REQUIRE WRITTEN APPROVAL FROM THE DESIGN TEAM.

4. DO NOT SCALE THE DRAWINGS. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGN TEAM PRIOR TO COMMENCING ANY WORK.

5. THE CONTRACT DOCUMENTS ARE COMPLEMENTARY. WORK REQUIRED TO BE DONE BY ONE DOCUMENT AND NOT BY OTHERS SHALL BE DONE AS IF REQUIRED BY ALL.

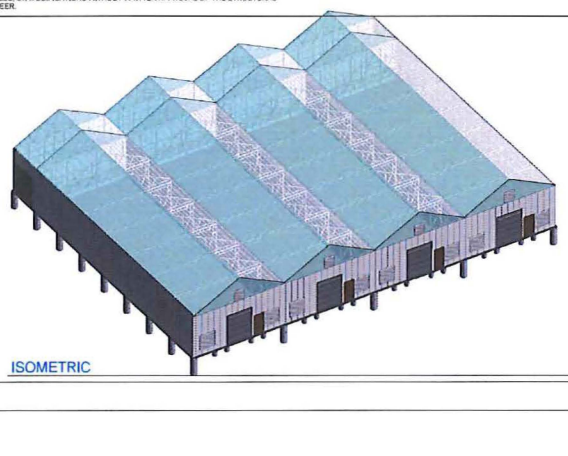
6. THE CONTRACTOR AND SUBCONTRACTOR SHALL MAKE NO STRUCTURAL SUBSTITUTIONS, CHANGES, OR MODIFICATIONS WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.

7. CONTRACTORS AND SUBCONTRACTORS SHALL ENSURE THAT ALL WORK IS PERFORMED IN A PROFESSIONAL AND WORKMANLIKE MANNER BY SKILLED MECHANICS OF THE TRADE. SUBCONTRACTORS AND SUPPLIERS ARE HEREBY NOTIFIED THAT THEY ARE TO COOPER AND COOPERATE FULLY WITH EACH OTHER DURING THE COURSE OF CONSTRUCTION TO DETERMINE THE EXACT EXTENT AND OVERLAP OF EACH OTHER'S WORK AND TO SUCCESSFULLY COMPLETE THE EXECUTION OF THE WORK IN A TIMELY MANNER.

8. BUILDER'S SET: THIS SET OF DRAWINGS HAS BEEN PREPARED SUFFICIENT TO OBTAIN A BUILDING PERMIT. ALL MATERIALS AND METHODS OF CONSTRUCTION NECESSARY TO COMPLETE THE PROJECT ARE NOT NECESSARILY DESCRIBED IN THIS "BUILDER'S SET". THE IMPLEMENTATION OF THE DRAWINGS REQUIRES THE CONTRACTOR TO BE THOROUGHLY KNOWLEDGEABLE WITH THE APPLICATIONS OF CODES AND THE METHODS OF CONSTRUCTION SPECIFIC TO THIS PROJECT AND TYPE OF CONSTRUCTION.

9. UNLESS SPECIFICALLY SHOWN OR NOTED ON THE DRAWINGS, NO STRUCTURAL MEMBER SHALL BE CUT, NOTCHED, BORED, OR OTHERWISE WEAKENED WITHOUT THE PERMISSION OF THE STRUCTURAL ENGINEER.

10. ALL WATERPROOFING, FLASHING, AND DRAINAGE ARE TO BE DESIGNED AND PROVIDED BY THE BUILDER.



ISOMETRIC

CONCRETE

CAST-IN-PLACE CONCRETE

CODES, SPECIFICATIONS, AND STANDARDS. CONCRETE WORK SHALL CONFORM TO THE FOLLOWING CODES, SPECIFICATIONS, AND STANDARDS, AND THE STANDARDS AND SPECIFICATIONS THEY REFERENCE. THE CONTRACTOR SHALL OBTAIN AND HAVE READILY AVAILABLE ON SITE THE LATEST VERSION OF THE "ACI MANUAL OF CONCRETE PRACTICE".

ACI
1. ACI-116 'CEMENT AND CONCRETE TERMINOLOGY';
2. ACI-301 'STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE';
3. ACI-302 'GUIDE TO CONCRETE FLOOR AND SLAB CONSTRUCTION';
4. ACI-304 'GUIDE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE';
5. ACI-305 'HOT WEATHER CONCRETING';
6. ACI-306 'COLD WEATHER CONCRETING';
7. ACI-308 'STANDARD SPECIFICATION FOR CURING CONCRETE';
8. ACI-309 'STANDARD PRACTICE FOR CONSOLIDATION OF CONCRETE.
9. ACI-311 'GUIDE FOR CONCRETE INSPECTION';
10. ACI-315 'DETAILS AND DETAILING OF CONCRETE REINFORCEMENT';
11. ACI-318 'BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE';
12. ACI-506R 'GUIDE FOR SHOTCRETING'.

ASTM
1. ASTM C33 'STANDARD SPECIFICATION FOR CONCRETE AGGREGATES';
2. ASTM C94 STANDARD SPECIFICATION FOR READY-MIX CONCRETE';
3. ASTM C150 'STANDARD SPECIFICATION FOR PORTLAND CEMENT';
4. ASTM C260 'STANDARD SPECIFICATION FOR AIR-ENTRAINED ADMIXTURES FOR CONCRETE';
5. ASTM C309 'STANDARD SPECIFICATION FOR LIQUID MEMBRANE-FORMING COMPOUNDS FOR CURING CONCRETE
6. ASTM C494 STANDARD SPECIFICATION FOR CHEMICAL ADMIXTURES FOR CONCRETE';
7. ASTM C595 'STANDARD SPECIFICATION FOR BLENDED HYDRAULIC CEMENTS';
8. ASTM C618 'STANDARD SPECIFICATION FOR ... FLY-ASH...', MAXIMUM LOSS ON IGNITION SHALL BE 1.0%.
9. ASTM C1017 'STANDARD SPECIFICATION FOR CHEMICAL ADMIXTURES FOR USE IN PRODUCING FLOWING CONCRETE';
10. ASTM C-1116 'SYNTHETIC FIBER REINFORCED CONCRETE AND SHOTCRETE';
11. ASTM C-1218 'STANDARD TEST METHOD FOR WATER-SOLUBLE CHLORIDE IN MORTAR AND CONCRETE'.

MIX DESIGNS. THE CONTRACTOR SHALL DESIGN CONCRETE MIXES THAT MEET OR EXCEED THE REQUIREMENTS OF THE CONCRETE MIX TABLE. THE MIX DESIGNS SHALL FACILITATE ANTICIPATED PLACEMENT METHODS, WEATHER, REBAR CONGESTION, ARCHITECTURAL FINISHES, CONSTRUCTION SEQUENCING, STRUCTURAL DETAILS, AND ALL OTHER FACTORS REQUIRED TO PROVIDE A STRUCTURALLY SOUND, AESTHETICALLY ACCEPTABLE FINISHED PRODUCT. WATER-REDUCING ADMIXTURES WILL LIKELY BE REQUIRED TO MEET THESE REQUIREMENTS. CONCRETE MIX DESIGNS SHALL CLEARLY INDICATE THE TARGET SLUMP, SLUMP TOLERANCE SHALL BE ± 1-1/2 INCHES.

AGGREGATE. COARSE AND FINE AGGREGATE SHALL CONFORM TO ASTM C-33

CEMENT. CEMENT SHALL CONFORM TO ASTM-150, TYPE II PORTLAND CEMENT, UNLESS NOTED OTHERWISE.

ALTERNATE MIX DESIGNS. VARIATIONS TO THE MIX DESIGN PROPORTIONS MAY BE ACCEPTED IF SUBSTANTIATED IN ACCORDANCE WITH ACI-318, CHAPTER 5. PROVIDE SUBMITTALS A MINIMUM OF TWO WEEKS PRIOR TO EID FOR DETERMINATION OF ACCEPTABILITY.

ADMIXTURES. ADMIXTURES SHALL BE BY MASTER BUILDERS, W.R. GRACE, OR PRE-APPROVED EQUAL. ALL MANUFACTURER'S RECOMMENDATIONS SHALL BE FOLLOWED.

WATER. SHALL BE CLEAN AND POTABLE.

MAXIMUM CHLORIDE CONTENT. THE MAXIMUM WATER SOLUBLE CHLORIDE CONTENT SHALL NOT EXCEED 0.15% BY WEIGHT OF CEMENTITIOUS MATERIAL UNLESS NOTED OTHERWISE.

CONCRETE EXPOSED TO WEATHER. PROVIDE 5.0% TOTAL AIR CONTENT FOR ALL CONCRETE EXPOSED TO WEATHER. TOTAL AIR CONTENT IS THE SUM OF ENTRAINED AIR PROVIDED BY ADMIXTURES AND NATURALLY OCCURRING ENTRAPPED AIR. AIR CONTENT SHALL BE TESTED PRIOR TO BEING PLACED IN THE PUMP HOPPER OR BUCKET. IT IS NOT REQUIRED TO BE TESTED AT THE CHUTE OF THE PUMP HOSE. THE TOLERANCE ON ENTRAPPED AIR SHALL BE +2.0% AND -1.5% WITH THE AVERAGE OF ALL TESTS NOT LESS THAN THE SPECIFIED AMOUNT.

ITEM	DESIGN f'c (PSI)	MAX. W/C RATIO	MIN. (2) FLYASH (PCY)	MAX. AGG. SIZE (IN)	NOTES	MIN. CEMENTITIOUS (1) MATERIAL (SACKS/YARD)
BASEMENT, RETAINING AND STEM WALLS	2500 at 28 DAYS	0.45	100	3/4		5-1/2
FOUNDATIONS	2500 at 28 DAYS	0.50	--	3/4		5
SLAB ON GRADE	3000 at 28 DAYS	0.45	100	3/4	3	5-1/2
COLUMNS AND SHEAR WALLS U.N.O.	4000 at 28 DAYS	0.50	--	3/8		5-1/2
ELEVATED BEAMS & SLABS	4000 at 28 DAYS	0.45	100	3/4		5-1/2
ALL OTHER CONCRETE	4000 at 28 DAYS	0.50	--	3/4		5-1/2

CONCRETE MIX NOTES:

1. TOTAL CEMENTITIOUS MATERIAL IS THE SUM OF ALL CEMENT PLUS FLYASH.

2. AT THE CONTRACTORS OPTION, FLYASH MAY BE SUBSTITUTED FOR CEMENT BUT SHALL NOT EXCEED 15% BY WEIGHT OF TOTAL CEMENTITIOUS MATERIAL.

3. FIBROUS CONCRETE REINFORCEMENT SHALL BE "FIBERMESH" MANUFACTURED BY SI CONCRETE SYSTEMS OR PRE-APPROVED EQUAL AND SHALL CONFORM TO ASTM C-1116 TYPE III 4.1.3, PERFORMANCE LEVEL 1, AND SHALL BE 100 FERCENT VIRGIN POLYPROYLENE, FIBRILLATED FIBERS CONTAINING NO REPROCESSED OLEFIN MATERIALS AND SPECIFICALLY MANUFACTURED FOR USE AS CONCRETE SECONDARY REINFORCEMENT. DOSAGE SHALL FOLLOW MANUFACTURER'S RECOMMENDATION BUT NOT BE LESS THAN 1.5 LB/CU. YD.

CONCRETE PLACEMENT

PLACE CONCRETE FOLLOWING ALL APPLICABLE ACI RECOMMENDATIONS. CONCRETE SHALL BE PROPERLY CONSOLIDATED PER ACI 309 USING INTERIOR MECHANICAL VIBRATORS. DO NOT OVER-VIBRATE. CONCRETE SHALL BE POURED MONOLITHICALLY BETWEEN CONSTRUCTION OR EXPANSION JOINTS. IF CONCRETE IS PLACED BY THE PUMP METHOD, HORSES SHALL BE PROVIDED TO SUPPORT THE HOSE. WEATHER FORECASTS SHALL BE MONITORED AND ACI RECOMMENDATIONS FOR HOT AND COLD WEATHER CONCRETING SHALL BE FOLLOWED AS REQUIRED. CONCRETE SHALL NOT FREE FALL MORE THAN 5 FEET DURING PLACEMENT WITHOUT WRITTEN APPROVAL OF ENGINEER.

FORMWORK STRIPPING

1) COLUMNS & WALLS - COLUMNS AND WALLS NOT SUPPORTING FRAMING WEIGHT MAY BE STRIPPED AS SOON AS FORMS CAN BE REMOVED WITHOUT DAMAGING THE CONCRETE AND THE CONCRETE HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 500 FSI.

2) BEAMS & SLABS - BEAMS AND SLABS MAY BE STRIPPED AND BECOME SELF-SUPPORTING AS SOON AS THEIR COMPRESSED STRENGTH REACHES 75% OF THE SPECIFIED DESIGN STRENGTH. RESHORING SHALL BE PROVIDED FOR ALL CONSTRUCTION LOADS THEREAFTER PER THE GENERAL CONTRACTOR.

COLD WEATHER PLACEMENT

1) COLD WEATHER IS DEFINED BY ACI 306 AS "A PERIOD WHEN FOR MORE THAN 3 SUCCESSIVE DAYS THE MEAN DAILY TEMPERATURE DROPS BELOW 40° F."
2) NO CONCRETE SHALL BE PLACED ON FROZEN OR PARTIALLY FROZEN GROUND. THAWING WITH HEATERS AND SUBSEQUENTLY COMPACTING THE GROUND IS PERMISSIBLE.
3) CONCRETE MIX TEMPERATURES SHALL BE AS SHOWN BELOW. HEATING OF WATER AND/OR AGGREGATES MAY BE REQUIRED TO ATTAIN THESE TEMPERATURES.
4) THE CONCRETE MAY REQUIRE PROTECTION FOR 4-7 DAYS AFTER PLACING. IF TEMPERATURES REMAIN BELOW FREEZING, INSULATING BLANKET COVERAGE IS REQUIRED. IF TEMPERATURES ARE SLIGHTLY BELOW FREEZING (30° F MIN.) AT NIGHT AND ABOVE FREEZING DURING THE DAY, KRAFT PAPER WITH COMPLETE COVERAGE MAY BE USED IN LIEU OF INSULATED BLANKETS.
5) NO ADDITIVES CONTAINING CHLORIDES SHALL BE USED. USE "POZZUTEC 20" BY MASTER BUILDERS OR "POLARSET" BY W.R. GRACE OR PRE-APPROVED EQUAL.

CONDITION OF PLACEMENT AND CURING		WALLS & SLABS	FOOTINGS
MIN. TEMP. FRESH CONCRETE AS MIXED FOR WEATHER INDICATED, DEGREES F.,	ABOVE 32° F. 0 TO 30° F. BELOW 0° F.	60 65 70	55 60 65
MIN. TEMP. FRESH CONCRETE AS PLACED AND MAINTAINED, DEGREES F.		55	50
MAX. ALLOWABLE GRADUAL DROP IN TEMP. THROUGHOUT FIRST 24 HOURS AFTER END OF PROTECTION, DEGREES F.		50	40

CONTROL AND CONSTRUCTION JOINTS

CONSTRUCTION JOINTS SHALL MEET THE REQUIREMENTS OF ACI 301 SECTIONS 3.2.2.5 AND 5.3.2.6. KEYWAYS PER SECTION 2.2.2.5B ARE NOT REQUIRED UNLESS DETAILED ON THE STRUCTURAL DRAWINGS. SPECIAL BONDING METHODS PER SECTION 5.3.2.6 SHALL BE SATISFIED BY ITEM 3 BELOW UNLESS OTHERWISE DETAILED ON THE STRUCTURAL DRAWINGS. WHERE CONSTRUCTION JOINTS ARE NOT SHOWN ON PLAN OR ADDITIONAL CONSTRUCTION JOINTS ARE REQUIRED, SUBMIT PROPOSED JOINTING FOR ENGINEER'S APPROVAL. PROVIDE CONSTRUCTION JOINTS AS INDICATED BELOW UNLESS NOTED OTHERWISE ON THE PLANS.

1. SLABS ON GRADE: PROVIDE CONSTRUCTION AND/OR CONTROL JOINTS AT 13 FEET OC FOR SLABS ON GRADE, PERPENDICULAR SPACING RATIO SHALL NOT EXCEED 1.5.

2. WALLS AND COLUMNS: COORDINATE CONSTRUCTION JOINTS WITH ARCHITECTURAL REVEALS.

3. BONDING AGENT: WHERE BONDING AGENT IS SPECIFICALLY CALLED OUT ON THE STRUCTURAL DRAWINGS, USE "WELD-CRETE" BY LARSON PRODUCTS CORPORATION OR PRE-APPROVED EQUAL. FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS.

EMBEDDED ITEMS

EMBEDDED CONDUIT IS NOT PERMITTED IN SLAB EXCEPT WHERE SPECIFICALLY SHOWN. IT SHALL BE PLACED AND REINFORCED PER THE TYPICAL CONCRETE DETAILS. NO ALUMINUM ITEMS SHALL BE EMBEDDED IN ANY CONCRETE. ALL EMBED PLATES SHALL BE SECURELY FASTENED IN PLACE.

CONCRETE CURING AND SEALING

CURING PROCEDURES SHALL COMMENCE IMMEDIATELY AFTER FINISHING CONCRETE TO MAINTAIN CONCRETE IN A MOIST CONDITION. VERIFY CURING AND/OR SEALING PRODUCTS ARE COMPATIBLE WITH FLOOR COVERINGS SHOWN ON THE ARCHITECTURAL DRAWINGS. FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS.

ITEM	CURING METHOD
ALL SLABS ON GRADE	2, 3, & 5
BASEMENT WALLS	4
ELEVATED SLABS NOT EXPOSED TO EARTH OR WEATHER	2, 3, & 5
ALL OTHER CONCRETE	NONE

CONCRETE CURING NOTES

1. PROVIDE PRE-APPROVED MOIST CURE METHOD FOR A MINIMUM OF 7 DAYS.

2. WHEN THE ESTIMATED EVAPORATION RATE IS GREATER THAN 0.2 PSF/HOUR, PROVIDE A SPRAY APPLIED EVAPORATION RETARDER IMMEDIATELY AFTER CONCRETE PLACEMENT. THE EVAPORATION RATE MAY BE CALCULATED PER ACI 305 FIGURE 2.1.5.

3. APPLY A LIQUID MEMBRANE FORMING CURING COMPOUND PER MANUFACTURER'S RECOMMENDATIONS TO ALL EXPOSED SURFACES IMMEDIATELY AFTER FINAL FINISHING.

4. APPLY A LIQUID MEMBRANE FORMING CURING COMPOUND PER MANUFACTURER'S RECOMMENDATIONS TO ALL FORMED SURFACES IMMEDIATELY AFTER FORM REMOVAL. NOT REQUIRED IF FORMWORK REMAINS IN PLACE FOR MORE THAN 7 DAYS.

5. APPLY A SILANE SEALER WITH A MINIMUM SOLIDS CONTENT OF 40% PER MANUFACTURER'S RECOMMENDATIONS.

GROUT

NON-SHRINK GROUT. MASTER BUILDERS "MASTERFLOW 555" OR PRE-APPROVED EQUAL. GROUT SHALL CONFORM TO CRD-C621 AND ASTM C1107 GRADE B WHEN TESTED AT A FLUID CONSISTENCY PER CRD- C611-45 FOR 30 MINUTES. GROUT MAY BE PLACED FROM A 25 SECOND FLOW TO A STIFF PACKING CONSISTENCY. FILL OR PACK ENTIRE SPACE UNDER PLATES BY FLOW TO A STIFF PACKING CONSISTENCY. FILL OR PACK ENTIRE SPACE UNDER PLATES OR SHAPES. NO GROUTING SHALL BE DONE BELOW 40° F.

EPOXY. USE TWO-PART LOVASAG EPOXY. GROUT MAY CONTAIN QUARTZ SAND AGGREGATE AS PROPORTIONED BY THE MANUFACTURER. USE EQUIPMENT WHICH WILL ACCURATELY MIX AND DISPENSE THE COMPONENTS. HOLE SHALL BE DRY AND CLEANED WITH WIRE BRUSH AND PRESSURIZED AIR JUST PRIOR TO INSTALLING GROUT. THE REBAR OR ROD SHALL BE CLEAN AND INSTALLED SLOWLY, AND SHALL BE ROTATED AS IT IS PUSHED INTO THE HOLE. COLD WEATHER GROUTING SHALL BE DONE WITH PROPER GROUT FORMULA. FIRST STAGES OF THE GROUTING OPERATION SHALL BE INSPECTED.

REINFORCING STEEL

REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60 (GRADE A706 FOR WELDED BARS UNLESS OTHERWISE NOTED. GRADE 40 FOR BEND OUT BARS). DETAIL, FABRICATE AND PLACE PER ACI 315 AND ACI 318. HORIZONTAL BEAM BARS, VERTICAL COLUMN BARS AND VERTICAL SHEAR WALL BARS SHALL MEET THE REQUIREMENTS OF ACI SECTION 21.2.5. REINFORCEMENT SHALL COMPLY WITH ASTM A706 FOR LOW-ALLOY STEEL, BILLET STEEL A615 GRADE 60 REINFORCEMENT MAY BE USED IF THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED THE SPECIFIED STRENGTH BY MORE THAN 18,000 PSI AND THE RATIO OF THE ACTUAL ULTIMATE TENSILE STRESS TO THE ACTUAL YIELD STRENGTH IS NOT LESS THAN 1.25.

WELDED WIRE FABRIC REINFORCEMENT SHALL CONFORM TO ASTM A-82 AND A-185, LAP ONE FULL MESH ON SIDES AND ENDS.

REINFORCING SPLICE AND DEVELOPMENT LENGTH SCHEDULE

BAR SIZE	MINIMUM LAP SPLICE LENGTHS ("Ls")		MINIMUM DEVELOPMENT LENGTHS ("Ld")		MINIMUM EMBEDMENT LENGTH FOR STANDARD END HOOKS ("LdH")
	TOP BARS(1)	OTHER BARS	TOP BARS(1)	OTHER BARS	
#3	2'-0"	1'-6"	1'-6"	1'-3"	0'-7"
#4	2'-6"	2'-0"	2'-0"	1'-7"	0'-9"
#5	3'-4"	2'-7"	2'-7"	2'-0"	1'-0"
#6	4'-0"	3'-1"	3'-1"	2'-4"	1'-2"
#7	5'-10"	4'-6"	4'-6"	3'-6"	1'-5"

SPLICE TABLE NOTES
1. "TOP BARS" ARE HORIZONTAL BARS WITH MORE THAN 12" DEPTH OF CONCRETE CAST BELOW THEM.

REINFORCING COUPLERS. "CADWELD" OR "LENTON" BY ERICO PRODUCTS, INC., MST BAR-LOCK, "NO-SLIP" BY FOXHOLLETT INDUSTRIES, INC., OR PRE-APPROVED EQUAL. COUPLER MUST DEVELOP THE TENSILE STRENGTH OF THE BAR UNO.

REINFORCING STEEL COVER
PROVIDE CONCRETE COVER OVER REINFORCEMENT AS FOLLOWS, UNLESS NOTED OTHERWISE.

CONCRETE CAST AGAINST EARTH ——— 3"
EXPOSED TO WEATHER OR EARTH ——— 2"
TIES ON BEAMS AND COLUMNS ——— 1-1/2"
WALLS AND SLABS NOT EXPOSED TO WEATHER— 3/4"

GENERAL NOTES

ANY DISCREPANCIES FOUND AMONG THE DRAWINGS, THESE GENERAL NOTES, AND THE SITE CONDITIONS SHALL BE REPORTED TO THE ENGINEER, WHO SHALL CORRECT SUCH DISCREPANCY IN WRITING, ANY WORK DONE BY THE GENERAL CONTRACTOR AFTER DISCOVERY OF SUCH DISCREPANCY SHALL BE DONE AT THE GENERAL CONTRACTOR'S RISK. THE GENERAL CONTRACTOR SHALL VERIFY AND COORDINATE DIMENSIONS AMONG ALL DRAWINGS PRIOR TO PROCEEDING WITH ANY WORK OR FABRICATION. THE STRUCTURE HAS BEEN DESIGNED TO RESIST CODE REQUIRED VERTICAL AND LATERAL FORCES AFTER THE CONSTRUCTION OF ALL STRUCTURAL ELEMENTS HAS BEEN COMPLETED. STABILITY OF THE STRUCTURE PRIOR TO COMPLETION IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS RESPONSIBILITY INCLUDES BUT IS NOT LIMITED TO JOB SITE SAFETY, ERECTION MEANS, METHODS, AND SEQUENCES, TEMPORARY SHORING, FORMWORK, AND BRACING OF EQUIPMENT AND CONSTRUCTION PROCEDURES. PROVIDE ADEQUATE RESISTANCE TO LOADS ON THE STRUCTURES DURING CONSTRUCTION PER SEISMICE STANDARD NO. 37-02 "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION." CONSTRUCTION OBSERVATION BY THE STRUCTURAL ENGINEER IS FOR GENERAL CONFORMANCE WITH DESIGN ASPECTS ONLY AND IS NOT INTENDED IN ANY WAY TO REVIEW THE CONTRACTOR'S CONSTRUCTION PROCEDURES.

STANDARDS
ALL METHODS, MATERIALS, AND WORKMANSHIP SHALL CONFORM TO THE 2013 CALIFORNIA BUILDING CODE (CBC) AS AMENDED AND ADOPTED BY THE LOCAL BUILDING OFFICIAL OR APPLICABLE JURISDICTION.

CONTRACT DRAWINGS / DIMENSIONS

ARCHITECTURAL DRAWINGS ARE THE PRIME CONTRACT DRAWINGS. CONSULTANT DRAWINGS BY OTHER DISCIPLINES ARE SUPPLEMENTARY TO ARCHITECTURAL DRAWINGS. REPORT DIMENSIONAL OMISSIONS OR DISCREPANCIES BETWEEN ARCHITECTURAL DRAWINGS AND STRUCTURAL, MECHANICAL, ELECTRICAL OR CIVIL DRAWINGS TO ARCHITECT PRIOR TO PROCEEDING WITH WORK.

STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS. FINISH ARCHITECTURAL ELEMENTS ARE DIMENSIONED ON STRUCTURAL PLANS AND DETAILS AND OVERALL LAYOUT OF STRUCTURAL PORTION OF WORK. SOME SECONDARY ELEMENTS ARE NOT DIMENSIONED SUCH AS: WALL CONFIGURATIONS (INCLUDING EXACT DOOR AND WINDOW LOCATIONS), ALCOVES, SLAB SLOPES AND DEPRESSIONS, CURBS, ETC. VERTICAL DIMENSIONAL CONTROL IS DEFINED BY ARCHITECTURAL WALL SECTIONS AND BUILDING SECTIONS. STRUCTURAL DETAILS SHOW DIMENSIONAL RELATIONSHIPS TO CONTROL DIMENSIONS DEFINED BY ARCHITECTURAL DRAWINGS. DETAILING AND SHOP DRAWING PRODUCTION FOR STRUCTURAL ELEMENTS WILL REQUIRE DIMENSIONAL INFORMATION CONTAINED IN BOTH ARCHITECTURAL AND STRUCTURAL DRAWINGS.

DESIGN CRITERIA

RISK CATEGORY: I - TABLE 1604.5

VERTICAL LOADS

AREA	DESIGN DEAD LOAD	LIVE LOAD	CONCENTRATED LOADS
ROOF	15 PSF	20 PSF	--
FLOOR	30 PSF	100 PSF	1000#

SNOW: FOR SITES OVER 25 PSF,

ROOF LIVE LOAD GOVERNS

LATERAL FORCES

WIND
ALTERNATE HEIGHTS METHOD
- EXPOSURE CATEGORY = B
- RISK CATEGORY = I
- BASIC WIND SPEED, V = 110 MPH
- Pmd = .00256*V^2*Kd*Kh*Kzt
- Kz = 0.62
- Pmd = 17 PSF

SEISMIC
V = CsW

Cs = Sds/(R/I) ; 0.044 Sds*Ie < Cs < Sd1/(R*Ie/T)

- SEISMIC IMPORTANCE FACTOR, Ie = 1
- SPECTRAL RESPONSE ACCELERATION Ss = 1.651, S1 = 0.587
- SITE CLASS PER TABLE 20-3.1 OF ASCE 7-10 = D
- SPECTRAL RESPONSE COEFFICIENTS: Sds = 1.101, Sd1 = 0.587
- SEISMIC DESIGN CATEGORY = D
- ANALYSIS PROCEDURE USED = EQUIVALENT LATERAL FORCE ANALYSIS
- RESPONSE MODIFICATION FACTOR PER TABLE 12.2-1 (ASCE 7-10) R = 1.25
- Cs = 0.881
- DESIGN BASE SHEAR, V = 0.881*W (ULTIMATE)

STRUCTURAL STEEL

DETAILING, FABRICATION AND ERECTION

ALL WORKMANSHIP SHALL CONFORM TO THE CURRENT AISC MANUAL OF STEEL CONSTRUCTION AND AISC 303 CURRENT EDITION.

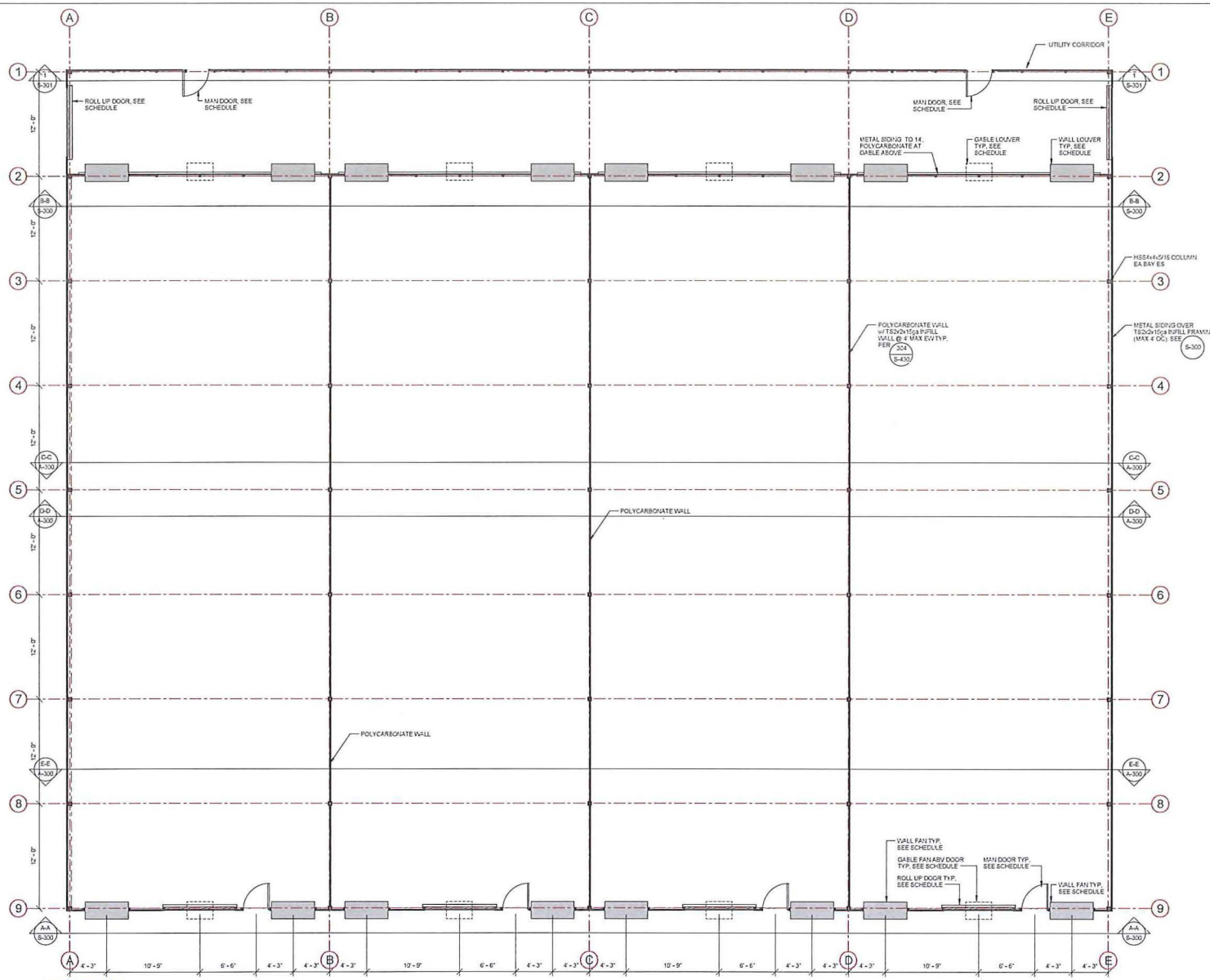
STEEL MEMBERS ARE EQUALLY SPACED BETWEEN DIMENSION POINTS UNLESS NOTED OTHERWISE.

ALL FABRICATION SHALL BE PERFORMED BY A FABRICATOR CERTIFIED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDS AND JOINT PREPARATIONS THAT INCLUDE BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES, AND OTHER AIDES. WELDING PROCEDURES, REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, WELD EXTENSION TABS, COPES, SURFACE ROUGHNESS VALUES AND TAPERS OF UNEQUAL PARTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLIANCE WITH ALL CURRENT OSHA REQUIREMENTS.

HOLES, COPES, OR OTHER CUTS OR MODIFICATIONS OF THE STRUCTURAL STEEL MEMBERS SHALL NOT BE MADE IN THE FIELD WITHOUT WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER.

MATERIA



FLOOR PLAN
3/16" = 1'-0"

COMPONENT SCHEDULE

ITEM	SIZE	OPENING
GABLE FAN	30"	35-5/8" H x 34-3/4" W
GABLE LOUVER	34"	34-3/4" H x 34-3/4" W
WALL FAN	49"	54-1/4" H x 52-3/4" W
WALL LOUVER	57"	57-3/4" H x 57-3/4" W
MAN DOOR	36"	84" H x 36" W
ROLL-UP DOOR	8'	10' H x 8' W

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LINCHPIN STRUCTURAL ENGINEERING
10031 West River Street, Truckee, CA 96161
PO Box 2451, Truckee, CA 96160
(530) 414-4144
info@LinchpinSE.com
www.LinchpinSE.com

REGISTERED PROFESSIONAL ENGINEER MICHAEL JAMES BOYD CIVIL STATE OF CALIFORNIA
SAMPLE PLAN SET

REVISIONS

These Drawings have been prepared by Linchpin Structural Engineering Inc. They are not suitable for use on other projects, in other locations, or by any other individuals without the written approval and participation of Linchpin Structural Engineering Inc. Reproduction is prohibited.

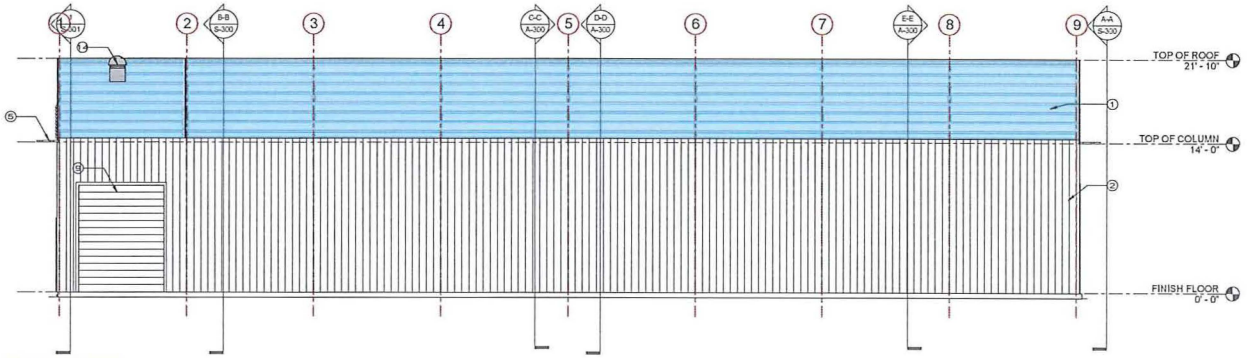
Gro-Tech SYSTEMS INC.

120x96 ALPINE GREENHOUSE

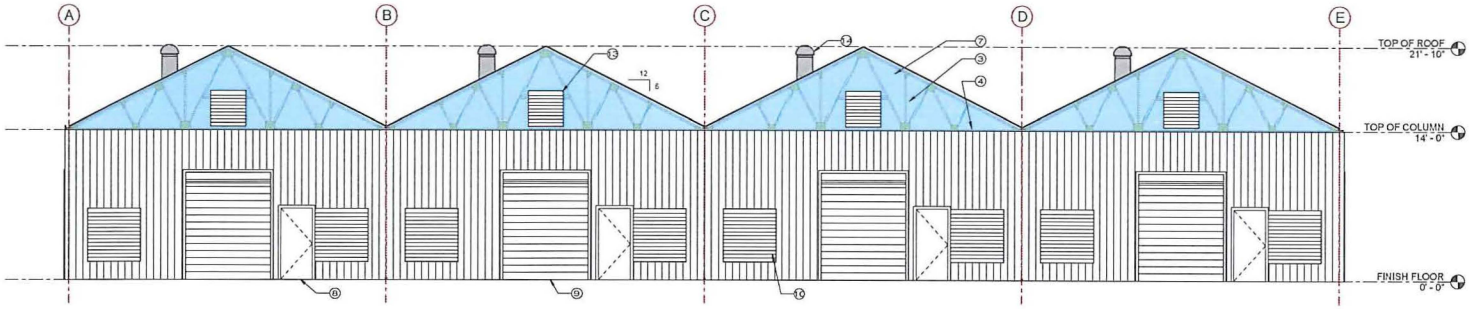
DESIGNED BY	BB
DRAFTED BY	BB
CLIENT INFORMATION	TBD TBD
PROJECT#	1755
ISSUE DATE	06/09/17
SCALE	3/16" = 1'-0"

FLOOR PLAN

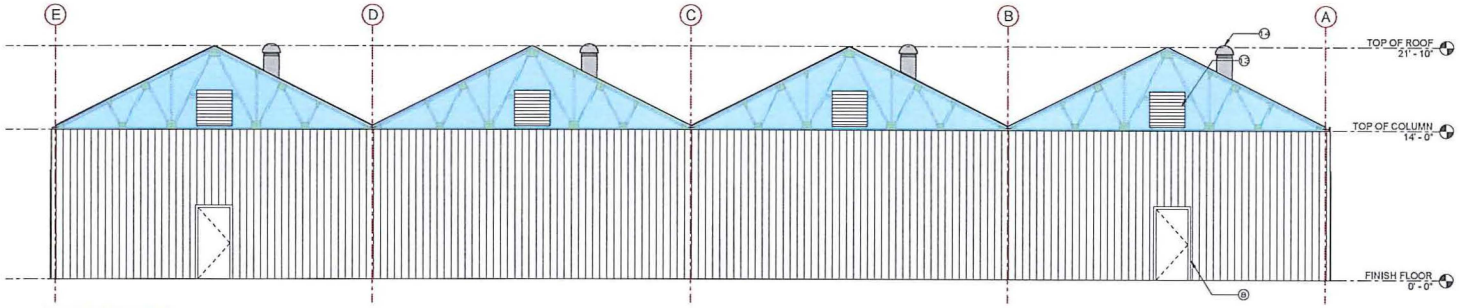
A-100



SIDE ELEVATION
3/16" = 1'-0"



FRONT ELEVATION
3/16" = 1'-0"



REAR ELEVATION
3/16" = 1'-0"

ELEVATION LEGEND

1. TWIN WALL POLY CARBONATE ROOF - CLEAR
2. CORRUGATED METAL SIDING - ASH GREY COLOR
3. 3/4" Z-BAR FLASHING
4. 2x2 GEM FLASHING
5. GUTTER
6. GABLE LOUVER
7. TWIN WALL POLY CARBONATE SIDING - CLEAR
8. MAN-DOOR
9. ROLL-UP DOOR
10. WALL FAN
11. GUTTER CONNECTION
12. WALL LOUVER
13. GABLE FAN
14. PRESSURE RELIEF DAMPER

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REGISTERED PROFESSIONAL ENGINEER MICHAEL JAMES A. [illegible] CIVIL STATE OF CALIFORNIA

SAMPLE PLAN SET

REVISIONS

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Gro-Tech SYSTEMS INC.

120x96 ALPINE GREENHOUSE

DESIGNED BY	BB
DRAFTED BY	BB
CLIENT INFORMATION	TBD TBD
PROJECT#	1755
ISSUE DATE	06/09/17
SCALE	As indicated

ELEVATIONS

A-200

Hello Andrew Machata,

The fans at the distances apart in your design will not interact (so no cumulative noise), and that noise form your greenhouse your design would be a point source not a linear source .

Thank you,

Clay Crider
CRS Supply Group
President

Decibel levels for the Quietaire 56” and 30” exhaust fans are listed below. The decibel readings may vary slightly based on wind, humidity, light traps, and static pressure.

56” Fan

53 decibels at 10 – 11 feet

51 decibels at 12 – 14 feet

49 decibels at 15 – 18 feet

47 decibels at 20 feet

30” Fan

35 decibels at 10 – 11 feet

33 decibels at 12 – 14 feet

31 decibels at 15 – 18 feet

29 decibels at 20 feet

Appendix E

Hydrology

1. Hydro Conductivity Letter; 2018, Fisch Drilling
2. Well Geological Summary Letter; 2020 Fisch Drilling
3. Well Completion Reports; 2019, Fitch Drilling

FISCH DRILLING

3150 Johnson Rd.
Hydesville, CA 95547

Invoice

DATE	INVOICE NO.
2/15/2018	W1956

BILL TO
Rolling Meadow Ranch, Inc. 2060 Airport West Dr. Vero Beach, FL 32960

P.O. NO.	TERMS	DUE DATE
Blocksburg	Due on receipt	2/15/2018

QTY	DESCRIPTION	RATE	AMOUNT
	Hydro Conductivity Letter	95.00	95.00

Questions regarding this invoice. Call Chris (707)768-9800

Total $95.00

Ask...
Fisch Drilling .com
WHEN YOU WANT TO KNOW ABOUT WATER!

3150 JOHNSON RD.
HYDESVILLE, CA.
(707)768-9800
dave@fischdrilling.com

February 15, 2018

Andy Machata
3060 Airport West Drive
Vero Beach, FL. 32960

Rolling Meadow Ranch
McCann Rd.
Blocksburg, CA. 95514

Result of site review of Rolling Meadow Ranch. APN 217-025-001, 217-201-001, 217-181-028, 211-284-009. The well sites in question will be located on parcel 217-025-001, 217-201-001, 217-181-028, 211-284-009 these wells are schedule to be drilled in spring of 2018.

These wells will be completed in the Franciscan Sandstone; the wells will most likely be drilled into a perched bedrock with little to no hydraulic connection to any surface water or any part of a larger shallow homogeneous aquifer.

Considering the depth of the wells, it appears to fall in line with the guide lines of a non-jurisdictional well of similar depth in the surrounding area.
Any questions please call (707)768-9800.

Thank You,

David Fisch
Fisch Drilling

Ask...
Fisch Drilling .com
WHEN YOU WANT TO KNOW ABOUT WATER!

3150 JOHNSON RD.
HYDESVILLE, CA.
(707)768-9800
dave@fischdrilling.com

April 6 2020

Andy Machata
3060 Airport West Drive
Vero Beach, FL, 32960

Rolling Meadow Ranch
McCann Rd.
Blocksburg, CA. 95514

Result of site review of Rolling Meadow Ranch, APN 217-024-010. The well site in question is located McCann Road on parcel 217-024-010 the well was completed 6/5/19.

This well was completed in the Franciscan Sandstone. The well was drilled into perched bedrock with no hydraulic connection to any surface water or any part of a larger shallow homogeneous aquifer.

Considering the depth of the well, it appears to fall in line with the guidelines of a non-jurisdictional well of similar depth in the surrounding area.
Any questions please call (707)768-9800.

Thank You,

David Fisch
Fisch Drilling

Ask...
Fisch Drilling .com
WHEN YOU WANT TO KNOW ABOUT WATER!

3150 JOHNSON RD.
HYDESVILLE, CA.
(707)768-9800
dave@fischdrilling.com

April 6 2020

Andy Machata
3060 Airport West Drive
Vero Beach, FL, 32960

Rolling Meadow Ranch
McCann Rd.
Blocksburg, CA. 95514

Result of site review of Rolling Meadow Ranch, APN 217-181-028. The well site in question is located McCann Road on parcel 217-181-028 the well was completed 6/8/19.

This well was completed in the Franciscan Sandstone. The well was drilled into perched bedrock with no hydraulic connection to any surface water or any part of a larger shallow homogeneous aquifer.

Considering the depth of the well, it appears to fall in line with the guidelines of a non-jurisdictional well of similar depth in the surrounding area.
Any questions please call (707)768-9800.

Thank You,

David Fisch
Fisch Drilling

Ask...
Fisch Drilling
.com
WHEN YOU WANT TO KNOW ABOUT WATER!

3150 JOHNSON RD.
HYDESVILLE, CA.
(707)768-9800
dave@fischdrilling.com

April 6 2020

Andy Machata
3060 Airport West Drive
Vero Beach, FL, 32960

Rolling Meadow Ranch
McCann Rd.
Blocksburg, CA. 95514

Result of site review of Rolling Meadow Ranch, APN 217-173-002. The well site in question is located McCann Road on parcel 217-173-002 the well was completed 6/14/19.

This well was completed in the Franciscan Sandstone. The well was drilled into perched bedrock with no hydraulic connection to any surface water or any part of a larger shallow homogeneous aquifer.

Considering the depth of the well, it appears to fall in line with the guidelines of a non-jurisdictional well of similar depth in the surrounding area.
Any questions please call (707)768-9800.

Thank You,

David Fisch
Fisch Drilling

State of California

Well Completion Report

Form DWR 188 Submitted 6/10/2019

WCR2019-007960

Owner's Well Number

Date Work Began 05/09/2019 Date Work Ended 06/03/2019

Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program

Secondary Permit Agency Permit Number 16/17-1005 Permit Date 04/19/2017

Well Owner (must remain confidential pursuant to Water Code 13752)

Name ROLLING MEADOW RANCH, INC., Andy Machata

Mailing Address 3060 Airport West Drive

City Vero Beach State FL Zip 32960

Planned Use and Activity

Activity New Well

Planned Use Water Supply Irrigation - Agriculture

Well Location

Address 2487 Mc Cann RD

City Blocksburg Zip 95514 County Humboldt

Latitude 40 Deg. 19 Min. 28.9596 Sec. N Longitude -123 Deg. 47 Min. 52.3788 Sec. W

Dec. Lat. 40.324711 Dec. Long. -123.797883

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 217-181-028

Township 02 S

Range 03 E

Section 02

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Air

Total Depth of Boring 270 Feet

Total Depth of Completed Well 270 Feet

Water Level and Yield of Completed Well

Depth to first water 152 (Feet below surface)

Depth to Static Water Level 148 (Feet) Date Measured 06/03/2019

Estimated Yield* 13 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown 118 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	5	over burden
5	20	loose sandstone
20	114	shale
114	246	sandstone shale mix
246	270	soft shale

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	70	Blank	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563			
1	70	270	Screen	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	270	Filter Pack	Other Gravel Pack	3/8 Inch	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	270	10

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: FISCH DRILLING
Person, Firm or Corporation

3150 JOHNSON ROAD | HYDESVILLE | CA | 95547
Address | City | State | Zip

Signed: *electronic signature received* | 06/10/2019 | 683865
C-57 Licensed Water Well Contractor | Date Signed | C-57 License Number

Attachments

Scan.pdf - Location Map

DWR Use Only

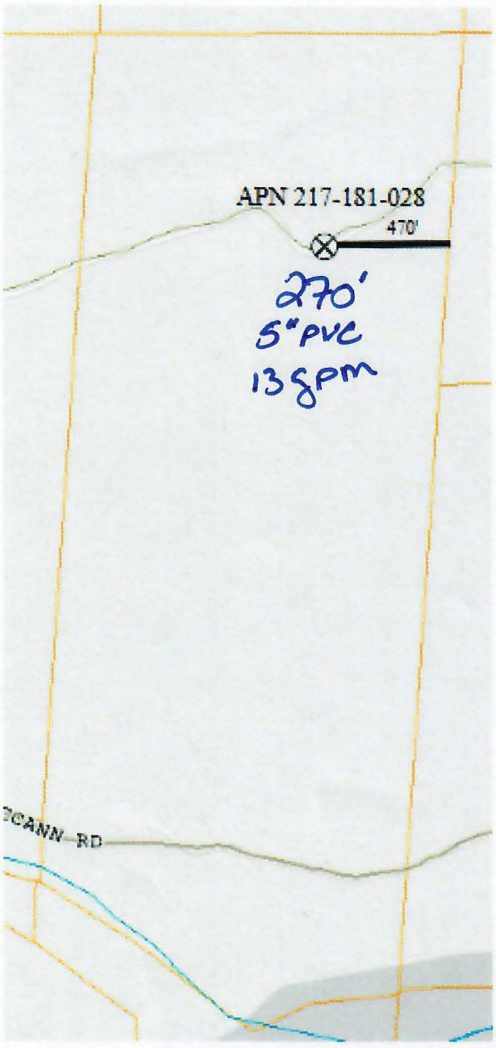
CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:



Rolling Meadows LLC
Andy Machata 321-684-3074
Mc Cann Road
Blocksburg, CA 95514

lacy@fischdrilling.com

From: Fisch Drilling <chris@fischdrilling.com>
Sent: Monday, June 10, 2019 10:53 AM
To: lacy@fischdrilling.com
Subject: FW: OSWCR: Thank you for submitting Well Completion Report WCR2019-007960

From: OSWCR-NoReply@water.ca.gov <OSWCR-NoReply@water.ca.gov>
Sent: Monday, June 10, 2019 10:47 AM
To: chris@fischdrilling.com
Subject: OSWCR: Thank you for submitting Well Completion Report WCR2019-007960

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Thank you for submitting your Well Completion Report - A New Production or Monitoring Well, **WCR2019-007960**, using the Online System for Well Completion Reports (OSWCR). The Department of Water Resources will review it for completeness. You will be notified if additional information is required. If you have any questions, please call your local DWR Region Office WCR contact.

DWR Northern Region Office
April Scholzen
(530)529-7368
April.Scholzen@water.ca.gov

To view this record, log in to OSWCR, or use the following link:
https://civicnet.resources.ca.gov/DWR_WELLS/urlrouting.ashx?type=1000&Module=WellCompletion&capID1=19CAP&capID2=00000&capID3=006JX&agencyCode=DWR_WELLS

Licensed Contractor: FISCH DRILLING License Number: 683865
Well Owner: Andy Machata Rolling Meadow Ranch, Inc.
Well Owner Address: 3060 Airport West Drive Vero Beach FL 32960

Well Address: 2487 Mc Cann RD, Blocksburg, CA 95514 County: Humboldt Parcel: 217-181-028
Latitude/Longitude: 40.324711°N, -123.797883°W
Submitted: 06/10/2019
Record Status: Submitted

State of California

Well Completion Report

Form DWR 188 Submitted 6/14/2019

WCR2019-008314

Owner's Well Number

Date Work Began 06/05/2019 Date Work Ended 06/14/2019

Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program

Secondary Permit Agency

Permit Number 16/17/1004 Permit Date 05/30/2017

Well Owner (must remain confidential pursuant to Water Code 13752)

Name ROLLING MEADOW RANCH, INC., Andy Machata

Mailing Address 3060 Airport West Drive

City Vero Beach State FL Zip 32960

Planned Use and Activity

Activity New Well

Planned Use Water Supply Irrigation - Agriculture

Well Location

Address 0 Mc Cann RD

City Blocksburg Zip 95514 County Humboldt

Latitude 40 Deg. 19 Min. 53.256 Sec. N Longitude -123 Deg. 45 Min. 24.7716 Sec. W

Dec. Lat. 40.33146 Dec. Long. -123.756881

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 217-173-002

Township 01 S

Range 04 E

Section 32

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Air

Total Depth of Boring 240 Feet

Total Depth of Completed Well 240 Feet

Water Level and Yield of Completed Well

Depth to first water 65 (Feet below surface)

Depth to Static Water Level 34 (Feet) Date Measured 06/14/2019

Estimated Yield* 20 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown 175 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	2	top soil
2	21	silty clay
21	43	silt stone
43	58	soft shale
58	213	sandstone shale mix
213	240	soft shale

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	60	Blank	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563			
1	60	240	Screen	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	240	Filter Pack	Other Gravel Pack	3/8 Inch	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	240	10

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: FISCH DRILLING
Person, Firm or Corporation

3150 JOHNSON ROAD | HYDESVILLE | CA | 95547
Address | City | State | Zip

Signed: *electronic signature received* | 06/14/2019 | 683865
C-57 Licensed Water Well Contractor | Date Signed | C-57 License Number

Attachments

Scan.pdf - Location Map

DWR Use Only

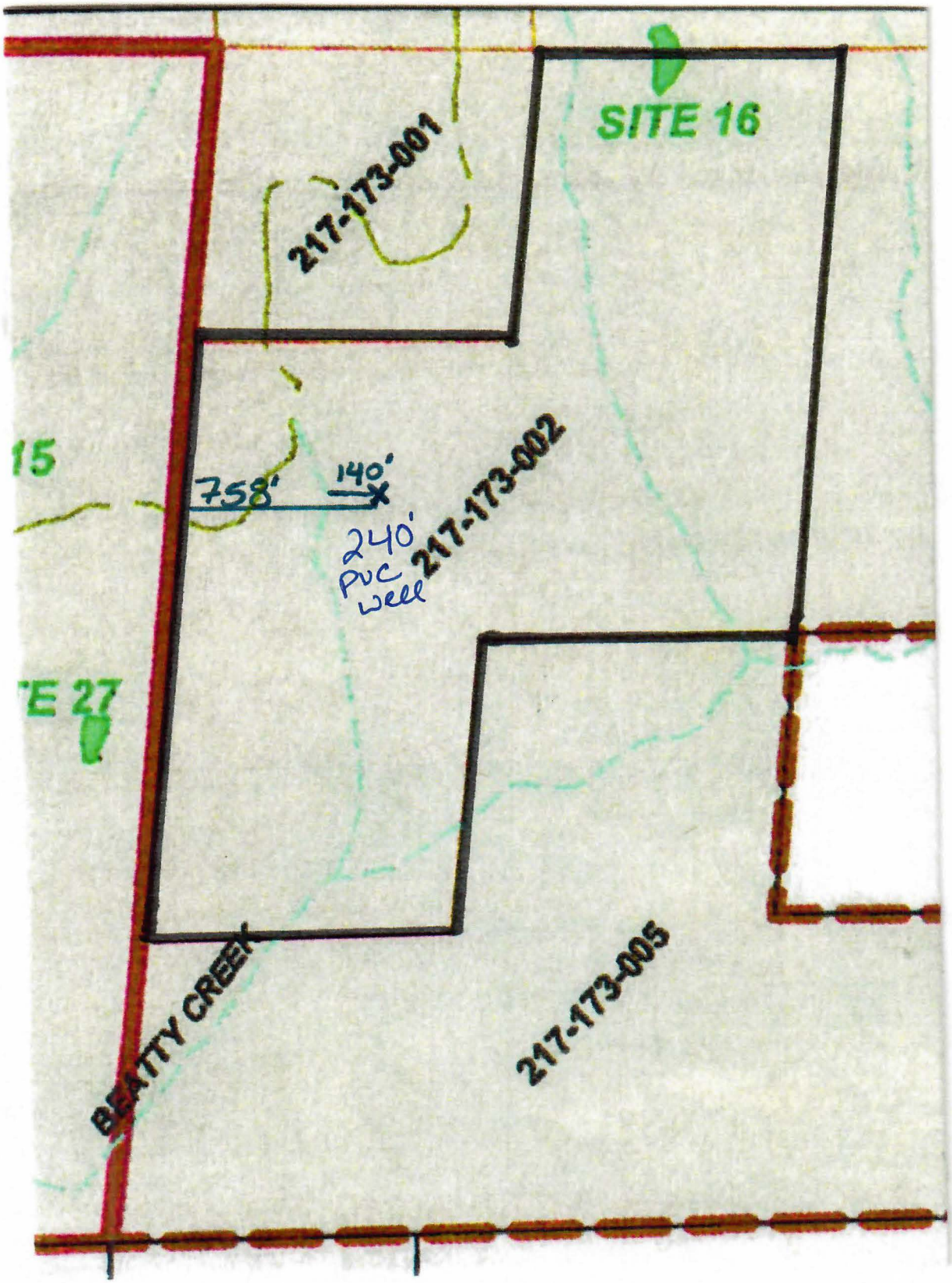
CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:


SITE 16
217-173-001
15
758'
140'
240'
PVC
well
217-173-002
E 27
BEATTY CREEK
217-173-005

Fisch Drilling

From: OSWCR-NoReply@water.ca.gov
Sent: Friday, June 14, 2019 11:02 AM
To: chris@fischdrilling.com
Subject: OSWCR: Thank you for submitting Well Completion Report WCR2019-008314

*******Please do not reply to this e-mail message*******

Thank you for submitting your Well Completion Report - A New Production or Monitoring Well, **WCR2019-008314**, using the Online System for Well Completion Reports (OSWCR). The Department of Water Resources will review it for completeness. You will be notified if additional information is required. If you have any questions, please call your local DWR Region Office WCR contact.

DWR Northern Region Office
April Scholzen
(530)529-7368
April.Scholzen@water.ca.gov

To view this record, log in to OSWCR, or use the following link:
https://civicnet.resources.ca.gov/DWR_WELLS/urlrouting.ashx?type=1000&Module=WellCompletion&capID1=19CAP&capID2=00000&capID3=006TW&agencyCode=DWR_WELLS

Licensed Contractor: FISCH DRILLING License Number: 683865
Well Owner: Andy Machata Rolling Meadow Ranch, Inc.
Well Owner Address: 3060 Airport West Drive Vero Beach FL 32960

Well Address: 0 Mc Cann RD, Blocksburg, CA 95514 County: Humboldt Parcel: 217-173-002
Latitude/Longitude: 40.33146°N, -123.756881°W
Submitted: 06/14/2019
Record Status: Submitted

State of California

Well Completion Report

Form DWR 188 Submitted 6/12/2019

WCR2019-008119

Owner's Well Number | Date Work Began 05/31/2019 | Date Work Ended 06/05/2019

Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program

Secondary Permit Agency | Permit Number 16/17-1007 | Permit Date 04/19/2017

Well Owner (must remain confidential pursuant to Water Code 13752)

Name ROLLING MEADOW RANCH, INC., Andy Machata

Mailing Address 3060 Airport West Drive

City Vero Beach State FL Zip 32960

Planned Use and Activity

Activity New Well

Planned Use Water Supply Irrigation - Agriculture

Well Location

Address 0 Mc Cann RD

City Blocksburg Zip 95514 County Humboldt

Latitude 40 Deg. 19 Min. 44.1479 Sec. N | Longitude -123 Deg. 46 Min. 57.7235 Sec. W

Dec. Lat. 40.32893 Dec. Long. -123.782701

Vertical Datum | Horizontal Datum WGS84

Location Accuracy | Location Determination Method

APN 217-024-010

Township 01 S

Range 03 E

Section 36

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Other - Under-Ream Down-Hole Hammer Drilling Fluid Air

Total Depth of Boring 200 Feet

Total Depth of Completed Well 200 Feet

Water Level and Yield of Completed Well

Depth to first water 42 (Feet below surface)

Depth to Static Water Level 30 (Feet) Date Measured 06/05/2019

Estimated Yield* 30 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown 158 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	4	top soil
4	21	silty clay
21	72	brown sandstone
72	105	soft shale
105	200	blue sandstone with clay layers

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	40	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			
1	40	190	Screen	Low Carbon Steel	Grade: ASTM A53	0.188	6	Milled Slots	0.05	
1	190	200	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	200	Filter Pack	Other Gravel Pack	3/8 Inch	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	200	10

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: FISCH DRILLING
Person, Firm or Corporation

3150 JOHNSON ROAD (Address) | HYDESVILLE (City) | CA (State) | 95547 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 06/12/2019 (Date Signed) | 683865 (C-57 License Number)

Attachments

Scan.pdf - Location Map

DWR Use Only

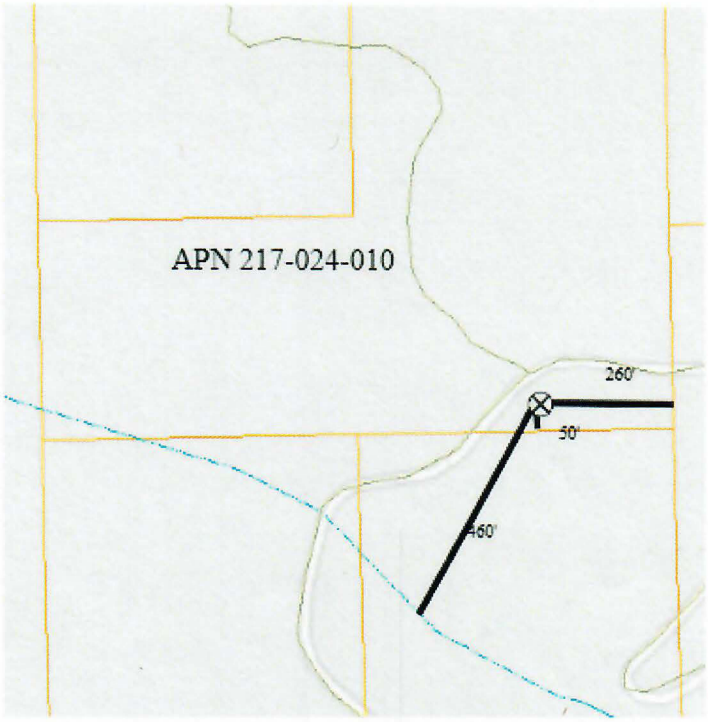
CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:



Rolling Meadows LLC
Andy Machata 321-684-3074
Mc Cann Road
Blocksburg, CA 95514

lacy@fischdrilling.com

From: Fisch Drilling <chris@fischdrilling.com>
Sent: Wednesday, June 12, 2019 9:47 AM
To: lacy@fischdrilling.com
Subject: FW: OSWCR: Thank you for submitting Well Completion Report WCR2019-008119

From: OSWCR-NoReply@water.ca.gov <OSWCR-NoReply@water.ca.gov>
Sent: Wednesday, June 12, 2019 9:46 AM
To: chris@fischdrilling.com
Subject: OSWCR: Thank you for submitting Well Completion Report WCR2019-008119

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Thank you for submitting your Well Completion Report - A New Production or Monitoring Well, **WCR2019-008119**, using the Online System for Well Completion Reports (OSWCR). The Department of Water Resources will review it for completeness. You will be notified if additional information is required. If you have any questions, please call your local DWR Region Office WCR contact.

DWR Northern Region Office
April Scholzen
(530)529-7368
April.Scholzen@water.ca.gov

To view this record, log in to OSWCR, or use the following link:
https://civicnet.resources.ca.gov/DWR_WELLS/urlrouting.ashx?type=1000&Module=WellCompletion&capID1=19CAP&capID2=00000&capID3=006OD&agencyCode=DWR_WELLS

Licensed Contractor: FISCH DRILLING License Number: 683865
Well Owner: Andy Machata Rolling Meadow Ranch, Inc.
Well Owner Address: 3060 Airport West Drive Vero Beach FL 32960

Well Address: 0 Mc Cann RD, Blocksburg, CA 95514 County: Humboldt Parcel: 217-024-010
Latitude/Longitude: 40.32893°N, -123.782701°W
Submitted: 06/12/2019
Record Status: Submitted

Appendix F

1. Supplemental Prime Agricultural Soil Assessment; Dirty Business, 2020
2. Prime Agricultural Soil Assessment; Dirty Business, 2017
3. NRCS Soil Map

Prime Agricultural Soil Assessment

Rolling Meadows Ranch

2189 McCann Rd, McCann, CA 95553

Updated October 10, 2020

Prepared For: Andrew Machada

Prepared By: Dirty Business Soil Consulting & Analysis, LLC

Table of Contents

1.0 Introduction 1
2.0 Results 1
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3.0 Site Descriptions 2
3.1 Site 3c – Hole 1 2
4.0 Conclusion 3
Appendix A. Methodology for Prime Agricultural Soil Assessment 4
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1.0 INTRODUCTION

The purpose of this report is to disclose the findings and methodologies of the prime agricultural soil assessment at 2189 McCann Rd, McCann, CA 95553 conducted October 10th, 2020. This assessment is in addition to the prime agricultural assessment conducted August 18th, 2016 through August 10th, 2017. Please see prior report for detailed information on our comprehensive findings.

Per the Humboldt County's Commercial Medical Marijuana Land Use Ordinance (CMMLUO), prime agricultural soils are defined as "*all lands which qualify for rating as Class I or Class II in the Soil Conservation Service land use capability classifications or qualify for rating 80 through 100 in the Storie Index Rating. Additionally, where determined through site-specific fieldwork prepared by a qualified professional, soils meeting these characteristics may be recognized as prime.*"

Prime agricultural soil assessments are conducted either by desktop assessment of existing Natural Resource Conservation Service (NRCS) surveys, Humboldt County GIS portal, and/or field assessment to determine the Storie Index or Land Capability Classification (LCC). The previous methods were examined, and it was determined that the Storie Index could be effectively utilized to assess prime agricultural soils throughout this property. Please see Appendix A for detailed methodology of Storie Index assessment.

2.0 RESULTS

Rolling Meadows Ranch is an approximately 6500-acre ranch spanning over 80 parcels. The initial Storie Index assessment conducted August 18th, 2016 through August 10th, 2017, yielded 1,832,399 square feet (42.1 acres) of prime agricultural soil across 42 different sites. Additionally another assessment conducted on October 10th 2020 yielded 32,176 square feet (0.74-ac) for a total of 1,864,575 square feet (42.84-ac).

The landscape consists of mostly forested mountain slopes interspersed with meadows; This site is located in a short grass meadow currently used for cattle grazing. A landscape photograph that captures the general topography and vegetation for the prime agricultural site found on this property is contained in Appendix B. Storie Index scores is 83.8%. This site resides in upland soils, with deep, moderately to well-developed profiles, 4-to-6-feet in depth. Surface soil texture is loam. Site had a moderate slope that averaged 6-8%. Drainage sites was moderately well drained (MWD) with a pH value below 7.3, which indicates no accumulation of alkaline minerals in soil. All Electrical Conductivity (EC) measurements were below 4 dS/m indicating no accumulation of phytotoxic nutrients. Soil acidity was moderately, with a pH of 5.6. Erosion and microrelief were used to vet low risk cultivation areas, thus the assessed site had little to no erosional and microrelief features.

Table 1 shows the prime agricultural soil site, the associated Assessor Parcel Number (APN), the Storie Index score, and site size. The site and soil auger hole description are discussed in the following section. A map of the prime agricultural site is contained in Appendix C for reference. The Storie Index scoring for the evaluated auger hole is contained in Appendix D.

Table 1. Comprehensive List of Prime Agricultural Soil Sites

Rolling Meadows Ranch Prime Ag Figures				
APN(s)	**Site Name**	**Storie Index Score (%)**	**Area Square Feet**	**Area Acres**
217-201-001	3c - Hole 1	83.8	32,176	0.74

3.0 SITE DESCRIPTION

The following section contains an in-depth description of the prime agricultural soil site. Assessment for all sites follow methodology contained in Appendix A. The site description includes the final Storie Index score, total area of site, a boundary description of the site perimeter, as well as details of soil characteristics for each Storie Index parameter. Maps of each site are in Appendix C and a table containing the Storie Index scoring is located in Appendix D.

3.1 SITE 3C – HOLE 1

Storie Index Score: 83.8

The total area mapped for Site 3c is 32,176 square feet (0.74 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 1 is a moderately sloping knoll alongside a road. The northern boundary abuts the boundary of 3a with a small graveled road that separates the two sites. There is a downslope greater than 15% on the East and south sides of the polygon before meeting a road on the south end. A confluence of two roads marks the western boundary of the polygon.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Loam.

Factor C – Slope

Slope was moderately sloping. Margin slopes were included up to 15% with an average slope between 6-8%.

Factor X -

Drainage: Well drained. No redoximorphic features. No restrictive layers. Increase in bulk density with depth. Clay films observed at 32”.

Alkali: Measured pH of 5.6 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 dS/m.

Acidity: Moderately acidic. Measured pH, 5.6.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

4.0 CONCLUSION

This report disclosed the findings and justifications for the prime agricultural soil assessments that were conducted on Rolling Meadows Ranch. This assessment adhered to the detailed methods and measurements of the Storie Index as set forth in the attached methodology (Appendix A). Landscape details and soil characteristics varied a little from site-to-site, but most were relatively similar with regards to the Storie Index parameters. This additional assessment yielded 32,176 square feet (0.74-ac) for a total of 1,864,575 square feet (42.84-ac) that met with the standards set forth by the CMMLUO (i.e., Storie Index of 80% or higher).

Appendix A. Methodology for Prime Agricultural Soil Assessment

Methodology for Determining Prime Agricultural Soils

Desktop Assessment

Existing soil data can be found through the Humboldt County GIS portal which is based on Humboldt County's 1967 soil survey as well as the NRCS Web Soil Survey (WSS) which is based on Humboldt County's most recent soil survey. Surveyed soils are mapped at the third-order, which means boundaries are plotted by observation and interpretation of remotely sensed data. The soil boundaries are verified by traversing representative areas and by some transects. Third-order surveys are made for land uses that do not require precise knowledge of small areas or detailed soils information. Delineations have a minimum size of up to 40-acres (USDA, 1993).

It is important to note that although the Humboldt County soil survey ground mapping has been finished, it has not yet been completely published on the WSS. When a soil survey query in WSS yields a "NOTCOM" result, it means no digital data is available for the project area. Standard practice in "NOTCOM" areas is to contact the local NRCS Soil Survey Field Office to identify if any data exists within the area of interest.

Field Assessment

The Storie Index and LCC are methods for rating soils on their potential for use and productivity. Both methods look at the same characteristics: slope, soil profile depth, drainage, salinity, etc. The Storie Index derives its rating from current conditions; while the Land Capability Classification derives its rating not only from current conditions, but on the potential to overcome those conditions using proper management techniques. LCC Class I soils are broadly defined as soils that "have few limitations which restrict their use." In contrast, LCC Class II soils are those that "have some limitations that reduce the choice of plants or require moderate conservation practices." (Storie, 1978; USDA SCS, 1961). Due to the nature of the Storie Index to assess only the current conditions, the parameters and ratings are generally more rigid in their interpretation than the LCC.

The Storie Index method of soil rating is based on soil characteristics that govern the land's potential utilization and productive capacity and is independent of other physical or economic factors that might determine the desirability of growing certain plants at a given location (Storie, 1932). A rating, between 0% and 100%, is assigned to definable soil properties that are measured either in the field or in the lab. The overall Storie Index Rating is determined by factoring all the ratings together:

Storie Index Rating = [(Factor A)/100 x (Factor B) /100 x (Factor C) /100 x (Factor X) /100] x 100

Table 1 describes the Storie Index parameters and general conditions for ratings. More detail on methodology for each parameter and the results for the assessed site are provided below.

Table 1. Storie Index soil properties and field methods (Storie, 1978).

Factor	Property	Highest Rating	Lowest Rating
A	Physical Profile Group	Based on landform type and soil development	
B	Surface Texture	Loamy Soils	Stony Soils, Dense Soils
C	Slope	Nearly Level/Gently Sloping (0 to 8%)	Steep/Very Steep (30 to over 45%)
X	*Rating of conditions other than A, B, or C*		
	Drainage	Well-drained	Waterlogged
	Alkali	Alkali-free	Strongly affected
	Nutrient (Fertility) Level	Very Low - Optimal	Detrimental nutrient accumulations
	Acidity	Neutral/Slight	Extremely Acidic/Extremely Basic
	Erosion	None/Slight	Severe
	Microrelief	Smooth	Hummocks and dunes

Methodology

Plots to undergo a complete Storie Index rating are found by slope measurements between 0 and 15%, vegetation (mostly open space, no wetland vegetation), and an examination of surface gravels. Locations that undergo a Storie Index rating are chosen because it has been determined to be the most representative part of the plot being evaluated. A soil core is excavated using a hand auger and the Storie Index rating is conducted. A sample of surface soil is taken for lab analysis, as well as the location being recorded with a Garmin GPS unit (accuracy < 15 meters). These rated soil holes are included on the site map.

The total number of holes excavated, rated, and sampled is based on the size of the plot area, uniformity of landscape surface, and vegetation within the plot area. Generally, inclusions of approximately an acre or less, if landscape variables (surface, vegetation) are consistent throughout, one hole is rated. If the plot exceeds an acre 1-2 holes per acre are rated and sampled or a transect is made.

Additionally, within each plot, confirmation holes are dug to evaluate the uniformity of the soil within a specific area and assist in the decision to include or exclude a portion from the plot. Confirmation holes are dug in areas where there is potential soil variation (i.e., in areas of vegetation change or topographic changes). For plots approximately one acre or less, 1-2 confirmation holes are dug. For plots over an acre, 1-4 confirmation holes per acre are dug. If a transect was made, confirmation holes are not necessary since a transect spans the entire plot. The confirmation holes are noted on field data sheets and the location is recorded with a Garmin GPS unit. These confirmation hole locations are included on the site map.

Plot boundaries are delineated by changes in land surface. Slope, soil type, gravel increases, vegetation change, and geomorphological features can all impact perimeter delineations. Field data sheets are used to record perimeter descriptions and these descriptions are included on the site maps along with a plot boundary and total square footage of passing area.

Factor A – Physical Profile Group

Factor A of the Storie Index rates the development of a soil profile. In alluvial soils, a high score indicates a younger undeveloped profile with an absence of gravelly subsoils and no Bt horizon (a horizon containing an accumulation of translocated clay). A lower score is given to older alluvial fans, plains and terraces when the presence of a Bt horizon or other restrictive features (i.e., clay pan, duripan, hardpan) can be confirmed (Storie, 1978; UC ANR,2008).

Upland soils that are formed from bedrock are rated based on depth to lithic (consolidated geologic material) or paralithic (softly consolidated or unconsolidated geologic material) contact (Storie, 1978; UC ANR,2008). The deeper the profile the higher the Storie Index score with a 100 being scored for upland soils that have profile of more than 6 feet (Storie, 1978). It should be noted that soil mapping parameters for Prime Farmland and Farmland of Statewide Importance have been established since the publication of the Storie Index in 1978. Both Prime Farmland and Farmland of Statewide Importance require an examination of effective rooting depth and other soil characteristics up to a depth of 40 inches (FMMP, 2016). Additionally, the LCC I requires a rooting depth of at least 36 inches and the LCC II requires a rooting depth of 20-36 inches (USDA SCS, 1961). These requirements demonstrate a consensus within the USDA and California Department of Conservation that farmland mapping include soils with profile depths of 40 inches or more as prime or agriculturally significant. Table 2 shows a revised scoring for upland soils to include effective rooting depth definitions of Prime Farmland and Farmland of Statewide Importance.

Table 2. Upland Soils/Effective Rooting Depth Score

Rooting Depth	Storie Index Score
>40 inches	100
30-40 inches	95
20-30 inches	90

Factor B – Surface Texture

Surface soil texture is determined using the texture by feel method. This method is the USDA standard field protocol for particle size analysis. If necessary, samples are sent to a lab for further particle size analysis using the hydrometer or micro-pipette method (USDA, 2014). Scoring rubric from Storie, 1978 is used for this rating.

Factor C – Slope

Slopes are measured in the field with clinometer (NRCS, 2012). Table 3 shows scoring rubric based on Storie 1978 but this scoring index removes the ranges for a more reproducible scoring method.

Table 3. Slope Scoring

Storie Index Class	Description	Score
A	Nearly Level (0-2%)	100
AA	Gently Undulating 0%	100
	Gently Undulating 1%	98
	Gently Undulating 2%	95
B	Gently sloping 3%	100

	Gently sloping 4-6%	98
	Gently sloping 6-8%	95
BB	Undulating 3%	100
	Undulating 4-6%	93
	Undulating 6-8%	85
C	Moderately Sloping 9-11%	95
	Moderately Sloping 12-14%	90
	Moderately Sloping 15%	80
CC	Rolling 9-11%	95
	Rolling 12-14%	90
	Rolling 15%	80

Factor X - Rating of conditions other than A, B, or C

Drainage – The subjectivity of the Storie Index drainage ratings has been addressed by an application of the natural drainage classes (i.e., the prevailing wetness conditions) as determined by the NRCS Soil Survey Manual (USDA, 1993) and the Drainage in Soil Surveys of California (USDA, 1989). Drainage is determined by observation to a four-foot depth of wetness, redoximorphic features, restrictive subsurface soil features (claypans, hardpans, etc...), increase in bulk density with depth, depth to bedrock, depth to unconsolidated bedrock (USDA, 1989). The Storie Index Rating, for various drainage classes is summarized in Table 4.

Table 4. Natural Drainage Classes and associated Storie Index Rating.

NRCS Classes	Storie Index Classes	Storie Index Rating (%)
Well Drained (WD)	Well Drained	100
Moderately Well Drained (MWD)	Fairly Well Drained	90
Somewhat Poorly Drained (SPD)		85
Poorly Drained (PD)	Moderately Waterlogged	40-80
Very Poorly Drained (VPD)	Badly Waterlogged	10-40

USDA, 1993; USDA, 1989

Alkali – If a pH value is 7.3 or more, it is considered alkaline (NRCS, 1998) and a carbonate test is conducted to quantify alkalinity (WREP, 2005). Generally, pH values for this region's soils are neutral to acidic, thus the alkali factor generally receives high scores.

Nutrient – Electrical conductivity (EC) and Sodium Absorption Ratio (SAR) are used to measure nutrient concentration in the soil. Having a low EC and SAR indicates a quality agriculture soil as management issues center mainly around accumulation of detrimental nutrients in soils (UC ANR, 2008). To evaluate nutrient levels, an EC measurement is taken from a saturation paste extract (WREP, 2005). If the EC result is 4 ds/m or lower, no SAR measurement is needed and a Storie Index rating of 100 is given. In this region, the heavily leached soils generally do not have high nutrient content, and typically receive high Storie Index ratings for nutrient level.

Acidity – pH is used to measure the acidity of the soil and is determined with a saturation paste (WREP, 2005). The Storie Index Rating, for various pH classes, is summarized in Table 5.

Table 5. Acidity Class, pH range and associated Storie Index Rating.

Classes	pH Range	Storie Index Rating (%)
Extremely acidic	3.5 – 4.4	40-90
Very strongly acidic	4.5 – 5.0	90
Strongly acidic	5.1 – 5.5	90-100
Moderately acidic	5.6 – 6.0	100
Slightly acidic	6.1 – 6.5	100
Neutral	6.6 – 7.3	100

NRCS, 1998; UC ANR 2008 (Figure 5A); FMMP

Erosion – Interpretation of erosion features in the field is conducted following the NRCS Field Book (NRCS, 2012) to properly evaluate erosion rating. Erosion types include none to slight, detrimental deposition, sheet erosion, gullies, and wind erosion.

Microrelief – Microrelief is small, relative differences in elevation between adjacent areas. Interpretation of the site's microrelief was conducted following the NRCS Field Book (NRCS, 2012) to evaluate microrelief features. Examples include smooth, channels, hummocks, and dunes.

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NRCS, 1998 – Soil Quality Information. USDA NRCS. January 1998. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052208.pdf

WREP, 2005 - Gavlak, Ray; Horneck, Donald; Miller, Robert O. Plant, Soil and Water Reference Methods for the Western Region, Third Ed. 2005.

Appendix B. Representative Landscape Photographs

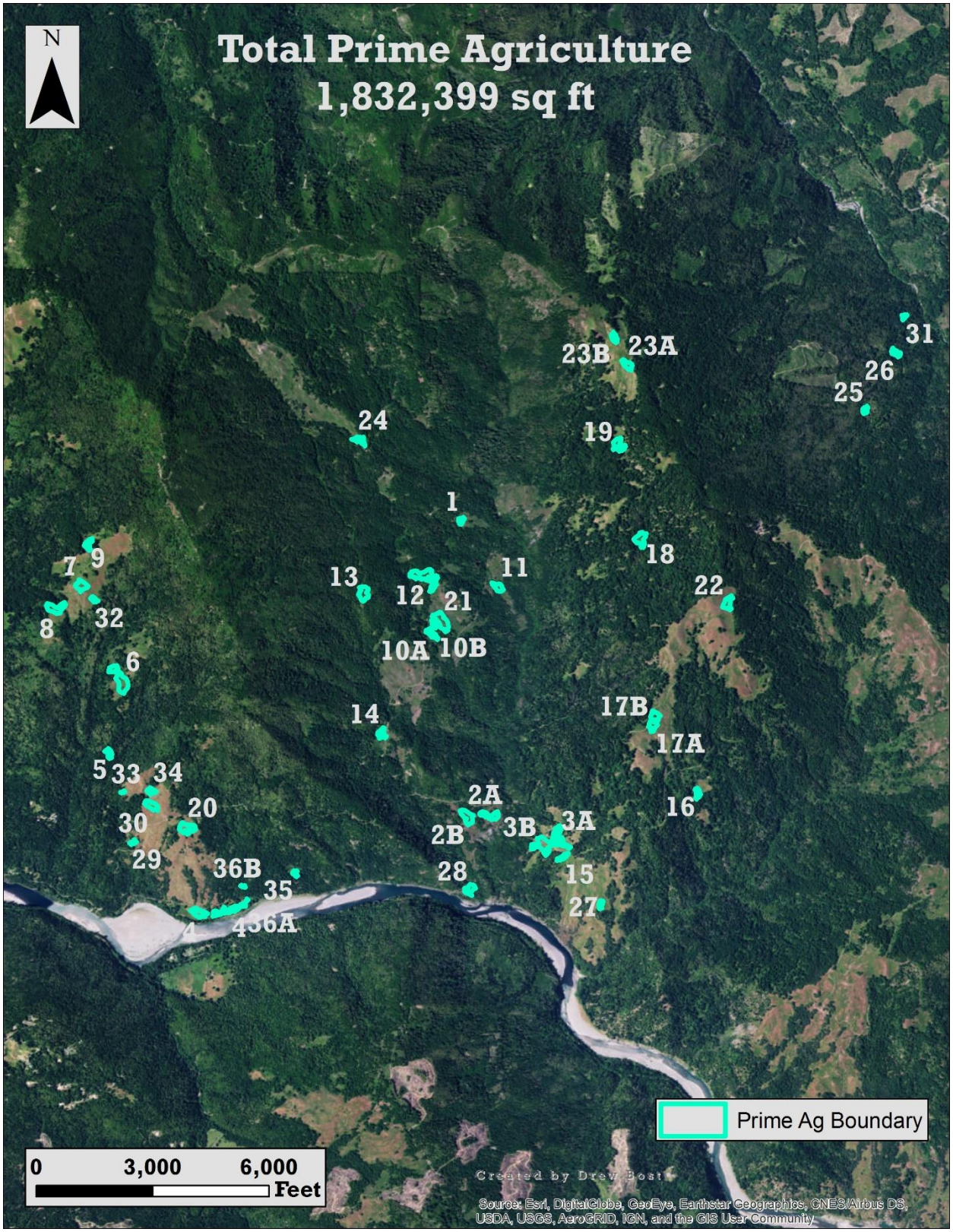
Site 3C. Auger Hole

Site 3C. Profile pic and clay film clods

Site 3C. South Facing Landscape

Appendix C. Site Maps

Comprehensive Map: Sites 1-36B



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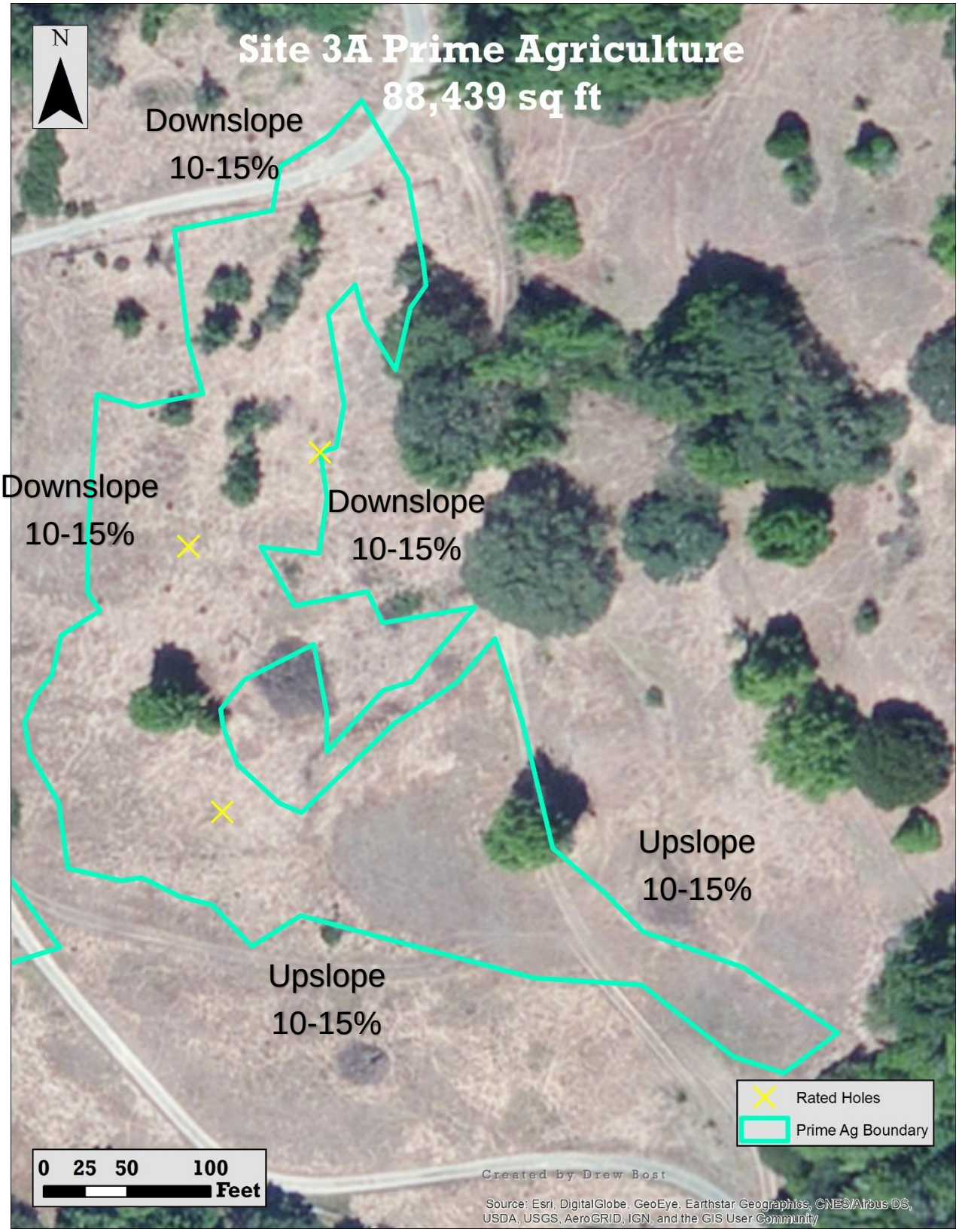
Site 3A



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Site 3B

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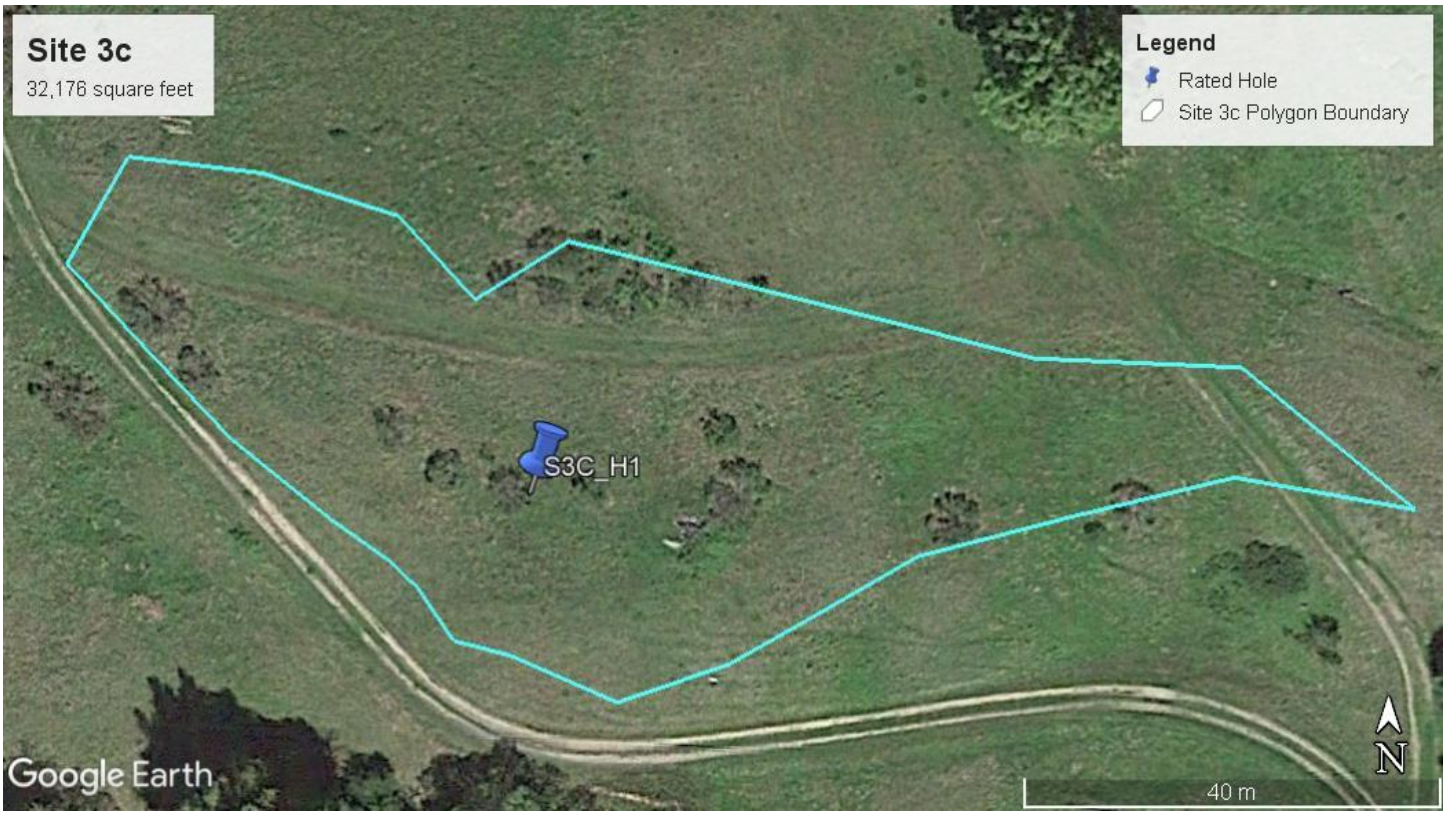
Site 3C



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Appendix D. Storie Index Scoring

Site Name	Factor A Physical Profile		Factor B Surface Texture		Factor C Slope		Factor X												*Final Storie Score (%)
							Drainage		Alkali		Nutrient Level		Acidity		Erosion		Microrelief		
	Characteristic	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	
Site 3c - Hole 1	IX - Upland, deep	90	Loam	100	C - Moderately Sloping, avg. 6-8%	95	WD	100	Not alkaline	100	Low, EC = 0.3	100	Moderately Acid, pH = 5.6	98	None	100	Smooth	100	83.79

*Storie Index Rating Calculation = [(Factor A)/100 x (Factor B) /100 x (Factor C) /100 x (Factor X) /100] x 100

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Prime Agricultural Soil Assessment

Rolling Meadows Ranch

2189 McCann Rd, McCann, CA 95553

August 31, 2017

Prepared For: Andrew Machada

Prepared By: Dirty Business Soil Consulting & Analysis, LLC

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Total Parcel Square Footage Prime Soil by Combining all Tracts

Tract Number	APN	Site Number	Square Footage Prime Soil	Useable Area (20%)	/14 = Maximum Canopy per Greenhouse
1	217-025-001 (Partial)	10A	27,066	5,413.20	386.66
	217-022-004	10B	13,229	2,645.80	188.99
		11	36,157	7,231.40	516.53
	217-023-008	12	56,395	11,279.00	805.64
		21	95,750	19,150.00	1,367.86
	217-024-002	14	29,357	5,871.40	419.39
4	217-201-001	2A	50,427	10,085.40	720.39
		2B	68,922	13,784.40	984.60
	217-201-001	3A	88,439	17,687.80	1,263.41
		3B	109,387	21,877.40	1,562.67
		15	19,937	3,987.40	284.81
		27	15,110	3,022.00	215.86
		28	38,760	7,752.00	553.71
2	211-284-009	6	131,029	26,205.80	1,871.84
	211-284-006	7	53,065	10,613.00	758.07
		32	13,859	2,771.80	197.99
	211-284-011	8	73,707	14,741.40	1,052.96
	211-281-006	9	28,806	5,761.20	411.51
3	217-181-028	4A	51,884	10,376.80	741.20
		20	71,342	14,268.40	1,019.17
	217-182-014	4B	69,477	13,895.40	992.53
		36	10,722	2,144.40	153.17
	211-284-005	5	22,797	4,559.40	325.67
	217-181-027	29	8,035	1,607.00	114.79
		30	49,055	9,811.00	700.79
	217-181-022	33	2,563	512.60	36.61
	211-281-010	34	22,191	4,438.20	317.01
Total Area Per Parcel			1,257,468	251,493.60	17,963.83

Per certified Dirty Business site data previously supplied.

1.0 INTRODUCTION

The purpose of this report is to disclose the findings and methodologies of the prime agricultural soil assessment at 2189 McCann Rd, McCann, CA 95553 conducted August 18th, 2016 through August 10th, 2017.

Per the Humboldt County's Commercial Medical Marijuana Land Use Ordinance (CMMLUO), prime agricultural soils are defined as *"all lands which qualify for rating as Class I or Class II in the Soil Conservation Service land use capability classifications or qualify for rating 80 through 100 in the Storie Index Rating. Additionally, where determined through site-specific fieldwork prepared by a qualified professional, soils meeting these characteristics may be recognized as prime."*

Prime agricultural soil assessments are conducted either by desktop assessment of existing Natural Resource Conservation Service (NRCS) surveys, Humboldt County GIS portal, and/or field assessment to determine the Storie Index or Land Capability Classification (LCC). The previous methods were examined and it was determined that the Storie Index could be effectively utilized to assess prime agricultural soils throughout this property. Please see Appendix A for detailed methodology of Storie Index assessment.

2.0 RESULTS

Rolling Meadows Ranch is an approximately 6500 acre ranch spanning over 80 parcels. The Storie Index assessment yielded 1,832,399 square feet (42.1 acres) of prime agricultural soil across 42 different sites. The landscape consists of mostly forested mountain slopes interspersed with meadows; all sites were located in meadow areas. A series of landscape photographs that capture the general topography and vegetation for the prime agricultural sites found on this property are contained in Appendix B. Storie Index scores ranged from 81-95% overall, with an average score of 84.4%. Most sites reside in upland soils, with deep, moderately to well-developed profiles, 4-to-6-feet in depth. A few sites are located on older alluvial terraces with moderately developed profiles, 4 to 6-feet in depth. Surface soil texture ranged from silt loam to sandy loam. All slopes were less than 15%, with the majority of sites ranging between 0-8% and occasionally 8-14%. Drainage for all sites was moderately well drained (MWD) to well drained (WD). All pH values were below 7.3, which indicates no accumulation of alkaline minerals in soil. All Electrical Conductivity (EC) measurements were below 4 dS/m indicating no accumulation of phytotoxic nutrients. Soil acidity ranged from very strongly acid to slightly acid, with pH's ranging from 4.6 to 6.5. Erosion and microrelief were used to vet low risk cultivation areas, thus all assessed sites had little to none erosional and microrelief features.

Table 1 is a comprehensive list of all prime agricultural soil sites, their associated Assessor Parcel Numbers (APN), the Storie Index score, and respective site sizes. Site and soil auger hole descriptions are discussed in the following section. A map of the all the prime agricultural sites throughout the property, as well as individual maps for each prime agricultural site, are contained in Appendix C for reference. The complete Storie Index scoring for each evaluated hole is contained in Appendix D.

Table 1. Comprehensive List of Prime Agricultural Soil Sites

Rolling Meadows Ranch Prime Ag Figures				
APN(s)	Site Name	Storie Index Score (%)	Area Square Feet	Area Acres
217-022-005	1 - Hole 1	85.5	17,764	0.4
	1 - Hole 2	81.2		
217-201-001	2A	90.0	50,427	1.2
217-201-001	2B	85.5	68,922	1.6
217-201-001	3A - Hole 1	85.5	88,439	2.0
	3A - Hole 2	81.2		
	3A - Hole 3	85.5		
217-201-001	3B	90.3	109,387	2.5
217-181-028	4A	90.3	51,884	1.2
217-182-014	4B	90.3	69,477	1.6
211-284-005	5	81.2	22,797	0.5
211-284-009	6	85.5	131,029	3.0
211-284-006	7	85.5	53,065	1.2
211-284-011	8	81.0	73,707	1.7
211-281-006	9	90.0	28,806	0.7
217-025-001	10A	85.5	27,066	0.6
217-025-001	10B	85.5	13,229	0.3
217-025-001	11 - Hole 1	95.0	36,157	0.8
	11 - Hole 2	81.2		
217-025-001	12	85.5	12,478	0.3
217-022-004			78,480	1.8
217-023-008			43,959	1.0
217-024-007	13	85.5	65,619	1.5
217-024-002	14	81.0	29,357	0.7
217-201-001	15	83.8	19,937	0.5
217-026-003	16	81.2	8,630	0.2
217-173-002			15,346	0.4
217-026-001	17A	81.2	38,894	0.9
217-026-001	17B	81.0	37,351	0.9
217-021-001	18	88.2	64,445	1.5
217-022-003	19	81.2	54,895	1.3
217-181-028	20	90.3	71,342	1.6
217-025-001	21	81.0	95,750	2.2
217-026-002	22	81.0	47,577	1.1
217-015-006	23A	85.7	35,922	0.8
217-015-006	23B	81.2	27,018	0.6
217-023-010	24	81.2	31,121	0.7

217-451-005	25	81.2	15,920	0.4
217-451-005	26	90.0	24,411	0.6
217-201-001	27	81.2	15,110	0.3
217-201-001	28	81.2	38,760	0.9
217-181-027	29	85.5	8,035	0.2
217-181-027	30	81.0	49,055	1.1
217-451-005	31	81.2	8,593	0.2
211-284-006	32	81.2	13,859	0.3
217-181-027	33	81.0	2,563	0.1
217-181-027	34	85.5	22,191	0.5
217-182-001	35	85.5	10,722	0.2
217-182-014	36	81.0	2,903	0.1
TOTAL			**1,832,399**	**42.1**
	Average SI Score	84.4		

3.0 Site Descriptions

The following sections contain in-depth descriptions of each prime agricultural soil site. Assessment for all sites follow methodology contained in Appendix A. Each site description includes the final Storie Index score, total area of site, a boundary description of the site perimeter, as well as details of soil characteristics for each Storie Index parameter. Maps of each site are in Appendix C and a table containing all Storie Index scoring for each site is located in Appendix D.

3.1 Site 1 – Hole 1

Storie Index Score: 85.5

The total area mapped for Site 1 is 17,764 square feet (0.4 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 1 is a flat knoll alongside a road. Steep slopes surround all four sides of the site, with 10-25% downslopes to the east and south, and 10-25% slopes to the north and west.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Silt Loam.

Factor C – Slope

Slope was fairly level, except along the margins where the slope began to increase or decrease. Margin slopes were included up to 8%. Surrounding slopes were between 10-25%.

Factor X -
Drainage: Well drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 4.9 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.8 dS/m.

Acidity: Very strongly acidic. Measured pH, 4.9.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.2 Site 1 – Hole 2

Storie Index Score: 81.2
The total area mapped for Site 1 is 17,764 square feet (0.4 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 1 is a flat knoll alongside a road. Steep slopes surround all four sides of the site, with 10-25% downslopes to the east and south, and 10-25% slopes to the north and west.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Silt Loam.

Factor C – Slope
Slope was fairly level, except along the margins where the slope began to increase or decrease. Margin slopes were included up to 8%. Surrounding slopes were between 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 27-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.3 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly acidic. Measured pH, 5.3.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.3 SITE 2A

Storie Index Score: 90.0

The total area mapped for Site 2A is 50,427 square feet (1.2 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 2A is on a shoulder slope, with steep 15-30% downslopes to the east and south, and 15-25% upslopes to the north and west.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Fine Sandy Loam.

Factor C – Slope

Slope varied between 5-14% on site, with the steepest slopes at the site margins. Surrounding slopes were steep, between 15-30%.

Factor X -

Drainage: Well drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.7 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Moderately acidic. Measured pH, 5.7.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.4 SITE 2B

Storie Index Score: 85.5

The total area mapped for Site 2B is 68,922 square feet (1.2 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 2B is a flat meadow west of Site 2A. 15-25% slopes border in all directions, with upslopes to the north and west, and downslopes to the south and east. Additionally, a tree-line forms part of the north border.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope varied between 5-14% on site, with the steepest slopes at the site margins. Surrounding slopes were steep, between 15-25%.

Factor X -
Drainage: Well drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.4 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly acidic. Measured pH, 5.4.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.5 SITE 3A – HOLE 1

Storie Index Score: 85.5
The total area mapped for Site 3A is 88,439 square feet (2.0 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 3A includes an orchard and surrounding flat areas. The slope is complex, and includes everything within an 8% threshold. Downslopes of 10-15% create boundaries to the north, northeast, and west; while 10-15% upslopes create borders to the south and southeast.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Loosely consolidated material at 4-feet suggests the soil may not be much deeper than 6-feet. Clay and bulk density increases with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope

Slope was fairly level, except along the margins where the slope began to increase or decrease. Margin slopes were included up to 8%. Surrounding slopes were between 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 20-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 6.0 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 dS/m.

Acidity: Moderately acidic. Measured pH, 6.0.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.6 SITE 3A – HOLE 2

Storie Index Score: 81.2
The total area mapped for Site 3A is 88,439 square feet (2.0 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 3A includes an orchard and surrounding flat areas. The slope is complex, and includes everything within an 8% threshold. Downslopes of 10-15% create boundaries to the north, northeast, and west; while 10-15% upslopes create borders to the south and southeast.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Loosely consolidated material at 4-feet suggests the soil may not be much deeper than 6-feet. Clay and bulk density increases with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope was fairly level, except along the margins where the slope began to increase or decrease. Margin slopes were included up to 8%. Surrounding slopes were between 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 24-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.4 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly acidic. Measured pH, 5.4.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.7 SITE 3A – HOLE 3

Storie Index Score: 85.5

The total area mapped for Site 3A is 88,439 square feet (2.0 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 3A includes an orchard and surrounding flat areas. The slope is complex, and includes everything within an 8% threshold. Downslopes of 10-15% create boundaries to the north, northeast, and west; while 10-15% upslopes create borders to the south and southeast.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Loosely consolidated material at 4-feet suggests the soil may not be much deeper than 6-feet. Clay and bulk density increases with depth.

Factor B – Surface Texture

Texture by Feel: Silt Loam.

Factor C – Slope

Slope was fairly level, except along the margins where the slope began to increase or decrease. Margin slopes were included up to 8%. Surrounding slopes were between 10-25%.

Factor X -

Drainage: Well drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 4.9 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.8 dS/m.

Acidity: Very strongly acidic. Measured pH, 4.9.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.8 SITE 3B

Storie Index Score: 90.3

The total area mapped for Site 3B is 109,387 square feet (2.5 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary

of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 3B includes a barn, machine shop, and the surrounding flat areas. 10-15% slopes formed boundaries in all directions.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Loosely consolidated material at 4-feet suggests the soil may not be much deeper than 6-feet. Clay and bulk density increases with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope was fairly level, except along the margins where the slope began to increase or decrease. Margin slopes were included up to 8%. Surrounding slopes were between 10-15%.

Factor X -
Drainage: Well drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.3 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.3.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.9 SITE 4A

Storie Index Score: 90.3
The total area mapped for Site 4A is 51,884 square feet (1.2 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 4A is located on a river terrace, and includes some areas with wet vegetation (horsetail and pennyroyal). The south and west boundaries are formed by an increase in these vegetation types, indicating a wetter subsoil. The east boundary is formed by a tree-line; and the north boundary is formed by a 10-15% upslope.

Factor A – Physical Profile

Storie Index Characteristic III – River terrace profile with moderately dense subsoils. Soil depth between 4 and 6-feet. Clay and bulk density increases with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope was fairly level, except along the margins where the slope began to increase or decrease. Margin slopes were included up to 8%. Surrounding slopes were between 10-15%.

Factor X -
Drainage: Well drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.55 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.25 dS/m.

Acidity: Moderately Acidic. Measured pH, 5.55.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.10 SITE 4B

Storie Index Score: 90.3
The total area mapped for Site 4B is 69,477 square feet acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 4B is on a river terrace just east of Site 4A, and includes some areas with wet vegetation (horsetail and pennyroyal). The south and west boundaries are formed by an increase in these vegetation types, indicating a wetter subsoil. The north boundary is formed by a 10-15% increase in slope; and the east boundary is formed by a change in vegetation to more shrubs and trees.

Factor A – Physical Profile
Storie Index Characteristic III – River terrace profile with moderately dense subsoils. Soil depth between 4 and 6-feet. Clay and bulk density increases with depth

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope was fairly level, except along the margins where the slope began to increase or decrease. Margin slopes were included up to 8%. Surrounding slopes were between 10-15%.

Factor X -
Drainage: Well Drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.55 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.25 dS/m.

Acidity: Moderately Acidic. Measured pH, 5.55.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.11 SITE 5

Storie Index Score: 81.2
The total area mapped for Site 5 is 22,797 square feet (0.5 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 5 is located in a flat clearing surrounded by forest. The site used to be used for cultivation, though the last date of use is unknown. The site being mostly flat, is bordered by slope changes on all sides. 10-15% upslopes created boundaries to the north and east; while downslopes of 10-15% created the boundaries to the south and west.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope ranged from 0-8% on site, and surrounding slopes were between 10-15%.

Factor X -
Drainage: – Moderately well drained. Redoximorphic features beginning around 30-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.4 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.1 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.4.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.12 SITE 6

Storie Index Score: 85.5

The total area mapped for Site 6 is 131,029 square feet (3.0 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 6 is part of shoulder slope / backslope complex. Steep 15-30% slopes form most of the boundaries, with upslopes to the north and east, and downslopes to the south and west. A tree-line forms part of the northeast boundary.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Fine Sandy Loam.

Factor C – Slope

Slope ranged from 0-14% on site, with the greatest slopes at the site's margins. Surrounding slopes were steep, between 15-30%.

Factor X -

Drainage: Well Drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.2 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.2.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.13 SITE 7

Storie Index Score: 85.5

The total area mapped for Site 7 is 53,065 square feet (1.2 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated site, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 7 is a terraced shoulder slope, with slopes forming boundaries in all directions. Downslopes of 15-30% bordered to the east, south, and west; while an upslope of 15-20% created the border to the north.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope ranged from 0-14% on site, with the greatest slopes at the site's margins. Surrounding slopes were steep, between 15-30%.

Factor X -
Drainage: Well Drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.2 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.2.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.14 SITE 8

Storie Index Score: 81.0
The total area mapped for Site 8 is 73,707 square feet (1.7 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 8 is bordered to the north and east by 15-25% upslopes; and to the south and west by 15-20% downslopes. Parts of the west border are also formed by an increase in ferns and pennyroyal, which may indicate a shallow water table or otherwise wet soils.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope ranged from 0-14% on site, with the greatest slopes at the site's margins. Surrounding slopes were, between 15-25%.

Factor X -
Drainage: Well Drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.1 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.1 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.1.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.15 SITE 9

Storie Index Score: 90.0
The total area mapped for Site 9 is 28,806 square feet (0.7 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 9 is on a shoulder slope, with a 15-25% upslope to the north, and 15-25% downslopes to the south and west. A tree-line forms the eastern boundary, and part of the west boundary.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope ranged from 0-14% on site, with the greatest slopes at the site's margins. Surrounding slopes were, between 15-25%.

Factor X -
Drainage: Well drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.6 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.1 dS/m.

Acidity: Moderately Acidic. Measured pH, 5.6.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.16 SITE 10A

Storie Index Score: 85.5

The total area mapped for Site 10A is 27,066 square feet (0.6 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 10A is located in a meadow with 10-25% slopes bordering in all directions. Upslopes border to the north and east, and downslopes to the south and west.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Silt Loam.

Factor C – Slope

Slope averaged 3% on site, with slope increasing towards the site margins. Surrounding slopes ranged from 10-25%.

Factor X -

Drainage: Moderately well drained. Redoximorphic features beginning around 20-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.2 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.2.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.17 SITE 10B

Storie Index Score: 85.5

The total area mapped for Site 10B is 13,229 square feet (0.3 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 10B is a small meadow located just north of site 10A. 10-25% upslopes form the north and east boundaries; while tree-lines and 10-20% downslopes form the south and west boundaries.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Likely greater than 6-feet because soil features seem like they will continue. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Silt Loam.

Factor C – Slope
Slope averaged 3% on site, with slope increasing towards the site margins. Surrounding slopes ranged from 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 20-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.2 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.2.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.18 Site 11 – Hole 1

Storie Index Score: 95.0
The total area mapped for Site 11 is 36,157 square feet (0.8 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 11 is a small meadow surrounded by 15-30% slopes on all sides. Upslopes border the north and west, while downslopes border the east and south.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Likely greater than 6-feet because soil features seem like they will continue. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Silt Loam.

Factor C – Slope
Slope ranged between 0-8% on site, with greater slopes near the margins. Surrounding slopes measured between 15-30%.

Factor X -
Drainage: Well Drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.7 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Moderately Acidic. Measured pH, 5.7.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.19 Site 11 – Hole 2

Storie Index Score: 81.2
The total area mapped for Site 11 is 36,157 square feet (0.8 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 11 is a small meadow surrounded by 15-30% slopes on all sides. Upslopes border the north and west, while downslopes border the east and south.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Likely greater than 6-feet because soil features seem like they will continue. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Silt Loam.

Factor C – Slope
Slope ranged between 0-8% on site, with greater slopes near the margins. Surrounding slopes measured between 15-30%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 20-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.2 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 1.0 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.2.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.20 SITE 12

Storie Index Score: 85.5

The total area mapped for Site 12 is 134,917 square feet. (3.1 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 12 is on a terraced shoulder slope, with 15-25% upslopes forming the west boundary and parts of the north; and 15-25% downslopes forming portions of both the east and south boundaries. Tree-lines, which can indicate slight soil variations, form significant portions of the north and east boundaries. Changes in vegetation, and most significantly increases in wetland indicator plants (pennyroyal and ferns) form a large part of the south boundary.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Likely greater than 6-feet because soil features seem like they will continue. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Fine Sandy Loam.

Factor C – Slope

Slope ranged from 0-14% on site, with the greatest slopes at the site's margins. Surrounding slopes were between 15-25%.

Factor X -

Drainage: Well Drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.3 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.1 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.3.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.21 SITE 13

Storie Index Score: 85.5

The total area mapped for Site 13 is 65,619 square feet (1.5 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map

showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 13 is located on a shoulder slope with 10-25% slopes forming boundaries in all directions. Upslopes rise to the north and east, and downslopes fall to the south and west. Tree-lines form parts of the south and west boundaries.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Likely greater than 6-feet because soil features seem like they will continue. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Silt Loam.

Factor C – Slope
Slope ranged between 0-8% on site, with greater slopes near the margins. Surrounding slopes measured between 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 20-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.5 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.5.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.22 SITE 14

Storie Index Score: 81.0
The total area mapped for Site 14 is 29,357 square feet (0.7 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 14 is on a shoulder slope, with 15-25% upslopes forming the boundaries to the north and east. A 15-25% downslope to the south is accompanied by wetland indicator plants. An increase in ferns, forms the northwest border, and a 15-25% downslope forms the remainder of the west boundary.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Likely greater than 6-feet because soil features seem like they will continue. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope ranged from 0-14% on site, with the greatest slopes at the site's margins. Surrounding slopes were, between 15-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 20-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 6.5 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 dS/m.

Acidity: Moderately Acidic. Measured pH, 6.5.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.23 SITE 15

Storie Index Score: 83.8
The total area mapped for Site 15 is 19,937 square feet (0.5 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 15 is on a toe slope just south of Sites 3A and 3B. A tree-lined gully runs the entire length of the north border, forming that boundary. 10-25% slopes form all other boundaries, with an upslope to the east, and downslopes to the south and west.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Sandy Loam.

Factor C – Slope
Slope ranged between 0-8% on site, with greater slopes near the margins. Surrounding slopes measured between 10-25%.

Factor X -

Drainage: Moderately well drained. Redoximorphic features beginning around 30-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.8 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Moderately Acidic. Measured pH, 5.8.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.24 SITE 16

Storie Index Score: 81.2

The total area mapped for Site 16 is 23,976 square feet acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 16 is located in a small meadow between two bowls. A tree-line forms the entire boundary to the south, and a gully surrounded by wetland indicator plants forms the entire boundary to the west. An 10-25% upslope forms the north boundary, and a 10-20% downslope forms the east boundary.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Fine Sandy Loam.

Factor C – Slope

Slope ranged between 0-8% on site, with greater slopes near the margins. Surrounding slopes measured between 10-25%.

Factor X -

Drainage: Moderately well drained. Redoximorphic features beginning around 24-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.4 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.4.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.25 SITE 17A

Storie Index Score: 81.2

The total area mapped for Site 17A is 38,894 square feet (0.9 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 17A is the lowest in a series of terraced meadows, with 17B located north and upslope of 17A. Slopes form all the boundaries at this site, with the upslope to the north measuring 10-20%; and 10-25% downslopes in all other directions.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Loam.

Factor C – Slope

Slope ranged between 0-11% on site, with greater slopes near the margins. Surrounding slopes measured between 10-25%.

Factor X -

Drainage: Moderately well drained. Redoximorphic features beginning at 24-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.2 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.2.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.26 SITE 17B

Storie Index Score: 81.0

The total area mapped for Site 17B is 37,351 square feet (0.9 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 17B is a terraced meadow located north and upslope of Site 17A. Slopes form the boundaries in all directions, with a 15-20% upslope to the north; and 15-25% downslopes in all other directions.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Loam.

Factor C – Slope
Slope ranged from 0-14% on site, with the greatest slopes at the site's margins. Surrounding slopes were, between 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning at 24-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.8 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Moderately Acidic. Measured pH, 5.8.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.27 SITE 18

Storie Index Score: 88.2
The total area mapped for Site 18 is 64,445 square feet acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 18 is in a small clearing, surrounded by forest. Tree-lines form the boundaries to the north, east, south, and northwest; and wetland indicator vegetation (mostly pennyroyal) forms the boundary to the southwest.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Loam.

Factor C – Slope

Slope ranged from 0-6% on site, with greater slopes near the site margins. Surrounding slopes varied from 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning at 24-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.6 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 dS/m.

Acidity: Moderately Acidic. Measured pH, 5.6.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.28 SITE 19

Storie Index Score: 81.2
The total area mapped for Site 19 is 54,895 square feet (1.3 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 19 is located in a meadow, with both slopes and vegetation changes forming boundaries. Parts of the north boundary are formed by a patch of bracken ferns, which may indicate slight changes in soil composition, while the remaining north boundary is formed by 10-25% upslopes. Upslopes of 10-25% also form the entire east boundary; and downslopes of equal measure form the entire west boundary. The southern boundary is formed partially by wetland indicator plants (rushes and pennyroyal), and the remainder by 10-25% downslopes.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope ranged from 0-7% on site, with greater slopes near the site margins. Surrounding slopes varied from 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning at 24-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.2 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.2.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.29 SITE 20

Storie Index Score: 90.3

The total area mapped for Site 20 is 71,342 square feet (1.6 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 20 is located on a shoulder slope with steep 10-25% slopes in all directions. Upslopes border to the north and north east, and downslopes border the south and southeast. The west boundary is formed by a wet spring and the surrounding riparian zone.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Fine Sandy Loam.

Factor C – Slope

Slope ranged from 0-8% on site, with greater slopes near the site margins. Surrounding slopes varied from 10-25%.

Factor X -

Drainage: Well drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.34 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.25 dS/m.

Acidity: Strongly acidic. Measured pH, 5.34.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.30 SITE 21

Storie Index Score: 81.0

The total area mapped for Site 21 is 95,750 square feet (2.2 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 21 is on a flat meadow between 10-25% upslopes to the north and west, and 10-25% downslopes to the south and east. Gullies and seeps also form partial borders to the north, south, and west.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope averaged 3% on site, with slope increasing towards the site margins. Surrounding slopes ranged from 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning at 30-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.1 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.16 dS/m.

Acidity: Strongly acidic. Measured pH, 5.1.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.31 SITE 22

Storie Index Score: 81.0
The total area mapped for Site 22 is 47,577 square feet (1.1 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 22 is located on a shoulder slope with 10-25% upslopes bordering the north and east, and 10-25% downslopes bordering the south and west.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope averaged 3% on site, with slope increasing towards the site margins. Surrounding slopes ranged from 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning at 36-inches. No restrictive layers. Slight increase in bulk density with depth.
Alkali: Measured pH of 5.11 indicates no accumulation of alkaline minerals in soil. Well leached soil.
Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.16 ds/m.
Acidity: Strongly acidic. Measured pH, 5.11.
Erosion: No erosion features observed.
Microrelief: No significant microrelief observed.

3.32 SITE 23A

Storie Index Score: 85.7
The total area mapped for Site 23A is 35,922 square feet (0.8 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 23A is the lowest in a series of terraced meadows, and is bordered by 10-25% slopes on all sides. The only upslope is to the north, and downslopes border to the east, south, and west.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Sandy Loam.

Factor C – Slope
Slope ranged between 0-10% on site, with greater slopes near the margins. Surrounding slopes measured between 10-25%.

Factor X -
Drainage: Well drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.4 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.18 dS/m

Acidity: Strongly acidic. Measured pH, 5.4.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.33 SITE 23B

Storie Index Score: 81.2

The total area mapped for Site 23B is 27,018 square feet (0.6 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 23B is the highest in a series of terraced meadows, and is bordered by 10-25% slopes on all sides. The only upslope is to the north, and downslopes border to the east, south, and west.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Sandy Loam.

Factor C – Slope

Slope ranged between 0-8% on site, with greater slopes near the margins. Surrounding slopes measured between 10-25%.

Factor X -

Drainage: Well drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.0 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly acidic. Measured pH, 5.0.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.34 SITE 24

Storie Index Score: 81.2

The total area mapped for Site 24 is 31,121 square feet (0.7 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a

map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 24 is on a small flat knoll, all surrounding slopes were between 10-25%, with upslopes to the north and west, and downslopes to the east and south. In addition to slopes, boundaries to the north, south, and west were also delineated by the appearance of thistles, pennyroyal, and ferns; which can indicate slight changes in soil composition.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope ranged between 0-8% on site, with greater slopes near the margins. Surrounding slopes measured between 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 20-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.2 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly acidic. Measured pH, 5.2.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.35 SITE 25

Storie Index Score: 81.2
The total area mapped for Site 25 is 15,920 square feet (0.4 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 25 is in a meadow surrounded by forest in all directions except the south. The tree-line forms all or part of the north, east, and west boundaries. Upslopes measuring between 10-25% form the remainder of the boundaries to the east and west. A 10-25% downslope accompanied by wetland indicator plants forms the south border.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope ranged between 0-8% on site, with greater slopes near the margins. Surrounding slopes measured between 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 20-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.4 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly acidic. Measured pH, 5.4.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.36 SITE 26

Storie Index Score: 90.0
The total area mapped for Site 26 is 24,411 square feet (0.6 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 26 is a small meadow surrounded by forest. A tree-line forms the border to the east, and parts of the north and west borders. Downslopes measuring 10-20% form the remainder of the north and west borders. The south border is formed by a gully surrounded by wetland indicator plants.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Loosely consolidated material at 4-feet suggests the soil may not be much deeper than 6-feet. Clay and bulk density increases with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope averaged 3% on site, with slope increasing towards the site margins. Surrounding slopes ranged from 10-20%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 20-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.5 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 dS/m.

Acidity: Strongly acidic. Measured pH, 5.5.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.37 SITE 27

Storie Index Score: 81.2
The total area mapped for Site 27 is 15,110 square feet (0.3 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 27 is on a shoulder slope with 10-25% slopes forming boundaries in all directions. Upslopes rise to the north and east, and downslopes fall to the south and west.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Sandy Loam.

Factor C – Slope
Slope averaged 3% on site, with slope increasing towards the site margins. Surrounding slopes ranged from 10-25%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 30-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.4 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Strongly acidic. Measured pH, 5.4.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.38 SITE 28

Storie Index Score: 81.2

The total area mapped for Site 28 is 38,760 square feet (0.9 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 28 is on a shoulder slope, with 10-20% upslopes bordering the north, east, and west. The south border is formed by a riparian zone demarcated approximately 200-feet from the Eel River.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Sandy Loam.

Factor C – Slope

Slope ranged between 0-8% on site, with greater slopes near the margins. Surrounding slopes measured between 10-25%.

Factor X -

Drainage: Moderately well drained. Redoximorphic features beginning around 24-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.7 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Moderately acidic. Measured pH, 5.7.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.39 SITE 29

Storie Index Score: 85.5

The total area mapped for Site 29 is 8,035 square feet (0.2 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 29 is on a shoulder slope with 10-20% slopes bordering in all directions. Upslopes rise to the north and east, and downslopes to the south and west. A wet seep trickles from north to west, and forms portions of both north and west boundaries.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increases with depth.

Factor B – Surface Texture
Texture by Feel: Silt Loam.

Factor C – Slope
Slope ranged between 0-11% on site, with greater slopes near the margins. Surrounding slopes measured between 10-20%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 20-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.74 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.4 dS/m.

Acidity: Moderately acidic. Measured pH, 5.74.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.40 SITE 30

Storie Index Score: 81.0
The total area mapped for Site 30 is 49,055 square feet (1.1 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 30 is bordered by 10-20% upslopes to the north and northeast, and 10-20% downslopes to the south, west, and southeast. Additionally, a rock outcropping forms part of the north border; and a vegetation changes (the appearance of ferns) forms part of the west border.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Loosely consolidated material at 4-feet suggests the soil may not be much deeper than 6-feet. Clay increases accompanied by iron reductions below 20-inches.

Factor B – Surface Texture
Texture by Feel: Silt Loam.

Factor C – Slope
Slope averaged 3% on site, with slope increasing towards the site margins. Surrounding slopes ranged from 10-20%.

Factor X -
Drainage: Moderately well drained. Redoximorphic features beginning around 20-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 4.9 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 dS/m.

Acidity: Very strongly acidic. Measured pH, 4.9.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.41 SITE 31

Storie Index Score: 81.2
The total area mapped for Site 31 is 8,593 square feet (0.2 acres). This site is spread across a single area with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 31 is a small meadow surrounded by trees, however, the tree-line only forms a boundary to the east. A 15% upslope forms the boundary to the south, and 15-20% downslopes form boundaries to the north and west.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile, soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Sandy Loam.

Factor C – Slope
Slope ranged between 0-8% on site, with greater slopes near the margins. Surrounding slopes measured between 15-20%.

Factor X -
Drainage: Moderately Well Drained. Redoximorphic features below 36-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.9 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 dS/m.

Acidity: Moderately acidic. Measured pH, 5.9.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.42 SITE 32

Storie Index Score: 81.2

The total area mapped for Site 32 is 13,859 square feet (0.3 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 32 is located on a toe-slope, with a 20% upslope bordering the north, and a 20% downslope bordering the south. An intersecting slope measuring 20-25% cuts down the west side of the site; while the east is bordered partially by a tree-line and a 20-25% downslope.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Likely greater than 6-feet because soil features seem like they will continue. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Sandy Loam.

Factor C – Slope

Slope ranged between 0-11% on site, with greater slopes near the margins. Surrounding slopes measured between 20-25%.

Factor X -

Drainage: Well drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 4.7 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 1.1 ds/m.

Acidity: Very strongly acidic. Measured pH, 4.7.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.43 SITE 33

Storie Index Score: 81.0

The total area mapped for Site 33 is 2,563 square feet (0.1 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary

of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 33 is a small shoulder slope bordered by slopes on all sides. An upslope of 15-20% borders the east; while 15-20% downslopes border the north, south, and west.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Loosely consolidated material at 4-feet suggests the soil may not be much deeper than 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Fine Sandy Loam.

Factor C – Slope
Slope averaged 3% on site, with slope increasing towards the site margins. Surrounding slopes ranged from 10-20%.

Factor X -
Drainage: Moderately Well Drained. Redoximorphic features beginning around 24-inches. Duripan between 32-40-inches. Paralithic contact below 40".

Alkali: Measured pH of 4.9 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.7 dS/m.

Acidity: Strongly Acidic. Measured pH, 4.9.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.44 SITE 34

Storie Index Score: 85.5
The total area mapped for Site 34 is 22,191 square feet (0.5 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 34 is a meadow bordered by 20% slopes to the north, east, and south. An upslope rises to the north, a complementary downslope to the south, and an intersecting slope to the east. The west boundary is formed by a gully surrounded by wetland vegetation.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Loam.

Factor C – Slope
Slope ranged between 0-11% on site, with greater slopes near the margins. Surrounding slopes measured between 15-20%.

Factor X -
Drainage: Well Drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 4.9 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.6 dS/m.

Acidity: Very strongly acidic. Measured pH, 4.9.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.45 SITE 35

Storie Index Score: 85.5
The total area mapped for Site 35 is 10,722 square feet (0.2 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 35 is on a benched toe slope with slopes bordering in all directions. Downslopes measuring 15-20% form the boundaries to the east and south, and an upslope measuring 15-20% forms the boundary to the north. An intersecting slope of 15-20% forms the west boundary in most places, with the exception of the southwest where the appearance of ferns signals a potential soil change.

Factor A – Physical Profile
Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Loosely consolidated material at 4-feet suggests the soil may not be much deeper than 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture
Texture by Feel: Loam.

Factor C – Slope
Slope ranged between 0-11% on site, with greater slopes near the margins. Surrounding slopes measured between 15-20%.

Factor X -

Drainage: – Well Drained. No redoximorphic features. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 4.6 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.9 dS/m.

Acidity: Very strongly acidic. Measured pH, 4.6.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.46 SITE 36

Storie Index Score: 81.0

The total area mapped for Site 36 is 2,903 square feet (0.1 acres). This square footage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix C contains a map showing the delineated area, area total in square feet, and plot holes. Appendix D contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 36 is on a toe-slope, and is divided in two by a narrow—4-foot wide—gully. Downslopes measuring 15-20% form boundaries to the east, west, and the majority of the south with the exception of some rocky areas in the south. An upslope of 15-20% forms most of the north border, with some rocky areas forming the remainder of that boundary.

Factor A – Physical Profile

Storie Index Characteristic IX – Upland, deep profile. Soil depth between 4 and 6-feet. Clay and bulk density increase with depth.

Factor B – Surface Texture

Texture by Feel: Loam.

Factor C – Slope

Slope averaged 3% on site, with slope increasing towards the site margins. Surrounding slopes ranged from 15-20%.

Factor X -

Drainage: Moderately Well Drained. Redoximorphic features below 30-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.0 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.9 dS/m.

Acidity: Strongly Acidic. Measured pH, 5.0.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

4.0 CONCLUSION

This report disclosed the findings and justifications for the prime agricultural soil assessments that were conducted on Wilderness Ranch. These assessments adhered to the detailed methods and measurements of the Storie Index as set forth in the attached methodology (Appendix A). Landscape details and soil characteristics varied a little from site-to-site, but most were relatively similar with regards to the Storie Index parameters. There were 36 unique sites mapped, for a total area of 1,538,678 square feet (35.3 acres), that met with the standards set forth by the CMMLUO (i.e., Storie Index of 80% or higher).

Appendix A. Methodology for Prime Agricultural Soil Assessment

Methodology for Determining Prime Agricultural Soils

Desktop Assessment

Existing soil data can be found through the Humboldt County GIS portal which is based on Humboldt County's 1967 soil survey as well as the NRCS Web Soil Survey (WSS) which is based on Humboldt County's most recent soil survey. Surveyed soils are mapped at the third-order, which means boundaries are plotted by observation and interpretation of remotely sensed data. The soil boundaries are verified by traversing representative areas and by some transects. Third-order surveys are made for land uses that do not require precise knowledge of small areas or detailed soils information. Delineations have a minimum size of up to 40-acres (USDA, 1993).

It is important to note that although the Humboldt County soil survey ground mapping has been finished, it has not yet been completely published on the WSS. When a soil survey query in WSS yields a "NOTCOM" result, it means no digital data is available for the project area. Standard practice in "NOTCOM" areas is to contact the local NRCS Soil Survey Field Office to identify if any data exists within the area of interest.

Field Assessment

The Storie Index and LCC are methods for rating soils on their potential for use and productivity. Both methods look at the same characteristics: slope, soil profile depth, drainage, salinity, etc. The Storie Index derives its rating from current conditions; while the Land Capability Classification derives its rating not only from current conditions, but on the potential to overcome those conditions using proper management techniques. LCC Class I soils are broadly defined as soils that "have few limitations which restrict their use." In contrast, LCC Class II soils are those that "have some limitations that reduce the choice of plants or require moderate conservation practices." (Storie, 1978; USDA SCS, 1961). Due to the nature of the Storie Index to assess only the current conditions, the parameters and ratings are generally more rigid in their interpretation than the LCC.

The Storie Index method of soil rating is based on soil characteristics that govern the land's potential utilization and productive capacity and is independent of other physical or economic factors that might determine the desirability of growing certain plants at a given location (Storie, 1932). A rating, between 0% and 100%, is assigned to definable soil properties that are measured either in the field or in the lab. The overall Storie Index Rating is determined by factoring all the ratings together:

Storie Index Rating = [(Factor A)/100 x (Factor B) /100 x (Factor C) /100 x (Factor X) /100] x 100

Table 1 describes the Storie Index parameters and general conditions for ratings. More detail on methodology for each parameter and the results for the assessed site are provided below.

Table 1. Storie Index soil properties and field methods (Storie, 1978).

Factor	Property	Highest Rating	Lowest Rating
A	Physical Profile Group	Based on landform type and soil development	
B	Surface Texture	Loamy Soils	Stony Soils, Dense Soils
C	Slope	Nearly Level/Gently Sloping (0 to 8%)	Steep/Very Steep (30 to over 45%)
X	*Rating of conditions other than A, B, or C*		
	Drainage	Well-drained	Waterlogged
	Alkali	Alkali-free	Strongly affected
	Nutrient (Fertility) Level	Very Low - Optimal	Detrimental nutrient accumulations
	Acidity	Neutral/Slight	Extremely Acidic/Extremely Basic
	Erosion	None/Slight	Severe
	Microrelief	Smooth	Hummocks and dunes

Methodology

Plots to undergo a complete Storie Index rating are found by slope measurements between 0 and 15%, vegetation (mostly open space, no wetland vegetation), and an examination of surface gravels. Locations that undergo a Storie Index rating are chosen because it has been determined to be the most representative part of the plot being evaluated. A soil core is excavated using a hand auger and the Storie Index rating is conducted. A sample of surface soil is taken for lab analysis, as well as the location being recorded with a Garmin GPS unit (accuracy < 15 meters). These rated soil holes are included on the site map.

The total number of holes excavated, rated, and sampled is based on the size of the plot area, uniformity of landscape surface, and vegetation within the plot area. Generally, inclusions of approximately an acre or less, if landscape variables (surface, vegetation) are consistent throughout, one hole is rated. If the plot exceeds an acre 1-2 holes per acre are rated and sampled or a transect is made.

Additionally, within each plot, confirmation holes are dug to evaluate the uniformity of the soil within a specific area and assist in the decision to include or exclude a portion from the plot. Confirmation holes are dug in areas where there is potential soil variation (i.e., in areas of vegetation change or topographic changes). For plots approximately one acre or less, 1-2 confirmation holes are dug. For plots over an acre, 1-4 confirmation holes per acre are dug. If a transect was made, confirmation holes are not necessary since a transect spans the entire plot. The confirmation holes are noted on field data sheets and the location is recorded with a Garmin GPS unit. These confirmation hole locations are included on the site map.

Plot boundaries are delineated by changes in land surface. Slope, soil type, gravel increases, vegetation change, and geomorphological features can all impact perimeter delineations. Field data sheets are used to record perimeter descriptions and these descriptions are included on the site maps along with a plot boundary and total square footage of passing area.

Factor A – Physical Profile Group

Factor A of the Storie Index rates the development of a soil profile. In alluvial soils, a high score indicates a younger undeveloped profile with an absence of gravelly subsoils and no Bt horizon (a horizon containing an accumulation of translocated clay). A lower score is given to older alluvial fans, plains and terraces when the presence of a Bt horizon or other restrictive features (i.e., clay pan, duripan, hardpan) can be confirmed (Storie, 1978; UC ANR,2008).

Upland soils that are formed from bedrock are rated based on depth to lithic (consolidated geologic material) or paralithic (softly consolidated or unconsolidated geologic material) contact (Storie, 1978; UC ANR,2008). The deeper the profile the higher the Storie Index score with a 100 being scored for upland soils that have profile of more than 6 feet (Storie, 1978). It should be noted that soil mapping parameters for Prime Farmland and Farmland of Statewide Importance have been established since the publication of the Storie Index in 1978. Both Prime Farmland and Farmland of Statewide Importance require an examination of effective rooting depth and other soil characteristics up to a depth of 40 inches (FMMP, 2016). Additionally, the LCC I requires a rooting depth of at least 36 inches and the LCC II requires a rooting depth of 20-36 inches (USDA SCS, 1961). These requirements demonstrate a consensus within the USDA and California Department of Conservation that farmland mapping include soils with profile depths of 40 inches or more as prime or agriculturally significant. Table 2 shows a revised scoring for upland soils to include effective rooting depth definitions of Prime Farmland and Farmland of Statewide Importance.

Table 2. Upland Soils/Effective Rooting Depth Score

Rooting Depth	Storie Index Score
>40 inches	100
30-40 inches	95
20-30 inches	90

Factor B – Surface Texture

Surface soil texture is determined using the texture by feel method. This method is the USDA standard field protocol for particle size analysis. If necessary, samples are sent to a lab for further particle size analysis using the hydrometer or micro-pipette method (USDA, 2014). Scoring rubric from Storie, 1978 is used for this rating.

Factor C – Slope

Slopes are measured in the field with clinometer (NRCS, 2012). Table 3 shows scoring rubric based on Storie 1978 but this scoring index removes the ranges for a more reproducible scoring method.

Table 3. Slope Scoring

Storie Index Class	Description	Score
A	Nearly Level (0-2%)	100
AA	Gently Undulating 0%	100
	Gently Undulating 1%	98
	Gently Undulating 2%	95
B	Gently sloping 3%	100

	Gently sloping 4-6%	98
	Gently sloping 6-8%	95
BB	Undulating 3%	100
	Undulating 4-6%	93
	Undulating 6-8%	85
C	Moderately Sloping 9-11%	95
	Moderately Sloping 12-14%	90
	Moderately Sloping 15%	80
CC	Rolling 9-11%	95
	Rolling 12-14%	90
	Rolling 15%	80

Factor X - Rating of conditions other than A, B, or C

Drainage – The subjectivity of the Storie Index drainage ratings has been addressed by an application of the natural drainage classes (i.e., the prevailing wetness conditions) as determined by the NRCS Soil Survey Manual (USDA, 1993) and the Drainage in Soil Surveys of California (USDA, 1989). Drainage is determined by observation to a four-foot depth of wetness, redoximorphic features, restrictive subsurface soil features (claypans, hardpans, etc...), increase in bulk density with depth, depth to bedrock, depth to unconsolidated bedrock (USDA, 1989). The Storie Index Rating, for various drainage classes is summarized in Table 4.

Table 4. Natural Drainage Classes and associated Storie Index Rating.

NRCS Classes	Storie Index Classes	Storie Index Rating (%)
Well Drained (WD)	Well Drained	100
Moderately Well Drained (MWD)	Fairly Well Drained	90
Somewhat Poorly Drained (SPD)		85
Poorly Drained (PD)	Moderately Waterlogged	40-80
Very Poorly Drained (VPD)	Badly Waterlogged	10-40

USDA, 1993; USDA, 1989

Alkali – If a pH value is 7.3 or more, it is considered alkaline (NRCS, 1998) and a carbonate test is conducted to quantify alkalinity (WREP, 2005). Generally, pH values for this region's soils are neutral to acidic, thus the alkali factor generally receives high scores.

Nutrient – Electrical conductivity (EC) and Sodium Absorption Ratio (SAR) are used to measure nutrient concentration in the soil. Having a low EC and SAR indicates a quality agriculture soil as management issues center mainly around accumulation of detrimental nutrients in soils (UC ANR, 2008). To evaluate nutrient levels, an EC measurement is taken from a saturation paste extract (WREP, 2005). If the EC result is 4 ds/m or lower, no SAR measurement is needed and a Storie Index rating of 100 is given. In this region, the heavily leached soils generally do not have high nutrient content, and typically receive high Storie Index ratings for nutrient level.

Acidity – pH is used to measure the acidity of the soil and is determined with a saturation paste (WREP, 2005). The Storie Index Rating, for various pH classes, is summarized in Table 5.

Table 5. Acidity Class, pH range and associated Storie Index Rating.

Classes	pH Range	Storie Index Rating (%)
Extremely acidic	3.5 – 4.4	40-90
Very strongly acidic	4.5 – 5.0	90
Strongly acidic	5.1 – 5.5	90-100
Moderately acidic	5.6 – 6.0	100
Slightly acidic	6.1 – 6.5	100
Neutral	6.6 – 7.3	100

NRCS, 1998; UC ANR 2008 (Figure 5A); FMMP

Erosion – Interpretation of erosion features in the field is conducted following the NRCS Field Book (NRCS, 2012) to properly evaluate erosion rating. Erosion types include none to slight, detrimental deposition, sheet erosion, gullies, and wind erosion.

Microrelief – Microrelief is small, relative differences in elevation between adjacent areas. Interpretation of the site's microrelief was conducted following the NRCS Field Book (NRCS, 2012) to evaluate microrelief features. Examples include smooth, channels, hummocks, and dunes.

Citations

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Appendix B. Representative Landscape Photographs

Site 4A. South Facing Landscape

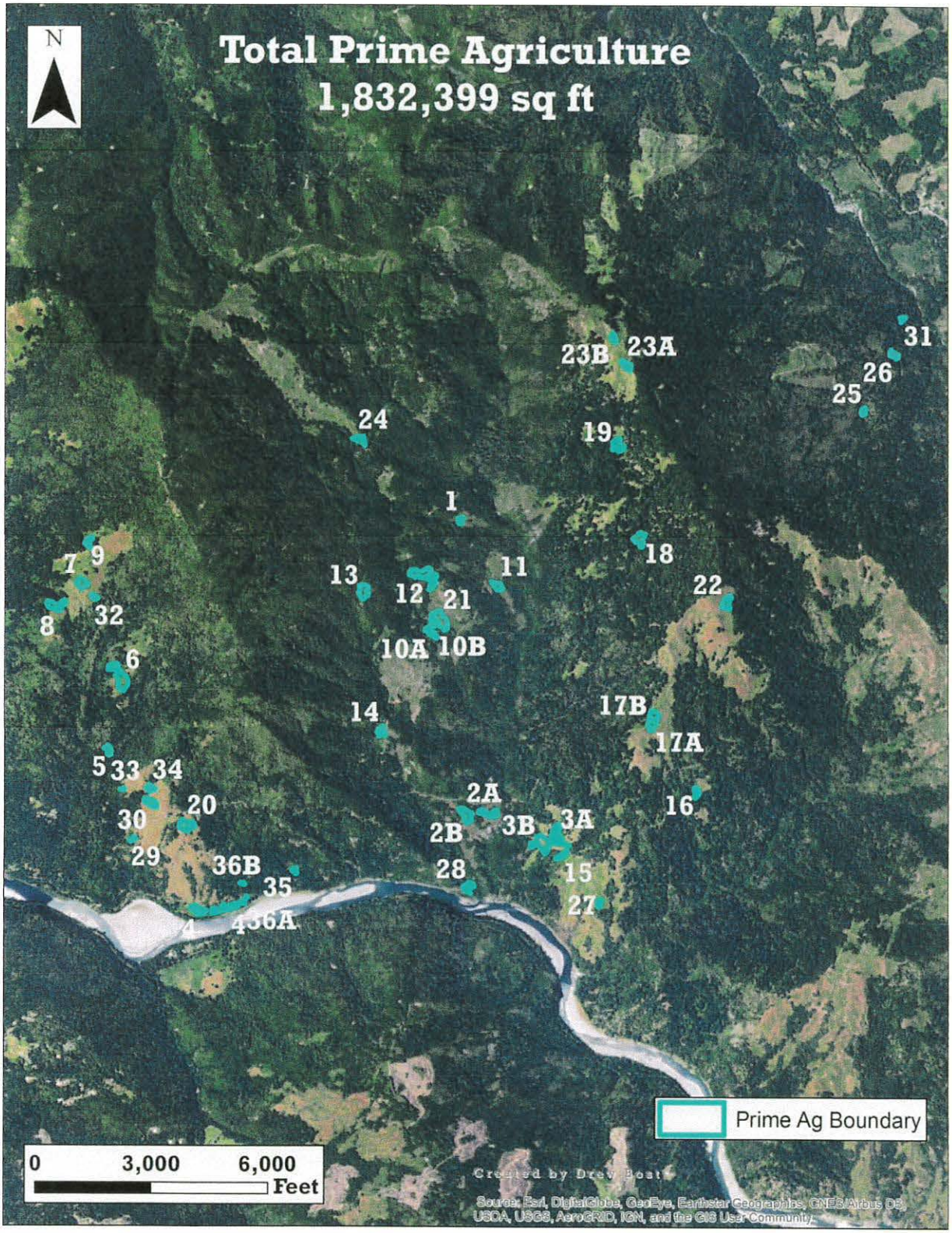
Site 20. West Facing Landscape

Site 28. South Facing Landscape

Site 34. North Facing Landscape

Appendix C. Site Maps

Comprehensive Map: Sites 1-36B



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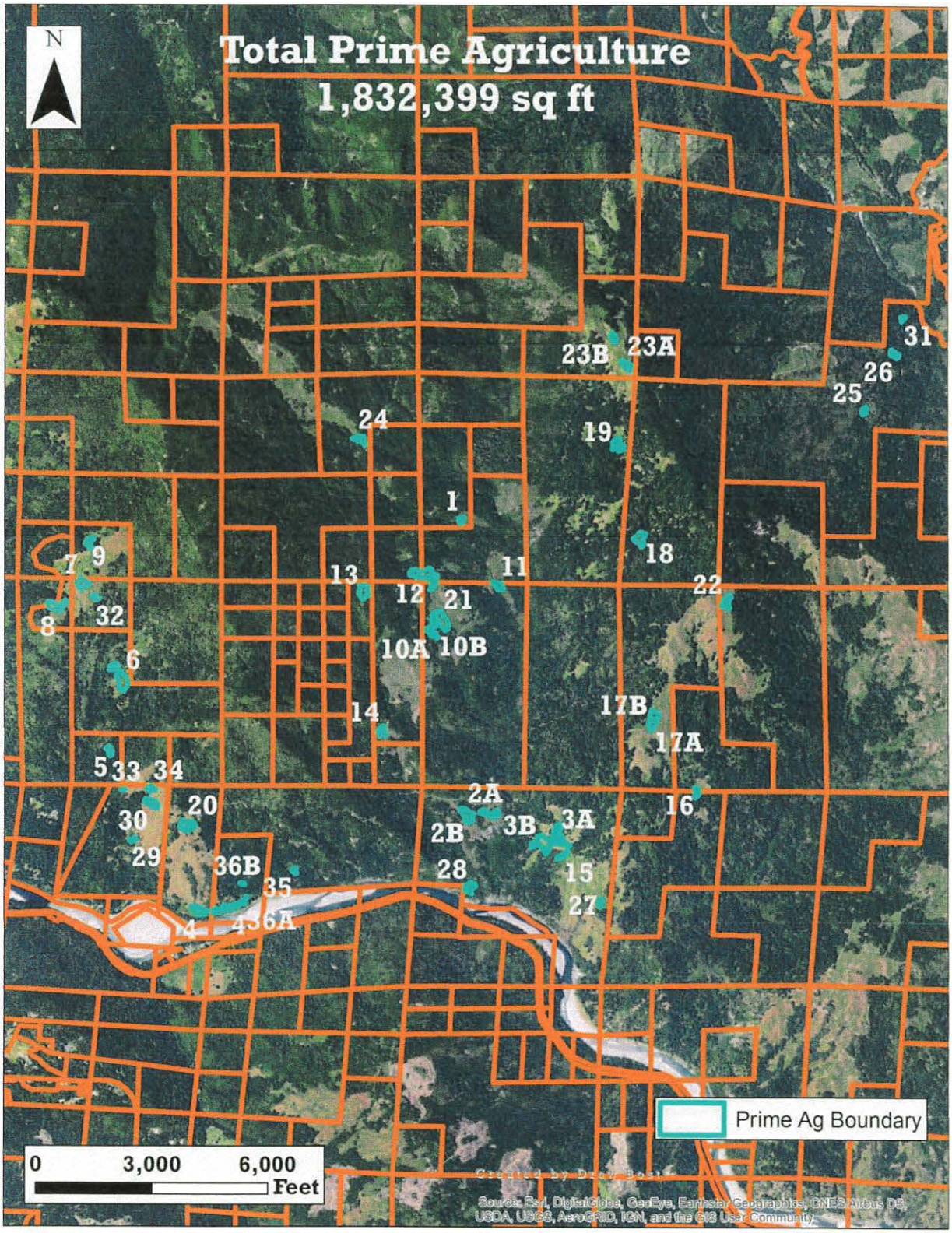
Comprehensive Map with Parcel Lines



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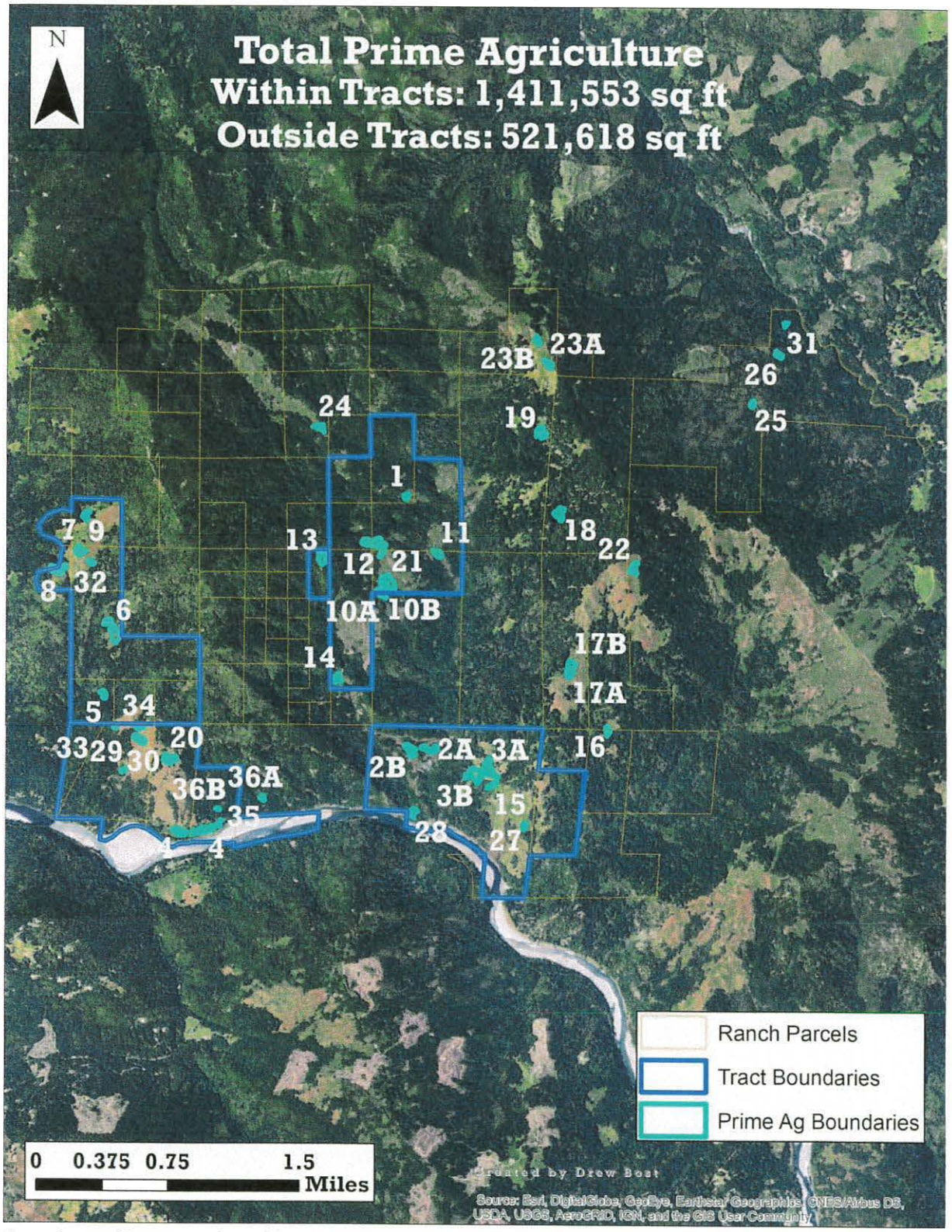
Comprehensive Map with Proposed Tract Boundaries



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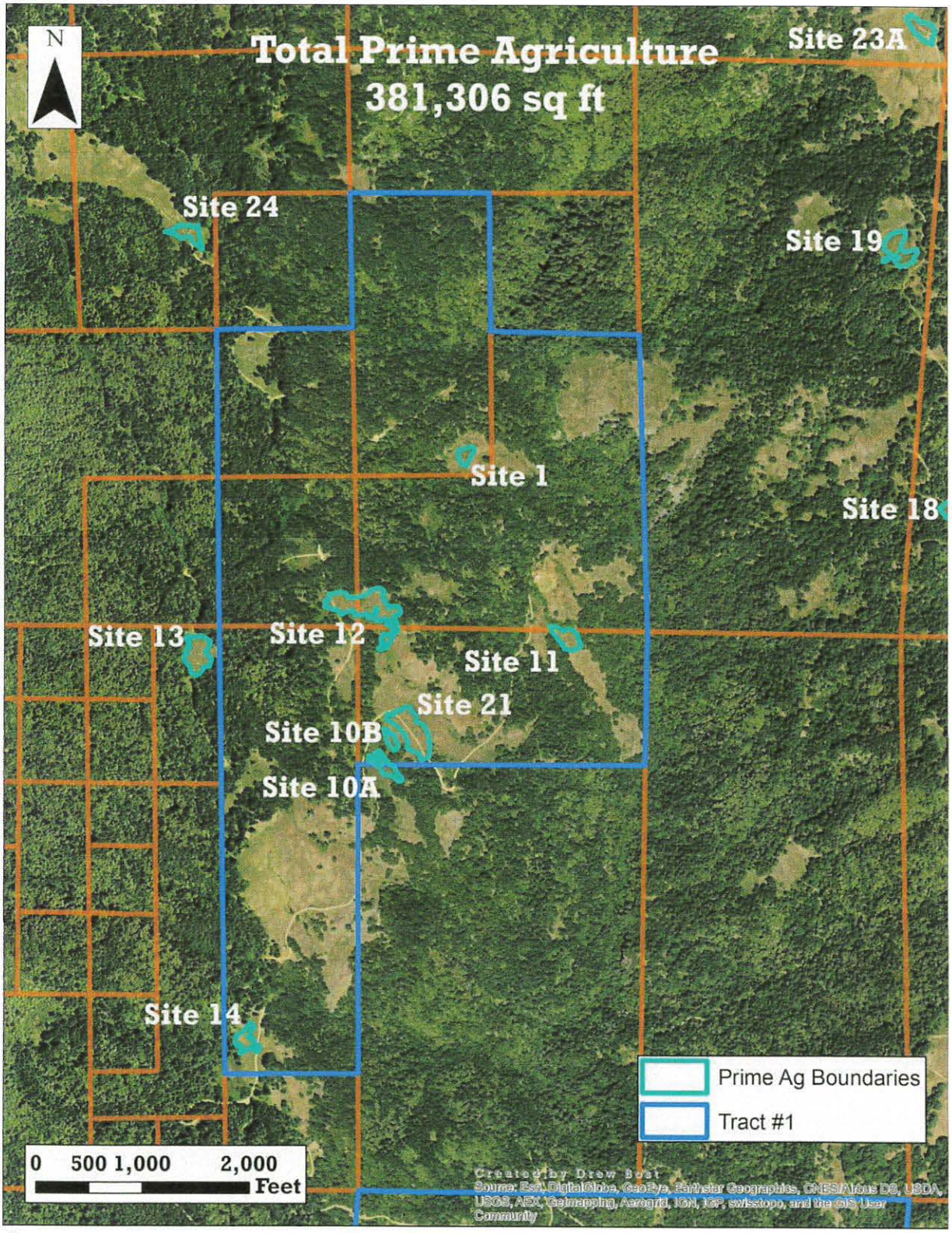
Tract 1 Map



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Tract 1A Map

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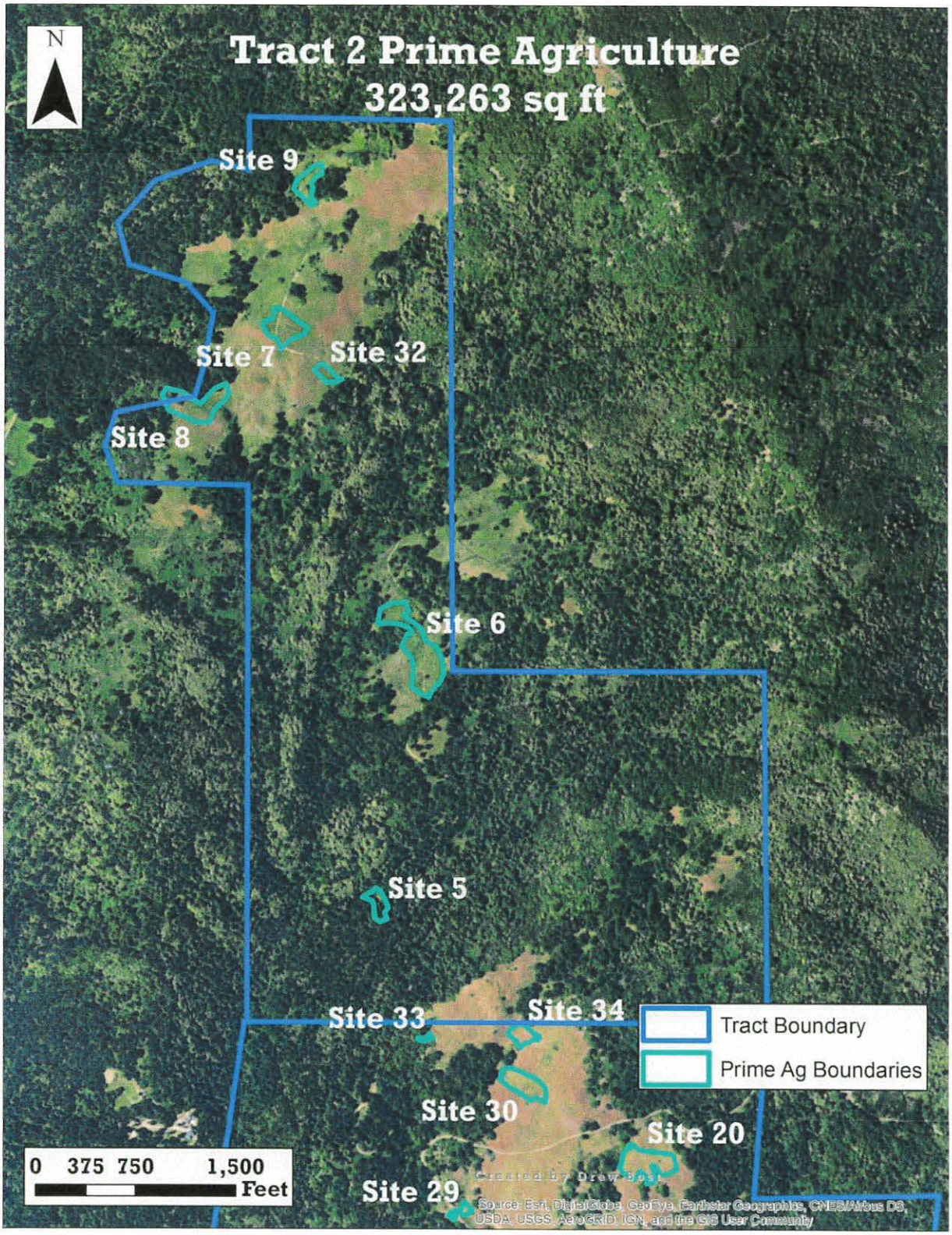
Tract 2 Map



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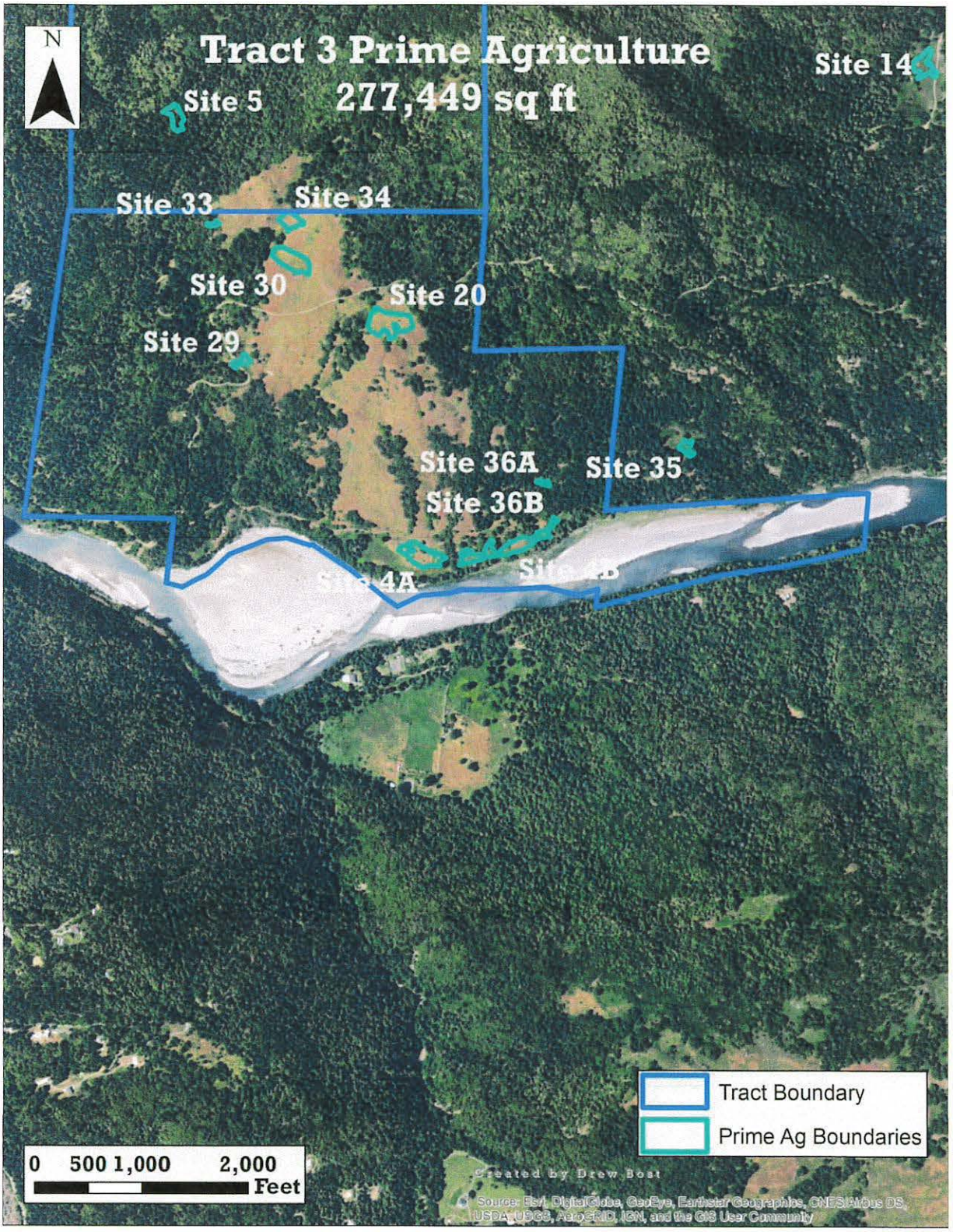
Tract 3 Map



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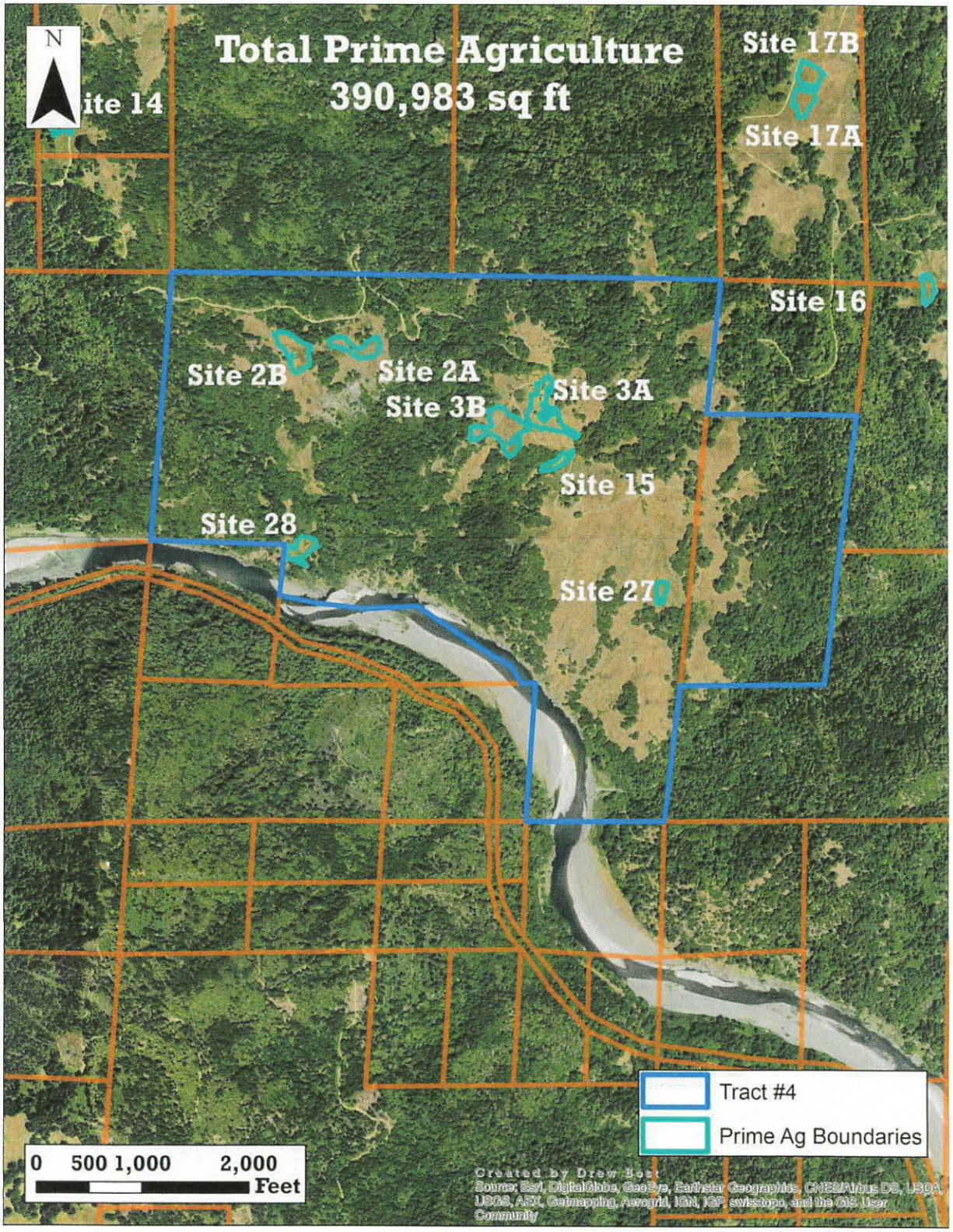
Tract 4 Map



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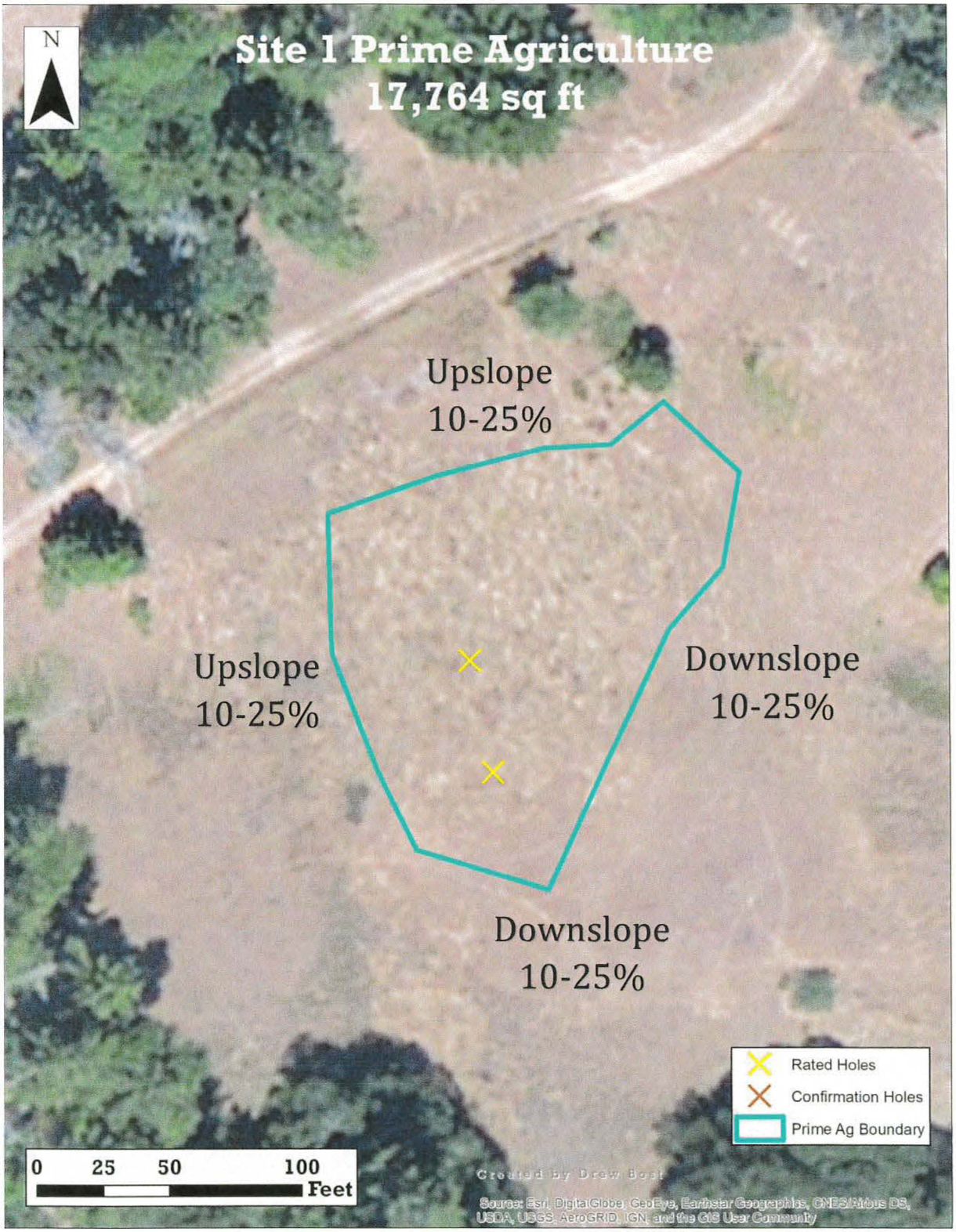
Site 1



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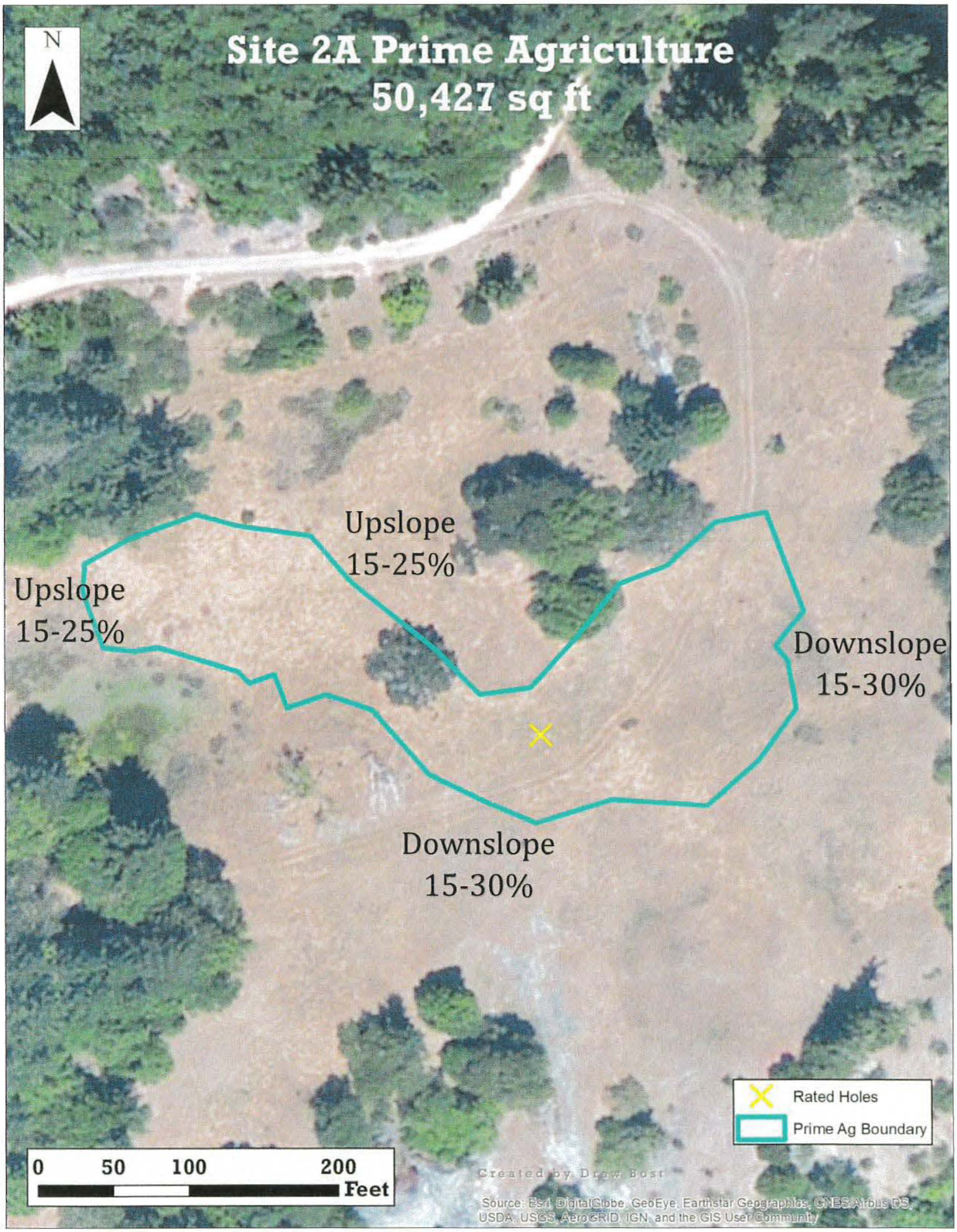
Site 2A



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Site 2B

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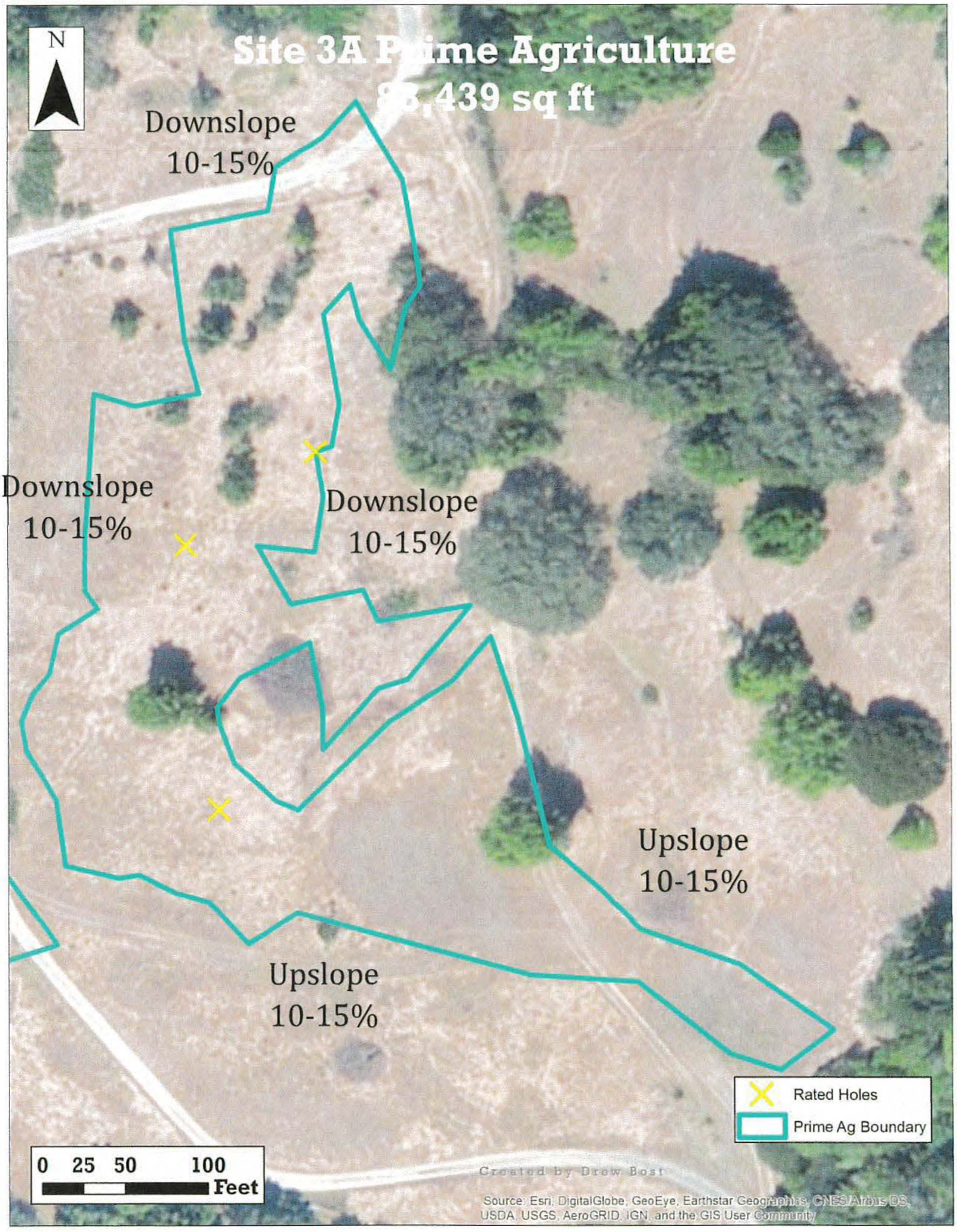
Site 3A



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Site 3B

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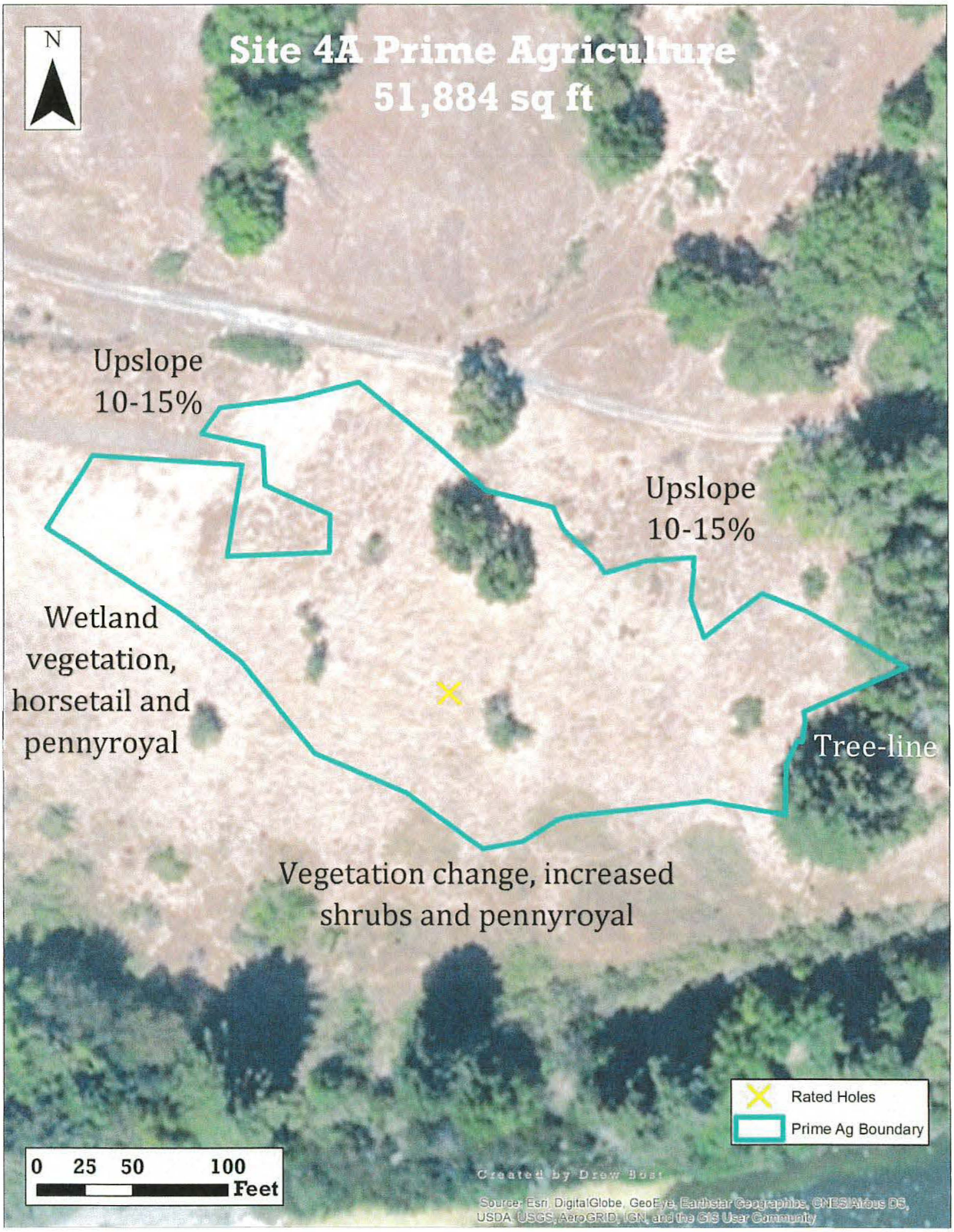
Site 4A



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Site 4B

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Site 5

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Site 6

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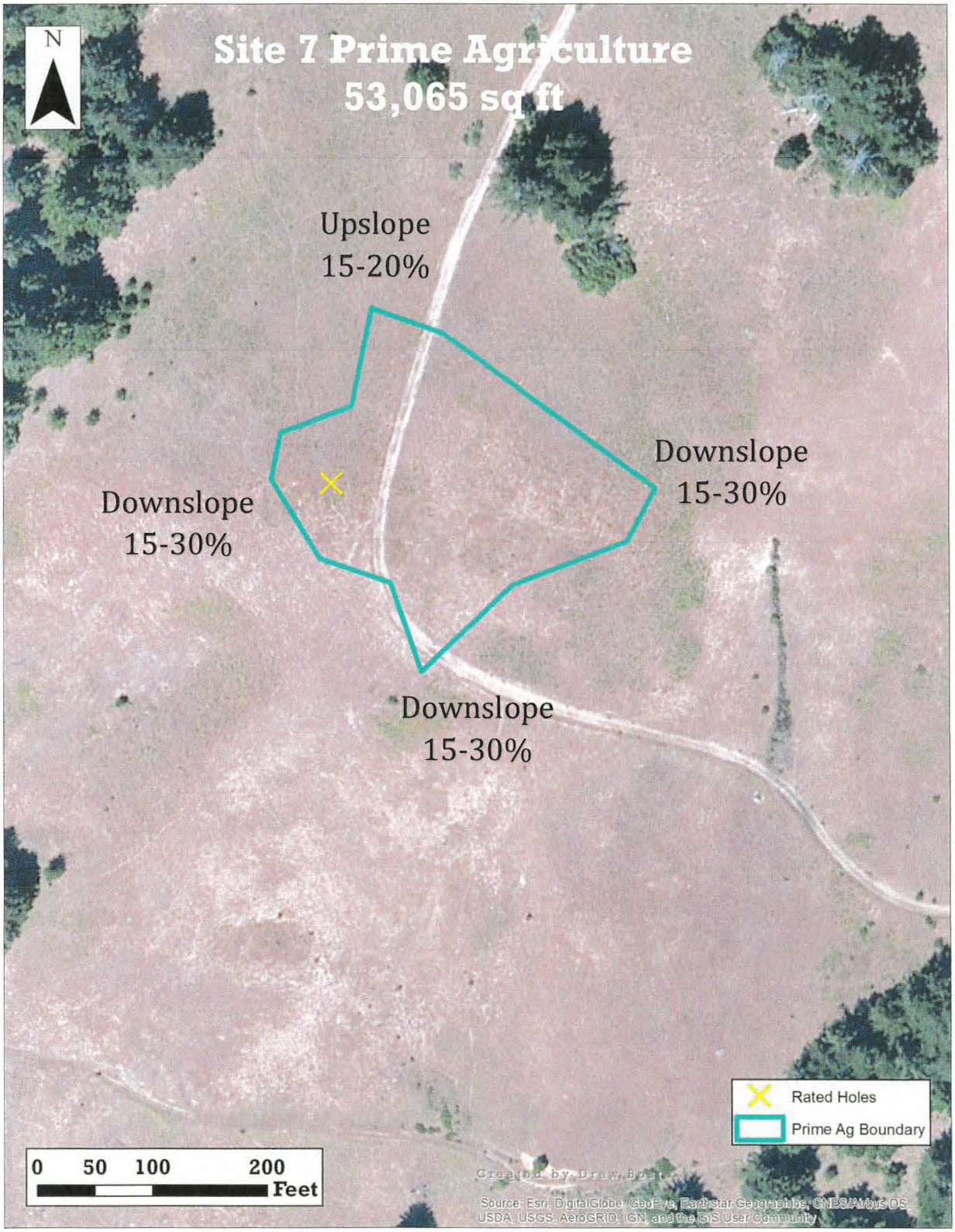
Site 7



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Site 8

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Site 9

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Site 10A

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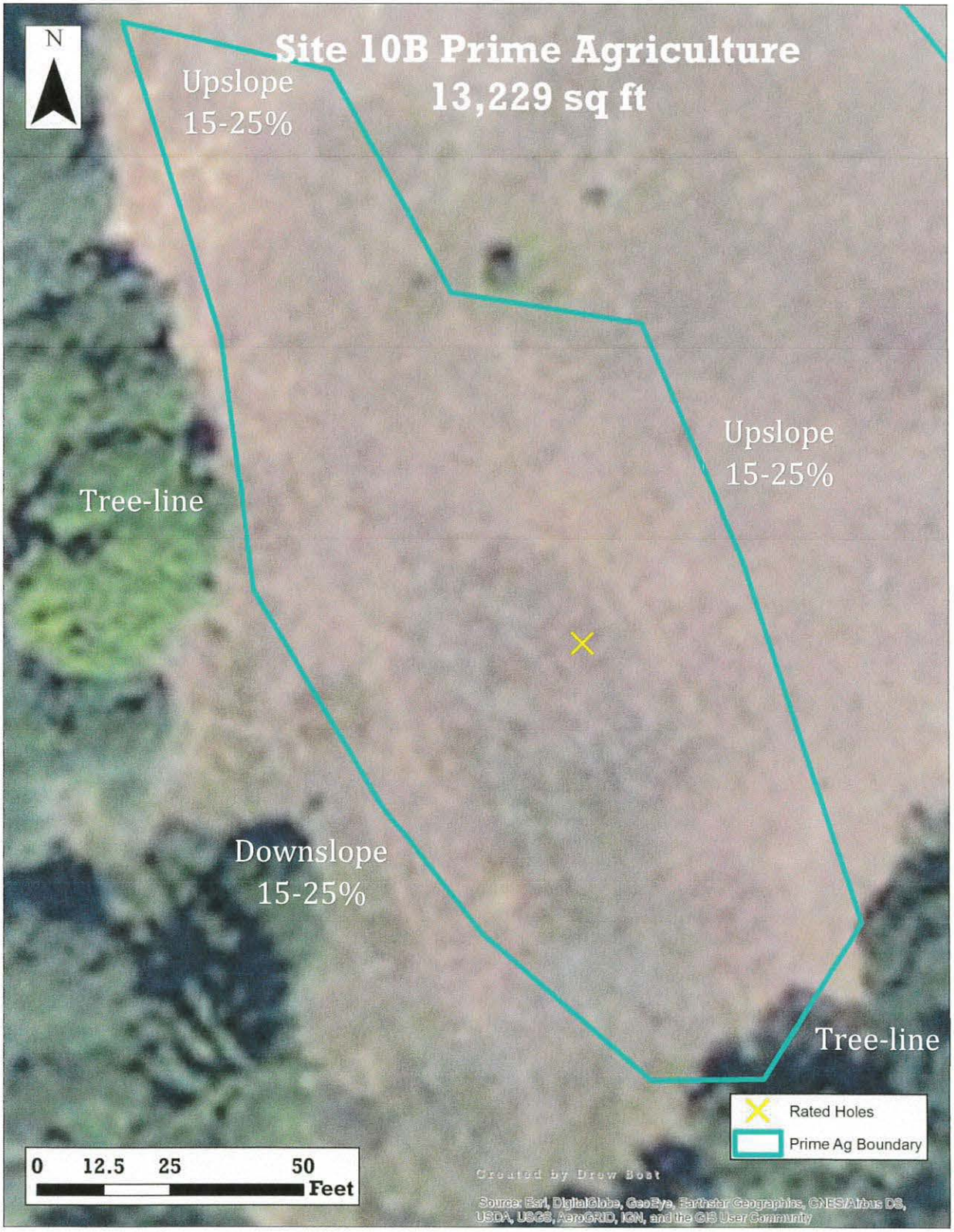
Site 10B



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Site 11

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Site 12

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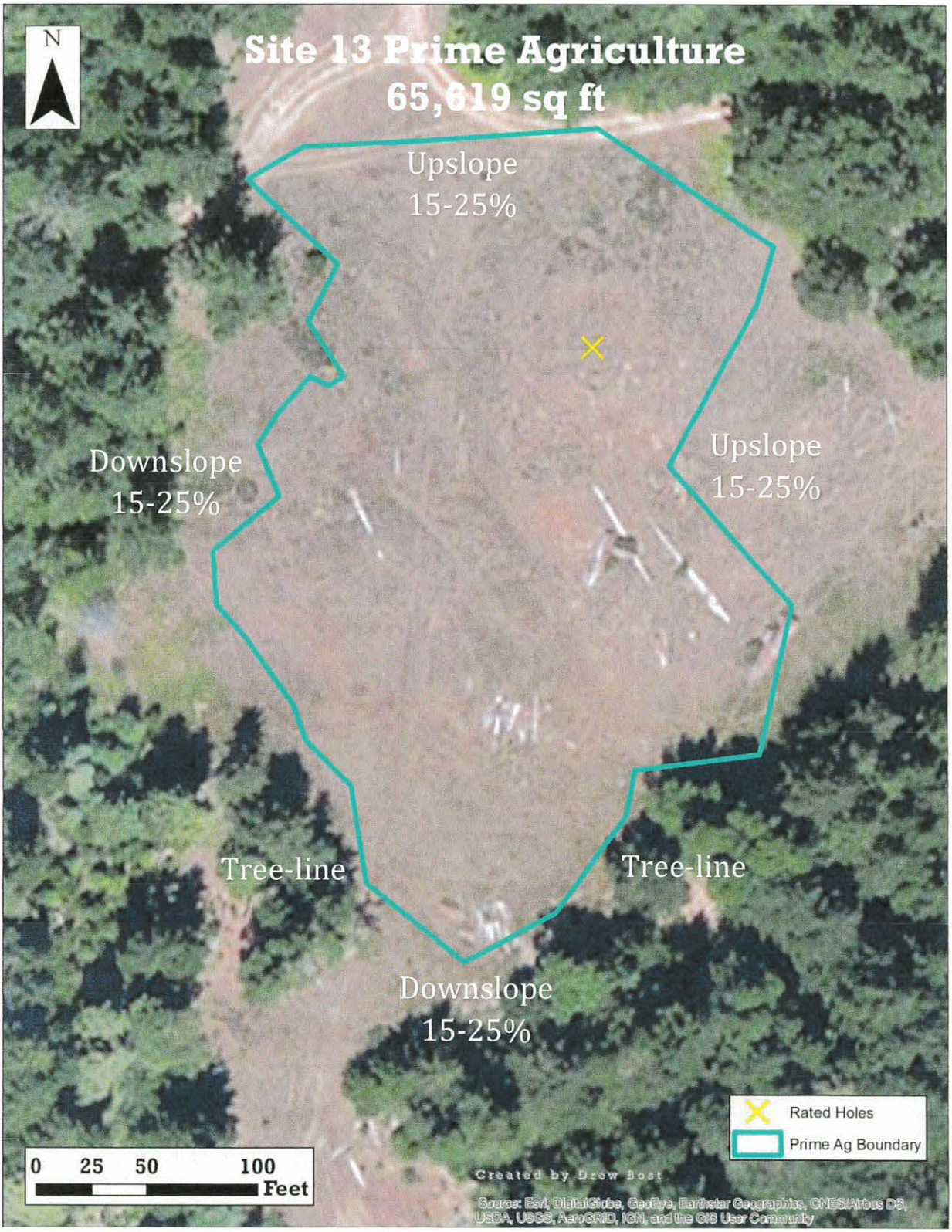
Site 13



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Site 14

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Site 15

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Site 16

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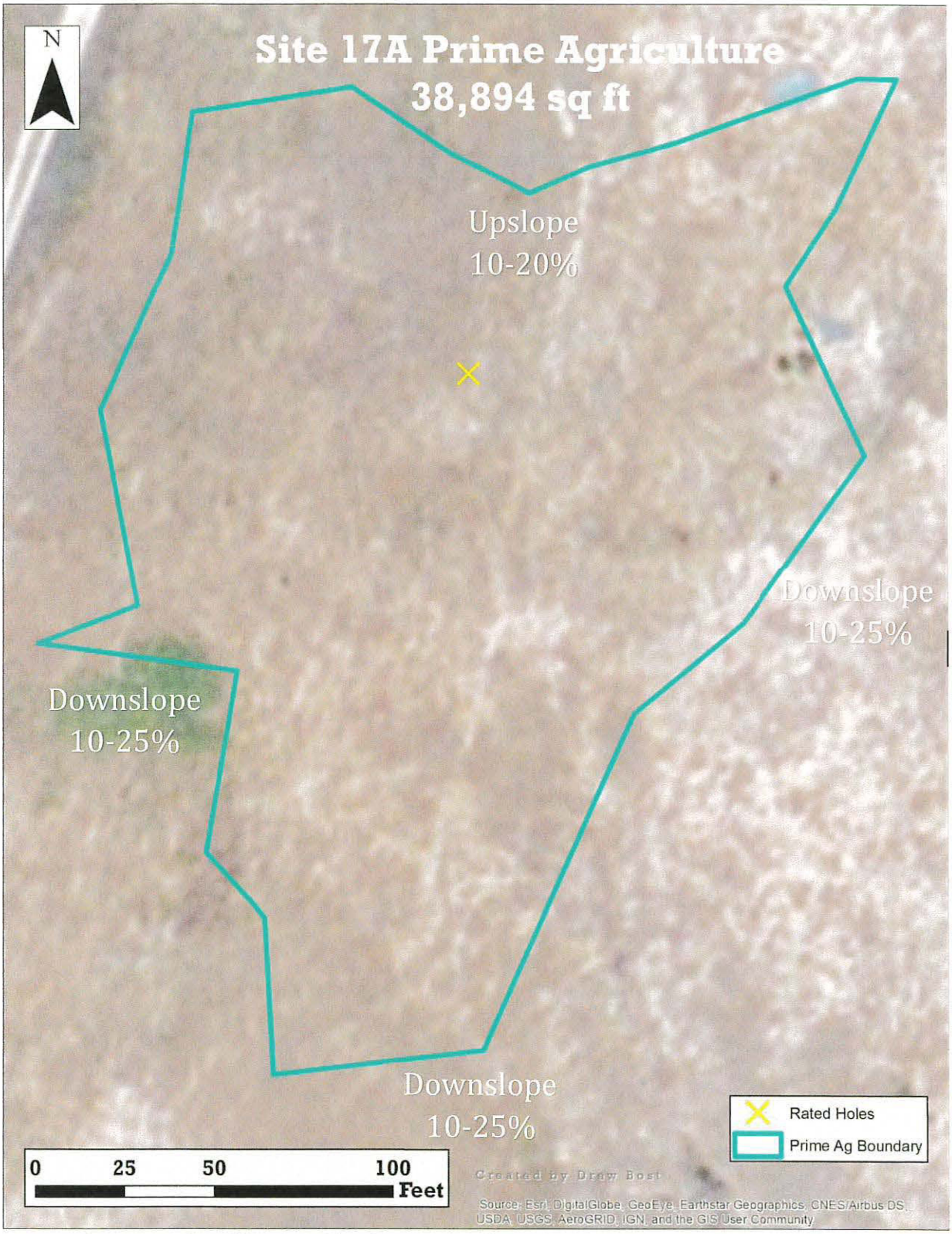
Site 17A



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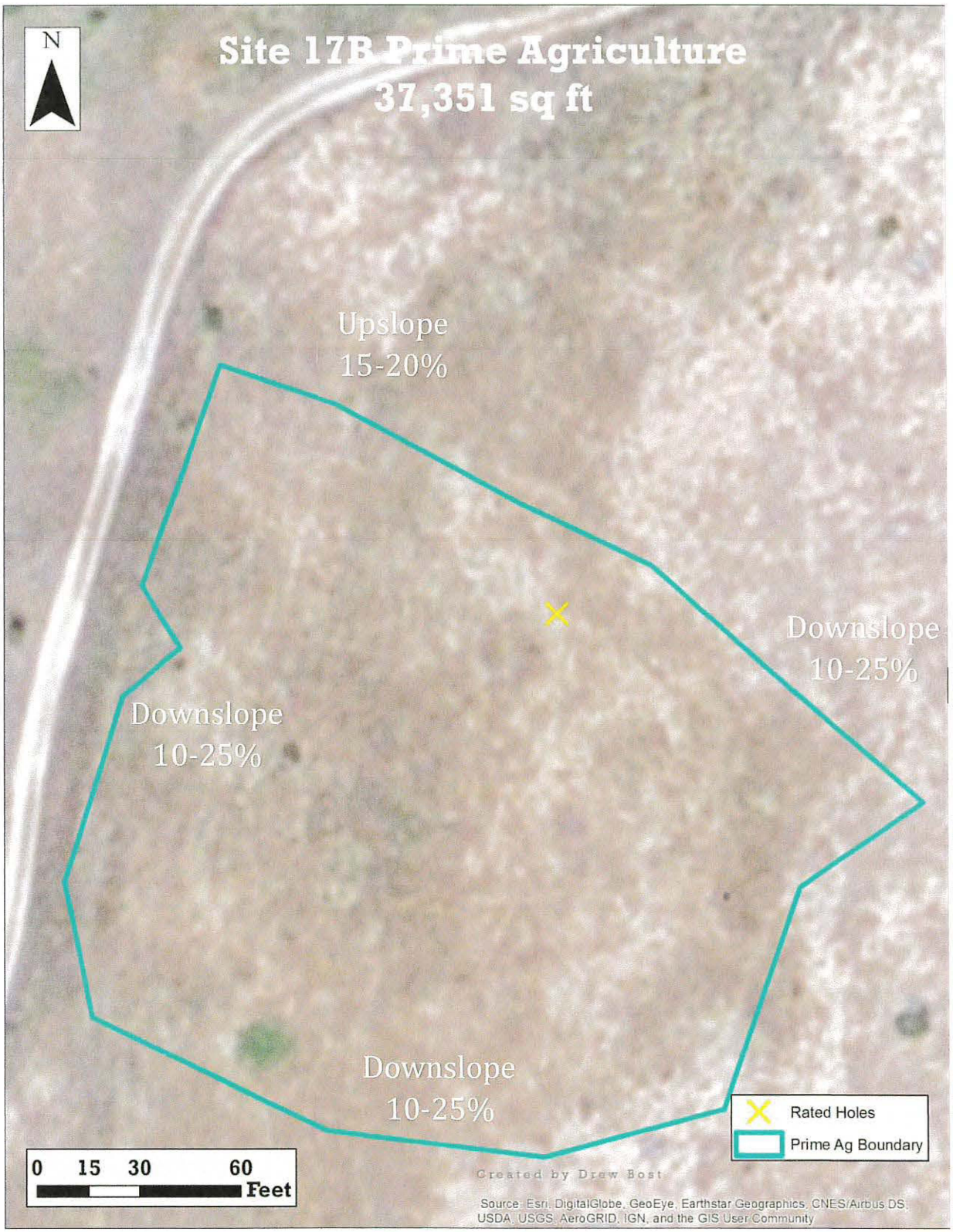
Site 17B



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Site 18

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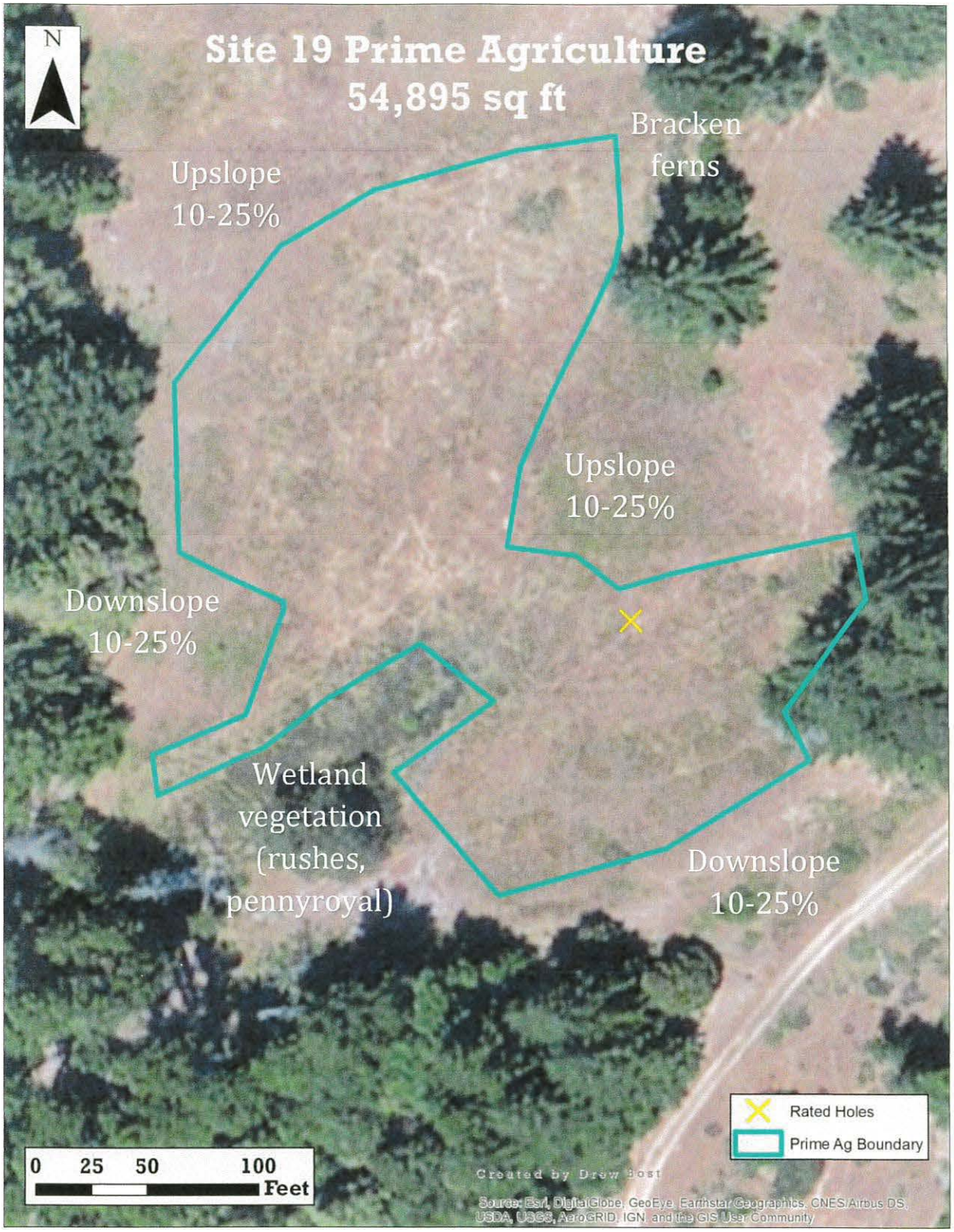
Site 19



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Site 20

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Site 21

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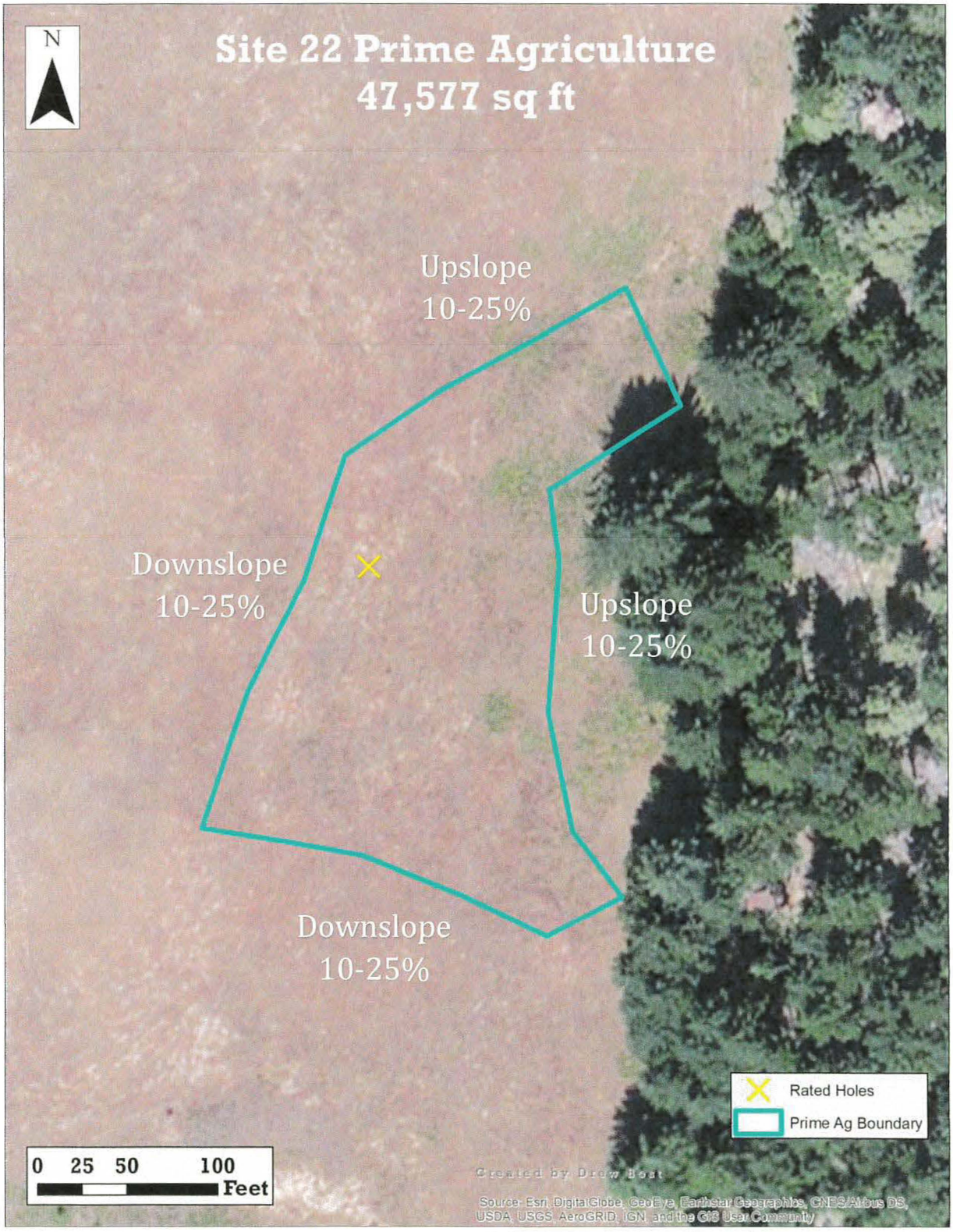
Site 22



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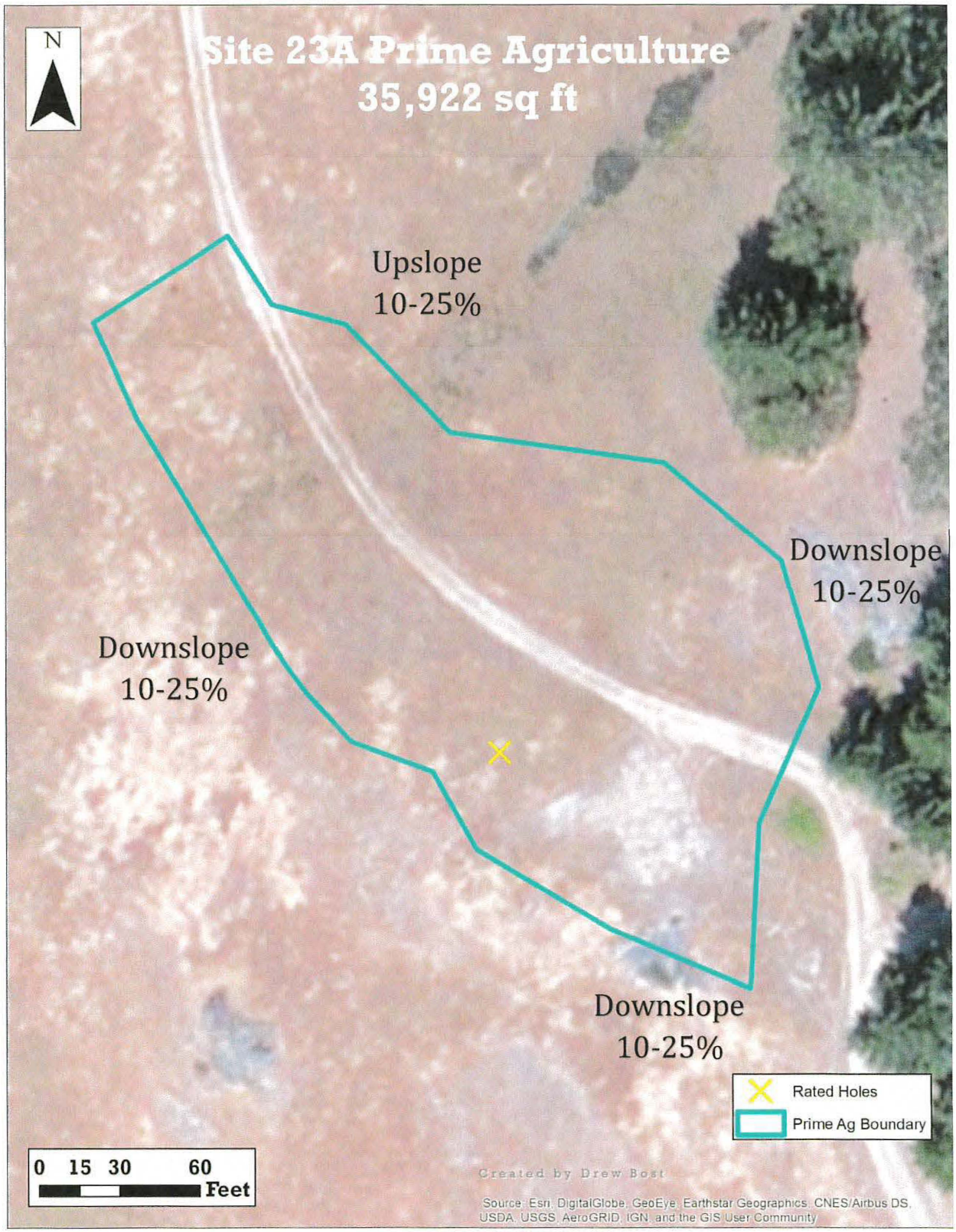
Site 23A



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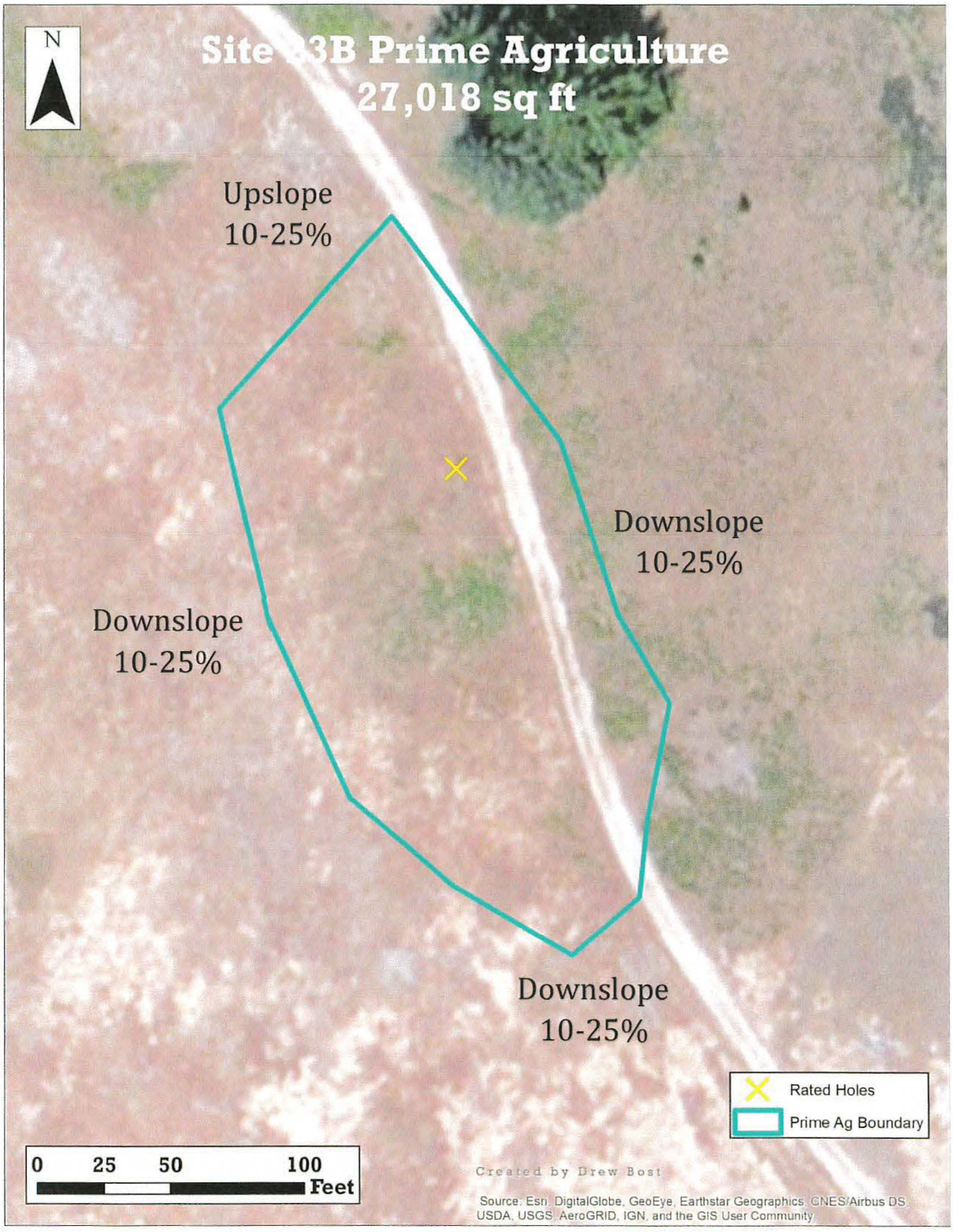
Site 23B



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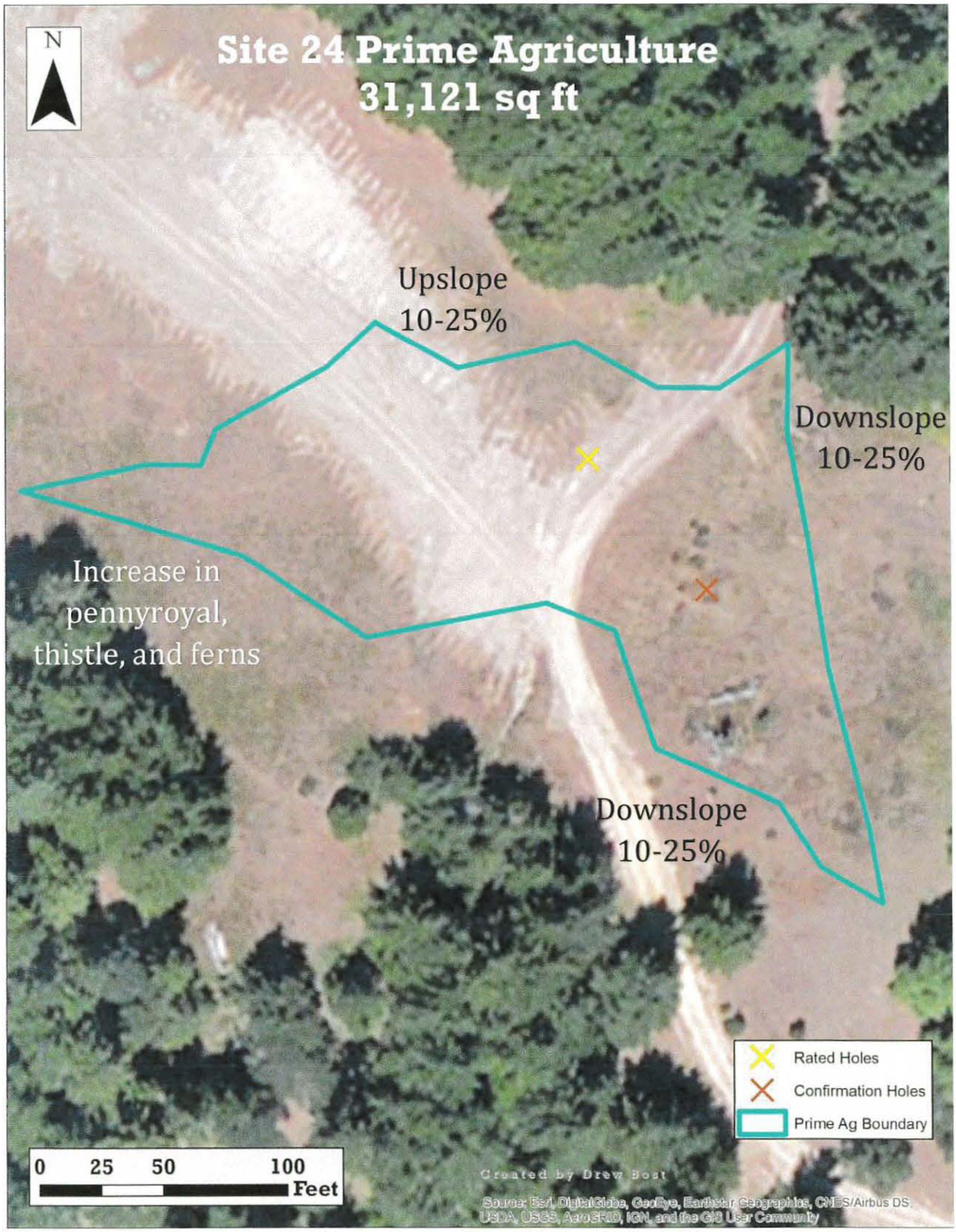
Site 24



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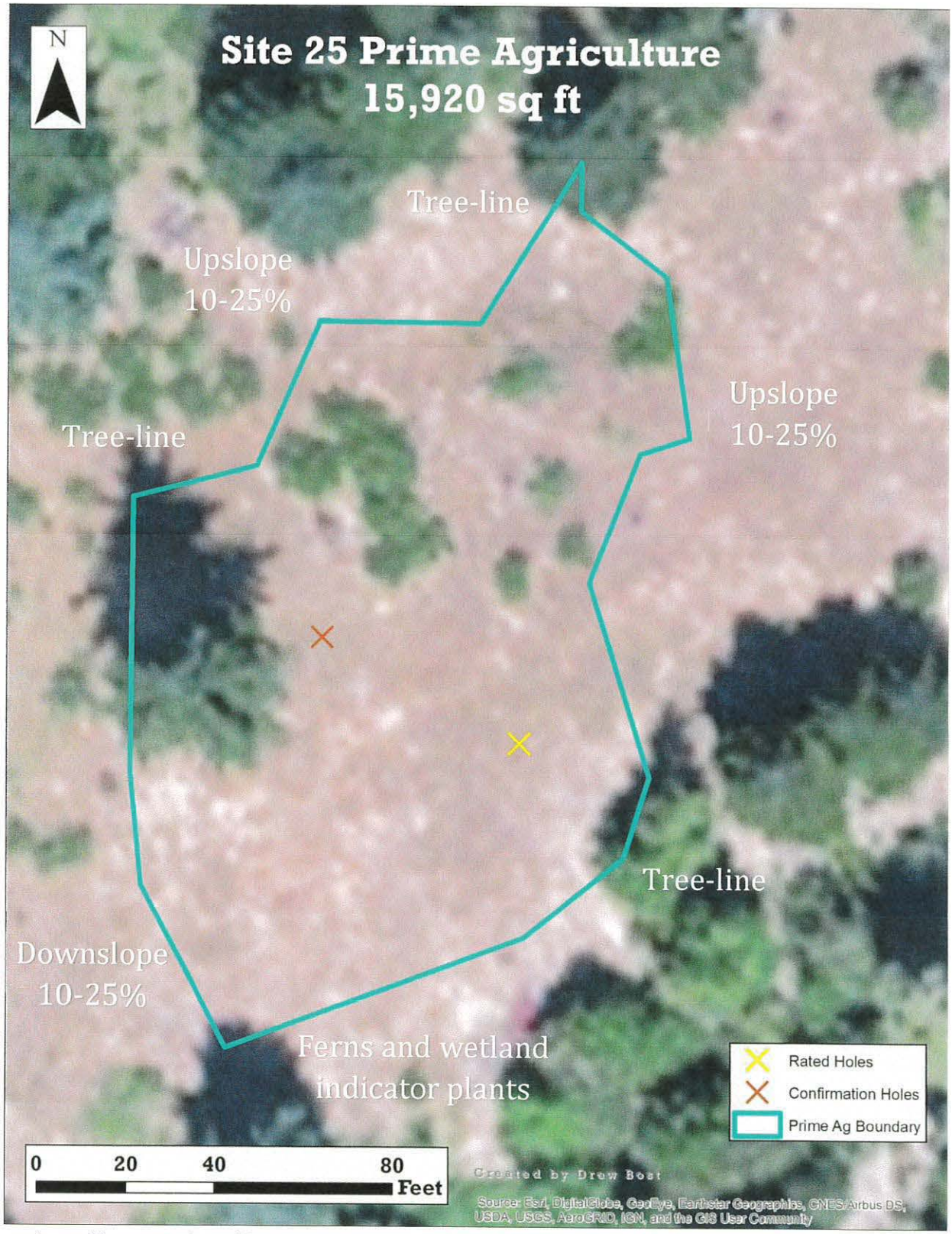
Site 25



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Site 26

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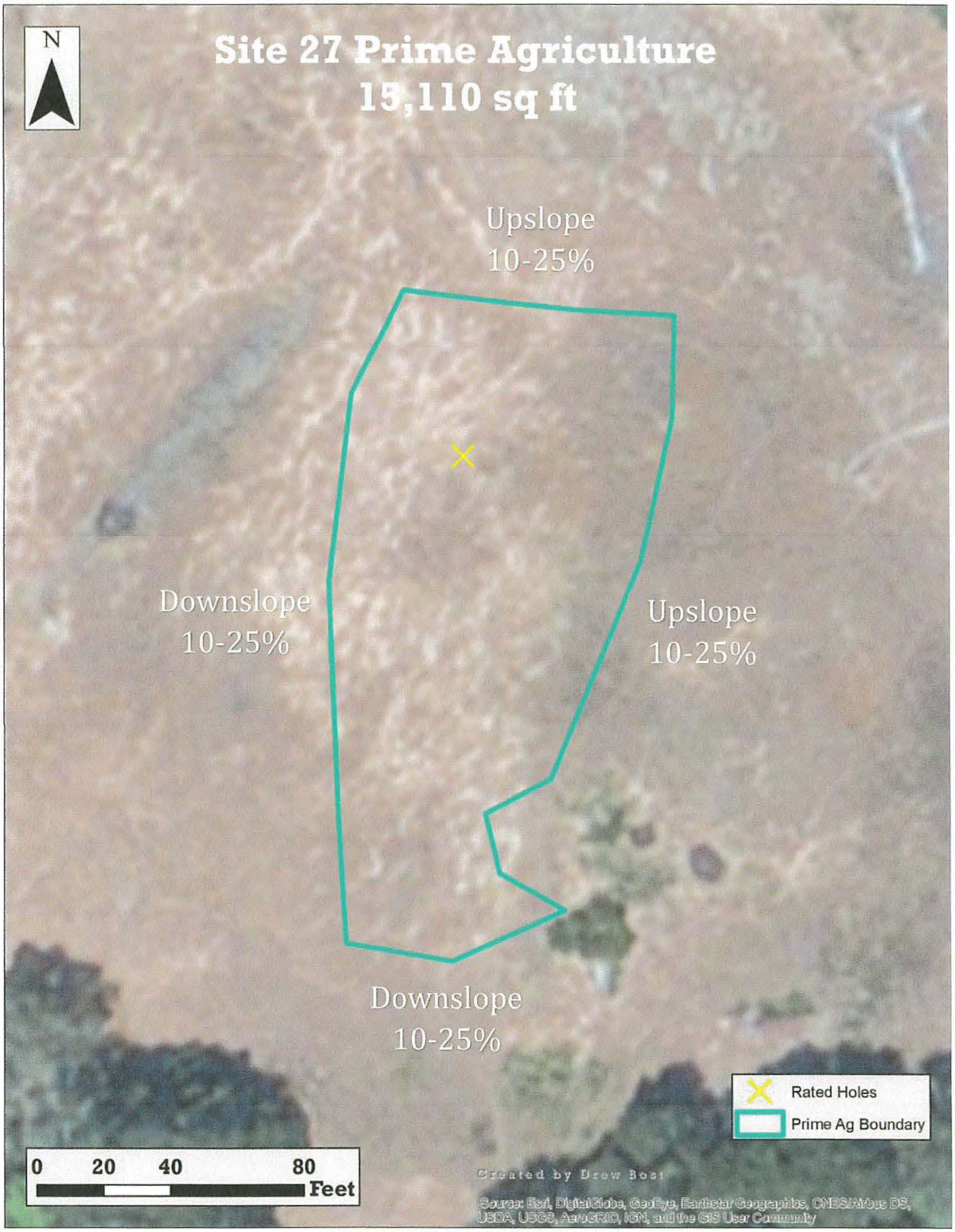
Site 27



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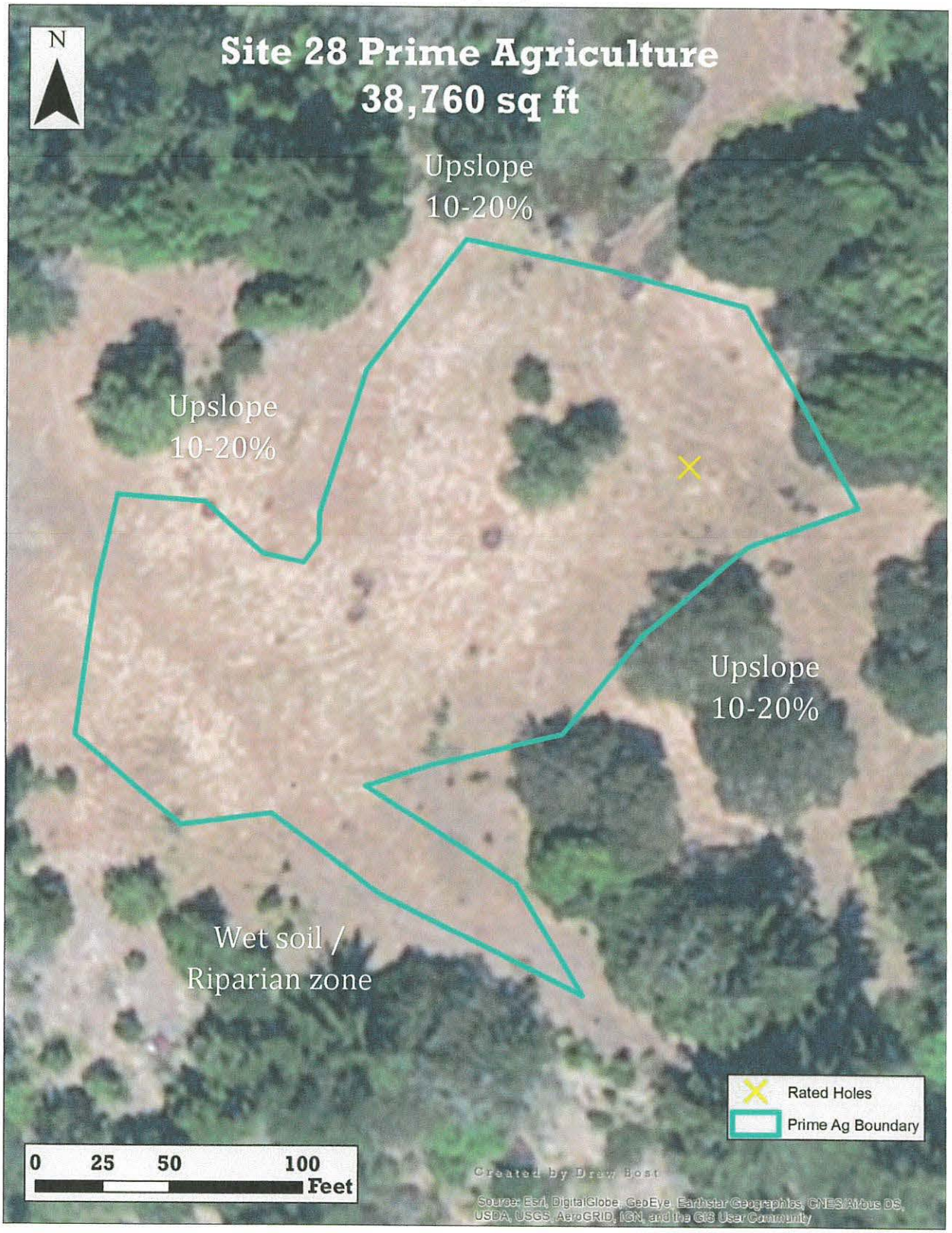
Site 28



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Site 29

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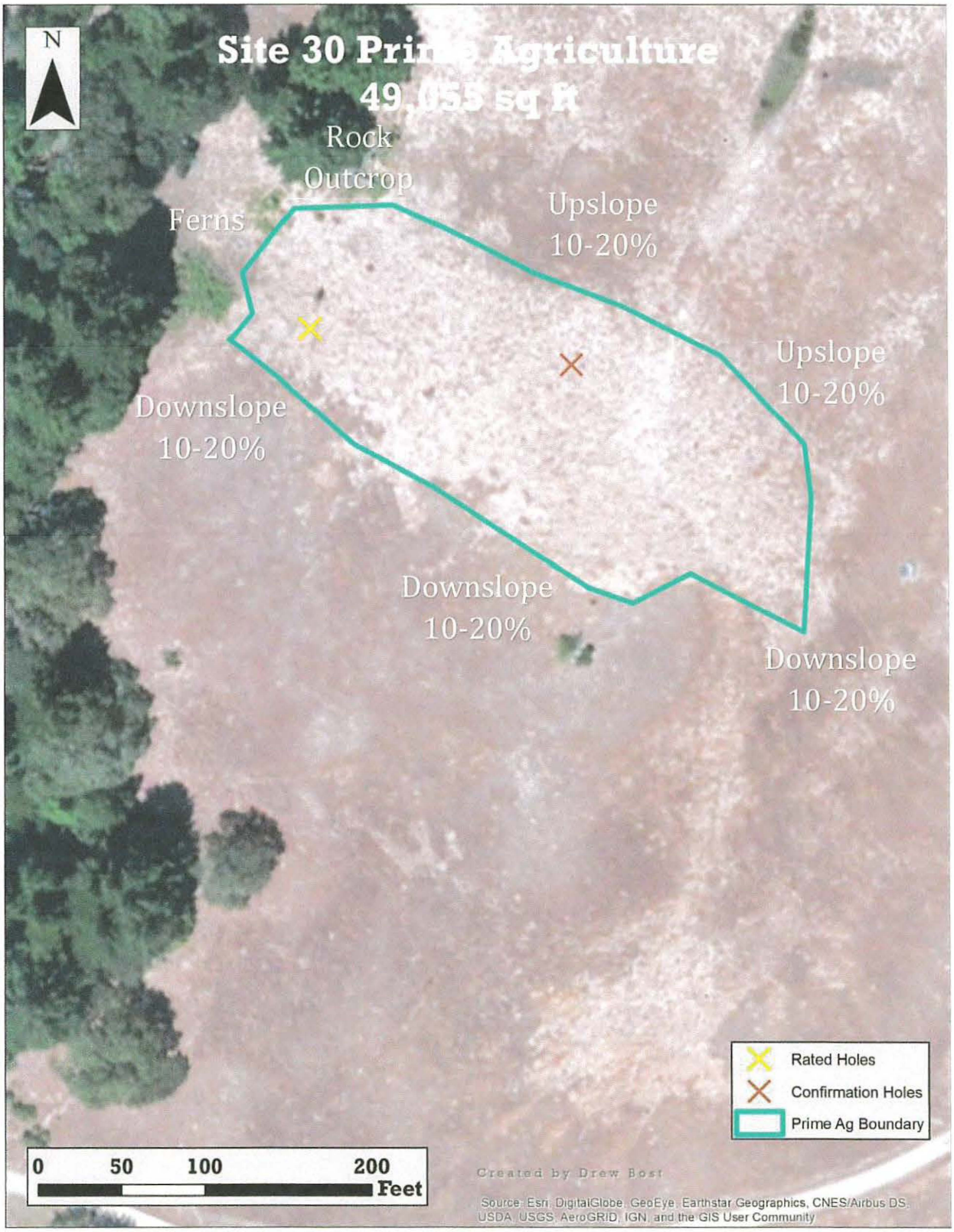
Site 30



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Site 31

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Site 33

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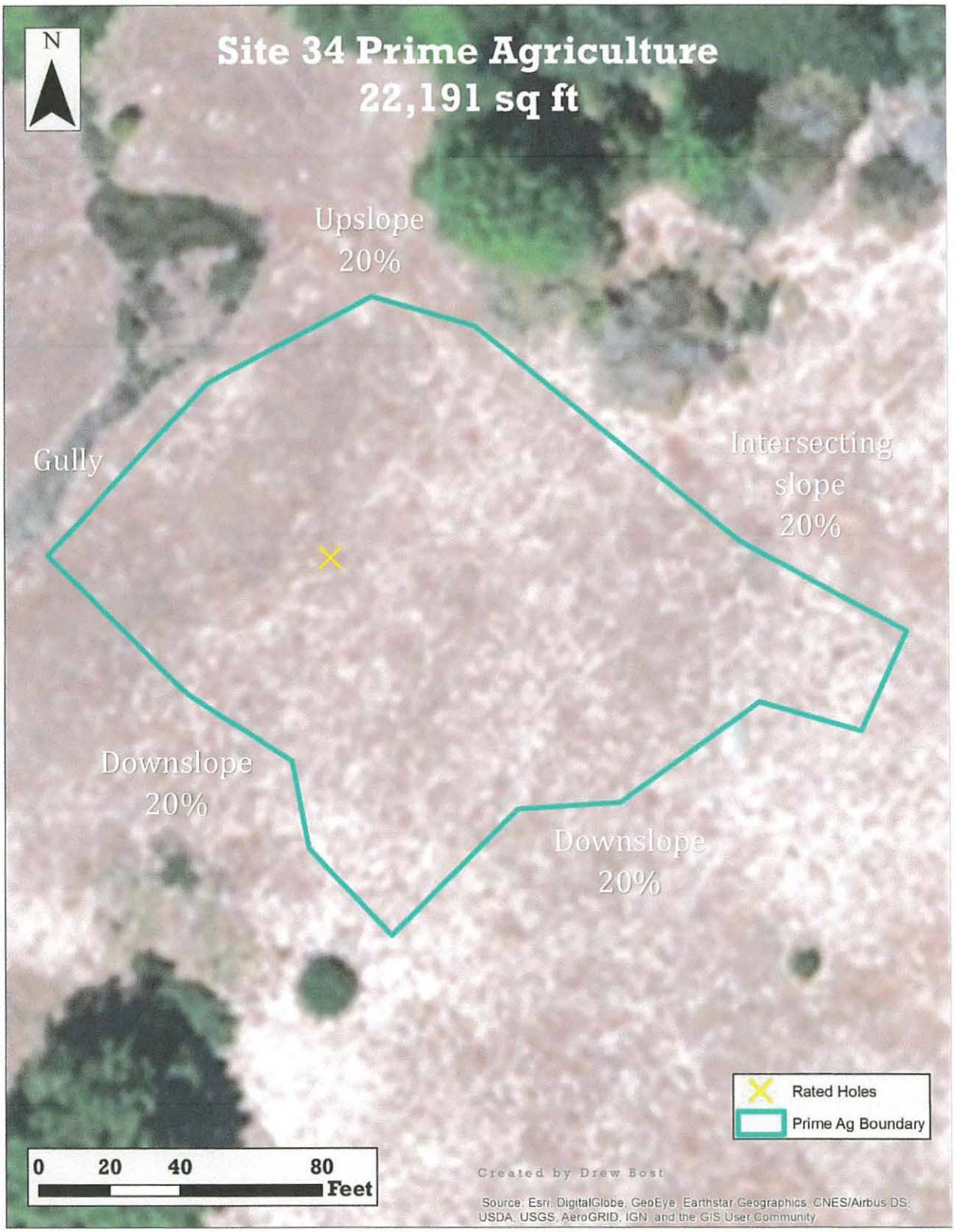
Site 34



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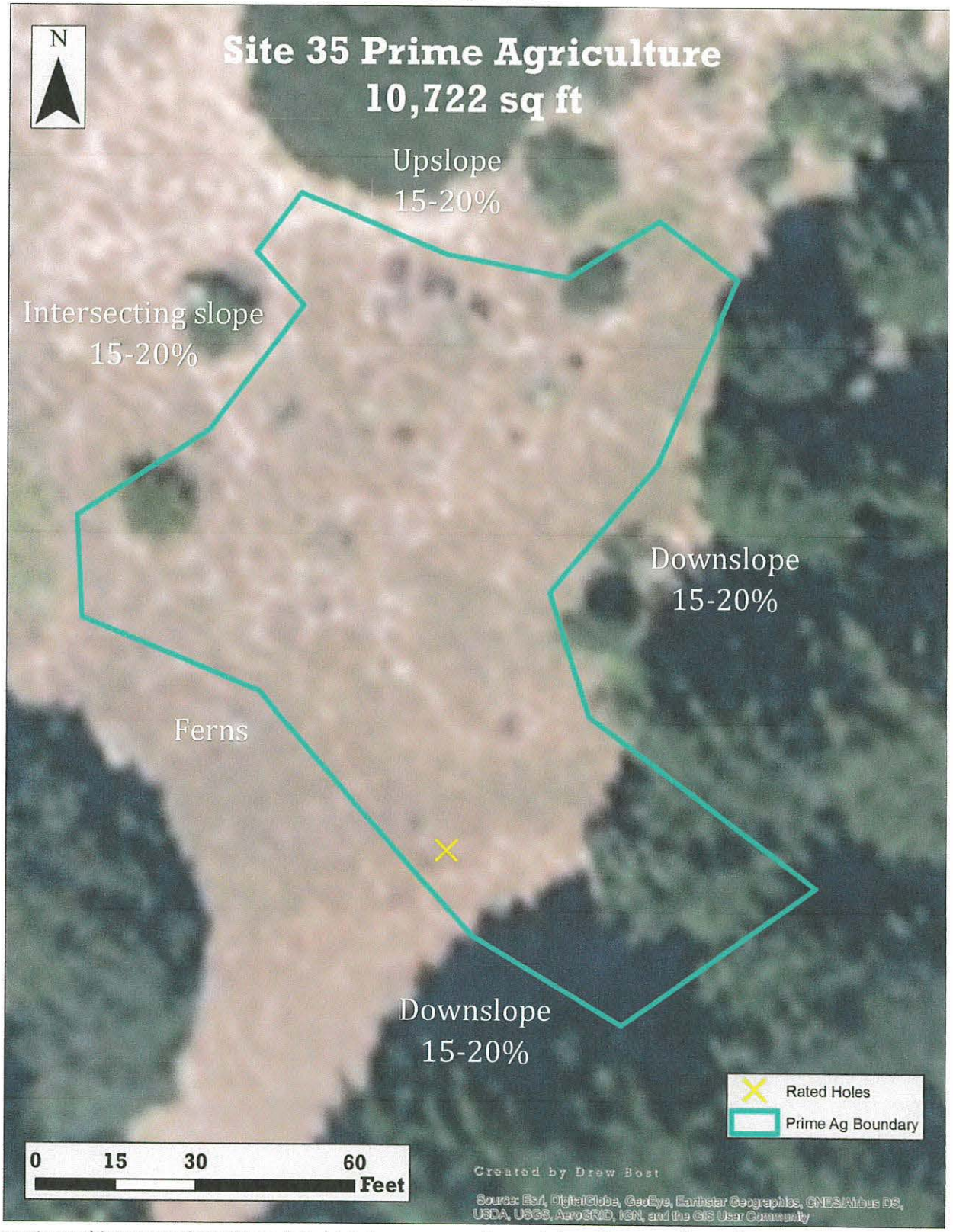
Site 35



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Site 36

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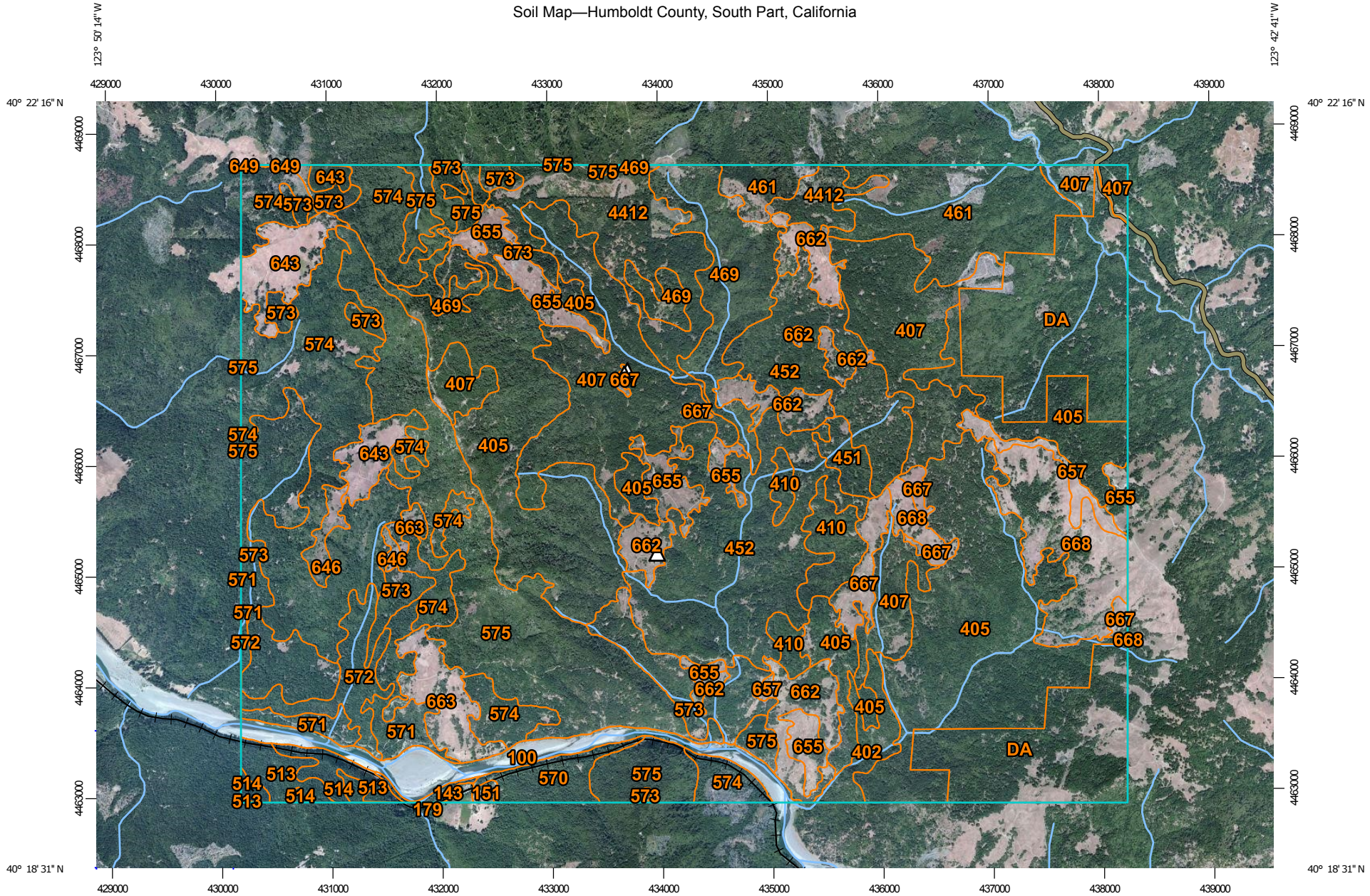
Appendix D. Storie Index Scoring

Site Name	Factor A Physical Profile		Factor B Surface Texture		Factor C Slope		Factor X												*Final Storie Score (%)
							Drainage		Alkali		Nutrient Level		Acidity		Erosion		Microrelief		
	Characteristic	Score (%)	Characteristic	Score (%)	Characteristic	Score (%)	Characteristic	Score (%)	Characteristic	Score (%)	Characteristic	Score (%)	Characteristic	Score (%)	Characteristic	Score (%)	Characteristic	Score (%)	
Site 1 - Hole 1	IX - Upland, deep	100	Silt Loam	100	B - Gently Sloping, avg. 8%	95	WD	100	Not alkaline	100	Low, EC=0.8	100	Very Strongly Acid, pH=4.9	90	None	100	Smooth	100	85.5
Site 1 - Hole 2	IX - Upland, deep	100	Silt Loam	100	B - Gently Sloping, avg. 8%	95	MWD	90	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.3	95	None	100	Smooth	100	81.2
Site 2A	IX - Upland, deep	100	Fine Sandy Loam	100	C - Moderately Sloping, corners @ 5%, 10%, 14%	90	WD	100	Not alkaline	100	Low, EC=0.2	100	Moderately Acid, pH=5.7	100	None	100	Smooth	100	90.0
Site 2B	IX - Upland, deep	100	Fine Sandy Loam	100	C - Moderately Sloping, 5%, 14%	90	WD	100	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.4	95	None	100	Smooth	100	85.5
Site 3A - Hole 1	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, avg. 8%	95	MWD	90	Not alkaline	100	Low, EC=0.3	100	Moderately Acidic, pH=6.0	100	None	100	Smooth	100	85.5
Site 3A - Hole 2	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, avg. 8%	95	MWD	90	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.4	95	None	100	Smooth	100	81.2
Site 3A - Hole 3	IX - Upland, deep	100	Silt Loam	100	B - Gently Sloping, avg. 8%	95	WD	100	Not alkaline	100	Low, EC=0.8	100	Very Strongly Acid, pH=4.9	90	None	100	Smooth	100	85.5
Site 3B	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, avg. 8%	95	WD	100	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.3	95	None	100	Smooth	100	90.3
Site 4A	III - River terrace	95	Fine Sandy Loam	100	B - Gently Sloping, avg. 8%	95	WD	100	Not alkaline	100	Low, EC=0.25	100	Moderately Acidic, pH=5.5	100	None	100	Smooth	100	90.3
Site 4B	III - River terrace	95	Fine Sandy Loam	100	B - Gently Sloping, avg. 8%	95	WD	100	Not alkaline	100	Low, EC=0.25	100	Moderately Acidic, pH=5.5	100	None	100	Smooth	100	90.3
Site 5	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, avg. 8%	95	MWD	90	Not alkaline	100	Low, EC=0.1	100	Strongly Acid, pH=5.4	95	None	100	Smooth	100	81.2
Site 6	IX - Upland, deep	100	Fine Sandy Loam	100	C - Moderately Sloping, 14% max	90	WD	100	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.2	95	None	100	Smooth	100	85.5
Site 7	IX - Upland, deep	100	Fine Sandy Loam	100	C - Moderately Sloping, 14% max	90	WD	100	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.2	95	None	100	Smooth	100	85.5
Site 8	IX - Upland, deep	100	Fine Sandy Loam	100	C - Moderately Sloping, 14% max	90	WD	100	Not alkaline	100	Low, EC=0.1	100	Strongly Acid, pH=5.1	90	None	100	Smooth	100	81.0
Site 9	IX - Upland, deep	100	Fine Sandy Loam	100	C - Moderately Sloping, 14% max	90	WD	100	Not alkaline	100	Low, EC=0.1	100	Moderately Acidic, pH=5.6	100	None	100	Smooth	100	90.0
Site 10A	IX - Upland, deep	100	Silt Loam	100	B - Gently Sloping, avg. 3%	100	MWD	90	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.2	95	None	100	Smooth	100	85.5
Site 10B	IX - Upland, deep	100	Silt Loam	100	B - Gently Sloping, avg. 3%	100	MWD	90	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.2	95	None	100	Smooth	100	85.5
Site 11 - Hole 1	IX - Upland, deep	100	Silt Loam	100	B - Gently Sloping, avg. 8%	95	WD	100	Not alkaline	100	Low, EC=0.2	100	Moderately Acid, pH=5.7	100	None	100	Smooth	100	95.0
Site 11 - Hole 2	IX - Upland, deep	100	Silt Loam	100	B - Gently Sloping, avg. 8%	95	MWD	90	Not alkaline	100	Low, EC=1.0	100	Strongly Acid, pH=5.2	95	None	100	Smooth	100	81.2
Site 12	IX - Upland, deep	100	Fine Sandy Loam	100	C - Moderately Sloping, 14% max	90	WD	100	Not alkaline	100	Low, EC=0.1	100	Strongly Acid, pH=5.3	95	None	100	Smooth	100	85.5
Site 13	IX - Upland, deep	100	Silt Loam	100	B - Gently Sloping, avg. 8%	95	MWD	90	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.5	100	None	100	Smooth	100	85.5
Site 14	IX - Upland, deep	100	Fine Sandy Loam	100	C - Moderately Sloping, 14% max	90	MWD	90	Not alkaline	100	Low, EC=0.3	100	Slightly Acid, pH=6.5	100	None	100	Smooth	100	81.0
Site 15	IX - Upland, deep	100	Sandy Loam	95	B - Gently Sloping, avg. 5%	98	MWD	90	Not alkaline	100	Low, EC=0.2	100	Moderately Acid, pH=5.8	100	None	100	Smooth	100	83.8
Site 16	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, avg. 8%	95	MWD	90	Not alkaline	100	Low, EC=0.3	100	Strongly Acid, pH=5.4	95	None	100	Smooth	100	81.2
Site 17A	IX - Upland, deep	100	Loam	100	C - Moderately Sloping, avg. 11%	95	MWD	90	Not alkaline	100	Low, EC=0.2	100	Strongly Acidic, pH=5.2	95	None	100	Smooth	100	81.2
Site 17B	IX - Upland, deep	100	Loam	100	C - Moderately Sloping, 14% max	90	MWD	90	Not alkaline	100	Low, EC=0.2	100	Moderately Acidic, pH=5.8	100	None	100	Smooth	100	81.0
Site 18	IX - Upland, deep	100	Loam	100	B - Gently Sloping, 6% max	98	MWD	90	Not alkaline	100	Low, EC=0.3	100	Moderately Acidic, pH=5.6	100	None	100	Smooth	100	88.2
Site 19	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, 7% max	95	MWD	90	Not alkaline	100	Low, EC=0.3	100	Strongly Acid, pH=5.2	95	None	100	Smooth	100	81.2
Site 20	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, avg. 8%	95	WD	100	Not alkaline	100	Low, EC=0.25	100	Strongly Acid, pH=5.94	95	None	100	Smooth	100	90.3
Site 21	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, avg. 3%	100	MWD	90	Not alkaline	100	Low, EC=0.16	100	Strongly Acid, pH=5.1	90	None	100	Smooth	100	81.0
Site 22	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, avg. 3%	100	MWD	90	Not alkaline	100	Low, EC=0.16	100	Strongly Acid, pH=5.11	90	None	100	Smooth	100	81.0
Site 23A	IX - Upland, deep	100	Sandy Loam	95	C - Moderately Sloping, 8-11%	95	WD	100	Not alkaline	100	Low, EC=0.18	100	Strongly Acid, pH=5.4	95	None	100	Smooth	100	85.7
Site 23B	IX - Upland, deep	100	Sandy Loam	95	B - Gently Sloping, 8% max	95	WD	100	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.0	90	None	100	Smooth	100	81.2
Site 24	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, 8% max	95	MWD	90	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.2	95	None	100	Smooth	100	81.2
Site 25	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, 8% max	95	MWD	90	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.4	95	None	100	Smooth	100	81.2
Site 26	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, avg. 3%	100	MWD	90	Not alkaline	100	Low, EC=0.3	100	Strongly Acid, pH=5.5	100	None	100	Smooth	100	90.0
Site 27	IX - Upland, deep	100	Sandy Loam	95	B - Gently Sloping, avg. 3%	100	MWD	90	Not alkaline	100	Low, EC=0.2	100	Strongly Acid, pH=5.4	95	None	100	Smooth	100	81.2
Site 28	IX - Upland, deep	100	Sandy Loam	95	B - Gently Sloping, 8% max	95	MWD	90	Not alkaline	100	Low, EC=0.2	100	Moderately Acidic, pH=5.7	100	None	100	Smooth	100	81.2
Site 29	IX - Upland, deep	100	Silt Loam	100	C - Moderately Sloping, avg. 11%	95	MWD	90	Not alkaline	100	Low, EC=0.4	100	Moderately Acidic, pH=5.74	100	None	100	Smooth	100	85.5
Site 30	IX - Upland, deep	100	Silt Loam	100	B - Gently Sloping, avg. 3%	100	MWD	90	Not alkaline	100	Low, EC=0.3	100	Very Strongly Acid, pH=4.9	90	None	100	Smooth	100	81.0
Site 31	IX - Upland, deep	100	Sandy Loam	95	B - Gently Sloping, 8% max	95	MWD	90	Not alkaline	100	Low, EC=0.2	100	Moderately Acidic, pH=5.9	100	None	100	Smooth	100	81.2
Site 32	IX - Upland, deep	100	Sandy Loam	95	C - Moderately Sloping, avg. 11%	95	WD	100	Not alkaline	100	Low, EC=1.1	100	Very Strongly Acid, pH=4.7	90	None	100	Smooth	100	81.2
Site 33	IX - Upland, deep	100	Fine Sandy Loam	100	B - Gently Sloping, avg. 3%	100	MWD	90	Not alkaline	100	Low, EC=0.7	100	Very Strongly Acid, pH=4.9	90	None	100	Smooth	100	81.0
Site 34	IX - Upland, deep	100	Loam	100	C - Moderately Sloping, avg. 11%	95	WD	100	Not alkaline	100	Low, EC=0.6	100	Very Strongly Acid, pH=4.9	90	None	100	Smooth	100	85.5
Site 35	IX - Upland, deep	100	Loam	100	C - Moderately Sloping, avg. 11%	95	WD	100	Not alkaline	100	Low, EC=0.9	100	Very Strongly Acid, pH=4.6	90	None	100	Smooth	100	85.5
Site 36	IX - Upland, deep	100	Loam	100	B - Gently Sloping, avg. 3%	100	MWD	90	Not alkaline	100	Low, EC=0.9	100	Strongly Acid, pH=5.0	90	None	100	Smooth	100	81.0

Soil Map—Humboldt County, South Part, California



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Humboldt County, South Part, California
Survey Area Data: Version 5, Sep 12, 2016

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

Date(s) aerial images were photographed: Jun 16, 2010—Aug 24, 2010

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

Map Unit Legend

Humboldt County, South Part, California (CA601)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
100	Water and Fluvents, 0 to 2 percent slopes	216.8	1.9%
143	Shivelyflat, 0 to 2 percent slopes	7.7	0.1%
151	Parkland-Garberville complex, 2 to 9 percent slopes	8.7	0.1%
179	Eelriver and Cottoneva soils, 0 to 2 percent slopes	13.3	0.1%
402	Tannin-Wohly-Rockyglen complex, 50 to 75 percent slopes	85.1	0.7%
405	Tannin-Wohly-Rockyglen complex, 30 to 50 percent slopes	1,838.8	16.0%
407	Tannin-Wohly complex, 9 to 30 percent slopes	1,102.1	9.6%
410	Rockyglen-Hollowtree-Rock outcrop complex, 50 to 100 percent slopes	151.4	1.3%
451	Burgsblock-Coolyork-Tannin complex, 15 to 30 percent slopes	52.9	0.5%
452	Burgsblock-Coolyork-Tannin complex, 30 to 50 percent slopes	957.7	8.3%
461	Tannin-Burgsblock-Rockyglen complex, 30 to 50 percent slopes	456.2	4.0%
469	Tannin-Burgsblock-Rockyglen complex, 50 to 75 percent slopes	397.3	3.5%
513	Redwoodhouse-Yagercreek-Mailridge complex, 30 to 50 percent slopes	79.3	0.7%
514	Redwoodhouse-Yagercreek-Mailridge complex, 50 to 75 percent slopes	71.7	0.6%
570	Sproulish-Canoecreek-Redwohly complex, 15 to 30 percent slopes	95.1	0.8%
571	Sproulish-Canoecreek-Redwohly complex, 30 to 50 percent slopes	143.2	1.2%
572	Canoecreek-Sproulish-Redwohly complex, 50 to 75 percent slopes	140.5	1.2%

Humboldt County, South Part, California (CA601)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
573	Sproulish-Canoecreek-Redwohly complex, 15 to 30 percent slopes, warm	589.3	5.1%
574	Sproulish-Canoecreek-Redwohly complex, 30 to 50 percent slopes, dry	1,150.6	10.0%
575	Canoecreek-Sproulish-Redwohly complex, 50 to 75 percent slopes, dry	998.4	8.7%
643	Windynip-Rainbear complex, 15 to 50 percent slopes	213.6	1.9%
646	Wirefence-Windynip-Devilshole complex, 5 to 30 percent slopes	45.6	0.4%
649	Windynip-Wirefence-Devilshole complex, 30 to 50 percent slopes	0.5	0.0%
655	Yorknorth-Witherell complex, 15 to 30 percent slopes	255.2	2.2%
657	Yorknorth-Witherell complex, 2 to 15 percent slopes	60.0	0.5%
662	Yorknorth-Witherell complex, 30 to 50 percent slopes	340.6	3.0%
663	Yorknorth-Windynip complex, 15 to 50 percent slopes	155.2	1.4%
667	Dryfield-Yorknorth-Witherell complex, 5 to 30 percent slopes	124.5	1.1%
668	Dryfield-Yorknorth-Witherell complex, 30 to 50 percent slopes	327.4	2.8%
673	Coolyork-Yorknorth complex, 30 to 50 percent slopes	36.2	0.3%
4412	Hoagland-Chalkmountain-Pasturerock complex 15 to 30 percent slopes	444.2	3.9%
DA	Area not surveyed, access denied	929.5	8.1%
Totals for Area of Interest		**11,488.5**	**100.0%**

Appendix G

Wildlife

1. NSO Surveys, 2018-2020; Cameron Holmgren
2. Golden Eagle Data Sheets and Observation Map; NRM 2018-2019

Northern Spotted Owl Summary for Rolling Meadow Ranch THP

There are 6 NSO Activity Centers HUM966, HUM891, HUM342, HUM346, HUM523, HUM524 are located within 0.7 air miles of the plan area. All NSO surveys followed USFWS Scenario 4, Attachment A". All surveys were called with a digital caller.

2018 is the first year of NSO protocol surveys. Six complete visits were done in 2018. There were no NSO or Barred Owl detections in 2018.

The timber type is unevenaged redwood, Douglas-fir, Oregon white oak, California black oak, tanoak, madrone, maple and Pepperwood. Canopy cover ranges from 0 to 100 percent and is typed as Nesting/Roosting, Foraging habitat and Non habitat.

Attachment A Spotted Owls

Northern Spotted Owl Mitigation Measures:

- This THP falls within the cost range of the northern spotted owl.
- The plan will comply with 14CCR 919.9(e) using USFWS Scenario 4. Attachment A dated 3-15-11.
- No timber operations shall occur until all surveys (which follow the most current USFWS approved protocols) for the current, or immediately preceding, survey period are complete; the results have been provided to CALFIRE; and the results of CALFIRE's take avoidance determination have been incorporated into the plan
- Habitat retention levels and operational protection measures for any known, or future known, activity centers (ACs) within 0.7 mile radius of the plan are as follows:

For all known Activity Centers, timber operations should adhere to the following recommendations:

a. Within the 100-acre Core Area polygon of an NSO Activity Center (AC):
   1. Outside the breeding season, limited timber operations (i.e. road use and maintenance, map point work, tall-hold placements, use of existing skid roads, and loading) may be conducted, provided no trees > 11 inches DBH are cut or removed by the operations, and no logs are yarded through the Core Area.
   2.During the NSO breeding season, timber operations (including use of roads before July 9th), are not allowed within the 100-acre Core Area polygon, except as allowed in subsections d & e, below.

b. Timber operations outside the 100-acre Core Area polygon, but within 0.25 mile of an NSO AC:
   1. Outside the breeding season, timber operations may be conducted.
   2. During the breeding season, no timber operations should proceed unless protocol surveys do not detect nesting NSO's.

c. For all NSO Activity Centers, prior to May 15th (until the required May 15 or later survey is completed):
   1. Timber operations (except helicopter yarding or staging) may be conducted only on those THP areas >0.25 mile from the Activity Center.
   2. Helicopter yarding and staging may occur only on those THP areas >0.5 mile from the NSO AC.

d. For all NSO Activity Centers where reproductive status has been determined to be non-nesting or failed nesting:
   1. Limited timber operations (road use and maintenance, map point work, use of existing skid roads, tail-hold placements and loading) may be conducted within the 100-acre Core Area polygon of the Activity Center provided no trees >11 inches DBH are cut or remove by the operations, and no logs are yarded through the Core Area.
   2. Full timber operations, including helicopter yarding and staging, may be conducted within 0.25 mile but not within the 100-acre core polygon of the Activity Center, Helicopter fly-overs shall not occur within 1000 feet of the NSO AC.

e. For NSO Activity Centers, where reproductive status has been determined to be nesting:
   1. For Activity Centers where fledging status has been determined, timber operations may be conducted only on those THP areas that are >0.25 mile from the Activity Center until the end of the breading season.
   2. Helicopter yarding and staging may occur only on those THP areas >0.5 mile from the NSO AC.

f. For NSO Activity Centers, where fledging status has been determined (either nest failure or fledglings have left the Core Area):

1. Full timber operations, including helicopter yarding and staging, may be conducted within 0.25 mile but not within the 100-acre core polygon of the Activity Center. Helicopter fly-overs shall not occur within 1000 feet of the NSO AC.
2. Limited timber operations (road use and maintenance, map point work, use of existing skid roads, tail-hold placements and loading) may be conducted within the 100-acre Core Area polygon of the Activity Center provided no trees >11inches DBH are cut or removed by the operations, and no logs are yarded through the Core Area.

g. For any NSO Activity Center, regardless of reproductive status:

1. If NSO move to a new location (>1000 feet from the historical Activity Center) and reproductive behavior is confirmed at the new site, request technical assistance to evaluate the status of the historical AC.

Core Area Habitat Protection

a. Once an Activity Center has been accurately mapped, a 100-acre Core area polygon must be identified that contains the highest quality habitat (typically Nesting/Roosting) located contiguous with Activity Center.

b. When an Activity Center is surrounded by sufficient Nesting/Roosting habitat, the Core Area polygon is typically mapped starting with a 1,000-foot radius circle (72 acres) centered on the Activity center, and is connected on one side to a WLPZ and expanded until the Core Area includes 100 acres. Limited timber operations are allowed within the Core area polygon (see VIII, Timber Operations).

c. When an Activity Center is closer than 500 feet to the outside edge of the Nesting/Roosting polygon, the acres of non Nesting/Roosting habitat within 500 feet of the activity center are included, but should be augmented with additional Nesting/Roosting habitat elsewhere in the Core Area polygon to make a total of 100 acres of the highest quality habitat.

d. When the Activity Center is closer than 1,000 feet, but within 500 feet of the outside edge of the Nesting/Roosting polygon, the protected Core Area should extend to the most distant edge of the Nesting/Roosting habitat but shall not be less than a 500-foot radius.

e. Operations conducted outside the Core Area, but within 1,000 feet of an activity Center should retain the functionality of any NSO habitat present pre-harvest within this area, i.e. operations do not downgrade habitat.

f. Polygons of Nesting/Roosting habitat contiguous with the Activity Center, which are larger than 100 acres provide the most operational flexibility. If the Nesting/Roosting polygon is 200 acres or greater, and operations in the polygon outside the Core Area retained functional Nesting/Roosting habitat (i.e. no more than 33% of the basal area removed retaining a minimum of 100sq.ft. of basal area per acre of trees greater than 11" DBH), then the 100-acre core area can be redrawn in subsequent entries. However, the 500-foot radius should remain unchanged, and the redrawn core area should not include any acres harvested within the previous 5 years.

g. Within the 0.7 mile radius (985 acres) of each Activity Center please use the following:

1. Retain habitat to maximize attributes desirable for NSO.
2. Retain at least 500 acres of suitable (Nesting/Roosting/Foraging) NSO habitat, post-harvest, as follows:
    a) Retain 200 acres of Nesting/Roosting Habitat within a 0.7 mile radius of the Activity Center consisting of:
        I. 100 acres of the 200 acres of Nesting/Roosting habitat retained should be contiguous, or contiguous as possible with the Activity Center.
        II. An additional 100 acres of Nesting/Roosting within the 0.7 mile radius:
            1) If the second 100 acres of Nesting/Roosting habitat is also contiguous with the Activity Center, or within the same drainage, operations should retain a minimum of 66% of the pre-harvest basal area per acre of trees at least 11" DBH.
            2) If the remaining 100 acres of Nesting/Roosting habitat is not contiguous with the Activity Center, retain at least 100acres of Nesting/Roosting habitat.
    b) Retain at least 300 acres of Suitable NSO habitat, post-harvest, of at least Foraging quality.
3. Remove no more than 1/3 of the remaining suitable habitat in excess of 500 acres within 0.7 mile of an Activity Center during the life of the timber operations.

Road Use

a. To avoid take of NSO from noise disturbance (see U.S. Fish & Wildlife Service 2006) road use within 0.25 mile (1,320 feet) of a NSO Activity Center during the breeding season is prohibited until July 10, unless:

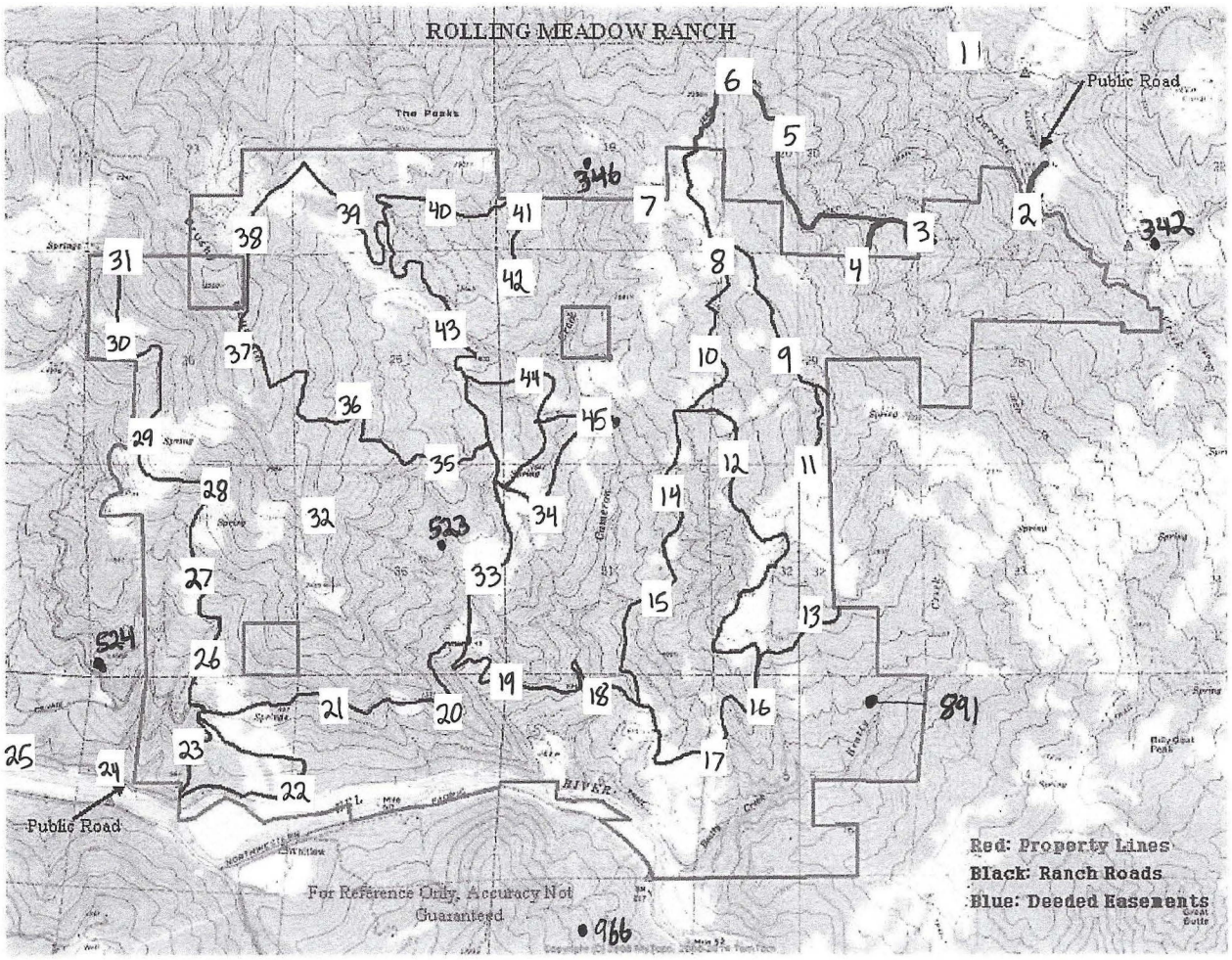
1. Non-nesting, or nesting failure at the Activity Center has been determined by an Activity Center Search (2011 NSO Protocol) conducted on or after May 15, or:
2. The Activity Center (AC) is within, 165 feet of a major highway that typically has continuous traffic year around (HWY 1, 36, 101, 128, 299, etc.) and the appurtenant road is not within 165 feet of the AC.
3. After July 9th until the end of the breeding season road use within the 100-acre core area is restricted to existing road use, maintenance and map point work.

USFWS Definitions

a. Foraging Habitat: Habitat that contains > 40% canopy cover of trees that are > 11" DBH, and have a basal area >75 square feet per acre of trees >11" DBH. Trees may be hardwoods or conifers.

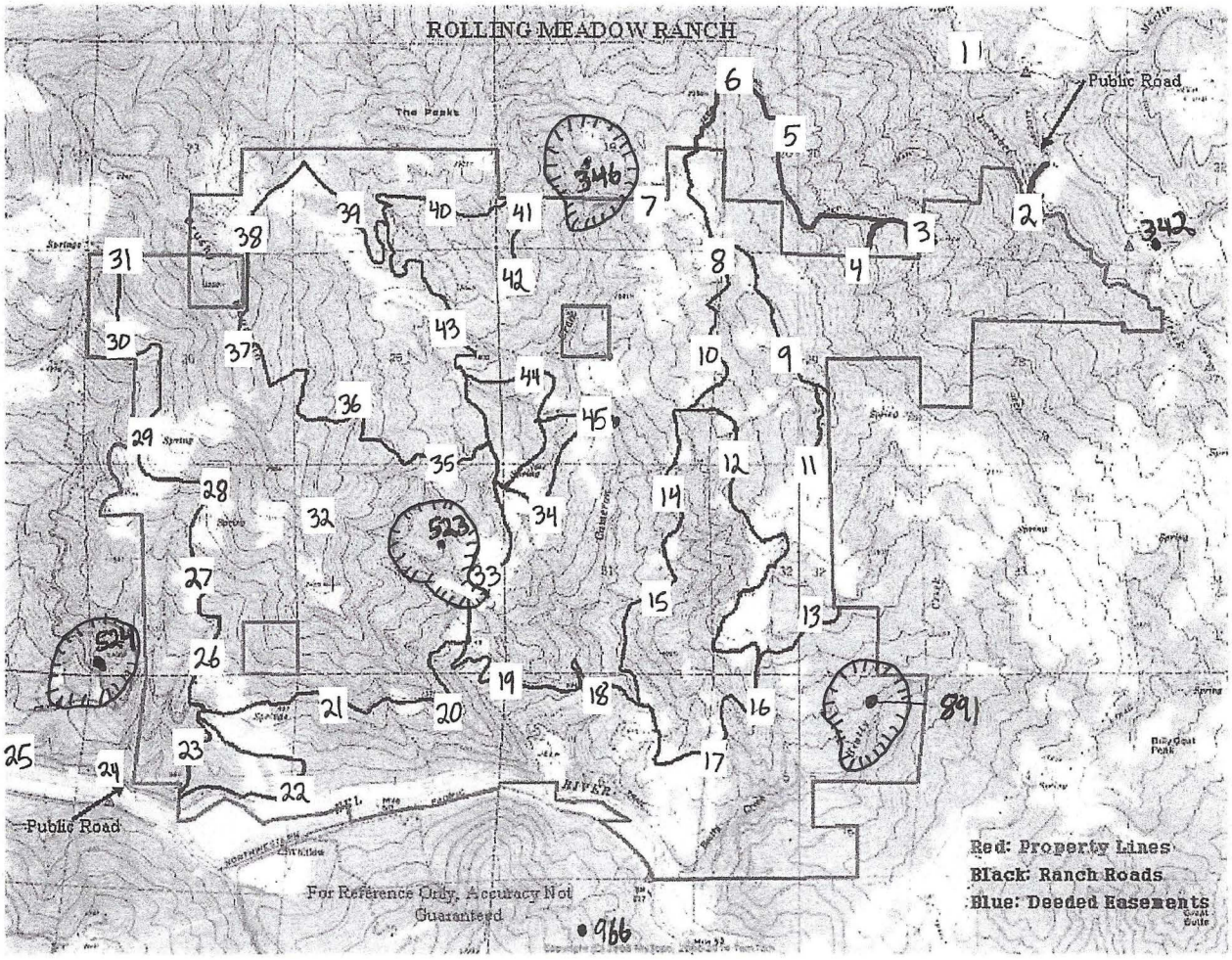
b. Nesting/Roosting Habitat: Forested habitat that supports successful nesting and associated roosting behavior by NSO. Habitat with>60% canopy cover of trees that are > 11" DBH, and have a basal area > 100 square feet per acre of trees > 11" DBH. Trees may be conifer or hardwood.

2018 NSO Calling Station Map



NSO Core Area Map - ~~~~~~~~

Each NSO Activity Center - Has a 100 acre NO cut zone.



Northern Spotted Owl Survey Form

Visit # 1

Project			
Rolling Meadow Ranch			
Observer	Date	Weather, Wind, Temp.	
Cameron Holmgren	3/27/18	CL, 1, 47°F	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
31	1937	1947	NC						
30	1956	2006	NC						
29	2012	2022	NC						
28	2029	2039	NC						
27	2044	2054	NC						
26	2059	2109	NC						
23	2114	2124	NC						
25	2134	2144	NC						
24	2148	2158	NC						
22	2211	2221	NC						
21	2230	2240	NC						
32	2259	2309	NC						
37	2316	2326	NC						
36	2341	2351	NC						
35	2356	0106	NC						
43	0114	0124	NC						
39	0133	0143	NC						
38	0159	0209	NC						
40	0220	0230	NC						
41	0236	0246	NC						
42	0257	0307	NC						
44	0329	0339	NC						
45	0344	0354	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 1

Project: Rolling Meadows

Observer: Justin Tallman | Date: 3/27-18 | Weather, Wind, Temp.: PC 1-2 40-45

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
20	1940	1950	N/C						
34	2005	2015	N/C						
33	2022	2032	N/C						
19	2040	2050	N/C						
18	2058	2108	N/C						
15	2116	2126	N/C						
14	2134	2144	N/C						
17	2200	2210	N/C						
16	2216	2226	N/C						
13	2235	2245	N/C						
11	2254	2304	N/C						
9	2311	2321	N/C						
12	2332	2342	N/C						
10	2351	0101	N/C						
8	0109	0119	N/C						
7	0129	0139	N/C						
6	0145	0155	N/C						
5	0204	0214	N/C						
4	0221	0231	N/C						
3	0237	0247	N/C						
2	0256	0306	N/C						
1	0410	0420	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 2

Project		
Rolling Meadow Ranch		
Observer	Date	Weather, Wind, Temp.
Cameron Holmgren	4/10/18	CL, 1, 44°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
25	1951	2001	NC						
24	2005	2015	NC						
23	2024	2034	NC						
22	2045	2055	NC						
26	2107	2117	NC						
27	2124	2134	NC						
28	2145	2155	NC						
29	2201	2211	NC						
30	2220	2230	NC						
31	2240	2250	NC						
21	2318	2328	NC						
37	2346	2356	NC						
32	0106	0116	NC						
36	0122	0132	NC						
35	0137	0147	NC						
38	0214	0224	NC						
39	0230	0240	NC						
42	0259	0309	NC						
41	0315	0325	NC						
40	0330	0340	NC						
43	0349	0359	NC						
44	0404	0414	NC						
45	0418	0428	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 2

Project	Rolling Meadows		
Observer	Justin Tallman	Date 4/10/18	Weather, Wind, Temp. OC/F6

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
14	1951	2051	N/C						
15	2057	2107	N/C						
18	2114	2124	N/C						
19	2130	2140	N/C						
20	2146	2156	N/C						
33	2204	2214	N/C						
34	2220	2230	N/C						
17	2247	2257	N/C						
16	2302	2312	N/C						
13	2319	2329	N/C						
11	2336	2346	N/C						
9	2357	0107	N/C						
8	0114	0124	N/C						
10	0130	0140	N/C						
12	0146	0156	N/C						
7	0203	0213	N/C						
6	0220	0230	N/C						
5	0236	0246	N/C						
4	0252	0302	N/C						
3	0309	0319	N/C						
2	0326	0336	N/C						
1	0352	0402	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 3

Project		
Rolling Meadow Ranch		
Observer	Date	Weather, Wind, Temp.
Cameron Holmgren	5/7/18	OC, 2, 50°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
45	2019	2029	NC						
44	2034	2044	NC						
43	2049	2059	NC						
39	2106	2116	NC						
38	2122	2132	NC						
40	2143	2153	NC						
41	2158	2208	NC						
42	2215	2225	NC						
35	2244	2254	NC						
36	2300	2310	NC						
32	2315	2325	NC						
37	2332	2342	NC						
21	0105	0115	NC						
22	0127	0137	NC						
31	0219	0229	NC						
30	0234	0244	NC						
29	0250	0300	NC						
28	0307	0317	NC						
27	0323	0333	NC						
26	0338	0348	NC						
23	0354	0404	NC						
24	0416	0426	NC						
25	0430	0440	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 3

Project: Rolling meadows

Observer: Justin Tallman

Date: 5/7-18

Weather, Wind, Temp.: OC 1-2 40-45

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
1	2020	2030	N/C						
2	2042	2052	N/C						
3	2100	2110	N/C						
4	2115	2125	N/C						
5	2131	2141	N/C						
6	2146	2156	N/C						
7	2203	2213	N/C						
8	2219	2229	N/C						
9	2236	2246	N/C						
11	2253	2303	N/C						
10	2313	2323	N/C						
12	2330	2340	N/C						
14	2351	0101	N/C						
15	0108	0118	N/C						
17	0127	0137	N/C						
16	0146	0156	N/C						
13	0207	0217	N/C						
18	0229	0239	N/C						
19	0247	0257	N/C						
33	0307	0317	N/C						
34	0325	0335	N/C						
20	0346	0356	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____

Data Entered _____

Northern Spotted Owl Survey Form

Visit # 4

Project		
Rolling Meadow Ranch		
Observer	Date	Weather, Wind, Temp.
Cameron Holmgren	6/4/18	CL, 1, 55°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
42	2045	2055	NC						
41	2100	2110	NC						
40	2115	2125	NC						
39	2131	2141	NC						
38	2147	2157	NC						
43	2209	2219	NC						
37	2230	2240	NC						
32	2247	2257	NC						
36	2306	2316	NC						
35	2320	2330	NC						
21	2344	2354	NC						
22	0119	0129	NC						
31	0158	0208	NC						
30	0216	0226	NC						
29	0237	0247	NC						
28	0255	0305	NC						
27	0312	0322	NC						
26	0327	0337	NC						
23	0343	0353	NC						
24	0402	0412	NC						
25	0416	0426	NC						
45	0450	0500	NC						
44	0506	0516	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 4

Project			
Rolling Meadows			
Observer	Date	Weather, Wind, Temp.	
Justin Tallman	6-4-18	CL 1	50s2

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
34	2045	2055	N/C						
33	2101	2111	N/C						
20	2117	2127	N/C						
19	2136	2146	N/C						
18	2152	2202	N/C						
17	2210	2220	N/C						
16	2226	2236	N/C						
13	2241	2251	N/C						
12	2302	2312	N/C						
15	2322	2332	N/C						
14	2340	2350	N/C						
10	2359	0109	N/C						
8	0116	0126	N/C						
9	0134	0144	N/C						
11	0152	0202	N/C						
7	0231	0241	N/C						
6	0250	0300	N/C						
5	0306	0316	N/C						
4	0320	0330	N/C						
3	0336	0346	N/C						
2	0355	0405	N/C						
1	0419	0429	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 5

Project			
Rolling Meadow Ranch			
Observer	Date	Weather, Wind, Temp.	
Cameron Holmgren	6/21/18	CL, 2, 54°F	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
25	2051	2101	NC						
24	2105	2115	NC						
23	2124	2134	NC						
22	2144	2154	NC						
26	2209	2219	NC						
27	2226	2236	NC						
28	2244	2254	NC						
29	2301	2311	NC						
30	2319	2329	NC						
31	2339	2349	NC						
45	0124	0134	NC						
44	0140	0150	NC						
43	0157	0207	NC						
39	0214	0224	NC						
38	0231	0241	NC						
40	0253	0303	NC						
41	0307	0317	NC						
42	0321	0331	NC						
35	0356	0406	NC						
36	0411	0421	NC						
37	0427	0437	NC						
32	0443	0453	NC						
21	0515	0525	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 5

Project: Rolling Meadows

Observer: Justin Tallman | Date: 6/21/18 | Weather, Wind, Temp.: CL 1-2 55°

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
1	2051	2101	N/C						
2	2116	2126	N/C						
3	2132	2142	N/C						
4	2148	2158	N/C						
5	2207	2217	N/C						
6	2224	2234	N/C						
7	2240	2250	N/C						
8	2257	2307	N/C						
9	2316	2326	N/C						
11	2334	2344	N/C						
10	2357	0107	N/C						
12	0117	0127	N/C						
13	0134	0144	N/C						
16	0151	0201	N/C						
17	0209	0219	N/C						
14	0227	0237	N/C						
15	0244	0254	N/C						
18	0300	0310	N/C						
19	0316	0326	N/C						
20	0335	0345	N/C						
33	0352	0402	N/C						
34	0409	0419	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 6

Project	Rolling Meadows		
Observer	Justin Tallman	Date	6/29/18
Weather, Wind, Temp.	CL 1-2 55		

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
1	2052	2102	N/C						
2	2112	2122	N/C						
3	2130	2140	N/C						
4	2146	2156	N/C						
5	2204	2214	N/C						
6	2220	2230	N/C						
7	2236	2246	N/C						
8	2254	2304	N/C						
9	2312	2322	N/C						
11	2330	2340	N/C						
10	2357	0107	N/C						
12	0114	0124	N/C						
13	0130	0140	N/C						
16	0147	0157	N/C						
17	0204	0214	N/C						
14	0231	0241	N/C						
15	0252	0302	N/C						
18	0312	0322	N/C						
19	0330	0340	N/C						
20	0348	0358	N/C						
33	0409	0419	N/C						
34	0426	0436	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 6

Project		
Rolling Meadow Ranch		
Observer	Date	Weather, Wind, Temp.
Cameron Holmgren	6/29/18	CL, 0, 56°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
31	2053	2103	NC						
30	2109	2119	NC						
29	2125	2135	NC						
28	2142	2152	NC						
27	2200	2210	NC						
26	2216	2226	NC						
21	2234	2244	NC						
32	2304	2314	NC						
37	2320	2330	NC						
36	2336	2346	NC						
35	2350	0100	NC						
45	0107	0117	NC						
44	0121	0131	NC						
43	0136	0146	NC						
39	0153	0203	NC						
38	0211	0221	NC						
40	0234	0244	NC						
41	0249	0259	NC						
42	0316	0326	NC						
22	0402	0412	NC						
23	0425	0435	NC						
24	0442	0452	NC						
25	0456	0506	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

2019 Northern Spotted Owl Summary for Rolling Meadow Ranch THP

There are 6 NSO Activity Centers HUM966, HUM891, HUM342, HUM346, HUM523, HUM524 located within 0.7 air miles of the ownership area. All NSO surveys followed USFWS Scenario 4, Attachment A". All surveys were called with a digital caller.

2019 is the second year of NSO protocol surveys. Six complete visits were done in 2019. There was a single male vocal detection on visit 1. A follow up stand search of the detection area was done the next day and no NSO's were found. On visit 5 an additional stand search of the male NSO vocal detection area was done and NSO's were not detected. The Single Male NSO vocal detection was heard early in the breeding season and no additional NSO detections were heard in the area. A large portion of NSO roosting/nesting habitat was being logged across the Eel River to the south of the ownership during the time of the NSO response. In 2019 a single barred owl vocal detection was heard on visit 5.

2018 was the first year of NSO protocol surveys. Six complete visits were done in 2018. There were no NSO or Barred Owl detections in 2018.

The timber type is unevenaged redwood, Douglas-fir, Oregon white oak, California black oak, tanoak, madrone, maple and Pepperwood. Canopy cover ranges from 0 to 100 percent and is typed as Nesting/Roosting, Foraging habitat and Non habitat.

Attachment A Spotted Owls

Northern Spotted Owl Mitigation Measures:

- This THP falls within the cost range of the northern spotted owl.
- The plan will comply with 14CCR 919.9(e) using USFWS Scenario 4. Attachment A dated 3-15-11.
- No timber operations shall occur until all surveys (which follow the most current USFWS approved protocols) for the current, or immediately preceding, survey period are complete; the results have been provided to CALFIRE; and the results of CALFIRE's take avoidance determination have been incorporated into the plan
- Habitat retention levels and operational protection measures for any known, or future known, activity centers (ACs) within 0.7 mile radius of the plan are as follows:

For all known Activity Centers, timber operations should adhere to the following recommendations:

a. Within the 100-acre Core Area polygon of an NSO Activity Center (AC):
   1. Outside the breeding season, limited timber operations (i.e. road use and maintenance, map point work, tall-hold placements, use of existing skid roads, and loading) may be conducted, provided no trees > 11 inches DBH are cut or removed by the operations, and no logs are yarded through the Core Area.
   2.During the NSO breeding season, timber operations (including use of roads before July 9th), are not allowed within the 100-acre Core Area polygon, except as allowed in subsections d & e, below.

b. Timber operations outside the 100-acre Core Area polygon, but within 0.25 mile of an NSO AC:
   1. Outside the breeding season, timber operations may be conducted.
   2. During the breeding season, no timber operations should proceed unless protocol surveys do not detect nesting NSO's.

c. For all NSO Activity Centers, prior to May 15th (until the required May 15 or later survey is completed):
   1. Timber operations (except helicopter yarding or staging) may be conducted only on those THP areas >0.25 mile from the Activity Center.
   2. Helicopter yarding and staging may occur only on those THP areas >0.5 mile from the NSO AC.

d. For all NSO Activity Centers where reproductive status has been determined to be non-nesting or failed nesting:
   1. Limited timber operations (road use and maintenance, map point work, use of existing skid roads, tail-hold placements and loading) may be conducted within the 100-acre Core Area polygon of the Activity Center provided no trees >11 inches DBH are cut or remove by the operations, and no logs are yarded through the Core Area.

2. Full timber operations, including helicopter yarding and staging, may be conducted within 0.25 mile but not within the 100-acre core polygon of the Activity Center, Helicopter fly-overs shall not occur within 1000 feet of the NSO AC.

e. For NSO Activity Centers, where reproductive status has been determined to be nesting:
   1. For Activity Centers where fledging status has been determined, timber operations may be conducted only on those THP areas that are >0.25 mile from the Activity Center until the end of the breading season.
   2. Helicopter yarding and staging may occur only on those THP areas >0.5 mile from the NSO AC.

f. For NSO Activity Centers, where fledging status has been determined (either nest failure or fledglings have left the Core Area):
   1. Full timber operations, including helicopter yarding and staging, may be conducted within 0.25 mile but not within the 100-acre core polygon of the Activity Center. Helicopter fly-overs shall not occur within 1000 feet of the NSO AC.
   2. Limited timber operations (road use and maintenance, map point work, use of existing skid roads, tail-hold placements and loading) may be conducted within the 100-acre Core Area polygon of the Activity Center provided no trees >11inches DBH are cut or removed by the operations, and no logs are yarded through the Core Area.

g. For any NSO Activity Center, regardless of reproductive status:
   1. If NSO move to a new location (>1000 feet from the historical Activity Center) and reproductive behavior is confirmed at the new site, request technical assistance to evaluate the status of the historical AC.

Core Area Habitat Protection

a. Once an Activity Center has been accurately mapped, a 100-acre Core area polygon must be identified that contains the highest quality habitat (typically Nesting/Roosting) located contiguous with Activity Center.

b. When an Activity Center is surrounded by sufficient Nesting/Roosting habitat, the Core Area polygon is typically mapped starting with a 1,000-foot radius circle (72 acres) centered on the Activity center, and is connected on one side to a WLPZ and expanded until the Core Area includes 100 acres. Limited timber operations are allowed within the Core area polygon (see VIII, Timber Operations).

c. When an Activity Center is closer than 500 feet to the outside edge of the Nesting/Roosting polygon, the acres of non Nesting/Roosting habitat within 500 feet of the activity center are included, but should be augmented with additional Nesting/Roosting habitat elsewhere in the Core Area polygon to make a total of 100 acres of the highest quality habitat.

d. When the Activity Center is closer than 1,000 feet, but within 500 feet of the outside edge of the Nesting/Roosting polygon, the protected Core Area should extend to the most distant edge of the Nesting/Roosting habitat but shall not be less than a 500-foot radius.

e. Operations conducted outside the Core Area, but within 1,000 feet of an activity Center should retain the functionality of any NSO habitat present pre-harvest within this area, i.e. operations do not downgrade habitat.

f. Polygons of Nesting/Roosting habitat contiguous with the Activity Center, which are larger than 100 acres provide the most operational flexibility. If the Nesting/Roosting polygon is 200 acres or greater, and operations in the polygon outside the Core Area retained functional Nesting/Roosting habitat (i.e. no more than 33% of the basal area removed retaining a minimum of 100sq.ft. of basal area per acre of trees greater than 11" DBH), then the 100-acre core area can be redrawn in subsequent entries. However, the 500-foot radius should remain unchanged, and the redrawn core area should not include any acres harvested within the previous 5 years.

g. Within the 0.7 mile radius (985 acres) of each Activity Center please use the following:
   1. Retain habitat to maximize attributes desirable for NSO.
   2. Retain at least 500 acres of suitable (Nesting/Roosting/Foraging) NSO habitat, post-harvest, as follows:
      a) Retain 200 acres of Nesting/Roosting Habitat within a 0.7 mile radius of the Activity Center consisting of:
         I. 100 acres of the 200 acres of Nesting/Roosting habitat retained should be contiguous, or contiguous as possible with the Activity Center.
         II. An additional 100 acres of Nesting/Roosting within the 0.7 mile radius:

1) If the second 100 acres of Nesting/Roosting habitat is also contiguous with the Activity Center, or within the same drainage, operations should retain a minimum of 66% of the pre-harvest basal area per acre of trees at least 11" DBH.
2) If the remaining 100 acres of Nesting/Roosting habitat is not contiguous with the Activity Center, retain at least 100acres of Nesting/Roosting habitat.

b) Retain at least 300 acres of Suitable NSO habitat, post-harvest, of at least Foraging quality.

3. Remove no more than 1/3 of the remaining suitable habitat in excess of 500 acres within 0.7 mile of an Activity Center during the life of the timber operations.

Road Use

a. To avoid take of NSO from noise disturbance (see U.S. Fish & Wildlife Service 2006) road use within 0.25 mile (1,320 feet) of a NSO Activity Center during the breeding season is prohibited until July 10, unless:

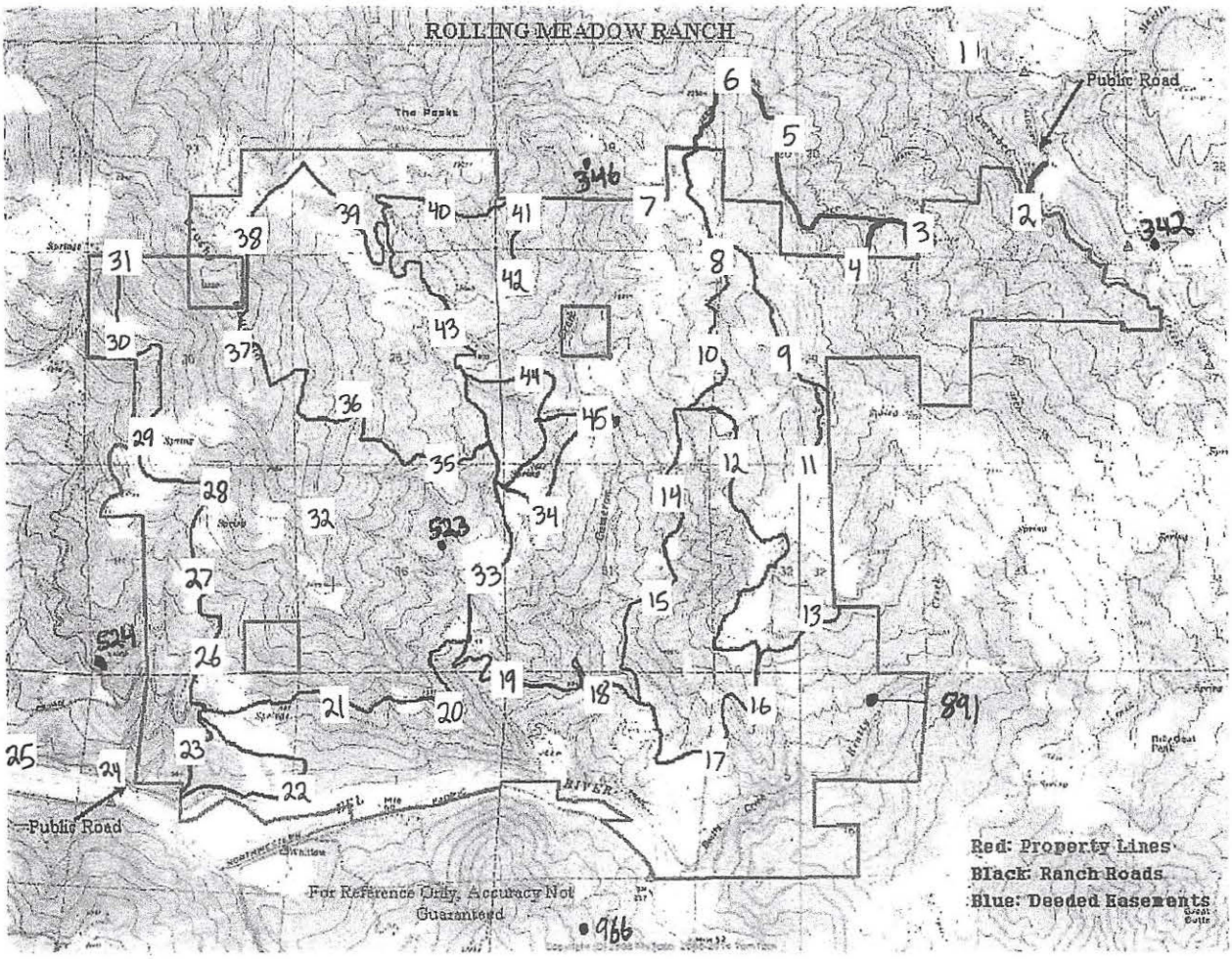
1. Non-nesting, or nesting failure at the Activity Center has been determined by an Activity Center Search (2011 NSO Protocol) conducted on or after May 15, or:
2. The Activity Center (AC) is within, 165 feet of a major highway that typically has continuous traffic year around (HWY 1, 36, 101, 128, 299, etc.) and the appurtenant road is not within 165 feet of the AC.
3. After July 9th until the end of the breeding season road use within the 100-acre core area is restricted to existing road use, maintenance and map point work.

USFWS Definitions

a. Foraging Habitat: Habitat that contains > 40% canopy cover of trees that are > 11" DBH, and have a basal area >75 square feet per acre of trees >11" DBH. Trees may be hardwoods or conifers.

b. Nesting/Roosting Habitat: Forested habitat that supports successful nesting and associated roosting behavior by NSO. Habitat with>60% canopy cover of trees that are > 11" DBH, and have a basal area > 100 square feet per acre of trees > 11" DBH. Trees may be conifer or hardwood.

2019 NSO Calling Station Map



Northern Spotted Owl Survey Form

Visit # 1

Project: Rolling Meadow Ranch

Observer: Cameron Holmgren | Date: 3/31/19 | Weather, Wind, Temp.: CL, 0, 52°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
31	1944	1954	NC						
30	1959	2009	NC						
29	2013	2023	NC						
28	2028	2038	NC						
27	2043	2053	NC						
26	2057	2107	NC						
23	2112	2122	NC						
25	2133	2143	NC						
24	2147	2157	NC						
22	2207	2217	NC						
21	2226	2236	NC						
35	2249	2259	NC						
36	2304	2314	NC						
37	2318	2328	NC						
38	0101	0111	NC						
39	0116	0126	NC						
40	0136	0146	NC						
41	0153	0203	NC						
42	0213	0222	NC						
43	0243	0253	NC						
44	0259	0309	NC						
45	0314	0324	NC						
32	0341	0351	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 1

Project			
	Rolling Meadows		
Observer	Date	Weather, Wind, Temp.	
Justin Tallman	3/31/19	CL 0-1 50°	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
★	2025	2040	CON	2027	NSO	M	280°	700yd	★ is were i was unloading
34	2101	2111	NC						Quad, but caller on while
18	2126	2136	NC						unloading. Got a strong
17	2140	2150	NC						4 note male. Calling back
16	2154	2204	NC						he continued calling after
13	2209	2219	NC						the 10 minutes and stayed
11	2224	2234	NC						in same spot. Dropped
9	2239	2249	NC						stations 19, 20, 33
8	2257	2307	NC						
10	2314	2324	NC						
12	2329	2339	NC						
14	2347	2357	NC						
15	0107	0117	NC						
7	0131	0141	NC						
6	0148	0158	NC						
5	0207	0217	NC						
4	0226	0236	NC						
3	0244	0254	NC						
2	0306	0316	NC						
1	0328	0338	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

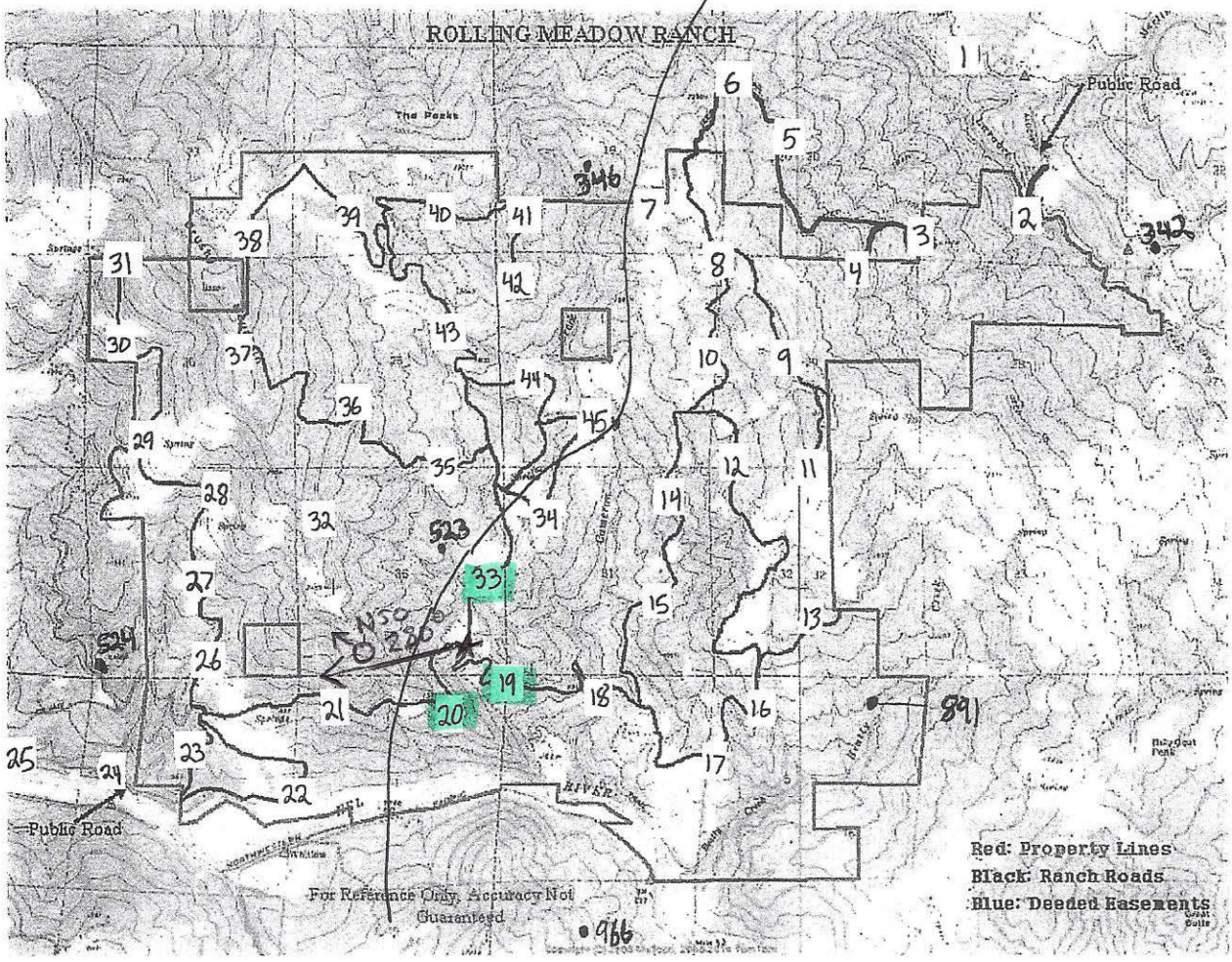
Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____


ROLLING MEADOW RANCH
Public Road
Public Road
346
342
523
529
N30°E
220
991
966
Red: Property Lines
Black: Ranch Roads
Blue: Deeded Easements
For Reference Only, Accuracy Not Guaranteed

Northern Spotted Owl Survey Form

Visit # follow-up

Project			
Rolling Meadows			
Observer	Date	Weather, Wind, Temp.	
Justin Tallman	4/1/19	OC 1-2 48-55	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
Status	0900	1200	N/C						Hiked up the hill softley calling and putting out mice to were I got the responce the night before. found some W.W. and a owl pellet on a stump 300-400 yards up from road. nice owl habitat. I continued calling & Hiking but No responce

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

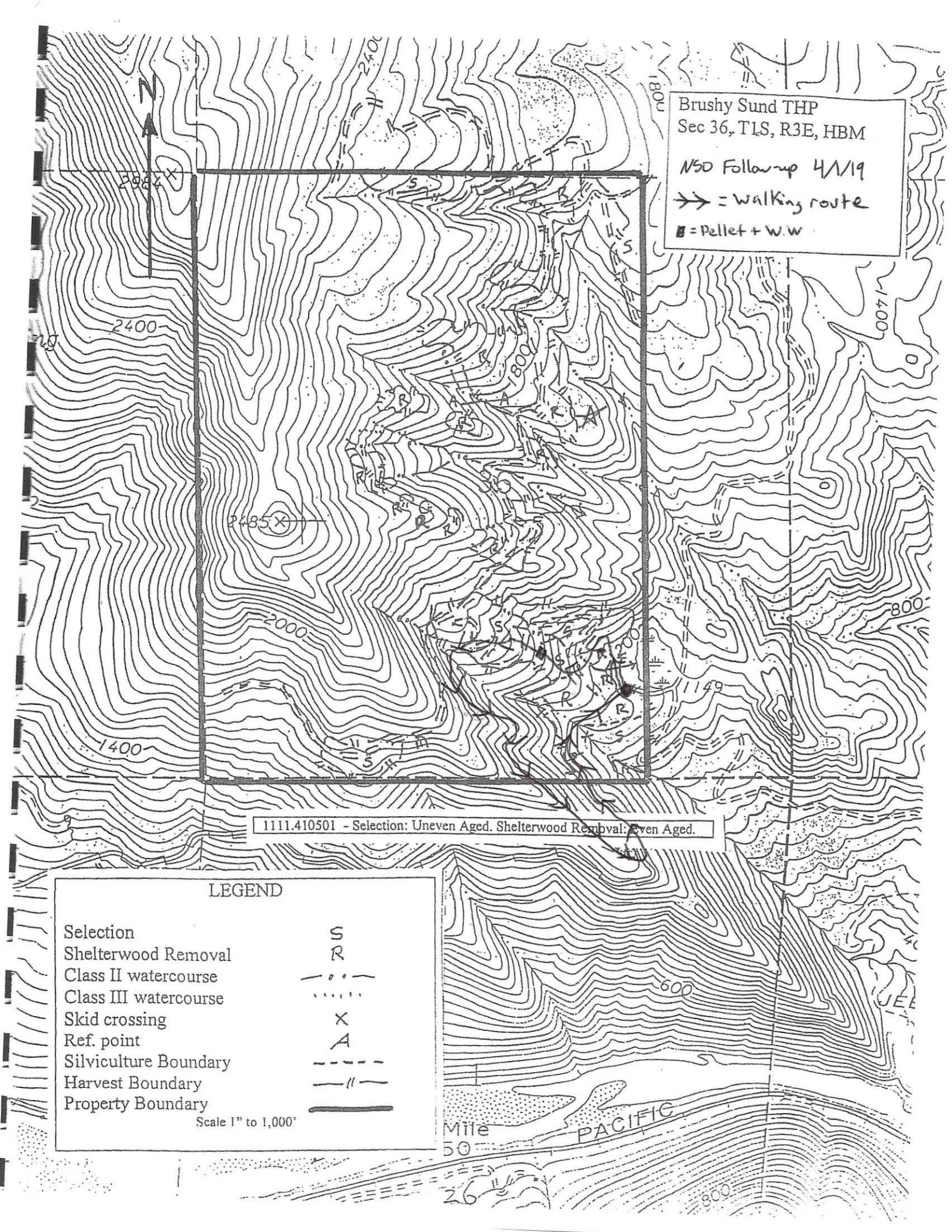
Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____


Brushy Sund THP
Sec 36, T1S, R3E, HBM
N50 Follow-up 4/1/19
→→ = walking route
■ = Pellet + W.W
1111.410501 - Selection: Uneven Aged. Shelterwood Removal: Even Aged.
LEGEND
Selection S
Shelterwood Removal R
Class II watercourse
Class III watercourse
Skid crossing X
Ref. point A
Silviculture Boundary
Harvest Boundary
Property Boundary
Scale 1" to 1,000'
PACIFIC
2485
2400
2000
1800
1400
1200
1000
800
600

Northern Spotted Owl Survey Form

Visit # 2

Project		
Rolling Meadow Ranch		
Observer	Date	Weather, Wind, Temp.
Cameron Holmgren	4/29/19	CL, 2, 52°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
42	2010	2020	NC						
41	2029	2039	NC						
40	2044	2054	NC						
38	2103	2113	NC						
39	2117	2127	NC						
43	2133	2143	NC						
45	2150	2200	NC						
44	2204	2214	NC						
37	2230	2240	NC						
36	2245	2255	NC						
35	2259	2309	NC						
32	2317	2327	NC						
21	2339	2349	NC						
26	2357	0107	NC						
27	0111	0121	NC						
28	0125	0135	NC						
29	0140	0150	NC						
30	0154	0204	NC						
31	0208	0218	NC						
22	0237	0247	NC						
23	0255	0305	NC						
24	0316	0326	NC						
25	0330	0340	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 2

Project	Rolling meadows		
Observer	Justin Tallman	Date 4/29/19	Weather, Wind, Temp. CL, 2, 52°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
34	2010	2020							
33	2024	2034							
20	2042	2052							
19	2059	2109							
18	2114	2124							
15	2132	2142							
14	2150	2200							
12	2209	2219							
10	2231	2241							
8	2247	2257							
9	2307	2317							
11	2324	2334							
13	2341	2351							
16	2358	0108							
17	0116	0126							
7	0152	0202							
6	0209	0219							
5	0226	0236							
4	0247	0257							
3	0309	0319							
2	0326	0336							
1	0356	0406							

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 3

Project			
Rolling Meadows Ranch			
Observer	Date	Weather, Wind, Temp.	
Cameron Holmgren	5/11/19	CL, 2, 54°F	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
31	2031	2041	NC						
30	2046	2056	NC						
29	2101	2111	NC						
28	2115	2125	NC						
27	2130	2140	NC						
26	2144	2154	NC						
21	2203	2213	NC						
32	2235	2245	NC						
37	2254	2304	NC						
36	2311	2321	NC						
35	2326	2336	NC						
45	2344	2354	NC						
44	2359	0109	NC						
43	0114	0124	NC						
38	0133	0143	NC						
39	0149	0159	NC						
40	0206	0216	NC						
42	0233	0243	NC						
41	0250	0300	NC						
23	0342	0352	NC						
22	0402	0412	NC						
24	0427	0437	NC						
25	0440	0450	NC						
			NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 3

Project	Rolling Meadows		
Observer	Justin Tallman	Date 5/11/19	Weather, Wind, Temp. OC / 1-2-50

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
34	2030	2040	N/C						
33	2047	2057	N/C						
20	2105	2115	N/C						
19	2123	2133	N/C						
18	2139	2149	N/C						
17	2156	2206	N/C						
16	2210	2220	N/C						
13	2225	2235	N/C						
11	2242	2252	N/C						
9	2300	2310	N/C						
8	2316	2326	N/C						
10	2333	2343	N/C						
14	2350	0100	N/C						
15	0107	0117	N/C						
4	0141	0151	N/C						
3	0159	0209	N/C						
2	0216	0226	N/C						
7	0258	0308	N/C						
6	0326	0336	N/C						
5	0341	0351	N/C						
1	0439	0449	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 4

Project		
Rolling Meadow Ranch		
Observer	Date	Weather, Wind, Temp.
Cameron Holmgren	5/31/19	CL, 2, 55°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
42	2045	2055	NC						
41	2103	2113	NC						
40	2118	2128	NC						
38	2141	2151	NC						
39	2158	2208	NC						
43	2214	2224	NC						
44	2230	2240	NC						
45	2246	2256	NC						
32	2315	2325	NC						
37	2334	2344	NC						
36	2349	2359	NC						
35	0104	0114	NC						
21	0133	0143	NC						
31	0159	0209	NC						
30	0214	0224	NC						
29	0229	0239	NC						
28	0243	0253	NC						
27	0257	0307	NC						
26	0312	0322	NC						
23	0330	0340	NC						
22	0349	0359	NC						
24	0415	0425	NC						
25	0429	0439	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 4

Project			
Rolling Meadows			
Observer	Date	Weather, Wind, Temp.	
Justin Tallman	5/31/19	CL 1-2 55	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
34	2045	2055	N/C						
33	2106	2116	N/C						
20	2127	2137	N/C						
19	2144	2154	N/C						
18	2201	2211	N/C						
17	2217	2227	N/C						
16	2234	2244	N/C						
13	2252	2302	N/C						
9	2310	2320	N/C						
8	2329	2339	N/C						
10	2346	2356	N/C						
12	0107	0117	N/C						
14	0126	0136	N/C						
15	0142	0152	N/C						
7	0226	0236	N/C						
6	0244	0254	N/C						
5	0301	0311	N/C						
4	0317	0327	N/C						
3	0334	0344	N/C						
2	0351	0401	N/C						
1	0410	0420	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 5 Stand search

Project			
Rolling Meadows			
Observer	Date	Weather, Wind, Temp.	
Justin Tallman	6/9/19	CL 1-2 60	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
Stand search	1600	1900	N/C						Did a follow up stand search of area ↖ NSO was heard visit I walked all over hill side calling Looking for W.W and nest structures put mice out several different times. had crows circle at 1810. No Responce.

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

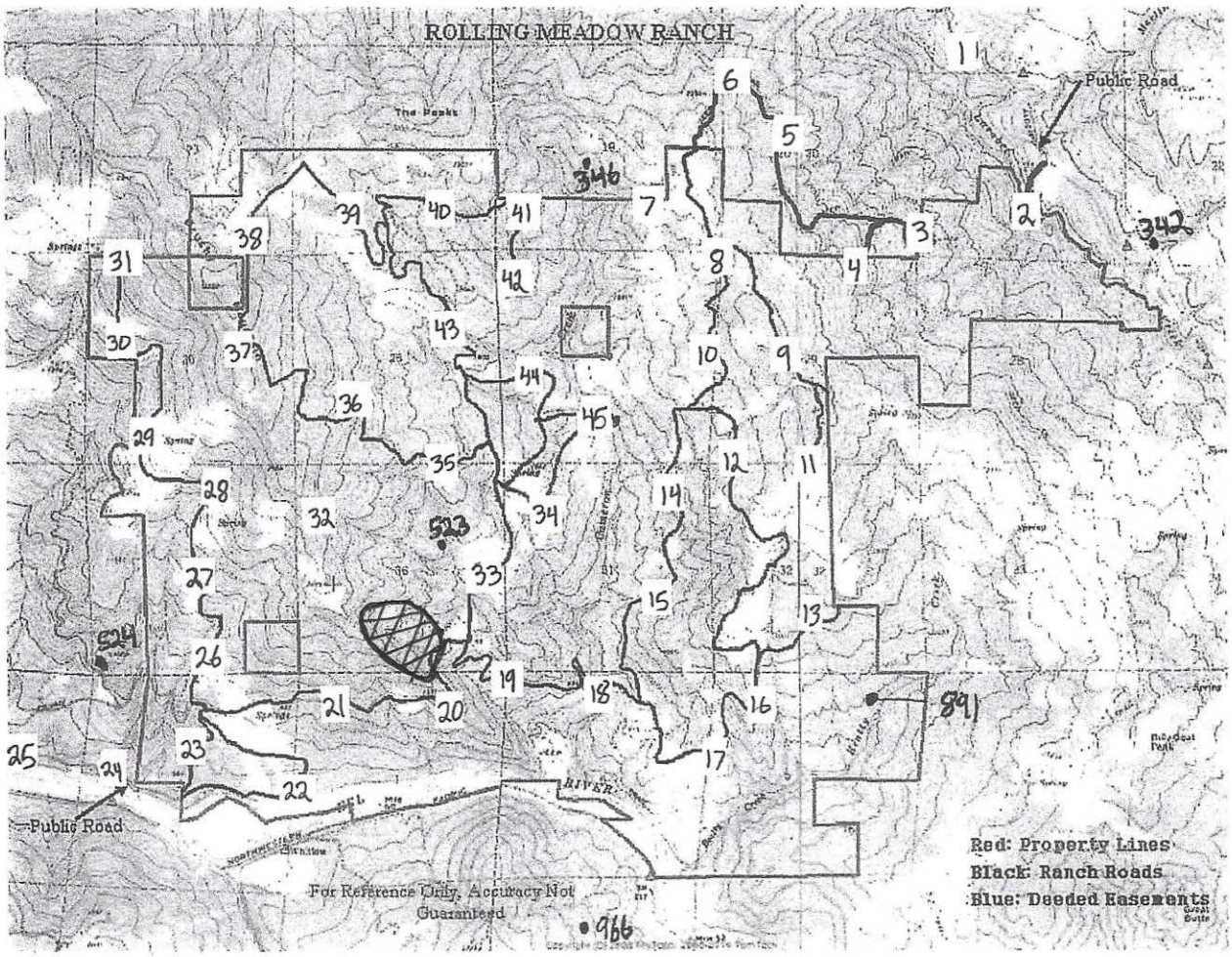
M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

2019 NSO Calling Station Map

NSO Stand Search Visit 5, 6/9/19

Stand Search area



Northern Spotted Owl Survey Form

Visit # 5

Project			
Rolling Meadows			
Observer	Date	Weather, Wind, Temp.	
Justin Tallman	6/9/19	CL 1-2 60	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
34	2055	2105	N/C						
33	2111	2121	N/C						
20	2126	2136	N/C						
19	2142	2152	N/C						
18	2158	2208	N/C						
15	2216	2226	N/C						
17	2237	2247	N/C						
16	2254	2304	N/C						
13	2310	2320	N/C						
11	2326	2336	N/C						
9	2344	2354	N/C						
8	0106	0116	N/C						
10	0124	0134	N/C						
12	0141	0151	N/C						
14	0158	0208	N/C						
7	0226	0236	N/C						
6	0247	0257	N/C						
5	0310	0330	N/C						
4	0338	0348	N/C						
3	0354	0404	N/C						
2	0411	0421	N/C						
1	0429	0439	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 5

Project		
Rolling Meadows		
Observer: Cameron Holmgren	Date: 6/9/19	Weather, Wind, Temp.: CL, 2, 59°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
31	2054	2104	NC						
30	2108	2118	NC						
29	2123	2133	NC						
28	2137	2147	NC						
27	2151	2201	NC						
26	2206	2216	NC						
25	2224	2234	NC						
24	2238	2248	NC						
23	2255	2305	NC						
22	2312	2322	NC						
21	2332	2342	NC						
32	2359	0109	NC						
37	0119	0129	NC						
36	0135	0145	Barred Owl				NNE	1,400'	Single Barred Owl Vocal Response
35	0150	0200	NC						
45	0211	0221	NC						
44	0227	0237	NC						
43	0242	0252	NC						
38	0259	0309	NC						
39	0314	0324	NC						
40	0330	0340	NC						
41	0345	0355	NC						
42	0402	0412	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

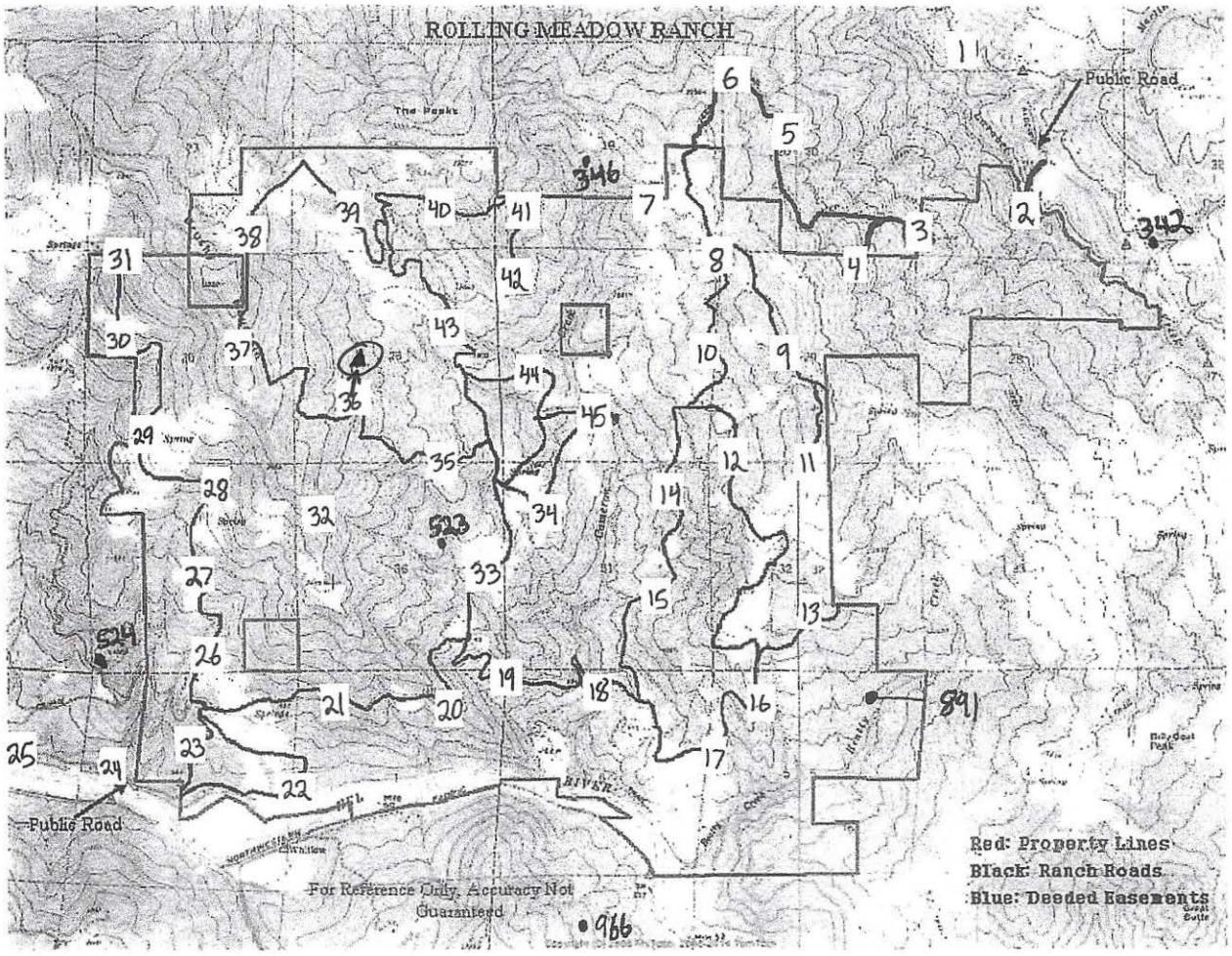
Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

2019 NSO Calling Station Map

Visit #5, 6/9/19 Barred owl Detection ▲



Northern Spotted Owl Survey Form

Visit # 6

Project		
Rolling Meadows		
Observer	Date	Weather, Wind, Temp.
Cameron Holmgren	6/24/19	CL, 1, 62°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
38	2057	2107	NC						
39	2112	2122	NC						
40	2129	2139	NC						
41	2143	2153	NC						
42	2201	2211	NC						
43	2226	2236	NC						
32	2257	2307	NC						
37	2320	2330	NC						
36	2335	2345	NC						
35	2351	0101	NC						
44	0109	0119	NC						
45	0124	0134	NC						
21	0149	0159	NC						
26	0206	0216	NC						
27	0220	0230	NC						
28	0235	0245	NC						
29	0249	0259	NC						
30	0304	0314	NC						
31	0318	0328	NC						
22	0349	0359	NC						
23	0407	0417	NC						
24	0424	0434	NC						
25	0438	0448	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 6

Project	Rolling Meadows		
Observer	Justin Tallman	Date 6/24/19	Weather, Wind, Temp. CL 1-2 55-60

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
34	2100	2110	N/C						
33	2116	2126	N/C						
20	2134	2144	N/C						
19	2151	2201	N/C						
18	2206	2216	N/C						
17	2221	2231	N/C						
16	2238	2248	N/C						
13	2256	2306	N/C						
11	2312	2322	N/C						
9	2330	2340	N/C						
8	2346	2356	N/C						
10	0106	0116	N/C						
14	0123	0133	N/C						
15	0140	0150	N/C						
7	0228	0238	N/C						
8	0247	0257	N/C						
6	0306	0316	N/C						
5	0324	0334	N/C						
4	0340	0350	N/C						
3	0358	0408	N/C						
2	0416	0426	N/C						
1	0439	0450	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

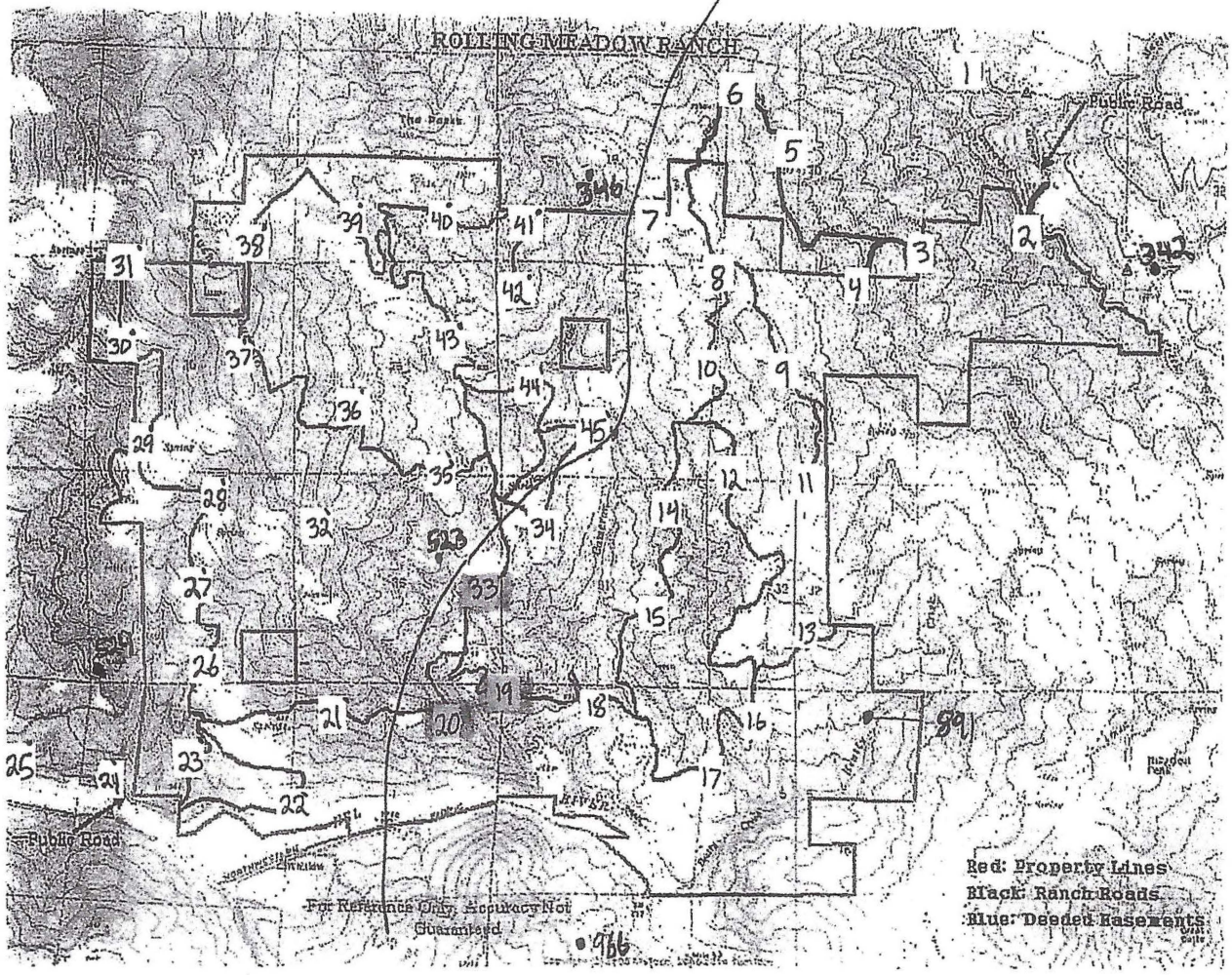
0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

2020 NSO Survey Info



Northern Spotted Owl Survey Form

Visit # 1

Project		
Rolling Meadows		Stand search
Observer	Date	Weather, Wind, Temp.
Justin Tallman	3-9-20	CL, 1-2, 55°

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
523.	1300	1600	NC						searched HU 523
									area. Put mice out
									Called. around 1410
									crows flew into
									trees so I stopped
									calling and put
									mice out Looking
									in tree's, after crows
									Left around 1500
									I started calling
									and searching again.

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form AC

Visit # 1 stand search

Project			
[redacted] Rolling Meadows			
Observer	Date	Weather, Wind, Temp.	
Cameron Holmgren	3/9/20	CL, 2, 50°F	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
Stand search	1431	1735	NC						I called at several different
Hum 891									locations near the AC Hum 891
									I looked for pellets and
									signs of white wash
									There were no NSO
									detections

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 1

Project: Rolling Meadows

Observer: Justin Tallman | Date: 3-9-20 | Weather, Wind, Temp.: CL 1-2 - 55°

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
34	1920	1930	N/C						
33	1934	1944	N/C						
20	1950	2000	N/C						
19	2004	2014	N/C						
18	2022	2032	N/C						
17	2038	2048	N/C						
16	2056	2106	N/C						
13	2112	2122	N/C						
11	2130	2140	N/C						
9	2146	2156	N/C						
8	2203	2213	N/C						
10	2219	2229	N/C						
12	2237	2247	N/C						
14	2258	2308	N/C						
15	2316	2326	N/C						
7	0131	0141	N/C						
6	0147	0157	N/C						
5	0204	0214	N/C						
4	0220	0230	N/C						
3	0236	0246	N/C						
2	0257	0307	N/C						
1	0322	0332	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 1

Project		
Rolling Meadows		
Observer	Date	Weather, Wind, Temp.
Cameron Holmgren	3/9/20	CL, 2, 48°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
42	1920	1930	NC						
41	1934	1944	NC						
40	1949	1959	NC						
38	2008	2018	NC						
39	2023	2033	NC						
43	2038	2048	NC						
44	2052	2102	NC						
45	2107	2117	NC						
35	2128	2138	NC						
36	2142	2152	NC						
37	2157	2207	NC						
32	2231	2241	NC						
21	2307	2317	NC						
26	2324	2334	NC						
27	2338	2348	NC						
28	2352	0102	NC						
29	0106	0116	NC						
30	0121	0131	NC						
31	0135	0145	NC						
22	0159	0209	NC						
23	0215	0225	NC						
24	0235	0245	NC						
25	0249	0259	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 2

Project			
Rolling Meadows			
Observer	Date	Weather, Wind, Temp.	
Justin Tallman	4-3-20	CL 1-2, 55-60	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
1	1944	1954	N/C						
2	2012	2024	N/C						
3	2030	2040	N/C						
4	2045	2055	N/C						
5	2102	2112	N/C						
6	2118	2128	N/C						
7	2136	2146	N/C						
8	2154	2204	N/C						
9	2209	2219	N/C						
11	2226	2236	N/C						
13	2244	2254	N/C						
16	2301	2311	N/C						
17	2316	2326	N/C						
15	2341	2351	N/C						
14	2359	0109	N/C						
10	0117	0127	N/C						
12	0136	0146	N/C						
18	0231	0241	N/C						
19	0247	0257	N/C						
20	0310	0320	N/C						
33	0327	0337	N/C						
34	0346	0356	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 2

Project			
Rolling Meadows			
Observer		Date	Weather, Wind, Temp.
Cameron Holmgren		04/3/20	CL, 2, 57°F

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
25	1949	1959	NC						
24	2002	2012	NC						
22	2019	2029	NC						
23	2038	2048	NC						
31	2102	2112	NC						
30	2116	2126	NC						
29	2130	2140	NC						
28	2144	2154	NC						
27	2157	2207	NC						
26	2211	2221	NC						
21	2229	2239	NC						
35	2253	2303	NC						
36	2307	2317	NC						
32	2329	2339	NC						
37	2354	0104	NC						
38	0135	0145	NC						
39	0151	0201	NC						
42	0213	0223	NC						
41	0227	0237	NC						
40	0241	0251	NC						
43	0302	0312	NC						
44	0317	0327	NC						
45	0334	0344	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 3

Project			
Rolling Meadows			
Observer	Date	Weather, Wind, Temp.	
Cameron Holmgren	4/11/20	PC, 2, 54°F	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
31	1958	2008	NC						
30	2012	2022	NC						
29	2026	2036	NC						
28	2040	2050	NC						
27	2054	2104	NC						
26	2108	2118	NC						
21	2129	2139	NC						
32	2158	2208	NC						
37	2217	2227	NC						
36	2232	2242	NC						
35	2247	2257	NC						
45	2310	2320	NC						
44	2325	2335	NC						
43	2341	2351	NC						
39	2358	0108	NC						
38	0114	0125	NC						
40	0134	0144	NC						
41	0151	0201	NC						
42	0205	0215	NC						
22	0241	0251	NC						
23	0300	0310	NC						
24	0321	0331	NC						
25	0335	0345	NC						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Northern Spotted Owl Survey Form

Visit # 3

Project			
Rolling Meadows			
Observer	Date	Weather, Wind, Temp.	
Justin Tallman	4-11	PC-2 - 47-55°	

Station*	Start	End	NSO Con/NC	CON Time	Species	Sex	Bearing	Distance	Notes
34	1953	2003	N/C						
33	2008	2018	N/C						
20	2024	2034	N/C						
19	2039	2049	N/C						
18	2056	2106	N/C						
17	2114	2124	N/C						
16	2130	2140	N/C						
13	2147	2157	N/C						
11	2207	2217	N/C						
9	2225	2235	N/C						
8	2241	2251	N/C						
10	2300	2310	N/C						
12	2316	2326	N/C						
14	2334	2344	N/C						
15	2351	0101	N/C						
7	0151	0201	N/C						
6	0210	0220	N/C						
5	0226	0236	N/C						
4	0247	0257	N/C						
3	0311	0321	N/C						
2	0330	0340	N/C						
1	0351	0401	N/C						

*List all stations and note if skipped.

Weather codes:

CL	Clear
FG	Fog
PC	Partly Cloudy
OC	Overcast
DR	Drizzle

Wind Codes:

0	Calm
1	Light Air
2	Light Breeze
3	Gentle Breeze
4	Moderate Breeze
5	Fresh Breeze
6	Strong Breeze

Sex Codes:

M	Male
F	Female
U	Unknown
PR	Pair

Data Logged _____ Data Entered _____

Golden Eagle (GOEA) Survey Report

Rolling Meadow Ranch

McCann, Humboldt County, California

APNs # 217-181-028, 217-182-014, 217-201-001, 211-284-009

Prepared for:
California Department of Fish and Wildlife
619 Second Street
Eureka, California 95501

Prepared by:
Michelle McKenzie
Natural Resources Management Corporation
1434 Third Street
Eureka, CA 95501

July 30, 2019

NRM
NATURAL RESOURCES MANAGEMENT
CORPORATION

Surveys for golden eagles were conducted from April 9 through June 14, 2019. Due to heavy, late rains, access to the parcel via the McCann ferry was delayed, resulting in a delay in surveying during the CDFW recommendation of at least 1 survey from January 15 to February 15.

During the course of surveys at the parcel no eagles were detected. See attached survey forms below.

Thank you,

Michelle McKenzie
Wildlife Biologist
Natural Resources Management Corporation
mmckenzie@nrmcorp.com
707.269.1380

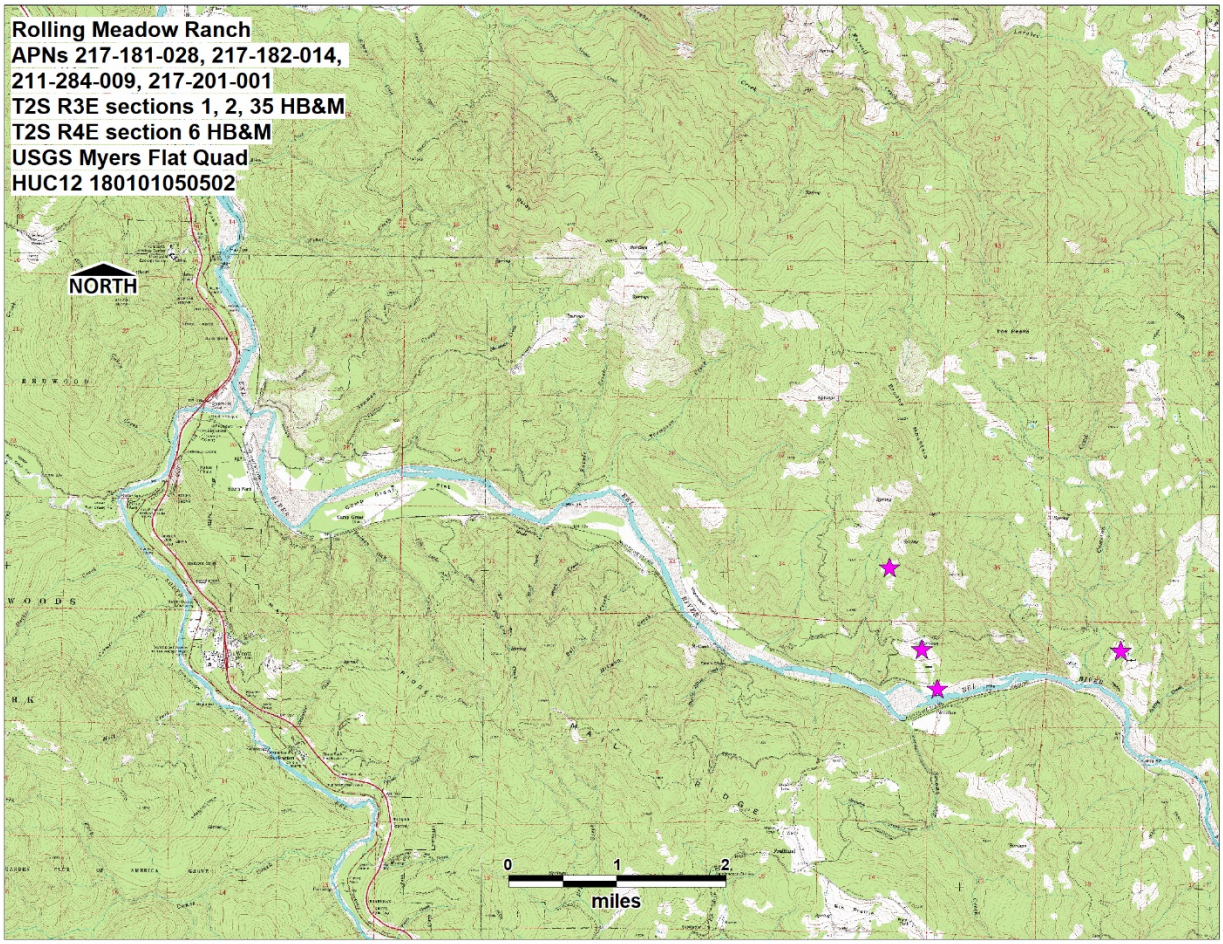


Figure 1. Vicinity map for Rolling Meadow Ranch APNs in McCann, Humboldt County, California

Golden Eagle (GOEA)
Survey Form

CDFW Recommendations:

3 surveys at least 10 days apart with at least 1 survey between **January 15th** and **February 15th**, and 1 after **May 1st** but before **June 15th**

If inability to access survey area persists *past* **February 15**, CDFW recommends 1 survey as soon as accessible and 2 surveys, 10 days apart, after **May 1st** but before **June 15th**

Surveys are conducted after **1000** for **3 hours** and located at vantage points covering the project area and out ½ mile

Additional Information:

Surveys to determine occupancy are best conducted during courtship (Jan/Feb) and before egg laying (Feb/Mar), when adults become more secretive. Surveys to determine presence are to be conducted only when occupancy-timed surveys did not occur and are best conducted during the fledgling (May/Jun) period.

Survey the area using as many points necessary to ensure coverage of the entire parcel, certain to include points that provide observer the ability to scan from the highest elevation possible and view the largest percentage of sky. It is important to scan ridge tops, just below ridgetops, and open sky for raptors utilizing thermals.

Date: 4/9/2019	**Surveyor: m3**	**SURVEY # 1**
Wind Speed: 0-5mph	**% Cloud Cover: 40**	**Temperature (F): 58**
Survey Start: 1010	**Survey Finish: 1315**	**Total Survey Time: 3hr 5min**
Area (client/quad/other): Rolling Meadow/Myers Flat		

Point #1 Site Operator #4	**DESCRIPTION** (Note things such as landmark, approx. mileage, relation to project area and/or aspect and percent sky observable): All 3 survey hours in this vicinity; overlooks all project areas; greater than 60 percent sky visible to horizon
	RESULTS (Note other raptor or vulture species observed, particularly if utilizing thermals): RTHA pair soaring (1005); sharp-shinned hawk (1140); turkey vultures, kestrel (1250)
Point #2	**DESCRIPTION:**
	RESULTS:
Point #3	**DESCRIPTION:**
	RESULTS:

Date: 4/24/2019	**Surveyor: m3**	**SURVEY # 2**
Wind Speed: 0-5 mph	**% Cloud Cover: 20**	**Temperature (F): 76**
Survey Start: 1010	**Survey Finish: 1315**	**Total Survey Time: 3hr**
Area (client/quad/other): Rolling Meadow/Myers Flat		

Point #1 Site Operator #4	**DESCRIPTION:** 2 survey hours in this vicinity; overlooks all project areas; greater than 60 percent sky visible to horizon. Winds picked up around 1115
1010-1210	**RESULTS:** TUVU pair (1140); RTHA (1200); TUVU 2nd pair (1215)
Point #2	**DESCRIPTION:** Approximately one mile west (back towards entrance gate) is high point on road next to access to newest proposed cultivation site; although this area is seen from Point #1, decided to spend an hour here
1215-1315	**RESULTS:** single RTHA (1221)
Point #3	**DESCRIPTION:**
	RESULTS:

Date: 6/14/2019	**Surveyor: M. McKenzie**	**SURVEY # 3**
Wind Speed: 3-5 mph	**% Cloud Cover: 0**	**Temperature (F): 81+**
Survey Start: 0920	**Survey Finish:1235**	**Total Survey Time: 3hr 10min**
Area (client/quad/other): Rolling Meadow Ranch		

Point #1 Site Operator #4	**DESCRIPTION:** 2 survey hours here; started early due to hot day and early winds
	RESULTS: American kestrels (AMKE) nesting in snag at edge of flat towards Eel River; noisy fledgling begging parents throughout survey time; TUVU (0943) flying just overhead as winds pick up; TUVU (0957) south ridge of Eel River corridor; TUVU (1013) at 340 degrees; RTHA (1036) at 320 degrees calling from ridge top; TUVU (1100) overhead
Point #2 One mile west of #1	**DESCRIPTION:** Point #1 sky space visible from here also
	RESULTS: CORA (several in air space most of the survey period)
Point #3	**DESCRIPTION:**
	RESULTS:

GOLDEN EAGLE (GOEA) Presence/Occupancy Survey Form

Instructions: Occupancy surveys are best conducted during courtship (Jan/Feb) and before egg laying (Feb/Mar), when adults become more secretive. Presence surveys are to be conducted ONLY when Occupancy surveys did not occur and are best conducted during Fledging (Jun) and Post-fledging (Jun/Jul) periods when adults are less secretive, and the feeding and teaching fledgling(s) to hunt makes them more easily detected.

A minimum of 4 surveys on 4 separate days for a total duration of at least 4 hours need conducted at a site.
Survey the area using as many points necessary to ensure coverage of the entire parcel, certain to include points that provide observer the ability to scan from the highest elevation possible and the largest percentage of sky. It is important to scan ridge tops, just below ridgetops, and open sky for raptors utilizing thermals.

Date: 7 /2 /2018	**Observer: M. McKenzie**	**SURVEY # 1**
Wind Speed: 8-10 mph w gusts	**% Cloud Cover: 0**	**Temperature (F): 90**
Survey Start: 1055	**Survey Finish: 1245**	**Total Survey Time: 1hr 50min**
Area (client/quad): Rolling Meadow Ranch / Myers Flat		

Point #1	**DESCRIPTION** (Note things such as landmark, approx. mileage, relation to project area and/or aspect and percent sky observable): entered far gate and drove to highest point just before road joins main road (that is accessed using closer gate). 30 minutes spent here. *NOTE*: Historic nest site at Big Bend on the Mad River is just upstream of this parcel.
	RESULTS (Note other raptor or vulture species observed, particularly if utilizing thermals): No soaring birds or raptors observed.
Point #2	**DESCRIPTION:** Continued up road past junction with main road approximately 2.5 miles past #1, facing north/northeast
	RESULTS: No soaring birds observed
Point #3	**DESCRIPTION:** Turned around and continued 0.2 miles past #2 (on main road) for a different aspect (south/southeast) that is also slightly higher in elevation.
	RESULTS: RTHA, TUVU in thermals. Observed one potential bird for several minutes before determining it to be a TUVU.

Date: 7/6 /2018	Observer: M. McKenzie	SURVEY # 2
Wind Speed: 0-3	% Cloud Cover: 90	Temperature (F): 72
Survey Start: 0925	Survey Finish: 1025	Total Survey Time: 1hr
Area (client/quad):		

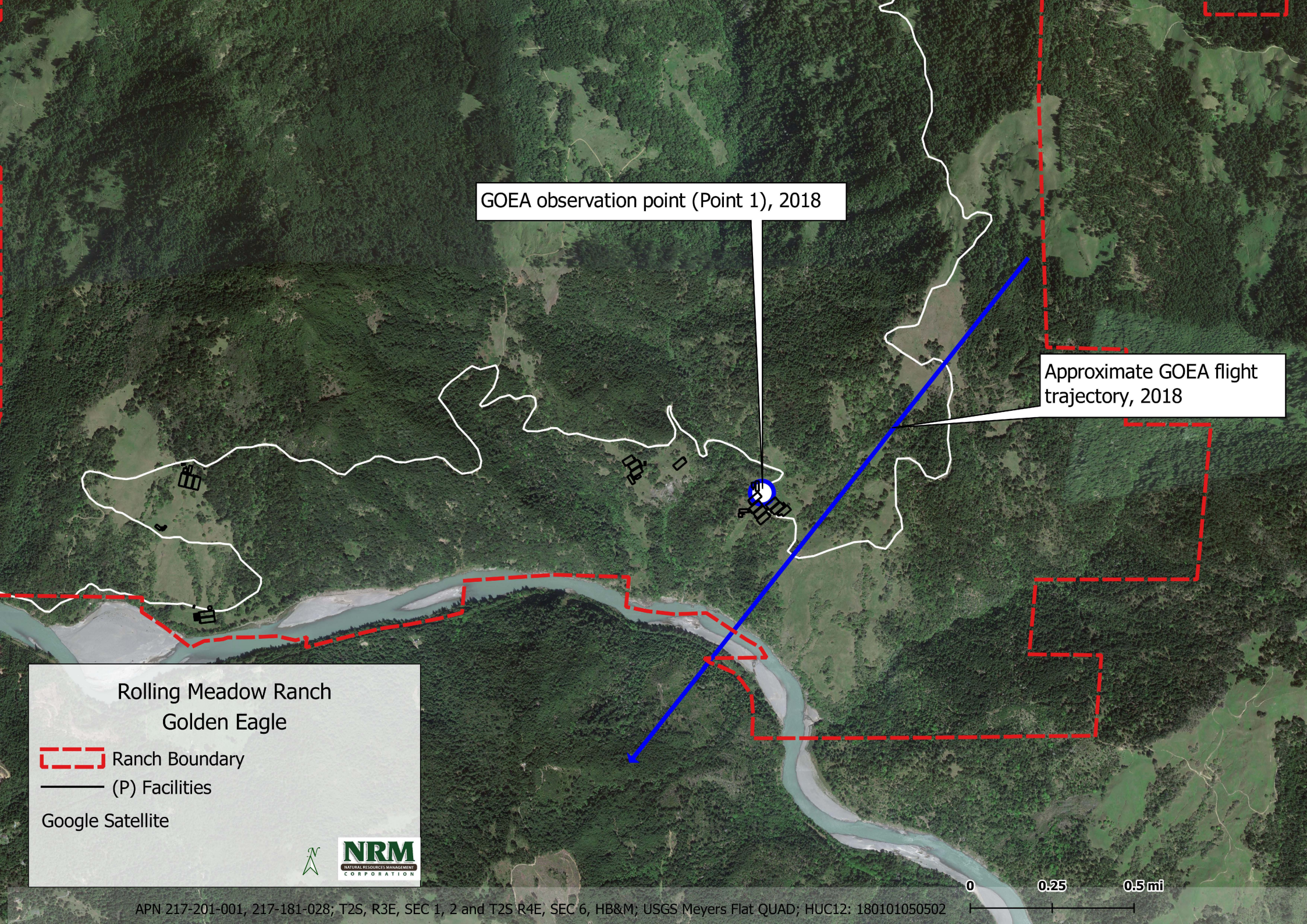
Point #1	**DESCRIPTION** (Note things such as landmark, approx. mileage, relation to project area and/or aspect and percent sky observable): Entire survey time spent at Tracks 1/4 in the easternmost part of the property near seasonal pond/old barn. Has southern aspect with 260 degree views.
	RESULTS (Note other raptor or vulture species observed, particularly if utilizing thermals): CORA, TUVUs
Point #2	**DESCRIPTION:**
	RESULTS:
Point #3	**DESCRIPTION:**
	RESULTS:

Date: 7/12/2018	Observer: A. Heitzman	SURVEY # 3
Wind Speed: 0-3 mph	% Cloud Cover: 0	Temperature (F): 77
Survey Start: 0830	Survey Finish:0930	Total Survey Time: 1hr
Area (client/quad): Rolling Meadow Ranch / Myers Flat		

Point #1	**DESCRIPTION** (Note things such as landmark, approx. mileage, relation to project area and/or aspect and percent sky observable): In the middle of this Area 4 there is a flat with a historic barn on it with 360-degree ridgeline views, spent 30 min here
	RESULTS (Note other raptor or vulture species observed, particularly if utilizing thermals): No soaring birds observed
Point #2	**DESCRIPTION:** Traveled ~1,000 feet to the east from point #1, upslope to another landing that provided 200-degree views, but ability to see more into the river valley, spent 30 minutes here
	RESULTS: No soaring birds observed
Point #3	**DESCRIPTION:**
	RESULTS:

Date: 7/16/2018	**Observer: A. Heitzman**	**SURVEY # 4**
Wind Speed:0-8 mph	**% Cloud Cover: 0**	**Temperature (F): 90**
Survey Start: 1630	**Survey Finish: 1730**	**Total Survey Time: 1hr**
Area (client/quad): Rolling Meadow Ranch / Myers Flat		

Point #1	**DESCRIPTION** (Note things such as landmark, approx. mileage, relation to project area and/or aspect and percent sky observable): Entire survey spent at Area 4 in one location, in the middle of this Area there is a flat, with a historic barn on it, with 360-degree ridgeline views.
	RESULTS (Note other raptor or vulture species observed, particularly if utilizing thermals): TUVU (2), GOEA flew from the NE ridgeline to the SW across the Eel River
Point #2	**DESCRIPTION:**
	RESULTS:
Point #3	**DESCRIPTION:**
	RESULTS:


GOEA observation point (Point 1), 2018
Approximate GOEA flight trajectory, 2018
Rolling Meadow Ranch
Golden Eagle
Ranch Boundary
(P) Facilities
Google Satellite
NRM
NATURAL RESOURCES MANAGEMENT CORPORATION
0
0.25
0.5 mi
APN 217-201-001, 217-181-028; T2S, R3E, SEC 1, 2 and T2S R4E, SEC 6, HB&M; USGS Meyers Flat QUAD; HUC12: 180101050502

Appendix H

North Coast Unified Air Quality Management District (NCUAQMD)

District Response & Application Components

North Coast Unified Air Quality Management District
707 L Street, Eureka, CA 95501
Telephone (707) 443-3093 FAX (707) 443-3099
http://www.ncuaqmd.org

May 14, 2019

Andrew Machata, Owner/Operator
Rolling Meadow Ranch
3060 Airport West Drive
Vero Beach, FL 32960

Re: Rolling Meadow Ranch Emergency Standby Propane-fueled Generators

Dear Mr. Machata:

The North Coast Unified Air Quality Management District (District) has received and reviewed your application for the proposed installation of five emergency standby propane-fueled generators at the Rolling Meadow Ranch facility on McCann Road, Myers Flat, Humboldt County (exact location detailed in permit application).

Based on the information you have provided, the District has determined that an air quality permit is not required for the five emergency standby propane-fueled generators detailed in your application.

Please contact me if you have any questions.

Sincerely,

Winslow Condon
Permit Engineer
(707) 443-3093 x121
wcondon@ncuaqmd.org

Cc: Breeanna Kalson, NRM Corp.

North Coast Unified Air Quality Management District
707 L Street
Eureka, CA 95501
(707) 443-3093

APPLICATION FORM 1300

Authority To Construct, Modification of Existing Permit, Permit Renewal, and Change of Ownership or Location

(Depending upon the source type, additional forms may be required – see Section VII)

Section I – Application Request

This application is for the purpose of (check all that apply):

☑ New Construction ☐ Modification of Equipment or Permit Conditions ☐ Change of Location

☑ Change of Permittee/Owner ☐ Existing Equipment Without a Permit ☐ Title V Permit Renewal

Estimated construction start date:	Estimated construction completion date:
April 2020	October 2020

Section II – Owner / Operator / Responsible Official

Legal name of Owner/Operator:

Andrew Machata

Legal name of Responsible Official (if different than listed above):

Company mailing address:	City/State:	Zip:
3060 Airport West Dr.	Vero Beach, FL	32960
Permit mailing address (if different from company mailing address):	City/State:	Zip:

Contact person:	Title:
Andrew Machata	Owner/Operator

Contact person's phone number:	Contact person's fax number:	Contact person's email address:
772-299-3739	772-299-3789	flycja@hotmail.com

Are you the owner of the equipment under this application? ☑ yes ☐ no

If no, enter the your company's name (see sectionIX):

Section III – Facility Information

Facility name:

Rolling Meadow Ranch

Facility physical address:	City/State:	Zip:
McCann Rd	Myers Flat, CA	95554

Type of business at this address:	Primary Standard Industrial Code (SIC) for this facility:	Number of employees at this facility:
cannabis/agricultural	____ ____ ____ ____ (Internet search: http://www.osha.gov/oshstats/sicser.html)	22

DISTRICT USE ONLY	TRACKING #	SIC/SCC CODES	PERMIT REVIEW	PERMIT REVIEW

FEE SCHEDULE:	CHECK/MONEY ORDER #	AMOUNT:
		$

Section IV – Facility Location

Detailed driving directions from nearest California town (attach roadmap if necessary):

Facility is 5 (distance) miles East (direction) of Weott, CA (nearest town)

Status of land at facility (check one): ☑ Private ☐ Tribe/Rancheria ☐ Government

Name of nearest Class 1 area to the facility (see map on page 4): Yolla Bolly Wilderness

Is your facility boundary within 10 km of the boundary of nearest Class 1 area? (see map) ☐ yes ☑ no

Distance to the nearest occupied residence or business: 2,272 ft. K-12 school 33,792 ft.

Is emission generating equipment within 1,000 feet of the outer boundary of a school? ☐ yes ☑ no

If yes, complete for all public or private schools, grade K-12, within a ¼ mile radius of facility property.

School name(s): _____

Address(es): _____

Phone(s): _____

Section V – Applicable Laws, Regulations, and Existing Permits

Does this facility have a District permit(s)? ☐ yes ☑ no If yes, the permit number is:

Does this facility have a Title V permit(s)? ☐ yes ☑ no If yes, submit Form 1313.

A) Is this a "major source" under Title V of the federal Clean Air Act?
(District Rule 501) ☐ yes ☑ no ☐ unsure

B) Is this source subject to a federal NSPS or NESHAP/MACT?
(District Rule 104) ☐ yes ☐ no ☑ unsure

C) Is this a significant net increase in emissions?
(District Rule 110 Section E) ☐ yes ☐ no ☑ unsure

D) Is this application in response to a Notice of Violation (NOV) or a Notice to Apply (NTA)? ☐ Yes
If yes, date: Tracking# ☑ No

If you answered "yes" or" unsure" to A, B, C, or D, contact the District to see if a pre-application meeting is required.

Section VI - Other Information

Does this facility emit any substance listed pursuant to Section 44321 of the Health and Safety Code?
☐ yes ☑ no If yes, contact District Staff to determine if a health risk assessment is required.

Is this project subject to the California Environmental Quality Act (CEQA)? ☑ yes ☐ no
Conditional Use Permit? List ID # and Issuing Agency: Humboldt Co CUPs 12529, 12542,12536,12540

Is there any information requested by this application that might be considered to be "trade secrets" that you don't wish to make public? ☐ yes ☑ no
If yes, attach documentation to describe and support your claim.

This question must be answered for all applications for new construction or significant modifications. Are all major sources under same ownership in California in compliance with federal, State, and local air pollution control rules? ☐ Yes ☐ No ☑ N/A

Section VII – Emission Device / Source Description – Supplemental Information

Indicate the type of device by marking the box. For each type of device used, complete the corresponding form. 1300 B is required for all devices except Fuel Dispensing and Storage Equipment – Form 1306.

- ☐ 1300 A (Reserved)
- ☐ 1300 B Emissions, Fuel and Process Materials
- ☑ 1301 Internal Combustion Equipment
- ☐ 1302 External Combustion Equipment
- ☐ 1303 Particulate Matter (PM10) Control Equipment
- ☐ 1304 Volatile Organic Compound Control Equip.
- ☐ 1305 Scrubber
- ☐ 1306 Fuel Dispensing and Storage Equipment
- ☐ 1307 Vapor Extraction Projects
- ☐ 1308 Miscellaneous Devices
- ☐ 1309 Aggregate Plant
- ☐ 1310 Hot Mix Asphalt Plant
- ☐ 1311 Reserved
- ☐ 1312 Gasoline Bulk Storage Facility
- ☐ 1313 Title V
- ☐ 1314 (Reserved)

Section VIII – Equipment Description (not required if using Form 1306)

Unit No.	Source Description	Make	Manufacturer Model No.	Serial No.	Manufacture Date	Rated Capacity
1	Generac	Protector	RG045	*	2019	45kW
2	Generac	Protector	RG045	*	2019	45kW
3	Generac	Protector	RG045	*	2019	45kW
4	Generac	Protector	RG045	*	2019	45kW
5	Generac	Protector	RG045	*	2019	45kW
	* proposed equipment; not yet purchased					

Section IX – Certification

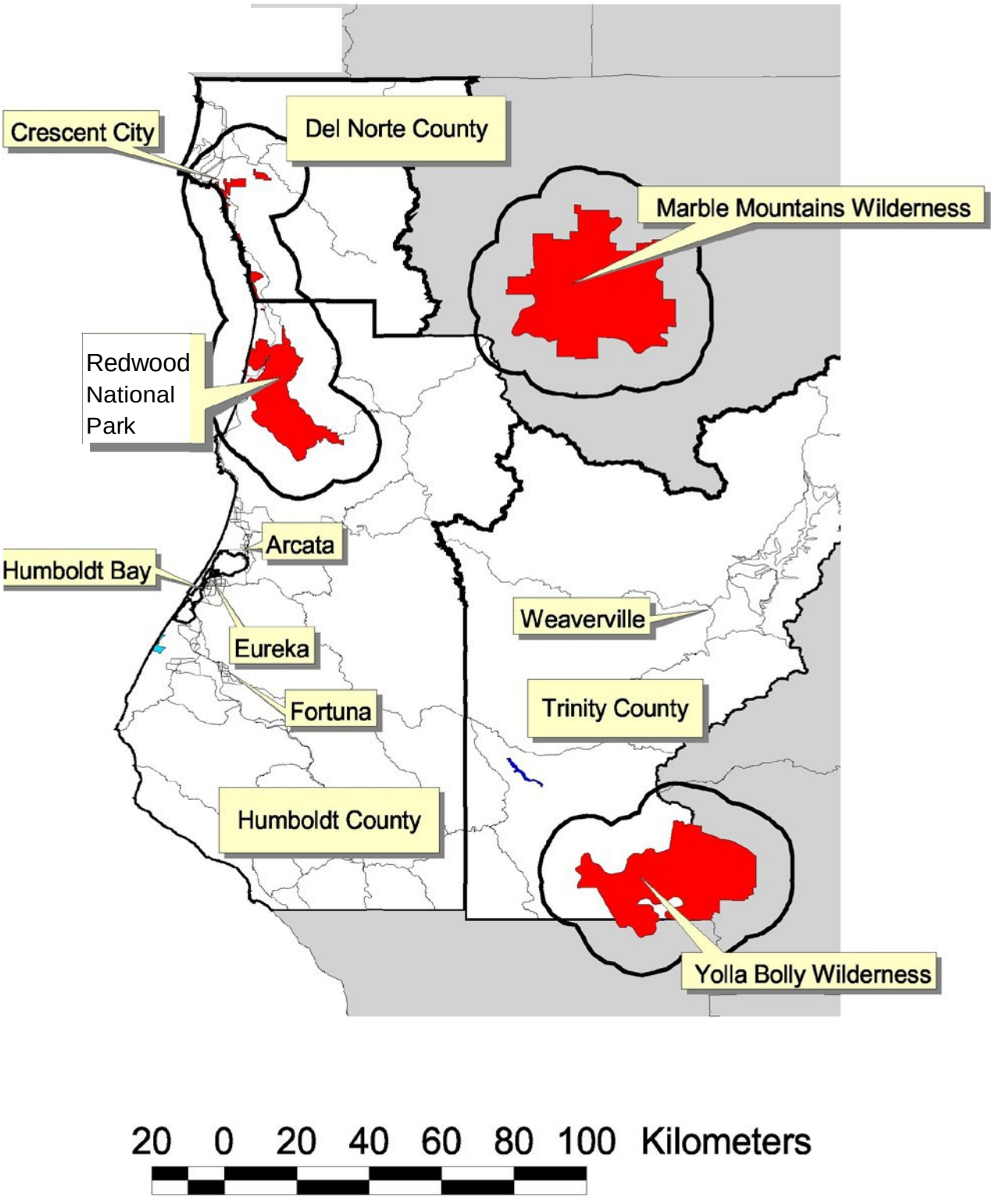
I hereby certify that all information and data provided on this application form and all supplemental District Forms, as well any technical drawings, emission calculations, or other supplemental information submitted as part of this application, are true and as accurate as possible, to the best of my knowledge and professional expertise and experience.

Signature of Preparer:	Date signed:	
Type or print name of Signatory: Breeanna Kalson	Title: Environmental Compliance Specialist; NRM Corp	Phone: 707-269-1367

If this application was prepared by person(s) other than the owner/operator/responsible official, it is not necessary to obtain the signatures listed below. Instead, attach documentation from the owner/operator/responsible official authorizing the preparer to sign on their behalf.

Signature of Owner / Operator / Responsible Official:	Date signed:	
Type or print name of Signatory: see authorization attached	Title:	Phone:

CLASS I AREAS
WITH 10 KILOMETER BUFFER ZONES



Source.US EPA

North Coast Unified Air Quality Management District
707 L Street
Eureka, CA 95501
(707) 443-3093

APPLICATION FORM 1300

Authority To Construct, Modification of Existing Permit, Permit Renewal, and Change of Ownership or Location

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☑ New Construction ☐ Modification of Equipment or Permit Conditions ☐ Change of Location

☑ Change of Permittee/Owner ☐ Existing Equipment Without a Permit ☐ Title V Permit Renewal

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Andrew Machata

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Contact person:	Title:
Andrew Machata	Owner/Operator

Contact person's phone number:	Contact person's fax number:	Contact person's email address:
772-299-3739	772-299-3789	flycja@hotmail.com

Are you the owner of the equipment under this application? ☑ yes ☐ no

If no, enter the your company's name (see sectionIX):

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Facility name:

Rolling Meadow Ranch

Facility physical address:	City/State:	Zip:
McCann Rd	Myers Flat, CA	95554

Type of business at this address:	Primary Standard Industrial Code (SIC) for this facility:	Number of employees at this facility:
cannabis/agricultural	____ ____ ____ ____ (Internet search: http://www.osha.gov/oshstats/sicser.html)	22

DISTRICT USE ONLY	TRACKING #	SIC/SCC CODES	PERMIT REVIEW	PERMIT REVIEW

FEE SCHEDULE:	CHECK/MONEY ORDER #	AMOUNT:
		$

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Address(es): _____

Phone(s): _____

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Does this facility have a Title V permit(s)? ☐ yes ☑ no If yes, submit Form 1313.

A) Is this a "major source" under Title V of the federal Clean Air Act?
(District Rule 501) ☐ yes ☑ no ☐ unsure

B) Is this source subject to a federal NSPS or NESHAP/MACT?
(District Rule 104) ☐ yes ☐ no ☑ unsure

C) Is this a significant net increase in emissions?
(District Rule 110 Section E) ☐ yes ☐ no ☑ unsure

D) Is this application in response to a Notice of Violation (NOV) or a Notice to Apply (NTA)? ☐ Yes
If yes, date: Tracking# ☑ No

If you answered "yes" or" unsure" to A, B, C, or D, contact the District to see if a pre-application meeting is required.

Section VI - Other Information

Does this facility emit any substance listed pursuant to Section 44321 of the Health and Safety Code?
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Is this project subject to the California Environmental Quality Act (CEQA)? ☑ yes ☐ no
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Indicate the type of device by marking the box. For each type of device used, complete the corresponding form. 1300 B is required for all devices except Fuel Dispensing and Storage Equipment – Form 1306.

- ☐ 1300 A (Reserved)
- ☐ 1300 B Emissions, Fuel and Process Materials
- ☑ 1301 Internal Combustion Equipment
- ☐ 1302 External Combustion Equipment
- ☐ 1303 Particulate Matter (PM10) Control Equipment
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- ☐ 1313 Title V
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Unit No.	Source Description	Make	Manufacturer Model No.	Serial No.	Manufacture Date	Rated Capacity
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4	Generac	Protector	RG045	*	2019	45kW
5	Generac	Protector	RG045	*	2019	45kW
	* proposed equipment; not yet purchased					

Section IX – Certification

I hereby certify that all information and data provided on this application form and all supplemental District Forms, as well any technical drawings, emission calculations, or other supplemental information submitted as part of this application, are true and as accurate as possible, to the best of my knowledge and professional expertise and experience.

Signature of Preparer:	Date signed:	
Type or print name of Signatory: Breeanna Kalson	Title: Environmental Compliance Specialist; NRM Corp	Phone: 707-269-1367

If this application was prepared by person(s) other than the owner/operator/responsible official, it is not necessary to obtain the signatures listed below. Instead, attach documentation from the owner/operator/responsible official authorizing the preparer to sign on their behalf.

Signature of Owner / Operator / Responsible Official:	Date signed:	
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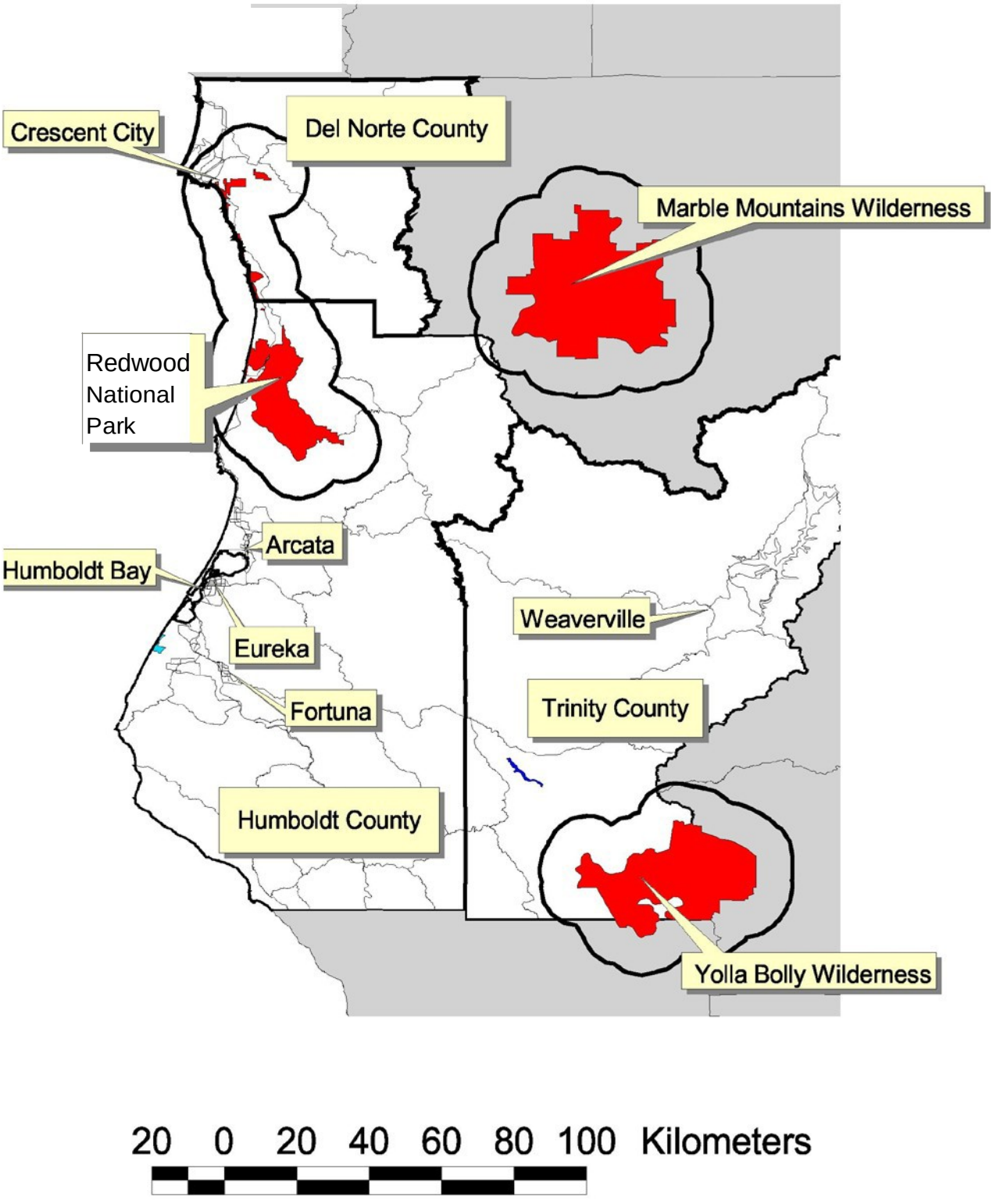
CLASS I AREAS
WITH 10 KILOMETER BUFFER ZONES



Source.US EPA

North Coast Unified Air
Quality Management District
707 L Street
Eureka, CA 95501
(707) 443-3093

INTERNAL COMBUSTION ENGINE
FORM 1301

Form 1300 must also accompany all submittals.

Section I - Equipment Information

1. Engine Function (check one):

a. ☐ Electrical Power
b. ☐ Pump Driver
c. ☐ Cogeneration (describe on a separate sheet of paper)
d. ☐ Compressor Driver
e. ☒ Fire Pump
f. ☐ Other: _____

2 Will the engine be installed only for emergency use? ◉ yes ○ no
3. Is the engine portable? (can be moved from one location to another) ○ yes ◉ no
4. Will the engine be used at only one facility? ◉ yes ○ no

Engine Information

5. Make: Generac
6. Model: in-line
7. Engine Serial Number: _____
8. Fuel Type: LP
9. Engine Family: KGNXB02.42L2
10. Executive Order: _____
11. Prime Rating: _____hp _____ kW
12. Standby Rating: _____hp 45 _____ kW
13. Cycle Type: a. ☐ Two Cycle b. ■ Four Cycle
14. Combustion Type: a. ☐ Lean Burn b. ■ Rich Burn
15. Aspiration Type:

a. ☐ Turbocharged
b. ☐ Turbocharged/Aftercooled
c. ☐ Naturally Aspirated
d. ☐ Timing Retarded $\geq 4^{o}$ (relative to standard timing)

16. Air to Fuel Ratio: _____
17. Does engine have an air/fuel ratio controller? ○ yes ○ no

Equipment Information

18. Make: Generac
19. Model: RG045
20. Equipment Serial Number: _____
21. Capacity/Rating: 45kW

Section II - Operation Information

22. Maximum operating schedule: hours/day ____ days/week _____ weeks/year _____ hours/year _____

23. Average operating schedule: hours/day ____ days/week _____ weeks/year _____ hours/year 2.17 _____

Section IV- Title V Information: *Fill out if AQMD has identified your facility as a Title V facility*

The requested application involves a(n): (check all that apply)

a. ☐ Administrative Permit Amendment
b. ☐ Minor Permit Modification
c. ☐ Significant Permit Modification
d. ☐ Non-Title V Permit Processing (Available until initial Title V permit is issued)
e. ☐ Permit Shield
f. ☐ Alternative Operating Scenarios
g. ☐ Voluntary Emission Cap
i. ☐ Other (specify):_____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2019 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Generac Power Systems, Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: KGNXB02.42L2-014

Effective Date: 10/02/2018

Expiration Date: 12/31/2019

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 10/02/2018

Revision Date: N/A

Manufacturer: Generac Power Systems, Inc.
Engine Family: KGNXB02.42L2
Mobile/Stationary Certification Type: Stationary
Fuel : LPG/Propane
Emission Standards :
Part 90 Phase 1
CO (g/kW-hr) : 519.0
HC + NOx (g/kW-hr) : 13.4
Emergency Use Only : Y

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

From: Prairie Moore <pmoore@nrmcorp.com>
Sent: Monday, April 1, 2019 12:59 PM
To: bkalson@nrmcorp.com
Subject: Fwd: Re: Air Board

-------- Forwarded Message --------
Subject:
Re: Air Board
Date:
Thu, 21 Mar 2019 12:01:00 -0400
From:
ANDREW MACHATA <dino2768@mac.com>
To:
Prairie Moore <pmoore@nrmcorp.com>

Go ahead

Sent from my iPhone

On Mar 21, 2019, at 11:51 AM, Prairie Moore <pmoore@nrmcorp.com> wrote:

Hi Andy,

One of the things the county asked for in the letter was that we : “Provide a statement from the North Coast Air Quality Management District that they are not concerned about emissions from propane generators”

We requested that from the NCAQMD, and they asked to see the generator lay out. We also explained to them that these generators were only for emergency use in times of fire.

In lieu of a statement, the NCUAQMD requests that we fill out an application and anticipates, but does not guarantee, that the emissions will be deemed insignificant. In other words he wants to look more closely at it before he gives us a statement saying it is insignificant. The application fee is only $67, and it will probably take us a few hours to fill it out.

I wanted to get your permission to file this application with the NCAQMD

We didn’t name a Generator in the IS (only the brand and size), but we need a specific model for the NCUAQMD permit. There are two possible generators in my file that both describe the dBA and fuel consumption as we did in the IS. They also seem to have the same exhaust output. However, since they are separate models, we still need to know which one will be used.
Generac Gaurdian Series LP 45kW 60Hz? or
Generac Protector Series LP 45kW 60Hz?

Thanks so much,

Prairie

-- Prairie Moore, MS
President
Environmental Services Director
Natural Resources Management Corporation
707-442-1735
707-499-5131 cell
pmoore@nrmcorp.com

NRM
NATURAL RESOURCES MANAGEMENT
CORPORATION

1434 Third Street • Eureka, CA • 95501-0682
707 442-1735 • fax: 707 442-8823
Email: nrm@nrmcorp.com
Web: www.nrmcorp.com

April 1, 2019

North Coast Unified Air Quality Management District
707 L Street
Eureka, CA 95501
(707) 443-3093

Application 1300B Section VI: Attachments #1 & #2
Prepared for: Mr. Andrew Machata
3060 Airport West Drive
Vero Beach, FL 32960

Dear Winslow Condon,

The following is a written description of the routine operations of Mr. Machata's proposed facility at Rolling Meadow Ranch in Humboldt County and the role of the proposed equipment (five propane fueled Generac Protector Series 45kW generators (1300B #1). Included, are short descriptions and maps that will fulfill the Plot Plan and Location information requirements (#2, a-j) of the 1300B form requested by the NCUAQMD.

Project Description

The project is a cannabis production project located on the main stem of the Eel River in southern eastern Humboldt County. In its entirety, Rolling Meadows Ranch comprises 7,110 acres of agricultural and timber land. This project consists of four proposed cultivation areas herein known as Site Operator #1, #2, #3, and #4 (Figure 1). These four cultivation areas will be located on one legally combined parcel of 1632 acres. A total of 16 greenhouses, five drying and trimming buildings with restrooms, five septic systems, and three wells will be constructed. Greenhouses will vary in size from 20,000 to 22,000 square feet; processing buildings will be 2.000 square feet. All building will be professionally built to county building and fire code.

The access for the project is located off of McCann Road. A common route to the site is via Hwy 101 to the Dyerville loop road then over the McCann Bridge and onto McCann Rd East. At approximately 2 miles from the bridge, the county road ends at the project boundary and the private ranch road network begins. When the Eel River flow volume increases to 3,500 cubic feet per second (cfs), typically late November through late April, Humboldt county closes the McCann Bridge and vehicle traffic across the bridge is no longer possible. The project will close seasonally in anticipation of bridge closure. The access roads that the project will upgrade and maintain consists of approximately 4.5 miles of private driveway (Figure 7). This 4.5 miles will be upgraded to Cal Fire's Fire Safe standards (12 foot wide roads with standardized grades and pull outs).

The electricity needed for this project will be supplied by PGE. There is PG&E infrastructure currently on a portion of the Rolling Meadow Ranch; the stretch of existing PG&E power is located along the Eel River near the southern property boundary. This power is strung above ground on poles. Additional infrastructure will be run from this existing power supply North and then East to all project sites. The power will be lines strung on poles along the existing ranch roads (with some exceptions).

The project does not require generators for project operations. The project will install one generator and one underground 500 gallon propane tank near each processing building (5 total) in order to provide emergency fire protection. That is, if grid

power is lost and there is a fire, the generators will run water pumps for fire suppression. The generator activation and the water pump function will be automated as a component of the facility's emergency fire system. The generators proposed for this project are Generac Protector Series propane generators with a standby power rating of 45kW.

The project doesn't anticipate needing the five Generac generators, but will maintain them as part of emergency preparedness. According to the manufacture, in order to maintain readiness, the generators will automatically turn on and run for five minutes every two weeks. This "exercise cycle" runs the generator at lower RPMs. As a result, it uses less fuel (0.7 gal per hour) during the "exercise cycle". To maintain readiness each generator would run for a five minute interval 26 times a year, for a yearly total of 130 minutes (or 2 hour and 10 minutes). This would consume 1.5 gallons of propane a year. If no fires occur and the generators do not run apart from the "exercise cycle," the 500 gallon tanks would require refilling in the year 2119.

The generators have a five year warranty and the project expects that, with maintenance, the generators will last much longer. When the generators are no longer functional, and assuming that the project still has ownership of the generators, the project will drain the fluids and dismantle the generators. According to the Humboldt Waste Management Authority, the generators will be accepted as scrap metal. The fluids will be contained and submitted to the Hazardous Waste Facility.

Plot plans and location maps are included in the pages below.

Cordially,

Breeanna Kalson
707-269-1367
bkalson@nrmcorp.com

Plot Plan and Location Information

a. & j. The following figure (1) is a general vicinity map showing the topographic features of the region and the locations of site operations (Meyer's Flat quadrangle).

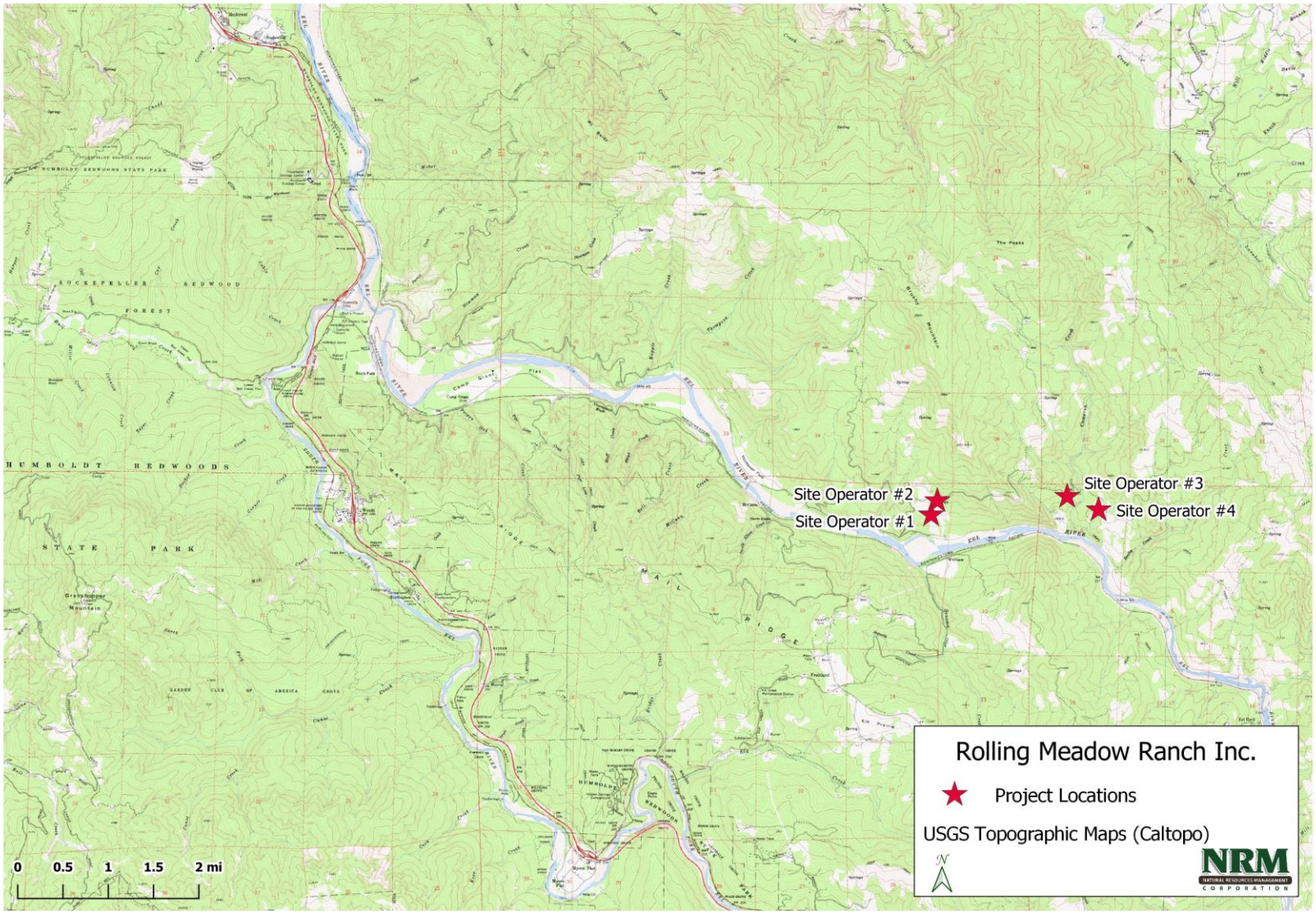


Figure 1

3/ Application 1300B Section VI: Attachments #1 & #2; Prepared for Mr. Andrew Machata, Rolling Meadow Ranch

b. & c. Figures 2 and 3 (ortho) include the property boundary. The proposed buildings are single story buildings located far from adjacent property lines.

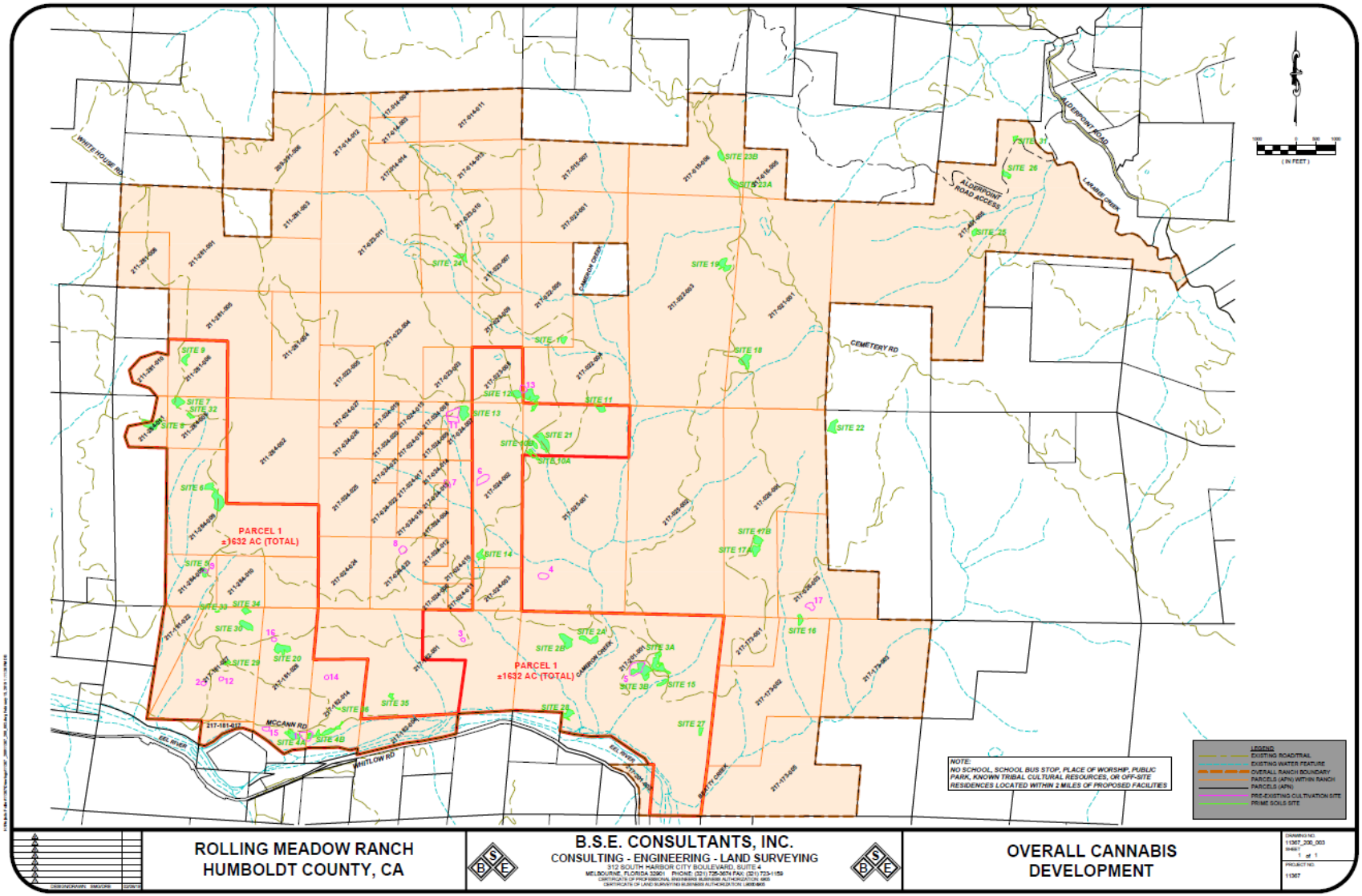
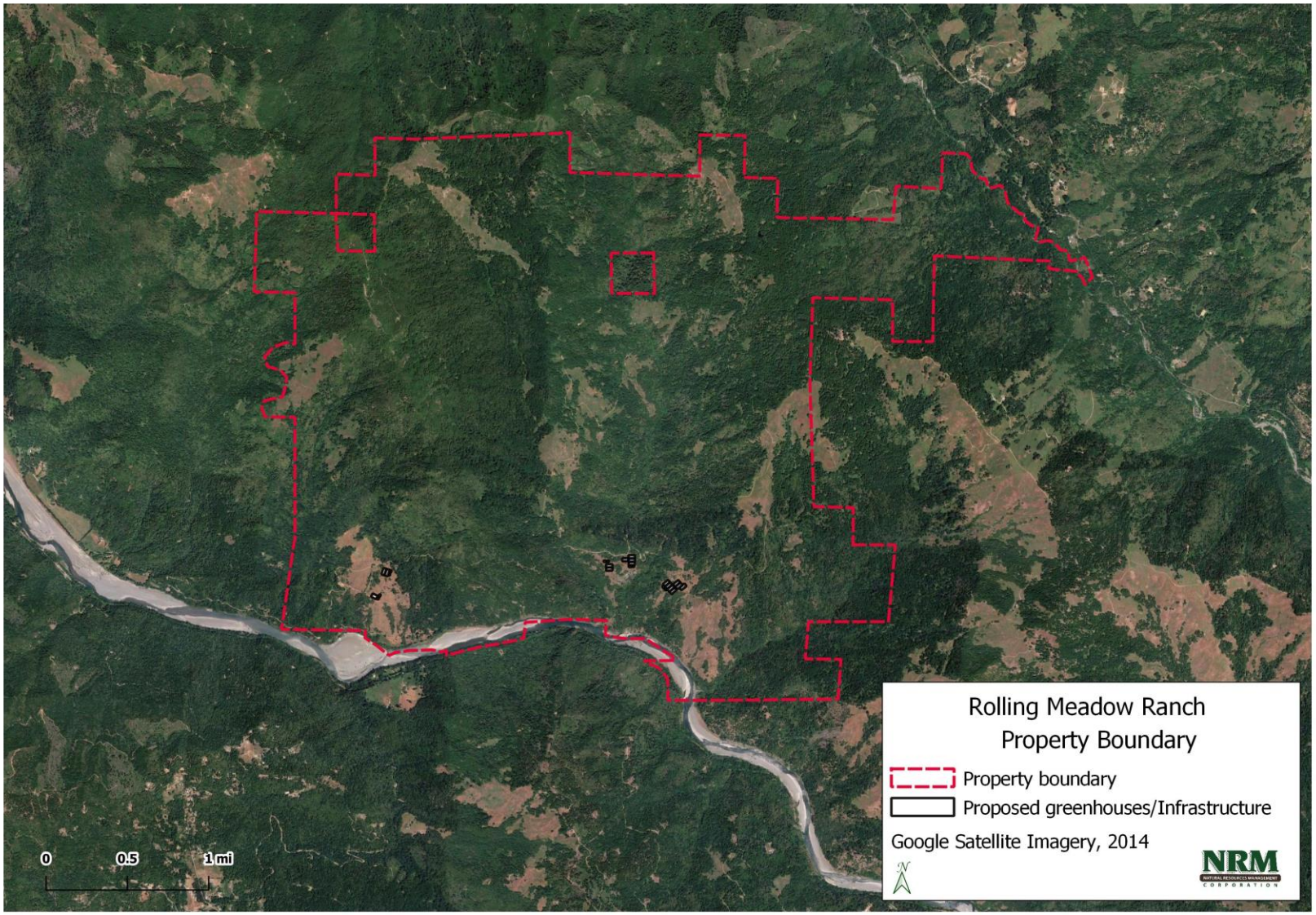


Figure 2

4/ Application 1300B Section VI: Attachments #1 & #2; Prepared for Mr. Andrew Machata, Rolling Meadow Ranch



APN 217-022-004, 217-201-001, 211-281-006, 217-181-017; T2S R3E Sec 1, 2, 35 HB&M; T2S R4E Sec 6 HB&M; USGS Meyers Flat QUAD; HUC 12 180101050502

Figure 3

c. & d. The following figures (4, 5, 6) give detail on the infrastructure – layout, sizes, and relative location of the generators

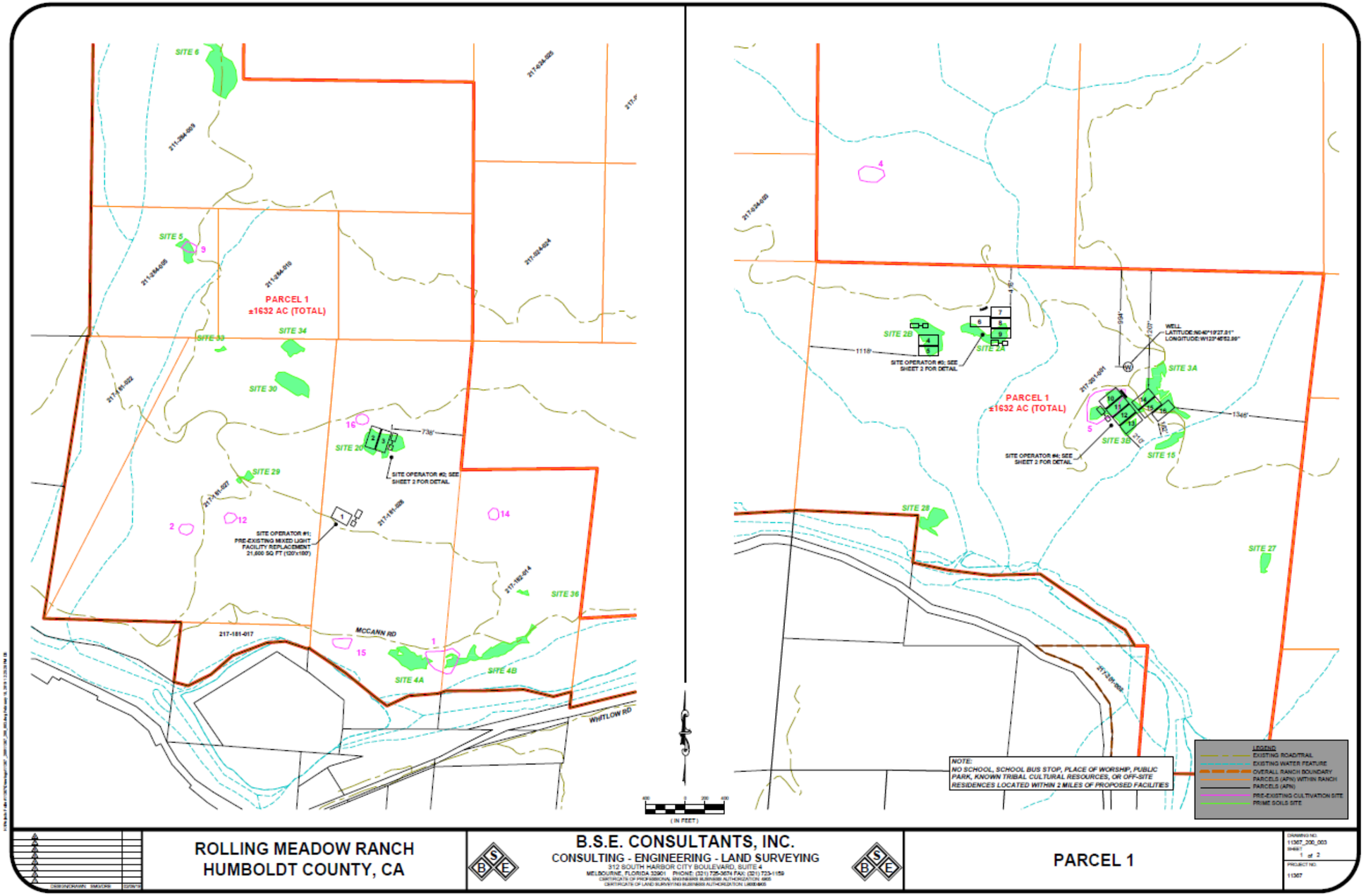
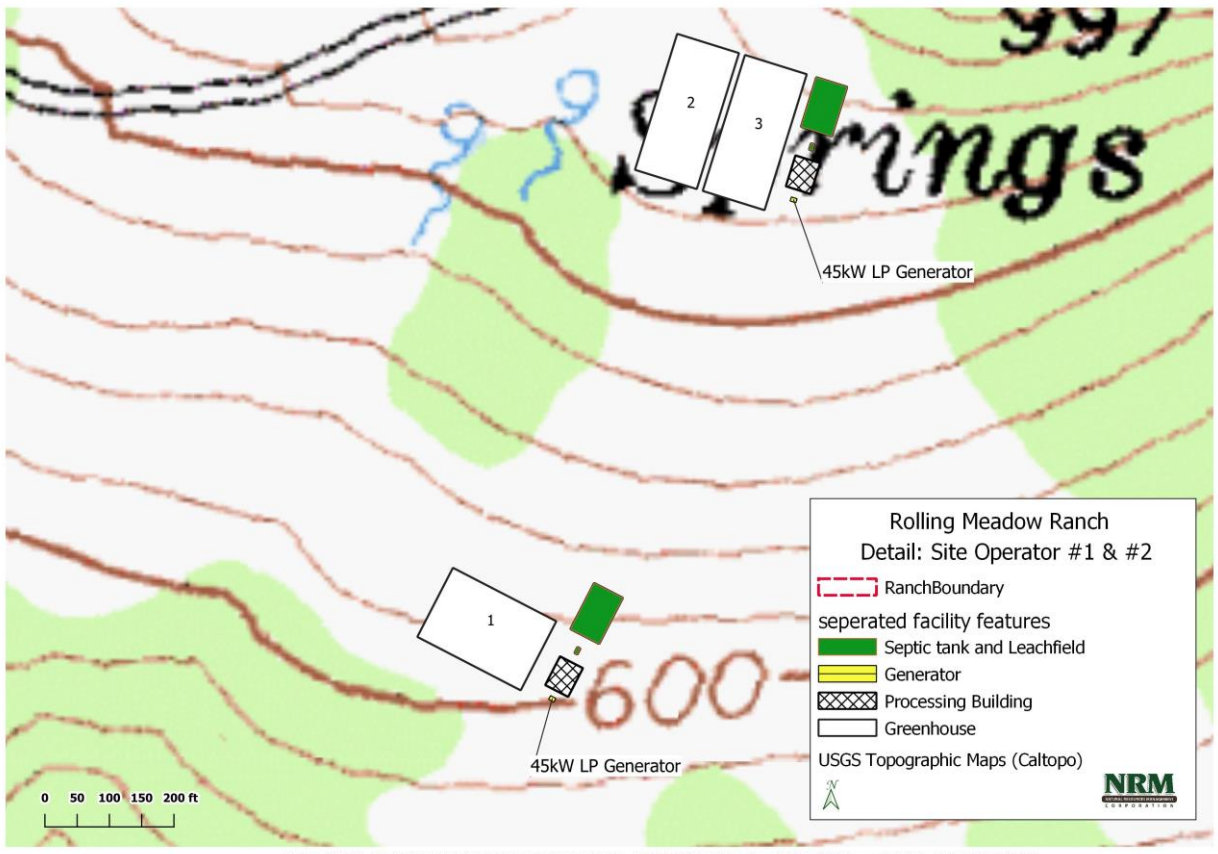
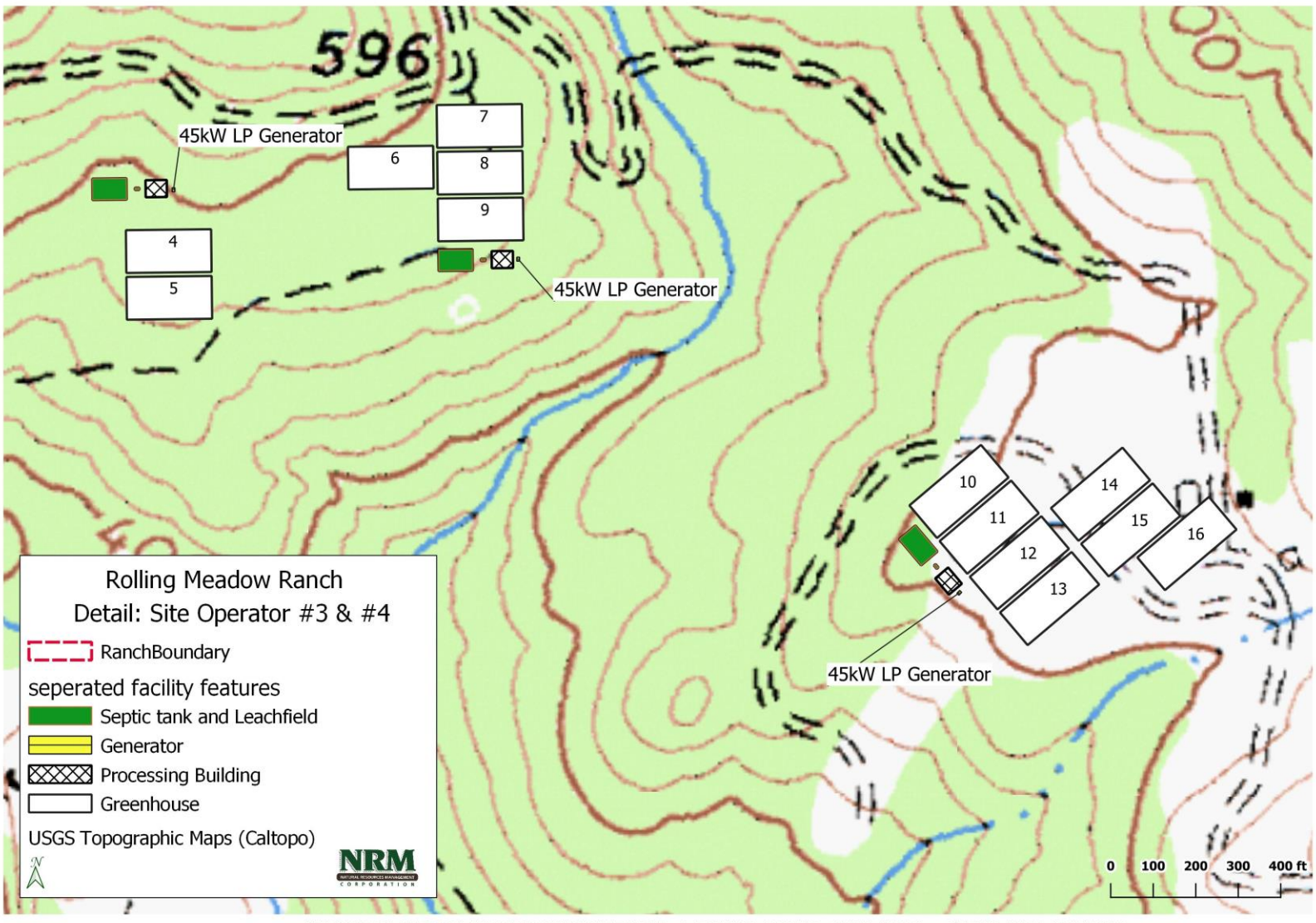


Figure 4



APN 217-022-004, 217-201-001, 211-281-006, 217-181-017; T2S R3E Sec 1, 2, 35 HB&M; T2S R4E Sec 6 HB&M; USGS Meyers Flat QUAD; HUC 12 180101050502

Figure 5. Site Operator #1 and #2; Greenhouse #s 1-3



APN 217-022-004, 217-201-001, 211-281-006, 217-181-017; T2S R3E Sec 1, 2, 35 HB&M; T2S R4E Sec 6 HB&M; USGS Meyers Flat QUAD; HUC 12 180101050502

Figure 6. Site Operator # 3 and #4; Greenhouse #s 4-16

e. & f. Figure 7 is a map of the access roads that the project will improve and maintain. There are two gates restricting access at the Southern entrance and there are permanent gates at all other road intersection points off of the main access road highlighted in yellow.

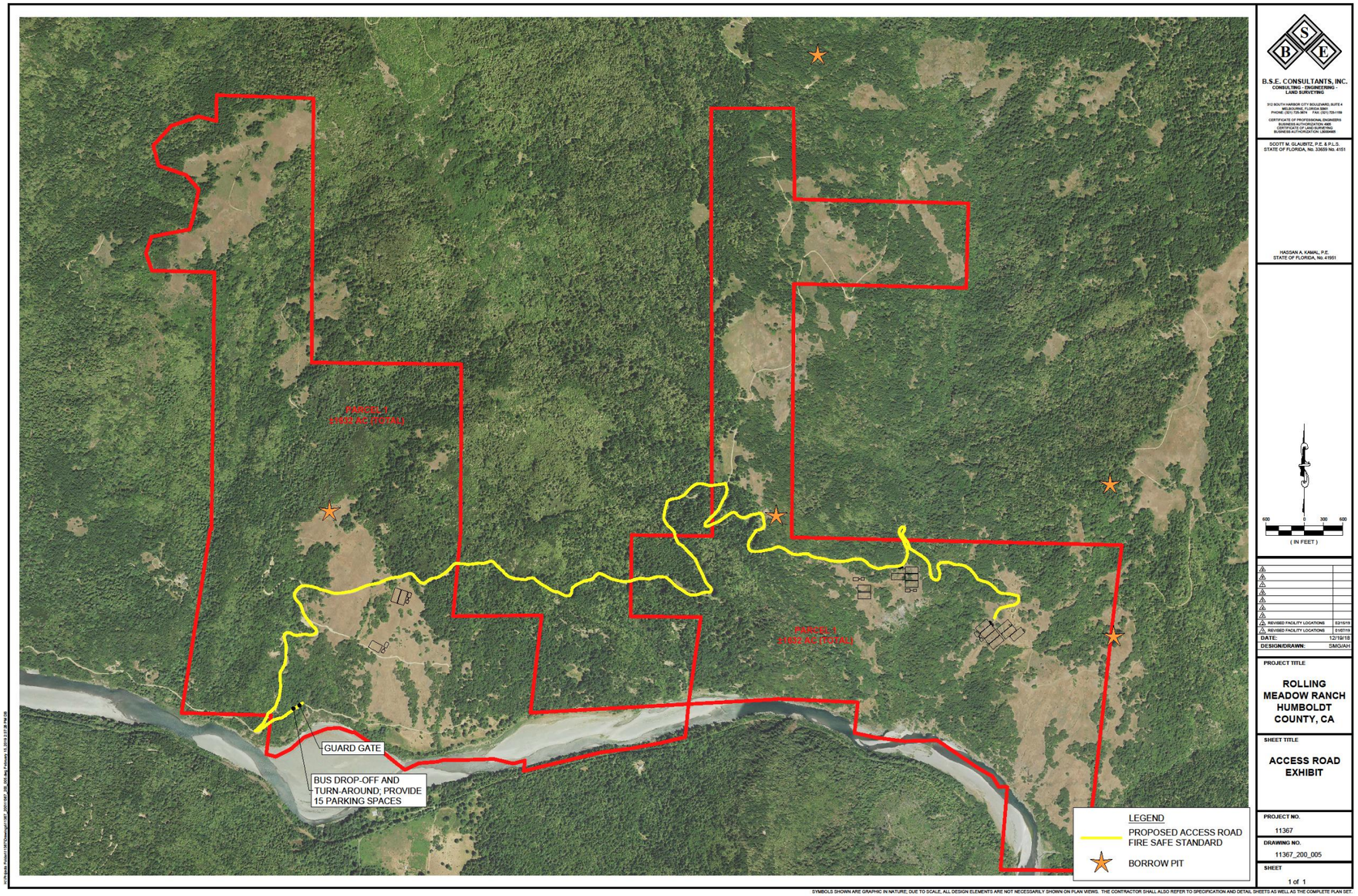


Figure 7

g. Figure 8 shows the distance to the nearest residence to be 2272-feet or .43 miles. The distance is taken from Site Operator #1, the closest project component to the residence. There is another residence to the West of Site Operators 1 and 2, and others across the river; none have been identified at a distance closer than .43 miles.

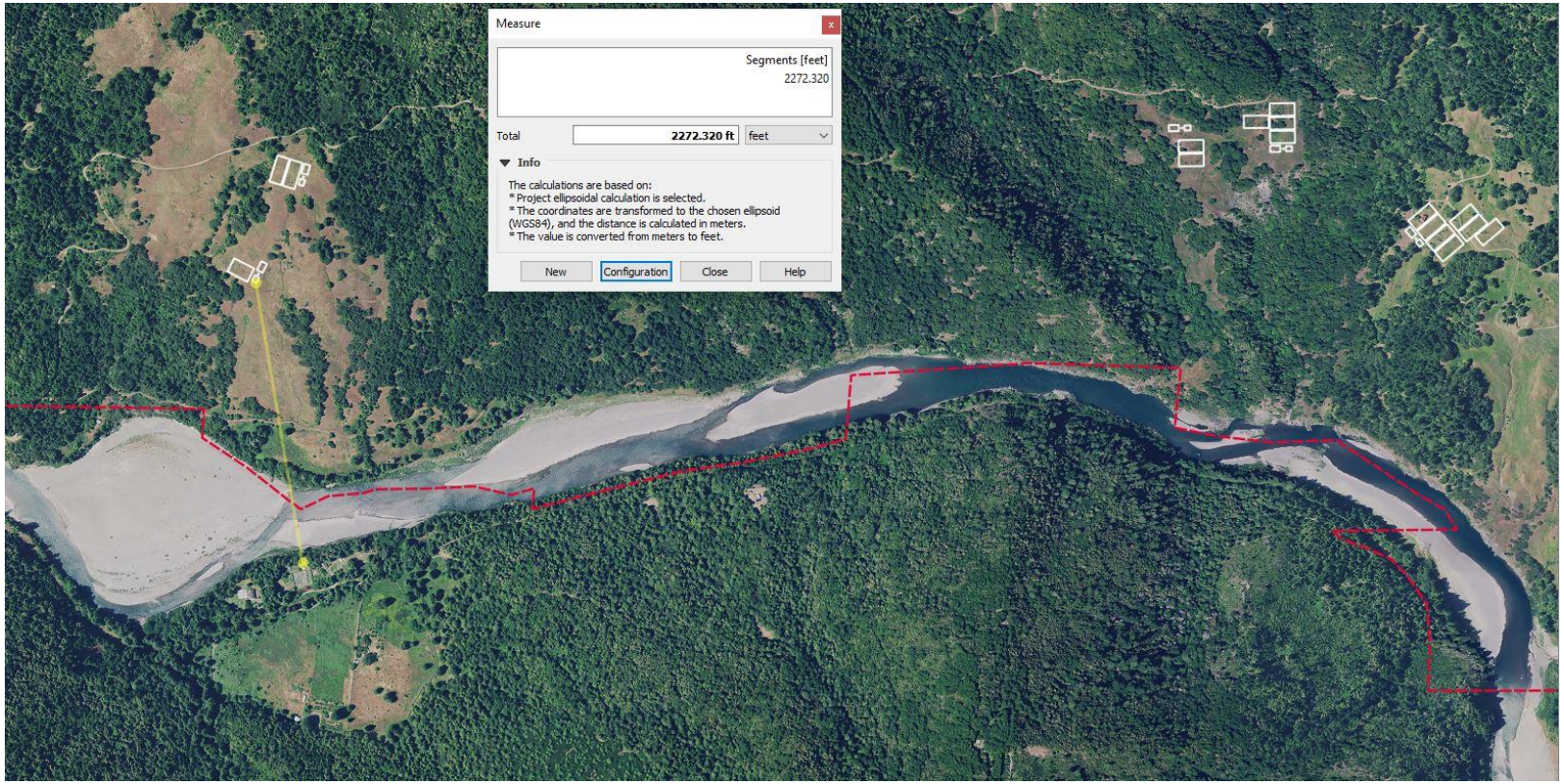
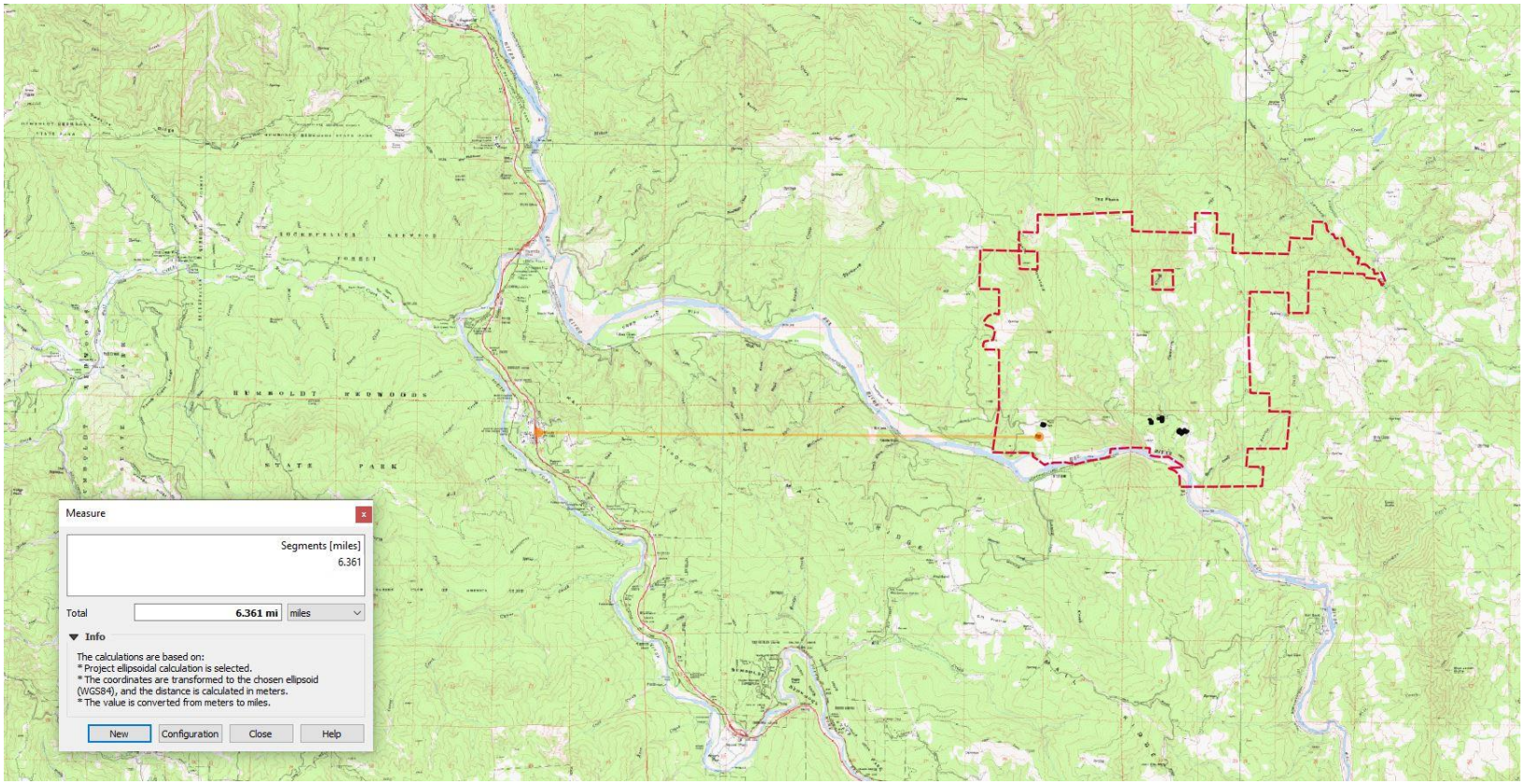


Figure 8

h. Figure 9 shows the distance to the nearest school (Agnes J. Johnson Elementary School in Weott) to be over 6 miles.



STATEMENT OF EXHAUST EMISSIONS
2019 SPARK-IGNITED GENERATORS
QT & RG SERIES - SCAQMD CERTIFIED
STATIONARY EMERGENCY

	Model	Engine	EPA Engine Family	Fuel	CAT Req'd *	SCAQMD CEP #	EPA Cert #	Grams/bhp-hr.			Rated RPM	BHP	Fuel Flow (lb/hr)
								THC	NOx	CO			
Small Spark Ignited Engines - SSIE (SORE)	RG022	2.4	KGNXB02.42NN	NG	No	NR	KGNXB02.42NN-055	2.34	2.15	101.28	1800	31.83	14.27
			KGNXB02.42NL	LPG	No	NR	KGNXB02.42NL-056	1.54	3.76	95.37	1800	35.63	15.31
	RG025	1.5	KGNXB01.52NN	NG	No	NR	KGNXB01.52NN-005	2.87	1.57	133.44	3600	47.10	20.35
			KGNXB01.52NL	LPG	No	NR	KGNXB01.52NL-010	1.99	1.62	134.47	3600	48.50	19.60
	RG030	1.5	KGNXB01.52NN	NG	No	NR	KGNXB01.52NN-005	2.87	1.57	133.44	3600	47.10	20.35
			KGNXB01.52NL	LPG	No	NR	KGNXB01.52NL-010	1.99	1.62	134.47	3600	48.50	19.60
	RG027	2.4	KGNXB02.42NN	NG	No	NR	KGNXB02.42NN-055	2.14	2.37	93.95	1800	38.39	16.52
			KGNXB02.42NL	LPG	No	NR	KGNXB02.42NL-056	1.43	4.38	86.18	1800	43.29	17.59
	RG045	2.4	KGNXB02.42L1	NG	Yes	457398	KGNXB02.42L1-006	0.62	0.22	1.00	3600	78.42	30.94
			KGNXB02.42L2	LPG	Yes	457398	KGNXB02.42L2-014	0.11	0.48	0.70	3600	85.51	35.01
	RG048	5.4	KGNXB05.42L1	NG	Yes	530213	KGNXB05.42L1-015	0.36	0.11	0.23	1800	75.70	24.30
			KGNXB05.42L2	LPG	Yes	530216	KGNXB05.42L2-016	0.06	0.56	0.27	1800	77.00	26.32
	QT070	6.8	KGNXB06.82L1	NG	Yes	487844	KGNXB06.82L1-017	0.27	0.15	0.72	1800	108.35	40.91
			KGNXB06.82L2	LPG	Yes	487844	KGNXB06.82L2-007	0.05	0.19	1.35	1800	111.93	42.30
Large Spark Ignited Engines - LSIE	QT100	6.8	KGNXB06.82C1	NG	Yes	453278	KGNXB06.82C1-042	0.42	0.16	0.90	2300	148.84	56.24
			KGNXB06.82C2	LPG	Yes	453278	KGNXB06.82C2-044	0.04	0.59	0.43	2300	162.25	62.90
	QT130	6.8	KGNXB06.82C1	NG	Yes	498304	KGNXB06.82C1-042	0.19	0.16	1.76	3000	191.87	73.53
			KGNXB06.82C2	LPG	Yes	498304	KGNXB06.82C2-044	0.06	0.59	1.36	3000	208.26	81.76
	QT150	6.8	KGNXB06.82C1	NG	Yes	483767	KGNXB06.82C1-042	0.12	0.02	1.51	3600	230.63	90.59
			KGNXB06.82C2	LPG	Yes	483767	KGNXB06.82C2-044	0.04	1.18	0.87	3600	231.35	90.73

* Three-Way Catalyst (TWC)
NR: Not Required
Refer to page 2 for definitions and advisory notes.

STATEMENT OF EXHAUST EMISSIONS
2019 SPARK-IGNITED GENERATORS
QT & RG SERIES - SCAQMD CERTIFIED
STATIONARY EMERGENCY

2019 EPA SPARK-IGNITED EXHAUST EMISSIONS DATA

Effective since 2009, the EPA has implemented exhaust emissions regulations on stationary spark-ignited (gaseous) engine generators for emergency applications. All Generac spark-ignited gensets, including SG, MG, QTA, QT and RG series gensets that are built with engines manufactured in 2009 and later meet the requirements of 40CFR part 60 subpart JJJJ and are EPA certified. These generator sets are labeled as EPA Certified with decals affixed to the engines' valve covers.

The attached documents summarize the general information relevant to EPA certification on these generator sets. This information can be used for submittal data and for permitting purposes, if required. These documents include the following information:

EPA Engine Family
The EPA Engine Family is assigned by the Manufacturer under EPA guidelines for certification purposes and appears on the EPA certificate.

Catalyst Required
Indicates whether a three-way catalyst (TWC) and Air/Fuel Ratio control system are required on the generator set to meet EPA certification requirements. Generally, units rated 80kW and smaller do not require a TWC to meet EPA certification requirements. Please note that some units that do not require a TWC to meet EPA requirements do need one if the California SCAQMD option is selected. Please see "California SCAQMD" below for additional information on this option.

Combination Catalyst or Separate Catalyst
SG and MG series generator sets typically utilize a single combination catalyst/silencer as part of meeting EPA certification requirements. Many QT and RG series generator sets use the same engines as SG series units, but have different exhaust configurations that require the use of conventional silencers with additional separate catalysts installed.

EPA Certificate Number
Upon certification by the EPA, a Certificate Number is assigned by the EPA.

Emissions Actuals - Grams/bhp-hr
Actual exhaust emission data for Total Hydrocarbons (THC), Nitrogen Oxides (NOx) and Carbon Monoxide (CO) that were submitted to EPA and are official data of record for certification. This data can be used for permitting if necessary. Values are expressed in grams per brake horsepower-hour; to convert to grams/kW-hr, multiply by 1.341. Please see advisory notes below for further information.

California Units, SCAQMD CEP Number
A separate low-emissions option is available on many Generac gaseous-fueled generator sets to comply with the more stringent South Coast Air Quality Management District requirements that are recognized in certain areas in California. Gensets that include this option are also EPA Certified.

General Advisory Note to Dealers
The information provided here is proprietary to Generac and its' authorized dealers. This information may only be disseminated upon request, to regulatory governmental bodies for emissions permitting purposes or to specifying organizations as submittal data when expressly required by project specifications, and shall remain confidential and not open to public viewing. This information is not intended for compilation or sales purposes and may not be used as such, nor may it be reproduced without the expressed written permission of Generac Power Systems, Inc.

Advisory Notes on Emissions Actuals
- The stated values are actual exhaust emission test measurements obtained from units representative of the generator types and engines described.
- Values are official data of record as submitted to the EPA and SCAQMD for certification purposes. Testing was conducted in accordance with prevailing EPA protocols, which are typically accepted by SCAQMD and other regional authorities.
- No emission values provided are to be construed as guarantees of emissions levels for any given Generac generator unit.
- Generac Power Systems reserves the right to revise this information without prior notice.
- Consult state and local regulatory agencies for specific permitting requirements.
- The emissions performance data supplied by the equipment manufacturer is only one element required toward completion of the permitting and installation process. State and local regulations may vary on a case-by-case basis and must be consulted by the permit applicant/equipment owner prior to equipment purchase or installation. The data supplied herein by Generac Power Systems cannot be construed as a guarantee of installability of the generator set.
- The emission values provided are the result of multi-mode, weighted scale testing in accordance with EPA testing regulations, and may not be representative of any specific load point.
- The emission values provided are not to be construed as emission limits.

Generac Power Systems, Inc. | P.O. Box 8 | Waukesha, WI 53187
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Bulletin A0000092502
Rev. A 01/18/19