

**PROJECT PIONEER
1 ANGWIN AVENUE
EROSION CONTROL PLAN**



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**PROJECT PIONEER
1 ANGWIN AVENUE**

EROSION CONTROL PLAN



NOVEMBER 2020

PREPARED BY:

**PPI ENGINEERING
2800 JEFFERSON STREET
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**PROJECT PIONEER
1 ANGWIN AVENUE**

EROSION CONTROL PLAN

NARRATIVE

1. The nature and purpose of the land disturbing activity and the amount of grading involved.

- a) This ECP addresses the conversion of approximately 35.9 net acres (42.2 gross acres) of existing farmland to vineyard located at 1 Angwin Avenue in Angwin. The project is located on APNs 024-080-040, 024-080-044, 024-080-048, and 024-080-049 which consist of approximately 485.16 acres per the Napa County Assessor's Office.
- b) Activities to be accomplished include ripping, rock removal, cultivating the soil to prepare for planting, seeding cover crop, mulching, trenching for irrigation pipelines, installing trellis system and deer fence, laying out the vine rows, and installing erosion control measures.

2. General description of existing site conditions, including topography, vegetation and soils.

- a) The site is located in the Conn Creek – Upper Reach Watershed and Moore Creek Watershed.
- b) The elevations in the vineyard area range from approximately 1805 to 1920 feet above mean sea level per topographic mapping. Ground slopes within the project boundary range between 5 and 18 percent.
- c) Topographic mapping was provided by Terra Firma flown in 2007.
- d) Existing vegetation consists of pasture and cropland. The area is currently grazed and mowed for hay. The grasses are renewed every 3 years by disking and replanting.
- e) No trees will be removed as a part of this project, therefore the project is in compliance with County Code Section 18.108.0202(D) requiring 3:1 tree preservation. Please see the biological report prepared by Aimee Wyrick-Brownworth, MSc and Floyd Hayes, PhD dated November 2020.
- f) Please see Appendix C for Vegetation Retention Calculations based on the existing vegetation and parcel configuration in 1993. This project proposes to retain 98% of the tree canopy and 77% of the brush and open (grass) cover that existed on the property in 1993.

- g) There are structures on the property. Please see the cultural resources report prepared by Flaherty Cultural Resources Services dated February 27, 2020.
- h) Please see Figure 4 in Appendix F for the Proposed Deer Fence map. The proposed deer fence includes blocks fenced individually.
- i) A site visit of the property was performed by Jim Bushey and Annalee Sanborn of PPI Engineering on Wednesday, July 25, 2019 and Thursday, December 5, 2019 to evaluate the vineyard development area and to collect photographic documentation. Photographs of pre-project conditions can be found in Appendix A.

3. Natural and man-made features onsite including streams, lakes, reservoirs, roads, drainage, and other areas that may be affected by the proposed activity.

- a) No natural or man-made features are expected to be adversely affected by this project.
- b) Mapping of waters and wetlands was performed for Project Pioneer by WRA. The Waters of the U.S. and wetlands are shown on Sheets 1 through 3.
- c) All ephemeral or intermittent streams that do not meet the Napa County definition of a stream have been avoided with a minimum 35' buffer in accordance with Napa County Conservation Regulation 18.108.025. There are no County-definitional streams or wetlands in the vicinity of the project area.
- d) There is an existing network of roads throughout the property. The existing road network is sufficient for access to proposed vineyard blocks. The existing roads shall be maintained and surfaced with crushed rock as needed. Please see Road Plan in Appendix E for the roads which will be used as primary access to the vineyard blocks.
- e) The runway for the Angwin-Parrett Airfield is located immediately adjacent to Block 1 and is in the vicinity of Blocks 2 and 3. Compliance with Federal Aviation Administration (FAA) regulations governing obstructions to runway clearance zones for a Visual Approach Utility Runway has been considered during project design. Please refer to the cross-sections on Sheet 4.

4. Location and source of water for irrigation or other uses.

- a) The proposed water source is an existing groundwater well. Please see the Site Plan for the location. Please see the WAA prepared by Richard C. Slade & Associates dated December 2020.

5. Soil types/soil series identified in the Soil Conservation Service (SCS) Napa County Soil Survey.

- a) The USDA – SCS Napa County Soil Survey maps the soil within the project boundary as Aiken Loam with 2 to 15 percent slopes and 15 to 30 percent slopes.
- b) Minimal rock is expected to be generated as a result of this project.

6. Critical areas, if any, within the development site that have serious erosion potential or problems.

- a) There are no areas with serious erosion potential or problems.
- b) Please see geology report prepared by Gilpin Geosciences dated September 22, 2020.

7. Erosion calculations

- a) Universal Soil Loss Equation (USLE) spreadsheets for this project are in Appendix B of this report.
- b) Please see pre-project versus post-project soil loss analysis prepared by PPI Engineering dated November 2020.

8. Proposed erosion control methods including:

a) All drainage systems and facilities, walls, cribbing or other erosion protection devices to be constructed with, or as a part of the proposed work.

- 1. No storm drainage facilities are required for this project.
- 2. Straw wattles shall be installed the year of construction in the approximate locations shown on the Site Plan. Additional temporary erosion control measures shall be installed as needed.

b) Proposed vegetative erosion control measures including location, type and quantity of seed, mulch, fertilizer and irrigation, timing and methods of planting, mulching and maintenance of plant material and slopes until a specified percentage of plant coverage is uniformly established.

- 1. Disturbed areas shall be seeded as described below. Straw mulch shall be applied to all disturbed areas at a rate of 3,000 lbs/acre prior to September 15 of the year of construction.

2. A permanent cover crop strategy will be utilized. The permanent cover crop will be generated the first year by seeding with the following mix: UC603 Barley at 50 lbs/acre, Blando Brome at 15 lbs/acre, and Zorro Fescue at 15 lbs/acre. A pre-approved alternative seed mix may be allowed.

The permanent cover crop will be managed each year such that any areas which have less than the percent vegetative cover specified below will be reseeded and mulched until adequate coverage is achieved. The permanent cover crop shall be mowed only and not disked.

Blocks with 75% vegetative cover: 1 & 3

Blocks with 80% vegetative cover: 2A, 2B, 2C, & 2D

3. In all blocks, the owner has the option of using a Dwarf Barley cover crop in the first three years that the block is planted to aid with vineyard establishment. If this option is used, seed shall be applied at a rate of 120 lbs/acre if broadcast or at a rate of 60 lbs/acre if drilled. The cover crop within the vineyard may be disked each spring after April 1 for the first three years. An alternative cover crop seed mix may be used upon prior approval. Each year the owner chooses to disk, the area shall be straw mulched at a rate of 3,000 lbs/acre prior to September 15. The permanent seed mix will be seeded prior to September 15 of the fourth (or earlier) year.
4. No pre-emergent herbicides will be used for weed management. Contact or systemic herbicides may be applied in spring (no earlier than February 15 to ensure adequate vegetative cover in the spray strips for the remainder of the rainy season). The width of the spray strip shall be no wider than 1.5' in Blocks 1 and 3 in order to achieve 75% vegetative cover (based on a seven-foot minimum row spacing). The width of the spray strip shall be no wider than 1' in Blocks 2A, 2B, 2C and 2D in order to achieve 80% vegetative cover.
5. Fertilizer shall be applied as necessary by vineyard management personnel for both the vineyard and to ensure specified percent vegetative cover crop is achieved. Site-specific soil analysis should be performed.
6. The vineyard avenues shall be mowed only and shall not be disked. Unless otherwise noted, all avenues shall conform to the natural grade. Vineyard avenues shall be seeded and mulched prior to September 15 of the year of construction and in subsequent years in bare or disturbed areas. The cover crop will be managed each year such that any avenues that have less than the percent vegetative cover specified below will be reseeded and mulched until adequate coverage is achieved. Seeding and mulching is not required on avenues and roads properly surfaced with gravel.

Blocks with 75% vegetative cover: 1 & 3

Blocks with 80% vegetative cover: 2A, 2B, 2C, & 2D

7. The proposed vine by row spacing is expected to be 4' by 7', however in areas where cross-slope exceeds 15% the owner shall increase the row spacing as needed to ensure there is adequate room for equipment. Width of tillage equipment shall be no more than 75% of row width to allow for bench formation and to minimize erosion.
8. The owner has the freedom to further subdivide vineyard blocks within the footprint of the proposed vineyard for irrigation and viticulture purposes. The proposed vinerow directions shall not be altered without an approved modification from Napa County.
9. Irrigation pipelines shall be located within existing roadways, vineyards and vineyard avenues, and/or within proposed clearing limits. Refer to Figure 5 in Appendix F. Regardless of pipeline location, pipeline trenches located on ground slopes greater than 15% shall be backfilled using imported or select native granular material to a depth of 6 inches above the pipelines such that voids do not form below haunches of pipe. Backfill shall be wheel rolled or otherwise compacted to reduce settlement. Final grading over trenches shall be mounded and water-barred such that water is directed away from trenches.
10. As stated in the Napa County Protocol for Re-Planting/Renewal of Approved Non-Tilled Vineyard Cover Crops dated March 23, 2004, when it becomes necessary, either by routine or emergency, to re-establish or renew vineyard cover crop the following measures should be followed:
 - Seek professional consultation, including soil nutrient analysis, to determine the reasons for the original cover crop's failure. Adjust soil fertility, irrigation and seed selection accordingly.
 - When tillage is necessary, alternate rows should be tilled, seeded, and straw-mulched to effectively accomplish the re-establishment/renewal process over a two-year period.
 - Tillage and re-seeding should be conducted in the following manner:
 - In year 1, till to prepare seed bed and sow desired cover crop in every other row ("the evens"), leaving the alternate rows ("the odds") untilled and mowed only.
 - Mulch all tilled rows having an up and down hill (perpendicular to contour) row direction with 3,000 lbs./acre of loose straw, or approved equivalent, after seeding.
 - Tilled rows with cross-slope (parallel to contour) row direction and slope gradients less than 15% may not require straw mulch.
 - In year 2, till to prepare seed bed and sow desired cover crop in "odd" rows.
 - In year 2, leave "even" rows untilled and mowed only.
 - Mulch rows tilled in year 2 as specified above.
 - Put all re-establishment measures in place by September 1
 - In year 3, return all rows to non-tilled culture.

9. Stormwater stabilization measures, if the development of the site will result in increased peak rates of runoff that may cause flooding or channel degradation downstream.

- a) No significant increase in quantity or rate of runoff is expected as a result of this project.
- b) Please see hydrology report prepared by PPI Engineering dated November 2020.

10. An implementation schedule showing the following:

a) The proposed clearing, grading, and/or construction schedule.

DATE	DESCRIPTION
April 1:	Commence clearing and tillage operations.
September 1:	All tillage and erosion control completed.
September 15:	All winterization complete, including seeding, straw mulching, and straw wattle installation.

b) The proposed schedule for winterizing the site (generally by October 15 of each year the permit is in effect.)

The site shall be winterized and all necessary erosion control measures described in the Erosion Control Plan shall be installed by September 15.

c) The proposed schedule of installation of all interim erosion and sediment control measures, including the stage of completion of such devices at the end of the grading season (generally October 15) of each year the permit will be in effect.

See Item 10a).

d) The schedule for installation of permanent erosion and sediment control devices where required.

See Item 10a).

11. The estimated cost of implementation of the erosion and sediment control measures.

Typical costs for installing erosion control measures as described in this plan range from \$500 to \$2,000 per acre.

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EROSION CONTROL PLAN

STANDARD PROVISIONS

SECTION 1 - SCOPE OF WORK

These specifications cover the construction of the erosion control measures for approximately 35.9 acres of vineyard to be developed by Project Pioneer.

The drawing numbered 11910501B, Sheets 1 through 4, and these Specifications describe in detail the construction of the complete erosion control system. Requests for further information or clarification of the work to be done can be made to Jim Bushey or Matt Bueno at the Napa office of PPI Engineering, phone (707) 253-1806.

All costs for the complete construction of the erosion control system must be included in the bid items, since no other payment will be made outside of the bid items. This includes all costs for moving onto and off of the job site, all equipment, tools, materials, labor, fuel, taxes, and incidentals for furnishing and installing the erosion control system.

Surveying adequate for construction will be provided by the Owner, at the Owner's expense. The Contractor will be responsible for preserving construction survey stakes and markers for the duration of their intended use. Any restaking costs or additional survey work requested by the Contractor shall be deducted from the final payment to the Contractor. The Owner does not guarantee that the project being bid will be awarded. The Owner also reserves the right to change the quantities of actual work performed as needed with payment made according to the new quantities at the unit price bid.

SECTION 2 - AUTHORITY OF DEVELOPER AND ENGINEER

The property is being developed by Project Pioneer. Project Pioneer's appointed representative shall have the final say in the event of a dispute with the Contractor.

The Owner shall appoint PPI Engineering as the Engineer to perform periodic review of the work. PPI Engineering shall report any unsatisfactory work to the Owner. The Contractor shall be responsible for any engineering fees or repair costs associated with bringing the unsatisfactory work into compliance with the Plans and Specifications.

SECTION 3 - CHANGES IN WORK

Materials and the manner of performance of the work performed in this contract shall be according to the Plans and Specifications. Modifications to the Plans or Specifications shall be agreed upon in writing by the Contractor, Owner, and Engineer before the work in question is performed. Materials and construction methods shall be as specified on the Plans and Specifications. The burden of proof that a given material or method constitutes an equivalent to the one specified will rest with the Contractor.

SECTION 4 - UTILITIES

At least two working days prior to beginning any excavation on the project, the Contractor shall contact Underground Service Alert (USA) at 1-800-642-2444 and request field location of all existing utilities.

Certain facilities at the site are existing. The Contractor shall be careful to avoid damaging existing facilities and shall notify the Owner immediately if any damage does occur. The cost of repairing any damage shall be the sole responsibility of the Contractor.

SECTION 5 - PROSECUTION OF THE WORK

Unless otherwise provided, the contract time shall commence upon issuance of a Notice to Proceed by the Owner. The work shall start within ten days thereafter and be diligently prosecuted to completion within the time specified in the Contractor's bid. If weather conditions prevent completion of the project within the specified amount of time, the Owner may extend the completion date of the project.

SECTION 6 - RESPONSIBILITIES OF THE CONTRACTOR

The Contractor agrees that in accordance with generally accepted construction practices, Contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including the safety of all persons and property. This requirement shall be made to apply continuously and not be limited to normal working hours. Contractor further agrees to defend, indemnify and hold design professional harmless from any and all liability, real or alleged, in connection with the performance of the work on this project, excepting liability arising from the sole negligence of design professional.

The Contractor shall be responsible for controlling dust and mud generated from construction activities. The Contractor shall not allow dust or mud to obstruct vehicular traffic on County roads or State Highways. The Contractor shall be responsible for cleaning all vehicles prior to leaving the site as required by the California Highway Patrol. The Contractor, at their own expense, shall

provide adequate dust control and prevention of mud tracking on roads, and take other preventative measures as directed by the Owner.

The Contractor shall be responsible for following all safety laws that may be applicable. Of particular concern are the trench safety regulations issued by CAL-OSHA. The Contractor alone shall be responsible for the safety of their equipment and methods and for any damage or injury which may result from their failure, improper construction, maintenance, or operation.

The Contractor shall be responsible for installing necessary sediment retention measures to keep sediment from leaving the site if construction activities continue beyond October 1.

The Contractor shall keep the work site clean and free of rubbish and debris throughout the project. Materials and equipment shall be removed from the site as soon as they are no longer necessary or the project is completed.

The Contractor shall also be responsible for ensuring that all permits which are necessary for construction have been obtained and that copies of these permits are maintained onsite at all times.

The Contractor shall, at their own expense, furnish all necessary light, power, pumps, and water necessary for the work.

SECTION 7 - MEASUREMENT AND PAYMENT

Payment shall be made at the unit prices bid according to the actual quantities installed. Measurement of the final quantities shall be the responsibility of the Owner's Engineer.

The Engineer shall periodically observe the project during construction and upon completion of the project any unfinished or unacceptable work observed will be brought to the Contractor's attention verbally and in writing. Final payment will be made upon satisfactory completion of all work items required by these Plans and Specifications.

SECTION 8 - GUARANTEE

In addition to the guarantees from suppliers, the Contractor shall guarantee the work he performs for a period of two years. Any repairs needed to the system within two years of completion due to faulty workmanship or materials shall be promptly repaired at no expense to the Owner. Any costs incurred by the Owner and/or Engineer within two years of completion due to rubbish or debris placed in a trench or other excavation shall be paid by the Contractor.

Unless otherwise provided in writing, payment by the Owner to the Contractor for installation of this system shall constitute acceptance of all provisions in this document by the Contractor.

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EROSION CONTROL PLAN

SPECIAL PROVISIONS

SECTION 1 – ROLLING DIPS

1.1 GENERAL:

Rolling dips shall be constructed as shown on Detail 1, Sheet 3 in locations shown on Figure 2 and as specified by the Engineer.

1.2 INSTALLATION:

The existing roadway within the location of the rolling dip shall be scarified and any vegetation shall be removed and thoroughly incorporated. Excavation into the existing road bed shall begin approximately 20 to 25 feet uphill from the rolling dip location, progressively steepening the grade until the axis is reached. The axis of the rolling dip shall be angled approximately 30 degrees to the road alignment. Fill shall be used to achieve approximately 12” minimum of elevation between the axis of the trough and the top of the reverse grade. Fill shall be moisture conditioned as necessary and compacted to 90% compaction per ASTM D1557. Construction shall be such that vehicles can easily drive over the rolling dips yet allows the trough to effectively convey surface flow, when present, off the road. Existing dense vegetation shall help diffuse the surface flow on the downstream side of the trough. In the event that existing grade is too rocky for uniform excavation, the Engineer may approve the use of Caltrans Class 2 Aggregate Base to construct the rolling dip as shown in Detail 1, Sheet 3.

SECTION 2 - TEMPORARY MEASURES

2.1 GENERAL:

Temporary erosion control measures shall be constructed by the Owner. These measures can include water bars, straw wattles, straw mulching, straw bale dikes, and other practices as needed. The measures shall be constructed in conformance with the detail drawings and maintained in a functional condition throughout the rainy season.

SECTION 3 - MAINTENANCE

3.1 GENERAL:

The erosion control measures described in these Specifications and shown on the Plans and Details require regular maintenance in order to function as intended. Vineyard management personnel shall assure that the erosion control measures are monitored throughout the rainy season each year and necessary repairs and/or maintenance are performed immediately. Maintenance operations shall include, but not be limited to the following activities.

3.2 ROLLING DIPS:

The rolling dips shall be monitored and repaired as needed to ensure water is directed off of the roadway. Any accumulated sediment shall be cleaned out by hand. In the event that a rolling dip requires removal of sediment on a regular basis, another rolling dip should be constructed uphill as this indicates that spacing is too wide between rolling dips.

3.3 STRAW WATTLES:

Straw wattles shall be monitored and repaired as needed to ensure water does not run under the wattle or between adjacent wattles. Should excessive erosion cause the wattle to fill with sediment, this material shall be removed to a protected location and the source of the sediment located and protected as needed.

APPENDIX A

PHOTOGRAPHIC DOCUMENTATION



Photo 1

7/25/2019



Photo 2

7/25/2019



Photo 3

12/5/2019

APPENDIX B

USLE CALCULATIONS

PPI Engineering

Napa County
 Maximum Length of Slope
 for a soil loss of 5 tons per acre

NAME: Project Pioneer

DATE: 5/22/19

Cover Type: Permanent Cover Crop

Soil Unit No. (100-182)--- 100 & 101

-K= 0.24

Soil Name Aiken

-R= 85

-T= 3

Percent Cover	65% Up & Down Hill	70% Up & Down Hill	75% Up & Down Hill	80% Up & Down Hill	85% Up & Down Hill	90% Up & Down Hill
	C= 0.058 P= 1.0	C= 0.046 P= 1.0	C= 0.034 P= 1.0	C= 0.022 P= 1.0	C= 0.015 P= 1.0	C= 0.010 P= 1.0
	2 2,577,246	5,581,137	15,286,873	65,238,727	233,853,027	903,469,034
	4 36,350	64,890	138,157	410,216	1,068,664	2,944,893
	6 3,959	6,295	11,522	27,519	59,197	133,193
	8 1,823	2,899	5,306	12,672	27,259	61,334
	10 973	1,546	2,831	6,761	14,543	32,721
P	12 589	936	1,713	4,091	8,801	19,802
E	14 386	614	1,123	2,683	5,772	12,986
R	16 269	427	782	1,867	4,016	9,035
C	18 196	311	569	1,359	2,924	6,579
	20 148	235	430	1,026	2,208	4,967
E	22 115	183	334	798	1,717	3,862
N	24 91	145	266	636	1,368	3,078
T	26 74	118	217	517	1,113	2,504
S	28 62	98	179	429	922	2,074
	30 52	82	151	361	776	1,745
L	32 44	70	129	307	661	1,488
O	34 38	61	111	265	571	1,285
P	36 33	53	97	232	498	1,121
E	38 29	47	85	204	439	987
	40 26	41	76	181	390	878
	42 23	37	68	162	349	786
	44 21	34	61	147	315	710
	46 19	30	56	133	286	645
	48 18	28	51	122	262	589
	50 16	26	47	112	241	542

NOTES:

C=Cover and Management Factor

P=Practice Factor

PPI Engineering

Napa County
 Maximum Length of Slope
 for a soil loss of 5 tons per acre

NAME: Project Pioneer

DATE: 5/22/19

Cover Type: Permanent Cover Crop

Soil Unit No. (100-182)--- 100 & 101

-K= 0.24

Soil Name Aiken

-R= 85

-T= 3

Percent Cover	65% Cross-Slope	70% Cross-Slope	75% Cross-Slope	80% Cross-Slope	85% Cross-Slope	90% Cross-Slope
	C= 0.058 P= 0.6	C= 0.046 P= 0.6	C= 0.034 P= 0.6	C= 0.022 P= 0.6	C= 0.015 P= 0.6	C= 0.010 P= 0.6
	2 14,146,563	30,634,994	83,910,005	358,096,907	1,283,624,766	4,959,162,785
	4 130,353	232,700	495,443	1,471,074	3,832,333	10,560,667
	6 10,998	17,485	32,005	76,442	164,436	369,980
	8 5,065	8,052	14,738	35,201	75,721	170,371
	10 2,702	4,296	7,863	18,780	40,397	90,893
	12 1,635	2,600	4,758	11,365	24,447	55,006
P	14 1,072	1,705	3,120	7,453	16,032	36,073
E	16 746	1,186	2,171	5,186	11,155	25,098
R	18 543	864	1,581	3,776	8,122	18,275
C	20 410	652	1,194	2,851	6,132	13,797
E	22 319	507	928	2,217	4,768	10,728
N	24 254	404	740	1,766	3,800	8,549
T	26 207	329	602	1,437	3,092	6,956
S	28 171	272	498	1,190	2,561	5,762
	30 144	229	419	1,001	2,154	4,847
L	32 123	195	358	854	1,837	4,134
O	34 106	169	309	737	1,586	3,568
P	36 93	147	269	643	1,384	3,113
E	38 82	130	237	567	1,219	2,743
	40 72	115	211	504	1,084	2,438
	42 65	103	189	451	971	2,184
	44 59	93	171	407	876	1,971
	46 53	85	155	370	796	1,791
	48 49	77	142	338	727	1,637
	50 45	71	130	311	669	1,504

NOTES:

C=Cover and Management Factor

P=Practice Factor

APPENDIX C

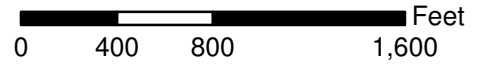
VEGETATION RETENTION CALCULATIONS

**PROJECT PIONEER
1 ANGWIN AVENUE
VEGETATION RETENTION CALCULATIONS
BASED ON 1993 PARCELS AND VEGETATION**

Area	Parcel Acres	Proposed Vineyard Area (Acres)	Developed in 1993 (Acres)	Tree Canopy Cover				Brush/ Shrub/Open Cover			
				Existing in 1993	30% Allowed to be Removed (acres)	Proposed to be Removed* (acres)	Proposed to be Retained (percent)	Existing in 1993	60% Allowed to be Removed (acres)	Proposed to be Removed* (acres)	Proposed to be Retained (percent)
Parcel #1	307.7	28.8	74.2	201.0	60.3	1.7	99%	32.6	19.5	5.5	83%
Parcel #2	119.2	11.4	52.7	48.9	14.7	0.5	99%	17.6	10.6	5.4	69%
Parcel #3	137.0	2.0	52.2	66.7	20.0	3.3	95%	18.1	10.9	5.0	73%
Total	564.0	42.2	179.1	316.5	95.0	5.5	98%	68.4	41.0	15.9	77%

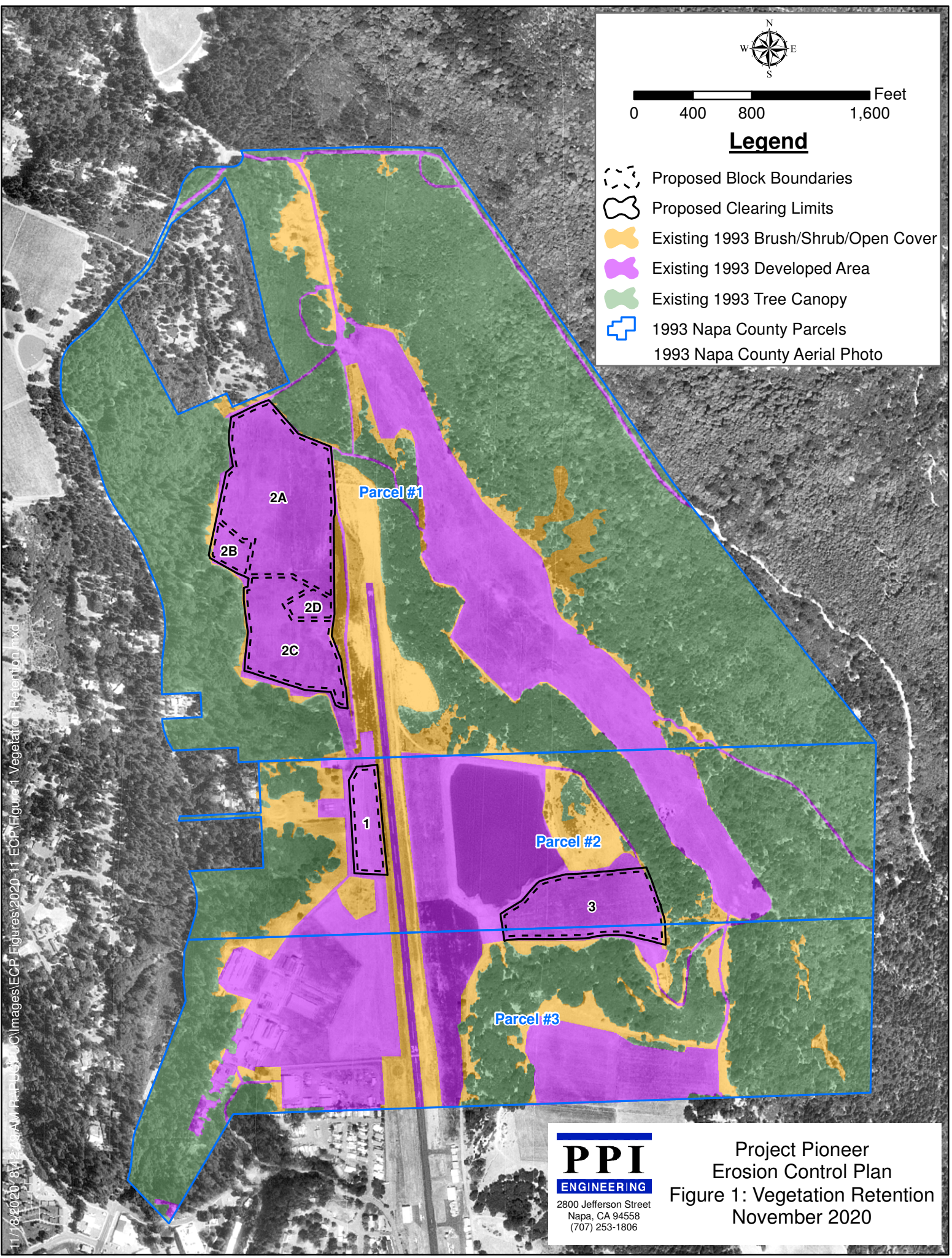
Note: some rounding may occur

*Proposed to be Removed includes tree canopy and brush/shrub/open removed after 1993 for other development, as well as the currently proposed development.



Legend

- Proposed Block Boundaries
 - Proposed Clearing Limits
 - Existing 1993 Brush/Shrub/Open Cover
 - Existing 1993 Developed Area
 - Existing 1993 Tree Canopy
 - 1993 Napa County Parcels
- 1993 Napa County Aerial Photo



11/18/2020 8:42:09 AM P:\PUB\00\Images\ECP\Figures\2020-11 ECP\Figure 1 Vegetation Retention.mxd

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ENGINEERING
2800 Jefferson Street
Napa, CA 94558
(707) 253-1806

Project Pioneer
Erosion Control Plan
Figure 1: Vegetation Retention
November 2020

APPENDIX D

SLOPE CALCULATIONS

**PROJECT PIONEER
1 ANGWIN AVENUE**

AVERAGE SLOPE OF PROPOSED VINEYARD BLOCKS

Block	Gross Acres	Net Acres	Slope #1	Slope #2	Average Slope
1	3.5	2.5	6%	10%	8%
2A	17.1	15.4	7%	16%	12%
2B	1.6	1.1	5%		5%
2C	8.9	7.6	10%	11%	11%
2D	1.2	1.0	6%	18%	12%
3	9.9	8.3	6%	10%	8%
Total	42.2	35.9			9%

APPENDIX E

ROAD PLAN

**PROJECT PIONEER
1 ANGWIN AVENUE
EROSION CONTROL PLAN**

ROAD PLAN

SECTION 1 - INTRODUCTION

Road systems can be a significant but easily controlled source of sediment production and delivery to stream channels (Napolitano et. al. 2009). The recommendations contained within this Road Plan are consistent with recent road management plans prepared by the Napa County Resource Conservation District (RCD) and with guidance presented within the Mendocino County RCD's 'Forest and Ranch Roads Handbook' (Weaver, W.E., and Hagens, D.K. 2014).

Project Pioneer contains an existing road network of paved, graveled, and dirt roads throughout the property at Assessor's Parcel Number (APN) 024-080-040, 024-080-044, 024-080-048, and 024-080-049. This plan addresses road improvements associated with the proposed new vineyard blocks requested in this Track I Erosion Control Plan (ECP).

The paved and dirt roads that provide access from Howell Mountain Road to the existing vineyard blocks are shown as "Existing Roads" on Figure 2 of this ECP. The roads shown as "Existing Dirt Road to be Graveled" on Figure 2 provide the primary access points to the proposed vineyard blocks. These existing roads are dirt roads used during ongoing agricultural and cattle operations on the property. Section 2 below discusses proposed improvements and recommendations to ensure that the increased usage of these existing roads does not increase erosion or sedimentation to local waterways.

SECTION 2 - PROPOSED IMPROVEMENTS

2.1 SURFACING WITH CRUSHED ROCK

Roads that provide access to the proposed vineyard blocks shown on Figure 2 will be surfaced with crushed rock as needed and as directed in the field by the Engineer. A 3-inch minus aggregate base material would be applied to the existing road width at a 3-6 inch depth to the road surface to ensure vehicle traffic would not degrade the road surface during wet periods of the year. Gravel shall be applied such that the finished road surface is outsloped and will be compacted with a smooth drum roller. The gravel shall be placed such that the existing grade on the uphill side of the road drains onto the gravel and is not diverted along the road by the gravel. The thickness of the gravel will be adjusted as necessary so that the finished grade of the road is completely outsloped, without the need for grading.

The gravel would be applied concurrently with vineyard development. Applying crushed rock to a road surface is an effective means of reducing erosion caused by vehicle traffic and the subsequent potential for delivery of sediment to the stream system.

2.2 PROPOSED ROLLING DIPS

Rolling dips are proposed as shown in Figure 2 where the existing road runs uphill and there is the potential for runoff to run down the road surface and cause erosion or gulying. The rolling dip serves to direct water off of the road surface and back onto native ground surface where vegetation will slow and disperse concentrated flow. The rolling dip and associated specifications are shown in Detail 1, Sheet 3 of this ECP.

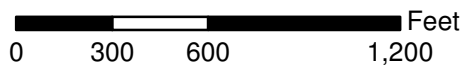
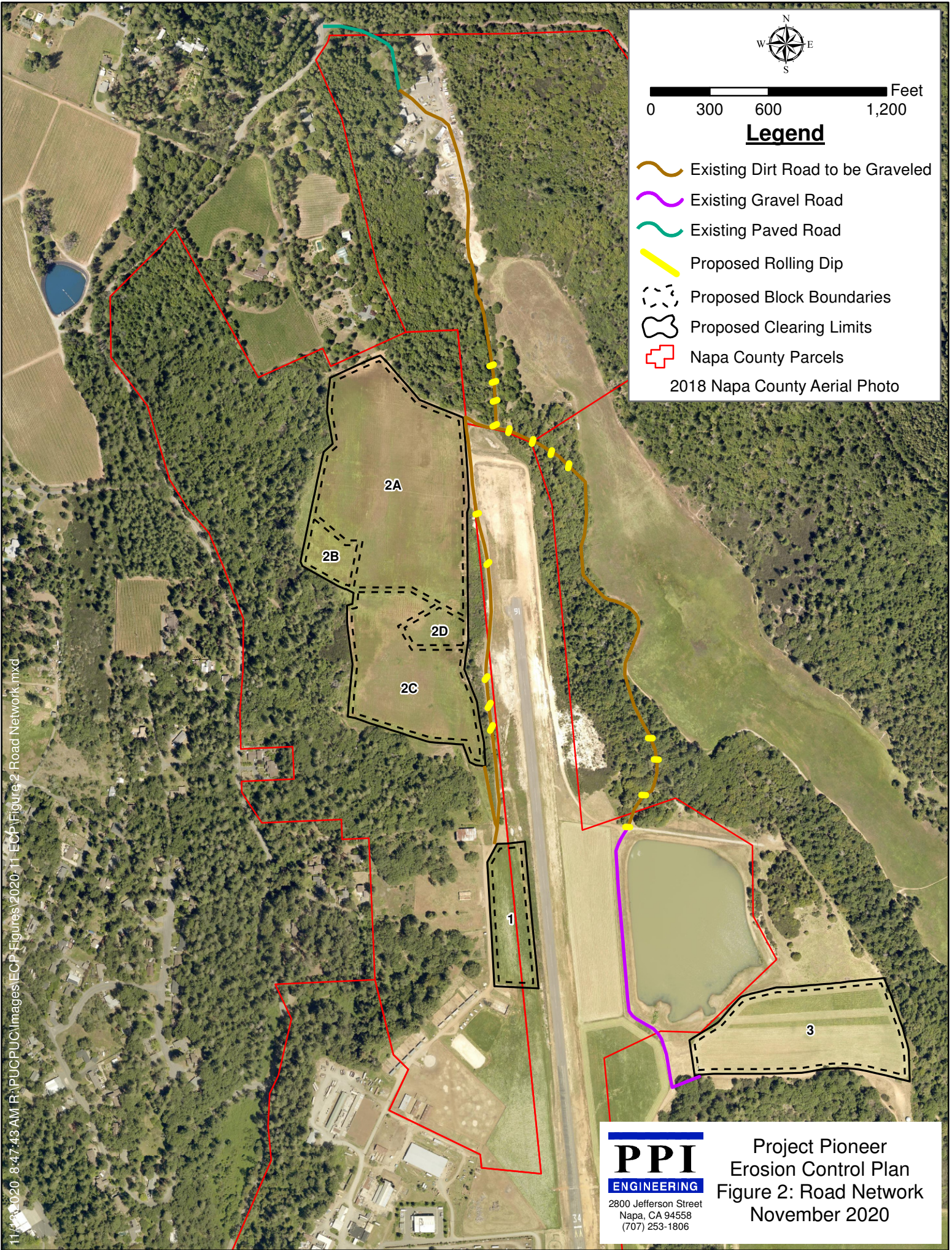
SECTION 3 - CONCLUSIONS

Road-related sediment can be prevented from entering the stream system through a variety of best management practices and erosion prevention treatments that generally involve dispersing road runoff and disconnecting road surface and ditch drainage. The proposed improvements in this Road Plan are consistent with guidance from the Napa County RCD and the Handbook for Forest and Ranch Roads and will ensure that the existing road network will be upgraded as necessary to minimize potential for erosion and sediment delivery to local drainages.

SECTION 4 - REFERENCES

Napolitano, Potter, Whyte 2009. *Napa River Sediment TMDL and Habitat Enhancement Plan*. California Regional Water Quality Control Board, San Francisco Bay Region.

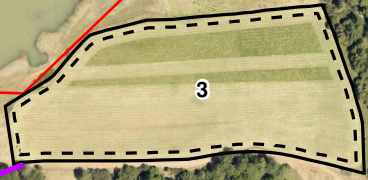
Weaver, W.E., and Hagans, D.K., 2014, *Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads*: Ukiah, CA, Mendocino County Resource Conservation District.



Legend

-  Existing Dirt Road to be Graveled
-  Existing Gravel Road
-  Existing Paved Road
-  Proposed Rolling Dip
-  Proposed Block Boundaries
-  Proposed Clearing Limits
-  Napa County Parcels

2018 Napa County Aerial Photo



PPI
ENGINEERING
 2800 Jefferson Street
 Napa, CA 94558
 (707) 253-1806

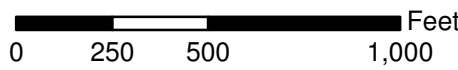
Project Pioneer
 Erosion Control Plan
 Figure 2: Road Network
 November 2020

11/19/2020 8:47:43 AM R:\PUC\Images\ECP\Figures\2020_11-ECP\Figure 2 Road Network.mxd





APPENDIX F

SUPPORTING FIGURES

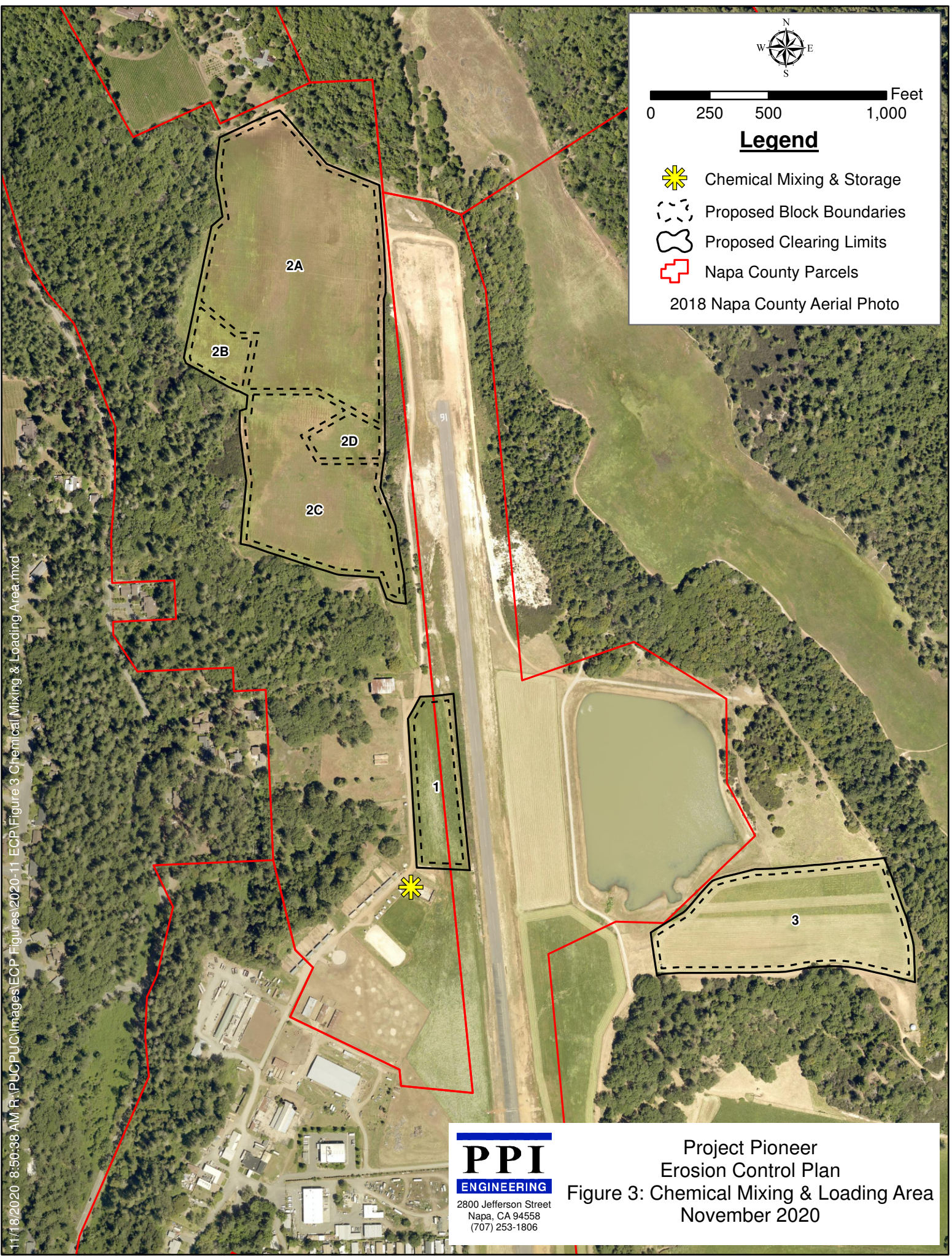
11/18/2020 8:50:38 AM R:\PUC\PLU\Images\ECP\Figures\2020-11 ECP\Figure 3 Chemical Mixing & Loading Area.mxd



Legend

-  Chemical Mixing & Storage
-  Proposed Block Boundaries
-  Proposed Clearing Limits
-  Napa County Parcels

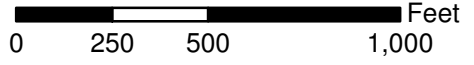
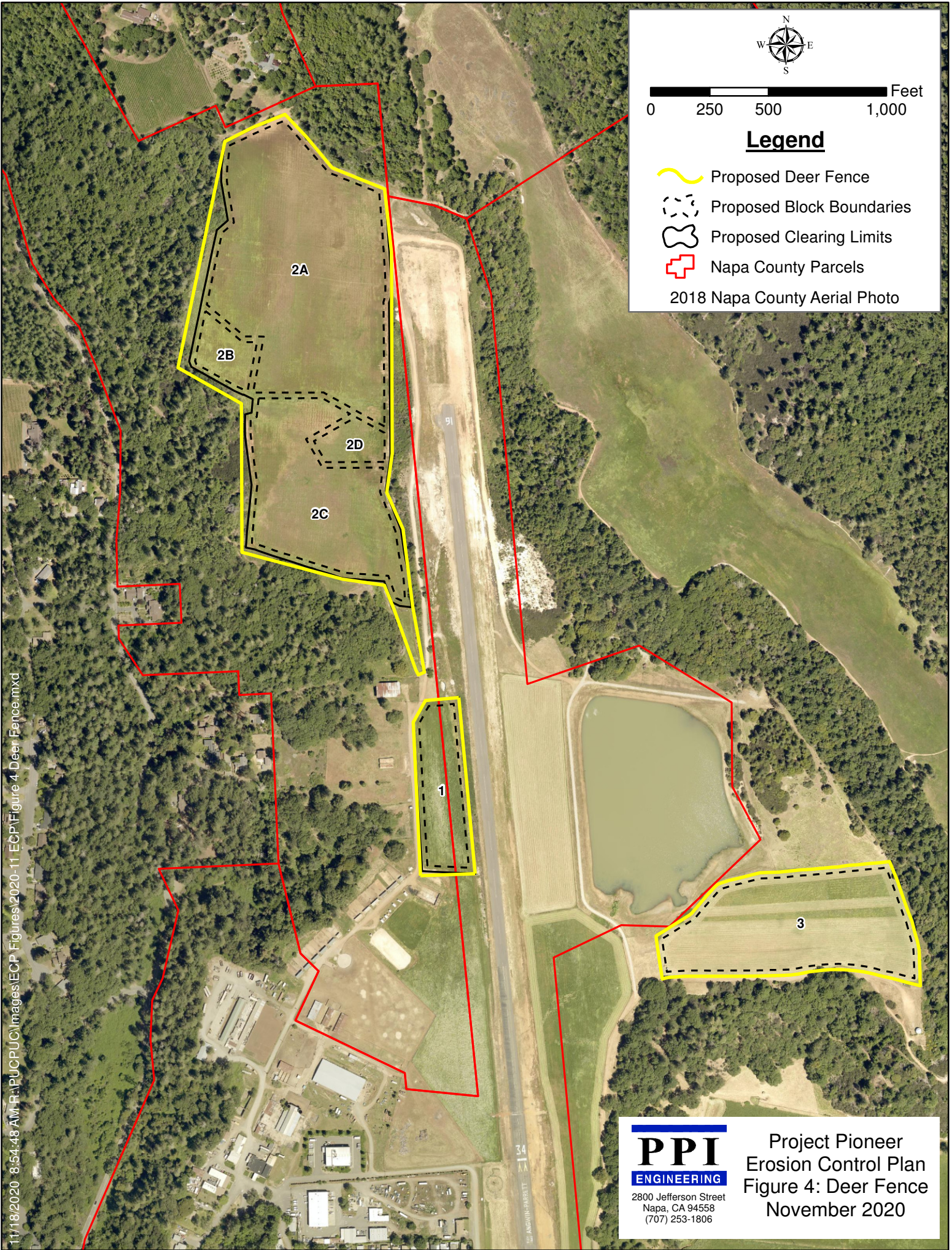
2018 Napa County Aerial Photo







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 Napa, CA 94558
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Project Pioneer
 Erosion Control Plan
 Figure 3: Chemical Mixing & Loading Area
 November 2020

11/18/2020 8:54:48 AM R:\PUCPUC\Images\ECP_Figures\2020-11 ECP\Figure 4 Deer Fence.mxd



Legend

-  Proposed Deer Fence
-  Proposed Block Boundaries
-  Proposed Clearing Limits
-  Napa County Parcels

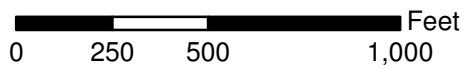
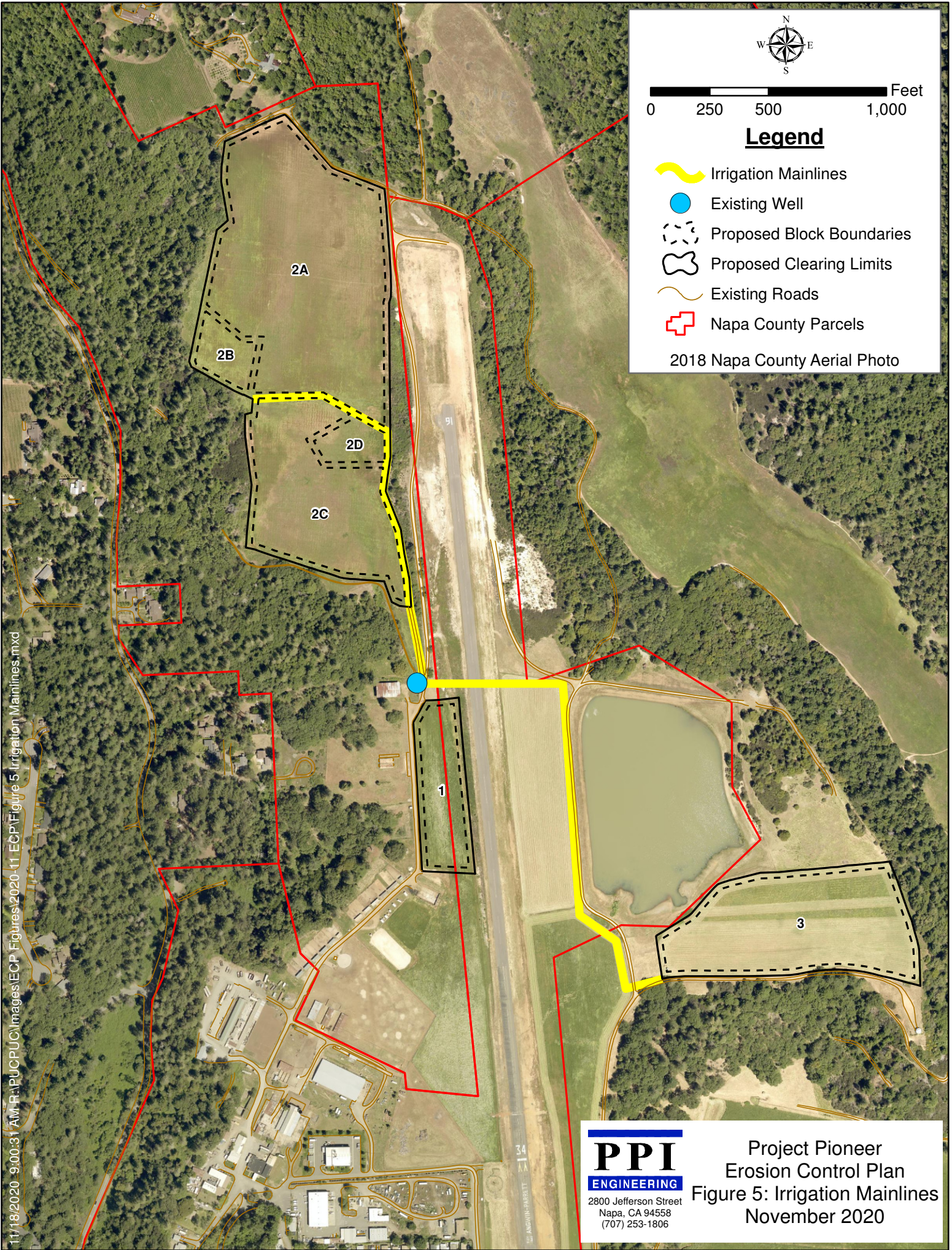
2018 Napa County Aerial Photo



2800 Jefferson Street
Napa, CA 94558
(707) 253-1806

Project Pioneer
Erosion Control Plan
Figure 4: Deer Fence
November 2020

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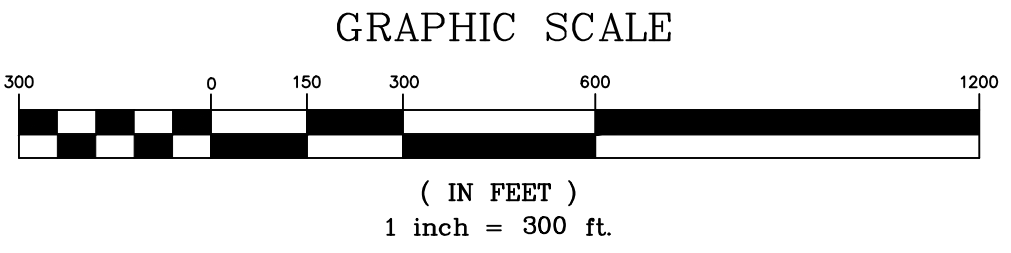
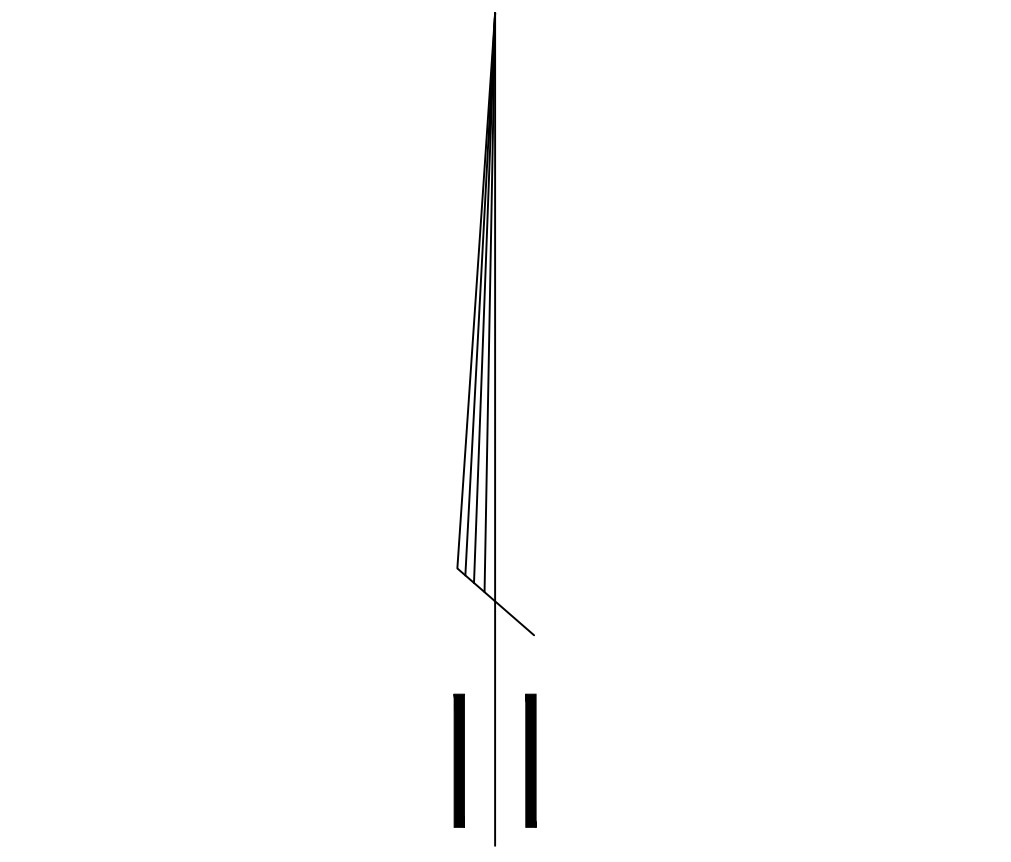
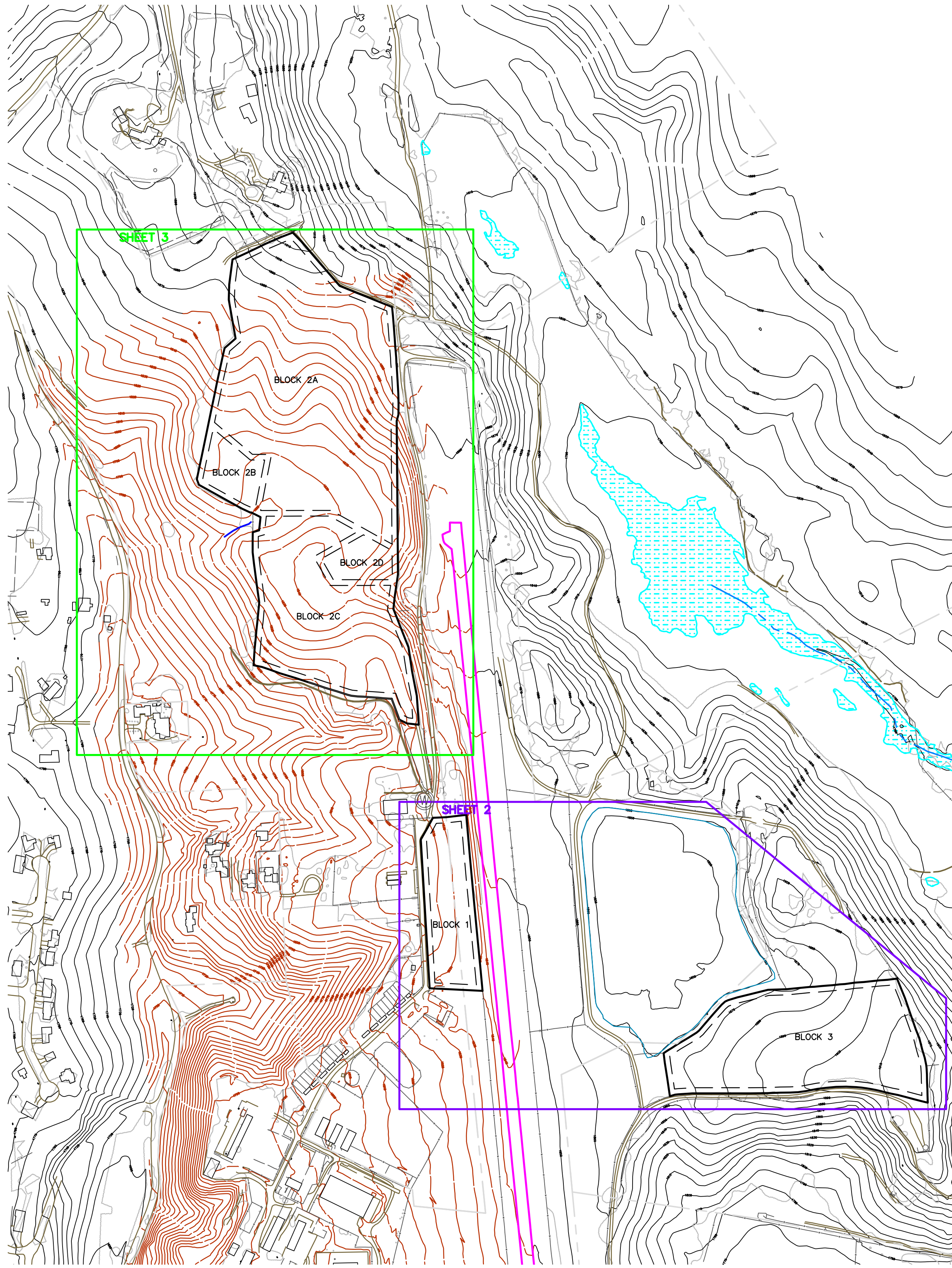
Legend

-  Irrigation Mainlines
-  Existing Well
-  Proposed Block Boundaries
-  Proposed Clearing Limits
-  Existing Roads
-  Napa County Parcels

2018 Napa County Aerial Photo

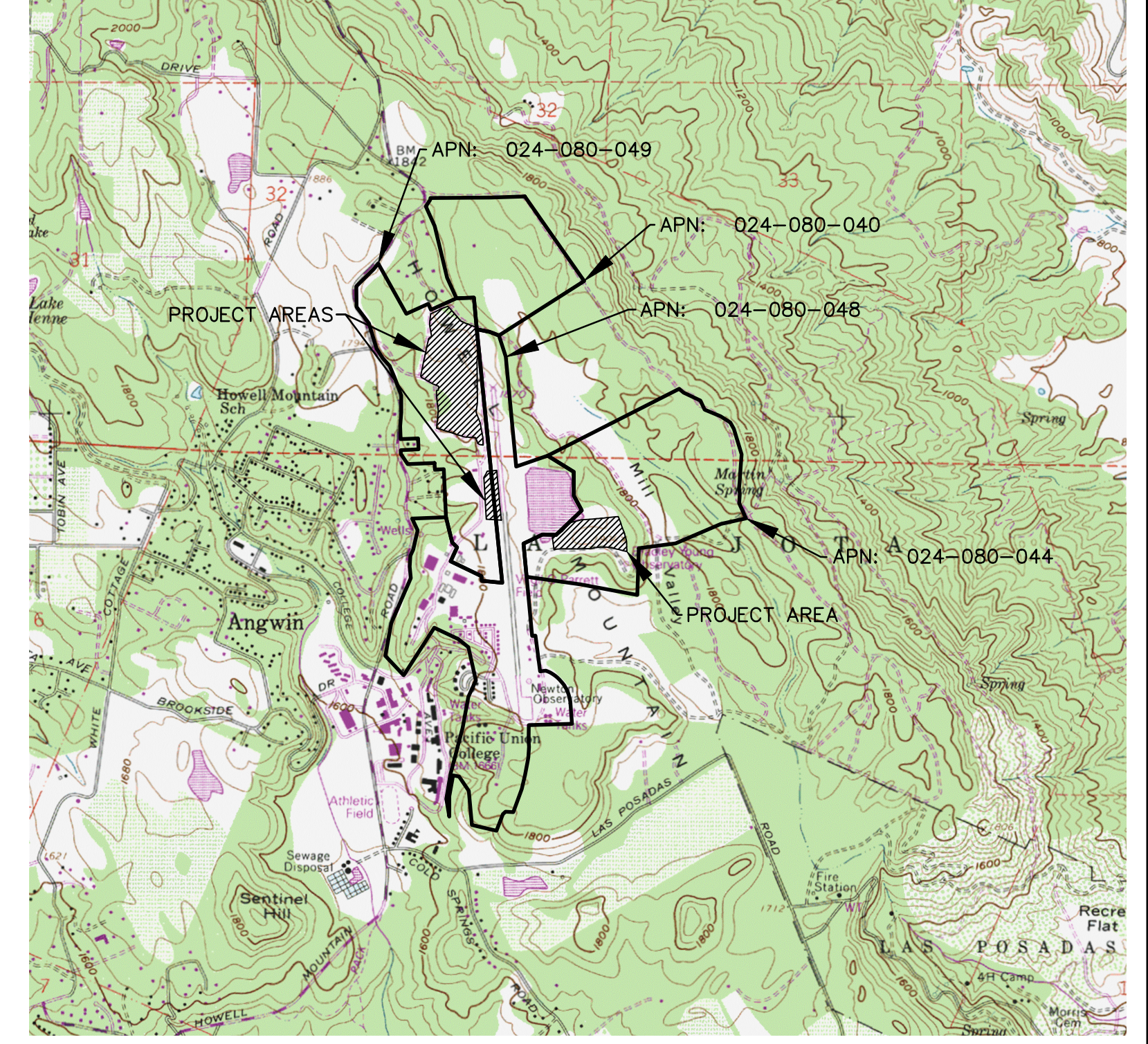
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Project Pioneer
 Erosion Control Plan
 Figure 5: Irrigation Mainlines
 November 2020



LEGEND

	APPROXIMATE PROPERTY LINE LOCATION
	INDEX CONTOUR, 5' INTERVAL
	INDEX CONTOUR, 10' INTERVAL
	U.S.G.S. BLUE LINE STREAM
	EPHEMERAL STREAM, MAPPED BY WRA
	SEASONAL WETLAND, MAPPED BY WRA
	ANGWIN-PARRETT AIRFIELD RUNWAY
	EXISTING RESERVOIR
	EXISTING ROAD
	EXISTING FENCE
	EXISTING BUILDING
	PROPOSED VINEYARD CLEARING LIMITS
	PROPOSED VINEYARD BLOCK BOUNDARY
	EXISTING WELL



VICINITY MAP
USGS ST. HELENA QUADRANGLE
TOWNSHIP 8 & 9 N., RANGE 5 W.
SCALE: 1" = ±2000'

NOTES:

- OWNER: PACIFIC UNION COLLEGE
SITE ADDRESS: 1 ANGWIN AVENUE, ANGWIN
APN: 024-080-040, -044, -048 & -049
- ACCESS TO PROJECT IS FROM 910 HOWELL MOUNTAIN ROAD. THE SITE IS GATED AND LOCKED. ADMITTANCE IS AVAILABLE UPON REQUEST.
- EXISTING VEGETATION CONSISTS OF PASTURE AND CROPLAND.
- DISTURBED AREAS SHALL BE SEEDED AS DESCRIBED BELOW. STRAW MULCH SHALL BE APPLIED TO ALL DISTURBED AREAS AT A RATE OF 3,000 LBS/ACRE PRIOR TO SEPTEMBER 15 OF THE YEAR OF CONSTRUCTION.
- PERMANENT COVER CROP (NO-TILL):
A PERMANENT COVER CROP STRATEGY WILL BE UTILIZED. THE PERMANENT COVER CROP WILL BE GENERATED THE FIRST YEAR BY SEEDING WITH THE FOLLOWING MIX:

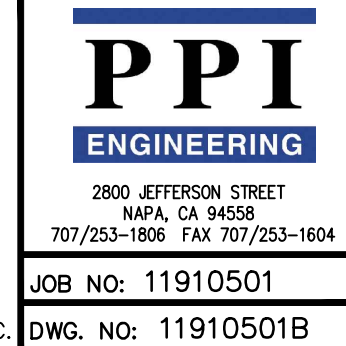
VARIETY	RATE (LBS/ACRE)
UC603 BARLEY	50
BLANDO BROME	15
ZORRO FESCUE	15

A PRE-APPROVED ALTERNATIVE SEED MIX MAY BE ALLOWED.
THE PERMANENT COVER CROP WILL BE MANAGED EACH YEAR SUCH THAT ANY AREAS WHICH HAVE LESS THAN THE PERCENT VEGETATIVE COVER SPECIFIED BELOW WILL BE RESEEDED AND MULCHED UNTIL ADEQUATE COVERAGE IS ACHIEVED. THE PERMANENT COVER CROP SHALL BE MOWED ONLY AND NOT DISKED.

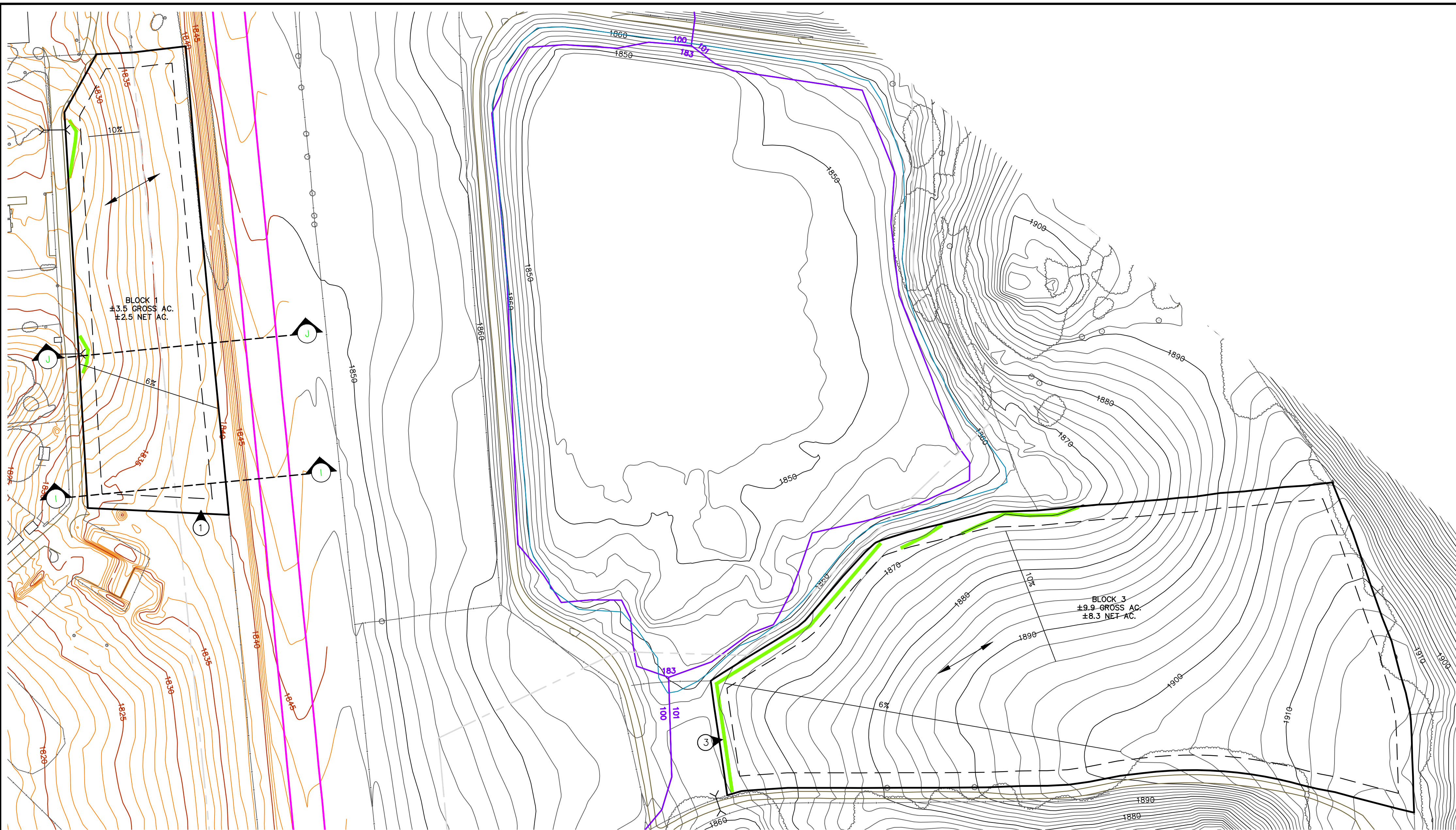
BLOCKS WITH 75% VEGETATIVE COVER: 1 & 3
BLOCKS WITH 80% VEGETATIVE COVER: 2A, 2B, 2C, & 2D
- IN ALL BLOCKS, THE OWNER HAS THE OPTION OF USING A DWARF BARLEY COVER CROP IN THE FIRST THREE YEARS THAT THE BLOCKS ARE PLANTED TO AID WITH VINEYARD ESTABLISHMENT. IF THIS OPTION IS USED, SEED SHALL BE APPLIED AT A RATE OF 120 LBS/ACRE IF BROADCAST OR AT A RATE OF 60 LBS/ACRE IF DRILLED. THE COVER CROP WITHIN THE VINEYARD MAY BE DISKED EACH SPRING AFTER APRIL 1 FOR THE FIRST THREE YEARS. AN ALTERNATIVE COVER CROP SEED MIX MAY BE USED UPON PRIOR APPROVAL. EACH YEAR THE OWNER CHOOSES TO DISK, THE AREA SHALL BE STRAW MULCHED AT A RATE OF 3,000 LBS/ACRE AND STRAW WATTLES SHALL BE INSTALLED PRIOR TO SEPTEMBER 15. THE PERMANENT SEED MIX WILL BE SEEDED PRIOR TO SEPTEMBER 15 OF THE FOURTH (OR EARLIER) YEAR.
- NO PRE-EMERGENT HERBICIDES WILL BE USED FOR WEED MANAGEMENT. CONTACT OR SYSTEMIC HERBICIDES MAY BE APPLIED IN SPRING (NO EARLIER THAN FEBRUARY 15TH TO ENSURE ADEQUATE VEGETATIVE COVER IN THE SPRAY STRIPS FOR THE REMAINDER OF THE RAINY SEASON). THE WIDTH OF THE SPRAY STRIP SHALL BE NO WIDER THAN 1.5' IN BLOCKS 1 AND 3 IN ORDER TO ACHIEVE 75% VEGETATIVE COVER (BASED ON A SEVEN-FOOT MINIMUM ROW SPACING). THE WIDTH OF THE SPRAY STRIP SHALL BE NO WIDER THAN 1' IN BLOCKS 2A, 2B, 2C AND 2D IN ORDER TO ACHIEVE 80% VEGETATIVE COVER.
- FERTILIZER SHALL BE APPLIED AS NECESSARY BY VINEYARD MANAGEMENT PERSONNEL FOR BOTH THE VINEYARD AND TO ENSURE SPECIFIED PERCENT VEGETATIVE COVER CROP IS ACHIEVED. SITE-SPECIFIC SOIL ANALYSIS SHOULD BE PERFORMED.
- THE VINEYARD AVENUES SHALL BE MOWED ONLY AND SHALL NOT BE DISKED. UNLESS OTHERWISE NOTED, ALL AVENUES SHALL CONFORM TO THE NATURAL GRADE. VINEYARD AVENUES SHALL BE SEEDED AND MULCHED PRIOR TO SEPTEMBER 15 OF THE YEAR OF CONSTRUCTION AND IN SUBSEQUENT YEARS IN BARE OR DISTURBED AREAS. THE COVER CROP WILL BE MANAGED EACH YEAR SUCH THAT ANY AREAS WHICH HAVE LESS THAN THE PERCENT VEGETATIVE COVER SPECIFIED BELOW WILL BE RESEEDED AND MULCHED UNTIL ADEQUATE COVERAGE IS ACHIEVED. SEEDING AND MULCHING IS NOT REQUIRED ON AVENUES AND ROADS PROPERLY SURFACED WITH GRAVEL.

BLOCKS WITH 75% VEGETATIVE COVER: 1 & 3
BLOCKS WITH 80% VEGETATIVE COVER: 2A, 2B, 2C, & 2D
- THE PROPOSED VINE AND ROW SPACING IS EXPECTED TO BE 4' BY 7', HOWEVER IN AREAS WHERE CROSS-SLOPE EXCEEDS 15% THE OWNER SHALL INCREASE THE ROW SPACING AS NEEDED TO ENSURE THERE IS ADEQUATE ROOM FOR EQUIPMENT. WIDTH OF TILLAGE EQUIPMENT SHALL BE NO MORE THAN 75% OF ROW WIDTH TO ALLOW FOR BENCH FORMATION AND TO MINIMIZE EROSION.
- THE OWNER HAS THE FREEDOM TO FURTHER SUBDIVIDE VINEYARD BLOCKS WITHIN THE FOOTPRINT OF THE PROPOSED VINEYARD FOR IRRIGATION AND VITICULTURE PURPOSES. THE PROPOSED VINEYARD DIRECTIONS SHALL NOT BE ALTERED WITHOUT AN APPROVED MODIFICATION FROM NAPA COUNTY.
- THE LOCATION OF THE EXISTING GROUNDWATER WELL, THE PROPOSED WATER SOURCE, IS SHOWN ON THE SITE PLAN.
- THE PROJECT CURRENTLY HAS NO DEER FENCE. SEE APPENDIX F FOR THE PROPOSED DEER FENCE MAP.
- THE RUNWAY FOR THE ANGWIN-PARRETT AIRFIELD IS LOCATED IMMEDIATELY ADJACENT TO BLOCK 1 AND IS IN THE VICINITY OF BLOCKS 2 AND 3. COMPLIANCE WITH FEDERAL AVIATION ADMINISTRATION (FAA) REGULATIONS GOVERNING OBSTRUCTIONS TO RUNWAY CLEARANCE ZONES FOR A VISUAL APPROACH UTILITY RUNWAY HAS BEEN CONSIDERED DURING PROJECT DESIGN. PLEASE REFER TO THE CROSS SECTIONS ON SHEET 4.
- REQUESTS FOR FURTHER INFORMATION, CLARIFICATION OF WORK TO BE DONE, OR INSPECTION INFORMATION CAN BE MADE TO JIM BUSHEY OR MATT BUENO AT PPI ENGINEERING IN NAPA, (707) 253-1806.
- PROPERTY LINES AS SHOWN ARE APPROXIMATE. OWNER SHALL BE RESPONSIBLE FOR SURVEYING PROPERTY LINE(S) AS NECESSARY PRIOR TO ANY SITE DISTURBANCE.
- THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS.
- AT LEAST 48 HOURS PRIOR TO EXCAVATING, THE CONTRACTOR SHALL CALL UNDERGROUND SERVICES ALERT (U.S.A.) AT 1-800-642-2444 IN ORDER TO LOCATE EXISTING UTILITIES. IT IS THE OWNER'S RESPONSIBILITY TO LOCATE ANY ADDITIONAL UNDERGROUND UTILITIES THAT MAY HAVE BEEN INSTALLED "IN-HOUSE" OR BY PRIVATE CONTRACTORS AND THEREFORE MAY NOT BE LOCATED THROUGH UNDERGROUND SERVICE ALERT.
- IT IS THE OWNER'S RESPONSIBILITY TO INSTALL ALL STRUCTURAL MEASURES AS SHOWN ON THE SITE PLAN AND DETAILS AND AS DESCRIBED IN THE SPECIFICATIONS WITHIN THE TIME FRAMES SPECIFIED FOR THIS PROJECT. ANY DEVIATION FROM THESE PLANS MUST BE REVIEWED AND APPROVED BY NAPA COUNTY PLANNING, BUILDING AND ENVIRONMENTAL SERVICES DEPARTMENT. IT IS THE OWNER'S RESPONSIBILITY TO INITIATE THIS MODIFICATION PROCESS. PPI ENGINEERING MUST BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF CONSTRUCTION IN ORDER TO SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE OWNER/MANAGER AND CONTRACTOR(S). FOR ONGOING MULTI-YEAR PROJECTS PPI ENGINEERING MUST BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF RESUMING CONSTRUCTION EACH YEAR.

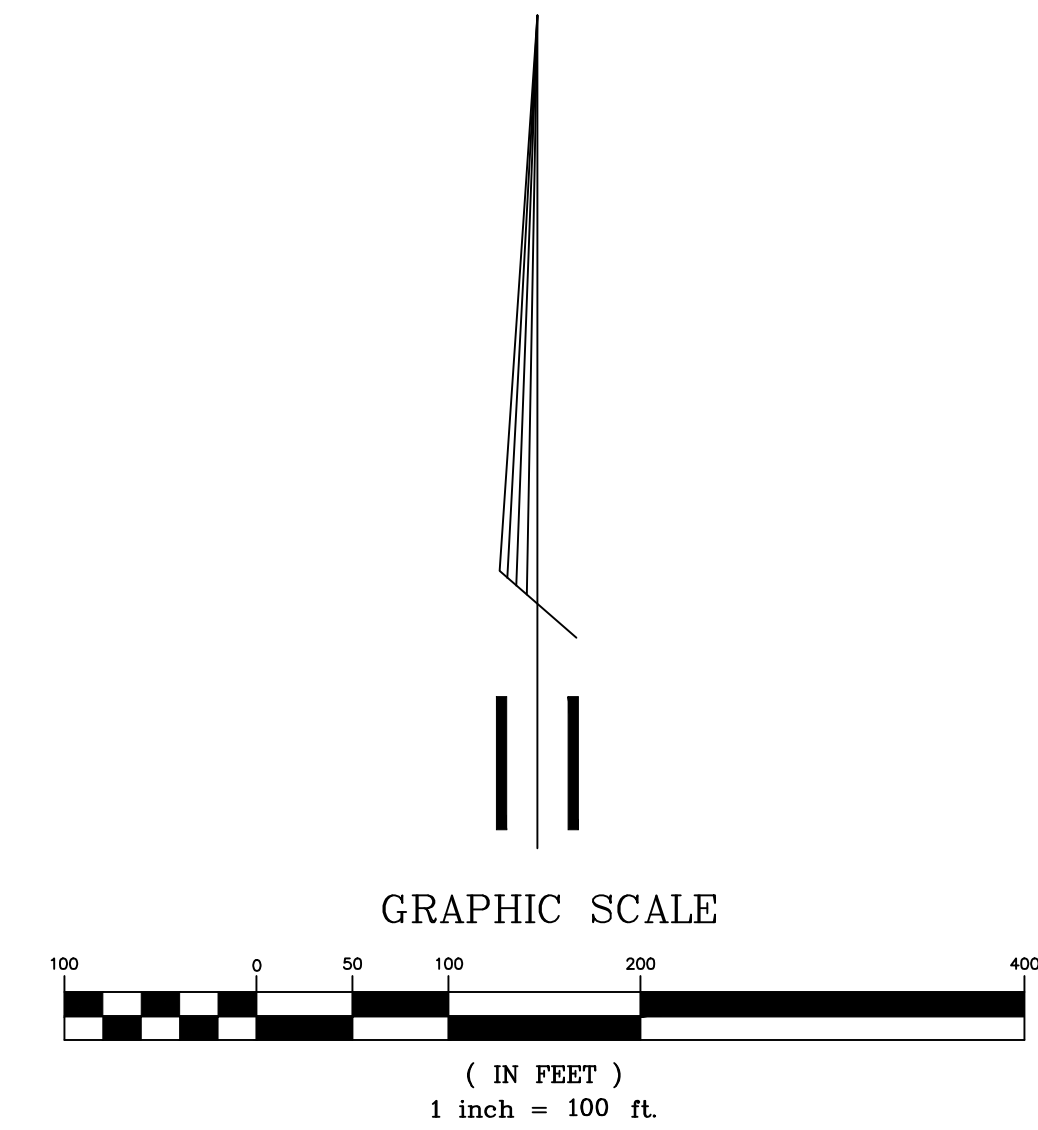
TOPOGRAPHIC MAPPING PROVIDED BY TERRA FIRMA, 2007
INTERMEDIATE CONTOURS TURNED OFF FOR CLARITY



PROJECT PIONEER	
1 ANGWIN AVENUE	
EROSION CONTROL PLAN	
SITE PLAN	
DESIGN ENGINEER:	J. BUSHEY
SCALE:	AS SHOWN
DRAWN BY:	JCJ, RR
DATE:	11-17-20
SHEET:	1
OF:	4



TOPOGRAPHIC MAPPING PROVIDED BY TERRA FIRMA, 2007

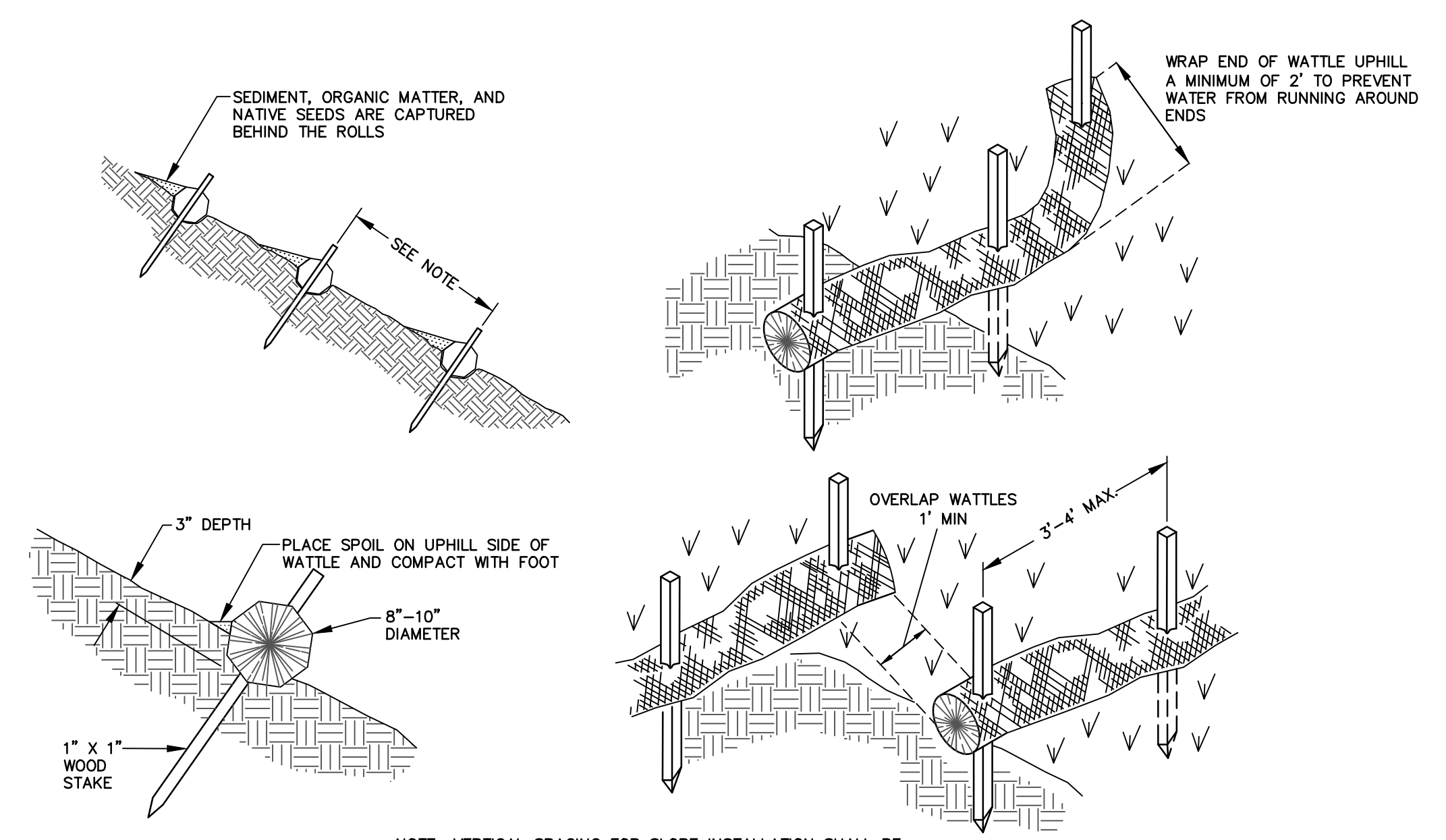


LEGEND

- APPROXIMATE PROPERTY LINE LOCATION
- INDEX CONTOUR, 5' INTERVAL
- INTERMEDIATE CONTOUR, 1' INTERVAL
- INDEX CONTOUR, 10' INTERVAL
- INTERMEDIATE CONTOUR, 2' INTERVAL
- ANGWIN-PARRETT AIRFIELD RUNWAY
- FAA COMPLIANCE CROSS SECTION (SEE SHEET 4)
- EXISTING RESERVOIR
- EXISTING ROAD
- EXISTING FENCE
- EXISTING BUILDING
- EXISTING CULVERT
- PROPOSED VINEYARD CLEARING LIMITS
- PROPOSED VINEYARD BLOCK BOUNDARY
- PROPOSED STRAW WATTLE (SEE DETAIL 1, THIS SHEET)
- PROPOSED VINEYARD DIRECTION
- PHOTO POINT NUMBER & LOCATION (SEE APPENDIX A)
- AVERAGE SURFACE SLOPE
- SOIL TYPE BOUNDARY

USDA SOIL CLASSIFICATIONS:

- 100** AIKEN LOAM 2-15% SLOPE
- 101** AIKEN LOAM 15-30% SLOPE
- 183** WATER

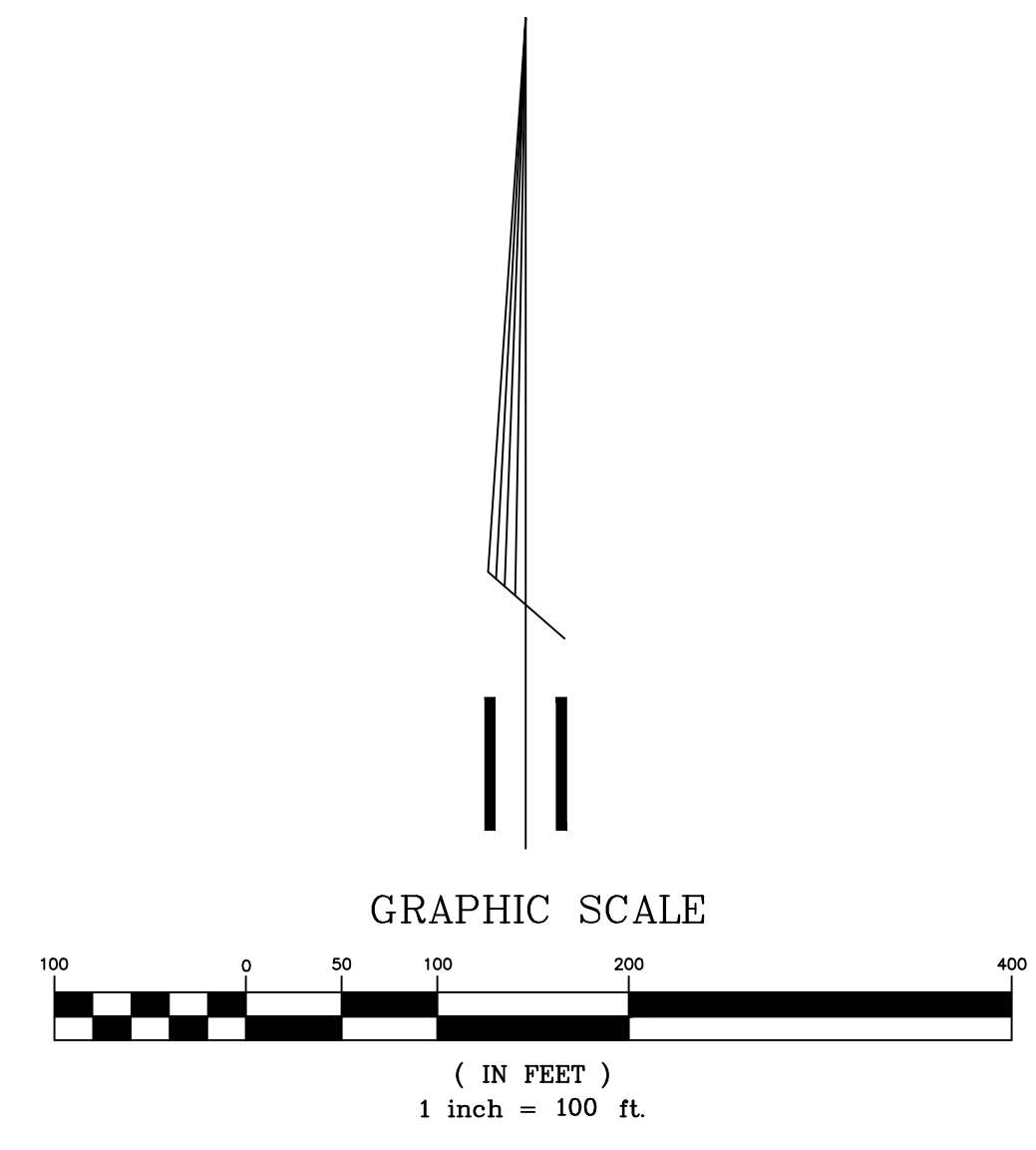
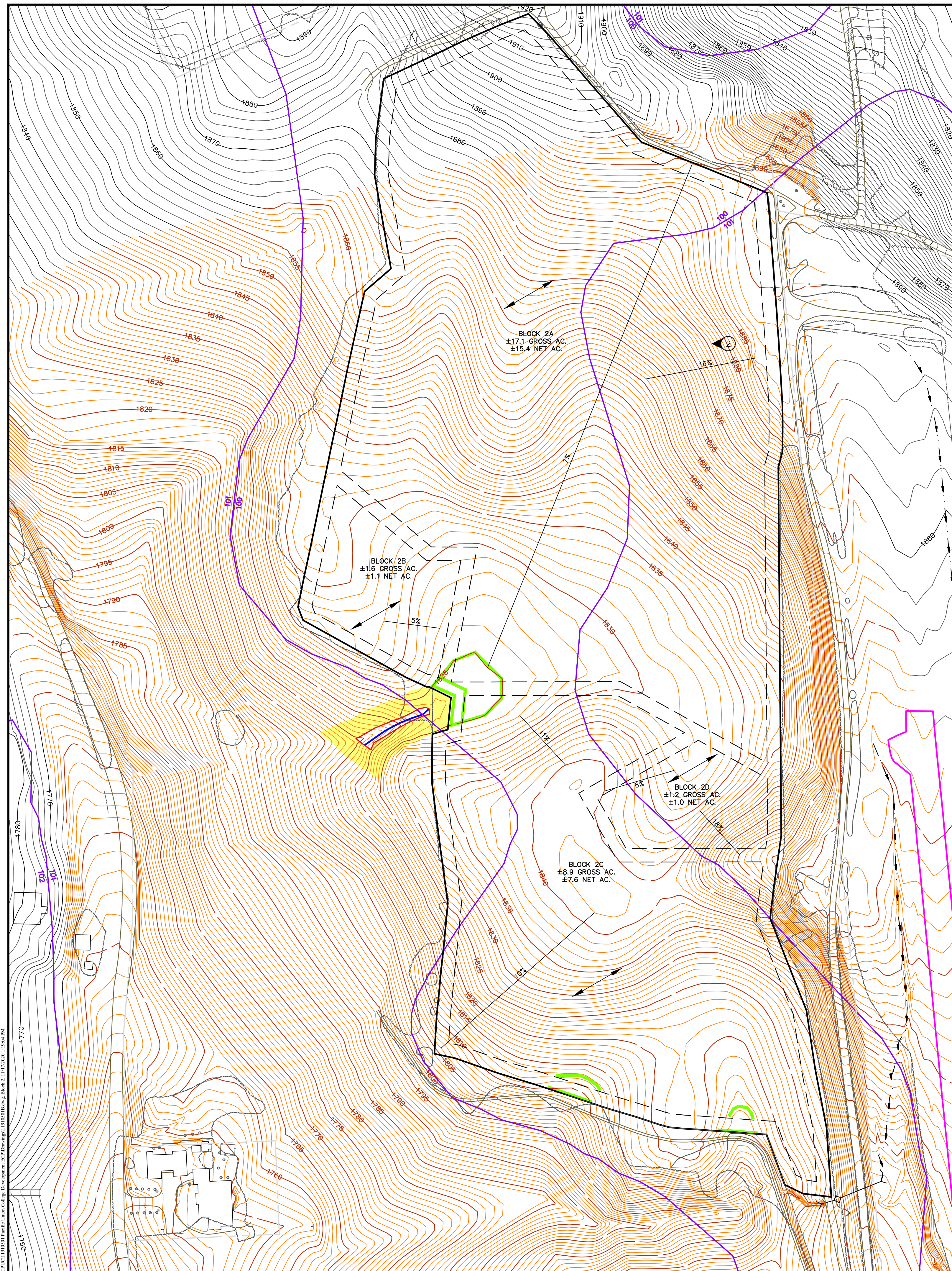


NOTE: VERTICAL SPACING FOR SLOPE INSTALLATION SHALL BE DETERMINED BY SITE CONDITIONS. WATTLE SPACING AND LOCATIONS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

1 STRAW WATTLE INSTALLATION
2 N.T.S.



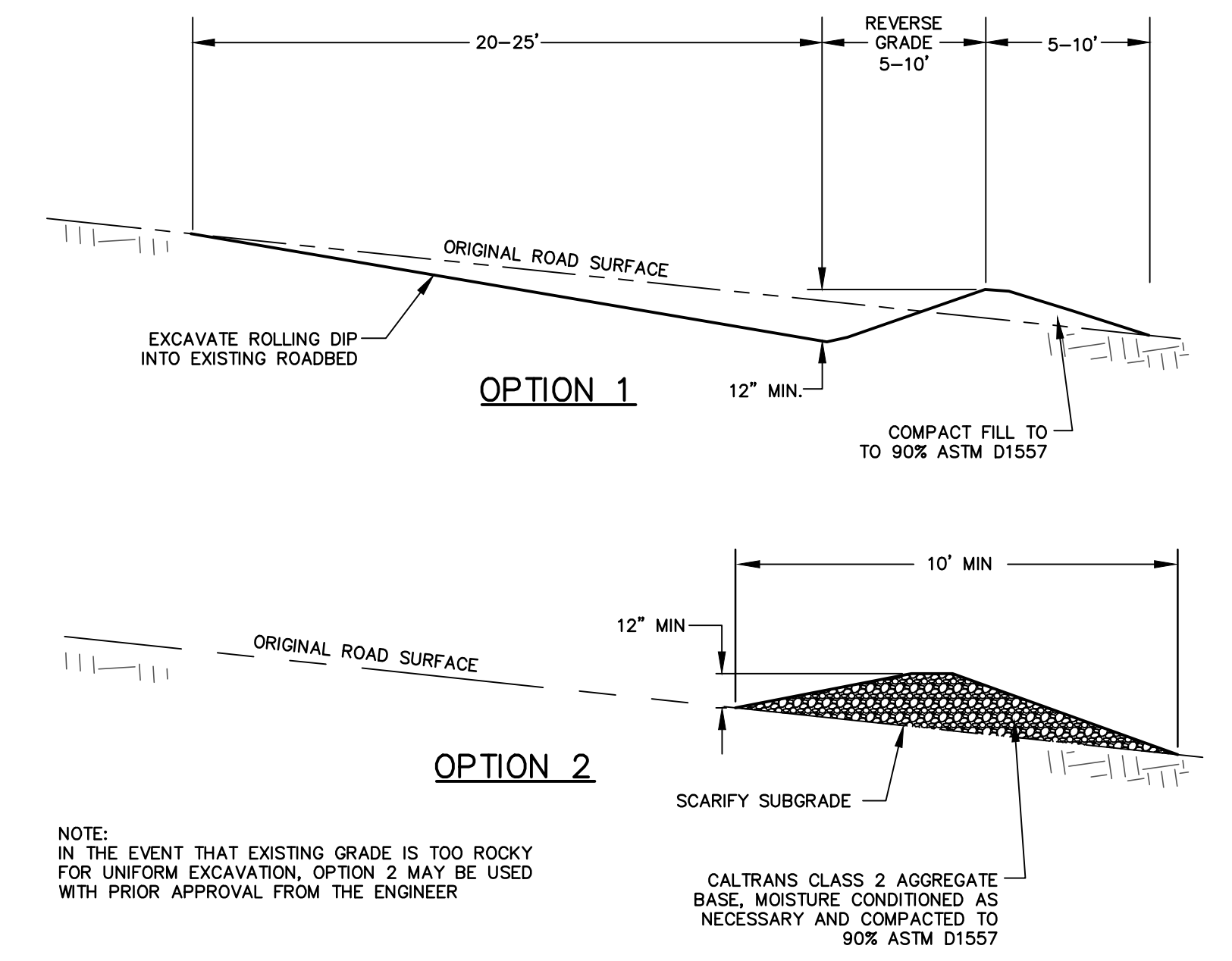
PROJECT PIONEER			
1 ANGWIN AVENUE			
EROSION CONTROL PLAN			
BLOCKS 1 & 3			
DESIGN ENGINEER:			
J. BUSHEY			
JOB NO: 11910501	SCALE:	DRAWN BY:	DATE:
DWG. NO: 11910501B	AS SHOWN	JCJ, RR	11-17-20
			SHEET: 2
			OF: 4



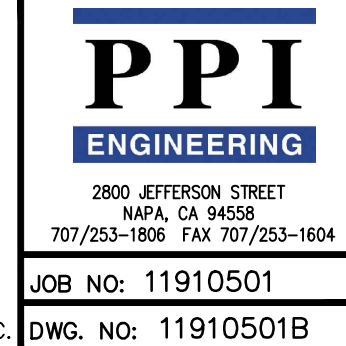
LEGEND

- APPROXIMATE PROPERTY LINE LOCATION
- - - EXISTING VINEYARD AREA
- INDEX CONTOUR, 5' INTERVAL
- INTERMEDIATE CONTOUR, 1' INTERVAL
- INDEX CONTOUR, 10' INTERVAL
- INTERMEDIATE CONTOUR, 2' INTERVAL
- EPHEMERAL STREAM, MAPPED BY WRA
- TOP OF BANK, APPROXIMATE, MAPPED BY WRA
- 35' UNDISTURBED FILTER STRIP
- ANGWIN-PARRETT AIRFIELD RUNWAY
- EXISTING ROAD
- EXISTING FENCE
- EXISTING BUILDING
- EXISTING CULVERT
- EXISTING DITCH, APPROXIMATE LOCATION
- PROPOSED VINEYARD CLEARING LIMITS
- PROPOSED VINEYARD BLOCK BOUNDARY
- PROPOSED STRAW WATTLE (SEE DETAIL 1, SHEET 2)
- PROPOSED VINEROW DIRECTION
- ⊙ PHOTO POINT NUMBER & LOCATION (SEE APPENDIX A)
- X% AVERAGE SURFACE SLOPE
- 100 SOIL TYPE BOUNDARY
- 101

- USDA SOIL CLASSIFICATIONS:**
- 100 AIKEN LOAM 2-15% SLOPE
 - 101 AIKEN LOAM 15-30% SLOPE
 - 102 AIKEN LOAM 30-50% SLOPE

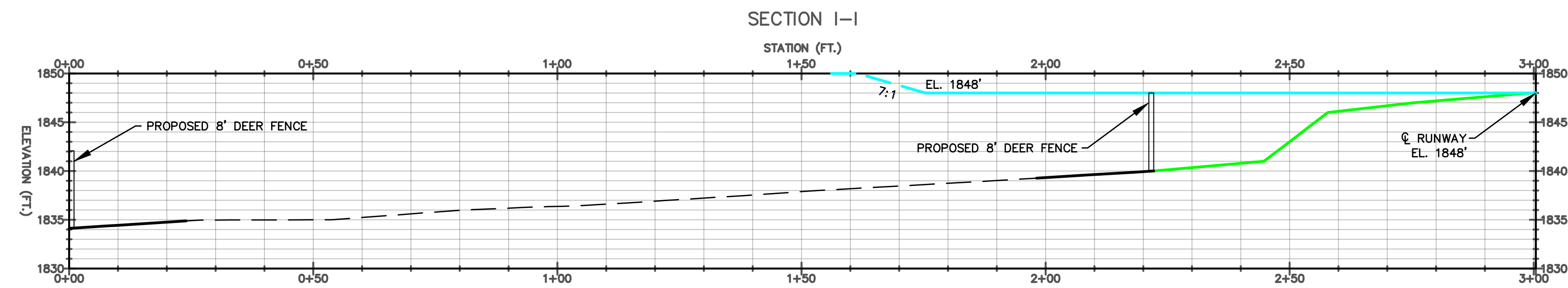


1
3 TYPICAL ROLLING DIP
N.T.S.

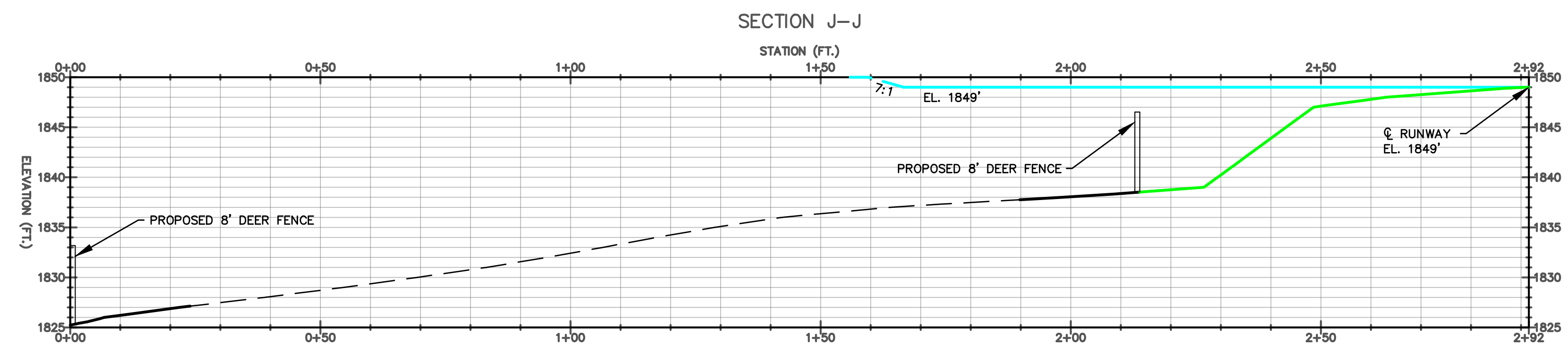


PROJECT PIONEER			
1 ANGWIN AVENUE			
EROSION CONTROL PLAN			
BLOCK 2			
DESIGN ENGINEER: J. BUSHEY			
JOB NO: 11910501	SCALE: AS SHOWN	DRAWN BY: JCJ, RR	DATE: 11-17-20
DWG. NO: 11910501B			SHEET: 3 OF: 4

TOPOGRAPHIC MAPPING PROVIDED BY TERRA FIRMA, 2007



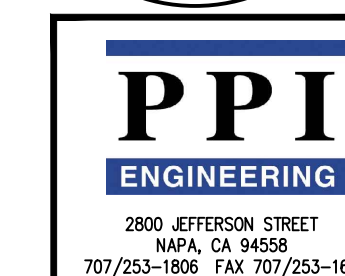
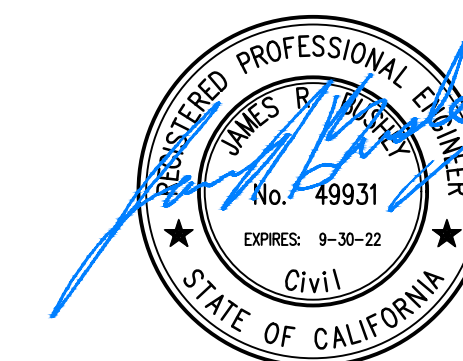
SECTION I-I
SCALE: 1"=20' (HOR.), 1"=10' (VERT.)



SECTION J-J
SCALE: 1"=20' (HOR.), 1"=10' (VERT.)

LEGEND

- EXISTING GRADE
- PRIMARY SURFACE
- - - PRIMARY TRANSITION SURFACE
- PROPOSED VINEYARD AVENUE
- - - PROPOSED VINEYARD BLOCK



PROJECT PIONEER 1 ANGWIN AVENUE			
EROSION CONTROL PLAN FAA CROSS SECTIONS			
DESIGN ENGINEER:		J. BUSHEY	
JOB NO: 11910501	SCALE: AS SHOWN	DRAWN BY: JCJ, RR	DATE: 11-17-20
DWG. NO: 11910501B			SHEET: 4 OF: 4