TEACHWORTH
VINEYARD DEVELOPMENT
4451 N. ST. HELENA HWY

EROSION CONTROL PLAN
REVISED JULY 2020

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ENGINEERING

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TEACHWORTH VINEYARD DEVELOPMENT
4451 N. ST. HELENA HWY

EROSION CONTROL PLAN



REVISED JULY 2020
ORIGINAL SUBMITTAL FEBRUARY 2020

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TEACHWORTH VINEYARD DEVELOPMENT
4451 N. ST. HELENA HWY

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 development of approximately 4.5 net acres (5.8 gross acres) of proposed vineyard on the Teachworth Vineyard located at 4451 N. Saint Helena Hwy in western Napa County. The ranch is located on APN 020-400-018 which consists of approximately 34.1 acres per the County GIS database. There is currently a lot-line adjustment being pursued for the parcel, the project assumes the lot-line adjustment was recorded. The adjusted parcel acreage will be approximately 40 acres.

b) Activities to be accomplished include removal of brush and trees within the proposed clearing limits, ripping, rock removal, cultivating the soil to prepare for planting, seeding cover crop, mulching, trenching for irrigation pipelines, installation of 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 Kellet Mine Creek Watershed.

b) The elevations in the vineyard area range from approximately 742 to 910 feet above mean sea level per topographic mapping. Ground slopes within the project boundary range between 15 and 29 percent. There are small pockets of areas with slope over 30% in several vineyard blocks which total approximately 0.6 acres, please see Sheet 1 for the locations.

c) Topographic mapping was provided by PPI Engineering Inc. in December 2018.

d) Existing vegetation consists of brush and trees. Please see the biological report prepared by WRA dated December 2019 and the Supplemental Memorandum prepared by WRA dated July 2020.

e) Please see Appendix C for Vegetation Retention Calculations. The project proposes to retain 76% of the tree canopy that existed on the property on areas under 50% slope and outside of stream setbacks in 2016, exceeding the 70% retention requirement and the 3:1 tree preservation ratio.

f) There is an existing residence and winery on the property. Please see the cultural resources report prepared by Flaherty Cultural Resource Services dated June 2019.

g) A portion of the property is currently deer fenced. Please see Figure 2 in Appendix E for the Existing and Proposed Deer Fence map.

h) A site visit of the property was performed by Matt Bueno and Cody Corsetti of PPI Engineering Inc. on Tuesday, March 19, 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) There is an existing paved and graveled driveway that provides access to the vineyard blocks, as shown in Figure 3. No new roads would be required for this project and there is no potential for increased erosion as a result of increased use of the existing driveway.

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

a) The proposed water sources are existing wells. Please see the Site Plan for the location. Please see WAA prepared by Richard C. Slade & Associates dated February 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 Forward silt loam with 12 to 57 percent slopes and Forward-Kidd complex with 11 to 60 percent slopes.

b) Some rock is expected to be generated as a result of this project. Some of the rock generated will be used to construct erosion control features such as rock level spreaders and rock aprons. In many locations rock will be used for rock-filled avenues that will help retain sediment as well as disperse runoff from vineyard blocks. Rock-filled avenues shall be located as shown on the Plans and at the downslope edge of vineyard blocks as determined by the Engineer in the field at the time of construction. The toe of the rock avenue fill slope shall not extend past the proposed clearing limits. Because of the nature of the rock-filled avenues, the proposed block boundary location is conceptual and not exact. Rock may be crushed and used on the existing roads where needed. Rock not used immediately will be stockpiled for future use inside the proposed clearing limits. Stockpiles are expected to be less than 20 feet in height. Rock staging areas shall

be located inside of proposed clearing limits. Temporary rock stockpiles shall also be located inside of proposed clearing limits. No grading activities, ground disturbance or rock storage will occur outside of the proposed clearing limits.

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.

7. Erosion calculations

a) Universal Soil Loss Equation (USLE) spreadsheets for this project are in Appendix B of this report.

b) Please see the revised pre-project versus post-project soil loss analysis prepared by PPI Engineering Inc. dated July 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. A variety of drainage systems will be utilized for erosion control in this project. In some location's diversion ditches will direct runoff to drop inlets, and drainage pipelines will be used to direct runoff to desired locations. Level spreaders, rock energy dissipaters, and sediment traps will be used at pipe outlets to disperse water and prevent concentrated flow from forming and developing gullies. Straw wattles will be installed. Please see Sheet 1 for locations of the above erosion control items. Please see the Detail Sheets 2 and 3 and the Special Provisions for details on the erosion control items.

2. The final pass with disking equipment shall be performed across slopes to prevent channeling water downhill the first winter after development.

3. 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 pounds per acre prior to October 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: Dwarf Barley at 50 pounds per acre, Blando Brome at 8 pounds per acre, Zorro Fescue at 12 pounds per acre, and Crimson Clover at 6 pounds per 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 90% vegetative cover will be reseeded and mulched until adequate coverage is achieved. The permanent cover crop shall be mowed only and not disked.

3. 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 pounds per acre if broadcast or at a rate of 60 pounds per 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 pounds per acre and straw wattles installed prior to October 15. The permanent seed mix will be seeded prior to October 15 of the fourth (or earlier) year.

4. No pre-emergent herbicides will be used for weed management. No strip spraying shall be performed in blocks requiring 90% vegetative cover. Spot spraying of contact or systemic herbicides in spring (no earlier than February 15) will be allowed provided the 90% vegetative cover is achieved in each block. If the owner chooses to farm without herbicide, an alternative will be to hand-hoe around the base of the vine only, or other methods that do not result in a continuous bare strip.

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 October 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 90% vegetative cover will be reseeded

and mulched until adequate coverage is achieved. Seeding and mulching is not required on avenues and roads properly surfaced with gravel.

7. The proposed vine by row spacing is expected to be 4 feet by 7 feet, 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. 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 October 15
- 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 Inc. dated February 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.
October 1:	All tillage and erosion control completed. This shall include complete construction of all structural measures required in these blocks which could include diversion ditches, drop inlets, surface drainage pipelines, subsurface drainage pipelines, level spreaders, rock aprons, detention basins, etc.
October 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 October 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 $10,000 to $20,000 per acre.

TEACHWORTH VINEYARD DEVELOPMENT
4451 N. ST. HELENA HWY

EROSION CONTROL PLAN

S T A N D A R D P R O V I S I O N S

SECTION 1 - SCOPE OF WORK

These specifications cover the construction of the erosion control measures for approximately 4.5 acres of vineyard to be developed by Teachworth Winery.

The drawing numbered 11813001B, 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 OWNER AND ENGINEER

The property is owned by Teachworth Winery. Teachworth Winery or the appointed representative shall have the final say in the event of a dispute with the Contractor.

The Owner shall appoint PPI Engineering (PPI) 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.

TEACHWORTH VINEYARD DEVELOPMENT
4451 N. ST. HELENA HWY

EROSION CONTROL PLAN

SPECIAL PROVISIONS

SECTION 1 - SURFACE DRAINAGE PIPELINE

1.1 GENERAL:

Surface drainage pipelines shall be installed to collect surface runoff at low points throughout the project area and transport it to a protected outlet, as shown in Detail 2, Sheet 2.

1.2 MATERIALS:

Surface drainage pipelines shall be constructed of solid corrugated polyethylene pipe (CPP) as shown on the Plans. Single-walled (SW) and dual walled (DW) corrugated polyethylene pipe used for surface drainage must conform to ASTM F405, ASTM F667, AASHTO M252, and AASHTO M294 standards, as applicable. Bent or damaged pipe shall not be used in the drainage system and shall be removed from the job site.

Pipe connections shall be made with fittings manufactured by the same manufacturer who made the pipe. All connections shall be securely fastened and the resulting connection shall not have gaps greater than 1/8 inch wide.

Gravel envelope bedding material may be volcanic rock or other granular material as approved by the Engineer. It shall be free of organic matter, clay, or other material which could prevent it from flowing uniformly around the pipe. One hundred percent of the material must pass the 1-1/2" clear square openings. Ninety to one hundred percent must pass through the 3/4" clear square openings. No more than 3% may pass the #200 U.S. Standard Sieve.

Gravel envelope material may also be a blend of clean hard sand and gravel. It shall be free of organic matter, clay, or other material that would decrease its hydraulic conductivity with time. The material shall be well graded. The coefficient of uniformity (D60/D10) must be greater than 4, and the coefficient of curvature ((D30^2/(D10 x D60)) must be between 1 and 3. One hundred percent must pass the 1/2" clear square openings. No more than 5% may pass the #100 U.S. Standard Sieve. An example of this material would be 80% 3/8 crushed rock and 20% washed concrete sand.

Alternative bedding material may be approved by the Engineer. A sample and sieve analysis of the proposed material must be submitted to the Engineer at least 2 days prior to delivering material to the job site. It will be the responsibility of the Contractor to remove and dispose of all envelope material not used on the project.

1.3 INSTALLATION:

The Contractor may use a trencher, or drainage plow with vertical soil displacement or backhoe/excavator for the excavation and placement of the surface drainage pipe as dictated by soil conditions. The operator shall be skillful in laying the tubing. Grade control may be established by visual control with grade stakes set no more than 100 feet apart or by laser control with grade stakes set no more than 200 feet apart. Trenches must be sufficiently wide for bedding material to flow freely around the sides of the pipe.

Construction staking shall be provided by the Owner's Engineer. The slope, alignment, and depth of placement of the tubing shall be as shown on the Plans and as staked in the field. A minimum cover of 4.0 feet must be provided within vineyard areas, unless otherwise staked in the field by Engineer.

A gradual variation of no more than 0.10 foot from grade will be allowed where slopes are 2% or less. Where slopes are greater than 2%, a gradual variation of no more than 0.20 foot from grade will be allowed. No reverse grade will be allowed. A gradual variation of no more than 1 foot from design alignment is allowed.

Stretching of the tubing should be avoided during installation. No more than 10% stretch will be allowed.

Cobbles and rocks may be present on the project site. The Contractor shall take necessary actions to work around the cobbles and rocks at their own expense.

1.4 BEDDING AND BACKFILL:

Surface drainage piping shall be backfilled with approved gravel envelope material to a depth of at least 3 inches above the pipe. The trench bottom shall be continuous, firm, relatively smooth, and free of rocks or other objects larger than 1 inch. Pipe may be placed directly on the bottom of the trench. Care shall be taken to ensure that bedding material completely surrounds the pipe.

Rocks or clods shall not be allowed to fall upon or otherwise strike the pipe during any phase of construction. No rocks larger than 6" may be placed within 12" of the pipe.

Final backfill shall be placed and spread in approximately uniform layers to fill the trench completely. Rolling equipment or heavy tampers shall not be used to consolidate backfill.

Where pipe is installed under all-weather roads, backfill shall be Class II Aggregate Base compacted to 90% per ASTM D1557. Road surface shall be regraded or paved as necessary to match original conditions.

SECTION 2 – DITCH

2.1 GENERAL:

Vineyard avenues of certain blocks will be constructed with a ditch along the uphill side to collect upslope runoff and direct it to a stable outlet or drop inlet.

2.2 MATERIALS:

Ditches will be cut into native material. Rock for lining ditches (if necessary) will be native rock generated onsite, 4-inch to 8-inch diameter. Filter fabric shall be Mirafi 140N or equal.

2.3 INSTALLATION:

Ditches shall be cut into native material to the extent possible. Fill material, if necessary, shall be moisture conditioned and compacted to 90% relative compaction per ASTM D1557. Flowline slope shall be 2% minimum. Side slopes of the ditches shall be 2:1 (Horizontal:Vertical) as shown on Detail 1, Sheet 2. The ditch shall be a minimum of 12 inches deep when complete and shall be lined with 4 to 8 inch diameter angular rock if the flowline slope exceeds 5%. A non-woven filter fabric shall be placed between the ground surface and the rock. The rocks shall be keyed into the sides of the ditch such that they do not obstruct or reduce the cross section of the channel. The ditch will outlet to a Drop Inlet or rock apron.

SECTION 3 - CUTOFF COLLAR

3.1 GENERAL:

Cutoff collars shall be installed on all solid pipelines with slopes greater than 5%, as shown in Detail 3, Sheet 2. Spacing between collars shall be as specified in the table below or as staked in the field by the Engineer.

Ground Slope (%)	Spacing (Feet)
0-5	None Required
6-15	200
16 and greater	100

3.2 MATERIALS:

Cutoff collars shall be constructed of Portland Cement Concrete, 3,000-psi minimum compressive strength.

The envelope material shall be the same as that specified in Section 1, subsection 1.2.

3.3 INSTALLATION:

Cutoff collars shall extend a minimum of 1.0 foot into native, undisturbed material on the sides and bottom of the trench and extend 1.0 feet above the top of the pipe. Cutoff collars shall be a minimum of 8 inches thick. A watertight seal shall be formed between the cutoff wall and the pipeline. The wall of the collar shall be poured against undisturbed soil. Backfill shall be placed around wall and hand compacted to ensure no voids are present.

The Contractor shall perforate the pipe with ±30 3/8-inch diameter holes along the bottom half of the pipe a minimum of 3 feet upstream of the cutoff collar to allow water to infiltrate back into the drainline. This perforated section shall be backfilled with approved envelope material. Gravel envelope shall be a minimum of 3 inches thick on all sides of the pipe.

The Contractor shall take precautions to ensure that concrete does not flow through perforations in amounts that would cause any reduction in flow capacity of pipe.

SECTION 4 – STANDARD DROP INLET

4.1 GENERAL:

Drop inlets shall be furnished and installed by the Contractor in the locations shown on the Plans and as staked in the field by the Engineer, according to Detail 4, Sheet 2. The dimensions of the riser and connector pipeline shall be as shown on the Plans and Details. A grate shall be installed over the top of each drop inlet.

4.2 MATERIALS:

Drop inlet risers shall be galvanized, 14 gauge corrugated metal pipe (CMP) of the diameter shown on the Plans and/or Specifications. Dual walled corrugated polyethylene pipe may be substituted for CMP with pre-approval from the engineer.

Grates shall be Agri Drain Bar Guard or equal.

Concrete for the bottom of the inlet shall be Portland Cement concrete, 3,000 psi minimum compressive strength.

4.3 INSTALLATION:

Standard Drop inlets shall be constructed as shown on the detail sheet and as staked in the field by the Engineer. Connector pipes shall be mortared in place to form a watertight seal. Grates shall be bolted or locked to drop inlet riser. Backfill around the inlet shall be compacted sufficiently by hand or water-jetted such that excessive settlement does not occur**.**

SECTION 5 – ROLLING DIP

5.1 GENERAL:

Rolling dips shall be constructed as shown on Detail 2, Sheet 3 in locations specified on the Plans.

5.2 INSTALLATION:

The location of the rolling dip shall be scarified and any vegetation shall be removed and thoroughly incorporated. Excavation 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 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. Drop inlets shall receive the surface flows 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 2, Sheet 3.

SECTION 6 – ROCK APRON

6.1 GENERAL:

A rock apron will be installed at the outlet of a ditch to help disperse concentrated flow and to minimize erosion downstream of the outlet. Rock aprons shall be installed where shown on the Plans and as staked in the field by the engineer.

6.2 MATERIALS:

Rock used in the construction of rock aprons shall be 4"-12" well graded field rock generated onsite. Filter fabric shall be Mirafi 140N or equal.

6.3 INSTALLATION:

Rock aprons shall be constructed as shown on Detail 3, Sheet 3. All rock shall be placed on undisturbed native vegetation if possible. If soil is disturbed place rock on filter fabric. The apron shall extend approximately 10 feet from the outlet of the ditch. The upstream end of the apron shall be approximately 6 feet wide. The downstream end shall be approximately 10 feet wide. A small keyway shall be excavated into native material at the downstream end of the spreader as shown in the detail. A rock berm shall be constructed at the downstream end of the apron as shown on the detail.

SECTION 7 – ROCK-FILLED AVENUE/LEVEL SPREADER & DETENTION BASIN LEVEL SPREADER

7.1 GENERAL:

The rock filled avenue/level spreader and detention basin level spreader will be constructed as shown in Detail 5, Sheet 2 and Detail 4, Sheet 3 in the locations shown on the Plans and as staked in the field by the Engineer.

7.2 MATERIALS:

Rock used for construction shall be field rock generated onsite and shall be well-graded to prevent large voids within the structure. Smaller (3-inch minus) field rock and ¾-inch minus gravel will be used to line the trough of the spreader. Gravel may be crushed rock generated onsite but should contain sufficient fines to reduce the overall permeability of the spreader and cause water to flow laterally along the length of the structure (generally equivalent to Cal –Trans Class II Aggregate Base). Select native material may be used for final trough lining with pre-approval from the engineer.

7.3 INSTALLATION:

A bench shall be cut along the outboard toe for placement of rock. Straw wattles shall be installed along the outboard edge of the bench **prior** to placing rock. Care shall be taken to remove as much of the fine material (clay and silt size) as possible prior to placing the rock. The rock-filled avenue/level spreader shall be parallel to the contour to ensure the water is evenly distributed, and the ends shall be turned uphill at least 2 feet in elevation to prevent water from running around the end. The spreader shall be constructed of large, well-graded rock to a finished cross-section with a trough depth of at least 3 feet. A layer of 3-inch minus field rock shall be spread 6-inches thick within the trough and a 6-inch layer of gravel applied over the 3-inch minus rock. Finished depth of the trough shall be at least 2 feet.

Where a pipe discharges into the middle of the rock-filled avenue/level spreader, a tee shall be used to re-direct flows parallel with the berm. The pipe shall be attached to the tee with two rows of sheet metal screws spaced approximately 6” apart along the circumference of the pipe – one row in the pipe and one row in the tee. At least one large rock, minimum 3-foot–diameter, shall be placed against the fitting.

Where a pipe discharges at the end of the rock-filled avenue/level spreader, the pipe shall discharge flow parallel with the berm. The pipe shall be attached to the elbow with two rows of sheet metal screws spaced approximately 6” apart along the circumference of the pipe – one row in the pipe and one row in the elbow. At least one large rock, minimum 3-foot–diameter, shall be placed against the fitting.

SECTION 8 – JUNCTION BOX/SEDIMENT TRAP

8.1 GENERAL:

A junction box/sediment trap shall be installed as shown on the Plans and as staked in the field by the Engineer. Construction of the sediment trap shall be as shown on Detail 5, Sheet 3. The sediment trap will transfer water from a proposed surface drainage pipeline to a rock level spreader.

8.2 MATERIALS:

The sediment trap riser shall be constructed of 36" diameter galvanized corrugated metal pipe (CMP), 14-gauge minimum. Corrugated metal pipe for use as a junction box shall meet the standards of ASTM A760 and AASHTO M36, as applicable.

The cover shall be constructed of a 38” diameter 1/8” steel plate with a 2” rim around the circumference.

Concrete for the bottom of the junction box shall be Portland cement concrete, 3,000 psi minimum compressive strength.

The outlet to the rock level spreader shall be constructed of 18” dual walled corrugated polyethylene pipe. Pipe shall meet the standards of AASHTO M294. The fittings for the outlet pipe shall be watertight; no gaps between the pipe and fittings will be allowed.

The envelope material shall be the same as that specified in Section 1, Subsection 1.2, Materials.

All pipe connections shall be sealed with mortar where they connect to the junction box.

8.3 INSTALLATION:

The sediment trap shall be constructed as shown in Detail 5, Sheet 3 and as staked in the field. The sediment trap shall be set plumb. No more than 2” deviation from vertical at the top shall be allowed. Backfill shall be hand-compacted or water-jetted sufficiently to prevent settlement from occurring.

A child-proof cover shall be constructed of 1\8” steel as shown in the Detail. The steel cover shall have a 2” steel rim to securely fasten the cover to the top of the junction box riser. A hinged and locking viewport 10 inches square shall be provided in the cover.

Pipe connections shall be sealed with mortar. A fillet of mortar shall be applied both inside and outside the CMP, simultaneously to ensure formation of a bond between the inside mortar and outside mortar. The mortar shall be allowed to fully cure prior to any backfill being placed around the structure.

The bottom 6" of the structure shall be filled with concrete per Detail 5, Sheet 3. A series of 1/4" holes on 1-foot centers shall be drilled in the base of the riser to provide drainage of the junction box. Three rows of 1/4" holes shall be drilled within 1.0' from the top of the concrete bottom. The holes shall be staggered so as to not adversely affect the integrity of the CMP riser. Gravel envelope shall be installed along the outside perimeter of the riser to encase the drilled holes.

SECTION 9 – DETENTION BASIN

9.1 GENERAL:

A detention basin shall be constructed in the northwest corner of Block B to attenuate small predicted increases in runoff associated with the proposed development. The basin shall be excavated into natural earth and have a compacted earth embankment. The basin shall be constructed as shown on Sheet 4, as described in these Specifications, and as staked in the field by the Engineer.

9.2 MATERIALS:

Compacted embankment shall be constructed of native soil.

Outlet risers shall be 18" diameter galvanized, 14-gauge corrugated metal pipe (CMP). Six- to eight-inch (6"-8") diameter field rock shall be used to encase the outlet risers and to help keep sediment and debris from clogging the slots in the riser.

Outlet piping from the northern 18" riser shall be 6" diameter dual walled corrugated polyethylene pipe (DW). Outlet piping from the southern 18" riser shall be 8" diameter DW. Outlet piping shall conform to AASHTO M252, AASHTO M294, and SCS 606 specifications as applicable. Bent or damaged pipe shall not be used and shall be removed from the job site. Pipe connections shall be made with fittings manufactured by the same manufacturer who made the pipe. All connections shall be securely fastened, and the resulting connection shall not have gaps greater than 1/8 inch wide.

Concrete for the bottom of the risers and the cutoff collars shall be Portland Cement concrete, 3,000 psi minimum compressive strength.

Trash racks shall be Agri Drain Bar Guard or equal.

9.3 CONSTRUCTION:

Prior to construction, all vegetation and organic matter shall be stripped from the site and spread in the adjacent vineyard area.

The contractor shall construct a compacted earth embankment from material excavated from the detention basin site. The fill material shall be free of large rocks and organic material. The embankment shall be constructed as shown on Sheet 4. Material below the embankment shall be

over-excavated as necessary (minimum 8 inches) to expose firm native soils and recompacted to 90% relative compaction per ASTM D1557. Embankment fill shall be placed in uniform, 8"-thick maximum horizontal layers, moisture conditioned as necessary, and compacted to 90% relative compaction per ASTM D1557. Field density testing shall be conducted as directed by the Project Engineering Geologist or Geotechnical Engineer on fill material to confirm the required relative compaction. Field density tests shall conform to ASTM D1557 standards.

The embankment shall extend around the perimeter of the detention basin to the catch point with existing grade as shown in the Plan View and as staked in the field by the Engineer. The embankment fill slopes shall be 2:1 (H:V) to top of embankment at elevation 836'. The top of the embankment shall be a minimum of 6' wide and constructed level.

The bottom of the proposed detention basin shall be constructed at elevation 831'. The uphill side of the detention basin shall be graded at 2:1 (H:V) slope from the bottom of the detention basin to the existing grade in proposed Block B. The Project Engineering Geologist shall inspect the final grading of the 2:1 cut slope to confirm that the cut slope is stable.

The compacted embankment shall be completed prior to installing the outlet risers. Two risers shall be installed as shown on Sheet 4. The risers shall be installed at the depths and locations shown and as staked in the field by the Engineer. The risers shall be set level with a 0.5' thick concrete bottom. The northern 18" riser shall be notched with 6" high x 2" wide slots. Four (4) equally spaced slots shall be cut along the circumference of the riser at elevation 831.75'. The tops of the individual risers shall be cut at the elevations shown, and trash racks shall be installed over the top of each. The risers shall be encased with 6"-8" field rock as shown in the Sections.

Outlet pipes shall connect to the individual risers as shown on Sheets 4 at the respective elevations shown. The trench for the outlet pipe shall be excavated into the compacted embankment fill and shall be made sufficiently wide to accommodate the proposed pipe and compaction equipment. The slope, alignment, and depth of placement of the piping shall be as shown in the Plan View and Sections and as staked in the field by the Engineer. The trench bottom shall be continuous, firm, relatively smooth, and free of rocks or other objects larger than 1 inch. A gradual variation of no more than 0.1 foot from grade will be allowed. No reverse grade will be allowed. A gradual variation of no more than 1 foot from design alignment is allowed. The pipe connections to the risers shall be mortared to form a watertight seal. Concrete cutoff collars shall be installed on the outlet pipes as shown on Detail 3, Sheet 2. Concrete cutoff collars shall be constructed as described in Section 3 of these Special Provisions except that no perforations of the pipe upstream nor gravel backfill shall be required. Backfill around the pipes shall be placed in 8"-thick maximum horizontal layers, moisture conditioned as necessary, and compacted to 90% relative compaction per ASTM D1557. Backfill material within 6 inches of the pipe shall be free of rocks and dirt clods larger than 1 inch in size and shall be hand-tamped as necessary to ensure no voids are present.

A rock level spreader shall be installed at the proposed pipe outlets. The rock level spreader shall be constructed according to Detail 4, Sheet 3. A 6" DW tee shall be installed at the outlet of the 6" pipe, and a 8" DW tee shall be installed at the outlet of the 8" pipe. The tees shall be secured with two (2) rows of ¾" metal screws.

SECTION 10 - TEMPORARY MEASURES

10.1 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 11 - MAINTENANCE

11.1 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.

11.2 DITCHES:

Ditches shall be monitored for over-topping and repaired as needed. Debris that could reduce the capacity of the ditch shall be removed during/after each storm event.

11.3 ROLLING DIPS:

The rolling dips shall be monitored and repaired as needed to ensure water is directed away from the vineyard. 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.

11.4 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.

11.5 ROCK APRONS:

These structures shall be monitored during/after every runoff event the first year and periodically in subsequent years. Adjustments shall be made as necessary to ensure flow is dissipated in a non-erosive manner.

11.6 DROP INLETS:

Drop inlets are designed with trash racks at the ground surface. Debris shall be removed from trash racks after each storm event or as necessary to ensure a clear flow path for water entering the drop inlet. Damaged trash racks shall be repaired immediately in order to ensure that unacceptable quantities of debris do not enter the storm drainage piping system. Drop inlets shall also be inspected annually for any sediment that may have accumulated within the riser. Sediment shall be removed and spread in a safe location and protected as necessary.

11.7 DETENTION BASIN AND JUNCTION BOX/SEDIMENT TRAP:

Detention basins and sediment traps shall be inspected after each rain the first year and at least annually thereafter. Accumulated sediment shall be removed and spread in a safe location and protected as necessary against erosion.

11.8 LEVEL SPREADERS:

Level spreaders shall be inspected after each storm event the first year and at least annually thereafter to ensure proper functioning.

APPENDIX A

PHOTOGRAPHIC DOCUMENTATION



Photo 1

3/19/2019



Photo 2

3/19/2019

APPENDIX B

USLE CALCULATIONS

PPI Engineering

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

NAME: Teachworth DATE: 11/5/18

Cover Type: Permanent Cover Crop
Soil Unit No. (100-182)--- 140 & 141 -K= 0.17
Soil Name Forward -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
PERCENT SLOPE	2	8,135,103	17,616,918	48,253,174	205,926,725	738,159,529	2,851,809,471
	4	86,081	153,667	327,173	971,446	2,530,738	6,973,893
	6	7,891	12,546	22,964	54,848	117,984	265,464
	8	3,634	5,777	10,575	25,257	54,330	122,243
	10	1,939	3,082	5,642	13,474	28,985	65,216
	12	1,173	1,865	3,414	8,154	17,541	39,467
	14	769	1,223	2,239	5,348	11,503	25,882
	16	535	851	1,558	3,721	8,004	18,008
	18	390	620	1,134	2,709	5,828	13,113
	20	294	468	856	2,045	4,400	9,900
	22	229	364	666	1,590	3,421	7,698
	24	182	290	531	1,267	2,726	6,134
	26	148	236	432	1,031	2,218	4,991
	28	123	195	358	854	1,837	4,134
	30	103	164	301	719	1,546	3,478
	32	88	140	257	613	1,318	2,966
	34	76	121	221	529	1,138	2,560
	36	66	106	193	462	993	2,234
	38	59	93	170	407	875	1,968
	40	52	83	151	361	777	1,749
	42	47	74	136	324	696	1,567
	44	42	67	122	292	629	1,414
	46	38	61	111	265	571	1,285
	48	35	55	102	243	522	1,174
	50	32	51	93	223	480	1,079

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: Teachworth DATE: 11/5/18

Cover Type: Permanent Cover Crop
Soil Unit No. (100-182)--- 140 & 141 -K= 0.17
Soil Name Forward -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
PERCENT SLOPE	2	44,653,774	96,699,680	264,862,809	1,130,336,638	4,051,775,023	15,653,649,291
	4	308,693	551,065	1,173,275	3,483,698	9,075,468	25,009,048
	6	21,920	34,849	63,789	152,355	327,734	737,401
	8	10,094	16,047	29,374	70,158	150,917	339,564
	10	5,385	8,561	15,671	37,429	80,514	181,157
	12	3,259	5,181	9,484	22,651	48,725	109,631
	14	2,137	3,398	6,219	14,854	31,954	71,896
	16	1,487	2,364	4,327	10,335	22,232	50,023
	18	1,083	1,721	3,151	7,526	16,189	36,424
	20	817	1,300	2,379	5,682	12,222	27,499
	22	636	1,011	1,850	4,418	9,503	21,383
	24	507	805	1,474	3,521	7,573	17,040
	26	412	655	1,199	2,865	6,162	13,864
	28	341	543	993	2,373	5,104	11,484
	30	287	457	836	1,996	4,294	9,661
	32	245	389	713	1,702	3,662	8,239
	34	211	336	615	1,469	3,161	7,112
	36	184	293	537	1,282	2,758	6,205
	38	163	258	473	1,130	2,430	5,467
	40	144	230	420	1,004	2,160	4,859
	42	129	206	377	899	1,935	4,353
	44	117	186	340	812	1,746	3,928
	46	106	169	309	737	1,586	3,569
	48	97	154	282	674	1,450	3,262
	50	89	142	259	619	1,333	2,998

NOTES:
C=Cover and Management Factor
P=Practice Factor

APPENDIX C

VEGETATION RETENTION CALCULATIONS

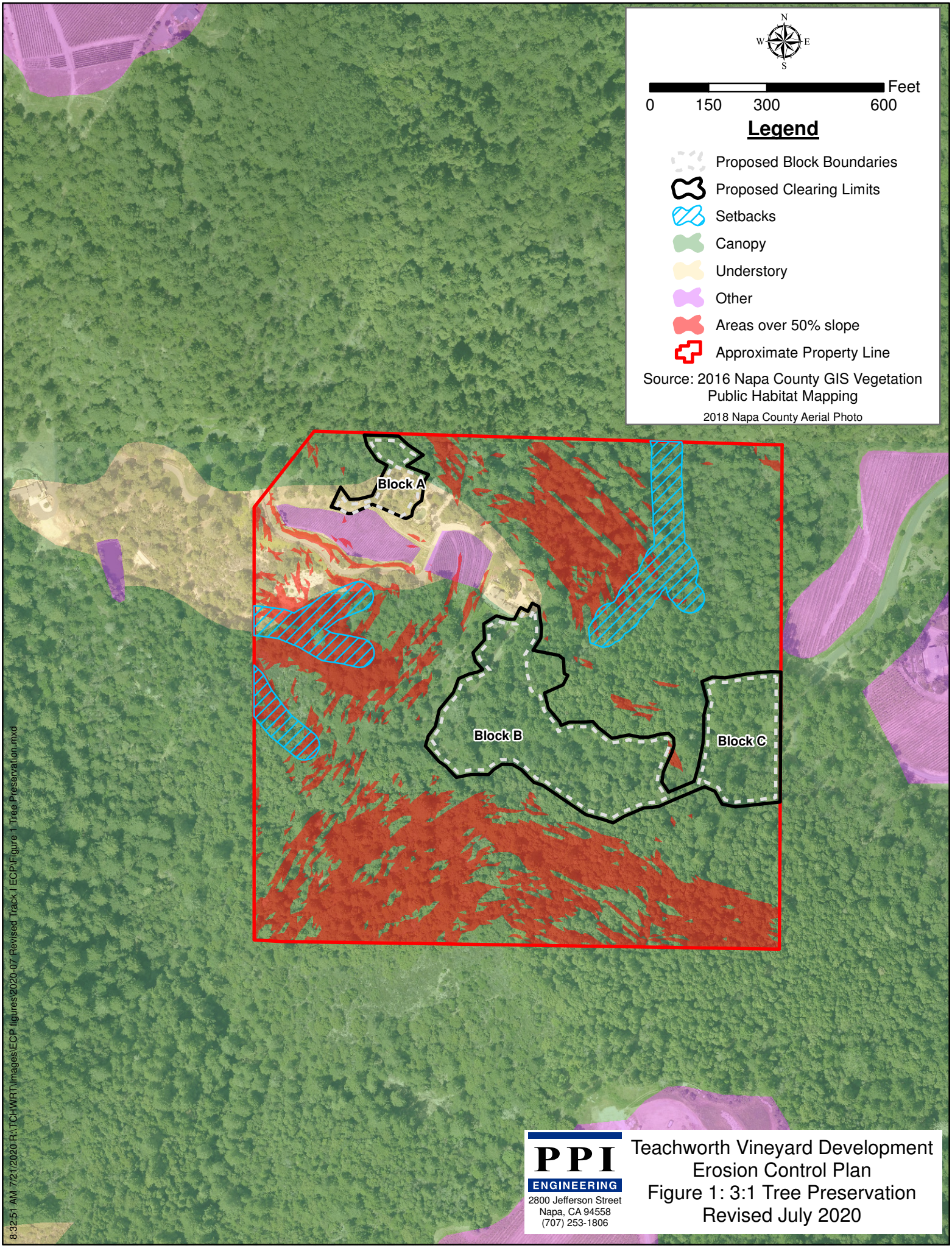
TEACHWORTH VINEYARD DEVELOPMENT
4451 N. ST. HELENA HWY
3:1 TREE PRESERVATION CALCULATIONS

	APN 020-400-018
Proposed Clearing Limits (acres)	5.81
Trees Existing in 2016 on Parcel (acres)[1]	35.67
Trees Proposed to be Removed (acres)	5.43
Trees on Less than 50% Slopes Outside Setbacks on Parcel (acres)	22.83
Trees Preserved on Less than 50% Slopes and Outside Setbacks (acres)	17.42
Trees Preserved on Less than 50% Slopes (percent)[2]	76%

Notes:

1. Tree canopy that existed in 2016 is based on Napa County GIS Vegetation Public Habitat Mapping.
2. 75% retention (or higher) is the same as 3:1 preservation (or higher)
3. See Figure 1 of this ECP.

Some rounding may occur



8:32:51 AM 7/21/2020 R:\TCH\WRT\Images\ECP figures\2020-07 Revised Track I ECP\Figure 1 Tree Preservation.mxd

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Teachworth Vineyard Development
Erosion Control Plan
Figure 1: 3:1 Tree Preservation
Revised July 2020

APPENDIX D

SLOPE CALCULATIONS

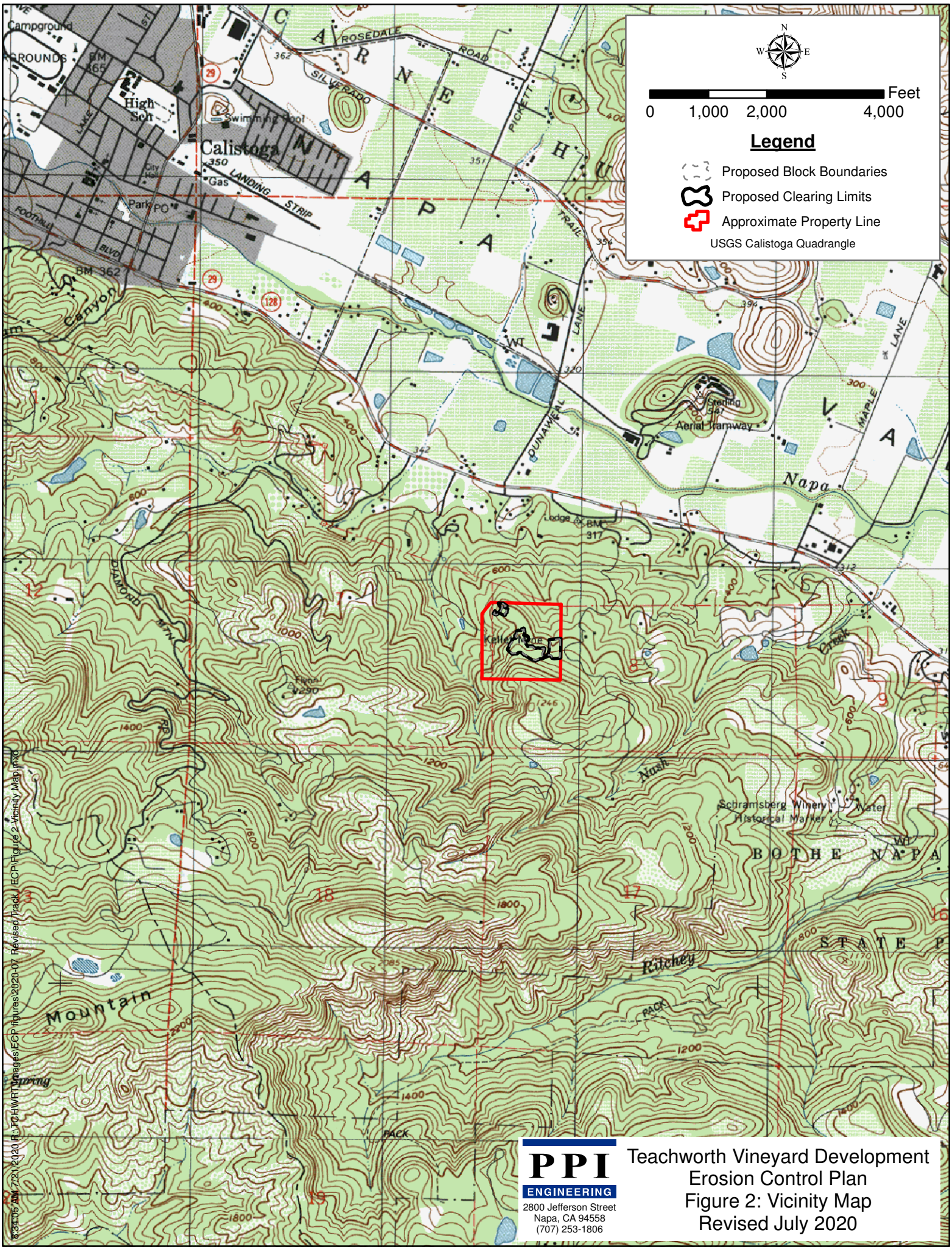
TEACHWORTH VINEYARD DEVELOPMENT
4451 ST. HELENA HWY N.

Average Slope Of Proposed Vineyard Blocks

Block	Gross Acres	Net Acres	Slope #1	Slope #2	Average slope
A	0.6	0.4	25%	29%	27%
B	3.7	2.9	24%	28%	26%
C	1.5	1.2	15%	21%	18%
Total	**5.8**	**4.5**			**24%**

APPENDIX E

SUPPORTING FIGURES


N
W
E
S
Feet
0
1,000
2,000
4,000
Legend
Proposed Block Boundaries
Proposed Clearing Limits
Approximate Property Line
USGS Calistoga Quadrangle
Calistoga
Campground
GROUNDS
BM 365
High Sch
Swimming Pool
City Hall
Park
PO
Gas
LANDING STRIP
FOOTHILL BLVD
BM 362
ROSEDALE ROAD
SILVERADO TRAIL
PICKETT LANE
DUNAWEAL LANE
MAPLE LANE
Sterling
Aerial Tramway
Napa
Lodge
BM 317
DIAMOND MTN
Kellenyon
Flynn
Creek
Schramsberg Winery
Historical Marker
Water
BOTHE NAPA
STATE P
Ritchey
Mountain
Spring
PACK
Canyon
CARNEROS
NAPA
VA
WT
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Napa, CA 94558
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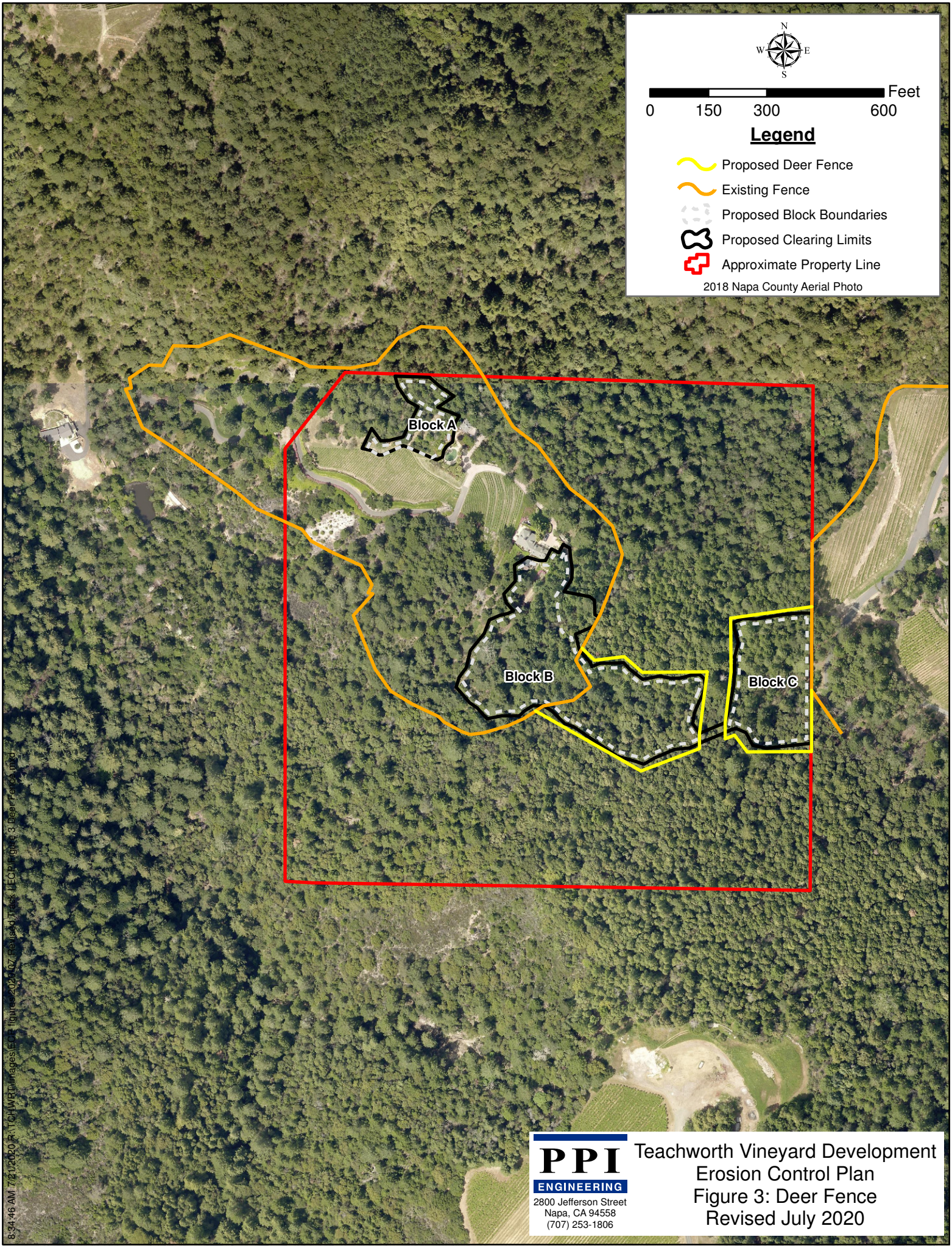
Teachworth Vineyard Development
Erosion Control Plan
Figure 2: Vicinity Map
Revised July 2020
8/21/05 AM 7/21/2020 RJTC HWRT Images\ECP figures\2020-07 Revised\Track\ ECP Figure 2 Vicinity Map.mxd



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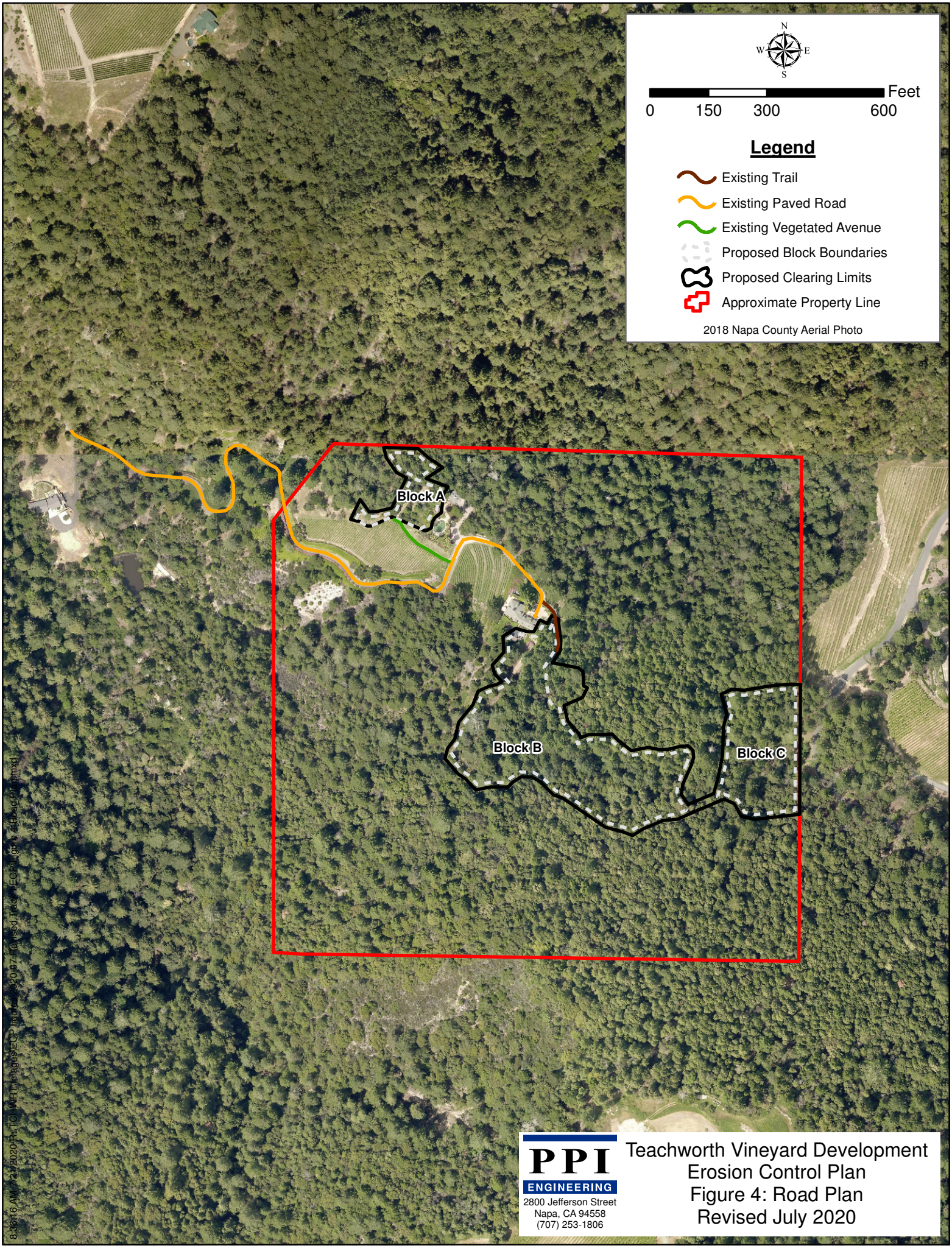
Teachworth Vineyard Development
Erosion Control Plan
Figure 3: Deer Fence
Revised July 2020

8:34:46 AM 7/21/2020 R:\TCH\WP\Images\ECP figures\2020.07 Revised Track 1\ECP Figure 3 Deer Fence.mxd



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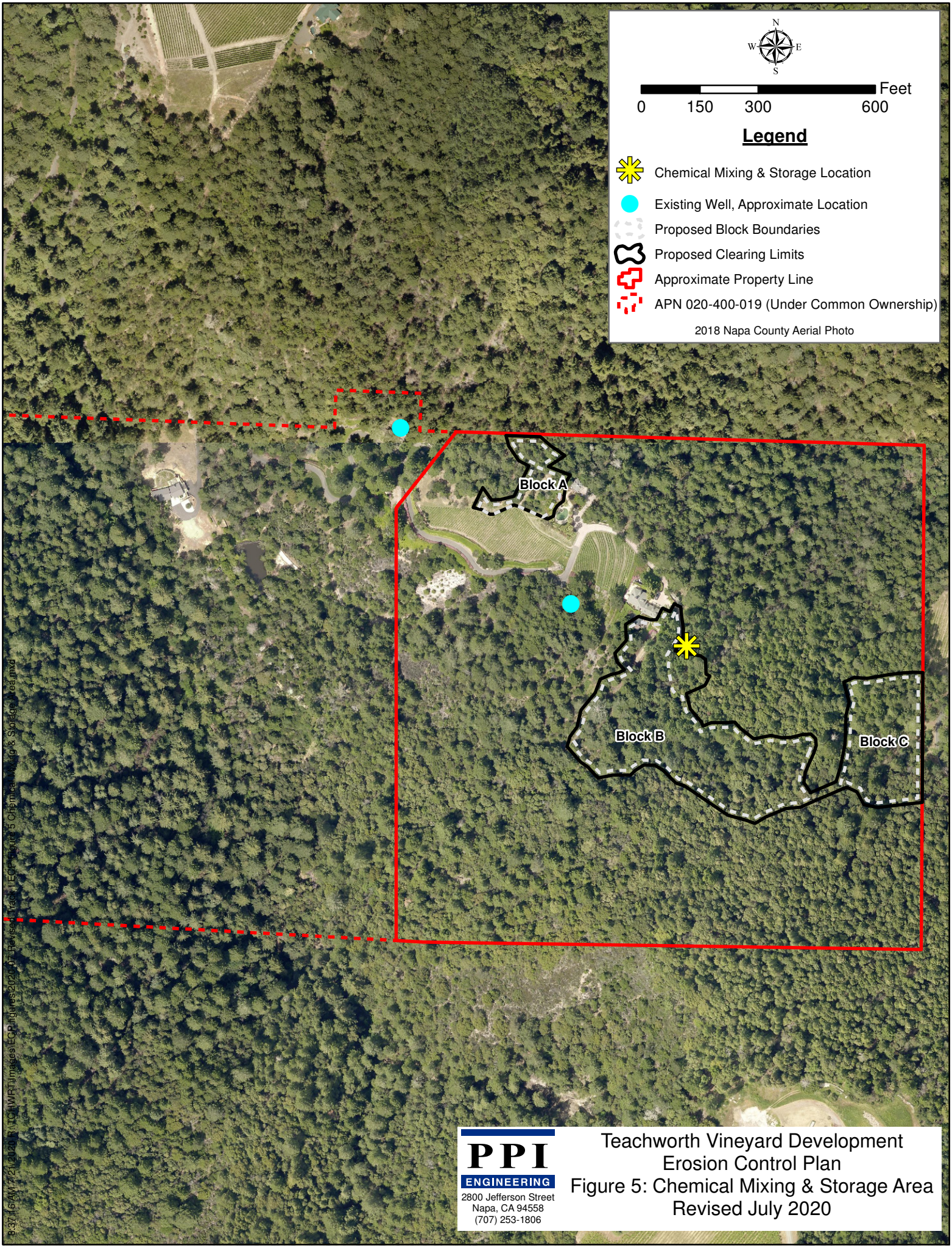
Teachworth Vineyard Development
Erosion Control Plan
Figure 4: Road Plan
Revised July 2020

8-3816 AW 7-21-2020 RJTC WRTV Images\ECP Title Page 2017 Revised Tract Copy.dgn 07 Road Plan.mxd



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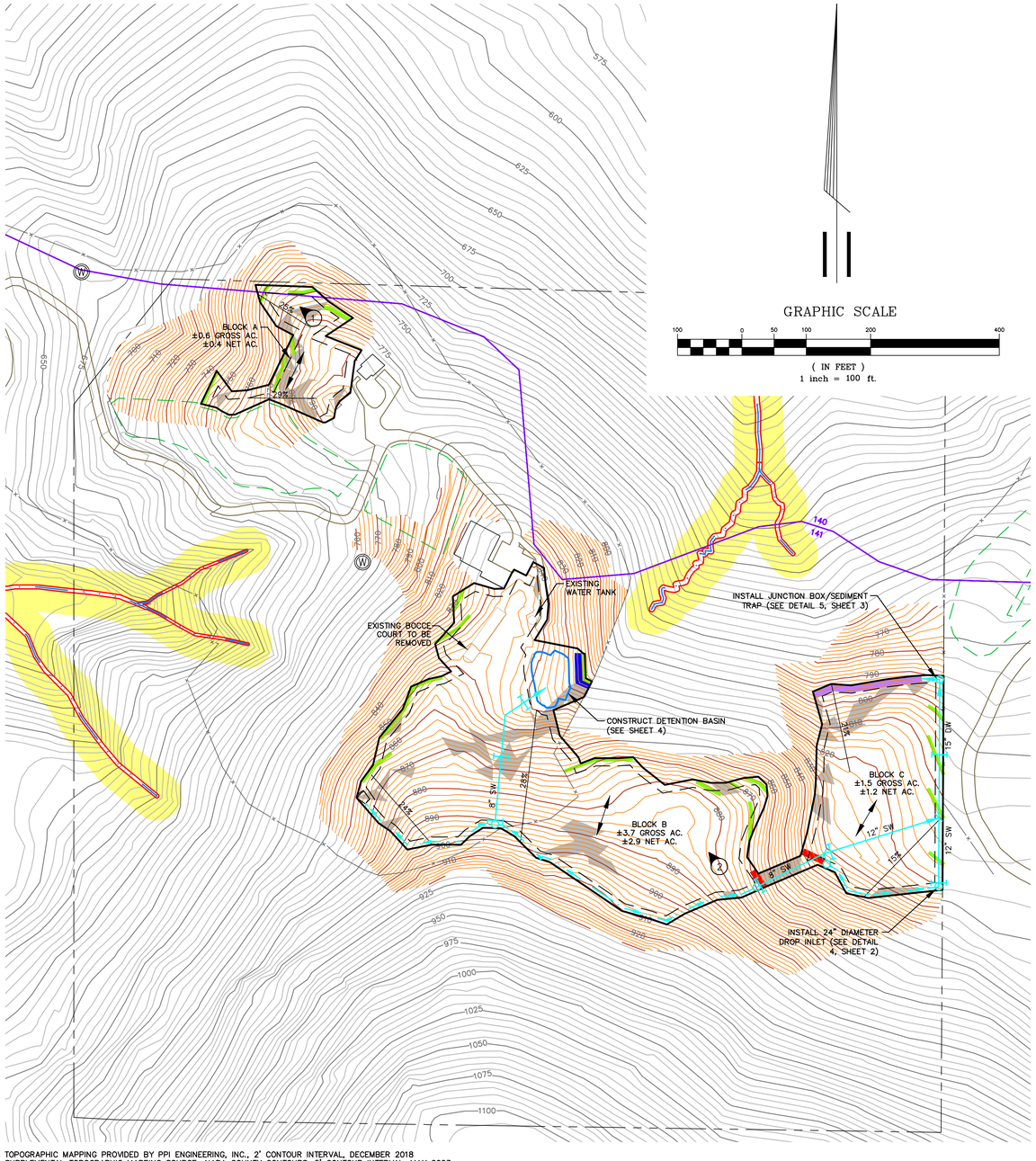
Teachworth Vineyard Development
Erosion Control Plan
Figure 5: Chemical Mixing & Storage Area
Revised July 2020

8:37:16 AM 7/21/2020 R:\JOB\WRT\Images\ECP Figures\2020-07 Revised Tech\ECP Figure 5 Chemical Mixing & Storage Area.mxd



GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

1 inch = 100 ft.

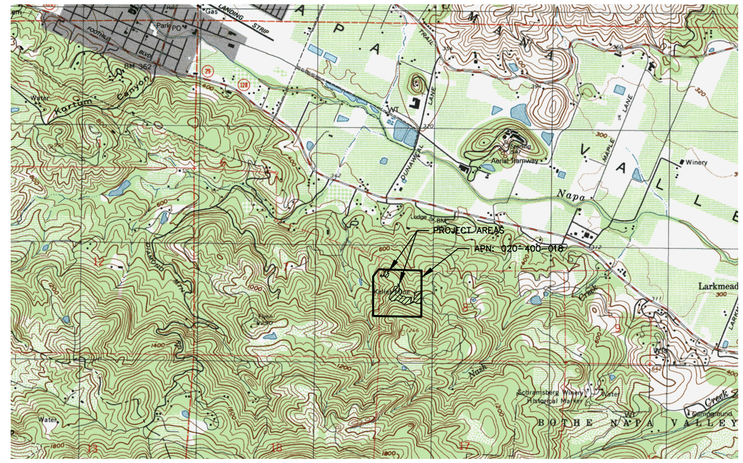
TOPOGRAPHIC MAPPING PROVIDED BY PPI ENGINEERING, INC., 2' CONTOUR INTERVAL, DECEMBER 2018
SUPPLEMENTAL TOPOGRAPHIC MAPPING SOURCE: NAPA COUNTY CONTOURS, 5' CONTOUR INTERVAL, MAY 2003

LEGEND

- NAPA COUNTY 25' INDEX CONTOUR
- NAPA COUNTY 5' INTERMEDIATE CONTOUR
- PPI ENGINEERING 10' INDEX CONTOUR
- PPI ENGINEERING 2' INTERMEDIATE CONTOUR
- APPROXIMATE PROPERTY LINE LOCATION (SEE NOTE 15)
- EXISTING VINEYARD AREA
- POTENTIAL WATERS OF THE U.S.
- TOP OF BANK, APPROXIMATE
- 35' SETBACK
- EXISTING ROAD
- EXISTING FENCE
- EXISTING BUILDING
- EXISTING WELL, APPROXIMATE LOCATION
- PROPOSED VINEYARD CLEARING LIMITS
- PROPOSED VINEYARD BLOCK BOUNDARY
- PROPOSED SURFACE DRAINAGE LINE (SEE DETAIL 2, SHEET 2)
- PROPOSED PIPE SIZE CHANGE
- PROPOSED CUTOFF COLLAR (SEE DETAIL 3, SHEET 2)
- PROPOSED DITCH (SEE DETAIL 1, SHEET 2)
- PROPOSED 18" DIAMETER DROP INLET, UNLESS NOTED OTHERWISE (SEE DETAIL 4, SHEET 2)
- PROPOSED ROCK-FILLED AVENUE/LEVEL SPREADER (SEE DETAIL 5, SHEET 2)
- PROPOSED DETENTION BASIN ROCK LEVEL SPREADER (SEE DETAIL 4, SHEET 3)
- PROPOSED STRAW WATTLE (SEE DETAIL 1, SHEET 3)
- PROPOSED ROLLING DIP (SEE DETAIL 2, SHEET 3)
- PROPOSED ROCK APRON (SEE DETAIL 3, SHEET 3)
- DW — DUAL WALL CORRUGATED POLYETHYLENE PIPE
- SW — SINGLE WALL CORRUGATED POLYETHYLENE PIPE
- AREA WHERE GROUND SLOPE IS 30 PERCENT OR GREATER
- PROPOSED VINEROW DIRECTION
- PHOTO POINT NUMBER & LOCATION (SEE APPENDIX A)
- X% — AVERAGE SURFACE SLOPE
- 140 / 141 — SOIL TYPE BOUNDARY

USDA SOIL CLASSIFICATIONS:

- 140 — FORWARD SILT LOAM, 12–57% SLOPES
- 141 — FORWARD–KIDD COMPLEX, 11–60% SLOPES



VICINITY MAP

USGS CALISTOGA QUADRANGLE
TOWNSHIP 8 N., RANGE 6 W.
SCALE: 1" = ±2000'

NOTES:

1. OWNER: TEACHWORTH WINERY
   SITE ADDRESS: 4451 N. SAINT HELENA HWY
   APN: 020-400-018
2. ACCESS TO PROJECT IS FROM N. SAINT HELENA HWY. THE SITE IS GATED AND LOCKED. ADMITTANCE IS AVAILABLE UPON REQUEST.
3. EXISTING VEGETATION CONSISTS OF BRUSH AND TREES.
4. DISTURBED AREAS SHALL BE SEEDED AS DESCRIBED BELOW. STRAW MULCH SHALL BE APPLIED TO ALL DISTURBED AREAS AT A RATE OF 3,000 POUNDS PER ACRE PRIOR TO OCTOBER 15 OF THE YEAR OF CONSTRUCTION.
5. 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)
DWARF BARLEY	50
BLANDO BROME	8
ZORRO FESCUE	12
CRIMSON CLOVER	6

   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 90% VEGETATIVE COVER WILL BE RESEEDED AND MULCHED UNTIL ADEQUATE COVERAGE IS ACHIEVED. THE PERMANENT COVER CROP SHALL BE MOWED ONLY AND NOT DISKED.
6. 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 POUNDS PER ACRE IF BROADCAST OR AT A RATE OF 60 POUNDS PER 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 POUNDS PER ACRE AND STRAW WATTLES SHALL BE INSTALLED PRIOR TO OCTOBER 15. THE PERMANENT SEED MIX WILL BE SEEDED PRIOR TO OCTOBER 15 OF THE FOURTH (OR EARLIER) YEAR.
7. NO PRE-EMERGENT HERBICIDES WILL BE USED FOR WEED MANAGEMENT. NO STRIP SPRAYING SHALL BE PERFORMED IN BLOCKS REQUIRING 90% VEGETATIVE COVER. SPOT SPRAYING OF CONTACT OR SYSTEMIC HERBICIDES IN SPRING (NO EARLIER THAN FEBRUARY 15) WILL BE ALLOWED PROVIDED THE 90% VEGETATIVE COVER IS ACHIEVED IN EACH BLOCK. IF THE OWNER CHOOSES TO FARM WITHOUT HERBICIDE, AN ALTERNATIVE WILL BE TO HAND-HOE AROUND THE BASE OF THE VINE ONLY, OR OTHER METHODS THAT DO NOT RESULT IN A CONTINUOUS BARE STRIP.
8. 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.
9. 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 OCTOBER 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 WHICH HAVE LESS THAN 90% VEGETATIVE COVER WILL BE RESEEDED AND MULCHED UNTIL ADEQUATE COVERAGE IS ACHIEVED. SEEDING AND MULCHING IS NOT REQUIRED ON AVENUES AND ROADS PROPERLY SURFACED WITH GRAVEL.
10. THE PROPOSED VINE AND ROW SPACING IS EXPECTED TO BE 4 FEET BY 7 FEET, 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.
11. 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.
12. THE LOCATION OF THE EXISTING WELLS, THE PROPOSED WATER SOURCES, ARE SHOWN ON THE SITE PLAN.
13. A PORTION OF THE PROJECT IS CURRENTLY DEER FENCED. SEE APPENDIX E FOR PROPOSED DEER FENCE MAP.
14. 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.
15. PROPERTY LINES AS SHOWN ARE APPROXIMATE. OWNER SHALL BE RESPONSIBLE FOR SURVEYING PROPERTY LINE(S) AS NECESSARY PRIOR TO ANY SITE DISTURBANCE. THERE IS CURRENTLY A LOT-LINE ADJUSTMENT BEING PURSUED FOR THE PARCEL, THE PROJECT ASSUMES THE LOT-LINE ADJUSTMENT WAS RECORDED.
16. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS.
17. 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.
18. 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.

REGISTERED PROFESSIONAL ENGINEER
MATTHEW S. BUENO
No. 84114
EXPIRES: 9-30-21
Civil
STATE OF CALIFORNIA

REV. NO.	DESCRIPTION	BY	DATE
1	THIS DRAWING SUPERSEDES DRAWING 11813001A. INCORPORATED CHANGES BASED ON NAPA COUNTY COMMENTS.	RR	7-21-20

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707/253-1806 FAX 707/253-1604

TEACHWORTH VINEYARD DEVELOPMENT
BLOCKS A, B & C

EROSION CONTROL PLAN

SITE PLAN

DESIGN ENGINEER: J. BUSHEY, M. BUENO

JOB NO: 11813001			
DWG. NO: 11813001B			
SCALE: AS SHOWN	DRAWN BY: RR	DATE: 7-21-20	SHEET: 1 OF: 4

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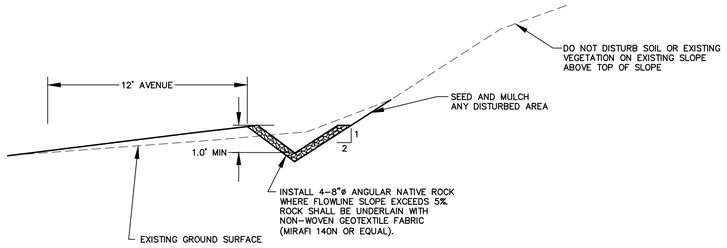
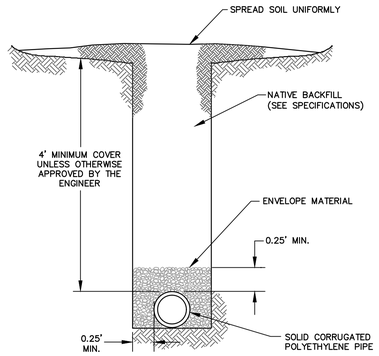
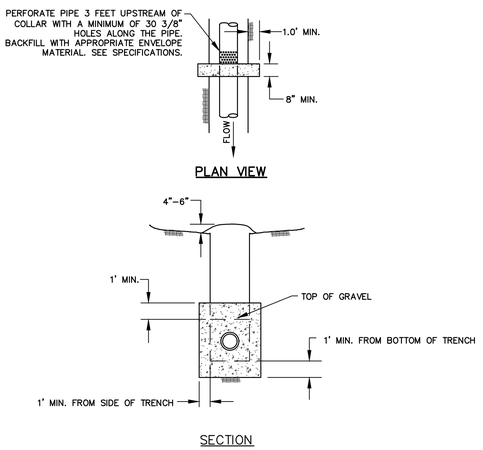


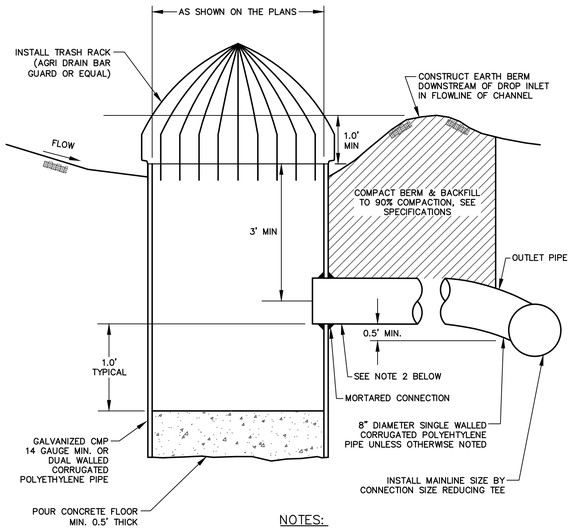
1/2 DITCH TYPICAL CROSS SECTION
N.T.S.



2/2 SURFACE DRAINAGE PIPELINE
N.T.S.



3/2 CUTOFF COLLAR
N.T.S.

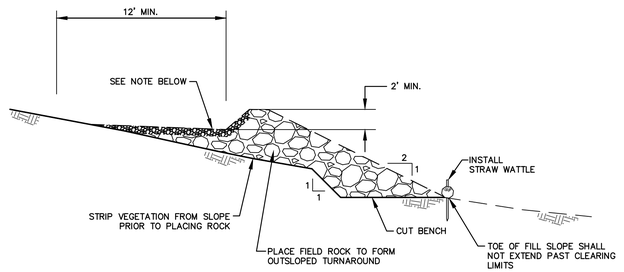


NOTES:

1. LOCATE DROP INLET IN VINEROW IF INLET IS LOCATED WITHIN THE VINEYARD. CONSTRUCT BERM TO DIRECT WATER TO DROP INLET.

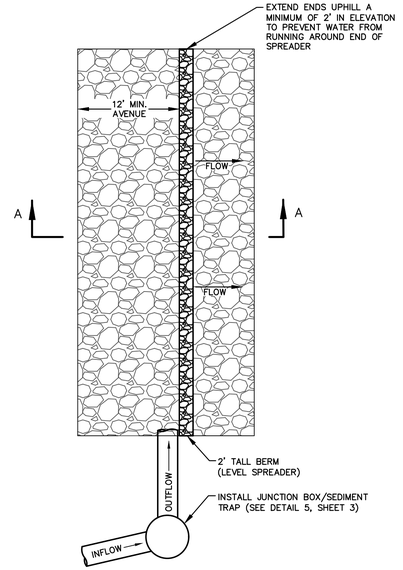
2. NO ADDITIONAL CONNECTOR PIPE SHALL BE REQUIRED WHERE THE INLET IS LOCATED AT UPPER END OF ALL MAINLINES. MAINLINE SIZES AS SPECIFIED SHALL CONNECT DIRECTLY TO DROP INLET.

4/2 STANDARD DROP INLET
N.T.S.



NOTE:
A LAYER OF 3" MINUS FIELD ROCK SHALL BE SPREAD 6" THICK WITHIN THE TROUGH AND A 6" LAYER OF 3" MINUS GRAVEL APPLIED OVER THE 3" MINUS ROCK. FINISHED DEPTH OF THE TROUGH SHALL BE AT LEAST 2'. (SEE SPECIAL PROVISIONS)

SECTION A-A



PLAN VIEW

5/2 ROCK-FILLED AVENUE/LEVEL SPREADER
N.T.S.

REGISTERED PROFESSIONAL ENGINEER
MATTHEW S. BUENO
No. 84114
EXPIRES: 9-30-21
Civil
STATE OF CALIFORNIA

DETAILS INCLUDED ON THIS SHEET:
DITCH TYPICAL CROSS SECTION
SURFACE DRAINAGE PIPELINE
CUTOFF COLLAR
STANDARD DROP INLET
ROCK-FILLED AVENUE/LEVEL SPREADER

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707/253-1806 FAX 707/253-1604

JOB NO: 11813001
DWG. NO: 11813001B

TEACHWORTH VINEYARD DEVELOPMENT
BLOCKS A, B & C

EROSION CONTROL PLAN

DETAILS

DESIGN ENGINEER: J. BUSHEY, M. BUENO

SCALE:	DRAWN BY:	DATE:	SHEET:
AS SHOWN	RR	7-21-20	2 OF: 4

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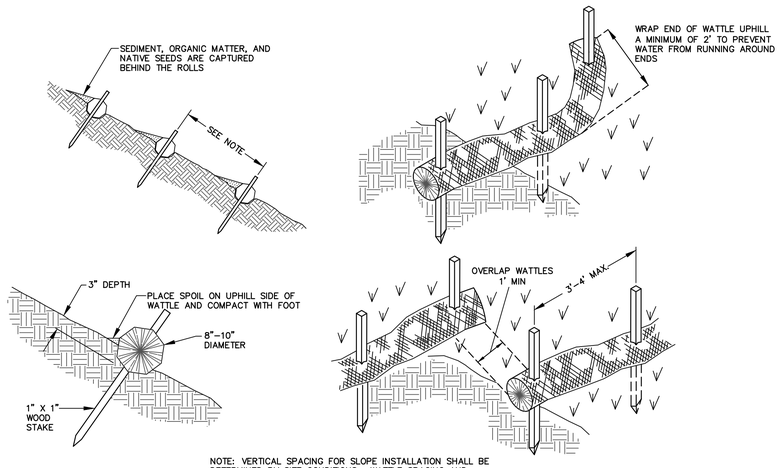
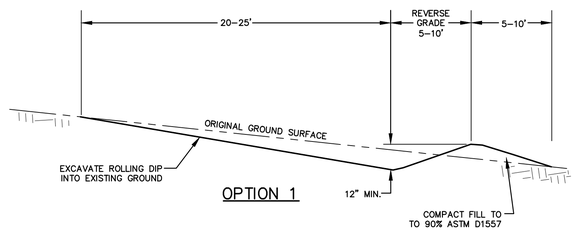
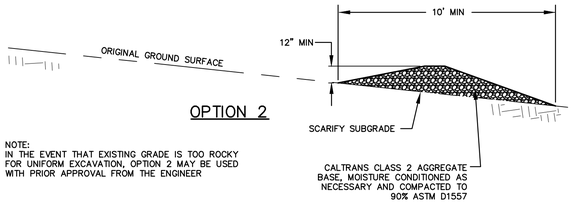


NOTE: VERTICAL SPACING FOR SLOPE INSTALLATION SHALL BE DETERMINED BY SITE CONDITIONS. WATTLE SPACING AND LOCATIONS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

1/3 STRAW WATTLE INSTALLATION
N.T.S.



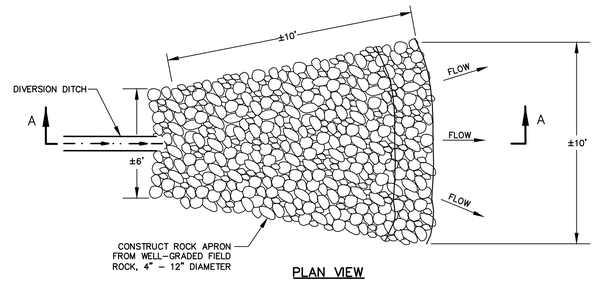
OPTION 1



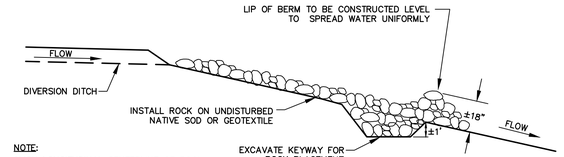
OPTION 2

NOTE:
IN THE EVENT THAT EXISTING GRADE IS TOO ROCKY FOR UNIFORM EXCAVATION, OPTION 2 MAY BE USED WITH PRIOR APPROVAL FROM THE ENGINEER

2/3 TYPICAL ROLLING DIP
N.T.S.



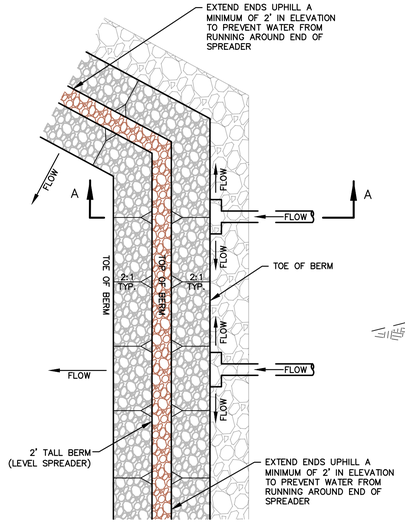
PLAN VIEW



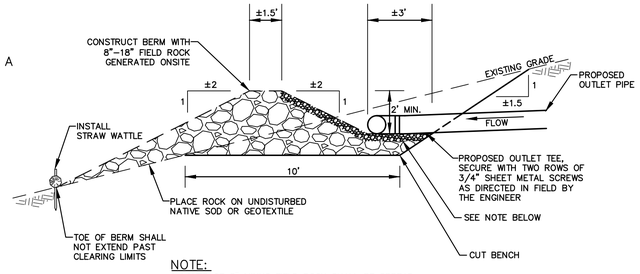
NOTE:
ALIGN LONGITUDINAL CENTERLINE OF ROCK SPREADER PERPENDICULAR TO CONTOURS.

SECTION A–A

3/3 ROCK APRON
N.T.S.



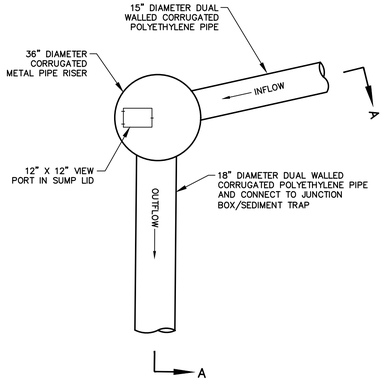
PLAN VIEW



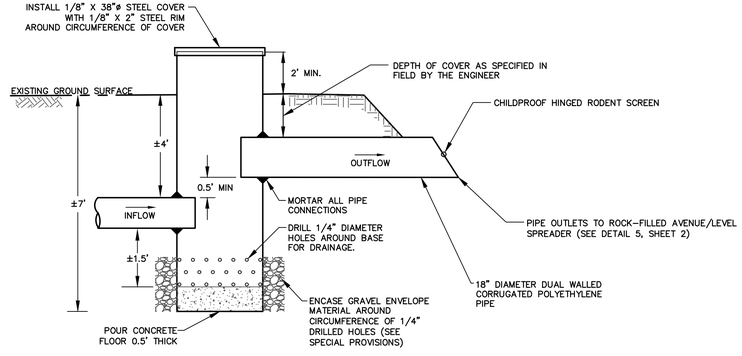
NOTE:
A LAYER OF 3" MINUS FIELD ROCK SHALL BE SPREAD 6" THICK WITHIN THE TROUGH AND A 6" LAYER OF ¾" MINUS GRAVEL APPLIED OVER THE 3" MINUS ROCK. FINISHED DEPTH OF THE TROUGH SHALL BE AT LEAST 2'. (SEE SPECIAL PROVISIONS)

SECTION A–A

4/3 DETENTION BASIN ROCK LEVEL SPREADER
N.T.S.



PLAN VIEW



SECTION A–A

5/3 JUNCTION BOX/SEDIMENT TRAP
N.T.S.

DETAILS INCLUDED ON THIS SHEET:
STRAW WATTLE INSTALLATION
TYPICAL ROLLING DIP
ROCK APRON
DETENTION BASIN ROCK LEVEL SPREADER
JUNCTION BOX/SEDIMENT TRAP

REGISTERED PROFESSIONAL ENGINEER
MATTHEW S. BUENO
No. 84114
EXPIRES: 9-30-21
Civil
STATE OF CALIFORNIA

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JOB NO: 11813001
DWG. NO: 11813001B

TEACHWORTH VINEYARD DEVELOPMENT
BLOCKS A, B & C
EROSION CONTROL PLAN
DETAILS

DESIGN ENGINEER: J. BUSHEY, M. BUENO

SCALE:	DRAWN BY:	DATE:	SHEET:
AS SHOWN	RR	7–21–20	3 OF: 4

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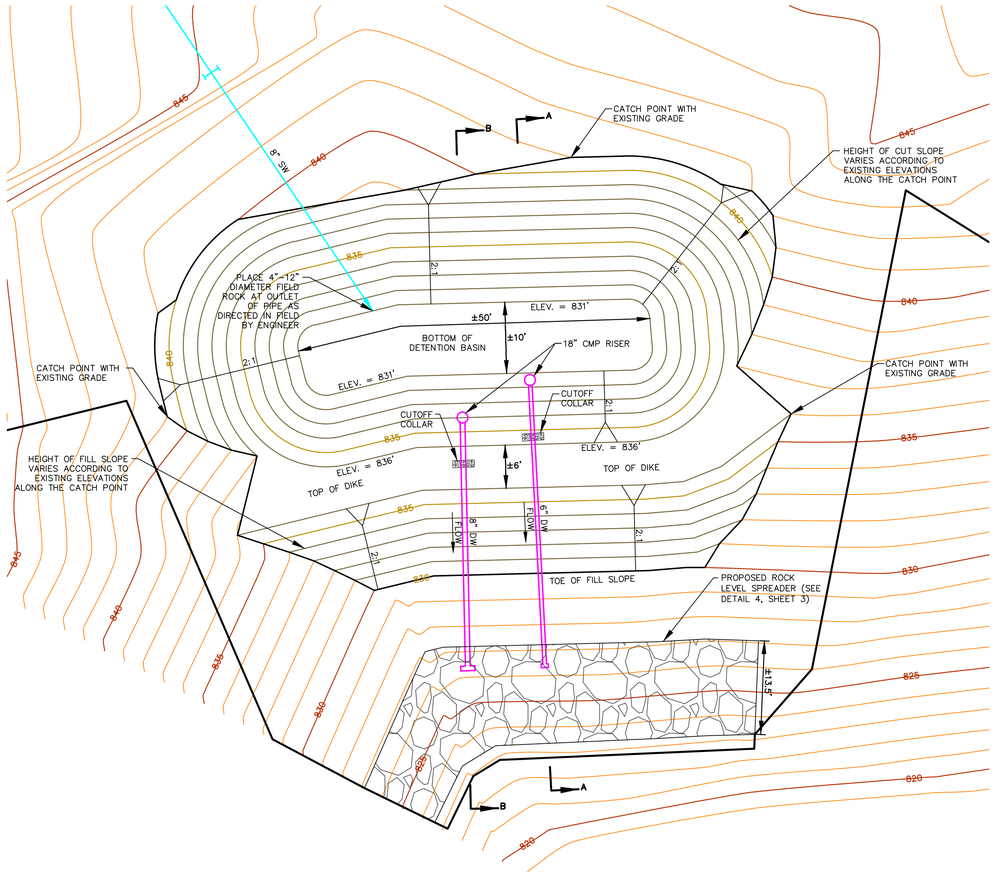
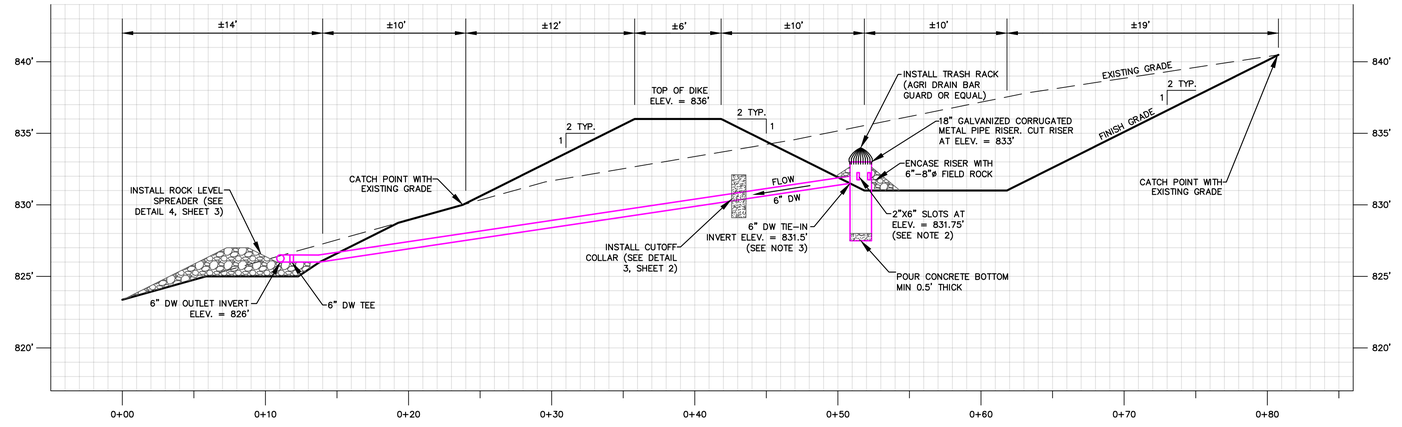


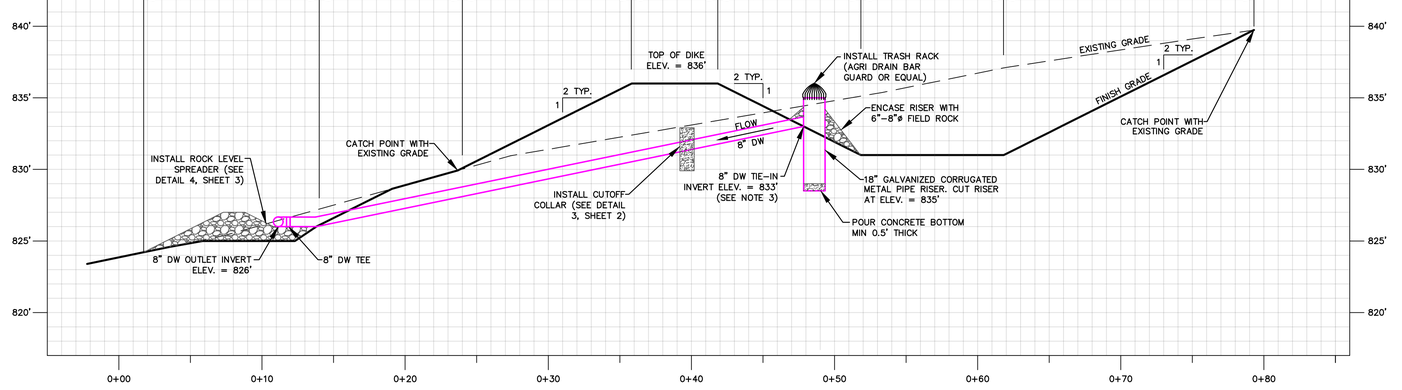
TOPOGRAPHIC MAPPING PROVIDED BY PPI ENGINEERING, INC., 1' CONTOUR INTERVAL, DECEMBER 2018

DETENTION BASIN – PLAN VIEW
SCALE 1"=10'



STATION (FEET)

DETENTION BASIN SECTION A–A
SCALE 1"=5'



STATION (FEET)

DETENTION BASIN SECTION B–B
SCALE 1"=5'

LEGEND

	EXISTING GRADE INDEX CONTOUR
	EXISTING GRADE INTERMEDIATE CONTOUR
	PROPOSED FINISH GRADE INDEX CONTOUR
	PROPOSED FINISH GRADE INTERMEDIATE CONTOUR
	PROPOSED CLEARING LIMITS
	PROPOSED SURFACE DRAINAGE LINE (SEE DETAIL 2, SHEET 2)
X X	PROPOSED DETENTION BASIN CROSS SECTION
SW	SINGLE WALL CORRUGATED POLYETHYLENE PIPE
DW	DUAL WALL CORRUGATED POLYETHYLENE PIPE
CMP	CORRUGATED METAL PIPE

NOTES:
1. ALL FILL SLOPES SHALL BE COMPACTED TO 90% RELATIVE COMPACTION PER ASTM D1557.

2. 2"X6" SLOTS SHALL BE CUT INTO THE 18" RISER CONNECTING TO THE 6" DW PIPE. FOUR (4) EQUALLY SPACED SLOTS SHALL BE CUT ALONG THE RISER AT THE ELEVATION SHOWN.

3. DW PIPE CONNECTIONS TO THE RISERS SHALL BE MORTARED TO FORM A WATERTIGHT SEAL.

REGISTERED PROFESSIONAL ENGINEER
MATTHEW S. BUENO
No. 84114
EXPIRES: 9-30-21
Civil
STATE OF CALIFORNIA

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TEACHWORTH VINEYARD DEVELOPMENT
BLOCKS A, B & C
EROSION CONTROL PLAN
DETENTION BASIN

DESIGN ENGINEER: J. BUSHEY, M. BUENO

JOB NO:	SCALE:	DRAWN BY:	DATE:	SHEET:
11813001	AS SHOWN	RR	7–21–20	4 OF: 4

DWG. NO: 11813001B

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