



Applicant 2019 Submittal and Supplemental Documents

Containing the Following:

- Submittal Cover Letter, Applicant January 2019
- Response to Comments Letter, RSA+ January 2019
- Proposed Reductions Chart, Applicant January 2019
- Winery Comparison Chart 30,000-50,000 Gallons, Applicant, January 2019
- Access Retaining Wall Logistics Plan/Letter, Ledcor Group November 2018
- Tree Easement Document
- Water System Feasibility Study, RSA+ March 2019
- Winery Wastewater Feasibility Study, RSA+ January 2019
- Hydrology Report, RSA+ January 2019
- Agricultural Erosions Control Plan, RSA+ January 2019
- Landscape Plan, Claud Schmidt January 2019

Anthem Winery P14-00320-MOD and Exception to Road and Street Standards,
Variance P14-00321-VAR and Viewshed, and
Agricultural Erosion Control Plan P14-00322-ECPA
Planning Commission Hearing Date (Wednesday, February 5, 2020)

January 11, 2019

Don Barrella
Napa County PBES
1195 Third Street, Second Floor
Napa, California

ANTHEM
Winery and Vineyards, LLC
3454 Redwood Rd.
Napa, CA 94558
www.anthemwinery.com

Delivery via email to Donald.Barrella@countyofnapa.org

RE: Anthem Winery – P14-00320

Don,

Our substantive responses to the questions raised during and after our October 3rd Planning Commission hearing are attached, including all the items you requested. These items include:

- 1) Revised Tier 1 Water Calculations;
- 2) Revised Landscaping Plan;
- 3) Revised Hydrology Report;
- 4) Revised Winery Wastewater Feasibility Report;
- 5) Revised Water Feasibility Study;
- 6) Revised Erosion Control Plan;
- 7) A viewshed/driveway exhibit depicting the winery and related improvements from Dry Creek Road;
- 8) A letter from our general contractor detailing how Anthem Winery's driveway will be constructed within the bounds of our property;
- 9) A response from RSA+ addressing questions raised regarding our driveway;
- 10) A winery comparison chart for all wineries with 30,000 gallons – 50,000 gallons production that the County has granted visitation since January 1, 2019;
- 11) A copy of the reciprocal "Tree Easement" we shared with Donald Harms and Patricia Damery. (Please note this easement simply prohibits removal or excessive cutting of "the existing mature oak trees" unless the tree is dead or dying. The easement applies within approximately 60-160 feet of a portion of the boundary line between the two properties. This application does not propose the removal of any tree within the tree easement, much less existing mature oak trees. Even if

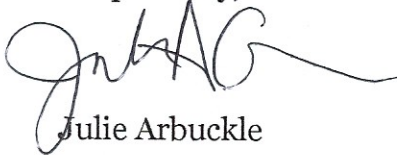
the Planning Commission had jurisdiction over the "Tree Easement", that easement has no bearing on this application.)

- 12) A chart showing that our family's proposed visitation and marketing reductions including a new reduction from the levels considered by the Planning Commission on October 3, 2018. As explained in Rob Anglin's December 3rd letter, we have been communicating with neighbors since the October 3rd hearing. On November 13, we proposed a compromise of reduced visitation and marketing event numbers in response to neighbor concerns. Neighbors have not responded or provided any counter-proposal to the compromise that we proposed and discussed with the neighbors on November 13 and 14, 2018.

Regarding availability of off-site parking for our one remaining larger event (for 200 persons), we will lease offsite parking (if necessary) from one of the nearby facilities with parking lots and provide shuttle service to our guests. Nearby facilities with parking lots include: Justin-Siena High School (2.2 miles), Las Flores Community Center (1.6 mile), St. John's Lutheran School and Church (2.5 miles), Alston Park (1.1 mile), and Church of Latter Day Saints (1.4 mile).


Thank you for your diligence and ensuring that these items are part of the public record and provided to the Planning Commissioners.

Respectfully,



Julie Arbuckle

cc: Charlene Gallina (via email)

	RSA+ CONSULTING CIVIL ENGINEERS + SURVEYORS +	SERVING CALIFORNIA SINCE	1980	1515 FOURTH STREET NAPA, CALIFORNIA 94559 FAX 707 252.4966 OFFICE 707 252.3301
	HUGH LINN, PE, QSD, QSP PRINCIPAL + PRESIDENT	CHRISTOPHER TIBBITS, PE, LS PRINCIPAL + VICE PRESIDENT		
707 252.3301 RSAcivil.com	hLinn@RSAcivil.com	cTibbits@RSAcivil.com		RSACivil.com

#4111010.0
January 11, 2019

Donald Barrella
County of Napa PBES, Planning Division
1195 Third Street
Napa, CA 94559

RE: Anthem Winery Planning Commission Hearing Public Comments

Dear Don:

Please find below our response to comments in your letters as listed below:

Paul K. Rowe – August 21, 2017 Letter

Comment 1 The winery is also seeking to abandon its existing access from Redwood Road and to create new access from Dry Creek Road, utilizing a 20-foot wide flagpole portion of its property.

Response 1 The existing access from Redwood Road will not be abandoned. It will remain, and will be used for vineyard, residential, and emergency access.

Comment 2 The County must disregard the winery’s option 1.

Response 2 We agree that the Planning Commission should focus on Option 2. Option 1 will not be used unless an agreement can be made with Mr. Rowe. Option 1 is included in this Use Permit application to eliminate the need of an additional Use Permit Modification if such an arrangement is reached in the future.

Comment 3 In requesting an exception to allow for the one-way bridge, the winery states that it will utilize the easement over my property to provide a 22-foot wide turnout on the downhill side of the bridge.

Response 3 The Exception to Road and Street Standards for Existing Driveway – Option 2, prepared by RSA+, states in the last paragraph of page 5, “The adjacent 40’ easement (No. 1996-014263, N.C.R., and 1996-026341) would be used for all residential traffic and would provide an emergency pull-out area to allow passage of emergency vehicles.”

In this case, an “emergency pull-out” is not the same as a standard 22-foot wide turnout. A Napa County standard turnout is constructed with a 25’ taper on each end, to allow a vehicle to pull into the turnout, and continue forward out of the turnout. A pull-out area is any location, such as a shoulder or private driveway, where under emergency conditions a vehicle is physically able to pull off the road to allow passage of an emergency vehicle. This pull out will be used to support emergency response, not winery use.

Comment 4 The deed cited by the winery as the basis for the claimed width (1996-014263) was superseded by a subsequent amendment (1996-026341), which limits the easement for all purposes to conform to the driveway “as built” on the date of the amendment.

Response 4 As stated above, Option 1 will not be used unless an agreement can be made with Mr. Rowe. Option 1 is included in this Use Permit application to eliminate the need of an additional Use Permit Modification if such an agreement is ever reached.

REAX Fire Safety Assessment – October 2, 2018

Comment 1 *The Anthem Winery marketing plan describes assembly occupancy characteristics as defined in California Building and Fire Codes wherein the potential for multiple fatalities and injuries from fire is comparatively high.*

Response 1 **This is true for all wineries. This project is designed to conform to applicable building and fire codes for this use. Additionally, the project has been revised to remove the 300-person events, which were the largest category of events previously proposed.**

Comment 2 *Proposed reductions in road access for firefighting has not been supported by a rational engineering analysis demonstrating equivalency to the intent of fire code requirements.*

Response 2 **Section 3 of the Napa County Road and Street Standards outlines the strict requirements for exceptions to the standards. The Exception to Road and Street Standards for Existing Driveway, prepared by RSA⁺, meets these requirements, and is the result of four years of collaboration with Cal Fire and the Napa County PBES Engineering Division. The former Fire Marshal and current PBES Engineering Manager walked the driveway with the property owner and RSA⁺ as part of this process, to ensure that the proposed exception provides the same overall practical effect as these Standards towards providing defensible space, and consideration towards life, safety and public welfare.**

Comment 3 *Anthem Winery is in an area of elevated wildland fire risk as demonstrated by historic fires and risk assessments from Cal Fire and the California State Public Utilities Commission.*

Response 3 **Figure 2, included with the REAX report, shows the Anthem Winery parcel to be within the “Moderate” Fire Hazard Severity Zone. It is entirely outside the “High” and “Severe” Fire Hazard Severity Zones.**

The Emergency Ingress/Egress Plan, prepared by RSA⁺, outlines measures incorporated into the design to mitigate for the “Moderate” Fire Hazard Severity.

Figures 5 and 6, included with the REAX report, shows the Anthem Winery parcel entirely outside the perimeter of the 2017 Napa Fire Complex, and all other recorded fire perimeters dating back to 1858. The proposed

improvements will present a substantial increase to emergency access, fire safety, and defensible space, over the existing condition.

Comment 4 *The proposed winery use would shift occupant type from a few workers who are familiar with the site, operating largely during daylight hours, and possibly trained in emergency procedures, to large groups of 50 to 300 recreational visitors. These visitors would likely not be familiar with the site, egress routes, or emergency procedures. Groups indoors, in social situations, likely consuming alcohol, may delay egress for significant periods after becoming aware of an emergency, and might be making their escape after dark. The Building and Fire codes anticipate these higher risk elements associated with assemblies and provide extra levels of protection for occupants.*

Response 4 **As noted in the REAX report, the Building and Fire codes anticipate these higher risk elements associated with assemblies and provide extra levels of protection for occupants. These extra levels of protection are incorporated into the design of this project.**

An emergency ingress / egress plan was created to provide permanent and operational control measures to support access for emergency wildland fire equipment, safe civilian evacuation, and to avoid delays in emergency equipment response to the site. The project has been revised to remove the 300-person events, which were the largest category of events previously proposed.

The on-site staff will be trained to direct evacuation in a safe and controlled manner, dependent on the emergency situation. This training will be specific to winery patrons, and on-site conditions.

The irrigated vineyard also provides a fire break from the dense shrubs and trees on the adjacent land to the north and west. The irrigated vineyard was identified in a previously approved exception request by Bartelt Engineering dated, April 2, 2001, as a “safe to stay” area in the event of a catastrophic fire.

Comment 5 *The risk of fire at a working winery is likely higher than typical Assembly occupancies. That risk is magnified considerably by this winery's location in a recognized and historically higher fire threat area.*

Response 5 **Proposed improvements will follow applicable state codes and the Napa County Fire Marshall development guidelines for commercial projects. Additional fire flows and emergency water storage will be provided, in**

conformance with the California Fire Code, as amended by Napa County for wineries.

As noted earlier, the Anthem Winery parcel is entirely outside the “High” and “Severe” Fire Hazard Severity Zones.

Comment 6 *Reduction in prescriptive requirements for access and egress have not seen quantitative description of the basis for prescriptive requirements or substantial rational analysis for alternate adoption. This is especially important when referencing local amendments that may be anticipating rural and agricultural uses more common in unincorporated areas.*

Response 6 **There are no established quantitative procedures referenced within the Napa County Road and Street Standards with which to qualify prescriptive requirements or exceptions thereto. Rather, proposed exceptions must meet the “same practical effect” as the standards. The proposed development has been found by Cal Fire and Napa County Engineering Division staff to meet this requirement.**

Meese and Christensen – November 8, 2018 Letter

Comment 1 *During the time we owned the property, we dug three wells. The first two were dry and the third well, within 30 feet of the shared property line with the Arbuckle's, initially produced 15 gallons per minute (GPM). The well's productivity fell to 4 GPM after the first year of use, in spite_ of the fact that we used the well for house consumption only. Dayna Manning has subsequently told me that the well's productivity has now dropped to less than 1 GPM.*

Response 1 **It is not possible to speculate as to the cause of Meese and Christensen's well problems without additional information regarding depth, testing, and metered use data. The extensive hydrogeologic study by Richard Slade & Associates shows that the Project Wells on the Anthem Winery parcels are capable of providing sufficient groundwater for the proposed development.**

Caloyannidis – October 3, 2018 Letter

Comment 1 The last winery audits we have, showed that 40% of Napa valley wineries were out of compliance.

Response 1 RSA+ has been informed by the owners of Anthem Winery that it is currently in compliance with its Use Permit.

Comment 2 In addition, this winery can only be approved if variance for 14 County Road Standards are granted in addition to one public encroachment permit.

Response 2 The requested exceptions and associated mitigations have been found to meet the same practical effect as the Napa County Road and Street Standards by Cal Fire and Napa County PBES. As the two parcels are under a common ownership, the owners are effectively requesting a setback variance from themselves.

Brooks WAA Comments – September 2018

Comment 1 Assume 100% rainwater collection. Not supported by research, we modeled 90%.

Response 1 The USDA TR-55 standards for Urban Hydrology for Small Watersheds establishes a Curve Number of 98 for paved parking lots, roofs, driveways, and roads. Curve Numbers range from 0 to 100, and model the amount of runoff after losses, such as surface depressions, vegetation, evaporation, and infiltration. Notwithstanding the USDA TR-55 standard, the Tier 1 Water Use Calculations have been revised to assume a conservative 85% rainwater collection.

Comment 2 Assume 100% winery process collection and reuse. Not supported by research, we modeled 90%.

Response 2 There is no industry standard for estimating winery process wastewater loss. Napa County code requires Process Wastewater treatment systems to be sized to treat 100% of the Process Water used.

Concrete crush pads with a dedicated drain system will provide similar collection characteristics to harvested rainwater. Losses due to evaporation will be negligible, considering that processing will occur in temperature- and humidity-controlled interior spaces. Captured Process Wastewater will also be supplemented by grape juice lost during the crush process. While we expect a much higher collection factor, we revised the Tier 1 Water Use Calculations to assume a conservative collection factor of 90%.

Comment 3 Assumed Residential water at low end (.6 af/yr). We modeled .75 af as used by Anthem in Tier 1 calculations.

Response 3 The Napa County Water Availability Analysis Guidance Document estimates 0.5 to 0.75 af/year for a Primary Residence with minor to moderate landscaping (e.g. 1000 sf of lawn). The existing residences on parcels 1 and 2 have minor, drought-tolerant landscaping. They are each eligible to be modeled using the lower range of 0.5 af/yr, which is reflected in our revised Tier 1 Water Use Calculations.

Comment 4 Sized storage tanks based on average rain year with evenly distributed rainfall. We sized tanks based on 2017/2018 average year with uneven rainfall.

Response 4 The Napa County Water Availability Analysis Guidance Document address water use on an annual basis. As a conservative measure, we modeled rain water capture on a monthly basis, to account for monthly variations in average rainfall. This is standard industry practice to model water balances for ponds, tank capacity, and irrigation. Due to the year-to-year variability in precipitation, data for any one year cannot be used to characterize the future rainfall. An average distribution over many years must be used.

Comment 5 Mixed rainwater capture of ground runoff with roof runoff. Anthem proposal calls out separating these streams. This impacts size of tanks and water treatment. We separated the systems and analyzed impact on storage.

Response 5 "Treatment" of rainwater is a specific industry term to describe effective removal of pollutants from runoff. In this case, rainwater captured from the ground will be treated by passing through a bioretention planter, designed per Bay Area Stormwater Management Agencies Association (BASMAA) standards. Following treatment, ground runoff will be combined with roof runoff.

Comment 6 Our model attempt to utilize reported real world Best Management Practices.

Response 6 "Best Management Practices (BMP)" is a specific term used to describe structural or operational storm water pollution prevention controls. It is misused in this context, and is not defined, or even mentioned in Napa County's Water Availability Analysis Guidance Document.

Comment 7 Assumed Wells at twice normal year flow rate during droughts-not always possible but left.

Response 7 This is misleading. Wells were tested to sustainably flow at the Drought Year flow rate. The Normal Year flow rate is half of the sustainable Drought Year flow rate.

Comment 8 At most use a 20% reduction in water use due to SDI installation rather than 40%.

Response 8 Flowmeter data from a 2015 DRI vs. Non-DRI test showed bimonthly reductions between 41% - 45% for underground water efficient irrigation. A 40% credit is conservative and appropriate in this case.

Comment 9 Do not take a reduction in water use due to planting Sauvignon blanc, not supported by the literature, and but more importantly, not enforceable.

Response 9 The reduced water demand of Sauvignon Blanc is documented from personal experience by the project's vineyard manager and winemaker. It is also supported by the shorter irrigation season for this varietal. The draft conditions of approval limit total groundwater extraction onsite and require monitoring to ensure compliance. These enforceable conditions of approval will drive farming practices including varietal selection.

Please feel free to contact me with any questions.

Sincerely,



Bruce Fenton, P.E.

PW/kp



	2014 Application	10/3/18 Application	Current Request
Marketing Events	48 30-person events	24 30-person events	22 30-person events
	24 100-person events	10 100-person events	6 100-person events
			2 50-person events
	2 300-person events	1 200-person event	1 200-person event
1 300-person event		No 300-person events	
Total Annual Marketing	4,440	2,220	1,560
Event Hours	11 am – 12 am with events over 30 guests moving indoors by 10 pm	11 am – 12 am with events over 30 guests moving indoors by 10 pm	11 am – 10 pm ¹
Tastings	40/day weekdays	32/day weekday	32/day weekday
	60/day weekends	48/day weekend	48/day weekend
	320/week	256/week	224/week

¹ County staff and Commissioners already have signaled this change will be required.

**Comparison to 30,000-50,000 Gallon Wineries
Granted Visitation Since 1/1/09**

Winery	App Type	Tastings/ Week	Annual Event Guests	Production	Parcel Size/ Zoning
40K - 50K Gallons					
Reynolds Winery	Major Mod	280	1,906	40,000	13.5 acres/AW
Benessere	Major Mod	300	1,760	44,000	42.6 acres/AP
B-Cellars Winery	Major Mod	450	2,235	45,000	11.5 acres/AP
Ceja Vineyards	New Winery	168	4,485	45,000	10.3/AW
Calistoga Artisan Village	New Winery	240	384	48,000	22 acres/AP
Piazza Del Dotto	New Winery	200	1,146	48,000	10.1 acres/AP
Vine Cliff Winery	Major Mod	350	2,516	48,000	99.6 acres/AW
Titus Vineyards	Major Mod	350	1,700	48,000	32 acres/AP
Outpost	Major Mod	180	325	50,000	37.6 acres/AP
Robert Keenan	Major Mod	245	1,050	50,000	147.4 acres/AW
Regusci	Major Mod	400	1,450	50,000	162.6 acres/AP
Woolls Ranch	New Winery	350	4,640	50,000	236 acres/AW
Cairdean Winery	New Winery	175	1,400	50,000	50.3 acres/AW
Refuge	New Winery	868	3,370	50,000	13 acres/AP
Wheeler Farms	New Winery	224	1,452	50,000	11.7 acres/AP
Robert Foley	Major Mod	60	244	50,000	13 acres/AW
Gamble Family	New Winery	300	1410	50,000	11.2 acres/AP
Average 40K-50K	-	302	1851	-	-
Median 40K-50K	-	280	1452	-	-
Anthem Revised Proposal	Major Mod	224	1,560	50,000	44.7 acres/AW
35K - 45K Gallons					
Hartwell	Major Mod	120	465	36,000	30 acres/AP
Reynolds Winery	Major Mod	280	1,906	40,000	13.5 acres/AW
Benessere	Major Mod	300	1,760	44,000	42.6 acres/AP
B-Cellars Winery	Major Mod	450	2,235	45,000	11.5 acres/AP
Ceja Vineyards	New Winery	168	4,485	45,000	10.3 acres/AW
Average 35K-45K	-	264	2,170	-	-
Median 35-45K	-	280	1,906	-	-
Anthem Revised Proposal	Major Mod	224	1,560	50,000	44.7 acres/AW

30K - 40K Gallons					
Catellucci	New Winery	210	830	30,000	19.3 acres/AP
Goosecross	Minor Mod	350	710	30,000	11.3 acres/AP
Trefethen H&L	New Winery	140	400	30,000	41.2 acres/AP
Beautiful Day	New Winery	385	1,300	30,000	29 acres/AP
Chateau Lane	New Winery	147	270	30,000	11 acres AW
Diogenes Ridge	New Winery	90	1,020	30,000	13 acres AW
Eagle Eye	New Winery	112	1,452	30,000	13 acres AW
Hyde	New Winery	120	400	30,000	12 acres AW
Ideology	New Winery	105	240	30,000	10 acres AP
Joseph Cellars	New Winery	525	4,560	30,000	26 acres AW
Mahoney Vineyards	New Winery	84	450	30,000	10 acres AW
Rogers	New Winery	120	300	30,000	53 acres AW
Sleeping Giant	New Winery	85	300	30,000	11 acres AW
Sleeping Lady	New Winery	140	450	30,000	104 acres AP
Wallis Family	New Winery	108	225	30,000	16.8 acres AW
Young Inglewood	New Winery	112	1745	30,000	16 acres AP
Yountville Washington St.	New Winery	175	400	30,000	11 acres AP
Hartwell	Major Mod	120	465	36,000	30 acres/AP
Reynolds Winery	Major Mod	280	1,906	40,000	13.5 acres/AW
Average 30K-40K	-	179	917	-	-
Median 30K-40K	-	120	450	-	-
Anthem Revised Proposal	Major Mod	224	1,560	50,000	44.7 acres/AW



11/1/18

Re: Anthem Winery Driveway

To whom it may concern,

Per your request, please find the attached description on how we are planning to construct the driveway leading to Anthem Winery located at 3123 Dry Creek Road in Napa.

Our logistical plan to construct this roadway between two property lines with a twenty-foot clearance and stay within the property owned by Anthem Winery are as follows,

- Install silt fencing along property lines adjacent to road construction that occurs on flat or down slope topography. This fencing is a precaution to keep excess material within property boundaries. Where the road is constructed with an elevated topography a shotcrete flash coat could be installed to stabilize slope.
- Use an articulating vertical auger to drill piers for retaining wall structural supports. This equipment access will be from the existing 3123 Dry Creek Road driveway.
- All retaining wall constructing will be within property lines of Anthem Winery.
- All road bases section and asphalt will be installed between twenty-foot property section owned by Anthem Winery.

Respectfully,

A handwritten signature in blue ink, appearing to read "Rod Field".

Rod Field

Leducor Builders Inc.

Order No: 111947
11/10/95-am-4

When recorded mail to:

JAMES D. DALY
SHARON E. DALY
6918 Harmon Drive
Ventura, CA 93003-7146



1995 028957
OFFICIAL RECORDS OF
NAPA COUNTY
H. KATHLEEN BONDS

AT REQUEST OF: FIRST AMERICAN TITLE
12/27/1995 08:00 AM
Fee: \$ 48.00 Pgs: 8
TT: \$.00

For Recorder's Use Only

MAIL TAX STATEMENTS TO:

SAME AS ABOVE

THE UNDERSIGNED GRANTOR DECLARES
DOCUMENTARY TRANSFER TAX \$ 0.00
 Computed on the consideration or value of property
conveyed; OR
 Computed on the consideration or value less liens or
encumbrances remaining at time of sale.
LOT LINE ADJUSTMENT

APN PTN. 035-460-025

CORPORATION GRANT DEED

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

FIRST AMERICAN TITLE COMPANY OF NAPA

a corporation organized under the laws of the State of California, does hereby

GRANT to

JAMES D. DALY and SHARON E. DALY, husband and wife, as Community Property

the real property in the County of Napa, State of California, described as

LEGAL DESCRIPTION ATTACHED HERETO AND MADE A PART HEREOF AND DESIGNATED EXHIBIT "A"

The purpose of this conveyance and the conveyances being recorded concurrently herewith is to create a Lot Line Adjustment pursuant to California Government Code Section 66412(d) and local subdivision ordinances.

Dated: 12-26-95

FIRST AMERICAN TITLE COMPANY OF NAPA

STATE OF CALIFORNIA }
COUNTY OF NAPA } ss.

On 12-26-95 1995, before me,
D. R. Tate

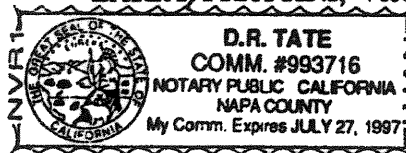
By: Paul Durbin
PAUL DURBIN, Vice President

personally appeared PAUL DURBIN and LARRY FRATTINI,
personally known to me (or proved to me on the basis of satisfactory
evidence) to be the persons whose names are subscribed to the within
instrument and acknowledged to me that they executed the same in
their authorized capacities and that by their signatures on the
instrument the persons, or the entity upon behalf of which the
persons acted, executed the instrument.

By: Larry Frattini
LARRY FRATTINI, Vice President

WITNESS my hand and official seal.

Signature D. R. Tate
Notary Public



MAIL TAX STATEMENTS AS DIRECTED ABOVE

Form NAP111SSP

FATCO/DALY
11/10/95-am-4

EXHIBIT "A"

BEGINNING on the line between the old Jackson Gridley tract of land and the tract formerly owned by E. C. Webber, North 67° 42' 30" East, 132.00 feet from the Northwest corner of the last named tract; thence North 23° 09' 26" West, 719.96 feet; thence North 67° 30' 00" East 1634.65 feet to the Westerly line of Dry Creek Road; thence North 27° 50' 49" West 20.09 feet to a rebar monument; thence South 67° 30' 00" West, 1633.01 feet to a rebar monument on the West bank of a small creek; thence South 67° 30' 00" West, 801.43 feet to an oak tree, 24 inches in diameter at an angle in the fence; thence South 67° 19' 02" West 277.17 feet; thence North 72° 59' 42" West 1028.6 feet, more or less, to the point of intersection with the Easterly line of the tract of land now or formerly owned by Mrs. W.B. Pieratt, said point of intersection bears South 44° 45' East 367.00 feet from the most Northern corner of that certain tract of land described as Exhibit "A" in the Amended Certificate of Compliance document recorded May 29, 1990 in Book 1742 at page 207 of Official Records of Napa County; thence along the Northerly and Easterly lines of the tract of land conveyed to William West by Deed recorded in Book 2 at page 337 of Official Records of Napa County, South 44° 45' East 491 feet; thence North 87° 00' East, 250.14 feet; thence South 28° 00' East, 49.50 feet; thence South 62° 45' East 117.48 feet; thence South 56° 00' East, 105.60 feet; thence South 9° 00' East, 84.48 feet; thence North 88° 30' East, 149.16 feet; thence South 75° 00' East 79.2 feet, more or less, to the center of the main branch of Napa Creek; thence down the middle of said creek to the Northwest corner of the tract conveyed to Stanley E. Wood by Deed of record in Book 725 at page 234 of Official Records of Napa County; thence following Wood's line, North 67° 42' 30" East, 1056 feet, more or less, to the point of beginning.

The consolidation of underlying lots, parcels or portions thereof as set forth in the above metes and bounds description, constitutes an expressed written statement of the Grantor, merging said underlying lots, parcels or portions thereof pursuant to Section 1093 of the California Civil Code.

FATCO/DALY

This conveyance is subject to the following covenants restricting the use of the foregoing described real property. These covenants are for the benefit and protection of the real property described in Exhibit B to this deed (the "Benefitted Property"), all of which covenants shall run with the land and shall be enforceable by the record owner of the Benefitted Property and all transferees, assigns and successors in right, title or interest in the Benefitted Property against grantee in this deed and all transferees, assigns and successors in right, title or interest to the property described in Exhibit A to this deed (the "Burdened Property"):

1. No building or other structures, including but not limited to patios, decks, tennis courts or pools shall be constructed or maintained within that portion of the Burdened Property described in Exhibit C attached hereto (the "Tree Easement Area"), except that there shall be permitted the construction of a residence which partially intrudes into said Tree Easement Area foregoing as shown on the attached plat.

2. None of the existing mature oak trees located within the Tree Easement Area shall be removed or excessively cut or pruned unless any such tree dies or becomes incurably diseased or dying.

3. The general intent and purpose of the foregoing restrictive covenants is to reasonably maintain the native forest and meadow conditions within the Tree Easement Area for the protection and enhancement of the value and amenity of the Benefitted Property and for the scenic enjoyment of its owners. These covenants may be expanded, restricted, removed or modified by the execution and recording in the records of the County of Napa by the record owners of the Benefitted Property and Burdened Property of a document which accomplishes such modification.

4. Any breach of these covenants and restrictions shall entitle the owner of the Benefitted Property to reasonable damages and equitable enforcement as determined by a court of law. The prevailing party in any legal action to enforce these covenants and restrictions or to recover damages for any breach thereof shall be awarded their reasonable attorney's fees and costs incurred, with the reasonable amount thereof to be fixed by the court, arbitrator or entity rendering a judgment, award, order or determination.

Acknowledgement and Acceptance of Grantee:

JAMES D. DALY

SHARON E. DALY

STATE OF CALIFORNIA)
COUNTY OF Ventura) ss.

On December 8 1995, before me, Benita A. Colitti, Notary Public
personally appeared JAMES D. DALY and SHARON E. DALY, personally known to me (or
proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are
subscribed to the within instrument and acknowledged to me that he/she/they executed the same
in his/hers/their authorized capacity(ies) and that by his/hers/their signature(s) on the instrument
the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature Benita A. Colitti
Notary Public



FATCO/DALY

EXHIBIT "B"

(Adjusted Lands of Harms)

PARCEL ONE:

Commencing at a point where the Westerly line of Dry Creek Road crosses a small creek, said point being on the Southeasterly line of the 487 acre tract conveyed to Jacob R. McCombs by Deed recorded April 13, 1852 in Book B of Deeds at page 156, said Napa County Records; running thence South 23° 30' East along the Westerly line of said road 225 feet, more or less, to the most Northern corner of the 0.94 acre parcel of land described in the Deed to Margaret Hartson recorded August 27, 1959 in Book 597 at page 925 of Official Records of Napa County; running thence South 67° 30' West along the Northwestern boundary of said Hartson's parcel, 205 feet to the most Western corner thereof; thence along the Southwestern boundary of said Hartson's parcel South 22° 30' East 150 feet, more or less, to the most Northern corner of the parcel of land described in the Deed to Dean A. Faria, recorded July 31, 1962 in Book 656 at page 804 of Official Records of Napa County; running thence along the Northwestern boundary of said Faria's parcel, South 67° 30' West 1100 feet to the most Western corner thereof; running thence along the Southwestern boundary of said Faria's parcel, South 23° 30' East 450 feet to the most Southern corner thereof, being a point on the Northern line of the 33.30 acre tract firstly described in the Deed to Minnie M. West, recorded September 26, 1905 in Book 84 of Deeds at page 104, said Napa County Records; thence along said Northern line South 67° 30' West 1140 feet, more or less, to an oak tree, 24 inches in diameter at an angle in the fence; thence South 67° 19' 02" West 277.17 feet; thence North 72° 59' 42" West 1028.6 feet, more or less, to the Easterly line of the 240 acre tract conveyed to Archie P. Pieratt by Deed recorded April 4, 1923 in Book 138 of Deeds at page 399, said Napa County Records; thence along the Easterly line of said 240 acre tract North 44° 45' West 367.00 feet to the most Northern corner of that certain tract of land described as Exhibit "A" in the Amended Certificate of Compliance document recorded May 29, 1990 in Book 1742 at page 207 of Official Records of Napa County; thence continuing along said Easterly line of Pieratt, North 25° 27' West 198 feet, more or less, to the Southerly line of the 487 acre tract above referred to; thence along the Southerly line of said 487 acre tract South 85° 30' East 2,206.38 feet to a post marked 21; thence continuing South 85° 30' East 66 feet, more or less, to the middle of the small creek above referred to, said creek being the Southerly boundary of said 487 acre tract; thence along the middle of said creek and following the meanderings thereof to the point of commencement.

EXCEPTING THEREFROM, that portion thereof conveyed to Stuart A. Mott, et ux, by Deed recorded May 31, 1967 in Book 766 at page 700 of Official Records of Napa County.

ALSO EXCEPTING THEREFROM that portion conveyed to the County of Napa by Deed recorded August 23, 1967 in Book 771 at page 572 of Official Records of Napa County.

ALSO EXCEPTING THEREFROM that portion described in the document to the County of Napa, recorded February 6, 1860 in Book F of Deeds at page 84, Napa County Records.

PARCEL TWO:

Commencing at the point formed by the intersection of the existing Westerly line and the proposed Northeasterly line of the County Road known as "Dry Creek Road" said existing Westerly line also being the Easterly line of that tract of land described in the Deed recorded in Book 762 at page 393 of Official Records of Napa County; thence from said point of commencement, North 23° 30' 00" West along said existing Westerly line 151.39 feet to the Northerly corner of said tract of land; thence North 73° 36' 52" East along the Easterly extension of the division line between said tract of land and that tract of land described in Deed recorded in Book 349 at page 250 of Official Records of Napa County, 20.15 feet to the point of intersection with the existing centerline of said County Road; thence South 23° 30' 00" East along said existing centerline 209.66 feet to the point of intersection with the proposed Northeasterly line of said County Road; thence North 41° 42' 56" West along said proposed Northeasterly line 63.98 feet to the point of commencement, and being a portion of the Napa Rancho.

PARCEL THREE:

A non-exclusive Easement for the purpose of construction, installation, operation, maintaining and repairing a reservoir, dam and appurtenances together with the right of ingress and egress thereto over the following described parcel of land:

COMMENCING at a rebar and cap stamped LS 4366 at the most Westerly corner of the Lands of Leonard Russell, as shown on the map filed in Book 23 of Surveys at page 19 in the office of the County Recorder of said Napa County; thence from said point of commencement North 67° 30' 00" East 86.00 feet; thence South 20° 03' 10" East 260.80 feet; thence South 38° 00' 00" West 80.00 feet to the Southwesterly line of the aforementioned lands of Leonard Russell; thence North 23° 30' 00" West 300.00 feet to the point of commencement.

FATCO/DALY

EXHIBIT "C"

DESCRIPTION
Tree Easement Area

All that real property situate in the County of Napa, State of California, more particularly described as follows:

BEGINNING at an oak tree 24 inches in diameter in a fence marking an angle point in the Northern line of that certain tract of land described as Exhibit "A" in the Amended Certificate of Compliance document recorded May 29, 1990 in Book 1742 at page 207 of Official Records of Napa County; and running thence along an existing wire fence line, North 67° 44' 21" East 236.63 feet; thence leaving said fence, South 23° 42' 22" East 172.33 feet; thence South 66° 16' 01" West 210.65 feet; thence South 81° 36' 04" West 254.35 feet; thence South 88° 40' 45" West 68.30 feet; thence North 46° 49' 18" West 234.10 feet; thence North 12° 58' 31" West 174.38 feet to the intersection with said wire fence; thence running along said fence, South 72° 19' 04" East 455.87 feet to the point of beginning.

EXCEPTING FROM the above described area that portion described as follows:

A strip of land, 20 feet in width, measured at right angles, the Easterly line of which is that certain course described above as "South 23° 42' 22" East 172.33 feet".

END OF DOCUMENT

N 12°58'31" W
174.38'

N 46°49'18" W
234.10'

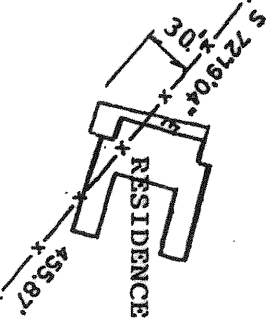
S 88°40'45" W
68.29'

S 81°36'04" W
254.35'

S 66°16'00" W
210.65'

S 23°42'22" E
172.33'

N 67°44'21" E
236.63'



LANDS OF
HARMS VINEYARDS

TREE EASEMENT AREA

LANDS OF DALY



○ = 3/4" IRON PIPE



PLAT OF DESCRIPTION
TREE EASEMENT AREA
OVER THE LANDS OF DALY AND HARMS VINEYARDS

DATE	10/25/95
SCALE	NONE
DRAWN BY	D. J. HENRY
FILE NO.	1409-TRE
DATE	1409
SHEET NO.	A
TOTAL SHEETS	1 OF 1



Water System Feasibility Study for a Regulated System

For:

Anthem Winery
Napa, CA

APN 035-470-046

Prepared for:

Julie Arbuckle
3454 Redwood Rd
Napa, CA 94558



Project #4111010.0

October 30, 2015

Revised: March 18, 2019



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I. TECHNICAL CAPACITY

System Description

The proposed Anthem Winery is located at 3454 Redwood Road, Napa. Existing wells on site will serve the proposed 50,000 gallon per year winery, existing dwellings and vineyard.

The proposed winery development will require the establishment of a Transient-Noncommunity water system. The consolidation of this project into an existing public water system has been investigated and no existing system within 3 miles of the Anthem Winery is willing to provide water service to the winery.

There are several wells on the parcel, however, only Well 8 will provide water to the winery public water system which will include the domestic use within the winery. The other wells will be used for supplementary irrigation and process water. The 2015 well completion report for Well 8 shows 50-ft annular seal of bentonite. No chemical or biological treatment will be performed on the well water unless quarterly testing results deem further treatment is necessary. Water for the Public Water System will be stored in a proposed +/- 10,000 gallon tank. Separate tanks will be installed for firewater, irrigation and other winery use. Separate pumps will supply the domestic water, irrigation water, fire water, and other winery water. See the Use Permit-Utility Plan for system layout.

Twenty-Year Evaluation of Projected Water Demand

Based on the Tier 1 Water Use Calculations, the annual public water demand (employees, visitors, and events) is 0.29 acre feet per year (94,500 gallons per year). The daily average public water demand is 259 gallons per day. Peak daily public water demand is estimated at 518 gallons per day, being 200% of average daily demand.

If the Winery seeks expansion in the future, thereby increasing the water demand on the public water system, the Winery will need to acquire a use permit modification and prove that increased capacity is available. It will not be permissible for future developments in the vicinity of this project to join this public water system without first justifying that the water supply is available to meet the demand.

Additional non-public water demand for the site includes winery process water, landscape and vineyard irrigation, and existing non-project residential uses. The proposed total water use for the two parcels is 6.72 acre feet per year. Of this, 0.69 acre feet per year will be provided by reclaimed process wastewater, and an average of 1.32 acre feet per year will be provided by harvested rainwater. The total groundwater use for both parcels (public and non-public) is 4.71 acre feet per year.

As noted in the Tier 1 Water Use Calculations, non-project wells (1, 5, 4, and 7) will continue to produce at their current rate of 3.79 acre feet per year. The remaining 0.92 acre-feet per year



(300,000 gallons per year) will be provided by the project wells (3, 6, and 8). The total daily average demand on project wells, public and non-public, is 821 gallons per day. Sufficient storage will be provided on site to mitigate peaking effects and allow for a constant 821 gallons per day demand on project wells.

Twenty-Year Evaluation of Water Supply Capacity

Well 8 is capable of supporting the proposed public water system peak daily groundwater demand of 518 gal/day. Page 24 of the Anthem Winery WAA Memo DRAFT 4-10-17 shows the capacity of Well 8 to be 1 to 2 gpm. When pumped on a 50% operational basis at 1 gpm (pumping 12 hours per day), the daily project well yield is 720 gallons per day. This exceeds the daily demand on Well 8.

$$1.0 \text{ gpm} * 720 \text{ min/ day} = 720 \text{ gal / day}$$
$$720 \text{ gal / day} \geq 518 \text{ gallons (peak public water system demand)}$$

The existing water source (project wells) is capable of supporting the proposed total daily groundwater demand of 821 gal/day. Recommendation 5 of the Anthem Winery WAA Memo DRAFT 4-10-17 shows the total capacity of project wells to be 2.5 gpm. When pumped on a 50% operational basis (pumping 12 hours per day), the daily project well yield is 1,800 gallons per day. This exceeds the daily demand on project wells.

$$2.5 \text{ gpm} * 720 \text{ min/ day} = 1,800 \text{ gal / day}$$
$$1,800 \text{ gal / day} \geq 821 \text{ gallons (peak total water demand)}$$

Source Adequacy

Well 8 has a 50-ft annular seal of Bentonite to comply with Napa County Code 13.12.380 as a Class IA wells for a Public Water System. The Application and Permit to Construct a Water Well document outlines the well construction and inspection by the Department of Environmental Management. Application and Permit are on file at Napa County.

Water Quality

Water sampling will be conducted prior to operation of the system. Water quality is expected to meet or exceed all requirements of Chapter 15 of Title 22, California Code of Regulations (CCR).

II. CONSOLIDATION

An investigation of the adjacent Public Water Systems within 3 miles of the project has been performed using the map viewer provided on the California Environmental Health Tracking Program website. The only public water system found within 3 miles of the proposed winery is the City of Napa Community Water System. An Outside Water Service Application was submitted to the City of Napa and the request to connect was denied. Without the possibility of connection, the estimated cost of connection was not investigated.



III. MANAGERIAL

General

The owner of the water system will be the property owner of the parcel. The costs of operation will be covered in the winery operation costs. The owner will also hold the responsibility of water system manager for the property.

Operation and Maintenance

The following is a summary of the required Operations and Maintenance schedule:

Tasks	Frequency	Action
System Water Level	Daily	Visual Inspection
System Pressure and Conveyance	Daily	Visual Inspection
Water Tanks	Quarterly	Visual Inspection
Manually Operate Valves and Pumps	Quarterly	Operation
Water Quality Test & Reporting	Quarterly	Unit Samples Taken & Reported to Napa Co.

A certified distribution operator or treatment operator (T1 level or above) as specified by Chapter 13 of Title 22 CCR contracted by the owner will be responsible for system repairs.

Monitoring and Testing

Water quality testing will be conducted to comply with Chapter 15 of Title 22 of CCR. Samples will be taken to Caltest or approved laboratory for testing.

IV. FINANCIAL

Below is a brief summary of the system's annual estimated financial capacity. Capital improvement costs and installation of the treatment and distribution systems, are estimated to be a one-time expense of \$50,000, amortized over 20 years.

Capital Improvements: \$2,500

Power: \$2,000

Maintenance: \$3,500

Water Quality Testing: \$1,500

Total: \$9,500

Projected Annual Gross Revenue: \$10,504,000 (Based on 21,008 cases at \$500/case)

Annual Operating Costs: \$8,403,200 (at 20% profit)

Percent of Total Operating Costs: 0.1%



WINERY WASTEWATER FEASIBILITY REPORT

For:

Anthem Winery
Napa, CA

APN 039-610-006

Prepared for:

Julie Arbuckle
3454 Redwood Rd
Napa, CA 94558

Project# 4111010.0

January 9, 2019





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DOMESTIC WASTEWATER - SUB SURFACE DRIP.....	4
STORMWATER DIVERSION.....	5
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APPENDICES

1. Vicinity Map & USGS Site Map
2. Reduced Use Permit Plan Set
3. Existing Septic System Documentation
4. Site Evaluation
5. Water Balance for Irrigation and Storage

INTRODUCTION

The Anthem Winery project is pursuing a Major Modification (MM) of an existing Use Permit to build a larger winery facility including a tasting room, fermentation buildings, offices, and wine caves. All proposed winery facilities will be located on the southern parcel APN 035-470-046 of two adjacent parcels, with winery and visitor access coming through the northern parcel APN 035-460-038. The proposed winery will have seven full-time, and five part-time employees.

The property varies in slope from 1-21%. The properties are currently used as a rural residence on the 035-460-038 parcel and the other is currently a winery. Redwood Creek runs roughly north to south on the western side of the property. Two wells exist on the site. One near the water tank along the existing northern property line. The other is located just south of the existing barrel storage cave. Appendix 1 contains a Site Location Map and a USGS Site Map showing the parcel topography, features and boundary. Appendix 2 contains a reduced version of the proposed winery plan set.

This report will evaluate the disposal of wastewater consisting of winery process wastewater, and winery domestic wastewater.

EXISTING SEPTIC SYSTEM

Information from Napa County files for the parcel shows an existing septic system for the house and winery. The winery system consists of a standard system that has two 1200 gallon septic tanks that feed into an 810 gallon pump tank before being pumped to 1,400 linear feet of line. The residential system information only showed approximate location of existing system.

The existing winery distribution lines are located southwest of the existing winery barrel cave. This area will be impacted by the proposed winery improvements. It is proposed that the existing drain field be abandoned.

SITE EVALUATION

RSA+ conducted a site evaluation on the subject parcel on June 20, 2014. Appendix 4 contains a map of test pit locations and test pit logs for the site evaluation. The site evaluation was conducted by Brett Frasier of RSA+ and observed by Kim Withrow of Napa County Environmental Management.

WINERY PROCESS WASTEWATER CHARACTERISTICS

The following is a summary of the winery wastewater characteristics:

<i>Wine Production:</i>	50,000 gallons of wine per year
	2.38 gallons of wine per case
	21,008 cases/year



Wastewater Production: 5 gallons of wastewater/gallon of wine
250,000 gallons/year

Peak Daily Waste Water Flow: Crush Period = 60 days
Annual wine production x 1.5 / 60
1,250 gallons/day

Average Daily Flow: 250,000/365 = 685 gallons/day

Monthly Wastewater Flows:

Table 1

	% By Month	Waste/Month	
Sep	15%	37,500	Gal/Month
Oct	15%	37,500	Gal/Month
Nov	11%	26,250	Gal/Month
Dec	8%	18,750	Gal/Month
Jan	4%	10,000	Gal/Month
Feb	6%	15,000	Gal/Month
Mar	6%	15,000	Gal/Month
Apr	5%	11,250	Gal/Month
May	6%	15,000	Gal/Month
Jun	7%	17,500	Gal/Month
Jul	9%	21,250	Gal/Month
Aug	10%	25,000	Gal/Month
Totals	100%	250,000	Gal/Year

DOMESTIC WASTEWATER CHARACTERISTICS

The winery domestic wastewater system has been sized to accommodate the unit values in Table 2 below. The number of visitors and employees is based on information provided by the owner. The projected flow is based on Napa County Environmental Management guidelines. The following is a summary of the estimated flows from the proposed winery.

Table 2

Use	Source	Number	Projected Flow (gpd)	Total Flow No Event Day (gpd)	Total Flow Event Day (gpd)
WINERY	Full-time employees	7	15	105	105
	Harvest employees	5	15	75	75
	Visitors	48	3	144	144
	Private Event w/ meals (catered)	100	10	0	1000
	Event Staff	5	15	0	75
Winery Subtotals				324	1399
Grand Total			Total Peak Flow	324	1399

Events with 30 or less guests will be on-site catered and events with more than 30 guests will be off-site catered. The number of visitors is based on a maximum expected daily visitor count. For events with more than 100 persons portable sanitation facilities will be provided.

WINERY PROCESS WASTEWATER - SURFACE DRIP IRRIGATION

According to Napa County Environmental Management Sewage Treatment System Design Guidelines, winery process wastewater must be treated prior to surface discharge. Based on our experience, winery wastewater characteristics are as follows:

Characteristics	Units	Average
pH		3.5
BOD5	mg/l	6000
TSS	mg/l	500
Nitrogen	mg/l	20
Phosphorus	mg/l	10

The treatment goal is 160 mg/l BOD and 80 mg/l TSS. To meet this treatment goal a treatment train including a septic tank, treatment tank with High Strength Membrane Bio-Reactor (HSMBR) unit, and pump tank are proposed. This treatment train may be modified for more desirable treatment processes prior to submitting construction plans. The following sections describe this process in more detail. This system is shown on Sheet UP3 contained in Appendix 2.

Septic Tank

The septic tank will serve to buffer peak flows and strengths from overwhelming the system and impairing treatment. This tank has been designed with baffles near the outlet. This tank will provide three days storage and will also serve to function as a primary settling basin. This tank will be 4,000 gallons.

Treatment Tank

The treatment tank will serve to treat wastewater flows using a High Strength Membrane Bio-Reactor (HSMBR) unit. This tank will provide ten days storage. This tank will be 13,000 gallons.

Pump Tank

The pump tank will serve to hold wastewater prior to distribution to the dispersal field. This tank will house dual pumps. This tank will be 1,000 gallons.

Holding Tank and Dispersal Field

To provide a preliminary estimate of the amount of storage tanks required, we have prepared a monthly water balance, as shown in Appendix 7. Monthly wastewater production is based on a percentage of the total annual wastewater production. The amount of water allowed to be applied is estimated by the typical vine water demand. The irrigation will be applied to areas of vineyards outside well setback requirements. The area available for irrigation is shown in Appendix 6. An area of 6.0 acres of vineyard and 0.5 acres of cover crop has been used to

calculate the storage capacity required. Based on monthly analysis no storage is required. Storage capacity of 20,000 gallons is provided for treated process wastewater generated during wet weather periods.

During the summer months all of the treated wastewater will be used for irrigation. During the wet winter months, a limited discharge will be consistent with landscape water demand and no discharge will occur within 48-hours of a forecasted rain event and also for 48-hours after a rain event. These irrigation scheduling constraints necessitate installing tanks to store excess water that cannot be discharged during the winter months. All stored water will then be used for irrigation during the summer months.

DOMESTIC WASTEWATER - SUB SURFACE DRIP

For the domestic wastewater we propose installation of a new septic system and dispersal field for the proposed winery. For the winery, the addition of a HOOT treatment system and a new dispersal field is proposed.

Domestic wastewater from the winery will flow into a 5,000 gallon septic tank before flowing into two new HOOT H-1000 tanks. After pretreatment in the HOOT H-1000, wastewater will be pumped to the proposed distribution field.

The subsurface drip field is sized to meet Napa County Environmental Management guidelines. The distribution field will be placed in the area of the site evaluation where the most limiting usable soil type was clay loam. The allowable application rate for clay loam is 0.6 gallons/square foot/day for pre-treated effluent. Peak daily domestic wastewater flow is 1399 gallons/day.

$$\text{Dispersal Field Area(primary)} = \frac{1399 \text{ gpd}}{0.6 \text{ gpd / SF}} = 2,332 \text{ square feet}$$

In addition to the primary dispersal area of 2,332 square feet, a 200% reserve area is required. The reserve area will be located adjacent to the primary field where the soil application rate is also 0.6 gallons/square foot/day.

$$\text{Dispersal Field Area(reserve area)} = \frac{1399 \text{ gpd}}{0.6 \text{ gpd / SF}} = 2,332 \text{ square feet}$$

The total requirement for domestic wastewater reserve dispersal area is 4,664 square feet. Total area required for the primary and reserve is 6,996 square feet.

The system layout is shown on the Use Permit Plans in Appendix 2.

STORMWATER DIVERSION

Operational areas including crush pad, trash and recycling enclosure, and mechanical pad will be covered.

OPERATION AND MAINTENANCE

The winery process and domestic waste systems will be fully automated and has been designed so minimal input from winery staff is required. Per Napa County guidelines, a Registered Civil Engineer, Registered Environmental Health Specialist, or Licensed Contractor will provide semi-annual monitoring and evaluation of the system. The contract with the responsible party will be provided prior to the final inspection for the system installed.

CONCLUSION

This report demonstrates that enough dispersion area is available making a sub-surface drip system a feasible option for treating the Anthem Winery's domestic wastewater. It has also been demonstrated that it is feasible to treat the winery process wastewater and distribute this to the vineyard using drip irrigation.

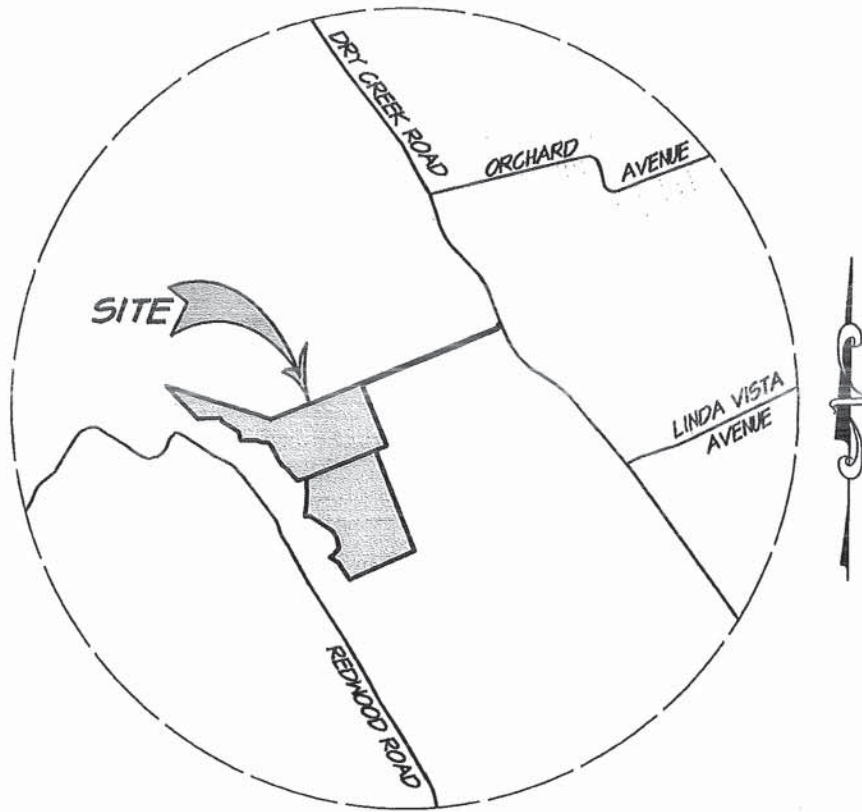
The above methodology results in a design that meets the Napa County Environmental Management Design standards for the treatment of winery and domestic wastewater.



APPENDIX 1

Vicinity Map & USGS Map

ARBUCKLE RESIDENCE VICINITY MAP NAPA COUNTY CALIFORNIA



VICINITY MAP

SCALE: 1" = 2000'

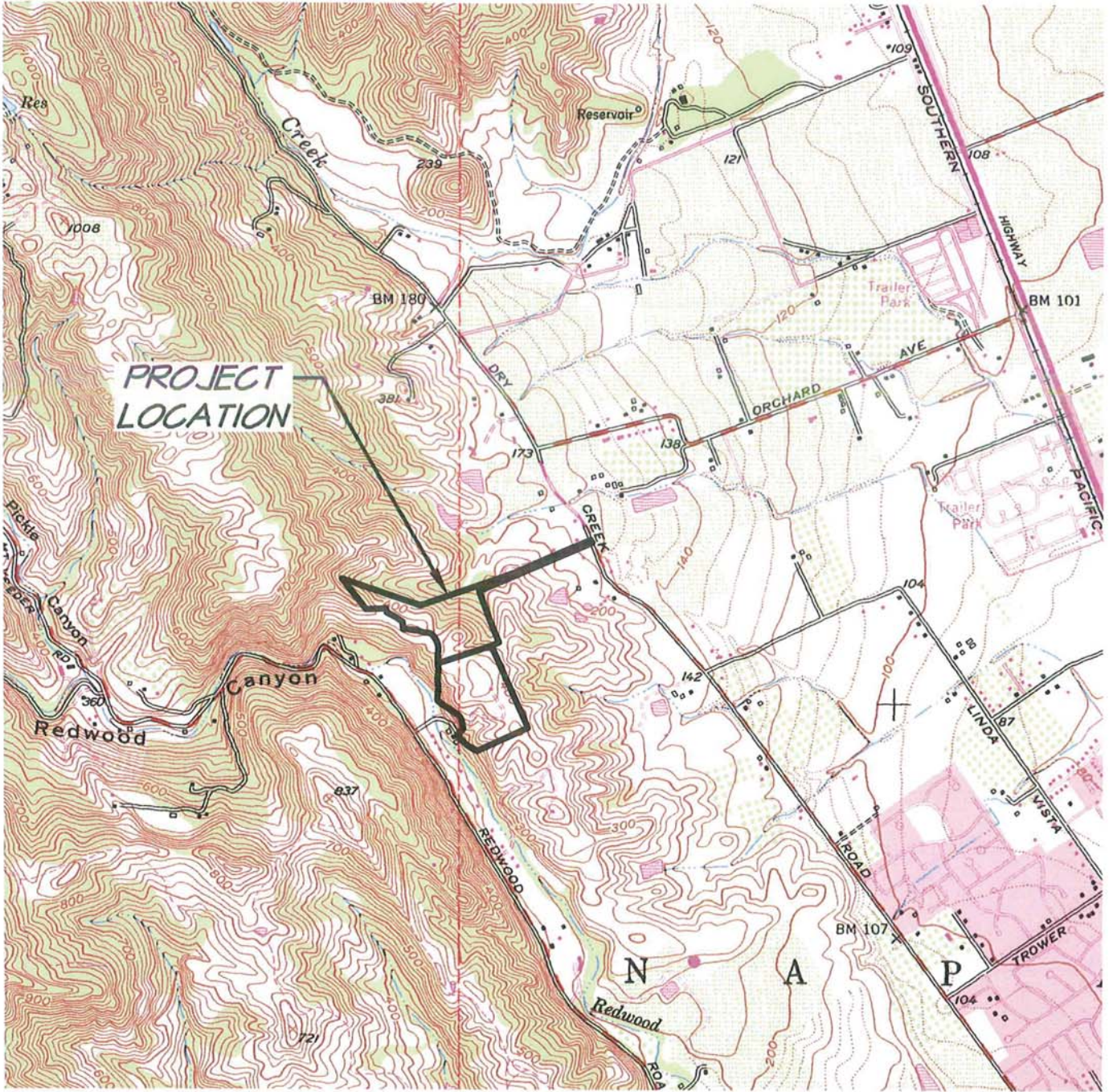


1515 Fourth Street
Napa, Calif. 94559
v 707.252.3301
f 707.252.4966

JULY 22, 2014

411010.0 Exh-Pitmap.dwg 1 OF 3

ARBUCKLE VINEYARDS USGS QUAD MAP NAPA CALIFORNIA



SCALE: 1" = 2000'

CONSULTING CIVIL ENGINEERS
**RIECHERS
& SPENCE**
ASSOCIATES

1515 Fourth Street
Napa, Calif. 94559
v 707.252.3301
f 707.252.4966

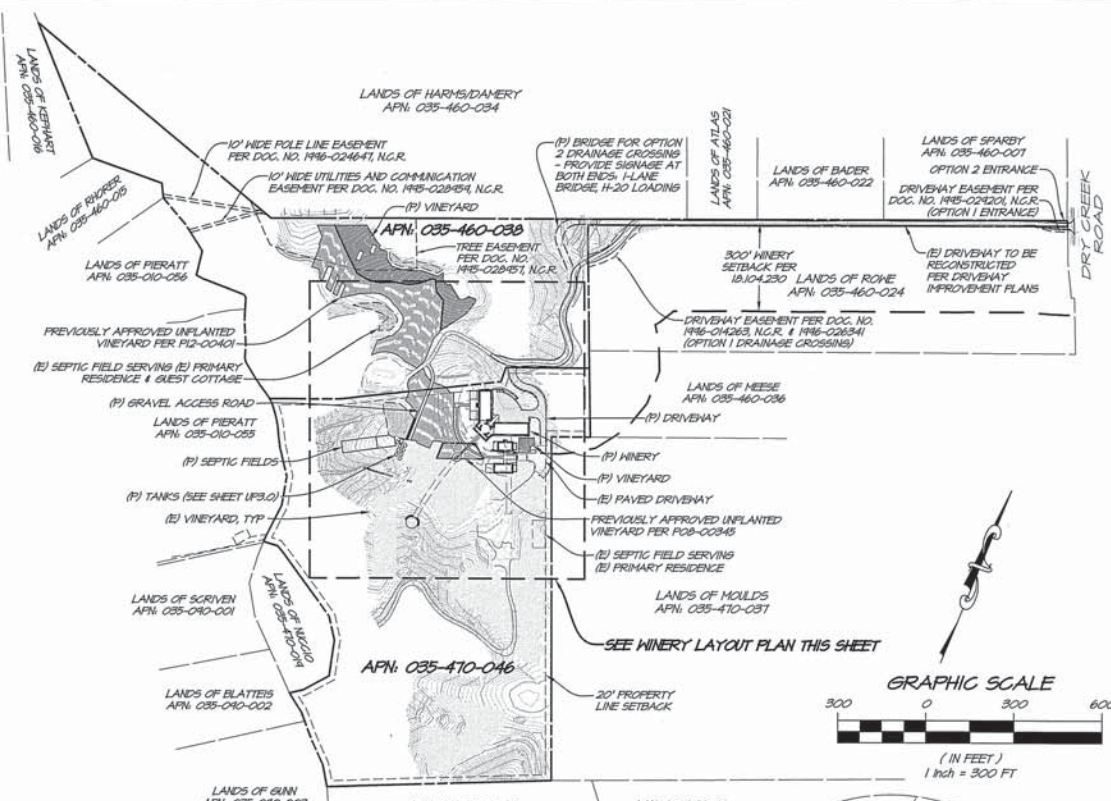
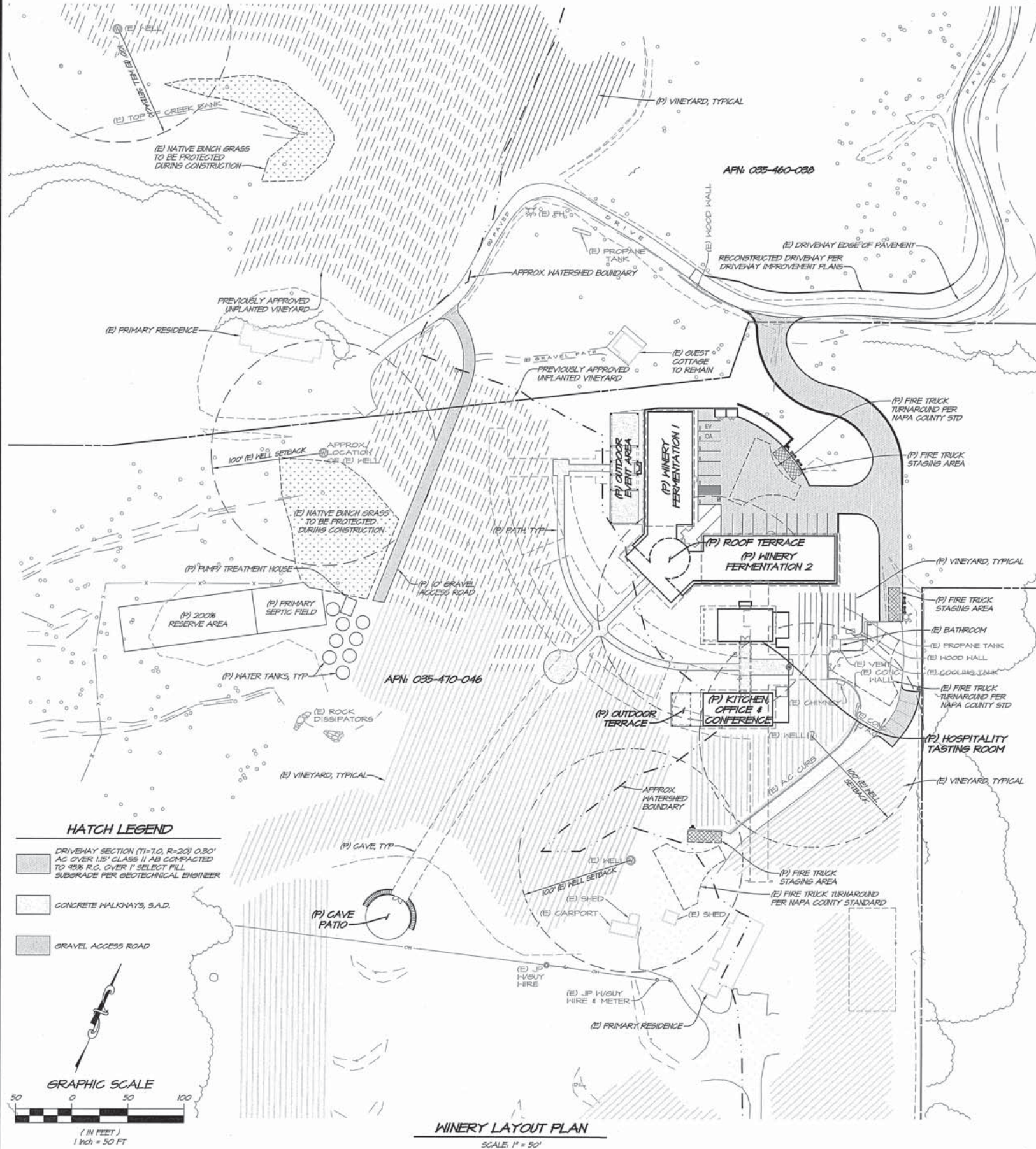
OCTOBER 15, 2012
4111010.0 1 OF 1



APPENDIX 2

Reduced Use Permit Plan Set

ANTHEM WINERY USE PERMIT PLANS



SYMBOL LEGEND

EXISTING	
☆	LIGHT
⊕	GAS RISER
⊕	GAS VALVE
EV	ELECTRIC VAULT
○	TREE (AS NOTED)
●	SEWER CLEANOUT
ICV	IRRIGATION CONTROL VALVE
---	FLOWLINE
---	EDGE OF GRAVEL
---	EXISTING VINE ROW
---	APPROX. WATERSHED BOUNDARY
---	PROPERTY LINE

PROPOSED	
---	STORM DRAIN LINE
---	SANITARY SEWER
---	PROCESS WASTE WATER
---	DOMESTIC WATER
---	FIRE WATER
---	IRRIGATION WATER
---	RAIN WATER
---	RECYCLED PROCESS WASTE WATER
---	WELL WATER
---	STORM DRAIN MANHOLE
---	SLOPE AS SHOWN
---	FIRE HYDRANT
---	WATER VALVE
---	DRAIN INLET
---	AREA DRAIN
---	SANITARY SEWER CLEANOUT
---	EX TREE TO BE REMOVED
---	SWALE FLOW LINE
---	PROPOSED VINE ROW
---	PREVIOUSLY APPROVED VINE ROW

ABBREVIATIONS

AD	AREA DRAIN
BM	BENCHMARK
C	CENTERLINE
CO	CLEANOUT
CONF	CONCRETE
CV	CHECK VALVE
DI	DRAIN INLET
DW	DOMESTIC WATER
EP	EDGE OF PAVEMENT
EX / (E)	EXISTING
FD	FOUND
FDG	FIRE DEPT. CONNECTION
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
E	FLOW LINE
FS	FINISH SURFACE
FH	FIRE WATER LINE
GB	GRADE BREAK
HP	HIGH POINT
ILLEGIBLE	ILLEGIBLE
INV	INVERT
IP	IRON PIPE
IW	IRRIGATION WATER
LP	LINEAL FEET/FOOT
LP	LOW POINT
HP	MANHOLE
OC	ON CENTER
OH	OVERHEAD
P&E	PACIFIC GAS AND ELECTRIC
PIV	POST INDICATOR VALVE
PL	PROPERTY LINE
(P)	PROPOSED NEW WORK
FWH	PROCESS WASTE WATER
R	RADIUS
R.C.	RELATIVE COMPACTION
ROM	RIGHT OF WAY
RH	RAIN WATER
RHL	RAIN WATER LEADER
S	SLOPE (FEET/FOOT)
S	SEE ARCHITECT'S DRAWINGS
S.D.	STORM DRAIN
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
S.S.D.	SEE STRUCTURAL DRAWINGS
STA	STATION
TC	TOP OF CURB
TH	TOP OF WALL
VECP	VINEYARD EROSION CONTROL PLAN
W	WATER LINE
WH	WET DRAFT HYDRANT
WM	WATER METER
WV	WATER VALVE

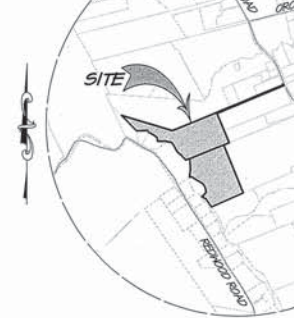
SHEET INDEX

UP1.0	SITE AND WINERY LAYOUT PLAN
UP2.0	DEMOLITION PLAN
UP2.1	GRADING AND EROSION PLAN
UP2.2	DRIVEWAY PLAN & PROFILE
UP3.0	UTILITY PLAN

ASSOCIATED PERMITS

VINEYARD EROSION CONTROL PLAN (POB-00345, P12-00401)

VICINITY MAP



PROJECT INFORMATION

OWNER: JUSTIN AND JULIE ARBUCKLE
3454 REDWOOD ROAD
NAPA, CALIFORNIA 94950

SITE ADDRESS: 3454 REDWOOD ROAD
NAPA, CA 94950

CIVIL ENGINEER: RSA+
1515 FOURTH STREET
NAPA, CA 94959

ARCHITECT: BACKEN GILLAM AND KROESER
2352 MARKESHIP WAY
SAUSALITO, CA 94965

APN & AREA: 035-460-038 (11.54 ACRES)
035-470-046 (21.23 ACRES)

EXISTING USE: RURAL HOMESITE (035-460-038)
WINERY (035-470-046)

PROPOSED USE: RURAL HOMESITE (035-460-038)
WINERY (035-470-046)

EXISTING ZONING: AM (035-460-038 & 035-470-046)

PROPOSED ZONING: AM (035-460-038 & 035-470-046)

TOPOGRAPHY

- TOPOGRAPHIC SURVEY MAP PREPARED BY RIEGHERS SPENCE & ASSOCIATES, DATED SEPT. 2013
- CONTOURS ARE SHOWN EVERY TWO FEET (2'), HIGHLIGHTED EVERY TEN FEET (10').

BOUNDARY

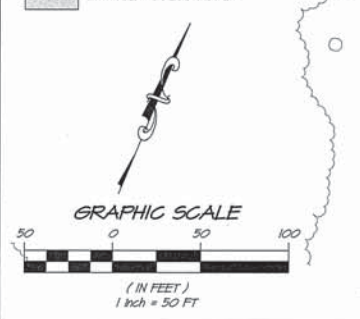
- BOUNDARY IS BASED ON A LOT LINE ADJUSTMENT PREPARED BY RIEGHERS SPENCE & ASSOCIATES, DATED MARCH 2012

BASIS OF BEARING & BENCHMARK

- BASIS OF BEARINGS FOR THIS MAP IS PER BOOK 04 OF SURVEYS, PAGE 4 & 5, N.C.R.
- CITY OF NAPA BM #8-A, ELEVATION = 143.22' (NSVD 1928)

HATCH LEGEND

[Hatched Pattern]	DRIVEWAY SECTION (11=1.0, R=20) 0.30' AC OVER 1.5" CLASS II AB COMPACTED TO 95% R.C. OVER 1" SELECT FILL. SUBGRADE PER GEOTECHNICAL ENGINEER
[Hatched Pattern]	CONCRETE WALKWAYS, S.A.D.
[Hatched Pattern]	GRAVEL ACCESS ROAD



WINERY LAYOUT PLAN

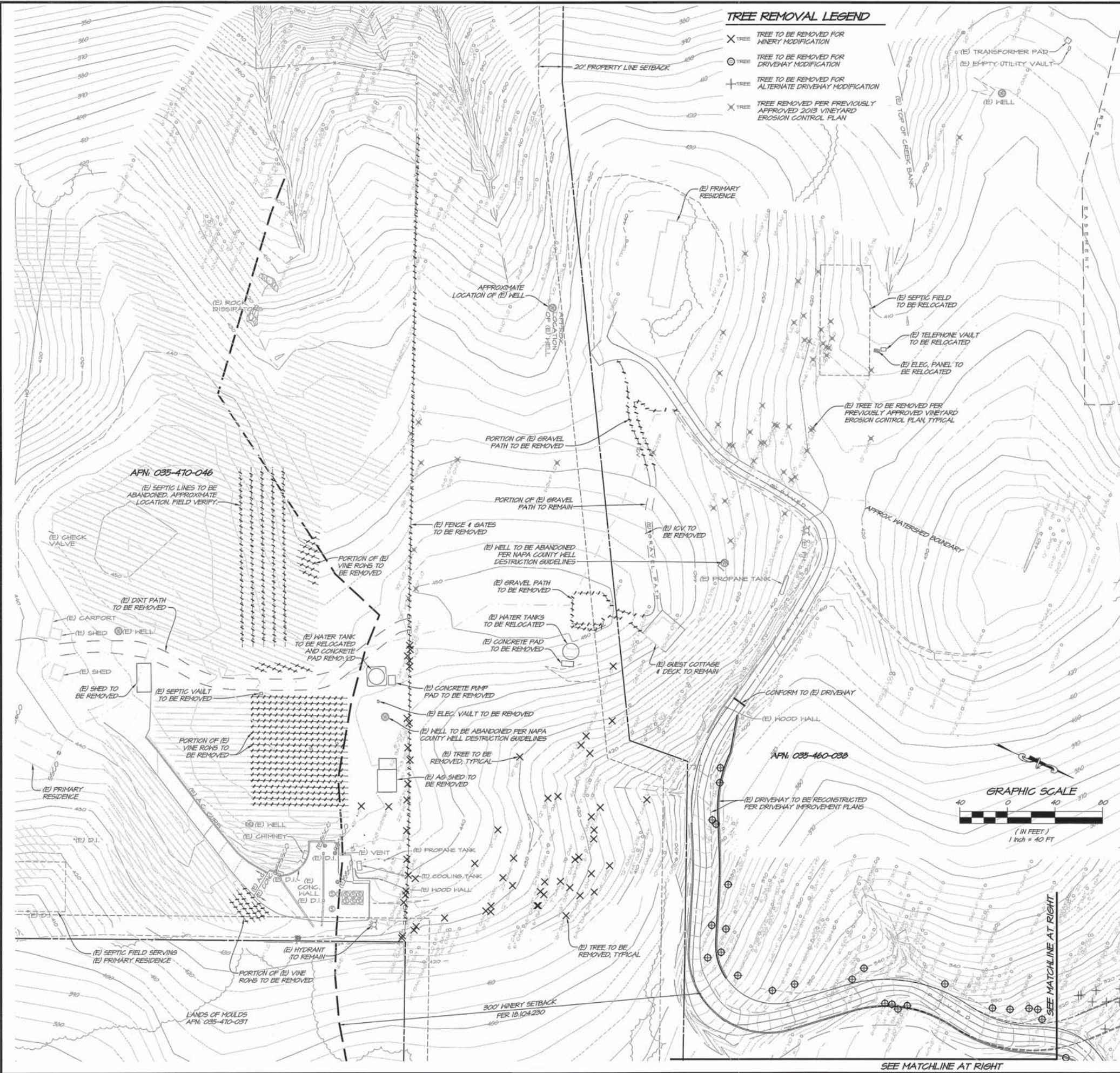
SCALE: 1" = 50'

1515 FOURTH STREET
NAPA, CALIF. 94959
OFFICE (707) 252-3301
www.RSAplus.com

RSA+
REGISTERED PROFESSIONAL SURVEYORS & CIVIL ENGINEERS

DATE: JUNE 5, 2018
DRAWN: JFW
DESIGNED: PSH
CHECKED: BWF
JOB NO.: 411010.0
SHEET NO.: UP1.0
1 OF 5 SHEETS

ANTHEM WINERY
SITE AND WINERY LAYOUT PLAN
CALIFORNIA
NAPA COUNTY



- TREE REMOVAL LEGEND**
- X TREE TREE TO BE REMOVED FOR WINERY MODIFICATION
 - O TREE TREE TO BE REMOVED FOR DRIVEWAY MODIFICATION
 - + TREE TREE TO BE REMOVED FOR ALTERNATE DRIVEWAY MODIFICATION
 - X TREE TREE REMOVED PER PREVIOUSLY APPROVED 2003 VINEYARD EROSION CONTROL PLAN

TREE REMOVAL FOR WINERY MODIFICATION

SPECIES	SIZE	QTY	SPECIES	SIZE	QTY	SPECIES	SIZE	QTY
BAY	6"	1	OAK	3x16"	1	OAK	18"	1
BAY	12x8x2	1	OAK	5x16"	1	OAK	20"	1
BAY CLUSTER	44"	1	OAK	6"	2	OAK	22"	1
BAY CLUSTER	62"	1	OAK	6x18"	1	OAK	42"	1
BLUE OAK	10"	1	OAK	7"	3	OAK SNAG	8x4"	1
BLUE OAK	12"	1	OAK	7x8"	1	OAK SNAG	10"	1
BLUE OAK	14x2	1	OAK	7x16"	1	FLUM	7"	1
CHERRY	8x3	1	OAK	8"	2	WHITE OAK	8"	1
LIVE OAK	2x4x10	1	OAK	9"	3	WHITE OAK	8x32"	1
LIVE OAK	4x6"	1	OAK	9x10"	1	WHITE OAK	14"	1
LIVE OAK	6"	1	OAK	10"	2	WHITE OAK	14x3	1
LIVE OAK	8"	2	OAK	10x4"	1	WHITE OAK	16"	1
LIVE OAK	8x2x20"	1	OAK	12"	4	WHITE OAK	18"	1
LIVE OAK	12"	1	OAK	14"	2	WHITE OAK	20"	1
LIVE OAK	18"	1	OAK	16"	1	WHITE OAK	22"	1
OAK	2x6"	1						

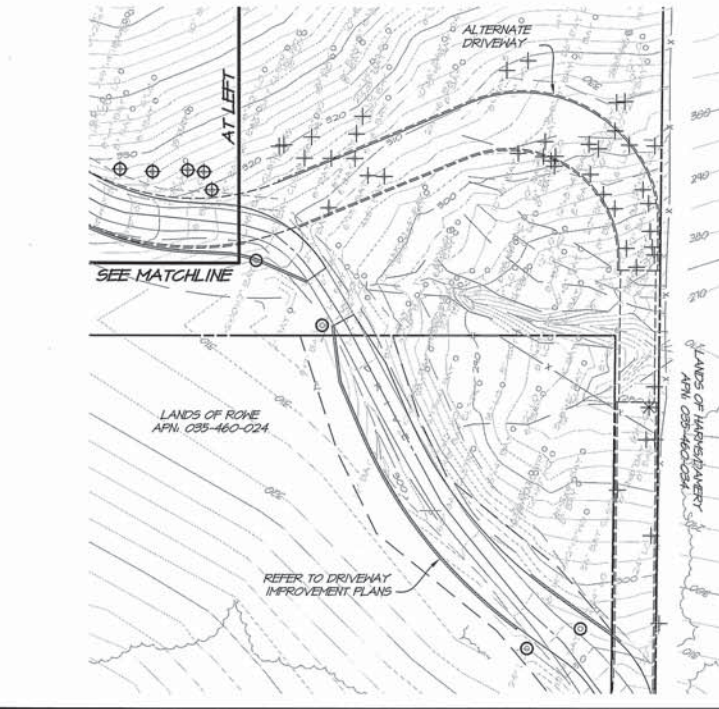
FOR DRIVEWAY MODIFICATION

SPECIES	SIZE	QTY	SPECIES	SIZE	QTY	SPECIES	SIZE	QTY
BAY	2x7"	1	BAY CLUSTER	50"	1	LIVE OAK	12"	1
BAY	3x3x6"	1	BAY CLUSTER	75"	1	LIVE OAK	14"	1
BAY	3x6"	1	BLUE OAK	4x6"	1	LIVE OAK	24"	1
BAY	6"	1	BLUE OAK	12x6"	1	LIVE OAK	26"	1
BAY	6x7"	1	BLUE OAK	14"	1	WHITE OAK	6x8x12"	1
BAY	7x2x10x12"	1	BLUE OAK	16"	1	WHITE OAK	8"	1
BAY	10x14"	1	BLUE OAK	18"	1	WHITE OAK	12"	2
BAY	12x14"	1	BLUE OAK	34"	1	WHITE OAK	14"	1
BAY	12x10x16"	1	LIVE OAK	8"	1	WHITE OAK	18"	1
BAY	16"	1						

FOR ALTERNATE DRIVEWAY MODIFICATION

SPECIES	SIZE	QTY	SPECIES	SIZE	QTY	SPECIES	SIZE	QTY
BAY	2x6"	2	BAY	12x10x16"	1	LIVE OAK	8"	3
BAY	2x7"	1	BAY	16"	1	LIVE OAK	10"	2
BAY	3x3x6"	1	BAY CLUSTER	36"	2	LIVE OAK	12"	1
BAY	3x6"	3	BAY CLUSTER	49"	1	LIVE OAK	14"	1
BAY	4x6"	1	BAY CLUSTER	50"	1	LIVE OAK	18x12"	1
BAY	6"	5	BAY CLUSTER	75"	1	LIVE OAK	20"	1
BAY	6x4"	3	BLUE OAK	4x6"	1	LIVE OAK	24"	1
BAY	8"	8	BLUE OAK	12x6"	1	LIVE OAK	26"	1
BAY	8x2x6"	1	BLUE OAK	14"	1	WHITE OAK	6x8x12"	1
BAY	10"	1	BLUE OAK	16"	1	WHITE OAK	8"	1
BAY	10x6"	1	BLUE OAK	18"	1	WHITE OAK	12"	3
BAY	10x14"	1	BLUE OAK	20"	1	WHITE OAK	14"	1
BAY	12"	1	BLUE OAK	34"	1	WHITE OAK	18"	2
BAY	12x6"	1	LIVE OAK	2x18"	1	WHITE OAK	2"	2
BAY	12x18x14"	1	LIVE OAK	6"	1			

ALTERNATE DRIVEWAY TOTAL: 68
 TOTAL TREES TO BE REMOVED (INCLUDES WINERY): 128



REVISIONS

NO.	DATE	BY	APPD

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 OFFICE (707) 252-3301
 + www.rsacivil.com +

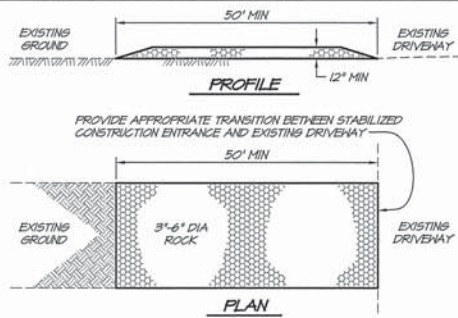
RSA+
 REGISTERED PROFESSIONAL ENGINEER
 CIVIL ENGINEER
 STATE OF CALIFORNIA

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**ANTHEM WINERY
 DEMOLITION PLAN**
 CALIFORNIA
 NAPA COUNTY



DATE: JUNE 5, 2010
 DRAWN: JFH
 DESIGNED: PSW
 CHECKED: BWF
 JOB NO.: 411010.0
 SHEET NO.: UP2.0
 2 OF 5 SHEETS

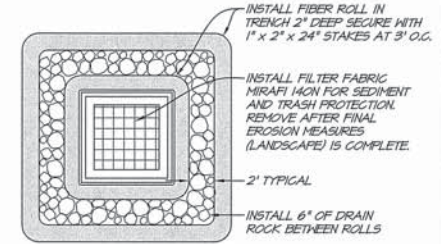
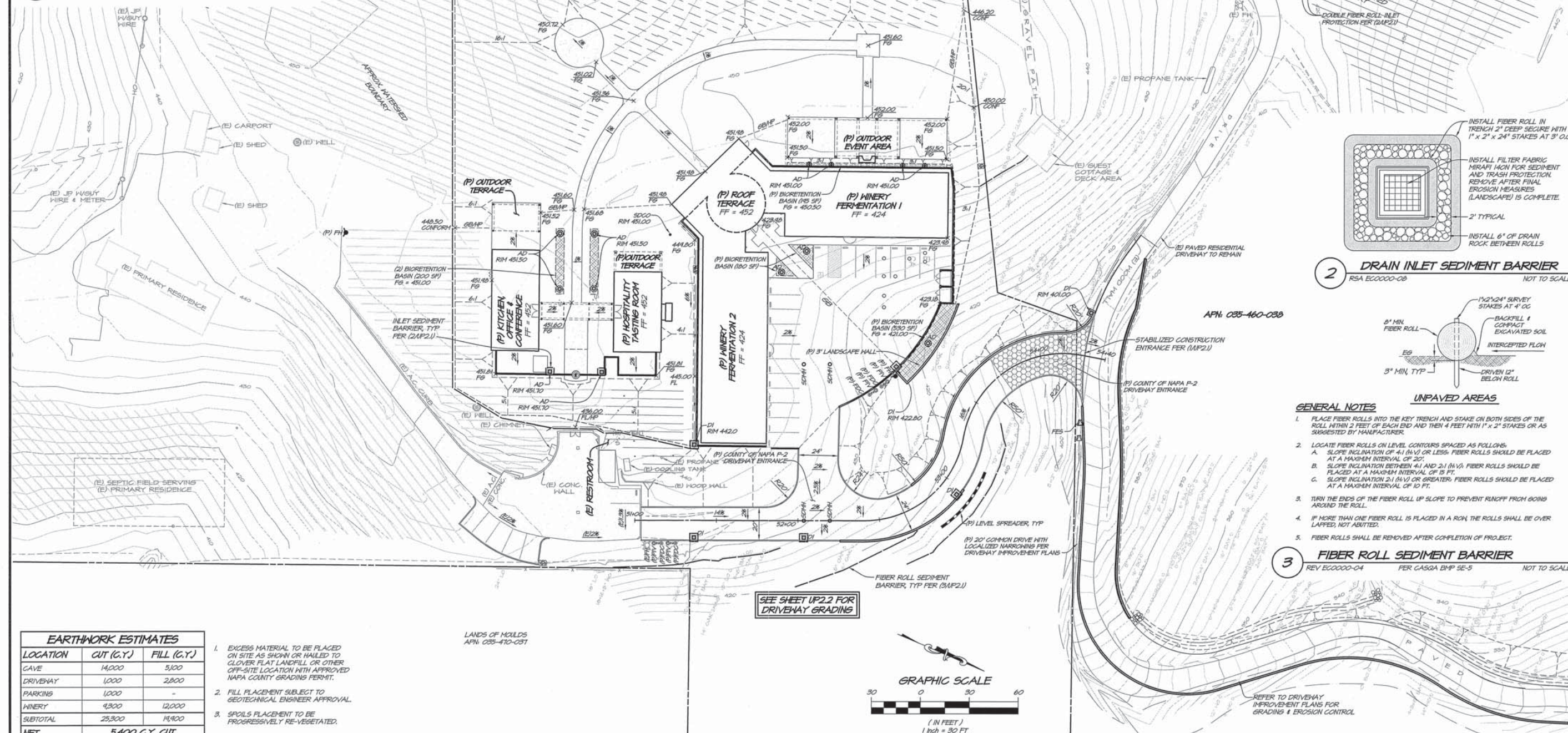


DESIGN AND CONSTRUCTION SPECIFICATIONS

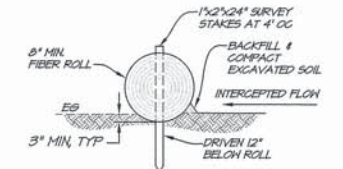
1. THE MATERIAL FOR CONSTRUCTION OF THE PAD SHALL BE 3 TO 6 INCH STONE.
2. THE THICKNESS OF THE PAD SHALL NOT BE LESS THAN 12 INCHES.
3. THE WIDTH OF THE PAD SHALL NOT BE LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. THE LENGTH OF THE PAD SHALL BE AS REQUIRED, BUT NOT LESS THAN 50 FEET.
5. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSINGS WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.
6. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE THROUGH USE OF SAND BAGS, GRAVEL, BOARDS OR OTHER APPROVED METHODS.

1 STABILIZED CONSTRUCTION ENTRANCE
REV EC0000-06 NOT TO SCALE

APN: 035-470-046



2 DRAIN INLET SEDIMENT BARRIER
RSA EC0000-08 NOT TO SCALE



GENERAL NOTES

1. PLACE FIBER ROLLS INTO THE KEY TRENCH AND STAKE ON BOTH SIDES OF THE ROLL WITHIN 2 FEET OF EACH END AND THEN 4 FEET WITH 1" x 2" STAKES OR AS SUGGESTED BY MANUFACTURER.
2. LOCATE FIBER ROLLS ON LEVEL CONTOURS SPACED AS FOLLOWS:
 - A. SLOPE INCLINATION OF 4:1 (H:V) OR LESS: FIBER ROLLS SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 20'
 - B. SLOPE INCLINATION BETWEEN 4:1 AND 2:1 (H:V): FIBER ROLLS SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 15 FT.
 - C. SLOPE INCLINATION 2:1 (H:V) OR GREATER: FIBER ROLLS SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 10 FT.
3. TURN THE ENDS OF THE FIBER ROLL UP SLOPE TO PREVENT RUNOFF FROM GOING AROUND THE ROLL.
4. IF MORE THAN ONE FIBER ROLL IS PLACED IN A ROW, THE ROLLS SHALL BE OVERLAPPED, NOT ADJUTED.
5. FIBER ROLLS SHALL BE REMOVED AFTER COMPLETION OF PROJECT.

3 FIBER ROLL SEDIMENT BARRIER
REV EC0000-04 PER CASQA BMP SE-5 NOT TO SCALE

EARTHWORK ESTIMATES

LOCATION	CUT (CY)	FILL (CY)
GAVE	14,000	5,100
DRIVEWAY	1,000	2,800
PARKING	1,000	-
WINERY	4,300	12,000
SUBTOTAL	25,300	19,900
NET	5,400 C.Y. CUT	

1. EXCESS MATERIAL TO BE PLACED ON SITE AS SHOWN OR HAULED TO CLOVER FLAT LANDFILL OR OTHER OFF-SITE LOCATION WITH APPROVED NAPA COUNTY GRADING PERMIT.
2. FILL PLACEMENT SUBJECT TO GEOTECHNICAL ENGINEER APPROVAL.
3. SPOILS PLACEMENT TO BE PROGRESSIVELY RE-VEGETATED.

LANDS OF MOLDS
APN: 035-470-037

DATE	JUNE 5, 2018
DRAWN	JPH
DESIGNED	PSH
CHECKED	BWF
JOB NO.	4110100
SHEET NO.	UP2.1
3 OF 5 SHEETS	

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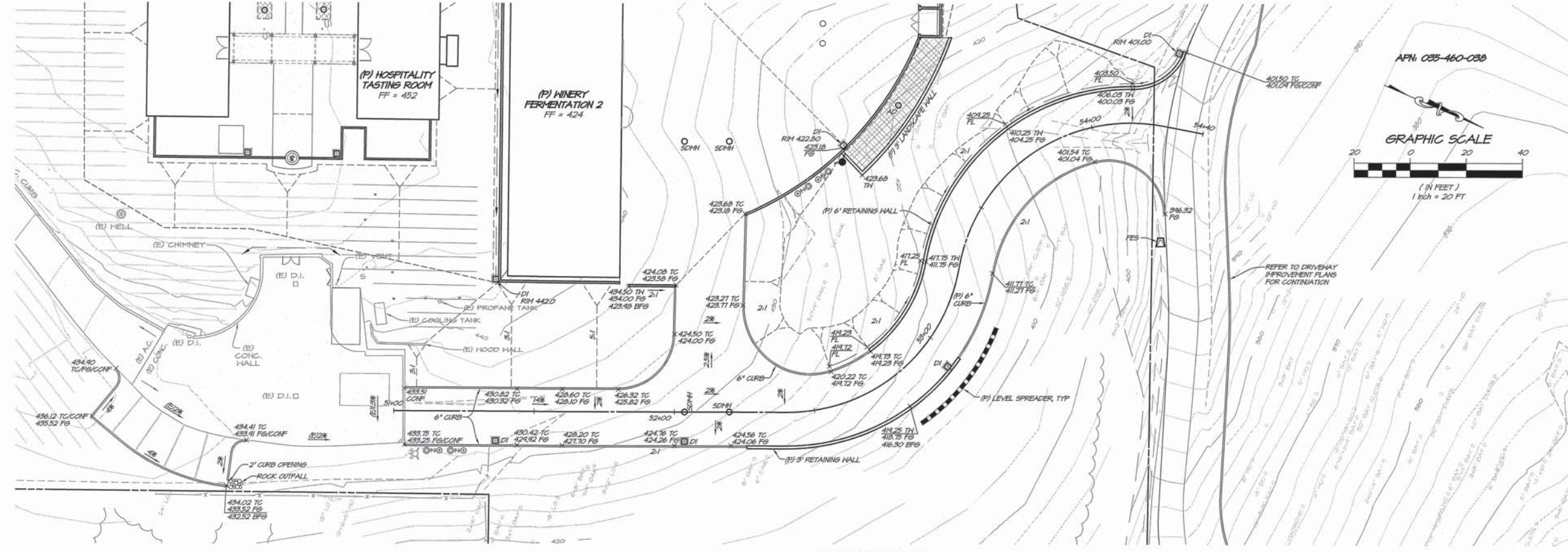
ANTHEM WINERY
GRADING & EROSION CONTROL PLAN
NAPA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEER
STATE OF CALIFORNIA
No. 52509
Exp. 12-31-18

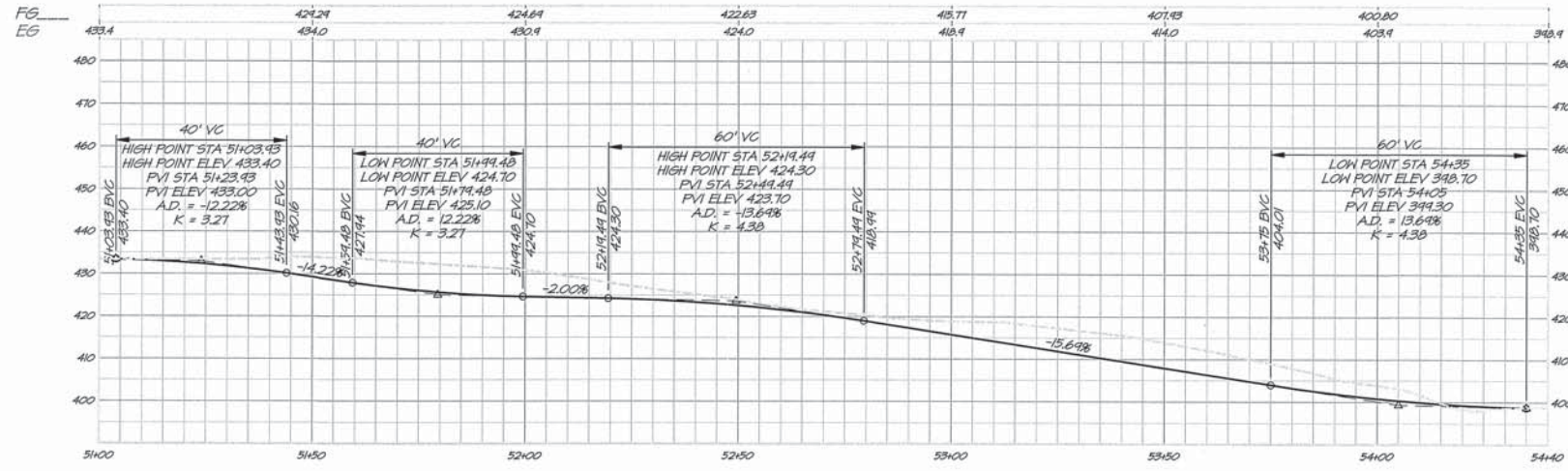
Printed on Recycled Paper Please Continue the Cycle

USE PERMIT - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY	APPD



DRIVEWAY PLAN
SCALE: 1" = 20'



DRIVEWAY PROFILE
SCALE: 1" = 20'

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WWW.RSACIVIL.COM

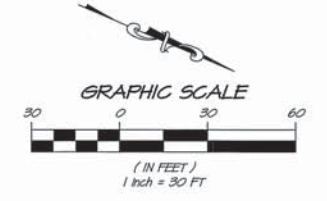
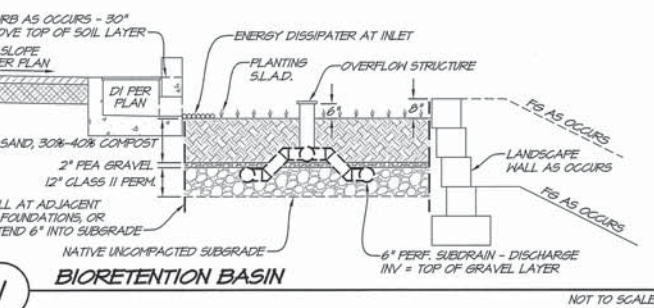
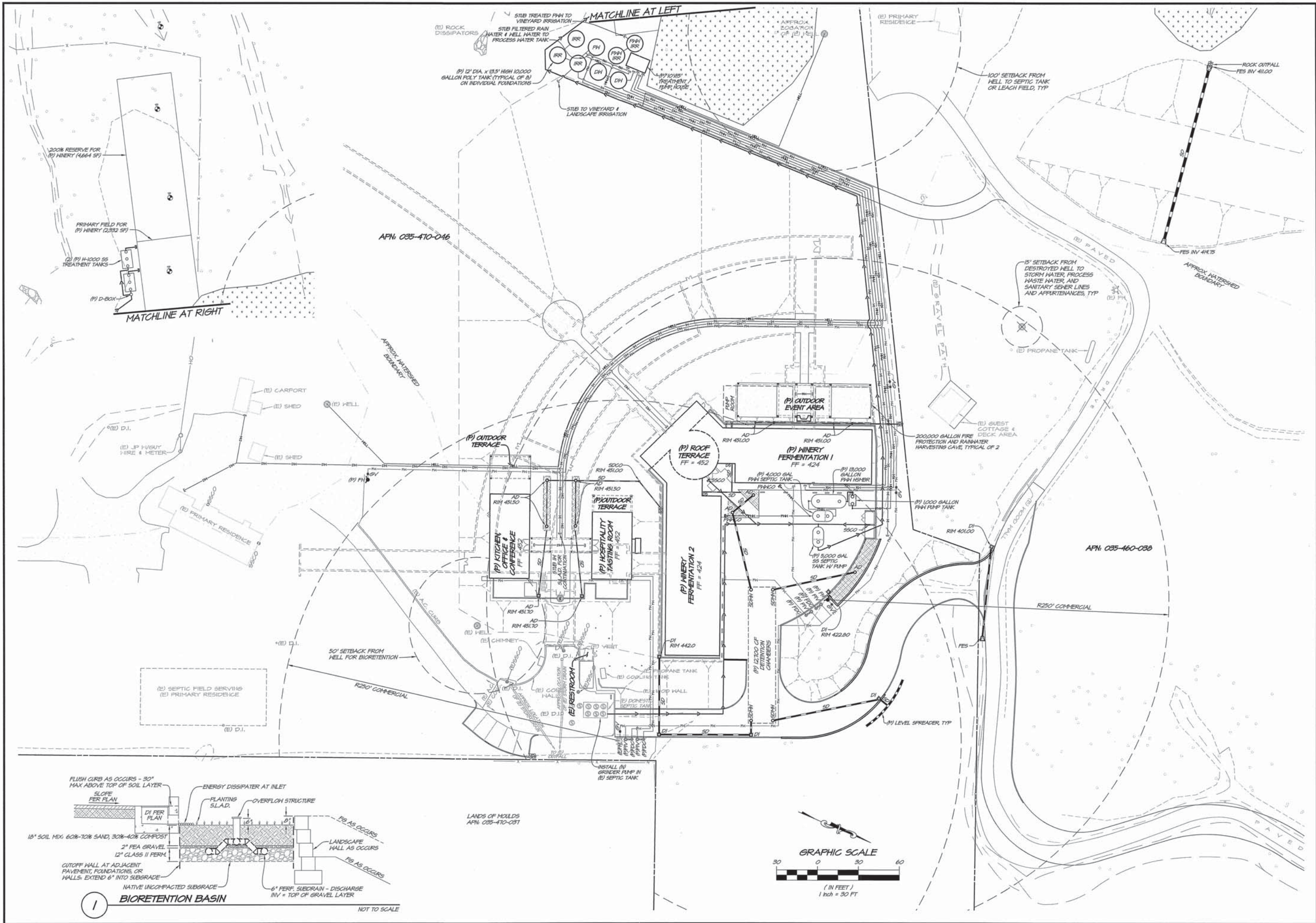
RSA+ CONSULTING CIVIL ENGINEERS + SURVEYORS + 1986

ANTHEM WINERY
DRIVEWAY PLAN & PROFILE
NAPA COUNTY
CALIFORNIA



DATE	JUNE 5, 2018
DRAWN	JFN
DESIGNED	PSM
CHECKED	BNF
JOB NO.	4111010.0
SHEET NO.	UP2.2

4 OF 5 SHEETS



NO.	DATE	REVISIONS	BY	APPD

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REGISTERED PROFESSIONAL ENGINEER
CALIFORNIA
1515 FOURTH STREET
NAPA, CALIF. 94559
OFFICE (707) 252-3301
WWW.RSACIVIL.COM

ANTHEM WINERY
UTILITY PLAN
CALIFORNIA
NAPA COUNTY



DATE	JUNE 5, 2018
DRAWN	JFM
DESIGNED	PSM
CHECKED	ENF
JOB NO.	411010.0
SHEET NO.	UP3.0
5 OF 5 SHEETS	

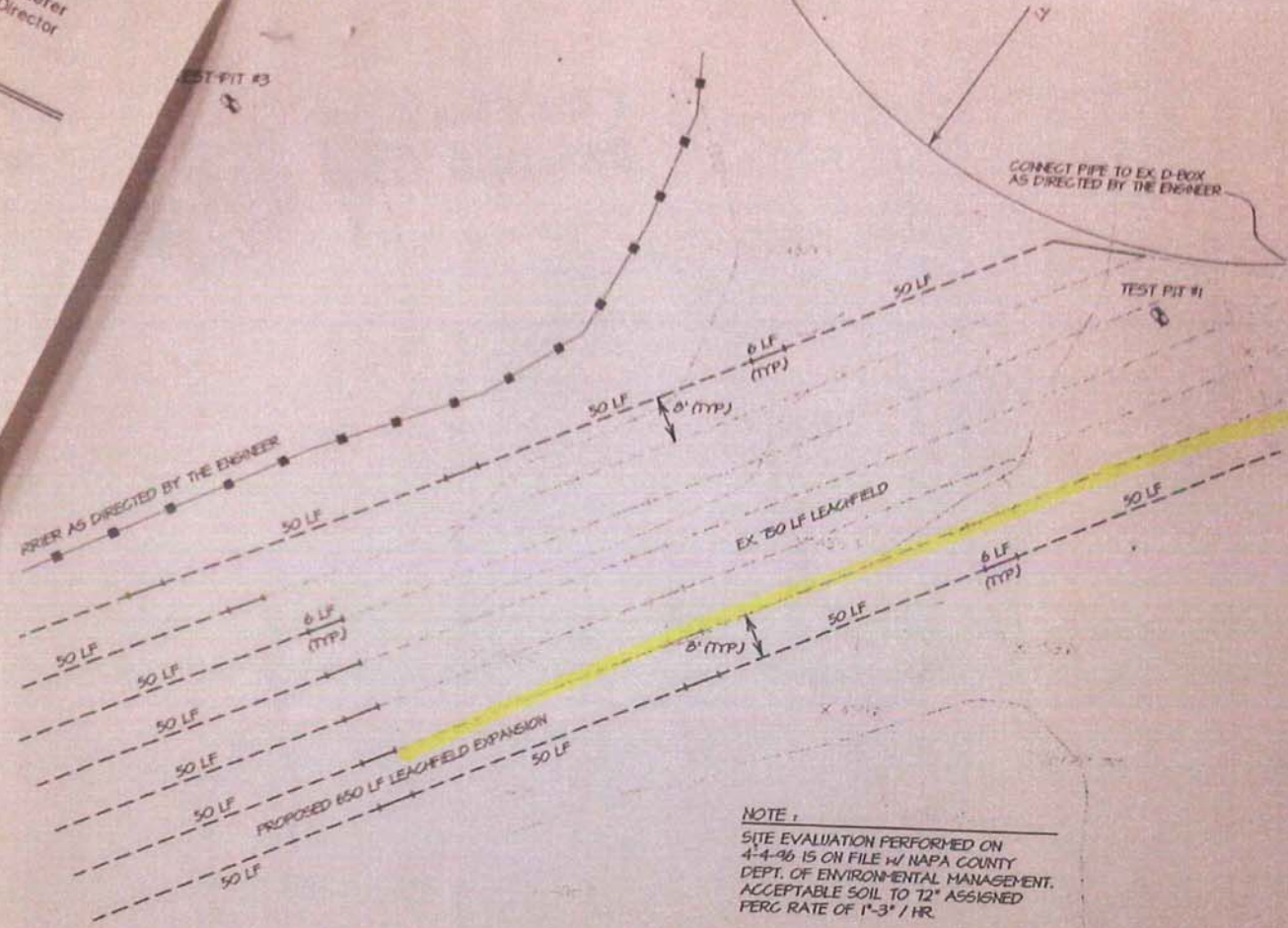


APPENDIX 3


Existing Septic System Documentation

Management
 Third Street, Suite 101
 Napa, CA 94559
 www.co.napa.ca.us
 (707) 253-4471
 (707) 253-4545
 Steven Lederer
 Director

R. in-NO140



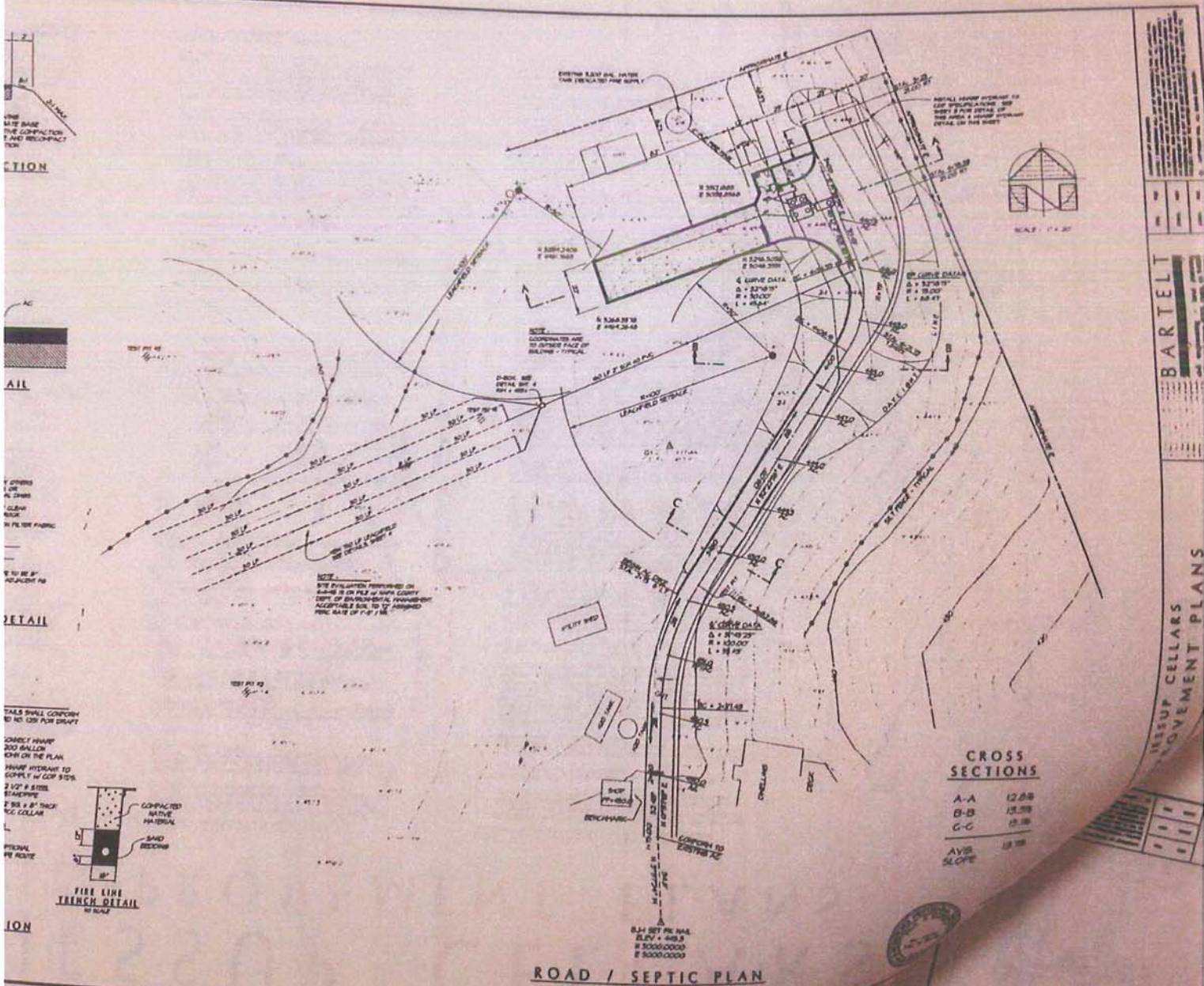
NOTE:
 SITE EVALUATION PERFORMED ON
 4-4-96 IS ON FILE W/ NAPA COUNTY
 DEPT. OF ENVIRONMENTAL MANAGEMENT.
 ACCEPTABLE SOIL TO T2* ASSIGNED
 PERG RATE OF 1"-3" / HR.

ER RIM
 MADE

 CONNECT TO
 WASTEWATER LINE
 FROM WINERY

Proposed
 Well
 110' Floor
 Existing
 Leachfield
 Per Green
 Medium
 Well

TERMS OF PERMIT:
 1) THE SPECIAL
 2) THE PERMIT
 3) AT THE PA
 4) ANY DEVI
 5) UNTIL THE
 DESIGNER C
 DEPARTMENT

I, THE UNDERSIGNED,
 FURTHERMORE, I UN
 OPERATION OF THIS S



CROSS SECTIONS

A-A	12.50
B-B	15.50
C-C	15.50
AVG SLOPE	15.50

ROAD / SEPTIC PLAN
 SCALE: 1" = 20'

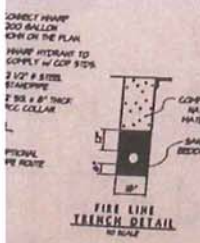
BARTELL
 SEPTIC CELLARS
 MOVEMENT PLANS

SECTION

AIL

DETAIL

ION



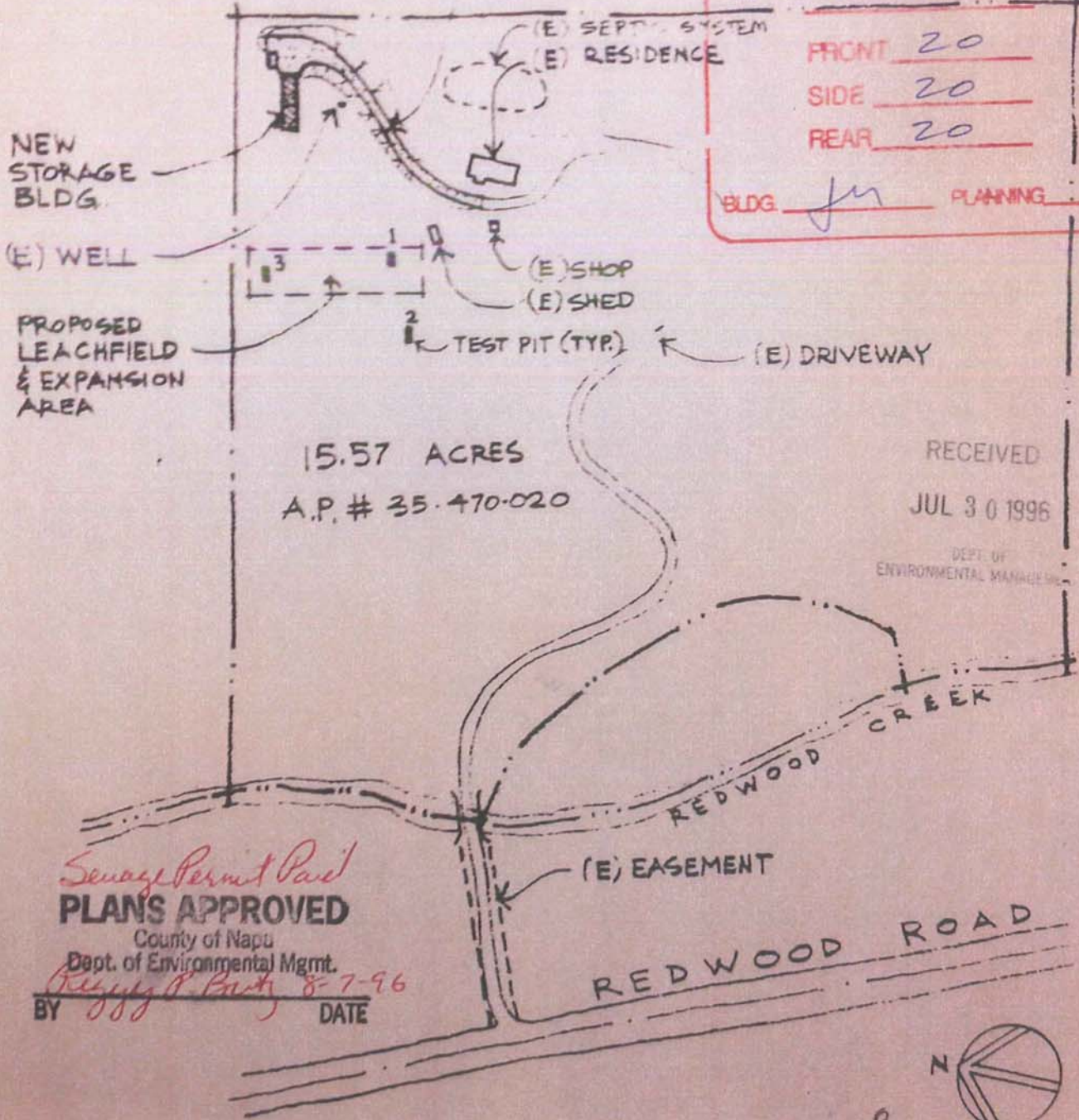
LEGAL LOT YES _____ NO _____
 ZONE AW
 MINIMUM STREET CENTERLINE SETBACK:

AND
 A00 800 # 10 B.P.# 57125

NEW DRIVEWAY
 MINIMUM PROPERTY LINE SETBACKS:
 RES. STORAGE BLDG

FRONT 20
 SIDE 20
 REAR 20

BLDG. ju PLANNING



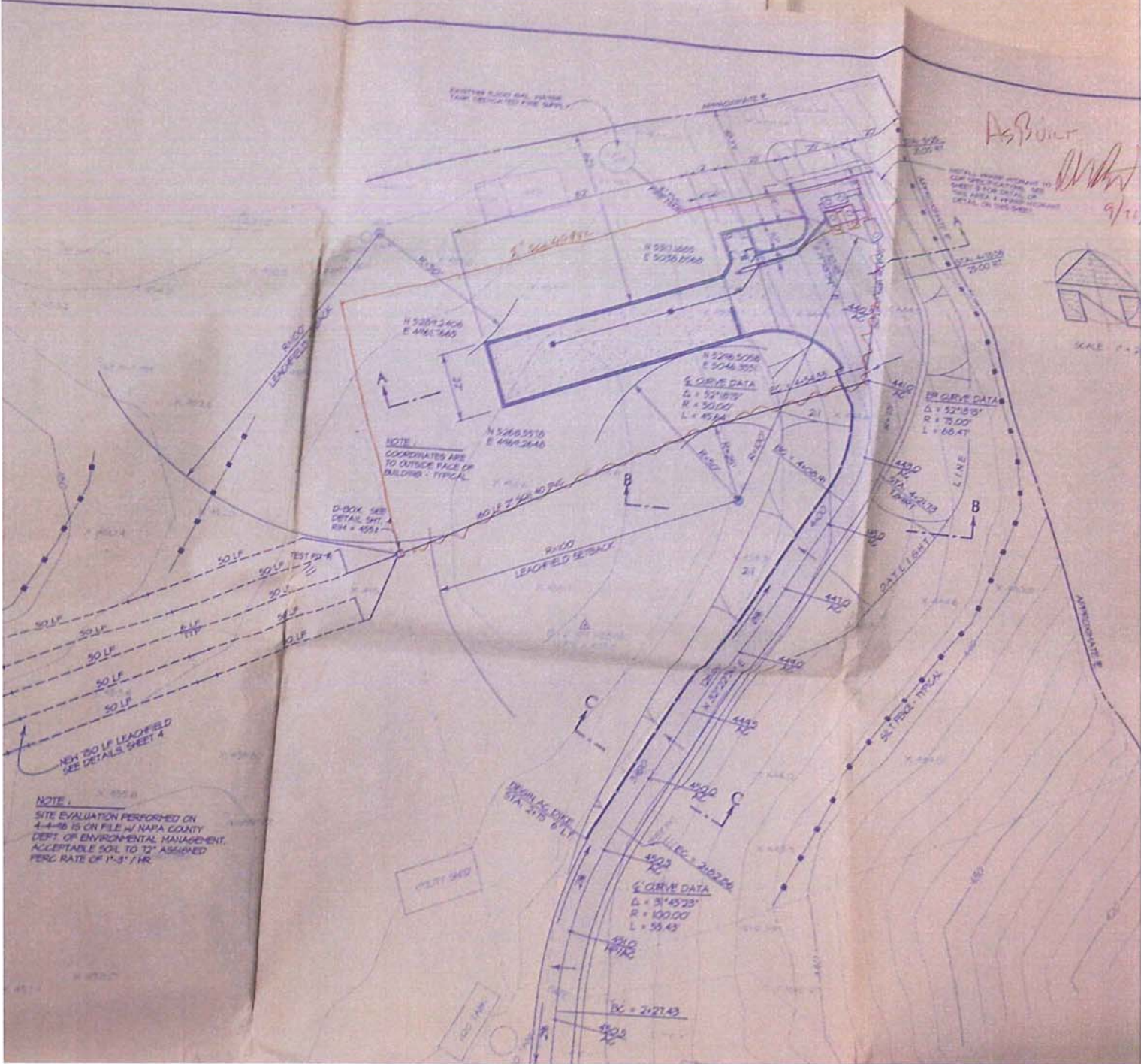
15.57 ACRES
 A.P. # 35-470-020

RECEIVED
 JUL 30 1996
 DEPT. OF ENVIRONMENTAL MANAGEMENT

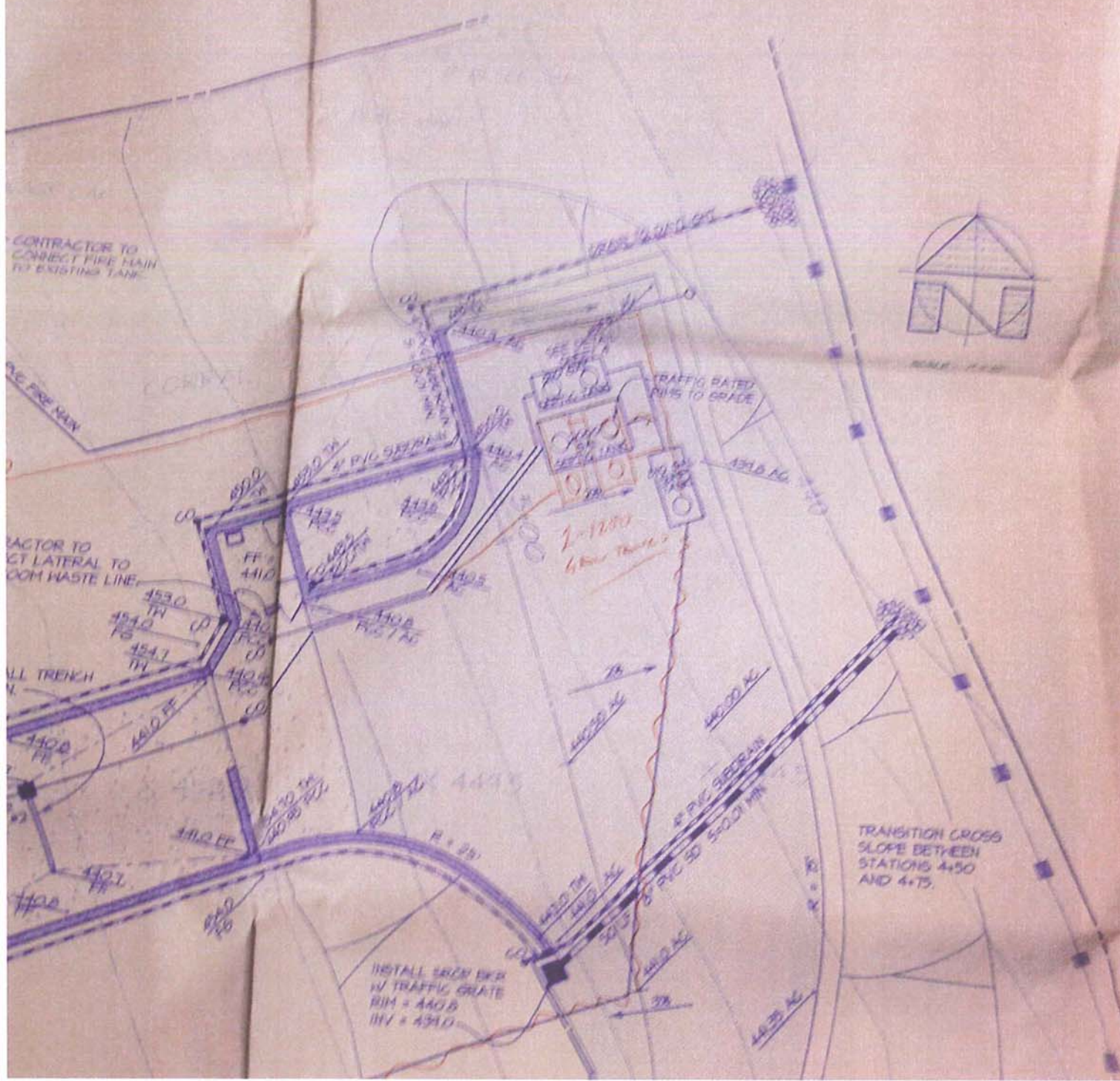
Sewage Permit Paid
PLANS APPROVED
 County of Napu
 Dept. of Environmental Mgmt.
Gregory R. Bush 8-7-96
 BY _____ DATE _____

SITE PLAN

#10668
 N
 1" = 200' ±



SECTION A-A
 SCALE: 1" = 10' VERT
 1" = 10' HOR



TRANSITION CROSS
 SLOPE BETWEEN
 STATIONS 4+50
 AND 4+75.

1-12-80
 4th TRAIL



APPENDIX 4

Site Evaluation

**Napa County Department of
 Environmental Management**

SITE EVALUATION REPORT

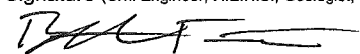
Please attach an 8.5" x 11" plot map showing the locations of all test pits triangulated from permanent landmarks or known property corners. The map must be drawn to scale and include a North arrow, surrounding geographic and topographic features, direction and % slope, distance to drainages, water bodies, potential areas for flooding, unstable landforms, existing or proposed roads, structures, utilities, domestic water supplies, wells, ponds, existing wastewater treatment systems and facilities.

Permit #: E14-00484	
APN: 035-470-046	
(County Use Only) Reviewed by:	Date:

PLEASE PRINT OR TYPE ALL INFORMATION

Property Owner Julie Arbuckle	<input type="checkbox"/> New Construction <input checked="" type="checkbox"/> Addition <input type="checkbox"/> Remodel <input type="checkbox"/> Relocation <input type="checkbox"/> Other:
Property Owner Mailing Address 3454 Redwood Road	<input type="checkbox"/> Residential - # of Bedrooms: Design Flow : gpd
City State Zip Napa CA 94558	<input checked="" type="checkbox"/> Commercial – Type: Winery Sanitary Waste: 1435 gpd Process Waste: gpd
Site Address/Location Same	<input type="checkbox"/> Other: Sanitary Waste: gpd Process Waste:

Evaluation Conducted By:

Company Name RSA+	Evaluator's Name Brett Frasier	Signature (Civil Engineer, R.E.H.S., Geologist, Soil Scientist) 
Mailing Address: 1515 Fourth Street		Telephone Number 707-252-3301
City Napa	State Zip CA 94559	Date Evaluation Conducted June 20, 2014

<u>Primary Area</u>	<u>Expansion Area</u>
Acceptable Soil Depth: 40 in. Test pit #'s: 1-4	Acceptable Soil Depth: 40 in. Test pit #'s: 1-4
Soil Application Rate (gal. /sq. ft. /day): 0.6	Soil Application Rate (gal. /sq. ft. /day): 0.6
System Type(s) Recommended: Sub-surface drip	System Type(s) Recommended: Sub-surface drip
Slope: 15% Distance to nearest water source: 280 ft.	Slope: 15% Distance to nearest water source: 280 ft.
Hydrometer test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)	Hydrometer test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)
Bulk Density test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)	Bulk Density test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)
Percolation test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)	Percolation test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)
Groundwater Monitoring Performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)	Groundwater Monitoring Performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)

Site constraints/Recommendations:

Test Pit # 1

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-40"	C	<30%	CL	S/SB	H	FRB	S	C/F-M	F/F	N/A
	40"-54"	Bottom	<30%								Yes

Notes:

Test Pit # 2

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-40"	C	<40%	CL	M/SB	H	FRB	S	F/F	C/F-C	N/A
	40"-53"	Bottom	~50%								

Notes:

Test Pit # 3

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-54"	Bottom	<30%	CL	S/SB	SH	FRB	S	C/F-M	C/F-C	N/A

Notes:

Test Pit # 4

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-48"	Bottom	<35%	CL	M/SB	H	FRB	S	M/F-M	M/F-C	N/A
Notes:											

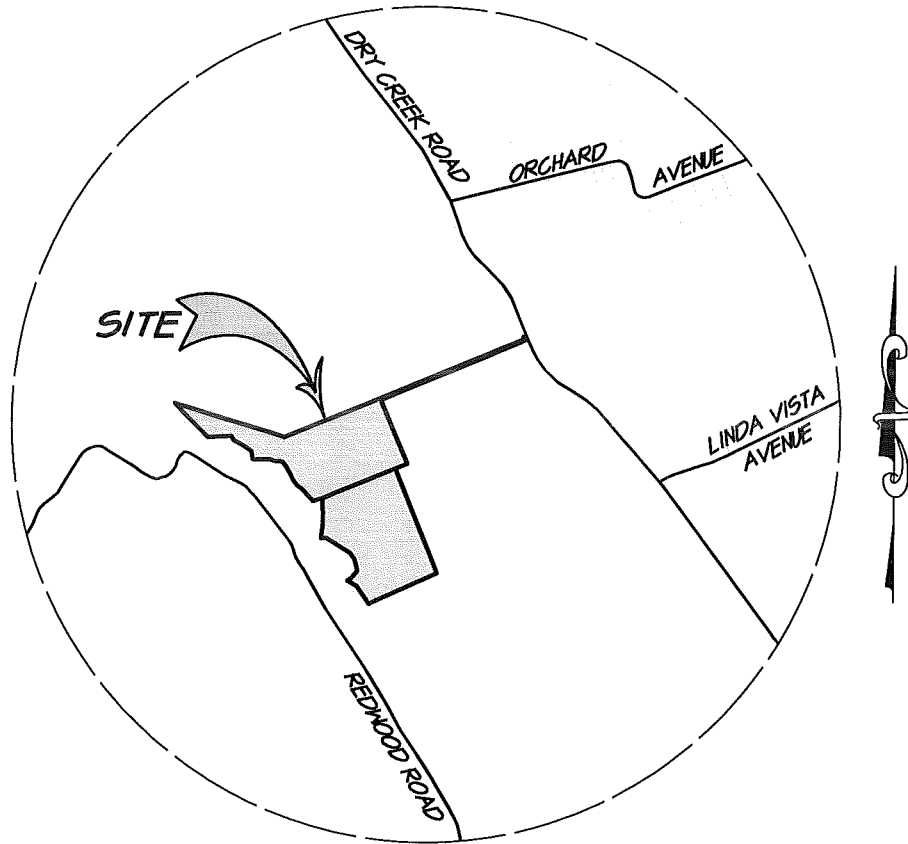
Test Pit # 5

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
Notes:											

Test Pit # 6

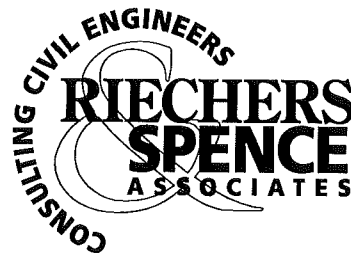
X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture +	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
Notes:											

ARBUCKLE RESIDENCE
VICINITY MAP
NAPA COUNTY CALIFORNIA



VICINITY MAP

SCALE: 1" = 2000'

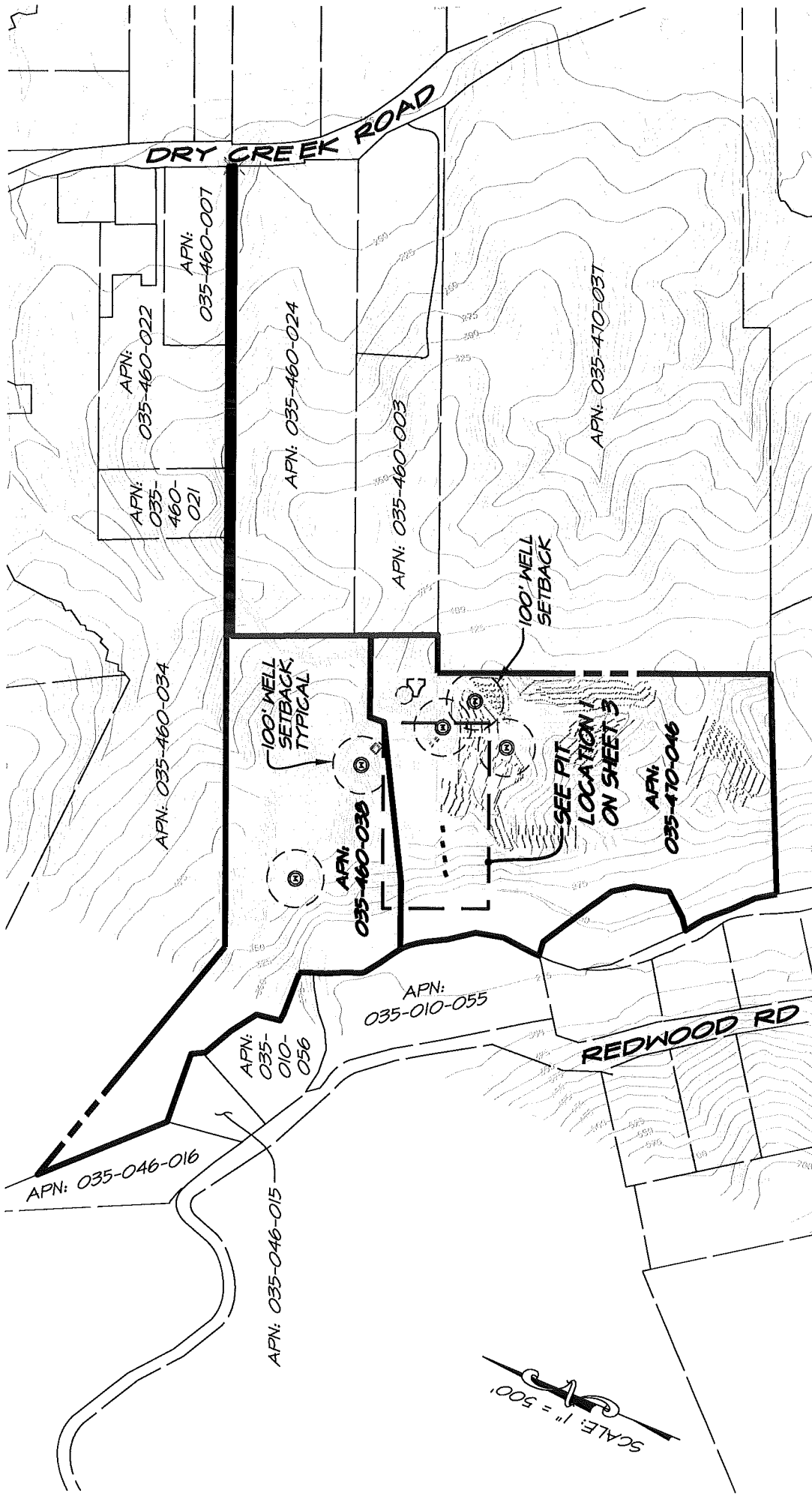


1515 Fourth Street
Napa, Calif. 94559
v 707.252.3301
f 707.252.4966

JULY 22, 2014

4111010.0 Exh-Pltmap.dwg 1 OF 3

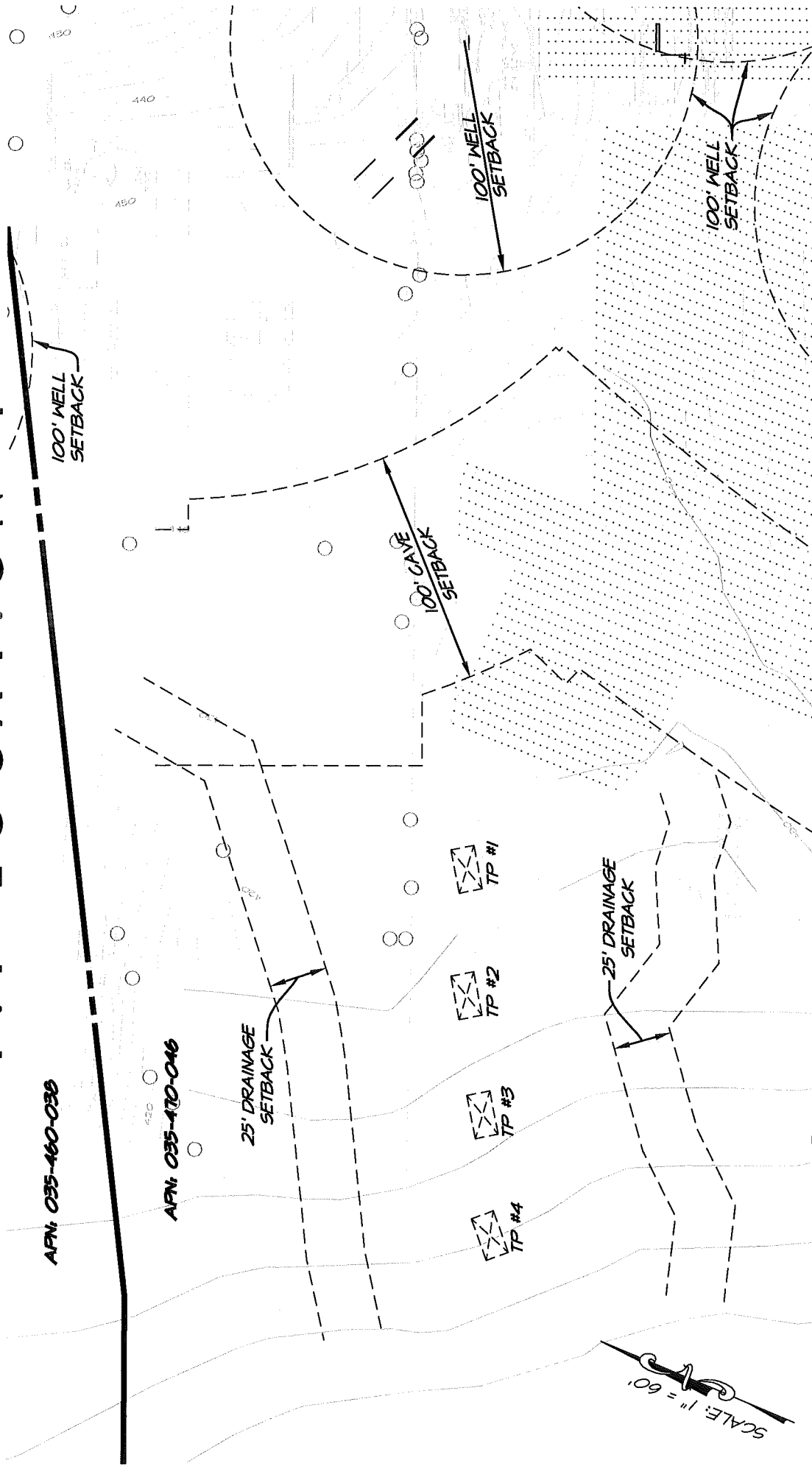
ARBUCKLE RESIDENCE PIT MAP



SITE EVALUATION DATE: JUNE 20, 2014
APN: 035-470-046
ADDRESS: 3454 REDWOOD ROAD
 NAPA, CA 94558
ENV. HEALTH INSPECTOR: KIM WITHROW

**RIECHERS
SPENCE
ASSOCIATES**
 CONSULTING CIVIL ENGINEERS
 1515 Fourth Street
 Napa, Calif. 94559
 v 707.252.3301
 f 707.252.4966
 JULY 22, 2014
 4111010.0 Extr-Pitmap.dwg 2 OF 2

ARBUCKLE RESIDENCE PIT LOCATION 1



LEGEND
 TEST PIT

SITE EVALUATION DATE: JUNE 20, 2014
APN: 035-470-046
ADDRESS: 3454 REDWOOD ROAD
 NAPA, CA 94558
ENV. HEALTH INSPECTOR: KIM WITHROW



1515 Fourth Street
 Napa, Calif. 94559
 v 707.252.3301
 f 707.252.4966

4111010.0 Ext-Pitmap.dwg 3 OF 3
 JULY 22, 2014

APPENDIX 5

Water Balance for Irrigation and Storage

**Reclaimed Process Wastewater
Water Balance for Irrigation and Storage**

Project Description		Annual Process Waste Flow Volume	
Project Number:	4111010.0	Wine Production:	50,000 gal/year
Project Name:	Anthem Winery		
Prepared By:	Brett Frasier	Annual Process Waste per Gallon Wine:	5 gal/year
Date:	September 16, 2014	Total Annual Process Waste Generated:	250,000 gal/year

Vineyard Irrigation Parameters		Landscape Irrigation Parameters	
Acres of irrigated vineyard:	6.00 acres	Crop type / name:	Native grass and trees
Row spacing:	7.0 feet	Total irrigated acres of crop:	0.50 acres
Vine spacing:	8.0 feet		
Total number of vines:	4,667 vines		
Water use per vine per month (peak):	26 gal		
Total peak monthly irrigation demand:	121,346 gal		

Monthly Process Wastewater Generation												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly process wastewater generated as % of annual total:	4%	6%	6%	5%	6%	7%	9%	10%	14%	14%	11%	8%
Monthly process wastewater generated [gallons]:	10,000	15,000	15,000	12,500	15,000	17,500	22,500	25,000	35,000	35,000	27,500	20,000

Monthly Vineyard Irrigation Water Use												
(Based on per-vine water use)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beginning of month reclaimed water in storage [gallons] (This number brought forward from end of previous month)	7,865	0	0	0	0	0	0	0	0	0	0	0
Vineyard irrigation as % of peak month irrigation demand:	6%	6%	10%	100%	100%	100%	100%	100%	100%	100%	10%	10%
Irrigation per month per vine (gallons):	2	2	3	26	26	26	26	26	26	26	3	3
Total vineyard irrigation demand [gallons]:	7,281	7,281	12,135	121,346	121,346	121,346	121,346	121,346	121,346	121,346	12,135	12,135
Will vineyard be irrigated with reclaimed water this month?	y	y	y	y	y	y	y	y	y	y	y	y
Process wastewater generated this month, reclaimed for vineyard irrigation [gallons]	7,281	7,281	12,135	12,500	15,000	17,500	22,500	25,000	35,000	35,000	12,135	12,135
Remaining vineyard irrigation demand after using this month's process water [gallons]	0	0	0	108,846	106,346	103,846	98,846	96,346	86,346	86,346	0	0
Drawdown from storage for remaining vineyard irrigation [gallons]	0	0	0	0	0	0	0	0	0	0	0	0
Well water required to satisfy remaining vineyard irrigation demand	0	0	0	108,846	106,346	103,846	98,846	96,346	86,346	86,346	0	0
Net storage after vineyard irrigation drawdown [gallons]	7,865	0	0	0	0	0	0	0	0	0	0	0
This month's process wastewater, remaining after vineyard irrigation, available for landscape irrigation [gallons]	2,719	7,719	2,865	0	0	0	0	0	0	0	15,365	7,865

Water balance continues on next page for cover crop irrigation.

Monthly Landscape Irrigation Water Use												
(Based on evapotranspiration crop demand and irrigated area)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
This month's process wastewater, remaining after vineyard irrigation, available for landscape irrigation [gallons] (From sheet 1)	2,719	7,719	2,865	0	0	0	0	0	0	0	15,365	7,865
Reference ET (ETo) (in/month) (see note 1)	1.03	1.53	2.93	4.71	5.82	6.85	7.21	6.44	4.87	3.53	1.64	1.17
Crop Coefficient (kc) (see note 2)	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Crop water demand per acre [inches]	0.82	1.22	2.34	3.77	4.66	5.48	5.77	5.15	3.90	2.82	1.31	0.94
Crop water demand per acre [gallons]	22,374	33,235	63,645	102,310	126,422	148,795	156,615	139,889	105,786	76,678	35,624	25,415
Total crop water demand for irrigated area [gallons]	11,187	16,617	31,823	51,155	63,211	74,398	78,308	69,945	52,893	38,339	17,812	12,707
Will landscape be irrigated with reclaimed water this month?	Y	Y	Y	N	N	N	N	N	N	Y	Y	Y
Process wastewater remaining after vineyard irrigation, reclaimed for landscape irrigation [gallons]	2,719	7,719	2,865	0	0	0	0	0	0	0	15,365	7,865
Landscape irrigation water required from storage or other source [gallons]	8,468	8,898	28,957	0	0	0	0	0	0	38,339	2,447	4,842
Drawdown from storage for landscape irrigation [gallons]	7,865	0	0	0	0	0	0	0	0	0	0	0
Process wastewater generated this month, unused for irrigation, to be reclaimed and stored [gallons]	0	0	0	0	0	0	0	0	0	0	0	0
Net end-of-month reclaimed water storage after all irrigation [gallons]	0	0	0	0	0	0	0	0	0	0	0	0

End of Water Balance

Peak Monthly Storage = 0 gallons

Notes:

1. Reference ETo from California Irrigation Management Information System
2. Crop Coefficient from Table 1 of "Estimating Irrigation Water Needs of Landscape Plantings in California", University of California Cooperative Extension, August 2000.



HYDROLOGY REPORT

Prepared for

ANTHEM WINERY
3123 DRY CREEK ROAD
NAPA, CA 94558

Prepared for:
Justin and Julie Arbuckle
400 Spear Street, Suite #122
San Francisco, CA 94105



RSA+ Project No. 4111010.0

December 3, 2015

Revised: January 9, 2019



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ATTACHMENTS

1. VICINITY MAP, SOIL MAP
2. CIVIL IMPROVEMENT PLANS
3. HYDROLOGY CALCULATIONS



I. Purpose

This report addresses the runoff requirements of Napa County Policy CON-50c. This project is identified as a "Discretionary Project". The requirements are outlined in the Napa County General Plan, dated June 23, 2009.

II. Existing Conditions

The Anthem Winery project is located at 3123 Dry Creek Road, Napa, California. The project's APNs are 035-460-038 and 035-470-046, and have a combined area of 44.77 +/- acres. The project site varies in slope from 1-30%. Redwood Creek, a blue-line stream, runs roughly north to south on the western side of the property. There are two residences, a guest house, and a winery located on the parcels. Refer to Attachment 1 for a Vicinity Map and Soil Map.

III. Proposed Development

The Owner is applying to the County of Napa for a modification to a Winery Use Permit that allows operation of a 50,000 gallon per year winery. The proposed winery will be constructed in the area of the existing winery, and will be entirely on the south parcel (035-470-046). Public access to the proposed winery will be from the existing residential driveway connecting to Dry Creek Road. The driveway will be upgraded as required to provide commercial access. The proposed project will disturb an area of approximately 2.5 acres. Refer to Civil Improvement Plans in Attachment 2, for the overall scope of the project.

IV. PRE & POST-DEVELOPMENT DRAINAGE STUDY

This drainage study computes the pre- and post-development total flow rates from the project area for the 2-, 10-, 50- and 100-year, 24-hour design storms, as required by CON-50c. It shows that post-development runoff does not exceed pre-development runoff for these events.

The following precipitation data for the project site was collected from the NOAA Atlas 14, Volume 6 – California (refer to NOAA Precipitation Frequency table in Attachment 3):

Table 1 - NOAA Precipitation Data

Storm Frequency	Precipitation Depth (inches, in 24 hour period)
2-yr	3.40
10-yr	5.17
50-yr	6.99
100-yr	7.77



Existing Conditions

The method used for studying the site stormwater runoff is a hydrograph analysis. The unit hydrograph rainfall distribution for the County of Napa falls under Type IA-distribution. The SCS hydrograph analysis is based on the National Resources Conservation Service Technical Release 55 for Urban Hydrology for Small Watersheds (TR-55) method. The purpose of the hydrograph analysis is to identify and mitigate the increase in the pre- to post-construction runoff flows. The project site consists of 3 separate watersheds, Redwood Creek and Salvador Channel. Five drainage sub-sheds have been identified within the three watersheds in order to model the pre- to post-construction runoff for the project site. The sub-sheds are then added together and the total existing flow rates are analyzed for the purpose of this study. The existing runoff for the 2-, 10-, 50- and 100-year, 24-hour storm events are as follows (refer to Basin Maps and Hydrology Calculations in Attachment 3.

Table 2 – Existing Stormwater Runoff

Watershed 1 – Redwood Creek			
Shed 1	A ₁	7.39	[acre]
Existing Impervious Area	A _{1_Paved}	0.06	[acre]
Existing Curve Number	CN ₁	79	
Existing Time of Concentration	T _{C-1}	10.24	[min]
Watershed 2 – Salvador Channel			
Sub-shed 2A	A _{2A}	1.56	[acre]
Existing Impervious Area	A _{2A_Paved}	0.12	[acre]
Existing Curve Number	CN _{2A}	78	
Existing Time of Concentration	T _{C-2A}	7.44	[min]
Sub-shed 2B	A _{2B}	8.98	[acre]
Existing Impervious Area	A _{2B_Paved}	0.59	[acre]
Existing Curve Number	CN _{2B}	76	
Existing Time of Concentration	T _{C-2B}	11.53	[min]
Watershed 3 – Salvador Channel			
Sub-shed 3A	A _{3A}	1.62	[acre]
Existing Impervious Area	A _{3A_Paved}	0.24	[acre]
Existing Curve Number	CN _{3A}	82	
Existing Time of Concentration	T _{C-3A}	9.39	[min]
Sub-shed 3B	A _{3B}	0.22	[acre]
Existing Impervious Area	A _{3B_Paved}	0.10	[acre]
Existing Curve Number	CN _{3B}	88	
Existing Time of Concentration	T _{C-3B}	6.00*	[min]
Watershed 1 – Redwood Creek			
Total Existing Peak Flow (2-yr)	Q_{2YEAR-EXIST}	2.43	[cfs]
Total Existing Peak Flow (10-yr)	Q_{10YEAR-EXIST}	5.32	[cfs]
Total Existing Peak Flow (50-yr)	Q_{50YEAR-EXIST}	8.54	[cfs]
Total Existing Peak Flow (100-yr)	Q_{100YEAR-EXIST}	9.95	[cfs]



Watershed 2 - Salvador Channel			
Total Existing Peak Flow (2-yr)	Q_{2YEAR-EXIST}	2.65	[cfs]
Total Existing Peak Flow (10-yr)	Q_{10YEAR-EXIST}	6.46	[cfs]
Total Existing Peak Flow (50-yr)	Q_{50YEAR-EXIST}	10.88	[cfs]
Total Existing Peak Flow (100-yr)	Q_{100YEAR-EXIST}	12.84	[cfs]
Watershed 3 - Salvador Channel			
Total Existing Peak Flow (2-yr)	Q_{2YEAR-EXIST}	0.76	[cfs]
Total Existing Peak Flow (10-yr)	Q_{10YEAR-EXIST}	1.52	[cfs]
Total Existing Peak Flow (50-yr)	Q_{50YEAR-EXIST}	2.34	[cfs]
Total Existing Peak Flow (100-yr)	Q_{100YEAR-EXIST}	2.71	[cfs]

See worksheets included in Attachment 3

* Adopted minimum T_c=6.00 min.

Proposed Conditions

To comply with the CON-50c requirement for stormwater quantity control, the post-development flow may not exceed pre-development flow for the 2-, 10-, 50-, and 100-year, 24-hour storm event.

The same drainage watersheds and sub-sheds were used to analyze the post-construction runoff flows. Watershed 1 will sheet flow to vegetated areas at the same flow rate as the existing condition. No mitigation is required for Watershed 1. 12,700 cubic feet of detention chambers will be installed under the winery driveway entrance in sub-shed 2A to mitigate post-construction peak flows in the Salvador Channel Watershed 2. Two, 4-foot diameter by 80-foot long detention pipes, providing 2,010 cubic feet of detention, will be installed in the driveway near the Dry Creek Road entrance in sub-shed 3A to mitigate post construction peak flows in the Salvador Channel Watershed 3. The captured stormwater will be conveyed to level spreaders and rock outfalls and will then return to natural flow lines. These measures will limit the peak developed discharge rates to the pre-construction levels. The proposed runoff for the 2-, 10-, 50-, and 100-year, 24-hour storm events are shown in table 3 (refer to Basin Maps and Hydrology Calculations in Attachment 3).

Table 3 – Proposed Stormwater Runoff

Watershed 1 – Redwood Creek			
Shed 1	A ₁	7.39	[acre]
Proposed Impervious Area	A ₁	0.24	[acre]
Proposed Curve Number	CN ₁	79	
Proposed Time of Concentration	T _{C-1}	10.24	[min]
Watershed 2 Area – Salvador Channel			
Sub-shed 2A	A _{2A}	1.56	[acre]
Proposed Impervious Area	A _{2A}	0.98	[acre]
Proposed Curve Number	CN _{2A}	92	
Proposed Time of Concentration	T _{C-2A}	6.00*	[min]



Sub-shed 2B	A _{2B}	8.98	[acre]
Proposed Impervious Area	A _{2B}	1.15	[acre]
Proposed Curve Number	CN _{2B}	77	
Proposed Time of Concentration	T _{C-2B}	9.64	[min]
Watershed 3 Area – Salvador Channel			
Sub-shed 3A	A _{2C}	1.62	[acre]
Proposed Impervious Area	A _{2C}	0.38	[acre]
Proposed Curve Number	CN _{2C}	83	
Proposed Time of Concentration	T _{C-2C}	6.00*	[min]
Sub-shed 3B	A _{2C}	0.22	[acre]
Proposed Impervious Area	A _{2C}	0.12	[acre]
Proposed Curve Number	CN _{2C}	89	
Proposed Time of Concentration	T _{C-2C}	6.00*	[min]
Watershed 1 – Redwood Creek			
Total Proposed Peak Flow (2-yr)	Q_{2YEAR-POST}	2.43	[cfs]
Total Proposed Peak Flow (10-yr)	Q_{10YEAR-POST}	5.32	[cfs]
Total Proposed Peak Flow (50-yr)	Q_{50YEAR-POST}	8.54	[cfs]
Total Proposed Peak Flow (100-yr)	Q_{100YEAR-POST}	9.95	[cfs]
Watershed 2 – Salvador Channel			
Total Proposed Peak Flow (2-yr)	Q_{2YEAR-POST}	2.65	[cfs]
Total Proposed Peak Flow (10-yr)	Q_{10YEAR-POST}	6.29	[cfs]
Total Proposed Peak Flow (50-yr)	Q_{50YEAR-POST}	10.32	[cfs]
Total Proposed Peak Flow (100-yr)	Q_{100YEAR-POST}	12.07	[cfs]
Watershed 3 – Salvador Channel			
Total Proposed Peak Flow (2-yr)	Q_{2YEAR-POST}	0.72	[cfs]
Total Proposed Peak Flow (10-yr)	Q_{10YEAR-POST}	1.28	[cfs]
Total Proposed Peak Flow (50-yr)	Q_{50YEAR-POST}	1.81	[cfs]
Total Proposed Peak Flow (100-yr)	Q_{100YEAR-POST}	2.02	[cfs]

See worksheets included in Attachment 3

* Adopted minimum T_c=6.00 min.

Upon successful completion of the project and construction of the detention chambers, the post-development peak flow rates will not exceed the pre-development peak flow rates for the 2-, 10-, 50-, and 100-year 24-hour storm events, for the Redwood Creek and Salvador Channel watersheds.

V. Conclusions

There will be no net increase in post-construction peak runoff during 2-, 10-, 50-, and 100-year storm events as required by the Napa County General Plan Policy CON-50c.



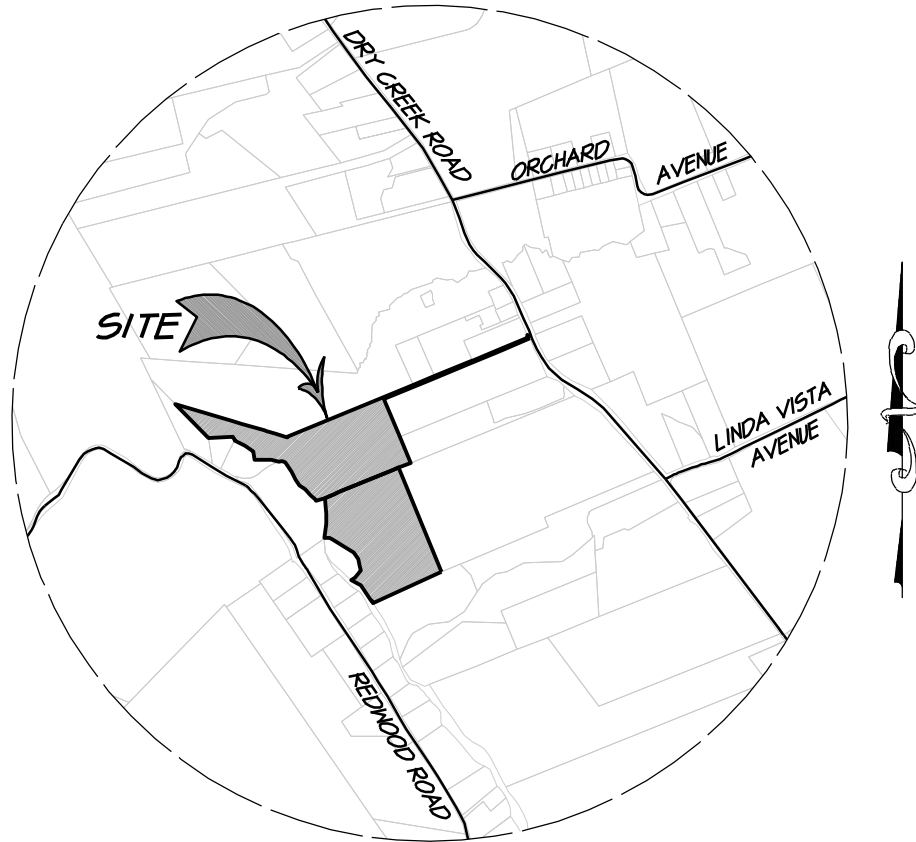
ATTACHMENT 1

Vicinity Map, Soil Map

ANTHEM WINERY VICINITY MAP

NAPA COUNTY

CALIFORNIA



VICINITY MAP

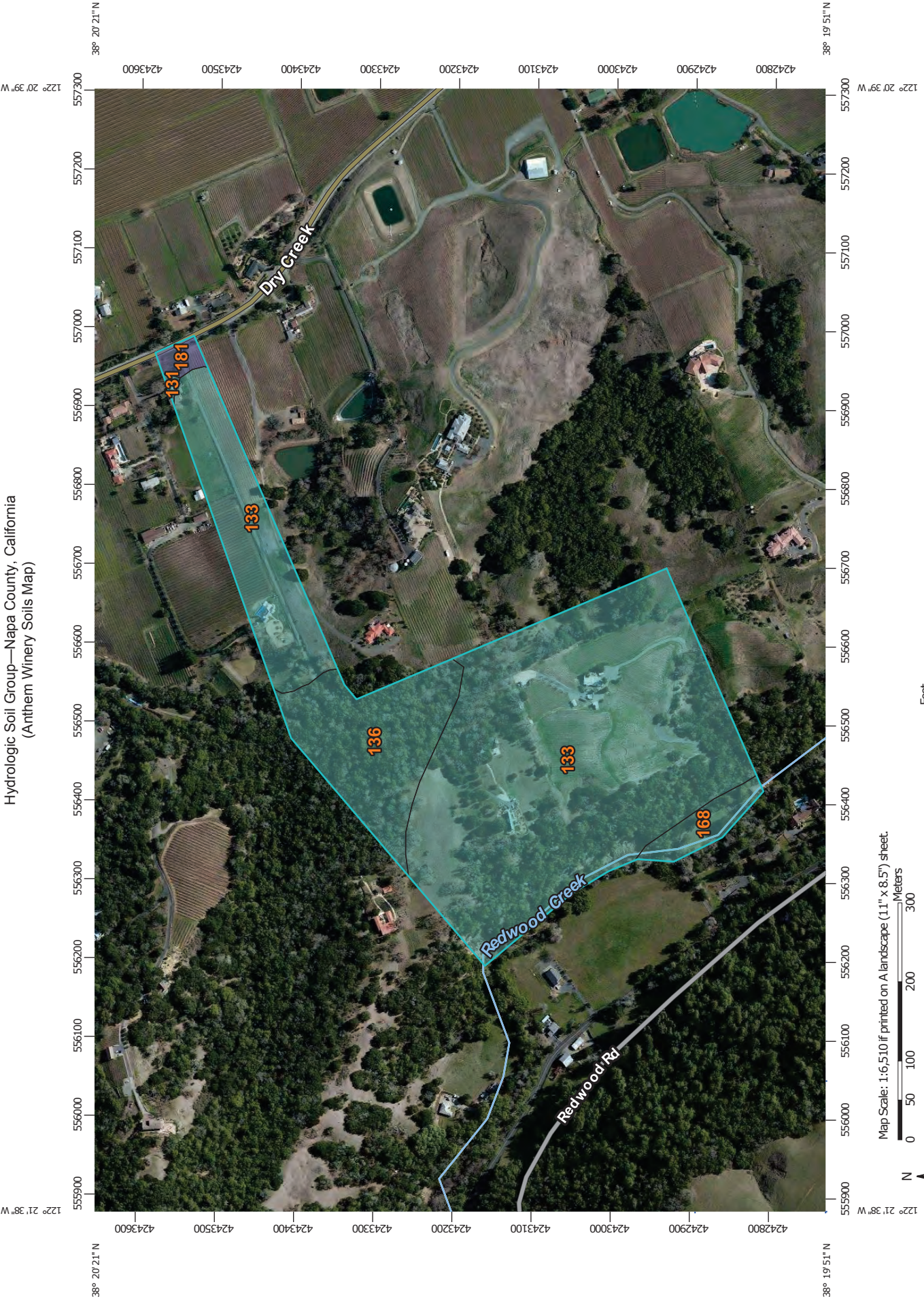
SCALE: 1" = 2000'

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MARCH 12, 2015 4111010.0 Exh-Vicinity Map.dwg

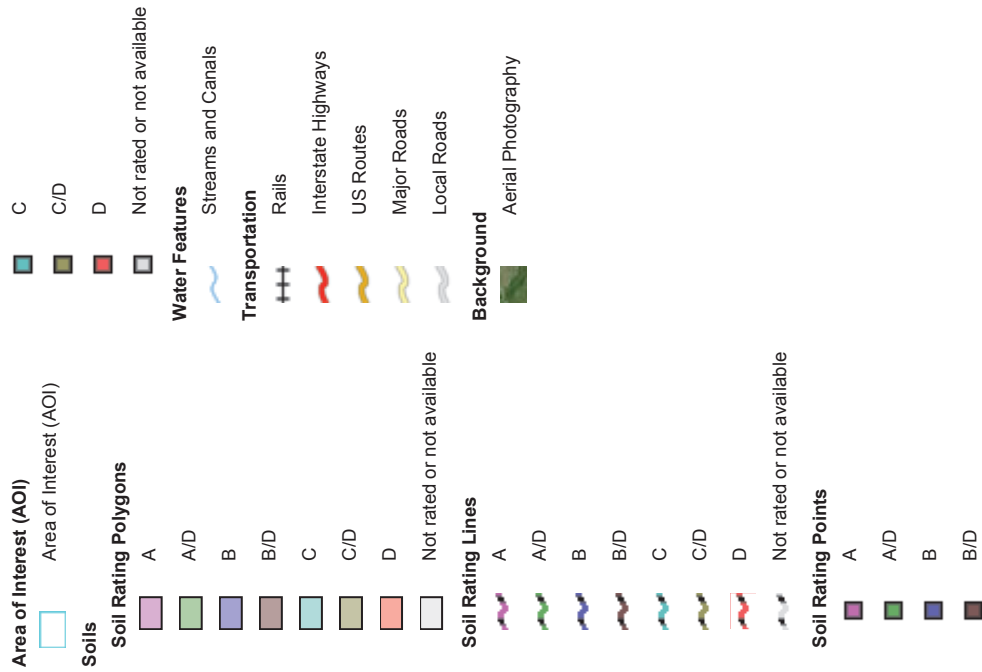
Hydrologic Soil Group—Napa County, California
(Anthem Winery Soils Map)



Map Scale: 1:6,510 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.
 Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Napa County, California
Survey Area Data: Version 7, Sep 25, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 2, 2010—Feb 17, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Napa County, California (CA055)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
131	Fagan clay loam, 5 to 15 percent slopes	C	0.1	0.2%
133	Fagan clay loam, 30 to 50 percent slopes	C	39.0	80.0%
136	Felton gravelly loam, 30 to 50 percent slopes	C	7.6	15.5%
168	Perkins gravelly loam, 2 to 5 percent slopes	C	1.5	3.2%
181	Yolo loam, 0 to 2 percent slopes	B	0.5	1.1%
Totals for Area of Interest			48.7	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

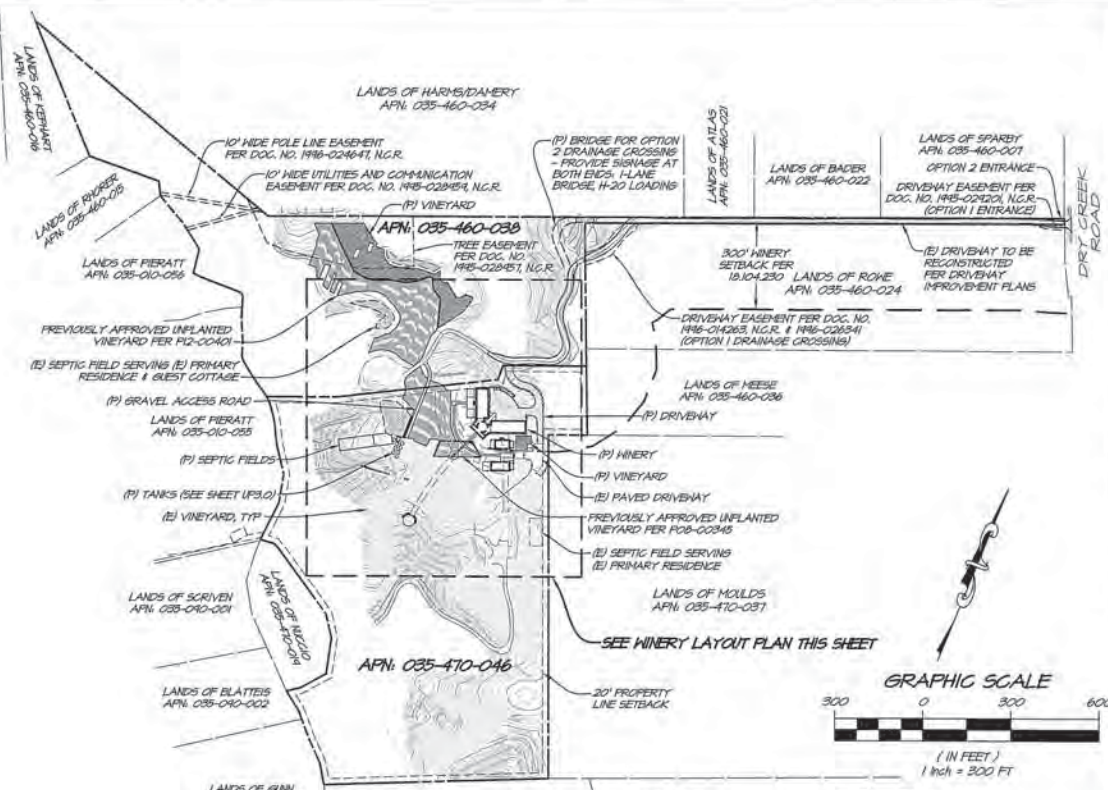
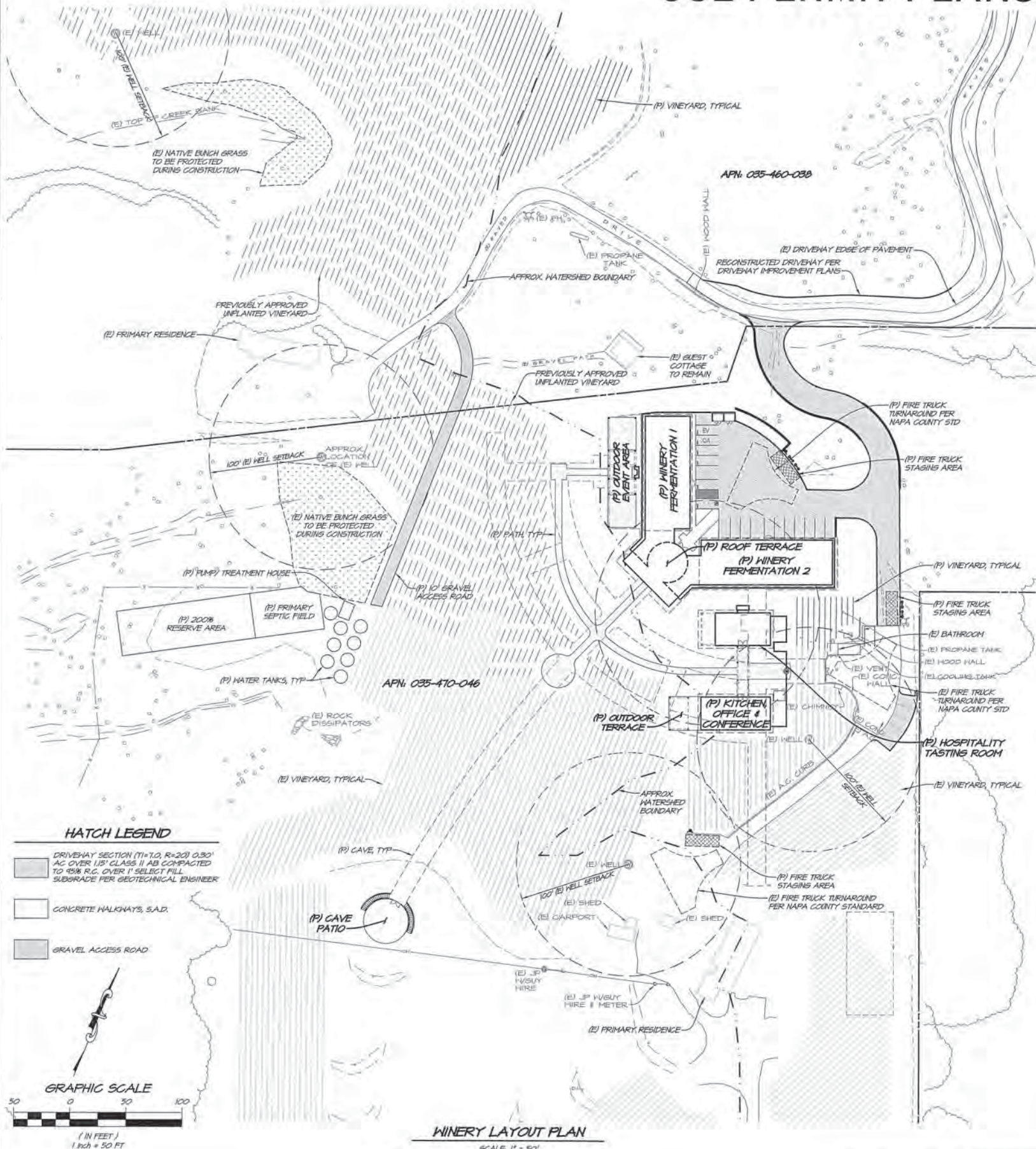
Tie-break Rule: Higher



ATTACHMENT 2

Civil Improvement Plans

ANTHEM WINERY USE PERMIT PLANS



OVERALL SITE PLAN
SCALE: 1" = 300'

SYMBOL LEGEND

EXISTING	PROPOSED
Light	Storm Drain Line
Gas Riser	Sanitary Sewer
Gas Valve	Process Waste Water
Electric Vault	Domestic Water
Tree (As Noted)	Fire Water
Sanitary Cleanout	Irrigation Water
Irrigation Control Valve	Recycled Process Waste Water
Flowline	Well Water
Edge of Gravel	Storm Drain Manhole
Existing Vine Row	Slope as Shown
Approx. Watershed Boundary	Fire Hydrant
Property Line	Water Valve
	Drain Inlet
	Area Drain
	Sanitary Sewer Cleanout
	Ex Tree to be Removed
	Shale Flow Line
	Proposed Vine Row
	Previously Approved Vine Row

ABBREVIATIONS

AD	AREA DRAIN
BM	BENCHMARK
CL	CENTERLINE
CO	CLEANOUT
CONF	CONCRETE
CV	CHECK VALVE
DI	DRAIN INLET
DW	DOMESTIC WATER
EP	EDGE OF PAVEMENT
EX / (E)	EXISTING
FD	FLOOD
FDG	FIRE DEPT. CONNECTION
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
E	FLOW LINE
FS	FINISH SURFACE
FHW	FIRE WATER LINE
GB	GRADE BREAK
HP	HIGH POINT
ILLEGIBLE	ILLEGIBLE
INV	INVERT
IP	IRON PIPE
IR	IRRIGATION WATER
LF	LINEAL FEET/FOOT
LP	LOW POINT
M	MANHOLE
OC	ON CENTER
OH	OVERHEAD
P&E	PACIFIC GAS AND ELECTRIC
PVI	POST INDICATOR VALVE
PL	PROPERTY LINE
(P)	PROPOSED NEW WORK
PWW	PROCESS WASTE WATER
R	RADIUS
R.C.	RELATIVE COMPACTION
RM	RIGHT OF WAY
RH	RAIN WATER
RHL	RAIN WATER LEADER
S	SLOPE (FEET/FOOT)
S.A.D.	SEE ARCHITECT'S DRAWINGS
SD	STORM DRAIN
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
S.S.D.	SEE STRUCTURAL DRAWINGS
STA	STATION
TG	TOP OF CURB
TH	TOP OF WALL
V.E.C.P.	VINEYARD EROSION CONTROL PLAN
W	WATER LINE
W	WET DRAFT HYDRANT
WM	WATER METER
WV	WATER VALVE

SHEET INDEX

UP1.0	SITE AND WINERY LAYOUT PLAN
UP2.0	DEMOLITION PLAN
UP2.1	GRADING AND EROSION PLAN
UP2.2	DRIVEWAY PLAN & PROFILE
UP3.0	UTILITY PLAN

ASSOCIATED PERMITS

VINEYARD EROSION CONTROL PLAN (POB-02345, P12-00401)



PROJECT INFORMATION

OWNER:	JUSTIN AND JULIE ARBUCKLE 3454 REDWOOD ROAD NAPA, CALIFORNIA 94950
SITE ADDRESS:	3454 REDWOOD ROAD NAPA, CA 94950
CIVIL ENGINEER:	RSA+ 1515 FOURTH STREET NAPA, CA 94954
ARCHITECT:	BACKEN GILLAM AND KROEGER 2352 MARKINSHIP WAY SAUSALITO, CA 94965
APN & AREA:	035-460-038 (11.54 ACRES) 035-470-046 (21.23 ACRES)
EXISTING USE:	RURAL HOMESITE (035-460-038) WINERY (035-470-046)
PROPOSED USE:	RURAL HOMESITE (035-460-038) WINERY (035-470-046)
EXISTING ZONING:	AH (035-460-038 & 035-470-046)
PROPOSED ZONING:	AH (035-460-038 & 035-470-046)

TOPOGRAPHY

- TOPOGRAPHIC SURVEY MAP PREPARED BY RIEGERS SPENCE & ASSOCIATES, DATED SEPT. 2018
- CONTOURS ARE SHOWN EVERY TWO FEET (2'), HIGHLIGHTED EVERY TEN FEET (10').

BOUNDARY

- BOUNDARY IS BASED ON A LOT LINE ADJUSTMENT PREPARED BY RIEGERS SPENCE & ASSOCIATES, DATED MARCH 2012

BASIS OF BEARING & BENCHMARK

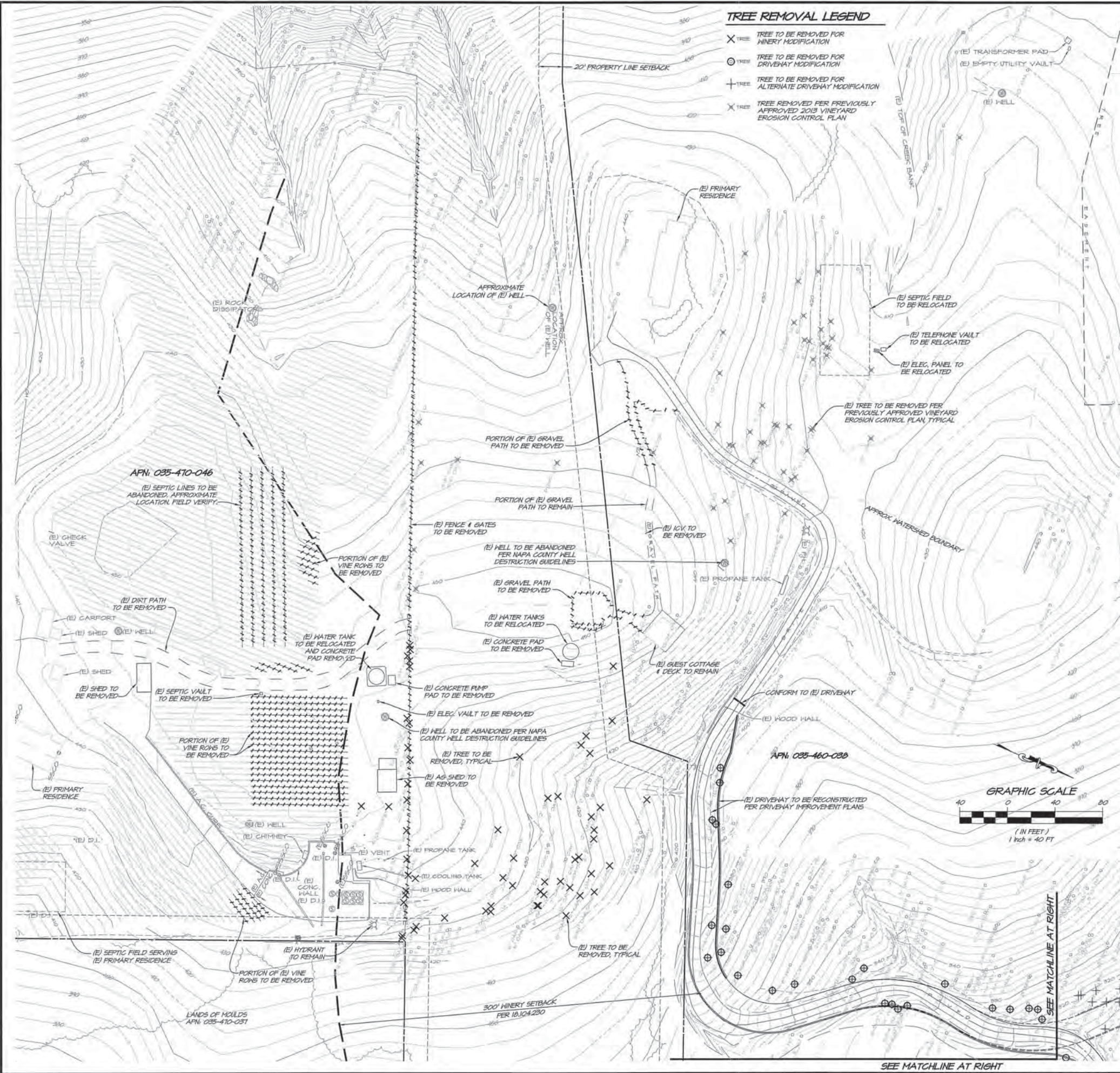
- BASIS OF BEARING FOR THIS MAP IS PER BOOK 89 OF SURVEYS, PAGE 4 & 5, N.G.R.
- CITY OF NAPA BM #B-A, ELEVATION = 143.22' (NGVD 1929).

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DATE: JUNE 5, 2018
DRAWN: JFY
DESIGNED: PSH
CHECKED: BHF
JOB NO.: 411010.0
SHEET NO.: UP1.0
1 OF 5 SHEETS

**ANTHEM WINERY
SITE AND WINERY LAYOUT PLAN
CALIFORNIA
NAPA COUNTY**



- TREE REMOVAL LEGEND**
- X TREE TO BE REMOVED FOR WINERY MODIFICATION
 - TREE TO BE REMOVED FOR DRIVEWAY MODIFICATION
 - + TREE TO BE REMOVED FOR ALTERNATE DRIVEWAY MODIFICATION
 - X TREE REMOVED PER PREVIOUSLY APPROVED 2003 VINEYARD EROSION CONTROL PLAN

TREE REMOVAL FOR WINERY MODIFICATION

SPECIES	SIZE	QTY	SPECIES	SIZE	QTY	SPECIES	SIZE	QTY
BAY	6"	1	OAK	3x16"	1	OAK	18"	1
BAY	12x12"	1	OAK	5x16"	1	OAK	20"	1
BAY CLUSTER	44"	1	OAK	6"	2	OAK	22"	1
BAY CLUSTER	62"	1	OAK	6x18"	1	OAK	42"	1
BLUE OAK	10"	1	OAK	7"	3	OAK SNAG	8x4"	1
BLUE OAK	12"	1	OAK	7x8"	1	OAK SNAG	10"	1
BLUE OAK	14x2"	1	OAK	7x16"	1	FLUM	7"	1
CHERRY	8x3"	1	OAK	8"	2	WHITE OAK	8"	1
LIVE OAK	2x4x18"	1	OAK	9"	3	WHITE OAK	8x32"	1
LIVE OAK	4x6"	1	OAK	9x10"	1	WHITE OAK	14"	1
LIVE OAK	6"	1	OAK	10"	2	WHITE OAK	14x3"	1
LIVE OAK	8"	2	OAK	10x14"	1	WHITE OAK	16"	1
LIVE OAK	8x2x20"	1	OAK	12"	4	WHITE OAK	18"	1
LIVE OAK	12"	1	OAK	14"	2	WHITE OAK	20"	1
LIVE OAK	18"	1	OAK	16"	1	WHITE OAK	22"	1
OAK	2x6"	1						

WINERY TOTAL: 60

TREE REMOVAL FOR DRIVEWAY MODIFICATION

SPECIES	SIZE	QTY	SPECIES	SIZE	QTY	SPECIES	SIZE	QTY
BAY	2x7"	1	BAY CLUSTER	50"	1	LIVE OAK	12"	1
BAY	3x3x6"	1	BAY CLUSTER	75"	1	LIVE OAK	14"	1
BAY	3x6"	1	BLUE OAK	4x6"	1	LIVE OAK	24"	1
BAY	6"	1	BLUE OAK	12x16"	1	LIVE OAK	26"	1
BAY	6x7"	1	BLUE OAK	14"	1	WHITE OAK	6x12"	1
BAY	7x2x12x12"	1	BLUE OAK	16"	1	WHITE OAK	8"	1
BAY	10x14"	1	BLUE OAK	18"	1	WHITE OAK	12"	2
BAY	12x14"	1	BLUE OAK	34"	1	WHITE OAK	14"	1
BAY	12x10x16"	1	LIVE OAK	8"	1	WHITE OAK	18"	1
BAY	16"	1						

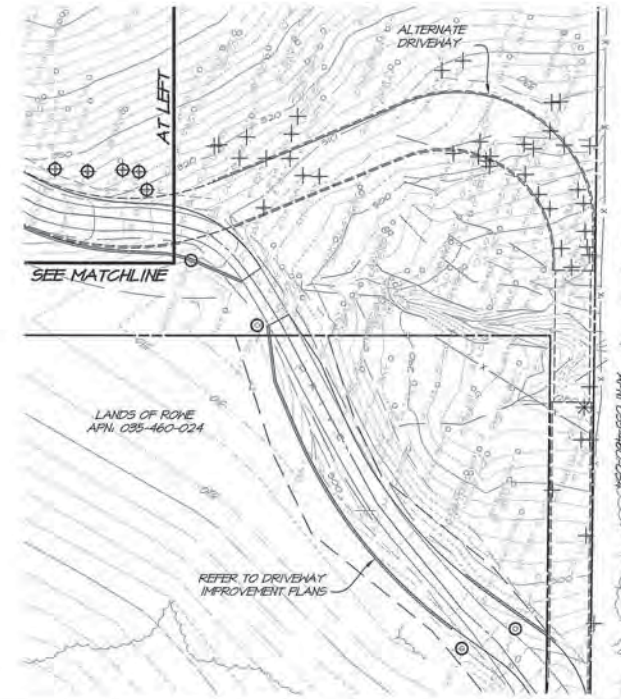
DRIVEWAY TOTAL: 24

TREE REMOVAL FOR ALTERNATE DRIVEWAY MODIFICATION

SPECIES	SIZE	QTY	SPECIES	SIZE	QTY	SPECIES	SIZE	QTY
BAY	2x6"	2	BAY	12x10x16"	1	LIVE OAK	8"	3
BAY	2x7"	1	BAY	16"	1	LIVE OAK	10"	2
BAY	3x3x6"	1	BAY CLUSTER	36"	2	LIVE OAK	12"	1
BAY	3x6"	3	BAY CLUSTER	48"	1	LIVE OAK	14"	1
BAY	4x6"	1	BAY CLUSTER	50"	1	LIVE OAK	18x12"	1
BAY	6"	5	BAY CLUSTER	75"	1	LIVE OAK	20"	1
BAY	6x4"	3	BLUE OAK	4x6"	1	LIVE OAK	24"	1
BAY	8"	8	BLUE OAK	12x16"	1	LIVE OAK	26"	1
BAY	8x2x6"	1	BLUE OAK	14"	1	WHITE OAK	6x12"	1
BAY	10"	1	BLUE OAK	16"	1	WHITE OAK	8"	1
BAY	10x6"	1	BLUE OAK	18"	1	WHITE OAK	12"	3
BAY	10x14"	1	BLUE OAK	20"	1	WHITE OAK	14"	1
BAY	12"	1	BLUE OAK	34"	1	WHITE OAK	18"	2
BAY	12x6"	1	LIVE OAK	2x18"	1	WHITE OAK	2"	2
BAY	12x18x4"	1	LIVE OAK	6"	1			

ALTERNATE DRIVEWAY TOTAL: 68

TOTAL TREES TO BE REMOVED (INCLUDES WINERY): 128



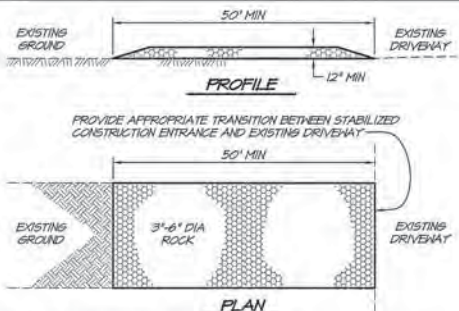
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**ANTHEM WINERY
DEMOLITION PLAN**
NAPA COUNTY
CALIFORNIA

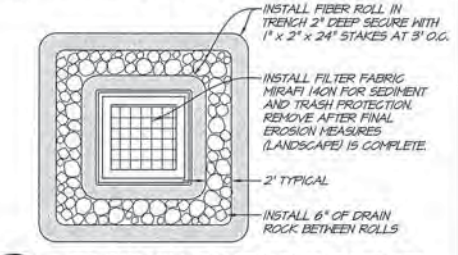
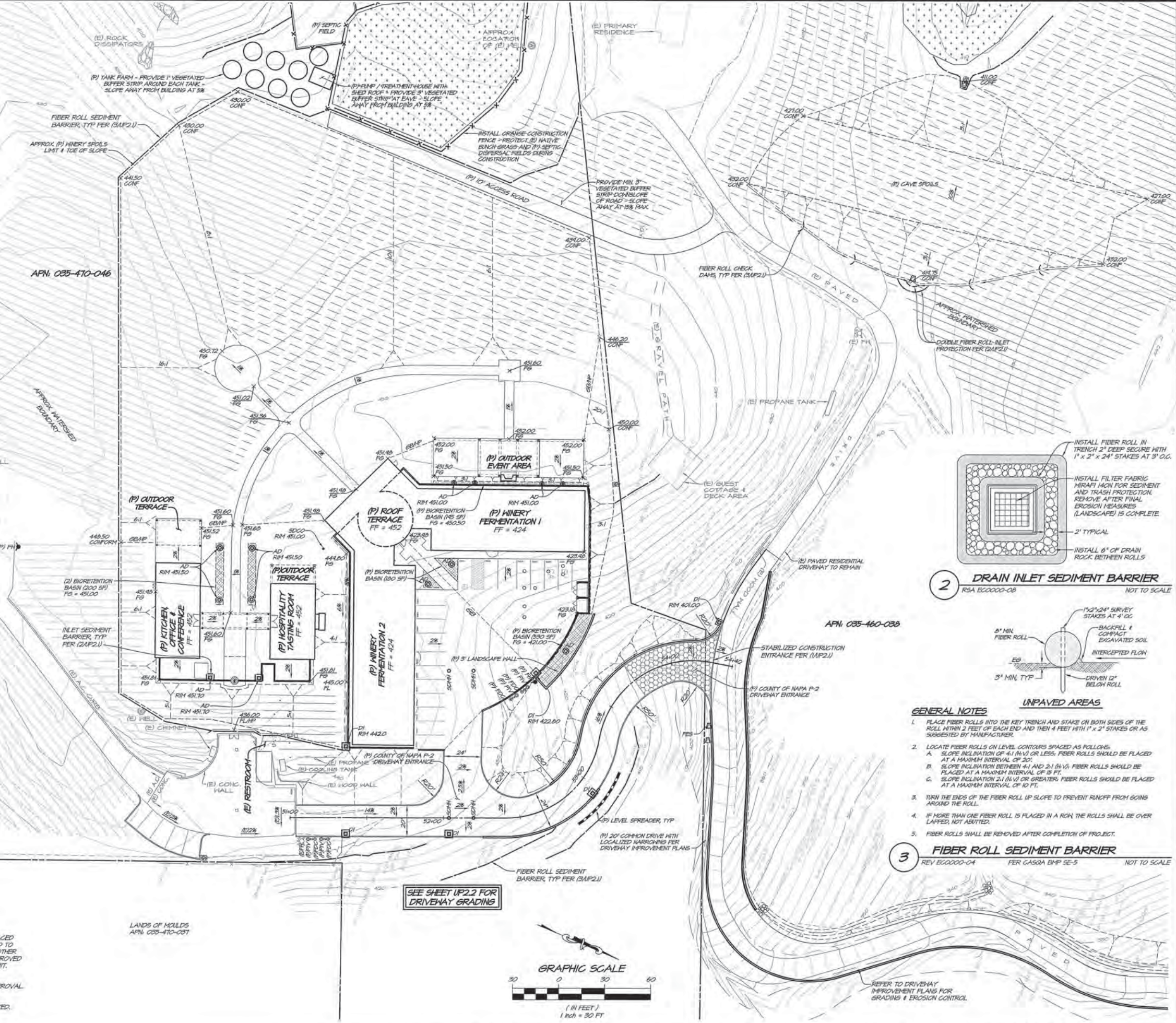
DATE: JUNE 5, 2018
DRAWN: JPH
DESIGNED: RSH
CHECKED: BWF
JOB NO.: 411010.0
SHEET NO.: UP2.0
2 OF 5 SHEETS

DATE: _____ BY: _____
NO. _____ DATE: _____
NO. _____ DATE: _____

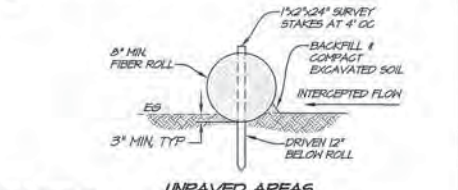


- DESIGN AND CONSTRUCTION SPECIFICATIONS
1. THE MATERIAL FOR CONSTRUCTION OF THE PAD SHALL BE 3 TO 6 INCH STONE.
 2. THE THICKNESS OF THE PAD SHALL NOT BE LESS THAN 12 INCHES.
 3. THE WIDTH OF THE PAD SHALL NOT BE LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
 4. THE LENGTH OF THE PAD SHALL BE AS REQUIRED, BUT NOT LESS THAN 50 FEET.
 5. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.
 6. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE THROUGH USE OF SAND BAGS, GRAVEL, BOARDS OR OTHER APPROVED METHODS.

1 STABILIZED CONSTRUCTION ENTRANCE
REV EC0000-06 NOT TO SCALE



2 DRAIN INLET SEDIMENT BARRIER
RSA EC0000-08 NOT TO SCALE



3 FIBER ROLL SEDIMENT BARRIER
REV EC0000-04 NOT TO SCALE

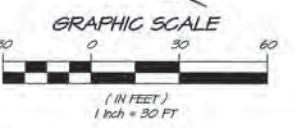
- GENERAL NOTES**
1. PLACE FIBER ROLLS INTO THE KEY TRENCH AND STAKE ON BOTH SIDES OF THE ROLL WITHIN 2 FEET OF EACH END AND THEN 4 FEET WITH 1' x 2' STAKES OR AS SUGGESTED BY MANUFACTURER.
 2. LOCATE FIBER ROLLS ON LEVEL CONTOURS SPACED AS FOLLOWS:
A. SLOPE INCLINATION OF 4:1 (H:V) OR LESS: FIBER ROLLS SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 20'.
B. SLOPE INCLINATION BETWEEN 4:1 AND 2:1 (H:V): FIBER ROLLS SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 15'.
C. SLOPE INCLINATION 2:1 (H:V) OR GREATER: FIBER ROLLS SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 10'.
 3. TURN THE ENDS OF THE FIBER ROLL UP SLOPE TO PREVENT RUNOFF FROM GOING AROUND THE ROLL.
 4. IF MORE THAN ONE FIBER ROLL IS PLACED IN A ROW, THE ROLLS SHALL BE OVER LAPPED, NOT ADJUTED.
 5. FIBER ROLLS SHALL BE REMOVED AFTER COMPLETION OF PROJECT.

EARTHWORK ESTIMATES

LOCATION	CUT (C.Y.)	FILL (C.Y.)
CAVE	14,000	5,100
DRIVEWAY	1,000	2,800
PARKING	1,000	-
WINERY	9,300	12,000
SUBTOTAL	25,300	19,900
NET	5,400 C.Y. CUT	

1. EXCESS MATERIAL TO BE PLACED ON SITE AS SHOWN OR HAULED TO CLOVER FLAT LANDFILL OR OTHER OFF-SITE LOCATION WITH APPROVED NAPA COUNTY GRADING PERMIT.
2. FILL PLACEMENT SUBJECT TO GEOTECHNICAL ENGINEER APPROVAL.
3. SPOILS PLACEMENT TO BE PROGRESSIVELY RE-VEGETATED.

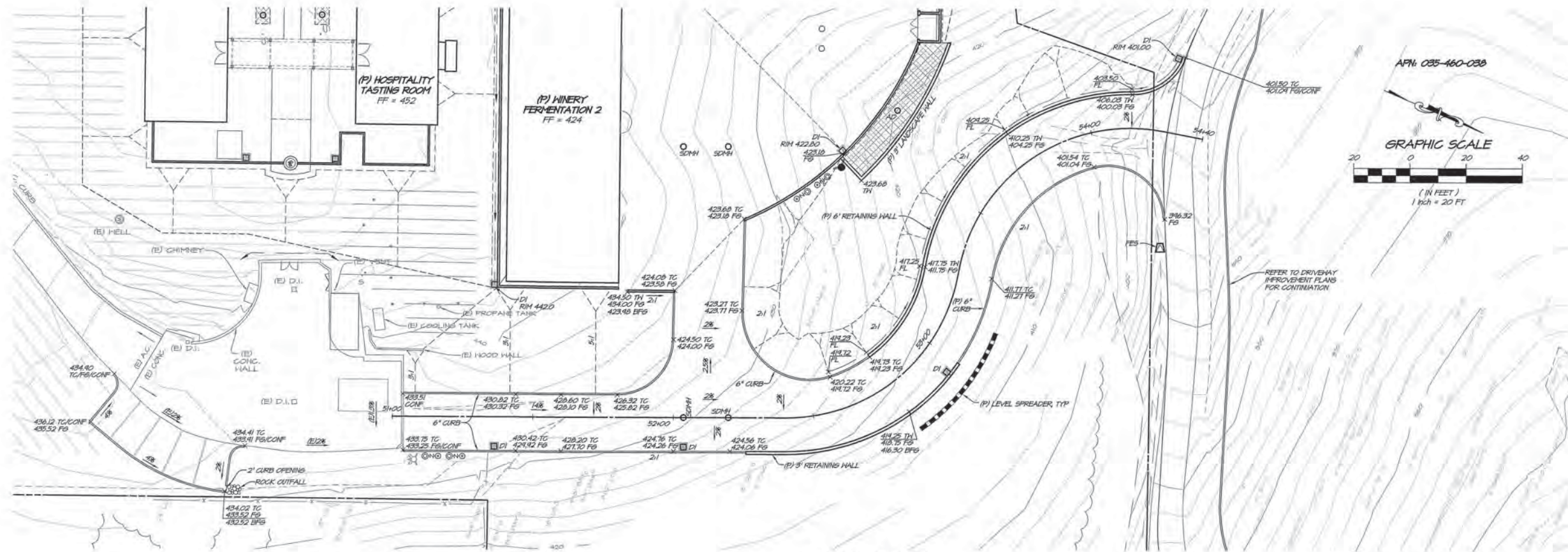
SEE SHEET UP2.2 FOR DRIVEWAY GRADING



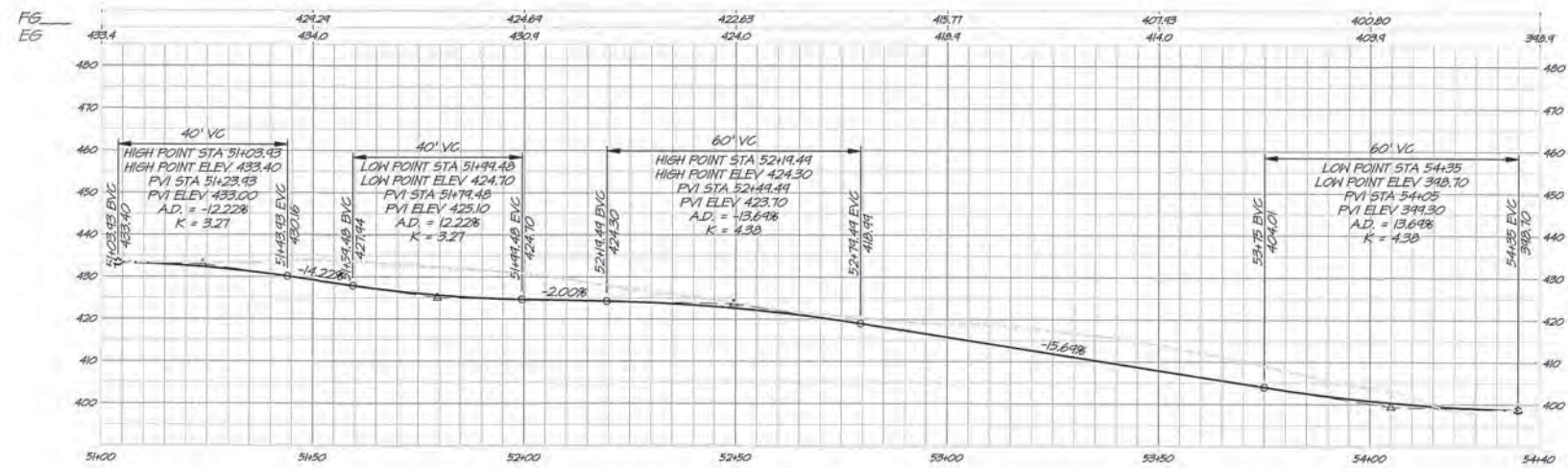
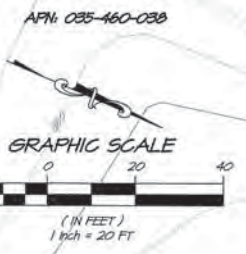
ANTHEM WINERY
GRADING & EROSION CONTROL PLAN
CALIFORNIA

NAPA COUNTY
NAPA COUNTY PROFESSIONAL ENGINEER
5529
Up 12-31-18
CIVIL ENGINEER
STATE OF CALIFORNIA

DATE: JUNE 5, 2018
DRAWN: JPN
DESIGNED: PSN
CHECKED: BWF
JOB NO.: 411010
SHEET NO.: UP2.1
3 OF 5 SHEETS



DRIVEWAY PLAN
SCALE: 1" = 20'



DRIVEWAY PROFILE
SCALE: 1" = 20'

REVISIONS

NO.	DATE	BY	APPV

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ANTHEM WINERY
DRIVEWAY PLAN & PROFILE
NAPA COUNTY
CALIFORNIA



DATE: JUNE 5, 2018

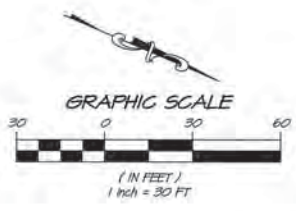
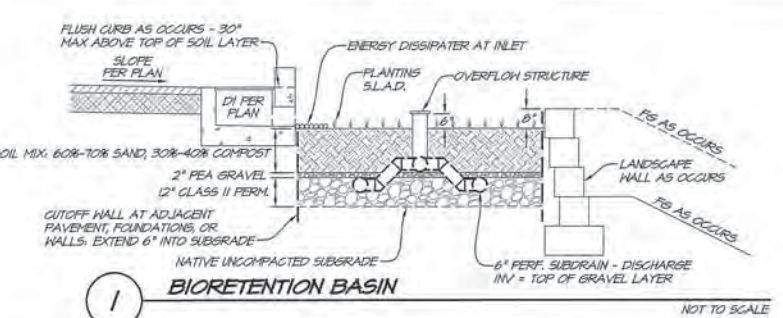
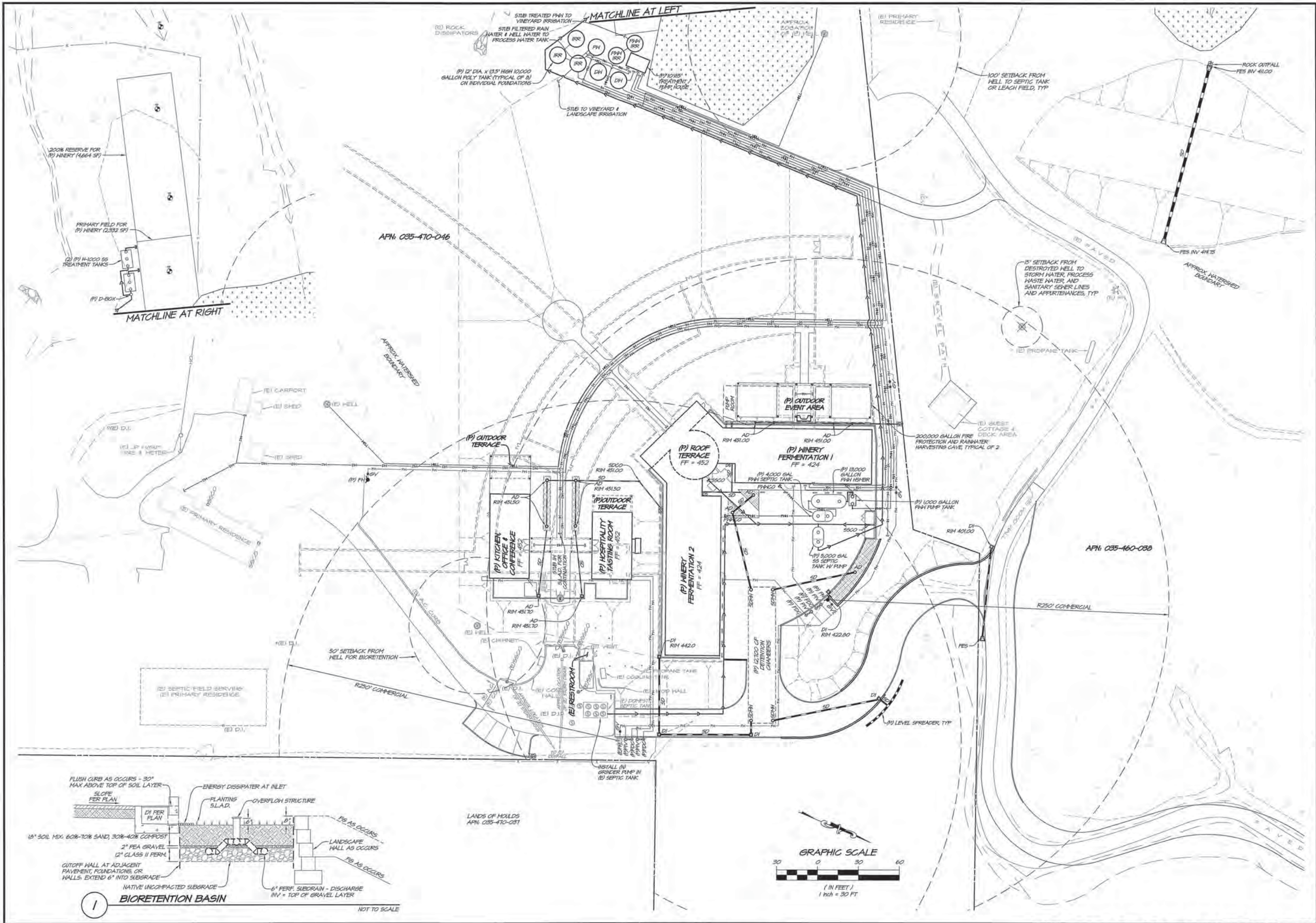
DRAWN: JFN

DESIGNED: PSH

CHECKED: EPF

JOB NO. 411010.0

SHEET NO. UP2.2
4 OF 5 SHEETS



NO.	DATE	REVISIONS

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ANTHEM WINERY
UTILITY PLAN
 CALIFORNIA
 NAPA COUNTY



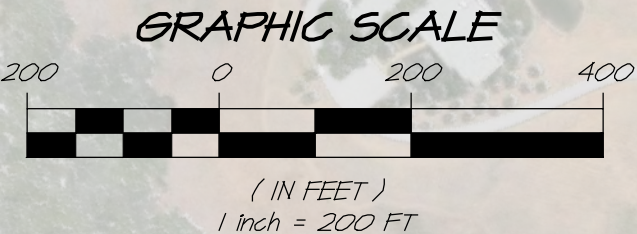
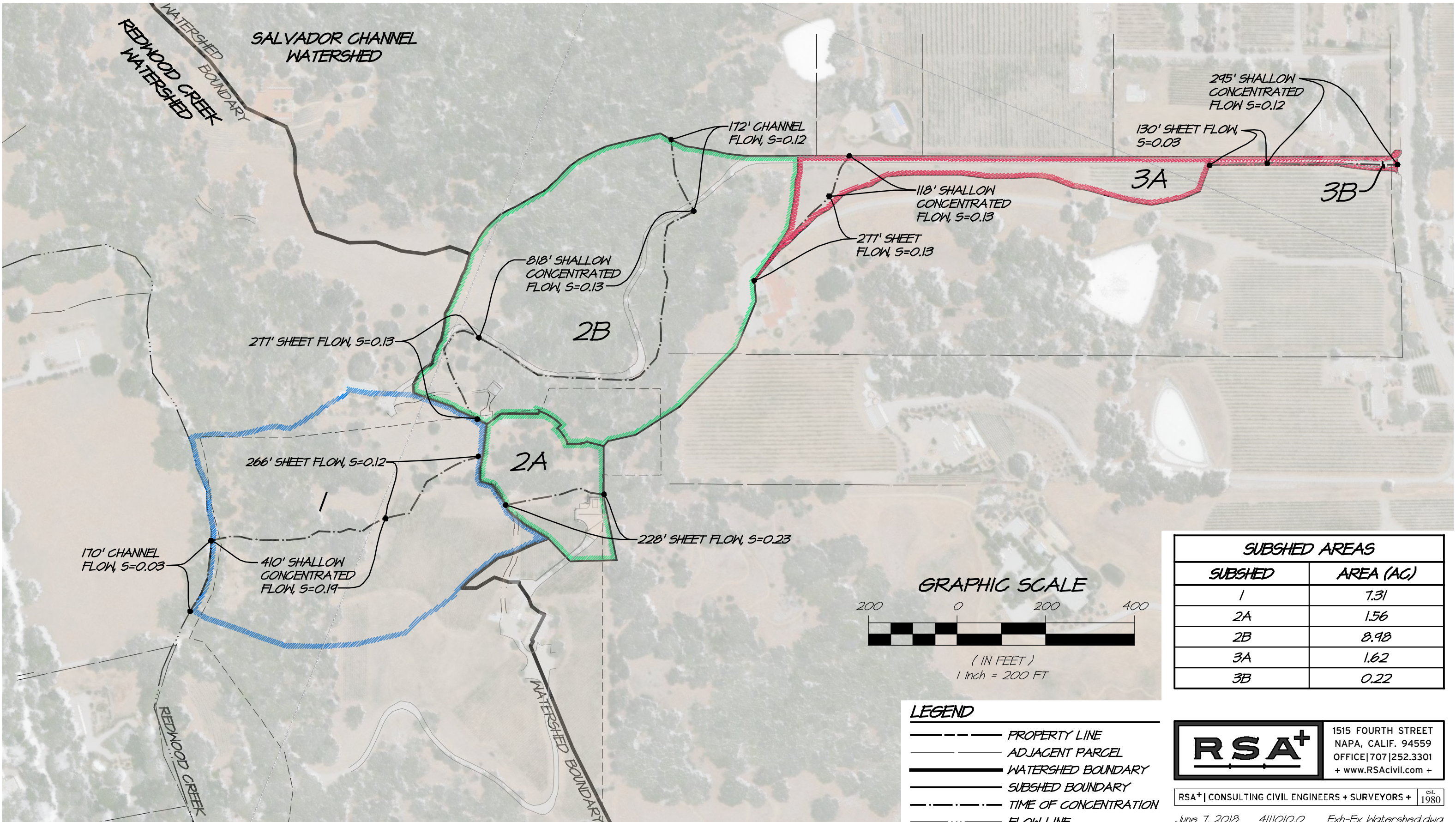
DATE	JAN 5, 2018
DRAWN	JEM
DESIGNED	PSM
CHECKED	EMF
JOB NO.	411010.0
SHEET NO.	UP3.0
5 OF 5 SHEETS	



ATTACHMENT 3

Hydrology Calculations

ANTHEM WINERY EXISTING DRAINAGE WATERSHED MAP



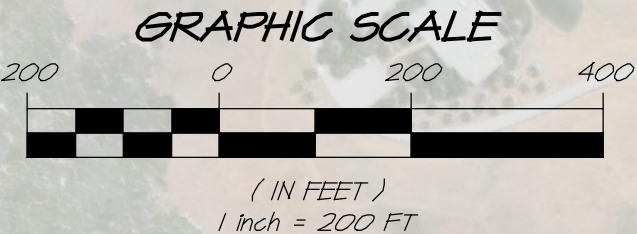
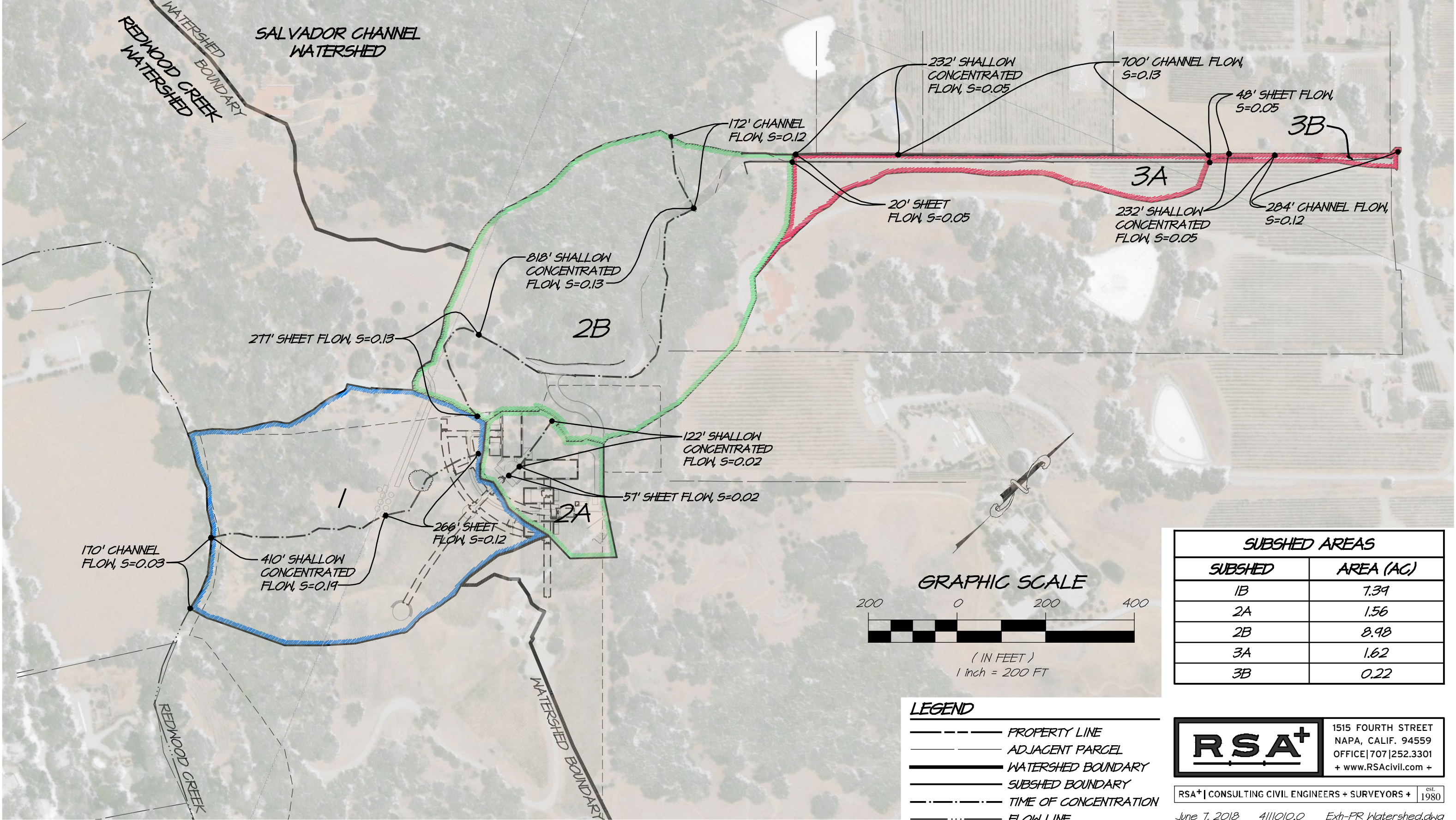
SUBSHED AREAS	
SUBSHED	AREA (AC)
1	7.31
2A	1.56
2B	8.98
3A	1.62
3B	0.22

- LEGEND**
- PROPERTY LINE
 - ADJACENT PARCEL
 - WATERSHED BOUNDARY
 - SUBSHED BOUNDARY
 - TIME OF CONCENTRATION
 - FLOW LINE

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ANTHEM WINERY PROPOSED DRAINAGE WATERSHED MAP



SUBSHED AREAS	
SUBSHED	AREA (AC)
1B	7.39
2A	1.56
2B	8.98
3A	1.62
3B	0.22

LEGEND

- PROPERTY LINE
- ADJACENT PARCEL
- WATERSHED BOUNDARY
- SUBSHED BOUNDARY
- TIME OF CONCENTRATION
- FLOW LINE

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NOAA Atlas 14, Volume 6, Version 2
Location name: Napa, California, US*
Latitude: 38.3352°, Longitude: -122.3532°
Elevation: 381 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerials](#)

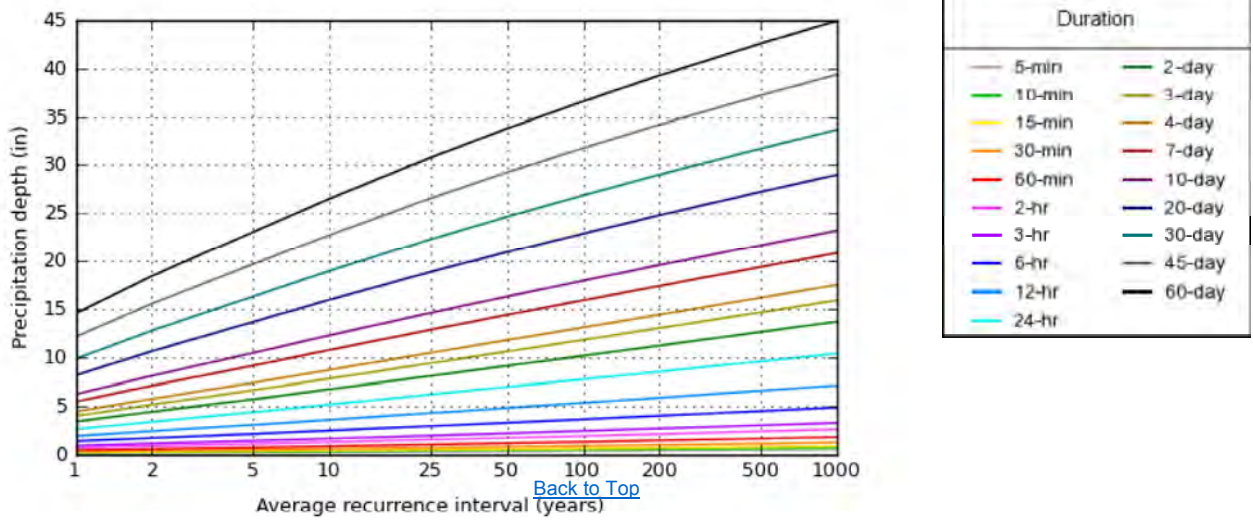
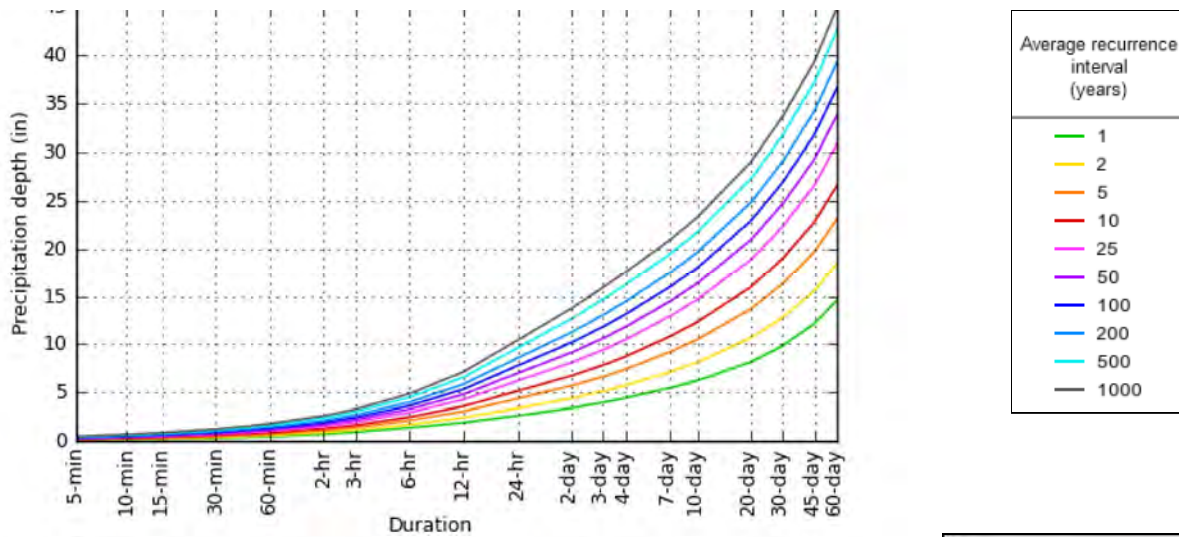
PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.135 (0.120-0.153)	0.167 (0.149-0.190)	0.210 (0.186-0.239)	0.245 (0.215-0.282)	0.293 (0.248-0.351)	0.331 (0.273-0.406)	0.369 (0.296-0.466)	0.410 (0.318-0.533)	0.465 (0.344-0.634)	0.508 (0.362-0.721)
10-min	0.193 (0.172-0.219)	0.240 (0.213-0.272)	0.301 (0.267-0.343)	0.351 (0.309-0.404)	0.421 (0.355-0.503)	0.474 (0.391-0.581)	0.530 (0.424-0.667)	0.587 (0.456-0.764)	0.666 (0.493-0.909)	0.728 (0.519-1.03)
15-min	0.234 (0.208-0.265)	0.290 (0.258-0.329)	0.364 (0.323-0.415)	0.425 (0.373-0.489)	0.509 (0.430-0.608)	0.574 (0.473-0.703)	0.640 (0.513-0.807)	0.710 (0.551-0.924)	0.806 (0.596-1.10)	0.881 (0.627-1.25)
30-min	0.335 (0.298-0.380)	0.415 (0.369-0.472)	0.521 (0.462-0.594)	0.609 (0.534-0.700)	0.728 (0.615-0.871)	0.822 (0.677-1.01)	0.917 (0.735-1.16)	1.02 (0.789-1.32)	1.15 (0.854-1.57)	1.26 (0.898-1.79)
60-min	0.485 (0.432-0.551)	0.602 (0.535-0.684)	0.756 (0.670-0.862)	0.883 (0.775-1.02)	1.06 (0.892-1.26)	1.19 (0.982-1.46)	1.33 (1.07-1.68)	1.47 (1.14-1.92)	1.67 (1.24-2.28)	1.83 (1.30-2.60)
2-hr	0.738 (0.657-0.837)	0.907 (0.807-1.03)	1.13 (1.00-1.29)	1.31 (1.15-1.51)	1.56 (1.31-1.86)	1.75 (1.44-2.14)	1.94 (1.55-2.44)	2.14 (1.66-2.78)	2.41 (1.78-3.29)	2.62 (1.87-3.72)
3-hr	0.944 (0.841-1.07)	1.16 (1.03-1.32)	1.44 (1.28-1.64)	1.67 (1.47-1.92)	1.98 (1.67-2.37)	2.21 (1.83-2.71)	2.45 (1.97-3.09)	2.70 (2.10-3.52)	3.04 (2.25-4.15)	3.30 (2.35-4.68)
6-hr	1.40 (1.25-1.59)	1.73 (1.54-1.97)	2.15 (1.91-2.45)	2.49 (2.19-2.87)	2.95 (2.49-3.53)	3.30 (2.72-4.05)	3.66 (2.93-4.61)	4.02 (3.12-5.23)	4.51 (3.34-6.15)	4.88 (3.48-6.93)
12-hr	1.94 (1.72-2.20)	2.44 (2.17-2.77)	3.08 (2.73-3.52)	3.60 (3.16-4.15)	4.30 (3.63-5.14)	4.82 (3.97-5.91)	5.34 (4.28-6.74)	5.88 (4.56-7.65)	6.59 (4.88-8.99)	7.14 (5.08-10.1)
24-hr	2.63 (2.37-2.98)	3.40 (3.06-3.86)	4.38 (3.93-4.99)	5.17 (4.60-5.92)	6.21 (5.38-7.31)	6.99 (5.96-8.38)	7.77 (6.49-9.50)	8.56 (6.98-10.7)	9.61 (7.57-12.5)	10.4 (7.97-13.9)
2-day	3.42 (3.08-3.88)	4.43 (3.98-5.03)	5.72 (5.13-6.50)	6.74 (6.01-7.73)	8.12 (7.03-9.55)	9.15 (7.79-11.0)	10.2 (8.50-12.4)	11.2 (9.17-14.1)	12.6 (9.96-16.4)	13.7 (10.5-18.3)
3-day	3.99 (3.59-4.53)	5.16 (4.63-5.86)	6.65 (5.96-7.56)	7.84 (6.98-8.98)	9.42 (8.17-11.1)	10.6 (9.05-12.7)	11.8 (9.87-14.5)	13.0 (10.6-16.3)	14.7 (11.6-19.0)	15.9 (12.2-21.2)
4-day	4.45 (4.01-5.05)	5.76 (5.17-6.54)	7.42 (6.65-8.44)	8.74 (7.78-10.0)	10.5 (9.09-12.3)	11.8 (10.1-14.1)	13.1 (10.9-16.0)	14.4 (11.8-18.1)	16.2 (12.8-21.0)	17.5 (13.4-23.4)
7-day	5.47 (4.92-6.21)	7.12 (6.40-8.08)	9.17 (8.22-10.4)	10.8 (9.60-12.3)	12.9 (11.2-15.1)	14.4 (12.3-17.3)	15.9 (13.3-19.5)	17.4 (14.2-21.8)	19.4 (15.3-25.1)	20.8 (16.0-27.8)
10-day	6.23 (5.61-7.07)	8.13 (7.31-9.23)	10.5 (9.39-11.9)	12.3 (10.9-14.1)	14.6 (12.7-17.2)	16.3 (13.9-19.5)	18.0 (15.0-22.0)	19.6 (16.0-24.5)	21.7 (17.1-28.1)	23.2 (17.8-31.0)
20-day	8.17 (7.35-9.27)	10.7 (9.58-12.1)	13.7 (12.3-15.6)	16.0 (14.2-18.3)	18.9 (16.4-22.2)	20.9 (17.8-25.1)	22.9 (19.1-28.0)	24.8 (20.2-31.1)	27.2 (21.5-35.3)	29.0 (22.2-38.7)
30-day	9.86 (8.87-11.2)	12.8 (11.5-14.5)	16.3 (14.6-18.6)	19.0 (16.9-21.7)	22.3 (19.3-26.3)	24.7 (21.0-29.5)	26.9 (22.4-32.9)	29.0 (23.7-36.3)	31.7 (25.0-41.1)	33.7 (25.8-44.9)
45-day	12.1 (10.9-13.8)	15.6 (14.0-17.7)	19.7 (17.6-22.4)	22.8 (20.3-26.1)	26.6 (23.0-31.3)	29.2 (24.9-35.0)	31.8 (26.5-38.8)	34.2 (27.9-42.8)	37.2 (29.3-48.2)	39.3 (30.1-52.4)
60-day	14.6 (13.1-16.5)	18.4 (16.6-20.9)	23.1 (20.7-26.2)	26.5 (23.6-30.4)	30.8 (26.7-36.2)	33.8 (28.8-40.5)	36.6 (30.5-44.7)	39.2 (32.0-49.1)	42.5 (33.5-55.1)	44.9 (34.4-59.9)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical



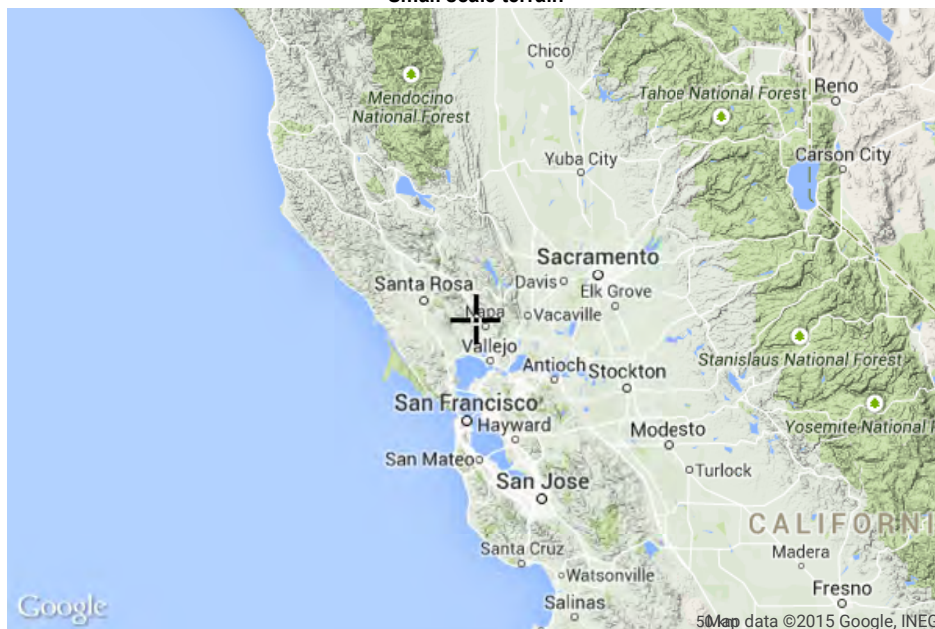
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Maps & aerials

Created (GMT): Wed Mar 4 21:58:48 2015

NOAA Atlas 14, Volume 6, Version 2

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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[US Department of Commerce](#)
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[National Weather Service](#)
[Office of Hydrologic Development](#)
1325 East West Highway
Silver Spring, MD 20910

Worksheet: Time of Concentration (T_c) or travel time (T_t)

Project Anthem Winery	By DJS	Date 6/7/2018
Location Project Site	Checked PSW	Date 6/7/2018
Subshed name Watershed 1	Check one: <input checked="" type="checkbox"/> Present <input type="checkbox"/> Developed	
Note: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic or description of flow segments.	Check one: <input checked="" type="checkbox"/> T_c <input type="checkbox"/> T_t through subarea	

SHEET FLOW (applicable to T_c only)

	Segment ID	1			
1. Surface description (table 3-1)		Range			
2. Manning's roughness coefficient, n (table 3-1)		0.13			
3. Flow length, L (total L, 300 ft) ft		266			
4. Two-year 24-hour rainfall, P_2 in		3.4			
5. Land slope, s ft/ft		0.12			
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t . . . hr		0.1509	+		= 0.1509

SHALLOW CONCENTRATED FLOW

	Segment ID	2			
7. Surface description (paved or unpaved)		Unpaved			
8. Flow length, L ft		410			
9. Watercourse slope, s ft/ft		0.19			
10. Average velocity, V (figure 3-1) ft/sec		7.0329			
11. $T_t = \frac{L}{3600 V}$ Compute T_t . . . hr		0.0162	+		= 0.0162

CHANNEL FLOW

	Segment ID	3			
12. Cross sectional flow area, a ft ²		64			
13. Wetted perimeter, p_w ft		32.98			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r . . . ft		1.9406			
15. Channel slope, s ft/ft		0.03			
16. Manning's roughness coefficient, n		0.03			
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V . ft/sec		13.3838			
18. Flow length, L ft		170			
19. $T_t = \frac{L}{3600 V}$ Compute T_t . . . hr		0.0035	+		= 0.0035
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11 and 19) hr					0.1706

$T_c = 10.24$ mins

Worksheet: Time of Concentration (T_c) or travel time (T_t)

Project Anthem Winery	By DJS	Date 6/7/2018
Location Project Site	Checked PSW	Date 6/7/2018
Subshed name Watershed 1	Check one: <input type="checkbox"/> Present <input checked="" type="checkbox"/> Developed	
Note: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic or description of flow segments.	Check one: <input checked="" type="checkbox"/> T_c <input type="checkbox"/> T_t through subarea	

SHEET FLOW (applicable to T_c only)

	Segment ID	1		
1. Surface description (table 3-1)	Range			
2. Manning's roughness coefficient, n (table 3-1)	0.13			
3. Flow length, L (total L, 300 ft) ft	266			
4. Two-year 24-hour rainfall, P_2 in	3.4			
5. Land slope, s ft/ft	0.12			
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t . . hr	0.1509	+		= 0.1509

SHALLOW CONCENTRATED FLOW

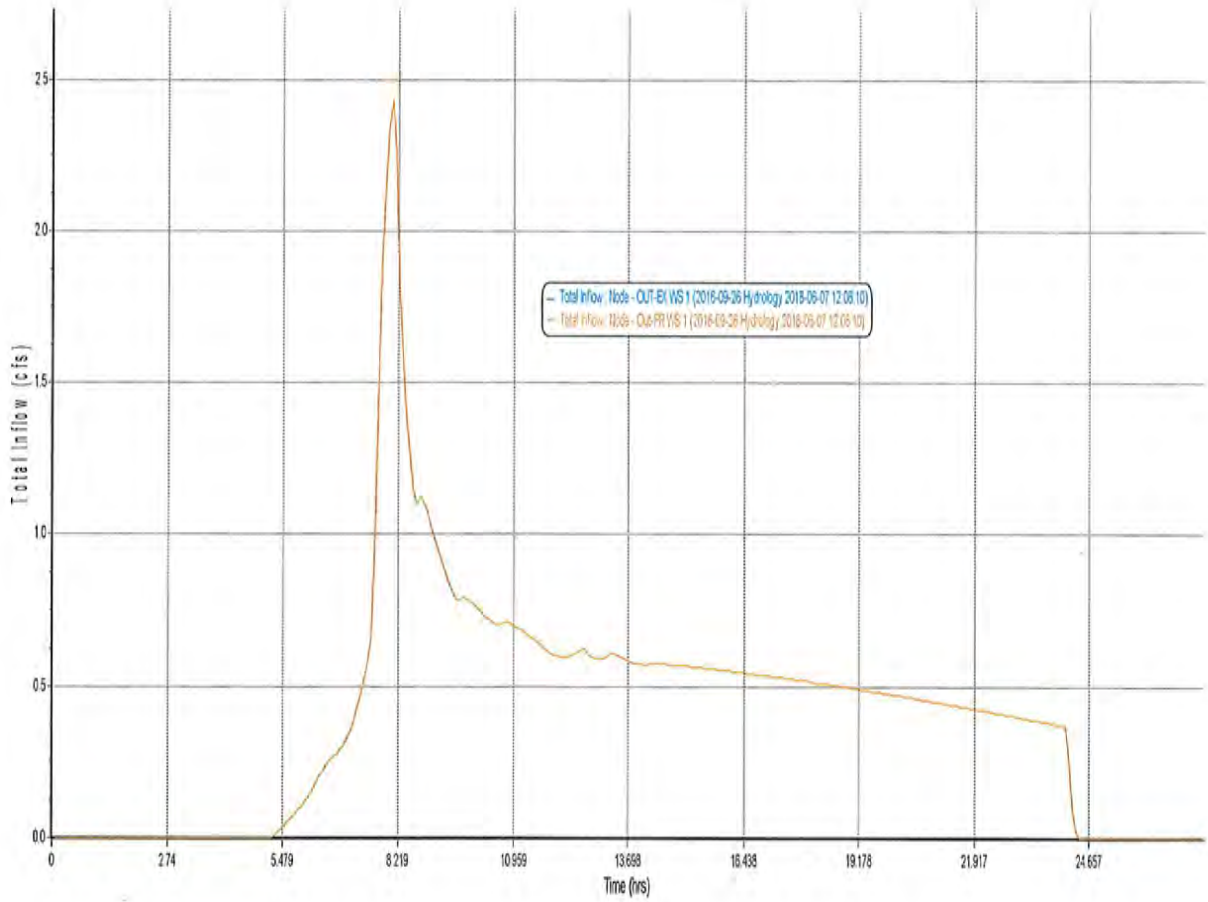
	Segment ID	2		
7. Surface description (paved or unpaved)	Unpaved			
8. Flow length, L ft	410			
9. Watercourse slope, s ft/ft	0.19			
10. Average velocity, V (figure 3-1) ft/sec	7.0329			
11. $T_t = \frac{L}{3600 V}$ Compute T_t . . hr	0.0162	+		= 0.0162

CHANNEL FLOW

	Segment ID	3		
12. Cross sectional flow area, a ft ²	64			
13. Wetted perimeter, p_w ft	32.98			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r . . ft	1.9406			
15. Channel slope, s ft/ft	0.03			
16. Manning's roughness coefficient, n	0.03			
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V . ft/sec	13.3838			
18. Flow length, L ft	170			
19. $T_t = \frac{L}{3600 V}$ Compute T_t . . hr	0.0035	+		= 0.0035
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11 and 19) hr				0.1706

$T_c = 10.24$ mins

Watershed 1: 2-yr Storm Event Runoff



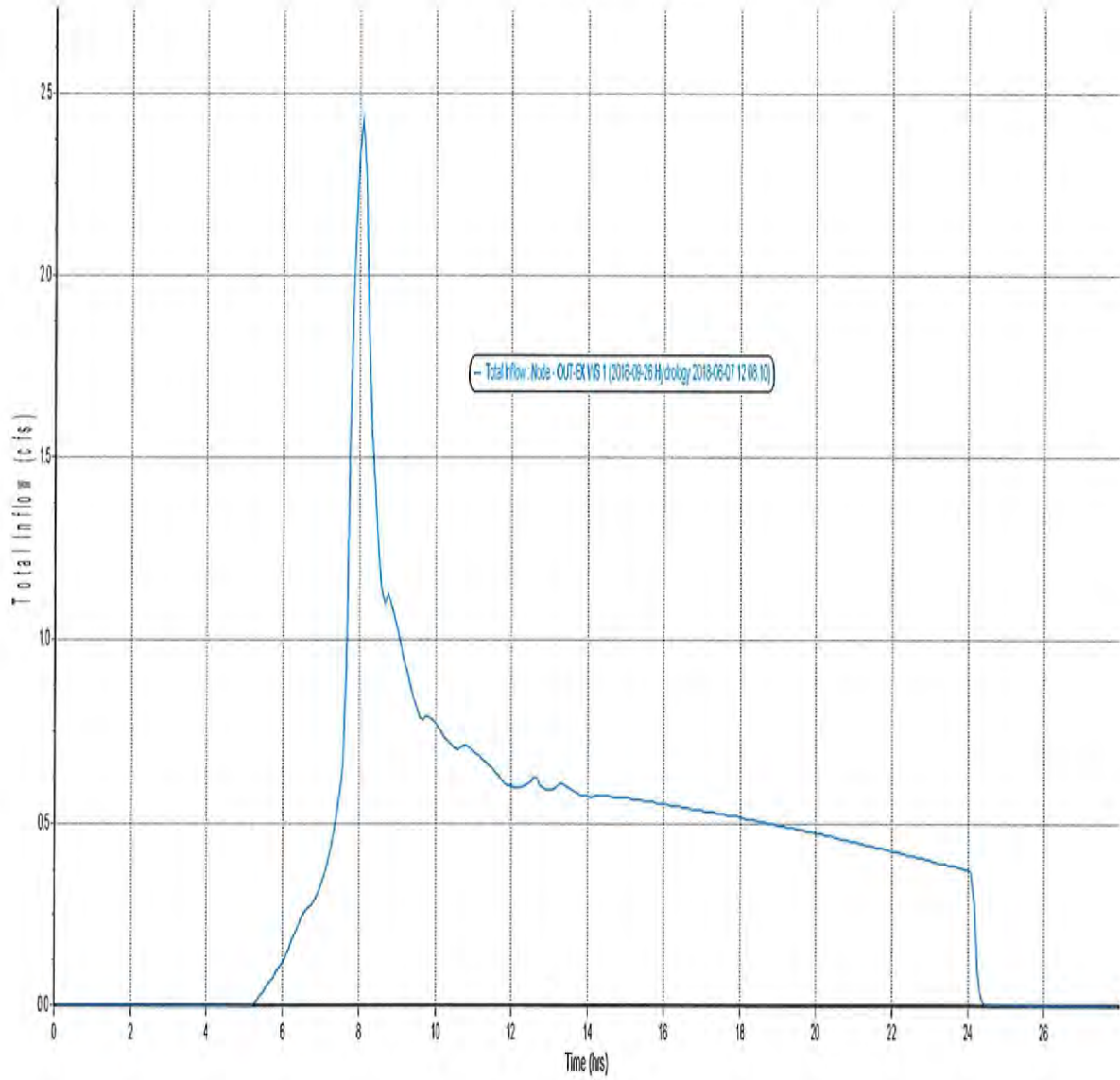
Existing Watershed Runoff Results

Total Rainfall (in) 3.40
 Peak Runoff (cfs) 2.43
 Time to Peak (hrs) 8.03

Proposed Watershed Runoff Results

Total Rainfall (in) 3.40
 Peak Runoff (cfs) 2.43
 Time to Peak (hrs) 8.03

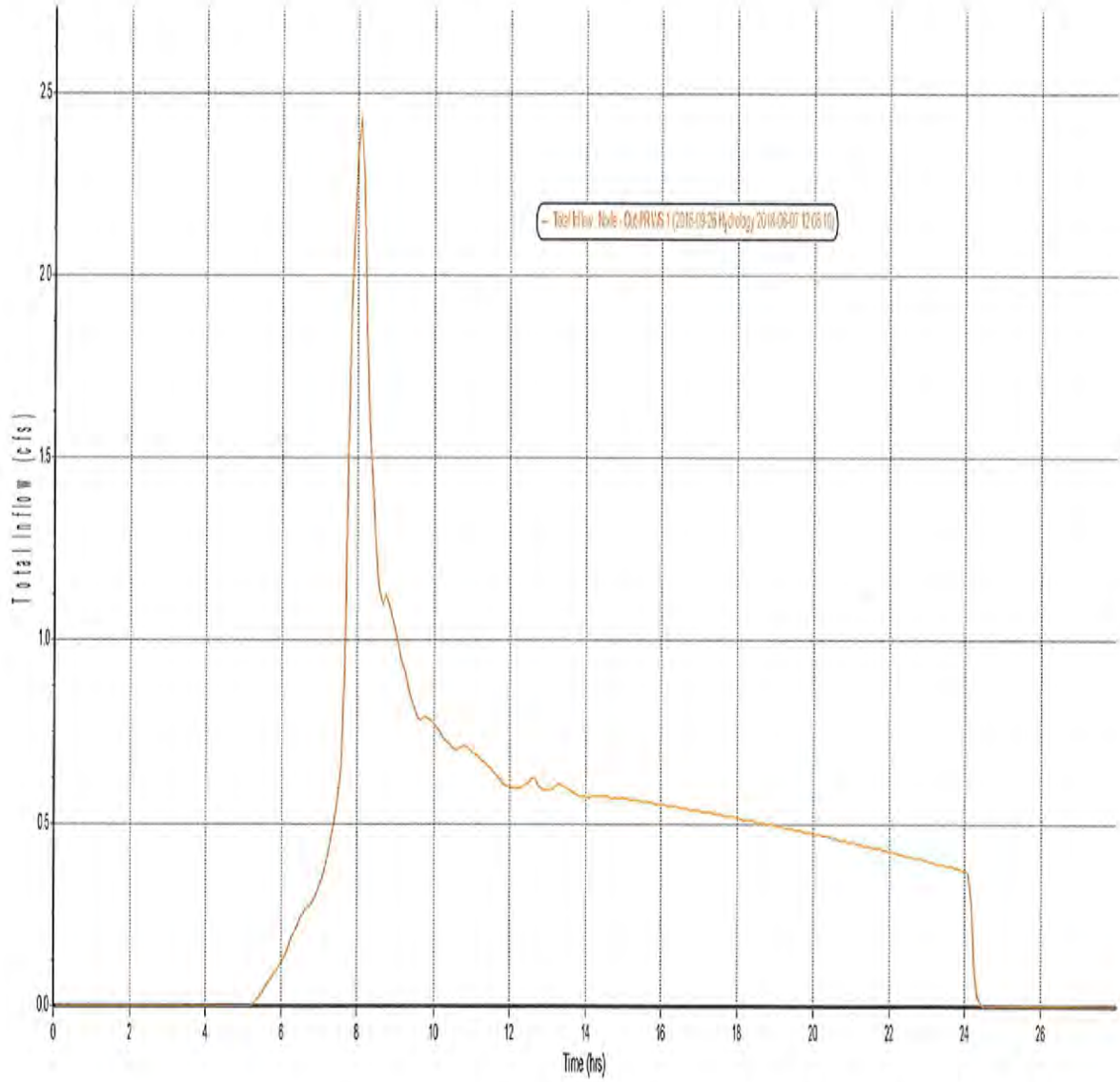
Watershed 1: Existing 2-yr Storm Event Runoff



Existing Watershed Runoff Results

Watershed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
1	79	10.24	7.39	3.40	8.03	2.43

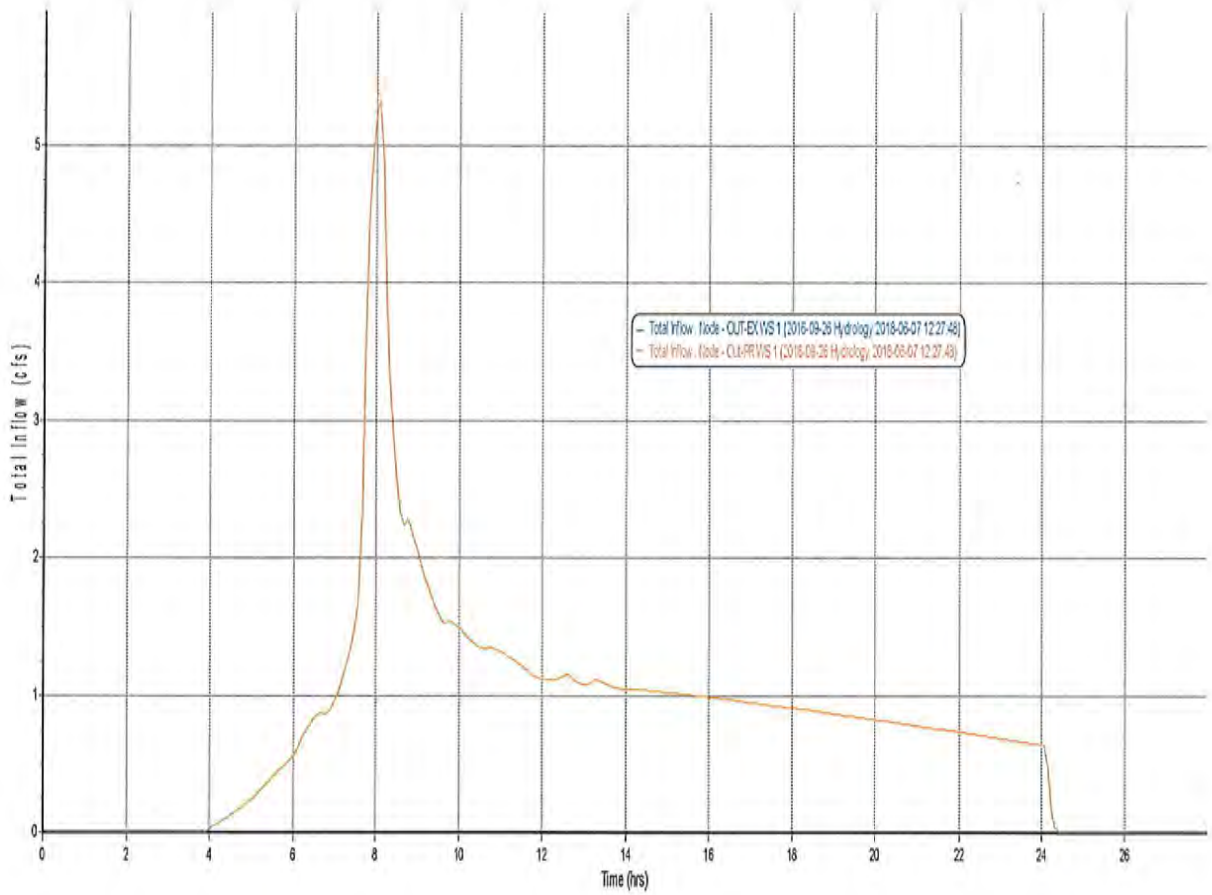
Watershed 1: Proposed 2-yr Storm Event Runoff



Proposed Watershed Runoff Results

Watershed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
1	79	10.24	7.39	3.40	8.03	2.43

Watershed 1: 10-yr Storm Event



Existing Watershed Runoff Results

Total Rainfall (in) 5.17

Peak Runoff (cfs) 5.32

Time to Peak (hrs) 8.04

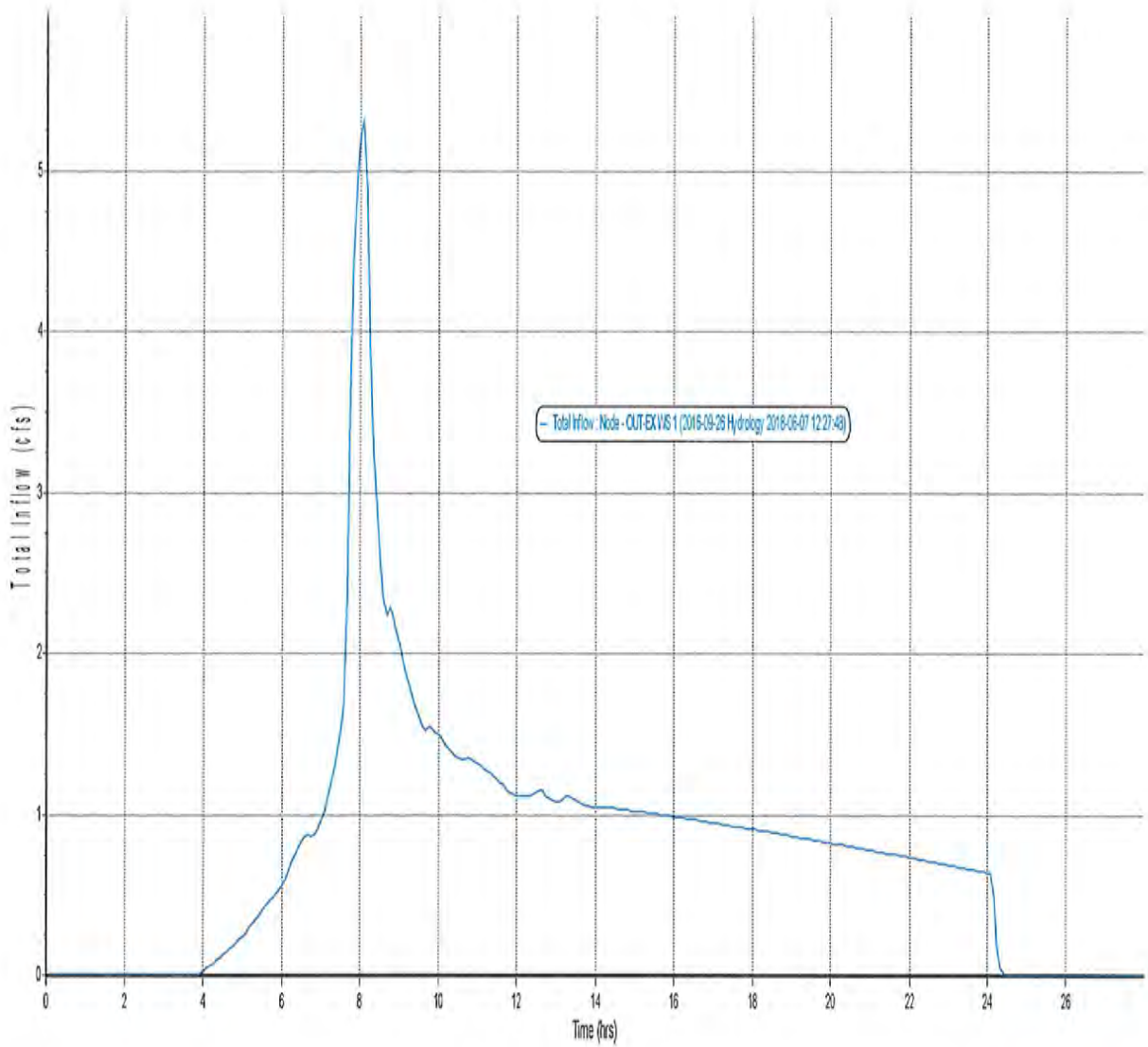
Proposed Watershed Runoff Results

Total Rainfall (in) 5.17

Peak Runoff (cfs) 5.32

Time to Peak (hrs) 8.04

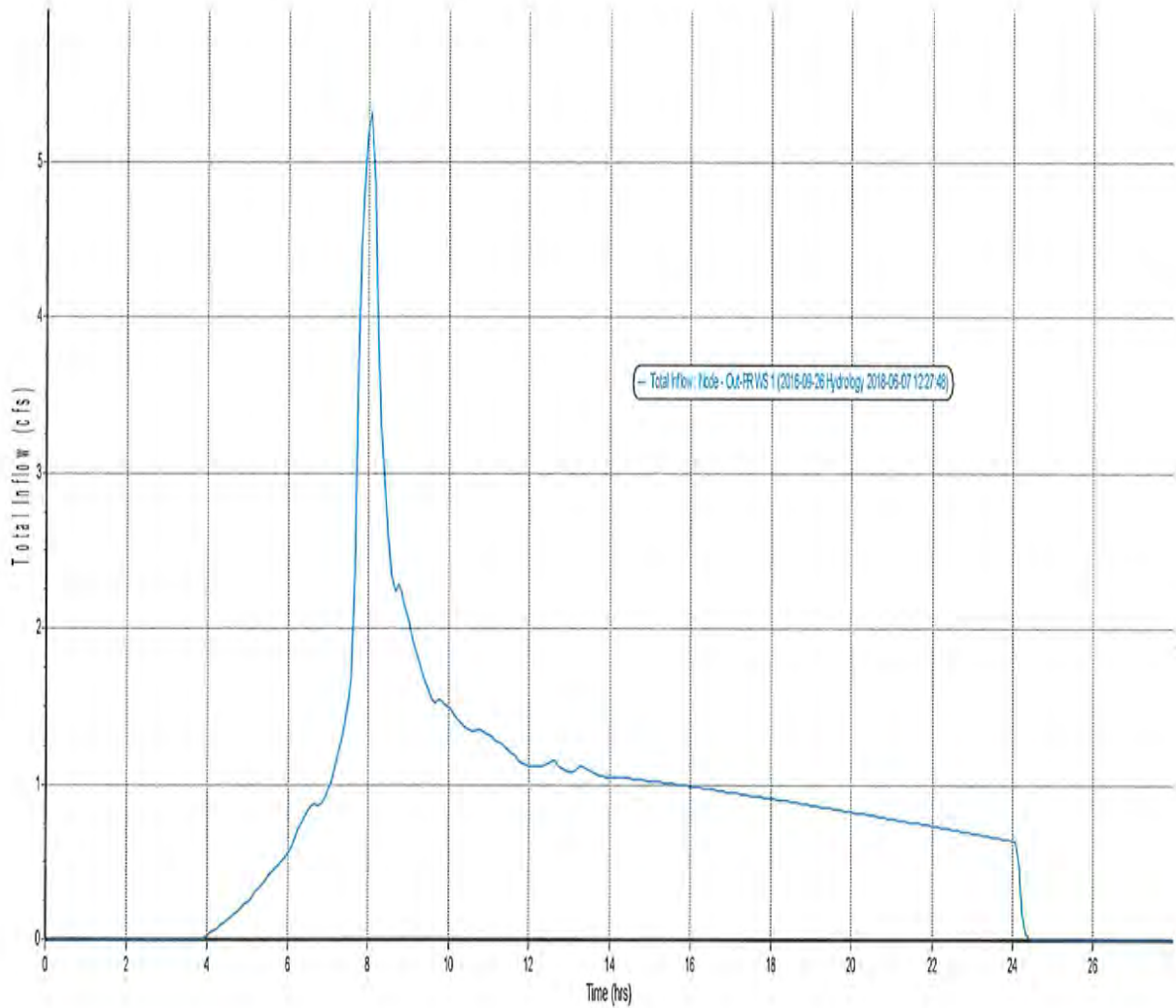
Watershed 1: Ex 10-yr Storm Event Runoff



Existing Watershed Runoff Results

Watershed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
1	79	10.24	7.39	5.17	8.06	5.32

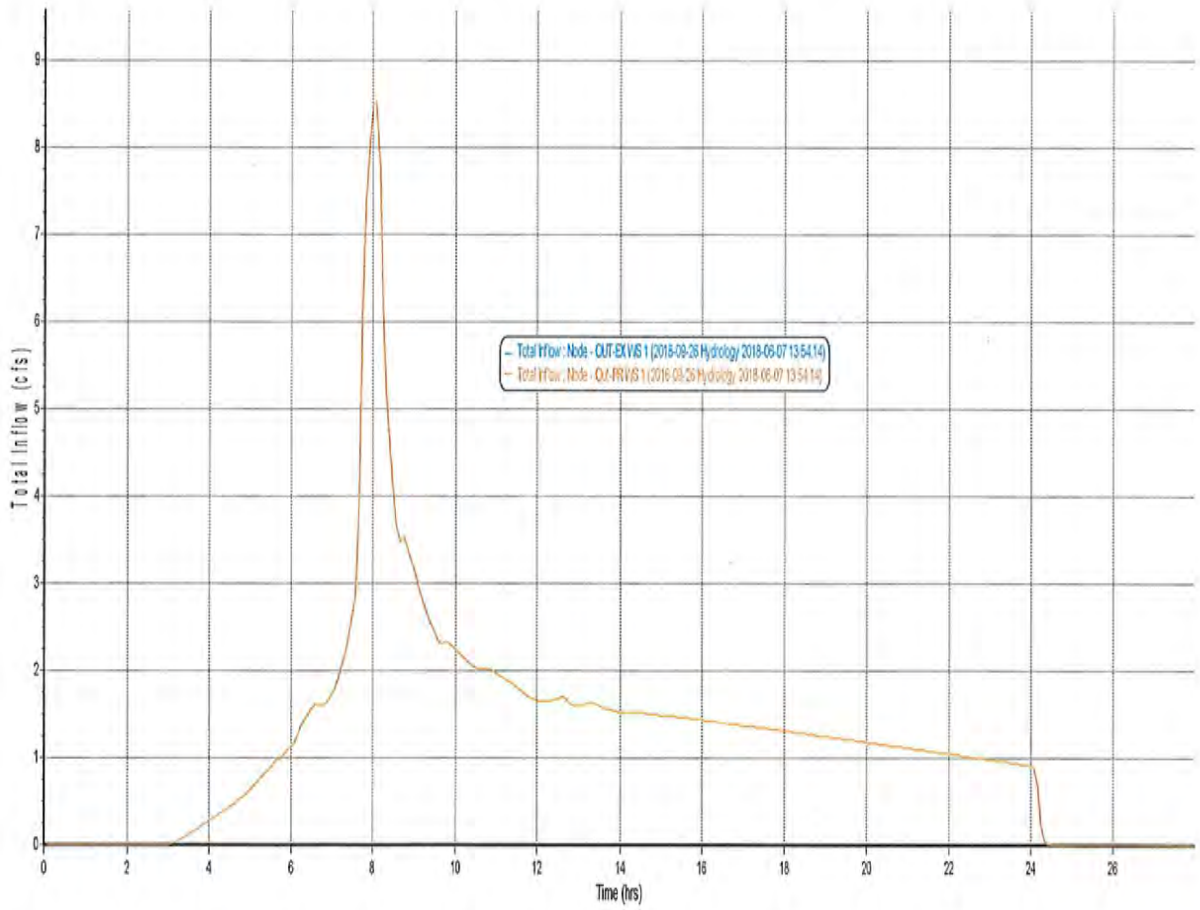
Watershed 1: Proposed 10-yr Storm Event Runoff



Proposed Watershed Runoff Results

Watershed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
1	79	10.24	7.39	5.17	8.10	5.32

Watershed : 50-yr Storm Event Runoff



Existing Watershed Runoff Results

Total Rainfall (in) 6.99

Peak Runoff (cfs)8.54

Time to Peak (hrs)8.57

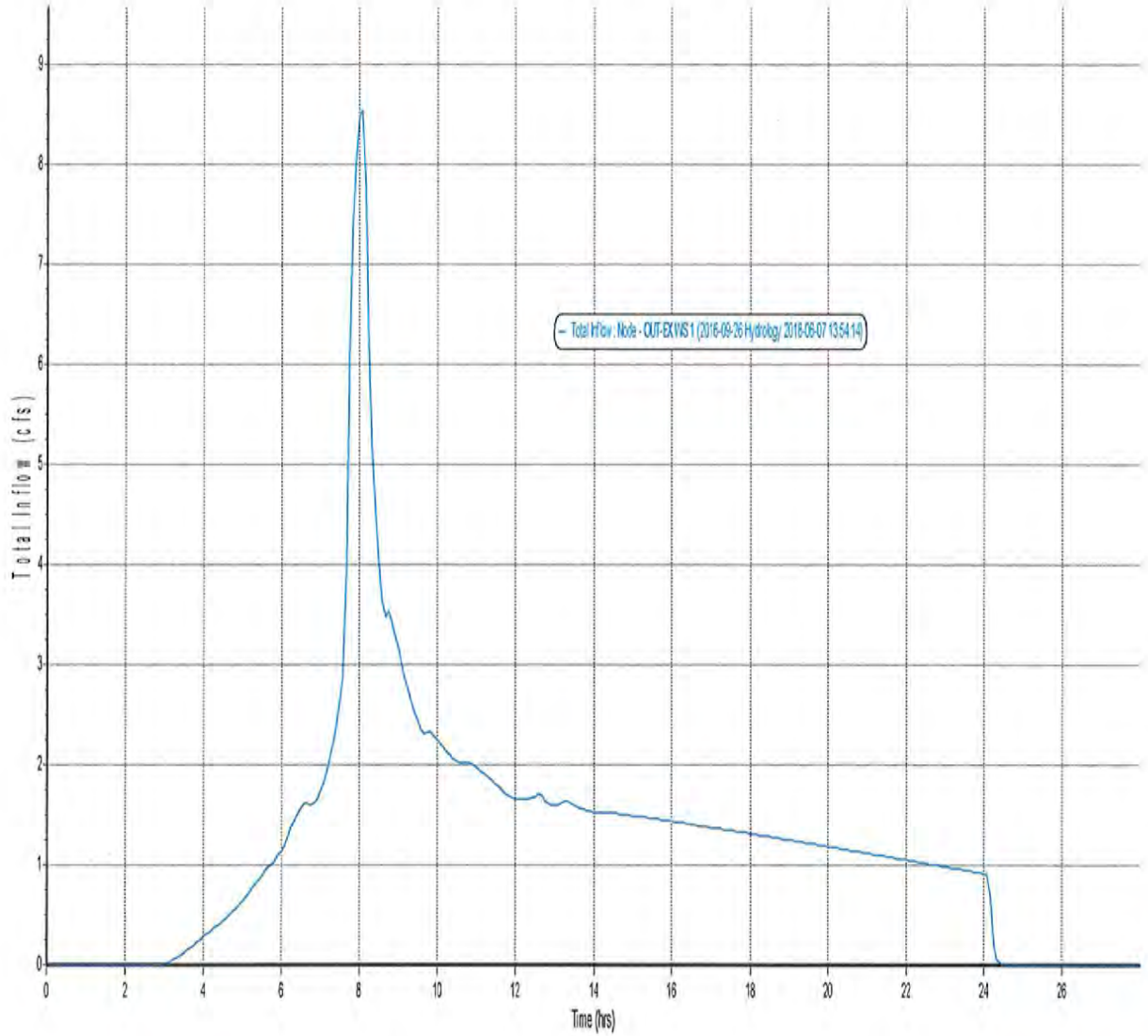
Proposed Watershed Runoff Results

Total Rainfall (in)6.99

Peak Runoff (cfs) 8.54

Time to Peak (hrs) 8.08

Watershed : Existing 50-yr Storm Event Runoff

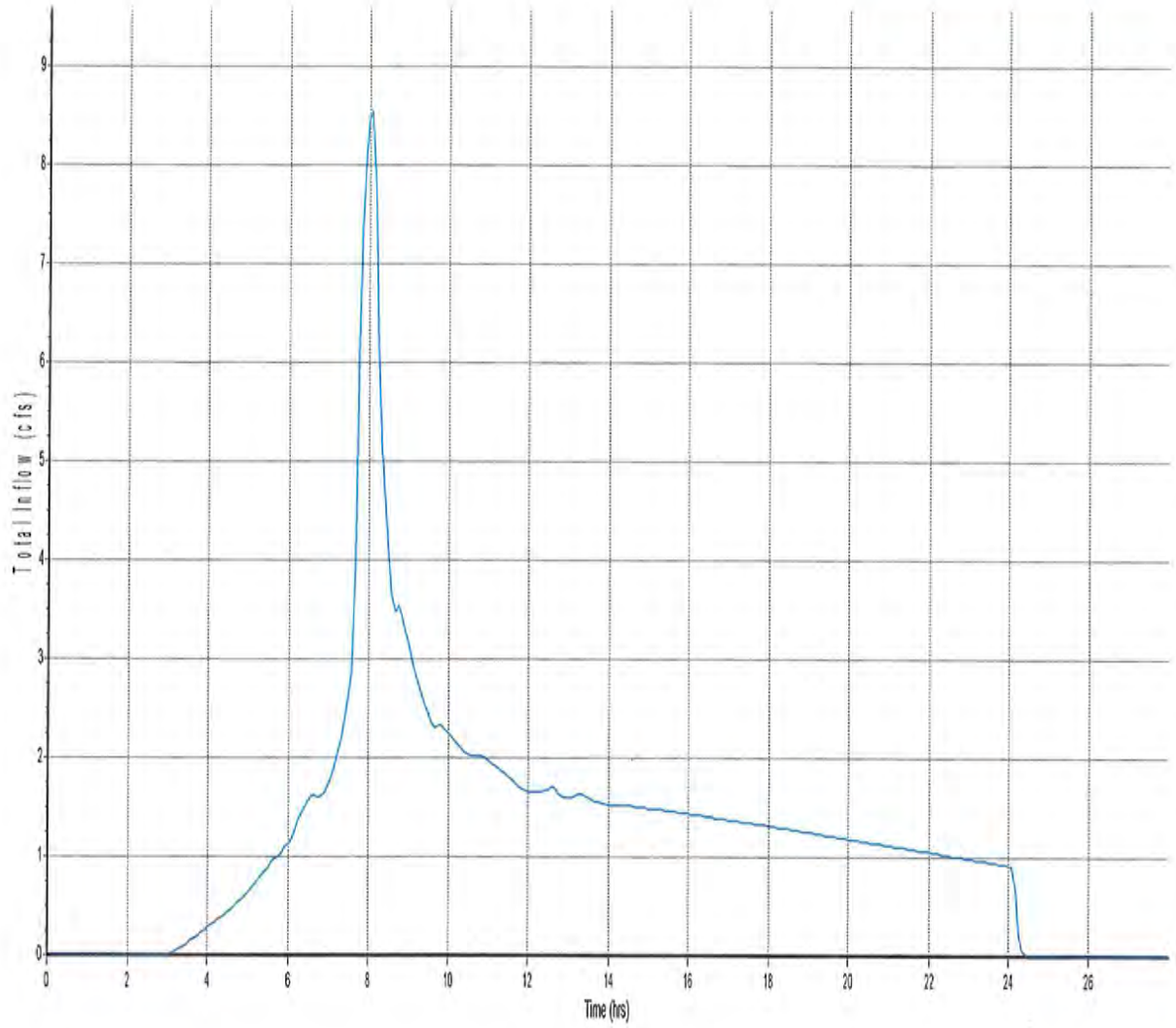


Existing Watershed Runoff Results

Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
1	79	10.24	7.39	6.99	8.08	8.54

Watershed 1: Proposed 50-yr Storm Event Runoff

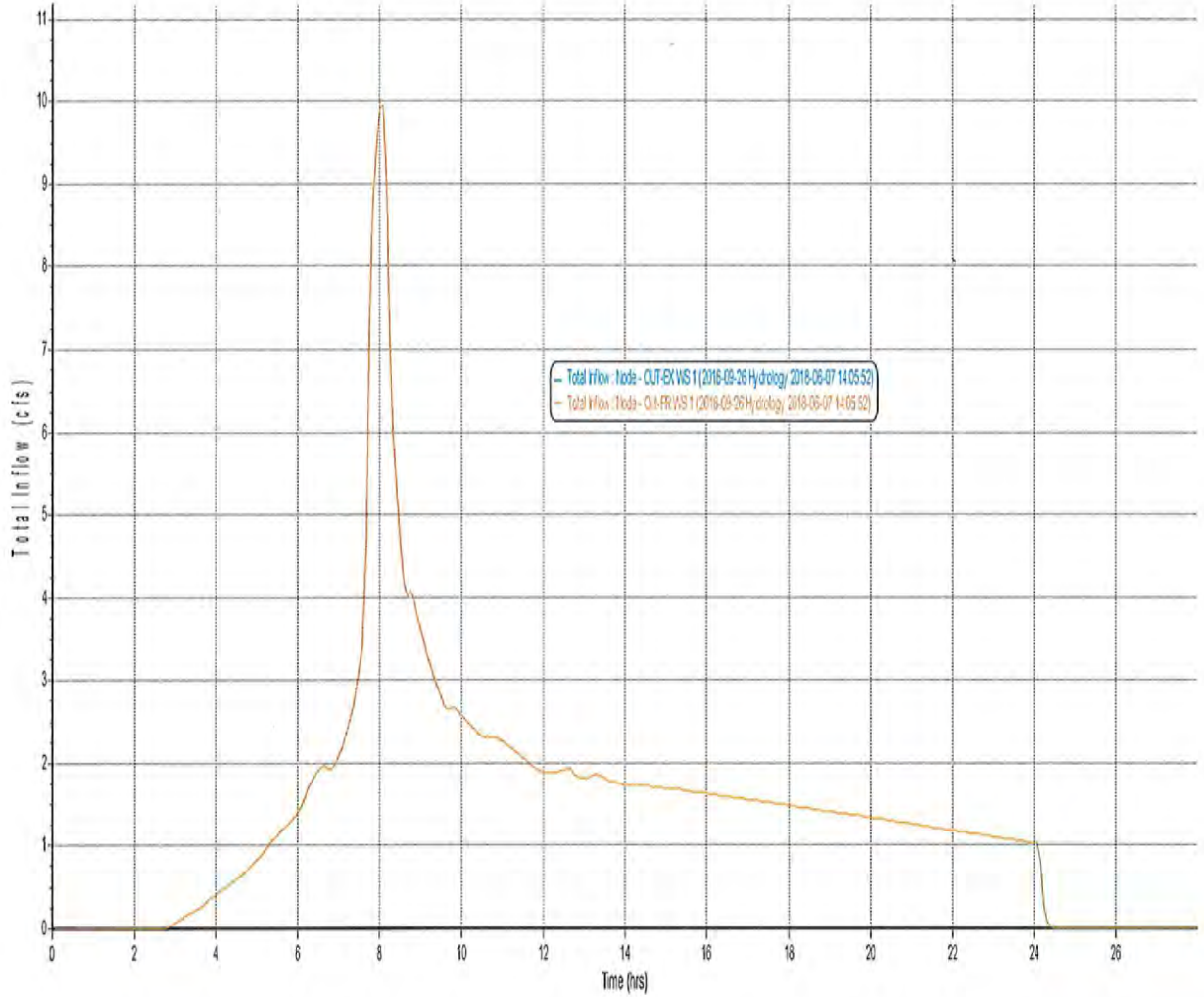
Total Inflow: Node - Qd:PRRVS 1 (2016-09-26 Hydrology 2018-05-07 13:54:14)



Proposed Watershed Runoff Results

Watershed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
1	79	10.24	7.31	6.99	8.10	8.54

Watershed 1: 100-yr Storm Event Runoff



Existing Watershed Runoff Results

Total Rainfall (in) 7.77

Peak Runoff (cfs) 9.95

Time to Peak (hrs) 8.06

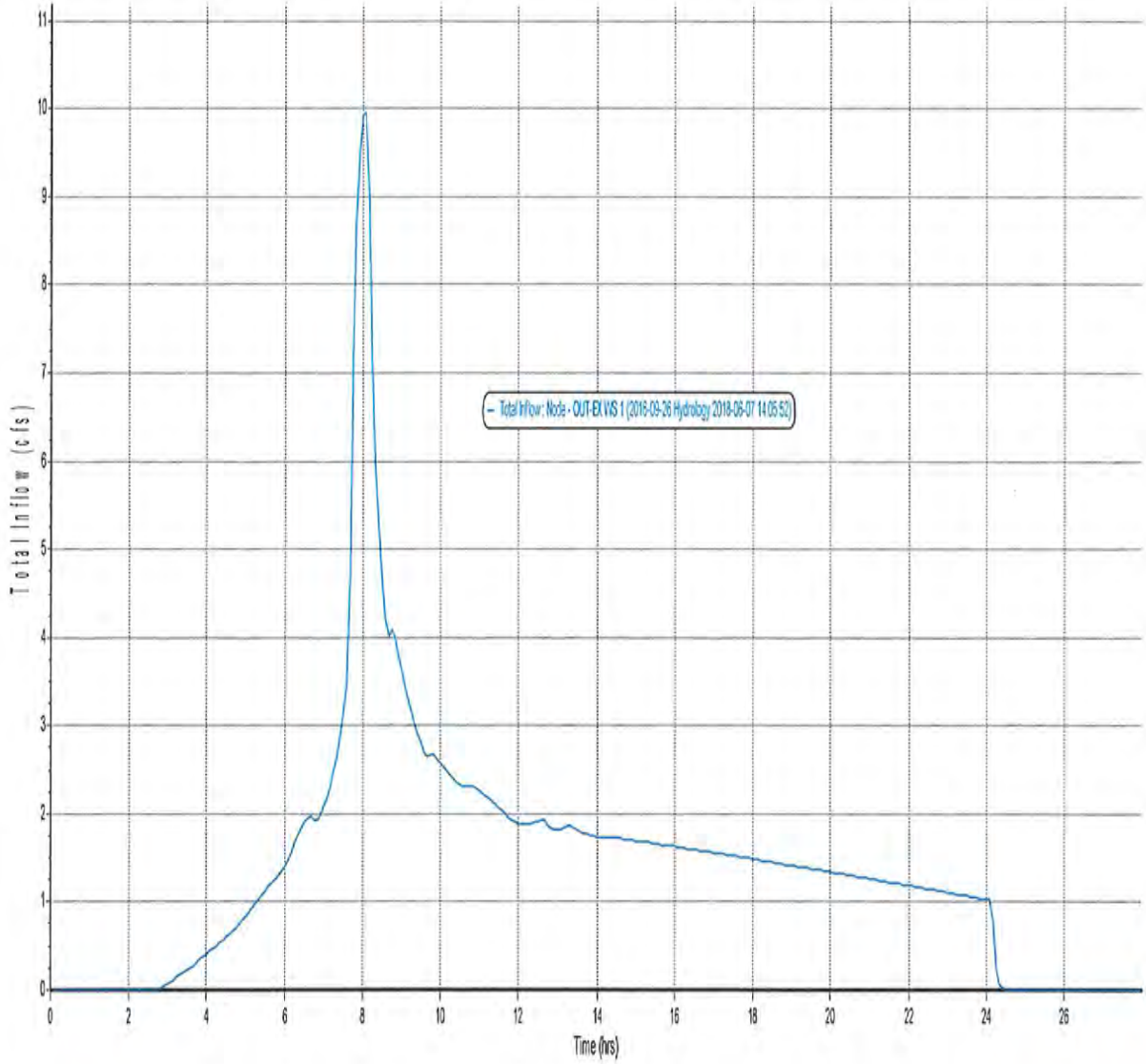
Proposed Watershed Runoff Results

Total Rainfall (in) 7.77

Peak Runoff (cfs) 9.95

Time to Peak (hrs) 8.06

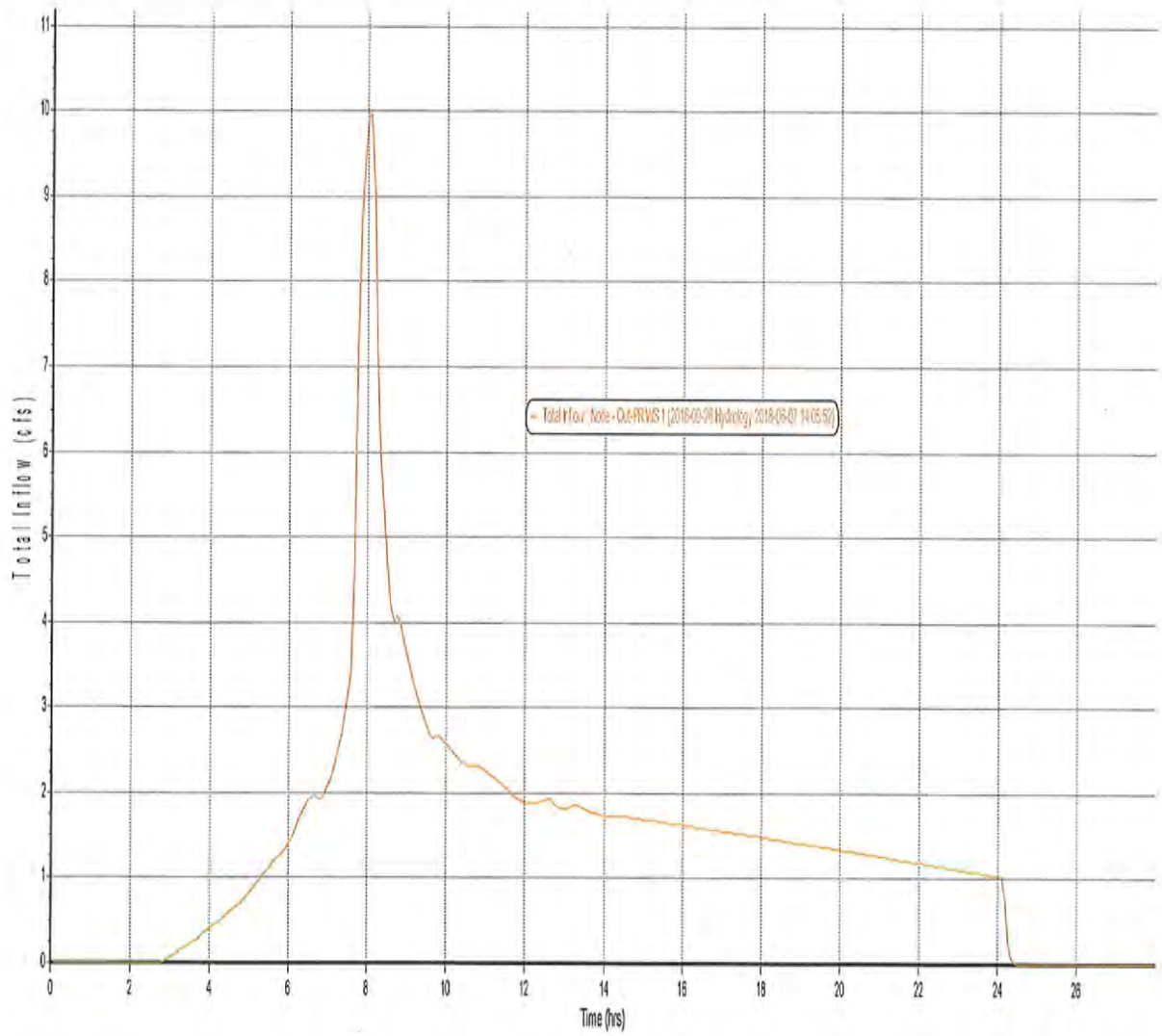
Watershed 1: Existing 100-yr Storm Event Runoff



Existing Watershed Runoff Results

Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
1B	79	10.24	7.39	7.77	8.06	9.95

Watershed 1: Proposed 100-yr Storm Event Runoff



Proposed Watershed Runoff Results

Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
1	79	10.24	7.39	7.77	8.08	9.95

Worksheet: Time of Concentration (T_c) or travel time (T_t)

Project Anthem Winery	By DJS	Date 9/28/2016
Location Project Site	Checked PSW	Date 9/28/2016
Subshed name Watershed 2A	Check one: <input checked="" type="checkbox"/> Present <input type="checkbox"/> Developed	
Note: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic or description of flow segments.	Check one: <input checked="" type="checkbox"/> T _c <input type="checkbox"/> T _t through subarea	

SHEET FLOW (applicable to T_c only)

	Segment ID			
1. Surface description (table 3-1)	1			
2. Manning's roughness coefficient, n (table 3-1)	Range			
3. Flow length, L (total L, 300 ft) ft	0.13			
4. Two-year 24-hour rainfall, P ₂ in	288			
5. Land slope, s ft/ft	3.4			
6. $T_t = \frac{0.007 (nL)^{0.6}}{P_2^{0.5} s^{0.4}}$ Compute T _t . . hr	0.23			
	0.1240	+		= 0.1240

SHALLOW CONCENTRATED FLOW

	Segment ID			
7. Surface description (paved or unpaved)				
8. Flow length, L ft				
9. Watercourse slope, s ft/ft				
10. Average velocity, V (figure 3-1) ft/sec				
11. $T_t = \frac{L}{3600 V}$ Compute T _t . . hr				
		+		=

CHANNEL FLOW

	Segment ID			
12. Cross sectional flow area, a ft ²				
13. Wetted perimeter, p _w ft				
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r . . ft				
15. Channel slope, s ft/ft				
16. Manning's roughness coefficient, n				
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V . ft/sec				
18. Flow length, L ft				
19. $T_t = \frac{L}{3600 V}$ Compute T _t . . hr				
20. Watershed or subarea T _c or T _t (add T _t in steps 6, 11 and 19) hr		+		= 0.1240

T_c = 7.44 mins

Worksheet: Time of Concentration (T_c) or travel time (T_t)

Project Anthem Winery	By DJS	Date 9/28/2016
Location Project Site	Checked PSW	Date 9/28/2016
Subshed name Watershed 2B	Check one: <input checked="" type="checkbox"/> Present <input type="checkbox"/> Developed	
Note: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic or description of flow segments.	Check one: <input checked="" type="checkbox"/> T_c <input type="checkbox"/> T_t through subarea	

SHEET FLOW (applicable to T_c only)

	Segment ID	1		
1. Surface description (table 3-1)	Range			
2. Manning's roughness coefficient, n (table 3-1)	0.13			
3. Flow length, L (total L, 300 ft) ft	277			
4. Two-year 24-hour rainfall, P_2 in	3.4			
5. Land slope, s ft/ft	0.13			
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t . . hr	0.1510	+		= 0.1510

SHALLOW CONCENTRATED FLOW

	Segment ID	2		
7. Surface description (paved or unpaved)	unpaved			
8. Flow length, L ft	818			
9. Watercourse slope, s ft/ft	0.13			
10. Average velocity, V (figure 3-1) ft/sec	5.8174			
11. $T_t = \frac{L}{3600 V}$ Compute T_t . . hr	0.0391	+		= 0.0391

CHANNEL FLOW

	Segment ID	3		
12. Cross sectional flow area, a ft ²	1.76			
13. Wetted perimeter, p_w ft	4.71			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r . . ft	0.3737			
15. Channel slope, s ft/ft	0.12			
16. Manning's roughness coefficient, n	0.012			
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V . ft/sec	22.3147			
18. Flow length, L ft	172			
19. $T_t = \frac{L}{3600 V}$ Compute T_t . . hr	0.0021	+		= 0.0021
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11 and 19) hr				= 0.1922

$T_c = 11.53 \text{ mins}$

Worksheet: Runoff Curve Number

Project Anthem Winery	By DJS	Date 6/7/2018
Location Watershed 2A	Checked PSW	Date 6/7/2018
Subshed name Proposed Conditions	Check one: <input type="checkbox"/> Present <input checked="" type="checkbox"/> Developed	

RUNOFF CURVE NUMBER

Soil name and hydrologic group <small>(SCS book)</small>	Cover description <small>(cover type, treatment and hydrologic condition; percent impervious)</small>	CN (1) <small>(Table 2-2)</small>	Area <input checked="" type="checkbox"/> acres <input type="checkbox"/> mi ² <input type="checkbox"/> %	Product of CN x Area	
133-C	Impervious Area (Roads, roofs, etc.)	98	0.98	96.04	
133-C	Pasture Land (fair)	79	0.46	36.34	
133-C	Row Crops- Straight (poor)	88	0.12	10.56	
(1) Use only one CN source per line			TOTAL:	1.56	142.94

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{142.94}{1.56} = 91.63 ; \text{ USE CN } \boxed{92}$$

Worksheet: Runoff Curve Number

Project Anthem Winery	By DJS	Date 9/26/2016
Location Watershed 2B	Checked PSW	Date 9/26/2016
Subshed name Proposed Conditions	Check one: <input type="checkbox"/> Present <input checked="" type="checkbox"/> Developed	

RUNOFF CURVE NUMBER

Soil name and hydrologic group <small>(SCS book)</small>	Cover description <small>(cover type, treatment and hydrologic condition; percent impervious)</small>	CN (1) <small>(Table 2-2)</small>	Area <input checked="" type="checkbox"/> acres <input type="checkbox"/> mi ² <input type="checkbox"/> %	Product of CN x Area
133-C	Impervious Area (Roads, roofs, etc.)	98	0.66	64.68
133-C	Pasture Land (fair)	79	0.69	54.51
133-C	Row Crops- Straight (poor)	88	0.09	7.92
133-C	Woods (fair)	73	2.02	147.46
136-C	Impervious Area (Roads, roofs, etc.)	98	0.49	48.02
136-C	Pasture Land (fair)	79	0.95	75.05
136-C	Woods (fair)	73	4.08	297.84

(1) Use only one CN source per line

TOTAL: 8.98 695.48

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{695.48}{8.98} = 77.45 ; \text{ USE CN } \mathbf{77}$$

Worksheet: Time of Concentration (T_c) or travel time (T_t)

Project Anthem Winery	By DJS	Date 9/28/2016
Location Project Site	Checked PSW	Date 9/28/2016
Subshed name Watershed 2B	Check one: <input type="checkbox"/> Present <input checked="" type="checkbox"/> Developed	
Note: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic or description of flow segments.	Check one: <input checked="" type="checkbox"/> T _c <input type="checkbox"/> T _t through subarea	

SHEET FLOW (applicable to T_c only)

	Segment ID	1	1		
1. Surface description (table 3-1)		Range	Smooth Surface		
2. Manning's roughness coefficient, n (table 3-1)		0.13	0.011		
3. Flow length, L (total L, 300 ft) ft		160	117		
4. Two-year 24-hour rainfall, P ₂ in		3.4	3.4		
5. Land slope, s ft/ft		0.13	0.02		
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T _t . . . hr		0.0973	+	0.0222	= 0.1195

SHALLOW CONCENTRATED FLOW

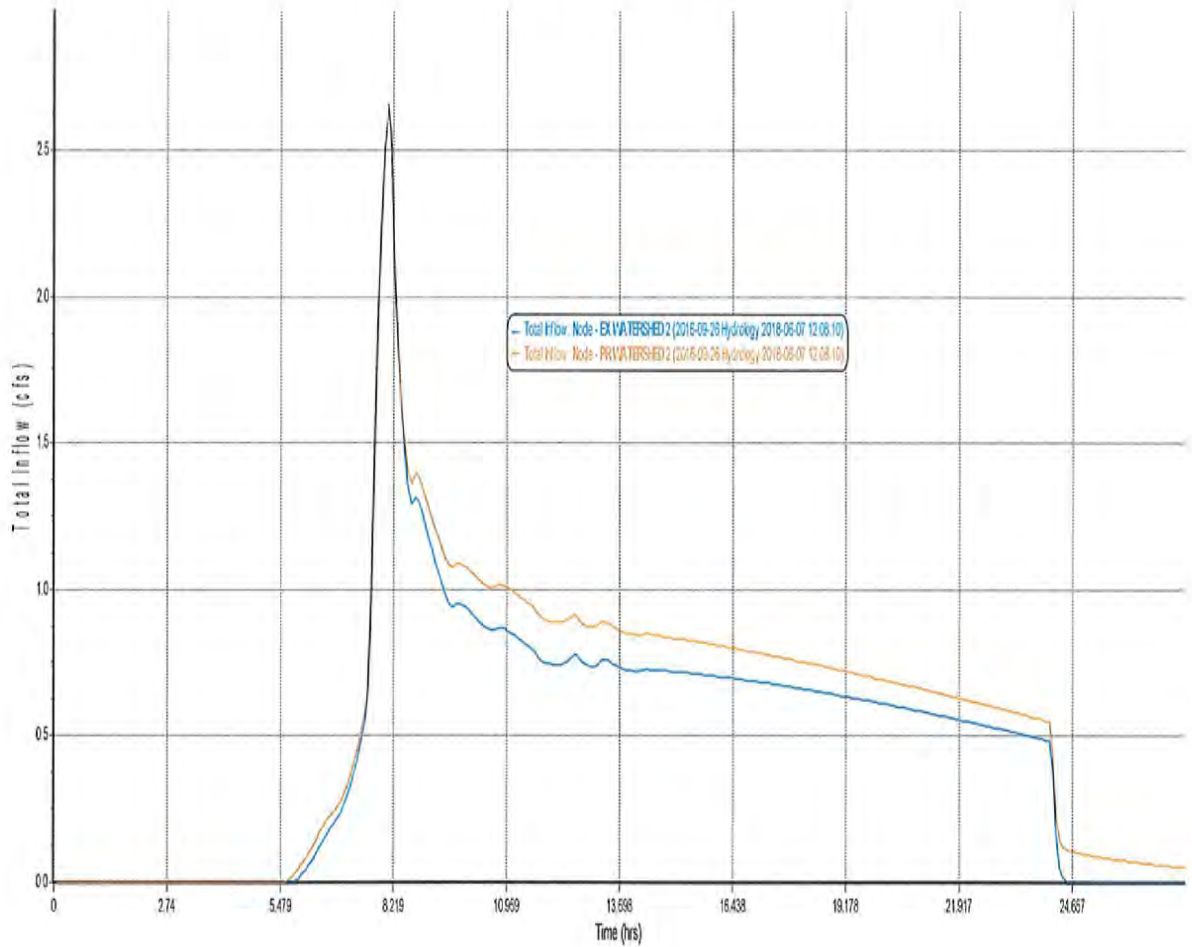
	Segment ID	2			
7. Surface description (paved or unpaved)		unpaved			
8. Flow length, L ft		818			
9. Watercourse slope, s ft/ft		0.13			
10. Average velocity, V (figure 3-1) ft/sec		5.8174			
11. $T_t = \frac{L}{3600 V}$ Compute T _t . . . hr		0.0391	+		= 0.0391

CHANNEL FLOW

	Segment ID	3			
12. Cross sectional flow area, a ft ²		1.76			
13. Wetted perimeter, p _w ft		4.71			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r . . ft		0.3737			
15. Channel slope, s ft/ft		0.12			
16. Manning's roughness coefficient, n		0.012			
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V . ft/sec		22.3147			
18. Flow length, L ft		172			
19. $T_t = \frac{L}{3600 V}$ Compute T _t . . . hr		0.0021	+		= 0.0021
20. Watershed or subarea T _c or T _t (add T _t in steps 6, 11 and 19) hr					0.1607

T_c = 9.64 mins

Watershed 2: 2-yr Storm Event Runoff



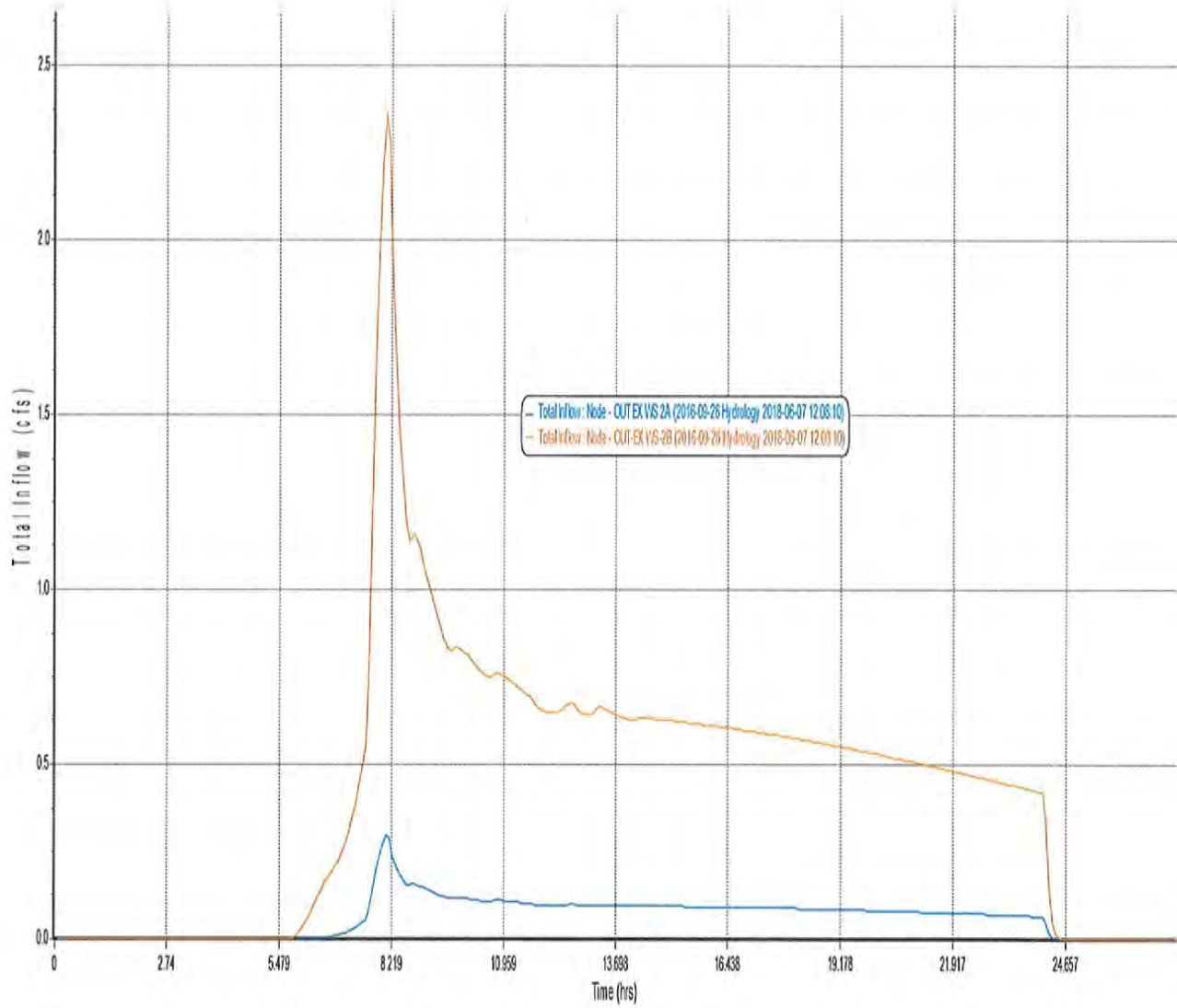
Existing Sub-shed Runoff Results

Total Rainfall (in) 3.40
 Peak Runoff (cfs) 2.65
 Time to Peak (hrs) 8.08

Proposed Sub-shed Runoff Results

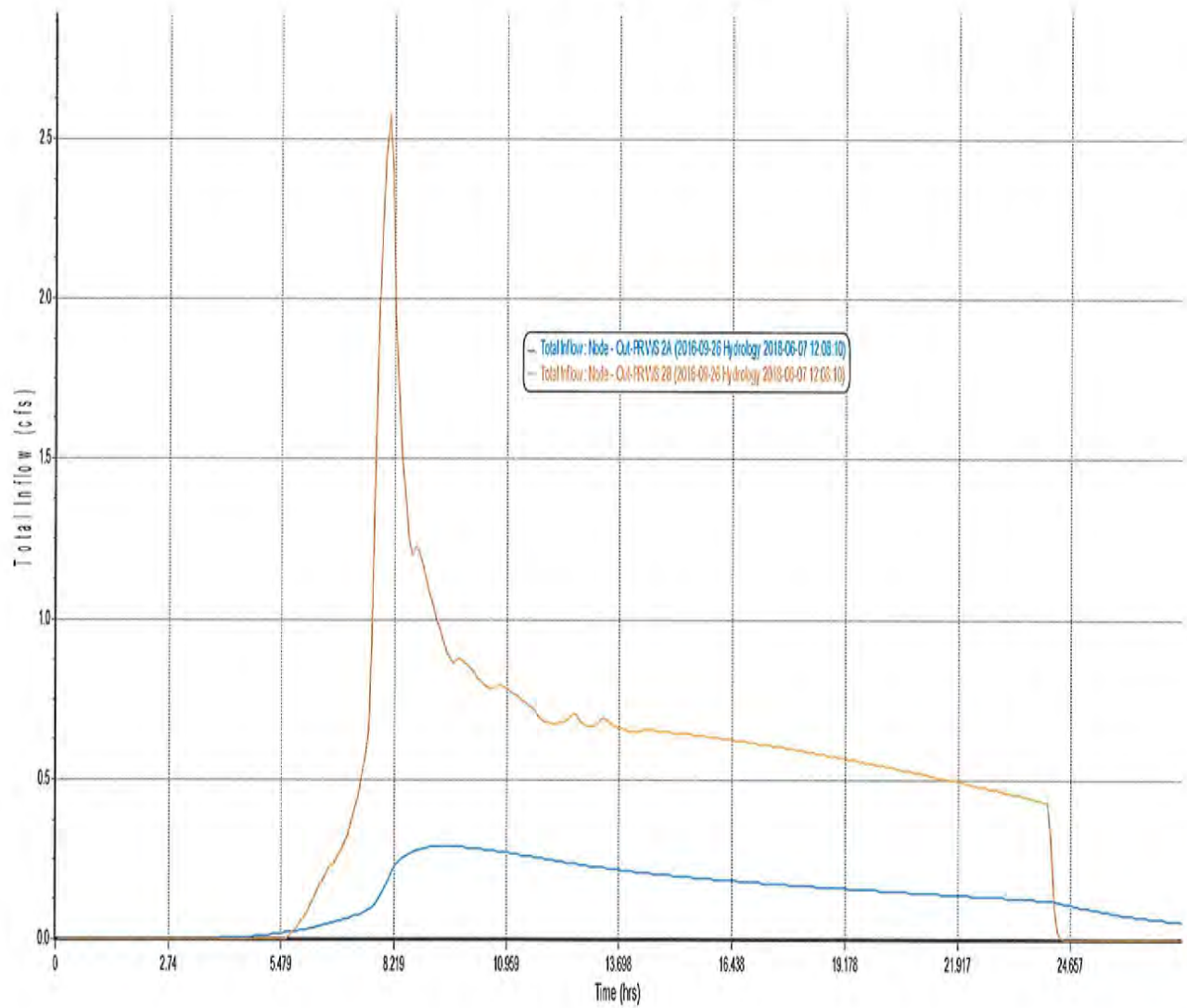
Total Rainfall (in) 3.40
 Peak Runoff (cfs) 2.65
 Time to Peak (hrs) 8.10

Watershed 2: Existing 2-yr Storm Event Runoff



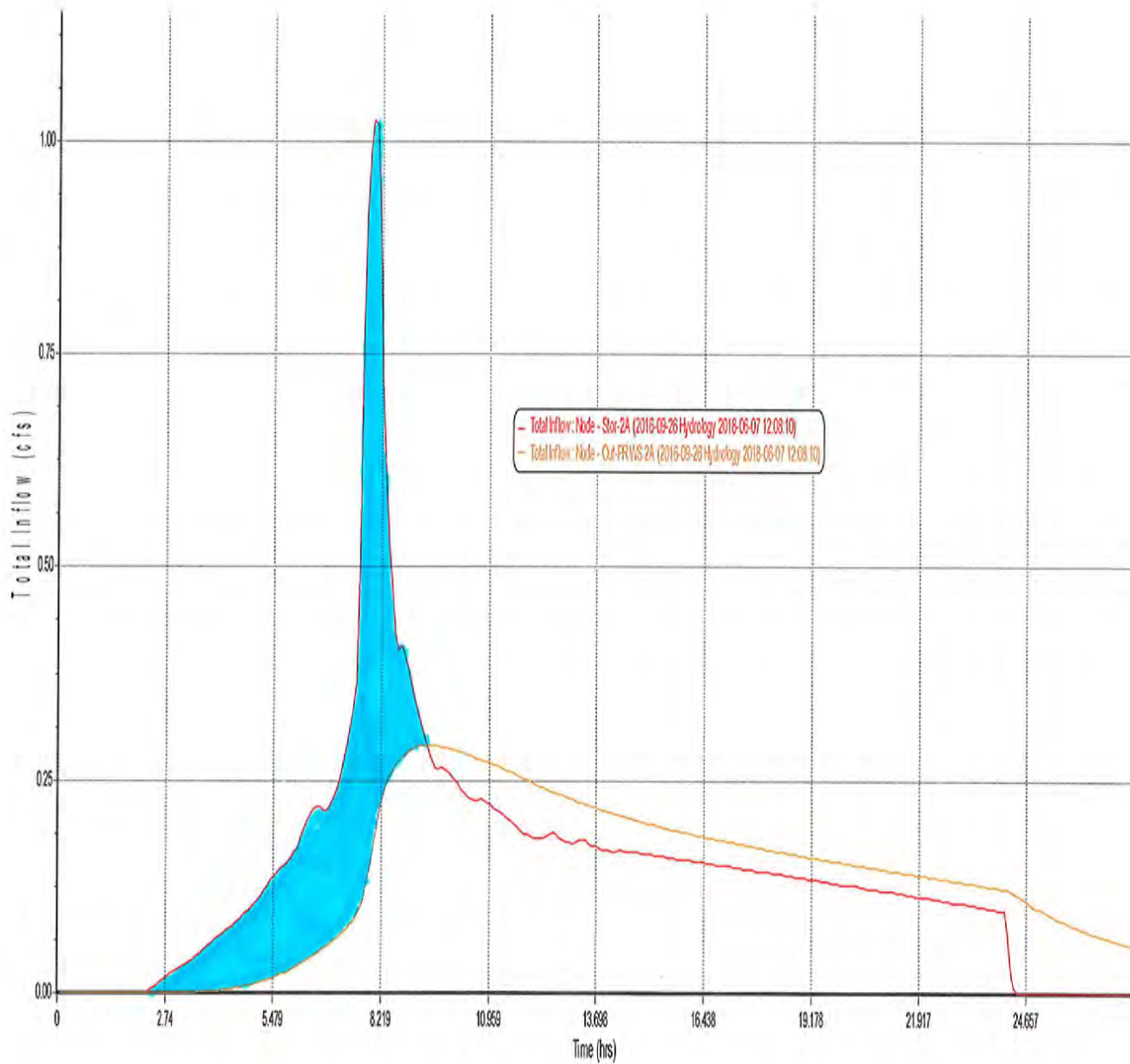
Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
2A	78	7.44	1.56	3.40	8.08	0.30
2B	76	11.53	8.98	3.40	8.06	2.36

Watershed 2: Proposed 2-yr Storm Event Runoff



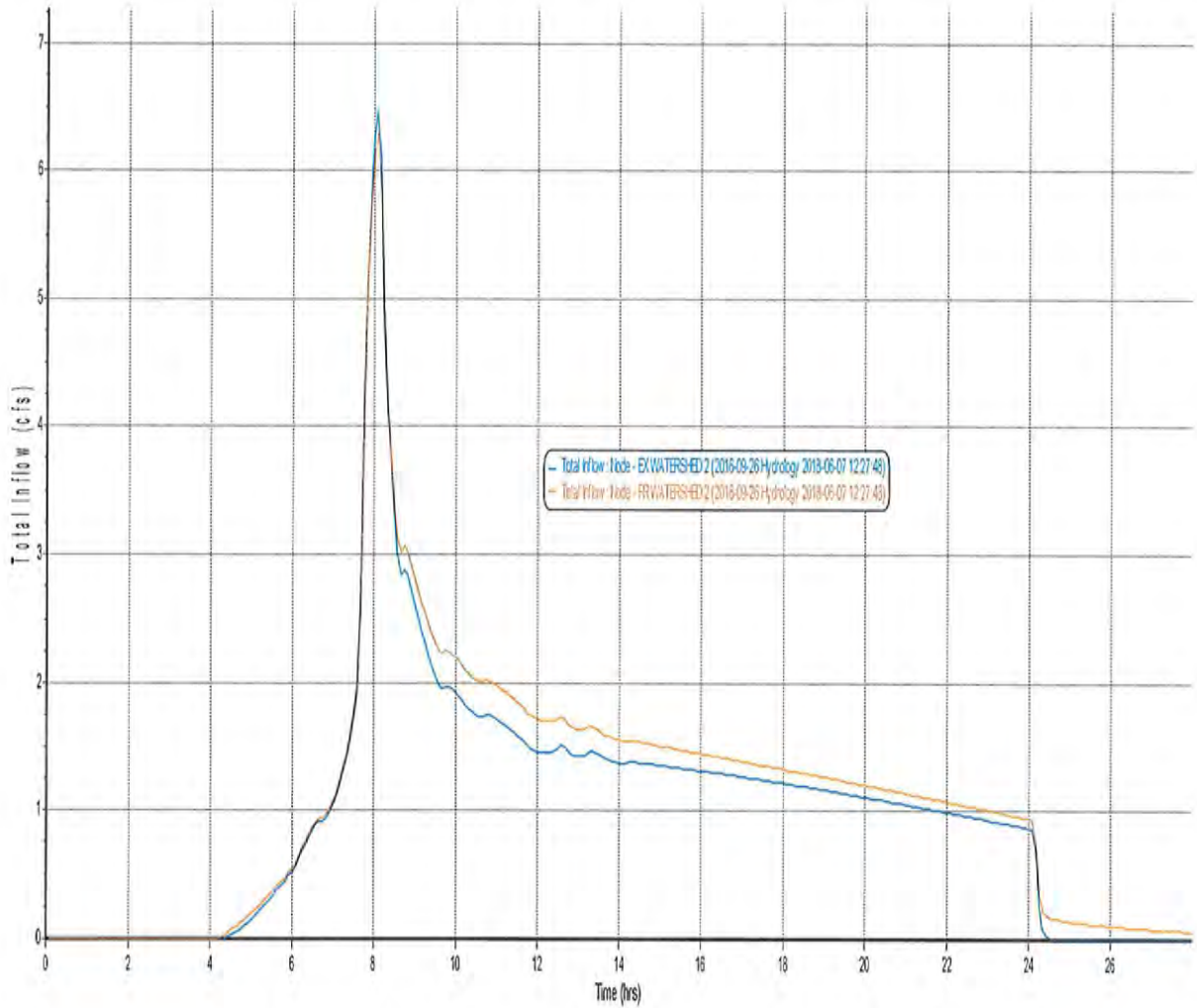
Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
2A	92	6.00	1.56	3.40	9.83	0.29
2B	77	9.64	8.98	3.40	8.08	2.57

Watershed 2: Proposed 2-yr Storm Event Storage



Storage.....5,380 cu. ft.

Watershed 2: 10-yr Storm Event Runoff



Existing Sub-shed Runoff Results

Total Rainfall (in) 5.17

Peak Runoff (cfs)6.46

Time to Peak (hrs)8.08

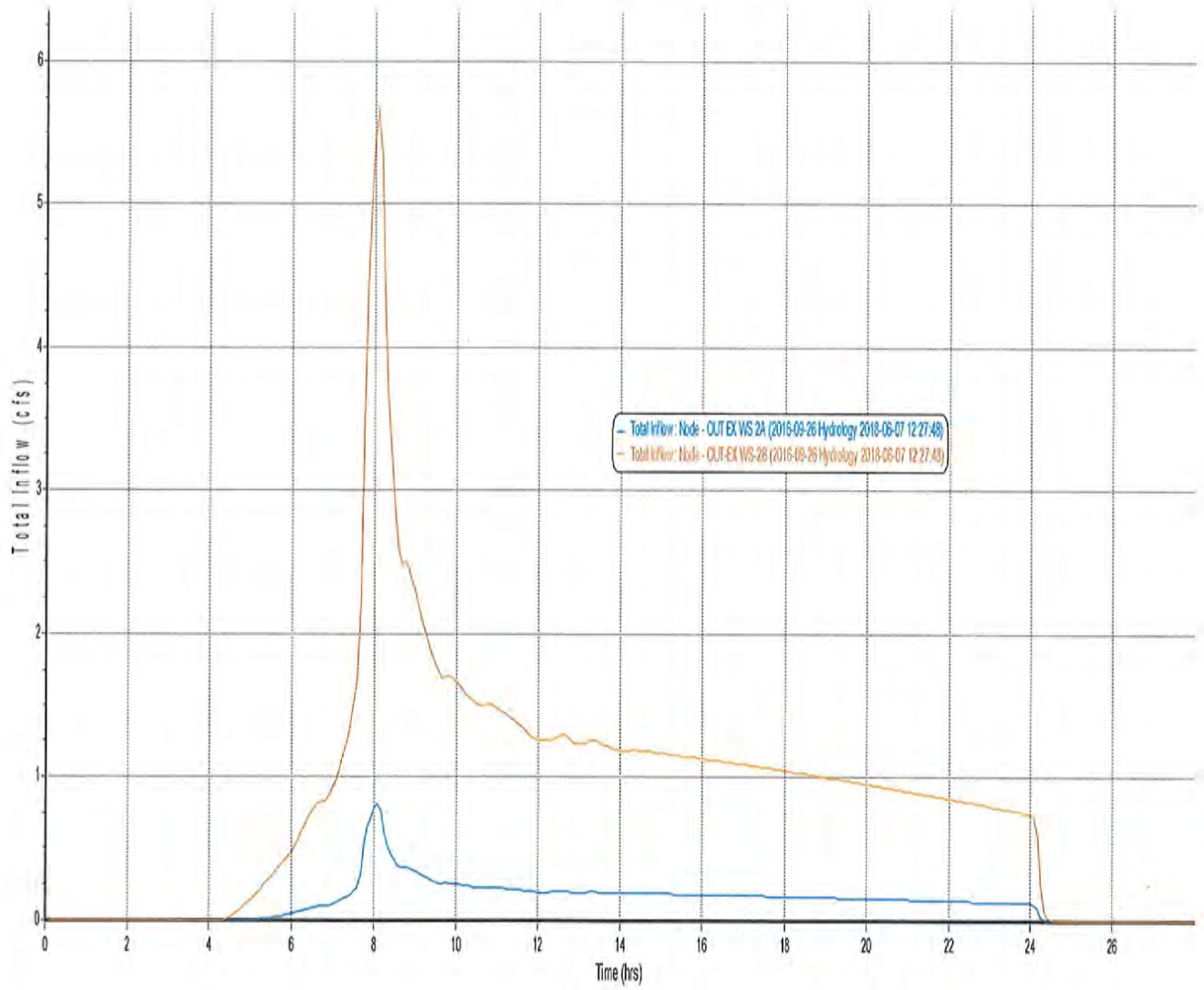
Proposed Sub-shed Runoff Results

Total Rainfall (in)5.17

Peak Runoff (cfs)6.29

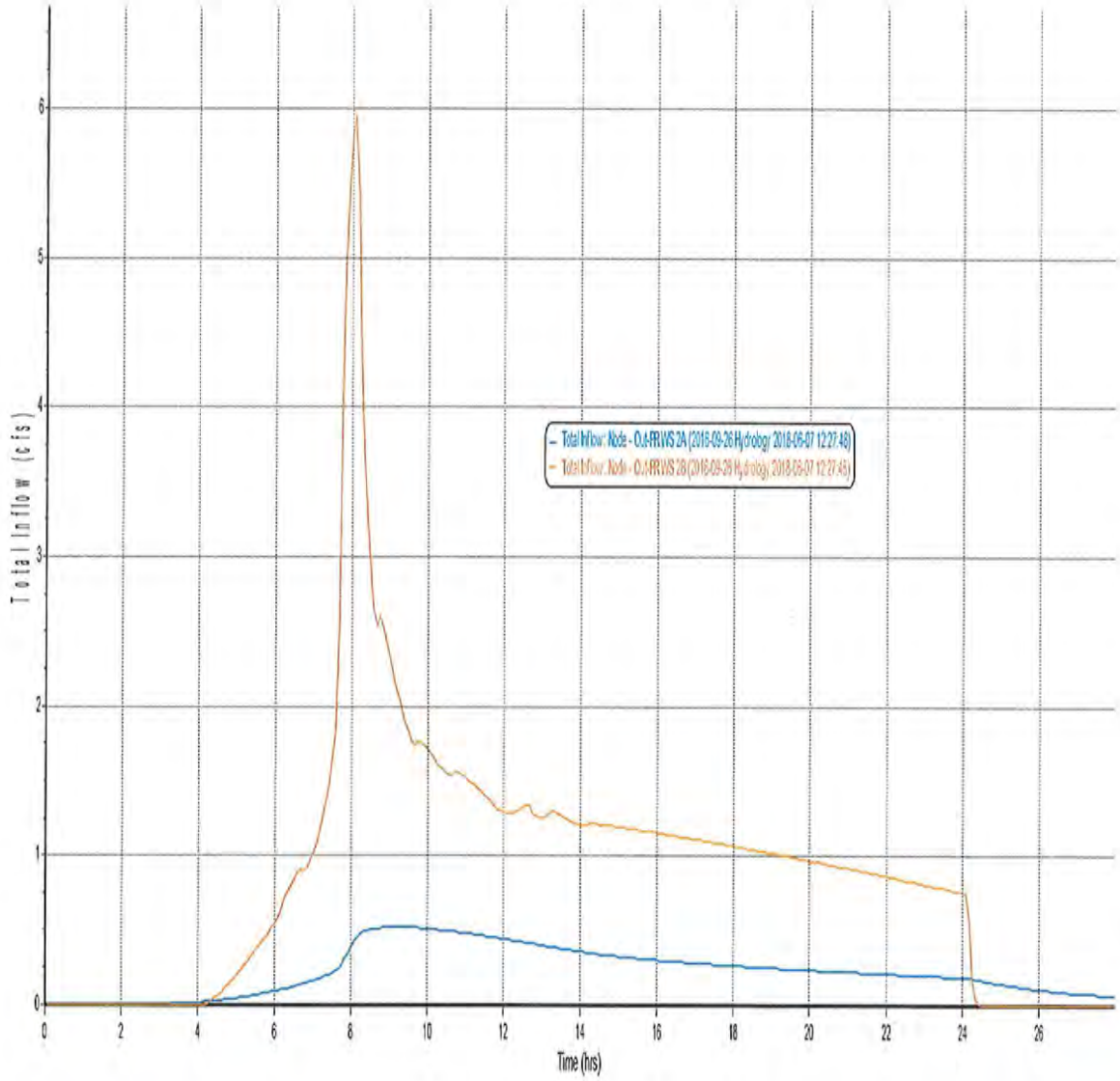
Time to Peak (hrs) 8.11

Watershed 2: Existing 10-yr Storm Event Runoff



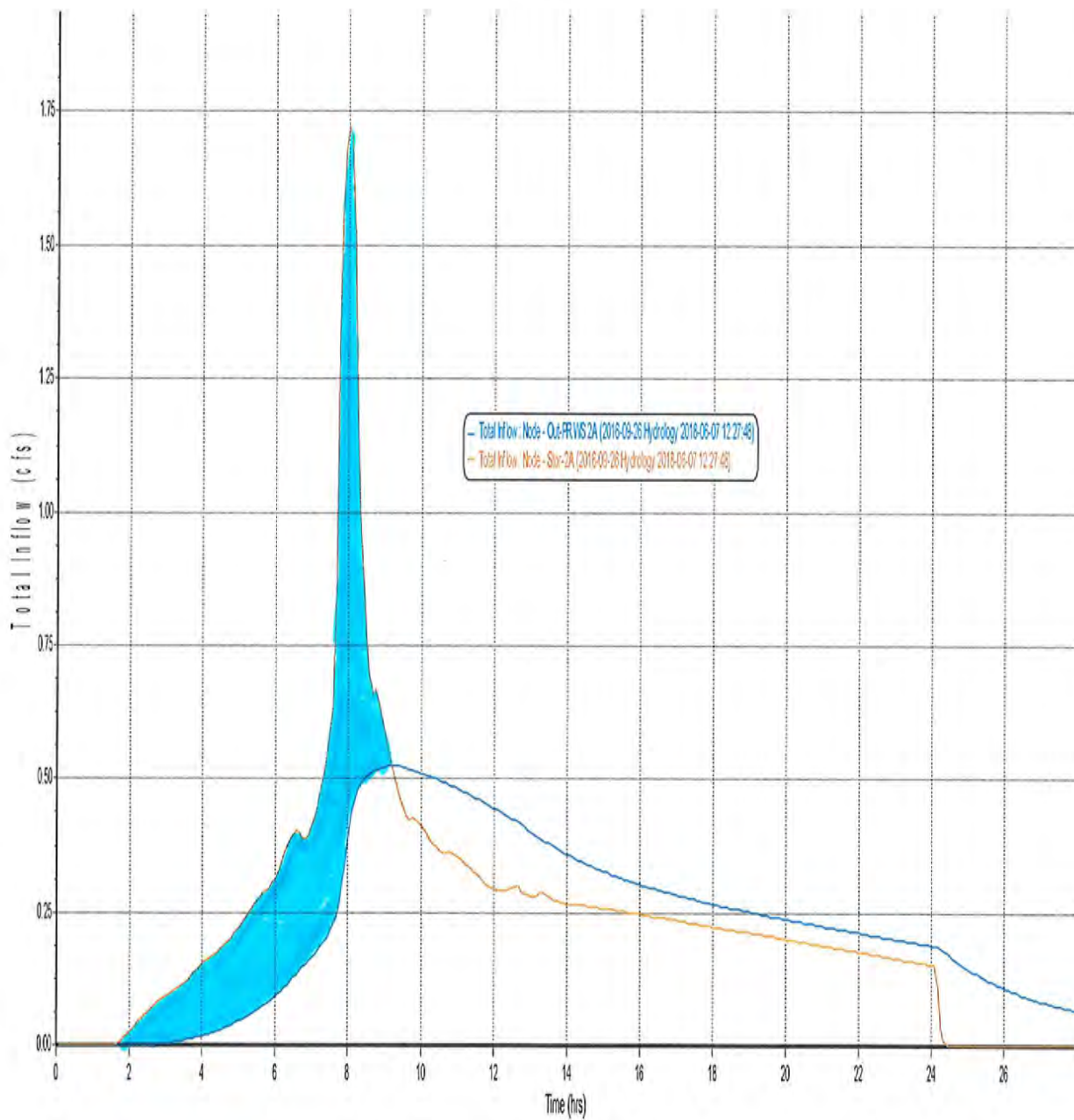
Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
2A	78	7.44	1.56	5.17	8.08	0.81
2B	76	11.53	8.98	5.17	8.06	5.65

Watershed 2: Proposed 10-yr Storm Event Runoff



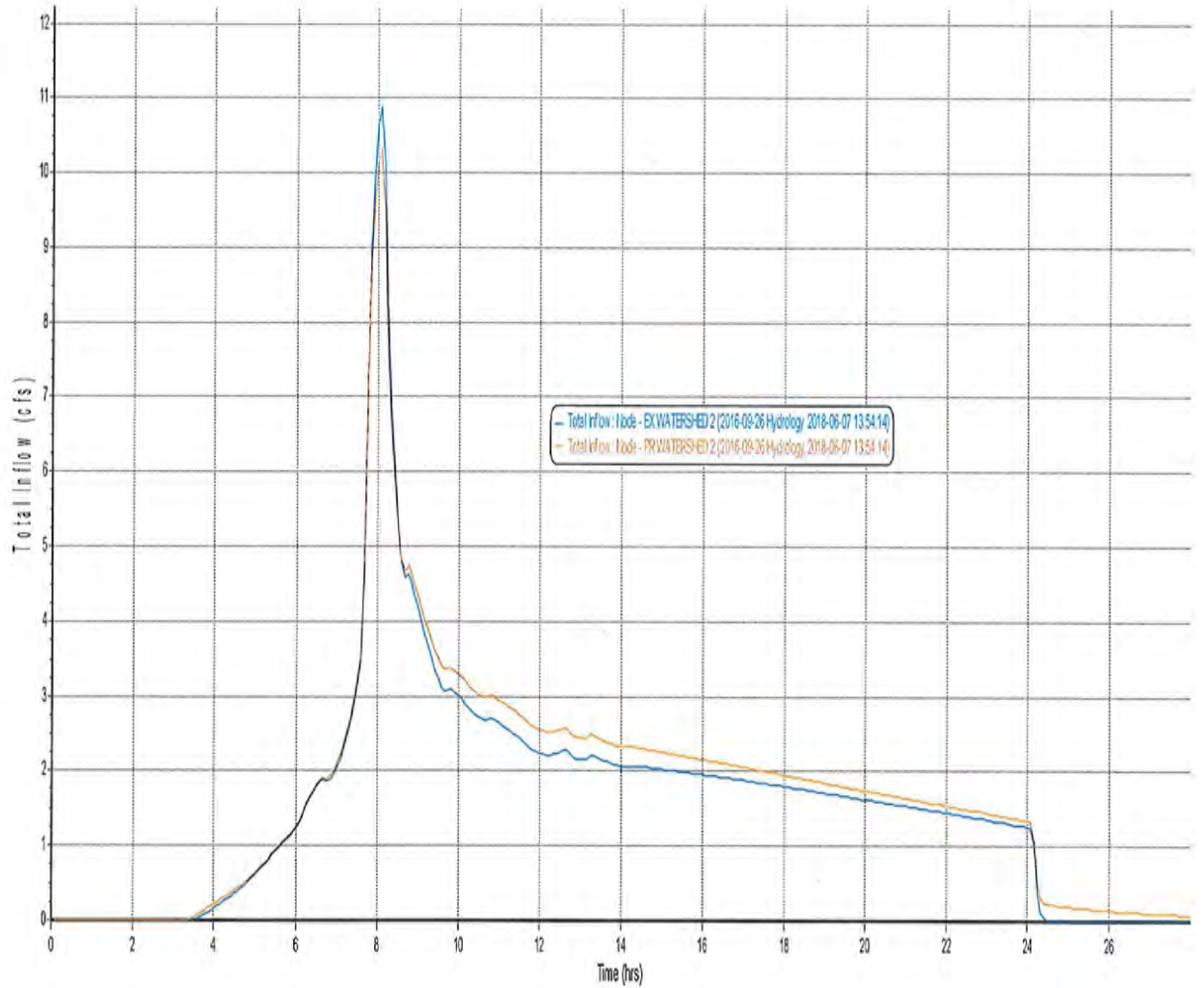
Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
2A	92	6.00	1.56	5.17	10.08	0.52
2B	77	9.64	8.98	5.17	8.08	5.94

Watershed 2: Proposed 10-yr Storm Event Storage



Storage.....8,023 cu. ft

Watershed 2: 50-yr Storm Event Runoff



Existing Sub-shed Runoff Results

Total Rainfall (in) 6.99

Peak Runoff (cfs) 10.88

Time to Peak (hrs) 8.08

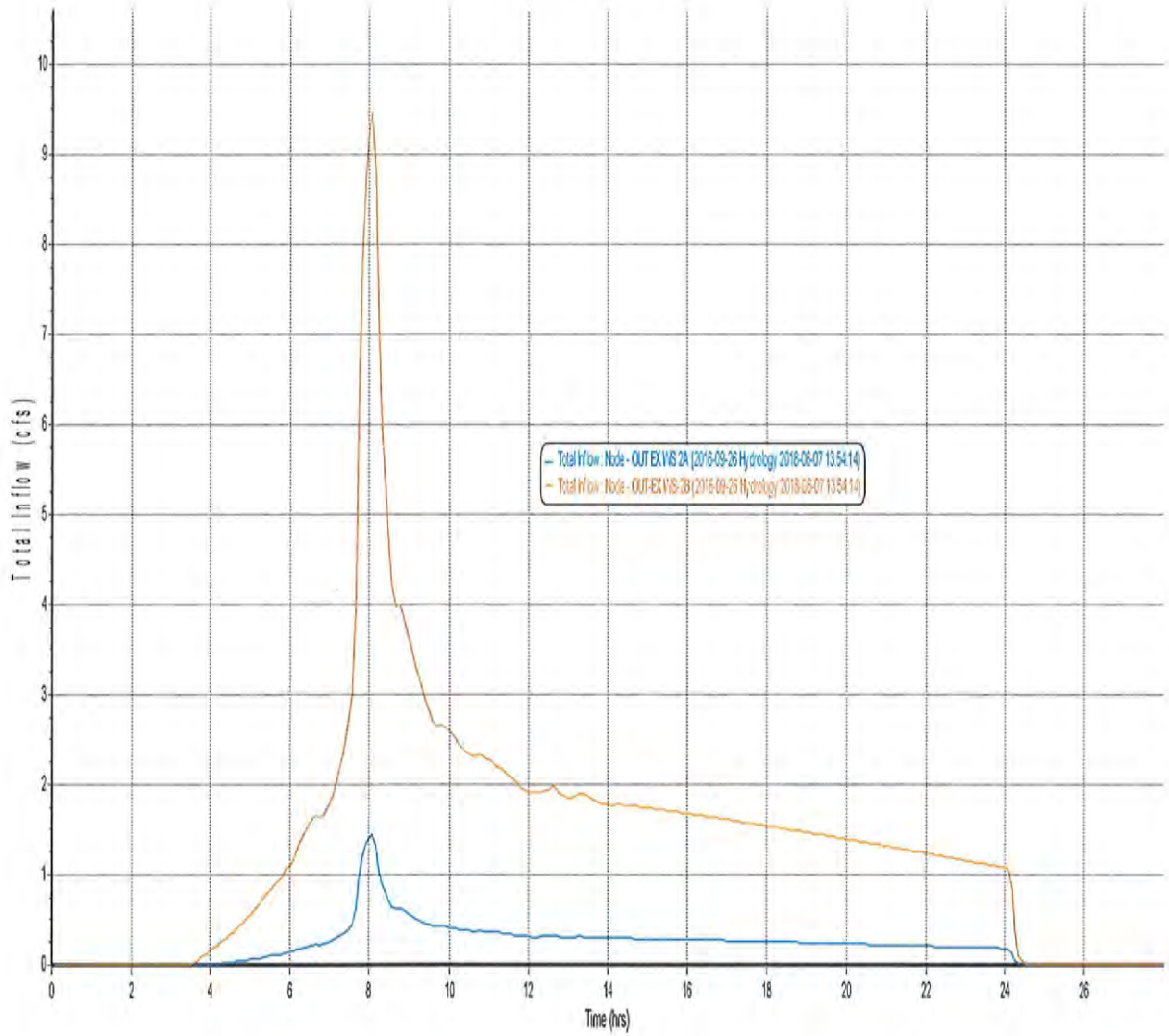
Proposed Sub-shed Runoff Results

Total Rainfall (in) 6.99

Peak Runoff (cfs) 10.32

Time to Peak (hrs) 8.11

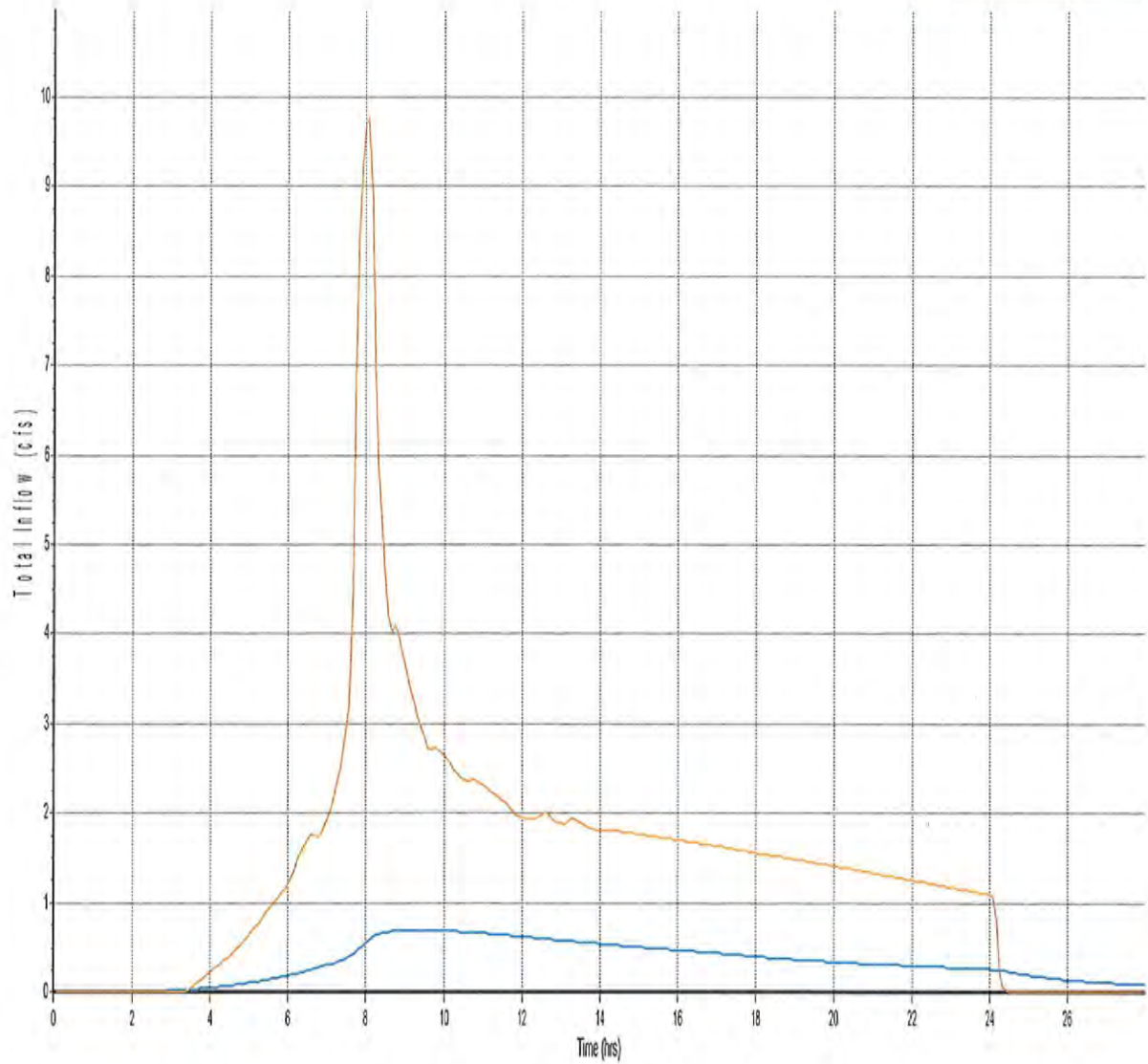
Watershed 2: Existing 50-yr Storm Event Runoff



Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
2A	78	7.44	1.56	6.99	8.08	1.44
2B	76	11.53	8.98	6.99	8.06	9.44

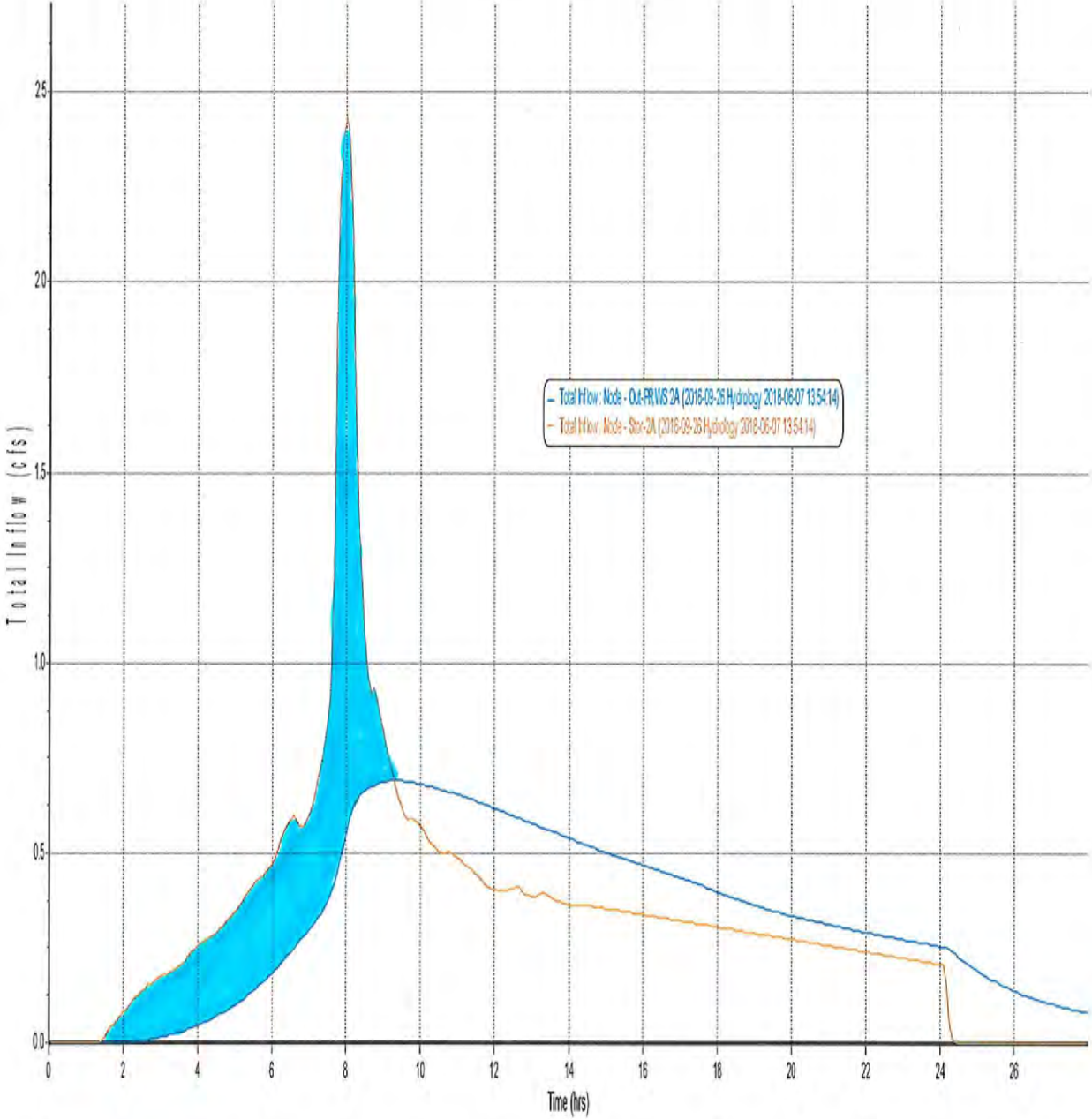
Watershed 2: Proposed 50-yr Storm Event Runoff

— Total Inflow - Node - Out-PRVVS 2A (2016-09-26 Hydrology 2016-06-07 13:54:14)
— Total Inflow - Node - Out-PRVVS 2B (2016-09-26 Hydrology 2016-06-07 13:54:14)



Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
2A	92	6.00	1.56	6.99	10.08	0.69
2B	77	9.64	8.98	6.99	8.08	9.77

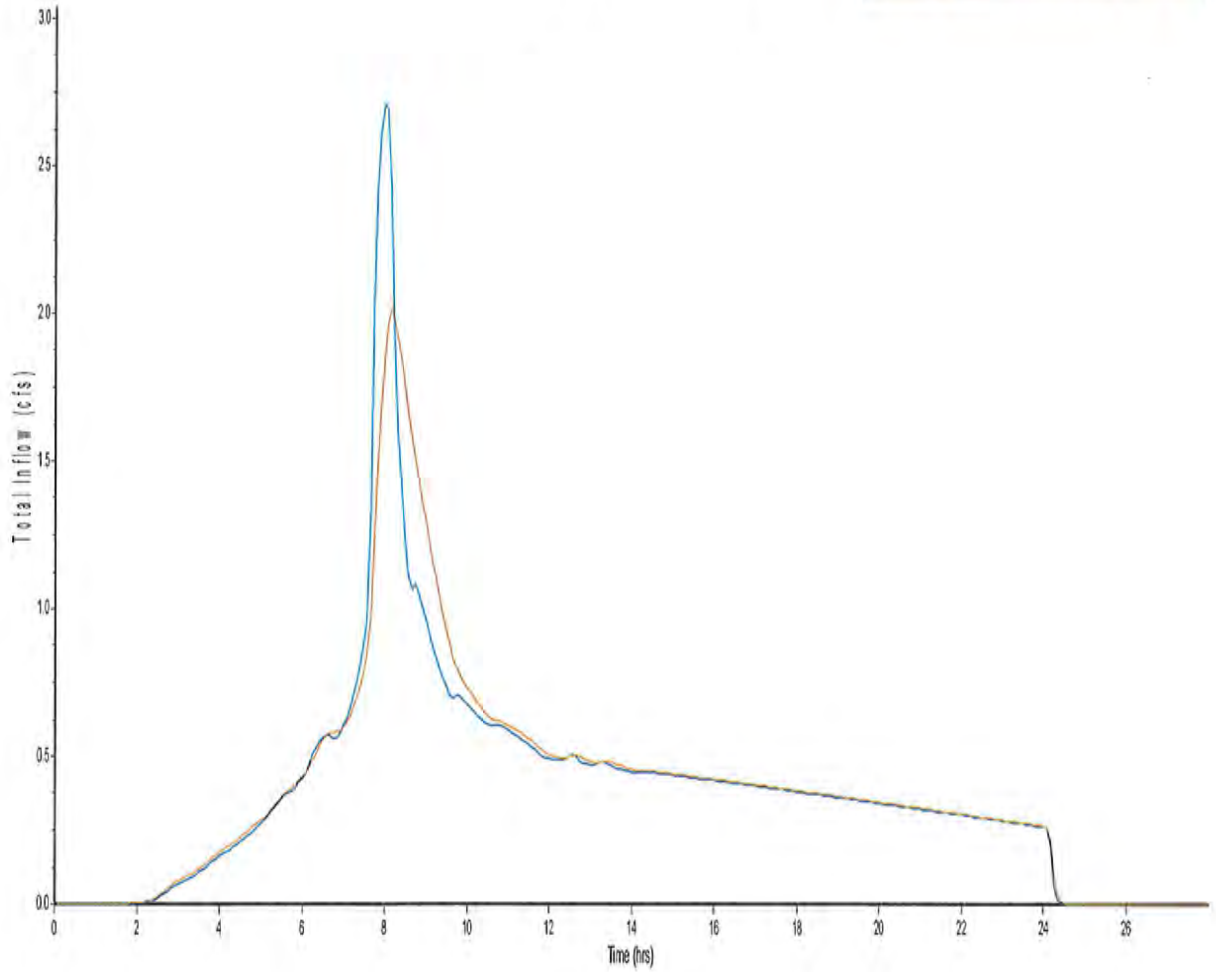
Watershed 2: Proposed 50-yr Storm Event Storage



Storage.....11,275 cu. ft.

Watershed 2: 100-yr Storm Event Runoff

— Total Inflow Node - EX WATERSHED 3 (2016-09-26 Hydrology 2018-06-07 14:05:50)
 — Total Inflow Node - PR WATERSHED 3 (2016-09-26 Hydrology 2018-06-07 14:05:50)



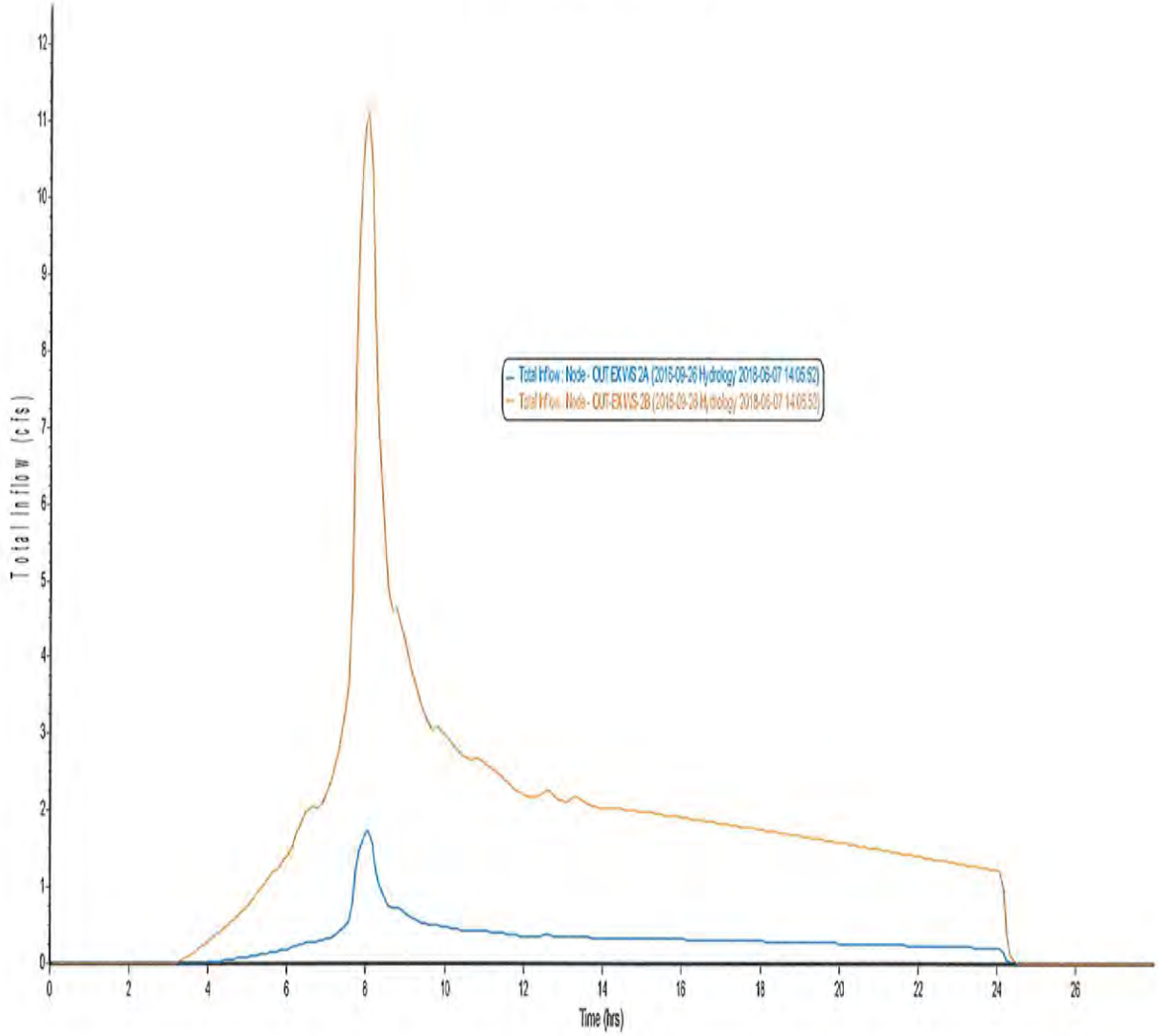
Existing Sub-shed Runoff Results

Total Rainfall (in) 7.77
 Peak Runoff (cfs) 12.84
 Time to Peak (hrs) 8.05

Proposed Sub-shed Runoff Results

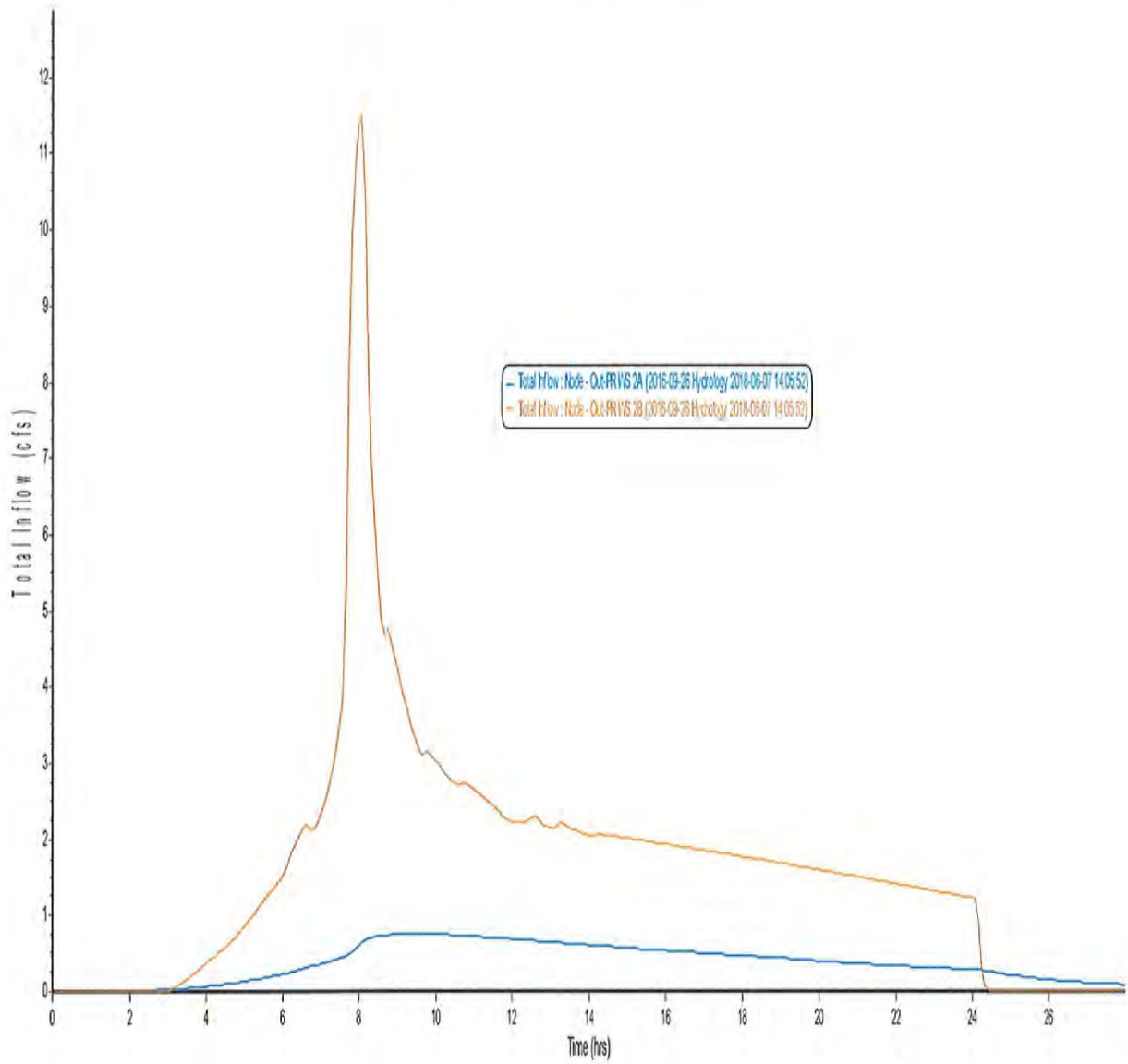
Total Rainfall (in) 7.77
 Peak Runoff (cfs) 12.07
 Time to Peak (hrs) 8.30

Watershed 2: Existing 100-yr Storm Event Runoff



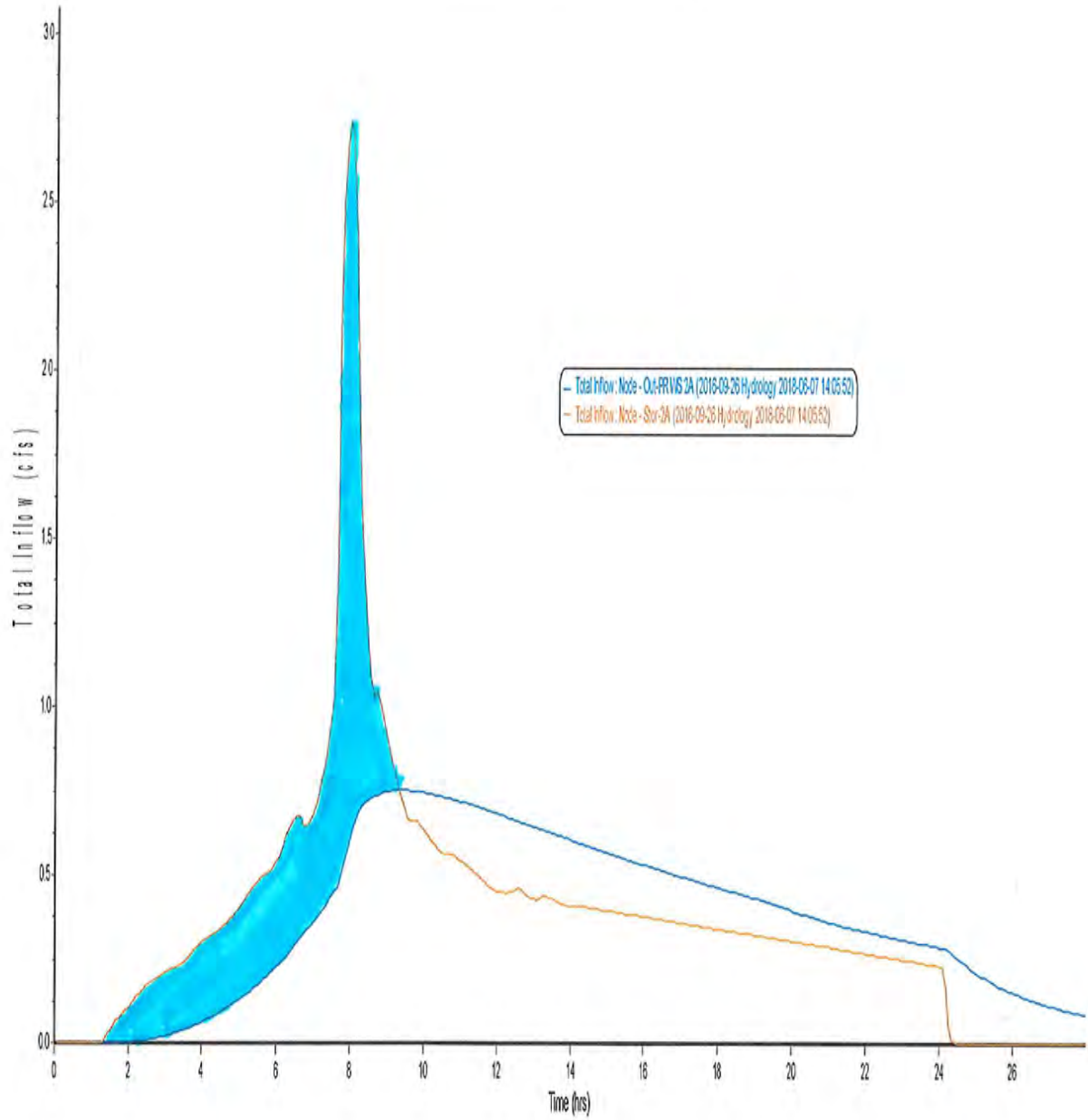
Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
2A	78	7.44	1.56	7.77	8.00	1.72
2B	76	11.53	8.98	7.77	8.02	11.12

Watershed 2: Proposed 100-yr Storm Event Runoff



Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
2A	92	6.00	1.56	7.77	10.33	0.75
2B	77	9.64	8.98	7.77	8.02	11.47

Watershed 2A: Proposed 100-yr Storm Event Storage



Storage.....12,645 cu. ft

Worksheet: Runoff Curve Number

Project	Anthem Winery	By	DJS	Date	9/28/2016
Location	Watershed 3A	Checked	PSW	Date	9/28/2016
Subshed name	Existing Conditions	Check one:	<input checked="" type="checkbox"/> Present	<input type="checkbox"/> Developed	

RUNOFF CURVE NUMBER

Soil name and hydrologic group (SCS book)	Cover description (cover type, treatment and hydrogic condition; percent impervious)	CN (1) (Table 2-2)	Area	Product of CN x Area	
			<input checked="" type="checkbox"/> acres <input type="checkbox"/> mi ² <input type="checkbox"/> %		
133-C	Impervious Area (Roads, roofs, etc.)	98	0.24	23.52	
133-C	Pasture Land (fair)	79	1.38	109.02	
(1) Use only one CN source per line			TOTAL:	1.62	132.54

$$CN \text{ (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{132.54}{1.62} = 81.81 ; \text{ USE CN } \boxed{82}$$

Worksheet: Time of Concentration (T_c) or travel time (T_t)

Project Anthem Winery	By DJS	Date 9/28/2016
Location Project Site	Checked PSW	Date 9/28/2016
Subshed name Watershed 3A	Check one: <input checked="" type="checkbox"/> Present <input type="checkbox"/> Developed	
Note: Space for as many as two segments per flow type can be used for each worksheet. Include a map, schematic or description of flow segments.	Check one: <input checked="" type="checkbox"/> T_c <input type="checkbox"/> T_t through subarea	

SHEET FLOW (applicable to T_c only)

	Segment ID	1		
1. Surface description (table 3-1)		Range		
2. Manning's roughness coefficient, n (table 3-1)		0.13		
3. Flow length, L (total L, 300 ft) ft		277		
4. Two-year 24-hour rainfall, P_2 in		3.4		
5. Land slope, s ft/ft		0.13		
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t . . hr		0.1510	+	= 0.1510

SHALLOW CONCENTRATED FLOW

	Segment ID	2	3	
7. Surface description (paved or unpaved)		UNPAVED	PAVED	
8. Flow length, L ft		108	10	
9. Watercourse slope, s ft/ft		0.13	0.13	
10. Average velocity, V (figure 3-1) ft/sec		5.8174	7.3294	
11. $T_t = \frac{L}{3600 V}$ Compute T_t . . hr		0.0052	+	= 0.0055

CHANNEL FLOW

	Segment ID			
12. Cross sectional flow area, a ft ²				
13. Wetted perimeter, p_w ft				
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r . . ft				
15. Channel slope, s ft/ft				
16. Manning's roughness coefficient, n				
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V . ft/sec				
18. Flow length, L ft				
19. $T_t = \frac{L}{3600 V}$ Compute T_t . . hr			+	= 0.1565
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11 and 19) hr				= 0.1565

$T_c = 9.39$ mins

Worksheet: Runoff Curve Number

Project	Anthem Winery	By	DJS	Date	9/28/2016
Location	Watershed 3B	Checked	PSW	Date	9/28/2016
Subshed name	Existing Conditions	Check one:	<input checked="" type="checkbox"/> Present	<input type="checkbox"/> Developed	

RUNOFF CURVE NUMBER

Soil name and hydrologic group (SCS book)	Cover description (cover type, treatment and hydrologic condition; percent impervious)	CN (1) (Table 2-2)	Area	Product of CN x Area
			<input checked="" type="checkbox"/> acres <input type="checkbox"/> mi ² <input type="checkbox"/> %	
133-C	Impervious Area (Roads, roofs, etc.)	98	0.10	9.80
133-C	Pasture Land (fair)	79	0.12	9.48

(1) Use only one CN source per line

TOTAL: 0.22 19.28

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = $\frac{19.28}{0.22}$ = 87.64 ; USE CN **88**

Worksheet: Runoff Curve Number

Project	Anthem Winery	By	DJS	Date	9/26/2016
Location	Watershed 3A	Checked	PSW	Date	9/26/2016
Subshed name	Proposed Conditions	Check one:	<input type="checkbox"/> Present	<input checked="" type="checkbox"/> Developed	

RUNOFF CURVE NUMBER

Soil name and hydrologic group (SCS book)	Cover description (cover type, treatment and hydrologic condition; percent impervious)	CN (1) (Table 2-2)	Area		Product of CN x Area
			<input checked="" type="checkbox"/> acres	<input type="checkbox"/> mi ²	
133-C	Impervious Area (Roads, roofs, etc.)	98	0.38		37.24
133-C	Pasture Land (fair)	79	1.24		97.96
(1) Use only one CN source per line			TOTAL:	1.62	135.20

$$CN \text{ (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{135.20}{1.62} = 83.46 ; \text{ USE CN } \boxed{83}$$

Worksheet: Runoff Curve Number

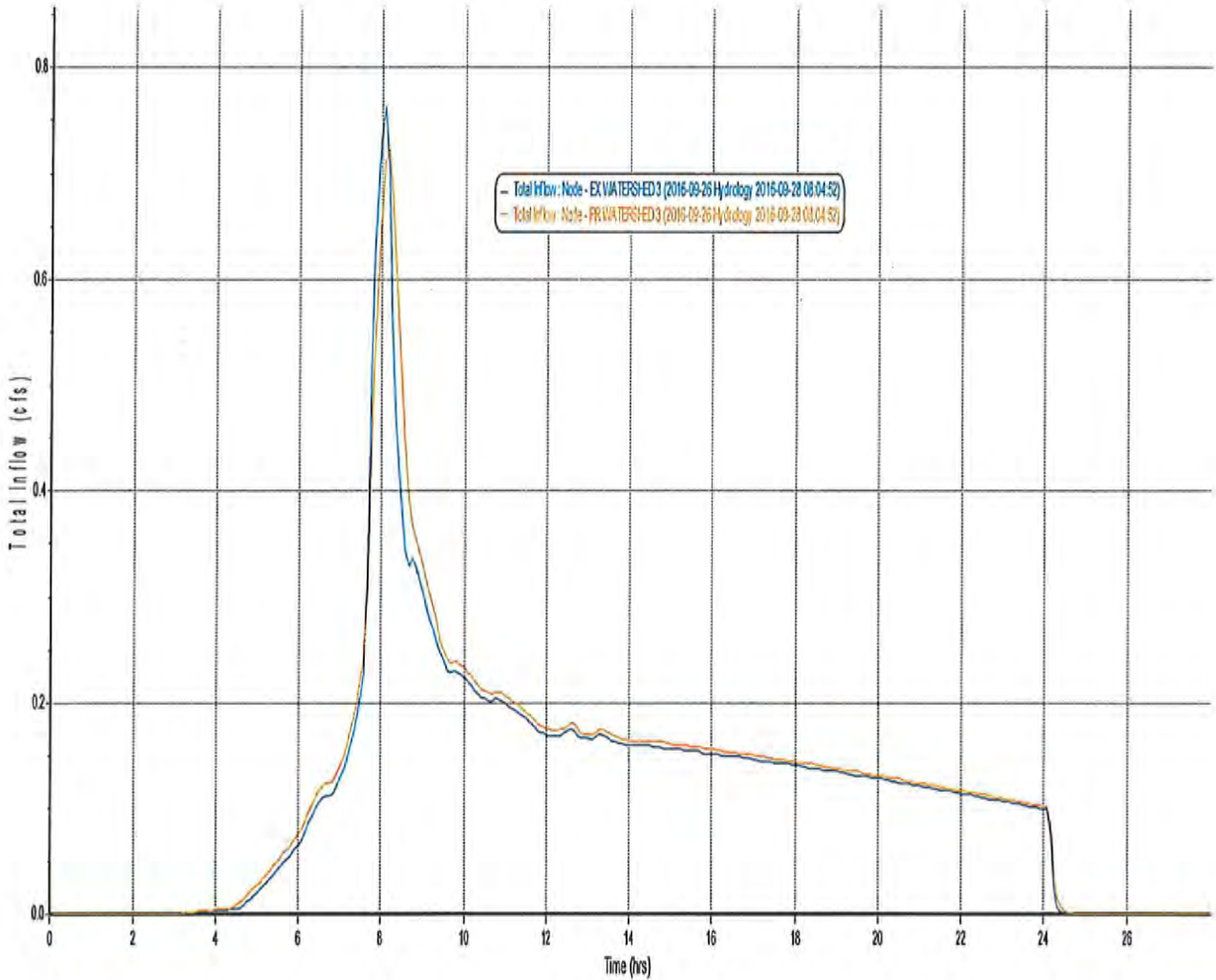
Project Anthem Winery	By DJS	Date 9/28/2016
Location Watershed 3B	Checked PSW	Date 9/28/2016
Subshed name Proposed Conditions	Check one: <input type="checkbox"/> Present <input checked="" type="checkbox"/> Developed	

RUNOFF CURVE NUMBER

Soil name and hydrologic group (SCS book)	Cover description (cover type, treatment and hydrogic condition; percent impervious)	CN (1) (Table 2-2)	Area <input checked="" type="checkbox"/> acres <input type="checkbox"/> mi2 <input type="checkbox"/> %	Product of CN x Area
133-C	Impervious Area (Roads, roofs, etc.)	98	0.12	11.76
133-C	Pasture Land (fair)	79	0.10	7.90
(1) Use only one CN source per line			TOTAL:	0.22
				19.66

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{19.66}{0.22} = 89.36$; USE CN **89**

Watershed 3: 2-yr Storm Event Runoff



Existing Sub-shed Runoff Results

Total Rainfall (in) 3.40

Peak Runoff (cfs)0.76

Time to Peak (hrs)8.08

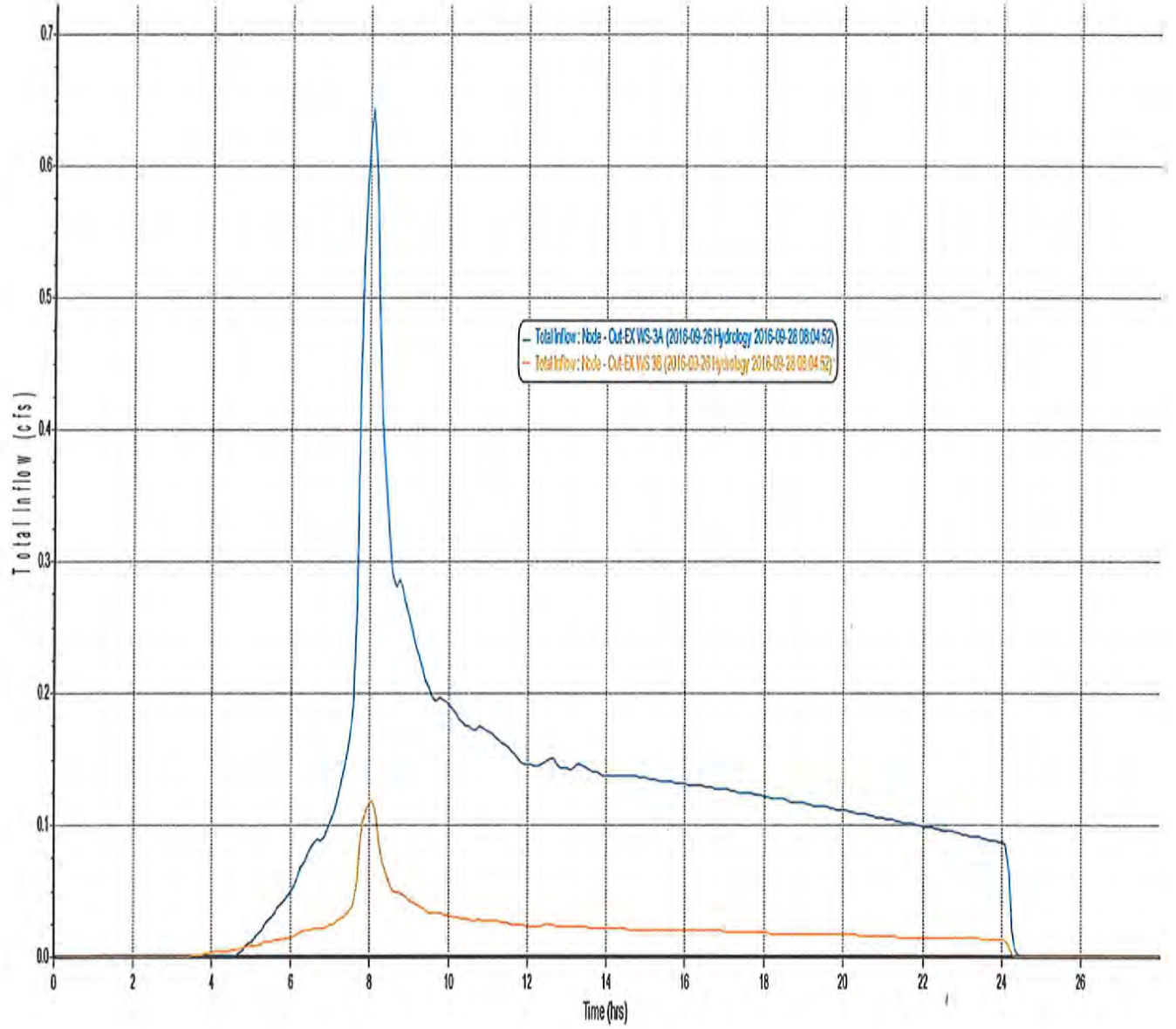
Proposed Sub-shed Runoff Results

Total Rainfall (in)3.40

Peak Runoff (cfs)0.72

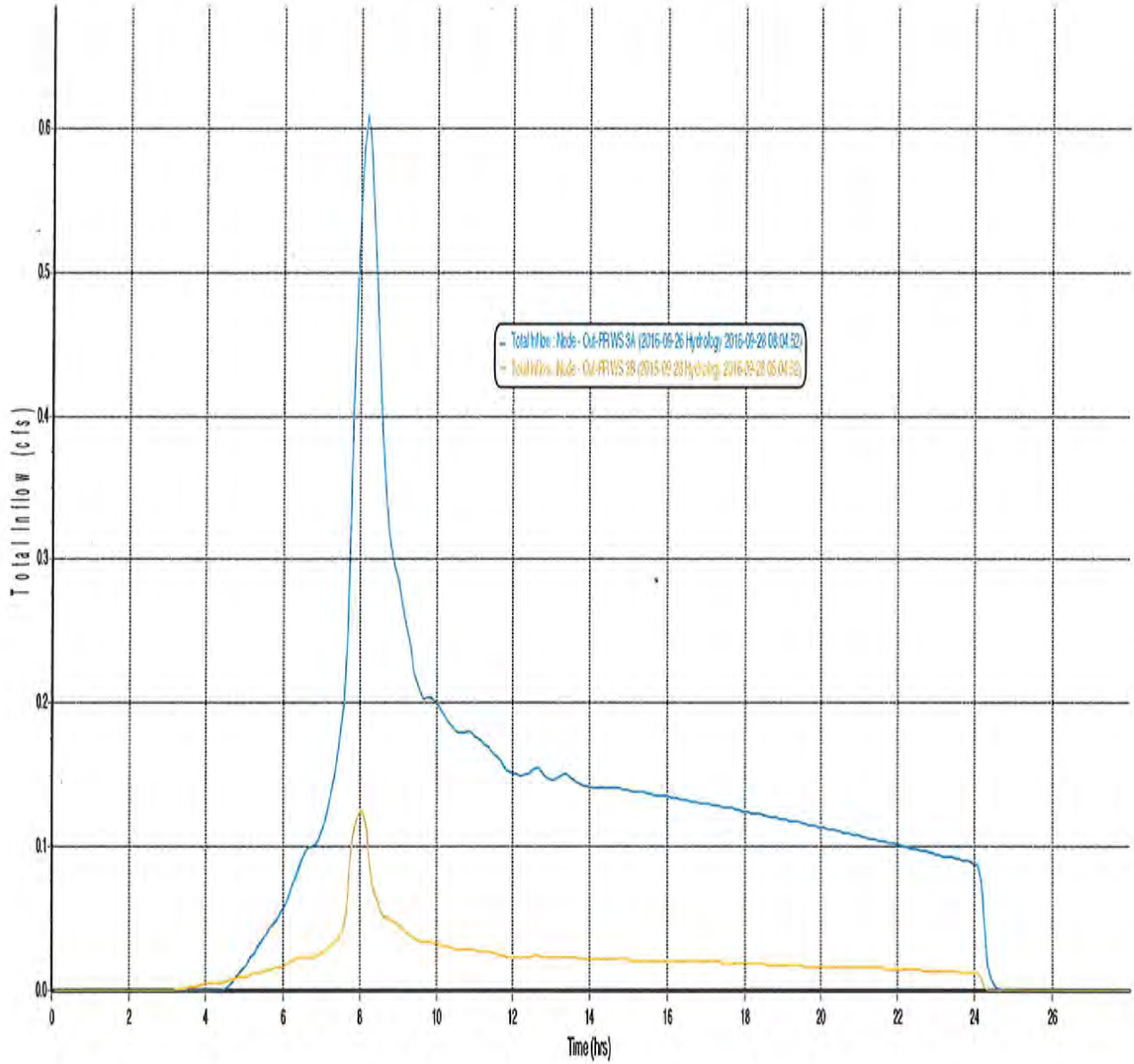
Time to Peak (hrs) 8.17

Watershed 3: Existing 2-yr Storm Event Runoff



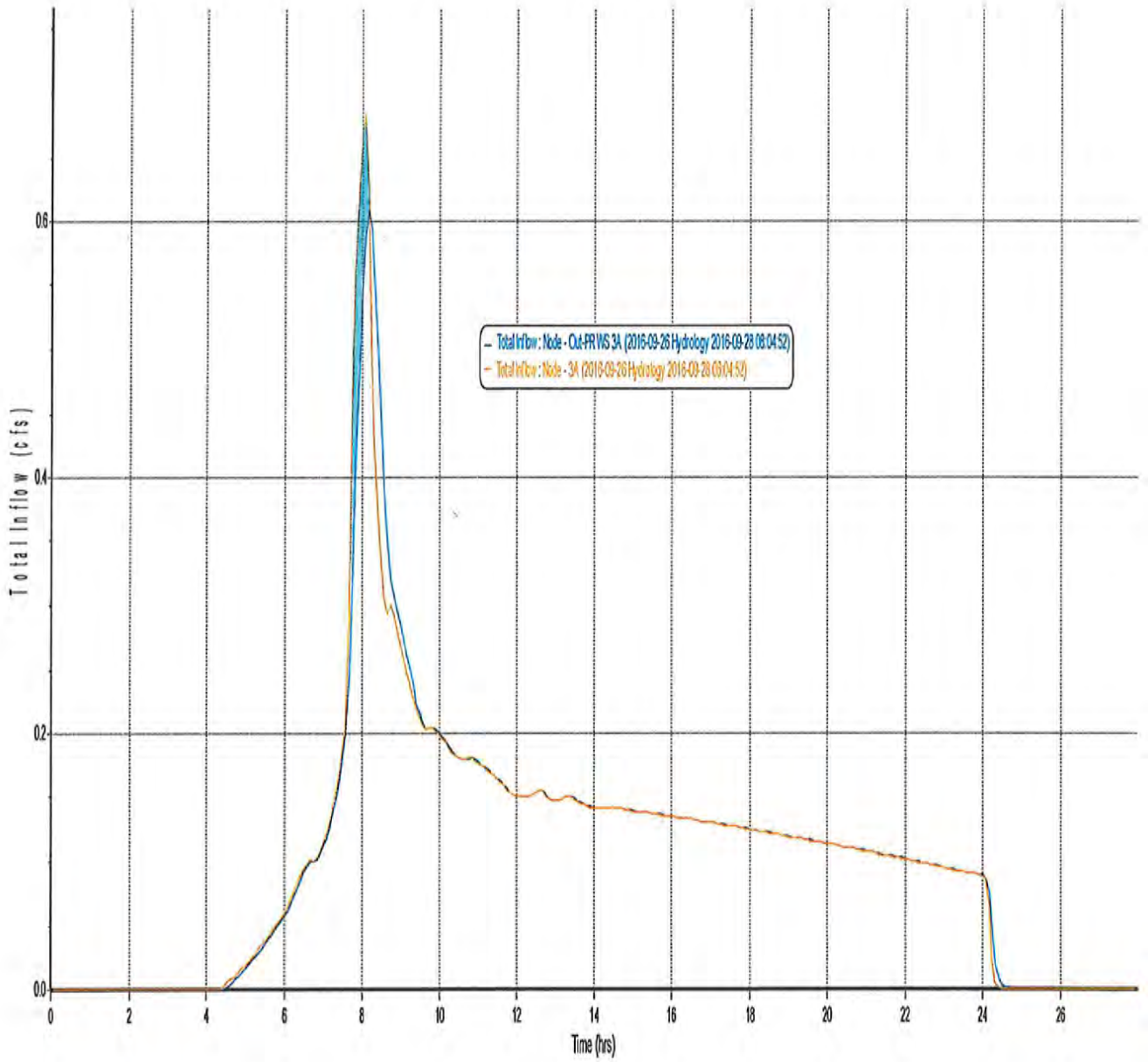
Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
3A	82	9.39	1.62	3.40	8.08	0.64
3B	88	6.00	0.22	3.40	8.07	0.12

Watershed 3: Proposed 2-yr Storm Event Runoff



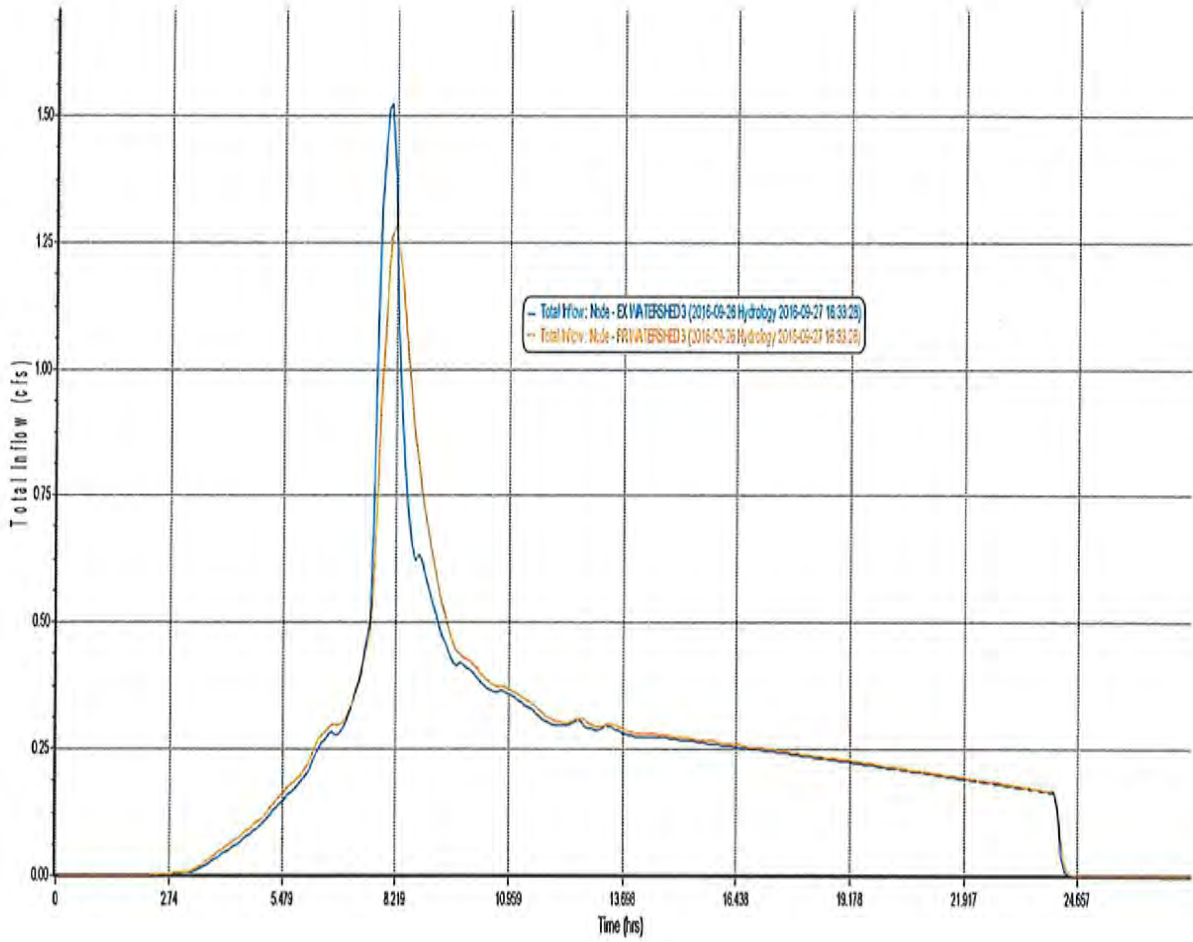
Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
3A	83	6.00	1.62	6.99	8.17	0.61
3B	89	6.00	0.22	6.99	8.00	0.13

Watershed 3A: Proposed 2-yr Storm Event Storage



 Storage.....246 cu. ft.

Watershed 3: 10-yr Storm Event Runoff



Existing Sub-shed Runoff Results

Total Rainfall (in) 5.17

Peak Runoff (cfs) 1.52

Time to Peak (hrs) 8.08

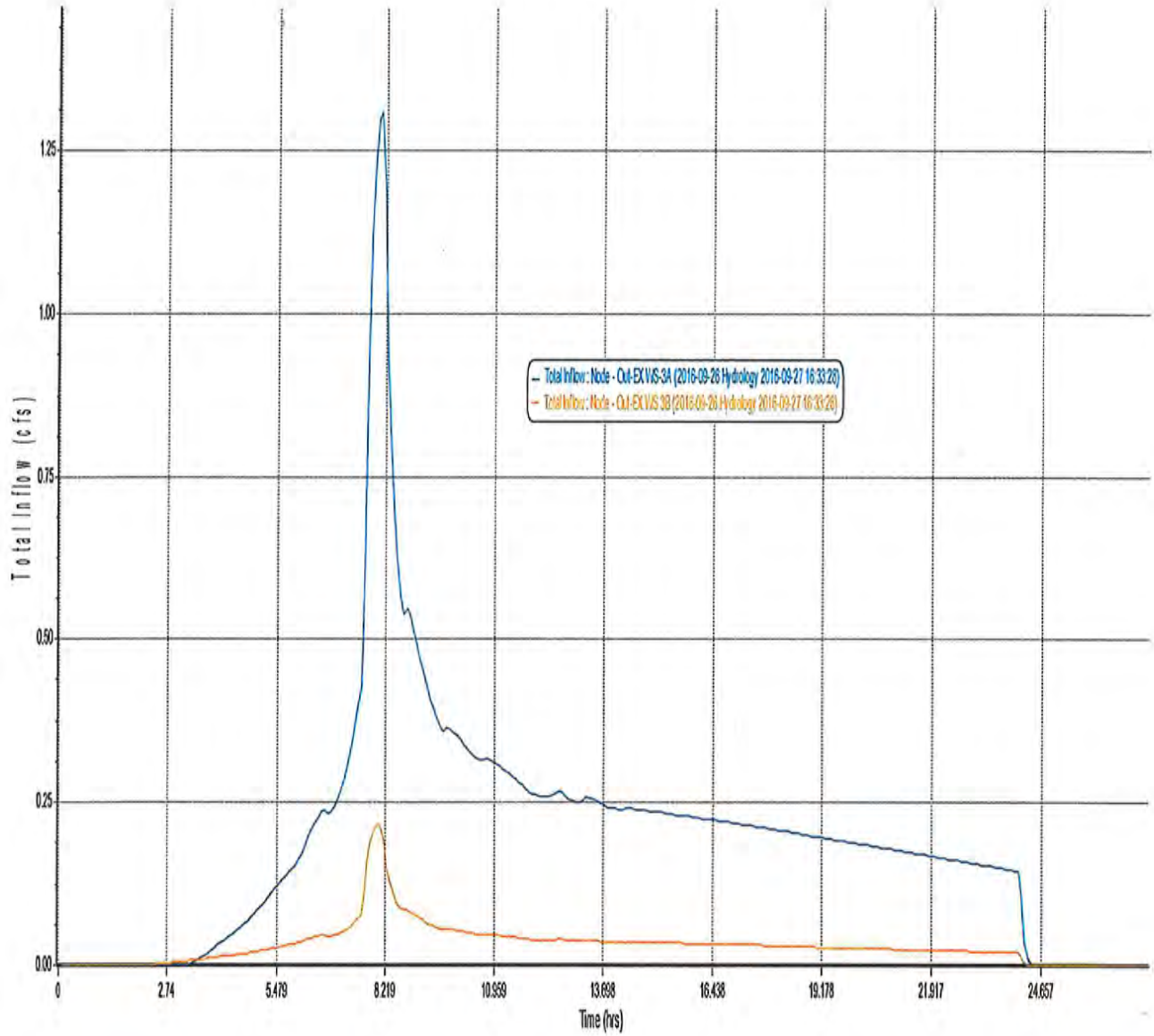
Proposed Sub-shed Runoff Results

Total Rainfall (in) 5.17

Peak Runoff (cfs) 1.28

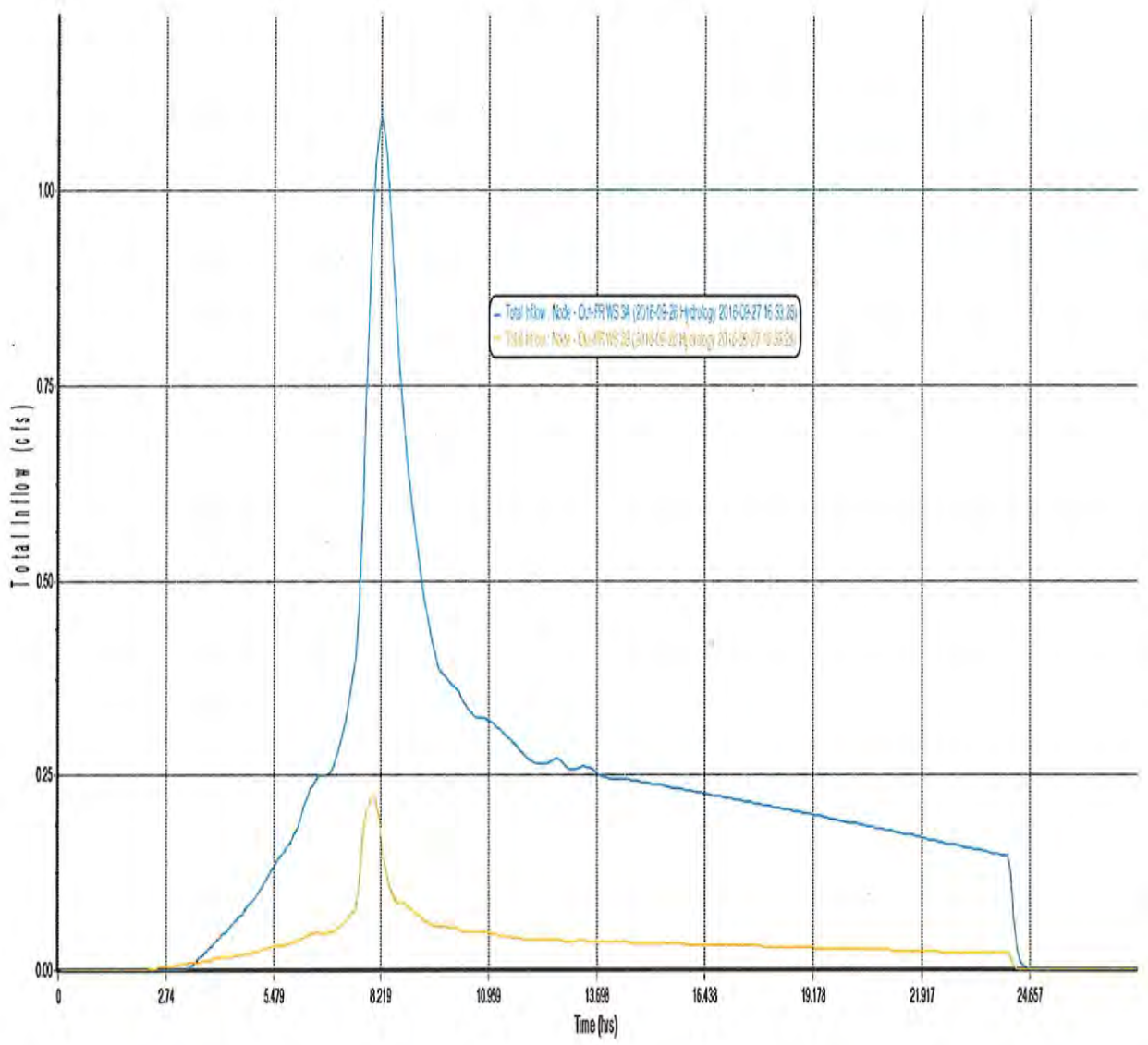
Time to Peak (hrs) 8.17

Watershed 3: Existing 10-yr Storm Event Runoff



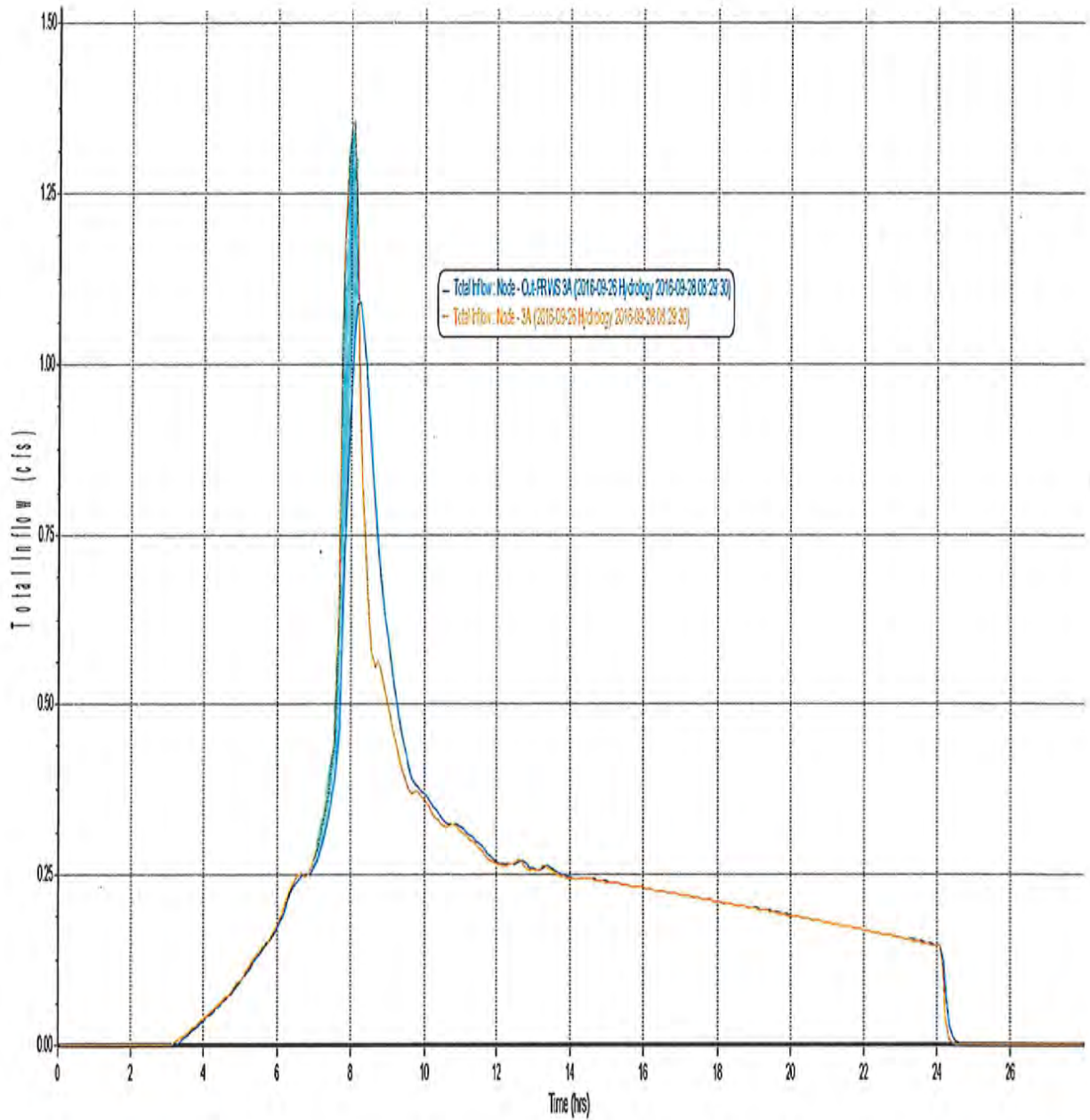
Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
3A	82	9.39	1.62	5.17	8.08	1.31
3B	88	6.00	0.22	5.17	8.00	0.22


Watershed 3: Proposed 10-yr Storm Event Runoff



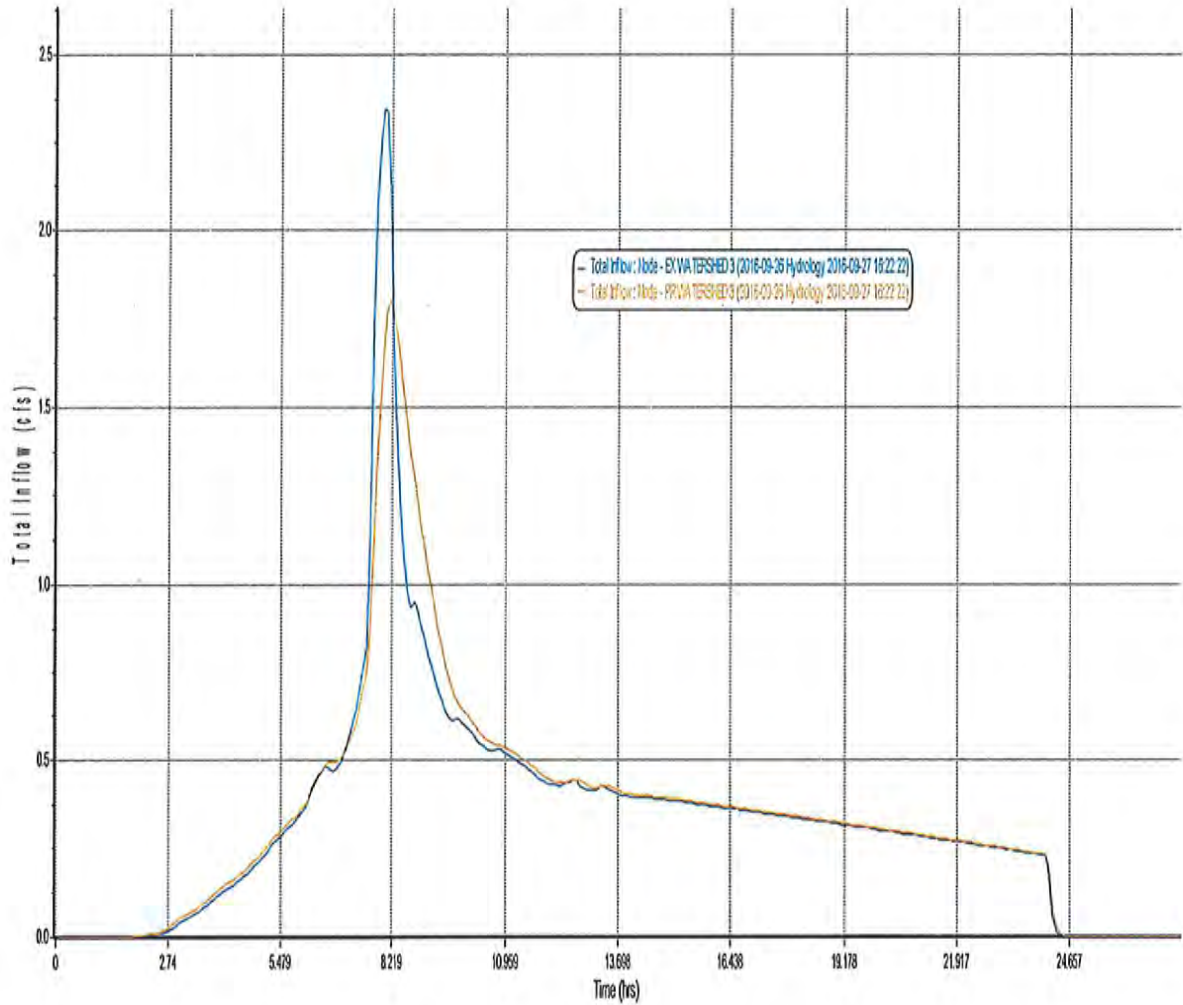
Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
3A	83	6.00	1.62	6.99	8.17	1.09
3B	89	6.00	0.22	6.99	8.00	0.22

Watershed 3A: Proposed 10-yr Storm Event Storage



 Storage.....783 cu. ft.

Watershed 3: 50-yr Storm Event Runoff



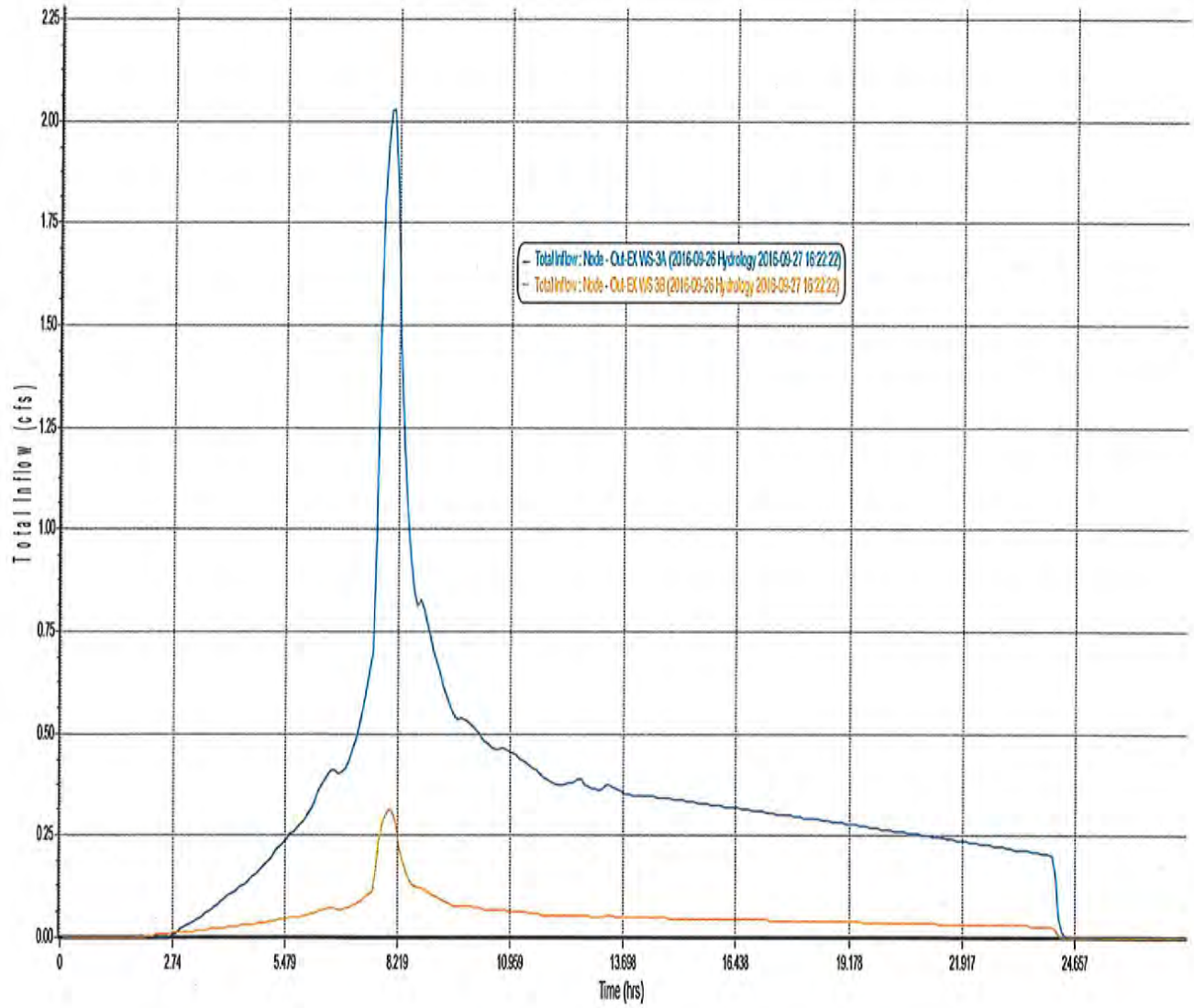
Existing Sub-shed Runoff Results

Total Rainfall (in) 6.99
 Peak Runoff (cfs) 2.34
 Time to Peak (hrs) 8.00

Proposed Sub-shed Runoff Results

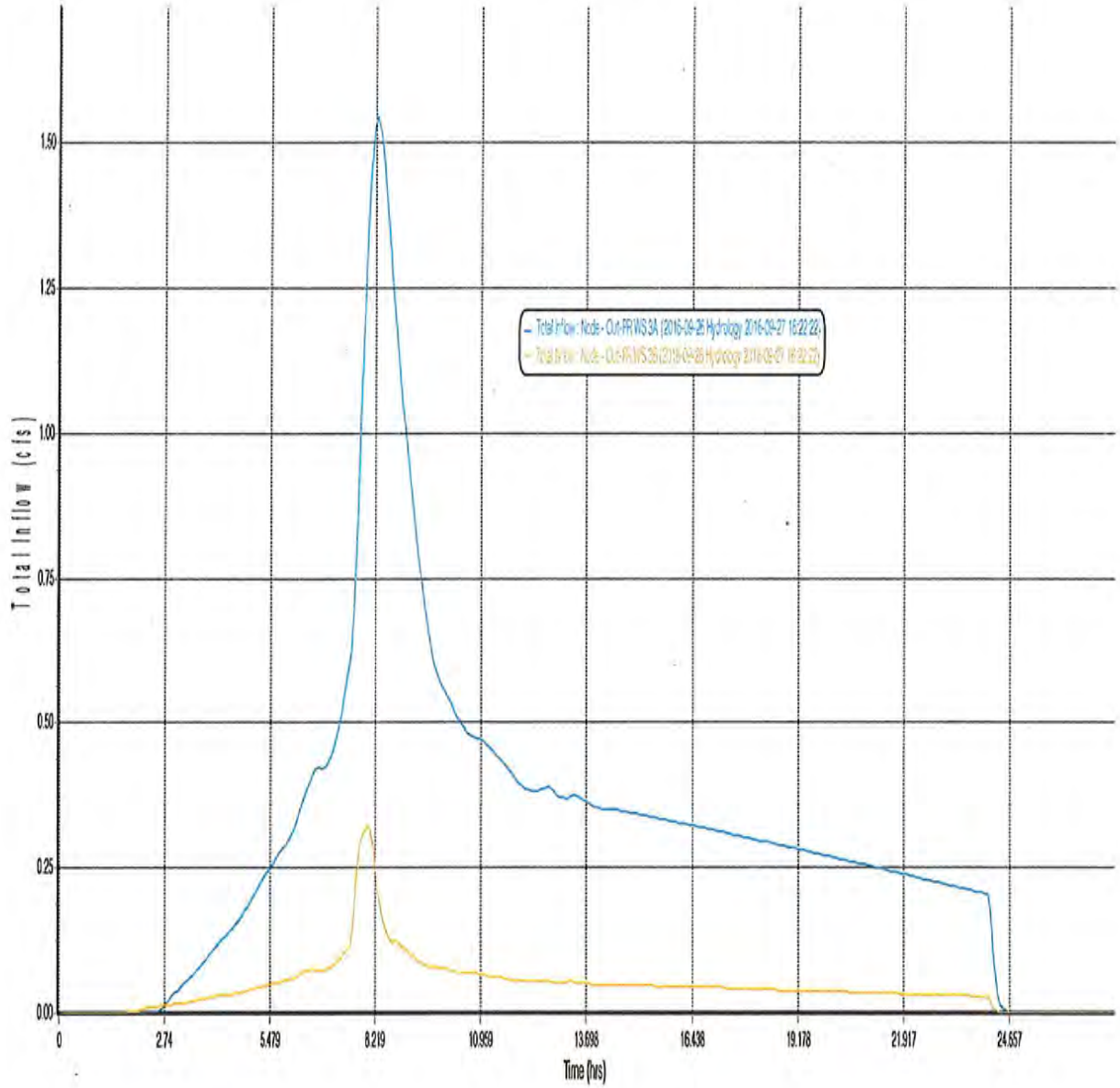
Total Rainfall (in) 6.99
 Peak Runoff (cfs) 1.81
 Time to Peak (hrs) 8.17

Watershed 3: Existing 50-yr Storm Event Runoff



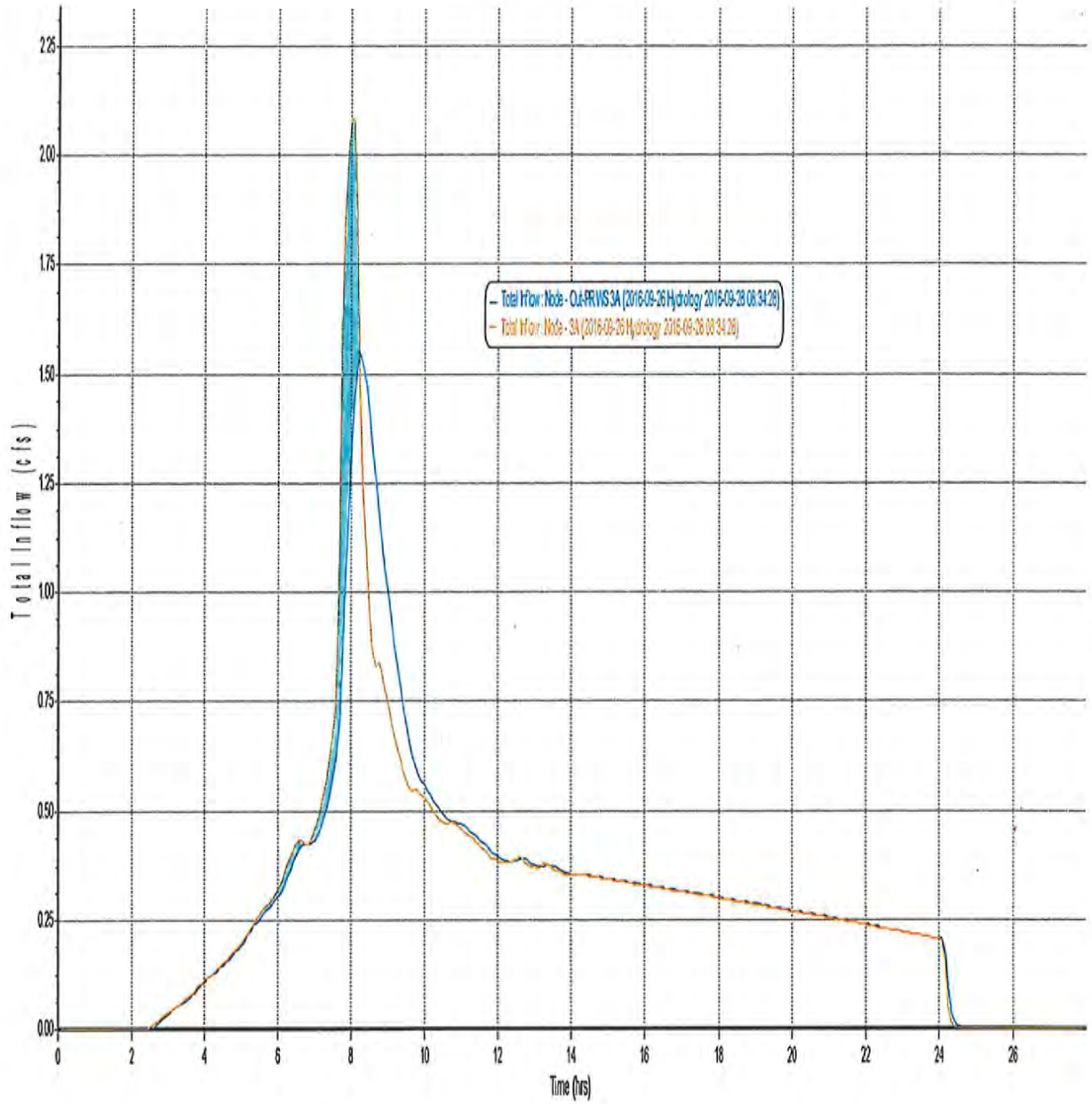
Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
3A	82	9.39	1.62	6.99	8.08	2.03
3B	88	6.00	0.22	6.99	8.00	0.32


Watershed 3: Proposed 50-yr Storm Event Runoff



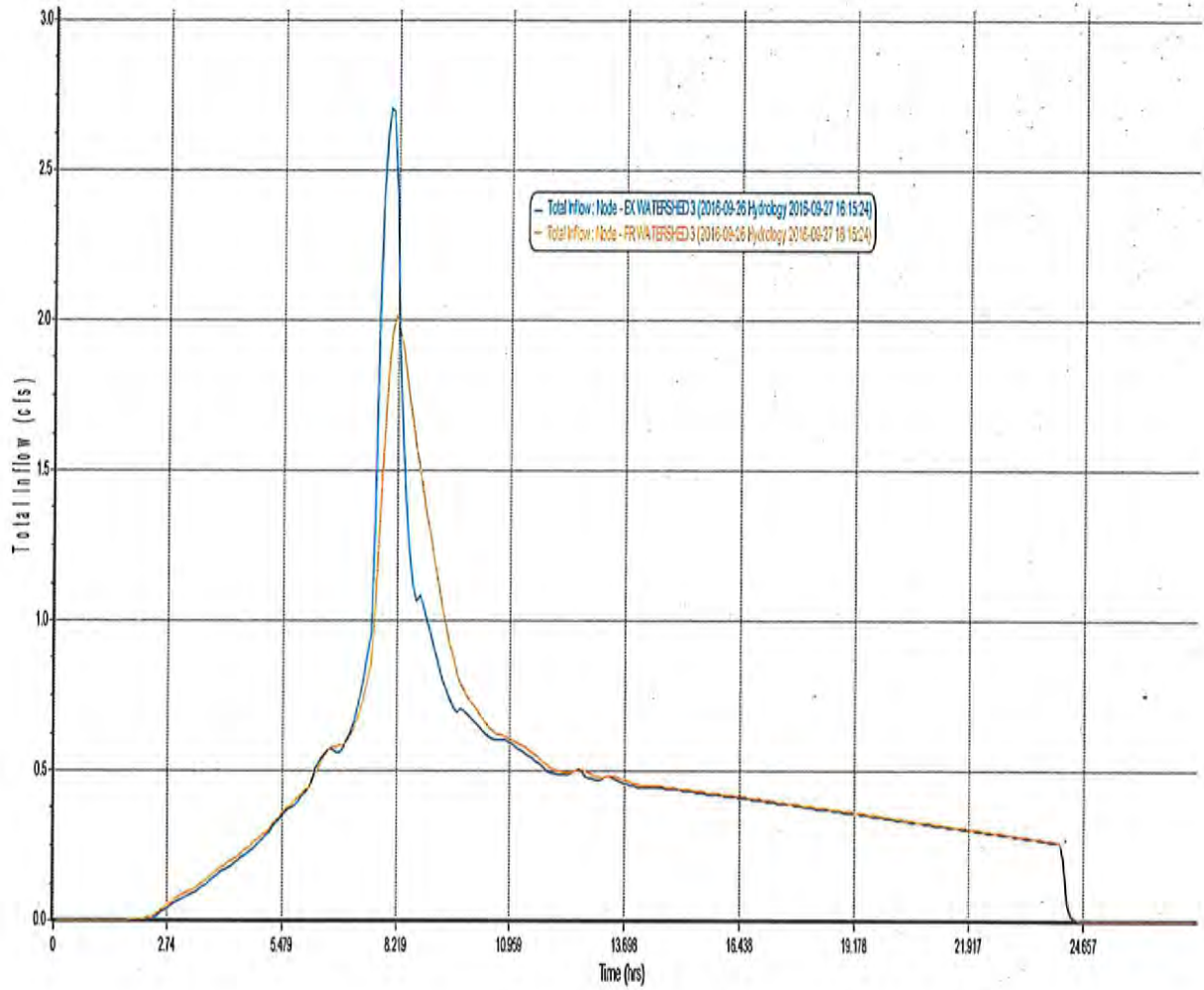
Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
3A	83	6.00	1.62	6.99	8.17	1.54
3B	89	6.00	0.22	6.99	8.00	0.32

Watershed 3A: Proposed 50-yr Storm Event Storage



 Storage.....1,574 cu. ft.

Watershed 3: 100-yr Storm Event Runoff



Existing Sub-shed Runoff Results

Total Rainfall (in) 7.77

Peak Runoff (cfs) 2.71

Time to Peak (hrs) 8.00

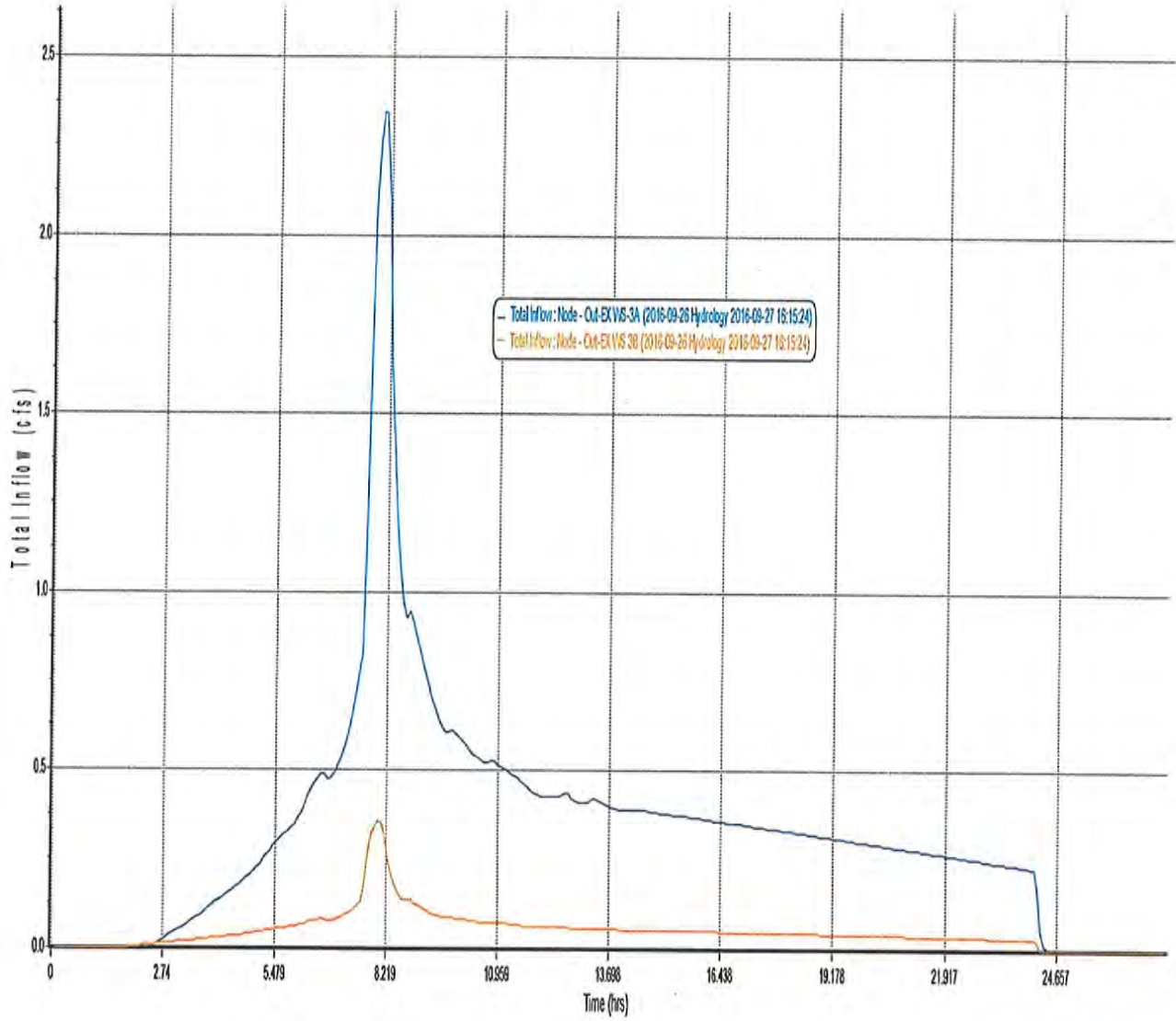
Proposed Sub-shed Runoff Results

Total Rainfall (in) 7.77

Peak Runoff (cfs) 2.02

Time to Peak (hrs) 8.17

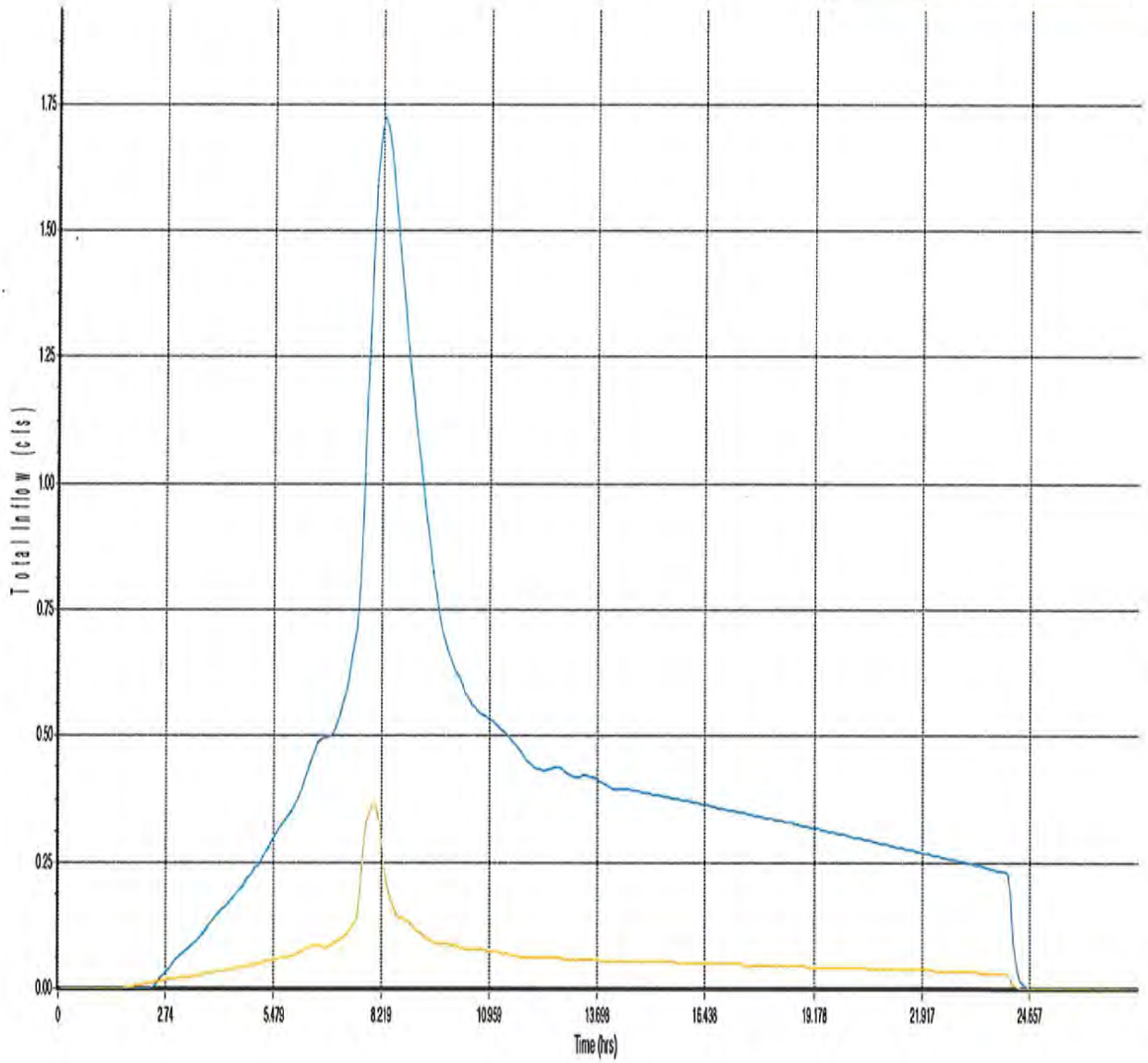
Watershed 3: Existing 100-yr Storm Event Runoff



Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
3A	82	9.39	1.62	7.77	8.00	2.35
3B	88	6.00	0.22	7.77	8.08	0.36

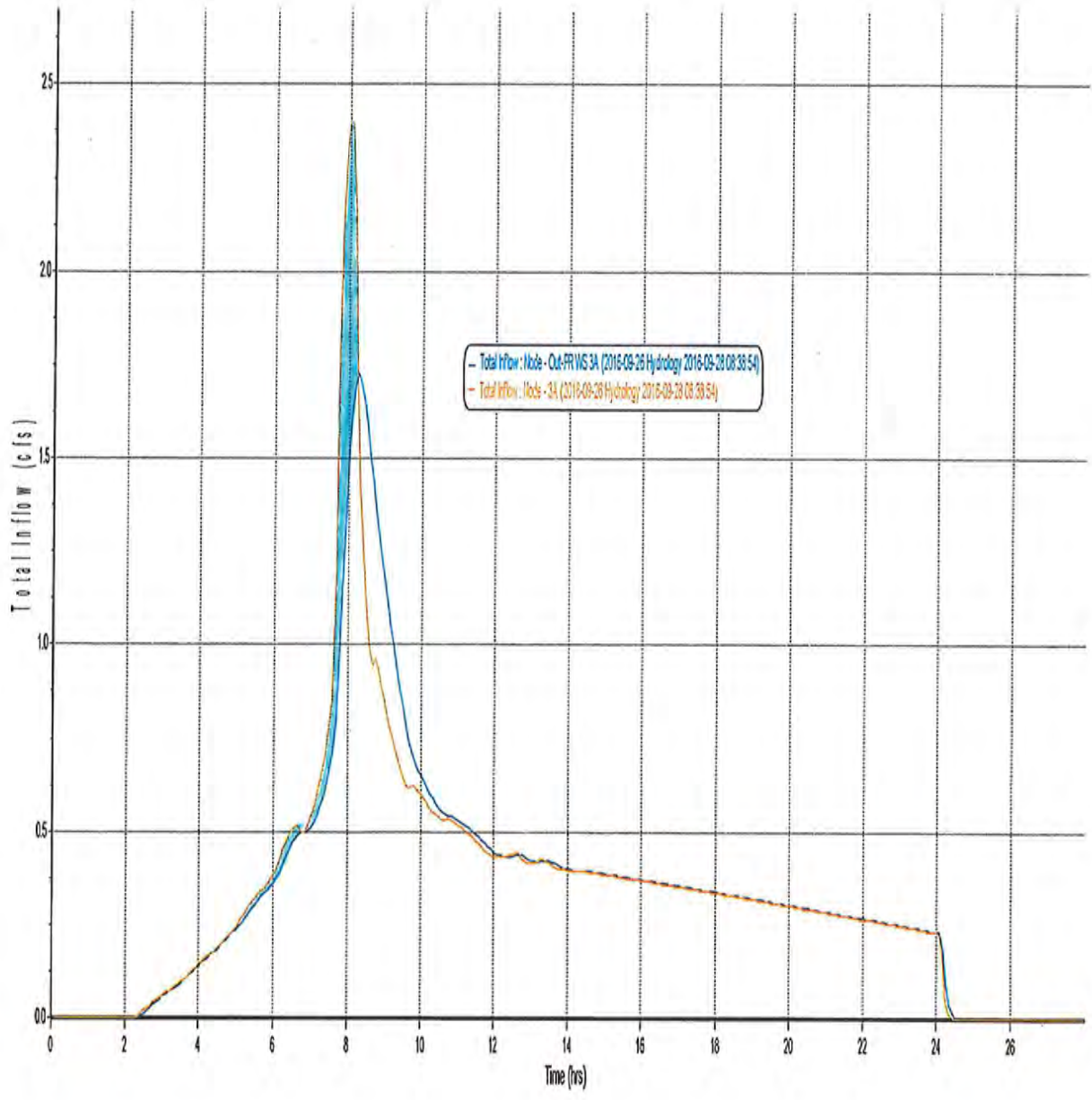
Watershed 3: Proposed 100-yr Storm Event Runoff


— Total Inflow Node - QJA75 WS 3A (2016-09-26 Hydrolog: 2016-06-27 16:15:24)
 — Sub Inflow Node - QJA75 WS 3B (2016-09-26 Hydrolog: 2016-06-27 16:15:24)



Sub-shed	CN	Tc (mins)	Area (Ac.)	Total Rainfall (in.)	Time to Peak (hrs.)	Peak Runoff (cfs)
3A	83	6.00	1.62	7.77	8.17	1.72
3B	89	6.00	0.22	7.77	8.00	0.36

Watershed 3A: Proposed 100-yr Storm Event Storage



 Storage.....1,963 cu. ft.

PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	WELO
OLE SEV	8	OLEA EUROPAEA 'SEVILLANO' 16'-17" TALL X 16'-17" WIDE	OLIVE	FIELD DUG	VERY LOW
PIS CHI	16	PISTACIA CHINENSIS	CHINESE PISTACHE	60" BOX	LOW
QUE AGR	12	QUERCUS AGRIFOLIA	COAST LIVE OAK	72" BOX	VERY LOW
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONT	WELO
ARB MAR	8	ARBUTUS X 'MARINA'	ARBUTUS MULTI-TRUNK	48" BOX	LOW
ARC BAK	34	ARCTOSTAPHYLOS BAKERI 'LOUIS EDMUNDS'	LOUIS EDMUNDS MANZANTIA	5 GAL	LOW
ARC HUR	21	ARCTOSTAPHYLOS MANZANTIA 'DR. HURD'	DR. HURD MANZANTIA	24" BOX	LOW
CEA YAN	7	CEANOTHUS GRISEUS HORIZONTALIS 'YANKEE POINT'	CALIFORNIA LILAC	5 GAL	LOW
FRUIT TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	WELO
FRU TBD	2	FRUIT TREE TBD	FRUIT TREE TO BE DETERMINED	B & B	MODERATE
PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	CONT	WELO
AGA BLU	84	AGASTACHE X 'BLUE FORTUNE'	ANISE HYSSOP	1 GAL	LOW
AGA LIC	61	AGASTACHE RUPESTRIS 'LICORICE MINT'	HYSSOP	1 GAL	LOW
ERI KAR	184	ERIGERON KARVINSKIANUS	SANTA BARBARA DAISY	1 GAL	LOW
NEP BLU	30	NEPETA X 'FAASSENI' 'BLUE WONDER'	CATMINT	1 GAL	LOW
PER SPI	116	PEROVSKIA ATRIPLICIFOLIA 'BLUE SPIRES'	RUSSIAN SAGE	5 GAL	LOW
SAL MID	260	SALVIA LEUCANTHA 'MIDNIGHT'	MEXICAN BUSH SAGE	5 GAL	LOW

LANDSCAPED AREA: 34,720 SQ. FT.

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CLAUDIA SCHMIDT
LANDSCAPE DESIGN

ANTHEM WINERY AND VINEYARDS, LLC
 3123 Dry Creek Road
 Napa, California 94558

Date	1/7/2019
Drawn By	CBL
Checked By	CSLD
Project No.	
Date	10/30/15
Issue	USE PERMIT
06/05/18	USE PERMIT RESUB L

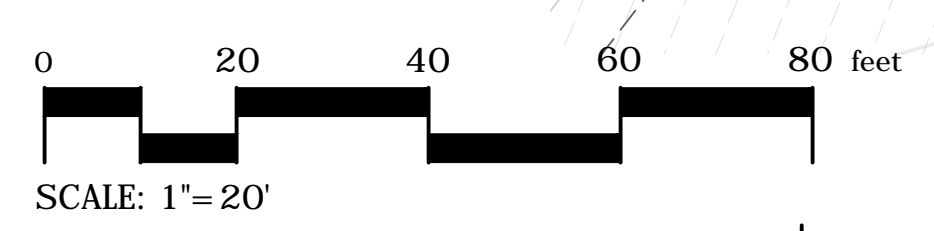
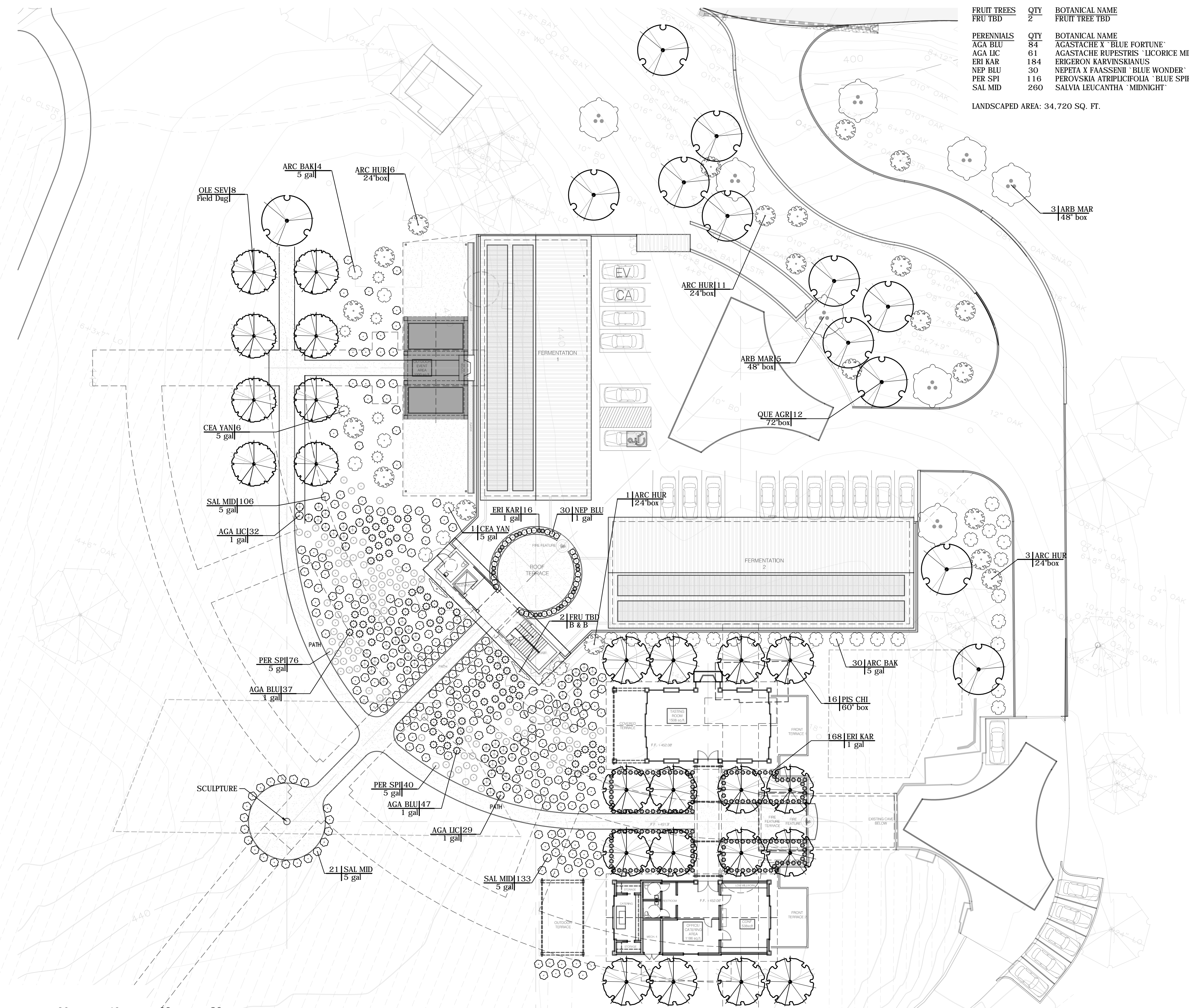
PLANTING PLAN

SCALE AS NOTED

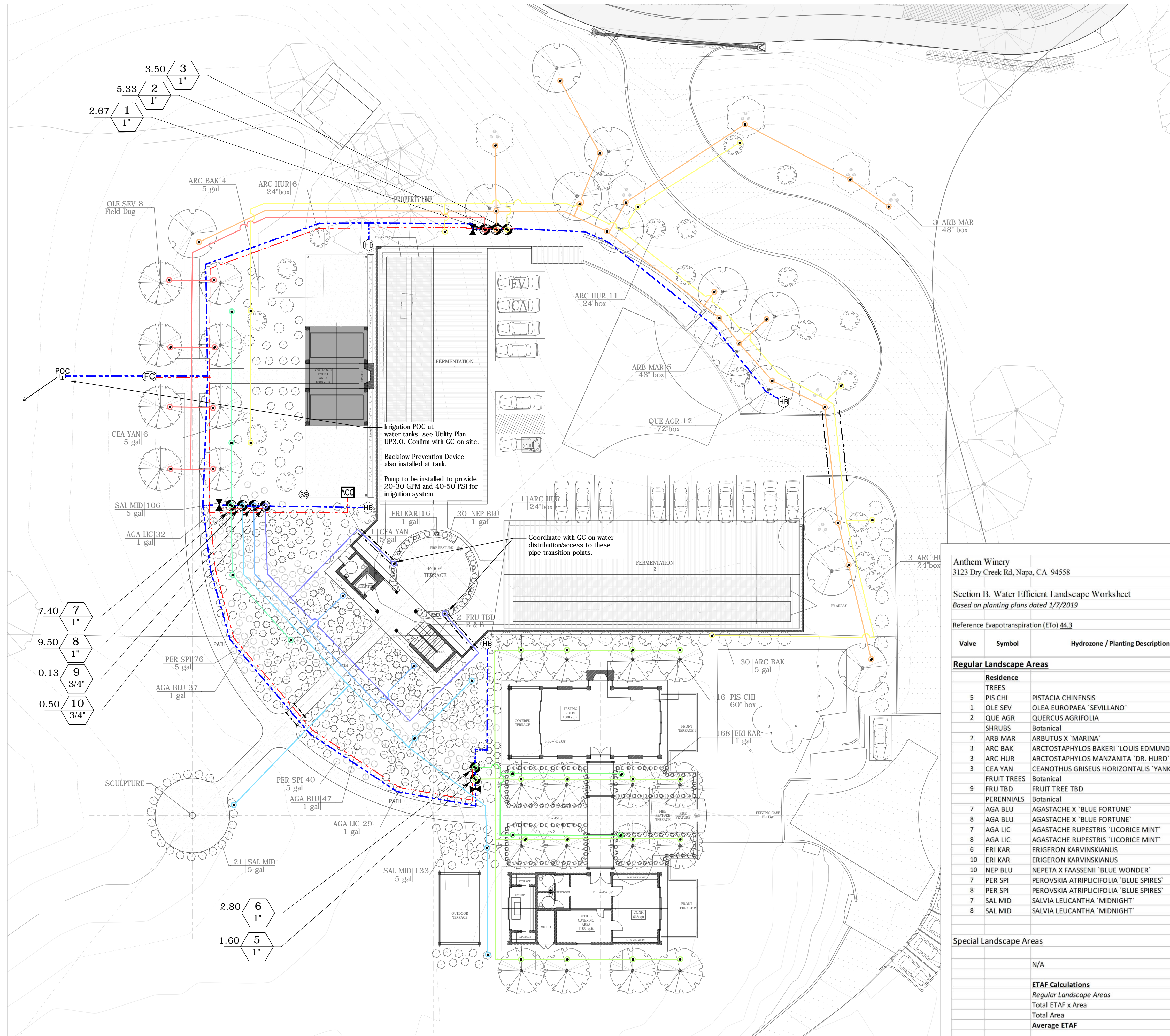
SHEET INDEX
 L2.1 PLANTING PLAN

- IR1.0 IRRIGATION PLAN & WELO CALCS
- IR2.0 IRRIGATION NOTES & DETAILS

Sheet **L2.1**
 of 1



1 PLANTING PLAN
 SCALE: 1" = 20'



IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
•	Pipe Transition Point - From Below-Grade PVC Pipe to Above-Grade Drip Tube
⊗	Electric Remote Control Valve, typ.
HB	Hose Bibb (design and location to be approved by Landscape Architect)
⌘	Shut Off Valve - PVC Ball Valve at each Valve Assembly Grouping
ACC	Hunter ACC Outdoor Modular Controller with Remote. Metal Cabinet.
SS	Hunter Solar-Sync Solar, rain freeze sensor with outdoor interface, connects to Hunter PCC, Pro-C, and I-Core Controllers, install as noted. Includes 10 year lithium battery and rubber module cover, and gutter mount bracket. Wired.
FC	Hunter FLOW-CLICK-100 Flow Sensor SOV with Interface Panel, 1" Schedule 40 Sensor Body, 24 VAC, 2 amp, install Interface Panel as required. Serves as meter for Irrigation System.
BF	Backflow Prevention device, already installed at tanks
---	Main line - 2" Sch. 40 PVC
---	Lateral Line - Sch. 40 PVC
---	Chase - 4" Sch. 40 PVC - Qty as needed
---	Controller Wire in 1" Conduit for Two-Wire system

Valve Callout:
 - Valve Number
 - Valve Flow
 - Valve Size

Anthem Winery
 3123 Dry Creek Rd, Napa, CA 94558

Section B. Water Efficient Landscape Worksheet

Based on planting plans dated 1/7/2019

Reference Evapotranspiration (ET₀) 44.3

Valve	Symbol	Hydrozone / Planting Description	WUCOLS	Zone Plant Factor	Irrigation Method	Irrigation Efficiency (IE)	ETAF (PF/IE)	Landscape Area (sq-ft)	ETAF x Area	Estimated Total Water Use (ETWU)	Qty	Size
Regular Landscape Areas												
Residence												
TREES												
5	PIS CHI	PISTACIA CHINENSIS	LOW	0.2	Drip	0.81	0.25	4800	1,185	31,671	16 60" BOX	
1	OLE SEV	OLEA EUROPAEA 'SEVILLANO'	VERY LOW	0.1	Drip	0.81	0.12	2000	247	6,598	8 FIELD DUG	
2	QUE AGR	QUERCUS AGRIFOLIA	VERY LOW	0.1	Drip	0.81	0.12	4200	519	13,856	12 72" BOX	
SHRUBS												
2	ARB MAR	ARBUTUS X 'MARINA'	LOW	0.3	Drip	0.81	0.37	1800	667	17,815	8 48" BOX	
3	ARC BAK	ARCTOSTAPHYLOS BAKERI 'LOUIS EDMUNDS'	LOW	0.3	Drip	0.81	0.37	1020	378	10,095	34 5 GAL	
3	ARC HUR	ARCTOSTAPHYLOS MANZANITA 'DR. HURD'	LOW	0.3	Drip	0.81	0.37	1260	467	12,470	21 24" BOX	
3	CEA YAN	CEANOTHUS GRISSEUS HORIZONTALIS 'YANKEE POINT'	LOW	0.3	Drip	0.81	0.37	210	78	2,078	7 5 GAL	
FRUIT TREES												
9	FRU TBD	FRUIT TREE TBD	MODERATE	0.6	Drip	0.81	0.74	60	44	1,188	2 B & B	
PERENNIALS												
7	AGA BLU	AGASTACHE X 'BLUE FORTUNE'	LOW	0.3	Drip	0.81	0.37	370	137	3,662	37 1 GAL	
8	AGA BLU	AGASTACHE X 'BLUE FORTUNE'	LOW	0.3	Drip	0.81	0.37	470	174	4,652	47 1 GAL	
7	AGA LIC	AGASTACHE RUPESTRIS 'LICORICE MINT'	LOW	0.3	Drip	0.81	0.37	320	119	3,167	32 1 GAL	
8	AGA LIC	AGASTACHE RUPESTRIS 'LICORICE MINT'	LOW	0.3	Drip	0.81	0.37	290	107	2,870	29 1 GAL	
6	ERI KAR	ERIGERON KARVINSKIANUS	LOW	0.3	Drip	0.81	0.37	1176	436	11,639	168 1 GAL	
10	ERI KAR	ERIGERON KARVINSKIANUS	LOW	0.3	Drip	0.81	0.37	112	41	1,108	16 1 GAL	
10	NEP BLU	NEPETA X FAASSENI 'BLUE WONDER'	LOW	0.3	Drip	0.81	0.37	300	111	2,969	30 1 GAL	
7	PER SPI	PEROVSKIA ATRIPLICIFOLIA 'BLUE SPIRES'	LOW	0.3	Drip	0.81	0.37	760	281	7,522	76 5 GAL	
8	PER SPI	PEROVSKIA ATRIPLICIFOLIA 'BLUE SPIRES'	LOW	0.3	Drip	0.81	0.37	400	148	3,959	40 5 GAL	
7	SAL MID	SALVIA LEUCANTHA 'MIDNIGHT'	LOW	0.3	Drip	0.81	0.37	1590	589	15,736	106 5 GAL	
8	SAL MID	SALVIA LEUCANTHA 'MIDNIGHT'	LOW	0.3	Drip	0.81	0.37	2310	856	22,862	154 5 GAL	
TOTALS:									23,448	6,583	175,917	
Special Landscape Areas												
N/A												
ETAF Calculations												
Regular Landscape Areas												
Total ETAF x Area									6,583	ETWU Total =		175,917
Total Area									23,448	Maximum Applied Water Allowance (MAWA)* =		289,810
Average ETAF									0.28			
*MAWA calculation: 44.3*0.62*(0.45*23,448)												
All Landscape Areas												
Total ETAF x Area									6,583			
Total Area									23,448			
Average ETAF									0.28			

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 11111 CALIFORNIA AVE
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ANTHEM WINERY AND
 VINEYARDS, LLC

3123 Dry Creek Road
 Napa, California 94558

Streamline
 Irrigation design and compliance

streamlineinc.com
 (707) 529-2633

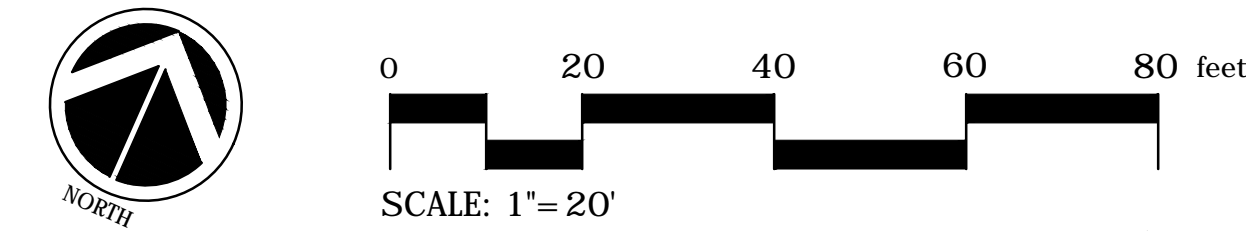
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 Drawn By: IM
 Checked By: CSID
 Project No:

Date: 10/30/15
 Issue: USE PERMIT
 06/05/18: USE PERMIT RESUB.1

IRRIGATION PLAN
 AND WELO CALCS

SCALE: AS NOTED

Sheet IR1.0
 of 2



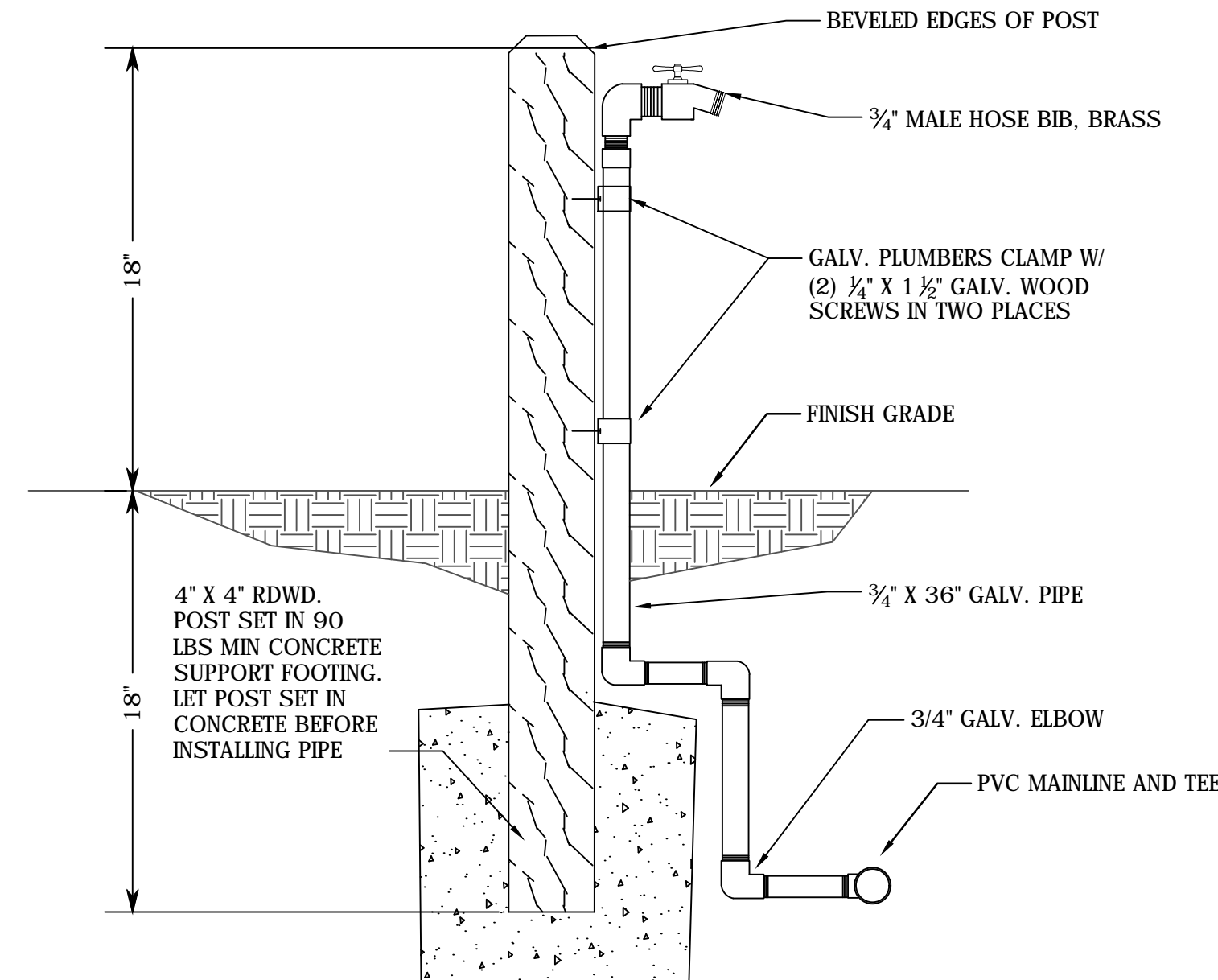
Irrigation Notes

- These irrigation drawings are diagrammatic and indicative of the work to be installed. All piping, valves and other irrigation components may be shown within paved areas for graphic clarity only and are to be installed within planting areas. Due to the scale of the drawings, it is not possible to indicate all offsets, fittings, sleeves, conduit and other items which may be required. Notify any coordinate irrigation contract work with applicable contractors for the location and installation of pipe, conduit or sleeves.
- The intent of this irrigation system is to conserve resources while providing a minimum amount of water required to sustain good plant health.
- It is the responsibility of the maintenance contractor and/or owner to program the irrigation controller to provide the minimum amount of water needed to sustain good plant health. This includes making adjustments to the irrigation program for seasonal weather changes, plant material, water requirements, mounds, slopes, sun, shade, wind exposure and growth over time.
- It is the responsibility of a licensed electrical contractor to provide 120 volt A.C. (2.5 amp demand per controller) electrical service to the controller location. It is the responsibility of the irrigation contractor to coordinate the electrical service stub-out to the controller. Provide proper grounding per controller manufacturer's instructions and in accordance with local codes.
- Provide the irrigation controller with its own independent low voltage common ground wire.
- Unless otherwise indicated, well contractor to provide a dedicated 2" service line with a minimum of 25 GPM and 40 PSI with a separate meter or sub-meter.
- Irrigation controller shall be weather- or moisture-based controller that automatically adjusts irrigation in response to changes in plants' needs as weather conditions change. Weather-based controllers without integral rain sensors or communication systems that account for local rainfall shall have a separate rain sensor which communicates with the controller. Soil moisture-based controllers are not required to have rain sensor input.
- Install new batteries in the irrigation controller to retain program information during power failures. Owner/maintenance contractor to check twice annually and replace when necessary, no less frequent than two years.
- Schedule a meeting which includes the maintenance contractor, the owner (or owner's representative) and the irrigation contractor at the site for instruction on the proper programming and operation of the irrigation controller. Irrigation contractor to provide owner's manual and as-built plans.
- Splicing of low voltage wires is permitted in valve boxes only. Leave a 24" long, 1" diameter coil of excess wire at each splice. Tape wires together every ten feet. Do not tape wires together where contained within sleeving or conduit.
- Install black plastic valve boxes with non-hinged cover marked "irrigation"
- Hose bib and irrigation valve locations are diagrammatic. Install remote control valve boxes 12" from walk curb, lawn header board, building or landscape feature. At multiple valve box groups, install each box 12" apart. Hose bib and valve box locations to be approved by landscape architect.
- A ball/gate valve shall be installed to isolate each irrigation valve or group of valves located together. Gate valve size shall be the same as the main line.
- Flush and adjust irrigation outlets and nozzles for optimum performance and to not allow overspray onto walks, roadways and/or buildings. Select the best degree of the arc and radius to fit the existing site conditions and throttle the flow control at each valve to obtain the optimum operating pressure for each control zone.
- Set sprinkler heads perpendicular to finish grade.
- Locate emitter outlets and bubblers on uphill side of plant or tree.
- At locations where low sprinkler head drainage will cause erosion and/or excess water, install a pop-up body with integral check valve. Install a spring loaded check valve on bubbler and emitter risers where required.
- Where it is necessary to excavate adjacent to existing trees, use caution to avoid injury to trees and tree roots. Excavate by hand in areas where 2 inch diameter and larger roots occur. Backfill trenches adjacent to tree within 24 hours. Where this is not possible, shade the side of the trench adjacent to the tree with wet burlap or canvas.
- The sprinkler system design is based on the minimum operating pressure shown on the irrigation drawings. Verify water pressure prior to construction. Report any difference between the water pressure indicated on the drawings and the actual pressure reading at the irrigation point of connection to the owner's authorized representative.
- Pipe sizing shown on the drawings is typical. As changes in layout occur during staking and construction the size may need to be adjusted accordingly.
- The irrigation contractor shall be responsible for minor changes in the irrigation layout due to obstructions not shown on the irrigation drawings such as lights, fire hydrants, signs, electrical enclosures, unforeseen underground utilities or boulders, etc.

"I have complied with the criteria of the Model Water Efficient Landscape Ordinance and applied them accordingly for the efficient use of water in the irrigation design plan."

Lindsay Merget

-Lindsay Merget, Streamline Irrigation Design and Compliance

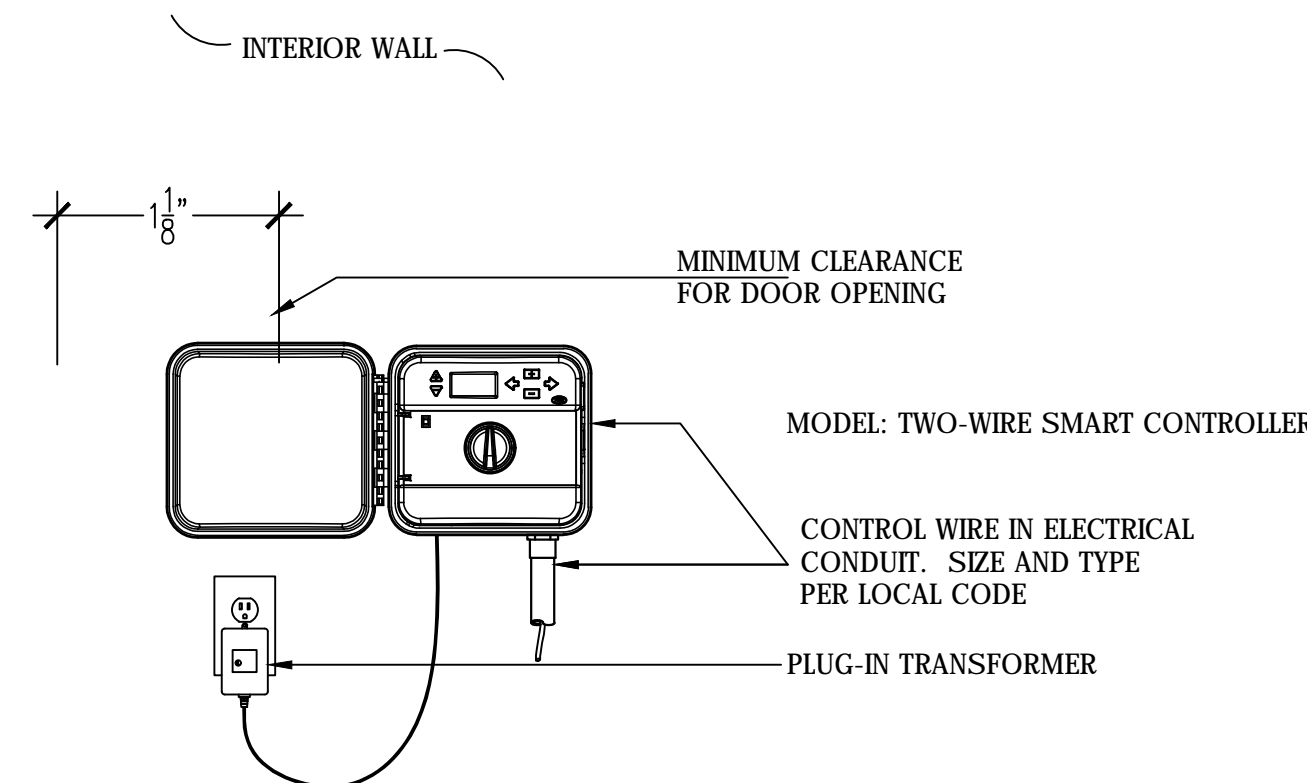


1 HOSE BIB
NOT TO SCALE

EMITTER CHART - NETAFIM PC 1 GPH EMITTER								
Container Size	1 gal	5 gal	15 gal/24" box	36" box	48" box	60" box	72" box	Field Dug
Qty Emitters	1	2	4	6	10	14*	20*	20*

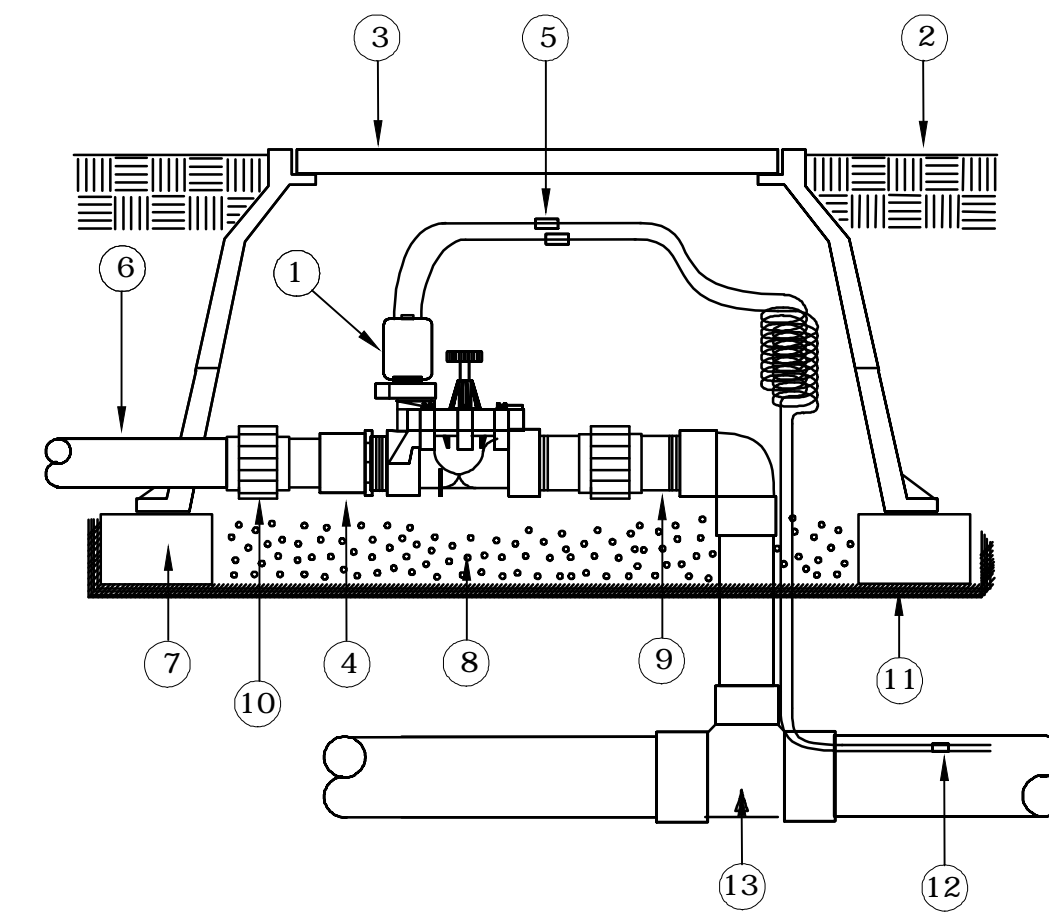
*Distribute emitters on 2 drip rings

3 EMITTER CHART
NOT TO SCALE



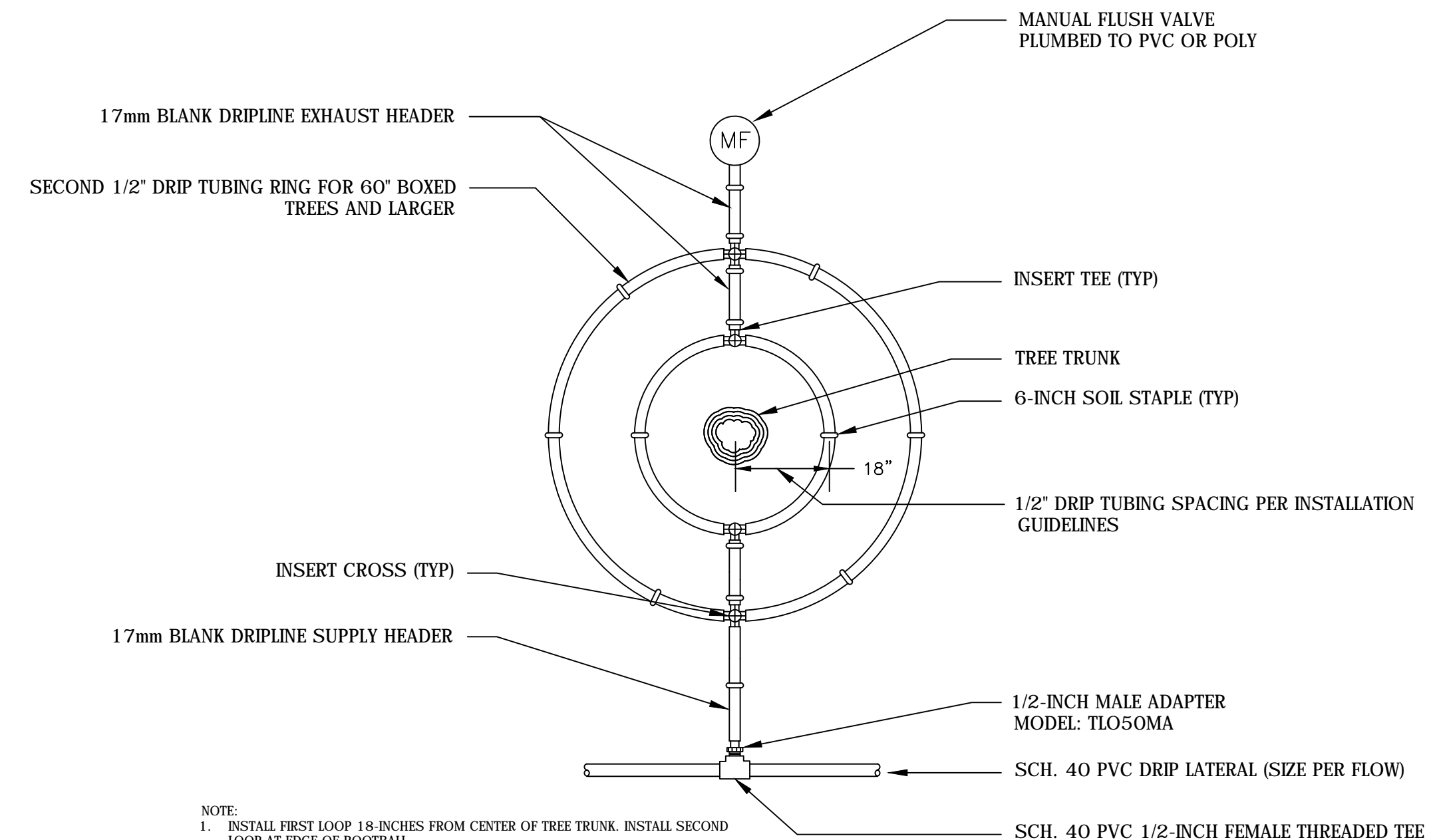
MOUNT CONTROLLER WITH LCD SCREEN AT EYE LEVEL. PLUG-IN TRANSFORMER SHALL BE CONNECTED TO GROUNDED 110 VAC OUTLET.

5 CONTROLLER
NOT TO SCALE



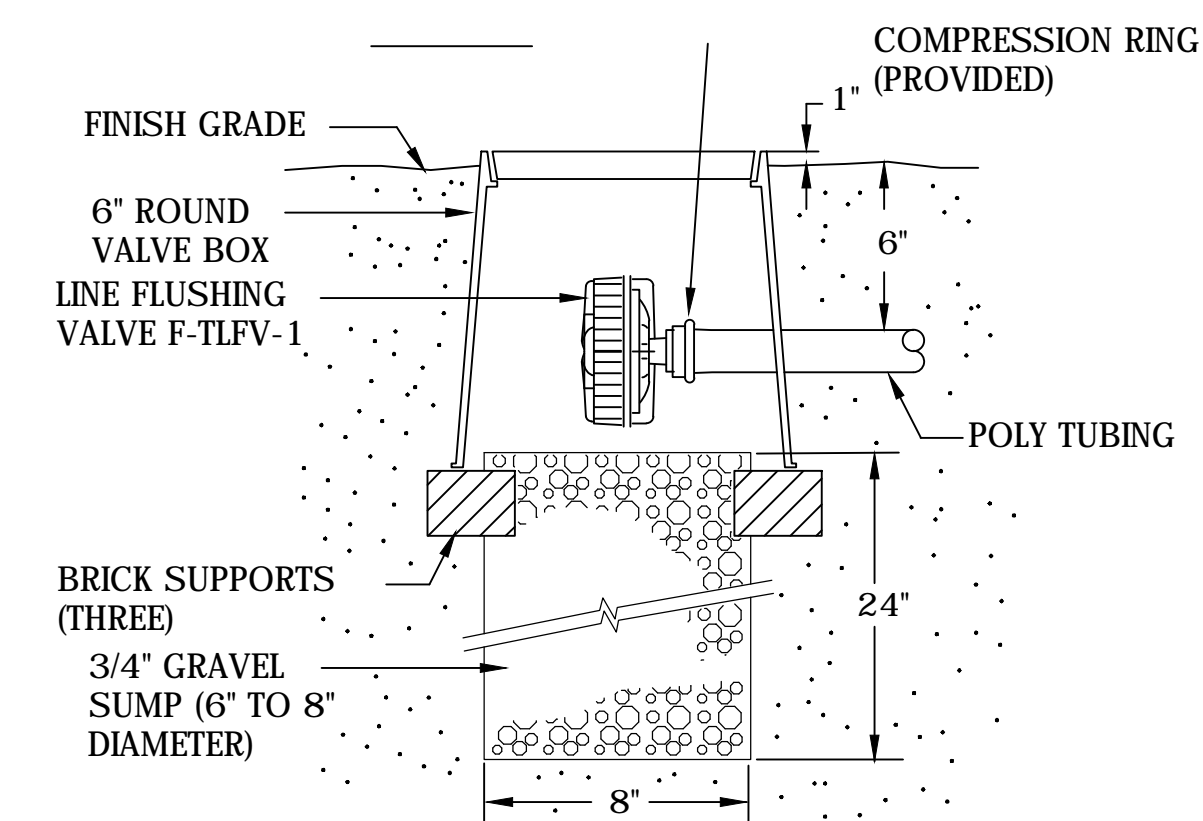
NOTE:
1. This drawing is provided for reference only. Individual project requirements and local codes may dictate differences in installation procedure that are not identified here.
2. Refer to product literature for additional installation and adjustment information.

2 VALVE ASSEMBLY
NOT TO SCALE



NOTE:
1. INSTALL FIRST LOOP 18-INCHES FROM CENTER OF TREE TRUNK. INSTALL SECOND LOOP AT EDGE OF ROOTBALL.
2. USE TORO 1/2" BLUE LINE DRIP HOSE OR EQUAL.
3. SEE EMITTER CHART FOR QUANTITY OF EMITTERS PER CONTAINER SIZE.

4 TREE RING DETAIL FOR 24" BOXED TREES AND LARGER
NOT TO SCALE



6 DRIP LINE FLUSHING VALVE DETAIL
NOT TO SCALE

CLAUDIA SCHMIDT
LANDSCAPE DESIGN

ANTHEM WINERY AND
VINEYARDS, LLC

Streamline
irrigation design and compliance

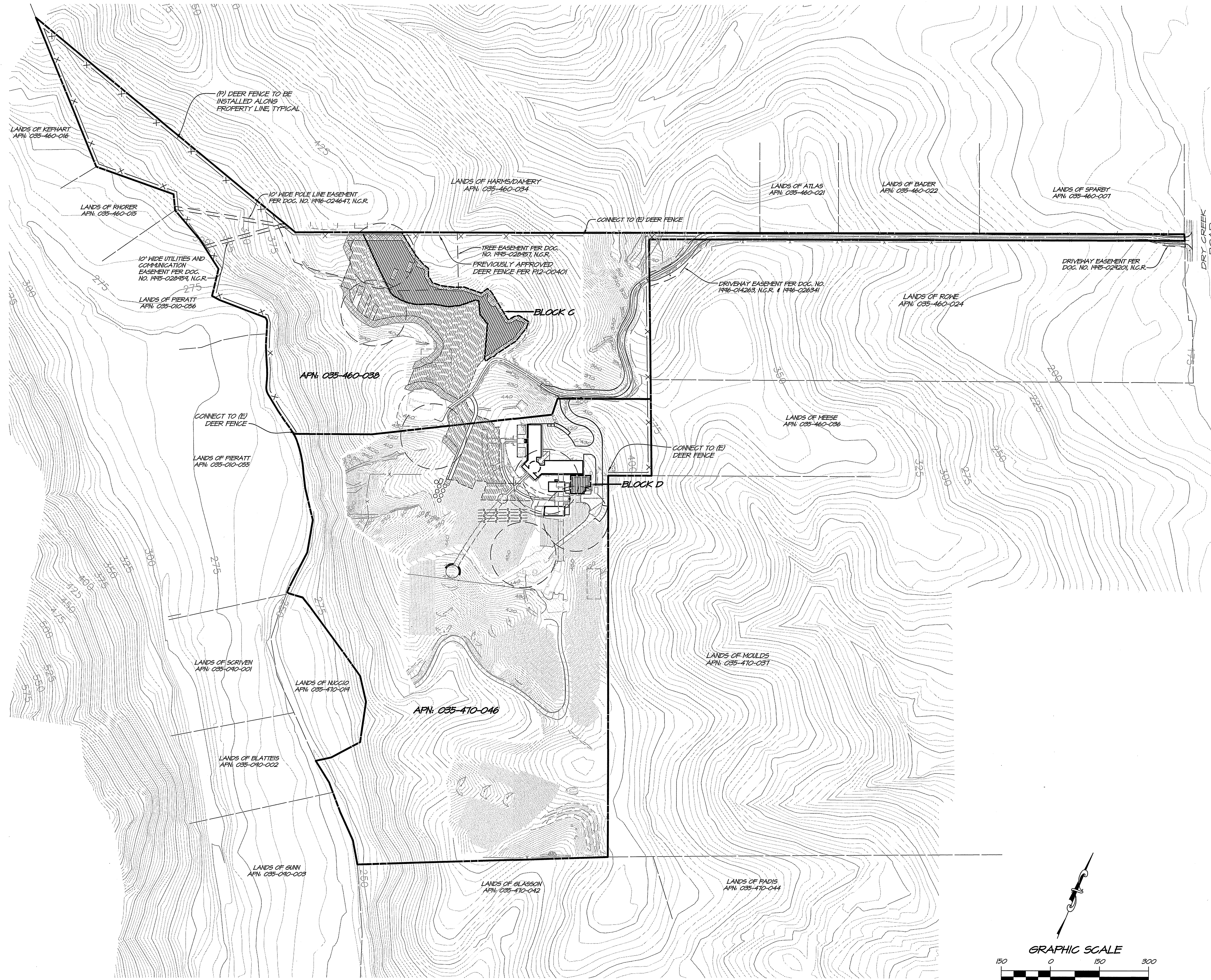
Date	01/07/2019
Drawn By	LM
Checked By	CSLD
Project No.	
Date	Issue
10/30/15	USE PERMIT
05/05/18	USE PERMIT RESUB. 1

IRRIGATION NOTES
AND DETAILS

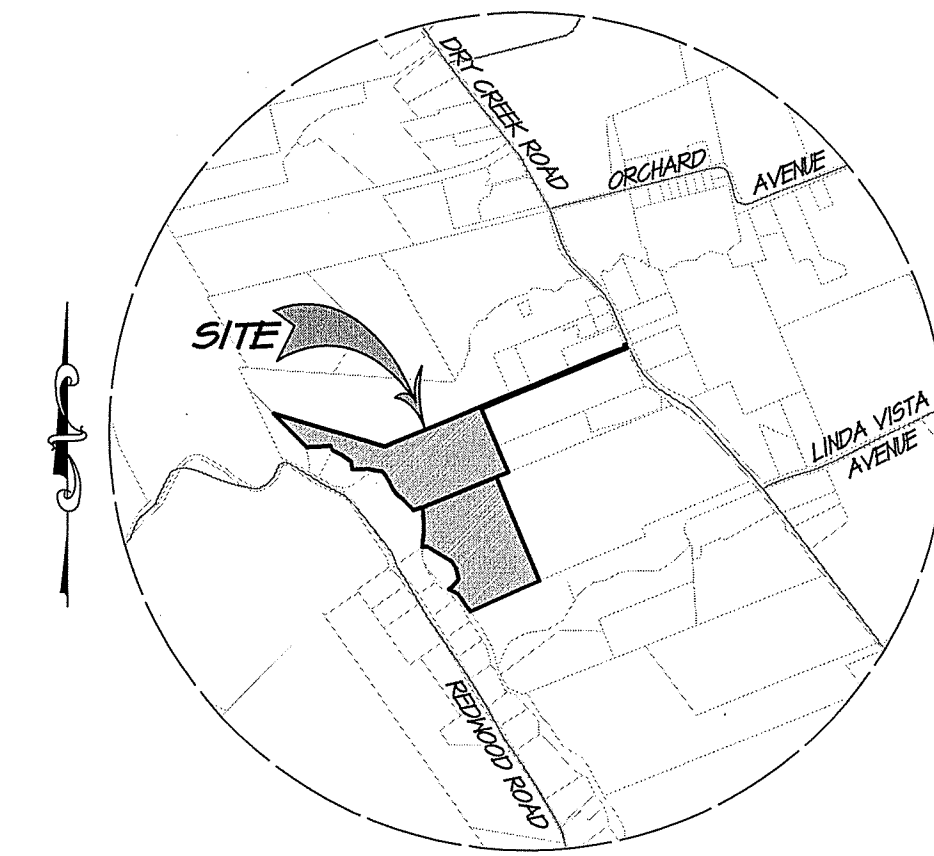
SCALE : AS NOTED

Sheet **IR2.0**
of 2

ANTHEM WINERY VINEYARD EROSION CONTROL PLAN



SITE PLAN
SCALE: 1" = 150'



VICINITY MAP
SCALE: 1" = 2000'

PROJECT INFORMATION

OWNER: JUSTIN AND JULIE AREBUCKLE
3454 REDWOOD ROAD
NAPA, CALIFORNIA 94958

SITE ADDRESS: 3454 REDWOOD ROAD
NAPA, CA 94958

CIVIL ENGINEER: RSA⁺
1515 FOURTH STREET
NAPA, CA 94959

APN & AREA: 035-460-038 (11.54 ACRES)
035-410-046 (21.23 ACRES)

PLANTED VINEYARD: 0 ACRES (035-460-038)
5.71 ACRES (035-410-046)

APPROVED UNPLANTED VINEYARD: 1.91 ACRES (035-460-038)
1.01 ACRES (035-410-046)

PROPOSED VINEYARD NET ACREAGE: 0.95 ACRES

PROPOSED VINEYARD GROSS ACREAGE: 1.19 ACRES (VINES & AVENUES)

EXISTING USE: RURAL HOMESITE (035-460-038)
WINERY (035-410-046)

PROPOSED USE: RURAL HOMESITE (035-460-038)
WINERY (035-410-046)

EXISTING ZONING: AH (035-460-038 & 035-410-046)

PROPOSED ZONING: AH (035-460-038 & 035-410-046)

TOPOGRAPHY

- TOPOGRAPHIC SURVEY MAP PREPARED BY RIECHERS SPENCE & ASSOCIATES, DATED SEPT. 2013
- CONTOURS ARE SHOWN EVERY TWO FEET (2'), HIGHLIGHTED EVERY TEN FEET (10').

BOUNDARY

- BOUNDARY IS BASED ON A LOT LINE ADJUSTMENT PREPARED BY RIECHERS SPENCE & ASSOCIATES, DATED MARCH 2012

BASIS OF BEARING & BENCHMARK

- BASIS OF BEARINGS FOR THIS MAP IS PER BOOK 04 OF SURVEYS, PAGE 4 & 5, N.C.R.
- CITY OF NAPA BM #8-A. ELEVATION = 143.22' (NGVD 1929).

ASSOCIATED PERMITS

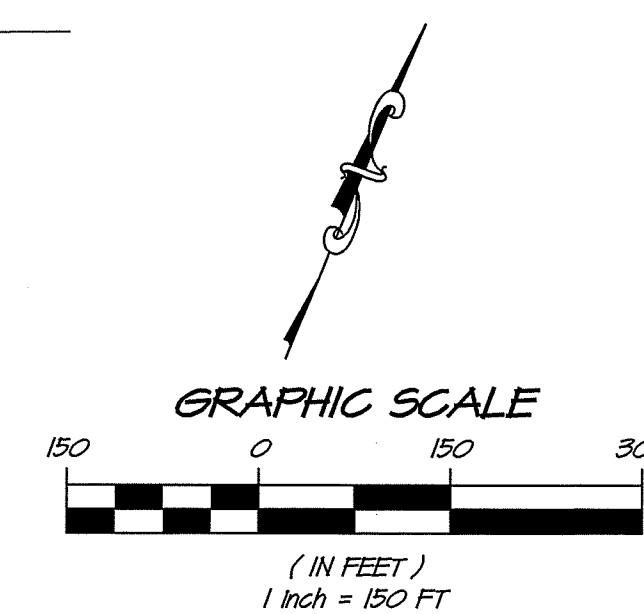
VINEYARD EROSION CONTROL PLAN (POB-00345, P12-00401)

VINEYARD ACREAGE

BLOCK G:	(035-460-038) 1.14 ACRES
BLOCK D:	(035-410-046) 0.05 ACRES
TOTAL	1.19 ACRES

SHEET INDEX

C1.0	COVER SHEET
C2.0	NOTES
C3.0	SLOPE ANALYSIS & EROSION CONTROL PLAN



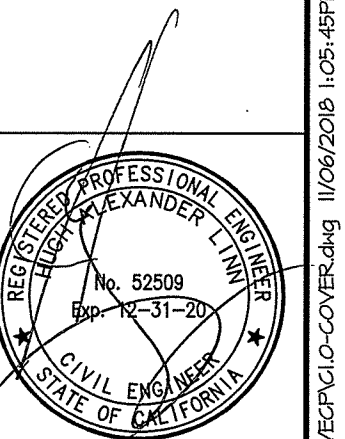
NO.	DATE	REVISIONS	BY

1515 FOURTH STREET
NAPA, CALIF. 94959
OFFICE 707/252-3301
www.rsacivil.com

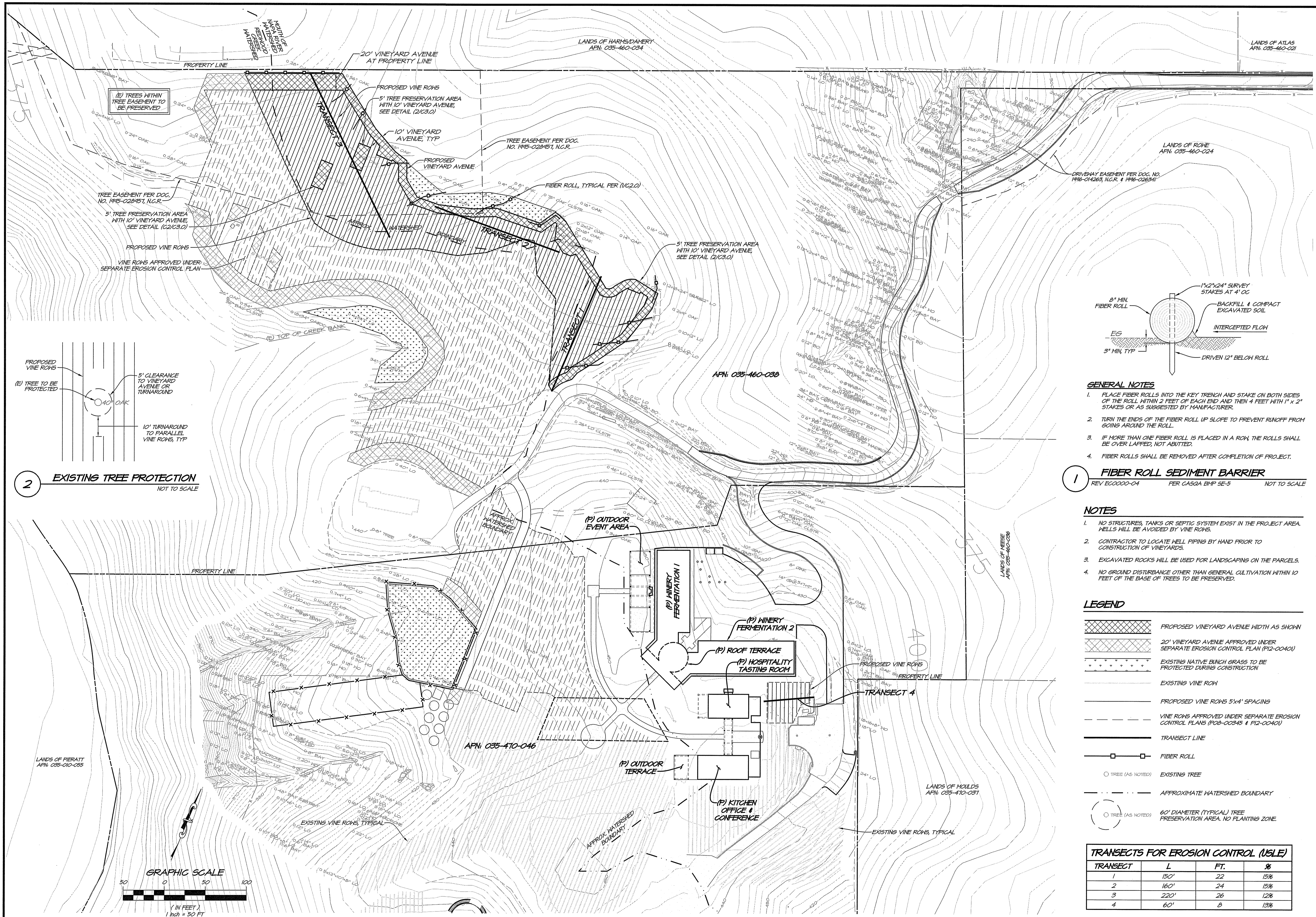
RSACIVIL

RSACIVIL CONSULTING CIVIL ENGINEERS & SURVEYORS • 1980

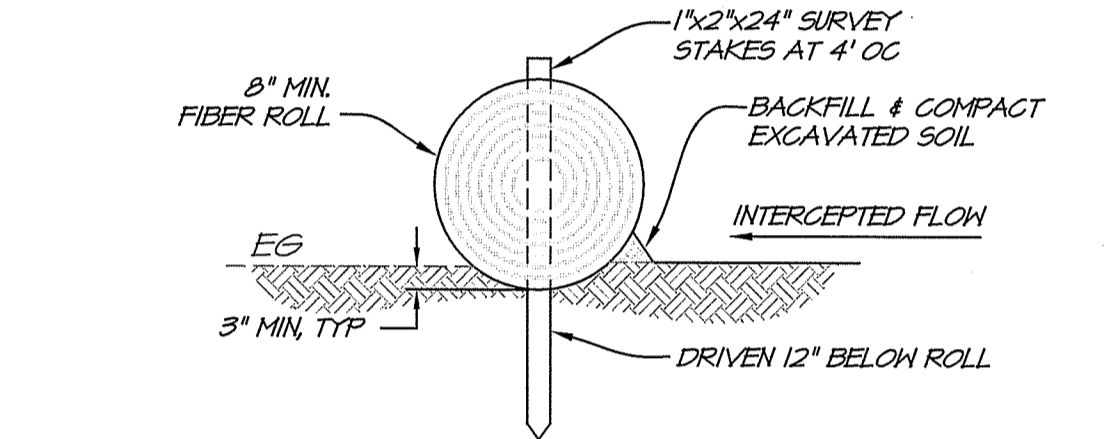
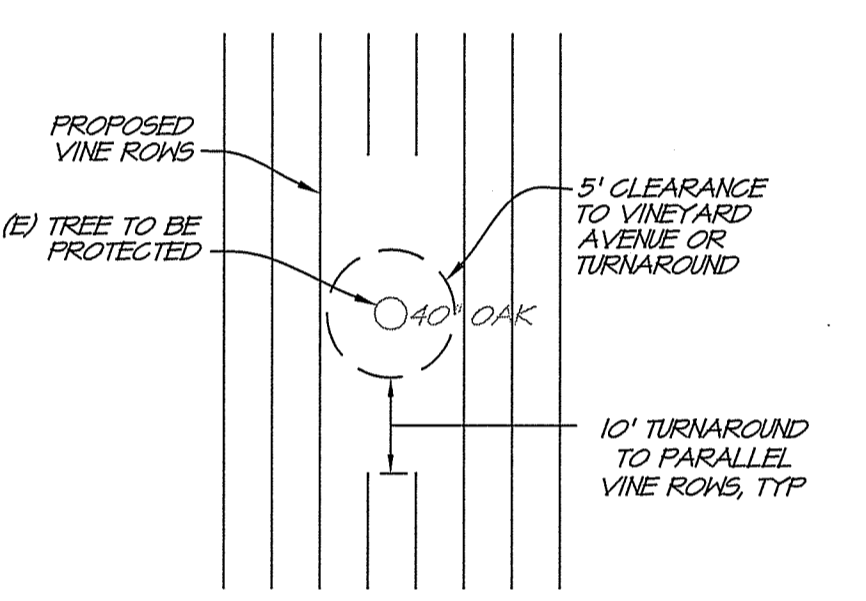
ANTHEM WINERY COVER SHEET CALIFORNIA
NAPA COUNTY



DATE	NOV 01, 2018
DRAWN	JH128
DESIGNED	FRB
CHECKED	PSH
JOB NO.	4111010.0
SHEET NO.	C1.0
1 OF 3 SHEETS	



2 EXISTING TREE PROTECTION
NOT TO SCALE



- GENERAL NOTES**
1. PLACE FIBER ROLLS INTO THE KEY TRENCH AND STAKE ON BOTH SIDES OF THE ROLL WITHIN 2 FEET OF EACH END AND THEN 4 FEET WITH 1" x 2" STAKES OR AS SUGGESTED BY MANUFACTURER.
 2. TURN THE ENDS OF THE FIBER ROLL UP SLOPE TO PREVENT RUNOFF FROM GOING AROUND THE ROLL.
 3. IF MORE THAN ONE FIBER ROLL IS PLACED IN A ROW, THE ROLLS SHALL BE OVER LAPPED, NOT ABUTTED.
 4. FIBER ROLLS SHALL BE REMOVED AFTER COMPLETION OF PROJECT.

1 FIBER ROLL SEDIMENT BARRIER
REV EC0000-04 PER GASQA BMP SE-5 NOT TO SCALE

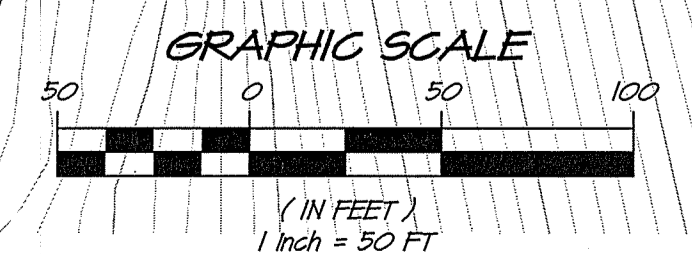
- NOTES**
1. NO STRUCTURES, TANKS OR SEPTIC SYSTEM EXIST IN THE PROJECT AREA. WELLS WILL BE AVOIDED BY VINE ROWS.
 2. CONTRACTOR TO LOCATE WELL PIPING BY HAND PRIOR TO CONSTRUCTION OF VINEYARDS.
 3. EXCAVATED ROCKS WILL BE USED FOR LANDSCAPING ON THE PARCELS.
 4. NO GROUND DISTURBANCE OTHER THAN GENERAL CULTIVATION WITHIN 10 FEET OF THE BASE OF TREES TO BE PRESERVED.

LEGEND

- PROPOSED VINEYARD AVENUE WIDTH AS SHOWN
- 20' VINEYARD AVENUE APPROVED UNDER SEPARATE EROSION CONTROL PLAN (P12-0040)
- EXISTING NATIVE BUNCH GRASS TO BE PROTECTED DURING CONSTRUCTION
- EXISTING VINE ROW
- PROPOSED VINE ROWS 5'x4' SPACING
- VINE ROWS APPROVED UNDER SEPARATE EROSION CONTROL PLANS (P08-00345 & P12-0040)
- TRANSECT LINE
- FIBER ROLL
- TREE (AS NOTED)
- EXISTING TREE
- APPROXIMATE WATERSHED BOUNDARY
- TREE (AS NOTED)
- 60' DIAMETER (TYPICAL) TREE PRESERVATION AREA, NO PLANTING ZONE.

TRANSECTS FOR EROSION CONTROL (USLE)

TRANSECT	L	FT.	%
1	150'	22	15%
2	160'	24	15%
3	220'	26	12%
4	60'	8	13%



BY: JPP
REVISIONS:
DATE:
NO.:

**1515 FOURTH STREET
NAPA, CALIF. 94559
OFFICE 707.252.3301
+ www.rsacivil.com**

1986
RSA+ CONSULTING CIVIL ENGINEERS + SURVEYORS

RSA+

**ANTHEM WINERY
SLOPE ANALYSIS & EROSION CONTROL PLAN
CALIFORNIA**

NAPA COUNTY
NAPA COUNTY
REGISTERED PROFESSIONAL ENGINEER
EXERCISES AUTHORITY UNDER
CHAPTER 9 OF THE CIVIL ENGINEERS
STATE OF CALIFORNIA
No. 52209
Exp. 12-31-20

DATE: NOV 01, 2018
DRAWN: JFW/DB
DESIGNED: FRB
CHECKED: PSW
JOB NO.: 4111010.0
SHEET NO.:
C3.0
3 OF 3 SHEETS