

PRELIMINARY
GRADING AND DRAINAGE ANALYSIS

149 4th STREET RESIDENCE
LOT 227 RESIDENCE
LOT 228 RESIDENCE &
DRIVEWAY PROJECT

149 4th Street East, Sonoma, CA 95476
Brazil Street, Sonoma, CA 95476
APN 018-091-018 & 018-051-007

Date: May 25, 2017



Bear Flag Engineering

Civil Engineering - Land Development - wastewater
Project management – stormwater – FORENSIC ENGINEERING
527 Broadway #202, Sonoma, Ca 95476
Phone: (707) 481-9472

TABLE OF CONTENTS

1. Overall Site Plan
2. Aerial Photo

GRADING AND DRAINAGE SUMMARY

3. General
4. Existing Property
5. Proposed Drainage Improvements
6. Proposed Grading Improvements
7. Grading and Drainage Impacts on Trees
 - a. 149 4th Street Residence Project
 - i. Overall Site Plan
 - ii. Preliminary Grading Plan
 - iii. Cut/Fill Exhibit
 - iv. Hydrology Map Post-Construction
 - b. Driveway Project
 - i. Driveway Plan and Profile
 - c. Lot 227 Residence Project
 - i. Lot 227 Site Plan
 - ii. Preliminary Grading Plan
 - iii. Cut/Fill Exhibit
 - iv. Hydrology Map Post-Construction
 - d. Lot 228 Residence Project
 - i. Lot 228 Site Plan
 - ii. Preliminary Grading Plan
 - iii. Cut/Fill Exhibit
 - iv. Hydrology Map Post-Construction
8. Changes to Grading and Drainage Between 1st Submittal and Current Plan
9. Tree Replacement and Preservation

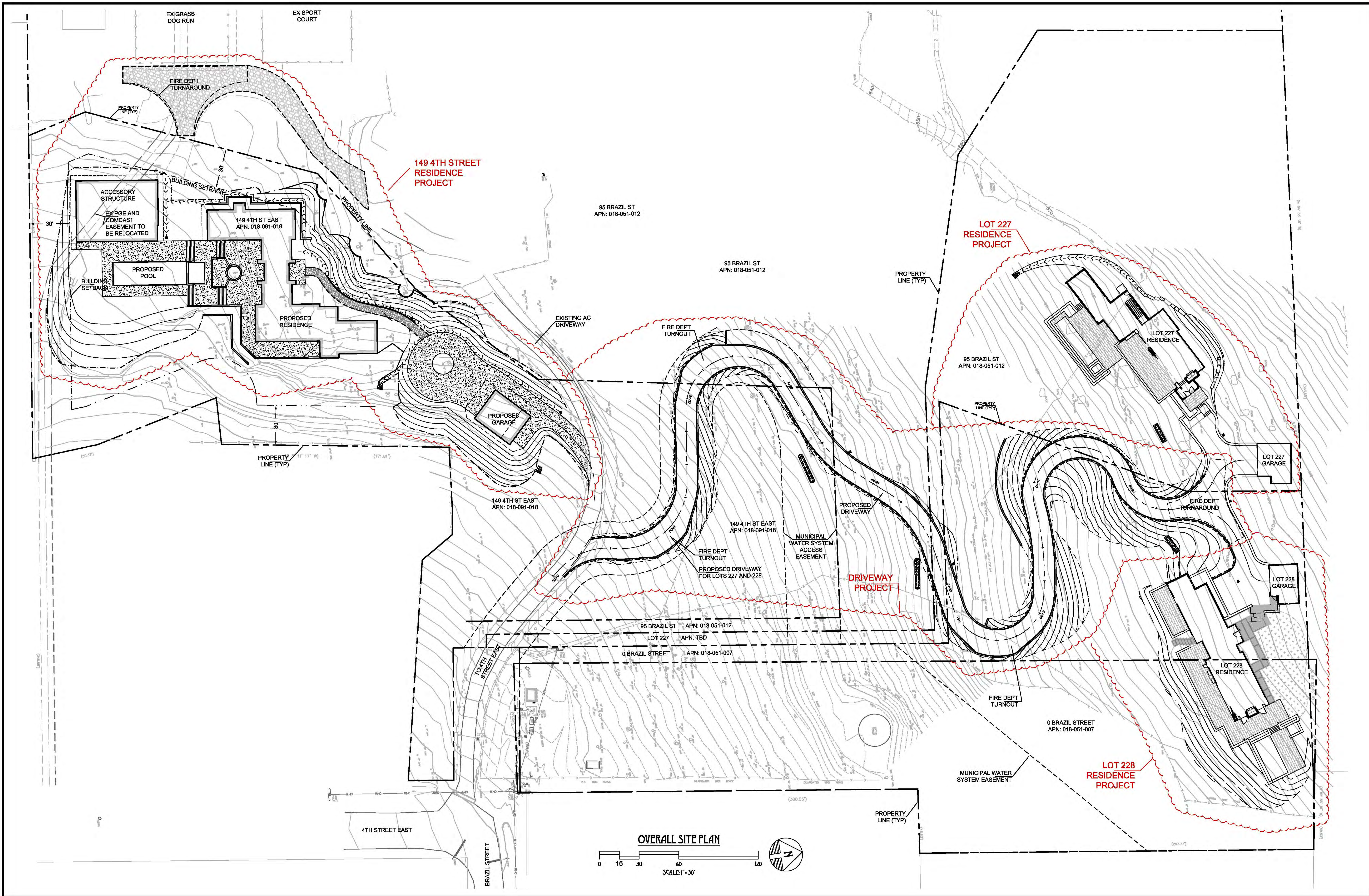
APPENDIX

10. Overall Hydrology Map



Bear Flag Engineering

Civil Engineering - Land Development - wastewater
Project management – stormwater – FORENSIC ENGINEERING
527 Broadway #202, Sonoma, Ca 95476
Phone: (707) 481-9472



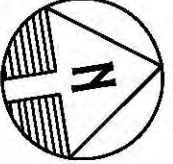
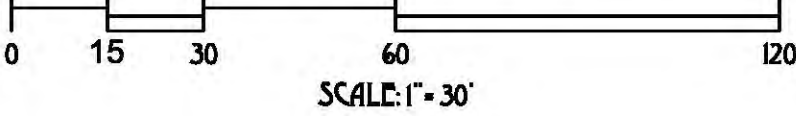
149 4TH STREET
RESIDENCE
PROJECT

LOT 227
RESIDENCE
PROJECT

LOT 228
RESIDENCE
PROJECT

DRIVEWAY
PROJECT

OVERALL SITE PLAN





Google earth

feet
meters



GRADING AND DRAINAGE SUMMARY

3. General

This report has been prepared to demonstrate a preliminary concept of grading and drainage improvements and coordinate impacts to existing trees for three separate residential projects. Three projects are the 149 4th Street Residence, Lot 227 Residence and Lot 228 Residence. They are located uphill of the intersection between 4th Street East and Brazil Street in Sonoma, California. The proposed projects include construction of a residence, detached garage, driveway, pool, landscape and utility improvements on vacant properties. The 149 4th Street Residence also includes an auxiliary structure.

4. Existing Property

The existing properties are located on hillside terrain with slopes between 5 and 25-percent. Residences have been designed with locations in open areas that have the relatively flattest existing terrain and to minimize tree removal. Soils on all three properties consist of loam with high rock content, which are well drained. Existing drainage patterns consist of sub-surface flow and sheet flow on the surface through the property. There are no creeks or any significant concentrations of runoff. Drainage eventually is collected by a roadside swale along 4th Street East at the frontage of the property.

5. Proposed Drainage Improvements

It is our intent to maintain the existing drainage scenario to the maximum extent possible. Proposed drainage improvements consist of interceptor swales, drain inlets with culverts, sub-drains and bio-retention planters.

- Interceptor swales are designed to accept uphill runoff from a building or driveway and convey it the downhill side of the improvement. Swales are triangular or trapezoidal in shape and approximately 9-inches deep.
- Drain inlets accept runoff from swales, landscape area or patio and convey runoff through a storm drain downhill of improvements. Inlets are used where surface swales are not feasible.
- Sub-drains will be required for building foundations, and areas with constructed fill slopes. They consist of perforated pipe and gravel trenches that collect sub-surface runoff and release it downhill of proposed improvements.
- Bio-retention planters have been designed on the downhill side of the residences and will receive runoff directly from roofs and patios. A bio-retention planter is a depression that detains and treats runoff through infiltration of a gravel bed or filtration with plant media.



Bear Flag Engineering

Civil Engineering - Land Development - wastewater
Project management – stormwater – FORENSIC ENGINEERING
527 Broadway #202, Sonoma, Ca 95476
Phone: (707) 481-9472

Bio-retention planters will be used to treat runoff in accordance with local stormwater guidelines.

Rock riprap energy dissipaters are designed at the end of drainage swales to disperse erosive energy of the runoff and change concentrated flow of the swale to sheet flow, which is similar to pre-construction conditions. Tee pipe storm drain dissipaters are designed for release from storm drains. These dissipaters consist of approximately 20-feet of larger diameter pipe with perforation on the crown of the pipe. Runoff from the storm drain fills the dissipater, and bubbles out the top in a manner that spreads out the flow similar to sheet flow.

6. Proposed Grading Improvements

Grading improvements are required to construct driveways and pads for residences, garages and patios. It is our design goal to reduce grading impacts to the maximum extent possible and balance the earthwork quantity to avoid import or off-haul to city streets. Proposed grading improvements include:

- Cut and Fill for pads for building foundations
- Compaction of existing terrain in preparation of driveway construction
- Cut slopes uphill of improvements
- Fill slopes downhill of improvements

7. Grading and Drainage Impacts on Trees

It is the primary goal of drainage design to maintain the pre-construction drainage scenario to the maximum extent possible. Proposed drainage improvements have been designed to avoid re-routing of runoff, over concentration of flows, and oversaturation of existing trees. Grading has been designed to minimize cuts and fills, balance earthwork, avoid grading on severely steep slopes, and avoid creating erosion issues. Below is a breakdown of grading and drainage impacts to existing trees separated into four separate projects. For purposes of this report, we have separated projects between the 149 4th Street Residence, Driveway up to the upper lots, Lot 227 Residence and Lot 228 Residence.

a. 149 4th Street East Residence –

Layout of the proposed residence has been designed to minimize removal of significant trees, maintain a close relationship to contour, and areas of the flattest slopes within the building area.

- Grading for the residence consists of cut slopes on uphill side and a fill slope downhill of the pool terrace. The downhill side of the residence is on-grade and does not include any major grading. Retaining walls have been designed to minimize impacts to a grove of trees (trees 44, 45, 46 and 47 in arborist report).
- The cut slope above the residence has been reduced to minimize impacts to uphill trees. Retaining walls are designed to pull excavation near or outside of the driplines.



Bear Flag Engineering

Civil Engineering - Land Development - wastewater
Project management – stormwater – FORENSIC ENGINEERING
527 Broadway #202, Sonoma, Ca 95476
Phone: (707) 481-9472

- Small landscape walls have been designed to pull excavation out of driplines, where cut slopes would have been shallow cuts. These walls have been designed to reduce grading impacts for trees 21, 24, 31 and 33 from the arborist report.
- Majority of the earthwork for the middle terrace pool terrace and auxiliary structure is proposed on existing grade that is sloped between 5 and 8-percent, which wouldn't qualify for hillside grading.
- Grading for this project is balanced. This means that the soil generated by cut excavation will be used up for fill placement. No extra soil will be required to be imported to the site or off-hauled from the site.
- Drainage concept specific to the residence includes an interceptor swale on the uphill side of the pathway between the garage and residence entry. A swale also extends southerly uphill of the residence and auxiliary structure. It will be released through a rock riprap outlet below the residence.
- Roof and patio drainage will be conveyed to two bio-retention planters below the residence. Runoff will be detained, infiltrated, and overflow will be spread out over 40-feet to maintain a sheet flow nature below the proposed improvements.

The proposed driveway starts at the existing asphalt driveway. It is short and generally parallel to contour.

- An interceptor swale from the pathway towards the driveway and garage conveys runoff to a drainage inlet and is released through a tee pipe storm drain dissipater in the open area west below the garage. Runoff is released in a location that is not directly above any existing trees.
- Drainage from the roadside swale will be collected in drainage inlets and conveyed to tee pipe storm drain dissipaters through storm drain. Locations for the outlets have been selected to areas that are not directly uphill of existing trees.

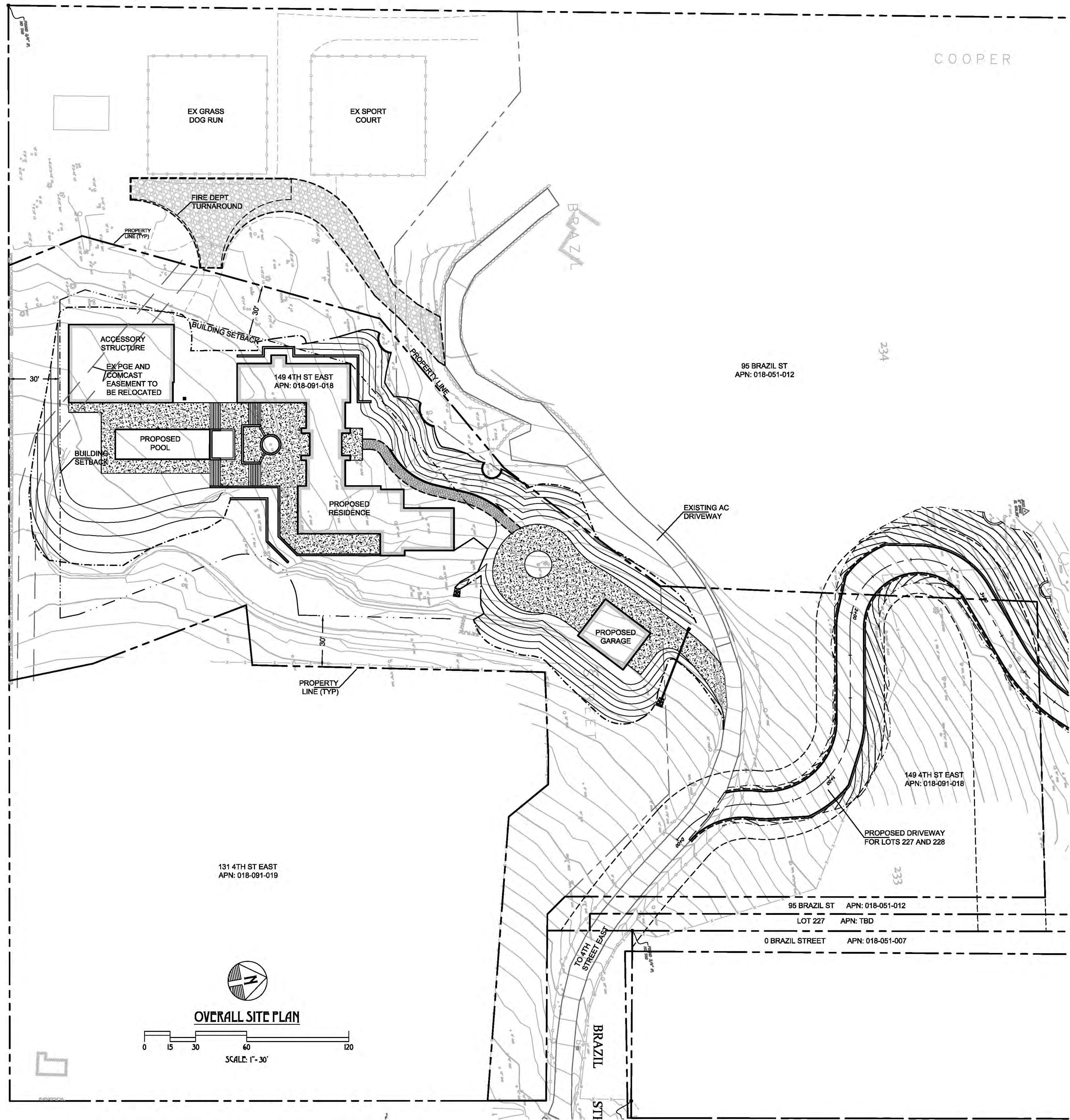
Proposed improvements will significantly impact 37 trees for the entire 149 4th Street Residence project according to the arborist report tree inventory. Significant impacts include close proximity to construction or location within footprint of construction and cannot be saved. 34 of the significantly impacted trees are planned for removal.

- Diameter – (21) trees are less than 8-inch diameter, (14) trees have a diameter between 9 and 12-inches, (4) trees are between 13 and 17-inches. (1) 18 and (1) 20-inch tree are also proposed to be impacted.
- Health – (3) trees have been determined as marginal health. (10) trees have fair health and the remaining (24) trees are good health. (0) trees were in excellent health.
- Species – (4) olive trees are proposed to be impacted, (1) almond tree, (2) bay trees, and the remaining (30) are different varieties of oak trees.



Bear Flag Engineering

Civil Engineering - Land Development - wastewater
 Project management – stormwater – FORENSIC ENGINEERING
 527 Broadway #202, Sonoma, Ca 95476
 Phone: (707) 481-9472



**BEAR FLAG
ENGINEERING
INC**

CIVIL ENGINEERING
LAND DEVELOPMENT
SEPTIC SYSTEM DESIGN
PROJECT MANAGEMENT
SURVEYING
BUILDING DESIGN

PO BOX 2193, SONOMA, CA 95976
PHONE: (707) 481-9472
BEARFLAGCIVIL@GMAIL.COM







**PRELIMINARY SITE PLAN
149 4TH STREET RESIDENCE**

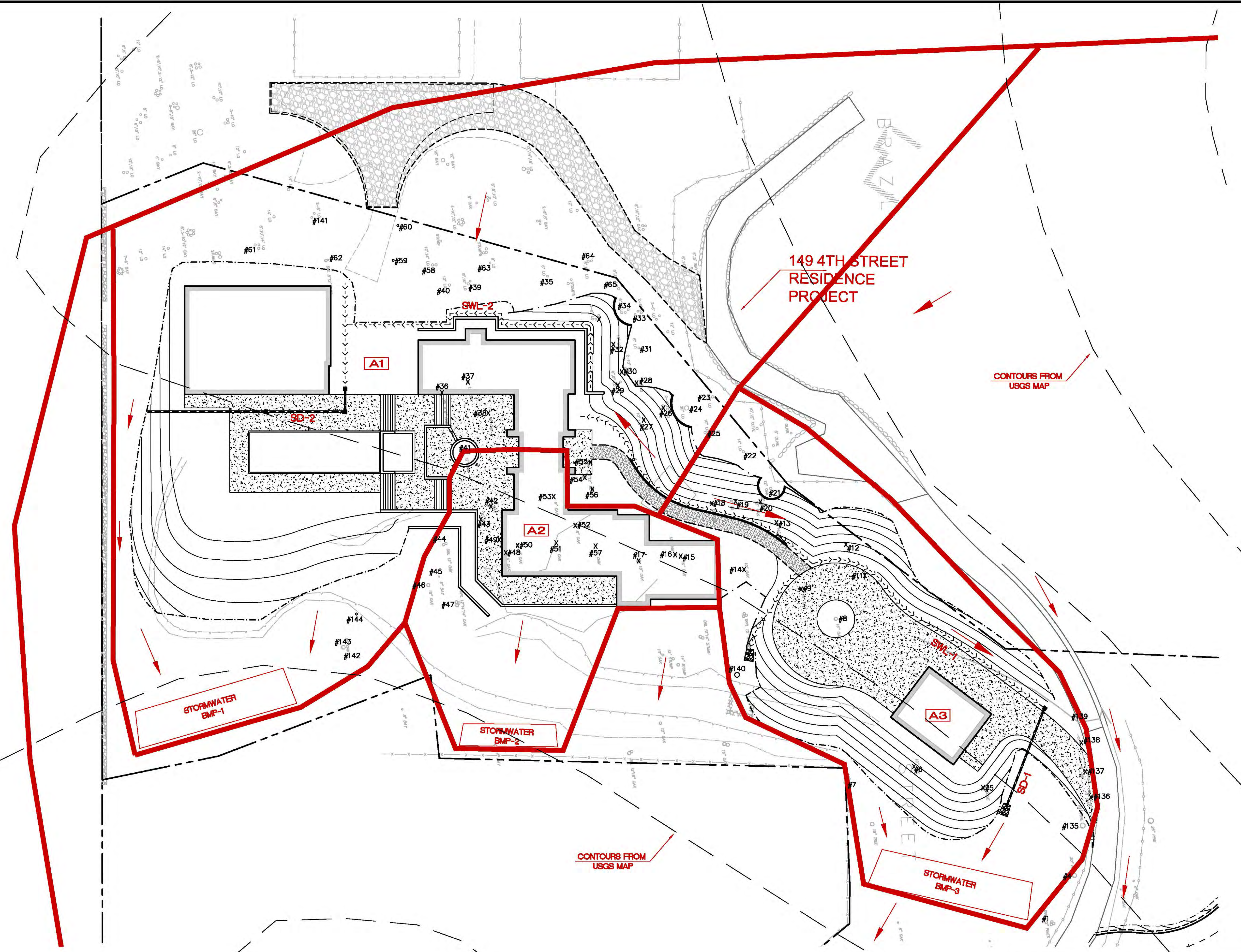
149 4TH STREET EAST, SONOMA, CA
APN: 018-091-018

REV	DATE	DESCRIPTION

DATE: 5/24/2017
DESIGN: CSM
PROJECT: 16002

SHEET
01
OF 3 SHEETS

- DRAINAGE LEGEND**
-  WATERSHED BOUNDARY
 -  WATERSHED LABEL
 -  POINT OF CONCENTRATION
 -  SWALE #1
 -  STORM DRAIN #1
 -  OVERLAND FLOW DIRECTION

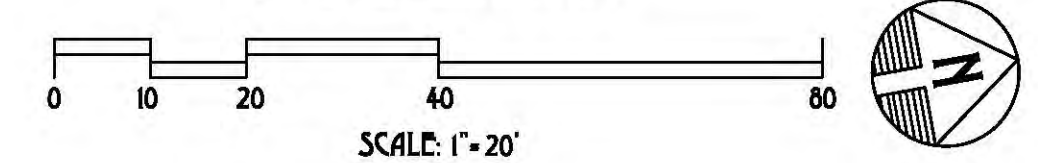



STORMWATER BMP-1

STORMWATER BMP-2

STORMWATER BMP-3

POST-CONSTRUCTION HYDROLOGY MAP

BEAR FLAG ENGINEERING, INC.

CIVIL ENGINEERING
LAND DEVELOPMENT
SEPTIC SYSTEM DESIGN
PROJECT MANAGEMENT
SURVEYING
BUILDING DESIGN

PO BOX 2193, SONOMA, CA 95476
PHONE: (707) 481-9472
BEARFLAGCIVIL@GMAIL.COM

POST-CONSTRUCTION HYDROLOGY MAP
149 4TH STREET RESIDENCE
149 4TH STREET EAST, SONOMA, CA
APN: 018-091-018

b. Driveway Project-

The proposed driveway connects with the existing asphalt driveway and provides access to both the Lot 227 Residence and the Lot 228 Residence. It will meander up the hill to the residence location, in an attempt to maintain as close a relationship with existing grade as possible. Proposed alignment has been designed to provide adequate emergency vehicle apparatus access. Where possible, the alignment has been designed to minimize impacts to existing trees.

- Grading from the asphalt driveway will consist of soil removal and re-compaction. The driveway meanders up the hill to maintain a minimum difference between finish and existing grade. The driveway generally consists of a cut bank on the uphill side and minor fill placement on the downhill side.
- Grading for the driveway turnaround area is primarily in cut. A retaining wall between the garage and residence is proposed to protect the existing trees. A cut bank would have harmed them, so a retaining wall maintains separation of grading from outside the dripline.
- A 4-foot retaining wall was added to the uphill side of driveway between stations 2+50 and 5+50, which eliminates the cut bank and saves approximately 25 existing trees. A retaining wall was also added to the toe of the fill slope above to save the same existing trees.
- Drainage from the berm will be collected in drainage inlets and conveyed to tee pipe storm drain dissipaters through storm drain. Locations for the outlets have been selected to areas that are not directly uphill of existing trees.

Runoff from the lower portion of the driveway will connect from the asphalt berm to the existing rock-lined drainage swale along the existing driveway.

Proposed improvements will significantly impact 19 trees for the entire driveway project according to the arborist report tree inventory. Significant impacts include close proximity to construction or location within footprint of construction and cannot be saved. 16 of the significantly impacted trees are planned for removal.

- Diameter – (7) trees are less than 8-inch diameter, (7) trees have a diameter between 9 and 12-inches, (2) trees are between 13 and 17-inches. (2) 18 and (1) 20-inch tree are also proposed to be impacted.
- Health – (7) trees have fair health and the remaining (12) trees are good health. 0 trees were in excellent health.
- Species – (4) olive trees are proposed to be impacted and the remaining 15 are different varieties of oak trees.



Bear Flag Engineering

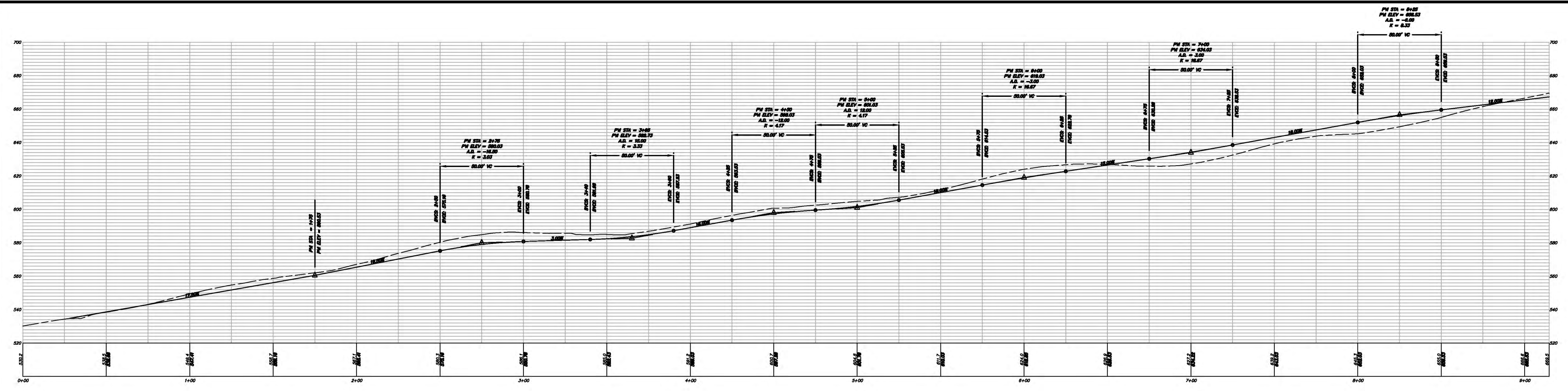
Civil Engineering - Land Development - wastewater
Project management – stormwater – FORENSIC ENGINEERING
527 Broadway #202, Sonoma, Ca 95476
Phone: (707) 481-9472



**BEAR FLAG
ENGINEERING
INC**

CIVIL ENGINEERING
LAND DEVELOPMENT
SEPTIC SYSTEM DESIGN
PROJECT MANAGEMENT
SURVEYING
BUILDING DESIGN

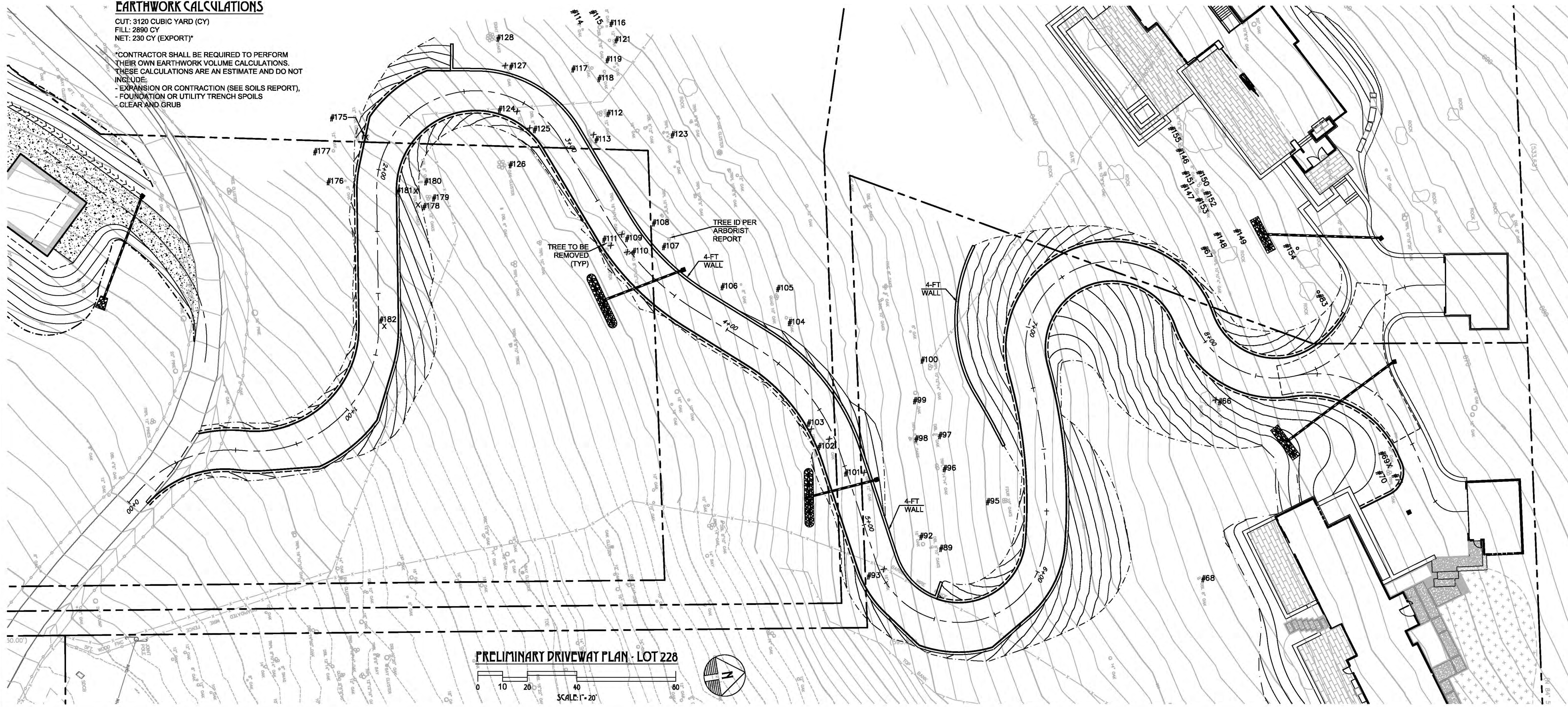
PO BOX 283, SONOMA, CA 95976
PHONE: (707) 481-9472
DEARFLAGCIVIL@GMAIL.COM



EARTHWORK CALCULATIONS

CUT: 3120 CUBIC YARD (CY)
FILL: 2890 CY
NET: 230 CY (EXPORT)*

*CONTRACTOR SHALL BE REQUIRED TO PERFORM THEIR OWN EARTHWORK VOLUME CALCULATIONS. THESE CALCULATIONS ARE AN ESTIMATE AND DO NOT INCLUDE:
- EXPANSION OR CONTRACTION (SEE SOILS REPORT),
- FOUNDATION OR UTILITY TRENCH SPOILS,
CLEAR AND GRUB



**PRELIMINARY DRIVEWAY PLAN
LOT 228 RESIDENCE**
BRAZIL STREET, SONOMA, CA
APN: 018-051-007

REV	DATE	DESCRIPTION

DATE: 5/24/2017
DESIGN: CSM
PROJECT: 16003

SHEET
C2
OF 3 SHEETS

c. Lot 227 Residence-

The proposed residence is located in a small open area surrounded by groves of existing trees and rock outcrops. Existing terrain slopes in the residence are between 16 and 20-percent, compared to steeper areas on the rest of the property.

- Grading for the residence consists of cut and fill placement for foundation of the residence, and fill placement for the patio to the south. The backside of the garage is in cut. The building is stacked and terraced to reduce grading around the perimeter.
- Retaining walls have been designed on the downhill side of the pool and residence, which eliminates downslope fill placement. These walls have been designed to prevent damage to the existing trees.
- Drainage concept specific to the residence includes an interceptor swale across the uphill side of the residence. It will be released through a rock riprap outlet below the residence on the west side of the pool.
- An interceptor swale between the garage and residence conveys runoff to a drainage inlet above a landscape wall and the parking area. Runoff in the inlet is conveyed through a storm drain and released through a tee pipe storm drain dissipater in the open area west of the driveway. Runoff is released in a location that is not directly above any existing trees.
- Roof and patio drainage will be conveyed to a bio-retention planter below the residence and pool. Runoff will be detained, infiltrated, and overflow will be spread out over 30-feet to maintain a sheet flow nature below the proposed improvements.

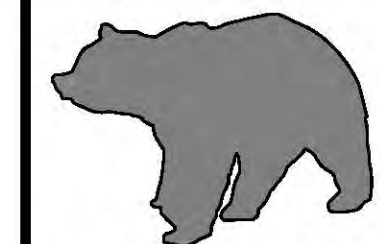
Proposed improvements will significantly impact 20 trees for the entire Lot 227 Residence project according to the arborist report tree inventory. Significant impacts include close proximity to construction or location within footprint of construction and cannot be saved. 19 of the significantly impacted trees are planned for removal.

- Diameter – (10) trees are less than 8-inch diameter, (7) trees have a diameter between 9 and 12-inches, (2) trees are between 13 and 17-inches. (1) 24-inch tree are also proposed to be impacted.
- Health – (13) trees have fair health and the remaining and (7) trees are good health. (0) trees were in excellent health.
- Species – (3) bay trees are proposed to be impacted, (1) buckeye tree, and the remaining (16) are different varieties of oak trees.



Bear Flag Engineering

Civil Engineering - Land Development - wastewater
Project management – stormwater – FORENSIC ENGINEERING
527 Broadway #202, Sonoma, Ca 95476
Phone: (707) 481-9472

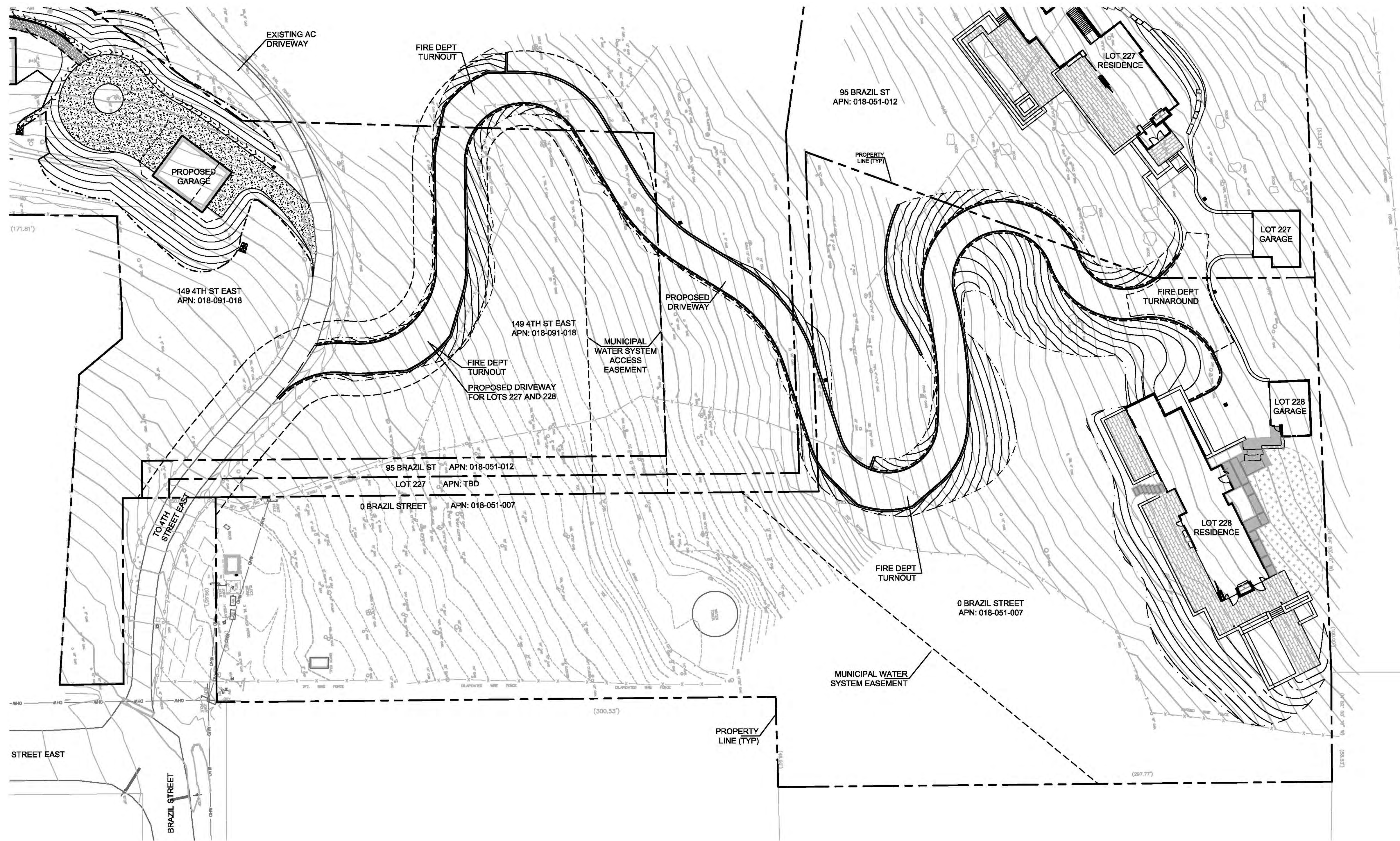


**BEAR FLAG
ENGINEERING
INC**

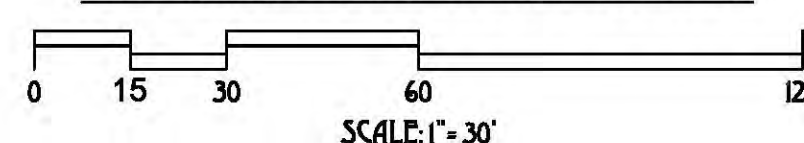
CIVIL ENGINEERING
LAND DEVELOPMENT
SEPTIC SYSTEM DESIGN
PROJECT MANAGEMENT
SURVEYING
BUILDING DESIGN

PO BOX 283, SONOMA, CA 95976
PHONE: 707 481-9472
DEARFLAGCIVIL@GMAIL.COM

**PRELIMINARY SITE PLAN
LOT 228 RESIDENCE**
BRAZIL STREET, SONOMA, CA
APN: 018-051-007



PRELIMINARY SITE PLAN - LOT 228



REV	DATE	DESCRIPTION

DATE: 5/24/2017
DESIGN: CSM
PROJECT: 18003

SHEET
01
OF 2 SHEETS



**BEAR FLAG
ENGINEERING
INC**

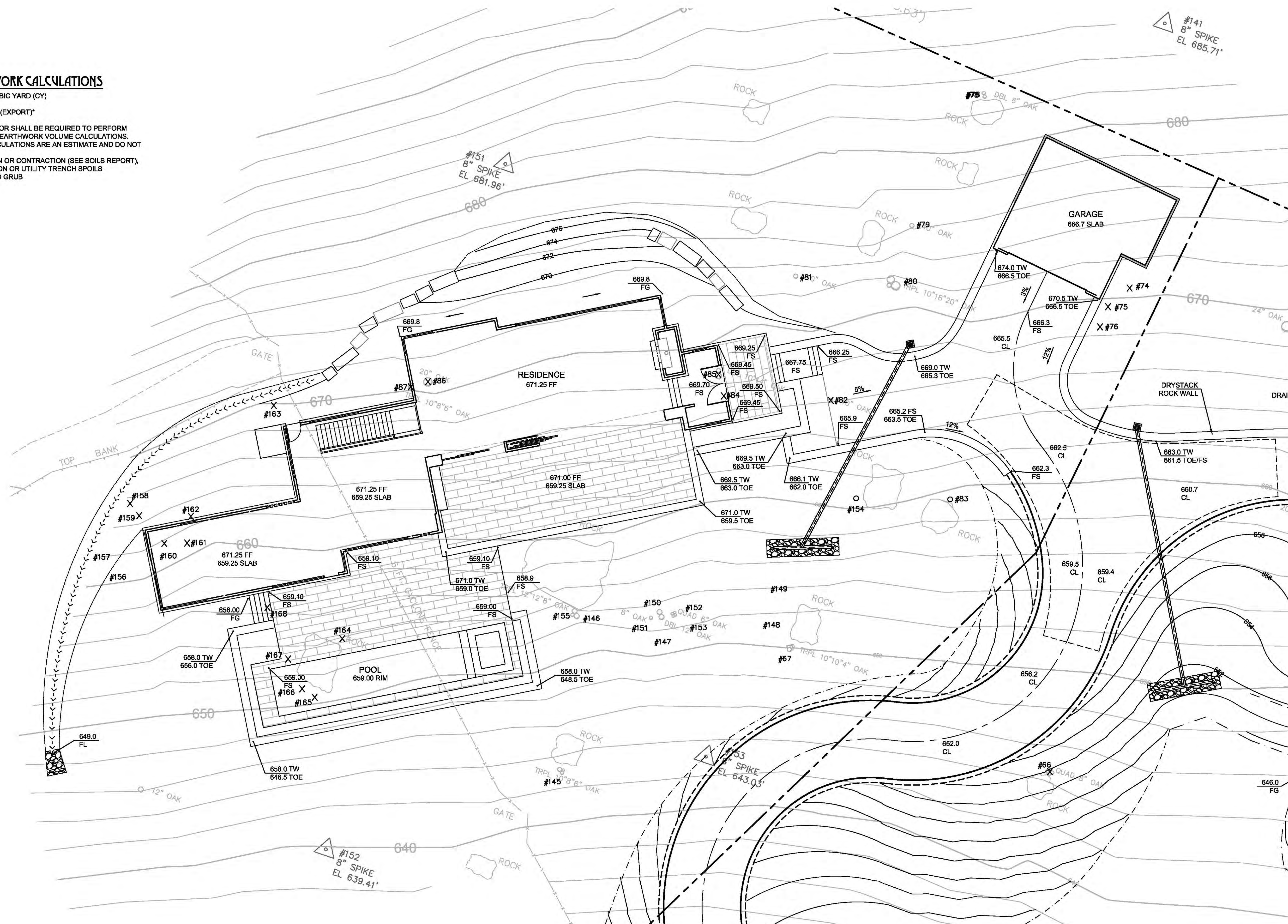
CIVIL ENGINEERING
SURVEYING
LAND DEVELOPMENT
SEPTIC SYSTEM DESIGN
PROJECT MANAGEMENT
FORENSIC ENGINEERING

527 BROADWAY #202
SONOMA, CA 95476
PHONE: (707) 481-9472
OFFICE@BEARFLAGCIVIL.COM

EARTHWORK CALCULATIONS

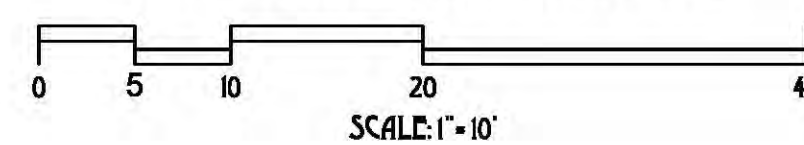
CUT: 620 CUBIC YARD (CY)
FILL: 190 CY
NET: 430 CY (EXPORT)*

*CONTRACTOR SHALL BE REQUIRED TO PERFORM THEIR OWN EARTHWORK VOLUME CALCULATIONS. THESE CALCULATIONS ARE AN ESTIMATE AND DO NOT INCLUDE:
- EXPANSION OR CONTRACTION (SEE SOILS REPORT),
- FOUNDATION OR UTILITY TRENCH SPOILS
- CLEAR AND GRUB



PRELIMINARY GRADING PLAN
LOT 227 RESIDENCE
BRAZIL STREET, SONOMA, CA
APN: XXX-XXX-XXX

**LOT 227 RESIDENCE
PRELIMINARY GRADING PLAN**



REV	DATE	DESCRIPTION

DATE: 5/24/2017
DESIGN: CSM
PROJECT: 16003

SHEET
C2
OF 2 SHEETS



**BEAR FLAG
ENGINEERING
INC**

CIVIL ENGINEERING
SURVEYING
LAND DEVELOPMENT
SEPTIC SYSTEM DESIGN
PROJECT MANAGEMENT
FORENSIC ENGINEERING

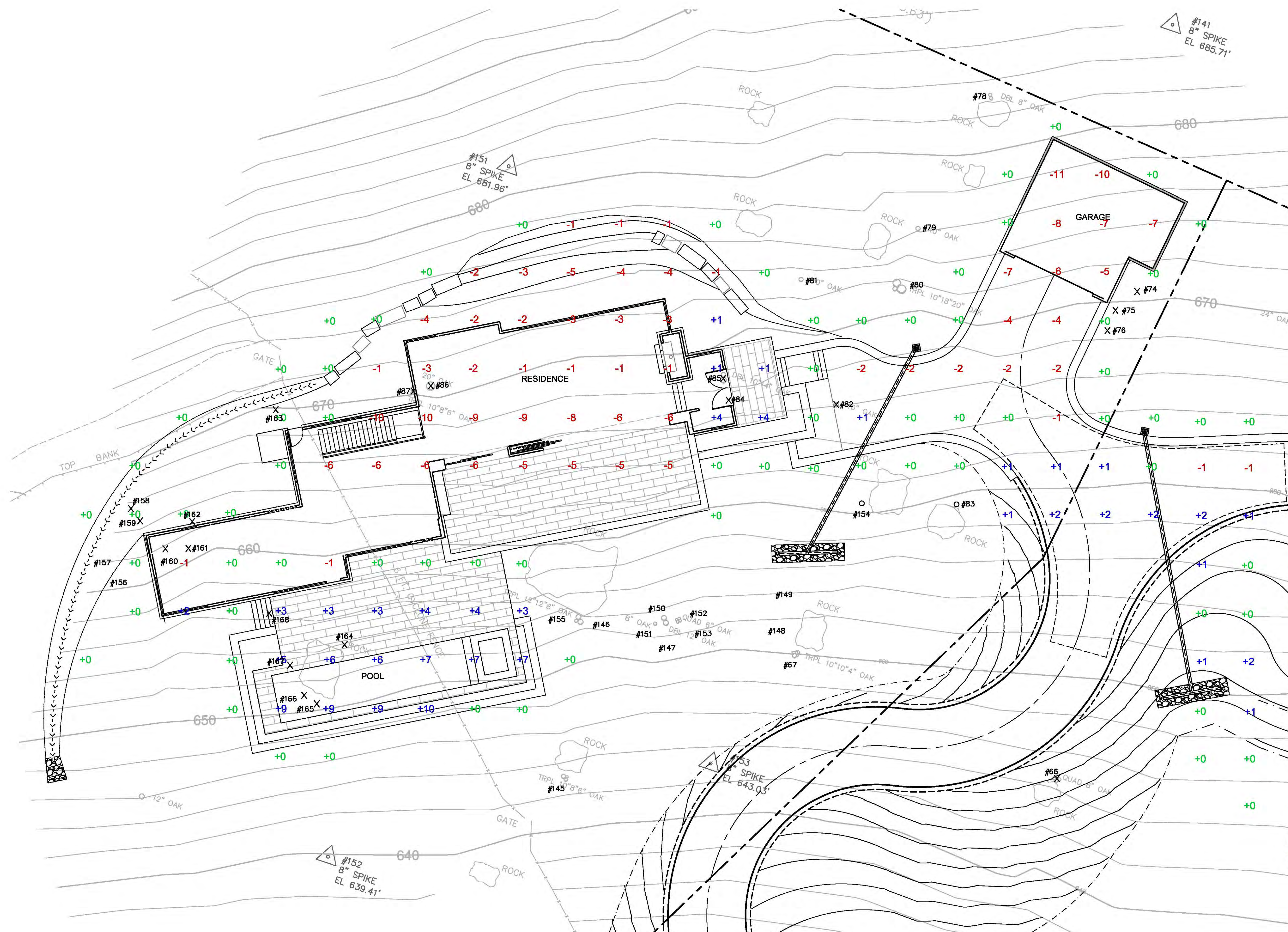
527 BROADWAY #202
SONOMA, CA 95476
PHONE: (707) 481-9472
OFFICE@BEARFLAGCIVIL.COM

CUT-FILL TICK EXHIBIT
LOT 227 RESIDENCE
BRAZIL STREET, SONOMA, CA
APN: XXX-XXX-XXX

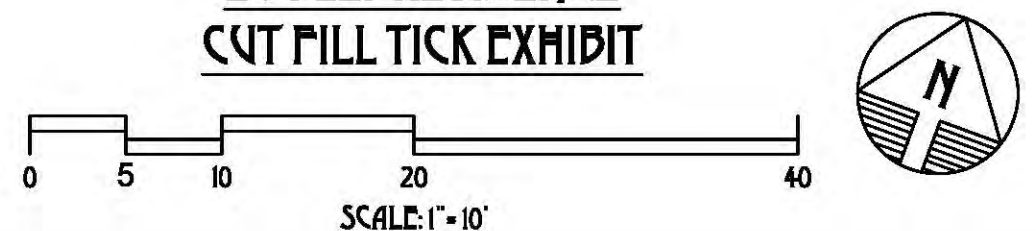
REV	DATE	DESCRIPTION

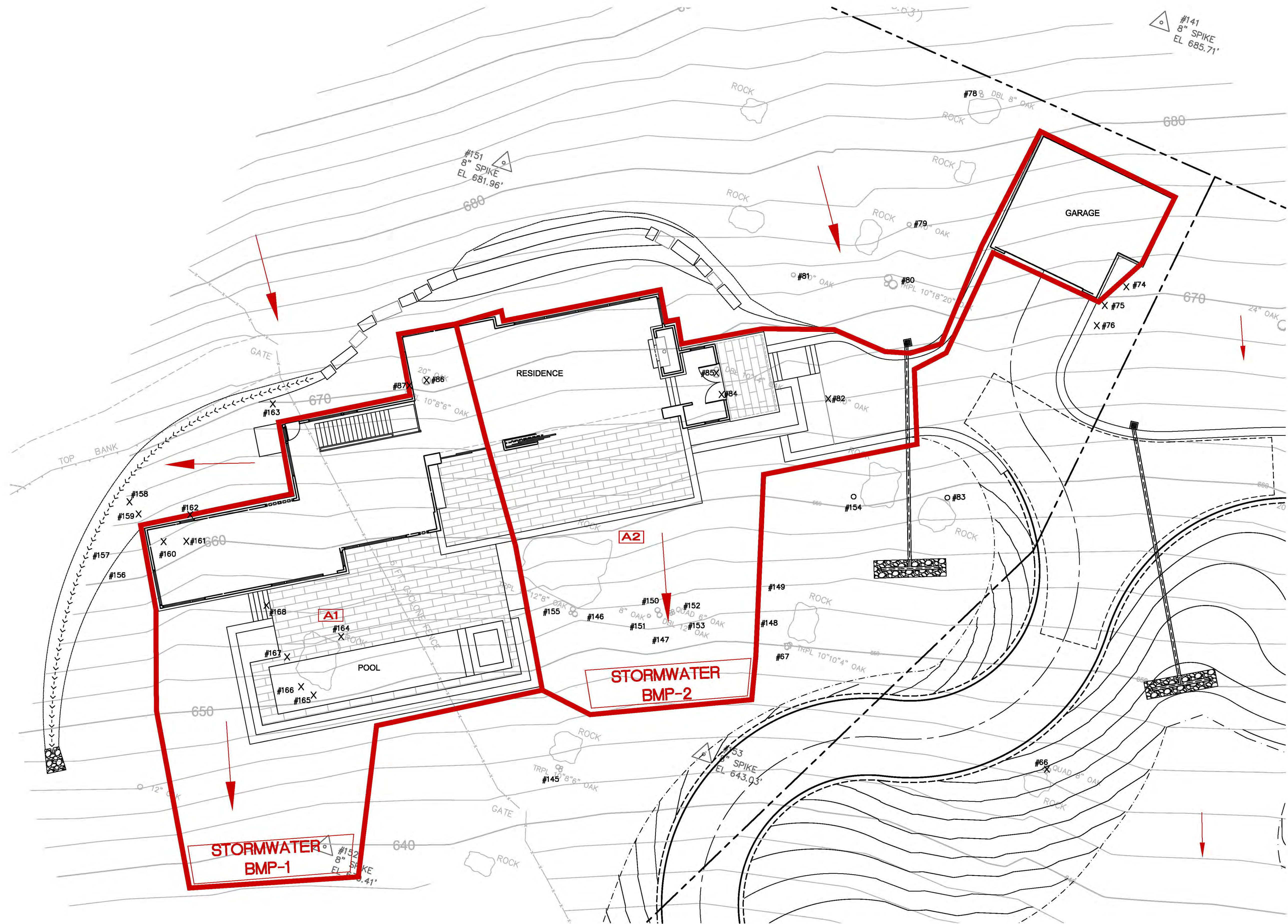
DATE: 5/24/2017
DESIGN: CSM
PROJECT: 18003

SHEET
1
OF 1 SHEET



**LOT 227 RESIDENCE
CUT FILL TICK EXHIBIT**

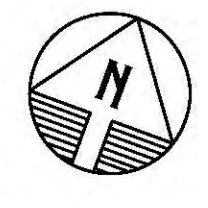
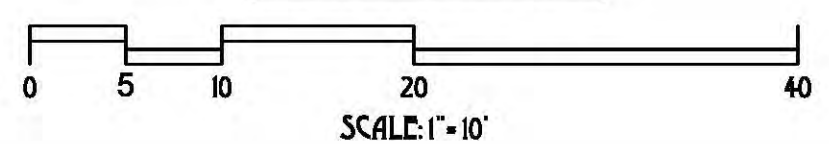




DRAINAGE LEGEND

- WATERSHED BOUNDARY
- WATERSHED LABEL
- POINT OF CONCENTRATION
- SWALE #1
- STORM DRAIN #1
- OVERLAND FLOW DIRECTION

**POST-CONSTRUCTION
HYDROLOGY MAP**



**BEAR FLAG
ENGINEERING, INC.**

CIVIL ENGINEERING
LAND DEVELOPMENT
SEPTIC SYSTEM DESIGN
PROJECT MANAGEMENT
SURVEYING
BUILDING DESIGN

PO BOX 2193, SONOMA, CA 95976
PHONE: (707) 481-9472
BEARFLAGCIVIL@GMAIL.COM

**POST-CONSTRUCTION
HYDROLOGY MAP
LOT 227 RESIDENCE**

BRAZIL STREET, SONOMA, CA
APN: XXX-XXX-XXX

d. Lot 228 Residence-

The proposed residence is located in an open area with minimal tree removal. Existing terrain slopes in the residence are between 15 and 22-percent, compared to steeper areas on the rest of the property.

- Grading around the residence consists of cut and fill placement for foundation of the residence, and fill placement for the patio to the east. The main residence is stacked and terraced to reduce grading around the perimeter. The backside of the garage is in cut.
- Grading for this project includes an import of 660 cubic yards. The 430 cubic yards from the Lot 227 Residence project and spoils from utilities and footings will provide the required material to balance the project. No extra soil will be required to be imported to the site or off-hauled from the site.
- Grading around the residence will not largely impact and existing trees. The driveway turnaround has been reduced to reduce impact to trees 70 and 71.
- Drainage concept specific to the residence includes an interceptor swale parallel to the northern property line above the garage, lawn area and pool terrace. It will be released through a rock riprap outlet below the residence.
- An interceptor swale west of the garage conveys runoff to a drainage inlet above a landscape wall and the fire department turnaround. Runoff in the inlet is conveyed through a storm drain and released through a tee pipe storm drain dissipater in the open area west of the residence. Runoff is released in a location that is not directly above any existing trees.
- Roof and patio drainage will be conveyed to two bio-retention planters below the residence. Runoff will be detained, infiltrated, and overflow will be spread out over 40-feet to maintain a sheet flow nature below the proposed improvements.

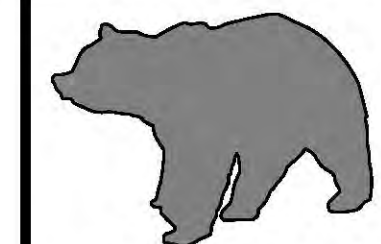
Proposed improvements will significantly impact 4 trees for the entire Lot 228 Residence project according to the arborist report tree inventory. Significant impacts include close proximity to construction or location within footprint of construction and cannot be saved. 2 of the significantly impacted trees are planned for removal.

- Diameter – (1) tree is less than 8-inch diameter, (1) 15-inch tree, (1) 18-inch tree and (1) 24-inch tree are also proposed to be impacted.
- Health – (1) tree has fair health and the remaining and (3) trees are good health. (0) trees were in excellent health.
- Species – (1) bay tree is proposed to be impacted and the remaining (3) are different varieties of oak trees.



Bear Flag Engineering

Civil Engineering - Land Development - wastewater
Project management – stormwater – FORENSIC ENGINEERING
527 Broadway #202, Sonoma, Ca 95476
Phone: (707) 481-9472

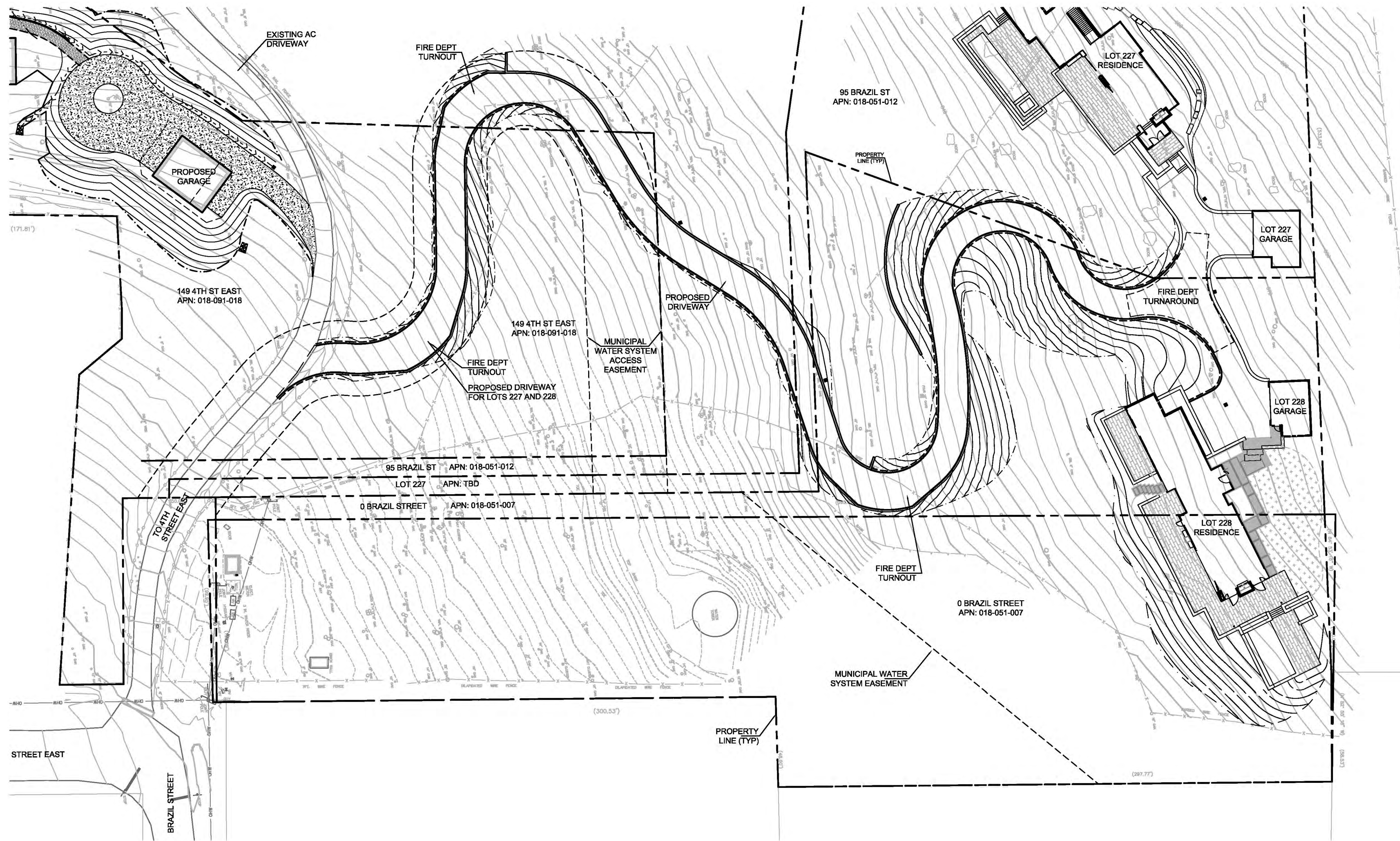


**BEAR FLAG
ENGINEERING
INC**

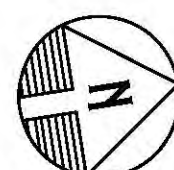
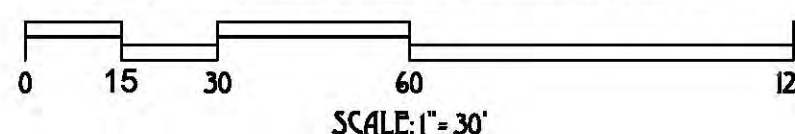
CIVIL ENGINEERING
LAND DEVELOPMENT
SEPTIC SYSTEM DESIGN
PROJECT MANAGEMENT
SURVEYING
BUILDING DESIGN

PO BOX 283, SONOMA, CA 95976
PHONE: 0707 481-9472
DEARFLAGCIVIL@GMAIL.COM

**PRELIMINARY SITE PLAN
LOT 228 RESIDENCE**
BRAZIL STREET, SONOMA, CA
APN: 018-051-007



PRELIMINARY SITE PLAN - LOT 228



REV	DATE	DESCRIPTION

DATE: 5/24/2017
DESIGN: CSM
PROJECT: 18003

SHEET
01
OF 2 SHEETS

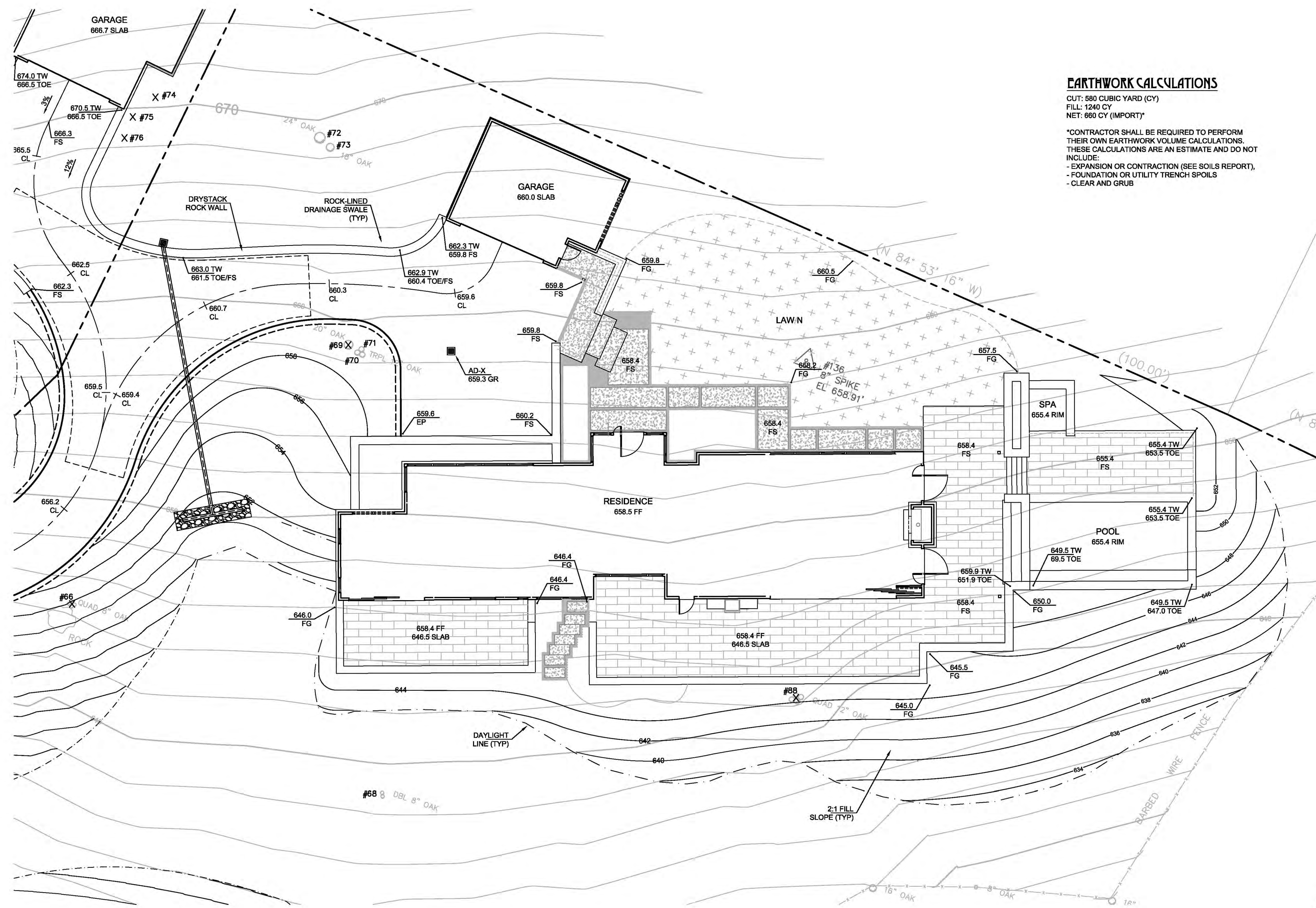


**BEAR FLAG
ENGINEERING
INC**

CIVIL ENGINEERING
SURVEYING
LAND DEVELOPMENT
SEPTIC SYSTEM DESIGN
PROJECT MANAGEMENT
FORENSIC ENGINEERING

527 BROADWAY #202
SONOMA, CA 95476
PHONE: (707) 481-9472
OFFICE@BEARFLAGCIVIL.COM

PRELIMINARY GRADING PLAN
LOT 228 RESIDENCE
BRAZIL STREET, SONOMA, CA
APN: 018-051-007

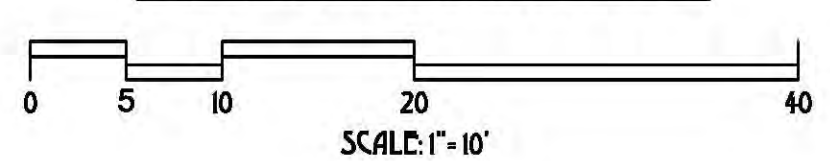


EARTHWORK CALCULATIONS

CUT: 580 CUBIC YARD (CY)
FILL: 1240 CY
NET: 660 CY (IMPORT)*

*CONTRACTOR SHALL BE REQUIRED TO PERFORM THEIR OWN EARTHWORK VOLUME CALCULATIONS. THESE CALCULATIONS ARE AN ESTIMATE AND DO NOT INCLUDE:
- EXPANSION OR CONTRACTION (SEE SOILS REPORT),
- FOUNDATION OR UTILITY TRENCH SPOILS
- CLEAR AND GRUB

**LOT 228 RESIDENCE
PRELIMINARY GRADING PLAN**



REV	DATE	DESCRIPTION

DATE: 5/24/2017
DESIGN: CSM
PROJECT: 16003

SHEET
C3
OF 3 SHEETS

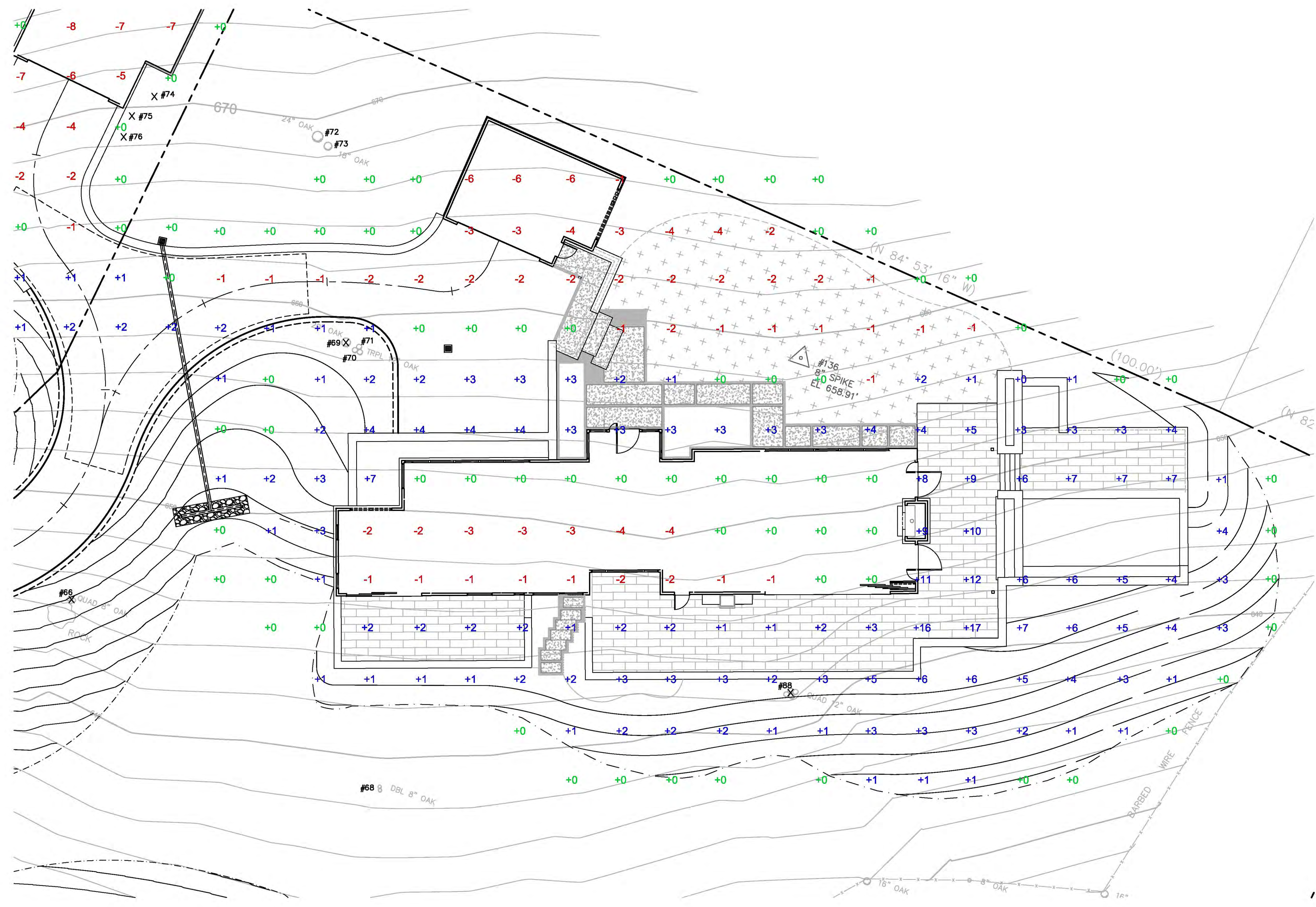


**BEAR FLAG
ENGINEERING
INC**

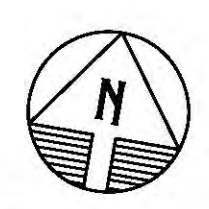
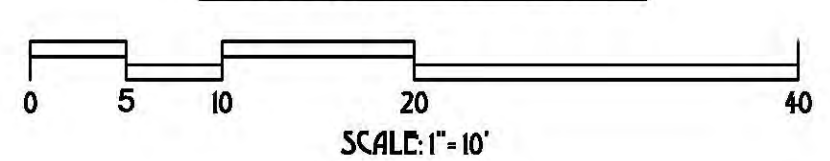
CIVIL ENGINEERING
SURVEYING
LAND DEVELOPMENT
SEPTIC SYSTEM DESIGN
PROJECT MANAGEMENT
FORENSIC ENGINEERING

527 BROADWAY #202
SONOMA, CA 95476
PHONE: (707) 484-9472
OFFICE@BEARFLAGCIVIL.COM

CUT-FILL TICK EXHIBIT
LOT 228 RESIDENCE
BRAZIL STREET, SONOMA, CA
APN: 018-051-007



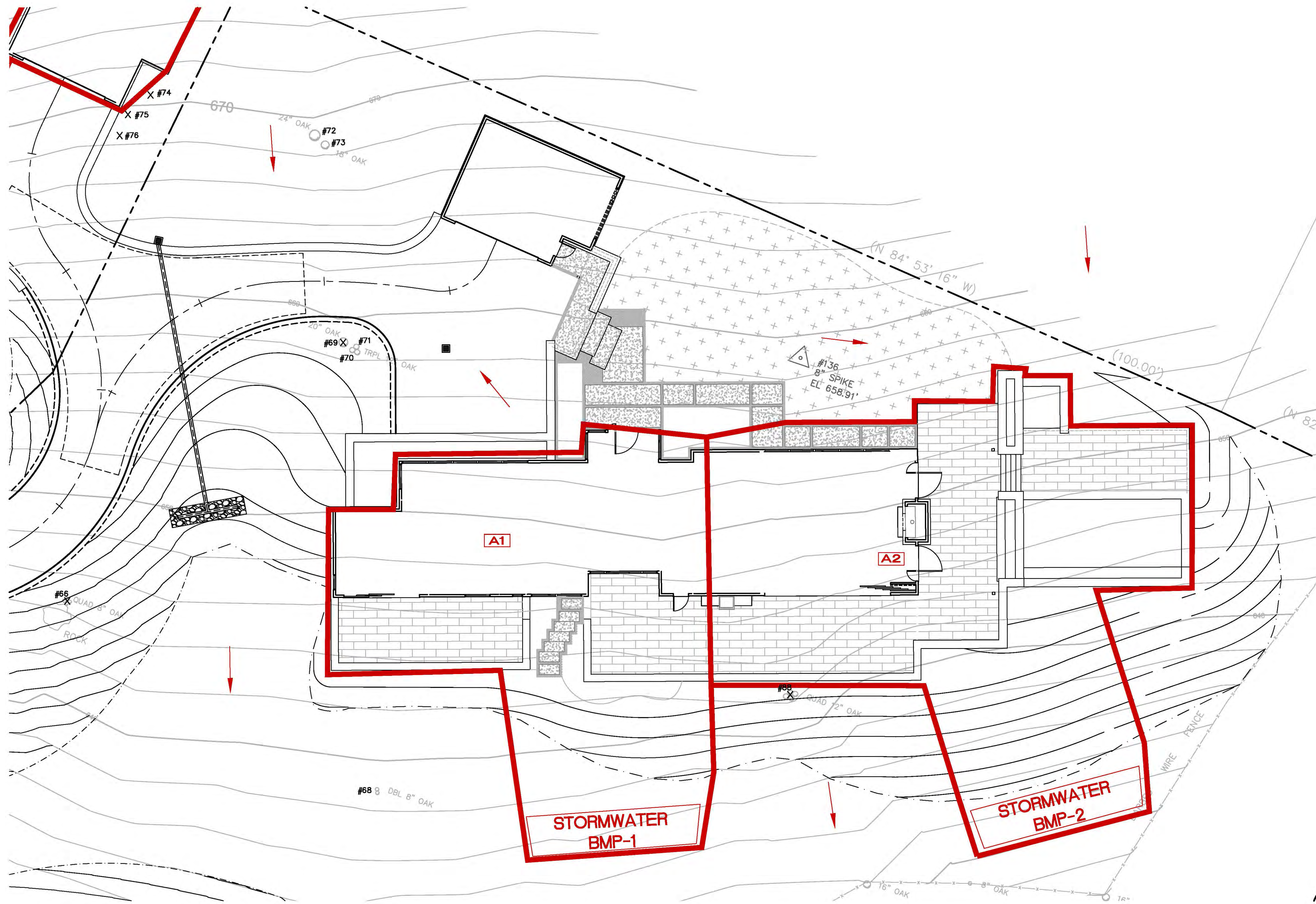
**LOT 228 RESIDENCE
CUT-FILL TICK EXHIBIT**



REV	DATE	DESCRIPTION

DATE: 5/24/2017
DESIGN: CSM
PROJECT: 16003

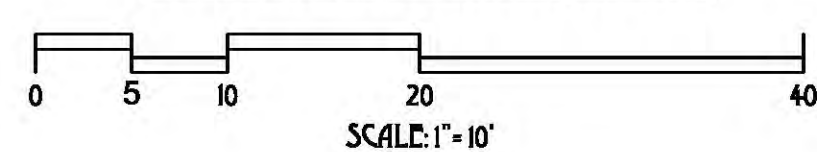
SHEET
1
OF 1 SHEET



DRAINAGE LEGEND

- WATERSHED BOUNDARY
- A1 WATERSHED LABEL
- 1 POINT OF CONCENTRATION
- SWL-1** SWALE #1
- SD-1** STORM DRAIN #1
- OVERLAND FLOW DIRECTION

**LOT 228 RESIDENCE
PRELIMINARY GRADING PLAN**



CIVIL ENGINEERING
LAND DEVELOPMENT
SEPTIC SYSTEM DESIGN
PROJECT MANAGEMENT
SURVEYING
BUILDING DESIGN
PO BOX 2193, SONOMA, CA 95976
PHONE: (707) 481-9472
BEARFLAGCIVIL@GMAIL.COM

**POST-CONSTRUCTION
HYDROLOGY MAP
LOT 228 RESIDENCE**
BRAZIL STREET, SONOMA, CA
APN: 018-051-007

8. Changes to Grading and Drainage between 1st Submittal and Current Plan

We have revised improvements to the grading and drainage plans for all three projects based upon feedback from planning commissioners, and arborist report recommendations. Here is a summary of revisions, which will help reduce impacts to existing trees.

149 4th Street East Residence-

- Dropped pool terrace and Auxiliary Structure elevation by 2-feet. Previous elevation was 547.00 and is now 545.00. Dropping the terrace and building elevation reduces the amount of fill placement by about 450 cubic yards and also reduces the area of fill placement below the terrace. It also brings the pool terrace finish grade closer to existing grade levels. Refer to the attached Cut Fill Exhibit.
- Reduced impervious area around the pool terrace. The pool terrace now consists of less concrete, and more native landscape area. This reduces the difference in stormwater runoff between the pre and post-construction scenarios and reduces the amount of soil disturbance since the fill slope is smaller to daylight.

Lot 228 Residence-

- A 300-foot long retaining wall has been added on the uphill side of the driveway between stations 2+50 and 5+50 that was not in the original submittal. Another 85-feet of retaining wall has been added to the bottom of the fill slope between stations 6+50 and 7+25 that was not in the original submittal. These walls reduce grading impacts and save approximately 25 trees that were previously impacted or planned for removal in the original submittal.
- Tee pipe dissipaters have been added to culverts to spread out drainage and reinforce the sheet flow drainage condition.
- The driveway turnaround and parking area have been reduced to save three trees (trees 69, 70 and 71).

9. Tree Replacement and Preservation

Trees that are damaged or removed due to construction of the proposed projects are planned to be replaced. A typical residential project requires a 1:1 replacement ratio. Our project is planning to replant 1.5 trees to every 1 removed/damaged, which is 50-percent above the minimum requirement. Replanted trees will be similar in species and location.

Proposed trees will be planted adjacent to the driveway to prevent over exposure of the driveway and woodland area. Trees will also be planted in the open area below the residence to further assist with prevention of visibility from the city streets.



Bear Flag Engineering

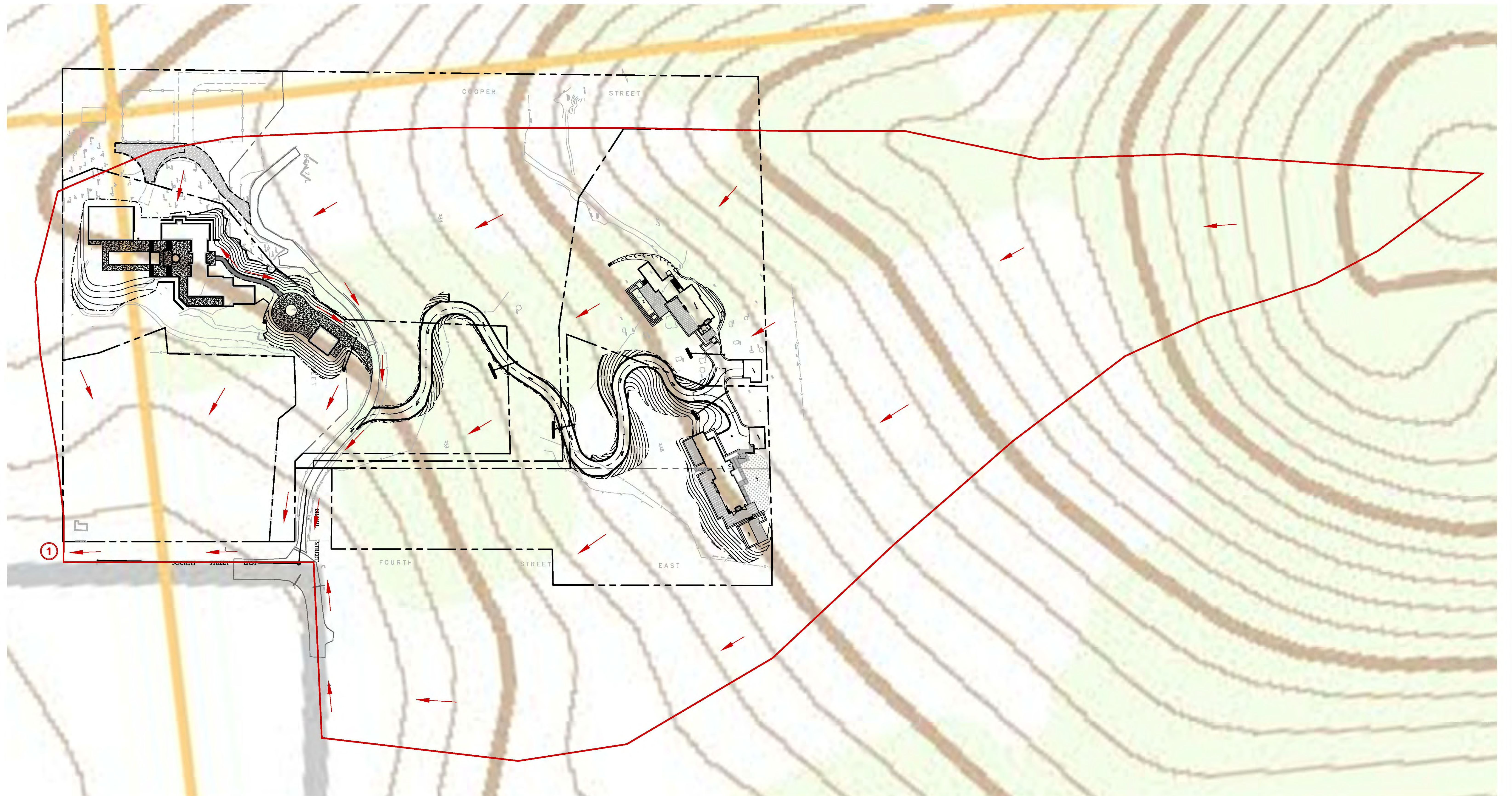
Civil Engineering - Land Development - wastewater
Project management – stormwater – FORENSIC ENGINEERING
527 Broadway #202, Sonoma, Ca 95476
Phone: (707) 481-9472

APPENDIX



Bear Flag Engineering

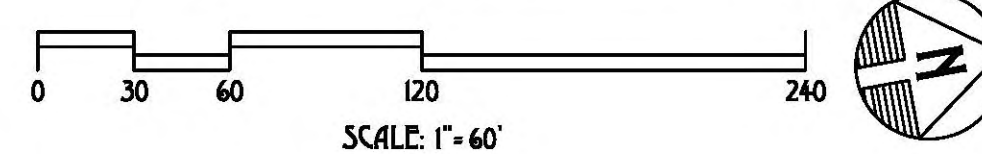
Civil Engineering - Land Development - wastewater
Project management – stormwater – FORENSIC ENGINEERING
527 Broadway #202, Sonoma, Ca 95476
Phone: (707) 481-9472




DRAINAGE LEGEND

- WATERSHED BOUNDARY
- A1 WATERSHED LABEL
- 1 POINT OF CONCENTRATION
- SWL-1 SWALE #1
- SD-1 STORM DRAIN #1
- OVERLAND FLOW DIRECTION

**POST-CONSTRUCTION
OVERALL HYDROLOGY MAP**



 BEAR FLAG ENGINEERING, INC.	CIVIL ENGINEERING LAND DEVELOPMENT SEPTIC SYSTEM DESIGN PROJECT MANAGEMENT SURVEYING BUILDING DESIGN PO BOX 2193, SONOMA, CA 95476 PHONE: (707) 481-9472 BEARFLAGCIVIL@GMAIL.COM	OVERALL HYDROLOGY MAP 149 4TH STREET RESIDENCE 149 4TH STREET EAST, SONOMA, CA APN: 018-091-018
---	--	--

ATTACHMENT 3

LETTER FROM INMAN LAW GROUP

June 7, 2017

**Mr. Ross Edwards
Caymus Builders
281 2nd Street East
Sonoma, CA 95476**

Re: **Tree Protection and Hillside View Preservation for 4th Street Parcel Map**

Dear Mr. Edwards:

You have asked us to propose restrictive covenant provisions to address tree protection and hillside view preservation concerns prompted by the feedback you received from the City of Sonoma Planning Commission hearing for your proposed parcel map for the property located adjacent to the intersection of 4th Street and Barzil Street in the City of Sonoma. In addition, you have asked that we provide an overview of the legal framework that would enforce the proposed restrictive covenants.

With respect to the proposed restrictive covenants, we understand the properties within the proposed parcel map as well as two separate properties will all share a private driveway which will be maintained by a property owners' association. This arrangement is well suited to serve the objectives of the proposed restrictive covenants, as the California caselaw dealing with the enforcement of similar restrictive covenants has consistently upheld not only the right to enforce such provisions but also the express duty to enforce the restrictive covenants as well.

Proposed Restrictive Covenants

Tree Protection Restrictions can utilize existing tree locations which can be incorporated into an exhibit attached to the restrictive covenants declaration:

As of the date of recording of this Declaration, no tree identified in attached Exhibit "A" shall be cut, pruned, altered, or removed without the prior written consent of the City of Sonoma. Any approved cutting, pruning, alteration or removal of any tree identified in Exhibit "A" shall only be performed by a licensed arborist.

Such provisions can be written to require either the parcel owner or the property owners' association to be responsible for the stewardship of the existing trees.

Mr. Ross Edwards
Caymus Builders
June 7, 2017
Page 2

Hillside View Preservation Restrictions can be written to address both landscaping and architectural design concerns:

Each Parcel Owner shall install and maintain the landscaping within his or her parcel in a manner which incorporates random groupings or clusters that mimic or maintain natural assemblages rather than in systematic rows. Owners shall maintain vegetation lines which convey the existing slope of the hillside. All residences and any structures constructed or placed on a parcel shall be designed to minimize visual obstruction of the existing hillside.

Legal Authority To Compel Enforcement of Proposed Restrictive Covenants

California law imposes specific obligations upon property owners' associations to discharge the specific requirements in Covenants, Codes & Restrictions (CC&Rs). Two judicial decisions discussed below outline how California law operates with respect to imposed obligations and financial obligations.

The two case decisions, *Ekstrom v. Marquesa at Monarch Beach HOA* (2008) 168 Cal. App. 4th 1111, and *James F. O'Toole Co., Inc. v. Los Angeles Kingsbury Court Owners Assn.* (2005)126 Cal.App.4th 549, give solid legal assurances that CC&R obligations imposed upon a property owners association will be discharged as contemplated, and that the association's board of directors will in fact raise the necessary funds to discharge its obligations. Prior to the *Ekstrom* case, there was a very legitimate concern that a owners' association board of directors could avoid following an obligation under the CC&Rs by evoking the "business judgment rule" deference to a board's decision to avoid performing obligations imposed by the CC&Rs. That is no longer a concern due to the *Ekstrom* decision:

In *Ekstrom*, the property owners' association's board of directors refused to enforce specific provisions of the CC&Rs which required all trees blocking ocean views to be trimmed. The HOA board refused to enforce the tree trimming obligation with respect to palm trees, contending:

"[t]he "judicial deference rule" adopted by the California Supreme Court in *Lamden v. La Jolla Shores Clubdominium Homeowner's Assn.* (1999) 21 Cal.4th 249 (*Lamden*), which is an adaptation of the business judgment rule applicable to directors of corporations, precludes judicial review of any of its decisions concerning the enforcement or nonenforcement of section 7.18 of the CC&Rs as to palm trees. We disagree."

The Court went on to hold that the board's interpretation of the CC&Rs was inconsistent with the plain meaning of the document and thus not entitled to judicial deference. The relevance of the *Ekstrom* case to the City of Sonoma's tree protection and

Mr. Ross Edwards
Caymus Builders
June 7, 2017
Page 3

hillside view protection concerns is that if the project's CC&Rs include the tree protection and hillside view preservation restrictions and obligate the property owners association to implement and enforce the provisions, California law now makes it clear that those obligations are not subject to the whims or discretion of the association's board of directors. Nor can the board claim "we don't have the money to perform the CC&Rs obligations" as the *O'Toole* case now makes it clear that a Community Association must impose the assessments necessary to perform its CC&Rs obligations.

James F. O'Toole Co., Inc. v. Los Angeles Kingsbury Court Owners Assn.
(2005)126 Cal.App.4th 549

"In this case, in typical form, the Los Angeles Kingsbury Court Owners Association's Declaration charges the Association with the duty to "maintain, repair, restore, replace and make necessary improvements to the Common Area so that the same are at all times in a first-class condition and good state of repair," and to "pay, out of the general funds of the Association, the costs of any such maintenance and repair" After the Northridge earthquake, the Association took the first step but not the second, and the question now before us is whether the Association can be compelled to impose an assessment to obtain the money needed to pay for the work that was performed for the benefit of the Association and its members. For the reasons that follow, we answer the question affirmatively."

The Court went on to hold the appointment of a receiver to take control of the owners association and to levy the necessary assessments to permit the owners association to discharge its obligation:

"It follows that the trial court correctly ordered the Association to impose a special emergency assessment and, in light of the Association's refusal to do so, correctly decided to appoint a receiver to carry out the court's order."

These two cases provide assurances that any specific and mandatory obligations stated in CC&Rs must be discharged by the property owners association. Essentially, *Ekstom* says, "a property owners' association must do what the CC&Rs obligate it to do, period," and *O'Toole* says (so to speak), "levy the assessments you need to pay for whatever the services property owners' association is obligated to perform, period."

Thus, to the extent the proposed restrictive covenants require trees to be maintained, the aforementioned judicial decisions create a legal means of imposing the obligation upon the development's property owners' association. The restrictive covenants can also be written to require the property owners association to contract with a licensed arborist or landscape architect to perform any oversight regarding the tree protection and

Mr. Ross Edwards

Caymus Builders

June 7, 2017

Page 4

hillside view preservation provisions. The CC&Rs provisions would also include a provision which prohibits the amendment of the obligation in the CC&Rs without the prior written approval of the City of Sonoma.

Property owners' association have a reputation for being overly controlling or overly political (think of Jerry Sienfeld's Del Boca Vista Phase III condo association), but whatever they are, in California, they are legal entities that must do what their governing documents mandate and must fund their mandatory debts (such as contracting with an arborist or landscape architect). As such, for the purpose of satisfying the City of Sonoma's tree preservation and hillside view preservation concerns, having property use restrictions which must be enforced by a property owners' association is an excellent option.

If you have any questions regarding any aspect of this letter, please do not hesitate to contact me.

Very truly yours,

INMAN LAW GROUP, LLP

Bruce R. Inman

ATTACHMENT 4

TREE SCREENING AND IMPACT EXHIBIT

ATTACHMENT 5

MEMORANDUM FROM WRA, INC.

Memorandum

To: Ross Edwards
Caymus Builders
281 Second Street East
Sonoma, CA 95476

From: Benjamin Saragusa
WRA, Inc.
2169-G East Francisco Blvd.
San Rafael, CA 94901

Cc:

Date: June 30, 2017

Subject: Results of Rare Plant Surveys at 95 Brazil Street Parcels

The following summarizes the results of a rare plant survey conducted April 21, and June 20, 2017 within the proposed project on three parcels (APN 018-051-012, 018-091-018, 018-051-007) at 95 Brazil Street, Sonoma, Sonoma County, California (Project Area).

An early season survey was conducted on April 21, 2017 by Cara Witte. A late season survey was conducted on June 20, 2017 by Benjamin Saragusa. The Project Area is gently to moderately sloped, and elevations range from approximately 160 to 350 feet above sea level. The site is underlain by one soil type, a complex of equal parts Goulding series and Toomes series soils, which are both well-drained, non-hydric soils; derived from metavolcanics and igneous rocks, respectively¹. These soils underlay areas of open grassland and small patches of oak woodland, and isolated rock outcrops are common and frequent.

Currently, the Project Area consists of a mosaic of the three habitat types described above, with open grassland being the dominant. Three sites are proposed for one house each, to be built primarily in open grassland, with a design aim to avoid trees and rocky outcrops to the greatest extent feasible.

The grasslands are dominated by annual non-native, and often invasive grasses such as: slim oats (*Avena barbata*), wild oats (*Avena fatua*), rattlesnake grass (*Briza maxima*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), Italian rye grass (*Festuca perennis*), and foxtail barley (*Hordeum murinum*).

The rocky outcrops and small oak woodland patches support a mix of shrubs, herbs, and trees. Aside from the dominant oaks such as coast live oak (*Quercus agrifolia*) and blue oak (*Quercus douglasii*), other trees such as buckeye (*Aesculus californica*), and California bay (*Umbellularia californica*) are intermingled in the stands, creating a relatively-dense canopy, and decreasing the cover of understory plants. In these areas, it is common to see shrubs and herbs such as Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*), cleavers (*Galium aparine*), poison

¹ California Soil Resource Lab. 2017. SoilWeb: An Online Soil Survey Browser. University of California, Davis. Most recently accessed: June 2017.

oak (*Toxicodendron diversilobum*), sticky monkeyflower (*Mimulus aurantiacus*), and toyon (*Heteromeles arbutifolia*).

Rare Plant Survey

Background Literature Search

Prior to the first rare plant survey, Cara Witte conducted a database query of the California Natural Diversity Database (CNDDDB)² and the California Native Plant Society (CNPS) Electronic Inventory³ of the Sonoma 7.5-minute USGS quadrangle to assess special-status plant species that may have the potential to occur in the Project Area. Twenty-one special-status plant species have been documented from the Sonoma quadrangle. Based on pre-survey understanding of site habitats, seven species have moderate or high potential to occur in the Project Area including Franciscan onion (*Allium peninsulare* var. *franciscanum*, CNPS Rank 1B.2), Napa false indigo (*Amorpha californica* var. *napensis*, CNPS Rank 1B.2), big-scale balsamroot (*Balsamorhiza macrolepis*, CNPS Rank 1B.2), narrow-anthered Brodiaea (*Brodiaea leptandra*, CNPS Rank 1B.2), streamside daisy (*Erigeron biolettii*, CNPS Rank 3), green monardella (*Monardella viridis*, CNPS Rank 4.3), and dark-mouthed Tritoleia (*Triteleia lugens*, CNPS Rank 4.3).

Field Survey Method

Cara Witte and Benjamin Saragusa performed on-site special-status plant assessments and complete floristic surveys on April 21 and June 20, 2017, respectively. The field visits were timed in this manner to best align with the bloom period for the special-status species with potential to occur on the site. The WRA biologists traversed the entire Project Area, and recorded all observed plant species, which were identified with Jepson eFlora⁴, to a taxonomic level sufficient to determine rarity (Attachment A).

Site Assessment and Survey Results

Of the 21 special-status plant species identified in the database search, 14 are unlikely or have no potential to occur within the Project Area.

The absence of serpentine and sandy soil conditions, the absence of aquatic features such as vernal pools or wetlands, the prevalence of non-native, invasive annual or perennial grasses throughout the grassland areas, and the relatively low elevation of the Project Area does not provide suitable habitat for many of the special-status plant species identified as occurring within the greater regional vicinity of the Project Area. Several of the special-status plant species are unlikely or have no potential to occur within the Project Area because of one or more of the following reasons:

2 California Department of Fish and Wildlife (CDFW). 2017. California Natural Diversity Database (CNDDDB), Wildlife and Habitat Data Analysis Branch, Sacramento, CA. Accessed: April 2017

3 California Native Plant Society (CNPS). 2017. Electronic Inventory of Rare and Endangered Vascular Plants of California. California Native Plant Society, Sacramento, CA. Available at: <http://www.cnps.org/inventory>. Accessed: April 2017.

4 Jepson Flora Project (eds.). 2017. Jepson eFlora. Online at: <http://ucjeps.berkeley.edu/IJM.html>; accessed June 2017.

- Hydrologic conditions (e.g. mesic, vernal pool habitat) necessary to support the special-status plants do not exist on site;
- Edaphic (soil) conditions (e.g. serpentine, sandy) necessary to support the special-status plants do not exist on site;
- Topographic conditions (e.g. mountainous) necessary to support the special-status plants do not exist on site;
- Associated vegetation communities (e.g. montane coniferous forest) necessary to support the special-status plants do not exist on site.

No special-status plant species were observed within the Project Area. Seventy-eight plant species (not including some ornamental, landscape species) were observed within the Project Area, of which 42 are considered not native to California (Attachment A).

Summary and Recommendations

Two focused rare plant surveys were conducted on April 21 and June 20, 2017 within the Project Area to determine the absence or presence of Franciscan onion, Napa false indigo, big-scale balsamroot, narrow-anthered Brodiaea, streamside daisy, green monardella, and dark-mouthed Triteleia and assess the potential to support other special-status plant species. The survey resulted in negative findings for all special-status plant species. Additionally, the Project Area does not have the potential to support other special-status plant species. Therefore, Project activities will not impact special-status plant species.

Should you have any questions or concerns, please feel free to contact me.

Sincerely,

Benjamin Saragusa

Wetland Biologist
saragusa@wra-ca.com
WRA, Inc.
2169-G East Francisco Blvd.
San Rafael, California 94901

Attachment A – Plant Species Observed in the Project Area, April 21 and June 20, 2017

Scientific Name	Common Name	Origin	Form	CAL-IPC Status
<i>Acacia dealbata</i>	Silver wattle	non-native (invasive)	tree, shrub	Moderate
<i>Aesculus californica</i>	Buckeye	native	tree	-
<i>Arbutus menziesii</i>	Madrono	native	tree	-
<i>Artemisia californica</i>	Coastal sage brush	native	shrub	-
<i>Avena barbata</i>	Slim oat	non-native (invasive)	annual, perennial grass	Moderate
<i>Avena fatua</i>	Wildoats	non-native (invasive)	annual grass	Moderate
<i>Baccharis pilularis</i>	Coyote brush	native	shrub	-
<i>Bellardia trixago</i>	Mediterranean linseed	non-native	annual forb	Limited
<i>Briza maxima</i>	Rattlesnake grass	non-native (invasive)	annual grass	Limited
<i>Briza minor</i>	Little rattlesnake grass	non-native	annual grass	-
<i>Brodiaea elegans ssp. elegans</i>	Harvest brodiaea	native	perennial herb	-
<i>Bromus diandrus</i>	Ripgut brome	non-native (invasive)	annual grass	Moderate
<i>Bromus hordeaceus</i>	Soft chess	non-native (invasive)	annual grass	Limited
<i>Bromus sterilis</i>	Sterile brome	non-native	annual grass	-
<i>Calendula arvensis</i>	Field marigold	non-native	annual herb	-
<i>Carduus pycnocephalus ssp. pycnocephalus</i>	Italian thistle	non-native (invasive)	annual herb	Moderate
<i>Castilleja attenuata</i>	Narrow leaved owl's clover	native	annual herb	-
<i>Centaurea solstitialis</i>	Yellow starthistle	non-native (invasive)	annual herb	High
<i>Cerastium fontanum ssp. vulgare</i>	Common chickweed	non-native	perennial herb	-
<i>Chlorogalum pomeridianum var. divaricatum</i>	Soap plant	native	perennial herb	-
<i>Claytonia perfoliata</i>	Miner's lettuce	native	annual herb	-
<i>Convolvulus arvensis</i>	Field bindweed	non-native (invasive)	perennial herb, vine	-
<i>Croton setiger</i>	Turkey-mullein	native	perennial herb	-
<i>Cyperus eragrostis</i>	Tall cyperus	native	perennial grasslike herb	-
<i>Delphinium decorum</i>	Larkspur	native	perennial herb	-
<i>Dichelostemma capitatum</i>	Blue dicks	native	perennial herb	-
<i>Elaeagnus sp.</i>	-	-	-	-
<i>Elymus caput-medusae</i>	Medusa head	non-native	annual grass	-

Scientific Name	Common Name	Origin	Form	CAL-IPC Status
<i>Elymus sp.</i>	-	-	-	-
<i>Erodium cicutarium</i>	Coastal heron's bill	non-native (invasive)	annual herb	Limited
<i>Eschscholzia californica</i>	California poppy	native	annual, perennial herb	-
<i>Euphorbia peplus</i>	Petty spurge	non-native	annual herb	-
<i>Festuca myuros</i>	Rattail sixweeks grass	non-native (invasive)	annual grass	-
<i>Festuca perennis</i>	Italian rye grass	non-native	annual, perennial grass	-
<i>Frangula californica</i>	California coffeeberry	native	shrub	-
<i>Galium aparine</i>	Cleavers	native	annual herb	-
<i>Geranium dissectum</i>	Wild geranium	non-native (invasive)	annual herb	Limited
<i>Geranium molle</i>	Crane's bill geranium	non-native (invasive)	annual, perennial herb	-
<i>Hedera helix</i>	English ivy	non-native (invasive)	vine, shrub	-
<i>Helminthotheca echioides</i>	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	Limited
<i>Heteromeles arbutifolia</i>	Toyon	native	shrub	-
<i>Holcus lanatus</i>	Common velvetgrass	non-native (invasive)	perennial grass	Moderate
<i>Hordeum marinum ssp. gussoneanum</i>	Barley	non-native (invasive)	annual grass	Moderate
<i>Hordeum murinum</i>	Foxtail barley	non-native (invasive)	annual grass	Moderate
<i>Hypochaeris glabra</i>	Smooth cats ear	non-native (invasive)	annual herb	Limited
<i>Hypochaeris radicata</i>	Hairy cats ear	non-native (invasive)	perennial herb	Moderate
<i>Juncus bufonius</i>	Common toad rush	native	annual grasslike herb	-
<i>Kickxia sp.</i>	-	-	-	-
<i>Lactuca serriola</i>	Prickly lettuce	non-native (invasive)	annual herb	-
<i>Lathyrus vestitus</i>	Common pacific pea	native	perennial herb	-
<i>Lysimachia arvensis</i>	Scarlet pimpernel	non-native	annual herb	-
<i>Lythrum sp.</i>	-	-	-	-
<i>Medicago arabica</i>	Spotted burclover	non-native	annual herb	-
<i>Mimulus aurantiacus</i>	Sticky monkeyflower	native	shrub	-
<i>Monardella villosa ssp. villosa</i>	Coyote mint	native	perennial herb	-
<i>Pellaea andromedifolia</i>	Coffee fern	native	fern	-

Scientific Name	Common Name	Origin	Form	CAL-IPC Status
<i>Petrorhagia prolifera</i>	Pink grass	non-native	annual herb	-
<i>Plantago erecta</i>	California plantain	native	annual herb	-
<i>Plantago lanceolata</i>	Ribwort	non-native (invasive)	perennial herb	Limited
<i>Quercus agrifolia</i>	Coast live oak	native	tree	-
<i>Quercus douglasii</i>	Blue oak	native	tree	-
<i>Ranunculus californicus</i>	Common buttercup	native	perennial herb	-
<i>Ranunculus muricatus</i>	Buttercup	non-native	annual, perennial herb	-
<i>Raphanus sativus</i>	Jointed charlock	non-native (invasive)	annual, biennial herb	Limited
<i>Rubus armeniacus</i>	Himalayan blackberry	non-native (invasive)	shrub	High
<i>Sanicula crassicaulis</i>	Pacific sanicle	native	perennial herb	-
<i>Stachys rigida</i>	Rough hedgenettle	native	perennial herb	-
<i>Stellaria media</i>	Chickweed	non-native	annual herb	-
<i>Stipa pulchra</i>	Purple needle grass	native	perennial grass	-
<i>Torilis arvensis</i>	Field hedge parsley	non-native (invasive)	annual herb	Moderate
<i>Toxicodendron diversilobum</i>	Poison oak	native	vine, shrub	-
<i>Trifolium dubium</i>	Shamrock	non-native	annual herb	-
<i>Trifolium hirtum</i>	Rose clover	non-native (invasive)	annual herb	Limited
<i>Trifolium subterraneum</i>	Subterranean clover	non-native	annual herb	-
<i>Trifolium tomentosum</i>	Woolly clover	non-native	annual herb	-
<i>Umbellularia californica</i>	California bay	native	tree	-
<i>Vicia hirsuta</i>	Hairy vetch	non-native	annual herb, vine	-
<i>Zeltnera venusta</i>	Charming centaury	native	annual herb	-

ATTACHMENT 6

***TREE PRESERVATION AND MITIGATION
REPORTS***

HORTICULTURAL

Associates

Consultants in Horticulture and Arboriculture

TREE PRESERVATION AND MITIGATION REPORT

Lot 227
Brazil Street
Sonoma, CA

Prepared for:

Caymus Builders
300 Derek Place
Roseville, CA 95661

Prepared by:

John C. Meserve
Consulting Arborist and Horticulturist
American Society of Consulting Arborists
ISA Certified Arborist, WE #0478A
ISA Tree Risk Assessment Qualified

June 7, 2017

TREE INVENTORY CHART

TREE INVENTORY
Lot 227
Sonoma, CA

June 7, 2017

Tree #	Species	Common Name	Trunk (dbh ± inches)	Multiple Trunk Conversion to TPZ (feet)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Tag?	Expected Impact	Recommendations
74	<i>Umbellularia californica</i>	California Bay	7	7	15	10	4	3	Yes	3	2
75	<i>Umbellularia californica</i>	California Bay	5+5	7	15	10	4	3	Yes	3	2
76	<i>Umbellularia californica</i>	California Bay	7	7	15	10	4	3	Yes	3	2
78	<i>Quercus agrifolia</i>	Coast Live Oak	8+10	13	14	12	3	3	Yes	1	1, 3, 4, 5, 6, 7, 8, 9
79	<i>Quercus agrifolia</i>	Coast Live Oak	6+8	10	16	12	3	3	Yes	1	1, 3, 4, 5, 6, 7, 8, 9
80	<i>Quercus agrifolia</i>	Coast Live Oak	18+18+12	28	21	15	3	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
81	<i>Quercus agrifolia</i>	Coast Live Oak	10	10	20	14	3	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
82	<i>Quercus agrifolia</i>	Coast Live Oak	4+4+6+6	10	18	12	3	3	Yes	3	2
83	<i>Quercus agrifolia</i>	Coast Live Oak	10+12+13	20	21	15	4	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
84	<i>Quercus agrifolia</i>	Coast Live Oak	12	12	25	18	4	3	Yes	3	2
85	<i>Quercus agrifolia</i>	Coast Live Oak	14+15	21	30	18	4	3	Yes	3	2
86	<i>Quercus agrifolia</i>	Coast Live Oak	24	24	40	28	4	3	Yes	3	2
87	<i>Quercus agrifolia</i>	Coast Live Oak	12+12+6	18	20	20	3	3	Yes	3	2
145	<i>Quercus agrifolia</i>	Coast Live Oak	6+8+9	13	20	14	3	3	Yes	1	1, 3, 4, 5, 6, 7, 8, 9
146	<i>Quercus agrifolia</i>	Coast Live Oak	6+10	12	25	15	3	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
147	<i>Quercus agrifolia</i>	Coast Live Oak	12+10+6+6+6+5+9	21	25	21	3	2.5	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
148	<i>Quercus agrifolia</i>	Coast Live Oak	12+12+6+6+5+12	21	25	22	3	2.5	Yes	1	1, 3, 4, 5, 6, 7, 8, 9
149	<i>Quercus agrifolia</i>	Coast Live Oak	8+8+6+6+5+7	17	20	20	3	2.5	Yes	1	1, 3, 4, 5, 6, 7, 8, 9

HORTICULTURAL ASSOCIATES
P.O. Box 1261, Glen Ellen, CA 95442
707.935.3911

TREE INVENTORY
Lot 227
Sonoma, CA

June 7, 2017

Tree #	Species	Common Name	Trunk (dbh ± inches)	Multiple Trunk Conversion to TPZ (feet)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Tag?	Expected Impact	Recommendations
150	<i>Quercus agrifolia</i>	Coast Live Oak	12+12+14+14+10	28	21	20	3	2.5	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
151	<i>Quercus agrifolia</i>	Coast Live Oak	5+16	17	20	15	3	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
152	<i>Olea Europaea</i>	Olive	8+4+4	10	20	10	4	3	Yes	1	1, 3, 4, 5, 6, 7, 8, 9
153	<i>Quercus agrifolia</i>	Coast Live Oak	6+6	8	15	10	4	4	Yes	1	1, 3, 4, 5, 6, 7, 8, 9
154	<i>Quercus agrifolia</i>	Coast Live Oak	4	4	15	8	4	4	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
155	<i>Quercus agrifolia</i>	Coast Live Oak	12+12	17	18	25	3	3	Yes	3	1, 3, 4, 5, 6, 7, 8, 9
156	<i>Quercus agrifolia</i>	Coast Live Oak	5	5	6	14	2	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
157	<i>Quercus agrifolia</i>	Coast Live Oak	5+5+7+8+10+12	20	40	21	3	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
158	<i>Quercus agrifolia</i>	Coast Live Oak	12+5+10+15	22	40	20	3	3	Yes	3	2
159	<i>Quercus agrifolia</i>	Coast Live Oak	6	6	20	15	3	3	Yes	3	2
160	<i>Quercus agrifolia</i>	Coast Live Oak	5+4+3	7	20	14	3	3	Yes	3	2
161	<i>Quercus agrifolia</i>	Coast Live Oak	6+6	8	12	18	3	3	Yes	3	2
162	<i>Quercus agrifolia</i>	Coast Live Oak	6+5+12+12	19	35	18	3	3	Yes	3	2
163	<i>Aesculus californica</i>	California Buckeye	5	5	10	12	4	3	Yes	3	2
164	<i>Quercus agrifolia</i>	Coast Live Oak	5+4+10+11	17	20	14	3	3	Yes	3	2
165	<i>Quercus agrifolia</i>	Coast Live Oak	8	8	24	12	3	3	Yes	3	2
166	<i>Quercus agrifolia</i>	Coast Live Oak	5+7+9	17	10	10	3	3	Yes	3	2
167	<i>Quercus agrifolia</i>	Coast Live Oak	6	6	10	12	3	3	Yes	3	2

HORTICULTURAL ASSOCIATES
P.O. Box 1261, Glen Ellen, CA 95442
707.935.3911

TREE INVENTORY
 Lot 227
 Sonoma, CA

June 7, 2017

Tree #	Species	Common Name	Trunk (dbh ± inches)	Multiple Trunk Conversion to TPZ (feet)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Tag?	Expected Impact	Recommendations
168	<i>Quercus agrifolia</i>	Coast Live Oak	9	9	6	10	3	3	Yes	3	2

KEY TO TREE
INVENTORY CHART

KEY TO TREE INVENTORY CHART

Lot 227
Sonoma, California

Tree Number

Each tree has been identified in the field with an aluminum tag and reference number. Tags are attached to the trunk at approximately eye level and the *Tree Location Plan* illustrates the location of each numbered tree.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

The diameter of each trunk has been estimated at 4.5 feet above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size, or different than what is actually present. Radius is generally used as an area of root zone to be protected from development activity

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

- (5) Excellent - health and vigor are exceptional, no pest, disease, or distress symptoms.
- (4) Good - health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.
- (3) Fair - health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.
- (2) Marginal - health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.
- (1) Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

- (4) Good structure - minor structural problems may be present which do not require corrective action.
- (3) Moderate structure - normal, typical structural issues which can be corrected with pruning.
- (2) Marginal structure - serious structural problems are present, which may or may not be correctable with pruning, cabling, bracing, etc.
- (1) Poor structure - hazardous structural condition that cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

Development Impacts

Considering the proximity of construction activities, type of activities, tree species, and tree condition the following ratings are used to estimate the amount of impact on tree health and stability. Most trees will tolerate a (1) rating, many trees could tolerate a (2) rating with careful consideration and mitigation, but trees with a (3) rating are poor candidates for preservation due to their very close proximity to construction or because they are located within the footprint of construction and cannot be preserved.

- (3) Significant impact on long-term tree integrity can be expected as a result of proposed development.
- (2) Moderate impact on long-term tree integrity can be expected as a result of proposed development.
- (1) Minor impact on long-term tree integrity can be expected as a result of proposed development.
- (0) No impact is expected

Recommendations

Recommendations are provided for removal or preservation. For those being preserved, protection measures and mitigation procedures to offset impacts and improve tree health are provided.

- (1) Preservation appears to be possible.
- (2) Removal is required due to significant development impacts.

KEY TO TREE INVENTORY CHART

(3) Install temporary protective fencing prior to beginning any grading or construction at the site. Tree protection fencing shall be located at the edge of the Tree Protection Zone (TPZ), which is designated as one foot from the trunk for each one-inch of trunk diameter as documented in the attached Tree Inventory. As an example, a trunk diameter of 12 inches requires a protective fence 12 feet from the trunk.

Fencing must be retained in the designated location for the duration of all construction activity in the area. Fences may not be modified for any reason without the written approval of the project arborist.

Tree protection fencing must conform to the Tree Fencing Detail included in this report, or an approved equivalent.

(4) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and all underground work outside the dripline.

(5) Place a 4" layer of chipped bark mulch over the soil surface within the Tree Protection Zone prior to installing temporary fencing. Maintain this layer of mulch throughout construction.

(6) Prune to clean, raise, or provide necessary clearance, per International Society of Arboriculture Pruning Standards. Pruning to occur by, or under the supervision of, an Arborist certified by the International Society of Arboriculture.

(7) Any approved grading that occurs within the designated Tree Protection Zone (TPZ) must be completed under the direction of the project arborist. All roots greater than one inch in diameter shall be cleanly pruned prior to cut grading activity using a sharp pruning saw, cut-off saw, or other approved tool that provides a clean cut. Cut roots must be protected from desiccation if they are exposed to air for more than 24 hours by covering the root end or cut root area with a wet fabric material. Burlap or used carpeting works well for this purpose. No sealant is required on cut roots.

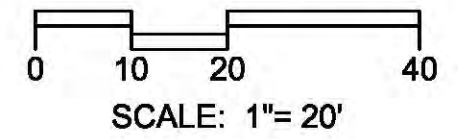
(8) Trees that receive impacts within their designated Tree Protection Zones (TPZ) may require post construction mitigation measures to assist in their recovery. Mitigation measures will be determined by the project arborist on a tree-by-tree basis depending on the extent of impact. Measures could include, but are not limited to, additional mulching and periodic irrigation.

(9) Removal of trees approved for removal has the potential to significantly impact adjacent trees that are being preserved, and the project arborist must direct these demolition activities. Trees being removed may not be pushed out of the ground to keep from damaging preserved tree root systems and will require trunk grinding. Removal activities may not damage the canopies of adjacent trees. Removal equipment may not work within the designated Tree Protection Zones of preserved trees.

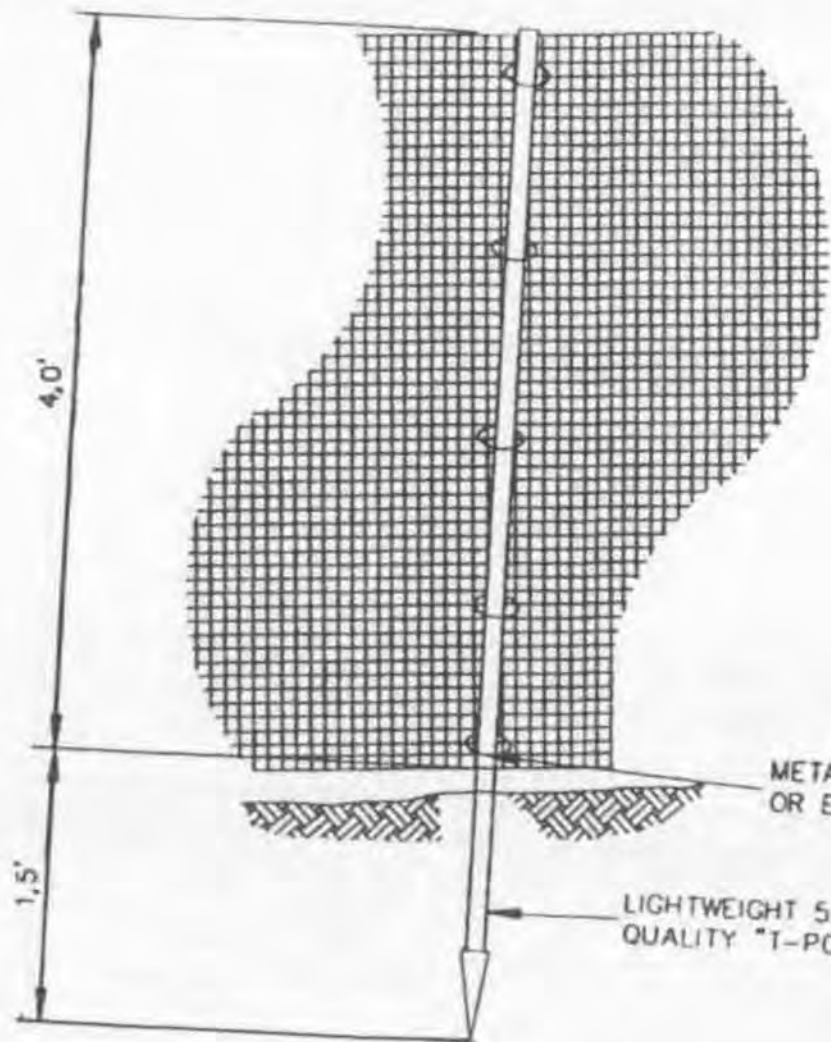
TREE LOCATION PLAN



LOT 227 RESIDENCE
TREE LOCATION AND NUMBERING PLAN



TREE FENCING DETAIL



NOTE:
TENSOR LIGHTWEIGHT SAFTY GRID, ORANGE
COLOR, BX226516, CUT OR FOLD AT POSTS
AS NEEDED TO CONFORM TO SLOPING TERRAIN.

METAL TIE WIRE, FLIP TIE
OR EQUIVALENT, 5 PER POST

LIGHTWEIGHT 5 1/2' HIGH STANDARD FARM
QUALITY "T-POST" PLACED 8' C-C

TREE PROTECTION FENCING DETAIL

HORTICULTURAL *Associates*

Consultants in Horticulture and Arboriculture

TREE PRESERVATION AND MITIGATION REPORT

Access Driveway
Brazil Street
Sonoma, CA

Prepared for:

Caymus Builders
300 Derek Place
Roseville, CA 95661

Prepared by:

John C. Meserve
Consulting Arborist and Horticulturist
American Society of Consulting Arborists
ISA Certified Arborist, WE #0478A
ISA Tree Risk Assessment Qualified

June 7, 2017

TREE INVENTORY CHART

TREE INVENTORY
Access Driveway
Sonoma, CA

June 7, 2017

Tree #	Species	Common Name	Trunk (dbh ± inches)	Multiple Trunk Conversion to TPZ (feet)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Tag?	Expected Impact	Recommendations
66	<i>Quercus agrifolia</i>	Coast Live Oak	5+5+7+10+12	19	15	18	3	2	Yes	3	2
67	<i>Quercus agrifolia</i>	Coast Live Oak	3x4+3x10+5	22	18	18	3	3	Yes	1	1, 3, 4, 5, 6, 7, 8, 9
89	<i>Olea europaea</i>	Olive	7+7	10	15	12	4	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
92	<i>Quercus douglasii</i>	Blue Oak	15	15	30	15	4	3	Yes	3	1, 3, 4, 5, 6, 7, 8, 9
93	<i>Olea europaea</i>	Olive	5+10	11	30	14	3	3	Yes	3	2
95	<i>Quercus agrifolia</i>	Coast Live Oak	3x12+2x10+4	25	22	16	3	3	Yes	3	1, 3, 4, 5, 6, 7, 8, 9
96	<i>Quercus agrifolia</i>	Coast Live Oak	15+5	16	25	16	4	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
97	<i>Quercus douglasii</i>	Blue Oak	6+5	8	20	14	3	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
98	<i>Quercus agrifolia</i>	Coast Live Oak	3x6+7	13	21	14	3	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
99	<i>Quercus agrifolia</i>	Coast Live Oak	3x8+2x12+10	24	18	21	3	2	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
100	<i>Quercus agrifolia</i>	Coast Live Oak	7+7+12+13	20	25	18	3	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
101	<i>Quercus agrifolia</i>	Coast Live Oak	10+10+12	19	25	20	3	3	Yes	3	2
102	<i>Olea europaea</i>	Olive	4x4	8	18	10	3	3	Yes	3	2
103	<i>Quercus agrifolia</i>	Coast Live Oak	12	12	18	18	4	3	Yes	3	2
104	<i>Quercus agrifolia</i>	Coast Live Oak	11	11	15	12	4	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
105	<i>Quercus agrifolia</i>	Coast Live Oak	10x4	13	30	18	3	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
106	<i>Quercus agrifolia</i>	Coast Live Oak	6	6	14	19	4	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
107	<i>Quercus agrifolia</i>	Coast Live Oak	25	25	25	20	3	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9

HORTICULTURAL ASSOCIATES
P.O. Box 1261, Glen Ellen, CA 95442
707.935.3911

TREE INVENTORY
Access Driveway
Sonoma, CA

June 7, 2017

Tree #	Species	Common Name	Trunk (dbh ± inches)	Multiple Trunk Conversion to TPZ (feet)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Tag?	Expected Impact	Recommendations
108	<i>Quercus agrifolia</i>	Coast Live Oak	5+8+10	14	18	18	2	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
109	<i>Quercus agrifolia</i>	Coast Live Oak	12+12+6+18	25	45	22	4	3	Yes	3	2
110	<i>Quercus agrifolia</i>	Coast Live Oak	10+10+8+8+6	19	35	18	4	3	Yes	3	2
111	<i>Quercus agrifolia</i>	Coast Live Oak	10+10+12+12	22	45	24	4	3	Yes	3	2
112	<i>Quercus agrifolia</i>	Coast Live Oak	14+14+12	23	40	21	4	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
113	<i>Olea europaea</i>	Olive	6+4+2+2	8	16	14	4	3	Yes	3	2
114	<i>Quercus agrifolia</i>	Coast Live Oak	10+14	17	35	18	4	3	No	1	1, 3, 4, 5, 6, 7, 8, 9
115	<i>Quercus agrifolia</i>	Coast Live Oak	12	12	35	18	4	3	No	1	1, 3, 4, 5, 6, 7, 8, 9
116	<i>Quercus agrifolia</i>	Coast Live Oak	12	12	35	18	4	3	No	1	1, 3, 4, 5, 6, 7, 8, 9
117	<i>Quercus agrifolia</i>	Coast Live Oak	8	8	35	18	4	3	No	1	1, 3, 4, 5, 6, 7, 8, 9
118	<i>Quercus agrifolia</i>	Coast Live Oak	14	14	35	20	4	3	No	1	1, 3, 4, 5, 6, 7, 8, 9
119	<i>Quercus agrifolia</i>	Coast Live Oak	13	13	35	20	4	3	No	1	1, 3, 4, 5, 6, 7, 8, 9
120	<i>Quercus agrifolia</i>	Coast Live Oak	16	16	40	20	4	3	Yes	1	1, 3, 4, 5, 6, 7, 8, 9
121	<i>Quercus agrifolia</i>	Coast Live Oak	12+9	15	40	20	4	3	Yes	1	1, 3, 4, 5, 6, 7, 8, 9
122	<i>Quercus agrifolia</i>	Coast Live Oak	12	12	25	21	4	3	Yes	1	1, 3, 4, 5, 6, 7, 8, 9
123	<i>Quercus agrifolia</i>	Coast Live Oak	10	10	40	18	4	3	Yes	1	1, 3, 4, 5, 6, 7, 8, 9
124	<i>Quercus agrifolia</i>	Coast Live Oak	8	8	35	14	4	3	Yes	3	2
125	<i>Quercus agrifolia</i>	Coast Live Oak	8+8+4	12	30	15	3	3	Yes	3	2

HORTICULTURAL ASSOCIATES
P.O. Box 1261, Glen Ellen, CA 95442
707.935.3911

TREE INVENTORY
Access Driveway
Sonoma, CA

June 7, 2017

Tree #	Species	Common Name	Trunk (dbh ± inches)	Multiple Trunk Conversion to TPZ (feet)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Tag?	Expected Impact	Recommendations
126	<i>Quercus agrifolia</i>	Coast Live Oak	3x12+2x15+4+14	33	45	30	2	2	Yes	3	1, 3, 4, 5, 6, 7, 8, 9
127	<i>Quercus agrifolia</i>	Coast Live Oak	18	18	40	20	4	3	Yes	3	2
128	<i>Quercus agrifolia</i>	Coast Live Oak	3x18+3x12	40	40	30	4	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
175	<i>Quercus agrifolia</i>	Coast Live Oak	4x12+3x15	35	45	30	4	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
176	<i>Quercus agrifolia</i>	Coast Live Oak	8+4	9	22	12	4	3	Yes	3	1, 3, 4, 5, 6, 7, 8, 9
177	<i>Quercus agrifolia</i>	Coast Live Oak	13	13	40	25	4	3	Yes	2	1, 3, 4, 5, 6, 7, 8, 9
178	<i>Quercus agrifolia</i>	Coast Live Oak	5+12+13	18	40	25	4	3	Yes	3	2
179	<i>Quercus agrifolia</i>	Coast Live Oak	8	8	30	16	4	4	Yes	3	1, 3, 4, 5, 6, 7, 8, 9
180	<i>Quercus agrifolia</i>	Coast Live Oak	6+8	10	25	15	3	3	Yes	3	1, 3, 4, 5, 6, 7, 8, 9
181	<i>Quercus agrifolia</i>	Coast Live Oak	12+15+20	28	45	25	4	3	Yes	3	2
182	<i>Olea europaea</i>	Olive	6+5+4+3+3	10	18	12	4	3	Yes	3	2
183	<i>Quercus agrifolia</i>	Coast Live Oak	6+10+10+12+14	23	45	28	4	3	Yes	1	1, 3, 4, 5, 6, 7, 8, 9

KEY TO TREE
INVENTORY CHART

KEY TO TREE INVENTORY CHART

Access Driveway
Sonoma, California

Tree Number

Each tree has been identified in the field with an aluminum tag and reference number. Tags are attached to the trunk at approximately eye level and the *Tree Location Plan* illustrates the location of each numbered tree.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

The diameter of each trunk has been estimated at 4.5 feet above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size, or different than what is actually present. Radius is generally used as an area of root zone to be protected from development activity.

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

- (5) Excellent - health and vigor are exceptional, no pest, disease, or distress symptoms.
- (4) Good - health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.
- (3) Fair - health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.
- (2) Marginal - health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.
- (1) Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

- (4) Good structure - minor structural problems may be present which do not require corrective action.
- (3) Moderate structure - normal, typical structural issues which can be corrected with pruning.
- (2) Marginal structure - serious structural problems are present, which may or may not be correctable with pruning, cabling, bracing, etc.
- (1) Poor structure - hazardous structural condition that cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

Development Impacts

Considering the proximity of construction activities, type of activities, tree species, and tree condition the following ratings are used to estimate the amount of impact on tree health and stability. Most trees will tolerate a (1) rating, many trees could tolerate a (2) rating with careful consideration and mitigation, but trees with a (3) rating are poor candidates for preservation due to their very close proximity to construction or because they are located within the footprint of construction and cannot be preserved.

- (3) Significant impact on long-term tree integrity can be expected as a result of proposed development.
- (2) Moderate impact on long-term tree integrity can be expected as a result of proposed development.
- (1) Minor impact on long-term tree integrity can be expected as a result of proposed development.
- (0) No impact is expected

Recommendations

Recommendations are provided for removal or preservation. For those being preserved, protection measures and mitigation procedures to offset impacts and improve tree health are provided.

- (1) Preservation appears to be possible.
- (2) Removal is required due to significant development impacts.

KEY TO TREE INVENTORY CHART

(3) Install temporary protective fencing prior to beginning any grading or construction at the site. Tree protection fencing shall be located at the edge of the Tree Protection Zone (TPZ), which is designated as one foot from the trunk for each one-inch of trunk diameter as documented in the attached Tree Inventory. As an example, a trunk diameter of 12 inches requires a protective fence 12 feet from the trunk.

Fencing must be retained in the designated location for the duration of all construction activity in the area. Fences may not be modified for any reason without the written approval of the project arborist.

Tree protection fencing must conform to the Tree Fencing Detail included in this report, or an approved equivalent.

(4) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and all underground work outside the dripline.

(5) Place a 4" layer of chipped bark mulch over the soil surface within the Tree Protection Zone prior to installing temporary fencing. Maintain this layer of mulch throughout construction.

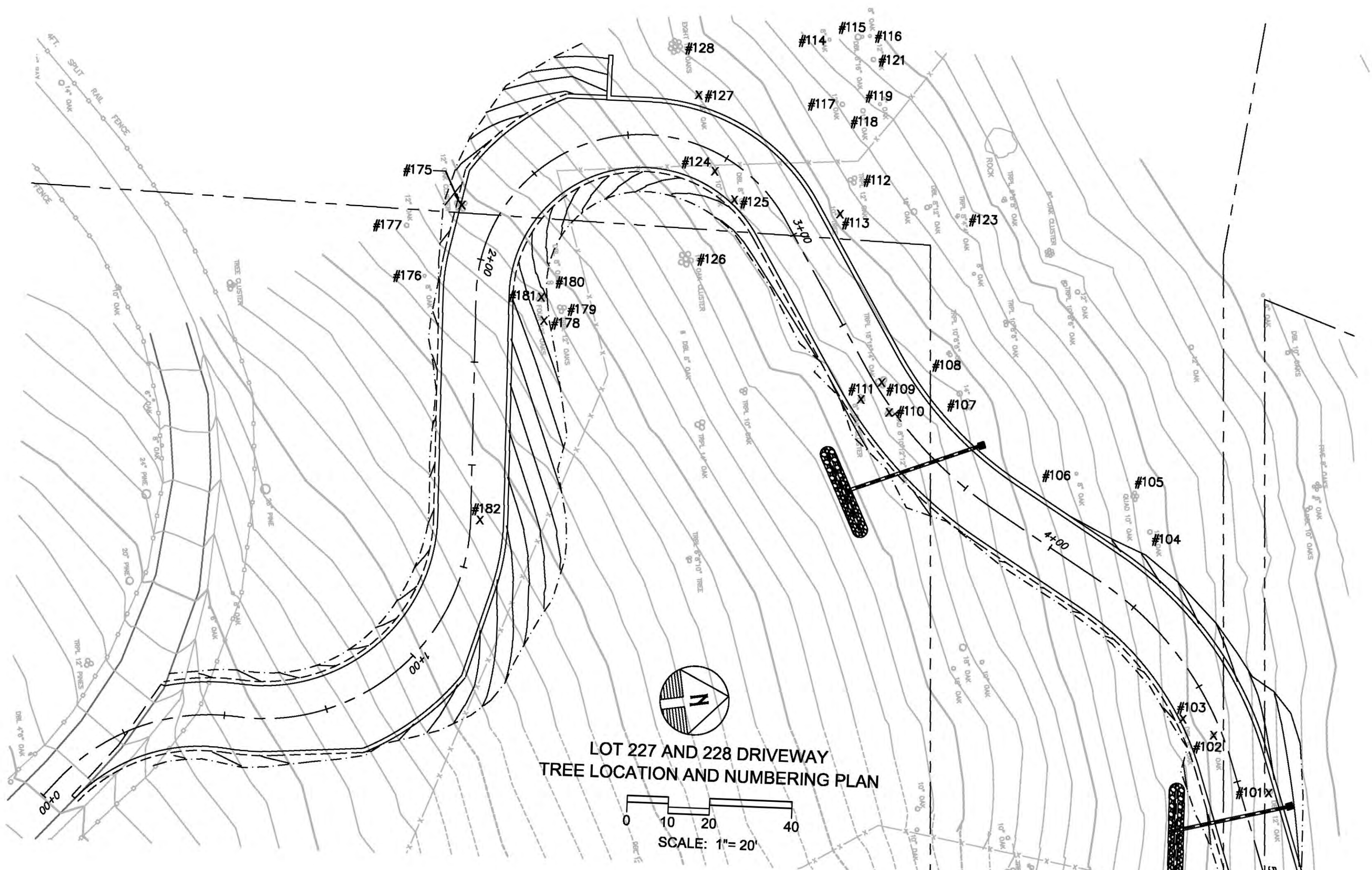
(6) Prune to clean, raise, or provide necessary clearance, per International Society of Arboriculture Pruning Standards. Pruning to occur by, or under the supervision of, an Arborist certified by the International Society of Arboriculture.

(7) Any approved grading that occurs within the designated Tree Protection Zone (TPZ) must be completed under the direction of the project arborist. All roots greater than one inch in diameter shall be cleanly pruned prior to cut grading activity using a sharp pruning saw, cut-off saw, or other approved tool that provides a clean cut. Cut roots must be protected from desiccation if they are exposed to air for more than 24 hours by covering the root end or cut root area with a wet fabric material. Burlap or used carpeting works well for this purpose. No sealant is required on cut roots.

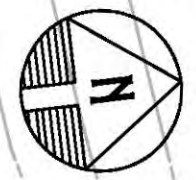
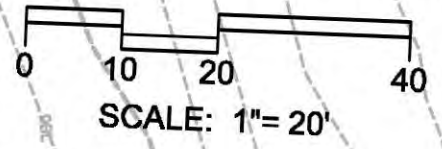
(8) Trees that receive impacts within their designated Tree Protection Zones (TPZ) may require post construction mitigation measures to assist in their recovery. Mitigation measures will be determined by the project arborist on a tree-by-tree basis depending on the extent of impact. Measures could include, but are not limited to, additional mulching and periodic irrigation.

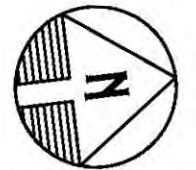
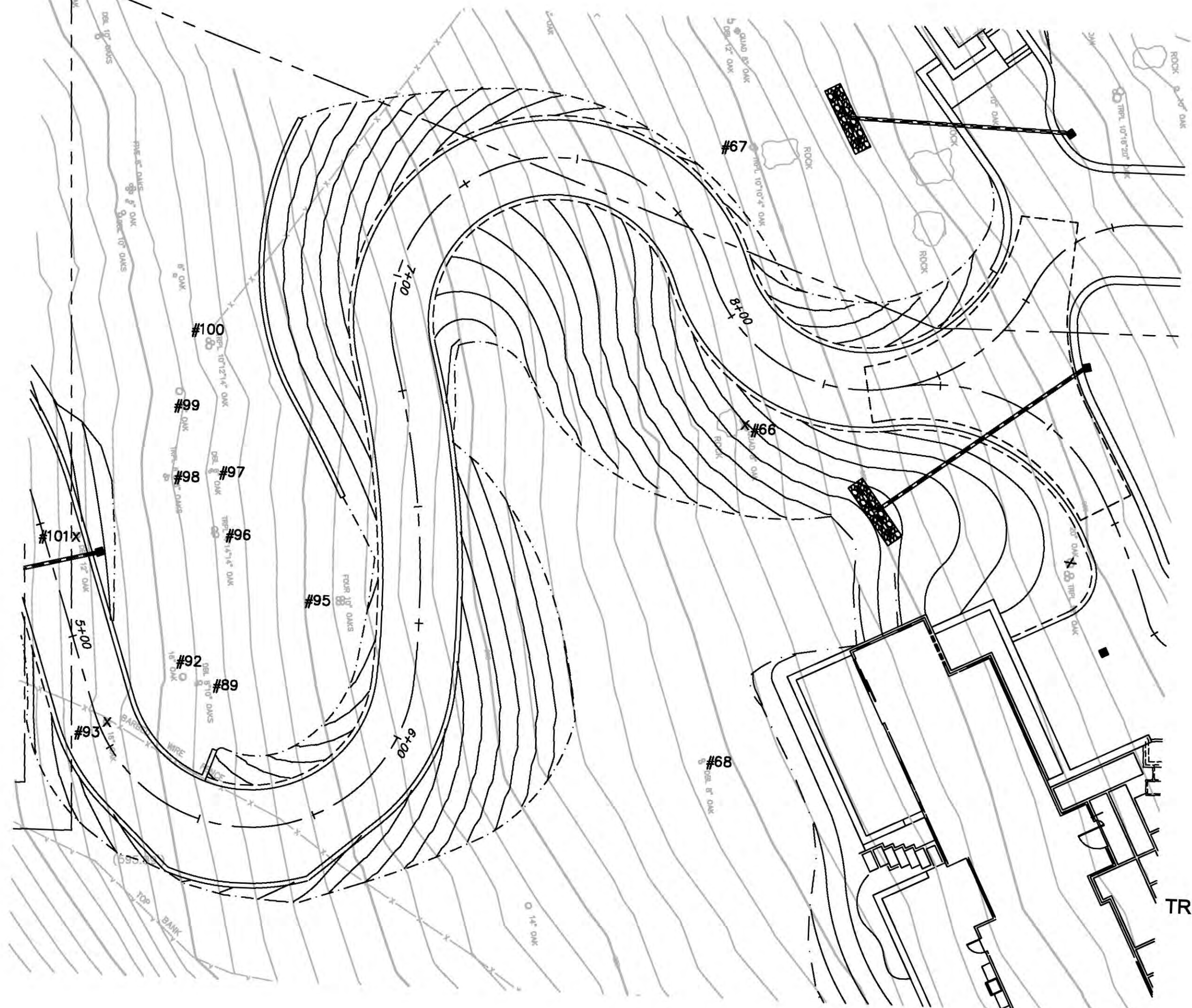
(9) Removal of trees approved for removal has the potential to significantly impact adjacent trees that are being preserved, and the project arborist must direct these demolition activities. Trees being removed may not be pushed out of the ground to keep from damaging preserved tree root systems and will require trunk grinding. Removal activities may not damage the canopies of adjacent trees. Removal equipment may not work within the designated Tree Protection Zones of preserved trees.

TREE LOCATION PLAN

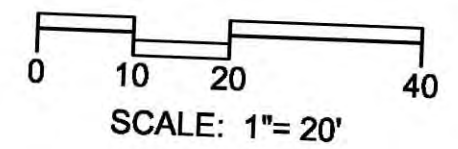


LOT 227 AND 228 DRIVEWAY
 TREE LOCATION AND NUMBERING PLAN

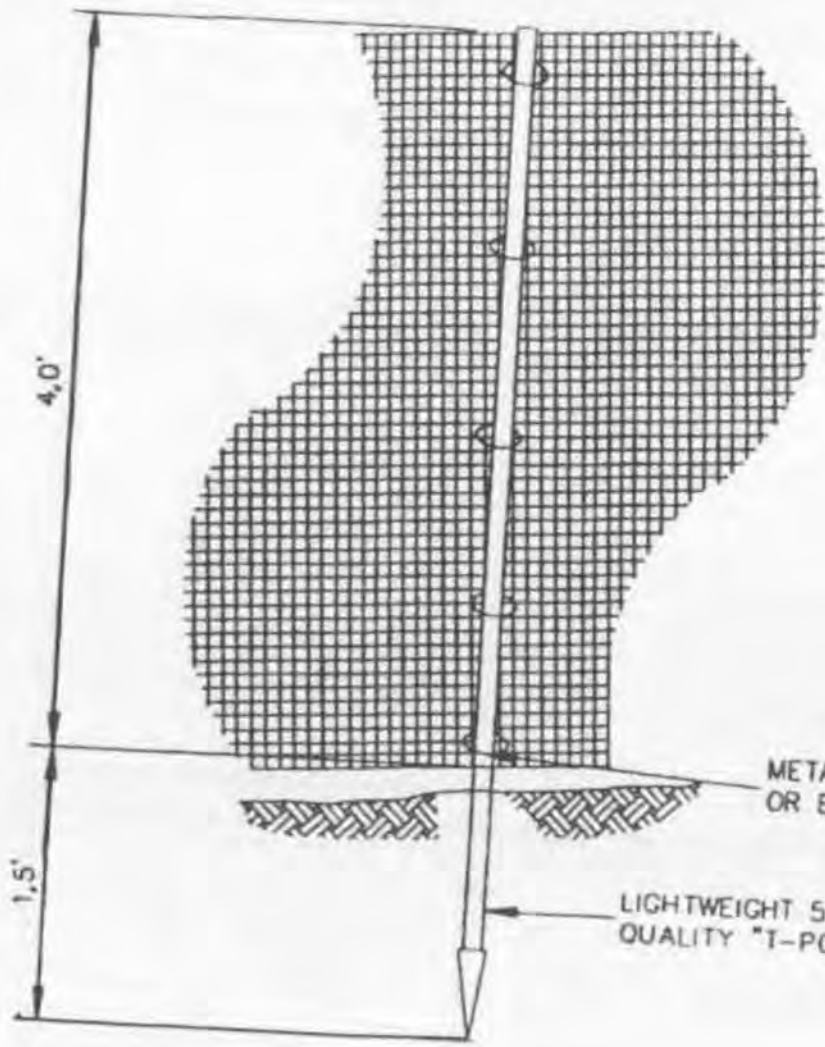




LOT 227 AND 228 DRIVEWAY
TREE LOCATION AND NUMBERING PLAN



TREE FENCING DETAIL



NOTE:
 TENSOR LIGHTWEIGHT SAFTY GRID, ORANGE
 COLOR, BX226516, CUT OR FOLD AT POSTS
 AS NEEDED TO CONFORM TO SLOPING TERRAIN.

METAL TIE WIRE, FLIP TIE
 OR EQUIVALENT, 5 PER POST

LIGHTWEIGHT 5 1/2' HIGH STANDARD FARM
 QUALITY "T-POST" PLACED 8' C-C

TREE PROTECTION FENCING DETAIL

ATTACHMENT 7

HISTORICAL RESOURCES STUDY

**Historical Resources Study of APNs
018-051-007, 018-051-012, and 018-091-018
Sonoma, Sonoma County, California**

Eileen Barrow, M.A.

May 3, 2017
Revised
May 8, 2017



**Historical Resources Study of APNs
018-051-007, 018-051-012, and 018-091-018
Sonoma, Sonoma County, California**

Prepared by:

Eileen Barrow

Eileen Barrow, M.A.

Tom Origer & Associates
Post Office Box 1531
Rohnert Park, California 94927
(707) 584-8200

Prepared for:

City of Sonoma
1 The Plaza
Sonoma, California 95476

May 3, 2017
Revised
May 8, 2017

ABSTRACT

Tom Origer & Associates conducted an historical resources survey of 12.7 acres of land located northwest of the intersection of 4th Street East and Brazil Street, Sonoma, Sonoma County, California. The study was requested and authorized by David Goodison of the City of Sonoma. This study was conducted to meet the requirements of the City of Sonoma and those of the California Environmental Quality Act. The purpose of this report is to identify historical resources (see definition of historical resources in the Regulatory Context section). This report will not address Tribal Cultural Resources as defined in Public Resources Code [PRC] 21074 (a)(1)(A)-(B).

The proposed activity within the study area consists of three use permit applications to develop three separate, but adjoining, parcels; each with a single-family residence. The development of the three residences includes extending a shared private drive to provide for access.

This study included archival research at the Northwest Information Center, Sonoma State University (NWIC File No. 16-1633), examination of the library and files of Tom Origer & Associates, Native American contact, and field inspection of the study area. No historical resources were found within the study area. Documentation pertaining to this study is on file at the offices of Tom Origer & Associates (File No. 2017-043S).

Synopsis

Project: 4th and Brazil
Location: 4th Street East and Brazil Street, Sonoma, Sonoma County
APNs: 018-091-018, 018-051-007, and 018-051-012
Quadrangles: Sonoma 7.5' series
Study Type: Intensive
Scope: 12.7 acres
Finds: None

Project Personnel

Eileen Barrow

Mrs. Barrow has been with Tom Origer & Associates since 2005. She holds a Master of Arts in cultural resources management from Sonoma State University. Mrs. Barrow's experience includes work that has been completed in compliance with local ordinances, CEQA, NEPA, and Section 106 (NHPA) requirements. Her professional affiliations include the Society for American Archaeology, the Society for California Archaeology, the California Historical Society, the Sonoma County Historical Society, and the Western Obsidian Focus Group.

CONTENTS

ABSTRACT	I
Synopsis.....	i
Project Personnel.....	ii
INTRODUCTION	1
REGULATORY CONTEXT.....	1
Resource Definitions	2
Significance Criteria.....	2
PROJECT SETTING.....	3
Study Area Location and Description	3
Cultural Setting.....	3
STUDY PROCEDURES	5
Native American Contact	5
Archival Study Procedures	5
Field Survey Procedures.....	6
STUDY FINDINGS	6
Native American Contact Results.....	6
Archival Study Findings.....	6
Field Survey Findings.....	7
RECOMMENDATIONS.....	8
Known Resources.....	8
Accidental Discovery	8
SUMMARY.....	9
MATERIALS CONSULTED.....	10
APPENDIX A: Native American Contact	

FIGURES

Figure 1. Project vicinity (adapted from the 1980 Santa Rosa 1:250,000-scale USGS map).....	1
Figure 2. Study area location (adapted from the 1980 USGS Sonoma 7.5' USGS topographic map).....	4

INTRODUCTION

This report describes an historical resources survey of 12.7 acres located northwest of the intersection of 4th Street East and Brazil Street, Sonoma, Sonoma County, California. The study was requested and authorized by David Goodison of the City of Sonoma and was conducted to meet the requirements of the City of Sonoma and those of the California Environmental Quality Act. Proposed development within the study area includes construction of three residences, related accessory structures, and driveway improvements. Documentation pertaining to this study is on file at Tom Origer & Associates (File No. 2017-043S).

REGULATORY CONTEXT

The California Environmental Quality Act (CEQA) requires that historical resources be considered during the environmental review process. This is accomplished by an inventory of resources within a study area and by assessing the potential that historical resources could be affected by development. The term “Historical Resources” encompasses prehistoric and historical archaeological sites and built environment resources (e.g., buildings, bridges, canals). An additional category of resources is defined in CEQA under the term “Tribal Cultural Resources” (Public Resources Code Section 21074). They are not addressed in this report. Tribal cultural resources are resources that are of specific concern to California Native American tribes, and knowledge of such resources is limited to tribal people. Pursuant to revisions to CEQA enacted in July of 2015, such resources are to be identified by tribal people in direct, confidential consultation with the lead agency (PRC §21080.3.1).

This historical resources survey was designed to satisfy environmental issues specified in the CEQA and its guidelines (Title 14 CCR §15064.5) by: (1) identifying all historical resources within the project area; (2) offering a preliminary significance evaluation of the identified cultural resources; (3) assessing resource vulnerability to effects that could arise from project activities; and (4) offering suggestions designed to protect resource integrity, as warranted.

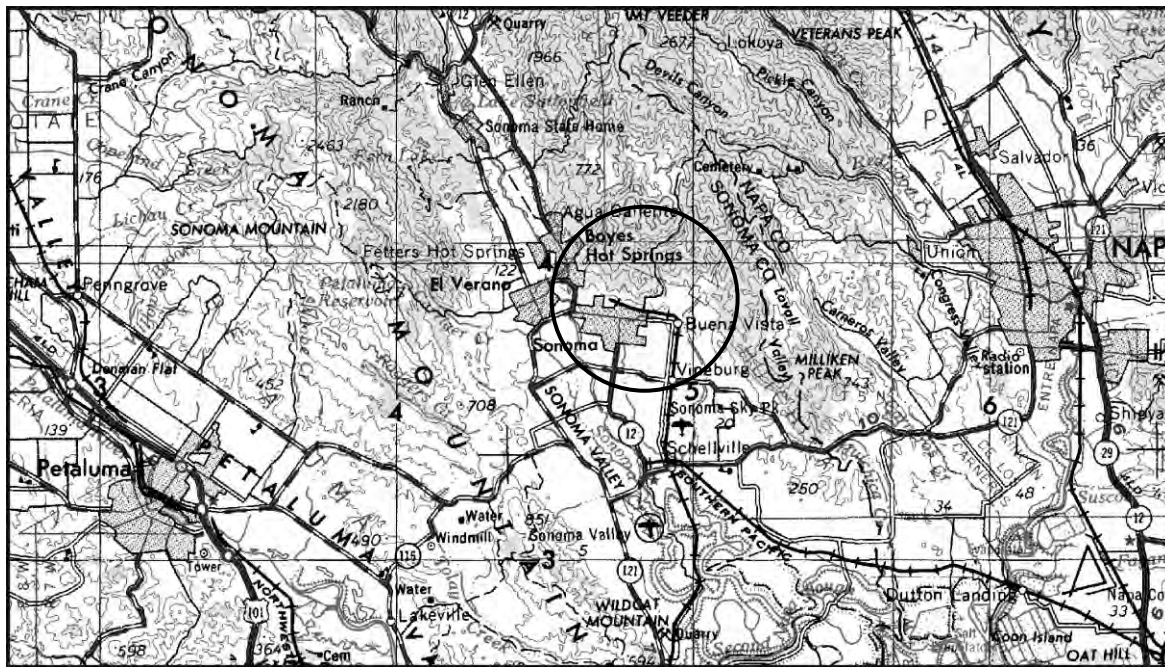


Figure 1. Project vicinity (adapted from the 1980 Santa Rosa 1:250,000-scale USGS map).

Resource Definitions

Historical resources are classified by the State Office of Historic Preservation (OHP) as sites, buildings, structures, objects and districts, and each is described by OHP (1995) as follows.

Site. A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure.

Building. A building, such as a house, barn, church, hotel, or similar construction, is created principally to shelter any form of human activity. "Building" may also be used to refer to a historically and functionally related unit, such as a courthouse and jail, or a house and barn.

Structure. The term "structure" is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter.

Object. The term "object" is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although it may be, by nature or design, movable, an object is associated with a specific setting or environment.

District. A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.

Significance Criteria

When a project might affect an historical resource, the project proponent is required to conduct an assessment to determine whether the effect may be one that is significant. Consequently, it is necessary to determine the importance of resources that could be affected. The importance of a resource is measured in terms of criteria for inclusion on the California Register of Historical Resources (Title 14 CCR, §4852(a)) as listed below. A resource may be important if it meets any one of the criteria below, or if it is already listed on the California Register of Historical Resources or a local register of historical resources.

An important historical resource is one which:

1. Is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
2. Is associated with the lives of persons important to local, California, or national history.
3. Embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of a master or possesses high artistic values.
4. Has yielded, or may be likely to yield, information important to the pre-history or history of the local area, California, or the nation.

In addition to meeting one or more of the above criteria, eligibility for the California Register requires that a resource retains sufficient integrity to convey a sense of its significance or importance. Seven elements are considered key in considering a property's integrity: location, design, setting, materials, workmanship, feeling, and association.

The OHP advocates that all historical resources over 45 years old be recorded for inclusion in the OHP filing system (OHP 1995:2), although the use of professional judgment is urged in determining whether a resource warrants documentation.

PROJECT SETTING

Study Area Location and Description

The study area is located northwest intersection of 4th Street East and Brazil Street, Sonoma, Sonoma County, as shown on the Sonoma 7.5' USGS topographic map (Figure 2). It consists of 12.7 acres situated on level to steeply sloped land.

The geology of the study area consists of aphyric andesite lava flows of the Sonoma Volcanics that date to approximately eight million years old (Wagner *et al.* 2004).

Soils within the study area belong to the Goulding-Toomes complex (Miller 1972:Sheet 108). Goulding soils consist of well-draining, clay loams found on mountainous uplands. In a natural state these soils support the growth of grasses, scattered oaks, manzanita, and small shrubs. Historically, parcels found on lower slopes containing Goulding soils were used for oat and vetch hay, or for dryland pastures (Miller 1972:38). Toomes soils consist of well-draining loams found on gently sloping ridgetops and very steep mountains uplands. In a natural state, they support the growth of grasses, forbs, coffeeberry, Toyon, small shrubs, and an occasional oak tree. Historically these soils have been used for sheep and cattle range, wildlife habitat, and watershed (Miller 1972:84).

Nathanson Creek is located approximately 550 meters south of the southern boundary of the study area.

Cultural Setting

Archaeological evidence indicates that human occupation of California began at least 11,000 years ago (Erlandson *et al.* 2007). Early occupants appear to have had an economy based largely on hunting, with limited exchange, and social structures based on the extended family unit. Later, milling technology and an inferred acorn economy were introduced. This diversification of economy appears to be coeval with the development of sedentism and population growth and expansion. Sociopolitical complexity and status distinctions based on wealth are also observable in the archaeological record, as evidenced by an increased range and distribution of trade goods (e.g., shell beads, obsidian tool stone), which are possible indicators of both status and increasingly complex exchange systems.

At the time of European settlement, the study area was included in the territory controlled by the Coast Miwok (Barrett 1908; Kelly 1978). The Coast Miwok were hunter-gatherers who lived in rich environments that allowed for dense populations with complex social structures (Barrett 1908; Kroeber 1925). They settled in large, permanent villages about which were distributed seasonal camps and task-specific sites.

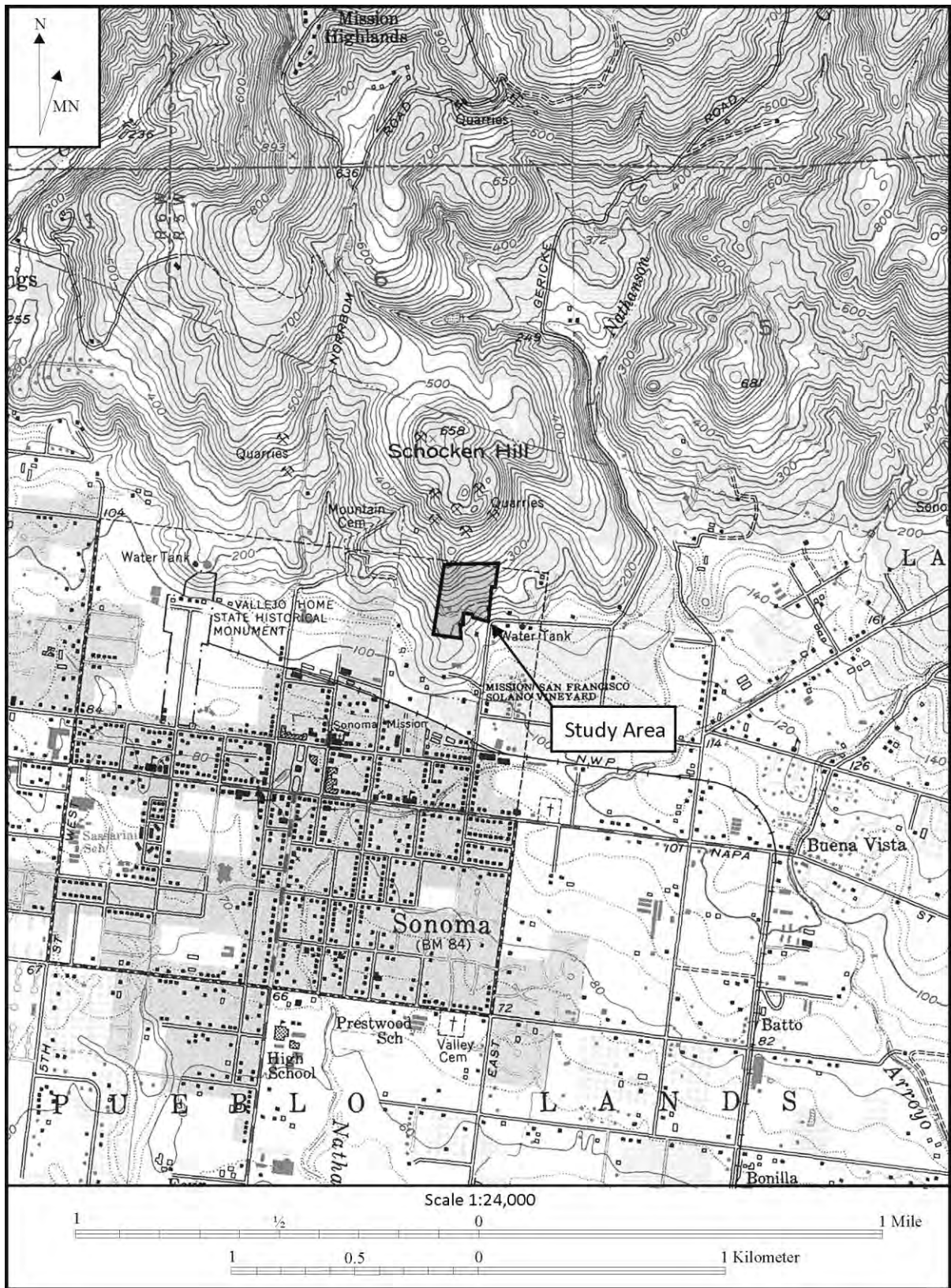


Figure 2. Study area location (adapted from the 1980 USGS Sonoma 7.5' USGS topographic map).

Primary village sites were occupied throughout the year and other sites were visited to procure particular resources that were especially abundant or available only during certain seasons. Sites often were situated near sources of fresh water and in ecotones where plant life and animal life were diverse and abundant.

Historically, the study area is situated on lands once claimed by the Mission San Francisco Solano de Sonoma (hereafter, the Sonoma Mission) (GLO 1880). The Sonoma Mission was the last of 21 missions established in California by Franciscan missionaries between 1769 and 1823. In 1833, the Mexican government began secularizing California mission lands. After futile starts in the Petaluma and Santa Rosa areas, Governor José Figueroa commissioned General Mariano Vallejo, former *Commandante* of the San Francisco Presidio and *Comissionado* of the Mission San Francisco de Solano, to establish a presidio and pueblo at Sonoma. About 6,064 acres of mission lands were set aside for the pueblo in 1834, excluding a two-acre parcel containing the mission buildings and the 12-acre mission vineyard. The mission is located less than half of a mile southwest of the study area.

STUDY PROCEDURES

Native American Contact

A request was sent to the State of California's Native American Heritage Commission seeking information from the sacred lands files and the names of Native American individuals and groups that would be appropriate to contact regarding this survey. Letters were also sent to the following groups:

- Federated Indians of Graton Rancheria
- Kashia Band of Pomo Indians of the Stewarts Point
- Lytton Rancheria of California
- Middletown Rancheria of Pomo Indians
- Mishewal-Wappo Tribe of Alexander Valley

This contact represents notification regarding the survey and proposed development activities and provides an opportunity for comment. It does not constitute consultation with tribes.

Archival Study Procedures

Archival research included examination of the library and project files at Tom Origer & Associates. A review (NWIC File No. 16-1633) was completed of the archaeological site base maps and records, survey reports, and other materials on file at the Northwest Information Center (NWIC), Sonoma State University, Rohnert Park. Sources of information included but were not limited to the current listings of properties on the National Register of Historic Places, California Historical Landmarks, California Register of Historical Resources, and California Points of Historical Interest as listed in the Office of Historic Preservation's *Historic Property Directory* (OHP 2012).

The Office of Historic Preservation has determined that structures more than 45 years of age should be considered potentially important historical resources, and former building and structure locations could be potentially important historic archaeological sites. Archival research included an examination of historical maps to gain insight into the nature and extent of historical development in the general vicinity, and especially within the study area. Maps ranged from hand-drawn maps of the 1800s (e.g., GLO) to topographic maps issued by the United States Geological Survey (USGS) and the United States Army Corps of Engineers (USACE).

In addition, ethnographic literature that describes appropriate Native American groups, county histories, and other primary and secondary sources were reviewed. Sources reviewed are listed in the "Materials Consulted" section of this report.

Field Survey Procedures

An intensive field survey was completed by Eileen Barrow on April 20, 2017. Ground visibility ranged from good to poor, with vegetation, imported gravel, asphalt, and buildings being the primary hindrances.

Based on the results of the prefield research, it was anticipated that prehistoric and historic-period resources could be found within the study area. Prehistoric archaeological site indicators expected to be found in the region include but are not limited to: obsidian and chert flakes and chipped stone tools; grinding and mashing implements such as slabs and hand-stones, and mortars and pestles; and locally darkened midden soils containing some of the previously listed items plus fragments of bone, shellfish, and fire affected stones. Historic period site indicators generally include: fragments of glass, ceramic, and metal objects; milled and split lumber; and structure and feature remains such as building foundations and discrete trash deposits (e.g., wells, privy pits, dumps).

STUDY FINDINGS

Native American Contact Results

The Native American Heritage Commission replied with a letter dated April 19, 2017, in which they indicated that the sacred land file has no information about the presence of Native American cultural resources in the immediate project area. An email from Ms. McQuillen was received on April 26, 2017 stating that within 10 days she would review the project. No other responses have been received as of the date of this report. A log of contact efforts is appended to this report, along with copies of correspondence (see Appendix A).

Archival Study Findings

Archival research found that the study area had not been previously subject to a cultural resources survey. Eight surveys have been conducted adjacent to, or within a ¼ mile of the study area (Beard 1995; Beard *et al.* 1991; Bryne 2000; Chattan 2006a; Dawson 2013a; Fredrickson and Hayes 1988; Lowe and Fredrickson 1976; Praetzellis 1987). Three cultural resources have been recorded within ¼ mile of the study area (Chattan 2006b; Dawson 2013b; Tom Origer & Associates 2000).

The closest resource is approximately 500 feet from the study area and would not extend into the study area.

The closest ethnographic village is reportedly located over ¼ of a mile from the study area (Barrett 1908).

A review of 19th and 20th century maps suggest that buildings were present within the study area as early as 1902, however county records indicate that a house was constructed within the study area in 1930 (USGS 1902). Due to the scale of the 1902 map, it is possible that the buildings shown are on

adjacent parcels. No buildings are shown in the study area prior to this date (Bell and Heymans 1888; Bowers 1867; GLO 1858; McIntire and Lewis 1908; Peugh 1934; Reynolds and Proctor 1898).

An aerial photo from 1948 shows a house within the study area just west of the intersection of 4th Street East and Brazil Street. By 1968, that house is no longer present, but a house is located in the central portion of the study area, and the current driveway leads up to it from the approximate location of the 1948 house (just west of the intersection of 4th Street East and Brazil Street).

No other buildings are visible on aerial photos within the study area until 2004 when the pump house is visible. It is possible the other buildings are not visible due to the number of trees on the property.

Information about the history of the vicinity of the study area was provided to the City by Patricia Cullinan, a local historian. Ms. Cullinan provided a brief property history of City of Sonoma Lots #1 and #2 (see Thompson 1877 or Reynolds and Proctor 1898 for reference), which are located southwest of the study area off of 2nd Street East. In addition, she stated that warm springs were known to be in this portion of Sonoma, and that there would potentially be Native American sites in the vicinity of the warm springs, as these could have been important locations for them.

Field Survey Findings

Archaeology

No archaeological site indicators were found during this survey.

Built Environment

A house, a carport, a large dog house, two sheds, a pump house, a cistern, a stone alignment, and a small road segment were found within the study area.

The house consists of a two story, wood-framed building with a side-gabled roof. The building has two single-story, gabled additions on the southwest side. On the northwest side of the building there is a gabled porch over the front door. All of the windows in the house appear to be aluminum side-sliders. The siding consisted of faux shingles. A deck wraps around from the southwest side of the building to the southeast side. There is also a deck on the southeast side of the second story portion of the house.

The carport and large dog house are both shed-roofed buildings located just northwest of the house. The two sheds are located toward the southern portion of the study area. One shed is a machine shed, and the other shed is enclosed.

The pump house and cistern are located just northeast of the intersection of 4th Street East and Brazil streets. The pump house is a small gabled building on a concrete pad. The cistern is approximate four feet by six feet and is made of cinder blocks and concrete. It is covered with boards.

The stone alignment constructed of dry-laid fieldstones of irregular sizes. Much of the alignment is only one or two courses tall. The stones are stacked irregularly or piled. The alignment is located in the central portion of the study area and does not appear that any segment of this alignment followed a property line.

No built or archaeological remains were found relating to the house shown on older maps just west of the intersection of 4th Street East and Brazil Street.

No evidence of warm springs were found within the study area.

RECOMMENDATIONS

Known Resources

Archaeology

No archaeological remains were observed during our survey; therefore, no resource specific recommendations are required.

Built Environment

The buildings and structures within the study area will not be impacted by this project, therefore no further recommendations are required.

The stone alignment on the property does not appear to be associated with any type of historical property line. The fence is not well constructed, and does not display any characteristics of the work of a master or type of design. Because of this, the stone alignment does not appear to meet criteria for inclusion on the California Register of Historical Resources and no further recommendations are required.

Accidental Discovery

Determining the potential for buried deposits factors includes landform age, distance to water, slope of the study area, and archaeological data (Meyer *et al.* 2016). The study area was primarily on a slope, and is only moderately close to water. The geology of the study area is made up of Miocene epoch volcanic deposits. These geologic deposits are approximately eight million years old. Buried prehistoric archaeological sites are found in or beneath Holocene-age (11,700 years old to present) depositional landforms (Meyer and Rosenthal 2007). Because the landform predates generally accepted dates for the presence of anatomically modern humans, there is a <1% chance of their being buried archaeological site indicators within the study area.

In keeping with the CEQA guidelines, if archaeological remains are uncovered, work at the place of discovery should be halted immediately until a qualified archaeologist can evaluate the finds (§15064.5 [f]). Prehistoric archaeological site indicators include: obsidian and chert flakes and chipped stone tools; grinding and mashing implements (e.g., slabs and handstones, and mortars and pestles); bedrock outcrops and boulders with mortar cups; and locally darkened midden soils. Midden soils may contain a combination of any of the previously listed items with the possible addition of bone and shell remains, and fire-affected stones. Historic period site indicators generally include: fragments of glass, ceramic, and metal objects; milled and split lumber; and structure and feature remains such as building foundations and discrete trash deposits (e.g., wells, privy pits, dumps).

The following actions are promulgated in the CEQA Guidelines Section 15064.5(d) and pertain to the discovery of human remains. If human remains are encountered, excavation or disturbance of the location must be halted in the vicinity of the find, and the county coroner contacted. If the coroner determines the remains are Native American, the coroner will contact the Native American Heritage Commission. The Native American Heritage Commission will identify the person or persons believed

to be most likely descended from the deceased Native American. The most likely descendent makes recommendations regarding the treatment of the remains with appropriate dignity.

SUMMARY

Tom Origer & Associates completed an historical resources study of 12.7 acres located northwest of the intersection of 4th Street East and Brazil Street, Sonoma, Sonoma County, California. The study was requested and authorized by David Goodison of the City of Sonoma. This study was conducted to meet the requirements of the City of Sonoma and those of the California Environmental Quality Act. No historical resources were found within the study area and therefore no resource-specific recommendations are warranted. Documentation pertaining to this study is on file at the offices of Tom Origer & Associates (File No. 2017-043S).

MATERIALS CONSULTED

Barrett, S.

1908 *The Ethno-Geography of the Pomo and Neighboring Indians*. University of California Publications in American Archaeology and Ethnology Vol. 6, No. 1:1-322. University of California Press, Berkeley.

Beard, V.

1995 *A Cultural Resources Survey for the Sabina Estates II Development, Fourth Street East, Sonoma, Sonoma County, California*. Document S-17049 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.

Beard, V., S. Atchley, and D. Fredrickson

1991 *An Archaeological Study of the LaVigna Property, Sonoma, Sonoma County, California*. Document S-12879 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.

Bell and Heymans

1888 *Map of Sonoma County, California*. Bell and Heymans, San Francisco.

Bowers, A.

1867 *Map of Sonoma County, California*. 2nd ed. A. Bowers.

Bryne, S.

2000 *An Archaeological Survey of the Proposed Sonoma Mountain Cemetery Trail, Sonoma County, California*. Document S-23209 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.

Byrd, B., A. Whitaker, and P. Mikkelsen

2016 *Caltrans District 4 Research Design and Treatment Plan for Native American Archaeological Resources in the San Francisco Bay-Delta Region*. On file at the Caltrans District 04 Office of Cultural Resource Studies, Oakland, California.

Chattan, C.

2006a *A Cultural Resources Evaluation of the Property Located at 240 Second Street East, Sonoma, Sonoma County, California (APN 047-214-005)*. Document S-32073 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.

2006b Primary Record for P-49-003561. Document on file at the Northwest Information Center, Sonoma State University, Rohnert Park.

Dawson, A.

2013a Letter report regarding a Survey and Evaluation for 216, 230 & 254 First Street East, Sonoma (APN: 018-131-012; 018-131-013; 018-131-018). Document S-44604 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.

2006b Primary Record for P-49-004739. Document on file at the Northwest Information Center, Sonoma State University, Rohnert Park.

Department of Parks and Recreation

1976 *California Inventory of Historical Resources*. State of California, Sacramento.

- Erlandson, J. T. Rick, T. Jones, J. Porcasi
 2007 One if by Land, Two if by Sea: Who Were the First Californians? In: *California Prehistory: Colonization, Culture, and Complexity*. (pp 53-62) T. Jones and K. Klar, editors. AltaMira Press. Lanham, MD.
- Fredrickson, D.
 1984 The North Coastal Region. In *California Archaeology*, edited by M. Moratto. Academic Press, San Francisco.
- Fredrickson, D. and J. (Mick) Hayes
 1988 *An Archaeological Field Investigation of the Proposed Villa Sonoma Development at 200 Second Street East, Sonoma, Sonoma County, California*. Document S-9587 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.
- General Land Office (GLO)
 1858 *Plat of the Pueblo Lands of Sonoma*. Department of the Interior, Washington, D.C.
- Hoover, M., H. Rensch, E. Rensch, and W. Abeloe
 1966 *Historic Spots in California*. 3rd edition. Stanford University Press, Stanford.
- Hoover, M., H. Rensch, E. Rensch, W. Abeloe, and D. Kyle
 1990 *Historic Spots in California*. 4th edition. Stanford University Press, Stanford.
- Hoover, M., H. Rensch, E. Rensch, W. Abeloe, and D. Kyle
 2002 *Historic Spots in California*. 5th edition. Stanford University Press, Stanford.
- Kelly, I.
 1978 Coast Miwok. In *California*, edited by R. Heizer, pp. 414-425. Handbook of North American Indians, Vol. 8, W. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.
- Kroeber, A.
 1925 *Handbook of the Indians of California*. Bureau of American Ethnology, Bulletin 78, Smithsonian Institution, Washington, D.C.
- Lowe, R.A. and D. Fredrickson
 1976 *An Archaeological Survey of Schocken Hill, Sonoma, Sonoma County, California*. Document S-323 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.
- Massey, S.
 2012 *Historic Property Survey Report for the Napa-Leveroni Rd/Highway 12 Project*. Document S-40342 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.
- McIntire and Lewis
 1908 *Official Map of the County of Sonoma, California*. County of Sonoma, Santa Rosa.
- Meyer, J., P. Kaijankoski, and J. Rosenthal
 2016 Discovering Sites: Geoarchaeological Approaches to Site Sensitivity and Predictive Modeling. In, *Caltrans District 4 Research Design and Treatment Plan for Native American Archaeological Resources in the San Francisco Bay-Delta Region*. B. Byrd, A. Whitaker, and

- P. Mikkelsen. Pp 4-1 through 4-13. On file at the Caltrans District 04 Office of Cultural Resource Studies, Oakland, California.
- Meyer, J. and J. Rosenthal
2007 *Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4*. Document S-33600 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.
- Miller, V.
1972 *Soil Survey of Sonoma County, California*. U.S. Department of Agriculture in cooperation with the University of California Agricultural Experiment Station.
- Moratto, M.
1984 *California Archaeology*. Academic Press, San Francisco.
- Office of Historic Preservation
1995 *Instructions for Recording Historical Resources*. California Office of Historic Preservation, Sacramento.
2012 *Historic Property Directory*. Office of Historic Preservation, Sacramento.
- Peugh, E.A.
1934 *Map of Sonoma County, California*. E.A. Peugh, Santa Rosa.
- Praetzellis, A.
1990 Primary Record for P-49-002305. Document on file at the Northwest Information Center, Sonoma State University, Rohnert Park.
- Praetzellis, A.
1990 *A Cultural Resources Study of the Site of the Proposed "Vintage House" Center, Sonoma, California*. Document S-9312 on file at the Northwest Information Center, Sonoma State University, Rohnert Park.
- Reynolds, W. and T. Proctor
1898 *Illustrated Atlas of Sonoma County, California*. Reynolds and Proctor, Santa Rosa.
- Thompson, T.H. & Co.
1877 *Historical Atlas Map of Sonoma County, California*. T.H. Thompson & Co., Oakland.
- Tom Origer & Associates
2000 Primary Record for P-49-002745. Document on file at the Northwest Information Center, Sonoma State University, Rohnert Park.
- United States Army Corps of Engineers
1933 Sonoma, California. 15' map. Engineer Reproduction Plant, U.S. Army Washington, D.C.
1942 Sonoma, California. 15' map. 29th Engineer Battalion Reproduction Plant, Portland, Oregon.
- United States Geological Survey
1902 Napa, California. 30' series map. Geological Survey, Washington, D.C.

1951a Sonoma, California. 15' series map. Geological Survey, Washington, D.C.

1951b Sonoma, California. 7.5' series map. Geological Survey, Washington, D.C.

Wagner, D., K. Clahan, C. Randolph-Loar, and J. Sowers

2004 *Geologic Map of the Sonoma 7.5' Quadrangle, Sonoma and Napa Counties, California: A Digital Database*. File ftp://ftp.consrv.ca.gov/pub/dmg/rgmp/Prelim_geo_pdf/Sonoma_prelim.pdf accessed on August 11, 2016.

Appendix A

Native American Contact

Copies of Correspondence

Native American Contact Efforts
4th Street East and Brazil Street, Sonoma, Sonoma County

Organization	Contact	Action	Results
Native American Heritage Commission		Letter 4/13/17	The Native American Heritage Commission replied with a letter dated April 19, 2017, in which they indicated that the sacred land file has no information about the presence of Native American cultural resources in the immediate project area.
Federated Indians of Graton Rancheria	Gene Buvelot Buffy McQuillen Peter Nelson Greg Sarris	Letter 4/17/17	An email from Ms. McQuillen was received on April 26, 2017 stating that within 10 days she would review the project. No additional responses have been received.
Kashia Band of Pomo Indians of the Stewarts Point	Reno Franklin	Letter 4/20/17	No response received as of the date of this report.
Lytton Band of Pomo Indians	Marjorie Mejia	Letter 4/20/17	No response received as of the date of this report.
Middletown Rancheria of Pomo Indians	Jose Simon, III	Letter 4/20/17	No response received as of the date of this report.
Mishewal-Wappo Tribe of Alexander Valley	Scott Gabaldon	Letter 4/20/17	No response received as of the date of this report.

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: 4th and Brazil
County: Sonoma

USGS Quadrangles

Name: Sonoma

Township T5N Range R5W Section(s) N/A MDBM (within the Pueblo Lands of Sonoma)

Date: April 13, 2017

Company/Firm/Agency: Tom Origer & Associates

Contact Person: Eileen Barrow

Address: P.O. Box 1531

City: Rohnert Park Zip: 94927

Phone: (707) 584-8200 Fax: (707) 584-8300

Email: eileen@origer.com

Project Description: We are conducting a survey of approximately 12.7 acres of land for the City of Sonoma.

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
Fax (916) 373-5471



April 19, 2017

Eileen Barrow
Tom Origer & Associates

Sent by Email: Eileen@origer.com
Number of Pages: 2

RE: 4th and Brazil, Sonoma, Sonoma County

Dear Ms. Barrow:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. **Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.**

I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. **By contacting all those on the list, your organization will be better able to respond to claims of failure to consult.** If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: Sharaya.souza@nahc.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Sharaya Souza".

Sharaya Souza
Staff Services Analyst

**Native American Heritage Commission
Native American Contacts
4/19/2017**

Federated Indians of Graton Rancheria
Gene Buvelot
6400 Redwood Drive, Ste 300 Coast Miwok
Rohnert Park , CA 94928 Southern Pomo
gbuvelot@gratonrancheria.
(415) 279-4844 Cell
(707) 566-2288 ext 103

Mishewal-Wappo Tribe of Alexander Valley
Scott Gabaldon, Chairperson
2275 Silk Road Wappo
Windsor , CA 95492
scottg@mishewalwappotribe.com
(707) 494-9159

Federated Indians of Graton Rancheria
Greg Sarris, Chairperson
6400 Redwood Drive, Ste 300 Coast Miwok
Rohnert Park , CA 94928 Southern Pomo
(707) 566-2288 Office
(707) 566-2291 Fax

Kashia Band of Pomo Indians of the Stewarts Point
Reno Keoni Franklin, Chairperson
1420 Guerneville Rd. Ste 1 Pomo
Santa Rosa , CA 95403
reno@stewartspoint.org
(707) 591-0580 Office

(707) 591-0583 Fax

Lytton Rancheria of California
Marjorie Mejia, Chairperson
437 Aviation Blvd Pomo
Santa Rosa , CA 95403
margiemejia@aol.com
(707) 575-5917
(707) 575-6974 - Fax

Middletown Rancheria
Jose Simon III, Chairperson
P.O. Box 1035 Pomo
Middletown , CA 95461 Lake Miwok
(707) 987-3670 Office
(707) 987-9091 Fax

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources assessments for the updated contact list for 4th and Brazil, Sonoma, Sonoma County.

Tom Origer & Associates

Archaeology / Historical Research

April 17, 2017

Gene Buvelot
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

RE: 4th Street East and Brazil Street, Sonoma, Sonoma County, California

Dear Mr. Buvelot:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. Our firm is surveying a 12.7 acre study area in the northern portion of the City of Sonoma. The City of Sonoma is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sonoma, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,



Eileen Barrow
Senior Associate

Tom Origer & Associates

Archaeology / Historical Research

April 17, 2017

Buffy McQuillen
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

RE: 4th Street East and Brazil Street, Sonoma, Sonoma County, California

Dear Ms. McQuillen:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. Our firm is surveying a 12.7 acre study area in the northern portion of the City of Sonoma. The City of Sonoma is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sonoma, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,



Eileen Barrow
Senior Associate

Tom Origer & Associates

Archaeology / Historical Research

April 17, 2017

Peter Nelson
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

RE: 4th Street East and Brazil Street, Sonoma, Sonoma County, California

Dear Mr. Nelson:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. Our firm is surveying a 12.7 acre study area in the northern portion of the City of Sonoma. The City of Sonoma is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sonoma, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,



Eileen Barrow
Senior Associate

Tom Origer & Associates

Archaeology / Historical Research

April 17, 2017

Greg Sarris
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

RE: 4th Street East and Brazil Street, Sonoma, Sonoma County, California

Dear Mr. Sarris:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. Our firm is surveying a 12.7 acre study area in the northern portion of the City of Sonoma. The City of Sonoma is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sonoma, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,



Eileen Barrow
Senior Associate

Tom Origer & Associates

Archaeology / Historical Research

April 20, 2017

Reno Franklin
Kashia Band of Pomo Indians of Stewarts Point
1420 Guerneville Road, Suite 1
Santa Rosa, CA 95403

RE: 4th Street East and Brazil Street, Sonoma, Sonoma County, California

Dear Mr. Franklin:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. Our firm is surveying a 12.7 acre study area in the northern portion of the City of Sonoma. The City of Sonoma is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sonoma, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,



Eileen Barrow
Senior Associate

Tom Origer & Associates

Archaeology / Historical Research

April 20, 2017

Marjorie Mejia
Lytton Rancheria of California
437 Aviation Boulevard
Santa Rosa, CA 95403

RE: 4th Street East and Brazil Street, Sonoma, Sonoma County, California

Dear Ms. Mejia:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. Our firm is surveying a 12.7 acre study area in the northern portion of the City of Sonoma. The City of Sonoma is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sonoma, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,



Eileen Barrow
Senior Associate

Tom Origer & Associates

Archaeology / Historical Research

April 20, 2017

Jose Simon, III
Middletown Rancheria of Pomo Indians
P.O. Box 1035
Middletown, CA 95461

RE: 4th Street East and Brazil Street, Sonoma, Sonoma County, California

Dear Mr. Simon:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. Our firm is surveying a 12.7 acre study area in the northern portion of the City of Sonoma. The City of Sonoma is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sonoma, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,



Eileen Barrow
Senior Associate

Tom Origer & Associates

Archaeology / Historical Research

April 20, 2017

Scott Gabaldon
Mishewal-Wappo Tribe of Alexander Valley
2275 Silk Road
Windsor, CA 95492

RE: 4th Street East and Brazil Street, Sonoma, Sonoma County, California

Dear Mr. Gabaldon:

I write to notify you of a proposed project within Sonoma County, for which our firm is conducting a cultural resources study. Our firm is surveying a 12.7 acre study area in the northern portion of the City of Sonoma. The City of Sonoma is reviewing the project for CEQA compliance.

Enclosed is a portion of the Sonoma, Calif. 7.5' USGS topographic quadrangle showing the project location.

Sincerely,



Eileen Barrow
Senior Associate



Eileen Barrow

From: THPO@gratonrancheria.com
Sent: Wednesday, April 26, 2017 3:47 PM
To: Eileen Barrow (Eileen@origer.com)
Subject: 4th Street and Brazil Street, Sonoma, Sonoma County
Attachments: Tom Origer, 4th Street and Brazil Street, Sonoma, Sonoma County.pdf

Dear Eileen Barrow,

Thank you for notifying the Federated Indians of Graton Rancheria about 4th Street and Brazil Street, Sonoma, Sonoma County, a project within the Tribe's Ancestral Territory. We appreciate being notified and will review your project within 10 business days. If you have an immediate request please contact the Tribal Heritage Preservation Office for assistance by phone at (707) 566-2288 or by email at thpo@gratonrancheria.com.

Sincerely,

Buffy McQuillen

Tribal Heritage Preservation Officer (THPO)

Native American Graves Protection and Repatriation Act (NAGPRA)

Office: 707.566.2288; ext. 137

Cell: 707.318.0485

FAX: 707.566.2291

Antonette Tomic

THPO Administrative Assistant

Federated Indians of Graton Rancheria

6400 Redwood Drive, Suite 300

Rohnert Park, CA 94928

Office: 707.566.2288, ext. 143

Fax: 707.566.2291

atomic@gratonrancheria.com



please consider our environment before printing this email.

Federated Indians of Graton Rancheria and Tribal TANF of Sonoma & Marin - Proprietary and Confidential

CONFIDENTIALITY NOTICE: This transmittal is a confidential communication or may otherwise be privileged. If you are not the intended recipient, you are hereby notified that you have received this transmittal in error and that any review, dissemination, distribution or copying of this transmittal is strictly prohibited. If you have received this communication in error, please notify this office at 707-566-2288, and immediately delete this message and all its attachments, if any. Thank you.