WATER AVAILABILITY ANALYSIS

80 CLEAR CREEK ROAD

80 Clear Creek Rd

Napa, CA 94558

APN 027-310-032, -043



SUMMIT

IVIL STRUCTURAL WATER|WASTEWATER ELECTRICAL PLANNING

Project No. 2021275
July 11, 2025

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PROJECT OVERVIEW

80 Clear Creek Road in Napa, CA, located on APNs 027-310-032 and -043, is applying for an administrative viewshed permit (P22-00182) to develop several proposed improvements to the residential site, including the construction of a tennis pavilion, a new three-bedroom ADU, and new underground spa and storage areas. The only proposed changes to the site that are anticipated to affect water usage are the addition of the ADU and modifications made to existing landscaping.

The residential site is located across two parcels, both of which are outside the Napa Valley Subbasin and the Milliken-Sarco-Tulucay (MST) area. APN 027-310-032 covers 123.07 acres and contains the existing residences as well as the proposed ADU. APN 027-310-043 covers 95.05 acres and contains the gate and entrance road to the property, along with minor landscaping. A vicinity map showing the location of the site within Napa County and an overall site plan showing the general layout of the project site are included in Enclosure A.

There are four existing wells on site, but only three are currently in use: Well A, Well B, and Well D. Wells A and B are located on APN 027-310-032 and supply all domestic water and landscape irrigation water for the parcel. Well D is located on APN 027-310-043 and provides landscape irrigation water for the minor landscaping on this parcel. Well C, located on APN 027-310-043, was drilled for a proposed residence which was never built and is currently non-operational. This inactive well is proposed to remain on site for potential future use, following the criteria listed in Napa County Code 13.12.460(B) and under the condition that no groundwater extracted from the well will be used to support the proposed developments of P22-00182. Available well completion reports for Wells A, B, and D are provided in Enclosure B. No well completion report is available for Well C. The existing wells and their capacities are summarized in Table 1.

Table 1: Existing well use, status, and capacities.

Source	Primary Use	Status	Pumping rate[1] (gpm)
Well A	Domestic water and landscape irrigation water for APN 027-310-032	**Active**	25
Well B	Domestic water and landscape irrigation water for APN 027-310-032	**Active**	16
Well C	Non-operational; drilled for proposed residence which was never built. Proposed to remain inactive for potential future use.	Inactive	Unknown
Well D	Landscape irrigation water for APN 027-310-043	**Active**	16

Note:
1. Yield testing has not been performed for any of the existing wells. The listed pumping rates are the capacities of the installed well pumps.

Summit Engineering has prepared the following Water Availability Analysis (WAA) in compliance with the Napa County 2015 WAA Guidance Document, the Application of Public Trust Doctrine to Projects Dependent on Groundwater dated January 2024, and the Interim Napa County Well Permit Standards and WAA Requirements dated January 2024. The purpose of this WAA is to demonstrate that the proposed project will

result in no net increase in groundwater usage, will have no adverse impact on existing or future neighboring wells, and will reduce harm relative to current conditions through modifications to the operation of existing project wells.

EXISTING WATER DEMAND

The existing water demands on the property include:

- Domestic water demand from:
  - The seven-bedroom main residence
  - A two-bedroom guest house
  - A covered pool
- Landscape irrigation

The estimated water demand for these uses is calculated in the following sections.

EXISTING DOMESTIC WATER DEMAND

Historical flow meter data is not available for the property, and therefore the existing water demand for the property is estimated in Table 2 following the Guidelines for Estimating Residential Water Use from the Napa County 2015 WAA Guidance Document. The resulting existing domestic water demand is 0.75 acre-feet per year (af/yr).

Table 2: Existing domestic water demand.

Use	Number	Units	Water Use Allocation[1]	Units	Total Water Use (af/yr)
Main residence	1	Primary residence	0.50	af/yr/residence	0.50
Guest house	1	Secondary residence	0.20	af/yr/residence	0.20
Pool with cover	1	Pool	0.05	af/yr/pool	0.05
Total					**0.75**

Note:
1. Water use allocations are taken from the Guidelines for Estimating Residential Water Use in Appendix B of the Napa County 2015 WAA Guidance Document.

EXISTING LANDSCAPE IRRIGATION WATER DEMAND

The existing landscape on APN 027-310-032 consists primarily of drought-tolerant trees and shrubs surrounding the main residence and guest house, as well as two lawn areas to the east and northwest of the main residence. Existing landscape planting and irrigation plans for APN 027-310-032 are included in Enclosure C. The Water Efficient Landscape Worksheet included with the existing irrigation plans show an Estimated Total Water Use of 1,037,134 gallons per year, or approximately 3.18 af/yr.

Landscaping on APN 027-310-043 includes olive and ginkgo trees planted near the site's entrance gate. The irrigated area for these trees spans approximately 10,300 square feet (SF). The estimated irrigation demand for

these trees is calculated in Enclosure D, resulting in an estimated irrigation demand of 0.56 af/yr. The resulting total existing irrigation water demand for both parcels is 3.74 af/yr.

PROPOSED WATER DEMAND

The only proposed changes to the site that are anticipated to affect water usage are the addition of the ADU and modifications made to existing landscaping. In order to offset the increased groundwater demand resulting from the proposed ADU, it is proposed to modify the existing landscaping to reduce on-site landscape irrigation demand.

PROPOSED DOMESTIC WATER DEMAND

The proposed domestic water demand is estimated in Table 3 following the Guidelines for Estimating Residential Water Use from the Napa County 2015 WAA Guidance Document. The proposed ADU is anticipated to add a new 0.20 af/yr of water demand, increasing the total proposed domestic water demand to 0.95 af/yr. All domestic water demand will continue to be supplied by Wells A and B.

Table 3: Existing domestic water demand.

Use	Number	Units	Water Use Allocation[1]	Units	Total Water Use (af/yr)
Main residence	1	Primary residence	0.50	af/yr/residence	0.50
Guest house	1	Secondary residence	0.20	af/yr/residence	0.20
Proposed ADU	1	Secondary residence	0.20	af/yr/residence	0.20
Pool with cover	1	Pool	0.05	af/yr/pool	0.05
Total					**0.95**

Note:
1. Water use allocations are taken from the Guidelines for Estimating Residential Water Use in Appendix B of the Napa County 2015 WAA Guidance Document.

PROPOSED LANDSCAPE IRRIGATION WATER DEMAND

The only new plantings in the proposed landscaping plans are the trees near the residences on APN 027-310-032 shown in the proposed landscaping plan included in Enclosure E. These drought-tolerant trees will require no irrigation once established. As such, no new irrigation lines will be installed in these areas, and the proposed trees are not anticipated to impact irrigation groundwater demand. In order to establish the trees, it is proposed to use spray irrigation using trucked water for the first year after planting, after which the trees will require no watering.

In order to offset the increased domestic water demand resulting from the proposed ADU, it is proposed to modify the existing lawn areas such that the landscape irrigation water demand on APN 027-310-032 is reduced by at least 0.20 af/yr. A water audit of the existing irrigation system performed by the site's landscape designer revealed that irrigation for the lawn northwest of the main residence is provided by four irrigation valves. Two of these valves were found to provide 2,160 gallons/week of irrigation water, with the other two

providing 1,080 gallons/week. Based on this data, if one of the higher-flow valves were removed along with the corresponding lawn area which it irrigates, annual irrigation demand would be reduced by 112,320 gallons per year, or approximately 0.34 af/yr. Thus, the required 0.20 af/yr reduction in irrigation demand to achieve no net increase in overall groundwater demand could be met by removing this portion of lawn.

Additional or alternative possibilities for reducing landscape irrigation water demand include replacing a larger portion of the existing lawn with less water-intensive landscaping or replacing existing MP rotator sprinkler heads with more efficient drip irrigation nozzles.

Although it has been demonstrated that there exists potential for greater water savings, the proposed water demand reduction is conservatively presented as being 0.20 af/yr, the minimum value required to offset the domestic water demand of the proposed ADU. No changes are proposed to the existing landscaping on APN 027-310-043, and therefore the resulting total proposed landscape irrigation demand on the project site is 3.54 af/yr. A breakdown of the existing and proposed landscape irrigation demand in shown Table 4.

Table 4: Existing and proposed landscape irrigation demand.

Source of Demand	Existing (af/yr)	Proposed (af/yr)	Difference (af/yr)
Landscaping on APN 027-310-032	3.18	2.98	-0.20
Landscaping on APN 027-310-043	0.56	0.56	0.00
Total	**3.74**	**3.54**	**-0.20**

TOTAL PROPOSED WATER DEMAND

A comparison of existing and proposed water demand by use is shown in Table 5. The total existing and proposed water demand is 4.49 af/yr; the proposed project results in no net increase in water demand.

Table 5: Existing and proposed groundwater demand comparison.

Source of Demand	Existing (af/yr)	Proposed (af/yr)	Difference (af/yr)
Domestic water	0.75	0.95	+0.20
Landscape irrigation	3.74	3.54	-0.20
Total	**4.49**	**4.49**	**0.00**

A breakdown of the existing and proposed water demand on each groundwater well is shown in Table 6. Water from Wells A and B are combined into a single 20,000-gallon storage tank that feeds both landscape irrigation and the domestic water treatment system, and there is no historical meter data for the individual usage of each well. Therefore, the relative usage of each well is assumed to be proportional to the relative capacities of the installed well pumps for each well (25 gpm for Well A and 16 gpm for Well B). This results in Well A providing approximately 61% of the water for APN 027-310-032, with Well B providing the remaining 39%. There are no proposed changes to the water distribution system, so the relative usage of each well is not expected to change. The proposed project results in no net increase in water demand on any individual project well.

Table 6: Existing and proposed groundwater demand on each project well.

Source of Demand	Existing (af/yr)	Proposed (af/yr)	Difference (af/yr)
Well A[1]			
Landscape irrigation	0.46	0.58	+0.12
Domestic water	1.94	1.82	-0.12
Total for Well A	**2.40**	**2.40**	**0.00**
Well B[1]			
Landscape irrigation	0.29	0.37	+0.08
Domestic water	1.24	1.16	-0.08
Total for Well B	**1.53**	**1.53**	**0.00**
Well D			
Landscape irrigation	0.56	0.56	0.00
Total for Well D	**0.56**	**0.56**	**0.00**

Notes:
1. The relative usage of Wells A and B is assumed to be proportional to the relative capacities of the installed well pumps for these wells (25 gpm and 16 gpm, respectively).

TIER I ANALYSIS: ESTIMATED AVERAGE ANNUAL GROUNDWATER RECHARGE

Per the January 2024 Interim Napa County Well Permit Standards and WAA Requirements, projects outside of the Napa Valley Subbasin and the Milliken-Sarco-Tulucay area are required to estimate the average annual recharge occurring on the project parcel and consider this recharge relative to the estimated project water use.

METHOD

Luhdorff & Scalmanini Consulting Engineers (LSCE) previously prepared a Hydrogeologic Conceptualization and Characterization of Conditions for Napa County regarding the groundwater and hydrogeology of the Napa Valley, including a detailed study of the anticipated rainfall recharge in several watersheds. An excerpt of this report is provided in Enclosure F. LSCE used a mass balance approach to provide groundwater recharge estimates for several watersheds within Napa County. The project APNs 027-310-032 and 027-310-043 are located within the Dry Creek watershed, which LSCE estimates to have an average annual recharge rate equal to 6% of annual precipitation.

The average annual precipitation for the site was taken to be 37.21 inches/year based on the last ten years (2015–2024) of precipitation data from PRISM. The PRISM precipitation data set is provided in Enclosure G.

Per the LSCE report, recharge potential is significantly reduced for areas of land with a slope greater than 30 degrees (approximately 57% slope). As such, areas of the site with slopes greater than 57% are excluded from the parcel acreage when calculating recharge. A site slope analysis (see Enclosure H) was prepared for each parcel based on digital elevation models downloaded from the USGS National Map. The slope analysis revealed a total of approximately 52.08 acres of land sloped more than 57% on APN 027-310-032 and approximately

37.12 acres sloped less than 57% on APN 027-310-043. Therefore, the total land area available for recharge over the two parcels is approximately 89.20 acres.

Utilizing the watershed's rainfall recharge fraction of 6% (according to the LSCE groundwater characterization), the anticipated annual recharge for a typical year is calculated to be 16.60 af/yr:

$$Typical\ Annual\ Recharge = \left(Available\ recharge\ area\ (acres) * Precipitation\ \left(\frac{ft}{year}\right) * Recharge\ Fraction\ (\%) \right)$$

$$= \left(89.20\ acres * \frac{37.12\ \frac{in}{year}}{12\ \frac{in}{ft}} * 6\% \right)$$

$$= 16.60\ \frac{acre\text{-}ft}{year}$$

RESULTS

The estimated proposed project water use is 4.49 af/yr during both normal and dry water years. Using the estimated annual recharge of 16.60 af/yr, the proposed project water use is only 27.9% of the estimated average annual recharge. As the proposed project water use is less than the estimated average annual recharge and the project demonstrates no net increase in groundwater demand, the project complies with the 2024 Interim Napa County Well Permit Standards and WAA Requirements.

TIER II ANALYSIS: WELL INTERFERENCE

Per the 2024 Interim Napa County Well Permit Standards and WAA Requirements, a Tier 2 analysis of an existing well is required only for projects that demonstrate a net increase in groundwater use, and therefore no Tier 2 analysis is required for the proposed project. Nevertheless, a Tier 2 analysis was performed to demonstrate that there is no potential for any of the project wells to have an adverse effect on any existing or future neighboring wells.

Based on available data, there is only one neighboring well located within 500 feet of the existing project wells: the well located on APN 027-310-026 is located approximately 157 feet from Well D. Regardless, the analysis was performed for all three active wells, to cover any possibility of an existing or future neighboring well falling within a 500 ft range of the project wells.

METHOD

Using the Theis equation as indicated in the WAA Napa County guidelines, the groundwater drawdown from the active property wells to the edge of the parcel was determined. The assumed closest distance that any neighboring well could be located is the edge of the parcel.

Using the Theis equation as indicated in the WAA Napa County guidelines, the groundwater drawdown from all property wells to the edge of the parcel was determined. The assumed closest distance that any neighboring well could be located is the edge of the parcel. Due to the limited data on the aquifer, assumed values that

would yield a conservative drawdown estimate were selected from Napa County Water Availability Analysis guidelines:

- Hydraulic Conductivity very low range of 10 to 30 ft/day for project site (Water Availability Analysis Guidance Document Figure F-3)
- Specific Storage range of 1.5x 10^{-5} to 3.1x 10^{-4} (1/ft) (Water Availability Analysis Guidance Document Table F3)
- Continuous pumping (i.e., > 1 day) at stated flow rate.

The Theis equation can be seen below along with an example calculation.

$$\text{Theis Equation: Drawdown} = \frac{\text{Flow}}{(4\pi \times \text{Transmissivity})} \times W(u)$$

$$W(u) = \int_u^{\infty} \frac{1}{\omega} e^{-\omega} d\omega$$

$$u = \frac{(\text{Distance}^2 \times \text{Specific Storage})}{(4 \times \text{Transmissivity} \times \text{Time})}$$

$$\text{Transmissivity} = \text{ Hydraulic Conductivity } \times \text{Aquifer Thickness}$$

Example for Well A drawdown effect on possible wells on adjacent properties:

$$u = \frac{(200 \text{ ft})^2 \times (1.50 \text{ X } 10^{-5})}{4 \times 10 \frac{\text{ft}}{\text{day}} \times 140 \text{ ft} \times 1 \text{ day}} = 1.07 \times 10^{-4}$$

With this value of u, W(u) = 8.58

$$\text{Drawdown} = \frac{25 \frac{\text{gal}}{\text{min}} \times \ 0.1337 \frac{\text{cuft}}{\text{gal}} \times 1{,}440 \frac{\text{min}}{\text{day}}}{4\pi \ \times 10 \frac{\text{ft}}{\text{day}} \times 140 \text{ ft}} \times 8.58 = 2.35 \text{ ft}$$

Table 7 shows a summary of the worst-case scenario drawdown results for the active parcel wells. More detailed tables can be found in Enclosure I.

Table 7: Well drawdown calculation results.

Well	Well Flow Rate (gpm)	Distance to Property Line (ft)	Aquifer Thickness (ft)	Estimated Drawdown (ft)
Well A	25	200	140	**2.35**
Well B	16	470	120	**1.37**
Well D	16	35	100	**2.87**

RESULTS

Using very conservative estimates for specific storage and hydraulic conductivity, no project well produces a drawdown greater than 10 feet on any existing or future wells that could be adjacent to the property. The Water Availability Analysis guidelines establish a 10-foot drawdown as the default criteria to determine significant adverse effects. Since the estimated drawdown of the well is less than 10 feet, no significant impact is expected to existing or future wells on adjacent parcels. Furthermore, the proposed project results in no net increase in groundwater use, meaning the project complies with the 2024 Interim Napa County Well Permit Standards and WAA Requirements irrespective of the project wells' impact on neighboring wells.

TIER III ANALYSIS: GROUNDWATER/SURFACE WATER INERACTION

Per the Interim Napa County Well Permit Standards and WAA Requirements dated January 2024, projects modifying the use of an existing well within 1,500 feet of a significant stream inside the Napa River watershed are not required to conduct a Tier 3 analysis if modifications to the location, construction, or operations of the project wells are made to reduce harm relative to current conditions.

While Well B is located outside of the 1,500 significant stream buffer, Wells A and D are located approximately 668 feet and 157 feet from significant streams, respectively. As part of the proposed project, it is proposed to install flow restrictors on Wells A and D to reduce the pumping rates of these wells, thereby reducing any potential impact these wells may currently have on the nearby significant streams. As this proposed change in operation will reduce harm relative to current conditions, a Tier 3 analysis is not required.

CONCLUSION

The only proposed changes in use at 80 Clear Creek Road that will affect groundwater demand is the construction of a new ADU and proposed modifications to existing landscaping. The increased water demand resulting from the proposed ADU is expected to be offset by these landscape modifications, resulting in no net increase in groundwater demand: Both the existing and proposed estimated water demand are 4.49 af/yr. This no net increase in groundwater demand demonstrates that the project complies with the Tier 1 and Tier 2 requirements published in the 2024 Interim Napa County Well Permit Standards and WAA Requirements. Furthermore, the proposed estimated water demand of 4.49 af/yr is significantly less than the site's estimated annual groundwater recharge of 16.60 af/yr, and none of the project wells produce a drawdown greater than 10 feet on any existing or future wells that could be adjacent to the property. Well B is located greater than 1,500 feet from any significant streams and therefore is not subject to a Tier 3 analysis. It is proposed to install flow restrictors on Wells A and D in order to reduce the pumping rates of these wells, thereby reducing the potential harm of each well relative to current conditions.

ENCLOSURE A

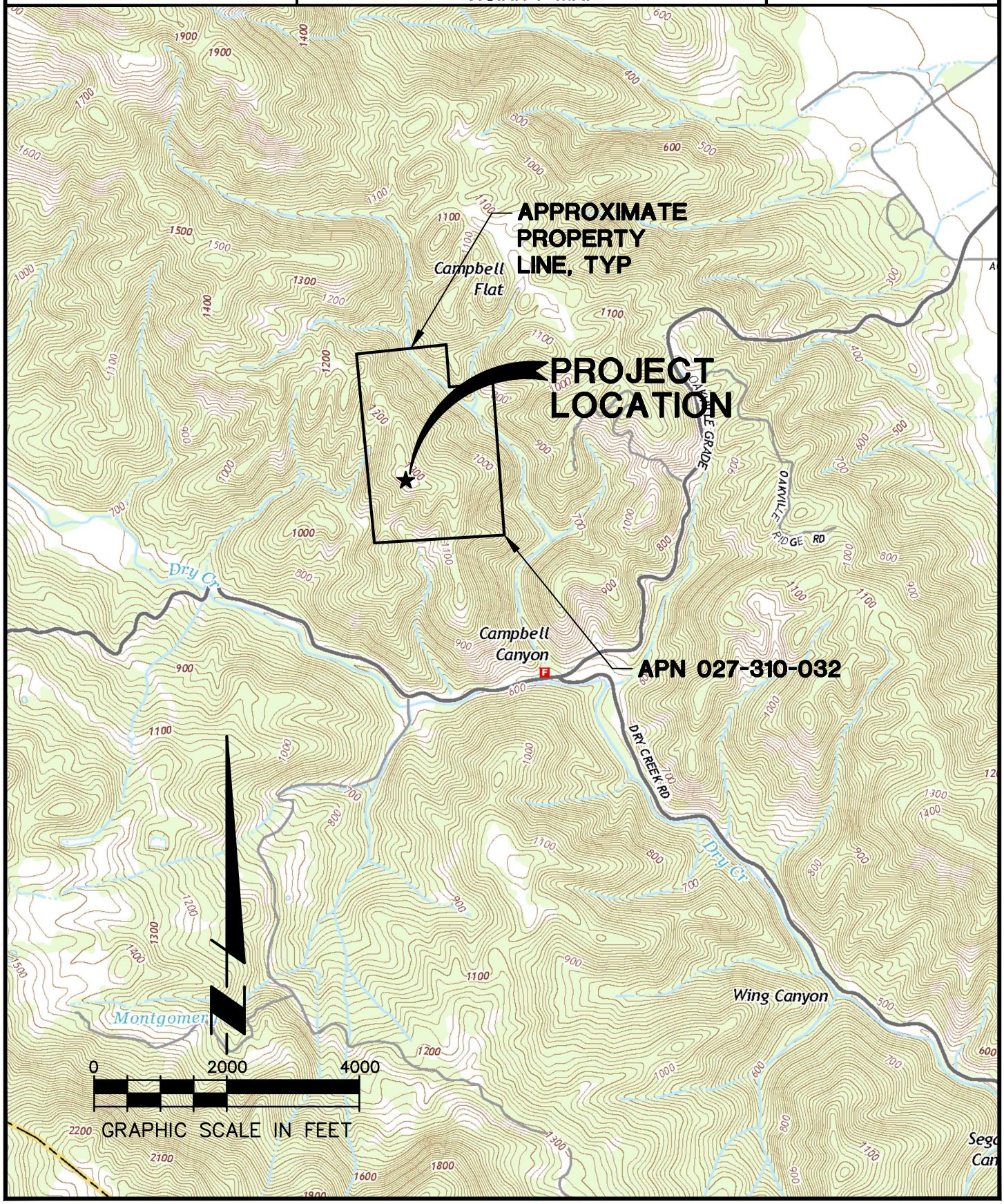
VICINITY MAP AND OVERALL SITE PLAN

SUMMIT

PONDEROSA ONE LLC
80 CLEAR CREEK ROAD
NAPA, CA
APN 027-310-032

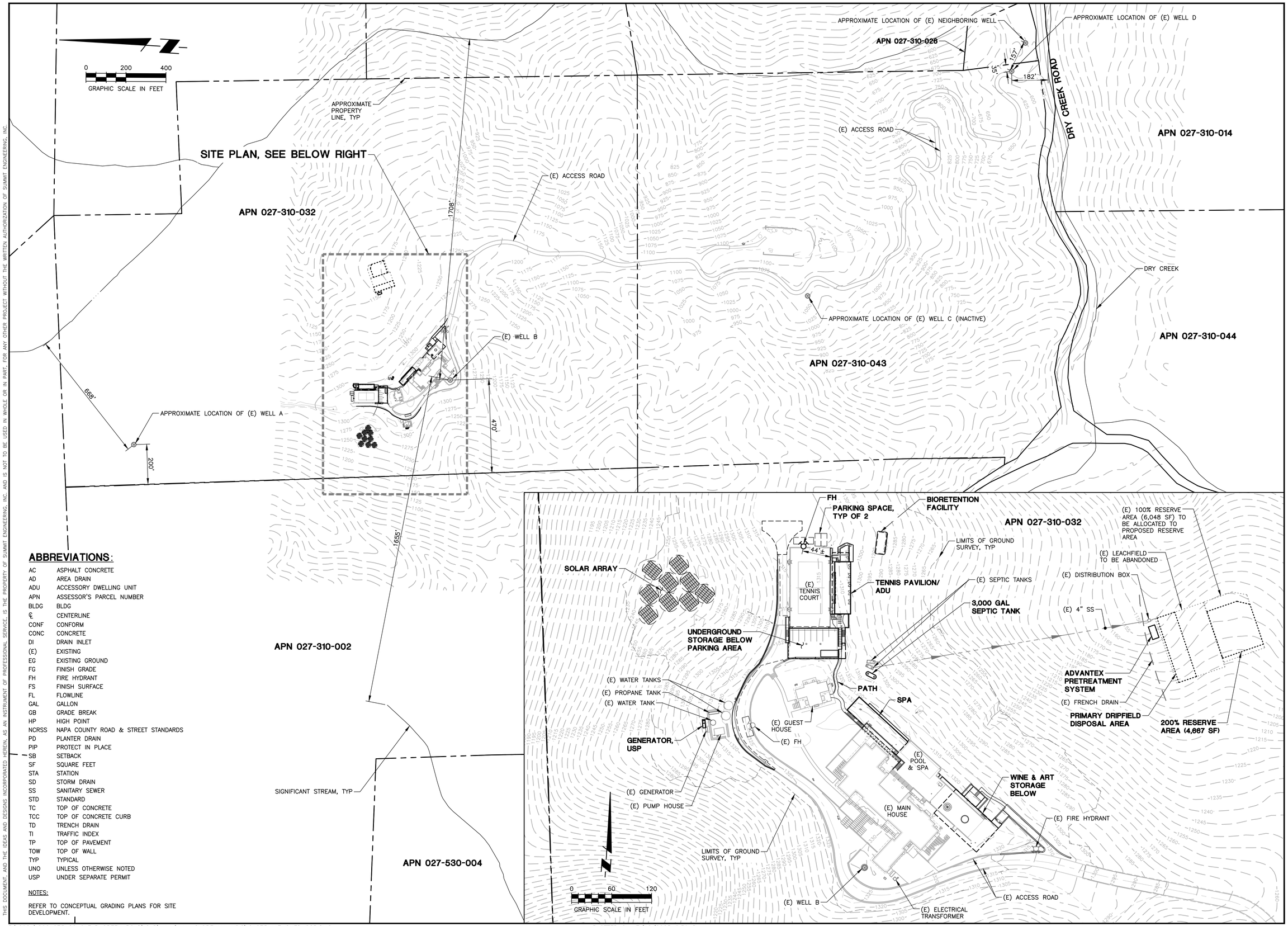
VICINITY MAP

PROJECT NO. 2021275
DATE 2021-06-29
SHT NO 1 OF 1
BY MB CHK MS



PLOTTED ON: 6/22/2022 4:43 PM
P:\2021\2021275 80 CLEAR CREEK ROAD\CAD\CIVIL\VICINITY MAP\21275-VICINITY MAP.DWG

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ABBREVIATIONS:

AC	ASPHALT CONCRETE
AD	AREA DRAIN
ADU	ACCESSORY DWELLING UNIT
APN	ASSESSOR'S PARCEL NUMBER
BLDG	BLDG
℄	CENTERLINE
CONF	CONFORM
CONC	CONCRETE
DI	DRAIN INLET
(E)	EXISTING
EG	EXISTING GROUND
FG	FINISH GRADE
FH	FIRE HYDRANT
FS	FINISH SURFACE
FL	FLOWLINE
GAL	GALLON
GB	GRADE BREAK
HP	HIGH POINT
NCRSS	NAPA COUNTY ROAD & STREET STANDARDS
PD	PLANTER DRAIN
PIP	PROTECT IN PLACE
SB	SETBACK
SF	SQUARE FEET
STA	STATION
SD	STORM DRAIN
SS	SANITARY SEWER
STD	STANDARD
TC	TOP OF CONCRETE
TCC	TOP OF CONCRETE CURB
TD	TRENCH DRAIN
TI	TRAFFIC INDEX
TP	TOP OF PAVEMENT
TOW	TOP OF WALL
TYP	TYPICAL
UNO	UNLESS OTHERWISE NOTED
USP	UNDER SEPARATE PERMIT

NOTES:

REFER TO CONCEPTUAL GRADING PLANS FOR SITE DEVELOPMENT.

THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF SUMMIT ENGINEERING, INC. AND IS NOT TO BE USED IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF SUMMIT ENGINEERING, INC.

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PONDEROSA ONE LLC
80 CLEAR CREEK ROAD
NAPA, CA 94558
APN 027-310-032 & -043

80 CLEAR CREEK ROAD WAA

OVERALL SITE PLAN

#	DATE	DESCRIPTION
	7/11/2025	WAA SUBMITTAL

JOB NO: 2021275
SCALE: AS SHOWN
DRAWN: TF/TBL
CHECKED: GG

SHEET OSP
SHEET 1 OF 1

ENCLOSURE B

WELL COMPLETION REPORTS

ORIGINAL
File with DWR

Well A

Page 1 of 1

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. e0133552

DWR USE ONLY — DO NOT FILL IN
STATE WELL NO./ STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Owner's Well No. 2-2011
Date Work Began 8/3/2011, Ended 8/8/2011
Local Permit Agency Napa County Environmental Mgmt
Permit No. E11-00267 Permit Date 7/1/2011

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD ROTARY FLUID AIR

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain, size, color, etc.*
0	60	BROWN & GRAY SHALE
60	90	GRAY SHALE
90	200	HARD GRAY SHALE
200	260	80% SHALE / 20% SILTSTONE
260	340	50% SHALE / 50% SILTSTONE
340	460	SHALE

RECEIVED
SEP 29 2011
DEPT. OF ENVIRONMENTAL MANAGEMENT

TOTAL DEPTH OF BORING 460 (Feet)
TOTAL DEPTH OF COMPLETED WELL 378 (Feet)

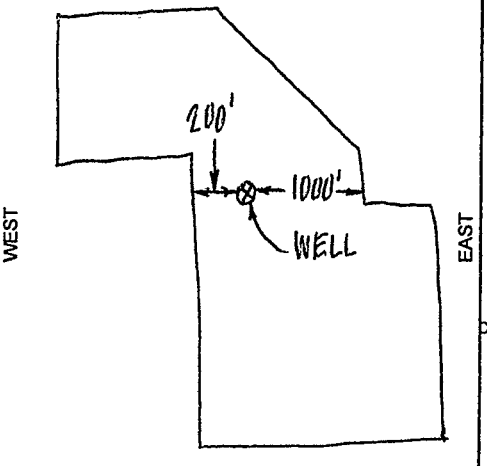
WELL OWNER

Name [redacted]
Mailing Address [redacted]
[redacted]ia CA [redacted]
CITY STATE ZIP

WELL LOCATION

Address 80 Clear Creek Road
City Napa CA
County Napa
APN Book 027 Page 310 Parcel 032
Township ___ Range ___ Section ___
Latitude ___ DEG. MIN. SEC. ___ DEG. MIN. SEC.

LOCATION SKETCH



Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

✓ NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG"

PLANNED USES (✓)
WATER SUPPLY
✓ Domestic ___ Public
✓ Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 230 (Ft.) BELOW SURFACE 1
DEPTH OF STATIC WATER LEVEL 187 (Ft.) & DATE MEASURED 8/8/2011
ESTIMATED YIELD * 60 (GPM) & TEST TYPE AIR LIFT
TEST LENGTH 2 (Hrs.) TOTAL DRAWDOWN N/A (Ft.)
May not be representative of a well's long-term yield.

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	CASING (S) TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	25	12								
25	460	9								
0	198		✓				PVC F480	6	SDR-21	
198	338			✓			PVC F480	6	SDR-21	.032
338	378		✓				PVC F480	6	SDR-21	

DEPTH FROM SURFACE Ft.	to Ft.	ANNULAR MATERIAL TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	3	✓			CONCRETE
3	23		✓		CHIPS
23	460			✓	PEA GRAVEL

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analysis
___ Other ___
ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
NAME HUCKFELDT WELL DRILLING, INC.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
2110 Penny Lane Napa CA 94559
ADDRESS CITY STATE ZIP
Signed [signature] 08/12/11 439-746
WELL DRILLER/AUTHORIZED REPRESENTATIVE DATE SIGNED C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL
File with DWR

Well B

Page 1 of 1

STATE OF CALIFORNIA

WELL COMPLETION REPORT

Refer to Instruction Pamphlet

No. e0102663

DWR USE ONLY — DO NOT FILL IN

STATE WELL NO./ STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

Owner's Well No. 2-'09

Date Work Began 11/24/2009, Ended 12/2/2009

Local Permit Agency Napa County Environmental Mgmt

Permit No. E09-00461 Permit Date 10/15/2009

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL — HORIZONTAL — ANGLE — (SPECIFY)

DRILLING METHOD ROTARY FLUID AIR

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain, size, color, etc.*
0	65	BROWN SHALE & CLAY
65	215	50% SHALE / 50% SILTSTONE
215	310	30% SHALE / 70% SILTSTONE
310	370	70% SHALE / 30% SILTSTONE
370	500	50% SHALE / 50% SILTSTONE

TOTAL DEPTH OF BORING 500 (Feet)

TOTAL DEPTH OF COMPLETED WELL 338 (Feet)

WELL OWNER

Name [redacted]C

Mailing Address [redacted] CA [redacted]

CITY STATE ZIP

WELL LOCATION

Address Dry Creek Road

City Napa CA

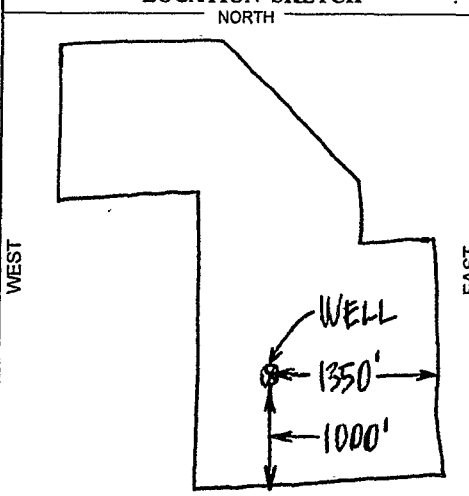
County Napa

APN Book 027 Page 310 Parcel 032

Township ____ Range ____ Section ____

Latitude ____ DEG. MIN. SEC. ____ DEG. MIN. SEC.

LOCATION SKETCH



Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

✓ NEW WELL

MODIFICATION/REPAIR

— Deepen

— Other (Specify)

— DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG"

PLANNED USES (✓)

WATER SUPPLY

✓ Domestic — Public — Industrial

— Irrigation

MONITORING —

TEST WELL —

CATHODIC PROTECTION —

HEAT EXCHANGE —

DIRECT PUSH —

INJECTION —

VAPOR EXTRACTION —

SPARGING —

REMEDIATION —

OTHER (SPECIFY) —

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 215 (Ft.) BELOW SURFACE 1

DEPTH OF STATIC WATER LEVEL 150 (Ft.) & DATE MEASURED 12/2/2009

ESTIMATED YIELD 23 (GPM) & TEST TYPE AIR LIFT

TEST LENGTH 3 (Hrs.) TOTAL DRAWDOWN N/A (Ft.)

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

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	25	12								
25	500	9								
0	198		✓				PVC F480	6	SDR-21	
198	318			✓			PVC F480	6	SDR-21	.032
318	338		✓				PVC F480	6	SDR-21	

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	3	✓			CONCRETE
3	22		✓		CHIPS
22	500			✓	PEA GRAVEL

ATTACHMENTS (✓)

— Geologic Log

— Well Construction Diagram

— Geophysical Log(s)

— Soil/Water Chemical Analysis

— Other

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

RECEIVED
DEC 15 2010
DEPT. OF ENVIRONMENTAL MANAGEMENT

CERTIFICATION STATEMENT

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

NAME HUCKFELDT WELL DRILLING, INC.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

2110 Penny Lane ADDRESS Napa CITY CA STATE 94559 ZIP

Signed [signature] WELL DRILLER/AUTHORIZED REPRESENTATIVE

12/14/09 DATE SIGNED

439-746 C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

Well D

ORIGINAL
File with DWR

Page 1 of 1

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. e039617

DWR USE ONLY — DO NOT FILL IN
STATE WELL NO./ STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Owner's Well No. 1
Date Work Began 5/15/2006, Ended 5/18/2006
Local Permit Agency Napa County Environmental Mgmt
Permit No. 96-10390 Permit Date 9/30/1998

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD ROTARY FLUID AIR

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain, size, color, etc.*
0	3	BROWN CLAY
3	135	HARD SHALE
135	137	SANDSTONE
137	150	HARD SHALE
150	152	SANDSTONE
152	160	HARD SHALE
160	162	SANDSTONE
162	180	90% HARD SHALE/ 10% SANDSTONE
180	200	50% HARD SHALE/ 50% SANDSTONE
200	300	HARD SHALE
		CONTINUED CASING LAYOUT
170	250	SCREEN PVC 6" .032 SLOT
250	270	BLANK PVC 6"
270	290	SCREEN PVC 6" .032 SLOT

RECEIVED
JUN 7 2006
DEPT. OF
ENVIRONMENTAL MANAGEMENT

TOTAL DEPTH OF BORING 300 (Feet)
TOTAL DEPTH OF COMPLETED WELL 290 (Feet)

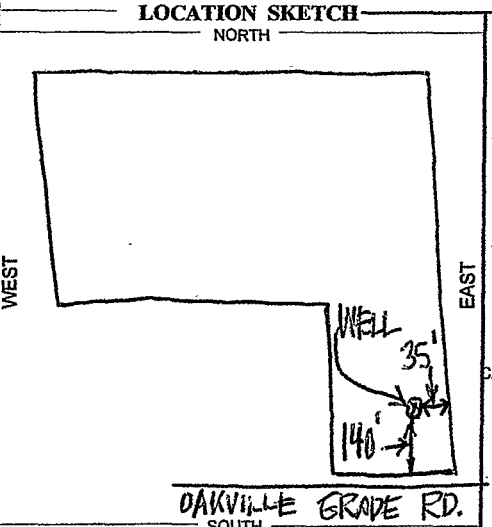
WELL OWNER

Name [redacted]C
Mailing Address [redacted]g
CITY [redacted] STATE CA ZIP [redacted]74

WELL LOCATION

Address 60 Campbell Creek Road
City Napa CA
County Napa
APN Book 027 Page 310 Parcel 031
Township ___ Range ___ Section ___
Latitude ___ DEG. ___ MIN. ___ SEC. ___ DEG. ___ MIN. ___ SEC.

LOCATION SKETCH



Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. **PLEASE BE ACCURATE & COMPLETE.**

ACTIVITY (✓)

✓ NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG"

PLANNED USES (✓)
WATER SUPPLY
✓ Domestic ___ Public
___ Irrigation ___ Industrial
___ MONITORING
___ TEST WELL
___ CATHODIC PROTECTION
___ HEAT EXCHANGE
___ DIRECT PUSH
___ INJECTION
___ VAPOR EXTRACTION
___ SPARGING
___ REMEDIATION
___ OTHER (SPECIFY)

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 60 (Ft.) BELOW SURFACE 1
DEPTH OF STATIC WATER LEVEL 15 (Ft.) & DATE MEASURED 5/18/2006
ESTIMATED YIELD * 25 (GPM) & TEST TYPE AIR LIFT
TEST LENGTH 2 (Hrs.) TOTAL DRAWDOWN N/A (Ft.)
May not be representative of a well's long-term yield.

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	25	12								
25	300	9								
0	50		✓				PVC F480	6	SDR-21	
50	150			✓			PVC F480	6	SDR-21	.032
150	170		✓				PVC F480	6	SDR-21	

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	5	✓			CONCRETE
5	25		✓		CHIPS
25	290			✓	PEA GRAVEL

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analysis
___ Other ___
ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
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Signed [signature] WELL DRILLER/AUTHORIZED REPRESENTATIVE
05/26/06 DATE SIGNED
439-746 C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ENCLOSURE C

EXISTING LANDSCAPE AND IRRIGATION PLANS FOR APN 027-310-032

Chaparral Planting North Slope

Mediterranean Garden Planting

Drip irrigation

Drip irrigation

Keep Shrubs and hydro seed in between

Keep Shrubs and hydro seed in between

Hyrdro seed Only- No Irrigation, but provide stub out just in case needed in the future

Keep Shrubs and hydro seed in between

Keep Shrubs and hydro seed in between

Master Bedroom Courtyard Planting

Chaparral Planting South Slope

Entry Courtyard Planting

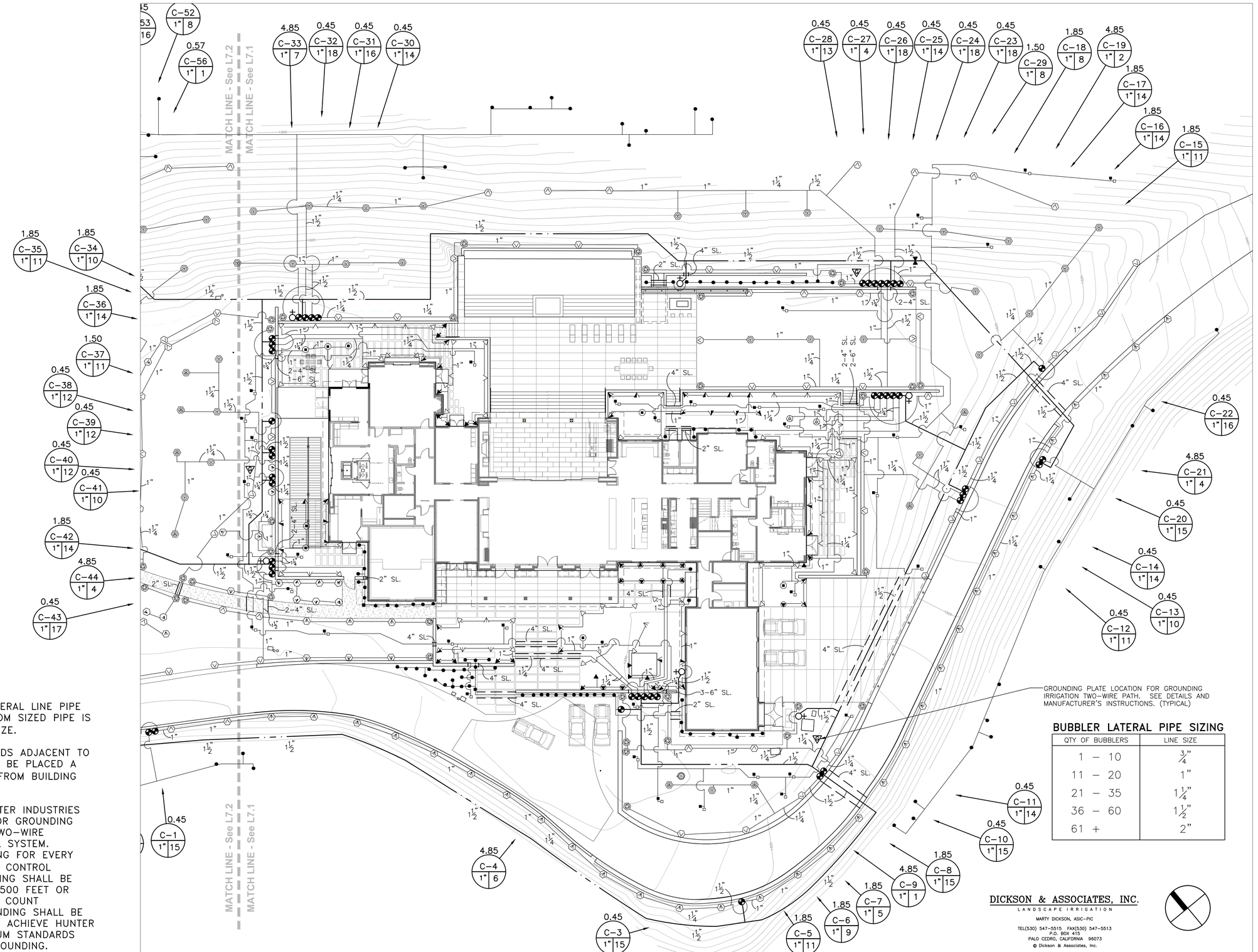
Rancho Arroyo Claro Final Planting Plan Presentation

80 Clear Creek Road

date: 06/20/14
scale: NTS

LUTSKO ASSOCIATES
landscape

2815 18th Street
San Francisco, CA 94110-2002
t: 415.920.2800 f: 415.920.2809



NOTES:
1. UNLABELED LATERAL LINE PIPE DOWN STREAM FROM SIZED PIPE IS TO BE 3/4" IN SIZE.

2. SPRINKLER HEADS ADJACENT TO BUILDINGS ARE TO BE PLACED A MINIMUM OF 12" FROM BUILDING WALLS.

3. REFER TO HUNTER INDUSTRIES SPECIFICATIONS FOR GROUNDING EQUIPMENT FOR TWO-WIRE DECODER CONTROL SYSTEM. PROVIDE GROUNDING FOR EVERY EIGHT (8) REMOTE CONTROL VALVES. GROUNDING SHALL BE INSTALLED EVERY 500 FEET OR CLOSER AS VALVE COUNT REQUIRES. GROUNDING SHALL BE TESTED AND MUST ACHIEVE HUNTER INDUSTRIES MINIMUM STANDARDS FOR EFFECTIVE GROUNDING.

BUBBLER LATERAL PIPE SIZING

QTY OF BUBBLERS	LINE SIZE
1 – 10	3/4"
11 – 20	1"
21 – 35	1 1/4"
36 – 60	1 1/2"
61 +	2"

DICKSON & ASSOCIATES, INC.
LANDSCAPE IRRIGATION
MARTY DICKSON, ASIC-PIC
TEL(530) 547-5515 FAX(530) 547-5513
P.O. BOX 415
PALO CEDRO, CALIFORNIA 96073
© Dickson & Associates, Inc.

RANCHO ARROYO CLARO/A/JOB/14-702/L7.1_Irrigation Plan/ L7.1 /SYMBOL SIZE: 192 /03-05-2014 LMD

LUTSKO ASSOCIATES
landscape
2815 18th Street
San Francisco, CA 94110-2002
t: 415.920.2800 f: 415.920.2809

Consultant:

Stamp:

Project Name:

Rancho Arroyo Claro

80 Clear Creek Rd.
Napa, CA

Sheet Title:
Detailed Irrigation Plan

Submittal:	Date:
Conformed Pricing Set	11/11/13
Permit Set	12/09/13
100% CD Set	01/31/14
100% CD Planting Set	02/07/14
100% CD Set - REV3	02/20/14

Revision: Date:

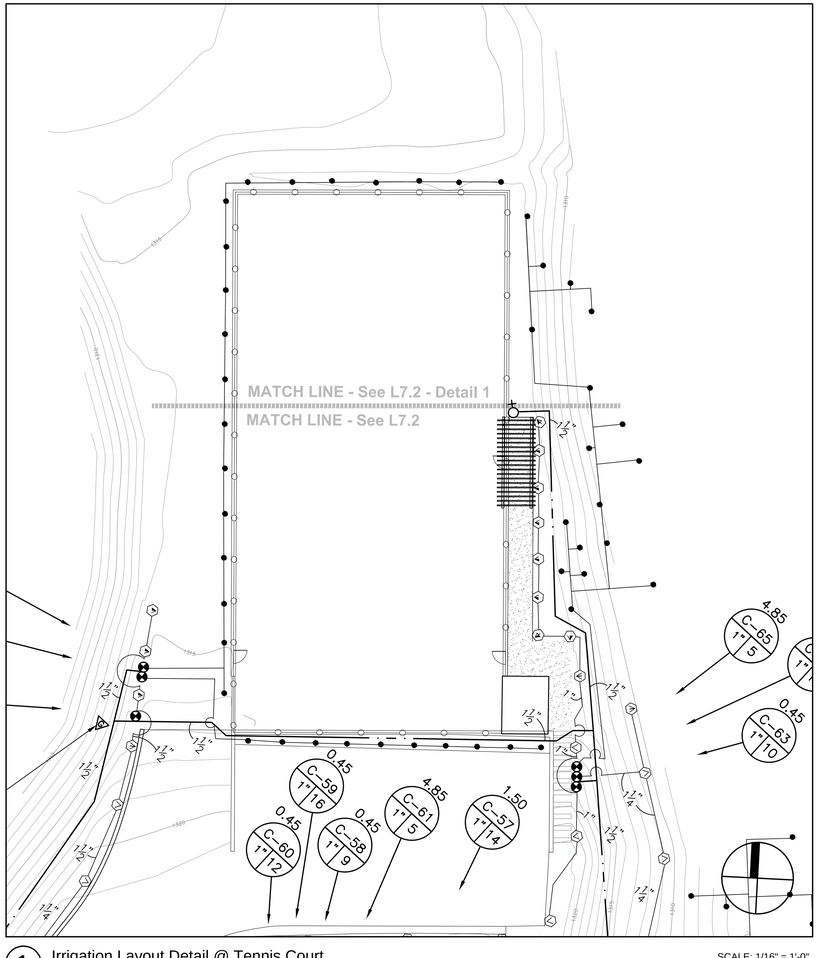
Scale: 1/16" = 1' - 0"

Sheet: L7.1

NOTES:
1. UNLABELED LATERAL LINE PIPE DOWN STREAM FROM SIZED PIPE IS TO BE 3/4" IN SIZE.

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3. REFER TO HUNTER INDUSTRIES SPECIFICATIONS FOR GROUNDING EQUIPMENT FOR TWO-WIRE DECODER CONTROL SYSTEM. PROVIDE GROUNDING FOR EVERY EIGHT (8) REMOTE CONTROL VALVES. GROUNDING SHALL BE INSTALLED EVERY 500 FEET OR CLOSER AS VALVE COUNT REQUIRES. GROUNDING SHALL BE TESTED AND MUST ACHIEVE HUNTER INDUSTRIES MINIMUM STANDARDS FOR EFFECTIVE GROUNDING.



1 Irrigation Layout Detail @ Tennis Court SCALE: 1/16" = 1'-0"

BUBBLER LATERAL PIPE SIZING

QTY OF BUBBLERS	LINE SIZE
1 – 10	3/4"
11 – 20	1"
21 – 35	1 1/4"
36 – 60	1 1/2"
61 +	2"

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Rancho Arroyo Claro

80 Clear Creek Rd.
Napa, CA

Sheet Title:
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100% CD Set	01/31/14
100% CD Planting Set	02/07/14
100% CD Set - REV3	02/20/14

Revision:	Date:

Scale: 1/16" = 1' - 0"

Sheet: L7.2

IRRIGATION NOTES

1. THESE IRRIGATION DRAWINGS ARE DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE INSTALLED. ALL PIPING, VALVES, ETC. SHOWN WITHIN PAVED AREAS IS FOR CLARITY ONLY AND ARE TO BE INSTALLED WITHIN PLANTING AREAS WHERE POSSIBLE. DUE TO THE SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, SLEEVES, ETC., WHICH MAY BE REQUIRED. THE CONTRACTOR IS REQUIRED TO INVESTIGATE THE STRUCTURAL AND FINISHED CONDITIONS AFFECTING ALL OF THE CONTRACT WORK INCLUDING OBSTRUCTIONS, GRADE DIFFERENCES OR AREA DIMENSIONAL DIFFERENCES WHICH MAY NOT HAVE BEEN CONSIDERED IN THE ENGINEERING. IN THE EVENT OF FIELD DIFFERENCES, THE CONTRACTOR IS REQUIRED TO PLAN THE INSTALLATION WORK ACCORDINGLY BY NOTIFICATION AND APPROVAL OF THE OWNER'S AUTHORIZED REPRESENTATIVE AND ACCORDING TO THE CONTRACT SPECIFICATION. THE CONTRACTOR IS ALSO REQUIRED TO NOTIFY AND COORDINATE IRRIGATION CONTRACT WORK WITH ALL APPLICABLE CONTRACTORS FOR THE LOCATION AND INSTALLATION OF PIPE, CONDUIT OR SLEEVES THROUGH OR UNDER WALLS, ROADWAYS, PAVING, STRUCTURE, ETC., BEFORE CONSTRUCTION. IN THE EVENT THESE NOTIFICATIONS ARE NOT PERFORMED, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL REQUIRED REVISIONS.

2. THE CONTRACTOR SHALL EXERCISE CARE IN LOCATING PIPING AS TO NOT CONFLICT WITH OTHER UTILITIES. DO NOT INSTALL IRRIGATION PIPING PARALLEL TO AND DIRECTLY OVER OTHER UTILITIES.

3. THE INTENT OF THIS IRRIGATION SYSTEM IS TO PROVIDE THE MINIMUM AMOUNT OF WATER REQUIRED TO SUSTAIN GOOD PLANT HEALTH.

4. IT IS THE RESPONSIBILITY OF THE LANDSCAPE MAINTENANCE CONTRACTOR AND/OR OWNER TO PROGRAM THE IRRIGATION CONTROLLERS TO PROVIDE THE MINIMUM AMOUNT OF WATER NEEDED TO SUSTAIN GOOD PLANT HEALTH. THIS INCLUDES MAKING ADJUSTMENTS TO THE PROGRAM FOR SEASONAL WEATHER CHANGES, PLANT MATERIAL, WATER REQUIREMENTS, MOUNDS AND SLOPES, SUN, SHADE, AND WIND EXPOSURES.

5. AT THE END OF THE REQUIRED MAINTENANCE PERIOD OF THE CONTRACTOR, THE OWNER SHALL PROVIDE REGULAR MAINTENANCE OF THE IRRIGATION SYSTEM TO ENSURE THE EFFICIENT USE OF WATER. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO CHECKING, ADJUSTING, AND REPAIRING IRRIGATION EQUIPMENT AND CONTROL SYSTEM.

6. 120 VOLT A.C. (2.5 AMP DEMAND) ELECTRICAL SERVICE TO IRRIGATION CONTROLLER LOCATION TO BE PROVIDED UNDER ELECTRICAL CONTRACT WORK. IRRIGATION CONTRACTOR TO MAKE FINAL CONNECTION FROM ELECTRICAL STUB-OUT TO CONTROLLER AND PROVIDE PROPER GROUNDING PER CONTROLLER MANUFACTURER'S INSTRUCTIONS.

7. CONTROLLER SHALL HAVE ITS OWN GROUND ROD. THE GROUND ROD SHALL BE AN EIGHT FOOT LONG BY 5/8" DIAMETER U.L. APPROVED COPPER CLAD ROD. NO MORE THAN 6" OF THE GROUND ROD TO BE ABOVE GRADE. CONNECT #6 GAUGE WIRE WITH A U.L. APPROVED GROUND ROD CLAMP TO ROD AND BACK TO GROUND SCREW AT BASE OF CONTROLLER WITH APPROPPRIATE CONNECTOR. THIS WIRE SHOULD BE AS SHORT AS POSSIBLE, AVOIDING ANY KINKS OR BENDING. GROUND ROD SHALL BE A MINIMUM OF EIGHT FEET (8') FROM IRRIGATION CONTROL WIRE BUNDLE.

8. CONTRACTOR SHALL PROGRAM THE IRRIGATION CONTROLLER TO PROVIDE IRRIGATION TO ALL PLANTING WITHIN THE ALLOWED WATERING WINDOW OF TIME AS REQUIRED. THE CONTRACTOR SHALL CREATE CONTROLLER PROGRAMING THAT WILL NOT EXCEED THE MAXIMUM GALLONS PER MINUTE FLOW RATE STATED ON THE DRAWINGS, AND NOT EXCEED THE CAPACITY OF ANY MAIN LINE PIPING.

9. IRRIGATION CONTROL WIRES SHALL BE HUNTER JACKETED DECODER CABLES WITH U.L. APPROVAL FOR DIRECT BURIAL IN GROUND, SIZE #14-1. SPLICE SHALL BE MADE WITH 3M-DBR/Y-6 SEAL PACKS.

10. FLOW SENSOR CABLE SHALL BE A SHIELDED, TWISTED PAIR CABLE, SIZE #16. NO SPLICES ALLOWED.

11. SPLICING OF DECODER CABLES IS NOT PERMITTED EXCEPT IN VALVE BOXES. SEAL WIRE SPLICES WITH 3M-DBR/Y-6 SPLICE SEALING DEVICES OF SIZE COMPATIBLE WITH WIRE SIZE. LEAVE A 36" LONG, 1" DIAMETER COIL OF EXCESS WIRE AT EACH SPLICE AND A 36" LONG EXPANSION LOOP EVERY 100 FEET ALONG WIRE RUN. TAPE WIRES TOGETHER EVERY TEN FEET. TAPING WIRES IS NOT REQUIRED INSIDE SLEEVES.

12. PLASTIC VALVE BOXES ARE TO BE BLACK IN COLOR WITH BOLT DOWN, NON-HINGED COVER MARKED "IRRIGATION". BOX BODY SHALL HAVE KNOCK OUTS. MANUFACTURER SHALL BE CARSON INDUSTRIES.

13. INSTALL REMOTE CONTROL VALVE BOXES 12" FROM WALK, CURB, LAWN, HEADER BOARD, BUILDING, OR LANDSCAPE FEATURE. AT MULTIPLE VALVE BOX GROUPS, EACH BOX SHALL BE AN EQUAL DISTANCE FROM THE WALK, CURB. LAWN, ETC. AND EACH BOX SHALL BE 12" APART. SHORT SIDE OF RECTANGULAR VALVE BOXES SHALL BE PARALLEL TO WALK, CURB, ETC.

14. VALVE LOCATIONS SHOWN ARE DIAGRAMMATIC. INSTALL IN GROUND COVER/SHRUB AREAS WHERE POSSIBLE (NOT IN LAWN AREA).

15. THE IRRIGATION CONTRACTOR SHALL FLUSH AND ADJUST ALL SPRINKLER HEADS FOR OPTIMUM PERFORMANCE AND TO PREVENT OVER SPRAY ONTO WALKS, ROADWAYS, AND/OR BUILDINGS AS MUCH AS POSSIBLE. THIS SHALL INCLUDE SELECTING THE BEST DEGREE OF ARC TO FIT THE EXISTING SITE CONDITIONS AND TO THROTTLE THE FLOW CONTROL AT EACH VALVE TO OBTAIN THE OPTIMUM OPERATING PRESSURE FOR EACH SYSTEM.

16. ALL SPRINKLER HEADS SHALL BE SET PERPENDICULAR TO FINISH GRADE OF THE AREA TO BE IRRIGATED UNLESS OTHERWISE NOTED ON THE DRAWINGS.

17. LOCATE BUBBLERS ON UP-HILL SIDE OF PLANT OR TREE.

18. INSTALL A VALCON 5000 SERIES SPRING LOADED CHECK VALVE BELOW THOSE SPRINKLERS WHERE LOW HEAD DRAINAGE WILL CAUSE EROSION AND/OR EXCESS WATER.

19. WHERE IT IS NECESSARY TO EXCAVATE ADJACENT TO EXISTING TREES, THE CONTRACTOR SHALL USE ALL POSSIBLE CARE TO AVOID INJURY TO TREES AND TREE ROOTS. EXCAVATION IN AREAS WHERE TWO (2) INCH AND LARGER ROOTS OCCUR SHALL BE DONE BY HAND. TRENCHES ADJACENT TO TREE SHOULD BE CLOSED WITHIN TWENTY-FOUR (24) HOURS; AND WHERE THIS IS NOT POSSIBLE, THE SIDE OF THE TRENCH ADJACENT TO THE TREE SHALL BE KEPT SHADED WITH BURLAP OR CANVAS.

20. IRRIGATION CONTRACTOR TO NOTIFY ALL LOCAL JURISDICTIONS FOR INSPECTION AND TESTING OF INSTALLED BACKFLOW PREVENTION DEVICE.

21. PRESSURE TEST PROCEDURE. THE CONTRACTOR SHALL:
   A. NOTIFY ARCHITECT AT LEAST THREE (3) DAY IN ADVANCE OF TESTING.
   B. PERFORM TESTING AT HIS OWN EXPENSE.
   C. CENTER LOAD PIPING WITH SMALL AMOUNT OF BACKFILL TO PREVENT ARCHING OR SLIPPING UNDER PRESSURE. NO FITTING SHALL BE COVERED.
   D. APPLY THE FOLLOWING TESTS AFTER WELD PLASTIC PIPE JOINTS HAVE CURED AT LEAST 24 HOURS.
      1. TEST LIVE (CONSTANT PRESSURE) AND QUICK COUPLER LINE HYDROSTATICALLY AT 125 PSI. MINIMUM. LINES WILL BE APPROVED IF TEST PRESSURE IS MAINTAINED FOR SIX (6) HOURS. THE LINE WILL BE APPROVED OR NOT APPROVED AS SUCH RESULTS MAY INDICATE. THE CONTRACTOR SHALL MAKE TESTS AND REPAIRS AS NECESSARY UNTIL TEST CONDITIONS ARE MET.
      2. TEST RCV CONTROLLED LATERAL LINES WITH WATER AT LINE PRESSURE AND VISUALLY INSPECT FOR LEAKS. RETEST AFTER CORRECTING DEFECTS.

22. THE SPRINKLER SYSTEM DESIGN IS BASED ON THE MINIMUM OPERATING PRESSURE SHOWN ON THE IRRIGATION DRAWINGS. THE IRRIGATION CONTRACTOR SHALL VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION. REPORT ANY DIFFERENCE BETWEEN THE WATER PRESSURE INDICATED ON THE DRAWINGS AND THE ACTUAL PRESSURE READING AT THE IRRIGATION POINT OF CONNECTION TO THE OWNER'S AUTHORIZED REPRESENTATIVE.

23. IRRIGATION DEMAND: 19 GPM AT 75 PSI STATIC PRESSURE AT IRRIGATION POINT OF CONNECTION. FIELD VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION. IF ACTUAL WATER PRESSURE DIFFERS FROM THE STATED PRESSURE CONTACT ARCHITECT FOR DIRECTION AND POSSIBLE REVISION.

24. PIPE THREAD SEALANT COMPOUND SHALL BE RECTOR SEAL T+2, CHRISTY'S ULTRA SEAL, OR APPROVED EQUAL.

25. RECORD DRAWINGS:
   A. THE CONTRACTOR SHALL MAINTAIN IN GOOD ORDER IN THE FIELD OFFICE ONE COMPLETE SET OF BLACK LINE PRINTS OF ALL SPRINKLER DRAWINGS WHICH FORM A PART OF THE CONTRACT, SHOWING ALL WATER LINES, SPRINKLERS, VALVES, CONTROLLERS AND STUB-OUTS. IN THE EVENT ANY WORK IS NOT INSTALLED AS INDICATED ON THE DRAWINGS, SUCH WORK SHALL BE CORRECTED AND DIMENSIONED ACCURATELY FROM THE BUILDING WALLS.
   B. ALL UNDERGROUND STUB-OUTS FOR FUTURE CONNECTIONS AND VALVES SHALL BE LOCATED AND DIMENSIONED ACCURATELY FROM BUILDING WALLS ON ALL RECORD DRAWINGS.
   C. UPON COMPLETION OF THE WORK, OBTAIN REPRODUCIBLE PRINTS FROM ARCHITECT AND NEATLY CORRECT THE PRINTS TO SHOW THE AS-BUILT CONDITIONS.

IRRIGATION LEGEND

SYMBOL	MODEL NUMBER	DESCRIPTION
	PROS-12-PRS40-CV-MP3000360 ADJUSTABLE	HUNTER POP-UP SPRAY SPRINKLER WITH MP ROTATOR NOZZLE (SHRUB)
	PROS-12-PRS40-CV-MP300090 ADJUSTABLE	HUNTER POP-UP SPRAY SPRINKLER WITH MP ROTATOR NOZZLE (SHRUB)
	PROS-12-PRS40-CV-MP300090 ADJUSTABLE	HUNTER POP-UP SPRAY SPRINKLER WITH MP ROTATOR NOZZLE (SHRUB)
	PROS-12-PRS40-CV-MP2000360 ADJUSTABLE	HUNTER POP-UP SPRAY SPRINKLER WITH MP ROTATOR NOZZLE (SHRUB)
	PROS-12-PRS40-CV-MP200090 ADJUSTABLE	HUNTER POP-UP SPRAY SPRINKLER WITH MP ROTATOR NOZZLE (SHRUB)
	PROS-12-PRS40-CV-MP200090 ADJUSTABLE	HUNTER POP-UP SPRAY SPRINKLER WITH MP ROTATOR NOZZLE (SHRUB)
	PROS-12-PRS40-CV-MP100090 ADJUSTABLE	HUNTER POP-UP SPRAY SPRINKLER WITH MP ROTATOR NOZZLE (SHRUB)
	PROS-12-PRS40-CV-MP100090 ADJUSTABLE	HUNTER POP-UP SPRAY SPRINKLER WITH MP ROTATOR NOZZLE (SHRUB)
	PROS-12-PRS30-CV-15-H,Q	HUNTER POP-UP SPRAY SPRINKLER (SHRUB)
	PROS-12-PRS30-CV-12-F,H,Q	HUNTER POP-UP SPRAY SPRINKLER (SHRUB)
	PROS-12-PRS30-CV-10-F,H,Q	HUNTER POP-UP SPRAY SPRINKLER (SHRUB)
	PROS-12-PRS30-CV-8-H,Q	HUNTER POP-UP SPRAY SPRINKLER (SHRUB)
	PROS-12-PRS30-CV-5-H,Q	HUNTER POP-UP SPRAY SPRINKLER (SHRUB)
	M210	BOWSMITH MULTI-OUTLET EMITTER (1 GPH PER OUTLET)
	PCB-25	HUNTER BUBBLER (SHRUB)
	PCB-25	HUNTER BUBBLER (TREE)
	RZWS-36-25-CV	HUNTER ROOT ZONE BUBBLER ASSEMBLY AND CHECK VALVE. (TREE)
	1" COMPACT & 90-1"	AMIAD FILTER W/155 MESH SCREEN AND WILKINS PRESSURE REDUCING VALVE
M	3200-1½"	SUPERIOR NORMALLY CLOSED MASTER CONTROL VALVE
	FSI-T10-001-1"/P7162D-A	CREATIVE SENSOR TECHNOLOGY FLOW SENSOR WITH PAIGE SHIELDED COMMUNICATION CABLE
	ICV-FS-SERIES	HUNTER FILTER SENTRY REMOTE CONTROL VALVE
	T-113	NIBCO GATE VALVE (LINE SIZE)
	I-401	CHAMPION HOSE BIB
	975XL2-1"	WILKINS REDUCED PRESSURE BACKFLOW ASSEMBLY (LEAD FREE)
	182199L	GROUNDING PLATE LOCATION FOR GROUNDING IRRIGATION CONTROL TWO-WIRE PATH. SEE DETAILS AND MANUFACTURER'S (PAIGE ELECTRICAL COMPANY) INSTRUCTIONS
C	ACC-99D-PED-SS/ICD-XXX/ ICD-HP/ROAMXL-KIT	HUNTER ACC TWO WIRE DECODER CONTROLLER, ROAMXL REMOTE KIT, STATION DECODERS, DECODER PROGRAMMER, AND ALL EARTH GROUNDING EQUIPMENT. CONTACT DON FRANKLIN, HUNTER INDUSTRIES, (916-899-9437) WITH QUESTIONS REGARDING TWO WIRE CONTROLLER COMPONENTS, INSTALLATION, WIRING, WIRE SPLICING, GROUNDING AND DECODER PROGRAMMING. (PEDESTAL MOUNT IN STAINLESS STEEL ENCLOSURE)
SS	SOLAR SYNC-SEN	HUNTER SOLAR SYNC SENSOR
		PRECIPITATION RATE
		CONTROLLER & STATION NUMBER
		APPROXIMATE FLOW (GPM)
		REMOTE CONTROL VALVE SIZE
		MAIN LINE: 1120-SCHEDULE 40 PVC PLASTIC PIPE WITH SCHEDULE 40 PVC SOLVENT-WELD FITTINGS. 18" COVER.
		LATERAL LINE: 1120-SCHEDULE 40 PVC PLASTIC PIPE WITH SCHEDULE 40 PVC SOLVENT-WELD FITTINGS. 12" COVER.
		SLEEVING: 1120-SCHEDULE 40 PVC PLASTIC PIPE. 18" COVER. 24" UNDER VEHICULAR PAVING.

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LANDSCAPE IRRIGATION
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Consultant:

Stamp:

Project Name:

Rancho Arroyo Claro

80 Clear Creek Rd. Napa, CA

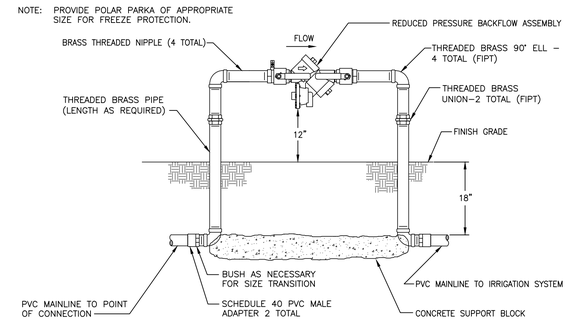
Sheet Title:
Irrigation Legend, Notes, Water Use Calculations

Submittal:	Date:
Conformed Pricing Set	11/11/13
Permit Set	12/09/13
100% CD Set	01/31/14
100% CD Planting Set	02/07/14
100% CD Set - REV3	02/20/14

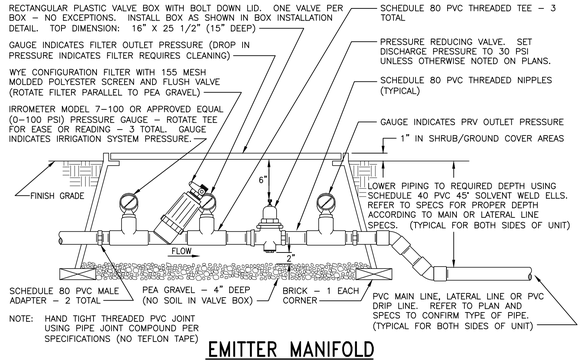
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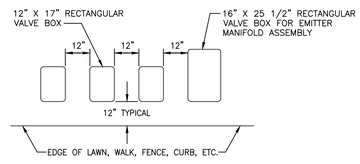
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REDUCED PRESSURE BACKFLOW ASSEMBLY
NOT TO SCALE

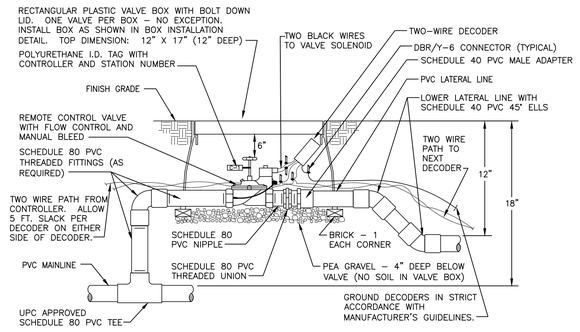


EMITTER MANIFOLD
NOT TO SCALE

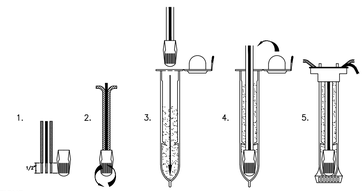


1. CENTER VALVE BOX OVER REMOTE CONTROL VALVE TO FACILITATE SERVICING VALVE.
2. SET BOXES 1" ABOVE FINISH GRADE OR MULCH COVER IN GROUND COVER/SHRUB AREA AND FINISH GRADE IN TURF AREA.
3. SET RCV AND VALVE BOX ASSEMBLY IN GROUND COVER/SHRUB AREA WHERE POSSIBLE. INSTALL IN LAWN ONLY IF GROUND COVER DOES NOT EXIST ADJACENT TO LAWN.
4. SET BOXES PARALLEL TO EACH OTHER AND PERPENDICULAR TO EDGE OF LAWN, WALK, FENCE, CURB, ETC.
5. AVOID HEAVILY COMPACTING SOIL AROUND VALVE BOXES TO PREVENT COLLAPSE AND DEFORMATION OF VALVE BOX SIDES.
6. INSTALL EXTENSION BY VALVE BOX MANUFACTURER AS REQUIRED TO COMPLETELY ENCLOSE ASSEMBLY FOR EASY ACCESS.

VALVE BOX INSTALLATION
NOT TO SCALE



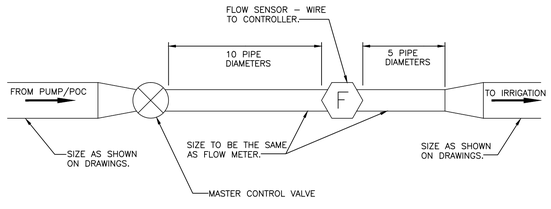
REMOTE CONTROL VALVE
NOT TO SCALE



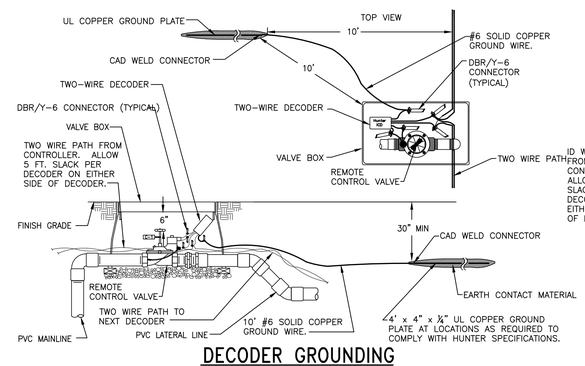
INSTRUCTIONS:

1. USE 3M–DBR/Y–6 WEATHER PROOF SPLICE.
2. STRIP WIRES APPROXIMATELY 1/2" (12.7 MM) TO EXPOSE WIRE.
3. TWIST CONNECTOR AROUND WIRES CLOCKWISE UNTIL HAND TIGHT, DO NOT OVERTIGHTEN.
4. INSERT WIRE ASSEMBLY INTO PLASTIC TUBE UNTIL WIRE CONNECTOR SNAPS PAST LIP IN BOTTOM OF TUBE.
5. PLACE WIRES WHICH EXIT TUBE IN WIRE EXIT HOLES AND CLOSE CAP UNTIL IT SNAPS.
6. INSPECT FINAL SPLICE ASSEMBLY TO BE SECURE AND FINISHED.

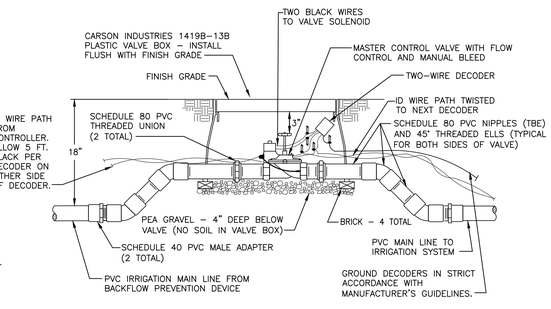
WEATHERPROOF SPLICE ASSEMBLY
NOT TO SCALE



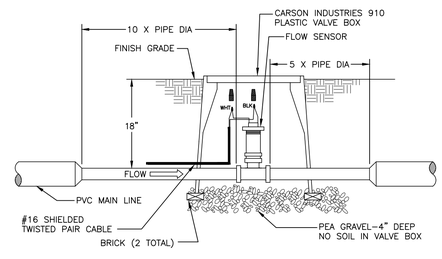
MASTER VALVE / FLOW SENSOR
NOT TO SCALE



DECODER GROUNDING
NOT TO SCALE



MASTER CONTROL VALVE
NOT TO SCALE



FLOW SENSOR INSTALLATION
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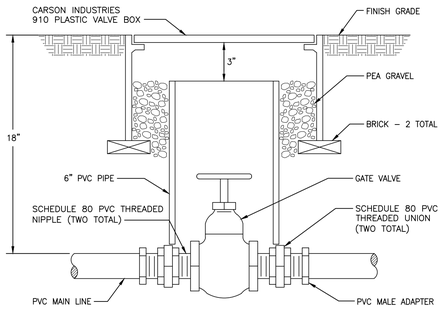
Sheet Title:
Irrigation Details

Submittal:	Date:
Conformed Pricing Set	11/11/13
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100% CD Set	01/31/14
100% CD Planting Set	02/07/14
100% CD Set - REV3	02/20/14

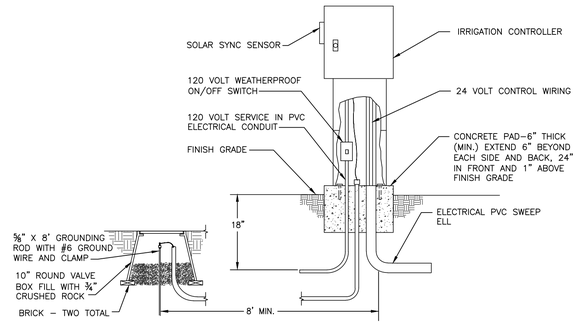
Revision: Date:

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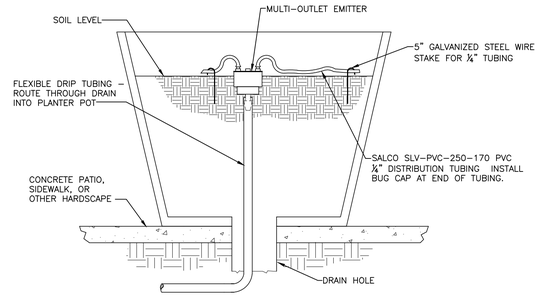
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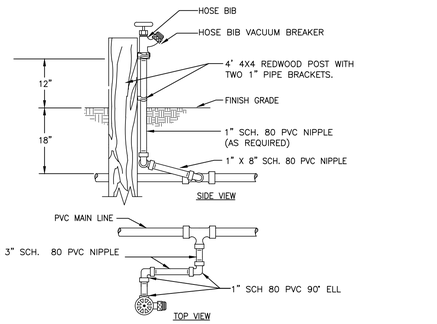
GATE VALVE
NOT TO SCALE



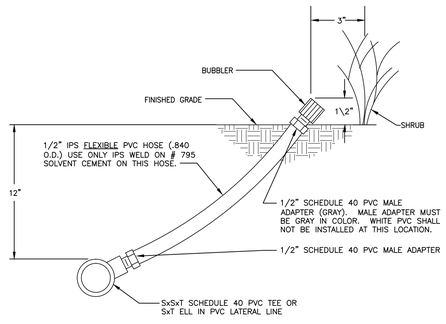
PEDESTAL MOUNT CONTROLLER
NOT TO SCALE



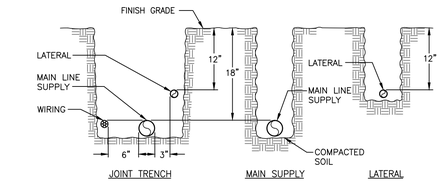
PLANTER POT IRRIGATION
NOT TO SCALE



HOSE BIB
NOT TO SCALE

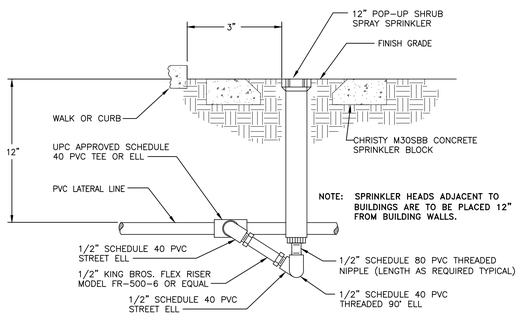


SHRUB BUBBLER WITH FLEXIBLE RISER
NOT TO SCALE

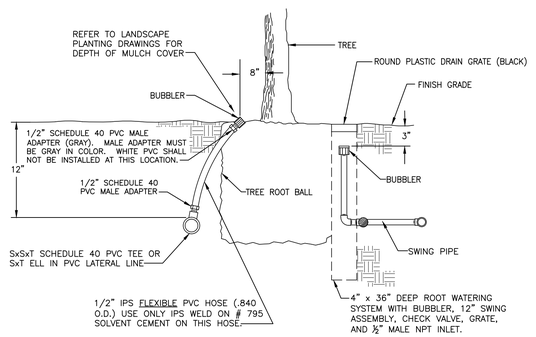


NOTES:
1. ALL PLASTIC PIPING SHALL BE INSTALLED IN THE TRENCH IN A SERPENTINE MANNER AS PER THE MANUFACTURER'S SPECIFICATIONS.
2. ALL SUPPLY LINES TO BE INSTALLED AS PER MANUFACTURER'S SPECIFICATIONS.
3. TAPE AND BUNDLE TUBING OR WIRING AT 10 FEET INTERVALS.
4. ALL 120 VOLT WIRING IN CONDUIT TO BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES.
5. BACKFILL MATERIAL SHALL BE THE EARTH EXCAVATED FROM THE TRENCHES, FREE FROM ROCKS, CONCRETE CHUNKS, AND OTHER FOREIGN OR COARSE MATERIALS. CAREFULLY SELECT BACKFILL THAT IS TO BE PLACED NEXT TO PLASTIC PIPE TO AVOID ANY SHARP OBJECTS WHICH MAY DAMAGE THE PIPE.

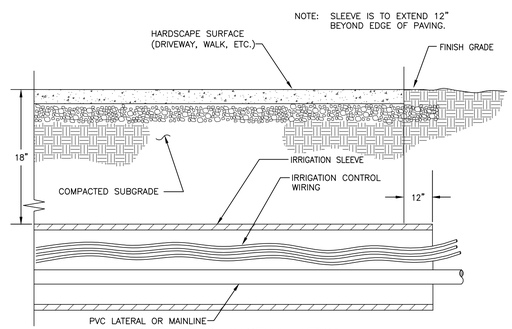
TRENCHING DETAIL
NOT TO SCALE



POP–UP SPRAY SPRINKLER RISER
NOT TO SCALE



TREE BUBBLER
NOT TO SCALE



SLEEVING INSTALLATION
NOT TO SCALE

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Rancho Arroyo Claro

80 Clear Creek Rd.
Napa, CA

Sheet Title:
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100% CD Planting Set	02/07/14
100% CD Set - REV3	02/20/14

Revision: Date:

Scale:

Sheet: L7.5

IRRIGATION WATERING SCHEDULES

MULTI-OUT DRIP IRRIGATION FOR MODERATE WATER USE PLANTS IN POTS - STATIONS: 48, & 56														
SPRINKLER MANUFACTURER		BOWSMITH		LOCATION:		NAPA, CALIFORNIA								
PRECIPITATION RATE (INCHES/HOUR):		0.57		EMITTER TUBE SPACING:		VARIES								
IRRIGATION SYSTEM EFFICIENCY		0.90		EMITTER TUBE FLOW:		1 GPH								
PLANT FACTOR:		0.50												
YEAR 2 REDUCTION AMOUNT:		-10% OF YEAR 1 (ESTABLISHMENT) RUN TIME MINUTES												
MONTH:		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ETO PER MONTH (INCHES):		1.30	1.70	2.80	3.90	5.10	6.00	7.10	6.10	4.80	3.10	1.50	0.90	44.30
ETO PER WEEK (INCHES):		0.300	0.393	0.647	0.901	1.178	1.386	1.640	1.409	1.109	0.716	0.346	0.208	
APPLIED ETO PER WEEK (INCHES):		0.167	0.218	0.359	0.500	0.654	0.770	0.911	0.783	0.616	0.398	0.192	0.115	
MINUTES OF WATER PER WEEK:	YEAR 1	18	23	38	53	69	81	96	82	65	42	20	12	
	YEAR 2	16	21	34	47	62	73	86	74	58	38	18	11	
DAYS PER WEEK:	YEAR 1	1	1	2	3	4	5	5	5	4	3	2	1	
	YEAR 2	1	1	2	3	4	5	5	5	4	3	2	1	
MINUTES OF WATER PER DAY:	YEAR 1	18	23	19	18	17	16	19	16	16	14	10	12	
	YEAR 2	16	21	17	16	15	15	17	15	15	13	9	11	
CYCLES PER DAY:	YEAR 1	1	1	1	1	1	1	1	1	1	1	1	1	
	YEAR 2	1	1	1	1	1	1	1	1	1	1	1	1	
MINUTES PER CYCLE:	YEAR 1	18	23	19	18	17	16	19	16	16	14	10	12	
	YEAR 2	16	21	17	16	15	15	17	15	15	13	9	11	

BUBBLER IRRIGATION FOR LOW WATER USE SHRUB/GROUNDCOVER - STATIONS: 2, 4, 9, 19, 21, 33, 44, 55, 61, 65, 67, & 68														
SPRINKLER MANUFACTURER		HUNTER		LOCATION:		NAPA, CALIFORNIA								
PRECIPITATION RATE (INCHES/HOUR):		4.85		HEAD SPACING:		VARIES								
IRRIGATION SYSTEM EFFICIENCY		0.85		HEAD GPM:		0.25								
PLANT FACTOR:		0.30												
YEAR 2 REDUCTION AMOUNT:		-10% OF YEAR 1 (ESTABLISHMENT) RUN TIME MINUTES												
MONTH:		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ETO PER MONTH (INCHES):		1.30	1.70	2.80	3.90	5.10	6.00	7.10	6.10	4.80	3.10	1.50	0.90	44.30
ETO PER WEEK (INCHES):		0.300	0.393	0.647	0.901	1.178	1.386	1.640	1.409	1.109	0.716	0.346	0.208	
APPLIED ETO PER WEEK (INCHES):		0.106	0.139	0.228	0.318	0.416	0.489	0.579	0.497	0.391	0.253	0.122	0.073	
MINUTES OF WATER PER WEEK:	YEAR 1	1	2	3	4	5	6	7	6	5	3	2	1	
	YEAR 2	1	2	3	4	5	5	6	6	4	3	1	1	
DAYS PER WEEK:	YEAR 1	1	1	2	3	3	3	3	3	2	1	1	1	
	YEAR 2	1	1	2	3	3	3	3	3	2	1	1	1	
MINUTES OF WATER PER DAY:	YEAR 1	1	2	1	1	2	2	2	2	2	3	2	1	
	YEAR 2	1	2	1	1	2	2	2	2	2	3	1	1	
CYCLES PER DAY:	YEAR 1	1	1	1	1	1	1	1	1	1	1	1	1	
	YEAR 2	1	1	1	1	1	1	1	1	1	1	1	1	
MINUTES PER CYCLE:	YEAR 1	1	2	1	1	2	2	2	2	2	3	2	1	
	YEAR 2	1	2	1	1	2	2	2	2	2	3	1	1	

BUBBLER IRRIGATION FOR MODERATE WATER USE TREES - STATIONS: 29, 37, & 57														
SPRINKLER MANUFACTURER		HUNTER		LOCATION:		NAPA, CALIFORNIA								
PRECIPITATION RATE (INCHES/HOUR):		1.50		HEAD SPACING:		VARIES								
IRRIGATION SYSTEM EFFICIENCY		0.85		HEAD GPM:		2 X .25								
PLANT FACTOR:		0.50												
YEAR 2 REDUCTION AMOUNT:		-10% OF YEAR 1 (ESTABLISHMENT) RUN TIME MINUTES												
MONTH:		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ETO PER MONTH (INCHES):		1.30	1.70	2.80	3.90	5.10	6.00	7.10	6.10	4.80	3.10	1.50	0.90	44.30
ETO PER WEEK (INCHES):		0.300	0.393	0.647	0.901	1.178	1.386	1.640	1.409	1.109	0.716	0.346	0.208	
APPLIED ETO PER WEEK (INCHES):		0.177	0.231	0.380	0.530	0.693	0.815	0.965	0.829	0.652	0.421	0.204	0.122	
MINUTES OF WATER PER WEEK:	YEAR 1	7	9	15	21	28	33	39	33	26	17	8	5	
	YEAR 2	6	8	14	19	25	29	35	30	23	15	7	4	
DAYS PER WEEK:	YEAR 1	1	1	1	1	1	2	2	2	2	1	1	1	
	YEAR 2	1	1	1	1	1	2	2	2	2	1	1	1	
MINUTES OF WATER PER DAY:	YEAR 1	7	9	15	21	28	16	19	17	13	17	8	5	
	YEAR 2	6	8	14	19	25	15	17	15	12	15	7	4	
CYCLES PER DAY:	YEAR 1	1	1	1	1	1	1	1	1	1	1	1	1	
	YEAR 2	1	1	1	1	1	1	1	1	1	1	1	1	
MINUTES PER CYCLE:	YEAR 1	7	9	15	21	28	16	19	17	13	17	8	5	
	YEAR 2	6	8	14	19	25	15	17	15	12	15	7	4	

NOTES:
THE CHARTS ARE INTENDED TO BE USED AS A GUIDELINE ONLY AND INDICATE APPROXIMATE RUN TIMES (IN MINUTES) FOR EACH ZONE BASED ON ESTIMATED WEEKLY WATER REQUIREMENTS FOR ESTABLISHED PLANT MATERIAL. THE FIGURES SHOWN IN THIS SCHEDULE ARE APPROXIMATE AND HAVE BEEN DEVELOPED FROM LOCAL CURRENT AVERAGES FOR EVAPOTRANSPIRATION, AND REFLECT MAXIMUM IRRIGATION REQUIREMENTS OF THE PLANT MATERIAL BASED ON PLANT TYPE AND SPACING. ACTUAL RUN TIMES MAY BE DIFFERENT DEPENDING ON A VARIETY OF FACTORS INCLUDING TOPOGRAPHY, SOIL STRUCTURE, SUN AND WIND EXPOSURE, WEATHER, ACTUAL PLANT WATER REQUIREMENTS, ETC.

MP ROTATOR IRRIGATION FOR MODERATE WATER USE SHRUB/GROUNDCOVER - STATIONS: 12, 22, 23, 26, 27, 28, 30, 31, 32, 38, 39, 40, 41, 43, 45, 46, 47, 49, 50, 51, 52, 53, 54, 58, 59, 60, 62, 63, & 64														
SPRINKLER MANUFACTURER		HUNTER		LOCATION:		NAPA, CALIFORNIA								
PRECIPITATION RATE (INCHES/HOUR):		0.46		HEAD SPACING:		VARIES								
IRRIGATION SYSTEM EFFICIENCY		0.75		HEAD GPM:		VARIES								
PLANT FACTOR:		0.50												
YEAR 2 REDUCTION AMOUNT:		-10% OF YEAR 1 (ESTABLISHMENT) RUN TIME MINUTES												
MONTH:		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ETO PER MONTH (INCHES):		1.30	1.70	2.80	3.90	5.10	6.00	7.10	6.10	4.80	3.10	1.50	0.90	44.30
ETO PER WEEK (INCHES):		0.300	0.393	0.647	0.901	1.178	1.386	1.640	1.409	1.109	0.716	0.346	0.208	
APPLIED ETO PER WEEK (INCHES):		0.200	0.262	0.431	0.600	0.785	0.924	1.093	0.939	0.739	0.477	0.231	0.139	
MINUTES OF WATER PER WEEK:	YEAR 1	27	35	57	80	105	123	146	125	99	64	31	18	
	YEAR 2	24	31	52	72	94	111	131	113	89	57	28	17	
DAYS PER WEEK:	YEAR 1	1	1	2	3	3	3	3	3	3	2	1	1	
	YEAR 2	1	1	2	3	3	3	3	3	3	2	1	1	
MINUTES OF WATER PER DAY:	YEAR 1	27	35	29	27	35	41	49	42	33	32	31	18	
	YEAR 2	24	31	26	24	31	37	44	38	30	29	28	17	
CYCLES PER DAY:	YEAR 1	1	1	1	1	1	1	1	1	1	1	1	1	
	YEAR 2	1	1	1	1	1	1	1	1	1	1	1	1	
MINUTES PER CYCLE:	YEAR 1	27	35	29	27	35	41	49	42	33	32	31	18	
	YEAR 2	24	31	26	24	31	37	44	38	30	29	28	17	

MP ROTATOR IRRIGATION FOR LOW WATER USE SHRUB/GROUNDCOVER - STATIONS: 1, 3, 10, 11, 13, 14, 20, 24, 25, & 66														
SPRINKLER MANUFACTURER		HUNTER		LOCATION:		NAPA, CALIFORNIA								
PRECIPITATION RATE (INCHES/HOUR):		0.45		HEAD SPACING:		VARIES								
IRRIGATION SYSTEM EFFICIENCY		0.75		HEAD GPM:		VARIES								
PLANT FACTOR:		0.30												
YEAR 2 REDUCTION AMOUNT:		-10% OF YEAR 1 (ESTABLISHMENT) RUN TIME MINUTES												
MONTH:		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ETO PER MONTH (INCHES):		1.30	1.70	2.80	3.90	5.10	6.00	7.10	6.10	4.80	3.10	1.50	0.90	44.30
ETO PER WEEK (INCHES):		0.300	0.393	0.647	0.901	1.178	1.386	1.640	1.409	1.109	0.716	0.346	0.208	
APPLIED ETO PER WEEK (INCHES):		0.120	0.157	0.259	0.360	0.471	0.554	0.656	0.564	0.443	0.286	0.139	0.083	
MINUTES OF WATER PER WEEK:	YEAR 1	16	21	34	48	63	74	87	75	59	38	18	11	
	YEAR 2	14	19	31	43	57	67	79	68	53	34	17	10	
DAYS PER WEEK:	YEAR 1	1	1	1	2	2	2	2	2	2	1	1	1	
	YEAR 2	1	1	1	2	2	2	2	2	2	1	1	1	
MINUTES OF WATER PER DAY:	YEAR 1	16	21	34	24	31	37	44	38	30	38	18	11	
	YEAR 2	14	19	31	22	28	33	39	34	27	34	17	10	
CYCLES PER DAY:	YEAR 1	1	1	1	1	1	1	1	1	1	1	1	1	
	YEAR 2	1	1	1	1	1	1	1	1	1	1	1	1	
MINUTES PER CYCLE:	YEAR 1	16	21	34	24	31	37	44	38	30	38	18	11	
	YEAR 2	14	19	31	22	28	33	39	34	27	34	17	10	

POP-UP SPRAY IRRIGATION FOR MODERATE WATER USE SHRUB/GROUNDCOVER - STATIONS: 7, 8, 35, 36, & 42														
SPRINKLER MANUFACTURER		HUNTER		LOCATION:		NAPA, CALIFORNIA								
PRECIPITATION RATE (INCHES/HOUR):		1.85		HEAD SPACING:		VARIES								
IRRIGATION SYSTEM EFFICIENCY		0.70		HEAD GPM:		VARIES								
PLANT FACTOR:		0.50												
YEAR 2 REDUCTION AMOUNT:		-10% OF YEAR 1 (ESTABLISHMENT) RUN TIME MINUTES												
MONTH:		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ETO PER MONTH (INCHES):		1.30	1.70	2.80	3.90	5.10	6.00	7.10	6.10	4.80	3.10	1.50	0.90	44.30
ETO PER WEEK (INCHES):		0.300	0.393	0.647	0.901	1.178	1.386	1.640	1.409	1.109	0.716	0.346	0.208	
APPLIED ETO PER WEEK (INCHES):		0.214	0.280	0.462	0.643	0.841	0.990	1.171	1.006	0.792	0.511	0.247	0.148	
MINUTES OF WATER PER WEEK:	YEAR 1	7	9	15	21	27	32	38	33	26	17	8	5	
	YEAR 2	6	8	13	19	25	29	34	29	23	15	7	4	
DAYS PER WEEK:	YEAR 1	1	1	2	2	3	3	3	3	3	2	1	1	
	YEAR 2	1	1	2	2	3	3	3	3	3	2	1	1	
MINUTES OF WATER PER DAY:	YEAR 1	7	9	7	10	9	11	13	11	9	8	8	5	
	YEAR 2	6	8	7	9	8	10	11	10	8	7	7	4	
CYCLES PER DAY:	YEAR 1	1	1	1	1	1	1	1	1	1	1	1	1	
	YEAR 2	1	1	1	1	1	1	1	1	1	1	1	1	
MINUTES PER CYCLE:	YEAR 1	7	9	7	10	9	11	13	11	9	8	8	5	
	YEAR 2	6	8	7	9	8	10	11	10	8	7	7	4	

POP-UP SPRAY IRRIGATION FOR LOW WATER USE SHRUB/GROUNDCOVER - STATIONS: 5, 6, 15, 16, 17, 18, & 34														
SPRINKLER MANUFACTURER		HUNTER		LOCATION:		NAPA, CALIFORNIA								
PRECIPITATION RATE (INCHES/HOUR):		1.85		HEAD SPACING:		VARIES								
IRRIGATION SYSTEM EFFICIENCY		0.70		HEAD GPM:		VARIES								
PLANT FACTOR:		0.30												
YEAR 2 REDUCTION AMOUNT:		-10% OF YEAR 1 (ESTABLISHMENT) RUN TIME MINUTES												
MONTH:		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ETO PER MONTH (INCHES):		1.30	1.70	2.80	3.90	5.10	6.00	7.10	6.10	4.80	3.10	1.50	0.90	44.30
ETO PER WEEK (INCHES):		0.300	0.393	0.647	0.901	1.178	1.386	1.640	1.409	1.109	0.716	0.346	0.208	
APPLIED ETO PER WEEK (INCHES):		0.129	0.168	0.277	0.386	0.505	0.594	0.703	0.604	0.475	0.307	0.148	0.089	
MINUTES OF WATER PER WEEK:	YEAR 1	4	5	9	13	16	19	23	20	15	10	5	3	
	YEAR 2	4	5	8	11	15	17	21	18	14	9	4	3	
DAYS PER WEEK:	YEAR 1	1	1	1	2	2	2	2	2	2	1	1	1	
	YEAR 2	1	1	1	2	2	2	2	2	2	1	1	1	
MINUTES OF WATER PER DAY:	YEAR 1	4	5	9	6	8	10	11	10	8	10	5	3	
	YEAR 2	4	5	8	6	7	9	10	9	7	9	4	3	
CYCLES PER DAY:	YEAR 1	1	1	1	1	1	1	1	1	1	1	1	1	
	YEAR 2	1	1	1	1	1	1	1	1	1	1	1	1	
MINUTES PER CYCLE:	YEAR 1	4	5	9	6	8	10	11	10	8	10	5	3	
	YEAR 2	4	5	8	6	7	9	10	9	7	9	4	3	

DICKSON & ASSOCIATES, INC.
LANDSCAPE IRRIGATION
MARTY DICKSON, ASIC-PIC
TEL(530) 547-5515 FAX(530) 547-5513
P.O. BOX 415
PALO CEDRO, CALIFORNIA 96073

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LUTSKO ASSOCIATES
landscape
2815 18th Street
San Francisco, CA 94110-2002
t: 415.920.2800 f: 415.920.2809

Consultant:

Stamp:

Project Name:

Rancho Arroyo Claro

80 Clear Creek Rd.
Napa, CA

Sheet Title:
Irrigation Schedules

Submittal:	Date:
Conformed Pricing Set	11/11/13
Permit Set	12/09/13
100% CD Set	01/31/14
100% CD Planting Set	02/07/14
100% CD Set - REV3	02/20/14

Revision: Date:

Scale:

Sheet: L7.6

SECTION B: WATER EFFICIENT LANDSCAPE WORKSHEETS

Section B1. Hydrozone Information Table

Please complete the hydrozone table(s) for each hydrozone. Use as many tables as necessary to provide the square footage of landscape area per hydrozone.

Hydrozone*	Zone or Valve	Irrigation Method**	Area (Sq. Ft.)	% of Total Landscape Area
Moderate shrub/gc	moderate MP	rotor	37222	53.8%
Low shrub/gc	low MP	rotor	19294	27.9%
Moderate shrub/gc	moderate spray	spray	2389	3.5%
Low shrub/gc	low spray	spray	3148	4.5%
Low shrub/gc	low bubbler	bubbler	6104	8.8%
Moderate shrub/gc	moderate drip	drip	31	0.1%
Moderate trees	moderate bubbler	bubbler	1056	1.4%
		Total (Sq. Ft.):	69,244	**100%**

Summary Hydrozone Table		
Hydrozone*	**Area (Sq. Ft.)**	**% of Total Landscape Area**
High Water Use	0	0
Moderate Water Use	40,698	59
Low Water Use	28,546	41
Total:	69,244	**100%**

** Hydrozone*
HW = High Water Use Plants
MW = Moderate Water Use Plants
LW = Low Water Use Plants

***Irrigation Method*
MS = Micro-spray
S = Spray
R = Rotor
B = Bubbler
D = Drip

Section B2. Maximum Applied Water Allowance (MAWA)

The project's Maximum Applied Water Allowance shall be calculated using this equation:

MAWA = (ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)]

where:

MAWA = Maximum Applied Water Allowance (gallons per year)
ETo = Reference Evapotranspiration from *Appendix A* (inches per year)
0.7 = ET Adjustment Factor (ETAF)
LA = Landscaped Area includes Special Landscape Area (square feet)
0.62 = Conversion factor (to gallons per square foot)
SLA = Portion of the landscape area identified as Special Landscape Area (square feet)
0.3 = the additional ET Adjustment Factor for Special Landscape Area (1.0 - 0.7 = 0.3)

Maximum Applied Water Allowance = 1,331,299 **gallons per year**

Show calculations.

44.3 x 0.62 x (.7 x 69,244) = 1,331,299

Effective Precipitation (Eppt)

If considering Effective Precipitation, use 25% (0.25) of annual precipitation. Use the following equation to calculate the Maximum Applied Water Allowance (see Appendix B for rainfall map):

MAWA= (ETo – Eppt) (0.62) [(0.7 x LA) + (0.3 x SLA)]

Maximum Applied Water Allowance = _____ **gallons per year**

Show calculations.

Section B3. Estimated Total Water Use (ETWU)

The project's Estimated Total Water Use is calculated using the following formula:

$$ETWU = (ETo)(0.62)\left(\frac{PF \times HA}{IE} + SLA\right)$$

where:

ETWU = Estimated total water use per year (gallons per year)
ETo = Reference Evapotranspiration (inches per year)
PF = Plant Factor from WUCOLS[2] (*Water Use Classification of Landscape Species, UCCE 2000*)
HA = Hydrozone Area [high, medium, and low water use areas] (square feet)
SLA = Special Landscape Area (square feet)
0.62 = Conversion Factor (to gallons per square foot)
IE = Irrigation Efficiency (minimum 0.71)

Hydrozone Table for Calculating ETWU

Please complete the hydrozone table(s). Use as many tables as necessary.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)	Area (HA) (square feet)	PF x HA (square feet)
Moderate MP	Moderate	.5	37,222	18,611
Low MP	Low	.3	19,294	5,788
Moderate Spray	Moderate	.5	2,389	1,195
Low Spray	Low	.3	3,148	944
Low Bubbler	Low	.3	6,104	1,831
Moderate Drip	Moderate	.5	31 ~~Sum~~	16
Moderate Bubbler	Moderate SLA	.5	1,056	528

Estimated Total Water Use = 1,037,134 **gallons**

Show calculations.

1. 44.3 x .62 x 18611/.75 = 681,560
2. 44.3 x .62 x 5788/.75 = 211,964
3. 44.3 x .62 x 1195/.7 = 46,888
4. 44.3 x .62 x 944/.7 = 37,040
5. 44.3 x .62 x 1831/.85 = 59,165
6. 44.3 x .62 x 16/.85 = 517

TOTAL = 1,037,134

[2] To obtain plant factors from WUCOLS, see http://www.water.ca.gov/wateruseefficiency/docs/wucols00.pdf - *Water Use Classification of Landscape Species, UCCE 2000.*

ENCLOSURE D

EXISTING LANDSCAPE AND IRRIGATION PLANS FOR APN 027-310-043

SUMMIT ENGINEERING, INC.	80 Clear Creek Road Water Use Estimates APN 027-310-043 Landscape Irrigation Demand	PROJECT NO. 2021275 BY: TBL CHK: GG

Reference ET 46.6

(Value listed in California WELO Appendix C for Oakville, CA)

Plant factors

Tree plant factor 0.5

(Recommended value for all trees by University of California Agriculture and Natural Resources: https://ucanr.edu/site/center-landscape-urban-horticulture/estimating-tree-water-requirements)

Irrigation efficiency 0.81

(WELO-recommended value for drip irrigation)

Canopy cover areas

Area 1	9,764	sf
Area 2	464	sf
Total Area	10,228	sf

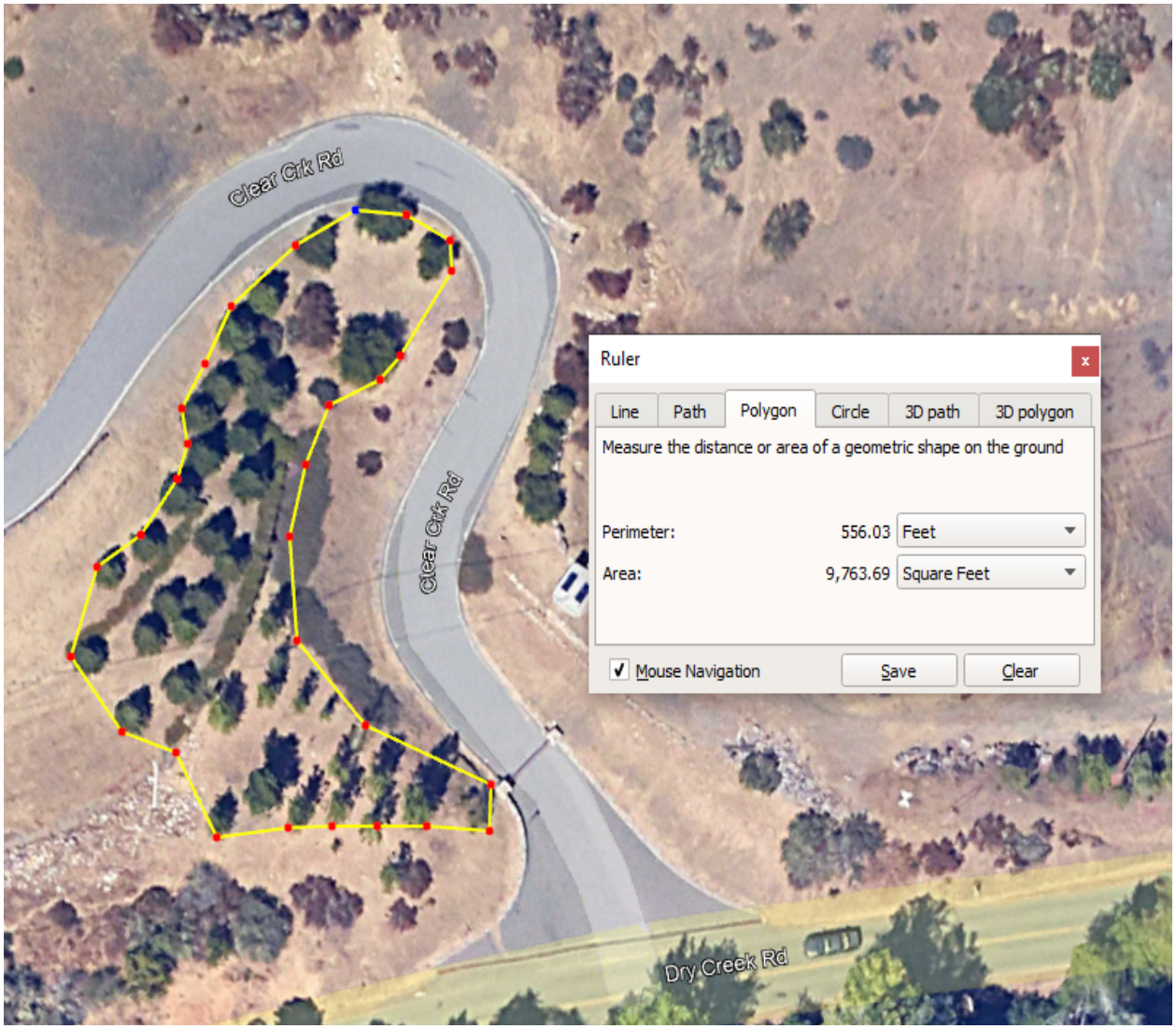
(Canopy cover areas conservatively estimated as shown on attached aerial image)

Calculated water demand

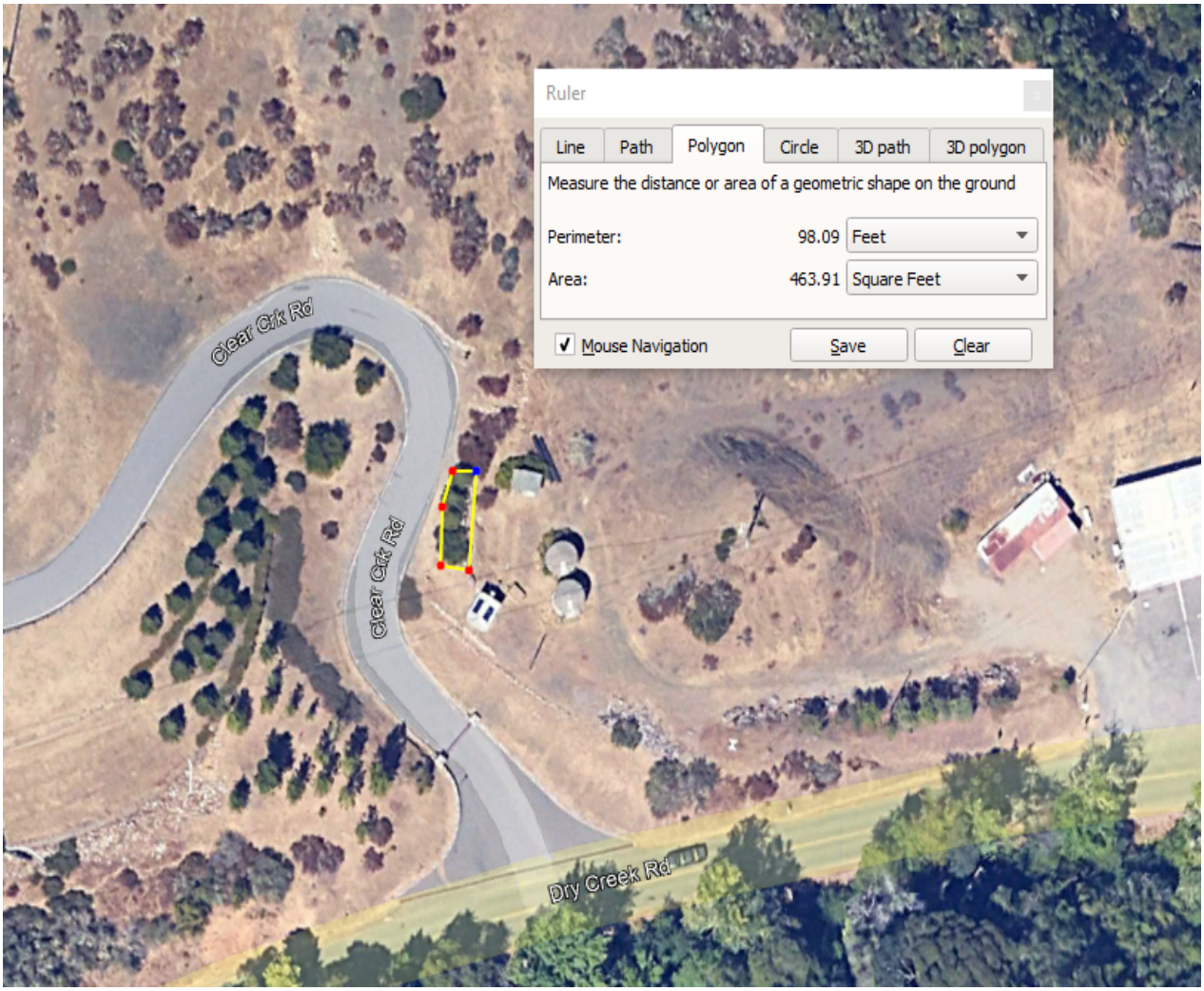
(Based on WELO ETWU methodology)

	174,137	gal/yr
	8,275	gal/yr
Total:	182,412	gal/yr
=	**0.56**	**af/yr**

Area 1


Clear Crk Rd
Clear Crk Rd
Dry Creek Rd
Ruler
Line
Path
Polygon
Circle
3D path
3D polygon
Measure the distance or area of a geometric shape on the ground
Perimeter:
556.03
Feet
Area:
9,763.69
Square Feet
Mouse Navigation
Save
Clear

Area 2


Ruler
Line
Path
Polygon
Circle
3D path
3D polygon
Measure the distance or area of a geometric shape on the ground
Perimeter:
98.09
Feet
Area:
463.91
Square Feet
Mouse Navigation
Save
Clear
Clear Crk Rd
Clear Crk Rd
Dry Creek Rd

ENCLOSURE E

PROPOSED LANDSCAPE PLANS



TERRE MOTO
3486-A MISSION ST
SAN FRANCISCO, CA 94110
843-271-7278
WWW.TERREMOTO.LA

LICENSED LANDSCAPE ARCHITECT
Mary Wiggins 6751
Signature
March 31, 2024
Renewal Date
April 4, 2022
Date
STATE OF CALIFORNIA

PROJECT

PROJECT CLOUD

Ponderosa One, LLC
80 Clear Creek Rd., Oakville
CA 94562

ISSUE SET
SCHEMETIC DESIGN

ISSUE DATE
04/15/2024

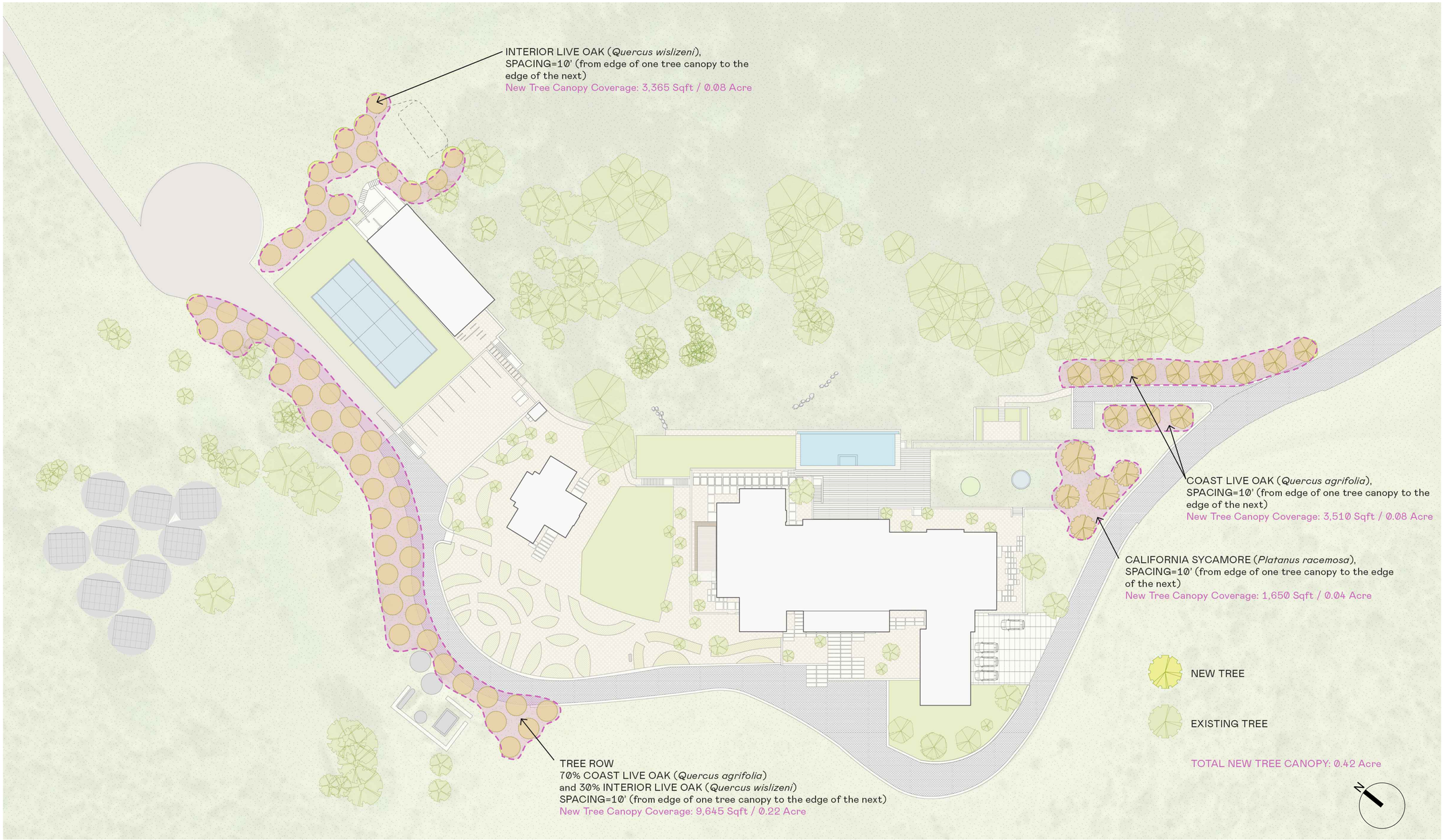
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1	04.15.24	Viewshed Revision	YS

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CHECKED BY:

SCALE
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SHEET TITLE
LANDSCAPE SITE PLAN

SHEET NUMBER
LA1



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300 BRANNAN ST
SAN FRANCISCO, CA 94107
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April 4, 2022
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12/06/2024

REV	DATE	ISSUE	BY
1	04.15.24	Viewshed Revision	YS
2	12.06.24	New Tree Coverage	YS

DRAWN BY:
CHECKED BY:

SCALE
1"=30'-0"

SHEET TITLE
NEW TREES

SHEET NUMBER
LA2

FIXTURE	MFG	MODEL #	DESCRIPTION
MINI MICRO	BK LIGHTING	SF - 24 - L - MM - LED - E71 - MFL - WHP - 12 - 11 - A - PP18B	PATH LIGHT



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Mary Wiggins 6751
STATE OF CALIFORNIA
Signature
March 31, 2024
Renewal Date
April 4, 2024
Date

PROJECT

PROJECT CLOUD

Ponderosa One, LLC
80 Clear Creek Rd., Oakville
CA 94562

ISSUE SET
SCHEMETIC DESIGN

ISSUE DATE
04/15/2024

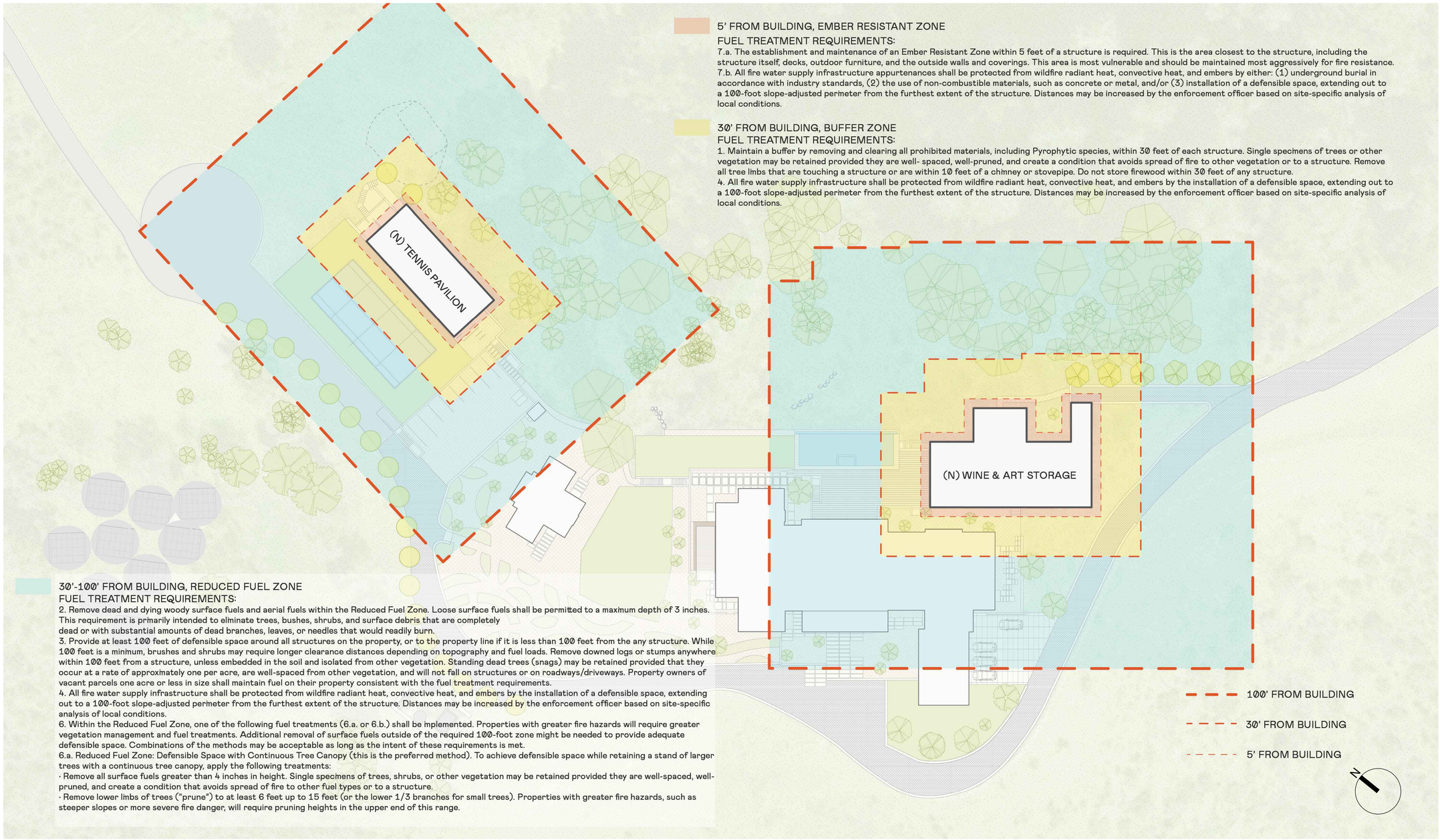
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1"=30'-0"

SHEET TITLE
LIGHTING PLAN

SHEET NUMBER
LA3



5' FROM BUILDING, EMBER RESISTANT ZONE
FUEL TREATMENT REQUIREMENTS:
7.a. The establishment and maintenance of an Ember Resistant Zone within 5 feet of a structure is required. This is the area closest to the structure, including the structure itself, decks, outdoor furniture, and the outside walls and coverings. This area is most vulnerable and should be maintained most aggressively for fire resistance.
7.b. All fire water supply infrastructure appurtenances shall be protected from wildfire radiant heat, convective heat, and embers by either: (1) underground burial in accordance with industry standards, (2) the use of non-combustible materials, such as concrete or metal, and/or (3) installation of a defensible space, extending out to a 100-foot slope-adjusted perimeter from the furthest extent of the structure. Distances may be increased by the enforcement officer based on site-specific analysis of local conditions.

30' FROM BUILDING, BUFFER ZONE
FUEL TREATMENT REQUIREMENTS:
1. Maintain a buffer by removing and clearing all prohibited materials, including Pyrophytic species, within 30 feet of each structure. Single specimens of trees or other vegetation may be retained provided they are well- spaced, well-pruned, and create a condition that avoids spread of fire to other vegetation or to a structure. Remove all tree limbs that are touching a structure or are within 10 feet of a chimney or stovepipe. Do not store firewood within 30 feet of any structure.
4. All fire water supply infrastructure shall be protected from wildfire radiant heat, convective heat, and embers by the installation of a defensible space, extending out to a 100-foot slope-adjusted perimeter from the furthest extent of the structure. Distances may be increased by the enforcement officer based on site-specific analysis of local conditions.

30'-100' FROM BUILDING, REDUCED FUEL ZONE
FUEL TREATMENT REQUIREMENTS:
2. Remove dead and dying woody surface fuels and aerial fuels within the Reduced Fuel Zone. Loose surface fuels shall be permitted to a maximum depth of 3 inches. This requirement is primarily intended to eliminate trees, bushes, shrubs, and surface debris that are completely dead or with substantial amounts of dead branches, leaves, or needles that would readily burn.
3. Provide at least 100 feet of defensible space around all structures on the property, or to the property line if it is less than 100 feet from the any structure. While 100 feet is a minimum, brushes and shrubs may require longer clearance distances depending on topography and fuel loads. Remove downed logs or stumps anywhere within 100 feet from a structure, unless embedded in the soil and isolated from other vegetation. Standing dead trees (snags) may be retained provided that they occur at a rate of approximately one per acre, are well-spaced from other vegetation, and will not fall on structures or on roadways/driveways. Property owners of vacant parcels one acre or less in size shall maintain fuel on their property consistent with the fuel treatment requirements.
4. All fire water supply infrastructure shall be protected from wildfire radiant heat, convective heat, and embers by the installation of a defensible space, extending out to a 100-foot slope-adjusted perimeter from the furthest extent of the structure. Distances may be increased by the enforcement officer based on site-specific analysis of local conditions.
6. Within the Reduced Fuel Zone, one of the following fuel treatments (6.a. or 6.b.) shall be implemented. Properties with greater fire hazards will require greater vegetation management and fuel treatments. Additional removal of surface fuels outside of the required 100-foot zone might be needed to provide adequate defensible space. Combinations of the methods may be acceptable as long as the intent of these requirements is met.
6.a. Reduced Fuel Zone: Defensible Space with Continuous Tree Canopy (this is the preferred method). To achieve defensible space while retaining a stand of larger trees with a continuous tree canopy, apply the following treatments:
· Remove all surface fuels greater than 4 inches in height. Single specimens of trees, shrubs, or other vegetation may be retained provided they are well-spaced, well-pruned, and create a condition that avoids spread of fire to other fuel types or to a structure.
· Remove lower limbs of trees ("prune") to at least 6 feet up to 15 feet (or the lower 1/3 branches for small trees). Properties with greater fire hazards, such as steeper slopes or more severe fire danger, will require pruning heights in the upper end of this range.

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LICENSED LANDSCAPE ARCHITECT
Mary Wiggins 6751
Signature
March 31, 2024
Renewal Date
April 4, 2022
Date
STATE OF CALIFORNIA

PROJECT
PROJECT CLOUD
Ponderosa One, LLC
80 Clear Creek Rd., Oakville
CA 94562

ISSUE SET
SCHEMETIC DESIGN
ISSUE DATE
04/15/2024

REV	DATE	ISSUE	BY
1	04.15.24	Viewshed Revision	YS

DRAWN BY:
CHECKED BY:
SCALE
1"=30'–0"
SHEET TITLE
DEFENSIBLE SPACE _NEW BUILDING
SHEET NUMBER
LA4

5' FROM BUILDING, EMBER RESISTANT ZONE

RECOMMENDATIONS:

· Remove any combustible outdoor furniture.
· Replace jute or fiber doormats with fire resistant materials.
· Remove or relocate all combustible materials, including garbage and recycling containers, lumber, trash, and patio accessories.
· Clean all fallen leaves and needles regularly. Repeat often during fire season.
· No Pyrophytic vegetation is recommended within 5 feet of structures. Vegetation in the Ember Resistant Zone area will be evaluated for compliance.
· Other plant species not listed or named should be reviewed by the Fire Code Official.
· Remove tree limbs that extend into this zone. Fire-prone tree varieties should be removed if they extend within 5 feet of any structure.
· Do not store firewood, lumber, or combustibles here, even (especially) under decks or overhangs. Move stored combustibles inside, or at least 30 feet away from structures.
· Use only inorganic, non-combustible mulches such as stone or gravel.

30' FROM BUILDING, BUFFER ZONE

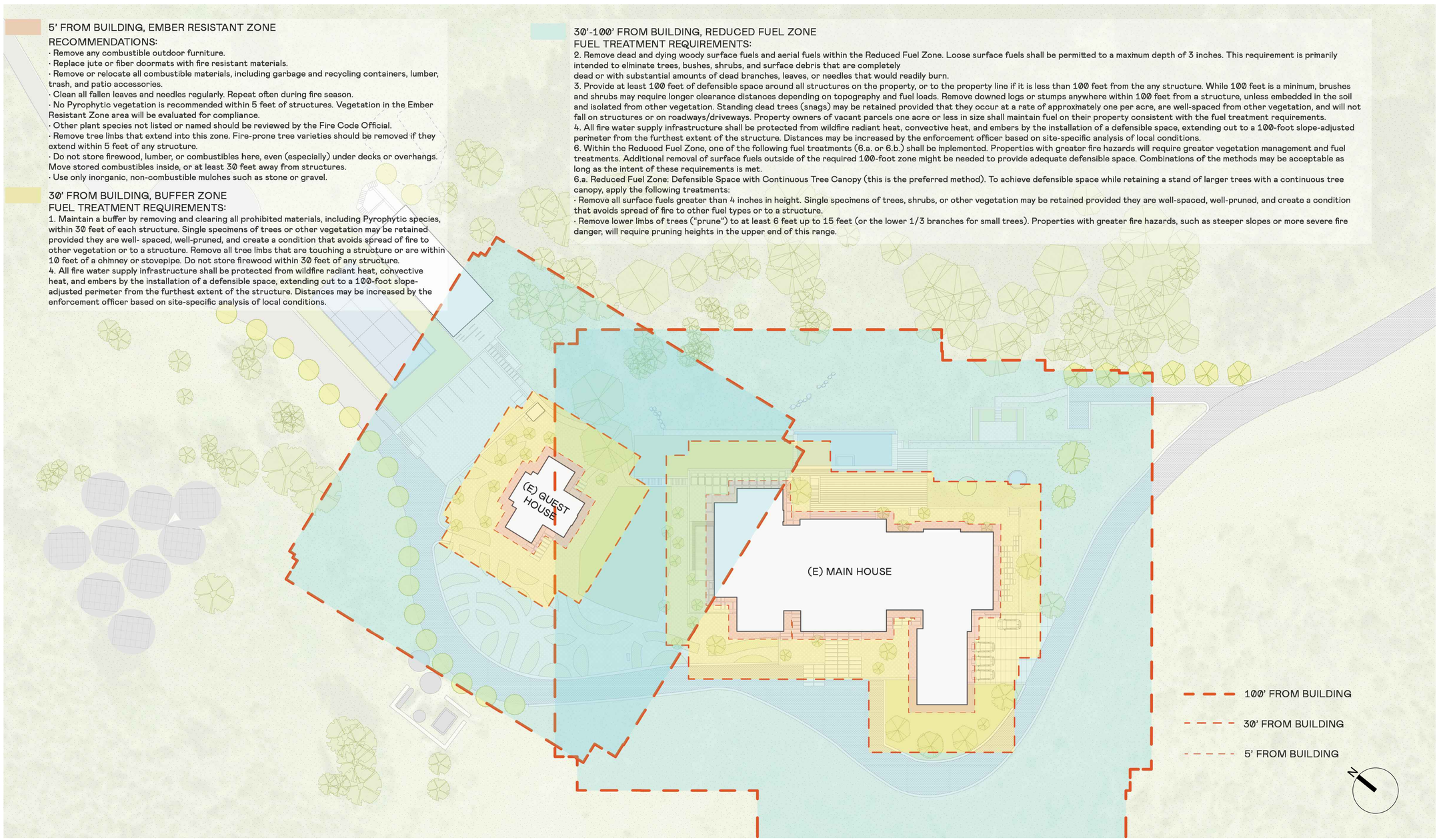
FUEL TREATMENT REQUIREMENTS:

1. Maintain a buffer by removing and clearing all prohibited materials, including Pyrophytic species, within 30 feet of each structure. Single specimens of trees or other vegetation may be retained provided they are well- spaced, well-pruned, and create a condition that avoids spread of fire to other vegetation or to a structure. Remove all tree limbs that are touching a structure or are within 10 feet of a chimney or stovepipe. Do not store firewood within 30 feet of any structure.
4. All fire water supply infrastructure shall be protected from wildfire radiant heat, convective heat, and embers by the installation of a defensible space, extending out to a 100-foot slope-adjusted perimeter from the furthest extent of the structure. Distances may be increased by the enforcement officer based on site-specific analysis of local conditions.

30'-100' FROM BUILDING, REDUCED FUEL ZONE

FUEL TREATMENT REQUIREMENTS:

2. Remove dead and dying woody surface fuels and aerial fuels within the Reduced Fuel Zone. Loose surface fuels shall be permitted to a maximum depth of 3 inches. This requirement is primarily intended to eliminate trees, bushes, shrubs, and surface debris that are completely
dead or with substantial amounts of dead branches, leaves, or needles that would readily burn.
3. Provide at least 100 feet of defensible space around all structures on the property, or to the property line if it is less than 100 feet from the any structure. While 100 feet is a minimum, brushes and shrubs may require longer clearance distances depending on topography and fuel loads. Remove downed logs or stumps anywhere within 100 feet from a structure, unless embedded in the soil and isolated from other vegetation. Standing dead trees (snags) may be retained provided that they occur at a rate of approximately one per acre, are well-spaced from other vegetation, and will not fall on structures or on roadways/driveways. Property owners of vacant parcels one acre or less in size shall maintain fuel on their property consistent with the fuel treatment requirements.
4. All fire water supply infrastructure shall be protected from wildfire radiant heat, convective heat, and embers by the installation of a defensible space, extending out to a 100-foot slope-adjusted perimeter from the furthest extent of the structure. Distances may be increased by the enforcement officer based on site-specific analysis of local conditions.
6. Within the Reduced Fuel Zone, one of the following fuel treatments (6.a. or 6.b.) shall be implemented. Properties with greater fire hazards will require greater vegetation management and fuel treatments. Additional removal of surface fuels outside of the required 100-foot zone might be needed to provide adequate defensible space. Combinations of the methods may be acceptable as long as the intent of these requirements is met.
6.a. Reduced Fuel Zone: Defensible Space with Continuous Tree Canopy (this is the preferred method). To achieve defensible space while retaining a stand of larger trees with a continuous tree canopy, apply the following treatments:
· Remove all surface fuels greater than 4 inches in height. Single specimens of trees, shrubs, or other vegetation may be retained provided they are well-spaced, well-pruned, and create a condition that avoids spread of fire to other fuel types or to a structure.
· Remove lower limbs of trees ("prune") to at least 6 feet up to 15 feet (or the lower 1/3 branches for small trees). Properties with greater fire hazards, such as steeper slopes or more severe fire danger, will require pruning heights in the upper end of this range.



TERRE MOTO

3486-A MISSION ST
SAN FRANCISCO, CA 94110
843-271-7278
WWW.TERREMOTO.LA

LICENSED LANDSCAPE ARCHITECT
Mary Wiggins 6751
Signature
March 31, 2024
Renewal Date
April 4, 2022
Date
STATE OF CALIFORNIA

PROJECT

PROJECT CLOUD
Ponderosa One, LLC
80 Clear Creek Rd., Oakville
CA 94562

ISSUE SET
SCHEMETIC DESIGN

ISSUE DATE
04/15/2024

REV	DATE	ISSUE	BY
1	04.15.24	Viewshed Revision	YS

DRAWN BY:
CHECKED BY:

SCALE
1"=30'-0"

SHEET TITLE
DEFENSIBLE SPACE
_EXISTING BUILDING

SHEET NUMBER
LA5

MINI-MICRO - STAFF STAR STYLE 'L' LED

IP66 RATED

DATE: | PROJECT: | TYPE:

CATALOG NUMBER LOGIC:



**For use with standard Anchor Base only.*

***Designed for use with 12 VAC. LED transformer.*

****For use up to 48" maximum overall height.*

CATALOG NUMBER LOGIC	
Example: SF - 24 - L - MM - LED - e71 - MFL - WHP - 12 - 11 - A - PP18B	
MATERIAL	
Aluminum	
SERIES	
SF - Staff Star Pathlight	
OVERALL HEIGHT	
24" (Standard), 30", 36", 42", 48", *54", *60", *66", or *72" height	
STYLE	
L - 90° Radius	
FIXTURE	
MM - Mini-Micro	
SOURCE	
LED - with Non-Dimming Integral Driver**	
LED TYPE	
e70 - 3W LED/2700K	e85 – 3W LED/2700K 90 CRI
e71 - 3W LED/3000K	e86 – 3W LED/3000K 90 CRI
e72 - 3W LED/4000K	e87 – 3W LED/3500K 80 CRI
e73 - 3W LED/Amber	
OPTICS	
NSP - Narrow Spot (17°)	MFL - Medium Flood (28°)
SP - Spot (21°)	ASY - Asymmetrical (17x31°)
FINISH (See page 2 for full-color swatches)	
Standard Finishes (BZP, BZW, BLP, BLW, WHP, WHW, SAP, VER)	
Premium Finish (ABP, AMG, AQW, BCM, BGE, BPP, CAP, CMG, CRM, HUG, NBP, OCP, RMG, SDS, SMG, TXF, WCP, WIR)	
Also available in RAL Finishes	
LENS TYPE	
12 - Soft Focus	13 - Rectilinear
SHIELDING	
11 - Honeycomb Baffle	
CAP STYLE	
A - 45°	
B - 90°	
C - Flush	
D - 45° Less Weephole (Interior use only)	
E - 90° Less Weephole (Interior use only)	
BASE OPTIONS	
(Blank) - Anchor Base (Standard, for use with remote 12 VAC. LED transformer)	
PP18B - 18" Power Pipe Stake with 'B' Cap***	
PP-TRe20 - Power Pipe T with 18" Stake, TRe20 Electronic Transformer (105-300 VAC. 50/60 Hz. non-dimming)***	
SF - Stability Flange (For use with Power Pipe)	

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12/06/2022 SKU-630
SUB000978

MINI-MICRO - STAFF STAR STYLE 'L' LED

IP66 RATED

DATE: | PROJECT: | TYPE:

Accessories (Configure separately)

SPECIFICATIONS

ELECTRICAL	WATTAGE	3W LED
	WIRING	PVC coated, 18AWG, 150V, 60°C rated and certified to UL 1838 standard.
	POWER PIPE WITH TRANSFORMER HOUSING	Additionally features integral transformer housing fully machined from copper-free aluminum. High temperature, silicone 'O' Ring provides water-tight seal. Integral, TRe20 electronic transformer. 105-300VAC primary voltage. 50/60Hz. Non Dimming. 20VA maximum load.
PHYSICAL	STYLE	L style features clean, 90° transition from fixture to stem.
	MATERIALS	Furnished in copper-free aluminum (6061-T6).
	BODY	Unibody design is fully machined from solid billet and provides enclosed, water-proof wireway and integral heat sink for maximum component life. Integral knuckle for maximum mechanical strength. High temperature, silicone 'O' Ring provides water-tight seal.
	KNUCKLE	LOCK Knuckle is integral to the body and features an interior taper machined from solid billet and a second, reverse angle taper allowing full 180° vertical adjustment without the use of aim-limiting serrated teeth. High temperature, silicone 'O' Ring provides water-tight seal and compressive resistance to maintain fixture position. Design withstands 73 lbs. static load prior to movement for optical alignment with a ½" pipe thread for mounting.
	CAP	Fully machined and accommodates one (1) lens or louver media.
	STEM	Fully machined, 1" dia. with internal threads for maximum visual appeal. Available in configurable lengths to 72" maximum (with Anchor Base) and 48" maximum (with Power Pipe).
	LENS	Shock-resistant, tempered glass lens is factory adhered to fixture cap and provides hermetically sealed optical compartment.
	LED	Integrated solid state system and modular design with electrical disconnects allows for easy field upgrade and maintenance. High power, forward throw source complies with ANSI C78.377 binning requirements and exceeds ENERGY STAR® lumen maintenance requirements. LM-80 certified components. Integral, constant current driver. 12VAC/VDC input. 50/60Hz. Proprietary input control scheme achieves power factor correction and eliminates inrush current (limited to <250mA non-dimming). Output, overvoltage, open-circuit, and short circuit protected. Conforms to Safety Std. C22.2 No. 250.13-12.
	OPTICS	Interchangeable, color-coded OPTIKIT modules permit field changes to optical distribution.
	ANCHOR BASE	Cast aluminum junction box with pass-through cover. 10" galvanized anchor stem for installation into soil or concrete. For use with 12VAC remote transformer or magnetic transforers only. B-K Lighting cannot guarantee performance with third party manufacturers' transformers.
	POWER PIPE	Provides a clean transition from wiring system to fixture. Schedule 80, 18" PVC housing for direct burial into soil or concrete. Machined 2-1/4" dia. cap for fixture mounting. Optional 6" diameter, molded stability flange, which simplifies installation and projects into substrate to reinforce housing stability. For use with 12VAC remote transformer or magnetic transformers only. B-K Lighting cannot guarantee performance with third party manufacturers' transformers.
	HARDWARE	Tamper-resistant, stainless steel hardware. LOCK aiming screw screw is black oxide treated for additional corrosion resistance.
	FINISH	StarGuard, our 15-stage chromate-free process cleans and conversion coats aluminum components prior to application of Class 'A' TGIC polyester powder coating and is RoHS compliant. Powder coat or metal finish options available for brass material and metal finish option only for stainless steel material.
	WARRANTY	5-year limited warranty.
	CERTIFICATION & LISTING	ITL tested to IESNA LM-79. UL Listed. Certified to CAN/CSA/ANSI Standards. RoHS compliant. Suitable for indoor or outdoor use, in wet locations, and for installation within 4' of the ground. IP66 Rated. Made in the USA with sustainable processes.

c UL us LISTED

RoHS

MADE IN THE USA

B-K LIGHTING | MADE IN THE USA | 559.438.5800 | INFO@BKLIGHTING.COM | BKLIGHTING.COM

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12/06/2022 SKU-630
SUB000978

TERRE MOTO

3486–A MISSION ST
SAN FRANCISCO, CA 94110
843-271-7278
WWW.TERREMOTO.LA

LICENSED LANDSCAPE ARCHITECT
Mary Wiggins 6751
Signature
March 31, 2024
Renewal Date
April 4, 2022
Date
STATE OF CALIFORNIA

PROJECT

PROJECT CLOUD
Ponderosa One, LLC
80 Clear Creek Rd., Oakville
CA 94562

ISSUE SET
SCHEMETIC DESIGN

ISSUE DATE
04/15/2024

REV	DATE	ISSUE	BY
1	04.15.24	Viewshed Revision	YS

DRAWN BY:
CHECKED BY:

SCALE
NTS

SHEET TITLE
LANDSCAPE LIGHTING FIXTURE SPECIFICATION

SHEET NUMBER
L103

ENCLOSURE F

EXCERPT FROM LUDHORFF & SCALMANINI REPORT WITH RECHARGE DATA

around the MST Subarea to determine the primary mechanisms of groundwater recharge. A seepage experiment consists of several streamflow measurements taken along the length of a stream to quantify streamflow gains and losses. The stream is considered losing where streamflow decreases between measurements, and gaining where streamflow increases. He concluded that the infiltration rate from precipitation and runoff is greatest where tuffs are exposed or underlie shallow Quaternary deposits. Additionally, only a small percentage of groundwater recharge was found to come from direct precipitation, but instead it is greatest where streams and tributaries come in contact with tuffs. Farrar and Metzger (2003) similarly analyzed seepage gains/losses for various creeks and tributaries in the MST. They concluded that significant streambed infiltration also occurs where streamflow passes over unconsolidated, highly permeable, alluvial deposits. **Figure 6-1** is a conceptual illustration of the major surface and subsurface hydrologic processes occurring within a watershed and shows how the hydrogeology of the Napa Valley area relates to these processes. As illustrated in **Figure 6-1** and discussed in greater detail in Sections 7 and 8 of this report, precipitation falling within the watershed infiltrates the ground or becomes surface water outflow through surface runoff processes. Some fraction of infiltrated water is consumed through plant evapotranspiration and some water percolates deeper and into the aquifer system as recharge. The potential for water to recharge the groundwater system depends on many factors, including the nature of the geologic materials and topography.

Based on the findings of Johnson (1977) and Farrar and Metzger (2003), a map was created to locate areas of greatest recharge potential. This map shows the location of exposed tuffs throughout the county (**Figure 6-2**). Sonoma Volcanics sedimentary deposits and various alluvial units found countywide were also included in the map following findings by Farrar and Metzger (2003). Areas in which the slope of the land surface exceeds 30 degrees, beyond which recharge potential is significantly reduced, were also added to the map.

Two sizeable exposures of rhyolitic ash-flow tuff and related alluvium occur in the northern portion of the Eastern and Western Mountains near Calistoga. The eastern exposure covers roughly 30 square miles with tuff in the north and Sonoma Volcanics sedimentary deposits to the south. Following Johnson (1977), the greatest recharge would be expected along Bell Creek, which traverses much of the northern tuffs, and Conn Creek, which passes over large Sonoma Volcanic sedimentary deposits in Conn Valley, some of which are covered by younger alluvium. The Western Mountains exposure, which covers roughly 18 square miles, is almost entirely tuff, with a single Sonoma Volcanics sedimentary deposit in the north at Cyrus Creek. Again, following Johnson (1977), the greatest recharge potential would be expected along York, Mill, Richie, Nash, and Cyrus Creeks (Figure 6-2). Although concealed below the Napa Valley Floor, it is likely that the two exposures are connected at depth. It is expected that much of the water recharged through these two exposures eventually reaches the aquifer units of the Napa Valley Floor and flows to the south.

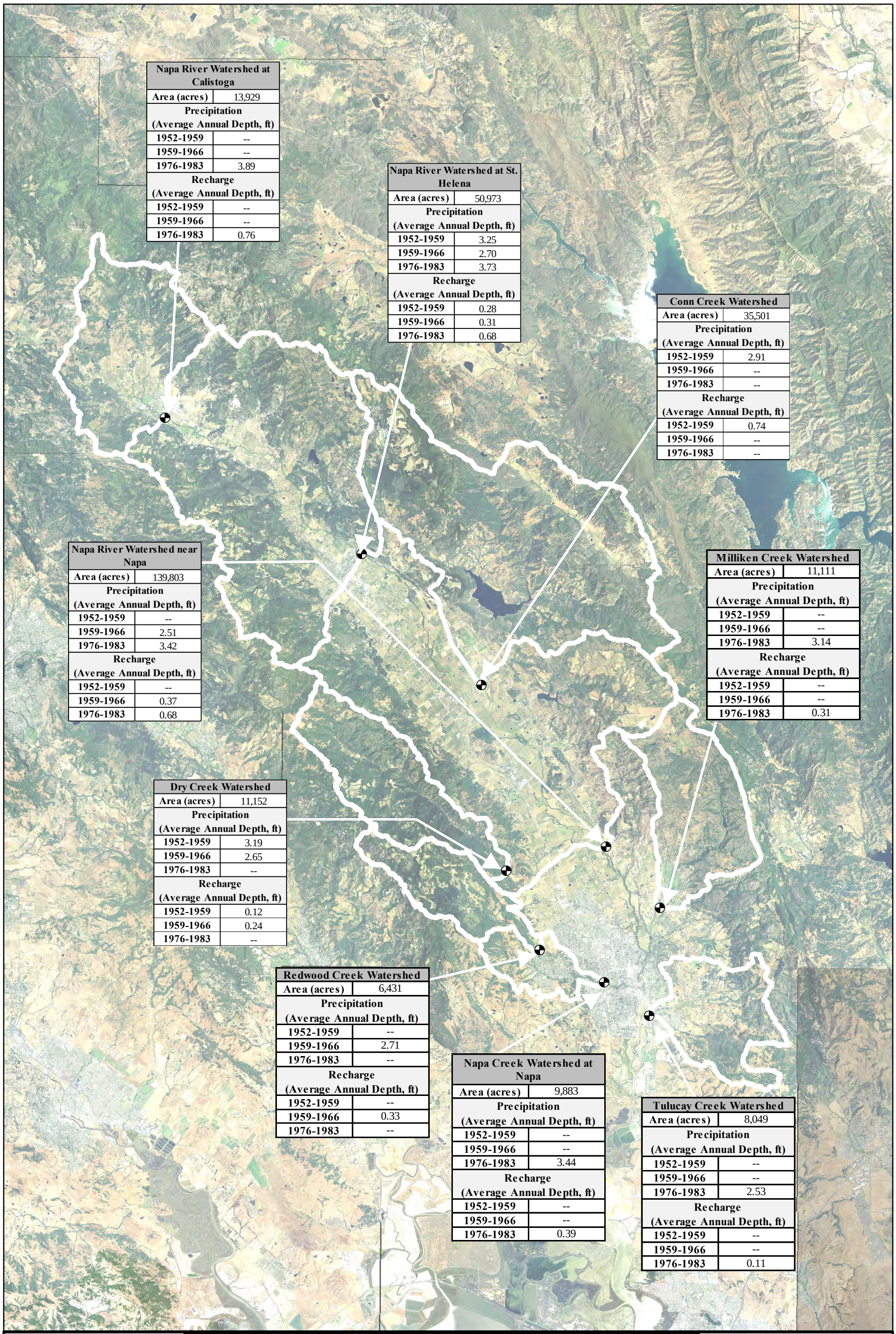
Table 8-9. Summary of Water Balance Model Results

	Average Annual (acre-feet)					Range (acre-feet)	Recharge (% of Precip.)
Watershed	**Precip.**	**Outflow**	**Infilt.**	**ET**	**Recharge**	**Recharge**	**Recharge**
Napa River near Napa	**418,500**	**146,800**	**271,700**	**201,900**	**70,600**	**8,300 - 185,900**	**17%**
- Conn Creek	98,200	24,600	73,600	52,200	21,100	4,300 - 40,700	21%
- Dry Creek	33,000	14,200	18,700	16,400	2,000	500 - 6,300	6%
- Napa River at St. Helena	161,400	67,000	94,400	72,500	22,000	2,500 - 60,900	14%
- Napa River at Calistoga	54,200	23,600	30,600	19,700	10,500	2,000 - 17,200	19%
Milliken Creek	**33,000**	**16,800**	**16,200**	**13,500**	**2,500**	**100 - 7,100**	**8%**
Tulucay Creek	**19,500**	**9,100**	**10,400**	**9,500**	**1,000**	**100 - 2,300**	**5%**
Redwood Creek	**19,300**	**7,800**	**11,500**	**9,500**	**1,900**	**400 - 5,000**	**10%**
Napa Creek at Napa	**32,100**	**14,800**	**17,300**	**13,700**	**3,600**	**600 - 6,900**	**11%**

Results presented in **Table 8-9** indicate that within the Napa River near Napa watershed groundwater recharge is higher in the Conn Creek watershed and in the northern portion of the watershed above Calistoga. Less recharge occurs in the Dry Creek watershed and the portion of the watershed between Calistoga and St. Helena. The Tulucay Creek watershed has the lowest estimated groundwater recharge equal to only 5% of precipitation.

A method for comparing absolute groundwater recharge between watersheds involves comparing groundwater recharge results as depth (normalized by area) for common hydrologic periods. Groundwater recharge can be expressed as depth by dividing average annual recharge volume by the watershed area. To facilitate such a comparison, three common hydrologic periods of eight years each were selected for comparisons of at least two different watersheds for each period. Common periods of record included water years 1952 through 1959, 1959 through 1966, and 1976 through 1983. Average annual groundwater recharge depths were calculated for each watershed during these periods. Average annual precipitation as depth over the watershed was also calculated to provide an indication of the relative wetness of the three common periods. These results are presented in **Figure 8-13**. The Conn Creek watershed was considered in this analysis for the period after construction of Lake Hennessey.

Results presented in **Figure 8-13** illustrate similar trends as seen in **Table 8-9**. The period from 1959 through 1966 was the driest of the three periods while the 1976 through 1983 period was the wettest. Based on absolute groundwater recharge depth, recharge was generally highest in



Napa River Watershed at Calistoga	
Area (acres)	13,929
Precipitation (Average Annual Depth, ft)	
1952-1959	--
1959-1966	--
1976-1983	3.89
Recharge (Average Annual Depth, ft)	
1952-1959	--
1959-1966	--
1976-1983	0.76

Napa River Watershed at St. Helena	
Area (acres)	50,973
Precipitation (Average Annual Depth, ft)	
1952-1959	3.25
1959-1966	2.70
1976-1983	3.73
Recharge (Average Annual Depth, ft)	
1952-1959	0.28
1959-1966	0.31
1976-1983	0.68

Conn Creek Watershed	
Area (acres)	35,501
Precipitation (Average Annual Depth, ft)	
1952-1959	2.91
1959-1966	--
1976-1983	--
Recharge (Average Annual Depth, ft)	
1952-1959	0.74
1959-1966	--
1976-1983	--

Napa River Watershed near Napa	
Area (acres)	139,803
Precipitation (Average Annual Depth, ft)	
1952-1959	--
1959-1966	2.51
1976-1983	3.42
Recharge (Average Annual Depth, ft)	
1952-1959	--
1959-1966	0.37
1976-1983	0.68

Milliken Creek Watershed	
Area (acres)	11,111
Precipitation (Average Annual Depth, ft)	
1952-1959	--
1959-1966	--
1976-1983	3.14
Recharge (Average Annual Depth, ft)	
1952-1959	--
1959-1966	--
1976-1983	0.31

Dry Creek Watershed	
Area (acres)	11,152
Precipitation (Average Annual Depth, ft)	
1952-1959	3.19
1959-1966	2.65
1976-1983	--
Recharge (Average Annual Depth, ft)	
1952-1959	0.12
1959-1966	0.24
1976-1983	--

Redwood Creek Watershed	
Area (acres)	6,431
Precipitation (Average Annual Depth, ft)	
1952-1959	--
1959-1966	2.71
1976-1983	--
Recharge (Average Annual Depth, ft)	
1952-1959	--
1959-1966	0.33
1976-1983	--

Napa Creek Watershed at Napa	
Area (acres)	9,883
Precipitation (Average Annual Depth, ft)	
1952-1959	--
1959-1966	--
1976-1983	3.44
Recharge (Average Annual Depth, ft)	
1952-1959	--
1959-1966	--
1976-1983	0.39

Tulucay Creek Watershed	
Area (acres)	8,049
Precipitation (Average Annual Depth, ft)	
1952-1959	--
1959-1966	--
1976-1983	2.53
Recharge (Average Annual Depth, ft)	
1952-1959	--
1959-1966	--
1976-1983	0.11

MBK ENGINEERS
1771 Tribute Road, Suite A
Sacramento, CA 95815
Phone: 916-456-4400 - Fax: 916-456-0253

Figure 8-13: Napa Valley Area Recharge by Hydrologic Period

SCALE:	1" = 3.0 miles
JOB NUMBER:	3327
DRAWN BY:	P.Ho
DATE:	11-26-2012

ENCLOSURE G

PRISM RAINFALL DATA FROM 2015–2024

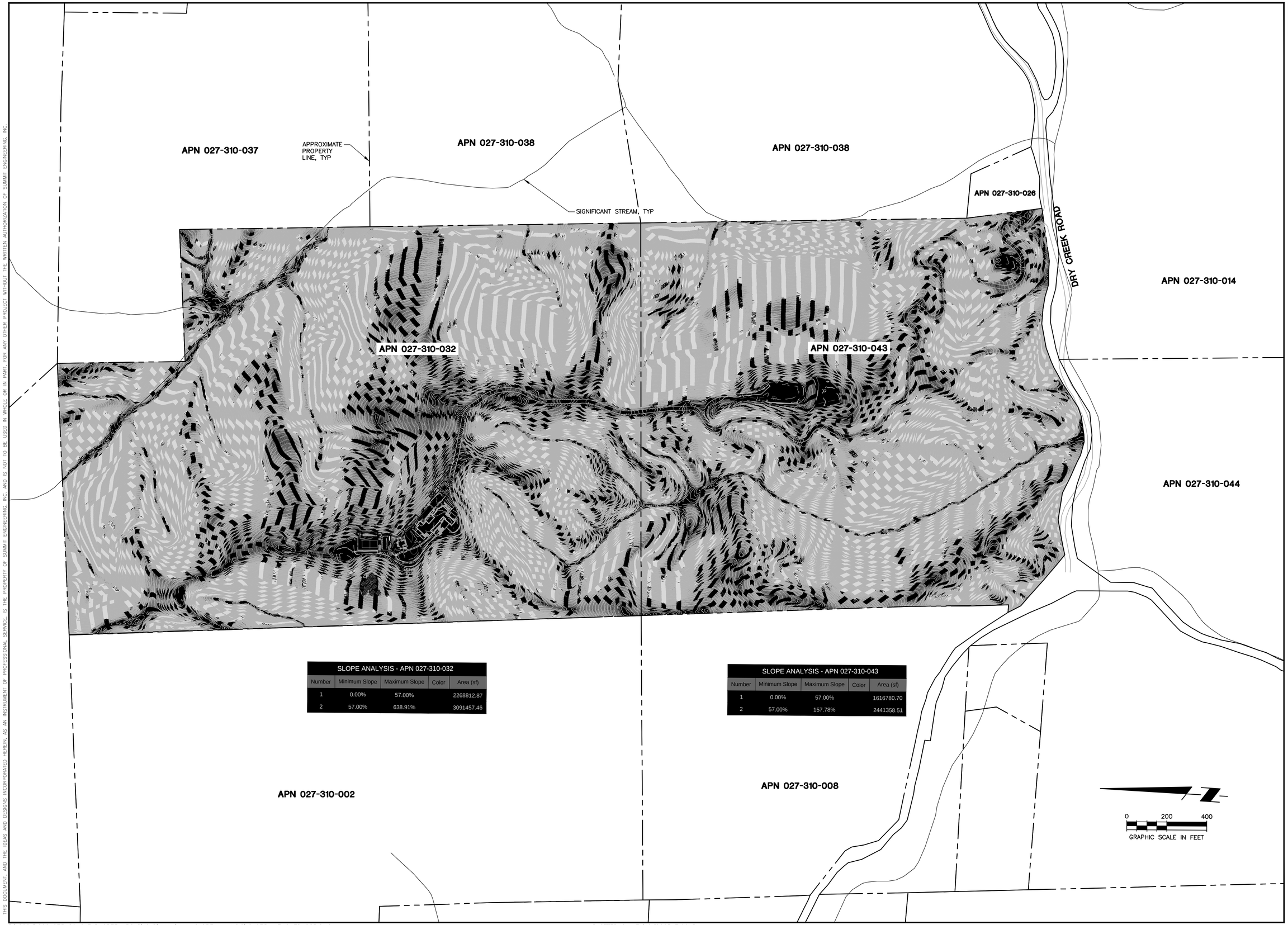
PRISM Time Series Data
Location: Lat: 38.4156 Lon: -122.4412 Elev: 1093ft
Climate variable: ppt
Spatial resolution: 800m
Period: 2015 - 2024
Dataset: AN91m
PRISM day definition: 24 hours ending at 1200 UTC on the day shown
Grid Cell Interpolation: Off
Time series generated: 2025-Jul-07
Details: http://www.prism.oregonstate.edu/documents/PRISM_datasets.pdf

Date	ppt (inches)
2015	17.24
2016	46.87
2017	52.13
2018	29.97
2019	55.3
2020	12.57
2021	35.48
2022	20.98
2023	48.53
2024	52.98
Average	37.21

ENCLOSURE H

SITE SLOPE ANALYSIS

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SLOPE ANALYSIS - APN 027-310-032

Number	Minimum Slope	Maximum Slope	Color	Area (sf)
1	0.00%	57.00%		2268812.87
2	57.00%	638.91%		3091457.46

SLOPE ANALYSIS - APN 027-310-043

Number	Minimum Slope	Maximum Slope	Color	Area (sf)
1	0.00%	57.00%		1616780.70
2	57.00%	157.78%		2441358.51

SUMMIT
Summit Engineering, Inc
575 W College Ave, Suite 201 • Santa Rosa, CA 95401
707-527-0775 • www.summit-sr.com

PONDEROSA ONE LLC
80 CLEAR CREEK ROAD
NAPA, CA 94558
APN 027-310-032 & 043

80 CLEAR CREEK WAA

SLOPE ANALYSIS

#	DATE	DESCRIPTION
	7/11/2025	WAA SUBMITTAL

JOB NO: 2021275
SCALE: AS SHOWN
DRAWN: TF/TBL
CHECKED: GG
SHEET OSP
SHEET 1 OF 1

ENCLOSURE I

TIER 2 WELL DRAWDOWN CALCULATIONS

SUMMIT ENGINEERING, INC.	80 Clear Creek Rd Water Availability Tier II: Well Drawdown Analysis Well A	PROJECT NO. 2021275 BY: TBL CHK: GG

Site Specific Parameters

Well Flow:
25 gpm

Radius of Influence:
200 ft

Aquifer Thickness
140 ft

Pumping Time:
1 day

Low End Specific Storage:
1.50E-05 1/ft

High End Specific Storage:
3.10E-04 1/ft

Low Hydraulic Conductivity:
10 ft/day

High Hydraulic Conductivity:
30 ft/day

Theis Drawdown

Scenario	Specific Storage (1/ft):	Hydraulic Conductivity (ft/day)	Theis u value (unitless):	u_a, rounded down (unitless):	u_b, rounded up (unitless):	$W(u_a)$	$W(u_b)$	W(u), interpolated	Theis s value	Drawdown(ft)
High S, Low h	3.10E-04	10	2.21E-03	2.00E-03	3.00E-03	5.639	5.235	5.55	0.0079	1.52
Low S, Low h	**1.50E-05**	**10**	**1.07E-04**	**1.00E-04**	**2.00E-04**	**8.633**	**7.94**	**8.58**	**0.0122**	**2.35**
High S, High h	3.10E-04	30	7.38E-04	7.00E-04	8.00E-04	6.688	6.555	6.64	0.0031	0.61
Low S, High h	1.50E-05	30	3.57E-05	3.00E-05	4.00E-05	9.837	9.55	9.67	0.0046	0.88

Notes:

1) Retrieve hydraulic conductivity from Napa WAA map; Specific Storage from well drilling lithology/soil type
2) 4 conditions (varying specific storage and hydraulic conductivity) are considered
3) Low specific storage and low hydraulic conductivity typically will result in max drawdown (highlighted in green)
4) Drawdowns greater than 10 ft for 6-inch casings and 15 ft for 8-inch casings typically indicate significant impacts
5) Min and max Specific storage and conductivity values can be adjusted to be site specific

SUMMIT ENGINEERING, INC.	80 Clear Creek Rd Water Availability Tier II: Well Drawdown Analysis Well B	PROJECT NO. 2021275 BY: TBL CHK: GG

Site Specific Parameters

Well Flow:
16 gpm

Radius of Influence:
470 ft

Aquifer Thickness
120 ft

Pumping Time:
1 day

Low End Specific Storage:
1.50E-05 1/ft

High End Specific Storage:
3.10E-04 1/ft

Low Hydraulic Conductivity:
10 ft/day

High Hydraulic Conductivity:
30 ft/day

Theis Drawdown

Scenario	Specific Storage (1/ft):	Hydraulic Conductivity (ft/day)	Theis u value (unitless):	u_a, rounded down (unitless):	u_b, rounded up (unitless):	$W(u_a)$	$W(u_b)$	W(u), interpolated	Theis s value	Drawdown(ft)
High S, Low h	3.10E-04	10	1.43E-02	1.00E-02	2.00E-02	4.038	3.355	3.75	0.0040	0.77
Low S, Low h	**1.50E-05**	**10**	**6.90E-04**	**6.00E-04**	**7.00E-04**	**6.842**	**6.688**	**6.70**	**0.0071**	**1.37**
High S, High h	3.10E-04	30	4.76E-03	4.00E-03	5.00E-03	4.948	4.726	4.78	0.0017	0.33
Low S, High h	1.50E-05	30	2.30E-04	2.00E-04	3.00E-04	7.94	7.535	7.82	0.0028	0.53

Notes:

1) Retrieve hydraulic conductivity from Napa WAA map; Specific Storage from well drilling lithology/soil type
2) 4 conditions (varying specific storage and hydraulic conductivity) are considered
3) Low specific storage and low hydraulic conductivity typically will result in max drawdown (highlighted in green)
4) Drawdowns greater than 10 ft for 6-inch casings and 15 ft for 8-inch casings typically indicate significant impacts
5) Min and max Specific storage and conductivity values can be adjusted to be site specific

SUMMIT ENGINEERING, INC.	80 Clear Creek Rd Water Availability Tier II: Well Drawdown Analysis Well D	PROJECT NO. 2021275 BY: TBL CHK: GG

Site Specific Parameters

Well Flow:
16 gpm

Radius of Influence:
35 ft

Aquifer Thickness
100 ft

Pumping Time:
1 day

Low End Specific Storage:
1.50E-05 1/ft

High End Specific Storage:
3.10E-04 1/ft

Low Hydraulic Conductivity:
10 ft/day

High Hydraulic Conductivity:
30 ft/day

Theis Drawdown

Scenario	Specific Storage (1/ft):	Hydraulic Conductivity (ft/day)	Theis u value (unitless):	u_a, rounded down (unitless):	u_b, rounded up (unitless):	$W(u_a)$	$W(u_b)$	W(u), interpolated	Theis s value	Drawdown(ft)
High S, Low h	3.10E-04	10	9.49E-05	9.00E-05	1.00E-04	8.739	8.633	8.69	0.0111	2.13
Low S, Low h	**1.50E-05**	**10**	**4.59E-06**	**4.00E-06**	**5.00E-06**	**11.85**	**11.63**	**11.72**	**0.0149**	**2.87**
High S, High h	3.10E-04	30	3.16E-05	3.00E-05	4.00E-05	9.837	9.55	9.79	0.0042	0.80
Low S, High h	1.50E-05	30	1.53E-06	1.00E-06	2.00E-06	13.24	12.55	12.87	0.0055	1.05

Notes:

1) Retrieve hydraulic conductivity from Napa WAA map; Specific Storage from well drilling lithology/soil type
2) 4 conditions (varying specific storage and hydraulic conductivity) are considered
3) Low specific storage and low hydraulic conductivity typically will result in max drawdown (highlighted in green)
4) Drawdowns greater than 10 ft for 6-inch casings and 15 ft for 8-inch casings typically indicate significant impacts
5) Min and max Specific storage and conductivity values can be adjusted to be site specific

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