

# Appendix WSS

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Water and Sewer Study

# **Sonoma County**

## **Rezoning Sites for Housing Project**

### **Water and Sewer Study**

*Prepared for:*



*and*



*Prepared by:*



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## 1.0 Introduction and Background

Like many counties throughout California, Sonoma County (County) is known for its high cost of living and lack of affordable, available housing. New construction in the County has not kept up with housing demand over the last half decade, and the 2017 wildfires destroyed over 5,000 housing units Countywide, exacerbating an already dire housing crisis.

The Sonoma County Permit and Resource Management Department (Permit Sonoma) is preparing a program Environmental Impact Report (EIR) for the rezoning of selected sites throughout the County for housing.

Proper location is an important consideration for new housing in the unincorporated County, as there has been a long-standing Countywide concern to avoid sprawl and protect open space. The County is largely rural, with limited urban areas. There are strong General Plan policies that protect designated Community Separators and facilitate city- and community- centered growth, voter-approved Urban Growth Boundaries, and General Plan-designated Urban Service Areas (USAs) where public sewer and water are available and higher densities of housing could be built.

This project will identify sites to be added to the County's Housing Element site inventory to comply with State law, and will implement current General Plan Policies and Programs that require the County to identify urban sites near jobs and transit which may appropriately accommodate additional housing. It will also identify appropriate sites on which to place the Workforce Housing Combining Zone, which would allow the development of jobs and/or housing on the same site or within walking distance from one another.

In 2018, the County asked the public for help identifying sites and received over 100 potential sites which was narrowed down to 59 based on the following four criteria:

1. Site must be located in the unincorporated County
2. Site must be located within an established USA where public water and sewer service is available
3. Site must not be located within a Community Separator
4. If a site is near an incorporated city, it must not be located outside of a city's Urban Growth Boundary (UGB)

Eight of the sites to be evaluated are already included in the County's Housing Element site inventory at a lower density but recent changes in State law give increased scrutiny to the continuing identification of sites already in inventory. Increasing the zoning densities for these sites may allow them to remain in inventory. By the end of the project, up to 59 urban sites in designated USAs throughout unincorporated Sonoma for by-right, medium density housing (no land use approvals for the development of medium-density housing would be required).

For the purposes of this environmental study, sites analyzed for rezoning to R2 (medium-density residential) with a base of 10 dwelling units (DU) per acre were assumed to increase to 20 DU per acre, the maximum allowable build out potential utilizing the County's 100% density bonus program. Sites analyzed for Workforce Housing Combining Zones are assumed to be allowed a density of 24 DU per acre which is the maximum allowed in these zones.

The purpose of this Water and Sewer Study (Study) is to conduct a high-level investigation to identify the water and sewer agencies that provide service to these potential sites, determine if water and sewer infrastructure exist adjacent to the proposed project sites, calculate the additional water demand and



sewage generation from the increased housing density, and investigate if capacity exists within the existing systems to accommodate the proposed projects.

The goal is to identify project sites that require minimal or no proposed improvements in order to provide adequate water and sewer service to support the proposed rezoned density.

## 2.0 Project Site Locations

In late 2018, the County asked for the public's help in identifying potential sites for rezoning, and over 100 sites were nominated. County staff evaluated all nominated sites to determine if they met the basic eligibility criteria and narrowed it down to 59 sites. Some sites that will be evaluated were included in a prior housing element, but the County proposes to include them in this analysis so that the potential for cumulative impacts can be analyzed. The 59 sites proposed for re-zoning are shown in **Figure 2-1** below (provided by Rincon Consultants). The environmental review process will further refine the sites with the potential for rezoning. The 59 sites are located in the following USAs of:

Geyserville (4)	Guerneville (4)	Larkfield (8)
Forestville (6)	Graton (5)	South Santa Rosa (10)
Glen Ellen (2)	Agua Caliente (3)	Penngrove (9)
Petaluma (4)	Sonoma (4)	

The 59 sites total approximately 164-acres of land. The existing zoning for each parcel was evaluated and proposed to be re-zoned in order to increase the density of each parcel. Each of the 59 sites was assigned a site ID based on their USA and site number within the USA. Based upon the parcel area, current land use zoning designation, and the average Sonoma County household of 2.6 persons per dwelling unit (per the latest census), a population density based on the existing zoning was determined to be approximately 960 persons. With the proposed rezoning for each parcel, the maximum build-out population increase to approximately 8,656 persons, or an increase of 7,696 persons. The proposed re-zoning of the 59 parcels will result in approximately 3,329 dwelling units.

**Table 2-1** below summarizes the existing population based on the current zone, the proposed population based on the re-zoning, and the increase in population for each of the potential sites.

**Table 2-1. Existing and Proposed Population**

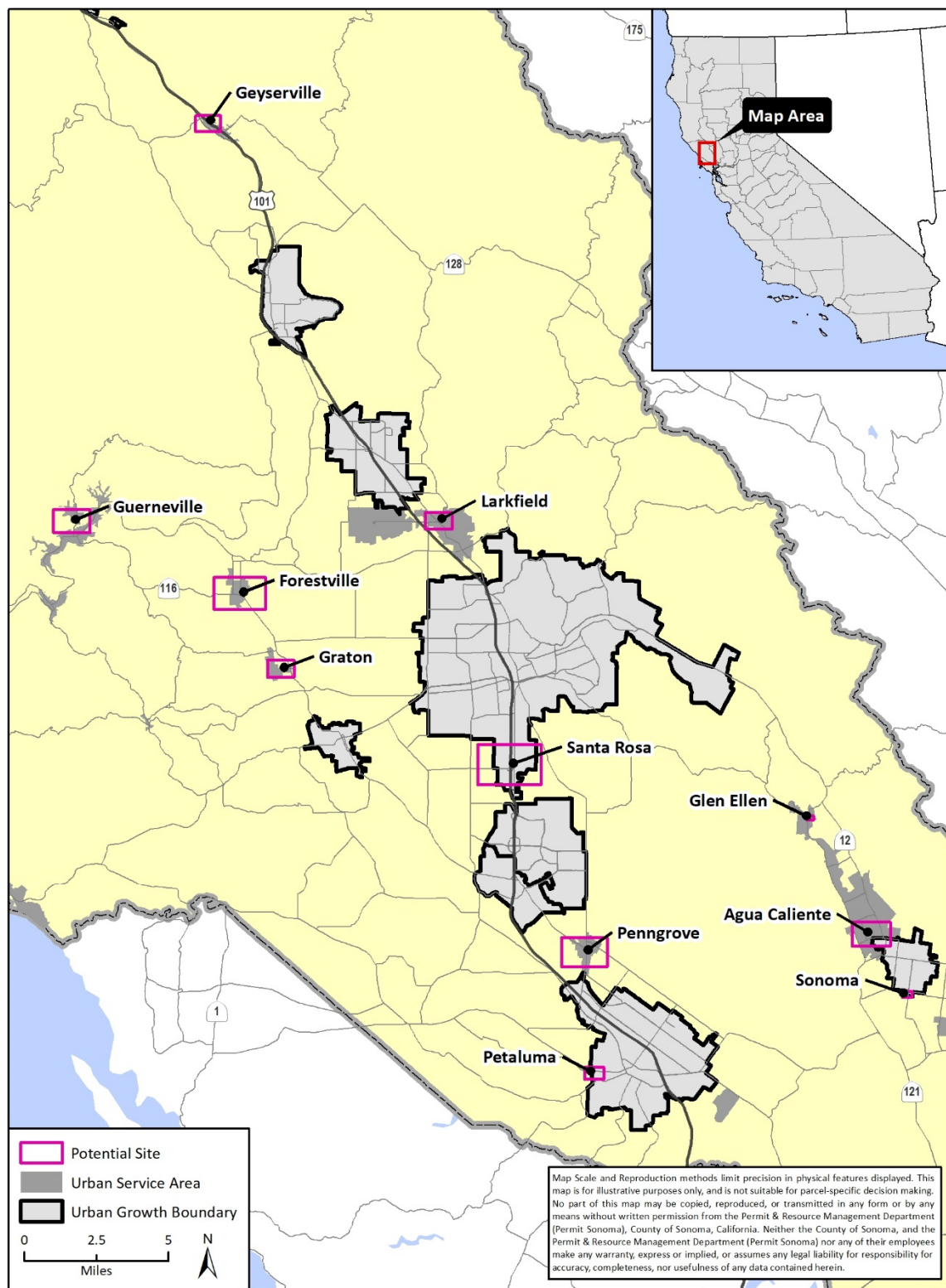
Site ID	Site Area (ac)	Existing Max Population	Proposed Max Population	Population Change
AGU-1	1.3	3	70	68
AGU-2	6.6	18	343	325
AGU-3	3.2	42	166	125
FOR-1	2.9	120	182	62
FOR-2	14.1	18	736	718
FOR-3	1.7	8	86	78
FOR-4	3.5	5	185	179
FOR-5	2.9	16	151	135
FOR-6	5.0	0	312	312

Site ID	Site Area (ac)	Existing Max Population	Proposed Max Population	Population Change
GEY-1	5.1	213	320	107
GEY-2	1.6	21	86	65
GEY-3	1.1	13	57	44
GEY-4	1.3	16	68	52
GLE-1	0.8	3	49	47
GLE-2	0.1	3	8	5
GRA-1	1.1	16	60	44
GRA-2	3.0	0	185	185
GRA-3	1.1	3	57	55
GRA-4	1.8	3	94	91
GRA-5	1.3	3	70	68
GUE-1	1.5	16	78	62
GUE-2	4.0	5	208	203
GUE-3	2.1	21	107	86
GUE-4	5.3	8	273	265
LAR-1	4.4	3	252	250
LAR-2	0.7	0	42	42
LAR-3	0.7	26	36	10
LAR-4	0.3	10	16	5
LAR-5	4.5	187	257	70
LAR-6	0.6	0	31	31
LAR-7	2.0	26	117	91
LAR-8	0.5	0	29	29
PEN-1	0.1	0	3	3
PEN-2	1.0	3	55	52
PEN-3	0.2	0	10	10
PEN-4	1.7	5	91	86
PEN-5	0.3	3	21	18
PEN-6	2.0	5	104	99
PEN-7	5.4	47	278	231
PEN-8	0.6	0	42	42
PEN-9	0.3	0	21	21
PET-1	2.0	3	101	99

Site ID	Site Area (ac)	Existing Max Population	Proposed Max Population	Population Change
PET-2	1.4	3	70	68
PET-3	4.9	3	169	166
PET-4	1.9	3	101	99
SAN-1	3.7	3	192	190
SAN-2	8.3	0	520	520
SAN-3	4.0	3	208	205
SAN-4	6.2	3	387	385
SAN-5	3.4	3	174	172
SAN-6	3.0	0	190	190
SAN-7	3.0	0	187	187
SAN-8	1.0	3	52	49
SAN-9	6.6	0	413	413
SAN-10	13.2	8	333	325
SON-1	1.0	0	49	49
SON-2	1.0	0	52	52
SON-3	1.0	3	52	49
SON-4	1.0	3	49	47
<b>TOTAL<sup>1</sup></b>	<b>164.3</b>	<b>920</b>	<b>8655</b>	<b>7735</b>

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<sup>1</sup> Note: Totals may not sum exactly due to rounding.



Source: Modified from data obtained with permission from the County of Sonoma, Permit & Resource Management Department (Permit Sonoma).  
Data and/or analysis depicted may be altered from the original Permit Sonoma dataset source therefore not representative of Permit Sonoma data; Esri.

**Figure 2-1. Sonoma County Housing Sites for Rezoning (source: Rincon Consultants)**

**Appendix A** provides larger scaled maps of the individual USAs identifying the 59 parcels that were considered for this Study. **Appendix B** provides individual parcel information in a tabular form.

### 3.0 Water and Sewer Agencies

The Sonoma County Water Agency (Sonoma Water) provides an array of services throughout Sonoma County, including, but not limited to, drinking water, distribution of recycled water and wastewater treatment.

Sonoma Water manages and maintains a water transmission system that provides naturally filtered Russian River water to nine cities and special districts that in turn delivers drinking water to more than 600,000 residents in portions of Sonoma and Marin counties. Sonoma Water provides wholesale drinking water to the following cities and special districts: City of Cotati, Marin Municipal Water District, North Marin Water District, City of Petaluma, City of Rohnert Park, City of Santa Rosa, City of Sonoma, Valley of the Moon Water District, and the Town of Windsor.

In 1995 Sonoma Water assumed responsibility from the County of Sonoma for managing the county sanitation zones and districts, which provide wastewater collection/treatment, and recycled water distribution/ disposal services for approximately 22,000 residences and businesses. The zones include Airport/Larkfield/Wikiup, Geyserville, Penngrove and Sea Ranch. The sanitation districts include the Occidental, Russian River, Sonoma Valley, and South Park County Sanitation Districts.

There are multiple water and sewer agencies responsible for providing service to the proposed project sites. The agencies are listed in **Table 3-1**. In order to obtain information about each system, documents were obtained from the agency's website (if available), and each agency was contacted via phone call and email. In a few cases, site visits were made to obtain system information. **Appendix C** summarizes the reference documents obtained for this Study and the source used to retrieve them.

**Table 3-1. Water and Sewer Agencies**

Urban Service Area	Water Service Provider	Sewer Service Provider
Agua Caliente	Valley of the Moon Water District	Sonoma Valley County Sanitation District (Sonoma Water)
Glen Ellen		
Sonoma	City of Sonoma	
Forestville	Forestville Water District	Forestville Water District
Geyserville	California American Water - Geyserville	Geyserville Sanitation Zone (Sonoma Water)
Graton	Individually Owned Wells	Graton Community Services District
Guerneville	Sweetwater Springs Water District/California Water Service – Armstrong Valley	Russian River County Sanitation District (Sonoma Water)

Larkfield	California American Water – Larkfield	Airport/Larkfield/Wikiup Sanitation Zone (Sonoma Water)
Penngrove	Penngrove/Kenwood Water Company	Penngrove Sanitation Zone (Sonoma Water)
Petaluma	City of Petaluma	City of Petaluma
Santa Rosa	City of Santa Rosa	South Park County Sanitation District (Sonoma Water)

**Table 3-2** summarizes the water supply source(s) for each agency.

**Table 3-2. Agency Water Supply**

Agency	Water Source
Valley of the Moon Water District	Sonoma Water, Local Wells
City of Sonoma	Sonoma Water, Local Wells
Forestville Water District	Sonoma Water
California American Water – Geyserville	Unknown <sup>[1]</sup>
California American Water – Larkfield	Unknown <sup>[1]</sup>
California Water Service – Armstrong Valley	Local Wells
Penngrove/Kenwood Water Company	Unknown <sup>[1]</sup>
City of Petaluma	Sonoma Water
City of Santa Rosa	Sonoma Water

[1] Information was not provided by the agency

**Table 3-3** identifies where each agency sends its sewage to be treated.

**Table 3-3. Agency Wastewater Treatment Facilities**

Agency	Treatment Facility
Sonoma Valley County Sanitation District	3.0 MGD Laguna Treatment Plant (Tertiary)
Forestville Water District	District's Wastewater Treatment Reclamation and Disposal Plant
Geyserville Sanitation Zone	92,000 GPD WWTP (Secondary)

Graton Community Services District	GCSD (Ross Lane) WWTP
Russian River County Sanitation District	710,000 GPD WWTP (Tertiary)
Airport/Larkfield/Wikiup Sanitation Zone	900,000 GPD WWTP (Tertiary)
Penngrove Sanitation Zone	"Routed to City of Petaluma"
City of Petaluma	6.7 MGD Ellis Creek Water Recycling Facility (Tertiary)
South Park County Sanitation District	3.0 MGD Laguna Treatment Plant (Tertiary)

#### 4.0 First Level Site Analysis

The purpose of the first level analysis (FLA) is to investigate if each of the 59 sites have existing water and sewer infrastructure directly adjacent to the site that could provide service. For the purposes of this study, "directly adjacent" is defined as having water and/or sewer service that can be directly accessed without cutting through another parcel or extending pipelines within a public right-of-way. This is typically defined as a service line exists in the road touching the parcel in question. Parcels found to have both water and sewer infrastructure adjacent to the parcel, where a direct connection could be made, advanced onto a second level analysis (SLA) that is described in greater detail in the following section.

The first step in determining whether or not the infrastructure exists was gathering pertinent documents from the aforementioned agencies such as: Water/Wastewater Master Plans, Atlas Maps and GIS files. Where available, electronic maps/GIS files showing the existing water/sewer systems were cross referenced with parcel locations. Where unavailable, agencies were contacted and requested to send hard copy documents showing infrastructure location and size. In a few cases, the agencies were non-responsive and no information or data was publicly available or provided. For those cases, site visits were conducted. The results from the FLA are shown below in **Table 4-1**.

**Table 4-1: First Level Analysis Matrix**

Site ID	Adjacent Water Service	Adjacent Water Pipes	Adjacent Sewer Service	Adjacent Sewer Pipe
AGU-1	Yes	8" AC	Yes	21" RC
		6" PVC/AC		
AGU-2	Yes	8" AC	Yes	21" RC
		6" PVC		
AGU-3	Yes	6" ACP on two sides	Yes	6"/8" VC
				6" AC
GLE-1	Yes	6" AC	Yes	6" AC
		8" AC		6"/16" AC
GLE-2	Yes	6"/8" AC	Yes	6" AC

Site ID	Adjacent Water Service	Adjacent Water Pipes	Adjacent Sewer Service	Adjacent Sewer Pipes
FOR-1	No		No	
FOR-2	No	6" AC on four sides	No	
FOR-3	Yes	10" AC	Yes	8" AC
		5" PE		
FOR-4	Yes	10" VC	Yes	8" AC on two sides
		5" PE		
FOR-5	Yes	10" VC	Yes	8" AC
		5" PE		
FOR-6	No		No	
GRA-1	No		Yes	6" on two sides
GRA-2	No		Yes	6"/12"
GRA-3	No		Yes	6"
GRA-4	No		No	
GRA-5	No		Yes	6"
PET-1	Yes	8" AC	No	
PET-2	Yes	8" AC	Yes	
PET 3 C1	Yes	8" AC	Yes	6" PVC and manhole
PET-3 AR				
PET-4	Yes	8" AC	Yes	6" PVC
SAN-1	No		Yes	8" PVC
SAN-2	Yes	12" PVC on smallest side	Yes	27" RC
SAN-3	No		Yes	8" PVC
SAN-4	Yes	12" DI	Yes	16" CP
SAN-5	No		Yes	8" PVC
SAN-6	Yes	12" AC	Yes	10" AC
SAN-7	Yes	12" AC	Yes	10" AC
SAN-8	No		Yes	8" PVC
SAN-9	Yes	8" PVC	Yes	15" PVC
		16" DI		
SAN-10 m1	Yes	12" PVC	No	
SAN-10 RR	Yes		No	
SON-1	No		No	



Site ID	Adjacent Water Service	Adjacent Water Pipes	Adjacent Sewer Service	Adjacent Sewer Pipes
SON-2	No		No	
SON-3	No		No	
SON-4	No		No	
GUE-1	No		Yes	6" AB
GUE-2	Unavailable	[1]	Yes	6" AB
GUE-3	Unavailable	[1]	Yes	6" PVC on two sides
				6" AB
GUE-4	Unavailable	[1]	Yes	6" AB
PEN-1	Unavailable	[1]	Yes	8" AC
PEN-2	Unavailable	[1]	No	
PEN-3	Unavailable	[1]	Yes	8" AC
PEN-4	Unavailable	[1]	No	
PEN-5	Unavailable	[1]	Yes	8" AC
PEN-6	Unavailable	[1]	Yes	6" AC
PEN-7 AH	Unavailable	[1]	Yes	6" AC
PEN-7 RR B6	Unavailable	[1]		
PEN-8	Unavailable	[1]	Yes	6" AC
PEN-9	Unavailable	[1]	No	
LAR-1	Unavailable	[1]	Yes	21" RC
				8" PVC
				6" AC
LAR-2	Unavailable	[1]	Yes	8" PVC
LAR-3	Unavailable	[1]	Yes	8" DI
LAR-4	Unavailable	[1]	Yes	21" RC
LAR-5	Unavailable	[1]	Yes	8" PVC
				21" RC
LAR-6	Unavailable	[1]	Yes	8" PVC
LAR-7	Unavailable	[1]	No	
LAR-8	Unavailable	[1]	Yes	21" RC
GEY-1	Unavailable	[1]	No	
GEY-2	Unavailable	[1]	Yes	6" AC

GEY-3	Unavailable	[1]	Yes	6" AC
GEY-4	Unavailable	[1]	Yes	6" AC

[1] System information was not publicly available or not provided by the agency.

There were several water agencies, denoted as “unavailable” in Table 4-1 above, where existing infrastructure information was not available or provided. For these sites, Google Earth Pro was used to identify fire hydrants in the area which would indicate exiting water service. A site visit was also performed to investigate the availability of services through a surface investigation. This method is not desirable as it does not provide specific pipe diameters. This criterion was used to determine if those sites that are missing information will move onto the next level of analysis. The results from this analysis are provided in **Table 4-2** below. If additional information becomes available, the analysis can be updated.

**Table 4-2. Apparent Availability of Water Service for Parcels Without Agency Information**

Site ID	Water	Sewer
GUE-2	Yes	Yes
GUE-3	Yes	Yes
GUE-4	Yes	Yes
PEN-1	Yes	Yes
PEN-2	No	Yes
PEN-3	Yes	No
PEN-4	No	Yes
PEN-5	Yes	No
PEN-6	Yes	Yes
PEN-7	Yes	Yes
PEN-8	Yes	Yes
PEN-9	Yes	No
LAR-1	Yes	Yes
LAR-2	Yes	Yes
LAR-3	Yes	Yes
LAR-4	Yes	No
LAR-5	Yes	No
LAR-6	Yes	Yes
LAR-7	Yes	Yes
LAR-8	Yes	Yes
GEY-1	Yes	No
GEY-2	Yes	Yes
GEY-3	Yes	Yes
GEY-4	Yes	Yes

In total, 29 of the sites did not pass the FLA because significant water and/or sewer improvements would be required to serve the parcel. The remaining 30 sites, spanning 8 different USAs, advance to the second level of analysis. These sites are identified in **Table 4-3** below.

**Table 4-3. Sites Advancing to Second Level Analysis**

AGU-1	SAN-7	LAR-4	GUE-2
AGU-2	SAN-9	LAR-5	GUE-3
AGU-3	FOR-3	LAR-6	PEN-1
GLE-1	FOR-4	LAR-8	PEN-6
GLE-2	FOR-5	GEY-2	PEN-7
SAN-2	LAR-1	GEY-3	PEN-8
SAN-4	LAR-2	GEY-4	
SAN-6	LAR-3	GUE-1	

## 5.0 Second Level Site Analysis

The purpose of the second level analysis (SLA) is to provide a more detailed investigation into the feasibility of the water and sewer systems to serve the proposed project sites that advanced past the FLA. This investigation is a desktop analysis, is based on available information, and does not include an analysis of hydraulic models, if available. The investigation reviewed information within agency planning documents regarding the available pipeline, pump/lift station, storage, and treatment capacity for each water and sewer system.

In order to determine whether or not adequate capacity is available, the proposed land use and density/population increase was used to calculate the anticipated increase in water demand and sewage generation for each project site and USA. Water demand factors came from County's regional compliance target development. California American Water does not have a target with the County so the average of all the other system goals was used as their water demand factor. Sewer generation factors were retrieved from the County's local area development guidelines where available, and for those USAs without information, the average of the known values was assumed for their generation rate.

Planning documents, such as Urban Water Management Plans, Capital Improvement Plans, General Plans, Water Master Plans, and Sewer Master Plans were used to determine maximum demand/generation factors, existing system capacity, and existing system deficiencies. For USAs that do not provide peaking factors, the average of the known factors was used. The following section will discuss the findings of the SLA.

### 5.1 Water Demands

Water demands were calculated using a population-based approach. The proposed population increase for each site was multiplied by the water demand factors set by the County's regional compliance target

as mentioned above. **Table 5-1** below summarizes the water demand requirement and the anticipated increase in demand for each parcel that advanced to the second level analysis.

**Table 5-1. Water Demand for Proposed Build Out**

Site ID	Exist. Max Population (per)	Exist. Average Day Demand (gpd)	Prop. Max Population (per)	Prop. Average Day Demand (gpd)	Prop. Average Day Demand (AFY)	Demand Increase (AFY)
AGU-1	3	372.0	70	8,680.0	9.7	9.4
AGU-2	18	2,232.0	343	42,532.0	47.6	45.1
AGU-3	42	5,208.0	166	20,584.0	23.1	17.4
GLE-1	3	372.0	49	6,076.0	6.8	6.5
GLE-2	3	372.0	8	992.0	1.1	0.7
SAN-2	0	0.0	520	65,520.0	73.4	73.4
SAN-4	3	378.0	387	48,762.0	54.6	54.3
SAN-6	0	0.0	190	23,940.0	26.8	26.8
SAN-7	0	0.0	187	23,562.0	26.4	26.4
SAN-9	0	0.0	413	52,038.0	58.3	58.3
FOR-3	8	1,032.0	86	11,094.0	12.4	11.3
FOR-4	5	645.0	185	23,865.0	26.7	25.9
FOR-5	16	2,064.0	151	19,479.0	21.8	19.5
LAR-1	3	404.3	252	33,964.0	38.0	37.7
LAR-2	0	0.0	42	5,660.7	6.3	6.3
LAR-3	26	3,504.2	36	4,852.0	5.4	1.5
LAR-4	10	1,347.8	16	2,156.4	2.4	0.8
LAR-5	187	25,203.4	257	34,637.9	38.8	10.6
LAR-6	0	0.0	31	4,178.1	4.7	4.7
LAR-8	0	0.0	29	3,908.6	4.4	4.4
GEY-2	21	2,830.3	86	11,590.9	13.0	9.8
GEY-3	13	1,752.1	57	7,682.3	8.6	6.6
GEY-4	16	2,156.4	68	9,164.9	10.3	7.9
GUE-1	16	2,156.4	78	10,512.7	11.8	9.4
GUE-2	5	673.9	208	28,033.8	31.4	30.6
GUE-3	21	2,830.3	107	14,421.2	16.2	13.0
PEN-1	0	0.0	3	404.3	0.5	0.5
PEN-6	5	673.9	104	14,016.9	15.7	14.9
PEN-7	47	6,334.6	278	37,468.2	42.0	34.9
PEN-8	0	0.0	42	5,660.7	6.3	6.3
<b>TOTAL</b>	<b>471</b>	<b>65,542.8</b>	<b>4,449</b>	<b>575,437.6</b>	<b>644.6</b>	<b>574.9</b>

**Table 5-2** below summarizes the increase in water demand for each USA.

**Table 5-2. Increase in Annual Water Demand by USA**

Urban Service Area	Water Demand Increase (AFY)	Water Service Provider
Agua Caliente	71.9	Valley of the Moon Water District
Glen Ellen	7.2	
Santa Rosa	239.2	City of Santa Rosa
Forestville	56.6	Forestville Water District
Larkfield	66.0	California American Water - Larkfield
Geyserville	24.3	California American Water - Geyserville
Guerneville	53.0	California Water Service Company – Armstrong Valley
Penngrove	56.6	Penngrove/Kenwood Water Company
<b>TOTAL</b>	<b>574.9</b>	

In order to assess existing and planned capacity, available planning documents, such as Urban Water Management Plans and Water Master Plans, were reviewed. The capacity assessment included reviewing pump stations firm capacity, tank capacity, well design flow, and water treatment plant capacity. The availability of water supply is also a key consideration when determining if each site can accommodate increased density.

## 5.2 Sonoma Water Supply Overview

Sonoma County Water Agency (Sonoma Water) gets the majority of its water from the Russian River which gets stored in two reservoirs, Lake Mendocino and Lake Sonoma. Lake Mendocino is formed by Coyote Dam, which provides a total storage capacity of 118,000 acre-feet/year and a water supply pool of 70,000 acre-feet/year, although Sonoma Water has the rights to store up to 122,500 acre-feet/year of water in Lake Mendocino. The Warm Springs Dam forms Lake Sonoma, which has a total storage capacity of 381,000 acre-feet/year with a water supply pool of 245,000 acre-feet/year.

Sonoma Water has the rights to divert or redivert up to 180 cubic feet per second (cfs) of water from the Russian River, with a limit of 75,000 acre-feet/year.

Sonoma Water has six collector wells adjacent to the Russian River. Collectors 1 and 2 were constructed in the late 1950's and are located near the Wohler Bridge. Collectors 3, 4 and 5 were constructed between 1975 and 1985 and are located near Mirabel Park. Construction of Sonoma Water's newest collector well, Collector 6, was completed in the spring of 2006. Groundwater is extracted by each collector well from the alluvial aquifer adjacent to and beneath the Russian River.

Sonoma Water operates an inflatable dam on the Russian River in the Mirabel area to increase production capacity during peak demand months. Operation of the inflatable dam increases production capacity in two important ways. First, surface water immediately behind the dam can be diverted to a series of infiltration ponds that are constructed adjacent to the three Mirabel collector wells. Second, infiltration to the underlying aquifer behind the dam is significantly improved by increasing the recharge area from the river.

As a stand-by water source, seven vertical wells were constructed in the late 1990's near the Mirabel collectors, providing 7 to 10 million gallons per day (mgd) of back up capacity.

Sonoma Water operates three groundwater wells in the Santa Rosa Plain. These wells pump groundwater from several hundred feet below the ground surface and are capable of providing up to 7 million gallons per day.

Per the 2015 Sonoma Water UWMP, Sonoma Water has adequate water supply to meet the normal year projected water demands through Year 2040. The Year 2040 normal water demand is projected to be 75,987 acre-feet/year, with the regional water supplies projected to exceed 110,000 acre-feet/year.

### **5.3 Water System Analysis by Urban Service Area**

#### Agua Caliente and Glen Ellen

Agua Caliente and Glen Ellen are served by Valley of the Moon Water District (VOMWD). VOMWD gets its water from 10 Sonoma Water turnouts and 6 local groundwater wells. They operate 10 pumping stations and 12 storage tanks (total of 5.3 MG). VOMWD is divided into 9 different pressure zones with the proposed project sites being located in Pressure Zones 1 and 2E. Pressure Zone 1 is the largest zone, while pressure Zone 2E is a very small zone.

Per VOMWD's April 2019 Water Master Plan, six (6) Sonoma Water Turnouts feed directly into Pressure Zone 1 and five (5) groundwater wells are located in Pressure Zone 1. Pressure Zone 1 has access to approximately 5.0 MG of storage in eight (8) tanks. Pressure Zone 2E has direct access to 0.03 MG of storage (Sobre Vista – Lower Tank).

VOMWD estimates that future demand will plateau and remain relatively stable despite additional population and economic growth. The projected annual water use from 2020 through 2040 is approximately 3,120 AFY. VOMWD's water supply contract with Sonoma Water entitles the District to 3,200 AFY. In recent years, VOMWD's well shave produced between 450-650 AFY.

VOMWD's 2019 Water Master Plan identified areas of Pressure Zone 1 where fire flow requirements aren't met. Furthermore, portions of the pressure zone are unable to meet minimum pressure requirements under peak hour. However, Pressure Zone 1 has adequate supply and storage to accommodate development.

Pressure Zone 2E experiences supply deficits in both current and future scenarios. However, consolidation of pressure zones 2E and 3E, abandoning the Sobre Vista Lower Tanks and Sobre Vista Upper Pump station, and adding a pressure reducing valve to gravity deliver storage to pressure zone 1B would mitigate these issues. The District has also initiated the design of a new 0.15-million-gallon tank which would assist in the supply issues being experienced.

VOMWD appears to have adequate supply to meet the demands of the proposed re-zoning sites. Although VOMWD has identified several fire flow and peak hour pressure deficiencies, the District has outlined 26 capital improvement projects to mitigate these issues. For these reasons, sites within Agua Caliente and Glen Ellen appear viable for further consideration.

#### City of Santa Rosa

Of the sites under consideration in Sonoma, Sonoma Local Agency Formation Commission (LAFCO) has jurisdiction over sites SAN-6 and SAN-7. These parcels are located outside of the City's boundary but within the City's sphere of influence, UGB, and USA. The parcels must be annexed into the City to

receive water and sewer service. The other parcels that made it to the second level analysis (SAN-2, SAN-4, and SAN-9) are not within LAFCO jurisdiction.

Per the City of Santa Rosa Water Master Plan Update (August 2014), the City owns and operates 24 storage tanks (total of 23.1 MG), 20 water pump stations, and 6 municipal groundwater wells. The service area is divided 32 pressure zones with the proposed sites located in the Aqueduct Pressure Zone.

The City receives approximately 95% of their water supply from Sonoma Water. Per the Restructured Agreement with Sonoma Water, the City is entitled to 29,100 AFY. The City's groundwater wells can supply an additional 2,300 AFY. The 2015 Urban Water Management Plan projects the City's normal water demands to be 28,140 AFY in year 2040, with a total supply of 31,400 AFY available (not including recycled water or other future water supply projects).

While there are no significant pumping deficiencies identified within the City system, the Aqueduct Pressure Zone has a projected storage deficit of 3.1 million gallons at ultimate buildout. This storage deficiency could be mitigated by re-engaging the use of the Proctor Heights Tanks. The Aqueduct Pressure Zone has access to 24.6 MG of SCWA storage as well as 8.8 MG of City storage. The 2014 Master Plan identified a few localized pressure deficiencies in the Aqueduct Pressure Zone, however numerous pipeline improvements projects (totaling 46,000 LF of improvements) were identified to mitigate the issues.

The City appears to have adequate supply to meet the demands of the proposed re-zoning sites. Although the City has identified a storage deficiency at ultimate buildout, the City has identified a capital improvement project to mitigate the deficiency, as well as outlined a robust capital improvement program to mitigate other identified deficiencies throughout the system. For these reasons, the SLA sites within Santa Rosa appear viable for further consideration.

### Forestville

Forestville is served by the Forestville Water District (FWD). FWD does not have a current Water Master Plan. However, per a conversation with the General Manager of FWD, there are no existing capacity deficiencies in the system that would prevent an increase in residential development. Therefore, the SLA sites in Forestville appear to be viable.

### Larkfield and Geyserville

Larkfield and Geyserville are both served by California American Water. These sites did not have agency information available, and the agency was not responsive when reaching out for system information. Each potential site was visited and inspected for potential of water service. Upon completion of the site visit, it was determined that all sites in Geyserville and Larkfield appear to have adjacent access to water service. Further detailed investigation will be required to confirm the systems have supply and capacity available.

### Guerneville

Guerneville is supplied water from California Water Service – Armstrong Valley system. There was no information publicly available or provided from the water agency, therefore a site visit was performed to determine if existing infrastructure exists adjacent to the proposed sites. All three sites are located in a rural residential neighborhood. Sites GUE-2 and GUE-3 are located along very narrow roadways with likely small diameter, dead-end waterlines that likely can't meet fire flow. These sites do not appear

viable. GUE-4 is located across the street from a school, so pipeline capacity and fire availability are likely available, therefore this site is considered viable and requires further detailed analysis.

#### Penngrove

Penngrove/Kenwood Water Company is responsible for providing water service to Penngrove residents. No agency information was provided or publicly available, therefore site visits were performed to determine if existing water infrastructure exists adjacent to the proposed parcels. Sites PEN-1, -3, -5, -6, -7, -8 and -9 all appear to have access to water infrastructure adjacent to the parcel, and therefore deemed viable for further analysis. Sites PEN-2 and -4 are located along the rural road Goodwin Avenue, and no evidence of water infrastructure was visible. Therefore, sites PEN-2 and -4 are considered not viable.

## 5.4 Sewer Generation Analysis

Sewer generation was calculated using a population-based approach as well, but the sewage generation and peaking factors came from the County's development guidelines. **Table 5-3** below summarizes the resulting sewage generation for the parcels in question.

**Table 5-3. Sewage Generation for Proposed Build Out**

Site ID	Exist. Max Population (per)	Existing Avg. Sewer Generation (gpd)	Prop. Max Population (per)	Proposed Avg. Sewer Generation (gpd)	Increase in Avg. Sewer Generation (gpd)	Peaking Factor	Increase in Peak Hour Generation (gpd)
AGU-1	3	230.8	70	5,384.6	5,230.8	1.94	10,147.7
AGU-2	18	1,384.6	343	26,384.6	25,000.0		48,500.0
AGU-3	42	3,230.8	166	12,769.2	9,615.4		18,653.8
GLE-1	3	230.8	49	3,769.2	3,615.4		7,013.8
GLE-2	3	230.8	8	615.4	384.6		746.2
SAN-2	0	0.0	520	46,600.0	46,600.0	2.24	90,404.0
SAN-4	3	268.8	387	34,681.2	34,501.9		66,933.7
SAN-6	0	0.0	190	17,026.9	17,026.9		33,032.2
SAN-7	0	0.0	187	16,758.1	16,758.1		32,510.7
SAN-9	0	0.0	413	37,011.2	37,011.2		71,801.6
FOR-3	8	606.8	86	6,523.4	5,916.6	2.42	11,478.2
FOR-4	5	379.3	185	14,032.9	13,577.8		26,340.9
FOR-5	16	1,213.7	151	11,453.9	10,240.2		19,866.1
LAR-1	3	227.6	252	19,115.1	18,963.4	2.42	36,789.0
LAR-2	0	0.0	42	3,185.9	3,185.9		6,180.6
LAR-3	26	1,972.2	36	2,730.7	758.5		1,471.6
LAR-4	10	758.5	16	1,213.7	379.3		735.8
LAR-5	187	14,184.6	257	19,494.4	5,309.8		10,300.9
LAR-6	0	0.0	31	2,351.5	2,351.5		4,561.8



LAR-8	0	0.0	29	2,199.8	2,199.8		4,267.5
GEY-2	21	1,826.1	86	7,478.3	5,652.2	2.42	10,965.2
GEY-3	13	1,130.4	57	4,956.5	3,826.1		7,422.6
GEY-4	16	1,391.3	68	5,913.0	4,521.7		8,772.2
GUE-1	16	1,213.7	78	5,916.6	4,702.9	2.42	9,123.7
GUE-2	5	379.3	208	15,777.6	15,398.3		29,872.7
GUE-3	21	1,592.9	107	8,116.3	6,523.4		12,655.4
PEN-1	0	0.0	3	216.0	216.0	2.74	419.0
PEN-6	5	360.0	104	7,488.0	7,128.0		13,828.3
PEN-7	47	3,384.0	278	20,016.0	16,632.0		32,266.1
PEN-8	0	0.0	42	3,024.0	3,024.0		5,866.6
<b>TOTAL</b>	<b>471</b>	<b>36,196.9</b>	<b>4,449</b>	<b>362,203.9</b>	<b>326,251.5</b>		<b>632,928.0</b>

The following desktop analysis references current Sewer System Management Plans for each respective sanitation district/zone and the 2019 Capital Project Plans provided by Sonoma Water. **Table 5-3** below summarizes the increase in sewage generation.

**Table 5-4. Increase in Sewage Generation by USA**

Urban Service Area	Average Dry-Weather Sewage Generation Increase (gpd)	Sewer Service Provider
Agua Caliente	39,846.2	Sonoma Valley County Sanitation District
Glen Ellen	4,000.0	
Santa Rosa	151,898.1	South Park County Sanitation District
Forestville	29,734.6	Forestville Water District
Larkfield	33,148.0	Larkfield-Wikiup Sanitation Zone
Geyserville	14,000.0	Geyserville Sanitation Zone
Guerneville	26,624.6	Russian River County Sanitation District
Penngrove	27,000.0	Penngrove Sanitation Zone
<b>TOTAL</b>	<b>326,251.5</b>	

## 5.5 Sewer System Analysis by Urban Service Area

### Agua Caliente and Glen Ellen

Agua Caliente and Glen Ellen are provided sewer service by Sonoma Valley County Sanitation District (SVCSD). Per the most recent Sewer System Management Plan (SSMP), in 2015 the system has experienced 19 sanitary sewer overflows (SSOs) and 16 capacity-limited pipe segments but there have been no pipe or pump station failures. The system has also experienced 3 blockages due to roots and grease. These deficiencies resulted in a cease-and-desist order from San Francisco Bay Regional Water Quality Control Board requiring SVCWD to mitigate their capacity deficiencies by 2024.

SVCSO has identified two projects to address the issues mentioned above. The first is the replacement of the trunk main that is located at the intersection of West Napa Street and Sonoma Highway to the intersection of Happy Lane and Anthony Court. This project will involve the replacement of 7,108 linear feet of 21-inch diameter reinforced concrete main with a 27-inch diameter trunk main and the replacement of 31 manholes. This project will address structural deficiency and mitigate capacity restricted sections. This project is proposed to occur by October of 2022.

The other project is replacing trunk main from the intersection of Happy Lane and Anthony Court to approximately the intersection of Las Flores Drive and Estrella Drive. It will consist of replacing 8,245 linear feet of 21-inch and 18-inch diameter reinforced concrete trunk main with appropriately larger mains, and replace 35 manholes. This project will also address structural deficiency and capacity restricted sections. This project is proposed to be completed by the end of October in 2024.

With these proposed projects implemented, the system should have adequate capacity to support the proposed re-zoning sites.

#### City of Santa Rosa

Of the sites under consideration in Sonoma, Sonoma Local Agency Formation Commission (LAFCO) has jurisdiction over sites SAN-6 and SAN-7. These parcels are located outside of the City's boundary but within the City's sphere of influence, UGB, and USA. The parcels must be annexed into the City to receive water and sewer service. The other parcels that made it to the second level analysis (SAN-2, SAN-4, and SAN-9) are not within LAFCO jurisdiction.

The City of Santa Rosa receives sewer service through South Park County Sanitation District (SPCSD) but they work closely with the City to address collection system upgrades. Per the 2016 SSMP, the system has only experienced 4 SSOs, with none of them being attributed to blockage since 2008. Based upon these results, SPCSD has determined that there are no capacity deficiencies. Furthermore, SPCSD has plans to repair, rehabilitate, and construct portions of collection system by 2024. With these proposed projects implemented, the system should have adequate capacity to support the proposed re-zoning sites.

#### Forestville

Forestville is provided sewer service by the Forestville Water District (FWD). Current sewer system planning documents were not provided or available. Per discussion with the General Manager of FWD, there are no existing capacity deficiencies in the system that would prevent higher density development. Therefore, the Forestville sites are considered viable.

#### Larkfield

Larkfield receives sewer service from the Airport-Larkfield-Wikiup Sanitation Zone (ALWSZ). Per the June 2016 SSMP, the ALWSZ wastewater treatment plant has a treatment capacity of 900,000 gallons per day (gpd). The hydraulic model analysis evaluation, conducted as a part of the 2016 SSMP indicated the trunk sewer system has adequate capacity to convey all existing and future flows. However, the 2020 Sonoma County General Plan Public Facilities and Services Element indicates the Airport/Larkfield/Wikiup Sanitation Zone as having limited capacity for accommodating future growth. Due to uncertainties about the capacity of the treatment plant, further investigation will be needed to confirm the viability of these sites.

### Geyserville

Geyserville receives sewer service from the Geyserville Sanitation Zone (GSZ). Per the June 2016 SSMP, GSZ's wastewater treatment plant has a treatment capacity of 92,000 gpd but currently treats approximately 45,000 gpd. Since 2008, GSZ has only experienced one SSO that was attributed to blockage. The capacity assessment completed for the 2016 SSMP found no capacity deficiencies in the system. Based upon this information, the GEY sites are deemed viable for sewer.

### Guerneville

Guerneville's sewer system is managed by the Russian River County Sanitation District. Per the 2016 SSMP, the District's treatment capacity is 0.71 MGD. The hydraulic analysis performed as a part of the 2016 SSMP identified two locations of potential surcharge with one of the two being slightly deficient. The system has only experienced two SSOs. The hydraulic capacity assessment conducted as a part of the 2016 SSMP concluded that the system has adequate capacity to convey existing and future flows. The site assessments for the GUE-3 determined that new lift station would be required to serve this parcel, therefore GUE-3 is not a viable site. Site GUE-2 would also require upgrades to an existing lift station, and therefore is not deemed viable. GUE-4 appears to be a viable site.

### Penngrove

Penngrove receives sewer service from the Penngrove Sanitation Zone (PSZ). Flows generated within the PSZ flow through the City of Petaluma's system and to the City's wastewater treatment plant. PSZ has an agreement with the City to treat wastewater for a maximum of 3,000 people. As of the 2010 census, Penngrove's population was 2,522 people. For the September 2016 SSMP, Agency staff conducted a capacity assessment of the PSZ system, and concluded that overflows would occur in 10-year storm event scenario due to inflow and infiltration. Agency staff also noted that not overflows have been observed. The system experienced three SSOs between December 2014 and March 2016 occurring just upstream of a lift station where the capacity was exceeded. Three capital improvement projects were identified in the 2016 SSMP to mitigate the overflow concerns. The Penngrove sites may be viable if the capital improvement projects have been completed and it may require a revised agreement with the City of Petaluma for treatment.

## **6.0 Recommendations**

Of the 59 potential sites, 29 sites were eliminated in the first level analysis due to a lack of adjacent water and/or sewer infrastructure. For the 30 sites that advanced to the second level analysis, a high-level investigation of the water supply availability, water system capacity, sewer system capacity and wastewater treatment capacity was performed. On paper, 28 of the 30 sites appear to have existing water and sewer infrastructure capacity in order to accommodate additional residential density due to the proposed re-zoning. It is noted that the water agencies serving Geyserville, Guerneville, Larkspur and Penngrove did not provide any system information. The analysis of those areas was performed by conducting site visits to identify above-grade water facilities to confirm pipelines exist adjacent to the proposed sites. Of the 30 sites that advanced to the second level analysis, only the two-sites in Guerneville were eliminated due to a lack of infrastructure or the requirement of significant improvements.

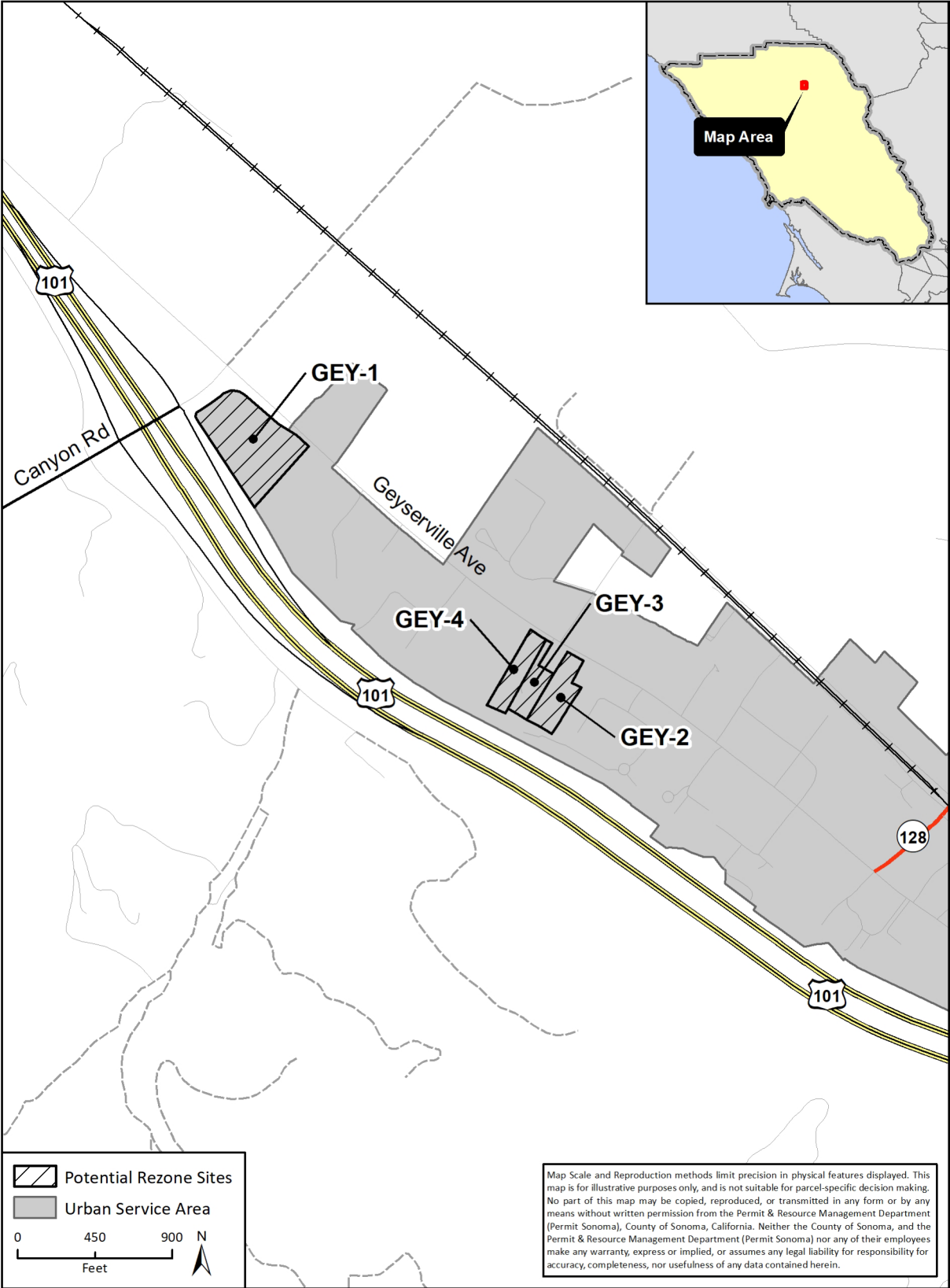
It is noted that this Study was a paper study only, and did not include hydraulic model analyses of either the water or sewer systems. It is recommended that more detailed investigations be completed for future development projects on the proposed sites to fire flow availability and system capacity.

**Table 6-1** below summarizes the viability of each site that made it to second level analysis.

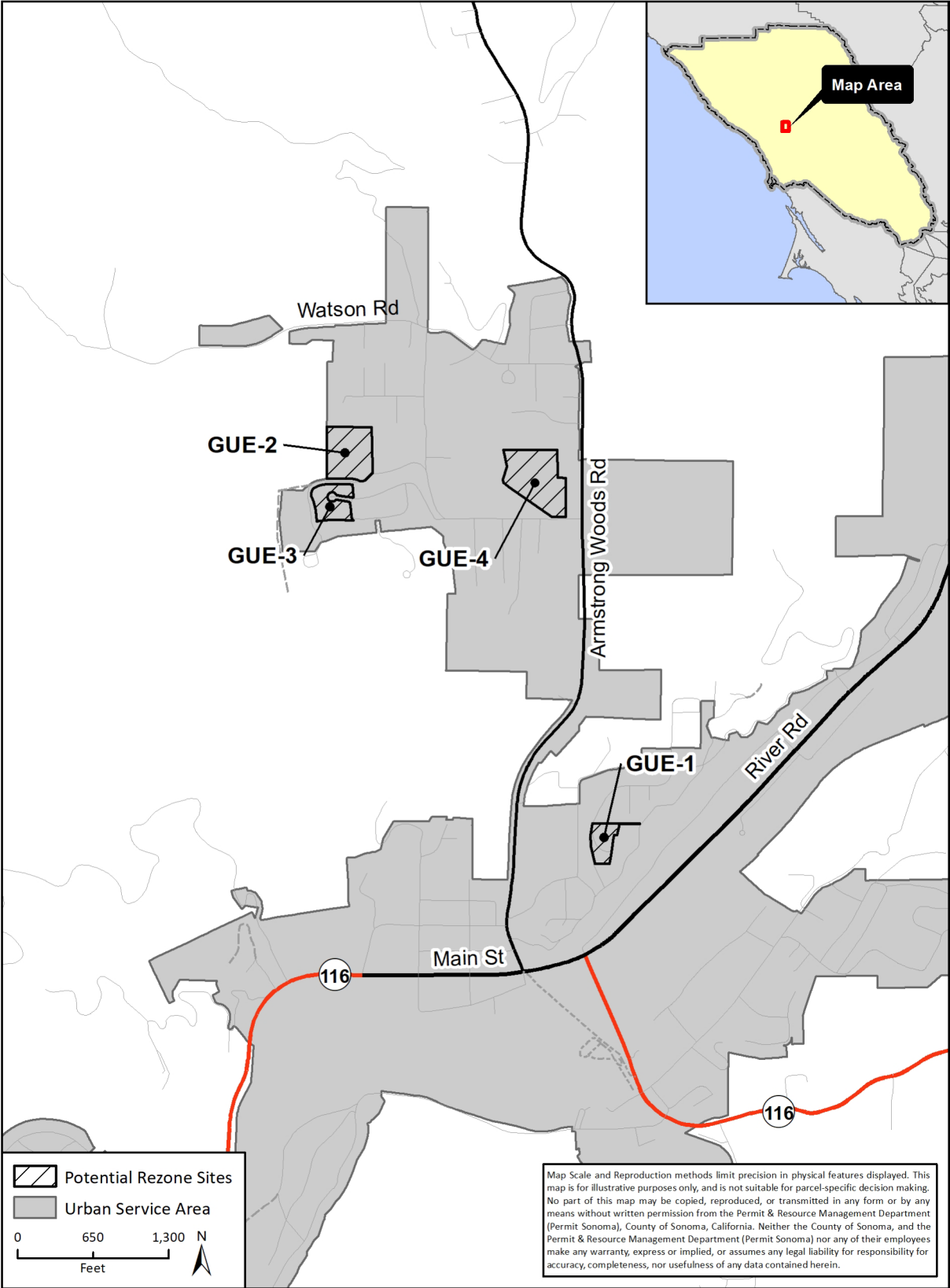
**Table 6-1. Summary of Site Viability**

Site	Viable?
AGU-1	Yes
AGU-2	Yes
AGU-3	Yes
GLE-1	Yes
GLE-2	Yes
SAN-2	Yes
SAN-4	Yes
SAN-6	No
SAN-7	No
SAN-9	Yes
FOR-3	Yes
FOR-4	Yes
FOR-5	Yes
LAR-1	Yes
LAR-2	Yes
LAR-3	Yes
LAR-4	Yes
LAR-5	Yes
LAR-6	Yes
LAR-8	Yes
GEY-2	Yes
GEY-3	Yes
GEY-4	Yes
GUE-2	No
GUE-3	No
GUE-4	Yes
PEN-1	Yes
PEN-6	Yes
PEN-7	Yes
PEN-8	Yes

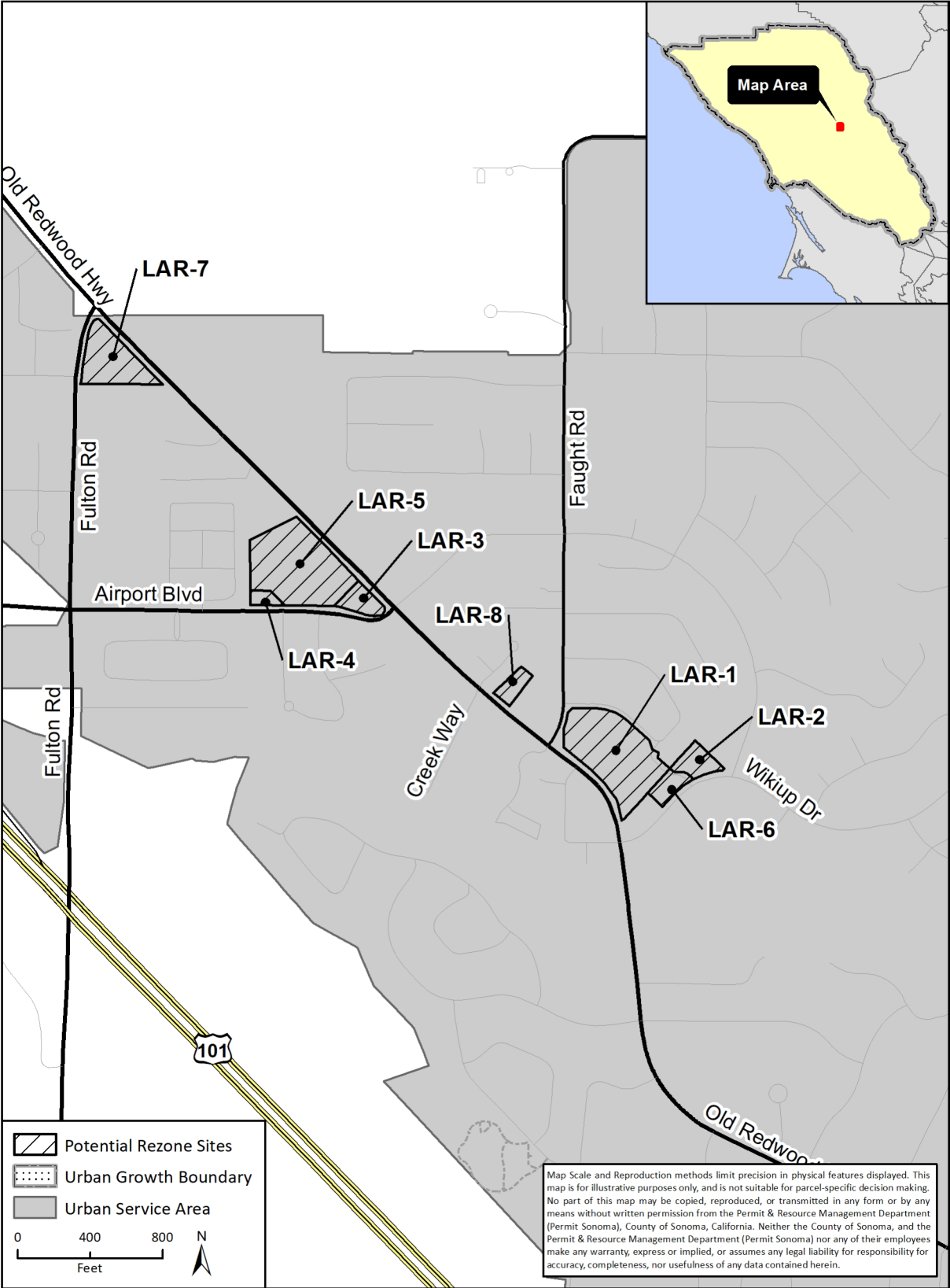
## **Appendix A – Maps of Sites Under Consideration by USA**



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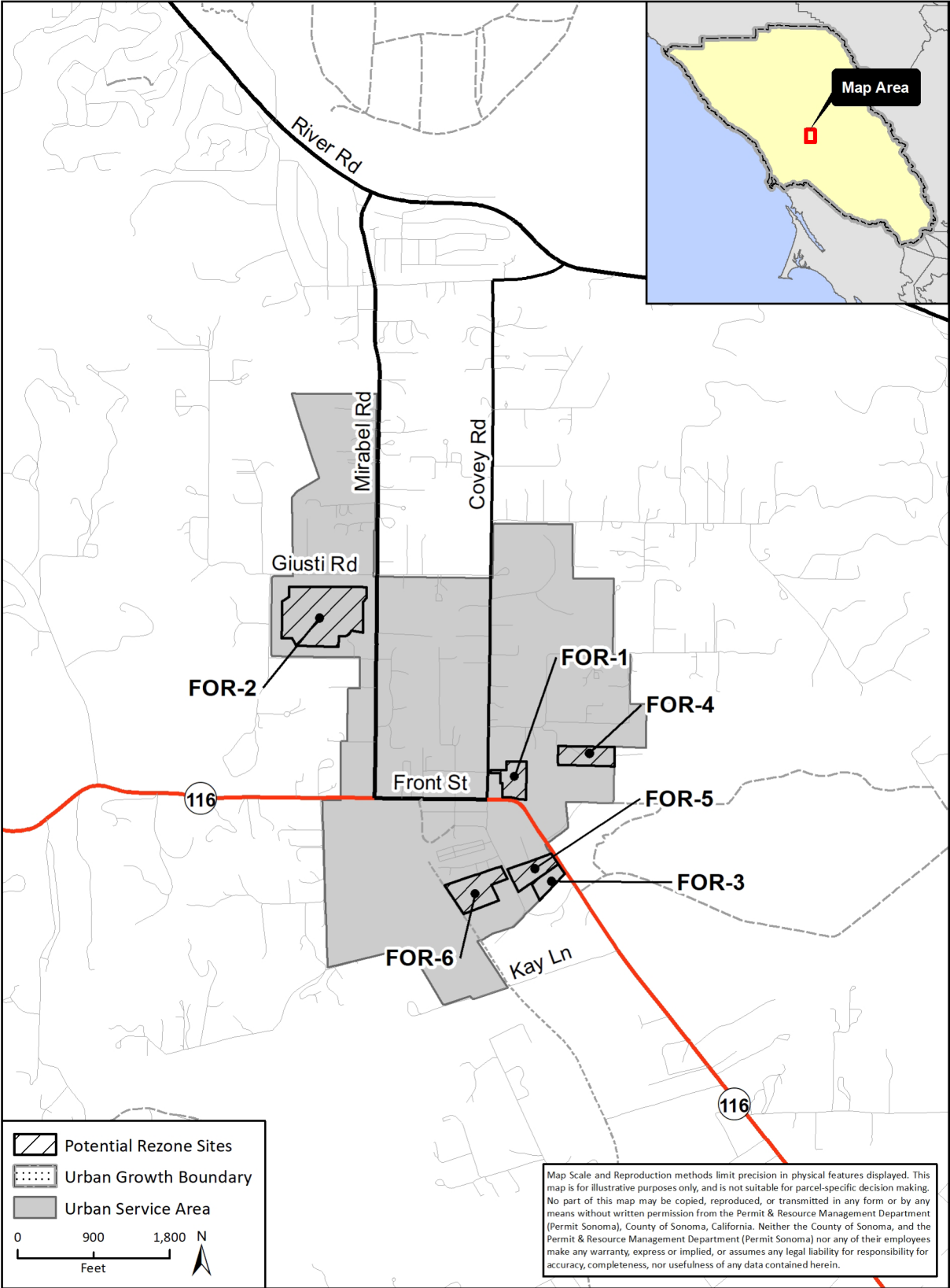


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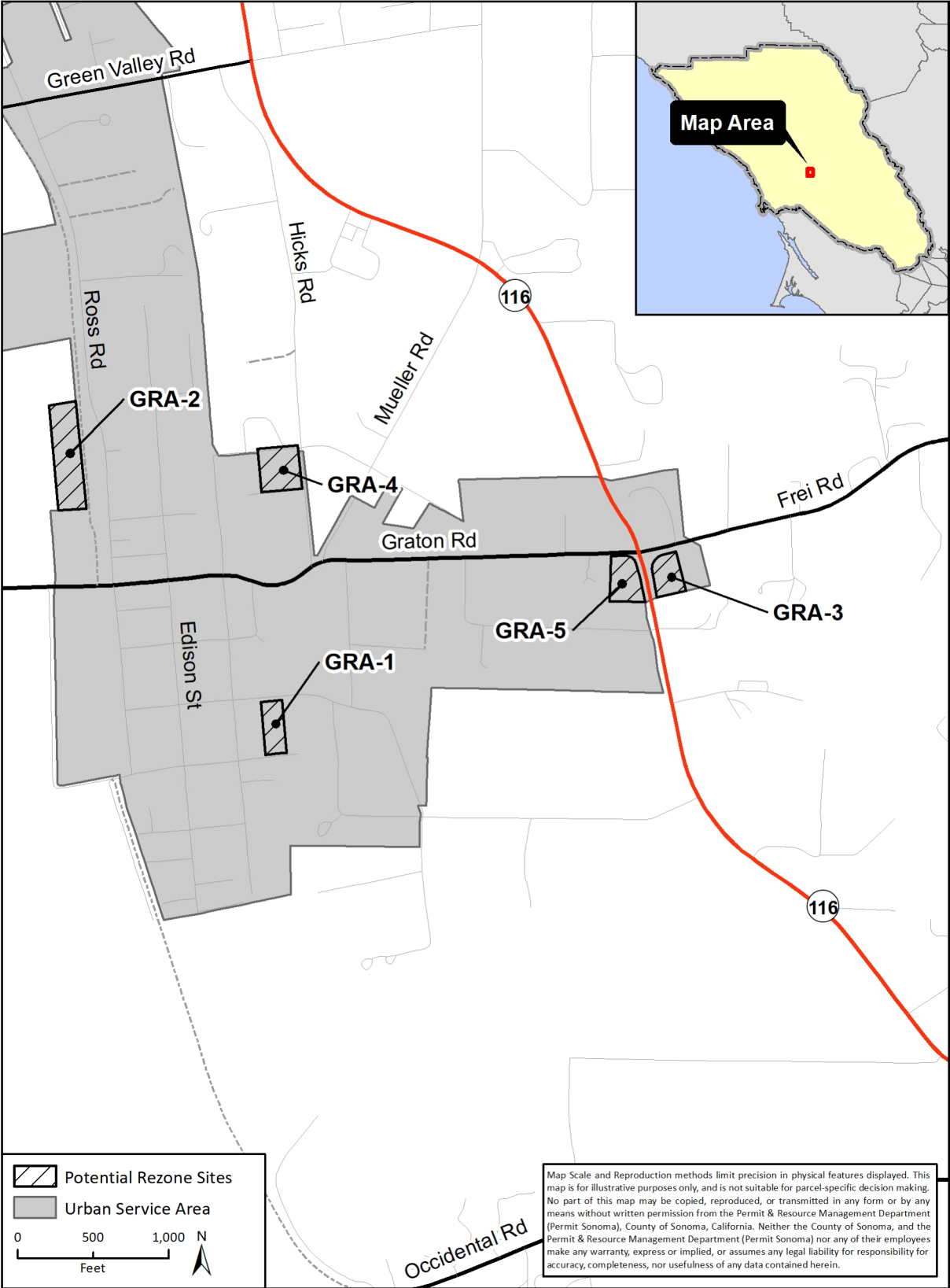


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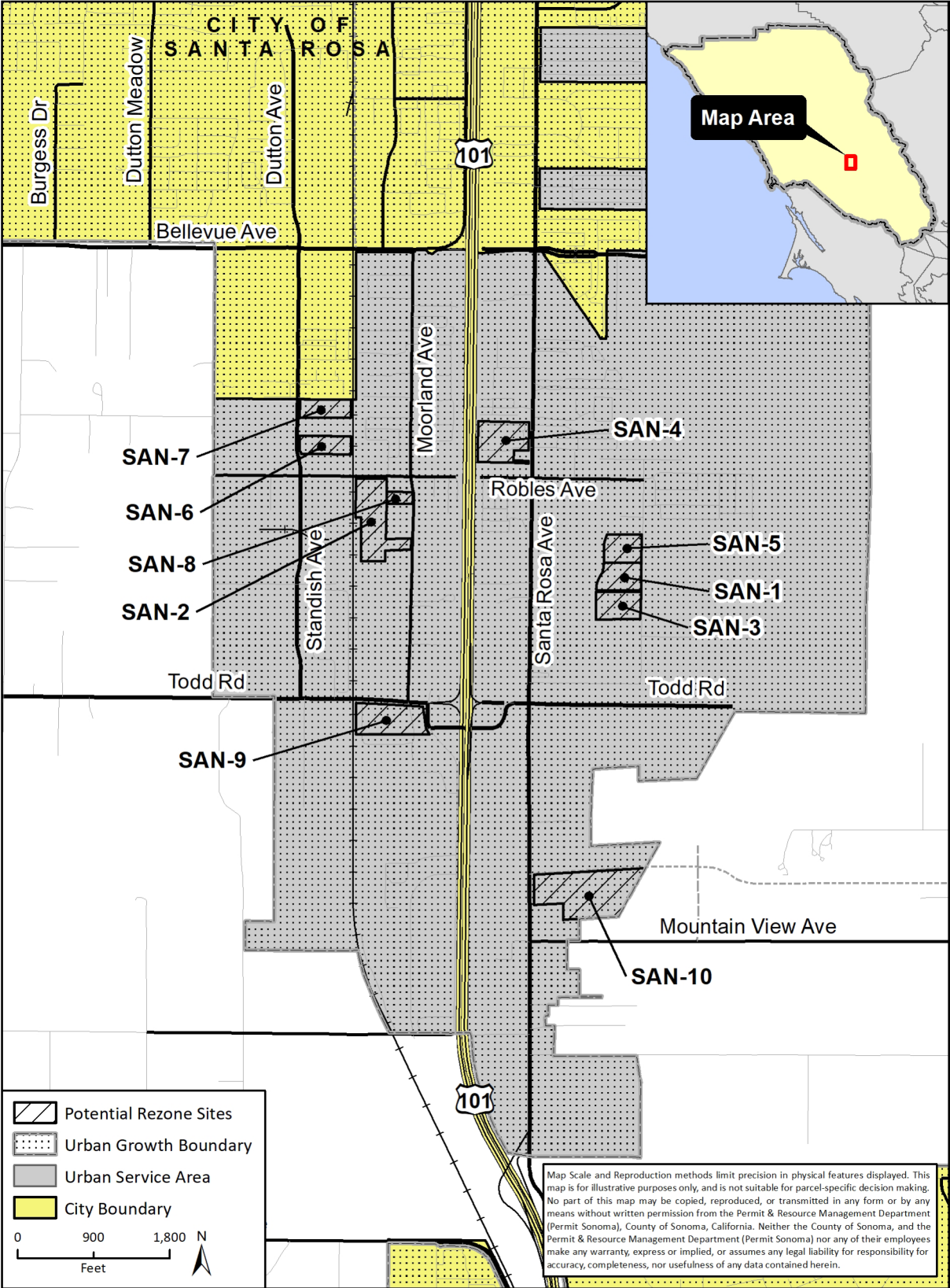




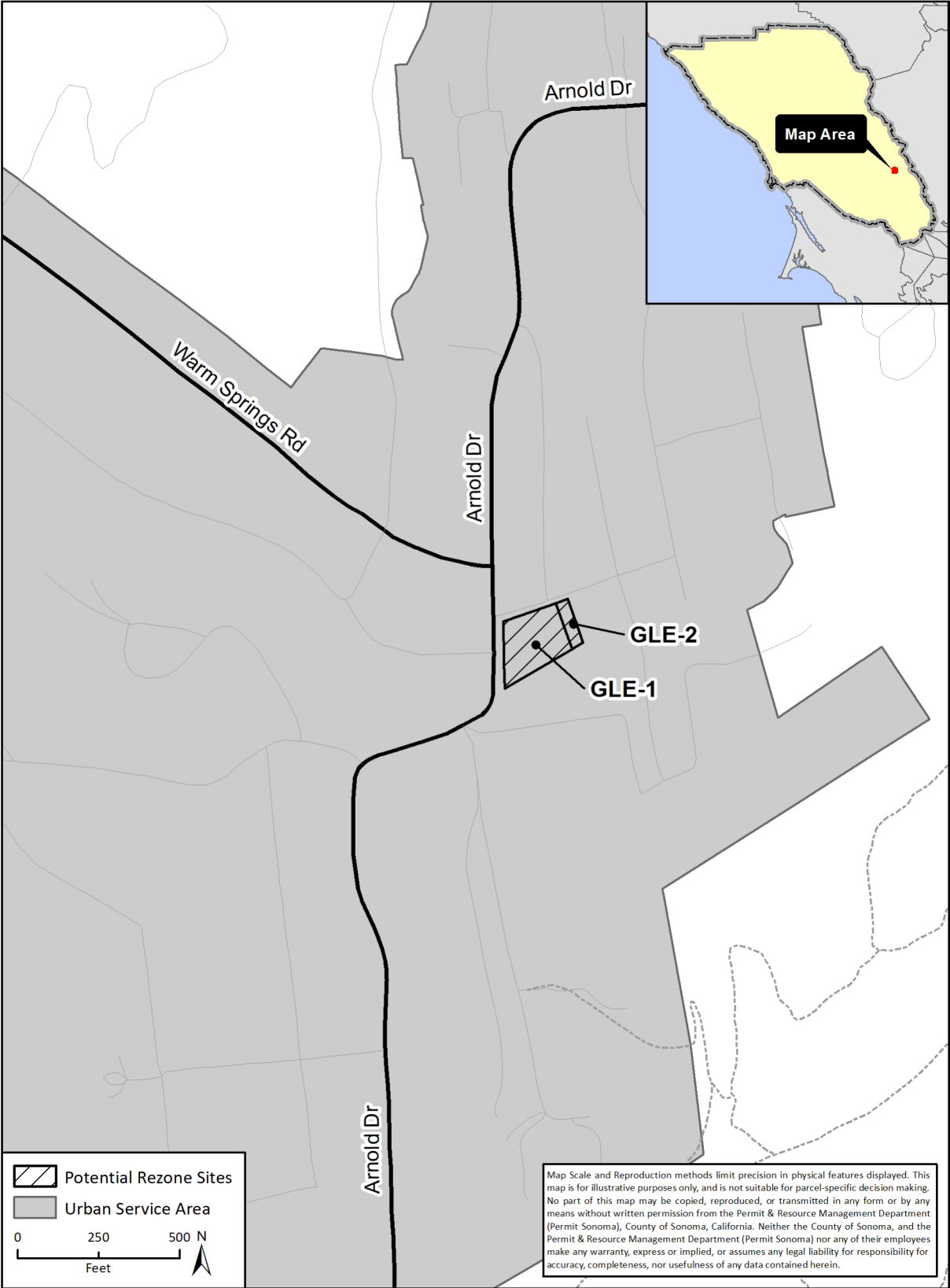
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Map Area

Arnold Dr

Warm Springs Rd

Arnold Dr

GLE-2

GLE-1

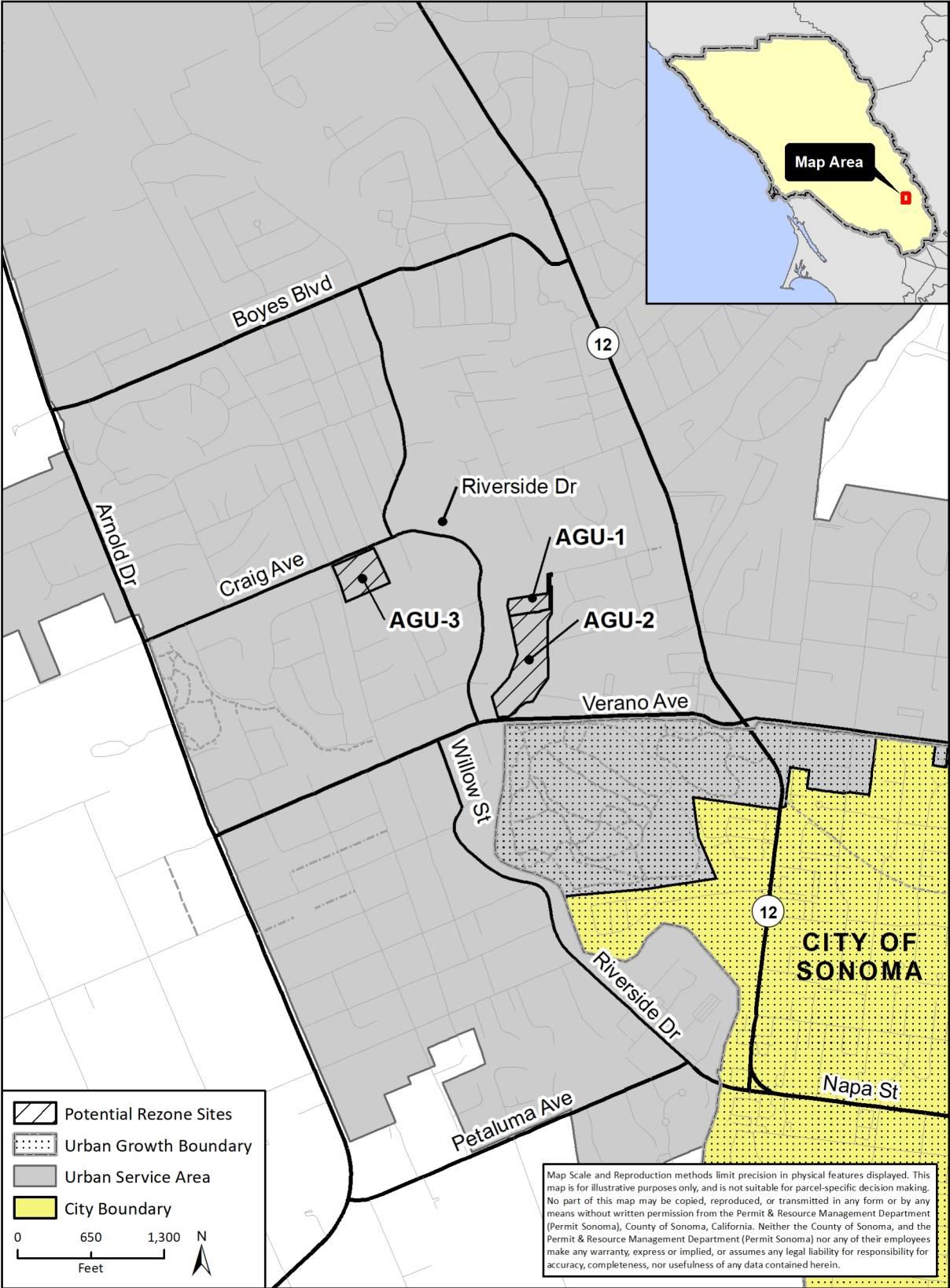
Arnold Dr

Potential Rezone Sites

Urban Service Area

0 250 500 N  
Feet

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Map Area

Boyes Blvd

12

Riverside Dr

AGU-1

Craig Ave

AGU-3

AGU-2

Verano Ave

Willow St

12

CITY OF SONOMA

Riverside Dr

Napa St

Petaluma Ave

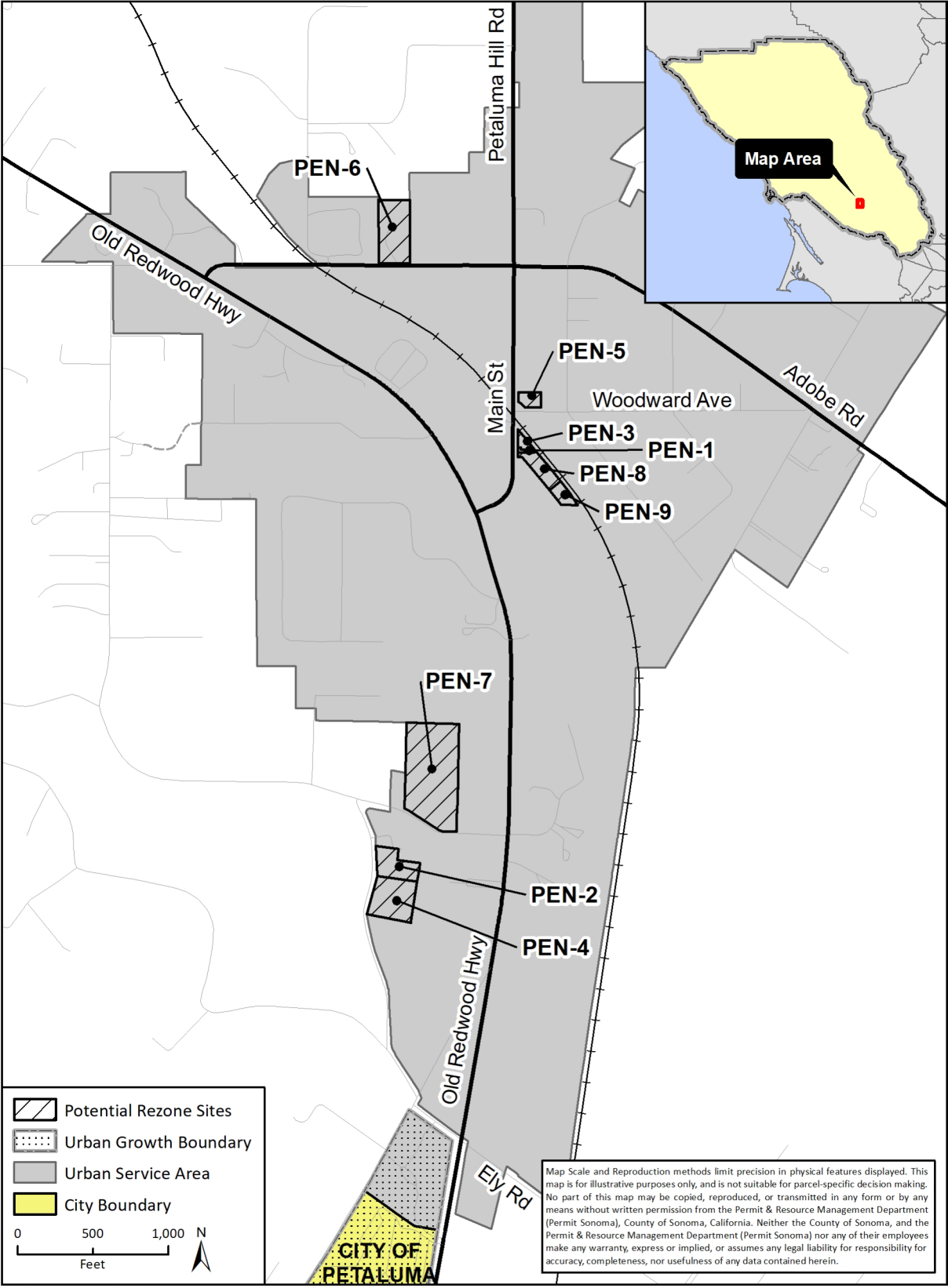
- Potential Rezone Sites
- Urban Growth Boundary
- Urban Service Area
- City Boundary

0 650 1,300 Feet

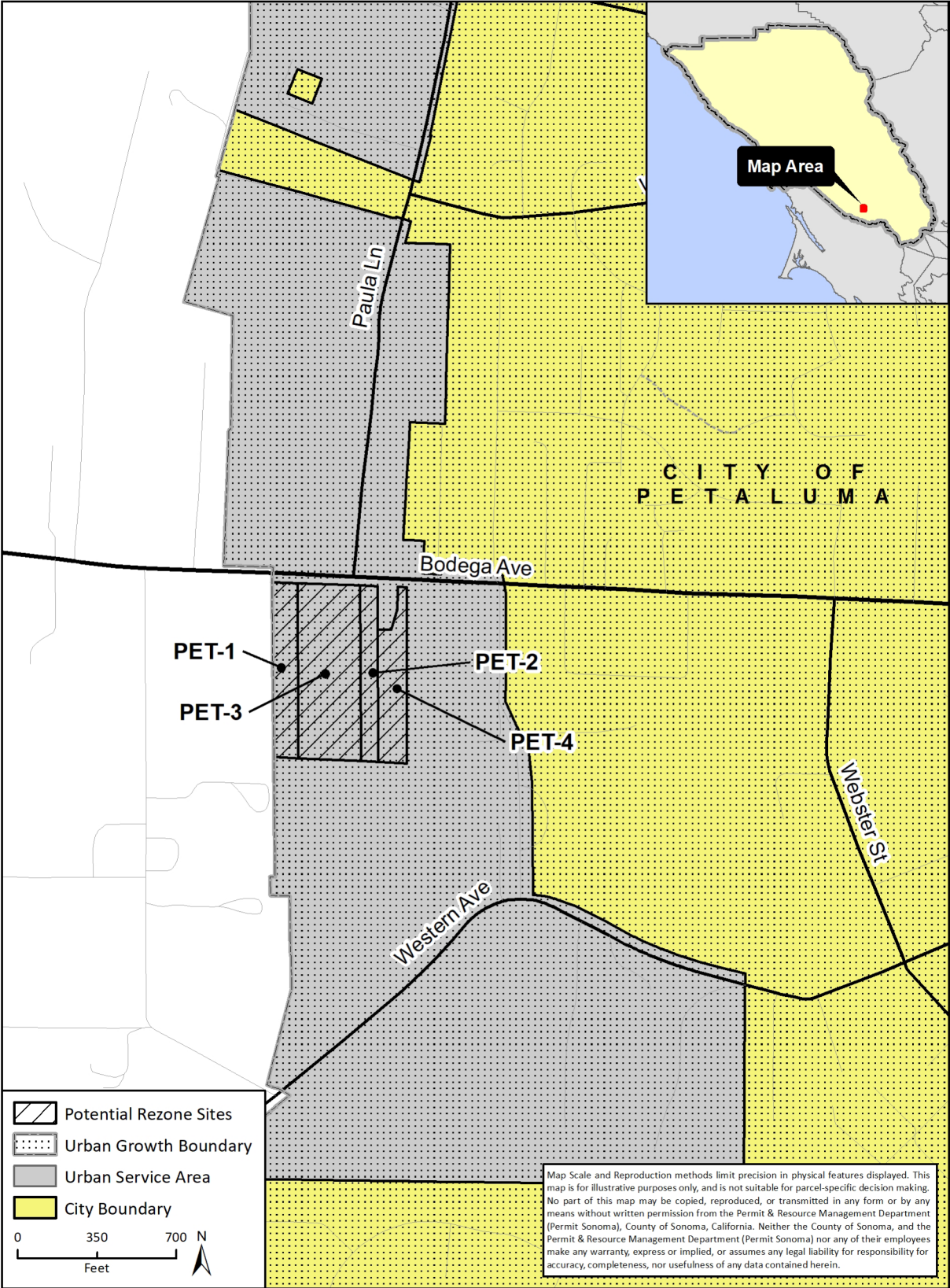


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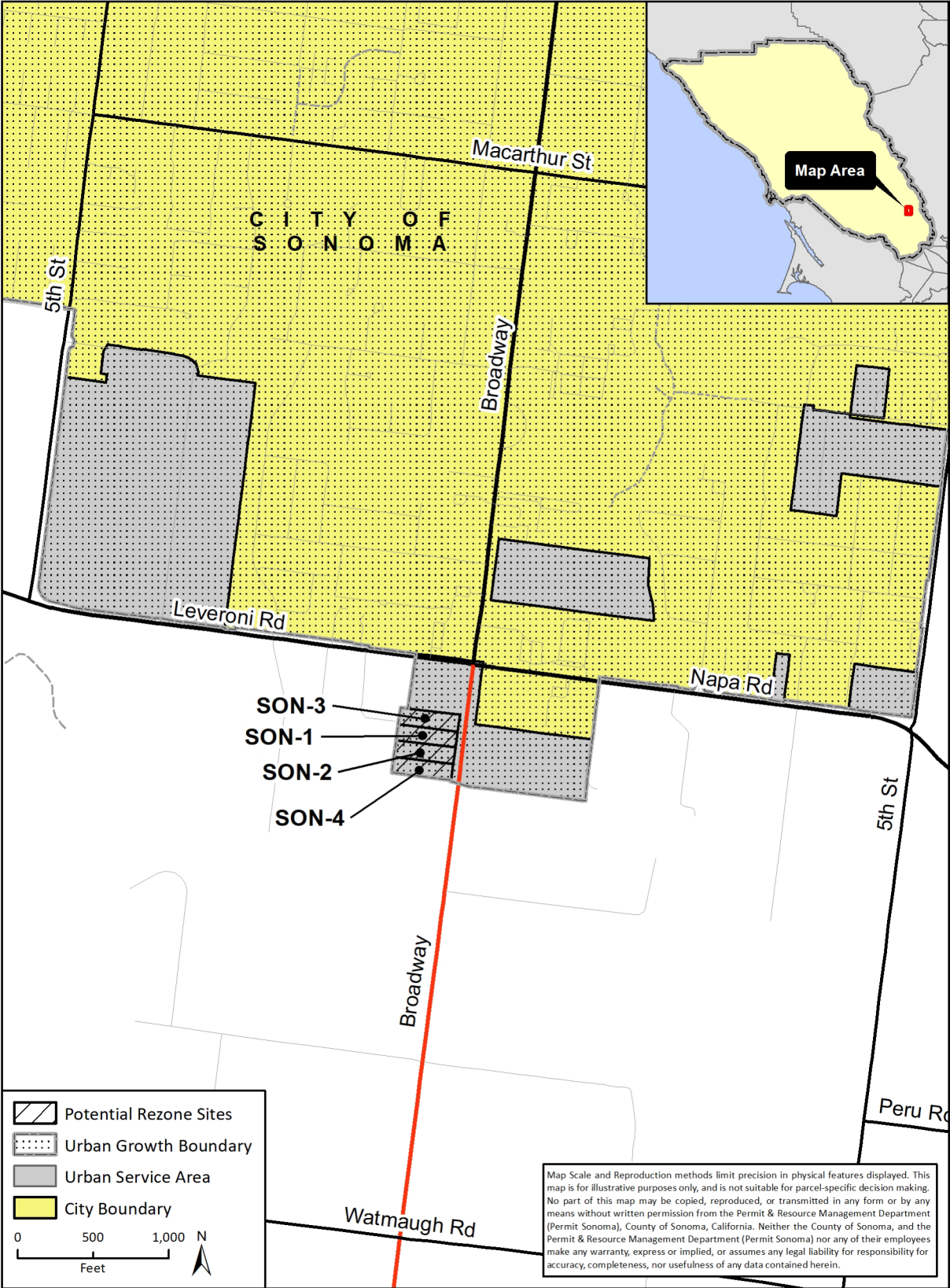




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## **Appendix B – Land Use Summary of Sites Under Consideration**

APN	Urban Service Area	EIR_Area Number	GIS_Acres	ASMT_USE CODE	ZONE	LU	ZONE_LEGEN	LU_LEGEND_	ASMT_Category	Dwelling Units	Max Buildout Under Existing (persons)	Max Buildout Under Rezoning (6/9) (persons)	Delta (persons)
140-180-035	Geyserville (GEY)	GEY-1	5.11	0050 [Rural Res/Vacant Homesite]	LC, AH RC50 SR	LC	LC	LC	Residential Properties	82.00	213	320	107
140-150-008	Geyserville (GEY)	GEY-2	1.63	0010 [Single Family Dwelling]	R1 B6 4.8 DU, NONE	UR 4.8	R1	UR	Residential Properties	8.00	21	86	65
140-150-004	Geyserville (GEY)	GEY-3	1.08	0052 [Rural Res/2 or More Residences]	R1 B6 4.8 DU, NONE	UR 4.8	R1	UR	Residential Properties	5.00	13	57	44
140-150-001	Geyserville (GEY)	GEY-4	1.28	0052 [Rural Res/2 or More Residences]	R1 B6 4.8 DU, SR	UR 4.8	R1	UR	Residential Properties	6.00	16	68	52
070-070-040	Guerneville (GUE)	GUE-1	1.52	0811 [Utility Water Company]	R1 B6 4 DU, LG/116	UR 4	R1	UR	Miscellaneous Properties	6.00	16	78	62
069-270-002	Guerneville (GUE)	GUE-2	4.00	0052 [Rural Res/2 or More Residences]	RR B6 2 DU, LG/116 VOH	UR 2	RR*	UR	Residential Properties	2.00	5	208	203
069-280-043	Guerneville (GUE)	GUE-3	2.06	0051 [Rural Res/Single Residence]	R1 B6 4 DU, F2 LG/116 VOH	UR 4	R1	UR	Residential Properties	8.00	21	107	86
069-230-007	Guerneville (GUE)	GUE-4	5.26	0051 [Rural Res/Single Residence]	RR B6 2 DU, F1 F2 LG/116 RC50/25 SR VOH	UR 2	RR*	UR	Residential Properties	3.00	8	273	265
039-320-051	Larkfield (LAR)	LAR-1	4.41	0710 [Religious Building]	LC, PC, VOH	LC, UR 11	LC, PC	LC, UR	Institutional Properties	1.00	3	252	250
039-040-040	Larkfield (LAR)	LAR-2	0.72	0100 [Vacant Commercial Land/Undevel]	CO, VOH	LC	CO	LC	Commercial Properties	0.00	0	42	42
039-025-060	Larkfield (LAR)	LAR-3	0.65	0100 [Vacant Commercial Land/Undevel]	CO, AH VOH	LC	CO	LC	Commercial Properties	10.00	26	36	10
039-025-026	Larkfield (LAR)	LAR-4	0.28	0050 [Rural Res/Vacant Homesite]	R2 B6 9 DU, AH VOH	UR 9	R2	UR	Residential Properties	4.00	10	16	5
039-025-028	Larkfield (LAR)	LAR-5	4.49	0320 [Warehousing/Active]	R2 B6 9 DU, AH VOH	UR 9	R2	UR	Industrial Properties	72.00	187	257	70
039-040-035	Larkfield (LAR)	LAR-6	0.55	0171 [Two Story Office Building]	CO, VOH	LC	CO	LC	Commercial Properties	0.00	0	31	31
039-380-018	Larkfield (LAR)	LAR-7	2.05	0051 [Rural Res/Single Residence]	R1 B6 5 DU, VOH	UR 5	R1	UR	Residential Properties	10.00	26	117	91
039-390-022	Larkfield (LAR)	LAR-8	0.47	0001 [Vacant Residential Lot Undevel w/Util]	CO, VOH	LC	CO	LC	Residential Properties	0.00	0	29	29
083-073-017	Forestville (FOR)	FOR-1	2.90	0310 [Light Manuftg & Industrial]	MP, AH LG/116 SR	LI	MP	LI	Industrial Properties	46.00	120	182	62
083-120-062	Forestville (FOR)	FOR-2	14.13	0511 [Non-Irrigated Orchard w/Residence]	RR B6 2, LG/116	UR 2	RR*	UR	Dry Farm Properties	7.00	18	736	718
084-020-004	Forestville (FOR)	FOR-3	1.67	0850 [Right-of-Way]	R1 B6 2 DU, LG/116 SR	UR 2	R1	UR	Miscellaneous Properties	3.00	8	86	78
083-073-010	Forestville (FOR)	FOR-4	3.53	0052 [Rural Res/2 or More Residences]	RR B6 2, LG/116	UR 2	RR*	UR	Residential Properties	2.00	5	185	179
084-020-003	Forestville (FOR)	FOR-5	2.89	0050 [Rural Res/Vacant Homesite]	R1 B6 2 DU, LG/116 SR	UR 2	R1	UR	Residential Properties	6.00	16	151	135
084-020-011	Forestville (FOR)	FOR-6	5.00	0050 [Rural Res/Vacant Homesite]	M1, LG/116	LI	M1	LI	Residential Properties	0.00	0	312	312
130-165-001	Graton (GRA)	GRA-1	1.13	0721 [Parochial School]	R1 B6 5 DU, NONE	UR 5	R1	UR	Institutional Properties	6.00	16	60	44
130-090-009	Graton (GRA)	GRA-2	2.98	0302 [Vacant Industrial Land w/Util]	M1, F2	GI	M1	GI	Industrial Properties	0.00	0	185	185
130-180-079	Graton (GRA)	GRA-3	1.12	0051 [Rural Res/Single Residence]	RR B6 2, LG/116 SR	RR 2	RR*	RR*	Residential Properties	1.00	3	57	55
130-146-003	Graton (GRA)	GRA-4	1.78	0051 [Rural Res/Single Residence]	RR B6 2 DU, NONE	UR 2	RR*	UR	Residential Properties	1.00	3	94	91
130-176-013	Graton (GRA)	GRA-5	1.35	0050 [Rural Res/Vacant Homesite]	RR B6 2 DU, LG/116 SR	UR 2	RR*	UR	Residential Properties	1.00	3	70	68
134-132-057	Santa Rosa (SAN)	SAN-1	3.71	0050 [Rural Res/Vacant Homesite]	RR B8, RC100/25 VOH	LI	RR*	LI	Residential Properties	1.00	3	192	190
134-111-068	Santa Rosa (SAN)	SAN-2	8.33	0311 [Light Manufctrng & Warehousing]	M2, RC100/25 VOH	GI	M2	GI	Industrial Properties	0.00	0	520	520
134-132-056	Santa Rosa (SAN)	SAN-3	3.98	0050 [Rural Res/Vacant Homesite]	RR B8, RC100/25 VOH	LI	RR*	LI	Residential Properties	1.00	3	208	205
043-153-021	Santa Rosa (SAN)	SAN-4	6.19	0065 [Motel/50 Units or More w/Shops]	PC, SR VOH	GC	PC	GC	Residential Properties	1.00	3	387	385
134-132-034	Santa Rosa (SAN)	SAN-5	3.37	0050 [Rural Res/Vacant Homesite]	RR B8, RC100/25 VOH	LI	RR*	LI	Residential Properties	1.00	3	174	172
134-072-040	Santa Rosa (SAN)	SAN-6	3.02	0302 [Vacant Industrial Land w/Util]	M1, RC100/25 VOH	GI	M1	GI	Industrial Properties	0.00	0	190	190
134-072-038	Santa Rosa (SAN)	SAN-7	3.00	0302 [Vacant Industrial Land w/Util]	M1, RC100/25 VOH	GI	M1	GI	Industrial Properties	0.00	0	187	187
134-111-020	Santa Rosa (SAN)	SAN-8	1.00	0052 [Rural Res/2 or More Residences]	RR B8, VOH	UR 5	RR*	UR	Residential Properties	1.00	3	52	49
134-171-059	Santa Rosa (SAN)	SAN-9	6.64	0310 [Light Manuftg & Industrial]	M3, RC100/25 VOH	LI	M3	LI	Industrial Properties	0.00	0	413	413
134-192-016	Santa Rosa (SAN)	SAN-10	13.19	0000 [Vacant Residential Lot/Undevel]	M1, RR B6 3, RC100/25 VOH	LI, RR 3	M1, RR*	LI, RR*	Residential Properties	3.00	8	333	325
054-290-057	Glen Ellen (GLE)	GLE-1	0.80	0113 [Store w/Res Unit or Units]	LC, LG/GE1 SR	LC	LC	LC	Commercial Properties	1.00	3	49	47
054-290-084	Glen Ellen (GLE)	GLE-2	0.13	0010 [Single Family Dwelling]	LC, LG/GE1 SR	LC	LC	LC	Residential Properties	1.00	3	8	5
056-531-005	Agua Caliente (AGU)	AGU-1	1.35	0051 [Rural Res/Single Residence]	R1 B6 1 DU, F2 RC50/25 VOH X	UR 1	R1	UR	Residential Properties	1.00	3	70	68
056-531-006	Agua Caliente (AGU)	AGU-2	6.59	0023 [SFD w/Granny Unit]	R1 B6 1 DU, F2 RC50/25 VOH X	UR 1	R1	UR	Residential Properties	7.00	18	343	325
052-272-011	Agua Caliente (AGU)	AGU-3	3.19	0710 [Religious Building]	R1 B6 5 DU, RC50/25 X	UR 5	R1	UR	Institutional Properties	16.00	42	166	125
047-174-009	Penngrove (PEN)	PEN-1	0.06	0891 [Parking Lot/No Fee]	C2, HD LG/PNG SR VOH	GC	C2	GC	Miscellaneous Properties	0.00	0	3	3
047-152-020	Penngrove (PEN)	PEN-2	1.05	0050 [Rural Res/Vacant Homesite]	RR B6 1, NONE	UR 2	RR*	UR	Residential Properties	1.00	3	55	52
047-174-008	Penngrove (PEN)	PEN-3	0.16	0110 [Single Story Store]	C2, HD LG/PNG SR VOH	GC	C2	GC	Commercial Properties	0.00	0	10	10
047-152-019	Penngrove (PEN)	PEN-4	1.73	0050 [Rural Res/Vacant Homesite]	RR B6 1, NONE	UR 2	RR*	UR	Residential Properties	2.00	5	91	86
047-173-011	Penngrove (PEN)	PEN-5	0.32	0010 [Single Family Dwelling]	LC, HD LG/PNG SR	LC	LC	LC	Residential Properties	1.00	3	21	18
047-091-013	Penngrove (PEN)	PEN-6	2.00	0052 [Rural Res/2 or More Residences]	RR B6 1, NONE	UR 1	RR*	UR	Residential Properties	2.00	5	104	99
047-153-004	Penngrove (PEN)	PEN-7	5.35	0051 [Rural Res/Single Residence]		UR 2	RR*	UR	Residential Properties	18.00	47	278	231
047-166-023	Penngrove (PEN)	PEN-8	0.65	0320 [Warehousing/Active]	C3, F2 LG/PNG RC50 SR VOH	GC	C3	GC	Industrial Properties	SRCC	0	42	42
	Penngrove (PEN)	PEN-9	0.34	0320 [Warehousing/Active]	c3	GC	c3	GC	Industrial Properties	0.00	0	21	21
019-090-003	Petaluma (PET)	PET-1	1.96	0052 [Rural Res/2 or More Residences]	AR B6 1.5, SR	RR 1.5	AR	RR*	Residential Properties	1.00	3	101	99
019-090-053	Petaluma (PET)	PET-2	1.36	0101 [Vacant Commercial Land w/Util]	AR B6 1.5, SR	RR 1.5	AR	RR*	Commercial Properties	1.00	3	70	68
019-090-004	Petaluma (PET)	PET-3	4.91	0113 [Store w/Res Unit or Units]	AR B6 1.5, C1 B8, SR	LC, RR 1.5	AR, C1	LC, RR*	Commercial Properties	1.00	3	169	166
019-090-058	Petaluma (PET)	PET-4	1.93	0000 [Vacant Residential Lot/Undevel]	AR B6 1.5, SR	RR 1.5	AR	RR*	Residential Properties	1.00	3	101	99
128-311-015	Sonoma (SON)	SON-1	0.97	0052 [Rural Res/2 or More Residences]	RR B6 3, SR VOH	RR 3	RR*	RR*	Residential Properties	0.00	0	49	49
128-311-016	Sonoma (SON)	SON-2	1.00	0052 [Rural Res/2 or More Residences]	RR B6 3, SR VOH	RR 3	RR*	RR*	Residential Properties	0.00	0	52	52
128-311-014	Sonoma (SON)	SON-3	1.02	0052 [Rural Res/2 or More Residences]	RR B6 3, SR VOH	RR 3	RR*	RR*	Residential Properties	1.00	3	52	49
128-311-017	Sonoma (SON)	SON-4	0.97	0010 [Single Family Dwelling]	RR B6 3, SR VOH	RR 3	RR*	RR*	Residential Properties	1.00	3	49	47
			164.35							354.00	920	8,655	7,735

## **Appendix C – Reference Documents**

USA	Documents for Water	Source	Documents for Sewer	Source
Agua Caliente	Atlas Maps, Urban Water Management Plan, Water Master Plan	Valley of the Moon Water District	Sewer System Management Plan	Sonoma Water Website
Glen Ellen				
Sonoma	General Plan, Housing Element to the General Plan, Upcoming Infrastructure Projects, Completed Projects, Water Master Plan, CIP	City of Sonoma Website	Sewer System Management Plan	Sonoma Water Website
Forestville	Atlas Maps (in person - no copies allowed)	Forestville Water District General Manager	Atlas Maps (in person - no copies allowed)	Forestville Water District General Manager
Geyserville	Notes from Site Visit	Wood Rodgers	Sewer System Management Plan	Sonoma Water Website
Graton	NA	NA	Atlas Maps	Graton Community Services District
Guerneville	Notes from Site Visit	Wood Rodgers	Sewer System Management Plan	Sonoma Water Website
Larkfield	Notes from Site Visit	Wood Rodgers	Sewer System Management Plan	Sonoma Water Website
Penngrove	Notes from Site Visit	Wood Rodgers	Sewer System Management Plan	Sonoma Water Website
Petaluma	General Plan, Urban Water Management Plan, CIP Budget	City of Petaluma Website	Sewer System Management Plan, System Map	City of Petaluma Website
Santa Rosa	General Plan, Groundwater Master Plan, Incremental Recycled Water Master Plan, Land Use Diagram, GIS files, Water Master Plan, South Santa Rosa Area Plan, 2015 UWMP	City of Santa Rosa Website	GIS files, Sewer System Management Plan, Water System Facilities	City of Santa Rosa Website
Sonoma Water	2015 Urban Water Management Plan	Sonoma Water Website	See Individual Zones	See Individual Zones