Appendix WSS

Water and Sewer Study

Sonoma County Rezoning Sites for Housing Project Water and Sewer Study

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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.

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 (GEY) 4	Guerneville (GUE) 4	Larkfield (LAR) 8
Forestville (FOR) 6	Graton (GRA) 5	South Santa Rosa (SAN) 10
Glen Ellen (GLE) 2	Agua Caliente (AGU) 3	Penngrove (PEN) 9
Petaluma (PET) 4	Sonoma (SON) 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.

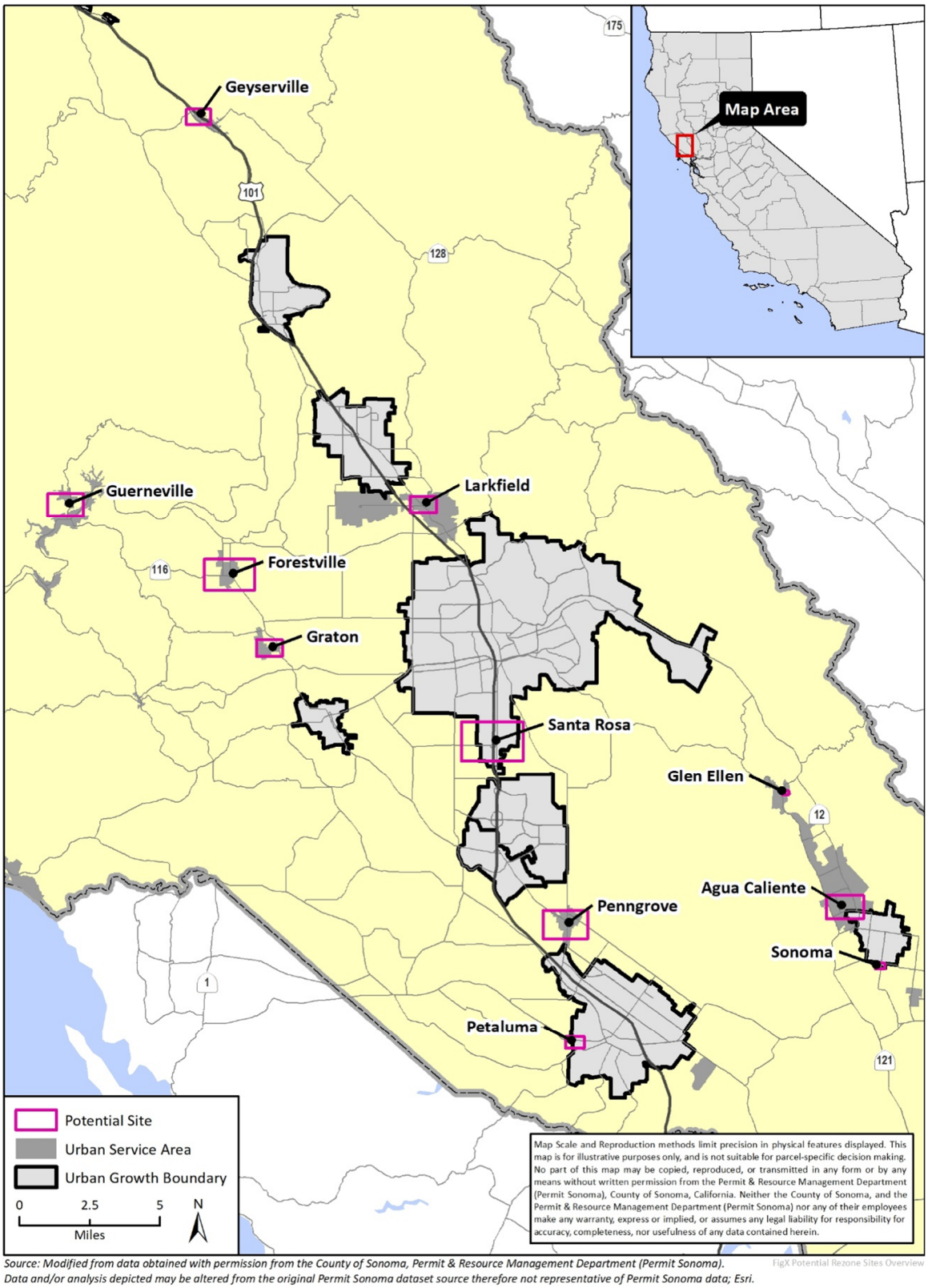
Table 2-1. Existing and Proposed Population

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
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

Site ID	Site Area (ac)	Existing Max Population	Proposed Max Population	Population Change
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
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

Site ID	Site Area (ac)	Existing Max Population	Proposed Max Population	Population Change
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
TOTAL[1]	**164.3**	**930**	**8,655**	**7,725**

[1] 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.

FigX Potential Rezone Sites Overview

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 7,000 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	City of Santa Rosa and 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 [1]
California American Water – Larkfield	Unknown [1]
California Water Service – Armstrong Valley	Local Wells
Penngrove/Kenwood Water Company	Sonoma Water
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	MGD Laguna Sub-Regional Treatment Plant (Tertiary)
City of Santa Rosa	

4.0 Existing Infrastructure

An initial task of this analysis is to determine if water and sewer infrastructure exists directly adjacent to the parcels proposed for rezoning using publicly available agency documents, GIS files, atlas maps and discussions with agency staff (if available). For the purposes of the analysis, directly adjacent is taken to mean that infrastructure exists either across the frontage of the property (such as in a road) or extending into the property. The results of the infrastructure analysis are summarized in **Table 4-1**.

Table 4-1: Water and Sewer Infrastructure by Parcel

Site ID	Adjacent Water Service	Adjacent Water Pipes	Adjacent Sewer Service	Adjacent Sewer Pipe
AGU-1	Yes	6" AC	Yes	21" RCP
AGU-2	Yes	6" PVC	Yes	21" RCP
AGU-3	Yes	6" AC	Yes	6"/8" VCP
		6” C-900		
		8” AC		6" AC
GLE-1	Yes	6" AC	Yes	6" AC
		8" AC		6"/16" AC
GLE-2	Yes	6"/8" AC	Yes	6" AC
FOR-1	Yes	8” AC	No	
FOR-2	Yes	6" AC on four sides	No	
FOR-3	Yes	8" AC	Yes	8" AC
FOR-4	No		Yes	8" AC on two sides
FOR-5	Yes	8" AC	Yes	8" AC
		6" AC		
FOR-6	Yes	8” AC	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	6” PVC
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" RCP
SAN-3	No		Yes	8" PVC
SAN-4	Yes	12" DI	Yes	16" CP

Site ID	Adjacent Water Service	Adjacent Water Pipes	Adjacent Sewer Service	Adjacent Sewer Pipes
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	
SON-2	No		No	
SON-3	No		No	
SON-4	No		No	
GUE-1	No		Yes	6" AB
GUE-2	No		Yes	6" AB
GUE-3	Yes	2” PVC	Yes	6" PVC on two sides
		4” PVC		6" AB
GUE-4	Yes	4” PVC	Yes	6" AB
PEN-1	Yes	6”	Yes	8" AC
PEN-2	Yes	6”	No	
PEN-3	Yes	6”	Yes	8" AC
PEN-4	Yes	6”	No	
PEN-5	Yes	6”/8”	Yes	8" AC
PEN-6	Yes	6”/8”	Yes	6" AC
PEN-7 AH	Yes	6”/8”	Yes	6" AC
PEN-7 RR B6				
PEN-8	Yes	6”	Yes	6" AC
PEN-9	Yes	6”	No	
LAR-1[1]	Yes	NE and NW Boundary	Yes	21" RCP
				8" PVC
				6" AC
LAR-2[1]	Yes	SE Boundary	Yes	8" PVC
LAR-3[1]	Yes	S and NE Boundary	Yes	8" DI
LAR-4[1]	Yes	S Boundary	Yes	21” RC
LAR-5[1]	Yes	S Boundary	Yes	8” PVC
				21” RC
LAR-6[1]	Yes	SE Boundary	Yes	8" PVC

Site ID	Adjacent Water Service	Adjacent Water Pipes	Adjacent Sewer Service	Adjacent Sewer Pipes
LAR-7[1]	Yes	NE Boundary	No	
LAR-8[1]	Yes	SW Boundary	Yes	21" RCP
GEY-1[1]	Yes	NE Boundary	No	
GEY-2[1]	Yes	NE Boundary	Yes	6" AC
GEY-3[1]	Yes	NE Boundary	Yes	6" AC
GEY-4[1]	Yes	NE Boundary	Yes	6" AC

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, valve covers, and manhole covers in the area which would indicate existing water and sewer service nearby. A site visit was also performed to investigate the availability of services through a surface investigation.

After reviewing the available information to determine the existing infrastructure adjacent to the proposed parcel, discussions were held with most agencies to understand their existing systems in greater detail. The information gathered includes, but is not limited to infrastructure condition, excess capacity, supply and storage availability, and system specific issues. This information was used to place each site into one of three categories as defined below:

1. Category 1 – Adequate as is to support rezoning
2. Category 2 – Adequate, however some improvements are likely
3. Category 3 – Inadequate as is, requires significant improvements

A Category 1 site has both water and sewer infrastructure directly adjacent to the parcel, both the water and sewer systems have available capacity, and there are no supply or treatment deficiencies. These sites can be re-developed with minimal to no infrastructure improvements required.

For a Category 2 site, there is both water and sewer infrastructure within the general vicinity of the site, however the infrastructure may need to be extended or upsized. Category 2 sites may have system deficiencies identified, however plans to mitigate the deficiency are planned by the agency.

Category 3 sites will have more extensive concerns, such as no water and/or sewer service in the vicinity of the parcel or have supply or treatment deficiencies that cannot be easily mitigated. These parcels will require significant improvements or actions to provide water and/or sewer service.

For each parcel that is either Category 2 or 3, an initial list of action items has been identified that would enable the site to become Category 1.

It is noted that for each parcel identified in this study, the individual agencies will still require the projects to go through the typical development application process, which likely will require a more detailed water and sewer study once the development plans have been determined. However, the specifics of what will be required is up to the agency who has jurisdiction and will be subject to their approval.

5.0 Water and Sewer Overview

The following section will provide an overview of the water and sewer systems that are applicable to parcels in question. Each agency was contacted to set up a (virtual) meeting to verify the existing conditions present for each site and understand if there are other concerns about serving each parcel. All but two agencies, California American Water (Larkfield and Geyserville) and Penngrove/Kenwood Water Company, made

[1] CalAm did not provide material or diameter information.

themselves available for these discussions. Included in **Appendix C** is the list of meetings held, including the attendees and dates they occurred.

Regional Water Supply

Sonoma County Water Agency (Sonoma Water) obtains the majority of its water from the Russian River which is 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. 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. There are 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 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 Urban Water Management Plan (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.

Sewer Treatment

Most of the Sonoma County area receives sewer service through subsidiaries of Sonoma Water. There are eight different districts/zones that Sonoma Water manages, six of which have parcels included in this study. Those zones/districts are: Geyserville Sanitation Zone, Russian River County Sanitation District, Sonoma Valley County Sanitation District, South Park County Sanitation District (which routes its wastewater to Santa Rosa Sub-Regional Treatment Plant), Airport/Larkfield/Wikiup Sanitation Zone, and Penngrove Sanitation Zone. Each of the districts have their own wastewater treatment plant, except for the Penngrove Sanitation Zone which routes its wastewater to the City of Petaluma.

In addition to the sanitation districts, there are four other sewer agencies that serve parcels included in this analysis: Graton Community Services District, Forestville Water District, the City of Petaluma, and the City of Santa Rosa. Each of these own and operate their own wastewater treatment facility.

5.1 Water Demand

The projected increase in water demand was calculated for each site 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 (Senate Bill X7-7). **Table 5-1** below summarizes the current water demand requirement and the anticipated increase in demand for each parcel being analyzed.

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	70	8,680	9.86	9.45
AGU-2	18	2,232	343	42,532	47.65	45.1
AGU-3	42	5,208	166	20,584	23.2	17.4
GLE-1	3	372	49	6,076	6.95	6.5
GLE-2	3	372	8	992	1.11	0.7
GRA-1	16	0	60	8,088	6.64	6.6
GRA-2	0	0	185	24,938	27.9	27.9
GRA-3	3	0	57	7,684	8.3	8.3
GRA-4	3	0	94	12,671	13.7	13.7
GRA-5	3	0	70	9,436	10.3	10.3
PET-1	3	423	101	14,382	16.1	15.6
PET-2	3	423	70	10,011	11.2	10.7
PET-3	3	423	169	23,829	26.7	26.2
PET-4	3	423	101	14,382	16.1	15.6
SAN-1	3	378	192	24,318	27.2	26.8
SAN-2	0	0	520	65,520	73.4	73.4
SAN-3	3	378	208	26,208	29.4	28.9
SAN-4	3	378	387	48,762	54.77	54.77
SAN-5	3	378	174	22,050	24.7	24.3
SAN-6	0	0	190	23,940	26.8	26.8
SAN-7	0	0	187	23,562	26.4	26.4
SAN-8	3	378	52	6,552	7.3	6.9
SAN-9	0	0	413	52,038	58.3	58.3
SAN-10	8	1,008	333	41,958	47	45.9
FOR-1	120	16,200	182	24,570	27.5	9.4
FOR-2	18	2,430	736	99,260	111.3	108.6
FOR-3	8	1,080	86	11,094	13.01	11.8
FOR-4	5	675	185	23,865	27.8	27.07
FOR-5	16	2,160	151	19,479	22.8	20.4
FOR-6	0	0	312	42,120	47.2	47.2
SON-1	0	0	49	8,832	10	10
SON-2	0	0	52	9,360	10	10
SON-3	3	540	52	9,360	10	9.88
SON-4	3	540	49	9,000	10	9.48
LAR-1	3	405	252	33,964	38	37.8
LAR-2	0	0	42	5,661	6.3	6.3
LAR-3	26	3,510	36	4,852	5.4	1.5

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)
LAR-4	10	1,350	16	2,156	2.3	0.8
LAR-5	187	25,245	257	34,638	38.9	10.6
LAR-6	0	0	31	4,178	4.7	4.7
LAR-7	26	3,510	117	15,795	17.7	13.8
LAR-8	0	0	29	3,909	4.4	4.4
GEY-1	213	28,755	320	43,200	48.4	16.2
GEY-2	21	2,835	86	11,591	13	9.8
GEY-3	13	1,755	57	7,682	8.6	6.65
GEY-4	16	2,160	68	9,165	10.3	7.9
GUE-1	16	2,156	78	10,513	11.8	9.4
GUE-2	5	673	208	28,034	31.5	30.7
GUE-3	21	2,830	107	14,421	16.2	13
GUE-4	8	1,080	273	36,855	41.3	40.1
PEN-1	0	0	3	404	0.5	0.5
PEN-2	3	405	55	7,425	8	7.9
PEN-3	0	0	10	1,350	2,0	2
PEN-4	5	675	91	12,285	14	13
PEN-5	3	405	21	2,835	3	2.7
PEN-6	5	675	104	14,017	15.7	14.97
PEN-7	47	3,384	278	37,468	22.4	18.63
PEN-8	0	0	42	5,661	3.39	3.39
PEN-9	0	0	21	1,512	1.7	1.7
TOTAL	**930**	**118,579**	**8,655**	**1,145,704**	**1,260**	**1,130**

Table 5-2 below summarizes the increase in water demand for each USA assuming that all parcels under consideration are developed.

Table 5-2. Increase in Water Demand by USA

Urban Service Area	Water Demand Increase (AFY)	Water Service Provider
Agua Caliente	72.0	Valley of the Moon Water District
Glen Ellen	7.2	
Sonoma	39.4	City of Sonoma
Santa Rosa	373.57	City of Santa Rosa
Forestville	224.49	Forestville Water District
Larkfield	79.9	California American Water - Larkfield
Graton	66.8	Property Wells
Geyserville	40.55	California American Water - Geyserville
Guerneville	93.2	California Water Service Company – Armstrong Valley
Penngrove	64.8	Penngrove/Kenwood Water Company
Petaluma	68.1	City of Petaluma
TOTAL	**1,130**	

5.2 Sewer Generation

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 proposed project sites.

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	231	70	5,462	5,231	1.94	10,148
AGU-2	18	1,385	343	26,385	25,000		48,500
AGU-3	42	3,231	166	12,846	9,615		18,654
GLE-1	3	231	49	3,846	3,615		7,014
GLE-2	3	231	8	615	385		746
GRA-1	16	1,214	60	4,551	3,338	2.24	7,476
GRA-2	0	0.0	185	14,033	14,033		31,434
GRA-3	3	228	57	4,400	4,172		9,345
GRA-4	3	228	94	7,130	6,903		15,462
GRA-5	3	228	70	5,386	5,158		11,554
PET-1	3	228	101	7,737	7,510	2.24	16,821
PET-2	3	228	70	5,386	5,158		11,554
PET-3	3	228	169	12,819	12,592		28,205
PET-4	3	228	101	7,737	7,510		16,821
SAN-1	3	269	192	17,296	17,027	2.24	38,140

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)
SAN-2	0	0.0	520	46,600	46,600	2.24	104,384
SAN-3	3	269	208	18,640	18,371		41,151
SAN-4	3	269	387	34,771	34,502		77,284
SAN-5	3	269	174	15,683	15,414		34,527
SAN-6	0	0.0	190	17,027	17,027		38,140
SAN-7	0	0.0	187	16,758	16,758		37,538
SAN-8	3	269	52	4,660	4,391		9,836
SAN-9	0	0.0	413	37,011	37,011		82,905
SAN-10	8	717	333	29,842	29,125		65,240
FOR-1	120	9,102	182	13,805	4,703	2.42	11,381
FOR-2	18	1,365	736	55,828	54,463		131,801
FOR-3	8	607	86	6,523	5,917		14,318
FOR-4	5	379	185	13,957	13,578		32,858
FOR-5	16	1,214	151	11,454	10,240		24,781
FOR-6	0	0.0	312	23,666	23,666		57,273
SON-1	0	0.0	49	3,769	3,769	1.94	7,312
SON-2	0	0.0	52	4,000	4,000		7,760
SON-3	3	231	52	4,000	3,769		7,312
SON-4	3	231	49	3,846	3,615		7,014
LAR-1	3	336	252	28,336	28,000	2.82	78,960
LAR-2	0	0.0	42	4,704	4,704		13,265
LAR-3	26	2,912	36	4,032	1,120		3,158
LAR-4	10	1,120	16	1,680	560		1,579
LAR-5	187	20,944	257	28,784	7,840		22,109
LAR-6	0	0.0	31	3,472	3,472		9,791
LAR-7	26	2,912	117	13,104	10,192		28,741
LAR-8	0	0.0	29	3,248	3,248		9,159
GEY-1	213	18,522	320	27,826	9,304	2.87	26,703
GEY-2	21	1,826	86	7,478	5,652		16,222
GEY-3	13	1,130	57	4,957	3,826		10,981
GEY-4	16	1,391	68	5,913	4,522		12,977
GUE-1	16	835	78	4,070	3,235	2.31	7,472
GUE-2	5	261	208	10,852	10,591		24,466
GUE-3	21	1,096	107	5,583	4,487		10,365
GUE-4	8	417	273	14,244	13,826		31,938
PEN-1	0	0.0	3	216	216	2.74	592
PEN-2	3	216	55	3,960	3,744		10,259
PEN-3	0	0	10	720	720		1,973
PEN-4	5	360	91	6,552	6,192		16,966
PEN-5	3	216	21	1,512	1,296		3,551
PEN-6	5	360	104	7,488	7,128		19,531
PEN-7	47	3,384	278	20,016	16,632		45,572
PEN-8	0	0.0	42	3,024	3,024		8,286
PEN-9	0	0.0	21	1,512	1,512		4,143
TOTAL	**930**	**81,543**	**8,655**	**710,752**	**629,208**		**1,483,451**

Table 5-4 below summarizes the increase in sewage generation by USA.

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	Sonoma Valley County Sanitation District
Glen Ellen	4,000	
Sonoma	15,154	
Santa Rosa	236,226	South Park County Sanitation District/City of Santa Rosa
Forestville	112,567	Forestville Water District
Larkfield	59,136	Larkfield-Wikiup Sanitation Zone
Graton	33,603	Graton Community Services District
Geyserville	23,304	Geyserville Sanitation Zone
Guerneville	32,139	Russian River County Sanitation District
Penngrove	40,464	Penngrove Sanitation Zone
Petaluma	32,769	City of Petaluma
TOTAL	**629,208**	

6.0 Water System Analysis

The discussion below summarizes the overall existing conditions within each USA. The individual notes for each parcel with respect to water service is provided in **Table 6-1**.

Agua Caliente and Glen Ellen

Agua Caliente and Glen Ellen are served by Valley of the Moon Water District (VOMWD). VOMWD receives water from 10 Sonoma Water turnouts and 6 local groundwater wells, five of which are currently active. They operate 10 pumping stations and 13 active storage tanks with total of 5.3 MG storage. They also own two hydro-pneumatic tanks. VOMWD is divided into 12 different pressure zones with the proposed project sites being located in Pressure Zones 1 and 1F. Pressure Zone 1 is the largest zone, while pressure Zone 1F 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.

VOMWD estimates that future demand will plateau and remain relatively stable despite additional population and economic growth due to conservation measures. 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 wells have 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.

The system as a whole has a storage deficit of about 260,000 gallons with approximately 200,000 gallons being in Glen Ellen. Future storage deficits in Zone 1F are predicted to be 0.344 MG. The District has initiated the design of a 0.15 MG, but an additional 0.2 MG tank is required to mitigate the entire deficiency in Glen Ellen.

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.

City of Santa Rosa

The City of Santa Rosa owns and operates a distribution system within City limits and purchases water from Sonoma Water. Of the sites under consideration in Santa Rosa, sites SAN-6, SAN-7, and SAN-10 are located outside of the City's boundary, but within the City's sphere of influence, UGB, and USA. The parcels must apply for a Utility Certificate with the City's Planning Division to receive approval to connect to the water system. Sonoma LAFCO will assess and determine if annexation will be a requirement in order to obtain approval for service. SAN-10 is currently located in an area that is only approved for fire protection service. This parcel may not need to be annexed. In addition, City policy states that site SAN-10 can only receive fire protection from the City, and no domestic water. SAN-10 will require a City Council action to waive the policy.

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 into 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).

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 a planned capital improvement project to mitigate the deficiency, as well as outlined a robust capital improvement program to mitigate other identified deficiencies throughout the system.

City of Sonoma

All four of the parcels are located outside of the City's boundary and therefore would need to be annexed to be eligible to receive water service. None of the parcels have water service directly adjacent; however, the water line at the corner or Leveroni and Broadway has a cross and blind flange towards the south which makes extending water service a possibility. Broadway (Highway 12) is within Caltrans right of way, therefore any pipeline improvements will require coordination and permitting with Caltrans. Furthermore, there is a large storm drain in Broadway that would need to be worked around when designing and constructing a new water line. To develop these parcels, a water demand analysis will need to be performed.

Forestville

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

It was noted that two of the sites (FOR-4 and FOR-6) may experience constructability issues. While neither site is in the floodplain, they get localized, seasonal flooding. Site (FOR-1) is the site of the old electro-vector building. Additionally, one of the parcels directly connected to FOR-1 had a church on it that burnt down, and water service is disconnected. The District noted there is adequate supply and storage available to accommodate the additional growth being proposed.

Larkfield and Geyserville

Larkfield and Geyserville are both served by California American Water (CalAm). CalAm Larkfield receives water from a combination of four (4) groundwater wells and purchased water from SCWA. The agreement that CalAm has with SCWA allowing them to purchase up to 700 acre-feet of potable water per fiscal year expires in 2040. CalAm also has an agreement to purchase additional supply from SCWA to meet peak demands, which expires in 2024.

CalAm completed a Water Supply Assessment (WSA) for the Larkfield area in May of 2022. The WSA results indicated that there would not be enough water supply if the SCWA source was no longer available. The SCWA source will be available until at least 2040 when a new Agreement/negotiations will be required to extend the purchase limits. CalAm staff determined there are no issues with pressure, headloss, or velocity in the pipes adjacent to the proposed project sites. However, all locations have concerns that there is not enough capacity for fire flow in the event that multi-family residences are developed.

Larkfield has four projects planned to address the aforementioned concerns:

1. Construct a 0.5 MG tank to satisfy storage recommendations (may also improve fire flow).
2. Replacement of a number of pipelines within the next 20 years (as identified by a pipe condition assessment).
3. Replace one of the wells within the next 10 years to address aging infrastructure and lost well capacity.
4. Complete an Alternative Source of Supply Study to address projected system-wide shortage (as described in the water supply assessment).

Geyserville receives all of its water supply from groundwater wells. In Geyserville, all proposed sites have capacity concerns within the adjacent water system. GEY-1 is adjacent to a small diameter pipe that cannot support current fire flow requirements. This pipe will require upsizing as dictated per CalAm standards. For the other three sites in this area, further system analysis is required to determine if pipeline upsizing is required in order to meet fire flows. The following projects are planned for completion in Geyserville to address the mentioned deficiencies:

1. Construct a 0.25 MG tank to address current peak hour demand deficiency.
2. Replacement of a number of pipelines within the next 20 years (as identified by a pipe condition assessment).
3. Replace two wells within the next 10 years to address aging infrastructure and lost well capacity.

Graton

Graton has a small area served by a municipal water system, the Graton Mutual Water District, but the majority of Graton uses private on-site wells for water supply. The five sites in question are located far enough away from the water district boundary that if they are developed it would make more sense to do so by constructing on-site private wells. Annexation would not be required.

Guerneville

Guerneville is supplied water from both Sweetwater Springs Water District and California Water Service – Armstrong Valley system. GUE-1 is the site for Sweetwater Springs Water District's main storage and treatment facilities. While it is theoretically possible to move these facilities, the District has said that they would not be willing to relocate this critical infrastructure. Additionally, the environmental impacts of moving or rebuilding the existing water treatment and storage facilities would be significant. The other three sites are within the California Water Service boundary.

The pipe network within the vicinity of the proposed parcels is mostly 2- and 4-inches in diameter and likely cannot provide minimum fire flow requirements for multi-family residential land use. Piping would have to be extended and upsized to reach the GUE-2 site. GUE-3 and GUE-4 have water service directly adjacent to the parcel that is 2-inches and 4-inches in diameter, respectively. All these pipes would need to be upsized to support fire flow requirements.

Penngrove

Penngrove/Kenwood Water Company is responsible for providing water service to Penngrove residents. All the potential sites are served with water purchased from the Sonoma Water Petaluma Aqueduct that passes through Penngrove. According to the water company manager, the entire Penngrove Town District (PTD) system has sufficient pressure to meet the minimum requirement of 40 psi. The water is purchased fully treated so the PTD does not have any treatment or storage facilities. The main concern is that water purchased from the County is limited based on the established permits. These permits will need to be reviewed to ensure there is sufficient water rights to meet additional demand. Furthermore, if Sonoma Water experiences water shortages, the issue will trickle down to Penngrove.

Petaluma

The City of Petaluma owns and operates a water distribution system with water purchased from Sonoma Water. None of the proposed parcels are currently within the City boundary and would therefore need to be annexed to receive water service. All other parcels that are located in between the current City boundary and the proposed parcels would need to agree to the annexation as well to have a continuous service boundary. Currently, the City's Outside Service Area Agreements (OSAA) policy does not support the extension of water service to these parcels. To be eligible for water service, council action would be needed to overturn the policy. If service to these parcels is approved, the 6-inch pipe in Bodega Avenue needs to be upsized to an 8-inch to address capacity issues mainly related to fire flow requirements.

6.1 Water System Results

The following **Table 6-1** summarizes the category designation assigned to each site solely based on the water system research and evaluation. For those sites in Category 2 or 3, the table identifies the steps required to redevelop the site. The agencies that were not responsive have greyed out boxes. It should be noted that these categories are not inclusive of the sewer analysis.

Furthermore, administrative challenges (such as needing to annex a parcel and receive a utility certificate before water service can be connected) are not factored into the category justification. The sites possessing administrative issues *in addition* to those listed in Table 6-1 are as listed below:

1. SAN-1 to 5: Apply for utility certificate
2. SAN-6 and 7: Annex parcels then apply for a new utility certificate
3. SAN-10: Council would need to amend current LAFCO OSAA policy to annex the parcels into the city
4. SON-1 to 4: Annex parcels
5. PET-1 to 4: Council would need to amend current LAFCO OSAA policy to annex the parcels into the city

Table 6-1. Water Category Results

Site ID	Category	Reason	Mitigations[2]
AGU-1	3	No water service adjacent to parcel and fire flow requirements are not met under peak hour.	Install service lateral going south into AGU-1 and extending to AGU-2. Address FF deficiencies, potentially with a larger pipe.
AGU-2	3	No water service adjacent to parcel.	
AGU-3	1	Site is a straight shot from a turnout so the pressure should be good. Waterlines on two sides.	N/A
GLE-1	3	There are large supply and storage deficits in the pressure zone where these parcels reside.	Upsize 6” ACP in Carquinez Avenue and Gibson Street to 8”, build extra storage tanks, a new BPS, and upgrade old BPS.
GLE-2	3		
GRA-1	N/A	Water service is not a requirement for development in Graton. Multifamily development is allowed with a well.	N/A
GRA-2	N/A		
GRA-3	N/A		
GRA-4	N/A		
GRA-5	N/A		
PET-1	2	The 6” pipe in Bodega Avenue has capacity issues	Perform hydraulic analysis per City of Petaluma standards to determine the diameter the pipe needs to be upsized to.
PET-2	2		
PET-3	2		
PET-4	2		
SAN-1	3	No water service adjacent to parcel.	Extend water line.
SAN-2	1	Water service adjacent to parcel	N/A
SAN-3	3	No water service adjacent to parcel.	Extend water line.
SAN-4	1	Parcel is already connected to water service.	N/A
SAN-5	3	No water service adjacent to parcel.	Extend water line.
SAN-6	1	Water service adjacent to parcels.	N/A
SAN-7	1		
SAN-8	3	Water service a few parcels North on Robles Avenue	Extend water service down Morland Avenue from corner of Morland and Robles (extend 3.5 parcels south)
SAN-9	2	Water service adjacent to parcel but not halfway across frontage	Extend water service to halfway across the frontage of the property
SAN-10	1	Water service adjacent to parcel	N/A

[2] To get site to Category 1

Site ID	Category	Reason	Mitigations[1]
FOR-1	2	No water service adjacent to parcel and water is blocked from one side due to a church burning down on an adjacent parcel.	Extension of waterline on side not blocked by fire.
FOR-2	1	Water service on all four sides of parcel.	N/A
FOR-3	1	Water available and no known supply or capacity issues. County owns entire corner.	N/A
FOR-4	2	Lot has water service but is inundated with water all year.	Install drainage measures or grade parcel to be above the flood line.
FOR-5	1	Water available and no known supply or capacity issues.	N/A
FOR-6	3	No water service available and lot is inundated with water all year.	Install drainage measures or grade parcel to be above the flood line. Extend water service to the parcel.
SON-1	1	Water service adjacent to parcels	Water service laterals will need to be constructed.
SON-2	1		
SON-3	1		
SON-4	1		
LAR-1	2	There are concerns that there is not sufficient fire flow capacity for commercial or multi-family development.	Construction of a new 0.5 MG storage tank and replacement of an aging well. Possible upsizing of pipes pending the results of a hydraulic analysis performed according to CalAm standards
LAR-2	2		
LAR-3	2		
LAR-4	2		
LAR-5	2		
LAR-6	2		
LAR-7	2		
LAR-8	2		
GEY-1	2	Small diameter pipe that cannot support fire flow. Peak hour supply deficiency.	Upsize the pipe (diameter to be determined by hydraulic analysis as instructed by CalAm)
GEY-2	2	There are concerns that the adjacent pipes do not have sufficient fire flow for multi-family development. Peak hour supply deficiency.	Construct 0.25 MG tank and perform hydraulic analysis per CalAm's direction to verify required pipe diameters for adjacent piping
GEY-3	2		
GEY-4	2		
GUE-1	3	Site is the location of the Sweetwater Springs Water District main storage and treatment facilities, so water pipes exist. However, discussion with District staff revealed they will not give up the site and the environmental impacts of doing so would be significant.	N/A
GUE-2	2	Water service stops at tip of parcel and is only 2-inches in diameter.	Upsize pipe and extend into the parcel.
GUE-3	2	Water service touch parcels but is only 2-inches in diameter.	
GUE-4	2	Water service is only 4-inches in diameter.	Upsize pipe.

Site ID	Category	Reason	Mitigations[1]
PEN-1	1	Pipes adjacent to parcel and no capacity concerns in pipes	N/A
PEN-2	1	Pipes adjacent to parcel and no capacity concerns in pipes	N/A
PEN-3	1	Pipes adjacent to parcel and no capacity concerns in pipes	N/A
PEN-4	1	Pipes adjacent to parcel and no capacity concerns in pipes	N/A
PEN-5	1	Pipes adjacent to parcel and no capacity concerns in pipes	N/A
PEN-6	1	Pipes adjacent to parcel and no capacity concerns in pipes	N/A
PEN-7	1	Pipes adjacent to parcel and no capacity concerns in pipes	N/A
PEN-8	1	Pipes adjacent to parcel and no capacity concerns in pipes	N/A
PEN-9	2	Pipes in adjacent street but would have to cross through a parcel to connect	Extend water service

7.0 Sewer System Analysis

Like the water systems, meetings were held with staff from the sanitation agencies to further discuss and investigate the constraints within each system. Most of the sewer agencies fall under the jurisdiction of Sonoma County Water Agency, who own and operate eight sanitation districts, six of which contains project sites. The four remaining agencies that provide sewer service to a parcel are special districts that are independent of the County.

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 January 2021 the trunk of the system has segments inadequate to convey existing peak wet weather flows. Two short segments of 6-inch pipe were also predicted to be surcharged under peak dry weather flow in future conditions. SVCSD has a hydraulic model that is currently being updated. All additional development will require that hydraulic analysis be performed to verify adequate capacity in the system.

SVCSD 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 involves 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 and will address structural deficiencies and mitigate capacity restricted sections. The project was split into three phases (A, B, and C). Phases A and B have been completed and phase C is nearing completion of the design phase and should be going out to bid in 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 currently in the design phase but the area the project is located has made the design challenging. SVCSD has a request for extension in with the San Francisco RWQCB and are waiting for response.

With these proposed projects implemented, the two currently inadequate pipe segments that are being improved should have adequate capacity to support the proposed re-zoning sites in Agua Caliente. However, there are concerns about the piping adjacent to AGU-2 not having enough capacity to support the site. This will need to be hydraulically investigated to determine whether upsizing will be required.

Both sites in Glen Ellen have had historical issues with sanitary sewer overflows downstream, which is an indication of capacity issues. These sites will need pipeline capacity evaluations to determine if the system will be able to accommodate the future growth.

City of Santa Rosa

The City of Santa Rosa receives sewer service through both the City of Santa Rosa and the South Park County Sanitation District (SPCSD). SAN-2, SAN-4, SAN-8, and SAN-9 are in the SPCSD service area, and the rest of the parcels are serviced by the City of Santa Rosa. The City of Santa Rosa owns and operates the Laguna Treatment Plant which has a 19.0 MG capacity for tertiary treatment and has peak treatment capacity at 30-40 MGD. In addition to treating wastewater for the City of Santa Rosa and the SPCSD, the plant also takes wastewater flows from Rohnert Park, Cotati, and Sebastopol.

Per the 2016 SSMP, the system has only experienced four sanitary sewer overflows (SSOs) since 2008 with none of them being attributed to blockage. 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.

Of the sites under consideration in Santa Rosa, sites SAN-6, SAN-7, and SAN-10 will require utility certificates and approval of the Sonoma Local Agency Formation Commission (LAFCO). These parcels are located outside of the City's boundary but within the City's sphere of influence, UGB, and USA. LAFCO may determine that these parcels need to be annexed but it is likely that only SAN-7 will require the annexation since it borders the City limits. Parcels SAN-1, SAN-3 and SAN-5 are subject to the conditions of the Brooks Assessment District (AD), which limit the property to the existing connected load of one single-family dwelling unit.

City of Sonoma

The City of Sonoma receives sewer service from Sonoma Valley County Sanitation District. There are four parcels being investigated in Sonoma. All four parcel are located directly adjacent to Broadway (Highway 12) which has large diameter trunk mains along the road. Broadway tends to surcharge during the winter months but there are no SSOs experienced during the surcharge. All the parcels have large diameter pipes adjacent so it is expected that there will be excess capacity within the system to accommodate the additional generation. This will need to be verified with a hydraulic model analysis. Furthermore, wastewater treatment discharge permits will need to be reviewed to verify that the treatment plant has adequate capacity.

Please note that these parcels do not require annexation into the City to receive sewer service. This is because they are in the sphere of influence of SVCSD which operates independently of the City.

Forestville

Forestville receives sewer service from the Forestville Water District (FWD). As discussed in the water analysis section, two of the six parcels collect standing water seasonally. This can cause inflow/infiltration and constructability issues. Four parcels do not have sewer service directly

adjacent to the parcel. FOR-5 has sewer service on the corner of the parcel and on Packing House Road which can be extended for the use of the parcel. There are no known capacity issues.

Larkfield

Larkfield receives sewer service from the Airport-Larkfield-Wikiup Sanitation Zone (ALWSZ). Per the SCWA website, the ALWSZ wastewater treatment plant has a permitted treatment capacity of 900,000 gallons per day (gpd). The hydraulic model analysis evaluation, conducted as a part of the 2021 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 at the treatment plant. This issue is worsened by flooding concerns at all Larkfield sites which may contribute to inflow and infiltration into the system.

Before any development, sewer capacity will still need to be verified with a hydraulic model analysis. The sanitation zone is currently updating their collection system model and are looking to start a Master Plan for the Treatment Plant this year (2022). Both studies will help to verify the improvements that are needed to handle additional development.

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 2021 SSMP found no hydraulic capacity deficiencies in the system. While the system is in good condition, the piping adjacent to the parcels in question are two (2) 6-inch diameter sewer pipes and it will need to be hydraulically analyzed to determine if upsizing is required.

Graton

Graton receives wastewater services from Graton Community Services District. The main concern with the parcels in Graton is the condition of the conveyance piping which has many structural and O&M defects. Furthermore, the main lift station used by the District is in bad condition and has capacity concerns. However, much of the existing trunk already has stubbed out laterals which would be very easy to connect additional services to.

One of the sites, GRA-4, is not within the service area for GCSD. To add it to the sphere of influence, the County would need to make a General Plan consistency determination, a municipal service review would need to be carried out, and an application would need to be submitted to LAFCO.

It should be noted that an individual party is in the process of trying to rezone and develop GRA-5. They have the intent of constructing 16-20 small units.

Guerneville

Guerneville's sewer system is managed by the Russian River County Sanitation District. Per the 2021 SSMP, the trunk has adequate capacity to convey existing and future peak dry weather flows. However, all four sites, GUE-1, 2, 3, and 4 reside in flood plains. When the river floods, the system experiences high inflow and infiltration, often resulting in SSOs. In 2017 and 2019, there were several large SSOs. The excessive inflow will need to be mitigated or the pipes will need to be upsized to accommodate additional development. Besides the issues with flooding, the Russian

River system is in good condition.

Site GUE-1 houses the main storage and water treatment facilities for Sweetwater Springs Water District. As such, this site would require the treatment plant to be relocated in order to redevelop. Discussions with the District indicated that they will not give up the site. Furthermore, the environmental impacts of relocation would be significant.

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. For the January 2021 SSMP, Agency staff conducted a capacity assessment of the PSZ system and concluded that the sanitation zone has not experienced any SSOs due to hydraulic deficiencies within the system so no formal capacity mitigation measures are planned. However, the lift station adjacent to the creek has been subject to flooding and the force main will eventually need structural upgrades and possible relocation.

The system experienced three SSOs between December 2014 and March 2016 occurring just upstream of a lift station where the capacity was exceeded. During the SSOs, the lift station had to be turned off due to flooding. If flood waters were to reach the lift station, it would cause major damage that could take the lift station out of service. However, the sanitation zone is implementing a project that will allow for the lift station to continue to operate during a flood.

The District is looking to have a capacity analysis underway later this year that will determine if the pipes need to be upsized. There are also concerns with septic failures in the area so it is possible that a parcel experiencing septic failure will need to be connected to the system. The Penngrove sites may be viable for additional development upon completion of the capital improvement projects and a revised agreement with the City of Petaluma for treatment.

Sites PEN-2 and 4 are currently on septic and will require the extension of a sewer pipeline up Goodwin Avenue for service. Sites PEN-1, 3, 5 and 8 have flooding concerns.

Petaluma

The City of Petaluma operates a wastewater treatment facility that provides tertiary treatment. The treatment plant also takes wastewater flows from Penngrove Sanitation Zone. All of the parcels would need to be annexed into the City to receive sewer service. The current OSAA policy does not support the extension of sewer service to these parcels and will require City Council action to allow.

PET-1 does not have sewer service adjacent to the parcel, but the other three sites do. The sewer line is 6-inches in diameter and resides in Bodega Avenue. Before development can be considered for these sites, the pipe will need to be upsized to address capacity concerns.

7.1 Sewer System Results

The following **Table 7-1** summarizes the categorical results of each site based on the above analysis. Like the water analysis, a summary of actions required to redevelop the site has been identified.

Table 7-1. Sewer Category Results

Site ID	Category	Reason	Mitigations[1]
AGU-1	1	Water service exists and the main trunk line are proposed to be upsized from 21" to 27" in the summer of 2021 to handle current flows so pipe capacity is good. May handle additional flow as well.	N/A
AGU-2	2	Same as AGU-1 but this site is much larger so there are potential pipe capacity issues.	Run a hydraulic model to determine the effect on capacity.
AGU-3	1	Sewer service exists adjacent to parcel and no known capacity issues.	N/A
GLE-1	2	Issues with sanitary sewer overflows (SSOs) further upstream indicating capacity issues.	Perform a hydraulic analysis to determine what size the pipe needs to be to handle flow. Upsize pipe.
GLE-2	2		
GRA-1	1	Sewer on two sides of parcel and infrastructure in good shape according to CCTV data.	N/A
GRA-2	2	Sewer service exists but is close to a lift station that has condition and capacity concerns. The lift station would need to be used to develop this parcel.	Perform upgrades to lift station and run hydraulic model to determine if the pipe needs to be upsized.
GRA-3	1	Infrastructure exists and there is a stubbed out lateral extending into the parcel.	N/A
GRA-4	3	No sewer infrastructure exists adjacent to parcel. Parcel is outside of District boundary.	Submit application to LAFCO to amend the sphere of influence of the District. County needs to amend general plan to incorporate parcel. A municipal service review will be required and then the parcel can be annexed to the District. Then extend sewer service up to parcel.
GRA-5	1	Infrastructure exists and an independent party is in the process of trying to purchase the land to build 20-60 small units.	N/A
PET-1	3	No sewer service adjacent to parcel and parcel is not in the City's boundary. LAFCO's current OSAA policy does not support the extension of sewer services to this parcel.	Council action will be needed to amend the current LAFCO OSAA policy. The parcels would then need to be annexed into the City. Council action will be needed to amend the current LAFCO OSAA policy. The parcels would then need to be annexed into the City. Council action will be needed to amend the current LAFCO OSAA policy. The parcels would then need to be annexed into the City.
PET-2	3	The 6" sewer pipe in Bodega Avenue that fronts these parcels has capacity issues. All of these parcels are not in the City's boundary. LAFCO's current OSAA policy does not support the extension of sewer services to this parcel.	
PET-3	3		
PET-4	3		

Site ID	Category	Reason	Mitigations[1]
SAN-1	2	Currently connected to sewer	Need to get a utility certificate to get additional service. The additional generation needs to be calculated and must not cause sewer generation to exceed that which is allowed in the General Plan and Wastewater Master Plan.
SAN-2	2	Sewer service does not extend halfway across the frontage of the property.	Sewer line would need to be extended so that it is halfway across the frontage of the property. See SAN-1 as well.
SAN-3	2	Sewer service adjacent to parcel but lot is currently vacant and would be limited to one residential connection	Site is very large to only develop one parcel. Further investigation needed to determine how to amend restriction. Utility certificate most likely needed.
SAN-4	1	Sewer service on three sides of the parcel	N/A
SAN-5	2	Sewer service adjacent to parcel but lot is currently vacant and would be limited to one residential connection	Site is very large to only develop one parcel. Further investigation needed to determine how to amend restriction. Utility certificate most likely needed.
SAN-6	2	Already has sewer on one side but is no within City's boundary	Parcels need to be annexed and utility certificates acquired.
SAN-7	2		
SAN-8	2	Sewer already connected to South Park County Sanitation District System	See note for SAN-1
SAN-9	2		
SAN-10	3	No sewer service adjacent to parcel and LAFCO's current OSAA policy does not allow for the extension of sewer services to this parcel.	Council action would be needed to amend the OSAA policy. Parcel would need to be annexed. All steps from SAN-1 are also valid.
FOR-1	3	No sewer service adjacent to parcel.	Extend sewer service.
FOR-2	3	No sewer service adjacent to parcel.	Extend sewer service in Mirabel Road to the corner of Mirabel Road and Nolan Road.
FOR-3	3	No sewer service adjacent to parcel.	Sewer service would be easy to extend up to the parcel but land is flat so grading would likely be needed to get adequate slope.
FOR-4	2	Sewer service exists but the lot is inundated with water all year.	Drainage measures would need to be installed.
FOR-5	1	Sewer service is available.	N/A
FOR-6	3	No sewer service adjacent to parcel. Majority of lot is inundated all year.	Sewer services would need to be extended and drainage measures installed.
SON-1	2	The pipe in Broadway tends to surcharge without SSOs during winter months but parcels are low in the system and pipes are large.	Run hydraulic model with proposed flows to verify how much additional flow can be handled. Determine if upsizing is needed to handle flows.
SON-2	2		
SON-3	1	Sewer on two sides of parcel and excess capacity likely available because one adjacent pipe is 30-inches in diameter.	N/A

Site ID	Category	Reason	Mitigations[1]
SON-4	2	The pipe in Broadway tends to surcharge without SSOs during winter months.	See SON-1/2
LAR-1	2	Parcels are close to Wikiup Creek and so there are flooding issues. Concerns with treatment plant capacity.	Increase the capacity at the WWTP or upgrade lines so there is less inflow and infiltration from Wikiup Creek flooding.
LAR-2	2		
LAR-3	2	Concerns with treatment plant capacity.	
LAR-4	2		
LAR-5	2		
LAR-6	2	Parcels are close to Wikiup Creek and so there are flooding issues. Concerns with treatment plant capacity.	
LAR-7	2	Concerns with treatment plant capacity.	
LAR-8	2	Trunk collection line has excess capacity but there are concerns about the capacity of the treatment plant.	
GEY-1	3	No sewer line adjacent to parcel.	Extend (and possibly upsize) the 8" PVC in Geyserville Avenue. Construct new manhole.
GEY-2	2	All parcels are adjacent to Geyserville Avenue which has two (2) 6-inch diameter pipes in good condition. There are concerns about disposal capacity at the treatment plant.	Evaluate excess disposal capacity determine a way to increase capacity at the treatment plant if necessary.
GEY-3	2		
GEY-4	2		
GUE-1	3	This site has Sweetwater Springs Water District's main treatment and storage facilities. Likely has sewer pipes already. However, the District is not willing to relocate and doing so would require a large environmental impact.	N/A
GUE-2	2	Entire system gets flooded often and experiences SSOs because of it. The property here is low lying which leads to large amounts of inflow.	Upsize pipes and/or take measures to mitigate the inflow being experienced in the area.
GUE-3	2		
GUE-4	2		
PEN-1	2	Site is subject to flooding.	Hydraulic analysis to determine how flooding impacts the capacity. Potentially upsize pipe. The District is hoping to start the capacity analysis later this year.
PEN-2	3	No sewer line adjacent to parcel. Many people in the area are on septic and excess capacity is needed for septic failures. Not in service area.	Extend (and possibly upsize) the sewer main in Goodwin Avenue. Determine if there is excess capacity in the event of the worst septic failure. Permit may be required for service.
PEN-3	2	Site is subject to flooding.	See PEN-1
PEN-4	1	Infrastructure exists and there are no concerns with SSOs in this area.	N/A
PEN-5	1		
PEN-6	1		
PEN-7	2	Sewer service stops just before parcel but there are no concerns with inflow due to flooding.	Extend sewer service to parcel.
PEN-8	2	Site is subject to flooding.	See PEN-1
PEN-9	3	No sewer line adjacent to parcel.	Extend (and possibly upsize) the 6" main that stops at PEN-8.

8.0 Results

Of the 59 potential sites, 8 were classified as Category 1, 28 as Category 2, and 23 as Category 3. The full categorical results are listed below in **Table 8-1**. It should be noted that water agencies that did not provide system information or meet with us, the sewer category was applied to be the overall category. This may not be accurate and should be reassessed as new information arises.

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 studies be completed for future development projects on the proposed sites to verify fire flow availability and system capacity (both in the systems and at the treatment plants). The specific studies will be agency specific and completed by the developer.

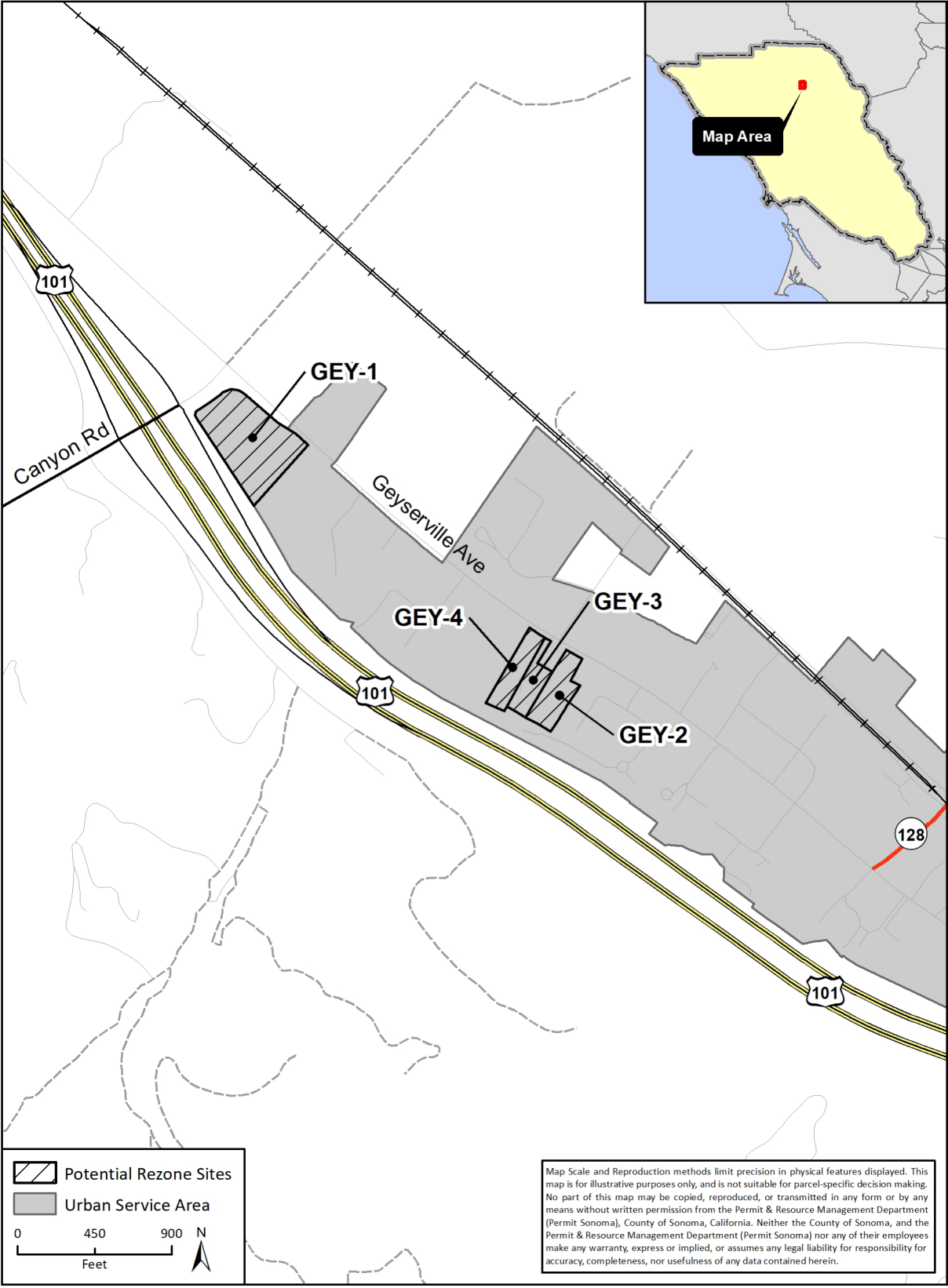
Table 8-1. Full Categorical Results for Each Site

Site ID	Water Category	Sewer Category	Overall Category
AGU-1	3	1	3
AGU-2	3	2	3
AGU-3	1	1	1
GLE-1	3	2	3
GLE-2	3	2	3
GRA-1	N/A	1	1
GRA-2	N/A	2	2
GRA-3	N/A	1	1
GRA-4	N/A	3	3
GRA-5	N/A	1	1
PET-1	2	3	3
PET-2	2	3	3
PET-3	2	3	3
PET-4	2	3	3
SAN-1	3	2	3
SAN-2	1	2	2
SAN-3	3	2	3
SAN-4	1	1	1

Site ID	Water Category	Sewer Category	Overall Category
SAN-5	3	2	3
SAN-6	1	2	2
SAN-7	1	2	2
SAN-8	3	2	3
SAN-9	2	2	2
SAN-10	1	3	3
FOR-1	2	3	3
FOR-2	1	3	3
FOR-3	1	3	3
FOR-4	2	2	2
FOR-5	1	1	1
FOR-6	3	3	3
SON-1	1	2	2
SON-2	1	2	2
SON-3	1	1	1
SON-4	1	2	2
LAR-1	2	2	2
LAR-2	2	2	2
LAR-3	2	2	2
LAR-4	2	2	2
LAR-5	2	2	2
LAR-6	2	2	2
LAR-7	2	2	2
LAR-8	2	2	2
GEY-1	2	3	3
GEY-2	2	2	2

Site ID	Water Category	Sewer Category	Overall Category
GEY-3	2	2	2
GEY-4	2	2	2
GUE-1	3	3	3
GUE-2	2	2	2
GUE-3	2	2	2
GUE-4	2	2	2
PEN-1	1	2	2
PEN-2	1	3	3
PEN-3	1	2	2
PEN-4	1	1	1
PEN-5	1	1	1
PEN-6	1	1	1
PEN-7	1	2	2
PEN-8	1	2	2
PEN-9	2	3	3

Appendix A – Maps of Sites Under Consideration by USA



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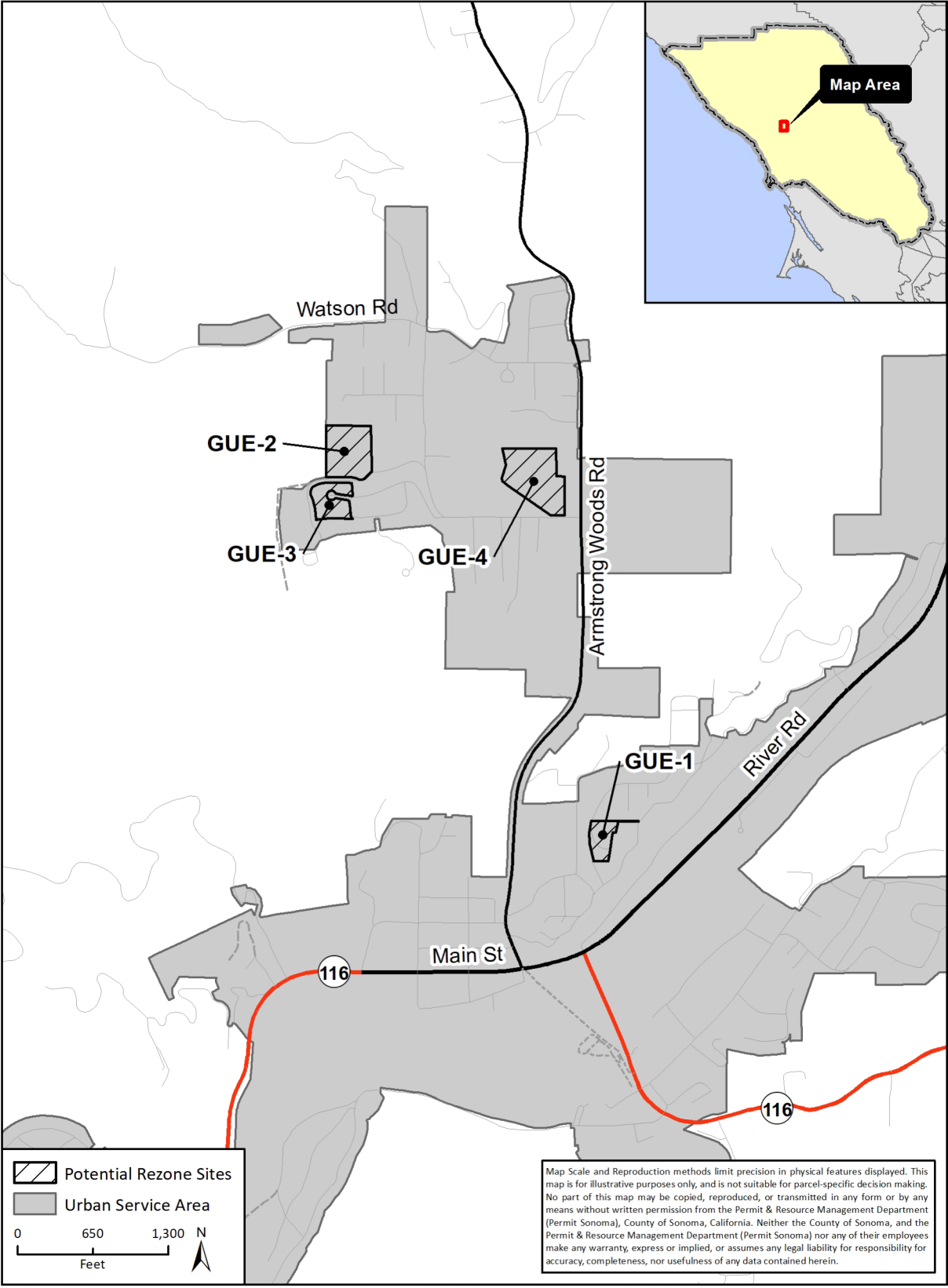

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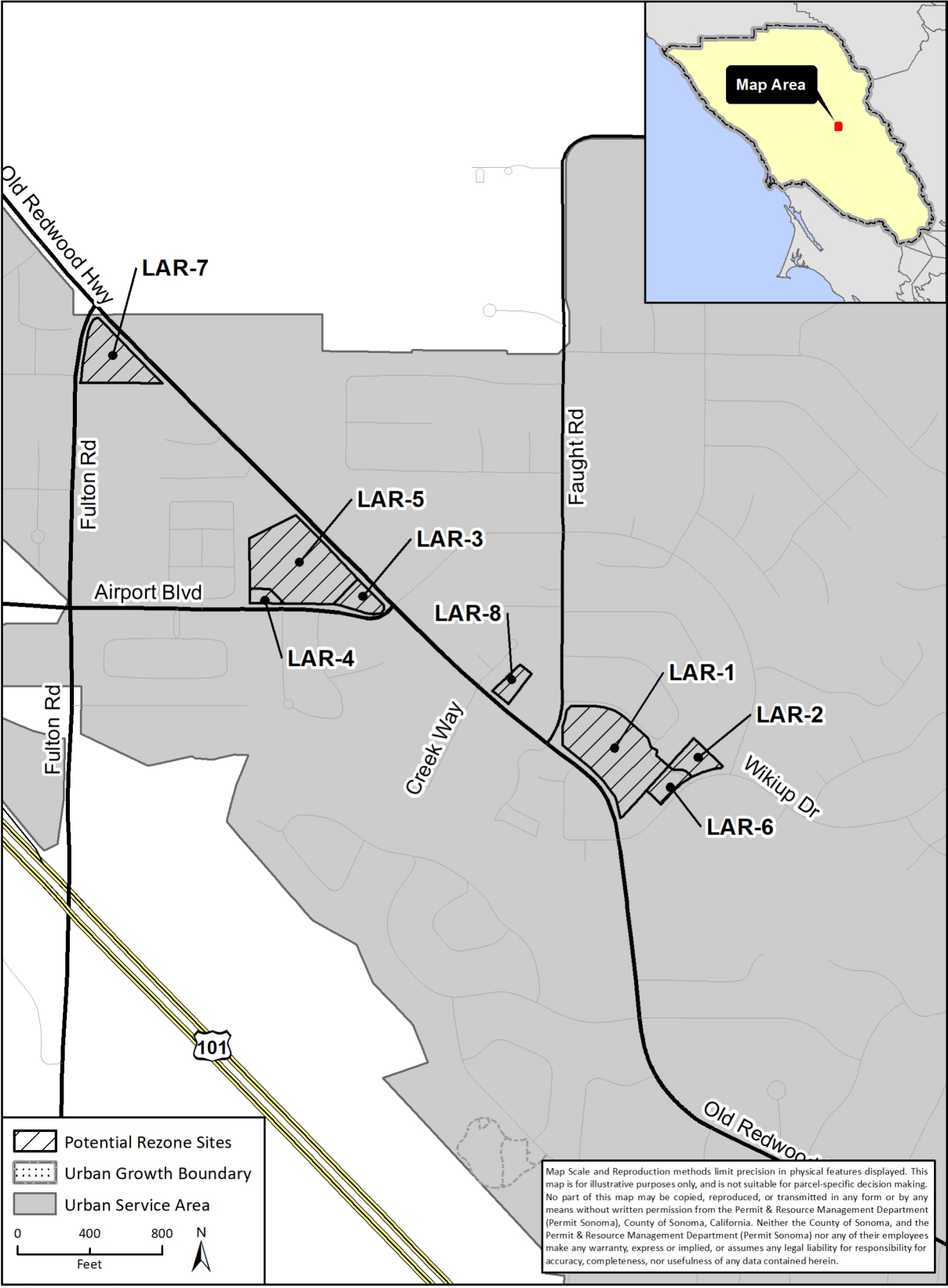

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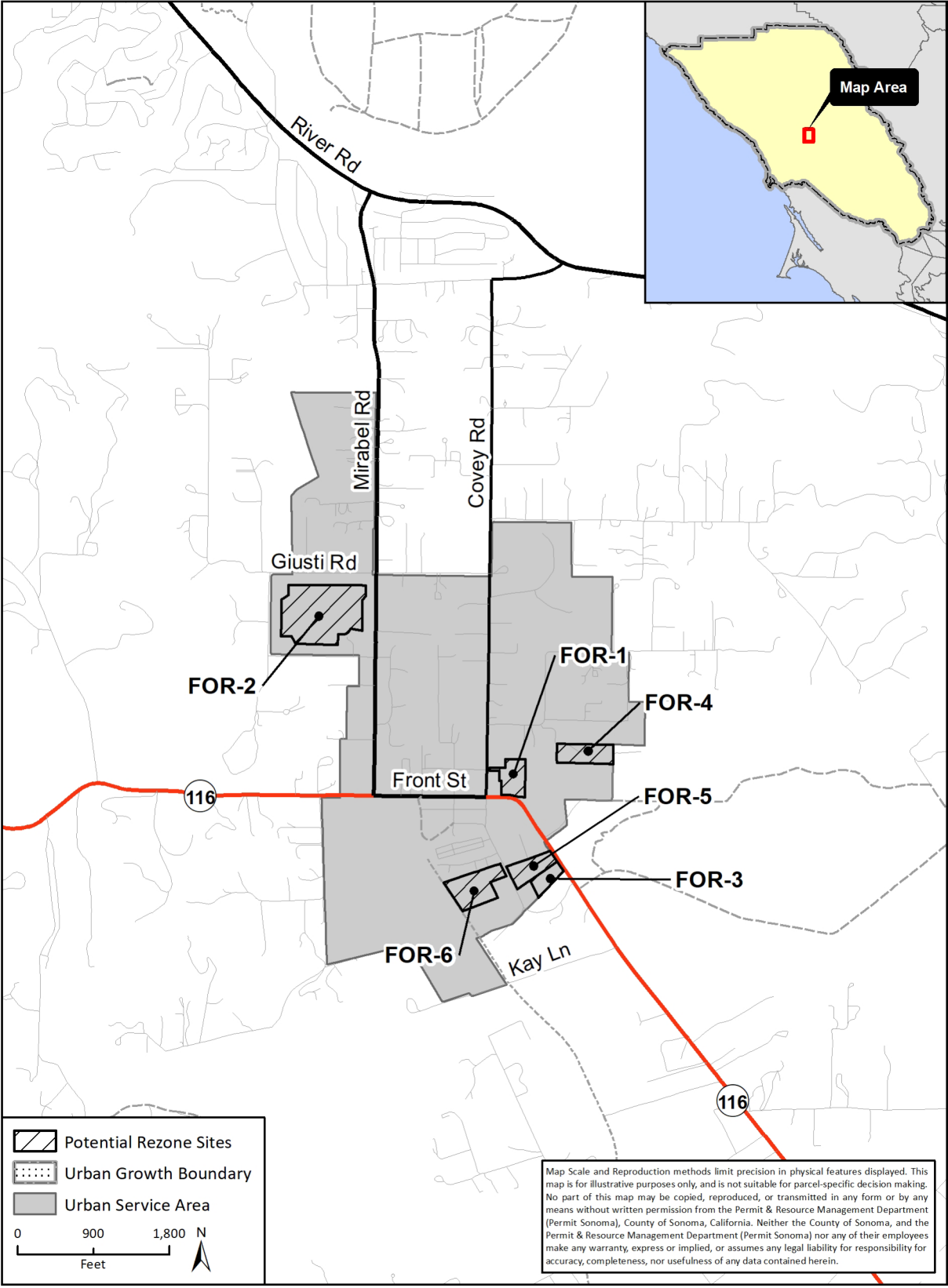

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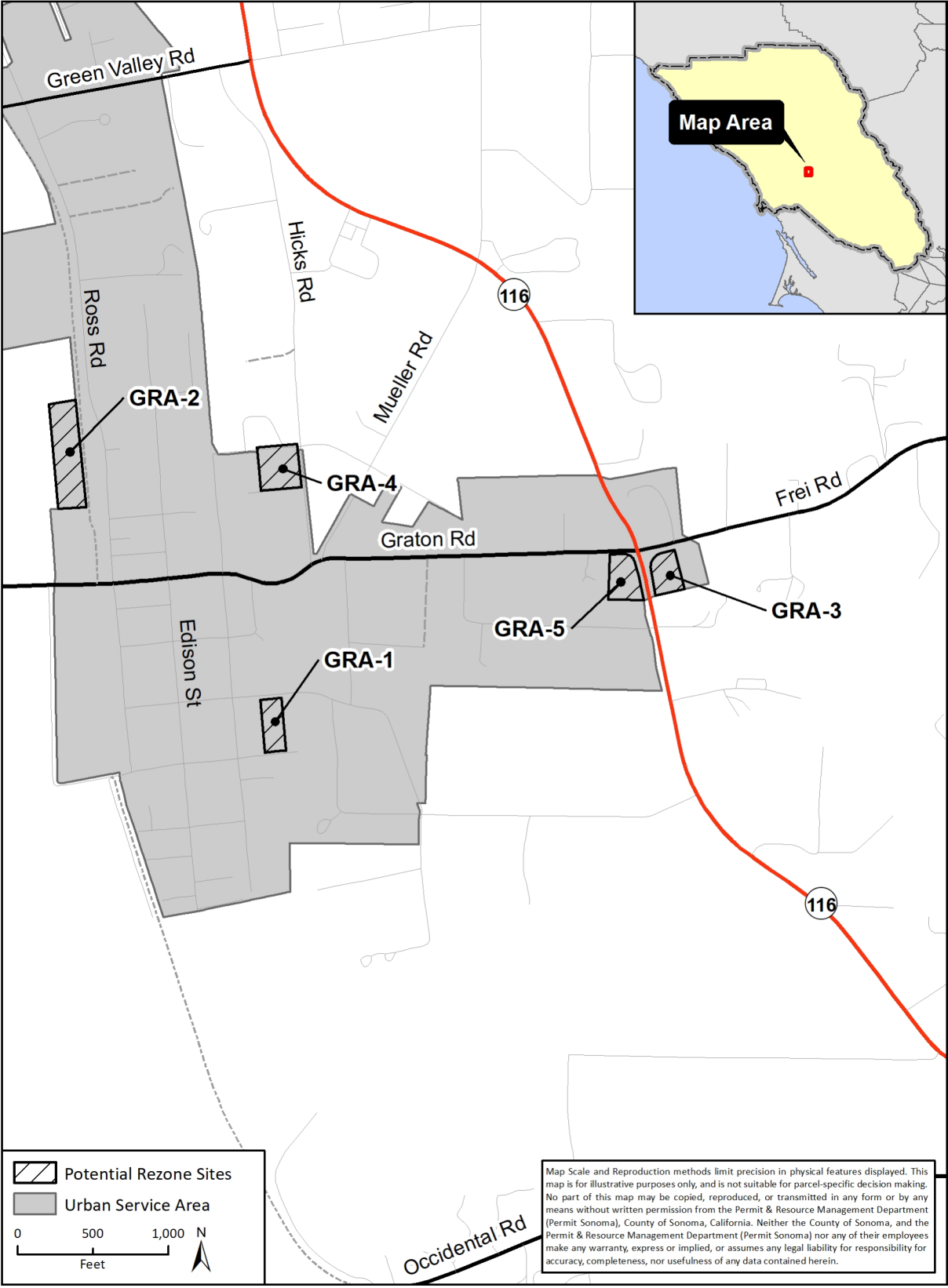

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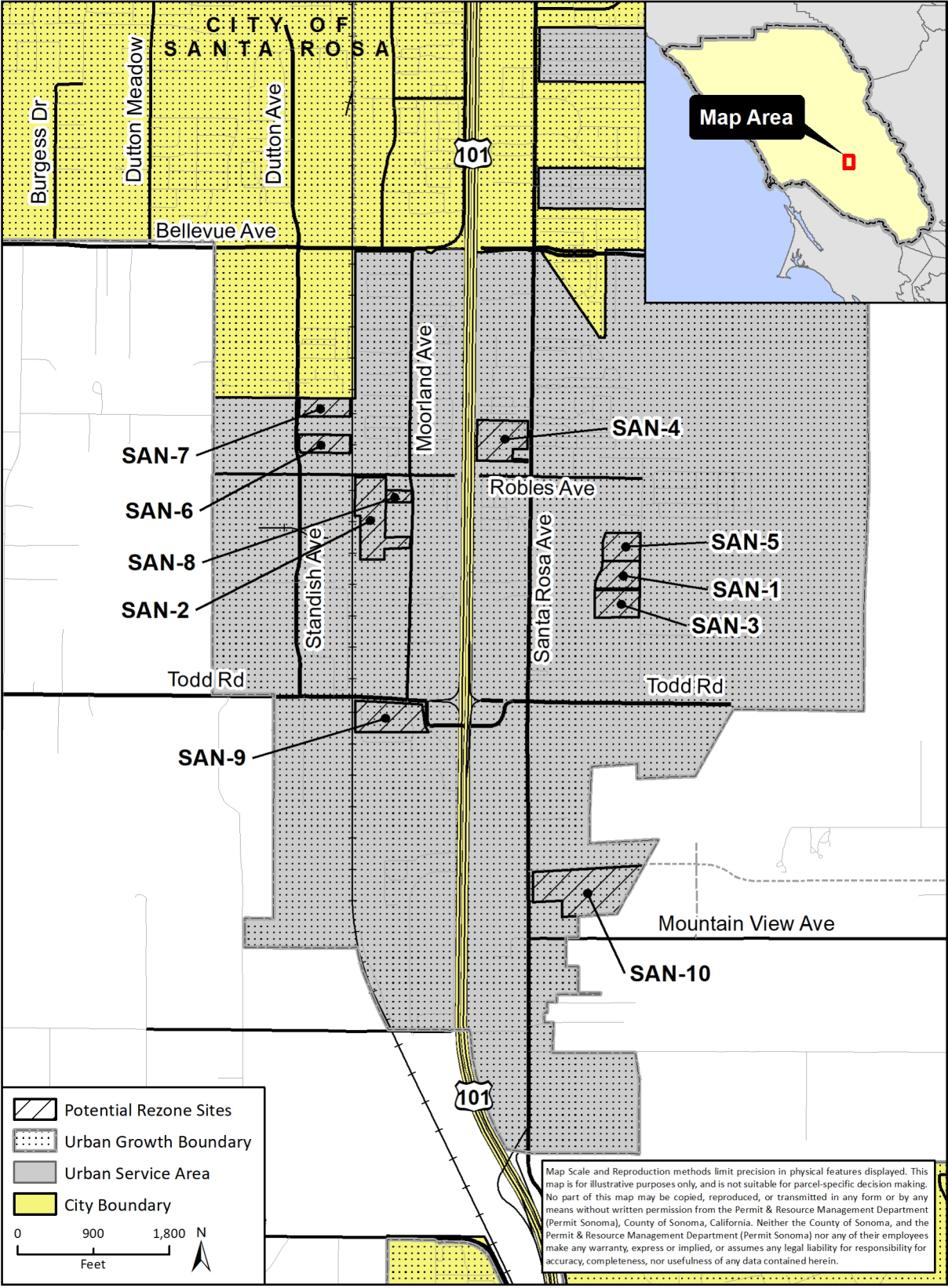

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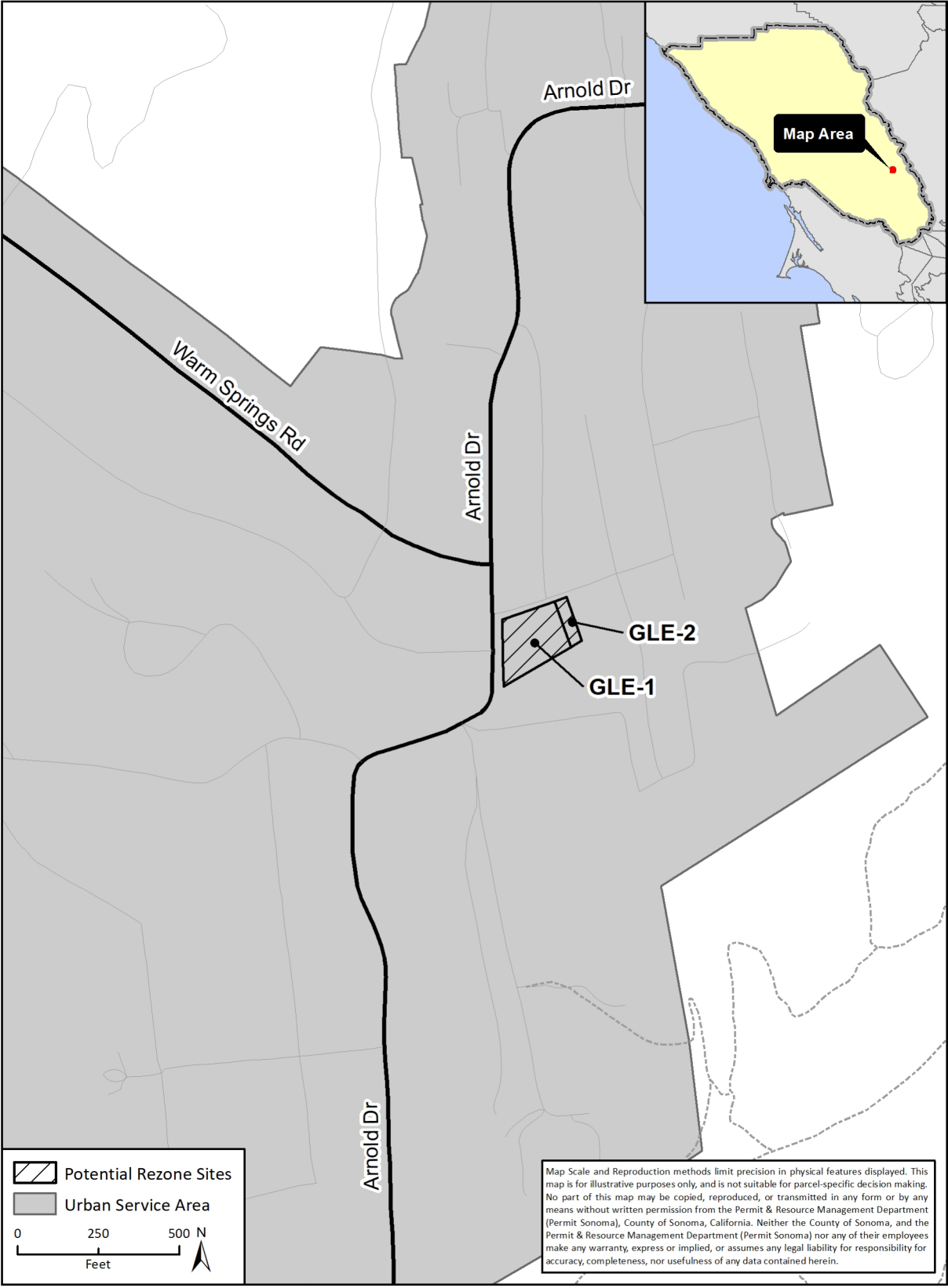

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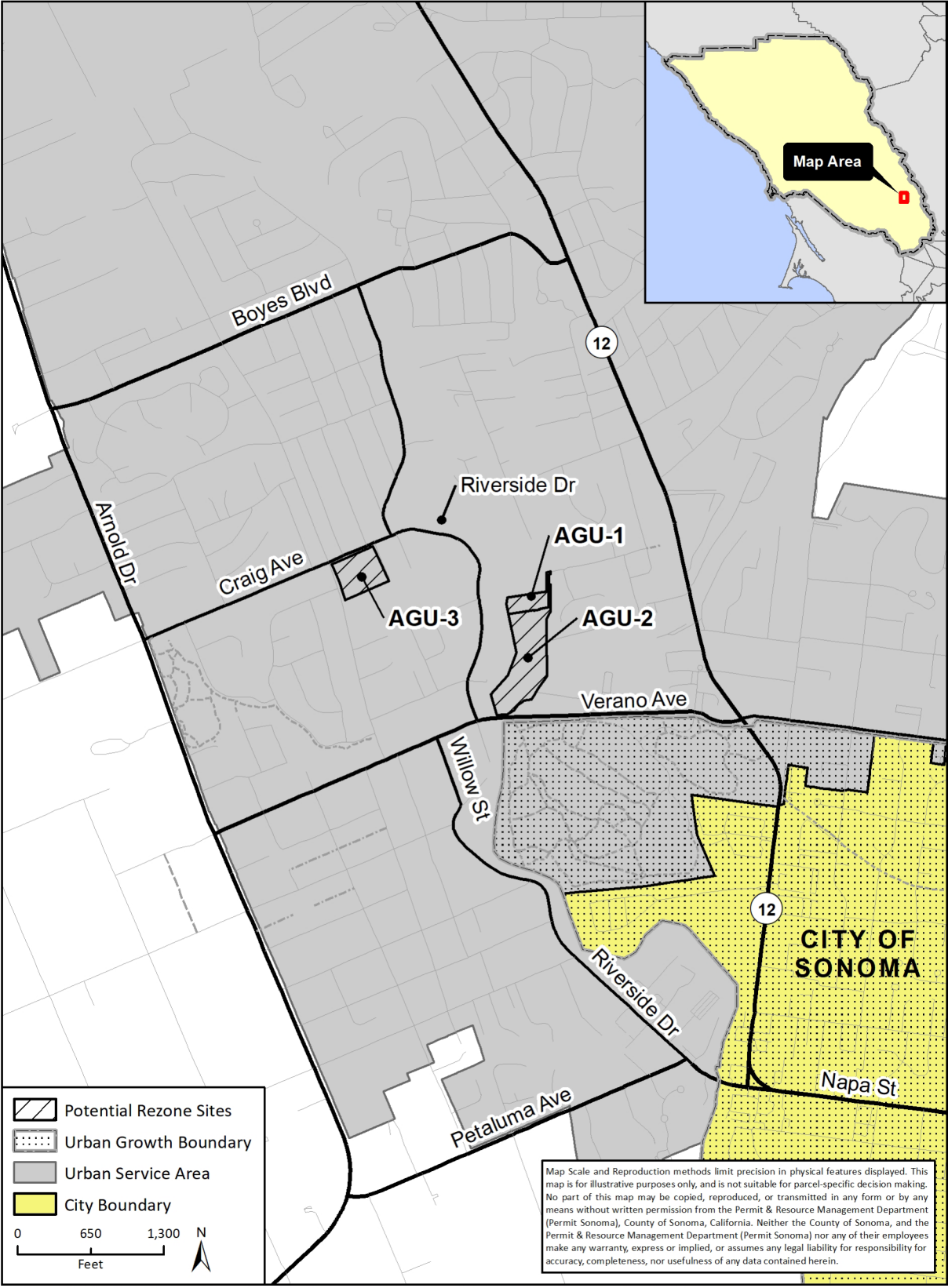

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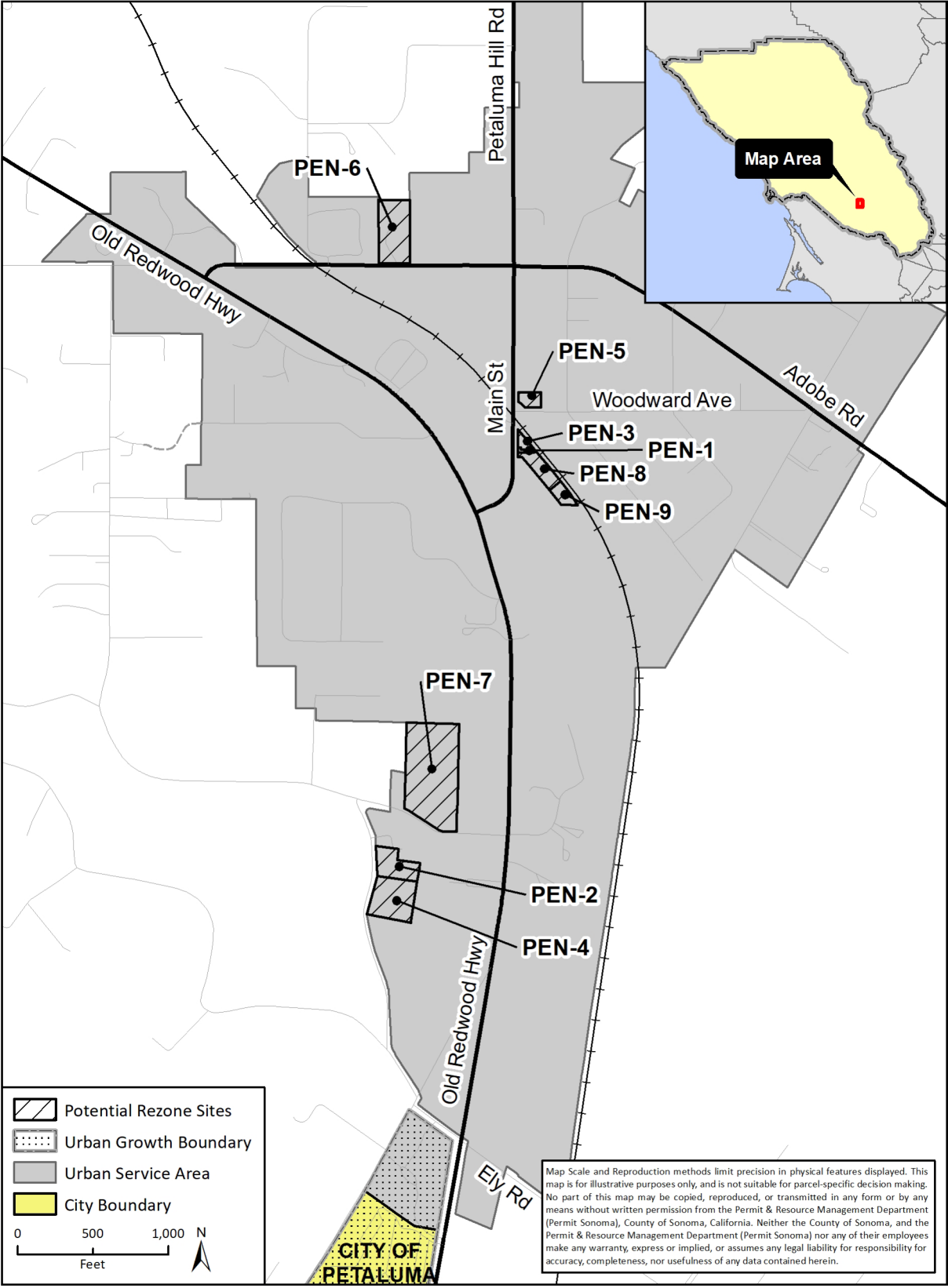

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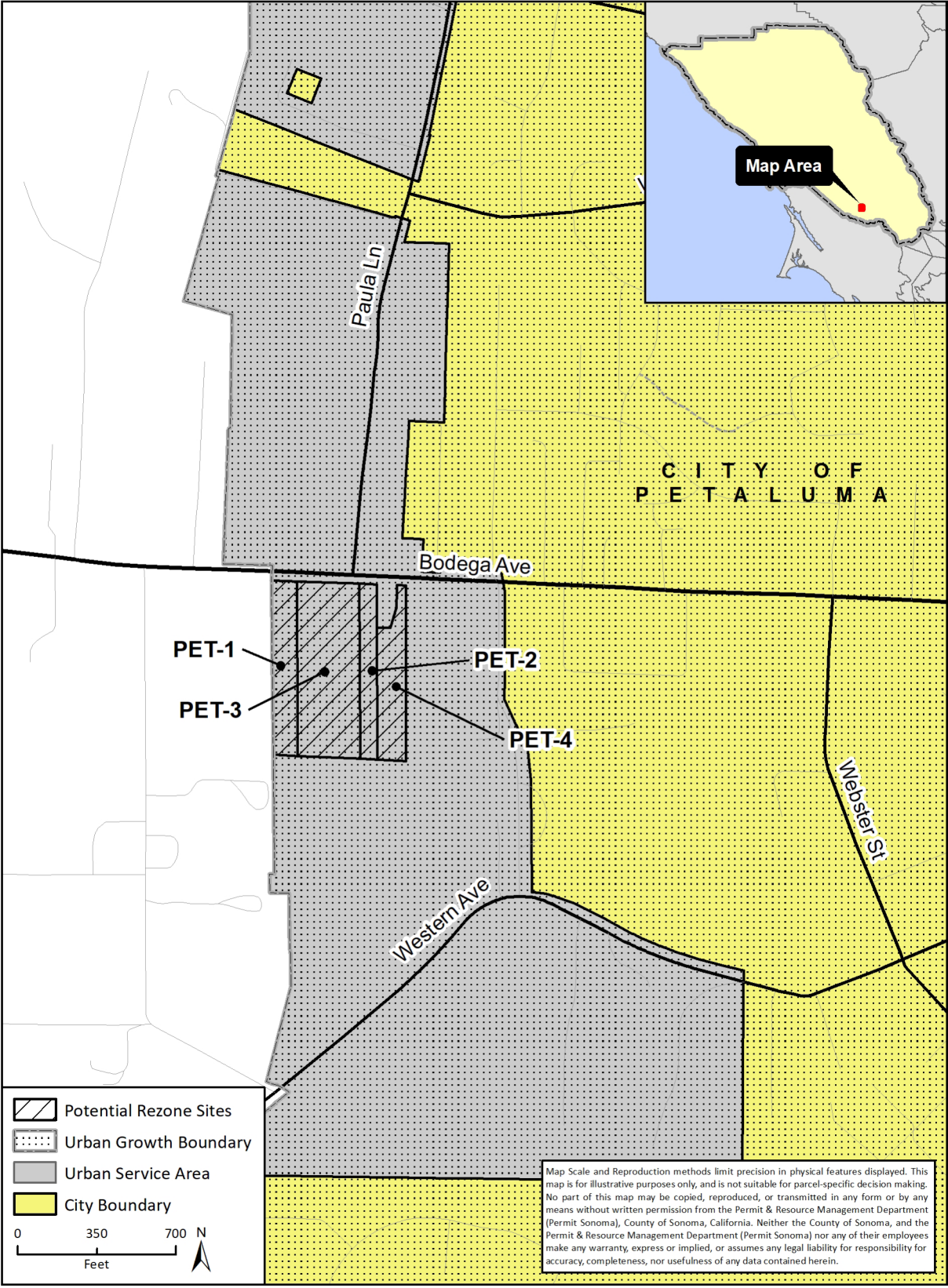

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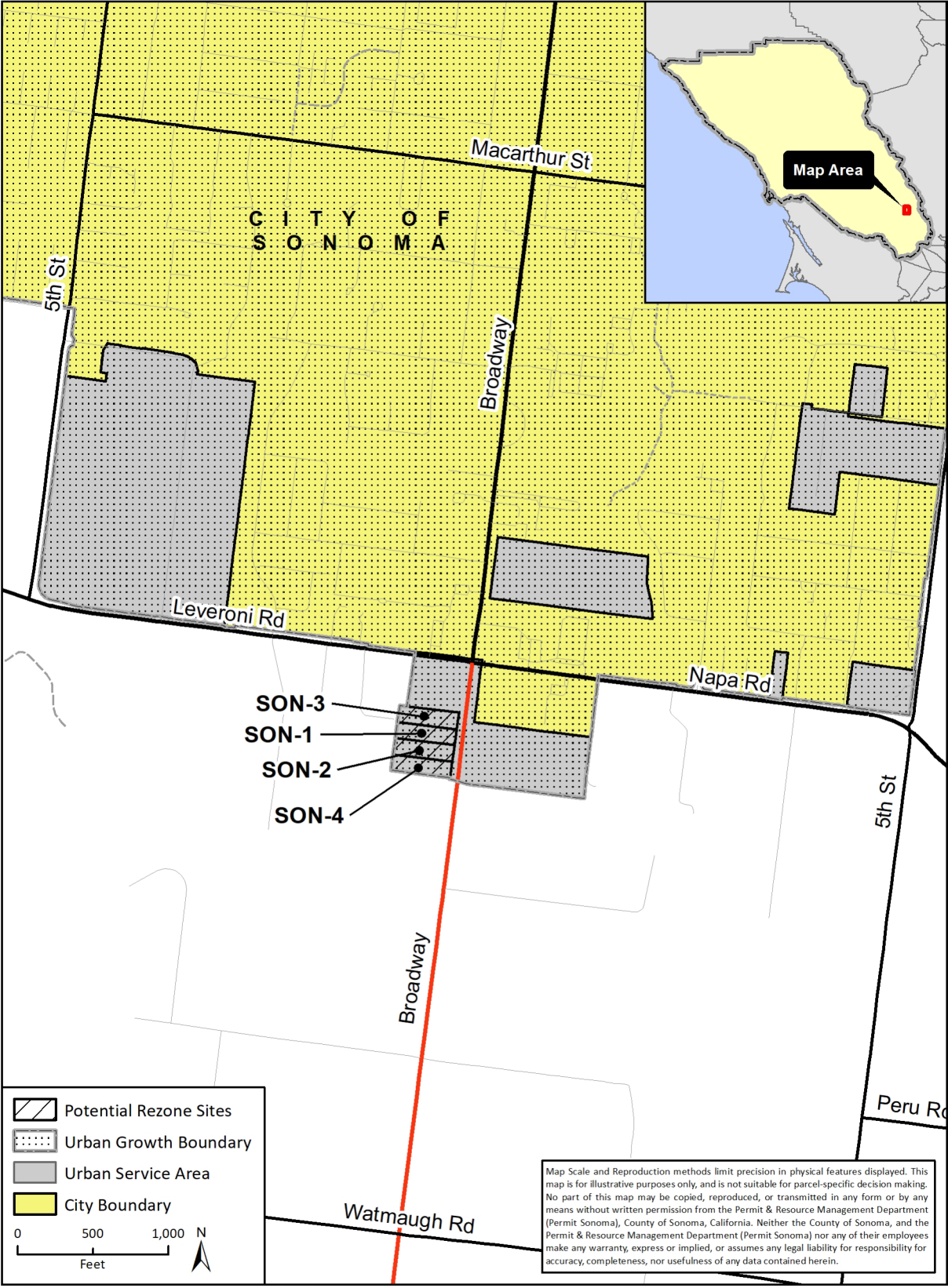

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Appendix B – Land Use Summary of Sites Under Consideration

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 Manufctrg & 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

Source: Rincon Consultants, June 16, 2020.

Appendix C – Agency Meeting Schedule

AGENCY	REPRESENTATIVE(S)	MEETING DATE
Valley of the Moon Water District	Matthew Fullner	April 20, 2021
	Brian Larson	
City of Sonoma	Chris Pegg	April 19, 2021
California Water Service	Evan Markey	May 5, 2021
California American Water	Margaret DiGenova	-
Penngrove/Kenwood Water Company	Receptionist	-
City of Santa Rosa	Casey Claborn	April 19, 2021
	Caryn Lozada	
City of Petaluma	Kent Carothers	April 20, 2021
Forestville Water District	Tony Lopes	April 20, 2021
Graton Community Services District	Jose Ortiz	May 28, 2021
Sanitation Districts: Geyserville Sanitation Zone Penngrove Sanitation Zone Sonoma Valley County Sanitation District Russian River County Sanitation District Airport/Larkfield/Wikiup Sanitation District South Park County Sanitation District	Kevin Booker	May 10, 2021
	David Royall	

Appendix D – 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 and Cal Am	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	WSA, Notes from Site Visit and Cal Am	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 and 2021 UWMP	City of Santa Rosa Website	GIS files, Sewer System Management Plan, Water System Facilities	City of Santa Rosa Website
Sonoma Water	2015 and 2021 Urban Water Management Plan	Sonoma Water Website	*See Individual Zones*	*See Individual Zones*