



# Sonoma Developmental Center Mobility Assessment

## Existing Conditions

May 2018

## Table of Contents

	Page
<b>Executive Summary</b> .....	1
<b>1 Site Access and Travel Patterns</b> .....	2
Sonoma Valley Vehicle Trips.....	4
Local Roadway Network and Traffic Conditions .....	7
<b>2 Transit Access and Service</b> .....	15
<b>3 Pedestrian and Bicycle access and Connectivity</b> .....	19
<b>4 Conclusions</b> .....	24

## Table of Figures

	Page
Figure 1 SDC Site Context .....	2
Figure 2 Sonoma County Regional Commute Trip Patterns.....	3
Figure 3 Sonoma Valley Trip Patterns – Destinations of Trips from Sonoma Valley (2010) ....	5
Figure 4 Sonoma Valley Trip Patterns – Origins of Trips to Sonoma Valley (2010) .....	6
Figure 5 Existing VMT Per Capita .....	7
Figure 6 On-street Parking along internal streets.....	8
Figure 7 Existing SDC Site Parking.....	9
Figure 8 Service road to recreational trails and facilities (note the vehicle and bicyclist sharing the road) .....	10
Figure 9 Intersection Existing Weekday AM and PM Peak Hour - LOS Conditions.....	11
Figure 10 Average Daily Traffic of Arnold Drive Segments.....	12
Figure 11 Arnold Drive Segment Existing Weekday AM and PM Peak Hour - LOS Conditions .....	12
Figure 12 Collision & Injury Map (2012-2016).....	14
Figure 13 Sonoma County Transit Bus .....	15
Figure 14 Existing Transit Network .....	16
Figure 15 Route 30 and Route 38 Service Hours, Headways, and Monthly Ridership.....	17
Figure 16 SCT Bus Stop (east side of Arnold Drive, north of Harney) .....	17
Figure 17 SDC Shuttle Stop .....	18
Figure 18 “Secondary Zone” painted sidewalk.....	19
Figure 19 SDC Pedestrian Facilities by Zone .....	20
Figure 20 Existing and Planned Bikeway Network .....	22



## EXECUTIVE SUMMARY

The SDC project site is located on Arnold Drive, immediately south of the village of Glen Ellen, and just over six miles north of the town of Sonoma. This rural location, in the north end of the Sonoma Valley, is surrounded by open space, agricultural land, and sparse residential and commercial development scattered around a few town centers to the north and south. The city of Santa Rosa is 15 miles northwest of the SDC site, and the rest of the more densely developed Highway 101 corridor is on the other side of Sonoma Mountain.

Most trips in and around the SDC site are local. The towns of Sonoma, Boyes Hot Springs, and Glen Ellen, which have the highest concentrations of residential development, represent the majority of origins and destinations. Most trips to the Sonoma Valley originate within the Sonoma Valley itself. The SDC site itself generates few trips compared to the rest of Sonoma County. The intersection of Highways 121 and 37 is a known pinch point for commute traffic within the regional highway network, but analysis suggests that the SDC project area (where existing land uses do not generate a high number of trips) does not make a significant contribution to regional commute trips at this intersection.

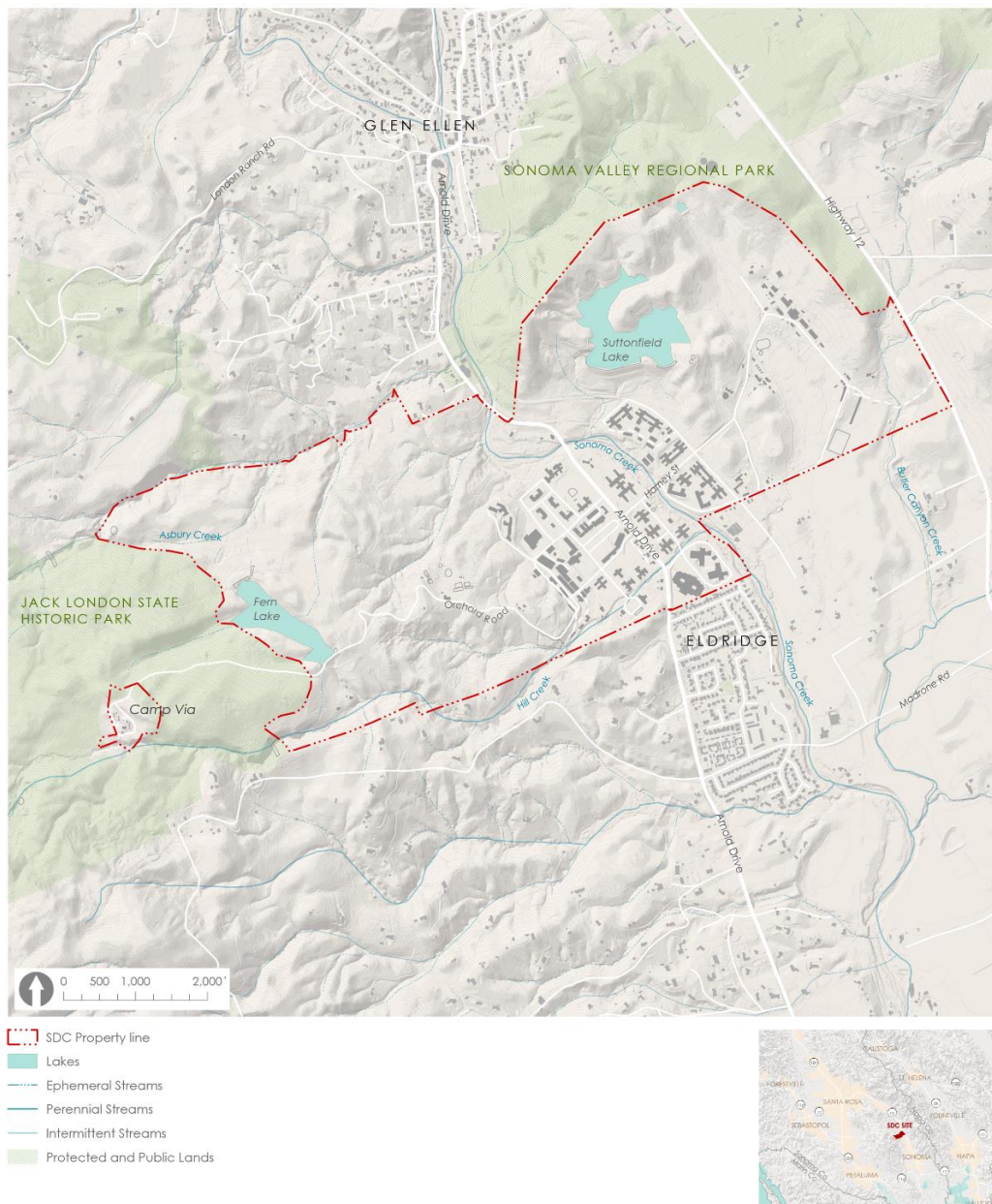
The SDC site's street networks and regional connectivity are consistent with local rural development. Traffic volumes at and near the site are highest on weekday afternoons and weekend late mornings, and Arnold Drive intersections experience minimal delays and have significant excess capacity. Transit service in the area is limited but does provide some commute hour connections to Santa Rosa and San Rafael. Pedestrian and bicycle networks are sparse, but low vehicle volumes on the SDC property make walking and biking a more comfortable option than they would be otherwise, considering the lack of infrastructure.

Establishing additional connections to the road network, in particular where the property fronts Highway 12, may improve access and free up additional space on the on-site road network. Changes to the road network may allow for more flexible local trip patterns, and as the area does not contain high trip generating uses, these changes would not likely affect local and regional traffic volumes.

# 1 SITE ACCESS AND TRAVEL PATTERNS

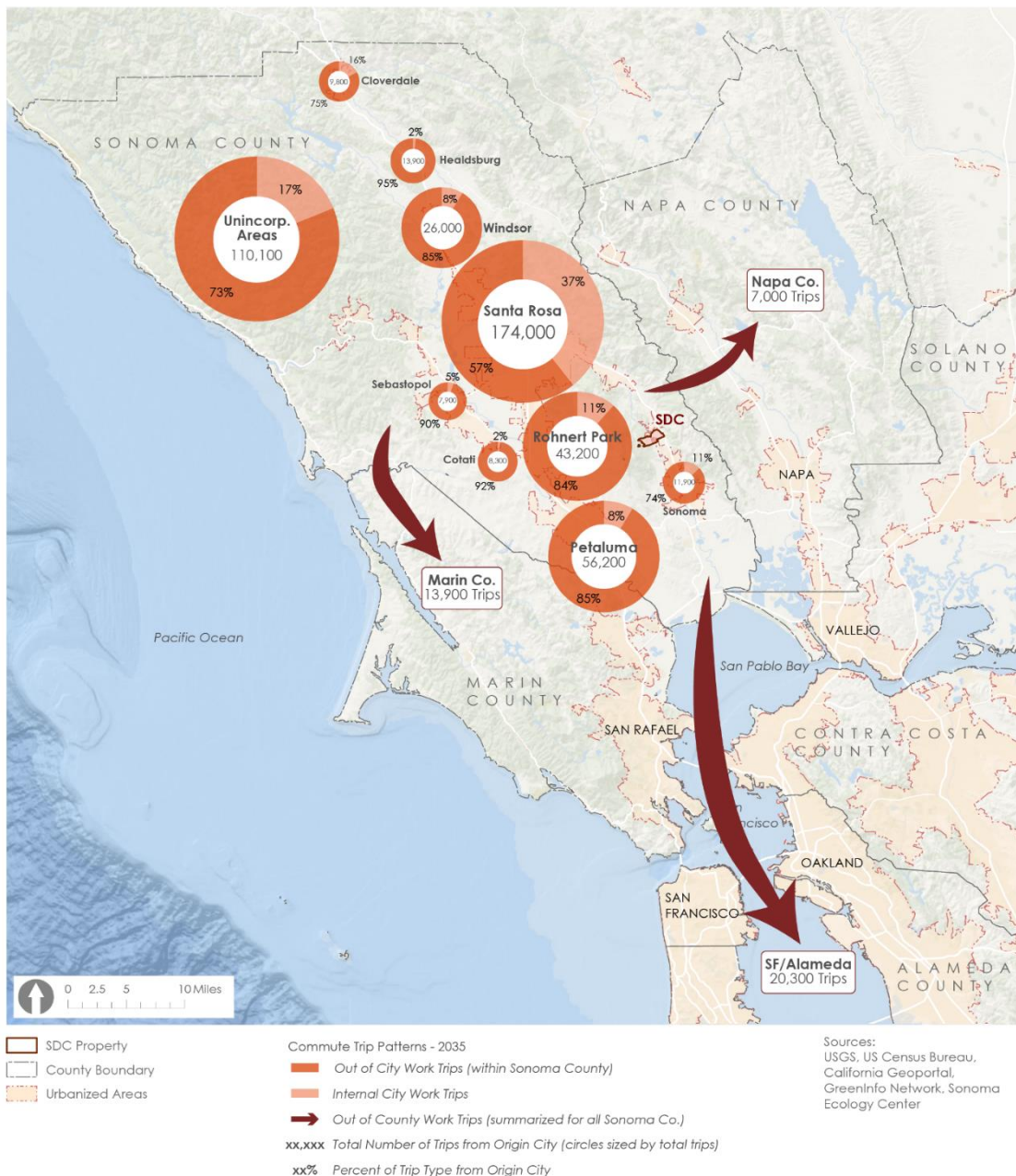
The SDC project site is located on Arnold Drive, immediately south of the village of Glen Ellen, and just over six miles north of the town of Sonoma. This rural location, in the north end of the Sonoma Valley, is surrounded by open space, agricultural land, and sparse residential and commercial development scattered around a few town centers to the north and south. The city of Santa Rosa is 15 miles northwest of the SDC site, and the rest of the more densely developed Highway 101 corridor is on the other side of Sonoma Mountain. **Error! Reference source not found.** illustrates the SDC project site location and boundaries in the context of surrounding communities, regional roadways, and nearby open spaces.

Figure 1 SDC Site Context



With very few regional employment and commercial destinations nearby, and with a much smaller local population than the cities along the Highway 101 corridor, this area generates very few trips relative to the rest of Sonoma County. Most of the commute trip activity is located in cities along the Highway 101 corridor. Based on the county’s projected 2035 trip volumes for the town of Sonoma, the nearest incorporated area to the SDC site, we can infer that Sonoma Valley trips make up a small portion of total regional travel. Figure 2 illustrates forecasted commute patterns for trips originating in Sonoma County cities and towns from the Sonoma County Travel Model 2035 projections.

**Figure 2 Sonoma County Regional Commute Trip Patterns**



Source: Sonoma County Transportation Authority (SCTA) Travel Demand Model, 2035 projections and Nelson\Nygaard

## SONOMA VALLEY VEHICLE TRIPS

A closer look at the travel patterns along the Arnold Drive and Highway 12 corridors (from Kenwood to the Highway 121 intersection) in Sonoma Valley reinforces this understanding that most trips in and around the SDC site are local. Figure 3 illustrates the distribution of trips from Sonoma Valley to destinations around the county, and Figure 4 illustrates the origins of Sonoma County trips to the Sonoma Valley corridor. These maps utilize data from the Sonoma County Travel Demand Model<sup>1</sup>.

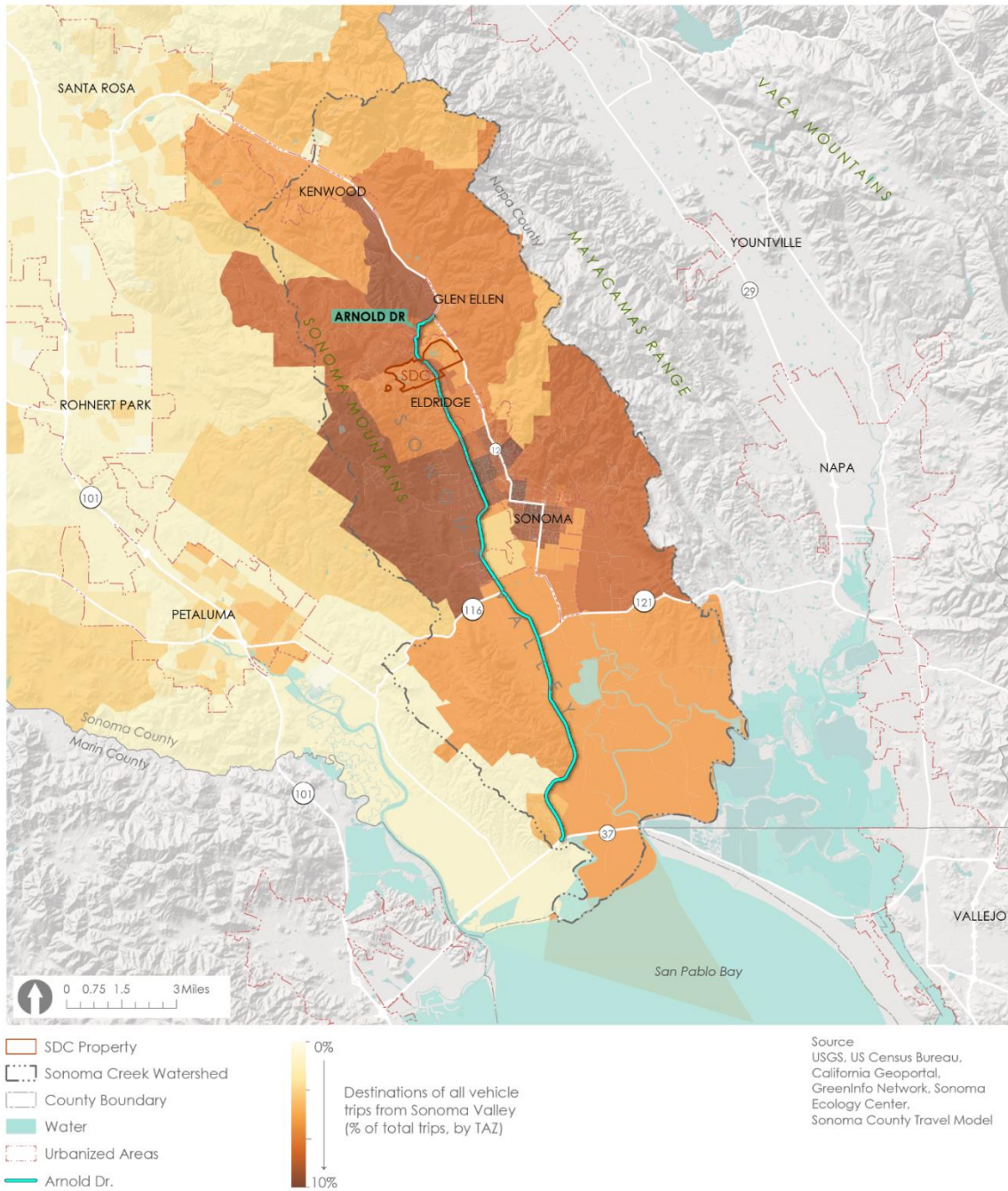
Based on the travel model data, most trips originating from the Sonoma Valley have destinations within the Sonoma Valley, with very small percentages of trips originating beyond the Arnold Drive/Highway 12 corridors. The towns of Sonoma, Boyes Hot Springs, and Glen Ellen represent the majority of destinations, with a few more concentrated destinations at the north and south ends of the valley; only a few transportation analysis zones near Petaluma connect the valley to the Highway 101 corridor. Similarly, most trips to the Sonoma Valley originate within the Sonoma Valley itself, with very small percentages of trips originating beyond the Arnold Drive/Highway 12 corridors. The towns of Sonoma, Boyes Hot Springs, and Glen Ellen represent the majority of the origins, and are also where residential development is most concentrated; only a few transportation analysis zones near Petaluma, and even fewer in Santa Rosa connect the valley to the Highway 101 corridor. Overall, for both origins and destinations, these travel patterns illustrate that most trips starting or ending within the Sonoma Valley are local.

The intersection of Highways 121 and 37, south of the town of Sonoma, provides a connection to Napa and Marin counties, and is a known pinch point for commute traffic within the regional highway network. However, travel patterns illustrated by the travel model suggest that the SDC project area does not make a significant contribution to regional commute trips at the Highway 121/Highway 37 intersection. This aligns with expectations based on the local population and land development density – the existing land uses on and around the SDC project site do not generate a high volume of trips relative to the other population and employment centers connected to the surrounding regional road network in Sonoma, Marin and Napa counties.

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<sup>1</sup>The Sonoma County Travel Demand Model is maintained by Sonoma County Transportation Authority (SCTA), and was last updated in 2010. This model forecasts vehicle trips within Sonoma County, broken down into a variety of categories (work, school, leisure, etc.). Trip totals are calculated at the transportation analysis zone (TAZ) level. The Sonoma Valley Trip Patterns data combines all vehicle trip categories to show the destination locations of those traveling out of Sonoma Valley, and the origin locations of those traveling into the Sonoma Valley.

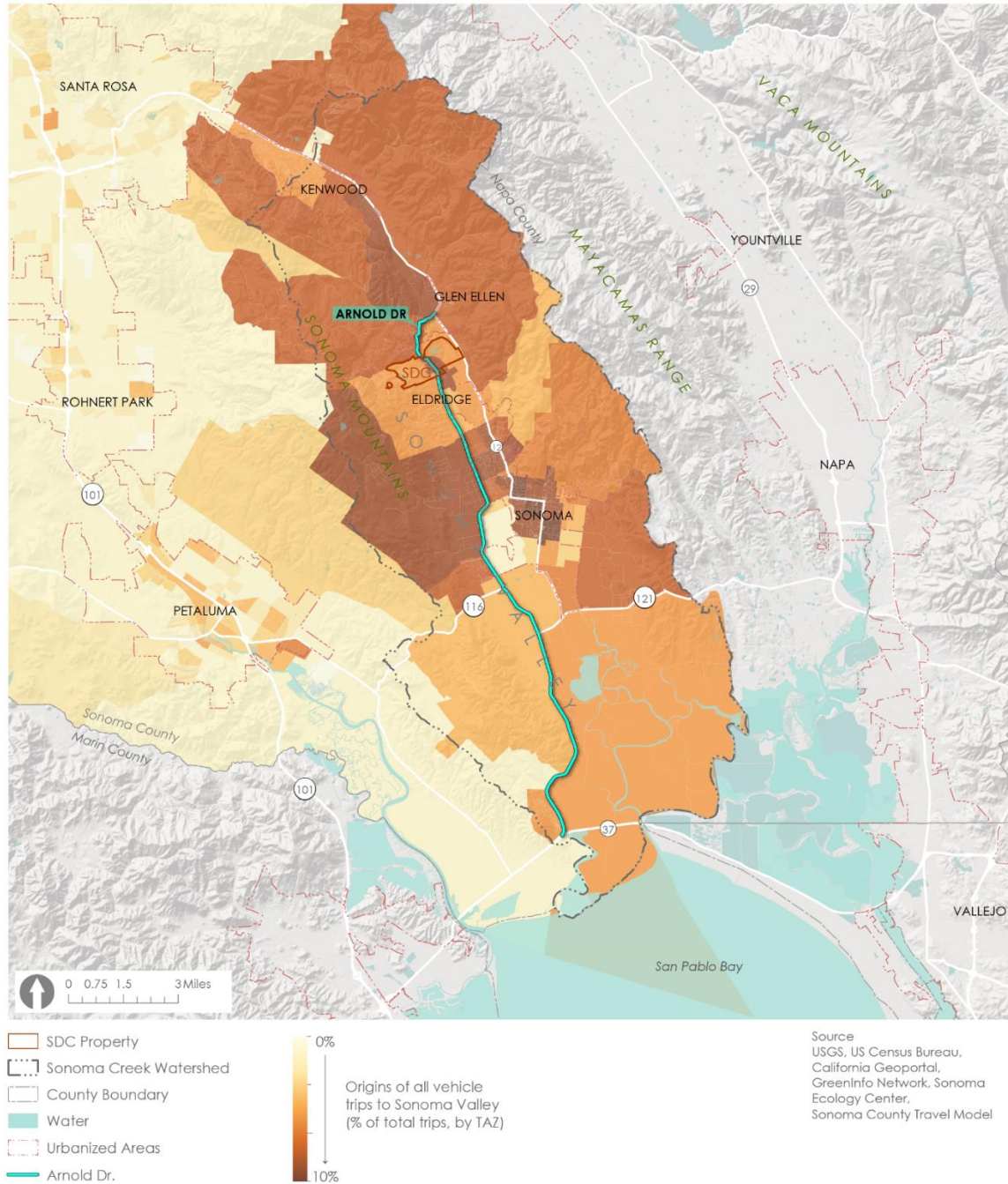
Figure 3 Sonoma Valley Trip Patterns – Destinations of Trips from Sonoma Valley (2010)



Source: Sonoma County Travel Model, 2010 projections and Nelson\Nygaard



Figure 4 Sonoma Valley Trip Patterns – Origins of Trips to Sonoma Valley (2010)



Source: Sonoma County Travel Model, 2010 projections and Nelson\Nygaard

## Vehicle Miles Traveled (VMT) Analysis

Many factors affect travel behavior and trip distances including density, diversity of land uses, design of the transportation network, access to regional destinations, distance to high-quality transit, development scale, and transportation demand management. Typically, low-density development at great distance from other land uses, located in areas with poor access to non-private vehicular modes of travel, generate more automobile travel compared to development located in urban areas, where higher densities, mixed land uses, and a variety of travel options are available.

Vehicle Miles Traveled (VMT) per person provides a representative measure of travel behavior and relative transportation impacts. The Metropolitan Transportation Commission (MTC)/Association of Bay Area Governments (ABAG) models VMT per capita by workplace location and place of residence based on geographic factors.<sup>2</sup> Figure 5 summarizes the existing VMT for the region (average for all nine Bay Area counties), the county, and the project site<sup>3</sup>.

The regional average is 14.9 daily VMT per capita, while the SDC area average is more than twice that at 30.4 daily VMT per capita<sup>4</sup>. Similarly, for employment, the SDC site average is 34.5 daily VMT per worker, significantly higher than the average daily VMT per worker for the county and region. Based on this measure of travel behavior, the residents and workers in the SDC area currently generate more total miles of travel per person and per worker than the regional and county averages. This reflects a high car dependence for those traveling to and from the SDC area.

**Figure 5 Existing VMT Per Capita**

Land Use	Bay Area	County of Sonoma	SDC Area
VMT per Person	14.9	18.2	30.4
VMT per Worker	23.2	22.5	34.5

Source: MTC/ABAG Travel One Model, 2017.

## LOCAL ROADWAY NETWORK AND TRAFFIC CONDITIONS

Local streets in the vicinity of the SDC site include Arnold Drive, Warm Springs Road, Madrone Road, and Agua Caliente Road West, all two-lane streets. In the Sonoma County *General Plan 2020*, these roads are classified as follows:

- Arnold Drive – Urban Major Collector between Warm Springs Road and Madrone Road, Urban Minor Arterial between Madrone Road and Petaluma Avenue
- Warm Springs Road – Rural Major Collector
- Madrone Road – Urban Minor Arterial
- Agua Caliente Road West – Urban Minor Arterial

<sup>2</sup> MTC/ABAG Travel Model One available online at:

[http://dataportal.mtc.opendata.arcgis.com/datasets?q=Transportation&page=2&sort\\_by=relevance](http://dataportal.mtc.opendata.arcgis.com/datasets?q=Transportation&page=2&sort_by=relevance); accessed August, 2017.

<sup>3</sup> VMT model provides VMT data by Traffic Analysis Zone (TAZ); the project site VMT represents TAZ 1318.

<sup>4</sup> The California Department of Transportation (Caltrans) has developed a statewide VMT reduction target per the *Strategic Management Plan* that specifically calls for a 15 percent reduction in per capita VMT, compared to 2010 levels, by 2020.

Other roadways in the SDC area are not classified in the *General Plan 2020* and are considered “local streets” that connect to these collector and arterial roadways. Most of these roadways do not include bicycle routes, with the exception of Madrone Road, which includes Class II striped bike lanes between Arnold Drive and Maplewood Drive. Madrone Road is the only street with on-street parking spaces; however, field observations have noted occasional curbside on-street parking along the other streets. Most intersections near the SDC site are All-Way STOP-Controlled (AWSC), and there is a roundabout at the intersection of Arnold Drive and Agua Caliente Road West.

The intersection of Harney and Arnold Drive provides direct access to the SDC site and is an AWSC intersection with a flashing red traffic signal. Directly north and south of Harney and Arnold Drive, the intersections of Holt Road/Arnold Drive and Wilson/Arnold Drive, respectively, provide additional access to the SDC. Both of these T-intersections have side-street stops (auto traffic along streets that intersect with Arnold Drive are STOP-controlled, and Arnold Drive is free flow with no STOP signs or signals at these intersections).



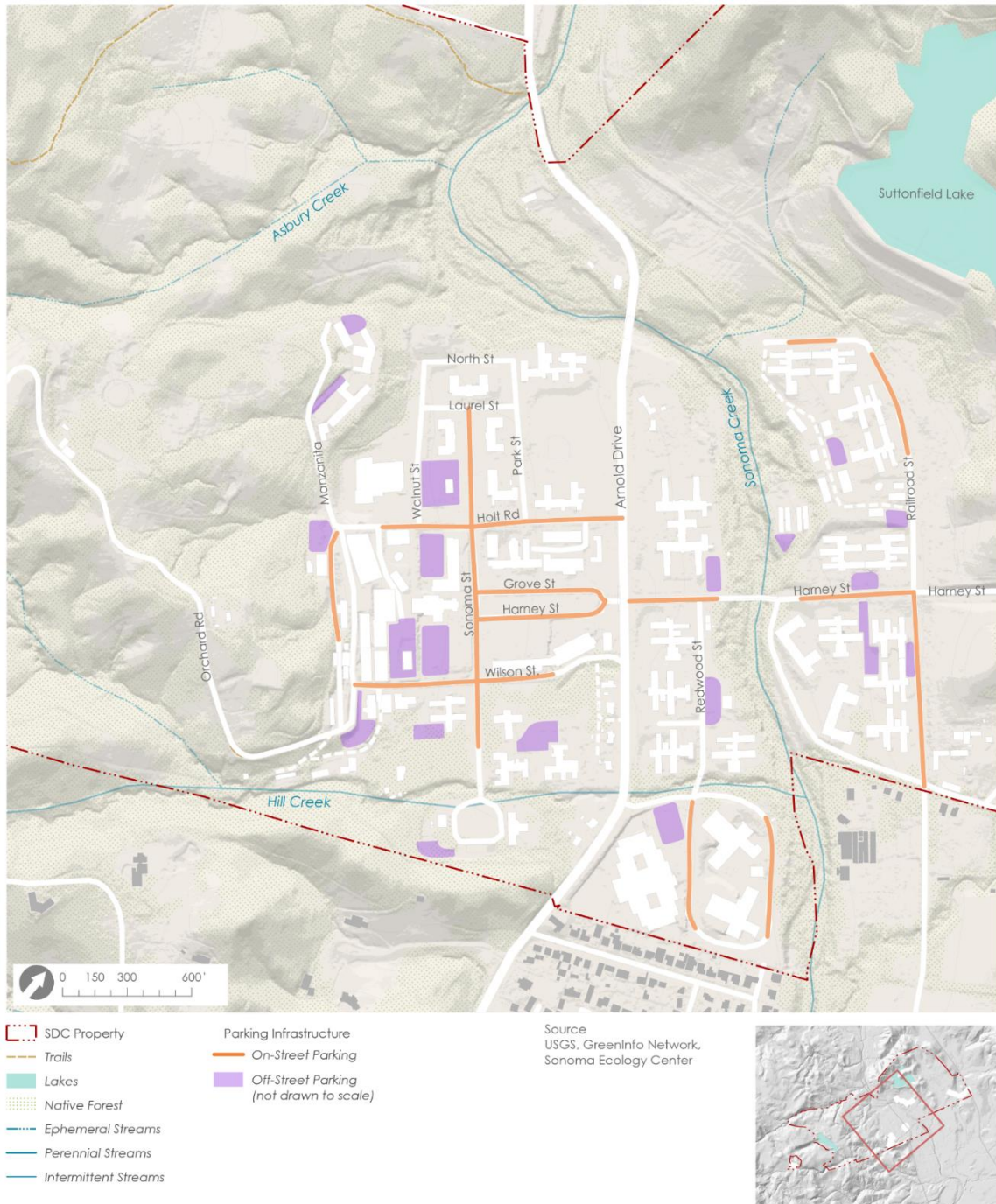
**Figure 6** On-street Parking along internal streets

The internal roadway network of the SDC site includes narrow, unstriped, two-lane streets that provide local access to buildings and trailheads within the site; these roadways do not include bicycle routes. Some named streets within the SDC site serve as driveways to access the rear of buildings, with a mix of both striped and informal parking.

The majority of on-street parking is located within designated parking spaces on Harney Street near the main entrance of the SDC site. Additional on-street parking is located curbside along all of the internal streets and there are no parking regulations, such

as time limits, throughout the site, with the exception of red-painted curbs indicating “no parking” where fire hydrants are present or at intersection corners. Off street parking lots are present adjacent to several buildings, often near the service entrances. In total, there is a large existing supply of parking, all of which is subject to change as necessary to meet future needs. Figure 7 illustrates the existing parking throughout the SDC property.

Figure 7 Existing SDC Site Parking



Most auto traffic within the SDC site is from SDC employees, clients, and visitors. The majority of traffic is concentrated along well-connected main roadways that provide direct access to Arnold Drive, off-street parking areas, and building frontages. The secondary or service access roads, many of which are short and or dead-end roads, are primarily used by maintenance, staff, delivery, and emergency vehicles.



**Figure 8** Service road to recreational trails and facilities (note the vehicle and bicyclist sharing the road)

Several roads near the western and eastern edges of the SDC property provide access to recreational areas, including SDC buildings, picnic areas, and trails on the SDC property and the adjacent Jack London State Historic Park. These roads are gated and use is restricted to pedestrians, bicyclists, and SDC vehicles. Many stretches of these service roads are very narrow, with limited capacity to accommodate two-way traffic. The narrow right-of-way, steep slopes, and occasional hair-pin turns keep vehicle speeds low, and provide a fairly comfortable environment for people walking and biking.

## Local Traffic Conditions

Existing vehicle traffic conditions were evaluated along select intersections on Arnold Drive and near the SDC property, and along Arnold Drive mainline segments adjacent to the site. This traffic operations analysis provides a picture of intersection capacity and current vehicle traffic conditions around the SDC project site. Level of service (LOS) is a quantitative measure of traffic operating conditions, whereby a letter grade (LOS “A” – LOS “F”) is assigned to an intersection or roadway segment representing average delay based on vehicle volumes during peak periods<sup>5</sup>.

### Intersection Operations Analysis

Intersection vehicle turning movement counts were collected during weekday peak commute periods, and on a weekend. Because SDC’s location in the Sonoma Valley is surrounded by parks, trails, and wineries, the weekend traffic generated by recreation and tourist visitors is of interest, in addition to the standard weekday peak commute periods.

For weekday peak periods, data collection was conducted during the morning peak period (7:00 a.m. to 9:00 a.m.) and afternoon peak period (4:00 p.m. to 6:00 p.m.) on Wednesday, August 2, 2017. For weekend periods, data collection was conducted over a 24-hour period on Saturday April 14, 2018, in response to concerns that the weekday-only traffic analysis may not reflect the unique local travel patterns with significant weekend volumes, and with a focus on two intersections immediately north and south of the project site. Weekend peak periods were determined based on 24-hour counts at mid-block locations north and south of the SDC site – on Arnold Drive immediately south of the Carolyn Day Trail access, and on Arnold Drive between Wilson Road and Redwood Road. These 24-hour counts provide a snapshot of how vehicle volumes are distributed over the course of the day, illustrating that the weekend morning peak period is later than weekdays (11:00 a.m. to 12:00 p.m.), and the weekend afternoon peak period

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<sup>5</sup> LOS is calculated with methods documented in the Transportation Research Board (TRB) Highway Capacity Manual (HCM 2010), and consistent with standards and traffic impact thresholds established by the County of Sonoma and Caltrans.

is earlier than weekdays (3:00 p.m. to 4:00 p.m.). Weekend intersection counts were collected at the intersections of Warm Springs Drive and Madrone Road, and the identified peak periods were used for intersection analysis

Intersection LOS is based on the observed “peak hour”, which is typically defined as the one continuous hour of peak traffic flow counted within the two-hour period in the morning and afternoon during the weekday. Existing lane configurations, intersection controls, and vehicle turning movement counts are included in the traffic analysis<sup>6</sup>. Per the County of Sonoma *Guidelines for Traffic Impact Studies*, LOS A through D are considered acceptable, and county road intersections that operates at LOS E or F are considered over capacity.

During both the weekday and weekend AM and PM peak hours, all of the study intersections operate at LOS A, B, or C, indicating very low vehicle delays and significant additional capacity. While weekend AM peak volumes are higher than weekday AM peak volumes at the sample intersections, the weekday PM peak volumes are consistently higher than both AM and PM peak volumes on weekends. Intersection volumes and peak hour LOS are summarized in Figure 9.

**Figure 9 Intersection Existing Weekday AM and PM Peak Hour - LOS Conditions**

Intersection	Control <sup>1</sup>	Peak Hour	Weekday (Wednesday, 8/2/17)		Weekend (Saturday, 4/14/18)	
			Volume <sup>2</sup>	LOS	Volume	LOS
Arnold Drive / Agua Caliente Road West	Roundabout	AM	1,068	A		
		PM	1,437	B		
Arnold Drive / Morningside Mountain Drive / Madrone Road	AWSC	AM	818	B	893	C
		PM	995	C	859	B
Wilson / Arnold Drive	SSSC	AM	487	B		
		PM	624	B		
Harney / Arnold Drive	AWSC	AM	559	A		
		PM	683	B		
Holt Road / Arnold Drive	SSSC	AM	471	B		
		PM	618	B		
Arnold Drive / Warm Springs Road	AWSC	AM	494	A	643	B
		PM	672	B	612	A

Notes:

1. SSSC = Side-Street STOP-Controlled intersection; AWSC = All-Way STOP-Controlled intersection.

2. Volumes represent the total entering volume for the intersection during the peak hour.

Source: Nelson\Nygaard, 2017.

### Arnold Drive Segment Analysis

Daily 24-hour vehicle counts were collected for two segments north and south of the main SDC site entrance at Harney Drive: 1) Arnold Drive between Carolyn Day Trail and Holt Road, and 2)

<sup>6</sup> Synchro 9 Trafficware is used to model and calculate intersection LOS according to the HCM 2000/2010 method.

Arnold Drive between Wilson and Redwood. The 24-hour vehicle volume counts were collected on Wednesday, August 2, 2017, and on Saturday, April 14, 2018. Northbound and southbound totals for each day are summarized in Figure 10. As with intersection counts, the weekday volumes are higher than weekend volumes.

**Figure 10 Average Daily Traffic of Arnold Drive Segments**

Segment	Direction	Weekday (Wednesday, 8/2/18)	Weekend (Saturday, 4/14/18)
		Average Daily Traffic (ADT)	Average Daily Traffic (ADT)
Arnold Drive, Carolyn Day Trail – Holt Road	Northbound	3,586	3,097
	Southbound	3,275	3,144
Arnold Drive, Wilson – Redwood	Northbound	3,837	3,762
	Southbound	3,861	3,584

Source: Nelson\Nygaard, 2017.

Roadway segment LOS is also based on the observed “peak hour,” which in this case is the maximum volume observed in one continuous hour of peak traffic flow in the morning and afternoon during the weekday. As shown in Figure 11, all of the roadway segments along Arnold Drive operate at LOS A, indicating significant additional capacity with very low traffic volumes during peak periods.

**Figure 11 Arnold Drive Segment Existing Weekday AM and PM Peak Hour - LOS Conditions**

Arnold Drive Segment	Direction	Peak Hour	Volume	V/C Ratio <sup>1</sup>	LOS
Carolyn Day Trail – Holt Road	Northbound	AM	244	0.14	A
		PM	378	0.22	A
	Southbound	AM	216	0.13	A
		PM	240	0.14	A
Wilson – Redwood	Northbound	AM	250	0.15	A
		PM	328	0.19	A
	Southbound	AM	261	0.15	A
		PM	310	0.18	A

Notes: 1. V/C = Volume to capacity. Assume a capacity of 1700 vehicles per hour, per lane (standard highway segment).  
Source: Nelson\Nygaard, 2017.

## Speed Survey

In addition to vehicle volumes, vehicle speed data was collected at the two roadway segment 24-hour vehicle count locations. Vehicle speeds are identified in increments of five miles per hour; by identifying locations where vehicles are traveling slower or faster than the posted speed limit, we can see where local traffic conditions and road design may contribute to higher or lower than expected speeds. In the case of Arnold Drive speed data, the vast majority of vehicles travel at speeds at or above 20 miles per hour. In other words, most vehicles are driving close to or above

the posted speed limit, which suggests that the local traffic patterns are not causing significant delays or extended travel times. Weekday speed data (collected Wednesday, August 2, 2017) shows that 98.5% of vehicles travel at speeds at or above 20 miles per hour. Weekend speed data (collected Saturday, April 14, 2018) shows that 96% of vehicles travel at speeds at or above 20 miles per hour.

## Collision Analysis

The Statewide Integrated Traffic Record System (SWITRS) logs all pedestrian, bicycle, and vehicle related collisions that were reported to local police or highway patrol. Figure 12 shows all reported crashes in and around the SDC site between 2012 and 2016.

The majority of collisions in the area are vehicle-vehicle collisions concentrated along Arnold Drive and Highway 12, north and south of the SDC site, including one fatality on Horn Avenue. Four collisions were recorded within the SDC site, including one vehicle-bicycle collision on Arnold Drive at Holt Road, and three vehicle-vehicle collisions. The total number of recorded collisions is low, but traffic volumes on these roads are also relatively low compared to less rural locations in Sonoma County, and people driving cars and riding bikes would both be well served by safety improvements.

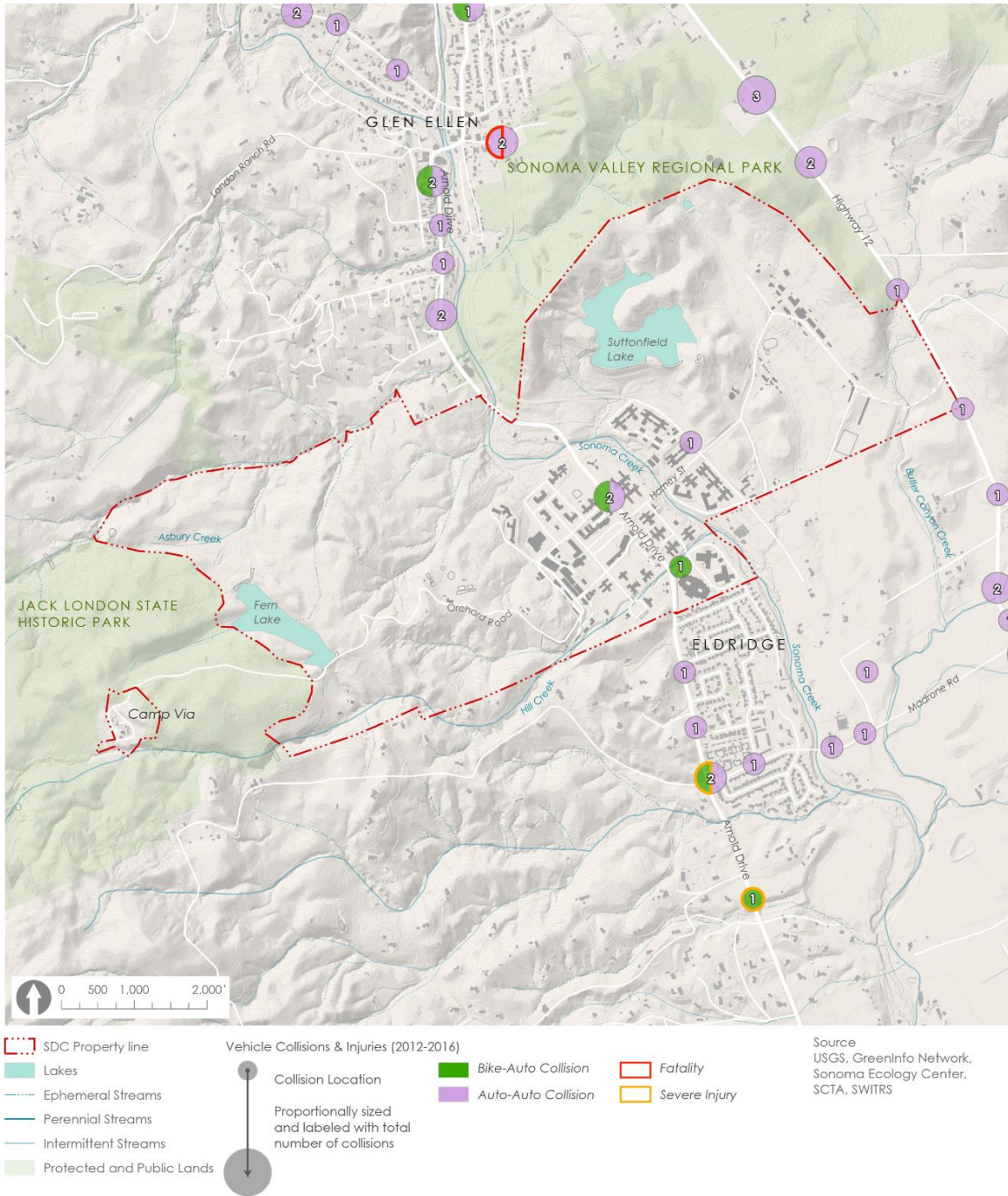
The *Circulation and Transit Element* of the Sonoma County *General Plan 2020* presents the planned transportation improvements, goals, objectives, and policies for the entire county. This plan outlines policies focused on improving Highway 12 and providing traffic calming in the unincorporated communities of Kenwood and Glen Ellen, adjacent to the SDC site. There are no specific planned traffic or circulation improvements along Arnold Drive nor near the SDC site<sup>7</sup>.

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<sup>7</sup> Sonoma County General Plan 2020, Circulation and Transit Element, amended August 24, 2010.



Figure 12 Collision & Injury Map (2012-2016)



## 2 TRANSIT ACCESS AND SERVICE

### Public Transit

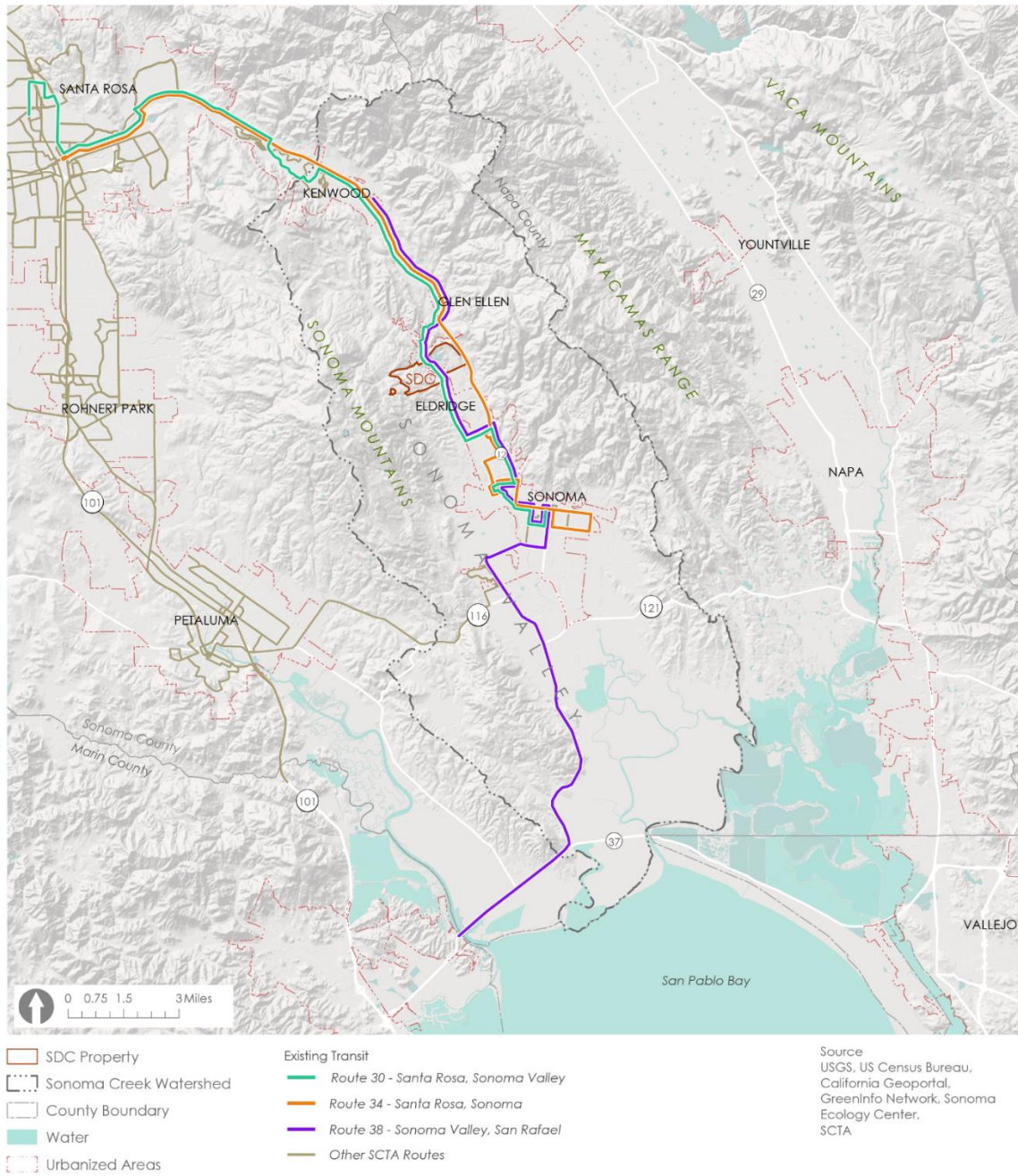


Figure 13 Sonoma County Transit Bus

Sonoma County Transit (SCT) provides intercity and local routes throughout Sonoma County, and SCT is the only public transit provider serving the SDC site. Figure 14 presents the existing transit network serving SDC. Bus Route 30 (Santa Rosa/Sonoma Valley) provides weekday and weekend service between Santa Rosa Kaiser Hospital and Sonoma Plaza. Bus Route 38 (Sonoma Valley/San Rafael) provides weekday-only peak hour service between the San Rafael Transit Center and the intersection of Highway 12 and Oakmont Drive in Kenwood. Bus Route 34 connects between Santa Rosa and Sonoma, and travels along Highway 12, bypassing the existing SDC site access.

**Error! Reference source not found.** presents the current service hours of operation, route headways, and monthly ridership totals and percent of total system wide ridership. Route 30 operates during most of the day with the exception of late-evening hours; headways are long, with buses scheduled to arrive every 75 to 115 minutes. Route 38 operates only in the peak direction, with one southbound bus in the morning and one northbound bus in the evening. Monthly bus ridership on both bus routes that serve the SDC represents around 10% of SCT's total monthly ridership system wide (which includes 24 bus routes and six connector shuttles).

Figure 14 Existing Transit Network



**Figure 15**      **Route 30 and Route 38 Service Hours, Headways, and Monthly Ridership**

SCT Route	Service Hours <sup>1</sup>	Headway (minutes) <sup>2</sup>	Monthly Ridership <sup>4</sup>
30 (Santa Rosa / Sonoma Valley)	<b>Weekday</b> 5:55 AM – 9:25 PM (eastbound) 5:50 AM – 8:40 PM (westbound) <b>Weekend</b> 9:05 AM – 8:12 PM (eastbound) 9:05 AM – 8:12 PM (westbound)	<b>Weekday</b> 75 – 115  <b>Weekend</b> ~240	9,645 passengers (10% of system wide ridership)
38 (Sonoma Valley/San Rafael)	5:45 AM – 7:07 AM (southbound) 6:26 PM – 7:48 PM (northbound)	n/a <sup>3</sup>	265 passengers (<1% of system wide ridership)

Notes:

1. Route information based on recent timetable provided online at <http://sctransit.com/>; accessed August 2017.
2. Headways represent the time (in minutes) between vehicles past a given point (e.g. stop). For example, if a bus is scheduled to arrive at a stop at 8:00 a.m. and the next bus is scheduled to arrive at 9:00 a.m., this equates to a 60-minute headway.
3. Headway information for Route 38 not applicable as there is only one bus in service during the scheduled morning and evening hours.
4. Monthly ridership information based on June 2015; information provided by SCT to Nelson\Nygaard.



the street.

**Figure 16**      **SCT Bus Stop (east side of Arnold Drive, north of Harney)**

Bus stops are located at the main entrance to SDC, along Arnold Drive, north of Harney. The bus stop on the east side of Arnold Drive serves northbound buses and the stop comprises a shelter, two benches, a transit map and timetable, and a route sign on a single post; see **Error! Reference source not found.** The bus stop on the west side of Arnold Drive, on SDC property, serves southbound buses, and comprises a stone structure with a wood-paneled rooftop and bench, and a route sign on a single post next to the shelter (no transit map or timetable is available).

Both bus stops are located curbside and require buses to pull into the parking lane along Arnold Drive for passenger loading and unloading. Auto traffic is able to continue along Arnold Drive within the travel lane when transit vehicles slow and stop to pick up and drop off passengers. Pedestrians access both stops via sidewalks that are fully separated from

According to the *2009 Comprehensive Transportation Plan for Sonoma County*, several measures have been programmed to enhance transit

service throughout Sonoma County and improve transit amenities, including bus shelters and providing real-time information<sup>8</sup>. There are no planned transit improvements, however, within the vicinity of SDC.

## SDC Shuttle Service

The SDC operates its own internal shuttle program with over-the-road trams providing open-seating for SDC clients, employees, and visitors. These trams only operate within the campus



Figure 17 SDC Shuttle Stop

street network and occasionally cross Arnold Drive.

These trams provide direct service to SDC buildings and offer passenger drop-off/pick-up activities at building entrances or at designated shuttle stops. The shuttle stops are located throughout the SDC site and vary in size but the standard design includes a rectangular-shaped, open-aired shelter with minimal setback from the curb for ease of boarding and alighting the tram; see **Error!**

**Reference source not found..** During passenger drop-off and pick-up, these trams slow and stop within the parking lane and close to the curb, which allows auto traffic to continue along campus streets without any conflicts with tram vehicles and passengers.

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<sup>8</sup> 2009 Comprehensive Transportation Plan for Sonoma County, Appendix A. List of Projects, Appendices 5-3.

### 3 PEDESTRIAN AND BICYCLE ACCESS AND CONNECTIVITY

Bicycle and pedestrian access and connectivity are evaluated based on the presence of comfortable facilities and designated right-of-way within the street network. Bicycle facilities include bike lanes, off-street bike paths, and public bicycle parking. Pedestrian facilities include sidewalks, crosswalks, and amenities that provide an added sense of comfort and security to people walking.

#### Existing Facilities in the SDC Site

There are no designated bicycle facilities within the SDC internal road network. Some buildings do have bicycle parking near the main entrances; however, many bicycles are left unlocked near building doors and against fencing or other infrastructure.

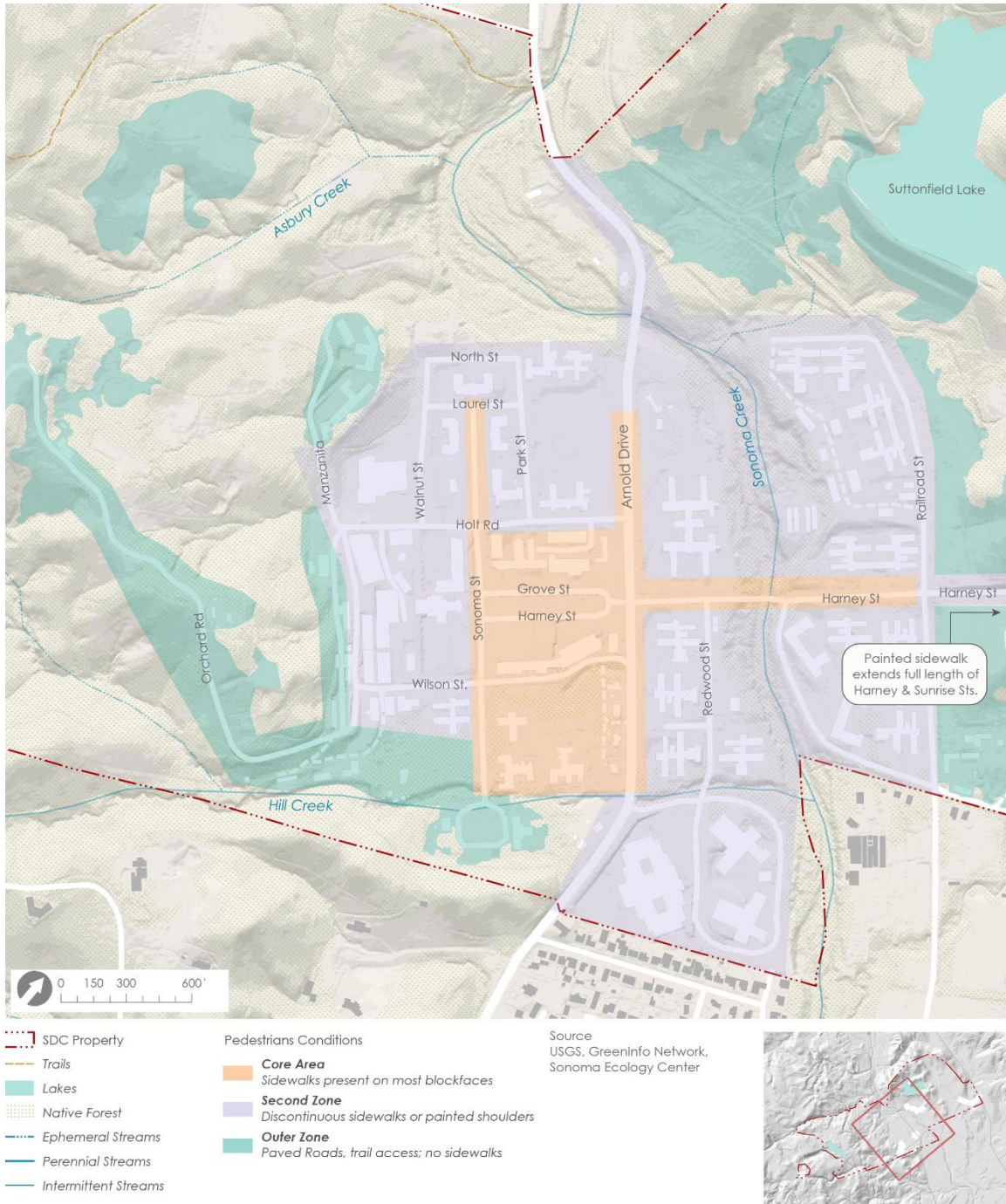
Pedestrian facilities in and around the SDC site mostly include sidewalks, painted pedestrian lanes on asphalt, and paved roads with no designated pedestrian right-of-way. The pedestrian environments on the SDC campus fit into three categories, illustrated in Figure 19.

- The **Core Area** includes most of the main roads in the central campus, and has paved concrete sidewalks on most blocks on both sides of the street. Sidewalks in this zone are typically five to six feet wide, including the curb, and include curb ramps at most crossings.
- The **Secondary Zone** has discontinuous concrete or painted sidewalks, often on one side of the street. In this zone, sidewalks primarily provide connections between parking areas and building entrances, or between buildings. Concrete sidewalks are approximately five feet wide and painted sidewalks are approximately three feet wide; see **Error! Reference source not found..**
- The **Outer Zone** has scattered sidewalk segments near building entrances or no designated sidewalk space. The outer zone mostly includes access roads, which provide vehicle access to building loading areas, formal and informal parking areas, and trail heads at the property edges.



Figure 18 “Secondary Zone” painted sidewalk

Figure 19 SDC Pedestrian Facilities by Zone



Intersections throughout the site have large curb radii, which increases the crossing distance for people walking and reduces the visibility of pedestrian activity for people in cars. Intersections on main roads in the SDC site are STOP-controlled, with the exception of the Arnold Drive and Harney intersection, which has a flashing-red traffic signal, which operates the same as an All-Way STOP-Controlled intersection (i.e., STOP signs at all intersection approaches). Intersections on main roads have striped crosswalks and, in most cases, curb ramps; intersections on access roads are free flowing and do not have crosswalks or curb ramps. The SDC site has a number of off-street pathways to provide connections between buildings and between parking areas and building entrances. These pathways are approximately five feet wide. Unpaved, off-street paths are also accessible from Orchard Road and connect buildings on the SDC site to Fern Lake and Camp Via.

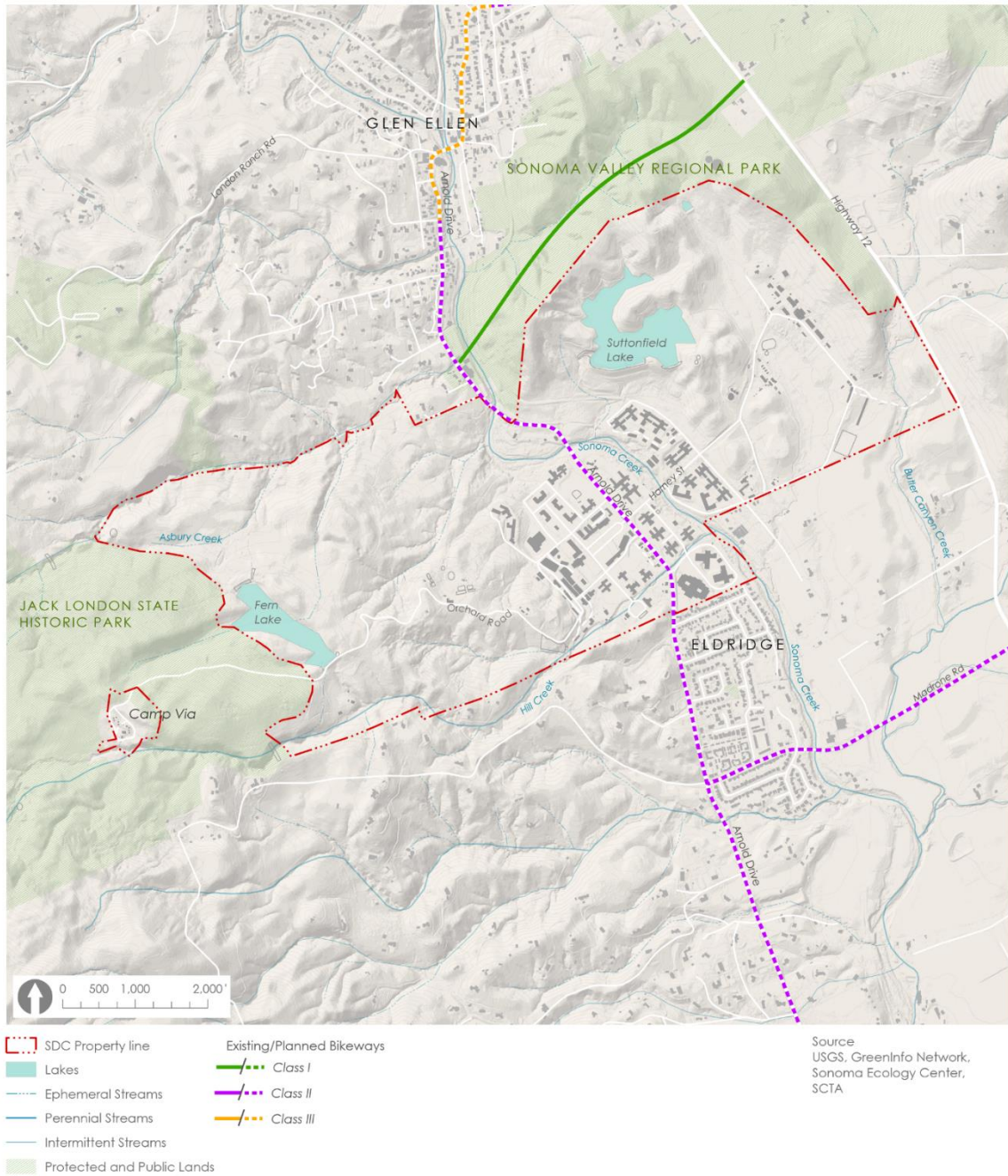
Pedestrian amenities encourage people to walk by increasing the perceived comfort and security. Street trees and landscaping, public seating, and lighting are all important amenities for walkable environments. Arnold Drive is the main road in the study area and has each of these elements, though seating is only available at bus stops. Holt Road is also tree lined, but does not have lighting or seating available for people walking.

## **Existing Pedestrian and Bicycle Facilities Near the SDC Site**

The area surrounding the SDC site has few bike facilities; pedestrian facilities are present but discontinuous. Sonoma Valley Regional Park, immediately northeast of the SDC, includes a paved Class I mixed use path. There are no bicycle facilities directly south of the SDC site, in Eldridge; however, the city of Sonoma has bicycle lanes in the downtown area and on both sides of Arnold Drive, between Orange Avenue to the south and Country Club Drive to the north. Figure 20 presents the existing and planned bikeway network in proximity to the SDC site.



Figure 20 Existing and Planned Bikeway Network



Sidewalks in both Glen Ellen and Eldridge are discontinuous and mostly exist on residential streets or immediately adjacent to commercial uses. Arnold Drive does not have sidewalks and pedestrians must walk on the shoulders. There are segments of Arnold Drive with very narrow shoulders, which forces pedestrians to walk in the vehicle right-of-way.

A trailhead and entrance to the Class I multi-use path in Sonoma Valley Regional Park is located on the east side of Arnold Drive, north of the Sonoma Creek Bridge; see **Error! Reference source not found.** People walking and riding bikes southbound along Arnold Drive must yield to oncoming auto traffic to cross the street and access the multi-use path, creating a hazardous situation.



Figure 21 Entrance to Sonoma Valley Regional Park (looking north from east side of Arnold Drive)

As illustrated in Figure 12, the majority of collisions in and around the SDC site between 2012 and 2016 are vehicle-vehicle collisions. However, there were six reported vehicles-bicycle collisions along Arnold Drive, including one in the SDC property at the intersection of Arnold Drive and Holt Road. There were no reported pedestrian-vehicle collisions in the SDC area for this time period.

## Planned Improvements

The 2010 Sonoma County Bicycle and Pedestrian Master Plan identifies high- and medium-priority projects that would create bicycle connections between the SDC site, the Town of Sonoma, Glen Ellen, and Highway 12. The plan calls for bicycle improvements along Arnold Drive, including a bike route continuing from the intersection of Arnold Drive and Country Club Drive, at the north end of the existing bike lane, to the intersection of Highway 12 and Arnold Drive. New bike routes on Madrone Road and Agua Caliente would connect Arnold Drive and Highway 12. Most improvements would be bicycle lanes (Class II facilities).<sup>9</sup>

A Glen Ellen resident proposed a 4.35-mile “community bikeway” between Eldridge and Glen Ellen in 2017. The suggested route would use neighborhood streets and off-street paths to connect between Dunbar School at the north end of Glen Ellen and Madrone Road, providing an alternate route to Arnold Drive. Establishing the proposed bikeway would require further consideration and a feasibility study by the County of Sonoma to determine associated costs and design details, especially at intersections and unpaved segments of the proposed bikeway.

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<sup>9</sup> Sonoma County Permit and Resource Management Department, *Sonoma County Bicycle and Pedestrian Master Plan*, 2010, Pages 32-62.

## 4 CONCLUSIONS

The SDC site includes an internal street network and connections to the surrounding communities at a scale that is consistent with the local rural development. The existing land use at the site and in the immediate surrounding area are not significant trip generators and have a very minor impact on the adjacent road network. Vehicle volumes are highest on weekday afternoons and weekend late mornings, and Arnold Drive intersections operate with very low vehicle delays and significant additional capacity.

Transit service is limited, but does include existing bus routes with commute hour connections to Santa Rosa and San Rafael. The local pedestrian and bicycle networks are sparse, but low vehicle volumes make walking and biking within the SDC site comfortable even where sidewalks and designated bike lanes are not present. Opportunities to establish additional connections to the surrounding road network, especially where the east edge of the SDC property fronts Highway 12, may improve access and provide redundancy in the on-site road network. Any changes to the SDC road network may allow for more flexible local trip patterns, but would not affect existing local and regional traffic volumes with the current low-trip generating land uses.