City of Rocklin
Open Space Preserve
Placer County, California

2023 Annual Monitoring Report
USACOE Ref. No. SPK-2014-01022

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December 2023
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1.0 INTRODUCTION

This 2023 Annual Monitoring Report (report) presents the results and discussion of annual biological monitoring conducted within the Rocklin Open Space Preserve (Preserve) which is owned and managed by the City of Rocklin (City). The City and the Preserve are located in Placer County, California (**Figure 1**). The reporting period for this report is January 1 through December 31, 2023. The annual monitoring is required by the City of Rocklin General Open Space Management Plan (GOSMP) (City of Rocklin 2017), and the purpose is to provide information to the Preserve Manager and agency personnel on the current status of the Preserve, whether management goals are being met, and whether management activities need to be modified. Monitoring results, discussions, and management recommendations are included below in **Sections 2.0, 3.0 and 4.0**, respectively. Survey methods, which generally do not change from year to year, are summarized in **Appendix A.** This report was prepared by Vollmar Natural Lands Consulting (VNLC) Senior Ecologist Linnea Neuhaus.

The Preserve encompasses 629.9 acres within the City of Rocklin, Placer County, California. It is located within portions of Sections 1, 2, 3, 10, 11, 12, 13, 14, 15, and 17, in Township 11 North, Range 7 East, in the U.S. Geological Survey (USGS) Roseville and Rocklin 7.5-minute topographic quadrangles. According to the GOSMP, the Preserve supports four primary vegetation communities: grasslands, riparian woodlands and wetlands, vernal pools, and oak woodland and savannah (City of Rocklin 2017). A variety of waters of the United States occur within these vegetation communities, including intermittent drainages and creeks, vernal pools, seasonal wetland/drainage swales, and marsh (ibid). A variety of special-status species are known to occur within the Preserve, including:

- Western pond turtle (*Emys marmorata*), California Department of Fish and Wildlife (CDFW) Species of Special Concern;
- Swainson's hawk (*Buteo swainsoni*), State-listed Threatened;
- Tricolored blackbird (*Agelaius tricolor*), State-listed Threatened;
- Vernal pool fairy shrimp (*Branchinecta lynchi*), Federally-listed Threatened; and
- Hispid salty bird's-beak (*Chloropyron molle* ssp. *hispidum*), California Native Plant Society (CNPS) California Rare Plant Rank 1B.1.

The Preserve is split up into nine different areas, and each Preserve Area contains between one and 19 subsections. Summary information for the nine preserve areas is included in **Table 1**, below.

Table 1. Preserve Areas included in the annual monitoring program in 2023.

Preserve Area Name	Number of Subsections	Total Size (acres)	Initial Year of Monitoring	Number of Vernal Pools Surveyed Annually Onsite
Claremont	5	14.8	2015	0
Orchard Creek	1	23.7	2015	1
Stanford Ranch	19	308.7	2015	27
Sunset West	8	146.1	2015	35
Whitney Ranch	7	119.9	2015	0
Brighton	1	3.0	2017	0
Garnet Creek	1	4.0	2018	0
Parklands North	1	4.7	2018	0
Placer Creek Corporate Center	5	5.0	2018	2
Total	**48**	**629.9**		**65**

Eight categories of monitoring are conducted on an annual basis, and their location, purpose, and timing are outlined in **Table 2.** Additional categories of monitoring are conducted at intermittent intervals (generally every five or ten years); no intermittent monitoring was required in 2023.

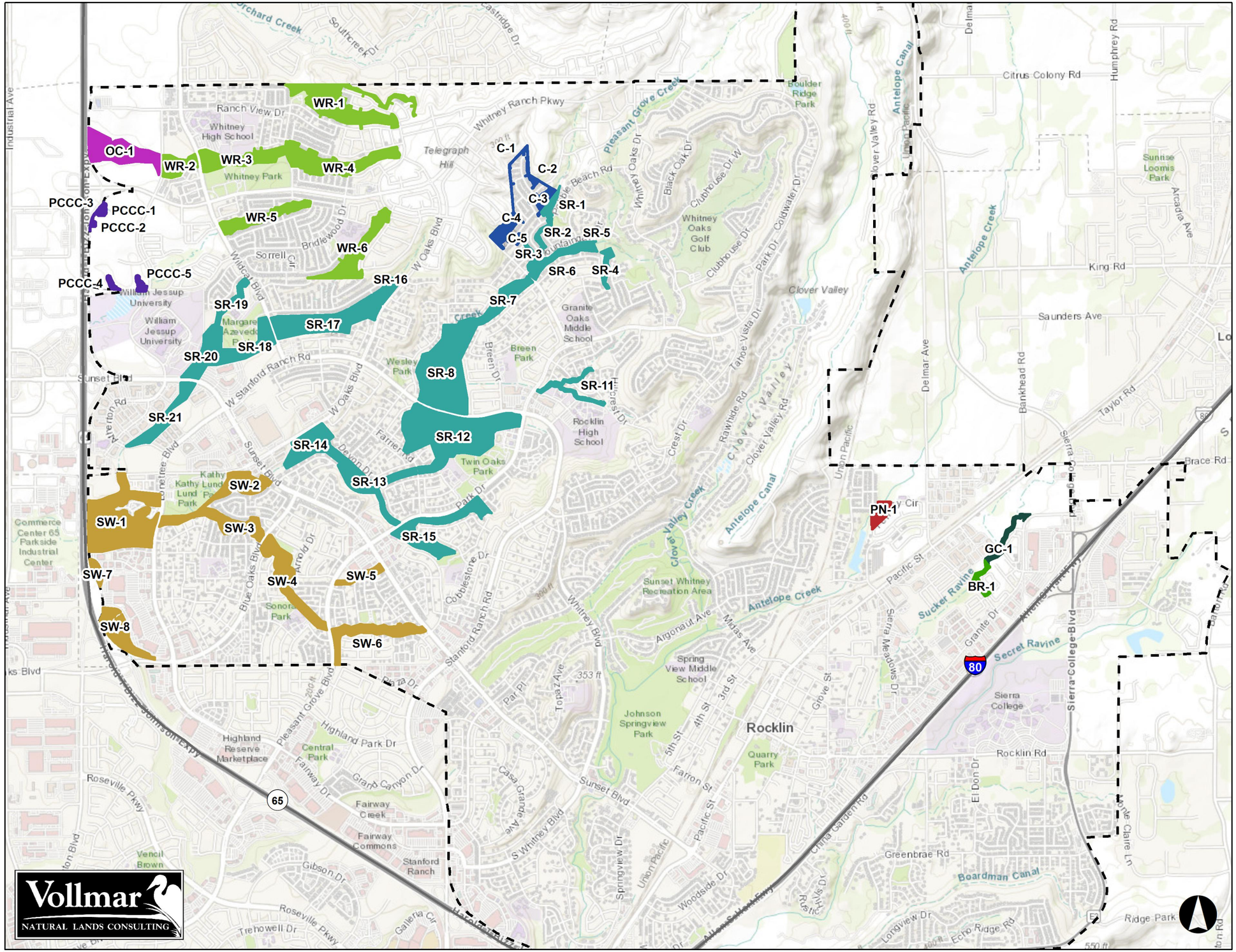
Table 2. Eight categories of biological monitoring conducted in 2023.

Monitoring Category	Monitored Preserve Area	Purpose	Survey Timing
General Conditions	All	Document overall condition of each preserve area and specific items in need of management attention	Twice: spring and summer
Invasive Plants	All	Monitor occurrences of invasive plants in each Preserve Area	Twice: spring and summer
Vernal Pool Hydrology	Orchard Creek, Stanford Ranch, Sunset West, Placer Creek Corp. Center	Monitor for appropriate hydrology of vernal pools during wet and dry season	Three times: winter, spring, and summer
Vernal Pool Floristics	Orchard Creek, Stanford Ranch, Sunset West, Placer Creek Corp. Center	Monitor for appropriate vernal pool species composition	Once in spring
Vernal Pool Aquatic Invertebrates	Orchard Creek, Stanford Ranch, Sunset West, Placer Creek Corp. Center	Document and assess occurrences of special-status large branchiopods, monitor overall aquatic invertebrate community	Twice in winter
Grassland Health	All	Document the conditions of grassland habitats, monitor characteristics such as native species composition	Once in spring
Thatch Levels	All	Document the thatch levels in all Preserve Areas	Once in fall
Special-status Plants	Stanford Ranch only	Document and assess known occurrences of special-status plant species	Once in late spring or early summer
General Bird Surveys	All	Document and assess avian abundance, community structure, and activity patterns in each Preserve Area	Twice: spring and fall

General conditions surveys and invasive plant monitoring are conducted in all nine Preserve Areas, specifically targeting wetland and riparian areas twice per year, vernal pool grasslands once per year, and oak woodland/savannah habitats once per year. Vernal pool hydrologic monitoring, floristics monitoring, and aquatic invertebrate monitoring is conducted in a subset of vernal pools in the four Preserve Areas which contain vernal pool habitat. Grassland vegetation health and thatch monitoring is conducted in the Preserve Areas, within vernal pool grassland and oak woodland/savannah habitats. Special-status plant monitoring is currently only conducted within Stanford Ranch, as this is the only Preserve Area with a known special-status plant population. Other Preserve Areas may be added to this survey in the future if new special-status plant populations are documented. Finally, general bird surveys are conducted within the nine Preserve Areas.

FIGURE 1
Preserve Site and Vicinity

Rocklin Open Space Preserve
Placer County, California

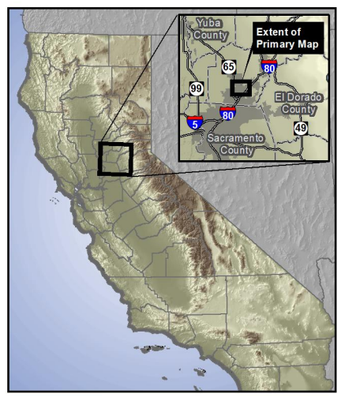


Legend

- Highway or Interstate
- City of Rocklin Boundary

Preserve Subsection

- Brighton (BR)
- Claremont (C)
- Garnet Creek (GC)
- Orchard Creek (OC)
- Parkland North (PN)
- Placer Creek Corporate Center (PCCC)
- Stanford Ranch (SR)
- Sunset West (SW)
- Whitney Ranch (WR)



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0 0.25 0.5 1 Km
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Data Sources: City of Rocklin | GAP | ESRI World Topo Map
Map Produced By: L. Neuhaus, Sept. 2023
Map File: 571_Overview_B-L_2023-0713.mxd

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2.0 MONITORING RESULTS

2.1 General Conditions Surveys

General conditions surveys were conducted within the nine Preserve Areas over two rounds of surveys in spring and summer 2023. Spring surveys occurred on May 23, 24, and 25, and summer surveys occurred on July 24, 25, 26, and 27. The purpose of the general conditions surveys is to document changes relative to the baseline condition of each Preserve Area, including changes in vegetation composition, hydrology or topography, overall condition, maintenance status of infrastructure, and any negative disturbance including animal or human damage. Regarding these stated purposes, **Section 3.1** discusses overall biological conditions in the three general habitat types (wetland and riparian, vernal pool grassland, and oak woodland), and specific survey results are contained in a set of maps, which are included in **Appendix B**. These maps show preserve boundaries and mark specific locations of key management issues, such as beaver evidence, unauthorized activities, isolated occurrences of invasive species, erosion, garbage, vandalism, fencing issues, and other problems or issues of note. Representative photos of the Preserve Areas, habitat conditions, and issues of management concern are included in **Appendix C**.

2.2 Invasive Plant Monitoring

Invasive plant monitoring surveys were conducted concurrently with general conditions surveys, in all nine Preserve Areas over two rounds in spring and summer of 2023. Spring surveys occurred on May 23, 24, and 25, and summer surveys occurred on July 24, 25, 26, and 27. The invasive plant species surveys provide a semi-quantitative measurement of invasive species in the Preserve which are listed by the California Invasive Plant Council's (Cal-IPC) Invasive Plant Inventory 'High' (those with severe ecological impacts) or 'Moderate' (those with substantial and apparent ecological impacts) categories. During the 2023 surveys, VNLC biologists documented the following 'High' ranked species within the Preserve:

- barbed goatgrass (*Aegilops triuncialis*),
- Himalayan blackberry (*Rubus armeniacus*),
- pampas grass (*Cortaderia selloana*),
- Parrot's feather (*Myriophyllum aquaticum*),
- perennial pepperweed (*Lepidium latifolium*),
- tamarisk (*Tamarix ramosissima*),
- water hyacinth (*Eichhornia crassipes*), and
- yellow star thistle (*Centaurea solstitialis*).

We also documented the following 'Moderate' ranked species:

- bull thistle (*Cirsium vulgare*),
- edible fig (*Ficus carica*),
- greater periwinkle (*Vinca major*),
- Italian thistle (*Carduus pycnocephalus*),
- mustard species (e.g., *Brassica* spp. or *Hirschfeldia incana*),
- skeleton weed (*Chondrilla juncea*),
- stinkwort (*Dittrichia graveolens*), and
- tree of heaven (*Ailanthus altissima*).

Invasive plant monitoring results are depicted in the General Conditions Maps in **Appendix B.** The numbered markers and mapped polygons indicate the locations of populations of 'Moderate' or 'High' ranked species which exceed a specific size and vegetation cover, and which are tracked and monitored each year. Specifically, tracked populations exceed 100 square meters in area, and 25-50 percent vegetative

cover. The alpha-numeric ID labels on the maps correspond to information in the Invasive Plant Species Monitoring Data Table (**Appendix B**). This table indicates the species, percent cover, and area of the stand for each marker, starting in 2023. Future surveys will revisit the marked populations and record that year's stand area to determine if the population is spreading or if management techniques are effective. Invasive species points that are not numbered indicate incidental occurrences that do not reach the size and cover criteria for problematic populations, as described above. These include scattered individual occurrences and populations whose cover value is less than 25-50 percent and/or less than 100 m^2.

VNLC biologists documented 49 total populations which met the minimum size requirements in 2023. These include 22 yellow star thistle populations, 20 Himalayan blackberry populations, two mustard populations, and single populations of edible fig, Italian thistle, parrot's feather, skeleton weed, stinkwort. The largest mapped population was over 8,700 square meters of Himalayan blackberry, located in Parklands North.

2.3 Vernal Pool Monitoring

Vernal pool monitoring was conducted within a previously selected subset of 65 created and natural vernal pools, within four Preserve Areas: Stanford Ranch (27 pools), Sunset West (35 pools), Orchard Creek (1 pool), and Placer Creek Corporate Center (2 pools). This pool subset was selected in previous years, and will remain the same in future years to allow for year-to-year comparison of survey results. Vernal pool survey categories include hydrology, aquatic invertebrate, and floristic monitoring, and the results of these surveys are described below. Maps showing the pools and Preserve Areas included in vernal pool monitoring surveys are included in **Appendix D**.

2.3.1 Hydrology

Vernal pool hydrology was monitored three times during 2023: concurrent with both aquatic invertebrate survey rounds (January 24 and March 21) and in peak summer (July 25). The average water depth over all pools during Round 1 of the wet season survey was 6.7 inches, and 8.0 inches during Round 2. All pools were dry during the summer survey. Estimated percent area of inundation averaged over all pools during Rounds 1 and 2 was 78% and 85%, respectively, including dry pools. Pools ranged from 0% to 100% inundated during both survey rounds. Round 1 pool water depths ranged from 0 to 16 inches, and four pools were dry. Round 2 pool water depths ranged from 0 to 22 inches, and two pools were dry.

2.3.2 Aquatic Invertebrates

Aquatic invertebrate surveys were conducted in two rounds in 2023, on January 24 and March 21. Two large branchiopod species were observed during the survey: the federally threatened vernal pool fairy shrimp (*Branchinecta lynchi*) and the California fairy shrimp (*Linderiella occidentalis*). The latter is not state or federally listed but is a native large branchiopod that is tracked by the CDFW in the California Natural Diversity Database (CNDDB) inventory. The federally endangered vernal pool tadpole shrimp (*Lepidurus packardi*), a species known from the general region, was not detected (and has not previously been documented within the Preserve). Complete data from the wet season aquatic invertebrate surveys are provided in **Appendix E**. Locations of special-status invertebrate species are shown in **Figures 2a-2c** below.

Vernal pool fairy shrimp were observed during both survey rounds in seven pools (see **Table 3,** below, and **Figures 2a-2c**). Four of the pools (288, 287, 332, and 189) were not part of the standard sample, but were surveyed because they were in the vicinity of other pools known to support vernal pool fairy shrimp in prior years, or looked like high quality shrimp habitat. Visually estimated vernal pool fairy shrimp populations in each pool varied from approximately ten up to a thousand individuals.

California fairy shrimp were also observed during both survey rounds in a total of three pools. The estimated California fairy shrimp population in each pool varied from approximately ten up to a thousand individuals.

Other taxa detected in the pools included: seed shrimp (class Ostracoda), chironomid larvae (family Chironomidae), copepods (orders Calanoida and Cyclopoida), water fleas (order Cladocera), flat worms (class Turbellaria), water boatmen (family Corixidae), predaceous diving beetle larvae (family Dytiscidae), mosquito larvae (family Culicidae), backswimmers (family Notonectidae), and scud (order Amphipoda). California clam shrimp (*Cyzicus californicus*), Sierran tree frog (*Pseudacris sierra*), American bullfrog (*Lithobates catesbeianus*), and mosquitofish (*Gambusia* sp.) were also detected.

Pool temperatures ranged from 6°C to 18°C during Round 1 and 10°C to 16°C during Round 2, trending upwards throughout the day, as expected.

Table 3. Survey results for pools with special-status large branchiopods detected in 2023.

Preserve Subsection ID	Pool Number	Date(s) of Detection	Survey Round	Max Current Depth (inches)	VPFS[1] Present	CFS[2] Present
SW-2	128	3/21	2	6	X	
SR-12	138	1/24	1	11	X	
SR-12	189	1/24, 3/21	1, 2	10	X	X
SR-8	286	1/24, 3/21	1, 2	13	X	
SR-8	287	1/24, 3/21	1, 2	7	X	
SR-8	288	3/21	2	8	X	
SR-8	332	1/24	1	14	X	

1. VPFS = vernal pool fairy shrimp (*Branchinecta lynchi*). Population range is estimated visually.
2. CFS = California fairy shrimp (*Linderiella occidentalis*).

2.3.3 Floristics

Vernal pool floristics surveys were conducted in spring on April 27 and May 1, 3, 4, and 17, 2023. A total of 120 plant taxa were recorded during the vernal pool floristic surveys in 2023. **Appendix F** contains a full list of these taxa, including whether each species is native to California, whether it is a vernal pool indicator or associate, and its United States Department of Agriculture (USDA) wetland indicator status.

Floristic data were analyzed by pool and averaged by Preserve Area. Results are summarized in **Table 4**, below, by average species richness per pool (or average number of species per pool), average percent native species per pool, average native relative percent cover per pool, and percent of pools meeting the Prevalence Index. Native relative cover per pool is a measurement of the percent cover of all native species in relation to all vegetation cover in a pool. The Prevalence Index is a calculation method utilized in past monitoring years to produce a numerical value that defines whether a wetland is dominated by hydrophytic species and therefore passes as a "functioning" vernal pool. Pools must have a Prevalence Index value of 3.0 or less to pass this test.

Table 4. Vernal pool floristics data results, summarized by Preserve Area.

Preserve Area	Number of Pools	Average Species Richness Per Pool	Average Percent Native Species Per Pool	Average Native Relative Percent Cover Per Pool	Percent Meeting Prevalence Index
Orchard Creek	1	25.0	68%	87.0%	100%
Placer Creek	2	18.0	47%	55.0%	100%
Stanford Ranch	27	22.9	69%	82.6%	100%
Sunset West	35	23.8	58%	72.2%	94%
All Pools	**65**	**23.2**	**63%**	**76.3%**	**97%**

FIGURE 2A

Occurrences of Special-status Large Branchiopods 2016-2023

Rocklin Open Space Preserve
Placer County, California

Legend*

- Vernal Pool Fairy Shrimp Observed for First Time in 2023
- Vernal Pool Fairy Shrimp Observed in 2023 and Prior Years
- Vernal Pool Fairy Shrimp Observed Only in Prior Years
- Stream
- Sampled Pool (with ID)
- City of Rocklin Boundary

Preserve Subsection

- Brighton (BR)
- Claremont (C)
- Garnet Creek (GC)
- Orchard Creek (OC)
- Parkland North (PN)
- Placer Creek Corporate Center (PCCC)
- Stanford Ranch (SR)
- Sunset West (SW)
- Whitney Ranch (WR)

* Note 1: all legend items may not appear on map
Note 2: Vernal Pool Fairy Shrimp (*Branchinecta lynchii*)

1:4,800
(1 inch = 400 feet at Tabloid Layout)

0 37.5 75 150 Meters
0 150 300 600 Feet

Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, VNLC 2023
Map File: 571_SS-species_B-L_2023-0801.mxd

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FIGURE 2B

Occurrences of Special-status Large Branchiopods 2016-2023

Rocklin Open Space Preserve
Placer County, California

Legend*

- Vernal Pool Fairy Shrimp Observed for First Time in 2023
- Vernal Pool Fairy Shrimp Observed in 2023 and Prior Years
- Vernal Pool Fairy Shrimp Observed Only in Prior Years
- Stream
- Sampled Pool (with ID)
- City of Rocklin Boundary

Preserve Subsection

- Brighton (BR)
- Claremont (C)
- Garnet Creek (GC)
- Orchard Creek (OC)
- Parkland North (PN)
- Placer Creek Corporate Center (PCCC)
- Stanford Ranch (SR)
- Sunset West (SW)
- Whitney Ranch (WR)

* Note 1: all legend items may not appear on map
Note 2: Vernal Pool Fairy Shrimp (*Branchinecta lynchii*)

1:4,800
(1 inch = 400 feet at Tabloid Layout)

0 37.5 75 150 Meters
0 150 300 600 Feet

Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, VNLC 2023
Map File: 571_SS-species_B-L_2023-0801.mxd

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FIGURE 2C

Occurrences of Special-status Large Branchiopods 2016-2023

Rocklin Open Space Preserve
Placer County, California

Legend*

- Vernal Pool Fairy Shrimp Observed for First Time in 2023
- Vernal Pool Fairy Shrimp Observed in 2023 and Prior Years
- Vernal Pool Fairy Shrimp Observed Only in Prior Years
- Stream
- Sampled Pool (with ID)
- City of Rocklin Boundary

Preserve Subsection

- Brighton (BR)
- Claremont (C)
- Garnet Creek (GC)
- Orchard Creek (OC)
- Parkland North (PN)
- Placer Creek Corporate Center (PCCC)
- Stanford Ranch (SR)
- Sunset West (SW)
- Whitney Ranch (WR)

* Note 1: all legend items may not appear on map
Note 2: Vernal Pool Fairy Shrimp (*Branchinecta lynchii*)

1:4,800
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0 37.5 75 150 Meters
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Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, VNLC 2023
Map File: 571_SS-species_B-L_2023-0801.mxd

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Orchard Creek

Only one monitored vernal pool is present in Orchard Creek, and it supported 25 different species, 68% of which were native. A majority (87%) of the vegetation cover in the pool were native species, and the pool had a Prevalence Index value of 1.4. The pool was dominated by vernal pool buttercup (*Ranunculus bonariensis* var. *trisepalus*).

Placer Creek Corporate Center

Two monitored pools are located in Placer Creek Corporate Center (subsections PCCC-2 and PCCC-5). These pools had an average of 18 different species, 47% of which were native. On average, over half (55%) of the vegetative cover in the pools were native species. Both pools met the Prevalence Index with values of 1.5 and 1.6. The pools were dominated by Fremont's goldfields (*Lasthenia fremontii*), penny royal (*Mentha pulegium*), and stalked popcornflower (*Plagiobothrys stipitatus* var. *micranthus*).

Stanford Ranch

A total of 27 monitored pools are present in Stanford Ranch within four subsections (SR-8, SR-12, SR-17, and SR-20). The pools average a total of 22.9 species, 69% of which were native. On average, 83% of the vegetative cover in the pools were native species. All 27 pools met the Prevalence Index, with values ranging from 1.33 to 2.28. The pools in Stanford Ranch were dominated by vernal pool buttercup, Fremont's goldfields, stalked popcornflower, smooth goldfields (*Lasthenia glaberrima*), woolly marbles (*Psilocarphus brevissimus*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), and hawkbit (*Leontodon saxatilis* ssp. *longirostris*).

Sunset West

A total of 35 monitored pools are present in Sunset West within all six subsections (SW-1 through SW-6). The pools average a total of 23.8 species, 58% of which were native. On average, approximately 72% of the vegetative cover in the pools were native species. All but two pools met the Prevalence Index with values ranging from 1.23 to 3.10. Pools 125 and 208 both failed with Prevalence Index values of 3.08 and 3.10. Pools in Sunset West were dominated by stalked popcornflower, Mediterranean barley, spike rush (*Eleocharis macrostachya*), Italian rye grass (*Festuca perennis*), Fremont's goldfields, Great Valley button celery (*Eryngium castrense*), vernal pool buttercup, round woolly marbles (*Psilocarphus chilensis*), woolly marbles, and annual hairgrass (*Deschampsia danthonioides*).

Pools 125 and 208 (which both failed the Prevalence Index) were dominated by non-native annual grass species Mediterranean barley and Italian rye grass.

Results were not tested for statistical significance, and should be interpreted for trends and patterns only. From a biological standpoint, Preserve Area boundaries were established somewhat arbitrarily and correspond more to development patterns than to biological patterns. Analyzing monitoring data on a Preserve Area-by-Preserve Area level is useful when the Preserve Areas are thought of as management units, where similar management treatments may be applied Preserve Area-wide, where appropriate. Therefore, the intention of the Preserve Area-by-Preserve Area analyses is to aid managers in focusing on any particular issues in need of attention for each of the management units. Floristic data results are discussed in more detail in **Section 3.3.3.**

2.4 Grassland Monitoring

Grassland monitoring was conducted on May 17, 18, 19, and 25, 2023, within all nine Preserve Areas in the same 55 plots as chosen in previous years for the grassland and thatch monitoring surveys. The 55 plots include 31 in vernal pool grassland and 24 in oak or riparian woodland habitats. **Table 5,** below, summarizes the results of the 2023 grassland surveys and **Appendix F** contains a full list of plant taxa identified during the survey, including whether each species is native to California and its USDA wetland indicator status.

Table 5. Grassland monitoring results in vernal pool grassland and oak and riparian woodland habitats, per Preserve Area.

Preserve Area	Average Species Richness Per Plot		Average Percent Native Species Per Plot		Average Native Relative Percent Cover Per Plot	
	Vernal pool grassland	Oak/riparian woodland	Vernal pool grassland	Oak/riparian woodland	Vernal pool grassland	Oak/riparian woodland
Brighton	n/a	9.0	n/a	33%	n/a	3.0%
Claremont	12.0	10.0	25%	10%	3.1%	1.0%
Orchard Creek	12.5	n/a	0%	n/a	0%	n/a
Placer Creek	20.0	n/a	20%	n/a	3.9%	n/a
Stanford Ranch	12.9	15.6	23%	10%	3.1%	1.2%
Sunset West	11.3	14.0	22%	14%	2.6%	2.0%
Whitney Ranch	15.1	8.0	19%	25%	2.8%	2.0%
Garnet Creek	n/a	19.0	n/a	32%	n/a	3.0%
Parklands North	n/a	6.0	n/a	17%	n/a	1.0%

Note: n/a is used when a Preserve Area didn't have any plots in a habitat type.

Average species richness in vernal pool grassland plots ranged from just over eleven to twenty species, and ranged from six to just over fifteen species in oak and riparian woodland plots. The average percent of native species ranged from 0% to 25% in vernal pool grassland plots and 10% to 33% in oak and riparian woodland plots. Finally, the average native species relative cover ranged from 0% to 3.9% in vernal pool grassland plots, and 1% to 3% in oak and riparian woodland plots.

As stated previously, there are too many environmental factors to scientifically compare the data results between Preserve Areas. Trends observed between Preserve Areas may be useful for directing management resources to areas of greatest need, but should not be used to quantitatively compare the effect of different management actions. Rather, year-to-year comparison of results for each Preserve Area can illustrate trends over time and is useful to inform management actions. As there is no known baseline data for the grassland monitoring task, data taken in future years will be compared to the 2023 data.

2.5 Thatch Monitoring

Thatch (or residual dry matter [RDM]) surveys were conducted on October 4, 2023, in all nine Preserve Areas at the same 55 plots as the grassland vegetation plots. As stated previously, 31 of these plots are located in vernal pool grassland and 24 are located in oak or riparian woodland habitats. Survey results are shown below in **Figures 3 and 4**, in pounds per acre. **Figure 3** shows RDM levels for oak and riparian habitats, averaged for each Preserve Area; **Figure 4** shows the same for vernal pool grassland habitats. The horizontal light blue bars correspond to the recommended minimum and maximum RDM values for oak woodland (400 and 1,200 pounds per acre) and vernal pool grassland (500 and 1,200 pounds per acre) with similar slope (0-10%) and tree cover (0-25%) (Bartolome et al. 2006).

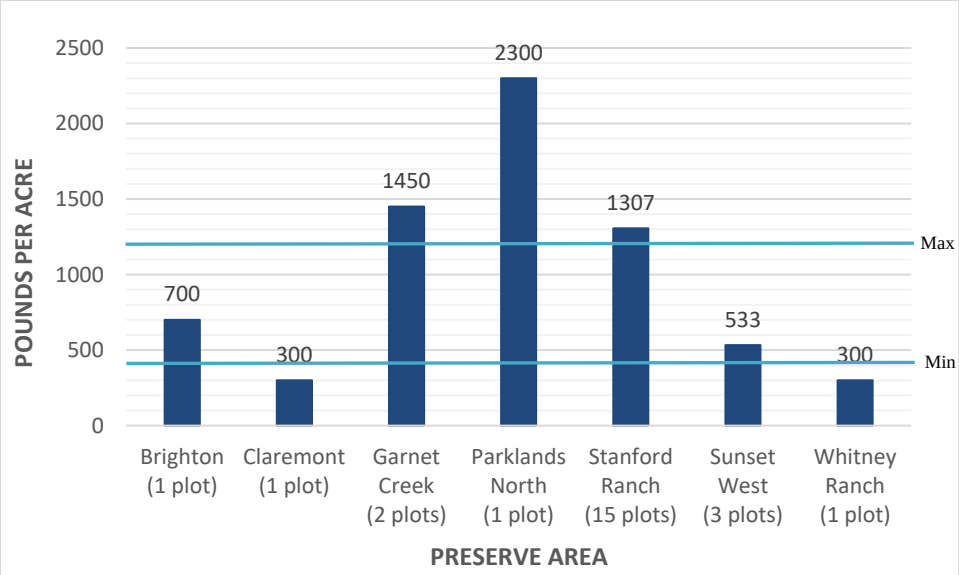

Figure 3. Average residual dry matter results in oak and riparian woodland habitats, per Preserve Area. Recommended minimum and maximum values are 400 and 1,200 pounds per acre, respectively.

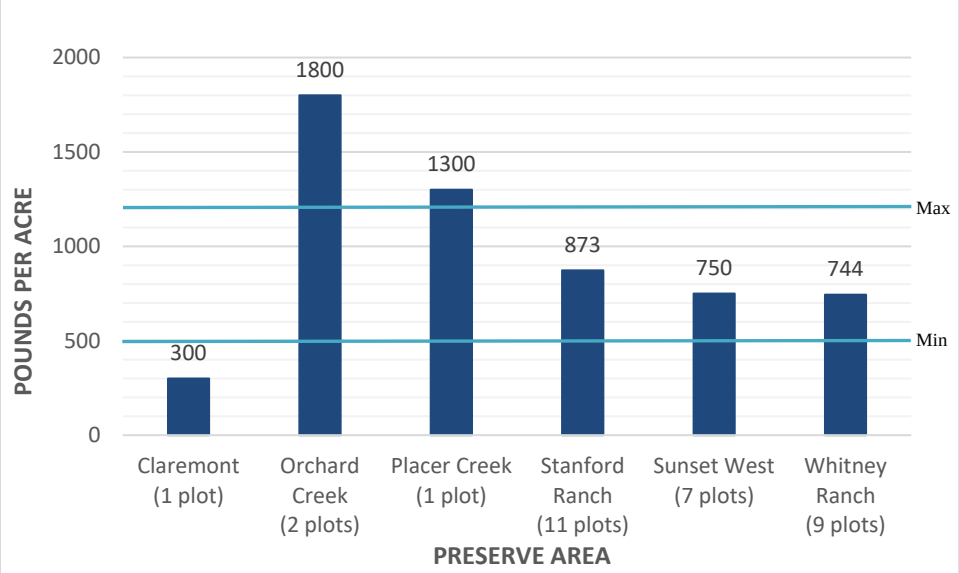

Figure 4. Average residual dry matter results in vernal pool grassland habitats, per Preserve Area. Recommended minimum and maximum values are 500 and 1,200 pounds per acre, respectively.

In 2023, the overall average RDM levels over all oak and riparian woodland plots was 1,154 pounds per acre, and the overall average for vernal pool grassland plots was 863 pounds per acre. As shown in **Figure 3**, three Preserve Areas (Garnet Creek, Parklands North, and Stanford Ranch) had higher than recommended RDM levels in oak and riparian habitats, while the remaining four Preserve Areas were within or just slightly below the recommended range. As shown in **Figure 4**, two Preserve Areas (Orchard Creek and Placer Creek Corporate Center) had higher than recommended levels in vernal pool grassland habitats, while the remaining four were within or below the recommended range.

See **Section 3.5** for a discussion of RDM levels within the Preserve, and grazing recommendations maps of all nine Preserve Areas are included in **Appendix G**.

2.6 Known Special-status Plant Surveys

Known special-status plant surveys were conducted on June 28, 2023 within Stanford Ranch subsection SR-12. Only one special-status plant species is known to occur within the Preserve and is included in the annual survey. This plant species, hispid salty bird's-beak (*Chloropyron molle* ssp. *hispidum*), is known to occur only within one subsection of Stanford Ranch. The survey was conducted within the peak bloom period for the species. In 2023, population cluster sizes ranged from <5 plants to over 200 plants, and population locations were mostly consistent with past years' data. Associated plant species included alkali bulrush (*Bolboschoenus maritimus* ssp. *paludosus*), salt grass (*Distichlis spicata*), alkali weed (*Cressa truxillensis*), and rabbitsfoot grass (*Polypogon monspeliensis*). The extent and population size estimates are shown below on **Figure 5**, and further discussion of survey results can be found in **Section 3.6**.

2.7 General Bird Surveys

General bird surveys were conducted in spring and fall on May 5 and September 18, 2023 in all nine Preserve Areas. During the spring survey, there were a total of 32 bird species observed and 218 individual birds observed in the Preserve. During the fall survey, there were a total of 15 bird species observed and 78 individual birds observed in the Preserve. A total of 34 bird species were observed during the surveys in 2023. The five most abundant bird species observed during both survey rounds (in descending order) are Red-winged Blackbird (*Agelaius phoeniceus*), Lesser Goldfinch (*Spinus psaltria*), House Finch (*Haemorhous mexicanus*), California Scrub-Jay (*Aphelocoma californica*), and Acorn Woodpecker (*Melanerpes formicivorus*).

Table 6, below, summarizes the bird survey results for the spring and fall surveys in 2023. The Preserve Areas with the highest number of observed birds during the survey were Stanford Ranch during the spring survey with 32 birds, and Brighton during the fall survey with 19 birds. Stanford Ranch and Claremont tied for the highest number of bird species in spring, with 13 species observed during the survey. In fall Brighton and Parklands North tied for the highest number of bird species with seven species each.

Table 6. Summary of bird survey results.

Preserve Area	Number of Birds per Plot		Number of Species per Plot		Percent Native Species per Plot	
	Spring	Fall	Spring	Fall	Spring	Fall
Brighton	27	19	11	7	100%	100%
Claremont	28	5	13	5	100%	100%
Orchard Creek	25	0	7	0	89%	n/a
Placer Creek	22	10	9	2	86%	50%
Stanford Ranch	32	7	13	5	89%	100%
Sunset West	24	7	7	4	100%	75%
Whitney Ranch	20	10	11	4	92%	100%
Garnet Creek	20	9	9	4	71%	100%
Parklands North	20	11	6	7	91%	100%

Bird survey results are discussed further in **Section 3.7**, and **Appendix H** contains the full list of bird species observed during the 2023 surveys.

2.8 Other Periodic Surveys

No periodic surveys were required in 2023.

FIGURE 5

Occurrences of Special-status Plants 2023

Rocklin Open Space Preserve
Placer County, California

Legend*

- Stream
- City of Rocklin Boundary

Preserve Area

- Stanford Ranch (SR-12)

Hispid salty bird's-beak Population

- 1-5
- 6-25
- 26-50
- 51-75
- 76-100
- 101-150
- 151-200
- 201+

* Note 1: all legend items may not appear on map
Note 2: Hispid salty bird's-beak (*Chloropyron molle subsp. hispidum*)

1:1,200
(1 inch = 100 feet at Tabloid Layout)

0 10 20 40 Meters
0 50 100 200 Feet

Vollmar NATURAL LANDS CONSULTING

Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, VNLC 2023
Map File: 571_CHLMOLH_B-L_2023-0808.mxd

3.0 DISCUSSION

3.1 General Conditions Surveys

In general, the Preserve Areas are in good condition and are functioning to support the habitats they were established to protect. Broad-scale issues such as altered hydrology and low detection of rare species are discussed in other sections of this report. During the general conditions surveys, biologists documented small-scale issues with erosion, fencing, irrigation runoff, blocked or overgrown culverts, and garbage accumulation in riparian areas. Generally, the majority of these documentations were limited in size and/or Preserve impact. Fire and flood hazards were typically limited to thatch accumulation and downed trees, and a few culverts clogged with vegetation. Maps in **Appendix B** show the locations of these small-scale documented issues.

Unauthorized use by neighboring residents is a small but significant issue in the Preserve. Unauthorized use by neighboring residents in the form of graffiti, walking or biking trails with bike jumps, and garden or yard encroachment was documented in many Preserve Areas. VNLC biologists documented one instance of graffiti, three biking trails with bike jumps, eight instances of large item dumping, and three instances of gardening or landscaping on Preserve land (such as raised garden beds) in 2023. While each individual encroachment does not pose a substantial threat to preserve function, it is worth noting the collective impact and potential for such problems to increase. See **Appendix B** for documented locations of yard encroachment and **Appendix C** for representative photos.

Invasive species were the most significant issue documented during the general conditions surveys. Specific invasive species are discussed in their associated habitat sections, while larger-scale tracked populations are discussed in **Section 3.2,** Invasive Plant Monitoring, below.

3.1.1 Wetland and Riparian Habitats

Wetland and riparian habitats in the Preserve appear to provide high quality scenic and wildlife values and are in generally good condition. Riparian corridors are well-vegetated and dominated by native species such as white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), California black walnut (*Juglans californica*), Fremont cottonwood (*Populus fremontii*), interior live oak (*Quercus wislizeni*), valley oak (*Q. lobata*), sandbar willow (*Salix exigua*), Gooding's black willow (*S. gooddingii*), red willow (*S. laevigata*), arroyo willow (*S. lasiolepis*), and cattail (*Typha latifolia*).

Some invasive plant species are fairly widespread in the canopy and understory within riparian habitats in the Preserve Areas, including Himalayan blackberry, edible fig, tree of heaven, Chinese tallowtree (*Triadica sebifera*), and Italian thistle. Four of the more problematic non-native plant species listed in the Cal-IPC Invasive Plant Inventory High category discussed in more detail below, including Himalayan blackberry, tamarisk, parrot's feather, and water hyacinth. The North American beaver (*Castor canadensis*), a native pest animal, is also discussed below.

Himalayan Blackberry: This species is widespread in riparian areas within Rocklin and throughout the region, and has been present since the establishment of the Preserve Areas, so it is not recommended that the City attempt to remove all stands of Himalayan blackberry. Removal of the species in Preserve Areas where it is widespread should only be attempted if adequate funding exists for revegetation with native species and for long-term management and treatment of the area. This would constitute a major restoration effort and should be undertaken only with appropriate long-term planning. However, targeted removal by hand or through grazing could benefit the native vegetation in those Preserve Areas where infestations are patchy and where the species could be removed without creating a large and severe disturbance. Removal in specific areas could prevent the species from becoming dominant in the future. Preserve Areas falling into this category include Stanford Ranch (SR-8 and 12 specifically), and Sunset West (SW-1, 3, and 4).

Tamarisk: Tamarisk was documented in two locations in 2023, on the eastern side of Sunset West subsection 1 (SW-1). It is unclear if this species was present when the Preserve Area was established, as it is not mentioned in prior monitoring reports. This highly invasive tree or shrub has a high evapotranspiration rate and uses more water than native riparian plants, and is therefore associated with reduced groundwater availability. It is also associated with a change in geomorphology as it may trap sediments and cause flooding. It can spread rapidly as it reproduces both by seed and asexually through vegetative growth, and germinates quickly in the right conditions (Cal-IPC 2023). Tamarisk may continue spreading and could outcompete the native riparian vegetation currently growing in the channel if left unmanaged. A combination of hand or mechanical and chemical control is recommended.

Parrot's Feather: The Cal-IPC has given parrot's feather a special "alert" designation, indicating it has high potential to invade new areas. Parrot's feather is an aquatic species and was observed in 2023 and previous years in perennial creeks in Whitney Ranch, Parklands North, and Brighton. This species reproduces asexually in this region; it fragments easily and the pieces can establish in new locations. It can also re-sprout easily after cutting (Cal-IPC 2023). The main problems listed in the Invasive Plant Inventory that are associated with this species occur when it forms large mats that impede water flow, displace native aquatic vegetation, and shade out algae that form the base of the aquatic food web. Parrot's feather was observed forming clumps and mats in Brighton, though it has been present since the Preserve Area was established. Due to the fact that complete eradication can be extremely difficult, it may not be advisable to attempt widespread control of this species at this time. However, the species can spread very quickly and should be monitored for such spread. Hand removal may substantially reduce population sizes for a few years, but would need to be repeated periodically to keep infestations under control. In a flowing-water environment, removal can dislodge fragments that re-colonize downstream; care should be taken to remove and properly dispose of all plant parts.

Water Hyacinth: This species was documented in 2023 in Sunset West (SW-1) and has been present since the establishment of the Preserve Area. Water hyacinth is problematic as it has potential to clog waterways with dense floating mats of vegetation and also affect water temperature and thus biota. Plants can spread asexually through fragmentation of plant parts that resprout, or by new plants germinating from seeds. Therefore, if hand or mechanical removal is employed, care should be taken to ensure all plant parts are removed from the waterway and disposed of properly. Mechanical removal is a temporary solution (as remnant plant parts or seeds will remain) and could be very costly, but should be considered if funding is available. Chemical control may also be effective at reducing the extent of an infestation, but due to the sensitive nature of aquatic systems, chemical control is not recommended at this time.

North American Beaver: Evidence of this species (dams, chewed trees, etc.) was observed in at least seven different locations in Stanford Ranch. The beaver is native to this region, but can be considered a pest in instances where beaver dams inhibit flood control, public safety, or preserve management objectives. However, impacts from beavers may provide benefits to some aquatic and riparian wildlife by increasing both aquatic and riparian habitat heterogeneity (Wright et al. 2002). Appendix 15 of the GOSMP, Beaver Management Policy, permits beaver impacts to be mitigated by the City in order to protect Preserve Areas (City of Rocklin 2017). The City regularly conducts beaver dam removal where needed for flood control and public safety purposes.

3.1.2 Vernal Pool Grasslands

The vernal pool grassland habitats within the Preserve are highly variable in terms of their overall quality. The uplands are generally dominated by non-native annual species which are common within the region, including rattail sixweeks grass (*Festuca myuros*), brome fescue (*F. bromoides*), slender wild oat (*Avena barbata*), medusa head (*Elymus caput-medusae*), Italian rye grass, and soft chess (*Bromus hordeaceus*).

Grassland monitoring was conducted in 2023, and data is presented and discussed in **Section 2.4** and **3.4**. Invasive species such as medusa head, barbed goatgrass, skeleton weed, stinkwort, and yellow star thistle are present and widespread in some of the vernal pool grasslands within Orchard Creek, Stanford Ranch, Sunset West, and Placer Creek Corporate Center, and appear to have been present at a similar scale when the Preserve was established. The grazing program established by the City may help reduce the spread of these species. It is widely agreed that grazing and thatch management are important for the ecological health of vernal pool ecosystems (Marty 2005; Pollack and Kan 1998; Tu et al. 2001).

Hydrologic alteration is the other substantial problem that has occurred in the Preserve. Some vernal pool grasslands within the Preserve receive substantially more runoff than they did before surrounding areas were developed, due to a variety of causes which may include a decrease in surrounding habitat permeability, presence of beaver dams, invasive vegetation, and more. Thus, historical seasonal swales may have been converted into perennial creeks or marshes that subsequently overtook nearby vernal pools. Hydrologic issues are further discussed in **Section 3.3**.

3.1.3 Oak Woodland Habitats

The oak woodland habitats, like the wetland and riparian habitats, appear to provide high quality scenic, wildlife, and recreational values and are in generally good condition, except for the prevalence of non-native and/or invasive species in the understory. The overstories are dominated by various combinations of valley oak, blue oak (*Q. douglasii*), and interior live oak (*Q. wislizeni*), and the trees appear healthy overall. Oak tree census and health surveys are conducted on a periodic basis, and will be conducted within some Preserve Areas in 2024. The oak woodland understories are dominated by the same non-native annual species as those found in vernal pool grassland habitats, with the addition of ripgut brome (*Bromus diandrus*), field hedge parsley (*Torilis arvensis*), and wall barley (*Hordeum murinum*). Other non-native and invasive species found in the understory include medusa head, barbed goatgrass, stinkwort, yellow star thistle, Italian thistle, rose clover (*Trifolium hirtum*), and dogtail grass (*Cynosurus echinatus*). The mix of native and non-native species present in 2023 does not appear to have changed significantly since Preserve establishment.

As is the case in vernal pool grasslands, carefully managed goat and sheep grazing may reduce the cover of invasive plant species in the understory and open up habitat for native species.

3.2 Invasive Plant Monitoring

As stated previously and in general, invasive plants found within the Preserve do not appear to have changed significantly since Preserve establishment. The largest invasive plant population mapped in 2023, Himalayan blackberry in Parklands North, has been present since the baseline survey for the Preserve Area. Most or all of the large Himalayan blackberry populations in the riparian habitats have been present since Preserve establishment. Four large populations of yellow star thistle were mapped in Orchard Creek in 2023, ranging from 520 square meters to over 3,600 square meters in size, and several large yellow star thistle populations were mapped in Sunset West (particularly in SW-1, ranging from 220 to 2,890 square meters). However, large yellow star thistle populations were also mapped in both areas in the 2015 baseline report.

It is beneficial to the ecological health of the Preserve to reduce the amount of invasive plants within the Preserve. Regular and well-timed grazing may reduce the cover of many of the grassland invasive species, and hand or mechanical removal is recommended for species in the riparian areas. See the Invasive Weed Species Monitoring Data Table and General Conditions maps in **Appendix B** for all invasive weed data and locations.

Future surveys will revisit all mapped invasive plant polygons and build on this data set to continue to monitor for any significant change in population size or location. This will help biological monitors inform the Preserve Manager about best management practices for these species. The species and area monitored may be changed in the future based on Preserve needs.

3.3 Vernal Pool Monitoring

3.3.1 Hydrology

Ponding duration can be highly variable within many vernal pool landscapes, and it is normal that during any given survey, some pools would be dry. During a wet winter, if pools are dry then they may be poorly designed or constructed (for created pools) or may be small, shallow pools which are invaded by upland grass species. Well timed grazing is the recommended management tool to inhibit encroachment of upland species into pool basins.

Rocklin experienced a well above average wet season over the winter of 2022-2023, with 32.30 inches of rain falling between October 2022 and May 2023 (the typical "wet season" in California). This amounts to nearly 150% of the 30-year average of 22.14 inches (PRISM 2023). **Figure 6,** below, compares monthly precipitation amounts over the winter of 2022-2023 to the 30-year average monthly levels.

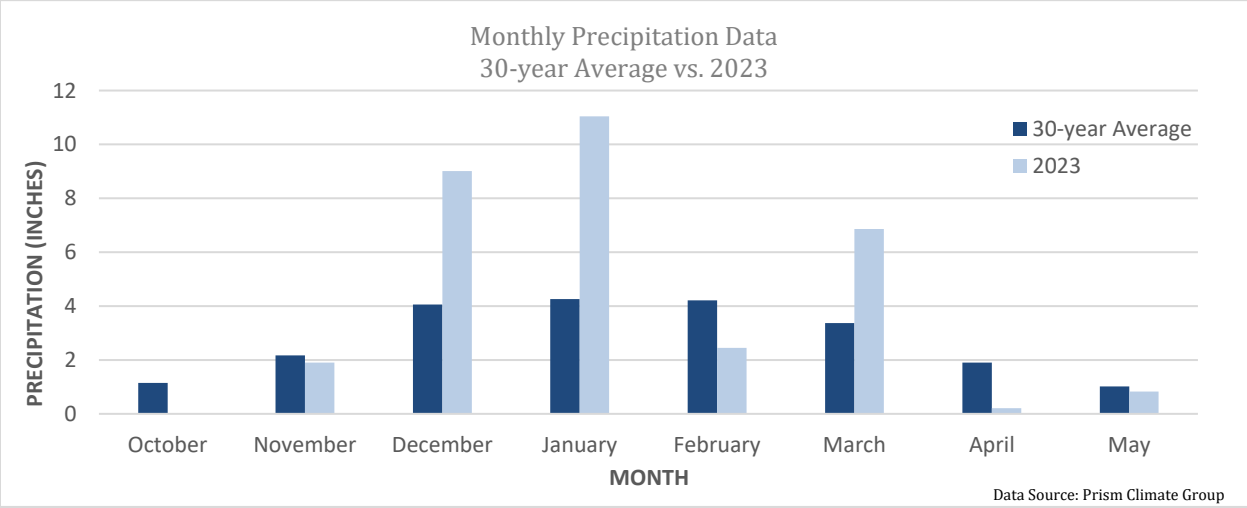

Figure 6. Rocklin precipitation data per month in 2023 compared to 30-year monthly averages.

Due to the well above average rainfall levels over the winter, nearly all the monitored pools held water during both wet season survey rounds. Only four pools were dry during the first survey round (January 24) and two pools were dry during the second round (March 21). Of the four dry pools in the January survey, two of them (pool 116 in Sunset West [SW-3] and pool 208 in SW-1) also did not pond during the March survey. The third dry pool in January (pool 125 in SW-2) only held 2 inches of water in March. The fourth dry pool in January was more than 90% ponded in March, so should not be considered a failed pool. The first three pools (116, 208, and 125) should be considered failed pools and will be removed from the vernal pool surveys and replaced with other pools as they do not contain habitat for special-status aquatic invertebrates.

Finally, five vernal pools included in the vernal pool sample were discovered to not be wetlands during the first survey round or had been previously mis-mapped. These 'pools' consisted of grassy, gently sloping areas, mostly located in Stanford Ranch (SR-8); they were replaced in the field with the closest identifiable wetland.

3.3.2 Aquatic Invertebrates

In 2023, vernal pool fairy shrimp were detected in seven pools in two Preserve Areas (Stanford Ranch and Sunset West) within three subsections (SR-8, SR-12, and SW-2). Since the first year that vernal pool monitoring surveys were conducted in 2016, vernal pool fairy shrimp have been documented in 13 pools within the Preserve. In 2023, vernal pool fairy shrimp were documented in six new pools (pools both within the standard sample and extra pools). See **Table 7**, below, for a summary of vernal pool fairy shrimp documentations from 2016 through 2023.

According to the GOSMP, the same sample of vernal pools should be sampled each year, in order to effectively track changes over time (City of Rocklin 2017). However, it is difficult to detect long-term trends with a small sample of vernal pool fairy shrimp-occupied pools, so more known occupied pools will be added to the standard sample as they are documented in future surveys. We have observed in other vernal pool ecosystems that it is typical for vernal pool fairy shrimp to be scarce or absent in the same pools during some years. During the surveys each year, we will continue to sample additional pools which are in the vicinity of other known occupied pools, or which look like high quality shrimp habitat. As we sample new pools, we expect to continue documenting more occurrences of the species throughout the Preserve.

Table 7. Summary of vernal pool fairy shrimp (*Branchinecta lynchi*) documentations from 2016 through 2023.

Preserve Subsection	Pool ID	2016	2017	2018	2019	2020	2021	2022	2023
SR-12	138				X				X
SR-12	189								X
SR-12	190					X			
SR-12	193				X				
SR-20	14	X	X						
SR-8	286								X
SR-8	287								X
SR-8	288								X
SR-8	332								X
SW-1	102			X	X				
SW-2	54	X							
SW-2	55			X		X			
SW-2	128								X
	Total	**2**	**1**	**2**	**3**	**2**	**0**	**0**	**7**

Our best explanations for the historically low number of detected occurrences of the vernal pool fairy shrimp during all survey years are: 1) the hydrology of the Preserve is altered compared to its condition before suburban development surrounded the Preserve Areas, 2) drought conditions over the past several years led to a lack of ponding in a majority of pools in the Preserve, 3) the Preserve Areas are highly fragmented, making re-colonization difficult in the event of a local extirpation, and 4) the species tends to be naturally flashy, and lack of detection in known occupied pools is common (VNLC, personal observation).

Hydrology: Many Preserve Areas are narrow corridors surrounded on all sides by pavement and buildings, so runoff from surrounding areas takes a different course than it would have prior to development. In portions of some Preserve Areas, emergent marshes or perennial wetlands have replaced vernal pools in areas where large quantities of water, including ‘nuisance water’ (urban runoff) accumulate. Roads and

retaining walls at the boundaries of many Preserve Areas cause extra water to pool, again converting vernal pool habitat to perennial wetland habitats. In addition, the ponding depth and duration of vernal pools within the Preserve Areas may not be optimal for other reasons. The location, designed topography, and depth of created pools are not always optimal for large branchiopods, especially for more specialized species such as vernal pool fairy shrimp. Additionally, the hydrology of natural pools has been altered by the encroachment of introduced annual grasses. The altered hydrological state due to development is in part a product of Preserve design (small, narrow Preserve Areas with a high edge to interior ratio), and is a permanent factor that is not possible to correct.

Fragmentation: Most of the Preserve Areas are relatively small, with a low number of vernal pools, and are isolated from one another. While cysts of the vernal pool fairy shrimp can persist within a pool for many years, providing a buffer against variations in annual conditions, this landscape fragmentation can result in a decreased likelihood of re-colonization of a given pool in the event of a local extirpation. However, it is not possible for the Preserve Manager to address this potential cause of the low detection rates of the species.

Despite these issues, as stated above we expect the number of vernal pool fairy shrimp documentations to continue to grow as we sample additional pools in future years.

3.3.3 Floristics

Overall, the majority of surveyed vernal pools in the Preserve exhibit plant species typical of pools throughout the Central Valley. Due to an above average rain year in 2023, most pools supported a majority of hydrophytic plant species. Only two pools did not meet the Prevalence Index in 2023, and both either did not pond (208) or barely ponded (125) during both hydrology survey rounds (see **Section 3.3.1** above). Because most of the plants inhabiting vernal pools are annual plants that are highly responsive to annual climatic variations, it is expected that results would vary slightly from year-to-year. **Table 8**, below, summarizes the percentage of pools meeting the Prevalence Index over the past five years.

Table 8. Percent of surveyed pools meeting Prevalence Index over last five years.

Survey Year	Percent of Pools Meeting Prevalence Index
2019	92%
2020	98%
2021	64%
2022	83%
2023	97%

There is one non-native species which could potentially pose a threat to the ecological health of vernal pools in the Preserve: waxy mannagrass (*Glyceria declinata*). Waxy mannagrass is listed in the Cal-IPC Invasive Plant Inventory Moderate category, which means it has "substantial and apparent – but generally not severe – ecological impacts" on the plant community (Cal-IPC 2023). It is a perennial grass that invades deep vernal pools and stock ponds in the Central Valley, which can out-compete native vegetation and threaten sensitive plant species (DiTomaso et al. 2013). Waxy mannagrass was documented in four pools in Stanford Ranch and Sunset West in 2023, including pools 134 in SW-4, 59 in SW-3, 152 in SR-8, and 188 in SR-12. In SW-4, it was nearly a dominant species, with a cover of 22% (dominance is defined as 25% cover). Waxy mannagrass is known to occur in the region and due to unavoidable factors such as altered hydrology from surrounding development (see hydrology discussion above), many vernal pools in the Preserve pond longer than they naturally would, creating more optimal conditions for waxy mannagrass. Although it is not surprising to document this species in the Preserve, it should continue to be monitored in

future years as it may become beneficial to reduce or eradicate it from certain areas should it pose a threat to sensitive resources (such as special-status species).

3.4 Grassland Monitoring

The grassland monitoring survey had not been previously conducted in the Preserve, so the data collected during 2023 surveys can serve as a baseline to which future years of data can be compared. Future surveys will build a more robust data set and allow for more meaningful conclusions about the health and quality of grassland habitat within the Preserve, and identify trends from year to year to assist with providing useful management recommendations.

Overall, the grassland plots within the Preserve exhibit similar species composition and percent cover as is present within other urban grassland habitats in the Sacramento region. Cover values and percent native species within the plots were generally low, which is not unusual within urban preserve habitats. Some of the more harmful invasive species present within the plots included yellow star thistle and barbed goat grass. Barbed goat grass was documented within six plots in Sunset West and Stanford Ranch, with cover values ranging from 1% to 15%. Yellow star thistle was documented in ten plots in Stanford Ranch, Claremont, Whitney Ranch, Orchard Creek, and Placer Creek Corporate Center, with cover values ranging from 0.25% to 35% (making it a dominant in one plot with a value over 25%). This plot was located in Whitney Ranch (WR-1) in oak or riparian woodland. Both of these species are well established within grassland habitats in the region and can be difficult to eradicate. Management methods for both species include well-timed and heavy grazing or mechanical removal (typically after the plant has flowered but before the seeds have set) and/or herbicide application.

3.5 Thatch Monitoring

Managing thatch levels is important both for the health of the ecosystems and to reduce fire danger within the Preserve. However, monitoring and managing the level of grazing is equally important; both under-grazing and over-grazing can be problematic. Over-grazing may lead to soil nutrient losses and/or erosion, while under-grazing may allow for invasion by exotic weed species. As established in past years, the ideal fall season RDM range to maximize productivity within oak savanna grassland on similar slopes (0-10%) with similar rainfall is around 750 pounds per acre (Bartolome et al. 2006) or between 400 and 1,200 pounds per acre. The typically recommended minimum RDM value in vernal pool grassland habitats is slightly higher, at 500 pounds per acre. RDM levels measured in the Preserve in 2023 ranged from 100 to 3,200 pounds per acre, with an overall average of 990 pounds per acre.

Grazing and thatch reduction is known to be particularly important for the health of vernal pool ecosystems (Marty 2005; Pollack and Kan 1998; Tu et al. 2001). Appropriately timed and managed grazing has been shown to positively impact vernal pool large branchiopods as it can reduce the potential for introduced annual grasses to encroach upon the pools and alter hydrology and other habitat conditions (Marty 2005). RDM levels within the Preserve Areas containing most of the vernal pool habitat (Stanford Ranch and Sunset West) were within the ideal range in 2023; the eleven vernal pool grassland plots in Stanford Ranch averaged 873 pounds per acre, and the seven plots in Sunset West averaged 750 pounds per acre. These numbers indicate that grazing levels were suitable for these habitats in 2023. Orchard Creek also contains a smaller area of vernal pool habitat, with a few pools occurring in the Preserve Area. Grazing load should be increased in Orchard Creek in 2024 as the RDM level was 1,800 pounds per acre, which is higher than recommended for this habitat type. A complete set of grazing recommendation maps are included in **Appendix G**.

3.6 Known Special-status Plant Surveys

Overall, the extent and size of the hispid salty bird's-beak populations in Stanford Ranch (SR-12) appeared consistent with data from past years. Population or individual plant locations can be expected to vary slightly from year to year, but generally the population appeared healthy and robust during 2023 surveys. The largest population area was estimated to contain 250 individual plants, while the smallest contained just three plants.

One area in the northeast corner of the parcel, just west of a large wetland, supported several smaller patches of hispid salty bird's-beak in past years, but no plants were observed in this area in 2023. However, it was noted during the survey that a matrix of swales and scoured pools was present, and it is likely that heavy storms during the winter of 2022-2023 caused an increase in ponding and scouring in this area, making it temporarily unsuitable for hispid salty bird's-beak or washing out some of the seed bank in the soil. It is likely the population will recover in this area in future years with a more average level of rainfall.

3.7 General Bird Surveys

Focused and standardized bird surveys had not been previously conducted in the Preserve, so data taken during the 2023 surveys can serve as a baseline for future years. Survey data in future years will build a more robust dataset and allow for year-to-year comparison and identifying and tracking of trends of avian activity within the Preserve.

Overall, the Preserve supported a healthy and abundant number of bird species and activity levels during the spring and fall surveys. The majority of birds identified during the surveys were native, with only three non-native bird species present (House Sparrow, European Starling, and Rock Pigeon). All three of these species are common in the region and were noted to be present primarily near adjacent houses (which likely were feeding them). Other notable bird species observed in the Preserve include Bald Eagle (*Haliaeetus leucocephalus*), which is a California state-listed Endangered species, and Northern Harrier (*Circus hudsonius*), a state Species of Special Concern. The Bald Eagle was observed flying over Brighton, and the Northern Harrier was observed flying over Claremont.

3.8 Other Periodic Surveys

No periodic surveys were required in 2023.

4.0 MANAGEMENT RECOMMENDATIONS SUMMARY

Any urgent issues which are documented during our surveys are communicated directly to the City via email or phone call; no urgent issues were observed in the Preserve in 2023. One-time management concerns (such as isolated invasive species, vandalism, and fencing issues) are addressed in a set of maps submitted to the City that display results of the General Condition and Invasive Weed surveys (**Appendix B**). The City crews may utilize the maps to take corrective actions on the one-time management concerns. Long-term management recommendations are discussed below, and are numbered according to our priority ranking in terms of biological value.

The four management priorities discussed below are as follows:

- **Continued Grazing** (Priority 1)
- **Engagement with Encroaching Landowners** (Priority 2)
- **Targeted Control of Specific Invasive Species** (Priority 3)
- **Long-term Comprehensive Invasive Species Management** (Priority 4)

Continued Grazing – Priority 1

Well-timed and managed grazing is beneficial both for ecosystem health and to reduce fire danger within the Preserve. A goat and sheep grazing program is implemented in the Preserve each summer and continued through 2023. Monitoring of grassland vegetation and RDM levels was conducted in 2023, and data from these monitoring tasks is used to evaluate and inform the grazing program. On average, RDM levels within the Preserve fell within the ideal range in 2023, indicating that grazing levels were mostly adequate. Continued annual grazing is recommended to maintain the health of the ecosystems and species which rely on the Preserve. Grazing management recommendations are included in a set of maps in **Appendix G**.

Engagement with Encroaching Landowners – Priority 2

Several incidences of encroachment by neighboring residents, including gardens and yard waste dumping, walking and bike trails, large item dumping, and some graffiti, were documented in 2023. While each individual encroachment into a Preserve Area does not pose a substantial threat to preserve function, the cumulative impact is significant. If residents observe that the City ignores these unauthorized uses, more residents may begin to engage in these activities. Increased signage to educate residents about the value of protection of natural habitat, and/or pamphlets or other handouts for the neighboring landowners may help to decrease such encroachments.

Targeted Control of Specific Invasive Species – Priority 3

Though it is not feasible to reduce or eradicate all invasive species with the Preserve Areas, some specific species and Preserve Areas could be treated with modest effort and cost. Tamarisk is growing in two different locations in the creek channel in Sunset West subsection 1 (SW-1). Tamarisk is an extremely invasive species and may spread quickly if left unmanaged. A combination of mechanical and chemical methods is generally the most effective method for control. Preserve Areas with small patches or incidental occurrences of Himalayan blackberry (such as Stanford Ranch subsection 8 and 12) could be treated to prevent further spread in these areas. Finally, a population of Parrot's feather in the creek channel in Brighton could be mechanically removed. Although Parrot's feather is difficult to fully eradicate, it can be partially or occasionally removed to keep it from fully obstructing the creek channel.

Long-term Comprehensive Invasive Species Management – Priority 4

Comprehensive invasive species surveys are conducted throughout the Preserve on an annual basis. Future surveys should expand on these results and carefully monitor targeted populations to determine if they are expanding and if management actions are necessary. Incidental surveys should continue to be conducted during the General Condition surveys. Though it is not feasible with current funding to completely eradicate these species from the Preserve, but reducing their cover should be a priority.

Monitoring and management of invasive species could likely be successfully conducted through implementation of properly timed and targeted grazing (priority 1) and targeted control of specific invasive species (priority 3), in combination with continued targeted invasive species surveys. As discussed above, appropriate grazing timing and annual or bi-annual repetition of grazing treatments are crucial to the successful management of widespread invasive grassland species.

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APPENDIX A

2023 Survey Methodology

Table of Contents

Tables

1.0 SURVEY METHODS

1.1 General Conditions Surveys

VNLC biologists Linnea Neuhaus, Misaki Yonashiro, Alistair Dobson, Samantha Maners, Gabe Saron, and Anton Bokisch (biologists) conducted General Conditions surveys in wetland and riparian habitats, vernal pool grassland, and oak woodland/savannah in all nine Preserve Areas in 2023. Wetland and riparian habitats were surveyed twice, once in spring and once in summer. Vernal pool grassland was surveyed once in spring, and oak woodland and savannah habitats were surveyed once in summer. The biologists walked meandering transects through each Preserve Area, ensuring that all pertinent features were observed. The biologists carried a Trimble GeoXT or GeoXH GPS unit (with preserve boundaries loaded as a background file) for navigation and mapping of notable site conditions. Biologists recorded notes on current hydrological conditions (such as whether drainages have flowing or standing water), excessive thatch buildup, vegetation species composition, and other basic parameters as required by the GOSMP (City of Rocklin 2017). Biologists recorded notes on and mapped any instances of vandalism, garbage dumping, fencing or signage in need of repair, or other damage to infrastructure, and documented any sites that appeared to be in need of restoration or enhancement activities. Representative photographs were taken.

During the General Condition survey, VNLC biologists also surveyed for and documented occurrences of non-native invasive plants. **Section 1.2**, below, discusses invasive plant monitoring in detail.

1.2 Invasive Plant Monitoring

Invasive plant monitoring was conducted concurrently with General Conditions surveys in all three habitat types. Surveys were conducted in wetland and riparian habitats twice, once in spring and once in summer; surveys were conducted in vernal pool grasslands and oak woodland and savannah once in summer. Invasive plant surveys targeted plant species listed in the California Invasive Plant Council's (Cal-IPC) Invasive Plant Inventory 'High' (those with severe ecological impacts) or 'Moderate' (those with substantial and apparent ecological impacts) categories. Biologists mapped the perimeter of each occurrence with a minimum of 25-50 percent absolute vegetative cover using a professional GPS unit (sub-meter accuracy) and estimated percent cover of the plant within the mapped area. Only stands with a minimum area of 100 m^2 were mapped and their data is summarized in the Invasive Weed Species Monitoring Data Table (see **Appendix B**). Occurrences of non-native species which do not meet the size requirements or are problematic but not listed as 'Moderate' or 'High' by Cal-IPC were mapped as points to be included in the General Conditions Maps, though population sizes were not mapped and they are not tracked in the table in **Appendix B**. Invasive annual grass species such as medusa head (*Elymus caput-medusae*), Italian rye (*Festuca perennis*), and barbed goat grass (*Aegilops triuncialis*) are well established within the Preserve and general region, and data on them is collected during grassland vegetation monitoring and therefore they were not included in the invasive plant monitoring surveys. Invasive plant monitoring data will be used to identify Preserve Areas that have problematic invasive populations and track changes in population size and density over the years. The species and minimum percent cover included in the targeted monitoring may be changed over time as management priorities, funding, and the nature of infestations change.

1.3 Vernal Pool Monitoring

The GOSMP requires that a minimum of 20% of pools be included in vernal pool monitoring each year, and the sample of pools should remain the same (City of Rocklin 2017). The standard pool sample of 65 pools is the same as those surveyed in 2022, and will continue to be sampled in future years. New pools may be added as new Preserve Areas are added to the annual monitoring, or new observations of vernal pool fairy shrimp (*Branchinecta lynchi*) are documented. In 2023, five vernal pools in Stanford Ranch (SR-8) were replaced with the nearest functioning vernal pool, as they were discovered to not be wetlands during

the field survey, likely due to inaccurate mapping. **Table 1**, below, summarizes the Preserve Areas and numbers of vernal pools included in the vernal pool survey.

Table 1. Preserve Areas and vernal pools included in annual vernal pool monitoring.

Preserve Area Name	Number of Subsections	Total Size (acres)	Number of Vernal Pools Surveyed Annually Onsite
Orchard Creek	1	23.7	1
Stanford Ranch	19	308.7	27
Sunset West	8	146.1	35
Placer Creek Corporate Center	5	5.0	2

1.3.1 Hydrology

Wet season hydrological monitoring was conducted three times in 2023, concurrently with the aquatic invertebrate survey rounds and once in the summer by VNLC biologists Linnea Neuhaus, Cassie Pinnell, Eric Smith, Anton Bokisch, Alistair Dobson, and Samantha Maners. Parameters measured during the wet season included maximum potential water depth, maximum current water depth, and percent inundation. General notes on hydrology were recorded, including observations on alterations to the natural hydrology. Biologists also documented potential artificial causes for late ponding, such as landscaping runoff, faulty design or construction, or man-made features inhibiting drainage.

1.3.2 Aquatic Invertebrates

VNLC biologists Linnea Neuhaus, Cassie Pinnell, and Eric Smith (lead biologists), with assistance from Anton Bokisch, conducted the aquatic invertebrate surveys in winter 2023. Two rounds of aquatic invertebrate monitoring were conducted with the standard pool sample (65 pools), as well as additional non-randomly selected pools in the vicinity of previously documented occurrences of vernal pool fairy shrimp. A set of maps showing preserve boundaries and sampled pools with pool numbers is included in **Appendix D**. The two survey rounds were conducted as required by the GOSMP (City of Rocklin 2017).

All lead VNLC biologists are permitted under VNLC's Section 10(a)(1)(A) recovery permit for conducting listed large branchiopod surveys (Permit Number **TE-035336-7.1**). Survey authorization was obtained from Lauren Kong of the USFWS Sacramento field office on January 11, 2023. The listed vernal pool shrimp species with potential to occur in the region include vernal pool fairy shrimp and vernal pool tadpole shrimp (*Lepidurus packardi*). During the surveys, the federally-threatened vernal pool fairy shrimp and the non-listed California fairy shrimp (*Linderiella occidentalis*) were the only large branchiopod species detected.

For each sampled pool, surveys were conducted by first visually inspecting the water column for large branchiopods, then dip-netting using a fine mesh net with a 12-inch square aperture. Pools were sampled for large branchiopods by dip-netting representative portions of the entire pool area and water column for a length of time corresponding to pool size (up to 30 minutes). VNLC biologists have found that tadpole shrimp are most likely detected when the net is used to stir up bottom sediments, where this species is usually located. In addition to dip-netting representative portions of the entire water column, nets were vigorously and repeatedly moved back and forth through the water column near the bottom of the pool, and then were inspected for aquatic invertebrates.

In addition, every pool was sampled for all aquatic invertebrates. Nets were moved through the water in five 1-meter-long sweeps spread throughout the pool and covering the entire water column. All aquatic invertebrates captured in the sample were recorded by abundance class to the most relevant taxonomic level. Any additional taxa collected during additional dip-netting was recorded as 'present' but not assigned

an abundance class. When a listed large branchiopod was detected, two to three adjacent pools were briefly sampled for presence of the species.

Environmental data were also collected for each sampled pool including maximum current water depth, percent area of inundation, temperature, and a turbidity ranking (1 through 4; 1 = clear, 4 = visibility < 1 inch). Any hydrological problems (such as flooding from an adjacent creek or lack of ponding) were noted, and are included in the Results and Discussion sections.

1.3.3 Floristics

Floristic monitoring was conducted in spring 2023 by VNLC biologists Alistair Dobson, Anton Bokisch, Cassie Pinnell, Linnea Neuhaus, Maria Vollmar, and Rachel Miller. As with wet season vernal pool surveys, the timing of floristic surveys was determined by tracking local pools and attempting to conduct surveys at the peak of the vernal pool blooming season. Biologists used Apple iPads for navigation and to record data within digital datasheets. Representative photographs were taken.

Parameters recorded at each pool included:

- Estimated absolute vegetative cover (the percent of the pool's area that is covered in vegetation);
- Dominant species present (dominant species were those with 25% relative cover or greater within a pool, or 10% if no species meets the 20% threshold; relative cover is defined as the percent of the total vegetative cover that is made up by a species or group of species);
- A list of all species present;
- Estimated relative cover of all species present;
- Water depth and percent cover; and
- Overall vegetation phenology (early bloom, peak bloom, late bloom, or dead/dry).

The following measures were calculated for each pool, and summarized by Preserve Area:

- Average species richness (total number of plant species) per pool;
- Average native species richness (total number of native plant species) per pool;
- Average percent of species per pool that were native;
- Average relative cover per pool of native species; and
- Prevalence value per pool.

1.4 Grassland Monitoring

VNLC biologists Linnea Neuhaus, Anton Bokisch, and Eric Smith conducted grassland vegetation monitoring in all nine Preserve Areas in spring 2023. Monitoring was conducted in 55 plots located in both vernal pool grassland and oak or riparian woodland habitats (31 vernal pool grassland plots and 24 woodland plots). These plot locations and sizes (3 x 3 meters) remained the same from previous years. Biologists navigated to each plot using a sub-meter accurate GPS unit and laid out two 3-meter tapes in a cross shape to visibly mark the plot on the ground. Data was then collected within each plot, which included a species list, total cover of vegetation, absolute cover of each species, and any other pertinent plot information. Data was collected within a previously set up Ninox Database loaded onto iPads.

1.5 Thatch Monitoring

VNLC biologists Anton Bokisch, Rachel Miller, and Trevor Hurd conducted thatch monitoring in all nine Preserve Areas in early fall 2023. Monitoring was conducted within the same 55 plots as in the grassland monitoring task, the locations of which remained the same from previous years. Biologists navigated to each plot using a sub-meter accurate GPS unit. At each plot, biologists collected residual dry matter (RDM)

data within one clip plot (circular 0.1 m^2 hoop) located at the center of the 3 x 3 meter plot. RDM was clipped down to 0.25 inch within the hoop and weighed in grams. After calibrating visual estimations, the biologists began to visually estimate the weight of every other plot to increase efficiency in the field. One quarter of the bagged samples were brought back to the office to fully dry out before being re-weighed, to calculate moisture content in the RDM. Bags were re-weighed 30 days after collection; moisture content was negligible so no adjustments were made to the data. Finally, RDM data for each plot was converted into pounds per acre by using the following calculation:
(X grams per 0.1 m^2) x 100 = X pounds per acre.

1.6 Known Special-status Plant Surveys

VNLC biologist Rachel Miller visited all documented extant populations of special-status plants within the Preserve during the period of peak bloom for the species. At present only one special-status plant species is known to exist in the Preserve, hispid salty bird's-beak (*Chloropyron molle* ssp. *hispidum*). Ms. Miller traversed Stanford Ranch on foot and mapped all populations using a sub-meter accurate GPS unit, and assessed abundance semi-quantitatively using the same abundance categories as in past years. Any changes to occupied habitat or other pertinent information was also documented during the survey and representative photos were taken.

1.7 General Bird Surveys

General bird surveys were conducted once in the spring and once in the fall at each of the nine Preserve Areas by VNLC biologists Linnea Neuhaus and Misaki Yonashiro. The biologists conducted a single point count of birds at each plot over a period of 10 minutes. The nine plots were established in the office and their locations were randomly chosen using ArcGIS software. The surveys were conducted on foot and birds were observed through high-powered binoculars and by ear. At each plot location, the following data was recorded on paper datasheets: the bird species present, the number of individuals present per species, the general behavior and habitat use of each bird or flock of birds, and other pertinent information.

1.8 Other Periodic Surveys

No periodic surveys were required in 2023.

APPENDIX B

General Inspection and Invasive Weed Maps

Rocklin Open Space Preserve Invasive Plant Monitoring Table

Appendix B

Map	Code	Common Name	Scientific Name	Percent Cover	Area (m^2)	2023 Notes
A	OC1-3	Yellow star thistle	*Centaurea solstitialis*	50-75	3615	
A	OC1-1	Yellow star thistle	*Centaurea solstitialis*	50-75	1190	
A	WR2-1	Yellow star thistle	*Centaurea solstitialis*	25-50	630	
A	OC1-4	Yellow star thistle	*Centaurea solstitialis*	25-50	605	
A	OC1-2	Yellow star thistle	*Centaurea solstitialis*	50-75	520	
A	PCCC5-1	Italian thistle	*Carduus pycnocephalus subsp. pycnocephalus*	50-75	100	
B	WR4-7	Yellow star thistle	*Centaurea solstitialis*	50-75	1830	
B	WR6-1	Yellow star thistle	*Centaurea solstitialis*	25-50	1415	
B	WR4-1	Yellow star thistle	*Centaurea solstitialis*	50-75	825	
B	WR4-3	Yellow star thistle	*Centaurea solstitialis*	50-75	475	
B	WR4-6	Yellow star thistle	*Centaurea solstitialis*	50-75	440	
B	WR1-3	Himalayan blackberry	*Rubus armeniacus*	85	360	
B	WR4-5	Yellow star thistle	*Centaurea solstitialis*	50-75	310	
B	WR4-2	Yellow star thistle	*Centaurea solstitialis*	50-75	290	
B	WR1-2	Himalayan blackberry	*Rubus armeniacus*	80	280	
B	WR3-1	Yellow star thistle	*Centaurea solstitialis*	25-50	215	
B	WR4-4	Yellow star thistle	*Centaurea solstitialis*	50-75	145	
B	WR1-1	Himalayan blackberry	*Rubus armeniacus*	75	110	
C	C2-1	Yellow star thistle	*Centaurea solstitialis*	25-50	2040	Entire hillside
C	SR7-2	Himalayan blackberry	*Rubus armeniacus*	75-90	665	
C	SR7-3	Himalayan blackberry	*Rubus armeniacus*	75-90	330	
C	SR7-1	Himalayan blackberry	*Rubus armeniacus*	75-90	305	
D	SR13-1	Himalayan blackberry	*Rubus armeniacus*	75-90	215	
D	SR14-1	Himalayan blackberry	*Rubus armeniacus*	50-75	180	
D	SR13-2	Himalayan blackberry	*Rubus armeniacus*	75-90	180	
D	SR13-3	Himalayan blackberry	*Rubus armeniacus*	75-90	170	
E	SR12-2	Yellow star thistle	*Centaurea solstitialis*	25-50	550	
E	SR12-1	Skeleton weed	*Chondrilla juncea*	25-50	400	
E	SR8-1	Himalayan blackberry	*Rubus armeniacus*	>90	165	Along creek
E	SR11-1	Edible fig	*Ficus carica*	50-75	110	*includes some area outside of the preserve
E, G	SR13-4	Himalayan blackberry	*Rubus armeniacus*	75-90	620	
F	SW1-1	Yellow star thistle	*Centaurea solstitialis*	50-75	2890	
F	SW8-2	Yellow star thistle	*Centaurea solstitialis*	50-75	1305	
F	SW7-1	Yellow star thistle	*Centaurea solstitialis*	50-75	1075	
F	SW1-5	Mustard	*Hirschfeldia incana*	50-75	600	
F	SW1-6	Stinkwort	*Dittrichia graveolens*	50-75	535	
F	SW1-4	Mustard	*Hirschfeldia incana*	50-75	495	
F	SW1-3	Yellow star thistle	*Centaurea solstitialis*	25-50	330	
F	SW1-2	Yellow star thistle	*Centaurea solstitialis*	50-75	220	
F	SW8-1	Yellow star thistle	*Centaurea solstitialis*	50-75	110	*includes some area outside of the preserve
G	SR15-1	Himalayan blackberry	*Rubus armeniacus*	25-50	1660	
G	SR13-6	Himalayan blackberry	*Rubus armeniacus*	>90	730	
G	SR13-5	Himalayan blackberry	*Rubus armeniacus*	75-90	675	
G	SR13-7	Himalayan blackberry	*Rubus armeniacus*	>90	245	
G	SR13-8	Himalayan blackberry	*Rubus armeniacus*	25-50	215	
H	PN1-1	Himalayan blackberry	*Rubus armeniacus*	25-50	8730	
H	GC1-1	Himalayan blackberry	*Rubus armeniacus*	25-50	1615	
H	BR1-2	Parrot's feather	*Myriophyllum aquaticum*	25-50	840	
H	BR1-1	Himalayan blackberry	*Rubus armeniacus*	25-50	665	

Preserve General Conditions Overview Map

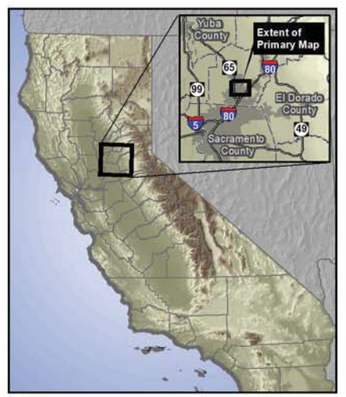
Rocklin Open Space Preserve
Placer County, California

Legend

- Extent of Submap (with letter)
- Highway or Interstate
- City of Rocklin Boundary

Preserve Subsection

- Brighton (BR)
- Claremont (C)
- Garnet Creek (GC)
- Orchard Creek (OC)
- Parkland North (PN)
- Placer Creek Corporate Center (PCCC)
- Stanford Ranch (SR)
- Sunset West (SW)
- Whitney Ranch (WR)



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0 0.25 0.5 1 Mi

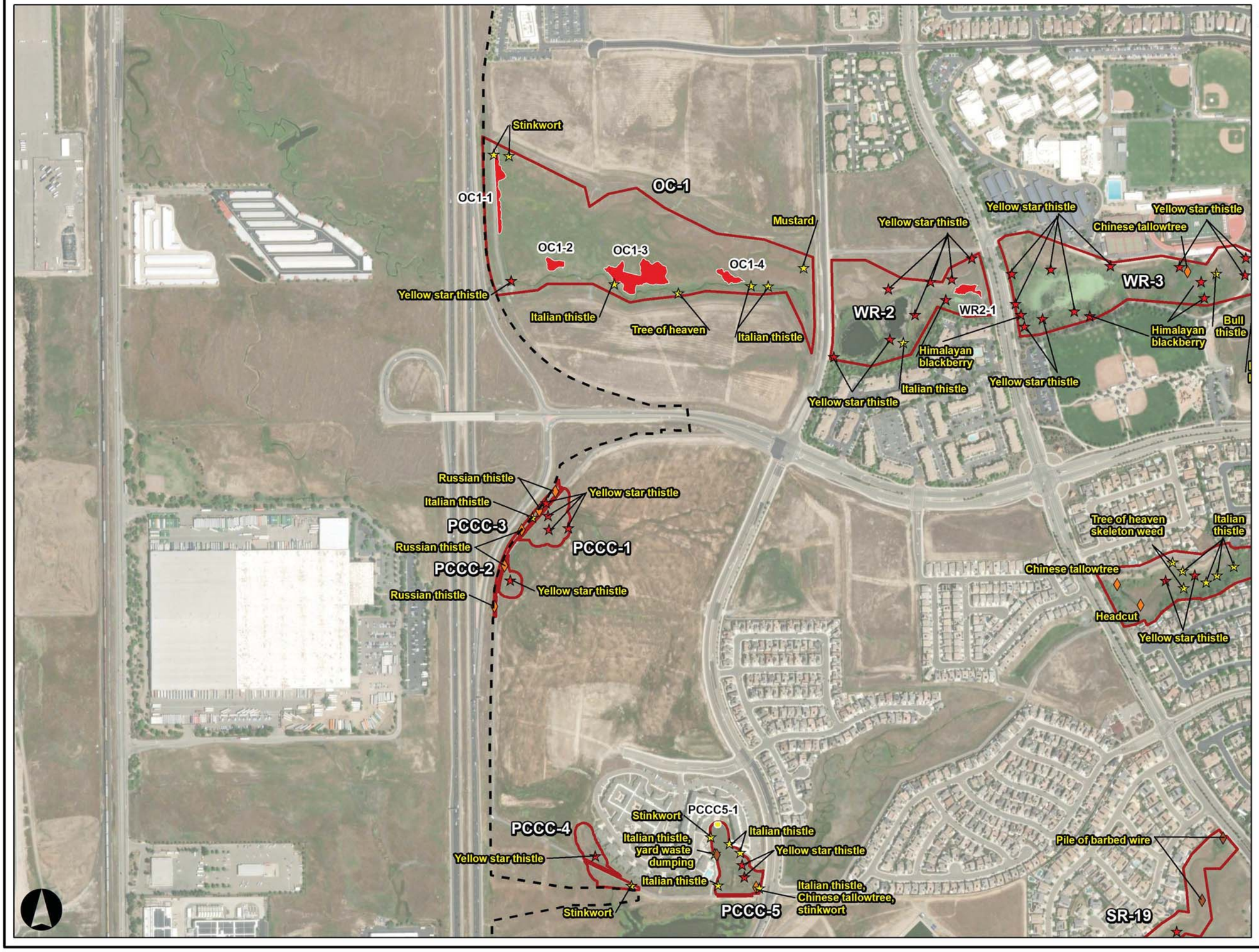
Data Sources: City of Rocklin | GAP | ESRI World Topo Map
Map Produced By: L. Neuhaus, Dec 2023
Map File: 571_Gen-Con_OVERVIEW_B-L_2023-1219.mxd

Vollmar NATURAL LANDS CONSULTING

Preserve General Conditions MAP A

Orchard Creek
Placer Creek Corporate Center
Whitney Ranch

Rocklin Open Space Preserve
Placer County, California



Legend*

- Preserve Area
- City of Rocklin Boundary

General Conditions Data 2023

- Erosion
- Fencing
- Garden
- Irrigation Runoff
- Other
- Signage
- Trash
- Vandalism
- Yard waste
- Cal-IPC Invasive Plant (High)**
- Cal-IPC Invasive Plant (Moderate)**

Tracked Invasive Plant Population (with ID)

- Invasive Plant (Cal-IPC High)**
- Invasive Plant (Cal-IPC Moderate)**

* All legend items may not appear on map
** California Invasive Plant Council's Invasive Plant Inventory Rating

1:6,700 at Tabloid Layout

0 50 100 200 Meters
0 250 500 1,000 Feet

Data Sources:
USDA NAIP 2016 (aerial photo) | City of Roseville
Vollmar Natural Lands Consulting, various years
Map Produced By: L. Neuhaus, K. Chinn, Dec. 2023
Map File: 571_Gen-Con_Preserves_B-L_2023-1217.mxd

Preserve General Conditions MAP B

Whitney Ranch

Rocklin Open Space Preserve
Placer County, California

Legend*

- Preserve Area
- City of Rocklin Boundary

General Conditions Data 2023

- Erosion
- Fencing
- Garden
- Irrigation Runoff
- Other
- Signage
- Trash
- Vandalism
- Yard waste
- Cal-IPC Invasive Plant (High)**
- Cal-IPC Invasive Plant (Moderate)**

Tracked Invasive Plant Population (with ID)

- Invasive Plant (Cal-IPC High)**
- Invasive Plant (Cal-IPC Moderate)**

* All legend items may not appear on map
** California Invasive Plant Council's Invasive Plant Inventory Rating

1:6,700 at Tabloid Layout

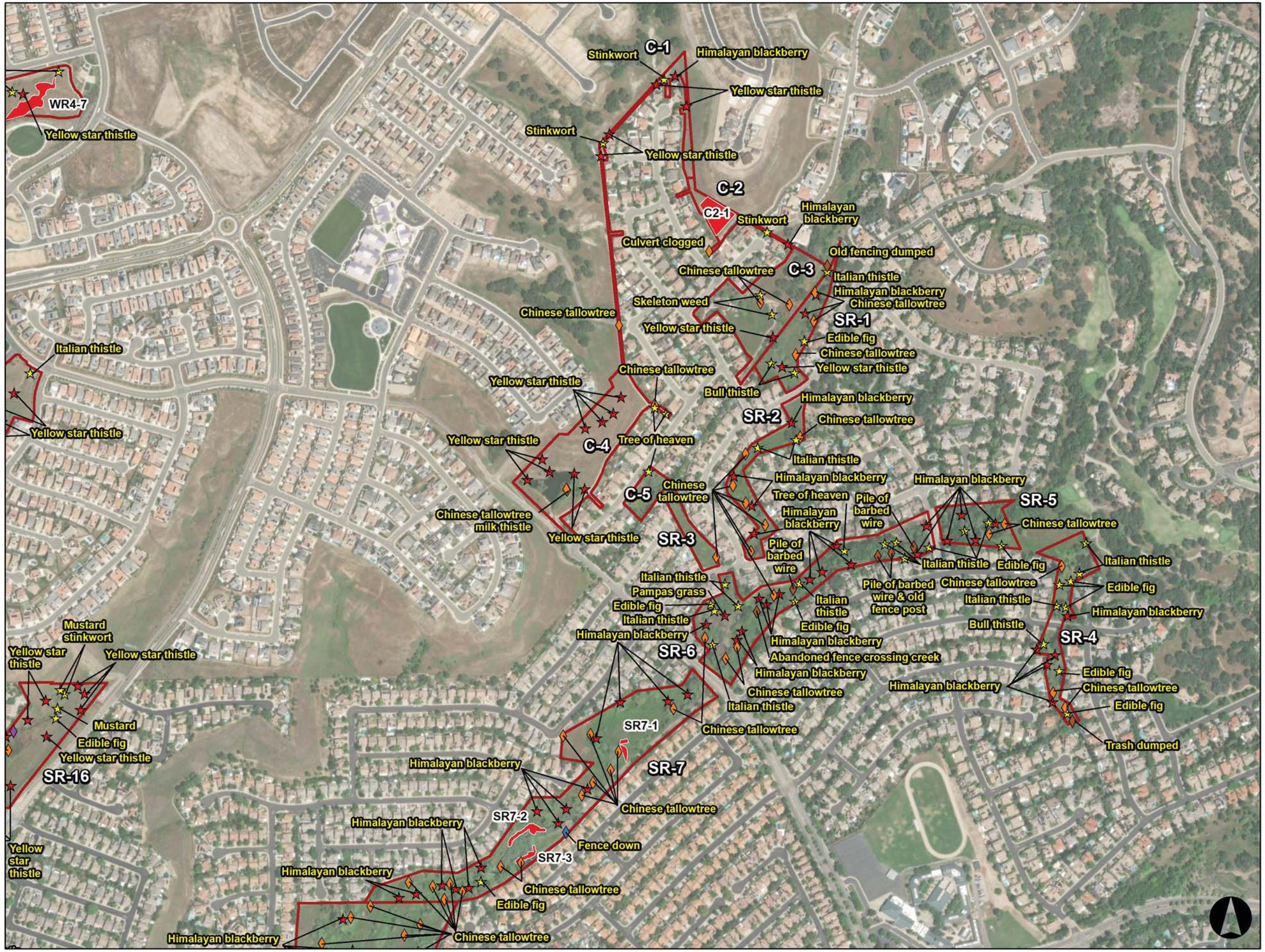
0 50 100 200 Meters
0 250 500 1,000 Feet

Data Sources:
USDA NAIP 2016 (aerial photo) | City of Roseville
Vollmar Natural Lands Consulting, various years
Map Produced By: L. Neuhaus, K. Chinn, Dec. 2023
Map File: 571_Gen-Con_Preserves_B-L_2023-1217.mxd

Preserve General Conditions
MAP C

Claremont
Stanford Ranch

Rocklin Open Space Preserve
Placer County, California



Legend*

- Preserve Area Boundary
- City of Rocklin Boundary

General Conditions Data 2023

- Erosion
- Fencing
- Garden
- Irrigation Runoff
- Other
- Signage
- Trash
- Vandalism
- Yard waste
- Cal-IPC Invasive Plant (High)**
- Cal-IPC Invasive Plant (Moderate)**

Tracked Invasive Plant Population (with ID)

- Invasive Plant (Cal-IPC High)**
- Invasive Plant (Cal-IPC Moderate)**

* All legend items may not appear on map
** California Invasive Plant Council's Invasive Plant Inventory Rating

1:6,700 at Tabloid Layout

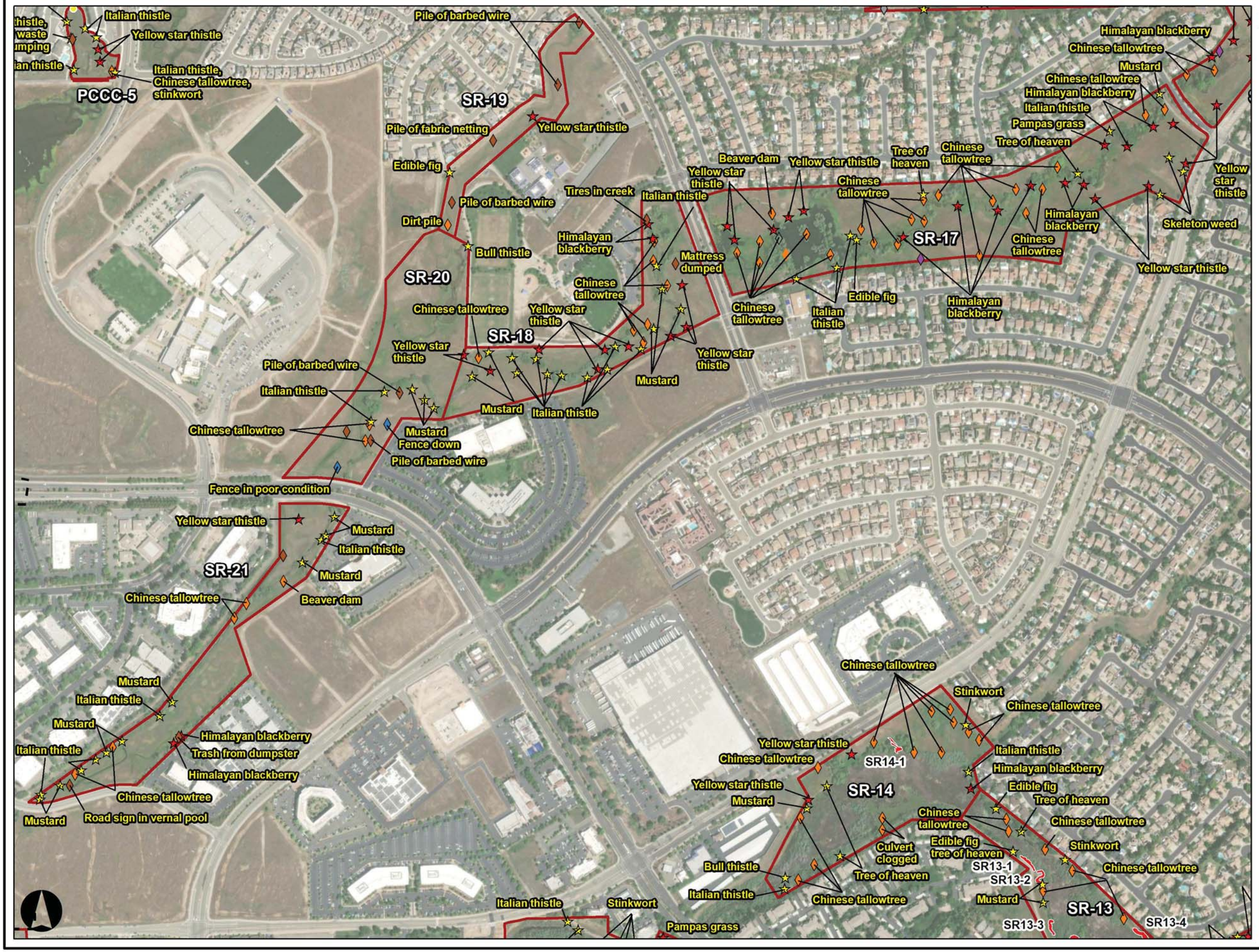
0 50 100 200 Meters
0 250 500 1,000 Feet

Data Sources:
USDA NAIP 2016 (aerial photo) | City of Roseville
Vollmar Natural Lands Consulting, various years
Map Produced By: L. Neuhaus, K. Chinn, Dec. 2023
Map File: 571_Gen-Con_Preserves_B-L_2023-1217.mxd

Preserve General Conditions MAP D

Stanford Ranch

Rocklin Open Space Preserve
Placer County, California



Legend*

- Preserve Area
- City of Rocklin Boundary

General Conditions Data 2023

- Erosion
- Fencing
- Garden
- Irrigation Runoff
- Other
- Signage
- Trash
- Vandalism
- Yard waste
- Cal-IPC Invasive Plant (High)**
- Cal-IPC Invasive Plant (Moderate)**

Tracked Invasive Plant Population (with ID)

- Invasive Plant (Cal-IPC High)**
- Invasive Plant (Cal-IPC Moderate)**

* All legend items may not appear on map
** California Invasive Plant Council's Invasive Plant Inventory Rating

1:6,700 at Tabloid Layout

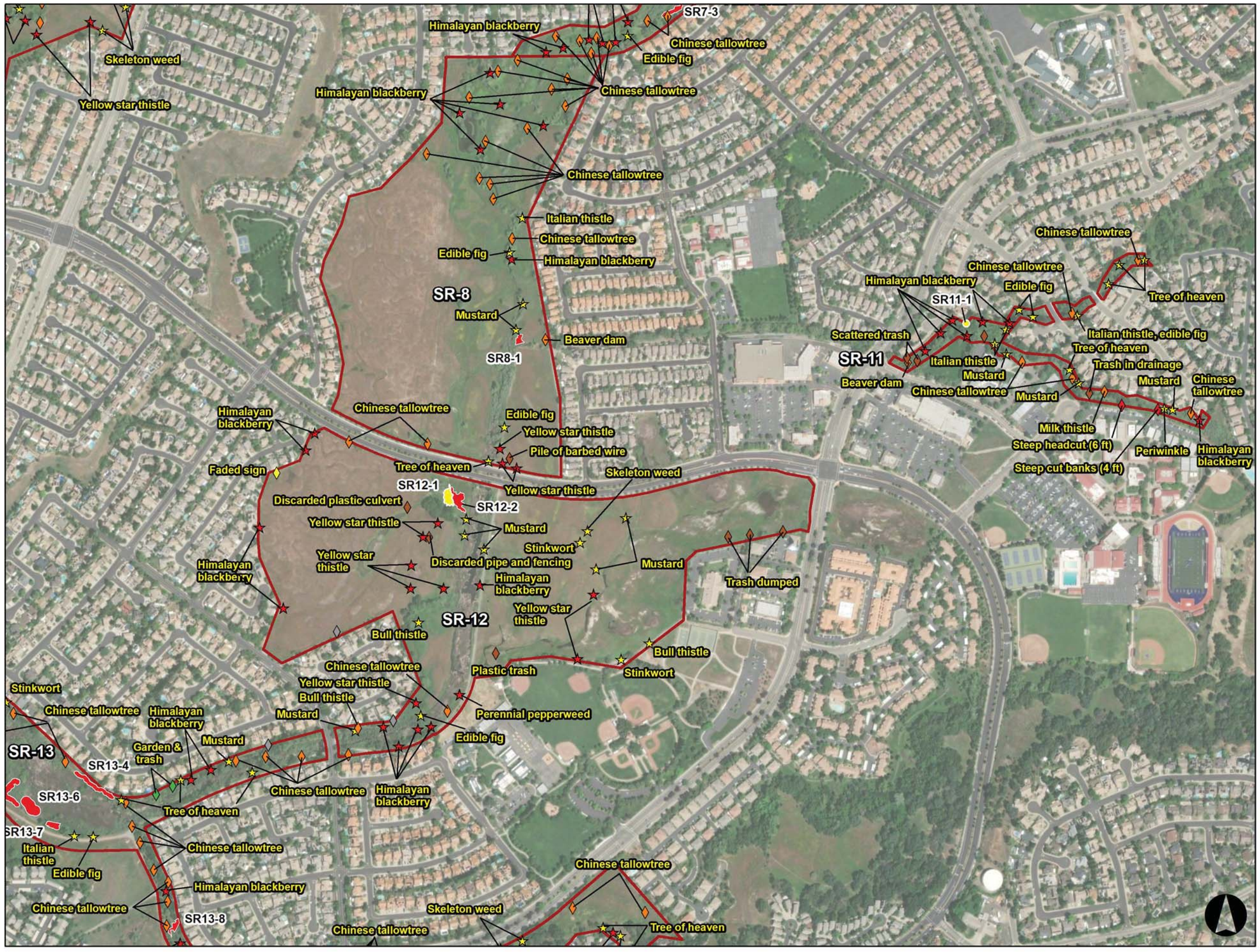
0 50 100 200 Meters
0 250 500 1,000 Feet

Data Sources:
USDA NAIP 2016 (aerial photo) | City of Roseville
Vollmar Natural Lands Consulting, various years
Map Produced By: L. Neuhaus, K. Chinn, Dec. 2023
Map File: 571_Gen-Con_Preserves_B-L_2023-1217.mxd

Preserve General Conditions MAP E

Stanford Ranch

Rocklin Open Space Preserve
Placer County, California



Legend*

- Preserve Area Boundary
- City of Rocklin Boundary

General Conditions Data 2023

- Erosion
- Fencing
- Garden
- Irrigation Runoff
- Other
- Signage
- Trash
- Vandalism
- Yard waste
- Cal-IPC Invasive Plant (High)**
- Cal-IPC Invasive Plant (Moderate)**

Tracked Invasive Plant Population (with ID)

- Invasive Plant (Cal-IPC High)**
- Invasive Plant (Cal-IPC Moderate)**

* All legend items may not appear on map
** California Invasive Plant Council's Invasive Plant Inventory Rating

1:6,700 at Tabloid Layout

0 50 100 200 Meters
0 250 500 1,000 Feet

Data Sources:
USDA NAIP 2016 (aerial photo) | City of Roseville
Vollmar Natural Lands Consulting, various years
Map Produced By: L. Neuhaus, K. Chinn, Dec. 2023
Map File: 571_Gen-Con_Preserves_B-L_2023-1217.mxd

Preserve General Conditions
MAP F

Sunset West

Rocklin Open Space Preserve
Placer County, California

Legend*

- Preserve Area
- City of Rocklin Boundary

General Conditions Data 2023

- Erosion
- Fencing
- Garden
- Irrigation Runoff
- Other
- Signage
- Trash
- Vandalism
- Yard waste
- Cal-IPC Invasive Plant (High)**
- Cal-IPC Invasive Plant (Moderate)**

Tracked Invasive Plant Population (with ID)

- Invasive Plant (Cal-IPC High)**
- Invasive Plant (Cal-IPC Moderate)**

* All legend items may not appear on map
** California Invasive Plant Council's Invasive Plant Inventory Rating

1:6,700 at Tabloid Layout

0 50 100 200 Meters
0 250 500 1,000 Feet

Data Sources:
USDA NAIP 2016 (aerial photo) | City of Roseville
Vollmar Natural Lands Consulting, various years
Map Produced By: L. Neuhaus, K. Chinn, Dec. 2023
Map File: 571_Gen-Con_Preserves_B-L_2023-1217.mxd

Preserve General Conditions MAP G

Sunset West
Stanford Ranch

Rocklin Open Space Preserve
Placer County, California

Legend*

- Preserve Area
- City of Rocklin Boundary

General Conditions Data 2023

- Erosion
- Fencing
- Garden
- Irrigation Runoff
- Other
- Signage
- Trash
- Vandalism
- Yard waste
- Cal-IPC Invasive Plant (High)**
- Cal-IPC Invasive Plant (Moderate)**

Tracked Invasive Plant Population (with ID)

- Invasive Plant (Cal-IPC High)**
- Invasive Plant (Cal-IPC Moderate)**

* All legend items may not appear on map
** California Invasive Plant Council's Invasive Plant Inventory Rating

1:6,700 at Tabloid Layout

0 50 100 200 Meters
0 250 500 1,000 Feet

Data Sources:
USDA NAIP 2016 (aerial photo) | City of Roseville
Vollmar Natural Lands Consulting, various years
Map Produced By: L. Neuhaus, K. Chinn, Dec. 2023
Map File: 571_Gen-Con_Preserves_B-L_2023-1217.mxd

Preserve General Conditions
MAP H

Parklands North
Garnet Creek
Brighton

Rocklin Open Space Preserve
Placer County, California

Legend*

- Preserve Area Boundary
- City of Rocklin Boundary

General Conditions Data 2023

- Erosion
- Fencing
- Garden
- Irrigation Runoff
- Other
- Signage
- Trash
- Vandalism
- Yard waste
- Cal-IPC Invasive Plant (High)**
- Cal-IPC Invasive Plant (Moderate)**

Tracked Invasive Plant Population (with ID)

- Invasive Plant (Cal-IPC High)**
- Invasive Plant (Cal-IPC Moderate)**

* All legend items may not appear on map
** California Invasive Plant Council's Invasive Plant Inventory Rating

1:6,700 at Tabloid Layout

0 50 100 200 Meters
0 250 500 1,000 Feet

Data Sources:
USDA NAIP 2016 (aerial photo) | City of Roseville
Vollmar Natural Lands Consulting, various years
Map Produced By: L. Neuhaus, K. Chinn, Dec. 2023
Map File: 571_Gen-Con_Preserves_B-L_2023-1217.mxd

APPENDIX C

Representative Photos from 2023 Monitoring

Pool 286, Stanford Ranch (SR-8) | January 24, 2023 (L. Neuhaus)
Vernal pool fairy shrimp documented in this pool for the first time

Pool 128, Sunset West (SW-2) | March 21, 2023 (E. Smith)
Vernal pool fairy shrimp documented in this pool for the first time

Pool 92, Sunset West (SW-1) | May 3, 2023 (M. Vollmar)

Pool 191, Stanford Ranch (SR-12) | May 4, 2023 (R. Miller)

Hispid salty bird's-beak (*Chloropyron molle* ssp. *hispidum*), Stanford Ranch (SR-12) | June 28, 2023 (R. Miller)

Garden in Stanford Ranch (SR-13) | May 23, 2023 (M. Vollmar)

Beaver dam, Stanford Ranch (SR-14) | May 23, 2023 (M. Vollmar)

Mustard adjacent to riparian area, Sunset West (SW-1) | May 24, 2023 (L. Neuhaus)

Old fencing and trash in culvert mouth, Sunset West (SW-8) | May 23, 2023 (L. Neuhaus)

General setting, grassland, Stanford Ranch (SR-8) | July 24, 2023 (A. Dobson)

General setting, riparian area, Stanford Ranch (SR-13) | May 23, 2023 (M. Vollmar)

General setting, riparian area, Sunset West (SW-6) | May 24, 2023 (M. Vollmar)

General setting, grassland, Sunset West (SW-5) | May 24, 2023 (M. Vollmar)

General setting, Brighton (BR-1) | September 18, 2023 (M. Yonashiro)

General setting, Garnet Creek (GC-1) | September 18, 2023 (M. Yonashiro)

General setting, Whitney Ranch (WR-1) | July 26, 2023 (M. Yonashiro)

General setting, Whitney Ranch (WR-4) | September 18, 2023 (M. Yonashiro)

General setting, grassland, Claremont (C-3) | September 18, 2023 (M. Yonashiro)

General setting, grassland, Orchard Creek (OC-1) | September 18, 2023 (M. Yonashiro)

General setting, Placer Creek Corporate Center (PCCC-5) | September 18, 2023 (M. Yonashiro)

APPENDIX D

Maps of Pools and Preserve Areas Included in Vernal Pool Monitoring

FIGURE D-1
Vernal Pools Sampled During 2023

Sunset West

Rocklin Open Space Preserve
Placer County, California

Legend*

- Vernal Pool Fairy Shrimp Documentation
- Stream
- Sampled Pool (with ID)
- City of Rocklin Boundary

Preserve Area

- Brighton (BR)
- Claremont (C)
- Garnet Creek (GC)
- Orchard Creek (OC)
- Parkland North (PN)
- Placer Creek Corporate Center (PCCC)
- Stanford Ranch (SR)
- Sunset West (SW)
- Whitney Ranch (WR)

* Note 1: all legend items may not appear on map
Note 2: Vernal Pool Fairy Shrimp (*Branchinecta lynchii*)

1:4,800
(1 inch = 400 feet at Tabloid Layout)

0 37.5 75 150 Meters
0 150 300 600 Feet

Vollmar NATURAL LANDS CONSULTING

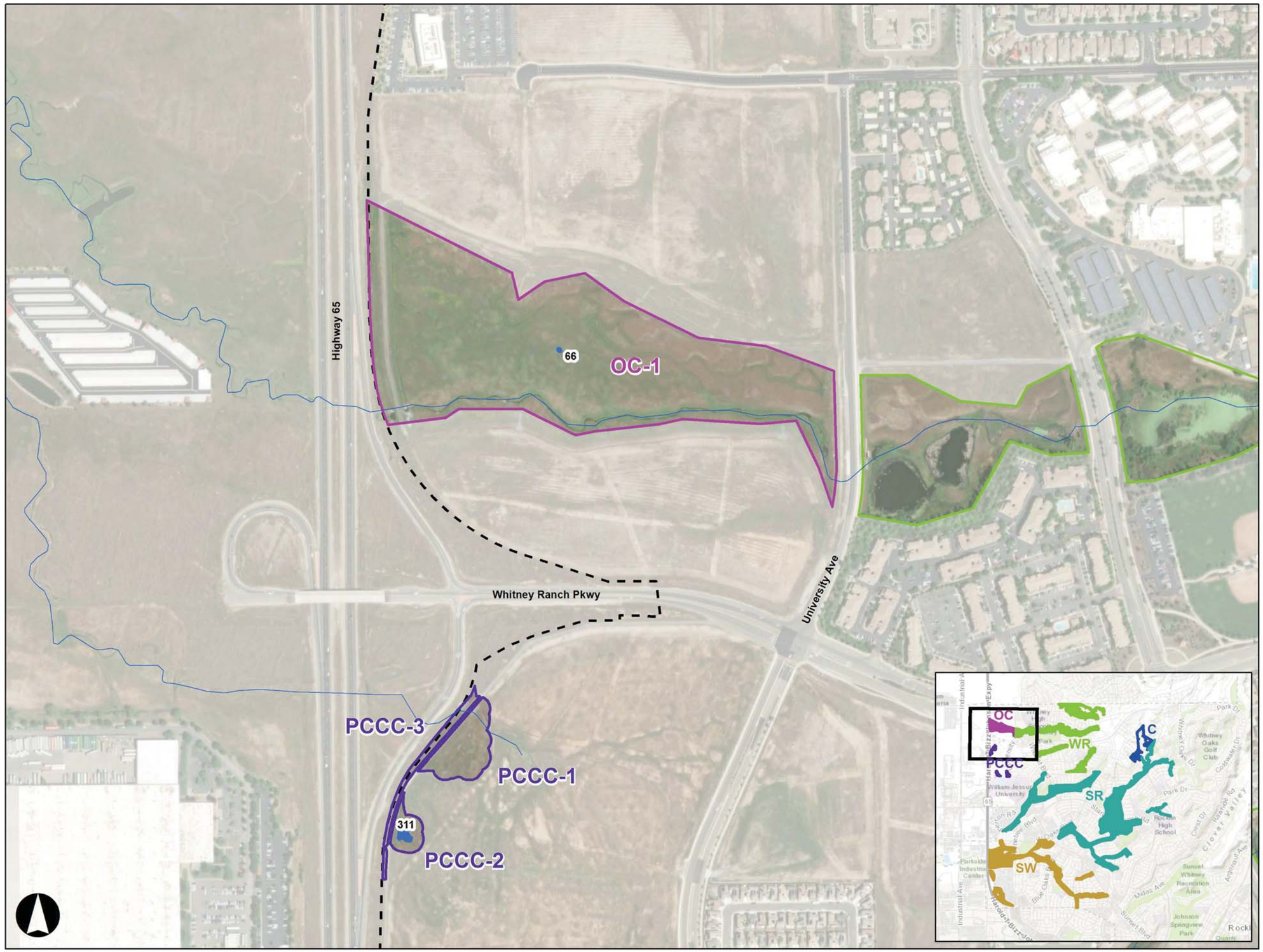
Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, VNLC 2023
Map File: 571_VP_field_B-L_2023-0810.mxd

FIGURE D-2

Vernal Pools Sampled During 2023

Orchard Creek
Placer Creek
Corporate Center

Rocklin Open Space Preserve
Placer County, California



Legend*

- Vernal Pool Fairy Shrimp Documentation
- Stream
- Sampled Pool (with ID)
- City of Rocklin Boundary

Preserve Area

- Brighton (BR)
- Claremont (C)
- Garnet Creek (GC)
- Orchard Creek (OC)
- Parkland North (PN)
- Placer Creek Corporate Center (PCCC)
- Stanford Ranch (SR)
- Sunset West (SW)
- Whitney Ranch (WR)

* Note 1: all legend items may not appear on map
Note 2: Vernal Pool Fairy Shrimp (*Branchinecta lynchii*)

1:4,800
(1 inch = 400 feet at Tabloid Layout)

0 37.5 75 150 Meters
0 150 300 600 Feet

Vollmar NATURAL LANDS CONSULTING

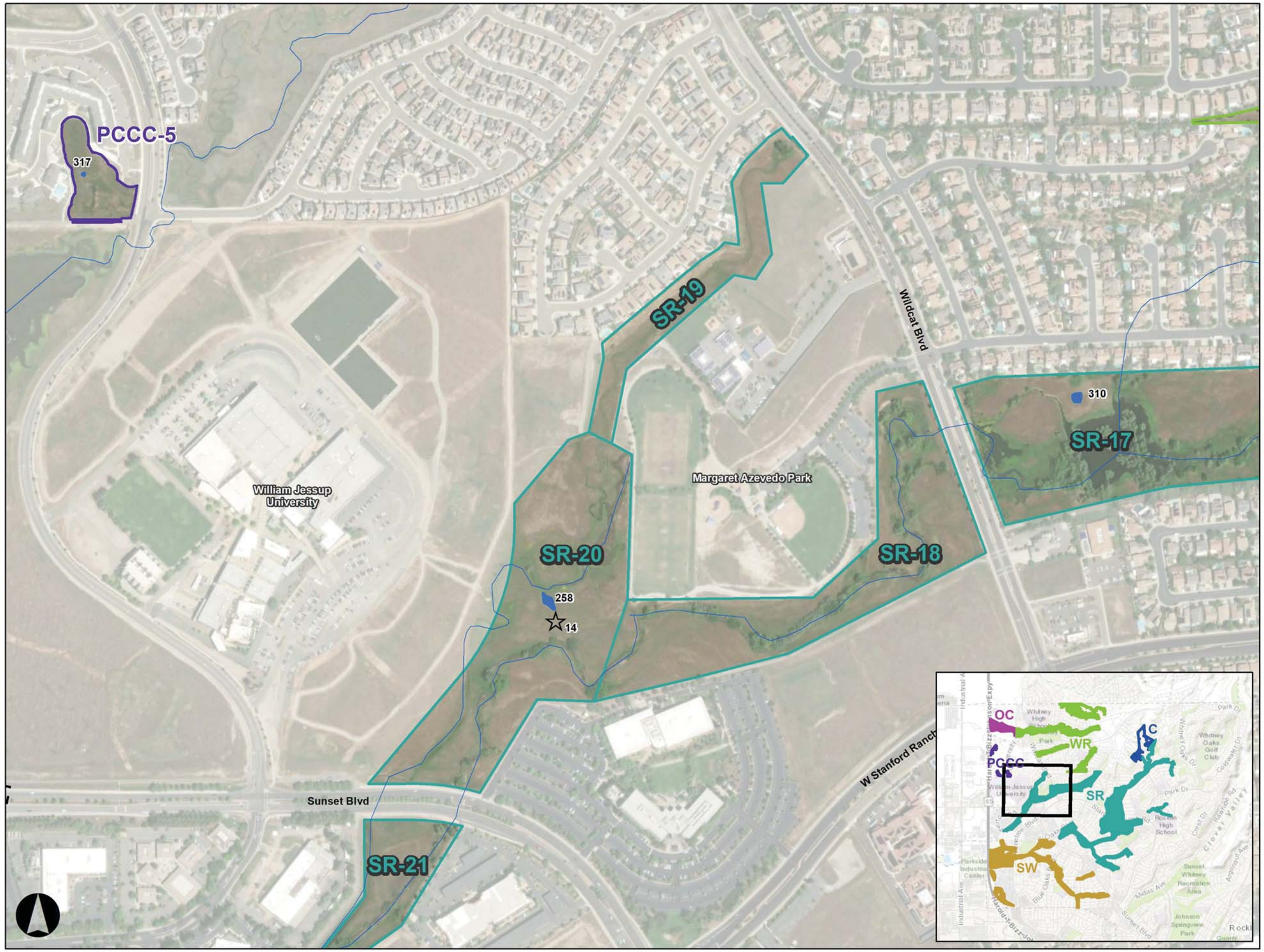
Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, VNLC 2023
Map File: 571_VP_field_B-L_2023-0810.mxd

FIGURE D-3

Vernal Pools Sampled During 2023

Stanford Ranch
Placer Creek
Corporate Center

Rocklin Open Space Preserve
Placer County, California



Legend*

- Vernal Pool Fairy Shrimp Documentation
- Stream
- Sampled Pool (with ID)
- City of Rocklin Boundary

Preserve Area

- Brighton (BR)
- Claremont (C)
- Garnet Creek (GC)
- Orchard Creek (OC)
- Parkland North (PN)
- Placer Creek Corporate Center (PCCC)
- Stanford Ranch (SR)
- Sunset West (SW)
- Whitney Ranch (WR)

* Note 1: all legend items may not appear on map
Note 2: Vernal Pool Fairy Shrimp (*Branchinecta lynchii*)

1:4,800
(1 inch = 400 feet at Tabloid Layout)

0 37.5 75 150 Meters
0 150 300 600 Feet

Vollmar NATURAL LANDS CONSULTING

Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, VNLC 2023
Map File: 571_VP_field_B-L_2023-0810.mxd

FIGURE D-4
Vernal Pools Sampled During 2023

Stanford Ranch

Rocklin Open Space Preserve
Placer County, California

Legend*

- Vernal Pool Fairy Shrimp Documentation
- Stream
- Sampled Pool (with ID)
- City of Rocklin Boundary

Preserve Area

- Brighton (BR)
- Claremont (C)
- Garnet Creek (GC)
- Orchard Creek (OC)
- Parkland North (PN)
- Placer Creek Corporate Center (PCCC)
- Stanford Ranch (SR)
- Sunset West (SW)
- Whitney Ranch (WR)

* Note 1: all legend items may not appear on map
Note 2: Vernal Pool Fairy Shrimp (*Branchinecta lynchii*)

1:4,800
(1 inch = 400 feet at Tabloid Layout)

0 37.5 75 150 Meters
0 150 300 600 Feet

Vollmar NATURAL LANDS CONSULTING

Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, VNLC 2023
Map File: 571_VP_field_B-L_2023-0810.mxd

FIGURE D-5
Vernal Pools Sampled During 2023

Sunset West

Rocklin Open Space Preserve
Placer County, California

Legend*

- Vernal Pool Fairy Shrimp Documentation
- Stream
- Sampled Pool (with ID)
- City of Rocklin Boundary

Preserve Area

- Brighton (BR)
- Claremont (C)
- Garnet Creek (GC)
- Orchard Creek (OC)
- Parkland North (PN)
- Placer Creek Corporate Center (PCCC)
- Stanford Ranch (SR)
- Sunset West (SW)
- Whitney Ranch (WR)

* Note 1: all legend items may not appear on map
Note 2: Vernal Pool Fairy Shrimp (*Branchinecta lynchii*)

1:4,800
(1 inch = 400 feet at Tabloid Layout)

0 37.5 75 150 Meters
0 150 300 600 Feet

Vollmar NATURAL LANDS CONSULTING

Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, VNLC 2023
Map File: 571_VP_field_B-L_2023-0810.mxd

APPENDIX E

2023 Wet Season Monitoring Data

Appendix E: 2023 Wet Season Monitoring Data

Survey Round[1]	Pool Number	Max Depth (in.)	% Area of Inundation	Temperature (C)	Turbidity(1-4; 1=clear)	Large Branchiopods[2,3]						Estimated # of LIOC in Pool	Estimated # of BRLY in Pool	Full Invertebrate Survey	Ostracoda	Copepoda		Cladocera	Coleoptera			Hemiptera		Diptera		Lymnaeidae	Microturbellaria	Hydracarina	Trichoptera	Amphipoda	Odonata	*Pseudacris sierra* larvae	*Pseudacris sierra* tadpoles	*Pseudacris sierra* adults
						LIOC	BRLY	CYCA	LEPA	BRME	Juvenile (sp. unknown)					Calanoida	Cyclopoida		Dytiscidae	Haliplidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae									
1	12	4	>90%	15	1										NC			X							R		NC							
1	13	0	0	Dry	Dry																													
1	18	3	90%	16	1										NC										X		NC							
1	20	5	90%	14	1										NC	C		R	NC						NC		NC							
1	23	5	100%	16	1										NC	C									NC		NC							
1	47	10	>90%	10	1										R			R																
1	48	10	100%	7	1										NC	C		NC							R		NC							
1	51	7	90%	8	1										X												R							
1	53	3	30%	11	1										R	C									X		R			X				
1	59	10	80%	11	1										NC												NC			R				
1	66	14	90%	14	1										NC	NC						X					C			X				
1	79	9	75-90%	9	1										C		C																	
1	82	1	5-10%	NA	3																													
1	86	11	90%	7	1													X									C							
1	88	11	100%	6	1										C			NC									NC							
1	90	6	90%	6	1										R			R																
1	92	6	80%	6	1										VC												X							
1	94	10	100%	6	1										C										R		R							
1	99	4	60%	6	1										C				R															
1	101	7	>90%	10	1										C																			
1	108	8	90%	7	1										NC										R		R							
1	110	7	90%	7	1										C									R			NC							
1	111	14	100%	6	1										NC												R							
1	112	3	80%	7	1										X																			
1	116	0	0	Dry	Dry																													
1	125	0	0	Dry	Dry																													
1	128	6	75-90%	12	1										C												R							
1	129	9	>90%	12	1										C		R																	
1	131	15	>90%	10	2										X	NC	C										C							
1	133	9	80%	10	1										C												C							
1	134	16	90%	11	2										A	A		NC							R		R							
1	136	12	>90%	14	2										NC	R											R							
1	138	11	>90%	14	1		X						10+		C												NC							
1	148	3	90%	16	1										NC										R		NC							
1	150	5	90%	14	1										C	C									R		C							
1	154	5	80%	14	1	R						10+			NC							X			NC									
1	160	4	90%	16	1										C				NC						R		C							
1	162	9	100%	13	1										C			NC									NC							
1	163	4	70%	18	1										VC	VC									R									
1	170	8	100%	13	1										C	C		C	NC						R		C							
1	172	12	100%	12	1			X							C	C		C	X								C							

Survey Round[1]	Pool Number	Max Depth (in.)	% Area of Inundation	Temperature (C)	Turbidity(1-4; 1=clear)	Large Branchiopods[2,3]						Estimated # of LIOC in Pool	Estimated # of BRLY in Pool	Full Invertebrate Survey	Ostracoda	Copepoda		Cladocera	Coleoptera			Hemiptera		Diptera		Lymnaeidae	Microturbellaria	Hydracarina	Trichoptera	Amphipoda	Odonata	*Pseudacris sierra* larvae	*Pseudacris sierra* tadpoles	*Pseudacris sierra* adults
						LIOC	BRLY	CYCA	LEPA	BRME	Juvenile (sp. unknown)					Calanoida	Cyclopoida		Dytiscidae	Haliplidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae									
1	173	1	25-50%	Dry	Dry										X												X						
1	188	8	>90%	16	1										C	C	R										C						
1	189	8	>90%	13	1	C									C																		
1	191	7	>90%	14	1										C	R		NC							R		C						
1	196	5	>90%	16	1										C	C									R		NC						
1	198	7	>90%	13	1										C												NC						
1	199	9	>90%	13	1										NC	NC		X							R								
1	208	0	0	Dry	Dry																												
1	210	3	25-50%	10	1										C	C																	
1	214	8	50-75%	10	1																		R				NC						
1	234	8	90%	9	1											NC									R								
1	238	1	20%	13	1										C	A		NC							R					R			
1	244	9	80%	9	1										NC	X		X															
1	245	2	5-10%	14	3										X		X																
1	249	8	90%	8	1										C												NC						
1	258	6	80%	17	1										X	X		X							X		C						
1	262	8	100%	8	1										C	VC									NC		VC						
1	277	3	>90%	14	1										C												NC						
1	286	11	100%	9	1		NC						100+		C			X									C					X		
1	287	5	100%	na	1		X						10+																				
1	290	5	100%	16	1																				NC		C						
1	307	10	100%	8	1	X						100+			C	NC		X							X		NC						
1	310	6	90%	18	1										NC			NC							R								
1	311	5	50-75%	15	1																				R								
1	317	2	50-75%	15	1										X	X	X																
1	331	9	100%	11	1										C			C	NC								C						
1	332	14	100%	8	1		X																										
2	12	6	>90%	15	1										NC	C																	
2	13	4	>90%	15	1										NC				R														
2	18	5	>90%	16	1										NC				R														
2	20	5	>90%	16	1										C	C										NC	C						
2	23	7	>90%	16	1										C	NC	C									NC							
2	47	10	>90%	10	1													VC						NC	R		R						
2	48	10	>90%	10	1										C	NC	NC									NC							
2	51	6	>90%	15	1										A				R								NC						
2	53	4	>90%	10	1											C	NC								R								
2	54	10	>90%	10	1										NC								R										
2	59	10	75-90%	14	1										C			C	NC														
2	66	17	>90%	10	1										C	C		C	NC														
2	79	9	75-90%	15	1										C										NC								
2	82	5	50-75%	15	1										C	NC		C							NC								
2	86	12	75-90%	15	1										C	A			NC						NC		NC						

Survey Round[1]	Pool Number	Max Depth (in.)	% Area of Inundation	Temperature (C)	Turbidity(1-4; 1=clear)	Large Branchiopods[2,3]						Estimated # of LIOC in Pool	Estimated # of BRLY in Pool	Full Invertebrate Survey	Ostracoda	Copepoda		Cladocera	Coleoptera			Hemiptera		Diptera		Lymnaeidae	Microturbellaria	Hydracarina	Trichoptera	Amphipoda	Odonata	*Pseudacris sierra* larvae	*Pseudacris sierra* tadpoles	*Pseudacris sierra* adults
						LIOC	BRLY	CYCA	LEPA	BRME	Juvenile (sp. unknown)					Calanoida	Cyclopoida		Dytiscidae	Haliplidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae									
2	88	11	75-90%	14	1										C		C	C	NC						NC		C						
2	90	6	75-90%	15	1										C	C	NC								NC		NC						
2	92	8	75-90%	15	1										C			NC															
2	94	10	>90%	15	1										C			A	NC						C		NC					NC		
2	99	7	>90%	10	1																													
2	101	11	>90%	10	1										C										C									
2	108	11	>90%	10	1											C		C	R															
2	110	7	>90%	10	1										C			A									R							
2	111	11	>90%	10	1											R	R	VC	NC						NC									
2	112	5	>90%	10	1										C		NC								C									
2	116	0	0	Dry	Dry																													
2	125	2	1-5%	10	1																													
2	128	6	>90%	10	1		C						100+		NC																			
2	129	10	>90%	10	1										C										NC									
2	130	10	>90%	10	1													C							NC									
2	131	18	>90%	10	1													A							R									
2	133	11	75-90%	15	1										C			VC																
2	134	15	75-90%	14	1										A	VC		A	NC			R												
2	136	12	>90%	15	1										A	VC		VC	C						NC		NC							
2	138	11	>90%	15	1										A			C	R				R		NC		R							
2	148	5	>90%	16	1													NC	R								R							
2	150	5	>90%	16	1										NC			C									NC							
2	154	8	>90%	16	1	R									NC	NC																		
2	160	5	>90%	16	1										NC	NC																		
2	162	9	>90%	16	1										C				NC						NC								NC	
2	163	8	>90%	16	1										A	C									NC		R							
2	170	10	>90%	16	1										C	C											NC							
2	172	14	>90%	16	1										C		NC	C									NC						NC	
2	173	4	>90%	15	1										NC																			
2	188	10	>90%	15	1										A			A	NC						NC		C							
2	189	10	>90%	15	1		X																											
2	191	22	>90%	14	1										C	C		C									NC							
2	196	4	>90%	15	1										NC	C																		
2	198	8	>90%	15	1										NC	NC																		
2	199	11	>90%	15	1											C		NC									R							
2	208	0		Dry	Dry																													
2	210	3	50-75%	10	1											C	R								NC									
2	214	9	50-75%	10	2											VC	R										R							
2	234	7	>90%	10	1										NC		VC								R									
2	238	3	75-90%	10	1											C	R								R									
2	244	7	75-90%	15	1										C			NC																

Survey Round[1]	Pool Number	Max Depth (in.)	% Area of Inundation	Temperature (C)	Turbidity(1-4; 1=clear)	Large Branchiopods[2,3]						Estimated # of LIOC in Pool	Estimated # of BRLY in Pool	Full Invertebrate Survey	Ostracoda	Copepoda		Cladocera	Coleoptera			Hemiptera		Diptera		Lymnaeidae	Microturbellaria	Hydracarina	Trichoptera	Amphipoda	Odonata	*Pseudacris sierra* larvae	*Pseudacris sierra* tadpoles	*Pseudacris sierra* adults
						LIOC	BRLY	CYCA	LEPA	BRME	Juvenile (sp. unknown)					Calanoida	Cyclopoida		Dytiscidae	Haliplidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae										
2	245	5	50-75%	10	1																													
2	249	9	75-90%	15	1										C		C					NC		NC		NC								
2	258	6	>90%	10	1										C	NC		NC						R									
2	262	9	>90%	15	1										NC			C								NC						NC		
2	277	5	>90%	15	1										NC																			
2	286	13	>90%	10	1		NC						100+		C											R								
2	287	7	>90%	10	1		C						100+											R									
2	288	8	>90%	10	1		R						10+		R											R								
2	290	6	>90%	10	2																			C		NC								
2	307	8	>90%	10	1	R						10+			NC	C		NC	NC				R			NC								
2	310	10	>90%	10	2																					NC								
2	311	8	>90%	10	1										C	R	R									R								
2	317	3	>90%	10	1										C			NC																
2	331	7	>90%	14	1										C			A	NC															
2	332	14	>90%	10	1											C		C								NC								

1. Survey Rounds:
Round 1: January 24, 2023
Round 2: March 21, 2023

2. Species Acronyms:
LIOC = *Linderiella occidentalis*
BRLY = *Branchinecta lynchi*
CYCA = *Cyzicus californicus*
LEPA = *Lepidurus packardi*
BRME = *Branchinecta mesovallensis*
BR sp. = *Branchinecta* species

3. Abundance Rating:
R = Rare (<2 Individuals)
NC = Not Common (2-10 Individuals)
C = Common (11-50 Individuals)
VC = Very Common (50-100 Individuals)
A = Abundant (>100 Individuals)
X = Present; observed during non-quantitative sampling

APPENDIX F

2023 Vernal Pool Floristics and Grassland Vegetation Data

Family	Scientific Name	Common Name	Vernal Pool Indicator/Associate	Native	Wetland Status
Alismataceae	*Alisma lanceolatum*	pink water plantain	None	No	OBL
Amaranthaceae	*Amaranthus californicus*	California amaranth	None	Yes	FACW
Apiaceae	*Eryngium castrense*	Great Valley button-celery	VPA	Yes	OBL
Apiaceae	*Torilis arvensis*	hedge parsley	None	No	NL
Asteraceae	*Centromadia fitchii*	spikeweed	None	Yes	FACU
Asteraceae	*Centaurea solstitialis*	yellow starthistle	None	No	NL
Asteraceae	*Holocarpha virgata* ssp. *virgata*	yellowflower tarweed	None	Yes	NL
Asteraceae	*Hypochaeris glabra*	smooth catsear	None	No	NL
Asteraceae	*Hypochaeris radicata*	hairy cat's ear	Gen	No	FACU
Asteraceae	*Lactuca serriola*	prickly lettuce	None	No	FACU
Asteraceae	*Lasthenia fremontii*	Fremont's goldfields	VPI	Yes	OBL
Asteraceae	*Lasthenia glaberrima*	smooth goldfields	VPI	Yes	OBL
Asteraceae	*Leontodon saxatilis* ssp. *longirostris*	lesser hawkbit	None	No	FACU
Asteraceae	*Matricaria discoidea*	pineapple weed	None	Yes	FACU
Asteraceae	*Psilocarphus brevissimus* var. *brevissimus*	woollyheads	VPI	Yes	FACW
Asteraceae	*Psilocarphus chilensis*	slender woollyheads	VPI	Yes	FACW
Asteraceae	*Psilocarphus oregonus*	wooly marbles	VPI	Yes	OBL
Asteraceae	*Psilocarphus tenellus*	Slender woolly marbles	VPI	Yes	OBL
Asteraceae	*Silybum marianum*	milk thistle	None	No	NL
Asteraceae	*Sonchus oleraceus*	common sow thistle	None	No	UPL
Asteraceae	*Taraxacum officinale*	Common dandelion	None	No	FACU
Asteraceae	*Xanthium strumarium*	rough cockleburr	None	Yes	FAC
Asteraceae	*Achyrachaena mollis*	blow wives	None	Yes	FAC
Boraginaceae	*Amsinckia menziesii*	small flowered fiddleneck	None	Yes	NL
Boraginaceae	*Plagiobothrys acanthocarpus*	adobe popcornflower	VPI	Yes	OBL
Boraginaceae	*Plagiobothrys greenei*	Greene's popcornflower	VPA	Yes	FACW
Boraginaceae	*Plagiobothrys stipitatus* var. *micranthus*	stalked popcornflower	VPA	Yes	FACW
Brassicaceae	*Hirschfeldia incana*	summer mustard	None	No	NL
Brassicaceae	*Lepidium nitidum*	shining pepperweed	VPA	Yes	FAC
Brassicaceae	*Rorippa palustris*	bog yellowcress	None	Yes	NL
Campanulaceae	*Downingia bicornuta*	bristled downingia	VPA	Yes	OBL
Campanulaceae	*Downingia ornatissima* var. *ornatissima*	horned downingia	VPA	Yes	OBL
Caryophyllaceae	*Cerastium glomeratum*	sticky chickweed	None	No	UPL

Family	Scientific Name	Common Name	Vernal Pool Indicator/Associate	Native	Wetland Status
Caryophyllaceae	*Spergularia rubra*	purple sandspurry	None	No	FAC
Convolvulaceae	*Convolvulus arvensis*	orchard morning glory	None	No	NL
Crassulaceae	*Crassula aquatica*	aquatic pygmy weed	VPI	Yes	OBL
Cyperaceae	*Cyperus eragrostis*	tall flatsedge	None	Yes	FACW
Cyperaceae	*Eleocharis acicularis*	needle spikerush	VPA	Yes	OBL
Cyperaceae	*Eleocharis macrostachya*	spikerush	VPI	Yes	OBL
Elatinaceae	*Elatine californica*	California waterwort	None	Yes	OBL
Euphorbiaceae	*Croton setiger*	dove weed	None	Yes	NL
Fabaceae	*Acmispon americanus* var. *americanus*	Spanish lotus	None	Yes	UPL
Fabaceae	*Lathyrus angulatus*	angled pea, angled pea vine	None	No	NL
Fabaceae	*Lotus corniculatus*	birdfoot trefoil	None	No	FAC
Fabaceae	*Lupinus bicolor*	miniature lupine	None	Yes	NL
Fabaceae	*Lupinus nanus*	valley sky lupine	None	Yes	NL
Fabaceae	*Medicago polymorpha*	burclover	None	No	FACU
Fabaceae	*Trifolium campestre*	low hop clover	None	No	NL
Fabaceae	*Trifolium depauperatum* var. *depauperatum*	dwarf sack clover	None	Yes	FAC
Fabaceae	*Trifolium dubium*	suckling clover	None	No	UPL
Fabaceae	*Trifoium* sp.	clover	None		
Fabaceae	*Trifolium glomeratum*	clustered clover	None	No	NL
Fabaceae	*Trifolium gracilentum*	pin point clover	None	Yes	NI
Fabaceae	*Trifolium hirtum*	rose clover	None	No	NL
Fabaceae	*Trifolium tomentosum*	Woolly clover	None	No	NL
Fabaceae	*Trifolium variegatum*	whitetip clover	VPA	Yes	FAC
Fabaceae	*Vicia villosa*	winter vetch	None	No	NL
Gentianaceae	*Cicendia quadrangularis*	cicendia	None	Yes	FAC
Geraniaceae	*Erodium botrys*	longbeak stork's bill	None	No	NL
Geraniaceae	*Erodium moschatum*	musky stork's bill	None	No	NL
Geraniaceae	*Geranium dissectum*	cutleaf geranium	None	No	NL
Isoetaceae	*Isoetes orcuttii*	Orcutt's quillwort	VPI	Yes	OBL
Juncaceae	*Juncus bufonius* var. *bufonius*	toad rush	VPA	Yes	FACW
Juncaceae	*Juncus capitatus*	leafybract dwarf rush	VPA	No	FACU
Juncaceae	*Juncus effusus*	common rush	None	Yes	FACW
Juncaceae	*Juncus uncialis*	inch high dwarf rush	VPI	Yes	OBL

Family	Scientific Name	Common Name	Vernal Pool Indicator/Associate	Native	Wetland Status
Juncaceae	*Juncus xiphioides*	iris-leaved juncus	None	Yes	OBL
Juncaginaceae	*Triglochin scilloides*	flowering quillwort	VPI	Yes	OBL
Lamiaceae	*Mentha arvensis*	wild mint	None	Yes	FACW
Lamiaceae	*Mentha pulegium*	pennyroyal	VPA	No	OBL
Lamiaceae	*Mentha sp.*	mint	None		NL
Lamiaceae	*Pogogyne zizyphoroides*	Sacramento pogogyne	VPI	Yes	OBL
Lamiaceae	*Trichostema lanceolatum*	vinegarweed	None	Yes	FACU
Lythraceae	*Lythrum hyssopifolia*	hyssop loosestrife	VPA	No	OBL
Marsileaceae	*Pilularia americana*	pillwort	VPA	Yes	OBL
Montiaceae	*Montia fontana*	annual water minerslettuce	VPA	Yes	OBL
Myrsinaceae	*Lysimachia arvensis*	scarlet pimpernel	Gen	No	FAC
Myrsinaceae	*Lysimachia minima*	chaffweed	VPI	Yes	FACW
Onagraceae	*Epilobium ciliatum* ssp. *ciliatum*	northern willowherb	None	Yes	FACW
Onagraceae	*Epilobium sp.*	willowherb	None	Yes	
Orobanchaceae	*Castilleja attenuata*	valley tassels	None	Yes	NL
Orobanchaceae	*Triphysaria eriantha* ssp. *eriantha*	butter 'n' eggs	Gen	Yes	NL
Portulacaceae	*Portulaca oleracea*	common purslane	None	No	FAC
Phrymaceae	*Erythranthe guttata*	common monkeyflower	None	Yes	FACW
Plantaginaceae	*Callitriche marginata*	winged water starwort	VPA	Yes	OBL
Plantaginaceae	*Gratiola ebracteata*	common hedge hyssop	VPA	Yes	OBL
Plantaginaceae	*Plantago coronopus*	cut leaf plantain	None	No	FAC
Plantaginaceae	*Plantago elongata*	prairie plantain	VPA	Yes	FACW
Plantaginaceae	*Plantago erecta*	dotseed plantain	None	Yes	NL
Plantaginaceae	*Veronica peregrina* ssp. *xalapensis*	hairy purslane speedwell	VPA	Yes	OBL
Poaceae	*Aira caryophyllea* var. *cupaniana*	silver hairgrass	None	No	FACU
Poaceae	*Alopecurus saccatus*	foxtail	VPI	Yes	OBL
Poaceae	*Avena barbata*	slender wild oat	None	No	NL
Poaceae	*Briza minor*	little quakinggrass	None	No	FAC
Poaceae	*Bromus hordeaceus*	soft chess	None	No	FACU
Poaceae	*Deschampsia danthonioides*	annual hairgrass	VPA	Yes	FACW
Poaceae	*Elymus caput-medusae*	medusahead	None	No	NL
Poaceae	*Festuca bromoides*	brome fescue	None	No	FACU
Poaceae	*Festuca microstachys*	small fescue	None	Yes	NL

Family	Scientific Name	Common Name	Vernal Pool Indicator/Associate	Native	Wetland Status
Poaceae	*Festuca perennis*	rye grass	None	No	FAC
Poaceae	*Glyceria declinata*	waxy mannagrass	None	No	FACW
Poaceae	*Hordeum brachyantherum*	meadow barley	Gen	Yes	FACW
Poaceae	*Hordeum marinum* ssp. *gussoneanum*	Mediterranean barley	None	No	FAC
Poaceae	*Paspalum dilatatum*	dallis grass	None	No	FAC
Poaceae	*Phalaris lemmonii*	Lemmon's canarygrass	VPA	Yes	FACW
Poaceae	*Polypogon maritimus*	Mediterranean beard grass	None	No	OBL
Poaceae	*Polypogon monspeliensis*	rabbitfootgrass	VPA	No	FACW
Polemoniaceae	*Navarretia leucocephala* ssp. *leucocephala*	whitehead navarretia	VPI	Yes	OBL
Polygonaceae	*Polygonum aviculare* ssp. *depressum*	common knotweed	None	No	FAC
Polygonaceae	*Rumex conglomeratus*	green dock	None	No	FACW
Polygonaceae	*Rumex crispus*	curly dock	None	No	FAC
Ranunculaceae	*Myosurus minimus*	tiny mousetail	VPA	Yes	OBL
Ranunculaceae	*Ranunculus aquatilis*	whitewater crowfoot	VPA	Yes	OBL
Ranunculaceae	*Ranunculus bonariensis* var. *trisepalus*	vernal pool buttercup	VPA	Yes	OBL
Ranunculaceae	*Ranunculus muricatus*	spiny buttercup	VPA	No	FACW
Rubiaceae	*Galium aparine*	goose grass	None	Yes	FACU
Salicaceae	*Salix gooddingii*	Goodding's willow	None	Yes	FACW
Salicaceae	*Salix laevigata*	red willow	None	Yes	FACW
Themidaceae	*Brodiaea sp.*	brodiaea	None	Yes	
Themidaceae	*Triteleia hyacinthina*	white brodiaea	VPA	Yes	FAC

Note:

OBL = obligate wetland; >99% probability of occurring in a wetland

FACW = facultative wetland; 67%-99% probability of occurring in a wetland

FAC = facultative; 33%-67% probability of occurring in a wetland

FACU = facultative upland; 1%-33% probability of occurring in a wetland

UPL = obligate upland; <1% probability of occurring in a wetland

NL = not listed (plants not listed)

Family	Scientific Name	Common Name	Native	Wetland Status
Amaranthaceae	*Amaranthus californicus*	California amaranth	Yes	FACW
Anacardiceae	*Toxicodendron diversilobum*	western poison oak	Yes	FACU
Apiaceae	*Torilis arvensis*	hedge parsley	No	NL
Apocynaceae	*Vinca major*	greater periwinkle	No	FACU
Asteraceae	*Carduus pycnocephalus*	Italian thistle	No	NL
Asteraceae	*Centromadia fitchii*	spikeweed	Yes	FACU
Asteraceae	*Centaurea solstitialis*	yellow starthistle	No	NL
Asteraceae	*Erigon canadensis*	horseweed	Yes	FACU
Asteraceae	*Holocarpha virgata* ssp. *Virgata*	yellowflower tarweed	Yes	NL
Asteraceae	*Hypochaeris glabra*	smooth catsear	No	NL
Asteraceae	*Lactuca serriola*	prickly lettuce	No	FACU
Asteraceae	*Leontodon saxatilis* ssp. *longirostris*	lesser hawkbit	No	FACU
Asteraceae	*Logfia gallica*	daggerleaf cottonrose	No	NL
Asteraceae	*Sonchus asper*	spiny sowthistle	No	FAC
Asteraceae	*Sonchus oleraceus*	common sow thistle	No	UPL
Asteraceae	*Tragopogon porrifolius*	purple salsify	No	NL
Boraginaceae	*Amsinckia menziesii*	small flowered fiddleneck	Yes	NL
Boraginaceae	*Plagiobothrys greenei*	Greene's popcornflower	Yes	FACW
Boraginaceae	*Plagiobothrys nothofulvus*	rusty popcorn flower	Yes	FAC
Brassicaceae	*Hirschfeldia incana*	summer mustard	No	NL
Caryophyllaceae	*Petrorhagia dubia*	wild carnation	No	NL
Convolvulaceae	*Convolvulus arvensis*	orchard morning glory	No	NL
Epilobium	*Epilobium ciliatum*	fringed willowherb	Yes	FACW
Euphorbiaceae	*Croton setiger*	dove weed	Yes	NL
Fabaceae	*Acmispon americanus* var. *americanus*	Spanish lotus	Yes	UPL
Fabaceae	*Lathyrus angulatus*	angled pea, angled pea vine	No	NL
Fabaceae	*Lathyrus hirsutus*	hairy pea	No	FAC
Fabaceae	*Lotus corniculatus*	birdfoot trefoil	No	FAC
Fabaceae	*Lupinus bicolor*	miniature lupine	Yes	NL
Fabaceae	*Lupinus nanus*	valley sky lupine	Yes	NL
Fabaceae	*Medicago polymorpha*	burclover	No	FACU

Family	Scientific Name	Common Name	Native	Wetland Status
Fabaceae	*Melilotus indicus*	annual yellow sweetclover	No	FACU
Fabaceae	*Trifolium campestre*	low hop clover	No	NL
Fabaceae	*Trifolium depauperatum* var. *depauperatum*	dwarf sack clover	Yes	FAC
Fabaceae	*Trifolium dubium*	suckling clover	No	UPL
Fabaceae	*Trifolium hirtum*	rose clover	No	NL
Fabaceae	*Trifolium subterraneum*	subterranean clover	No	NL
Fabaceae	*Vicia sativa*	spring vetch	No	FACU
Fabaceae	*Vicia villosa*	winter vetch	No	NL
Fagaceae	*Quercus lobata*	Valley oak	Yes	FACU
Fagaceae	*Quercus wislizeni*	interior live oak	Yes	NL
Geraniaceae	*Erodium botrys*	longbeak stork's bill	No	NL
Geraniaceae	*Erodium brachycarpum*	shortfruit stork's bill	No	NL
Geraniaceae	*Erodium cicutarium*	redstem stork's bill	No	NL
Geraniaceae	*Geranium carolinianum*	Carolina geranium	Yes	NL
Geraniaceae	*Geranium dissectum*	cutleaf geranium	No	NL
Geraniaceae	*Geranium molle*	crane's bill geranium	No	NL
Juncaceae	*Juncus bufonius* var. *bufonius*	toad rush	Yes	FACW
Lamiaceae	*Mentha pulegium*	pennyroyal	No	OBL
Lamiaceae	*Trichostema lanceolatum*	vinegarweed	Yes	FACU
Lythraceae	*Lythrum hyssopifolia*	hyssop loosestrife	No	OBL
Onagraceae	*Epilobium brachycarpum*	tall annual willowherb	Yes	NL
Orobanchaceae	*Castilleja attenuata*	valley tassels	Yes	NL
Orobanchaceae	*Parentucellia viscosa*	yellow glandweed	No	FAC
Plantaginaceae	*Plantago elongata*	prairie plantain	Yes	FACW
Poaceae	*Avena barbata*	slender wild oat	No	NL
Poaceae	*Aegilops triuncialis*	barbed goatgrass	No	NL
Poaceae	*Aira caryophyllea* var. *cupaniana*	silver hairgrass	No	FACU
Poaceae	*Avena fatua*	wild oat	No	NL
Poaceae	*Briza minor*	little quakinggrass	No	FAC
Poaceae	*Bromus diandrus*	ripgut grass	No	NL
Poaceae	*Bromus hordeaceus*	soft chess	No	FACU

Family	Scientific Name	Common Name	Native	Wetland Status
Poaceae	*Bromus madritensis*	Spanish brome	No	UPL
Poaceae	*Cynosurus echinatus*	bristly dogstail grass	No	NL
Poaceae	*Elymus caput-medusae*	medusahead	No	NL
Poaceae	*Festuca bromoides*	brome fescue	No	FACU
Poaceae	*Festuca myuros*	rattail fescue	No	FACU
Poaceae	*Festuca perennis*	rye grass	No	FAC
Poaceae	*Hordeum marinum* ssp. *gussoneanum*	Mediterranean barley	No	FAC
Poaceae	*Hordeum murinum*	foxtail barley	No	FACU
Poaceae	*Stipa pulchra*	purple needle grass	Yes	NL
Polemoniaceae	*Navarretia intertexta*	needleleaf navarretia	Yes	FACW
Polygonaceae	*Polygonum aviculare* ssp. *depressum*	common knotweed	No	FAC
Polygonaceae	*Rumex conglomeratus*	green dock	No	FACW
Polygonaceae	*Rumex crispus*	curly dock	No	FAC
Polygonaceae	*Rumex pulcher*	fiddle dock	No	FAC
Rosaceae	*Rubus armeniacus*	Himalayan blackberry	No	FAC
Rubiaceae	*Galium aparine*	goose grass	Yes	FACU
Rubiaceae	*Galium parisiense*	wall bedstraw	No	UPL
Themidaceae	*Brodiaea sp.*	brodiaea	Yes	
Themidaceae	*Brodiaea elegans*	harvest brodiaea	Yes	FACU
Themidaceae	*Brodiaea nana*	dwarf brodiaea	Yes	NL
Themidaceae	*Dichelostemma capitatum*	blue dicks	Yes	FACU
Themidaceae	*Dichelostemma multiflorum*	many flowered brodiaea	Yes	NL
Themidaceae	*Triteleia hyacinthina*	white brodiaea	Yes	FAC
Themidaceae	*Triteleia laxa*	Ithuriel's spear	Yes	NL

Note:

OBL = obligate wetland; >99% probability of occurring in a wetland

FACW = facultative wetland; 67%-99% probability of occurring in a wetland

FAC = facultative; 33%-67% probability of occurring in a wetland

FACU = facultative upland; 1%-33% probability of occurring in a wetland

UPL = obligate upland; <1% probability of occurring in a wetland

NL = not listed (plants not listed)

APPENDIX G

2023 Grazing Recommendations Maps

FIGURE G-1
Grazing Management Recommendations 2023
Orchard Creek

Rocklin Open Space Preserve
Placer County, California

Legend*

- Preserve Boundary
- City of Rocklin Boundary
- Stream

Thatch Sample Point

- Annual Grassland/VP Complex
- Oak/Riparian Woodland

Grazing Recommendations

- Increase Grazing Level
- Maintain Grazing Level
- Reduce Grazing Level

* Note: all legend items may not appear on map

1:3,600
(1 inch = 300 feet at Tabloid Layout)

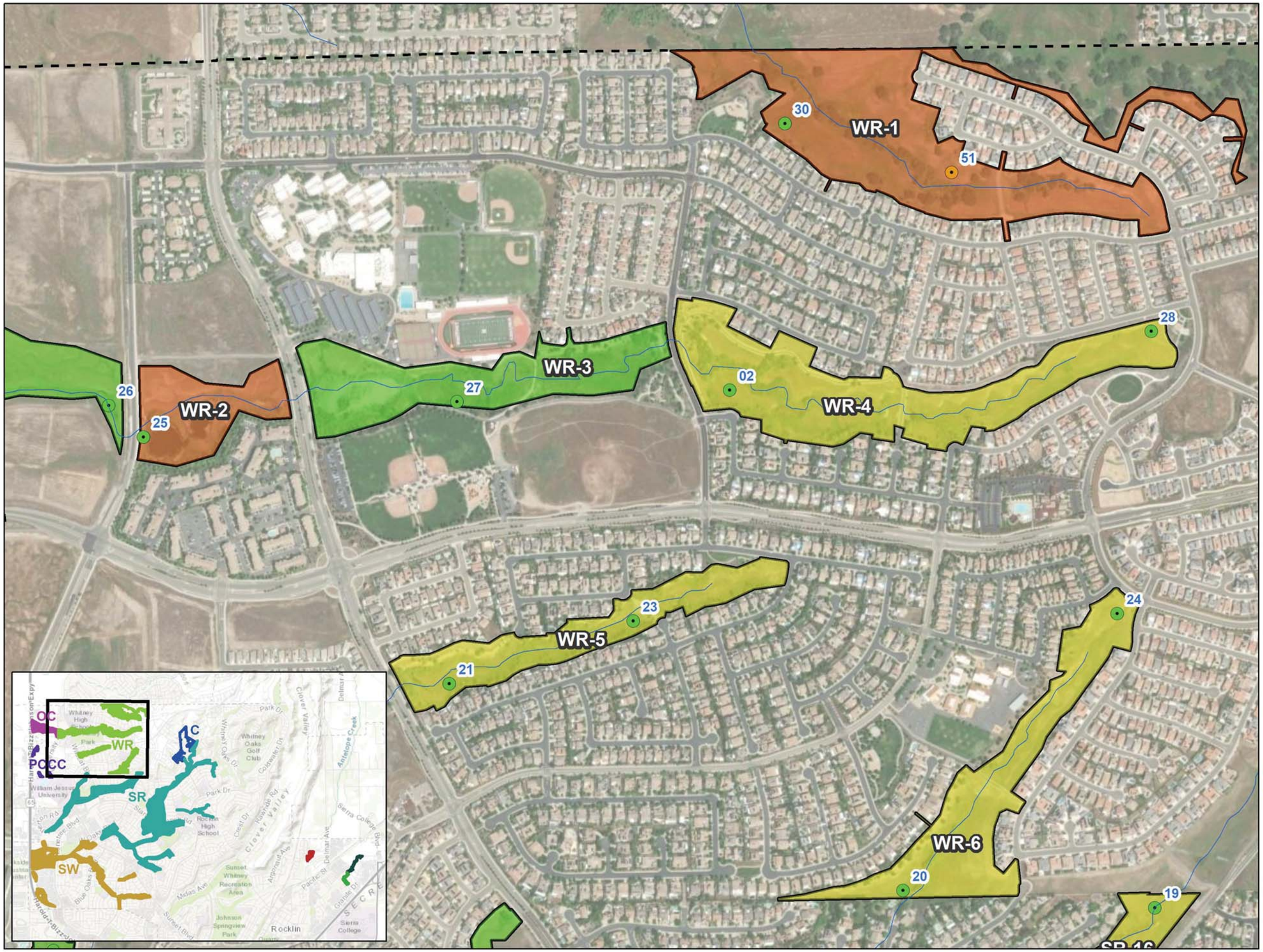
0 37.5 75 150 Meters
0 150 300 600 Feet

Vollmar NATURAL LANDS CONSULTING

Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, Dec 2023
Map File: 571_grazing-recs_B-L_2023-1204.mxd

FIGURE G-2
Grazing Management Recommendations 2023
Whitney Ranch

Rocklin Open Space Preserve
Placer County, California



Legend*

- Preserve Boundary
- City of Rocklin Boundary
- Stream

Thatch Sample Point

- Annual Grassland/VP Complex
- Oak/Riparian Woodland

Grazing Recommendations

- Increase Grazing Level
- Maintain Grazing Level
- Reduce Grazing Level

* Note: all legend items may not appear on map

1:7,200
(1 inch = 600 feet at Tabloid Layout)

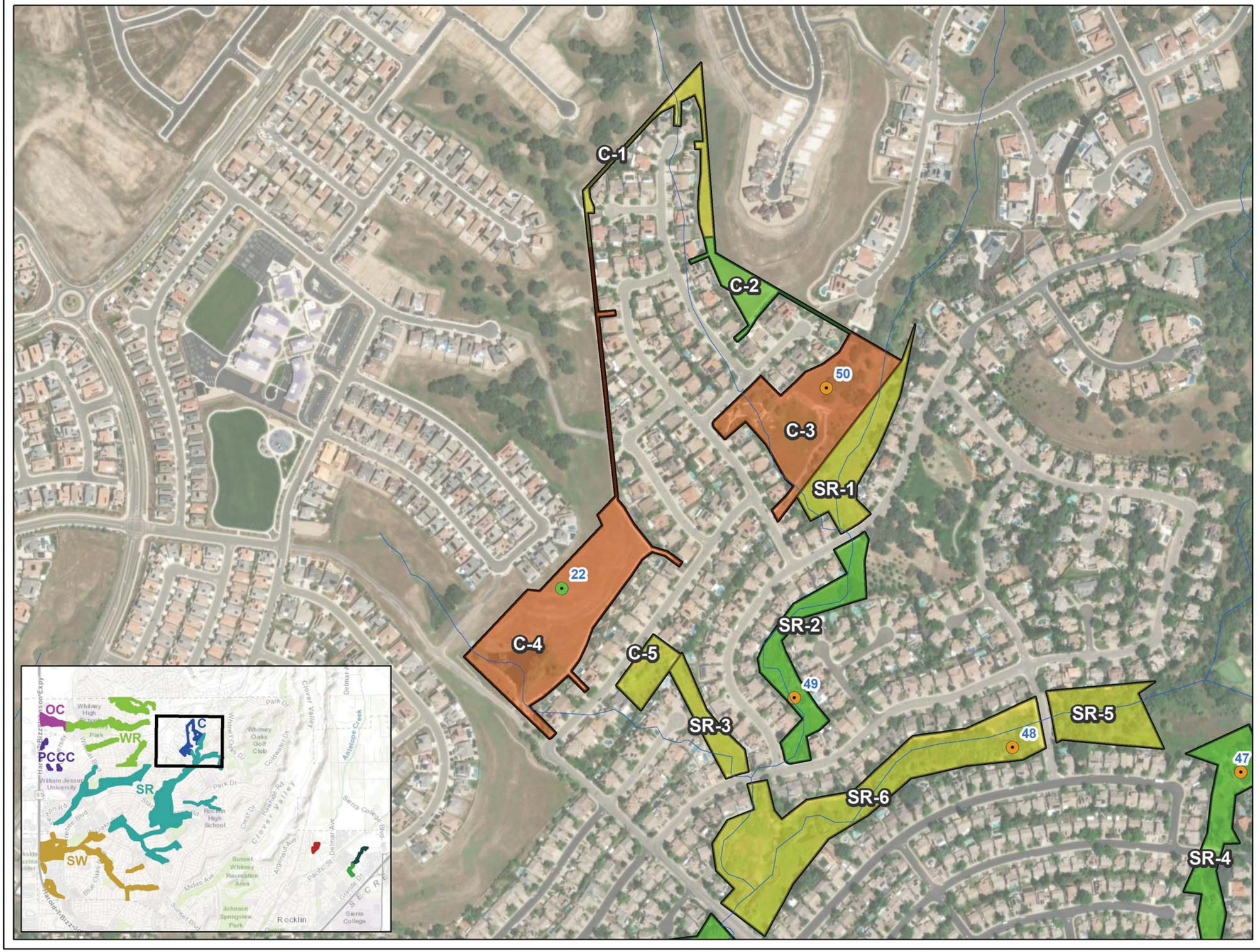
0 75 150 300 Meters
0 300 600 1,200 Feet

Vollmar NATURAL LANDS CONSULTING

Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, Dec 2023
Map File: 571_grazing-recs_B-L_2023-1204.mxd

FIGURE G-3
Grazing Management Recommendations 2023
Claremont

Rocklin Open Space Preserve
Placer County, California



Legend*

- Preserve Boundary
- City of Rocklin Boundary
- Stream

Thatch Sample Point

- Annual Grassland/VP Complex
- Oak/Riparian Woodland

Grazing Recommendations

- Increase Grazing Level
- Maintain Grazing Level
- Reduce Grazing Level

* Note: all legend items may not appear on map

1:4,800
(1 inch = 400 feet at Tabloid Layout)

0 60 120 240 Meters
0 210 420 840 Feet

Vollmar NATURAL LANDS CONSULTING

Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, Dec 2023
Map File: 571_grazing-recs_B-L_2023-1204.mxd

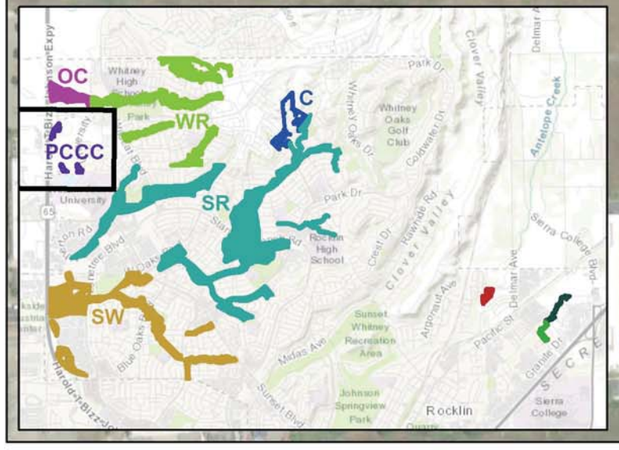
FIGURE G-4

Grazing Management Recommendations 2023

Placer Creek Corporate Center

Rocklin Open Space Preserve
Placer County, California

PCCC-3
PCCC-1
PCCC-2
PCCC-4
PCCC-5
31



Legend*

- Preserve Boundary
- City of Rocklin Boundary
- Stream

Thatch Sample Point

- Annual Grassland/VP Complex
- Oak/Riparian Woodland

Grazing Recommendations

- Increase Grazing Level
- Maintain Grazing Level
- Reduce Grazing Level

* Note: all legend items may not appear on map

1:4,800
(1 inch = 400 feet at Tabloid Layout)

0 60 120 240 Meters
0 210 420 840 Feet

Vollmar NATURAL LANDS CONSULTING

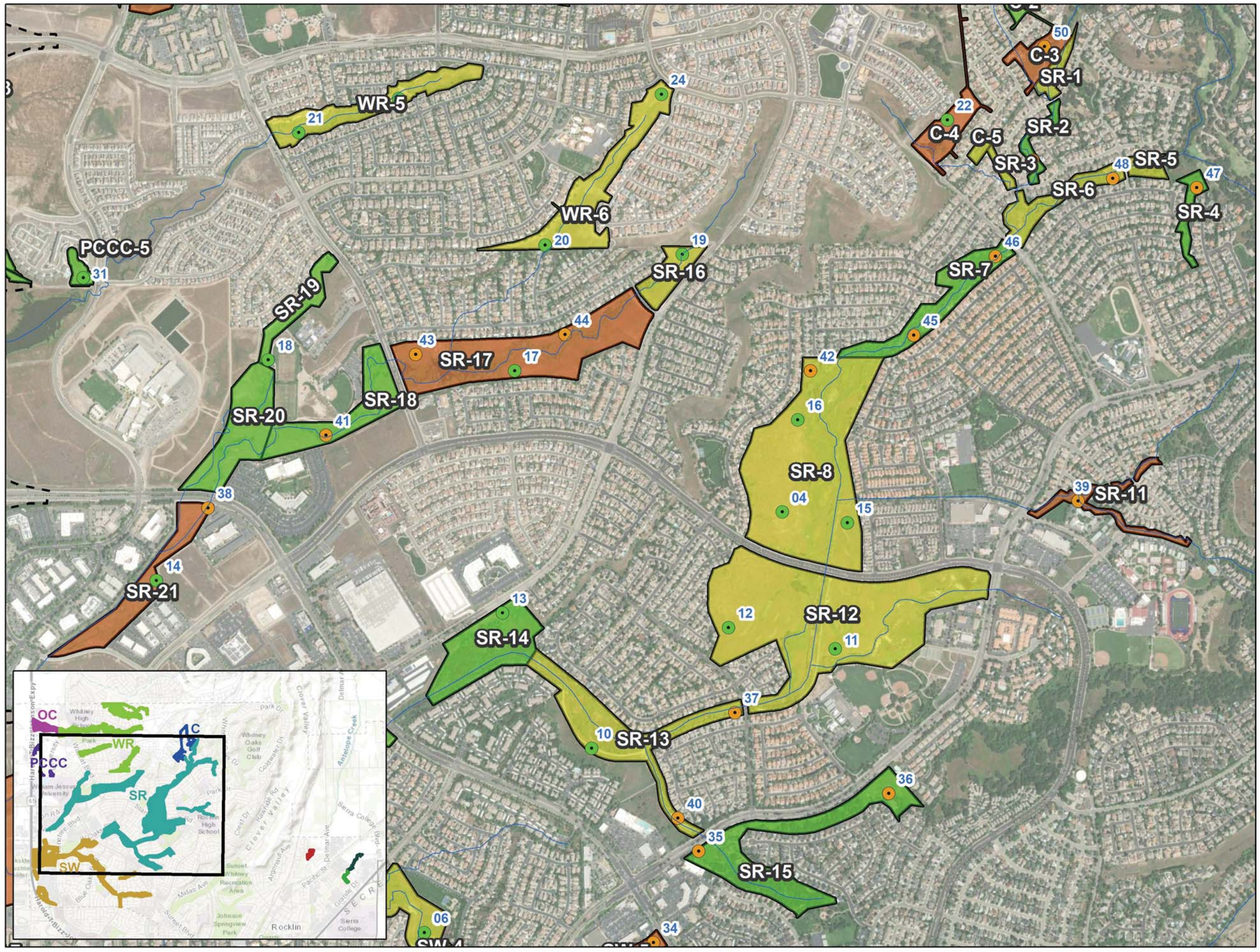
Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, Dec 2023
Map File: 571_grazing-recs_B-L_2023-1204.mxd

FIGURE G-5

Grazing Management Recommendations 2023

Stanford Ranch

Rocklin Open Space Preserve
Placer County, California



Legend*

- Preserve Boundary
- City of Rocklin Boundary
- Stream

Thatch Sample Point

- Annual Grassland/VP Complex
- Oak/Riparian Woodland

Grazing Recommendations

- Increase Grazing Level
- Maintain Grazing Level
- Reduce Grazing Level

* Note: all legend items may not appear on map

1:13,200
(1 inch = 1,100 feet at Tabloid Layout)

0 150 300 600 Meters
0 600 1,200 2,400 Feet

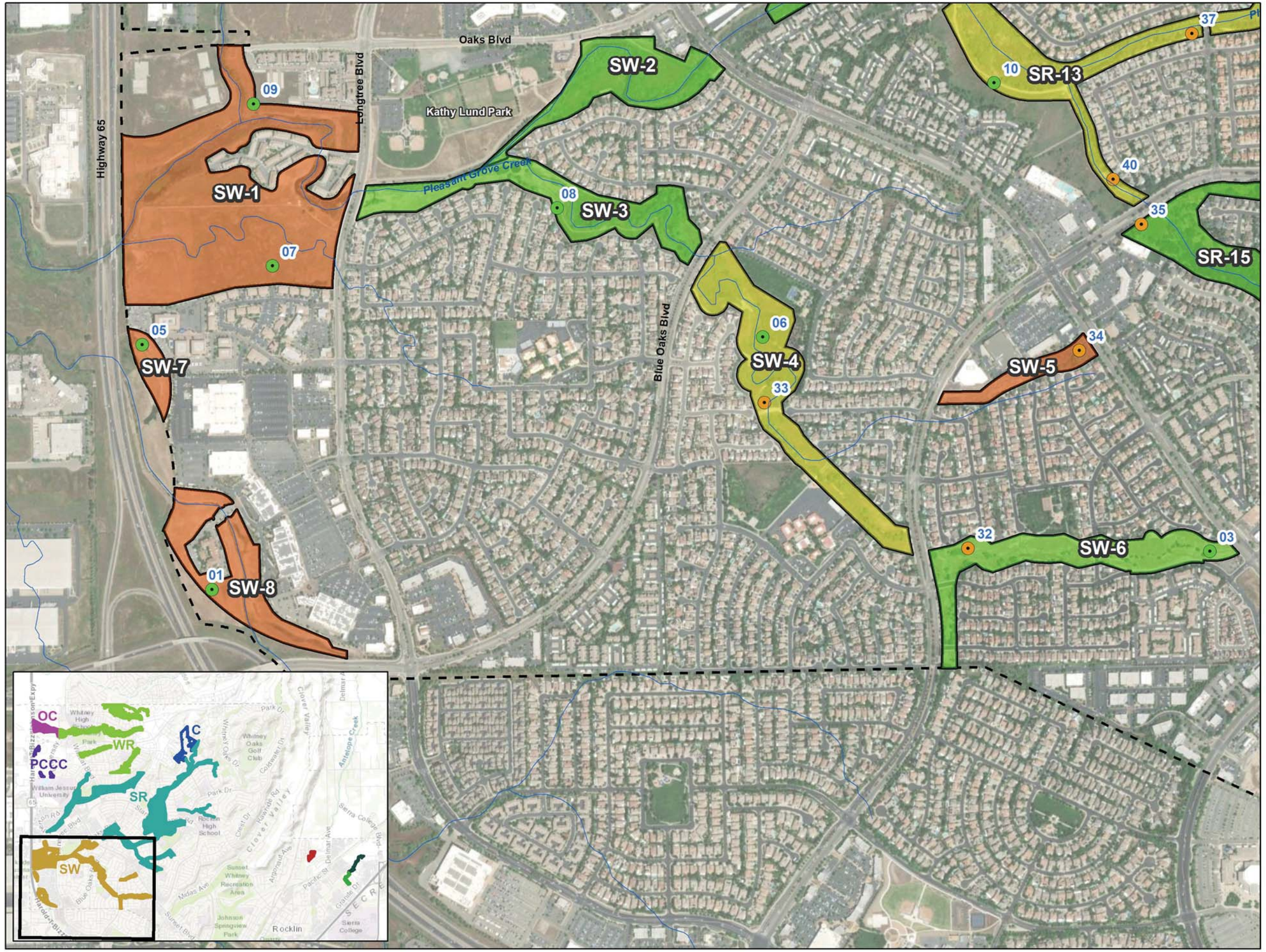
Vollmar NATURAL LANDS CONSULTING

Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, Dec 2023
Map File: 571_grazing-recs_B-L_2023-1204.mxd

FIGURE G-6
Grazing Management Recommendations 2023

Sunset West

Rocklin Open Space Preserve
Placer County, California



Legend*

- Preserve Boundary
- City of Rocklin Boundary
- Stream

Thatch Sample Point

- Annual Grassland/VP Complex
- Oak/Riparian Woodland

Grazing Recommendations

- Increase Grazing Level
- Maintain Grazing Level
- Reduce Grazing Level

* Note: all legend items may not appear on map

1:9,600
(1 inch = 800 feet at Tabloid Layout)

0 100 200 400 Meters
0 400 800 1,600 Feet

Vollmar NATURAL LANDS CONSULTING

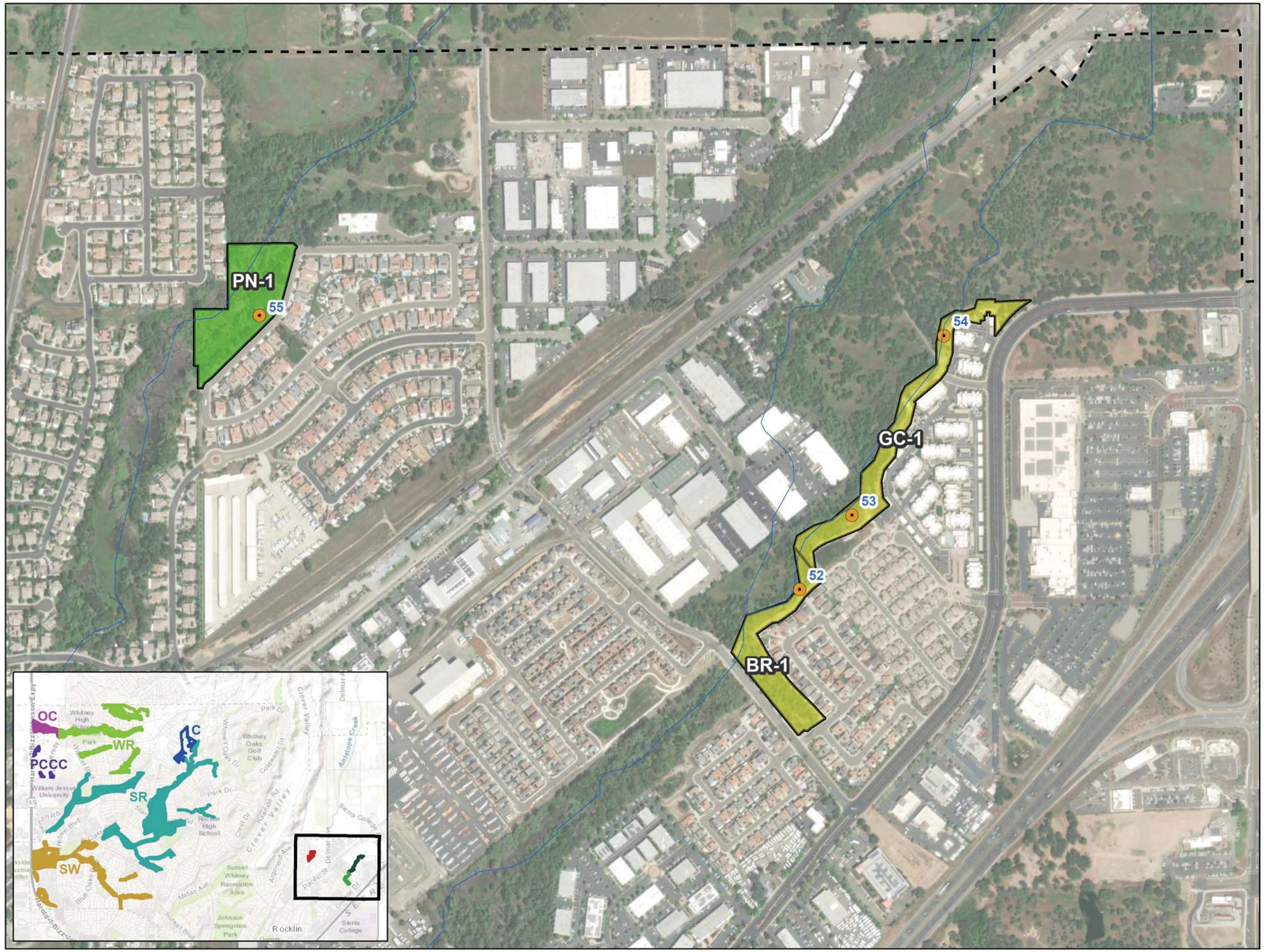
Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, Dec 2023
Map File: 571_grazing-recs_B-L_2023-1204.mxd

FIGURE G-7

Grazing Management Recommendations 2023

Parklands North, Garnet Creek, Brighton

Rocklin Open Space Preserve
Placer County, California



Legend*

- Preserve Boundary
- City of Rocklin Boundary
- Stream

Thatch Sample Point

- Annual Grassland/VP Complex
- Oak/Riparian Woodland

Grazing Recommendations

- Increase Grazing Level
- Maintain Grazing Level
- Reduce Grazing Level

* Note: all legend items may not appear on map

1:6,000
(1 inch = 500 feet at Tabloid Layout)

0 50 100 200 Meters
0 250 500 1,000 Feet

Vollmar NATURAL LANDS CONSULTING

Data Sources:
City of Rocklin 2023 | ESRI Digital Globe 2022
Vollmar Natural Lands Consulting, 2023
Map Produced By: L. Neuhaus, Dec 2023
Map File: 571_grazing-recs_B-L_2023-1204.mxd

APPENDIX H

2023 Bird Survey Results

Appendix H. 2023 Bird Survey Results

Common Name	Scientific Name	Native	Season	Preserve Area
Acorn Woodpecker	*Melanerpes formicivorus*	Yes	Spring, Fall	Spring: GC, BR, PN, C Fall: BR, C, GC, PN
American Crow	*Corvus brachyrhynchos*	Yes	Spring, Fall	Spring: SR Fall: C, SW
Anna's Hummingbird	*Calypte anna*	Yes	Spring, Fall	Spring: C, PCCC, WR, SW Fall: BR, PN, SR, WR
Black Phoebe	*Sayornis nigricans*	Yes	Spring, Fall	Spring: SR, C Fall: SW
Black-headed Grosbeak	*Pheucticus melanocephalus*	Yes	Spring	GC, BR,
Bushtit	*Psaltriparus minimus*	Yes	Spring	GC, WR
California Scrub-Jay	*Aphelocoma californica*	Yes	Spring, Fall	Spring: BR, PN, SR, C, WR Fall: BR, C, GC, PN, SR, WR
California Towhee	*Melozone crissalis*	Yes	Spring	BR
Canada Goose	*Branta canadensis*	Yes	Spring	OC, WR
Cedar Waxwing	*Bombycilla cedrorum*	Yes	Spring	BR
Cliff Swallow	*Petrochelidon pyrrhonota*	Yes	Spring	SR, SW
Common Raven	*Corvus corax*	Yes	Spring	WR
European Starling	*Sturnus vulgaris*	No	Spring	GC, C, SW
House Finch	*Haemorhous mexicanus*	Yes	Spring, Fall	Spring: GC, BR, PN, SR, C, PCCC, WR, SW
House Sparrow	*Passer domesticus*	No	Spring	C
Killdeer	*Charadrius vociferus*	Yes	Spring	PCCC, OC
Lesser Goldfinch	*Spinus psaltria*	Yes	Spring, Fall	Spring, BR, PN, SR, C, OC Fall: PN
Mallard	*Anas platyrhynchos*	Yes	Spring	OC
Mourning Dove	*Zenaida macroura*	Yes	Spring, Fall	Spring: SR, C, PCCC, WR Fall: BR, PCCC, WR
Northern Flicker	*Colaptes auratus*	Yes	Fall	WR
Northern Harrier	*Circus hudsonius*	Yes	Fall	C
Northern Mockingbird	*Mimus polyglottos*	Yes	Spring	BR, SR, C, PCCC
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	Yes	Spring	PCCC
Oat Titmouse	*Baeolophus inornatus*	Yes	Spring, Fall	Spring: BR, C Fall: BR, GC, PN, SR
Red-tailed Hawk	*Buteo jamaicensis*	Yes	Spring	WR
Red-winged Blackbird	*Agelaius phoeniceus*	Yes	Spring	GC, PN, SR, PCCC, OC, WR, SW

Common Name	Scientific Name	Native	Season	Preserve Area
Rock Pigeon	*Columba livia*	No	Fall	PCCC, SW,
Say's Phoebe	*Sayornis saya*	Yes	Spring, Fall	Spring: PCCC Fall: SR, SW
Song Sparrow	*Melospiza melodia*	Yes	Spring	GC, BR, PN, WR
Turkey Vulture	*Cathartes aura*	Yes	Spring, Fall	Spring: SR, C Fall: PN
Western Kingbird	*Tyrannus verticalis*	Yes	Spring	SR
Western Meadowlark	*Sturnella neglecta*	Yes	Spring	OC, SW
Western Tanager	*Piranga ludoviciana*	Yes	Spring	GC
White-breasted Nuthatch	*Sitta carolinensis*	Yes	Spring, Fall	Spring; GC, BR, SR, C Fall: BR