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November 14, 2022

Amy Christopherson Bolten
Christopherson Builders
565 West College Ave.
Santa Rosa, CA 95401

Re: Biological assessment of proposed development at Fir Ridge Meadows, Santa Rosa
Sonoma County A.P.N. 173-620-030

Dear Amy:

As requested, I have completed a site visit to the referenced property in the 'Fountaingrove' area of Santa Rosa, for the purposes of documenting onsite conditions, and looking for any features, habitats, or species of biological importance or regulatory significance, such as and specifically including jurisdictional "wetlands", "other waters", and listed plant species (or their preferred habitats). Figures 1 and 2 show the site in regional perspective, while Figure 3 shows the property in greater detail. Figure 4 shows the site on the pertinent USGS topographic quad map. This letter report summarizes my findings for the site.

Background and Methods

The property is approximately 6.03 acres, and is located on Fir Ridge Drive in northeastern Santa Rosa. The site is undeveloped, and is mostly open grassland with clusters of oak trees. While it has been vacant in recent years, it was been heavily grazed and/or otherwise farmed for many decades in the past.

The overall property has a slight slope and drains via overland sheet flow to the southwest. The site is one of the last remaining undeveloped parcels in the area, and is largely surrounded by typical semi-urban neighborhoods (see Figures 2 and 3), with dense housing and heavily used roads, sidewalks, curbs and buried drainage in some areas, and extensive buildings, roads, and fences throughout. Onsite, the grassland areas are routinely (annually) mowed for hay (and fire hazard reduction), and may have been seeded in years past. The site, and all of the immediate surroundings, burned in a major wildfire in 2017. Much of the (already fragmented) woodland cover on adjoining lands (on steeper slopes, in ravines, on vacant lots) was eliminated by that fire, although pockets of surviving woodland (such as at this site) still remain.

A detailed site visit was conducted on September16, 2022, at which time I walked the property, carefully inspecting areas with potential wetland (or possible rare plant habitat) conditions, recording all plant species encountered, and trying to attain essentially 100 percent visual coverage of the site. Potential wetland conditions, unusual soils, and/or other features or habitats of biological significance were sought (and examined in closer detail if present). Historic air photos were examined, looking for any clear signatures that might indicate potential wetland or other interesting/significant habitat conditions. I also reviewed prior environmental documents related to the property and a previously proposed project here.

I specifically sought evidence of "wetlands" (dominated by vegetation) and/or "other waters" (generally unvegetated, such as creek channels), both of which are potentially subject to the jurisdiction of and/or

regulation by the U.S. Army Corps of Engineers, as well as the State of California, potentially including the California Regional Water Quality Control Board (CRWQCB) and/or the California Department of Fish and Wildlife (CDFW). I applied the Army Corps' standard (1987) wetland delineation procedures (as amended by the "Arid West" update in 2008), examining the three pertinent parameters: soil, vegetation, and hydrology, at several locations in the study area.

In addition to the wetland investigation, I also examined the site for potential sensitive plant species and/or their preferred habitats (e.g., vernal pools, rock outcrops, clay flats, serpentine). All plants encountered were identified to at least the level necessary to ascertain rarity or commonness, as well as their 'wetland' (National Wetland Inventory) status. Botanical taxonomy in the text (and in my field notes, data sheets) follows Munz and Keck (1968), "A California Flora", but for wetland status purposes and ascertaining commonness/rarity, has been converted to the newer names (Jepson, 2012; NWI, 2016) in the appendices. While the survey here was a one-time site visit conducted in September (and hence cannot be regarded as a full "protocol" botanical survey), it was adequate to ascertain the basic habitat types and vegetation communities present, and almost all plants encountered could still be identified based on dried stalks and old seed heads.

Appendix A is a master list of rare plants known or expected in the region, and which I use a 'search' list. It includes a brief assessment of the potential for each species to actually occur at the site. While there are numerous rare plants known from the region's serpentine, rockland, wetlands, old growth forest, and chaparral habitats, the most likely potentially suitable habitats for rare plants that would/could occur in this area are seasonal wetlands, native grasslands and meadows. Even completely undisturbed oak woodland in this region (which does not occur onsite) is not known to support many rare plant species (at least without other specialized or uncommon conditions). Many/most regionally known rare species can be dismissed outright for lack of any suitable habitat here.

While I am primarily a plant ecologist, I have worked extensively with wildlife biologists in the region, and have a first-hand familiarity with most sensitive wildlife species known from the region (with the exception of various songbirds). I was at one time licensed by CDFG to dipnet for CTS on the Santa Rosa Plain, and am well versed in the preferred (and sometimes crucial) habitats of most of the region's sensitive wildlife species. During my field surveys, I note any significant wildlife sightings (e.g., hawks, owls, deer, skunks, waterbirds, etc.), and assess the various habitats present (as well as in the surrounding environs) for the potential to support any of the region's sensitive wildlife species (the least unlikely being badgers, hawks, bats, and owls); looking for such features as thick riparian growth, dead snags, cliffs, old buildings, marshes, ponds). Appendix B is a brief listing and assessment of the sensitive wildlife species known or expected in the region that would be most likely to occur here (excluding most fishes, as there are no aquatic or stream habitats onsite). The onsite oak canopy likely serves as a resting/roosting and/or even potentially nesting area for certain birds and/or bats, and numerous small/medium size mammals. Deer (as well as skunks, raccoons, and other smaller mammals) are likely frequent visitors and/or short term 'residents' here when forage is abundant.

Notes and photographs were taken during the site visit, with wetland or sensitive habitat conditions being sought (and examined on the ground if present), guided by various different years of air photos. Figure 3 shows the site's (and vicinity's) vegetation cover, including any wetlands, 'other waters', and/or significant natural habitats or plant communities onsite and nearby. Appendix C includes selected photos of the site, and Appendix D summarizes the professional qualifications of this investigator.

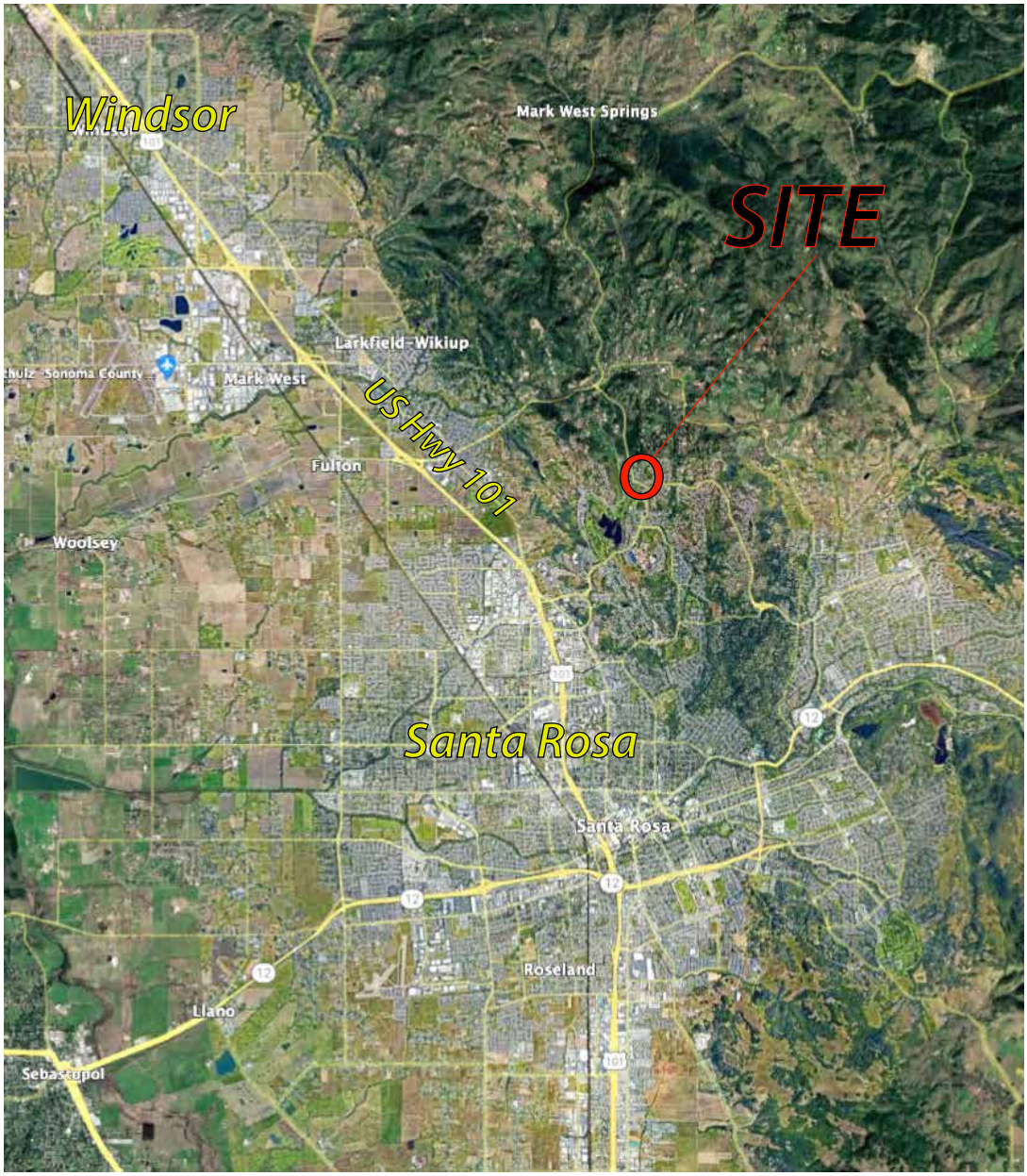

Figure 1. Regional Location

Fir Ridge Meadows, Santa Rosa

NORTH ⇧	**Source/Prepared by:** C. Patterson; Oct., 2022	**Applicant:** Christopherson Builders	**Sonoma County APN** 173-620-030
	Basemap: 2020 Google Earth Air Photo **No Scale**		Approx. 6 ac

Biological Assessment Report

Figure 2. Local Setting

Fir Ridge Meadows, Santa Rosa

NORTH ⇧	**Source/Prepared by:** C. Patterson; Oct., 2022	**Applicant:** Christopherson Builders	**Sonoma County APN** 173-620-030
	Basemap: 2020 Google Earth Air Photo **No Scale**		Approx. 6 ac

Biological Assessment Report

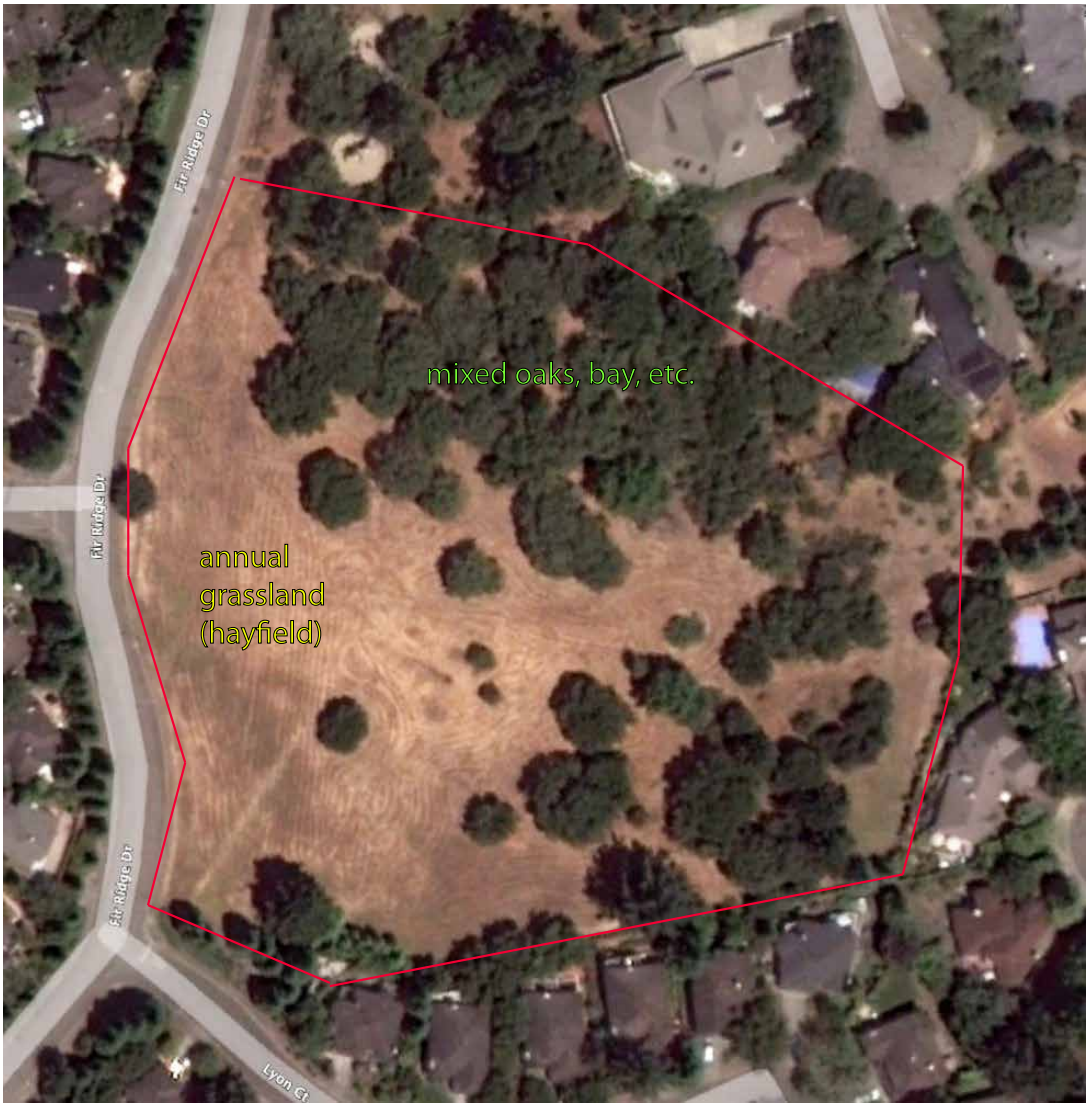

Figure 3. Site Detail

Fir Ridge Meadows, Santa Rosa

NORTH ⇧	**Source/Prepared by:** C. Patterson; Oct., 2022	**Applicant:** Christopherson Builders	**Sonoma County APN** 173-620-030
	Basemap: 2010 (pre-fire) Google Earth Air Photo **No Scale**		Approx. 6 ac

Biological Assessment Report

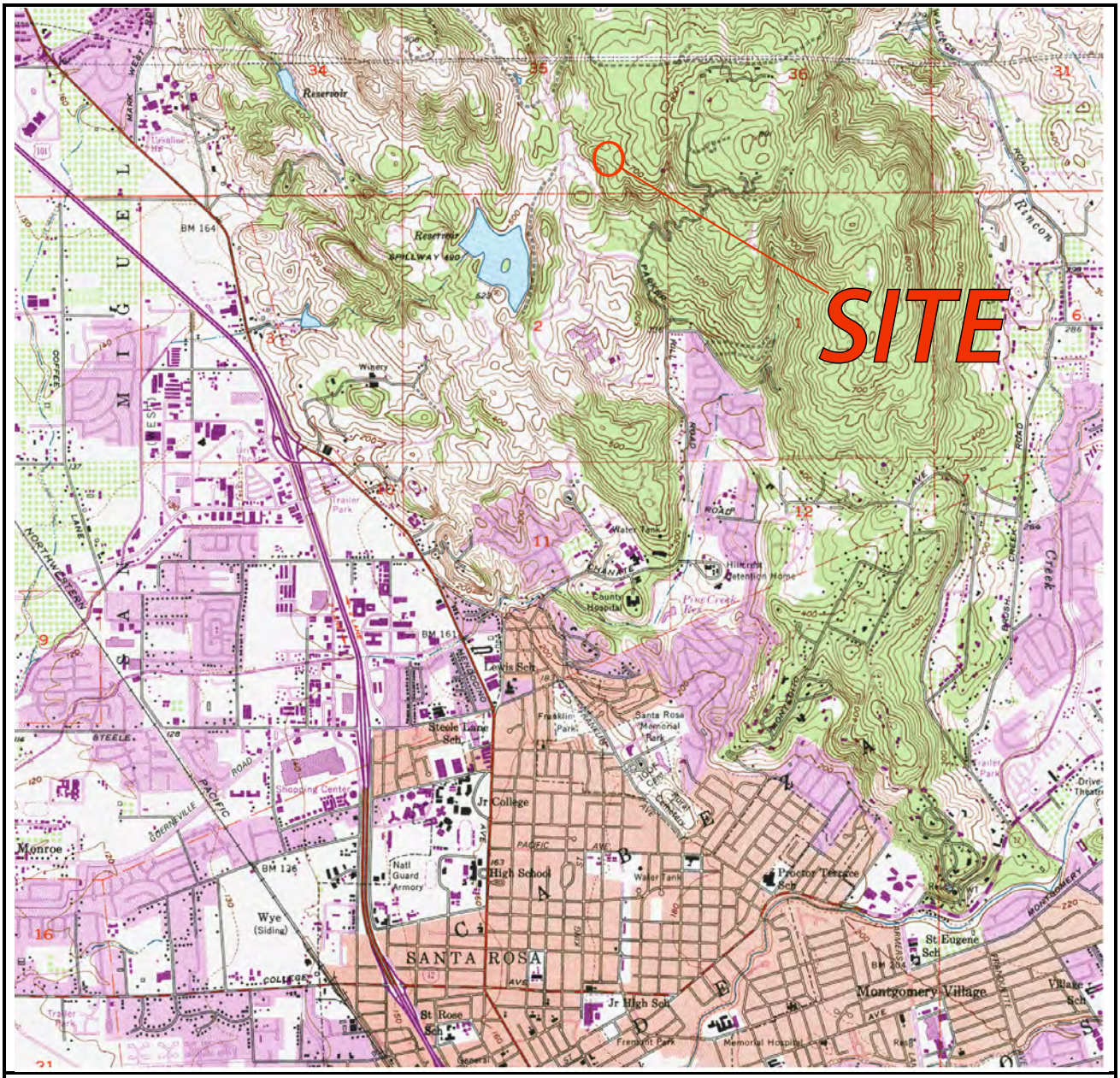

Figure 4. Site On USGS Topo Map

Fir Ridge Meadows, Santa Rosa

NORTH ⇧	**Source/Prepared by:** C. Patterson; Oct., 2022	**Applicant:** Christopherson Builders	**Sonoma County APN** 173-620-030
	Basemap: USGS 1:24,000 scale topo map; Santa Rosa quad. **No Scale**		Approx. 6 ac

Biological Assessment Report

Existing Conditions

The site is located in the low hills just to the east of the valley-bottom Santa Rosa Plain (SRP), and is on a well drained hillside soil mapped by Miller, et al (Soil Survey of Sonoma County, 1972) as "Felta very gravelly loam" (varying slopes). The site has a gentle slope to the southwest, and contains no onsite creeks, channels, ditches, major drainage swales, or other distinct waterways. With extensive surrounding development, there is no significant remaining upslope watershed that contributes runoff to the site. A review of historic air photos shows that the site has remained relatively unaltered for many decades, and that there are/were no discernible wetlands or channels on the site over these years.

Under pre-human conditions, this site likely supported an oak savannah community, dominated by coast live oak (*Quercus agrifolia*), plus lesser amounts of valley oak (*Q. lobata*), black oak (*Q. kelloggii*), and California bay (*Umbellularia*), plus scattered madrone (*Arbutus menziesii*) and Douglas-fir (*Pseudotsuga menziesii*) in the ravines, hollows, and more pronounced north slopes. With a typical Mediterranean climate and southerly exposure, the site is relatively hot and dry in summer, and most of the site is covered by regionally typical non-native (mostly annual) grassland. This grassland cover has been historically grazed by livestock, more recently simply mowed for hay annually, and like the overall region, has had a long history of disturbance and invasion by introduced plant species. Dominant grassland species include the widely naturalized non-native grasses Italian ryegrass (*Lolium*), soft chess and ripgut bromes (*Bromus mollis, B. rigidus*), wild oats (*Avena*), and several others (*Briza, Hordeum, Phalaris, Vulpia*). Mixed into this typically low growing herbaceous cover of predominantly annuals, are several introduced forages (*Vicia, Medicago, Trifolium*), and numerous common forbs and weeds (*Erodium, Geranium, Plantago, Sonchus, Hypochaeris, Picris, Daucus, Lactuca, Convolvulus*).

Around the periphery of the property (adjoining numerous private residences), are an assortment of planted ornamental trees, typically redwoods, cypress, acacia, pines, along with a few remnant oaks.

Aside from the oaks, native plant species are not common onsite, and occur generally as few scattered individuals of a few native grasses, including purple needlegrass (*Stipa pulchra*) blue wildrye (*Elymus glaucus*), and a very few wildflowers (*Brodiaea pulchra*, *Hemizonia* sp., *Lupinus bicolor, Lotus purshianus, Ranunculus californicus, Eschscholzia californica, Trifolium depauperatum, Juncus bufonius*), all of which occur along the site's less disturbed edges and/or beneath/around the clusters of oak trees (and not out in the open grassland). Also present in small amounts are non-native Himalaya blackberry (*Rubus discolor*) and a few shrubs of the ubiquitous coyote brush (*Baccharis*).

Wetlands

The site has been grazed, invaded by exotics, and disturbed such that there is very little remaining natural habitat (a few oak tree clusters), and there is only minor native vegetation over most of the site. Through repeated mowing and harvesting (and possibly occasional historic disking), the open grassland has become gradually flatter and more uniform, and the site lacks any distinct low-lying areas or depressions that collect or hold persistent surface water. There are no channels or distinct drainage swales onsite.

Without any contributing watershed, the site has only direct rainfall as a source of onsite hydration. As such, and lacking any significant low spots, virtually all water received either percolates directly or runs off to the southwest. No areas onsite were observed to exhibit any significant evidence of (potentially qualifying) persistent surface hydrology (e.g., dried algae, stained leaves/stems, silt-encrusted detritus, oxidized rhizospheres). Soils are relatively dark (10 YR 3/2, 3/3) gravelly loam, with no iron staining within ten inches

of the surface, no shallow hardpan, nor any evidence of hydric soil conditions. Finally, no "Obligate" wetland plant species were seen onsite, and there are no significant occurrences of "Facultative-Wetland" species.

To summarize, the site has well drained soil that does not reflect significant anaerobic conditions, is dominated by non-native hayfield vegetation that is not hydrophytic, and has no significant low-lying topography, nor any evidence of prolonged surface hydrology. The site contains no qualifying (jurisdictional) "wetlands," nor any "other waters" subject to state or federal regulations.

Sensitive Species

There are a number of rare, endangered, threatened, and/or otherwise sensitive plants that are known from this region, many of which grow in rocky, serpentine, chaparral, or wooded habitats (which are not present here), or in wetland habitats, ranging from perennial marshes to vernal pools and other seasonal wetlands. In particular, there are four state and federally listed plants that have (at least historically) been reported from seasonal wetlands in the region. These include Burke's goldfields (*Lashtenia burkei*), Sonoma sunshine or Baker's blennosperma (*Blennosperma bakeri*), Sebastopol meadowfoam (*Limnanthes vinculans*), and many-flowered navarretia (*Navarretia plieantha*). None of these listed species have been reported from the vicinity of the study area, and (aside from rare species in chaparral on Fountaingrove Ridge upslope to the east) the nearest valley rare plant locations are historic records for the first three pool species identified above in the vicinity of the Francisco and Waltzer in northwestern Santa Rosa, which is approximately four miles away, with major urban barriers in between. The navarretia was reported (discovered by this investigator in 1984) at one parcel near the County Airport, but has not been seen elsewhere on the SRP, nor has it been seen recently at that unique location. All of these species grow in seasonal wetlands. No habitats suitable for any of these species were found onsite or nearby.

Most of the site has very low (or even negligible) potential for rare plants. There are no particularly suitable habitats for any regionally known listed plants, and the CNDDB does not have any historic records of any such species at this site or immediately nearby. The property has no serpentine, nor any other unusual soils or exposed rocks. There are no natural chaparral habitats onsite, and as described, most of the grassland is highly altered and non-native in character. This site is just outside the eastern edge of the general SRP landform, occurring just into the adjacent hills, and does not contain the type of nearly level clay or hardpan soils that fosters the formation of vernal pools on the SRP proper (which is generally where the listed species occur). As such, and lacking any other naturally restrictive substrates or specialized habitats, the site does not provide prime potential habitat for any of the plant species of concern.

Based on the relative commonness of the habitats and vegetation, and the high degree of disturbance of the subject property, there are no habitats present, specifically seasonal wetlands, that are regarded as potentially suitable for rare or otherwise sensitive plants. Rare species of open natural grasslands are also not likely, as the local grassland has been thoroughly degraded, invaded, and converted mostly to non-natives. Based on these factors, it is reasonably likely that no formally listed or protected plants occur here.

Small, disturbed, and surrounded by semi-urban neighborhoods, the site provides no especially unique or high value habitats or critical resources for sensitive or uncommon wildlife species in the region, and no rare wildlife species are reported as being present. Appendix B is a list of sensitive wildlife species that could potentially be found in this general region, with assessments of the likelihood of each to actually occur on the project site. Most of these species are not expected here because of the lack of specific habitat requirements (e.g., perennial water, old trees, expansive riparian), although any of several protected birds and/or bats could potentially forage in the area.

The study area is used by common songbirds, small and large mammals (skunk, raccoon, deer, coyote), and numerous resident lizards, snakes, and ground burrowing rodents. Ground squirrels are not abundant however, and no large burrows (e.g., suitable for badger, fox, coyote) were seen onsite. The habitats here would be used for foraging and temporary resting by numerous songbirds, possible nesting by owls or bats, but there is no onsite habitat that represent significant habitat for water birds, waterfowl, or any birds of prey. The site is well outside the designated "Critical Habitat" area for the California tiger salamander (CTS; see Figure 5), and is in an area designated by the US Fish and Wildlife Service as "not likely to affect" CTS. There could be some occasional foraging here by raptors or other protected birds as certain avian species move through the region, but no critical nesting or other prime habitat for such birds would be lost or adversely affected. Further, because of its relatively small size and isolated occurrence (surrounded by urban landscape), it is not likely to be a particularly attractive pocket of habitat; the site's value for the more secretive or sensitive wildlife species has been severely diminished over the years by (1) areawide and direct onsite ranching, and (2) the relatively densely urbanized surroundings.

Other Potentially Significant Biotic Issues

The study area's primary biotic features of significance are the clusters of native oaks that remain. Aside from these, none of the rest of the site has any especially natural habitats, nor any appreciable potential to support sensitive species. The few native oaks that are present do not occur in numbers enough or suitable context to constitute 'woodland' or any other oak 'community'. Individual trees, may, however, warrant consideration (if proposed for removal) and/or compensatory mitigation based on species and size. A few such trees that cannot be easily avoided will be addressed through standard City permitting protocols and mitigation requirements.

The study area contains no undisturbed natural forest or woodland cover, nor any riparian woodland, wetlands, or significant native shrub cover (e.g., no coastal scrub or chaparral). No rare or sensitive wildlife have been observed onsite, or are likely to frequent this parcel. Situated in a semi-urban landscape, this site has only minor value to regional wildlife.

Potential Impacts and Recommended Mitigation Measures

Several acres of ruderal grassland/hayfield would be eliminated/removed, along with a few lone trees, including a very small number of common native plant species, all of which are regarded as relatively insignificant impacts. This vegetation loss would be relatively inconsequential with regard to actual direct ecological functions and resource values to be lost, as well as in the broader regional context (a very minor loss or impact). The loss of ruderal grassland vegetation would contribute very slightly to the incremental reduction in this type of habitat around the county/state, but situated in such an urban area, would not be considered significant. Therefore, impacts to general vegetation (plant communities, natural physical habitats) would be relatively insignificant, owing to the already non-native, degraded character of the site's vegetation, and the immediately neighboring urban landscape. Loss of the annual grassland and a few trees is not considered highly significant, and no native plant communities or species would be adversely affected.

The project would have no impact on seasonal wetlands or 'other waters', and is located outside the designated "Critical Habitat" for CTS; hence, CTS is not considered an issue or concern here. The site contains no potentially suitable breeding habitat for CTS, and there are no known CTS occurrences within several miles (to the west on the SRP proper).

Figure 5. Site In Relation To CTS Critical Habitat

Fir Ridge Meadows, Santa Rosa

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	Basemap: USGS 1:24,000 scale topo map; Santa Rosa quad. **No Scale**		Approx. 6 ac

Biological Assessment Report

The site is beyond the eastern edge of the Corps/FWS-designated (and 'special conditioned') SRP, where certain requirements for listed species surveys and mitigation typically apply. Therefore, as the site here falls outside that specially conditioned region, the standard protocol (sensitive species) survey requirements for the SRP do not apply here. Hence, multiple years of botanical surveys (and other 'full protocol' requirements) are not required.

Without significant wetland, sensitive habitat, or listed species issues, the project's biotic impacts would be relatively minor (even 'insignificant'), and no permitting or coordination with the Corps of Engineers would be required. By extension, '401 Certification' by the state RWQCB would not be required, as that provision of the federal Clean Water Act would not apply.

As with the development of any open land, certain common wildlife species will be displaced, and the common ruderal habitats used by them here will be slightly reduced; this is judged here to be a very minor impact, particularly in view of the extensive past/existing local/regional development. Loss of small increments of generic open grassland represents a relatively insignificant impact, both regionally and statewide, as such habitats are very common and widespread. Open lands outside the City boundaries will likely accommodate any locally displaced wildlife.

While many of the trees on the site will remain, pre-construction bird and/or nest surveys may be warranted/required, depending on the extent (and season) of any tree removal to occur and/or any extensive potentially disruptive activities (major grading, machinery work, loud noises, night work, etc.). Significant physical onsite work (grading, trenching, etc.), other disruptive activities, and/or tree removal during the overall nesting season (typically March through August) may trigger the need for such pre-work surveys. Such surveys typically need to be performed within two weeks before the physical work is to start. Surveys for bats roosting in the onsite trees may be warranted depending on the position taken by CDFW (to be determined through direct and City/CEQA coordination). Any native trees of significant size (greater than roughly six inches in diameter) that would be removed may be subject to compensatory replacement and/or fees, as per City requirements. These measures, plus other standard BMPs regarding protection of water quality, along with any other specific requirements to be set forth by the CDFW, should assure that the projected impacts to biotic resources will be residually insignificant.

No specific permitting or mitigation should be required regarding wetlands or rare plants, as the site is outside the specially conditioned SRP area where certain 'automatic' mitigations are required.

Applicable CEQA Checklist Items

The following are brief assessments with regard to the most pertinent environmental issues typically included on a CEQA checklist:

Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U. S. Fish and Wildlife Service?

No; no such listed or protected species are present here, nor would any such species be substantially adversely impacted by the project here. Any sensitive wildlife species that might use the area occasionally would not be seriously affected as they can move (or already have moved) into other undeveloped areas nearby.

Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community?

No; there is no riparian vegetation or habitat, nor any other sensitive natural habitats or communities present on (or near) the project site, and no such habitat or vegetation would be lost or otherwise adversely affected.

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No; there are no fish or fish-bearing streams onsite or nearby, and wildlife that may use the area now will be free to move into other undeveloped areas to the northeast upon development here. With extensive urban neighborhoods to the west, east, and south, plus numerous busy paved streets, there are no significant wildlife corridors through this area. Onsite development will largely eliminate this parcel of open land for most future wildlife use, but this is generally not regarded as a significant impact, as much of that depletion process has played out over many decades or surrounding development.

Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No; no jurisdictional "wetlands" or "other waters" occur onsite.

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No; the site is zoned for residential development within the City's general plan and long term goals, and has long been expected to be developed for such use. The site is not a part of any recognized natural area, preserve, or open space designation, and does not contain any resources that would warrant such designation. A number of native oak trees occur onsite which may be removed, and which may require City mandated mitigation(s), which will be addressed during the City approval process. Mitigation (e.g., fees, replacement planting, etc.) will be provided as per City requirements for any trees that cannot be saved in place. No other onsite habitats, species, or resources are of such high value as to be recognized or protected for same.

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No; there are no such designations here or nearby, and development of this site would not preclude such efforts nearby; there are no recognized resources in this immediate area that would warrant such efforts or designations. Virtually all of the land/parcels immediately surrounding the study area have already been developed, mostly for urban residential neighborhoods, and none of these nearby areas are known to support or provide exceptional natural habitat values worthy of preservation efforts.

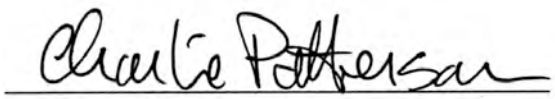
Permitting Considerations

The project will not require either '404' (fill) authorization from the Corps, nor '401 Certification' from the RWQCB. CTS and listed plants should not be regulatory issues or require any specific mitigations. Onsite runoff treatment will be reviewed by the RWQCB, with likely onsite treatment measures being required.

CEQA will presumably be adequately addressed by the City. Pending CDFW feedback/direction regarding the potential need for nesting surveys, no further mitigation or compensation should be needed with regard to wetlands/other waters, general vegetation, sensitive plants, habitats or wildlife.

I hope this evaluation provides the information needed for this project. Please contact me if you (or the City) have any questions or need additional information.

Sincerely,



Charles A. Patterson

Appendix A. Sensitve plants potentially in the Santa Rosa area.

PLANT TAXON	COMMON NAME	LIST (CNPS)	HABITAT	Likely In Study Area ? (Fountaingrove area)
SPECIES OF PRIMARY CONCERN:				
Castilleja uliginosa	Pitkin Marsh paintbrush	1A	marshes, wet meadow; Pitkin Marsh	No; no suitable habitat; ***presumed extinct*** ; none seen
Trifolium amoenum	showy Indian clover	1A	low rich fields, swales; clay, serpentine	No; no good habitat; ***presumed extinct*** ; none seen
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	1B	low wet places, marsh, riparian scrub	No; no suitable habitat; none seen
Arctostaphylos bakeri ssp. bakeri	Baker's manzanita	1B	dry serp., near Occidental	No; no good habitat; none seen
Arctostaphylos canescens ssp. sonomensis	Sonoma manzanita	1B	chaparral	No; no good habitat; none seen
Arctostaphylos densiflora	Vine Hill manzanita	1B	dry slopes, chaparral	No; no good habitat; none seen
Arctostaphylos stanfordiana ssp. decumbens	Rincon Ridge manzanita	1B	chaparral, edge of woodland	No; no good habitat; none seen
Astragalus clarianus	Clara Hunt's milkvetch	1B	grassy hillsides, cismontane woodland	No; poor habitat quality onsite; none seen
Blennosperma bakeri	Baker's blennosperma or Sonoma sunshine	1B	low wet places; valley grassland, vernal pools	No; no suitable habitat; none seen
Campanula californica	swamp harebell	1B	freshwater marshes, bogs, closed cone pine, wet meadow, seeps	No; no suitable habitat; out of range?, none seen
Carex albida	white sedge	1B	open marshy places; Pitkin Marsh	No; no suitble habitat; none seen; taxonomically reassigned - no longer listed?
Ceanothus confusus	Rincon Ridge ceanothus	1B	foothill woodland, chaparral	No; no good habitat; none seen
Ceanothus divergens	Calistoga ceanothus	1B	chaparral, woodland; serpentine	No; no good habitat; none seen

Compiled by C. Patterson, Sept. 2022

Appendix A. Sensitve plants potentially in the Santa Rosa area.

Ceanothus foliosus var. vineatus	Vine Hill ceanothus	1B	chaparral	No; no good habitat; none seen
Ceanothus sonomensis	Sonoma ceanothus	1B	chaparral, Hood Mountain region	No; no good habitat; none seen
Chlorogalum pomeridianum var. minus	dwarf soaproot	1B	chaparral; serpentine	No; no suitable habitat; none seen
Clarkia imbricata	Vine Hill clarkia	1B	chaparral near Pitkin Marsh	No; no good habitat; none seen
Delphinium bakeri	Baker's larkspur	1B	low brush and fencerows; coast'l prairie	No; no suitable habitat; out of range; none seen
Delphinium luteum	yellow larkspur	1B	sea bluffs, coastal scrub	No; no suitable habitat; out of range; none seen
Dirca occidentalis	western leatherwood	1B	wet rocky hills, coast. decid. forest, chaparral	No; no suitable habitat; none seen
Erigeron angustatus	narrow-leaved daisy	1B	chaparral; serpentine	No; no suitable habitat; none seen
Eriogonum nervulosum	Snow Mtn. buckwheat	1B	chaparral, barrens, rocks; serpentine	No; no suitable habitat; none seen
Fritillaria liliacea	fragrant fritillary	1B	heavy adobe soils, coastal grassland and scrub	No; poor habitat quality; none seen
Gratiola heterosepala	Bogg's Lake hedge-hyssop	1B	vernal pools, shallow marshy ground	No; no suitable habitat; none seen
Hemizonia congesta ssp. Congesta	congested-headed hayfield tarplant	1B	grasslands, edges of marshes	No; marginal habitat; none seen
Hesperolinon bicarpellatum	two carpellate western flax	1B	chaparral, rockland, serpentine	No; no suitable habitat; none seen
Horkelia tenuiloba	thin-lobed horkelia	1B	mesic chaparral	No; no good habitat onsite; none seen; out of range?
Lasthenia burkei	Burke's goldfields	1B	vernal pools, wet swales	No; no suitable habitat; none seen
Layia septentrionalis	Colusa layia	1B	woodland, grassland; sandy, serpentine	No; poor habitat quality; none seen
Legenere limosa	legenere	1B	vernal pools; valley grassland	No; no suitable habitat; none seen

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Appendix A. Sensitve plants potentially in the Santa Rosa area.

Lilium maritimum	coast lily	1B	coastal scrub, prairie, forest	No; no suitable habitat; none seen
Lilium pardalinum ssp. pitkinense	Pitkin Marsh lily	1B	wet marshy ground, Pitkin Marsh	No; no suitable habitat; none seen
Limnanthes vinculans	Cunningham Marsh or Sebastopol meadowfoam	1B	vernal pools, wet meadows	No; no suitable habitat; none seen
Lupinus sericatus	Cobb Mt. lupine	1B	chaparral, woodland, forest	No; poor habitat quality; none seen; out of range?
Monardella villosa ssp. globosa	robust monardella	1B	foothill woodland, clearings in chaparral	No; no good habitat; none seen
Navarretia leucocephala ssp. bakeri	Baker's navarretia	1B	vernal pools, wet swales, mesic grassland?	No; no suitable habitat; none seen
Navarretia leucocephala ssp. pauciflora	few-flowered navarretia	1B	vernal pools; volcanic ash-flow	No; no suitable habitat; none seen
Navarretia leucocephala ssp. plieantha	many- flowered navarretia	1B	edges of vernal pools, meadows	No; no suitable habitat; none seen
Parvisedum leiocarpum	Lake County stonecrop	1B	grass., woodland; shallow seas. pools on rocks	No; no suitable habitat; none seen; out of range?
Penstemon newberryi var. sonomensis	Sonoma beard tongue	1B	rocky chaparral	No; no suitable habitat; none seen
Pleuropogon hooverianus	Hoover's or No. Coast semaphore grass	1B	meadows, coastal decid. forest, wet places	No; no suitable habitat; out of range?; none seen
Potentilla hickmanii	Hickman's cinquefoil	1B	coastal and freshwater marsh	No; no suitable habitat; none seen
Rhynchospora californica	California beaked rush	1B	bogs, swamps, freshwater marsh	No; no suitable habitat; none seen
Sidalcea hickmanii ssp. viridis	Marin checkerbloom	1B	chaparral	No; no suitable habitat; none seen
Sidalcea oregana ssp. hydrophila	marsh checkerbloom	1B	meadows, mesic riparian	No; no suitable habitat; none seen
Sidalcea oregana ssp. valida	Kenwood Marsh checkerbloom	1B	freshwater marsh	No; no suitable habitat; none seen

Compiled by C. Patterson, Sept. 2022

Appendix A. Sensitve plants potentially in the Santa Rosa area.

Streptanthus brachiatus ssp. brachiatus	Socrates Mine jewelflower	1B	serpentine	No; no suitable habitat; none seen
Streptanthus brachiatus ssp. hoffmanii	Freed's jewelflower	1B	serpentine	No; no suitable habitat; none seen
Streptanthus glandulosus ssp. hoffmanii	secund jewelflower	1B	chaparral, barrens; serpentine	No; no suitable habitat; none seen
Streptanthus morrisonii ssp. elatus	Three Peak's jewelflower	1B	chaparral, barrens; serpentine	No; no suitable habitat; none seen
Streptanthus morrisonii ssp. kruckebergii	Kruckeberg's jewelflower	1B	chaparral, barrens; serpentine	No; no suitable habitat; none seen
Streptanthus morrisonii ssp. morrisonii	Morrison's jewelflower	1B	chaparral, barrens; serpentine	No; no suitable habitat; none seen
Tracyina rostrata	beaked tracyina	1B	woodland, grassland	No; poor habitat quality; none seen
Calamagrostis crassiglumis	Thurber's reed grass	2	freshwater marsh, wet meadow, coast. scrub	No; no suitable habitat; none seen; out of range?
Downingia pusilla	dwarf downingia	2	vernal pools; valley grassland	No; no suitable habitat; none seen
SPECIES OF SECONDARY CONCERN:				
Cardamine pachystigma var. dissectifolia	dissected-leaved toothwort	3	chaparral, meadow; serpentine	No; poor habitat quality; none seen
Erigeron biolettii	streamside daisy	3	riparian zone in woodland, broad- leaved forest	No; no suitable habitat; none seen
Lessingia hololeuca	woolly-headed lessingia	3	grassland, barrens, scrub; serpentine, clay	No; poor habitat quality; none seen
Pogogyne douglasii ssp. parviflora	Douglas' pogogyne	3	vernal pools, low seas. wet places	No; no suitable habitat; none seen
Amsinckia lunaris	bent- flowered fiddleneck	4	valley and foothill grassland	No; poor habitat quality; none seen
Antirrhinum virga	tall snapdragon	4	chaparral	No; no suitable habitat; none seen
Arabis blepharophylla	coast rock cress	4	rocky places, cliffs, coastal scrub, prairie	No; no suitable habitat; none seen; out of range?

Appendix A. Sensitve plants potentially in the Santa Rosa area.

Asclepias solanoana	serpentine milkweed	4	serpentine rockland, chaparral	No; no suitable habitat; none seen
Astragalus breweri	Brewer's milkvetch	4	chaparral, woodland, grassland	No; no good habitat; none seen
Calamagrostis bolanderi	Bolander's reed grass	4	freshwater marsh, scrub, meadows	No; no suitable habitat; none seen
Calochortus umbellatus	Oakland star tulip	4	dry wooded or barren hills; serpentine; meadows	No; no suitable habitat; none seen; out of range?
Calyptridium quadripetalum	four-petaled pussy-paws	4	chaparral; sand/gravel, serpentine	No; no suitable habitat; none seen
Calystegia collina ssp. oxyphylla	Mt. St. Helena morning-glory	4	chaparral, serpentine	No; no suitable habitat; none seen
Cirsium andrewsii	Fransiscan thistle	4	broadleaved up. forest, coastal bluffs; serpentine	No; no good habitat; none seen
Cordylanthus tenuis ssp. brunneus	serpentine bird's-beak	4	chaparral, woodland, rocks; serpentine	No; no suitable habitat; none seen
Cypripedium montanum	mountain lady's slipper	4	lower coniferous forest	No; no suitable habitat; none seen
Cypripedium fasciculatum	clustered lady's-slipper	4	open rocky woods, redwd. to yellow pine	No; no suitable habitat; none seen
Elymus californicus (Hystrix c.)	California bottlebrush grass	4	coastal, shaded (mesic/wet) woods and	No; no good habitat; none seen
Erythronium helenae	St. Helena fawn lily	4	chaparral, woodland, grass.; volc or serpentine	No; no good habitat; none seen
Lilium rubescens	redwood lily	4	mixed evergreen forest, chaparral	No; no suitable habitat; none seen
Linanthus acicularis	bristly linanthus	4	chaparral, woodland, prairie	No; poor habitat onsite; none seen
Lomatium repostum	Napa lomatium	4	shaded woods, chaparral	No; poor habitat onsite; none seen
Micropus amphibolus	Mt. Diablo cottonweed	4	foothill woodland, upland forest, rocky grassland	No; poor habitat onsite; none seen

Appendix A. Sensitve plants potentially in the Santa Rosa area.

Monardella undulata	curly-leaved monardella	4	coastal dunes, scrub, chaparral	No; no suitable habitat; none seen
Monardella viridis ssp. viridis	green monardella	4	chaparral, woodland, upland forest	No; no good habitat; none seen
Perideridia gairdneri ssp. gairdneri	Gairdner's yampah	4	moist places, marshes, woodland	No; no suitable habitat; none seen
Pityopus californicus	California pinefoot	4	deep shade, mixed evergreen forest	No; no suitable habitat; none seen
Ranunculus lobbii	Lobb's aquatic buttercup		shallow vernal ponds & pools	No; no suitable habitat; none seen
Rhynchospora alba	white beaked rush	4	bogs, freshwater marsh	No; no suitable habitat; none seen
Rhynchospora globularis var. globularis	round headed beaked rush	4	bogs, freshwater marsh	No; no suitable habitat; none seen
Ribes victoris	Victor's gooseberry	4	broadleaved up. forest, chaparral	No; poor habitat onsite; none seen
Cirsium walkerianum	Alameda Co. thistle		dry slopes, mixed ever-green forest	No; poor habitat onsite; none seen
Trifolium grayi	Gray's clover		meadows, mesic grassland	No longer listed; poor habitat quality; none seen
OTHER SPECIES OF POSSIBLE CONCERN:				
Cuscuta howelliana	Bogg's Lake dodder		vernal pools	No longer listed; no suitable habitat; none seen
Hemizonia multicaulis ssp. multicaulis	seaside tarplant		coastal bluffs, scrub	No longer listed; poor habitat quality; none seen
Hemizonia multicaulis ssp. vernalis	Tiburon tarplant		coastal scrub prairie; serpentine	No longer listed; poor habitat quality; none seen

APPENDIX B. Sensitive wildlife potentially in central Sonoma County.

Animal Species	Status *	Habitat	Likely to occur onsite ?
MAMMALS			(Fountaingrove area)
Pallid bat *Antrozous pallida*	--/CSC	Roosts in cracks in cliffs, rock outcrops, old buildings, under bridges	Could conceivably forage onsite; not likely a frequent visitor; area probably too highly urbanized
Townsend's big-eared bat *Corynorhinus townsendii*	--/CSC	Roosts in old buildings, caves	Could forage onsite; not likely a frequent visitor
Western red bat *Lasiurus blossevillii*	--/CSC	Roosts in trees of forest, woodland	Not likely; only one historic report in Sonoma Co (Cloverdale)
American badger *Taxidea taxus*	--/CSC	Open habitats with friable soils	Could forgae onsite, but no burrows seen; likely too urbanized
BIRDS			
White-tailed kite *Elanus leucurus*	--/CFP	Forages in grasslands, meadows; nests in solitary trees	Could forage onsite occasionally, but site is very small & urban; none seen
Northern harrier (marsh hawk) *Circus cyaneus*	--/CSC	Forages and nests in grasslands, meadows, marshes	Could forage onsite occasionally, but site is very small, wooded, & urban; none seen
Vaux's swift *Chaetura vauxi*	--/CSC	Nests in large hollow trees; forages primarily in riparian	Could forage onsite occasionally, but site is very small, wooded, & urban; no true riparian nearby; none seen
Purple martin *Progne subis*	--/CSC	Woodlands; nests in snags	Could forage onsite occasionally, but site is very small, wooded, & urban
Yellow warbler *Dendroica petechia*	--/CSC	Riparian woodlands, thickets	No; no suitable riparian habitat onsite or nearby
Loggerhead shrike *Lanius ludovicianus*	--/CSC	Dense brush or trees; forages in scrub, grasslands	Could potentially forage onsite, but no good habitat; none seen
Yellow-breasted chat *Icteria virens*	--/CSC	Riparian woodlands, thickets	No; no suitable riparian habitat onsite or nearby
Tricolored blackbird *Agelaius tricolor*	--/CSC	Nests in dense vegetation near open water; forages in grasslands, ag land	Not likely onsite; no suitable open water habitat onsite or nearby
Short-eared owl *Asio flammeus*	--/CSC	Open treeless habitats; nests in dense vegetation	No; too small, wooded, urban; doesn't breed in this region
Western burrowing owl *Athene cunicularia hypugea*	--/CSC	Nests in ground burrows of other animals; grasslands	No; too small, wooded, urban; doesn't breed in this region; no suitable burrows (or owls) seen

APPENDIX B. Sensitive wildlife potentially in central Sonoma County.

AMPHIBIANS			
California tiger salamander *Ambystoma californiense*	FE/CT	Breeds in vernal pools and other ponds	No; no breeding habitat onsite or nearby; nearest known sighting 3-4 miles to W & SW; outside of FWS designated 'Critical Habitat'
California red-legged frog *Rana draytonii*	FT/CSC	Pools in streams, ponds, marshes	No; no suitable habitat onsiteor nearby
Foothill yellow-legged frog *Rana boylii*	--/CSC	Rocky banks of clean creeks; breeds in backwaters, pools	No; no suitable habitat onsiteor nearby
REPTILES			
Pacific pond turtle *Actinemys marmorata*	--/CSC	Ponds, perennial creeks; nests and forages in adjacent grasslands	No; no suitable ponded habitats onsite or nearby
Coast horned lizard *Phrynosoma coronatum frontale*	--/CSC	Open sunny habitats; feeds on ants	No; no suitable habitat; not known in area; highly disturbed and urbanized
FISH			No fish occur in the area as there are no suitable streams onsite or anywhere nearby

* FE = federally listed as 'Endangered'
* CT = State listed as 'Threatened'
* CFP = State listed as 'Fully Protected'
* CSC = State species of 'Special Concern'

Appendix C

Selected Photos

Biological Assessment Prepared For

Fir Ridge Meadows

Fir Ridge Drive
Santa Rosa

Charles A. Patterson, Oct., 2022

Plate 1. Looking NNE across main part of site (farmed hayfield), September 16, 2022; 'Fir Ridge Meadows', Fir Ridge Drive, Santa Rosa.

Plate 2. Looking SE aross middle of the site.

Plate 3. Looking SSW from SE corner of the site, September 16, 2022.

Plate 4. Looking south aross middle and southern part of the site; Fir Ridge Drive is to the right.

Appendix D

Investigator's Qualifications

Charles A. Patterson, Plant Ecologist

Biological Assessment Prepared For

Fir Ridge Meadows

Fir Ridge Drive, Santa Rosa

Charles A. Patterson

1806 Ivanhoe Avenue, Lafayette, CA 94549

PLANT ECOLOGIST, WETLAND SPECIALIST, RESOURCE MANAGER, NATURALIST

Ph: (925) 938-5263 (925 'wetland') cell: (510) 414–7976 email: cpwetguy@sbcglobal.net

EDUCATION

M.S. in Range Management & Wildland Ecology, 1974, University of California at Davis
B.S. in Renewable Natural Resources, 1972, UC Davis
Undergraduate coursework in Mechanical Engineering, 1968-1970, UC Santa Barbara
American Graduate University, trained in Proposal Preparation and Source Selection, 1980

WORK HISTORY

Mr. Patterson is a professional plant ecologist and wetland specialist with 45 years of work experience, including 38 years as an independent consultant in California and other western states. He has participated in over 600 environmental assessments, EIRs/EISs, rare plant surveys, restoration plans, and related studies. He has completed rare plant surveys for the 19,000 acre Marin Municipal Water District, the 29,000 acre "Flying 'M' Ranch" in Merced County, and numerous smaller properties around northern California. With an emphasis on rare plant and wetland ecology, Mr. Patterson has designed, implemented, and monitored seven wetland and rare plant mitigation banks (and dozens of other wetland mitigation projects) in Sonoma County, and is a frequent contributor to California's Natural Diversity Data Base and CalFlora's photographic plant database.

1984 - present: Self-employed Consulting Ecologist. Conducted or participated in several hundred environmental studies, including numerous wetland delineations, sensitive species surveys, and development site evaluations; mitigation and revegetation design, implementation and monitoring; habitat (including wetland) restoration plans; specialized botanical and wetland related studies (e.g., listed species propagation, pest species treatments, violation investigations); and seven ongoing wetland mitigation banks on the Santa Rosa Plain. Congressional appointee (as a wetland and vernal pool expert) to the Sonoma County Vernal Pool Task Force, 1989-1994. Surveys and reports for numerous power transmission line, hydro-electric, and reservoir proposals in Kern, Merced, Sonoma, Ventura, and Riverside counties. Acted as fill-in technical specialist for six months reviewing mine reclamation plans for the Calif. Division of Mines and Geology.
1977 - 1982: Western Ecological Services Company (WESCO), Marin County. Associate and Senior Plant Ecologist. Directed vegetation, rare plant, and wetland studies for over 200 projects; prepared technical and cost proposals for both botanical and interdisciplinary studies; hired and supervised botanical subcontractors (including a team of ten botanists to survey the 'Geothermal Public Power Line' – Geysers to Williams); project management and staff supervision; technical (and full report) writing, editing, and production. Over 50 wetland delineations; expert witness for three court cases involving wetland JDs.
1974 - 1976: The Nature Conservancy, Western Regional Office, San Francisco. Research Ecologist. Prepared vegetation inventories for 10 nature preserves in California and Washington; hired and supervised interdisciplinary study teams for preparation of inventories and master plans for 15 preserves in Calif.; completed natural resources reference study of Santa Cruz Island (cover article in 'Fremontia' April, 1978); evaluated potential site acquisitions.
1973 - 1974: U.S. Forest Service, Riverside Fire Lab. Graduate Research Assistant. Studied the effectiveness of Angora goats in fuel break establishment and/or maintenance in the Sierra Nevada foothills.
1982 - 1985: ECHO - The Wilderness Company, Oakland, CA. After being laid off in the 1982 recession, I worked part time as a professional whitewater river guide and naturalist in California, Oregon, Idaho.
1971 - 1991: Northern California Volleyball Officials Association. Part time professional volleyball referee for collegiate and professional leagues in northern California.

CAPABILITIES AND WORK EXPERIENCE

Plant Taxonomy: Firsthand experience with the flora of most western states, including California, Nevada, Oregon, Washington, Arizona, New Mexico, Utah, Colorado, and Idaho. Taught informal wetland botany field classes to Army Corps of Engineers staff.
Vegetation Mapping: Plant community and habitat mapping utilizing topographic maps, air photos, stereoscope interpretation; soil-veg correlations and range site descriptions; delineation of 'wetlands and other waters'; wildlife habitat assessments; and physically demanding ground surveys. Have mapped the vegetation of the Desolation and Mokelumne Wilderness areas (USFS), conducted rare plant surveys and mapping of the 19,000 acre Marin Municipal Water District, cataloged and mapped the riparian vegetation of the Sacramento and San Joaquin riverbanks (Redding to Verona, Friant to Stockton), coordinated the vernal pool and rare plant surveys and mapping of the 15,000+ acre "Flying 'M' Ranch" in Merced County (1983), and surveyed and mapped numerous ranches

and development sites in Sonoma, Marin, Lake, Napa, Contra Costa, Alameda, San Mateo, Placer, Eldorado, and other California counties.

Quantitative Sampling: Documentation and descriptions of plant communities using transect, quadrat, releve, and/or permanent plot methods. Range condition and forage production estimates; technical wetland data (soil, vegetation, hydrology) collection and interpretation; restored vegetation and sensitive species monitoring; constructed wetland monitoring via fixed transects.

Rare and Endangered Plant Species: Literature/herbaria searches, 'ID' and historic mapping research, detailed field surveys, expert and agency coordination, management and recovery plans, habitat suitability determinations, rare plant impact assessments and mitigation plans, sensitive species use in revegetation, and preserve design. Firsthand experience with over 300 of California's rare and endangered plant taxa, familiarity with many of the state's centers of endemism. Frequent contributor to the California Native Plant Society, Natural Diversity Data Base, and CalPhotos data files; expert reviewer of proposed state and federal plant listings and status reports. Personally discovered many listed plant locations in Sonoma County. Lead author of "Inventory of Rare Plant Locations and Sites Surveyed for Wetland Resources on the Santa Rosa Plain", prepared for the Calif. Dept. of Fish and Game, 1994; with Betty Guggolz and Marco Waaland).

Wetlands: Wetland delineation and mapping, including full coordination with the U.S. Army Corps of Engineers (USACE); habitat evaluations; wetland management and restoration. Experience with salt and freshwater wetlands, coastal and estuarine, riparian and floodplains, wet meadows, alpine meadows, bogs and hot springs, vernal pools and other seasonal wetlands, ephemeral and perennial stream systems. Have completed over 400 wetland delineations and surveys throughout the state. Have worked closely with the USACE, San Francisco, Sacramento, Ventura districts. Preparation of wetland fill (Section 404) permit applications (including Pre-Discharge Notifications, Nationwide Permits, Individual Permits, Alternatives Analyses), State 401 Certification; wetland mitigation feasibility, design, implementation, and monitoring. I began mapping ("delineating") wetlands in 1978, prior to the USACE's now-standard 1987 delineation manual, and have spent several hundred person-hours in the field (and some classroom) in the 1980s, 1990s, and 2000s, with Mr. Dan Martel of the USACE, their (at the time) pre-eminent "Wetland Specialist" and nationally known wetland expert. Under his technical direction, I completed close to 100 JDs. I completed a training course in "The Unified Federal Method" in 1989, an attempt by the USACE to upgrade the 1987 manual, but which was never adopted.

Revegetation and Restoration: Basic revegetation planning and implementation; site evaluations and revegetation design; species palettes and planting specifications; range improvement, restoration, and conversion; weed assessment; specialty consignment growing (e.g., native grasses, rare species); wildlife habitat enhancement; riparian restoration.

Fire Ecology: Basic wildfire hazard assessment; botanical input for fire management plans; conceptual burning plans for habitat enhancement and fuel reduction.

Environmental Regulations: Interpretation and coordination with state and federal environmental regulations, CEQA, NEPA, Clean Water Act, state and federal Endangered Species Acts, Wild and Scenic Rivers Act, EIR and EIS requirements, FERC (small and large) hydro-electric projects, and Corps of Engineers (404) permits; coordination with city and county general plans and policies.

Other: Considerable experience with energy/utility facility siting and development (power plants, access roads, steam lines, penstocks, pipelines, reservoirs, transmission lines); 30+ small hydroelectric projects. Rare plant photography and propagation; urban landscaping with native plants.

REFERENCES

Charlie Traboulsi, TDG Engineers, Santa Rosa (707) 494-0425
Larry Wasem, Patrick Imbimbo, Airport Business Center, Santa Rosa, (707) 578-5344
Christopher Desmond, Mitigation Bank Owner, Sebastopol (415) 308-1000
Jean Kapolchok, Planner/Principal, J. Kapolchok & Associates, Santa Rosa (707) 526-8939

PARTIAL LIST OF CLIENTS

The Nature Conservancy; AT&T; California Coastal Conservancy; PG&E; Calif. Dept. of Fish and Wildlife; Jackson Family Wines; Chalk Hill Winery; U.S. Forest Service (Inyo, Eldorado, Toyabe, Stanislaus); Bureau of Land Management; East Bay Municipal Utility District; Sonoma County Dept. of Public Works; U.S. National Park Service; Marin Municipal Water District; Sacramento Municipal Utility District; Calif. Div. of Mines and Geology; Wetland Research Associates, San Rafael; LSA Associates, Point Richmond; QUESTA Engineers, Point Richmond; Sonoma County Water Agency; Sonoma Co. Ag. Preservation and Open Space District; Munselle Civil Engineering, Healdsburg