



Midpeninsula Regional
Open Space District

PLANNING AND NATURAL RESOURCES COMMITTEE

R-19-140
October 22, 2019

AGENDA ITEM 2

AGENDA ITEM

Addendum to the Mindego Hill Ranch Grazing Management Plan to Expand Conservation Grazing into the South Pasture

GENERAL MANAGER'S RECOMMENDATION

Forward a recommendation to the Board of Directors to adopt an addendum to the Mindego Hill Ranch Grazing Management Plan as an amendment to the Russian Ridge Use and Management Plan that adds the south pasture as part of the conservation grazing area on the property.

SUMMARY

The General Manager recommends adoption of an addendum to the Mindego Hill Ranch (Mindego) Grazing Management Plan (Grazing Plan) (Attachment 1) to expand the conservation grazing area within Russian Ridge Open Space Preserve (Russian Ridge). The addendum identifies the existing resources and current uses in the proposed south pasture expansion area, and provides recommendations for future improvements, management, and monitoring at the site. The recommendations include: installation of additional water infrastructure, updates to fencing, management of brush encroachment into grasslands, and monitoring of resource management activities. Midpeninsula Regional Open Space District (District) staff and the current grazing tenant have been working with the Natural Resources Conservation Service (NRCS) to secure cost-sharing support for the anticipated improvements. Implementation of the recommended infrastructure improvements is estimated to cost \$119,341, of which approximately \$85,000 is projected to be the District's share with the remainder funded by the NRCS. Recommended improvements would span four years with work anticipated to begin in July 2020. If approved, the District's share would be allocated across the next four fiscal years and requested as part of the annual Budget and Action Plan development process. District costs for infrastructure improvements are eligible for Measure AA reimbursement.

BACKGROUND

The District has used grazing as a management tool to protect sensitive species habitat and reduce fuel loads at Mindego within Russian Ridge since 2015 (R-15-114). This management is consistent with the Russian Ridge Use and Management Plan (U&M Plan) for the Mindego Ranch area adopted by the Board in 2014 (R-14-21) and helps fulfill the District's commitments to the US Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and the San Mateo County Farm Bureau (Farm Bureau). Currently, specific grazing practices at the site are guided by the Mindego Grazing Plan. When the District commenced

grazing of the original 1,047-acre property, staff identified an additional 125 acres to the southeast as a future priority for expanding conservation grazing on the property.

The NRCS is a federal agency under the US Department of Agriculture that provides farmers and ranchers with financial and technical assistance to encourage conservation practices as part of day-to-day agricultural activities. The NRCS manages the following natural resources conservation programs that assist agricultural producers with reducing soil erosion, enhancing water supplies, improving water quality, increasing wildlife habitat, and reducing damage caused by floods and other natural disasters:

- *Agricultural Management Assistance* - Construct or improve water management or irrigation structures.
- *Conservation Stewardship Program* - Improve resource conditions, such as soil quality, water quality, water quantity, air quality, habitat quality, and energy.
- *Environmental Quality Incentives Program (EQIP)* - Implement conservation practices, or activities, such as conservation planning, that address natural resource concerns on agricultural lands.

The District's tenant at Mindego Ranch has worked with the local NRCS Conservationist to develop infrastructure improvements that qualify for funding assistance through these programs, reducing District costs in implementing the infrastructure to support the proposed pasture expansion.

DISCUSSION

The proposed 125-acre south pasture expansion area within Russian Ridge is situated adjacent to and south of the Mindego Hill Trail, and east of Mindego Hill (Attachment 2). The proposed pasture expansion site is bordered by Russian Ridge on the north, east and west, and by private property to the south. Access to the site is via an all-weather gravel road off Alpine Road that runs east to west for approximately 0.5 miles.

The proposed pasture expansion area is south sloping, comprised primarily of annual grasslands with scattered dense stands of coyote brush and some oak trees. The pasture drains into a small tributary that flows into Alpine Creek, within the San Gregorio Creek Watershed. Livestock access to the stream channels would be controlled by natural buffers (steep terrain and dense vegetation) as well as partial fencing, as needed. This portion of Alpine Creek drains into Mindego Creek, downstream from the Cuesta La Honda Guild's point of diversion.

District staff have begun efforts to manage priority invasive species at this site under the Integrated Pest Management (IPM) Program. Similar nearby sites (e.g. Mindego Hill and others) have shown positive impacts in vegetative diversity, increased native grasses and wildflowers, and reduction of invasive vegetation from IPM practices that include the use of livestock grazing as a grassland management tool. Additionally, reducing fine fuels in this area through active grazing would decrease the risk of wildfire to nearby residences.

The attached addendum provides a framework to guide ongoing resource management work based on the specific conditions and resources within the proposed pasture expansion area. With an emphasis on protecting both the unique biological resources and agricultural heritage of the site, the addendum aligns with the District's coastside mission and Grazing Management Policy. To accomplish these goals, the addendum recommends infrastructure improvements, resource

management projects, stocking rates, and a monitoring protocol for expanding the effectiveness of the conservation grazing program on the property and its beneficial effects on grassland habitats. The components of the addendum are discussed in more detail below.

Proposed Infrastructure Improvements

The addendum recommends several infrastructure improvements to optimize effective use of conservation grazing as a rangeland management tool. The use of grazing animals requires fencing and water sources for controlling the distribution of livestock to manage and protect the natural resources. Refer to Attachment 3, Mindego Hill Proposed Grazing Infrastructure Map, for detailed locations of the proposed improvements, which include the following:

- *Fencing:* Approximately 5,000 linear feet of new fencing is proposed along the eastern and southern pasture boundary. Fencing would be installed parallel to the Mindego Hill Trail to the east and along the border of the former Silva Property to the south. The fence would be wildlife friendly per District standards. Short sections of fence may be required along the western boundary of the pasture to reinforce the natural barrier of dense vegetation and steep terrain, which will act to contain livestock. Fencing for this project is estimated to cost approximately \$60,000 and is not eligible for NRCS cost sharing.
- *Water:* The availability of clean and reliable water is essential to the function of the conservation grazing program. Having well distributed water sources helps disperse the influence of livestock on the landscape and reduce impacts on natural waterways. No natural water sources are present within the pasture expansion area to support grazing livestock. However, a clean and reliable water source has been developed on Mindego that uses a natural spring with a solar powered pump to supply water to a storage tank and water troughs in pastures adjacent to the proposed expansion area (R-14-021). This existing water system can be modified to supply water to the expansion area.

Installation of three new wildlife-friendly concrete water troughs is recommended to supply water to livestock and promote livestock distribution. Two of the new troughs would be located within the pasture at sites that are minimally visible from the Mindego Hill Trail to reduce aesthetic impacts. The third trough would be installed in the holding field/corral area above the pasture. A new 5,000-gallon low-profile tank (partially buried in the ground) would be installed in the corral area to supply the water troughs in the pasture expansion area. Installation of approximately 5,000 feet of pipe would be required to supply water to the new troughs and tank. The total cost of these water improvements is anticipated to be approximately \$59,341. The water improvements would be eligible for approximately \$34,341 in NRCS cost sharing funds through the EQUIP program. The District would reimburse the tenant the remaining \$25,000 to complete this work.

Estimated Carrying Capacity

Proposed carrying capacity estimates for the south pasture expansion area would be referenced as a starting point and be adjusted upward or downward as necessary throughout the grazing season. Carrying capacity estimates for the site include:

- Favorable Production Year
175.6 AUMs = Approximately 15 cows year-round or 30 cows for 6 months
- Average Production Year

- 145.2 AUMs = Approximately 12 cows year-round or 24 cows for 6 months
- Unfavorable Production Year
- 111.6 AUMs = Approximately 9 cows year-round or 18 cows for 6 months

Monitoring

The monitoring plan for the grazed rangeland pastures on the Mindego portion of Russian Ridge is designed to ensure that the specific rangeland uses are compliant with the Mindego Grazing Plan, and land stewardship goals and objectives. The addendum recommends using the protocols identified and used for the Mindego Hill Grazing Plan to monitor the pasture expansion area. In addition, six new photo point locations have been strategically selected to monitor overall rangeland health, grazing infrastructure, and invasive vegetation.

Farm Bureau

Staff reviewed the addendum with the executive committee of the Farm Bureau on September 25, 2019. The committee members were generally supportive of the addendum and recommended the addition of farm labor housing (e.g. trailer) to provide day-to-day monitoring of the site. However, the tenant has not requested and does not require workforce housing to manage the property. Consequently, farm labor housing is not included in the addendum.

Amendment to the Use and Management Plan

To implement the proposed south pasture expansion, an amendment to the District's Russian Ridge Use and Management Plan for the Mindego Ranch area is required that incorporates the proposed Mindego Grazing Plan addendum.

FISCAL IMPACT

The addendum specifies several recommended infrastructure improvements related to fencing and water infrastructure. Implementation of these improvements is estimated to cost approximately \$119,342 and would take place over the next four years with completion anticipated in 2023. The NRCS has estimated that the tenant would likely be eligible for approximately \$34,341 in cost-share payments for implementing the qualifying recommended infrastructure improvements. The District would reimburse the tenant for remaining costs (approximately \$85,000). Work is anticipated to begin in July 2020. If approved, infrastructure improvements will be included during the annual Budget and Action Plan development process.

Infrastructure improvements are eligible for MAA funding in Portfolio #9 for Russian Ridge (Public Recreation, Grazing, and Wildlife Protection Projects).

PUBLIC NOTICE

Public notice was provided as required by the Brown Act. Public Notice was sent to the grazing interested parties list and posted on the District's webpage.

CEQA COMPLIANCE

The existing Mindego Grazing Plan was adopted in 2014 and evaluated in an Initial Study/Mitigated Negative Declaration (IS/MND). Additional California Environmental Quality Act (CEQA) evaluation of the recommended updates to the Grazing Plan would be presented to the Board when it considers adopting changes to the Plan.

NEXT STEPS

Following review and comment by the PNR Committee, next steps will include completing the CEQA analysis and forwarding the item to the Board for consideration, anticipated in Quarter 2 of Fiscal Year 2019-20.

Attachments

1. Addendum to Mindego Ranch Hill Grazing Management Plan
2. Mindego Ranch, Proposed South Pasture Expansion Map
3. Proposed Improvements to Infrastructure Map

Responsible Department Head:

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ADDENDUM No. 1:

Mindego Hill Ranch Grazing Management Plan

March 2019



PREPARED FOR:

Midpeninsula Regional Open Space District

Attn: Lewis Reed, Rangeland Ecologist

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Los Altos, CA 94022

ORIGINAL PLAN PREPARED BY:

SAGE Associates

May 2008

ADDENDUM PREPARED BY:

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Manager #M-100



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I. OVERVIEW & PURPOSE

This document serves as an addendum to the original Mindego Hill Grazing Management Plan, prepared in May 2008 by SAGE Associates, for the 1,047 acre Mindego Hill Ranch (Mindego Hill). This addendum is prepared by Koopmann Rangeland Consulting at the request of Coty Sifuentes-Winter, Senior Resource Management Specialist for the Midpeninsula Regional Open Space District (District). Mindego Hill was acquired by the District in 2008.

Mindego Hill was historically grazed by the former owners, the True Family. Upon acquisition of Mindego Hill, the District installed a variety of grazing infrastructure improvements including fencing, gates, corral, and an extensive livestock water system prior to entering into a long-term grazing lease in 2015. Cattle grazing on Mindego Hill is carefully managed to reduce wildfire fuel loads, conserve and enhance habitat for special status wildlife species, and foster the rich agricultural heritage in San Mateo County. Mindego Hill is bordered on two sides by the Russian Ridge Open Space Preserve, also owned and managed by the District. A grassland portion of Russian Ridge, adjacent to Mindego Hill, is identified by Natural Resources Department (NRD) staff as a site that may benefit ecologically from the introduction of livestock grazing while reducing wildfire fuel loads adjacent to a highly used access road/trail. The site includes approximately 125 grazeable acres described in subsequent sections of this document.

This addendum serves to add the 125 acre Russian Ridge site as a pasture expansion to the original Mindego Hill Ranch Grazing Management Plan prepared in 2008 by SAGE Associates. Rangeland management and grazing prescriptions, management strategies, and best management practices (BMPs) recommended in the Sage RMP should also be applied to the pasture expansion area. This addendum recommends additional management prescriptions specific to the pasture expansion area to meet the District's objectives for the site.

II. PROPERTY BACKGROUND & DESCRIPTION

LOCATION:

Russian Ridge Open Space Preserve (Russian Ridge) is located in rural San Mateo County, bordered by Skyline Boulevard on the east and Alpine Road to the south (Figure-1). The 125± acre site within Russian Ridge is situated adjacent to and west of the Mindego Hill Trail south of the Mindego Hill property (Figure-2). The pasture expansion site is bordered by Mindego Hill to the north, Russian Ridge to the south and east, and by private property to the west. Access to the site is via an all-weather gravel road that runs south to north for approximately 0.5 miles, originating on the north side of Alpine Road.

SITE DESCRIPTION:

The proposed pasture encompasses approximately 125± grazeable acres of the Russian Ridge Open Space Preserve located on the west-southwest side of the Mindego Hill Trail (former True Driveway). The pasture area is west sloping, comprised primarily of annual grasslands with dense stands of coyote brush and some oak trees around the bottom of the pasture. The entire pasture drains into a small tributary to Alpine Creek, part of the San Gregorio Creek Watershed. Cattle will not have access to the stream channel and a natural vegetative buffer of at least 375 feet exists between the grazed pasture and Alpine Creek. Livestock access to the stream channels will be controlled by natural buffers (steep terrain and dense vegetation) as well as partial fencing as needed. This portion of Alpine Creek drains into Mindego Creek with the confluence of the two streams located downstream from the Cuesta La Honda Guild point of diversion (POD).

Annual grasslands comprise the majority of the pasture area, dominated by non-native grasses and low growing forbs that are palatable, desirable forage for livestock. Some ridgetop grassland areas of the proposed pasture have been impacted by coyote brush encroachment. Well-established coyote brush and hardwood forest dominate many of the steeper drainages. Large infestations of invasive vegetation are well established in the area and include yellow starthistle, milk thistle, bull thistle, and poison hemlock, most of which can be controlled or reduced through livestock grazing. Similar sites nearby have shown a positive impact from livestock grazing in terms of vegetative diversity, increased native grasses and wildflowers, and reduction of invasive vegetation. Additionally, reducing fine fuels in this area will minimize the risk of catastrophic wildfire, which poses a risk to nearby residences.

HISTORIC & CURRENT LAND USE:

The site was historically grazed by cattle but has not been grazed for several decades, beginning when the District took ownership of the property in 1978. For the past several decades, the site has been a part of the Russian Ridge, used for low impact public recreation. The site, while included in Russian Ridge, received little recreational use due its remote location, steep terrain, and difficult access.

Recent construction and opening of the Mindego Hill Trail has increased traffic and public use in the area, but access is restricted to the trail/access road on the ridge top. Currently, the site remains relatively undisturbed with the exception of biological monitoring, coyote brush removal efforts, implementation on invasive species treatment, and the livestock corral located adjacent to the Mindego Hill Trail/driveway, which serves the current grazing operation on the Mindego Hill property.

III. CULTURAL AND ECOLOGICAL RESOURCES

ECOLOGICAL RESOURCES & SPECIAL STATUS SPECIES:

A biological assessment of the Mindego Hill pasture expansion area was conducted by the District's Natural Resource Department staff in 2017. The pasture expansion area boasted a diverse vegetative composition with a variety of grasses and forbs observed. Large stands of invasive thistle, coyote brush, and dense layers of thatch were noted throughout much of the site, which may have impaired the growth of additional species and/or may have limited observations by staff. No special status vegetative species were observed during the assessment.

San Francisco garter snake (SFGS), California red-legged frogs (CRLF), and Western pond turtles (WPT) have been documented on the adjacent Mindego Hill property. A reported observation of a San Francisco garter snake was documented in the pasture expansion area in 2009 ^[1] along the Mindego Hill Trail. The potential for CRLF and WPT to exist in the pasture expansion area is rare due to the absence of aquatic features other than a few seasonal drainages and seeps. The pasture expansion area is considered potential upland habitat for SFGS that are known to occupy Mindego Lake and Upper Springs approximately 0.25 miles to the north ^[1]. Other species of interest that have been documented in the pasture expansion area include mountain lions, bobcats, and American badgers. Feral pigs have been observed on the site and often cause ecological impacts to water sources and desirable vegetation by rooting up the soil.

CULTURAL RESOURCES:

The Muwekma Ohlone Tribe of the San Francisco Bay Area historically occupied the region, including the Russian Ridge area in San Mateo County. Native Americans are thought to have used the area for gathering seeds and may have burned some of the grasslands to encourage a bountiful crop in the following years ^[2]. Remnant artifacts from the Muwekma Ohlone Tribe can be found throughout the region including decorative shells, milling slabs, hand stones, awls, mortars, and pestles. No cultural resources were identified within the pasture expansion area during a biological and cultural resource assessment conducted by District staff in 2017. Sensitive cultural resources are known to occur at sites near the pasture expansion area, so there is a potential for inadvertent discovery of cultural resources on site.

VEGETATIVE COMPOSITION:

A combination of annual grassland and coastal scrub habitat covers approximately 70-75 percent of the pasture expansion area, comprised of a diverse vegetation composition, ranging from 100 percent annual grassland to areas heavily influenced by coyote brush. The vast majority of the grassland forage species are introduced non-native palatable grasses and low forbs that are desirable for livestock grazing. Dense woody vegetation including oaks, bay laurels, redwoods, and coyote brush dominate the steep drainages and act as a natural barrier to livestock along the

steep western edge of the site. Non-native invasive vegetation is found throughout the pasture expansion area. Yellow starthistle is found throughout the site with many localized dense stands. Italian thistle, milk thistle, and bull thistle were also identified. Coyote brush encroachment has drastically impacted grasslands throughout the pasture expansion area. Purple starthistle and woolly distaff thistle are found on the adjacent Mindego Hill pastures but were not observed in the pasture expansion area, except for a few purple starthistle plants on the Mindego Hill Trail/driveway ^[3].

IV. GRAZING MANAGEMENT PERCEPTIONS & RECOMMENDATIONS

The proposed pasture expansion area within Russian Ridge is primarily annual grasslands. The reintroduction of cattle grazing to the site has the potential to enhance wildlife habitat, reduce non-native invasive plant species, promote increased plant species diversity, and reduce wildfire fuel loads. The following grazing management prescriptions are recommended to achieve the District's management objectives for the site.

ESTIMATED CARRYING CAPACITY:

Stocking rates should be adjusted downward or upward annually depending on precipitation (distribution and quantity) and annual forage production. Standing forage will determine pasture rotation, at the livestock operator's discretion, provided they remain within the prescribed forage standards. At no time should there be significant areas of bare soil void of vegetation cover present in the grazed pastures. A minimum of two to three inches of forage should be left as ground cover during both the growing season and dry summer and fall months. Proposed carrying capacity estimates for the Pasture Expansion Area should be referenced as a starting point and be adjusted upward or downward as necessary throughout the grazing season. Carrying capacity estimates for the site include:

- Favorable Production Year:
175.6 AUMs = Approximately 15 cows year-round or 30 cows for 6 months.
- Average Production Year:
145.2 AUMs = Approximately 12 cows year-round or 24 cows for 6 months.
- Unfavorable Production Year:
111.6 AUMs = Approximately 9 cows year-round or 18 cows for 6 months.

SEASON OF USE:

A light to moderate year-round grazing regime is best suited for the site, which will be incorporated into the current 2-pasture grazing rotation in place on Mindego Hill. The result will be a 3-pasture grazing rotation with the addition of the Pasture Expansion Area which will allow greater flexibility in managing livestock grazing to achieve multiple objectives including fire fuel load reduction, wildlife habitat enhancement, promoting native grasses and forbs, and control of invasive vegetation.

The Pasture Expansion Area would benefit from winter and early spring grazing which will reduce non-native annuals allowing native forbs and wildflowers to bloom. In addition, winter and early spring grazing will reduce cattle impacts to recreational trails on Mindego Hill during winter months as cattle are confined to the new expansion pasture. A second grazing rotation, during the early summer, will reduce remaining fine fuels for fire protection and assist in control of some invasive thistles, which typically bolt and flower later than the annual grasses and wildflowers.

PRESCRIBED FORAGE STANDARD:

Leaving prescribed levels of residual dry matter (RDM) on the ground surface will provide a grassland seed crop for the following season, minimize the risk for soil erosion and sedimentation, protect water quality and reduce the presence of invasive vegetation. To protect soil stability, minimize the risk of sedimentation into local streams, and the spread of invasive vegetation, the grazed site should not exceed the following RDM performance standards per average slope at the conclusion of the grazing season:

- 0-30% Slopes – An average minimum of two to three inches of forage – approximately an average of 800-1,000 pounds per acre per Natural Resource Conservation Service (NRCS) and University of California Cooperative Extension (UCCE) definition ^[4].
- Greater than 30% Slopes – An average minimum of three to four inches of RDM – approximately an average of 1,000-1,200 pounds per acre per NRCS and UCCE definition ^[4].

At no time should there be significant areas of bare soil void of vegetation cover in any of the grazed pastures, particularly on steep upland slopes or areas adjacent to riparian corridors. A minimum of two to three inches of forage should be left as ground cover during both the growing season and dry summer and fall months.

Grazing to reduce vegetative biomass plays an important role in reducing wildfire fuel loads and promoting ecological benefit on coastal rangelands. While it is ideal to graze pastures to at or near prescribed RDM levels, it may be difficult to obtain these results annually based on natural climatic factors. Grazing operators should manage grazing livestock to remove, at a minimum, forty percent of the annual forage produced. For example, if annual forage production in a pasture is 5,000 pounds per acre, the grazing operator should manage livestock to reduce, at a

minimum, 2,000 pounds of forage per acre resulting in Fall RDM measurements around 3,000 pounds per acre.

While a forty percent reduction in forage is not ideal, it will provide some benefit in terms of fine fuels reduction and ecological benefit. If pastures or areas within pastures continually fail to meet the prescribed RDM standard, consider options to achieve RDM objectives such as; increased stocking rate, adjusting season of use/timing, adding a water source in the area, and/or placing cattle supplement in the area as an attractant.

V. GRAZING INFRASTRUCTURE RECOMMENDATIONS

FENCING:

Containment of grazing livestock to designated pastures plays an important role in the success of grazing to achieve resource management objectives, protect water quality, and provide a safe, user friendly recreational experience. New fence will be required along the eastern and southern borders of the pasture expansion area. An existing fence between the pasture expansion area and Mindego Hill property is in place along the northern boundary. Natural barriers (dense vegetation and steep terrain) will act as a livestock barrier along the western border of the pasture expansion area. Grazing tenant should monitor the efficacy of the natural barrier and install additional fencing as needed to ensure livestock remain in the pasture area. The District can require installation of additional fencing, as needed, to ensure cattle remain within the designated pasture area.

Approximately 5,000 linear feet of new fencing will be required along the eastern and southern pasture boundary. Fencing will be installed parallel to the Mindego Hill Trail to the east and along the border of the Silva Property to the south. The fence should consist of five (5) wires, four (4) strands of barbed wire on top with a smooth bottom wire approximately 16" above the ground. Fence braces should consist of welded oilfield pipe with heavy duty 1.33 PPF t-posts installed on ten (10) or twelve (12) foot centers. This style of fence is a wildlife friendly design that has been used extensively on the Mindego Hill property as well as other District preserves. The fence line parallel to the Mindego Hill Trail should be installed 10-12 feet below the trail to allow maintenance staff to mow and perform road maintenance as necessary without compromising the fence. Additionally, the fence will be installed below the road to reduce aesthetic impacts to Preserve visitors. Short sections of fence may be required along the western boundary of the pasture to reinforce the natural barrier (dense vegetation and steep terrain) that will act to contain livestock. Reference Figure-3, Mindego Hill Proposed Grazing Infrastructure Map, for detailed location of proposed fencing.

STOCK WATER:

Developed stock water is an essential component to a well managed livestock grazing program. Water sources can be used as an attractant to encourage cattle to graze desired areas within a pasture and enhance livestock distribution to better utilize available forage and graze grasslands more evenly. No natural water sources are present within the pasture expansion area to support grazing livestock.

A reliable water source is developed on the Mindego Hill property, a natural spring with a solar powered pump, which supplies water to a storage tank and water troughs in pastures adjacent to the pasture expansion area. This existing water system can be modified to supply a reliable, quality water source to the pasture expansion area.

Installation of three (3) new wildlife friendly concrete water troughs is recommended to supply water to livestock and promote livestock grazing distribution. Two of the new troughs will be located within the pasture at sites that are minimally visible from the Mindego Hill Trail to reduce aesthetic impacts. The third trough will be installed in the holding field/corral area above the pasture. A new 5,000-gallon water storage tank will be installed in the corral area to supply the water troughs in the pasture expansion area. A low-profile tank partially buried in the ground is recommended to minimize aesthetic impacts in the Preserve. Installation of approximately 5,000 feet of pipe is will be required to supply water to new troughs and tank. Pipe should be trenched or plowed into the ground at a depth of 18 to 24 inches. Reference Figure-3, Mindego Hill Proposed Grazing Infrastructure Map, for detailed location of proposed troughs, tank, and pipeline. All water troughs should be equipped with a wildlife escape ramp.

CORRAL:

The livestock corral that serves the Mindego Hill property is currently located within the pasture expansion area on the east side of the Mindego Hill Trail. The existing corral will adequately serve grazing operations in the pasture expansion area.

VI. BEST MANAGEMENT PRACTICES

WATER QUALITY PROTECTION:

Runoff from the pasture expansion area drains entirely into a small tributary to Alpine Creek, part of the San Gregorio Creek Watershed. This portion of Alpine Creek drains into Mindego Creek with the confluence of the two streams located downstream from the Cuesta La Honda Guild point of diversion (POD). Protecting water quality in the watershed is of high importance to the District to ensure the safety of downstream water users and protect aquatic habitat for wildlife.

The following BMPs should be implemented to help reduce the risk of animal waste contaminating water sources within and downstream of the pasture expansion area:

- Maintain a natural vegetative buffer of no less than thirty (30) feet from the top of the bank of perennial tributaries to Alpine Creek. The vegetative buffer will act as a natural filter to trap potential pathogens before they reach the water body. There is currently a 375 foot vegetative buffer planned between the grazed pasture area and tributary drainage.
- Control runoff and leaching from stockpiled manure, confined livestock, and corral facilities. Maintain a 100 foot vegetative buffer between corrals/confined livestock pens and perennial streams. The corral is situated on a ridgetop nearly a half-mile from the tributary drainage to Alpine Creek.
- Fly and vector control in livestock facilities may also reduce the spread and subsequent infection of other animals with pathogenic bacteria.
- Provide off-stream livestock water sources such as water troughs to reduce the use of streams by cattle and other livestock for water.
- Leave prescribed levels of residual dry matter (RDM) on the ground surface to minimize the risk for soil erosion and sedimentation to protect water quality. Ensure that grassland vegetation remains at levels equal to or greater than minimum prescribed RDM standards.
- Implement a comprehensive livestock husbandry program, including appropriate and timely inoculations and de-worming to minimize the risk of contracting or spreading disease to other livestock, humans, and wildlife. The Mindego Hill pasture expansion area presents an extremely low risk of impacts to water quality. No restrictions on season of use are recommended.
- Trap and remove feral pigs when feasible. Rooting from feral pigs disturbs soil which can lead to erosion and sedimentation of downstream waterways. Additionally, feral pigs can carry disease and pathogens such as cryptosporidium which may contaminate water sources.

SPECIAL STATUS SPECIES:

SFGS have been documented within the pasture expansion area, which provides potential upland habitat for snakes occupying the Upper Springs and Mindego Lake sites on the Mindego Hill property. The dense thatch accumulation in the pasture expansion area provides poor habitat for SFGS who prefer a mosaic of grassland vegetation of varying height.

Utilize grazing livestock to manage surrounding upland habitats for a mosaic of microhabitats (some open grassland, some brush, some downed woody debris areas, etc.) in the pasture expansion area. Creating a mosaic of microhabitats and breaking up the dense layer of thatch in the grasslands can be beneficial for successful management of SFGS habitat ^[5].

All proposed activities must adhere to applicable permit conditions for avoidance and minimization of impacts to SFGS. A preconstruction training, biological pre-surveys and/or the presence of a biological monitor may be required during construction and maintenance of grazing infrastructure as well as mechanical vegetation management efforts (e.g. mowing or weed whipping) to avoid impacts to SFGS

CULTURAL RESOURCES:

While cultural resources were not observed in the pasture expansion area, cultural resources are known from nearby areas. Given sensitivity, continue to monitor the pasture expansion area for the presence of cultural artifacts, particularly during construction of grazing infrastructure. If inadvertent cultural resources are detected, report to District staff and avoid future work in and around the area of the cultural resources until the site is inspected by a Senior Resource Management Specialist or a professional archaeologist.

INVASIVE VEGETATION MANAGEMENT:

Available forage production has been impacted by non-palatable invasive plant species resulting in reduced germination of desirable forage. Invasive plants decrease forage productivity, impact livestock health, impact wildlife habitat value, and create significant fiscal impacts to the landowner/lessee. Implementing an integrated approach to controlling pest plants is critical to the success of improving forage production and quality in grazed pastures. Manage the site with the minimum goal of containing the weed infestation to its current extent and preventing the introduction of new invasive species. Invasive plant control methods must be consistent with the District's Integrated Pest Management Program (IPMP) and all invasive species treatment must adhere to the District's BMPs and mitigation measures as prescribed in the IPMP.

The following recommended practices are designed to reduce the presence of invasive vegetation, protect soil and water quality, and promote beneficial forage production.

- Adjust the stocking rate in order to maintain a minimum of two-three inches of beneficial, vegetated ground cover at all times.
- Application of a selective broadleaf herbicide in the spring can be an effective strategy for the control of purple starthistle, yellow starthistle, and wooly distaff thistle, particularly when treating large infestations that are not easily controlled through manual methods. Follow-up inspection and manual removal during the summer can help control late germinating plants following initial herbicide treatment. A pest control recommendation must be issued from a Pest Control Advisor for any herbicide application on the property.

- Manually remove woolly distaff and purple starthistle by digging or cutting out the plant at least five inches below the soil surface before they begin to flower. After flowering, the plants should be bagged and removed from site, as seeds will continue to mature and ripen after the plant has been cut.
- Mowing can be used to manage invasive thistles, provided it is well timed and used on plants with a high branching pattern. Mowing at early growth stages results in increased light penetration and rapid regrowth of the weed. If plants branch from near the base, regrowth will occur from recovering branches. Repeated mowing of plants too early in their life cycles (rosette or bolting stages) or when branches are below the mowing height will not prevent seed production, as flowers will develop below the mower cutting height. Plants with a high branching pattern are easier to control, as recovery will be greatly reduced. Even plants with this growth pattern must be mowed in the late spiny or early flowering stage to be successful. An additional mowing may be necessary in some cases. Be sure to mow well before thistles are in flower to prevent seed spread.
- Prioritize thistle removal where the likelihood of seed spread is high such as road sides, cattle trails and loafing areas.
- Carefully monitor areas where outside feed is brought in for new invasive species and remove new weeds before they become established. If feasible, feed Certified Weed Free Hay or locally sourced hay to minimize the risk of introducing new invasive plant species.
- Do not import outside soil or fill material. Soil can be contaminated with invasive species and pathogens such as phytophthora. Soil importation is not consistent with District policy.
- Be aware of seed transport on ranch equipment and clean vehicles/equipment as needed. All personnel working in infested areas shall take appropriate precautions to not carry or spread weed seed or plant and soil diseases outside of the infested area. Such precautions will consist of, as necessary based on site conditions, cleaning of soil and plant materials from tools, equipment, shoes, clothing, or vehicles prior to entering or leaving the site.

Implement an integrated approach described above to identifying and treating invasive plants within the pasture expansion area that are impacting forage production and grassland health including but not limited to coyote brush, yellow starthistle, woolly distaff thistle, Italian thistle, bull thistle and purple starthistle. Work with the District, UCCE and/or local NRCS or RCD to determine best options and timing for specific treatments.

VII. MONITORING

The monitoring program for the grazed rangeland pastures on the Mindego Hill portion of Russian Ridge is designed to ensure that the specific rangeland uses are in compliance with the Mindego Hill Rangeland Management Plan and the land stewardship goals and objectives. Utilize the monitoring protocols recommended in the Mindego Hill Grazing Management Plan (Sage, 2008) to monitor the pasture expansion area. Six (6) photo point locations within the pasture expansion area were strategically selected to capture overall rangeland health, grazing infrastructure, and invasive vegetation. These six photo points should be added to the annual Mindego Hill rangeland monitoring and data collection, including residual dry matter data. Figure-4 is a map showing photo point locations within the pasture expansion area and Exhibit-1 shows the stock photo for each of the six selected monitoring points.

Figure-1: Regional Location Map

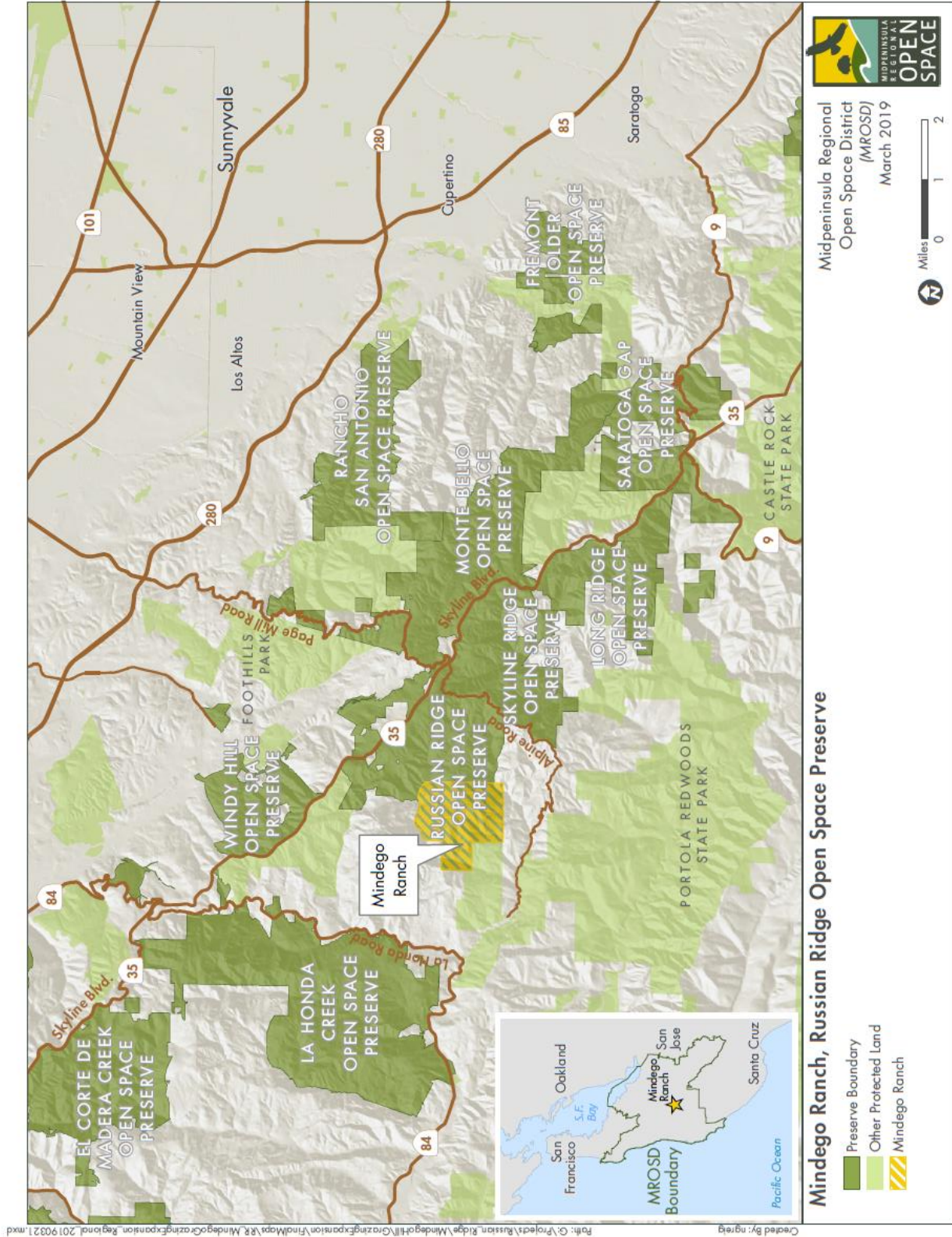


Figure-2: Mindego Hill Pasture Expansion Area

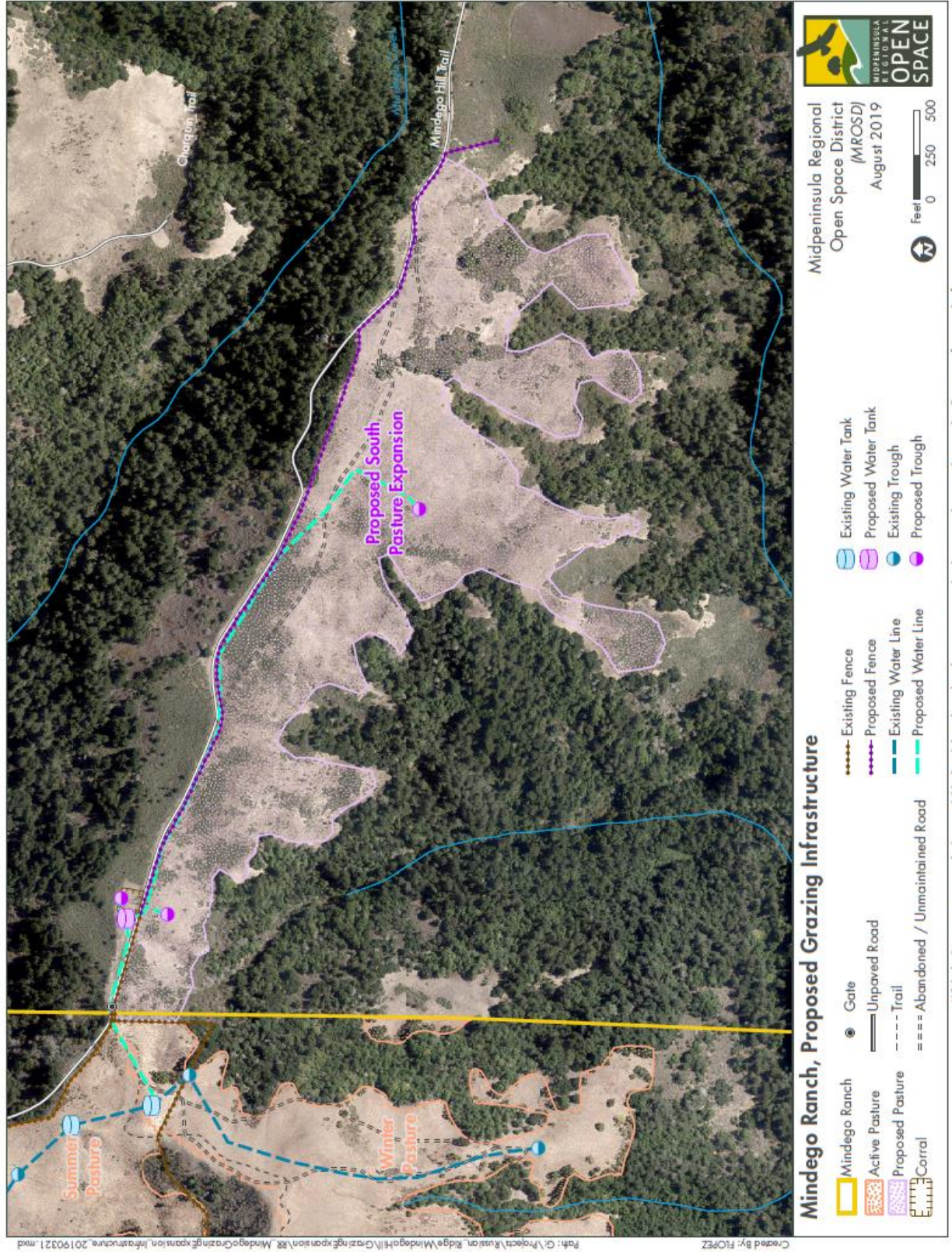


Figure-3: Proposed Grazing Infrastructure Improvements

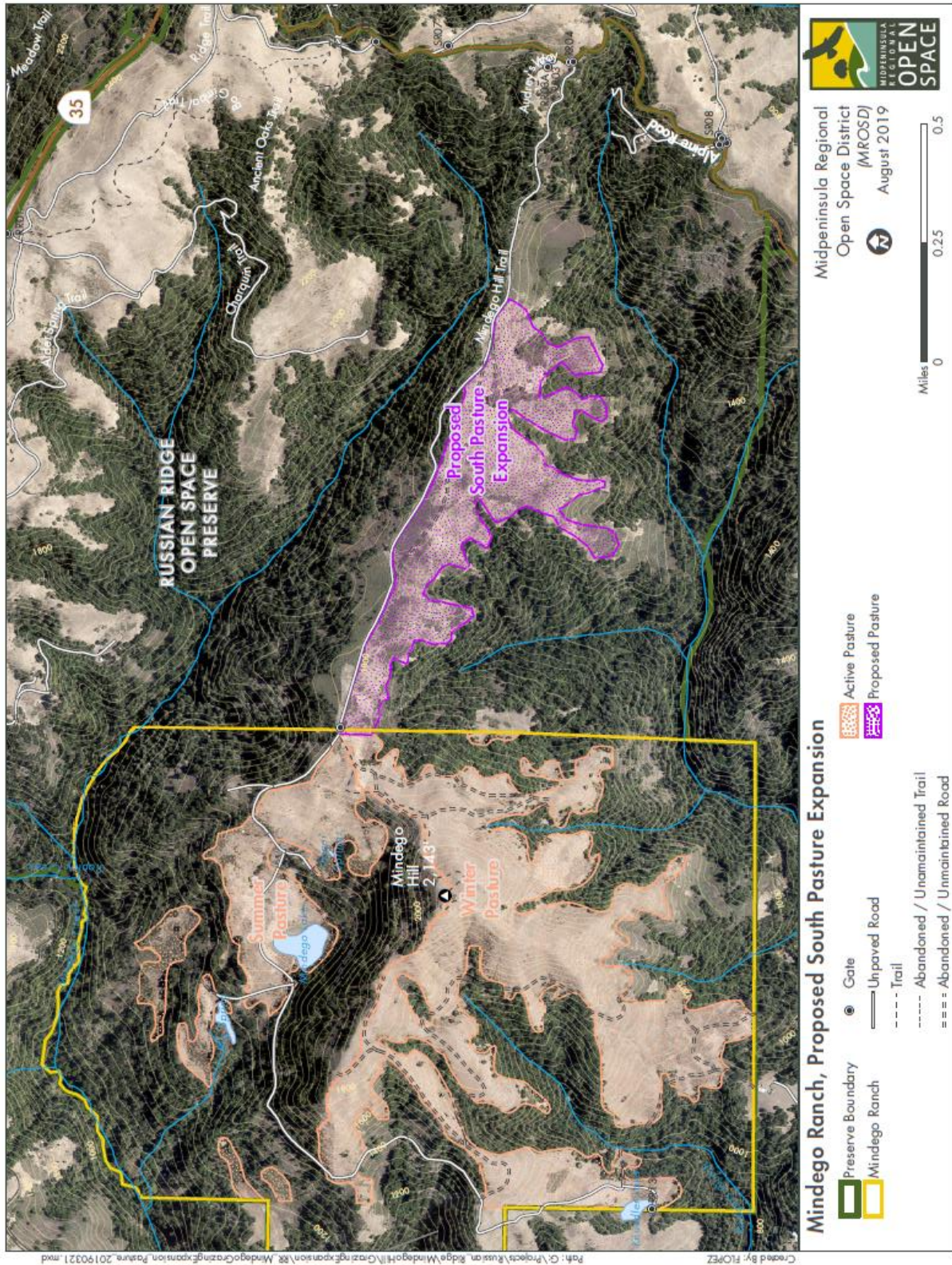


Figure-4: Rangeland Monitoring Photo Point Locations

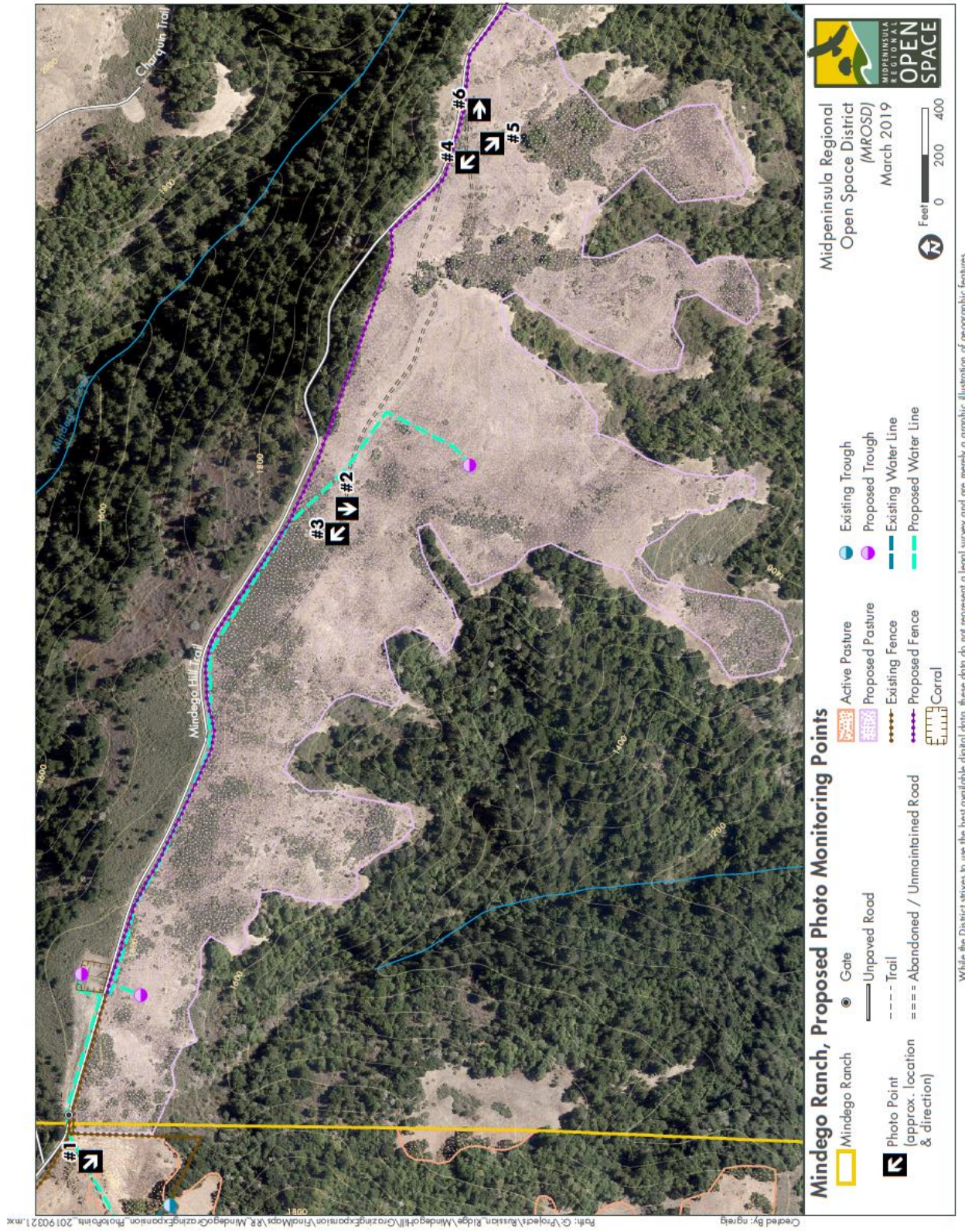


EXHIBIT-1

Rangeland Monitoring Stock Photos



Photo Point 1: Across the road from corral facing south. A landscape photo capturing vegetative composition including coyote brush encroachment.



Photo Point 2: Ridgetop near east central part of pasture expansion looking west toward Alpine Creek. Planned location for water trough, brush encroachment, and grasslands.



Photo Point 3: Ridgetop near east central part of pasture expansion looking north toward corrals and Mindego Hill. Ridgetop grasslands with Mindego Trail in background.



Photo Point 4: Ridgetop near western end of pasture expansion looking north toward Alpine Creek and Mindego Hill. Grassland habitat with coyote brush encroachment.



Photo Point 5: Ridgetop near western end of pasture expansion looking west toward Alpine Road. Grassland habitat with coyote brush encroachment and lower reaches of pasture.



Photo Point 6: Ridgetop near western end of pasture expansion looking South toward Alpine Road and former Silva Property. Grassland habitat with coyote brush encroachment.

REFERENCES

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3. PERSONAL OBSERVATION: Koopmann, Clayton. April 2017 site visit.
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5. Managing Rangelands to Benefit California Red-Legged Frogs and California Tiger Salamanders. Lawrence D. Ford, Pete A. Van Hoorn, Devii R. Rao, Norman J. Scott, Peter C. Trenham, and James W. Bartolome. Chapters 4, 5, and 8. September 2013.
6. US Fish and Wildlife Service (USFWS). 2004. Endangered and threatened wildlife and plants: Determination of threatened status for the California red-legged frog. *Federal Register* 61(101):25813-25833.
7. Mindego Hill Rangeland Management Plan. *Sage and Associates*. 2008.
8. California Natural Diversity database last accessed online March 2019.

PLAN PREPARED BY:

Having prepared this Rangeland Management Plan (RMP) addendum, I certify that it is consistent with the purpose and requirements, as set forth in the relevant RMP Provisions. As with any plan, this RMP should be viewed as a living document, subject to periodic update and review as needed to reflect changing on-farm conditions over time. The RMP, including addenda, should be updated at least every ten years, or in the event of significant changes in the use, management, or ownership of the Property.

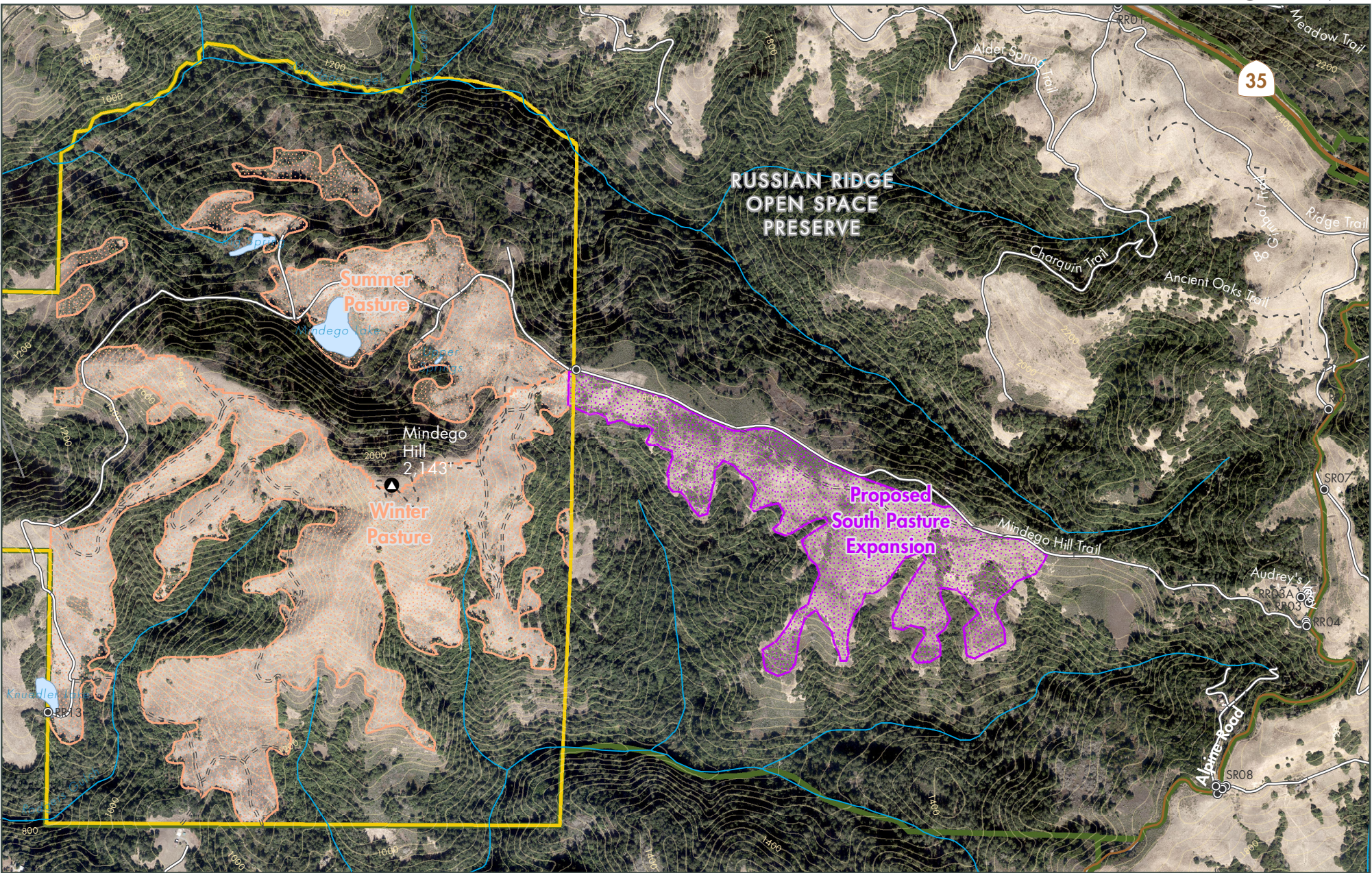

 Clayton W. Koopmann

April 2, 2019
 Date

Clayton W. Koopmann, B.S., Agricultural Management & Rangeland Resources; Owner Koopmann Rangeland Consulting; California Board of Forestry Registered Certified Rangeland Manager #M-100



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Mindego Ranch, Proposed South Pasture Expansion

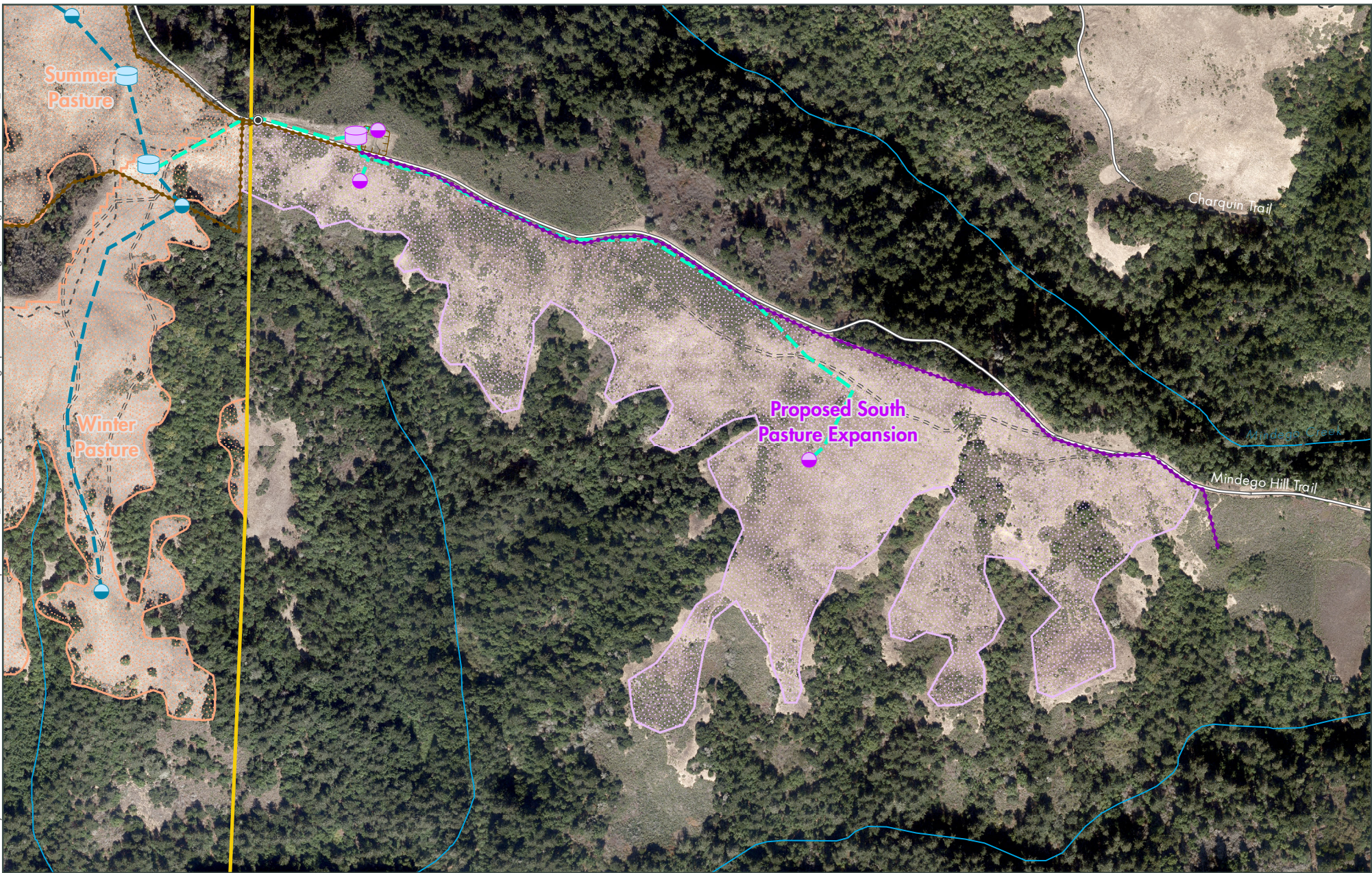
- Preserve Boundary
- Mindego Ranch
- Gate
- Unpaved Road
- Trail
- Abandoned / Unmaintained Trail
- Abandoned / Unmaintained Road
- Active Pasture
- Proposed Pasture

Midpeninsula Regional
Open Space District
(MROSD)
August 2019



While the District strives to use the best available digital data, these data do not represent a legal survey and are merely a graphic illustration of geographic features.

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Mindego Ranch, Proposed Grazing Infrastructure

- | | | | |
|------------------|-------------------------------|---------------------|---------------------|
| Mindego Ranch | Gate | Existing Fence | Existing Water Tank |
| Active Pasture | Unpaved Road | Proposed Fence | Proposed Water Tank |
| Proposed Pasture | Trail | Existing Water Line | Existing Trough |
| Corral | Abandoned / Unmaintained Road | Proposed Water Line | Proposed Trough |

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