

## Tolay Lake Regional Park Grazing Plan

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### Site Description

Tolay Lake Regional Park is located in southeast Petaluma, containing 1,737 acres. One goal of the Park is to allow for public access while maintaining the economic viability of livestock grazing within the Park's boundaries. In the Park's Rangeland Resources Study (LSA Associates, 2009), seven beneficial impacts of livestock grazing were listed: (1) preservation of the Agricultural working landscape, (2) fire hazard reduction, (3) native grassland preservation and enhancement, (4) preservation and enhancement of native wildflowers, (5) preservation and enhancement of seasonal wetlands, (6) control of invasive non-native plants and (7) preservation and enhance of wildlife habitat.

This plan addresses the overall use of the Tolay Lake Regional Park taking into account the beneficial impacts of grazing while balancing the public access.

### Rangeland Management Goals:

The rangeland management goals for the Tolay Lake Regional Park are:

#### GOAL 1:

Maintain an optimal mosaic of vegetation associations (grassland, riparian woodland, and oak woodland) to **promote biodiversity**

1. Maintain and enhance a healthy productive grassland ecosystem with a diversity of native grasses and native wildflowers,
2. Protect and enhance seasonal wetland habitat,
3. Protect and enhance riparian woodland habitat,
4. Protect oak woodland habitat and improve oak regeneration,
5. Control invasive non-native pest rangeland plants (medusahead, Italian thistle, purple star-thistle, yellow star-thistle, and bristly ox-tongue),
6. Maintain and enhance habitat values for native wildlife.

#### GOAL 2:

Manage **wildfire fuel levels** in the open space area's grasslands consistent with County requirements and with other goals of the management plan.

#### GOAL 3:

Allow a viable, **sustainable livestock grazing operations** compatible with overall public recreational usages.

- 1) Minimize conflicts with recreational users and provide interpretive educational opportunities to inform the public about research management and cultural resources issues including the historical agricultural heritage,
- 2) Avoid or minimize impacts on significant cultural resources,
- 3) Promote a long-term improvement in watershed conditions through minimization of soil compaction, erosion, and sedimentation.

### **Management Objectives**

The enhancement of biodiversity and reduction of fuel levels may be accomplished using livestock, through setting realistic goals and choosing a livestock grazing strategy that achieves resource goals. Tolay Lake property has a long history of livestock use resulting in development of fences, water sources and other infrastructure. Historical grazing use was through continual grazing of the entire property. During recent years, the land has been leased for livestock grazing by an adjacent private rancher who is responsible for maintaining the facilities.

### **Grazing Program**

A grazing system refers to the manner in which grazing and non-grazing periods occur within the grazing season that, in low elevation California, is considered to be yearlong. This grazing program recommends a grazing season of nine (9) months.

A cattle producer, grazing Tolay Lake, can use many different systems involving pasture rotation within the grazing season with varying results. The implementation of fencing, water sources, and other distribution tools, such as supplements, can be used along with grazing systems to improve utilization. The cattle producer should work closely with the Regional Parks Department to ensure that range management goals, as described in the Tolay Lake Grazing plan, are achieved.

### **Timing of Grazing**

Because livestock management involves both dynamic ecosystems and economics, it should be an adaptive process, with adjustments made to accommodate natural resource responses to grazing. Grazing capacity was calculated using the standard forage projection estimates for range sites identified in the USDA Soil Survey. Average forage production was used to determine and an average amount of 1,000 pounds per acre for Residual Dry matter (RDM) was used to determine the overall carrying capacity. This amount was taken into account, along with the natural resource issue prescriptions from the Tolay Lake Grazing Plan, to determine the number of cows and the season of use.

In addition, this grazing plan recommends the season of use be for nine (9) months, occurring from October – June. This removes cattle from the Park during the summer high season usage by the public while still allowing the cattle producer to use the grazing land at peak growing seasons.

**Assumptions in these determinations:**

Animal Unit (AU) = 1 cow  
One AU will consume 1,000 pounds of forage per month

**Pastures:**

Grazing timing in each of the pastures was based on the Rangeland Management Goals outline in the Tolay Lake Regional Park Resources Study.

**Park Center:**

No grazing is scheduled to occur in this pasture.

**Pasture 1: Northwest Hills**

The Northwest Hill pasture is 41.6 acres. On average, the pasture will produce 2700 pounds per acre, for 112,320 pounds of total production and with 41,600 pounds of RDM.

$70,720 / 1,000$  pounds of forage per month = 70 AUMs.

This pasture will be used for two (2) months to reduce fuel loads.

**Pasture 2: Central West Hills**

The Central West Hill pasture is 108.9 acres. The pasture prescriptions suggest that pastures are grazed to reduce fire fuel loads. On average, the pasture will produce 2,700 pounds per acre, for 294,300 pounds total production and with 109,000 pounds of RDM.

$185,300$  pounds /  $1000$  pounds of forage per month = 185 AUMs.

This pasture will be grazed for five (5) months to address the listed species and the seasonal wetlands. The pasture prescriptions suggest that grazing should occur at a time to allow Fragrant fritillary to bloom in early spring. Grazing in winter will reduce the annual grass competition which will reduce competition for the Fragrant fritillary.

**Pasture 3: Southwest Hill**

The Southwest Hill pasture is 340.5 acres. On average, the pasture will produce 2700 pounds per acre, for 919,350 pounds of total production and with 340,500 pounds of RDM.

578,850 pounds / 1000 pounds of forage per month = 578 AUMs.

This pasture will be grazed for six (6) months. The pasture prescriptions suggest that grazing should occur at a time to allow Fragrant fritillary to bloom in early spring. Grazing in winter will reduce the annual grass competition which will reduce competition for the Fragrant fritillary.

#### **Pasture 4: Tolay Creek**

The Tolay Creek pasture is 204.4 acres. On average the pasture will produce 2700 pounds of forage per acre, for 551,880 pounds total production and with 204,400 pounds of RDM.

347,480 pounds / 1000 pounds of forage per month = 347 AUMs.

The pasture will be grazed for five (5) months. This grazing regime will provide grazing pressure on the star thistle. The cattle will be removed from the pasture after May to prevent cattle impacts on the riparian areas.

#### **Pasture 5: North Terrace**

The North Terrace pasture is 107.6 areas. On average the pasture will produce 2700, pounds of forage per acre, for 290,520 pounds total production and with 107,600 pounds of RDM.

182,920 pounds / 1000 pounds of forage per month = 183 AUMs.

The pasture will be grazed for four (4) months. The grazing is not recommended during the wet and an application of mowing should be considered to reduce infestation of undesired species.

#### **Pasture 6: South Terrance**

The South Terrance pasture is 216.2 acres. On average the pasture will produce 2700 pounds of forage per acre, for 583,740 pounds total production and with 216,200 pounds of RDM.

367,540 pounds / 1000 of forage per month = 368 AUMs.

The pasture will be grazed for four (4) months. The grazing is not recommended during the wet and an application of mowing should be considered to reduce infestation of undesired species.

#### **Pasture 7: Eastern Hills**

The Eastern Hills pasture is 426.6 acres. On average the pasture will produce 1800 pounds of forage per acre for 767,880 pounds total production and with 426,600 pounds of RDM.

341,280 pounds / 1000 pounds of forage per month = 341 AUMs.

The pasture will be grazed for seven (7) months. The increasing amount of star thistle should be grazed heavily in the growing season. Star thistle can be reduced by cattle with adequate pressures. The pond should be fenced to reduce impacts by cattle.

**Table 1. Number of Animal Units (AU) per Pasture during the Grazing Season**

Pasture	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>Park Center</b>												
<b>1 (35)</b>											35	35
<b>2 (37)</b>	37	37	37								37	37
<b>3 (96)</b>	96	96	96							96	96	96
<b>4 (70)</b>	70	70	70	70	70							
<b>5 (45)</b>			45	45	45	45						
<b>6 (92)</b>				92	92	92				92		
<b>7 (48)</b>			48	48	48	48				48	48	48
<b>Total</b>	203	203	296	255	255	185				236	216	216

**Carrying Capacity**

The overall carrying capacity of Tolay Lake is estimated at 200 Animal units (AU). During the grazing season, more AUs will be grazing Tolay Lake during the growing season. On average, there are 200 animal units when calculated as follows:

When adding the total the number of AUs for the entire grazing season:

$$2,065 / 9 \text{ months} = 229 \text{ AUs}$$

When dividing this number by 12 months:

$$2,065 / 12 \text{ months} = 172 \text{ AUs}$$

$$229 \text{ AUs} + 172 \text{ AUs} = 401 \text{ AUs} / 2 = 200 \text{ AUs.}$$

**Monitoring Protocol:**

The vegetation should be monitored to ensure that the level of removal meets the desired objectives. The vegetation and grazing impacts can initially be monitored by: 1) photo-points and 2) RDM measurements. Maintaining adequate RDM will address the biodiversity and wildfire issues.

(1) Photo-points are a valued method of recording change over time in relation to a management regime such as grazing. Two permanent transect are established in various pastures, through permanent markers and GPS points. Photos documentation is taken at the beginning (before cattle are released) and after cattle grazing (at the end of the grazing season).

(2) Grazing impacts on biodiversity can also be measured along established transects. Changes in species composition can be measured along 100-foot transects, selected at various read throughout the grazed property.

(3) The residual dry matter (RDM) measurements can also be taken along transects or at established, permanent sites. The RDM level has been set at 1,000 pound of residual dry matter, measured at the end of the grazing season. RDM can be estimated using two methods: 1) clip plots and 2) ocular.