U.S. Department of Agriculture
Natural Resources Conservation Service

Section III – A – 3
Field Office Technical Guide
All Field Offices
Georgia

PASTURELAND

Planning

Resource Management

Systems

July, 2014

Pastureland

Planning Resource Management Systems

Successful resource management on pastureland is the correct application of a combination of practices that will meet the needs of the pastureland ecosystem (the soil, water, air, plant, and animal resources) and the objectives of the land user.

The minimum quality criteria that must be met on pastureland for each of the resource concerns is explained in Section III – A of the Field Office Technical Guide.

In planning a pastureland resource management system (RMS), the vegetative management practice Prescribed Grazing is the foundation on which the RMS is built. Prescribed Grazing (observing minimum grazing heights and timing of grazing, nutrient application, and weed control) is essential to the proper management of pastureland. A grazing management plan that balances forage and feed with livestock intake demands and prescribes animal movement through the pasture system to meet the needs of the plants, animals, soil, water and air resources is essential to the formulation of an RMS on pastureland. Nutrient Management is planned to manage pasture fertility. Pest Management is planned to eliminate or minimize insect, disease or weed infestations. Drinking water for the animals of concern must be provided and is essential to a pastureland RMS.

All other practices planned on pastureland are to either: 1) facilitate the application of the management plan and are identified as DESIRABLE practices, or 2) establish, renovate, more intensively manage, or accelerate changes in the pasture and are identified as NEEDED practices. The NEEDED practices are planned when necessary to treat specific resource problems to meet the criteria for managing the soil, water, air, plant, and animal resources.

Resource Management Systems include combinations of practices that are:

1. ESSENTIAL – Those practices that are essential to successful pastureland management and are always planned in the RMS.

2. DESIRABLE – These practices facilitate or enhance the essential pastureland management practices.

3. NEEDED – These practices are planned when necessary to establish, renovate or more intensively manage the pastureland, or accelerate changes in the pastureland by treating specific resource problems to meet RMS criteria.

An RMS is developed by selecting a combination of the ESSENTIAL, plus the DESIRABLE or NEEDED practices, or both, whose combined effects will meet the criteria for each resource (soil, water, air, plant, and animal) and the objectives of the land user. The following is a list of ESSENTIAL, DESIRABLE and NEEDED practices applicable to pastureland.

ESSENTIAL Practices –	These practices are essential for proper pastureland management and sustainability, and are always planned in the RMS.

Nutrient Management
Herbaceous Weed Control
Prescribed Grazing
Livestock Water System[1]

DESIRABLE Practices –	These practices facilitate the application of the essential practices.

Access Road
Animal Trails and Walkways
Fence
Heavy Use Area Protection
Pipeline
Pond
Pond Sealing or Lining
Spring Development
Water Well
Watering Facilities

NEEDED Practices –	These practices are planned when necessary to establish, renovate, or accelerate changes in pastureland or to treat specific resource problems.

Critical Area Planting
Diversion
Filter Strip
Grade Stabilization Structure
Land Smoothing
Pasture and Hay Planting
Prescribed Burning
Riparian Forest Buffer
Stream Crossing
Streambank and Shoreline Protection
Upland Wildlife Habitat Management
Use Exclusion
Waste Utilization
Watering Ramp
Wetland Wildlife Habitat Management
Windbreak/Shelterbreak Establishment
Windbreak/Shelterbreak Renovation

[1]Livestock Watering Systems are comprised of a combination of conservation practices. All potential water sources (well, public water supply, spring, pond, stream, etc.) will be identified during the resource inventory. Direct consumption from springs, streams and/or ponds should be used as a last resort, after other options to establish livestock watering facilities have been exhausted. If livestock are permitted to water from springs, streams and/or ponds, the Prescribed Grazing system will specify a frequency of rotation such that degradation of channel banks and water quality will be prevented. If channel banks and water quality will not be adequately protected through implementation of the Prescribed Grazing practice and livestock rotation, then Heavy Use Area Protection, Use Exclusion, Watering Ramps, Stream Crossings, Spring Development, etc. will be used to control livestock access to water bodies and prevent degradation.

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PASTURELAND RESOURCE MANAGEMENT SYSTEM (RMS)

Existing Conditions: The concerns identified are those that exist or have a high potential for occurring in the absence of needed treatment.

Endophyte-infected tall fescue and a mixture of weedy species are in continuous use on 39.5 acres of pastureland. The 39.5 acres is divided into two fields, one at 19 acres and one at 20.5 acres. Since livestock are allowed to graze a pasture for more than 12 days at a time before they are rotated to the other pasture, the rest period and increased utilization benefits associated with rotational stocking are not achieved. Proper minimum grazing height is not observed resulting in low plant vigor. The pastures are fertilized with broiler litter.

Warm season perennial plants are not specifically grown and are limited to weedy invaders of the tall fescue pastures.

Mud holes are developing as a result of livestock watering from a natural spring area in one pasture and a small stream in the other. A well serving the broiler enterprise is located between the two pastures. Mud holes have developed around hay and mineral feeding areas, reducing pasture productivity and contributing to weedy invasion.

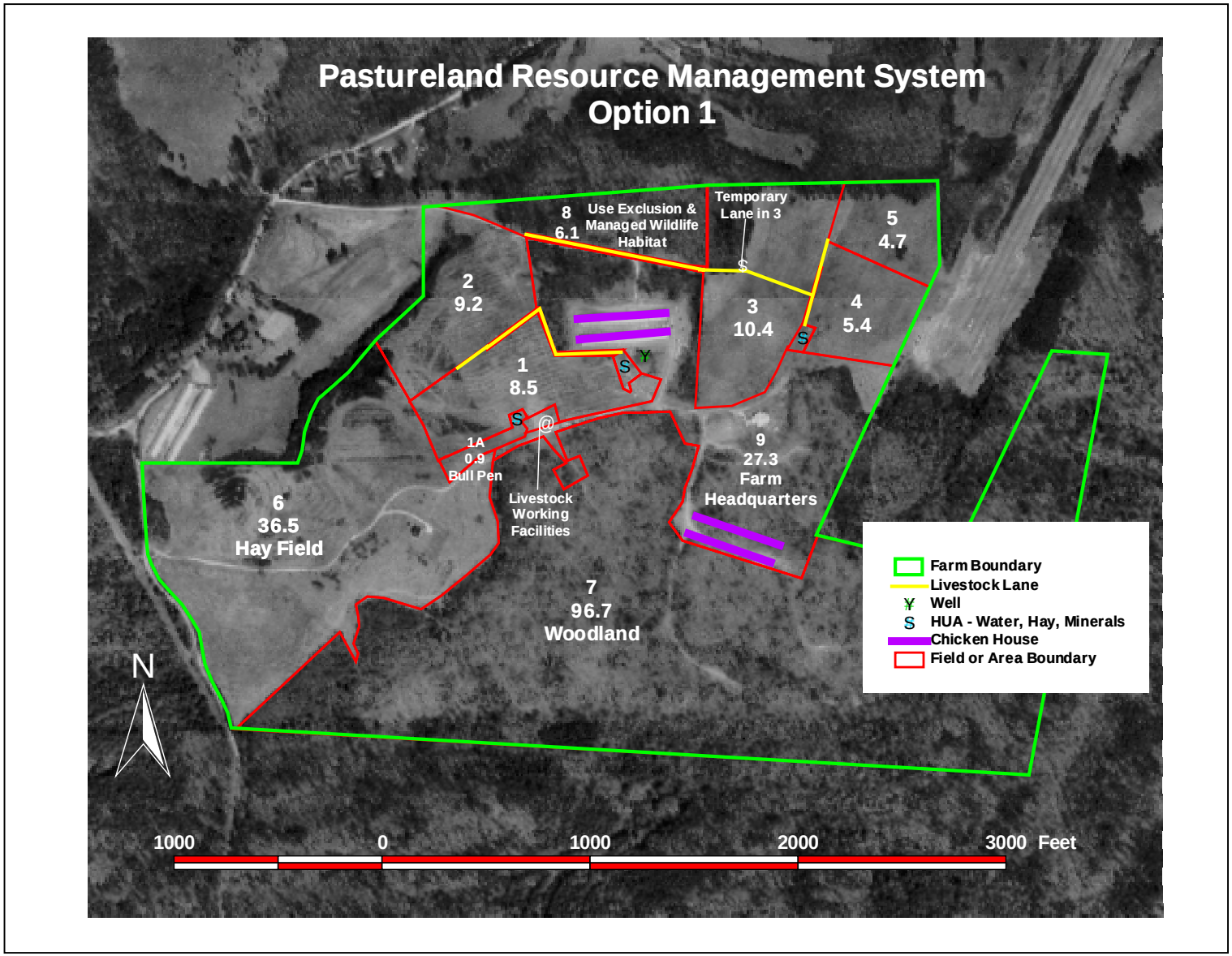
The bull runs with the cows throughout the year. The calving percentage of the beef cattle operation is 87% and the average weaning weight of the calves is 430 lbs. The cattle are not identified with ear tags and record keeping is at a minimum. Approximately 2 tons of hay are fed per brood cow per year. Hay is not tested for quality and is fed to livestock on the ground. Cattle exhibit symptoms of fescue toxicosis associated with the endophyte-infected tall fescue variety that was originally planted on the farm.

The soil is a fine sandy loam.

The natural spring that originates on the property goes on to form the drinking water supply for a major commercial/industrial and populated area.

Suitable habitat for turkey is a concern. The wildlife Habitat Suitability Index is 0.18.

Option 1: **A five pasture rotational stocking system is planned.**

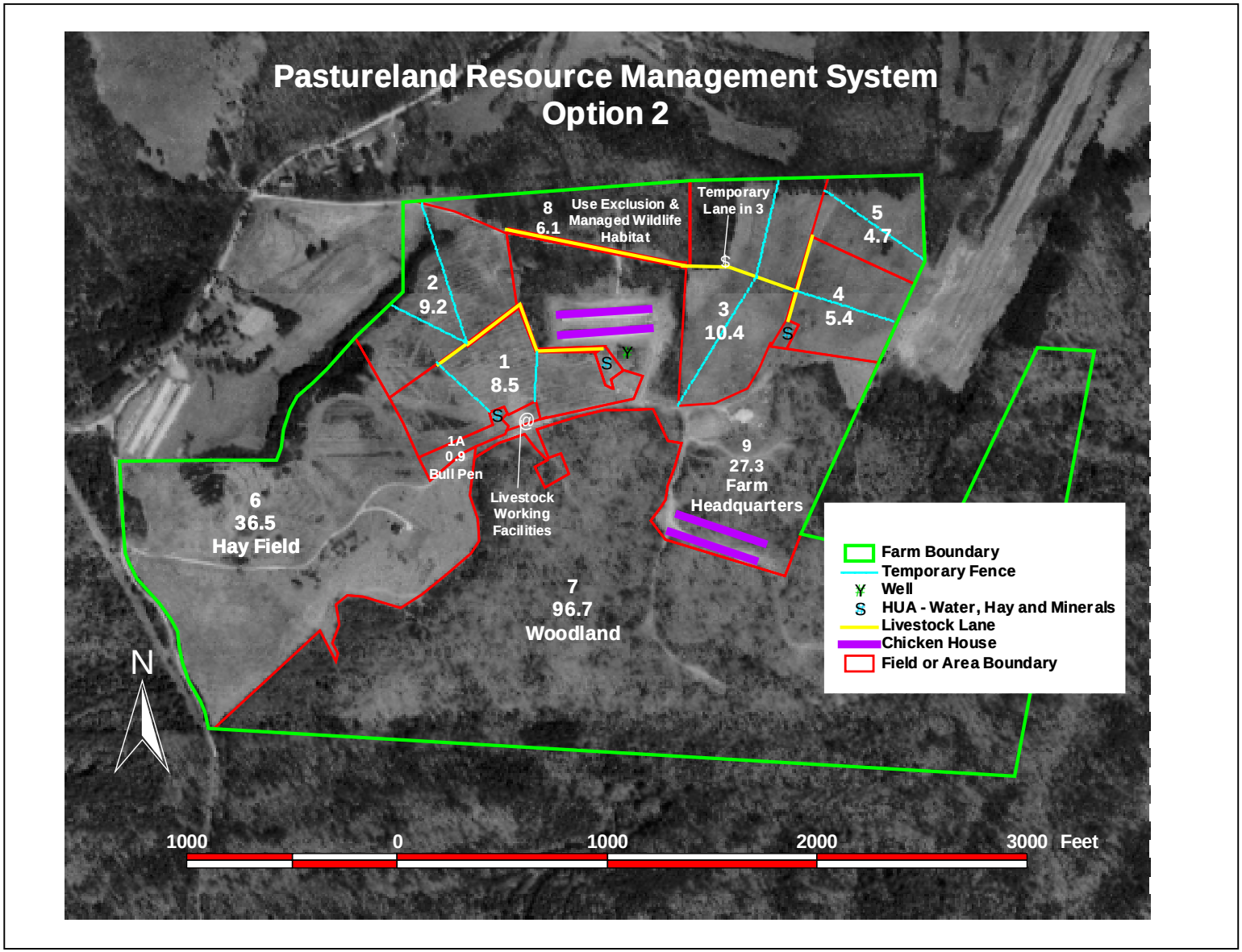


Option 1 – Cow-calf operation. A rotational stocking system consisting of five pastures with a one week average grazing duration is planned. Cattle are rotated based on proper minimum grazing height for the forages grown. Duration of grazing varies with growth conditions. Fencing is used to exclude livestock from natural springs and a stream, and cattle are supplied drinking water from a well using pipeline, and automatic, freeze-proof drinkers. Minerals, water, and hay are supplied in two common use areas where heavy use area protection has been installed. Hay is tested for quality and fed in hay rings. Cattle travel to the common use areas and rotate among some pastures using a heavy use area protection lane system. Endophyte-infected tall fescue has been diluted with white clover and orchardgrass to alleviate tall fescue toxicity symptoms. Field 3 has been sprigged with hybrid bermudagrass to introduce a warm-season perennial grass to the forage base. The bull is separated from the herd at appropriate times to facilitate a 90-day controlled breeding season. Calving is planned to correspond with a period of high quality forage production. Cows are identified with ear tags, and production, vaccination and culling records are kept. Nutrients are applied according to a nutrient management plan. Pesticides are applied according to Extension recommendations and product guidelines. Wildlife food plots have been established for turkey. Woodland grazing has been minimized. The wildlife Habitat Suitability Index is 0.37.

Resource Problems																					
Conservation Practices	Soil						Water			Air	Plants				Animals						
	Erosion			Condition		Deposition	Quantity	Quality		Quality	Suitability	Condition	Management		Habitat Management						
	Sheet & Rill	Gully	Stream-bank	Soil Compac-tion	Fertilizer & Pesticides	Sediment Damage Offsite	Restricted Capacity for Sediment Deposition	Surface Water Contaminants		Airborne Odors	Plants Unsuitable for Use	Productivity	Estab Growth Harvest	Nutr. & Pest Mgmt.	Food		Cover or Shelter	Water	Population Resource Balance		Animal Health
								Nutr.	Pest.						Cattle	Quail	Quail	Cattle	Cattle	Quail	Cattle
Quality Criteria Met	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
382 Fence	F	F	F	F	F	F	F	F	F	N/A	F	F	F	F	F	F	F	-	F	F	F
472 Use Exclusion	+	+	+	+	0/+	+	+	+	+	0	+	+	+	+	+	+	+	+	N/A	+	+
512 Pasture Planting	+	+	0	+	+	+	+	+	+	-/0	+	+	+	+	+	0	0	+	+	+	+
516 Pipeline	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	+	F	+	F	F	F
528A Prescribed Grazing	+	+	0	+	+	+	+	+	+	N/A	+	+	+	+	+	+	+	N/A	+	+	+
561 Heavy Use Area Protection	+	+	0	+	+	+	0	+	+	0	N/A	+	N/A	N/A	+	+	+	F	N/A	+	+
575 Animal Trails and Walkways	+	+	0	+	0	+	0	+	+	0	N/A	+	N/A	N/A	F	N/A	+	F	N/A	+	+
590 Nutrient Management	+	0/+	0/+	0	+	+	+	+	0	0/+	0	+	+	+	+	+	+	N/A	+	+	+
595 Pest Management	0/+	0/+	0	0	0/+	0	0	0	+	+	N/A	+	+	+							
614 Watering Facility	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	+	F	+	F	F	F
642 Water Well	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	+	F	+	F	F	F
645 Upland Wildlife Habitat Mgmt.	+	+	+	+	+	+	+	+	+	0	+	+	+	+	N/A	+	+	N/A	N/A	+	+

F = facultative (positive impact under some conditions but not others) + = positive impact - = negative impact 0 = no impact

Option 2: **A fourteen pasture rotational stocking system is planned.**



Option 2 – Cow-calf operation. A rotational stocking system consisting of fourteen pastures with a two day average grazing duration is planned. Cattle are rotated based on proper minimum grazing height for the forages grown. Duration of grazing varies with growth conditions. Fencing is used to exclude livestock from natural springs and a stream, and cattle are supplied drinking water from a well using pipeline, and automatic, freeze-proof drinkers. Minerals, water, and hay are supplied in two common use areas where heavy use area protection has been installed. Hay is tested for quality and fed in hay rings. Cattle travel to the common use areas and rotate among some pastures using a heavy use area protection lane system, part of which is permanent and part of which is temporary. Endophyte-infected tall fescue has been diluted with white clover and orchardgrass to alleviate tall fescue toxicity symptoms. Field 3 has been sprigged with hybrid bermudagrass to introduce a warm-season perennial grass to the forage base. The bull is separated from the herd at appropriate times to facilitate a 90-day controlled breeding season. Calving is planned to correspond with a period of high quality forage production. Cows are identified with ear tags, and production, vaccination and culling records are kept. Nutrients are applied according to a nutrient management plan. Pesticides are applied according to Extension recommendations and product guidelines. Wildlife food plots have been established for turkey. Woodland grazing has been minimized. The wildlife Habitat Suitability Index is 0.37.

Resource Problems																					
Conservation Practices	Soil						Water			Air	Plants				Animals						
	Erosion			Condition		Deposition	Quantity	Quality		Quality	Suitability	Condition	Management		Habitat Management						
	Sheet & Rill	Gully	Stream-bank	Soil Compac-tion	Fertilizer & Pesticides	Sediment Damage Offsite	Restricted Capacity for Sediment Deposition	Surface Water Contaminants		Airborne Odors	Plants Unsuitable for Use	Productivity	Estab Growth Harvest	Nutr. & Pest Mgmt.	Food		Cover or Shelter	Water	Population Resource Balance		Animal Health
								Nutr.	Pest.						Cattle	Quail	Quail	Cattle	Cattle	Quail	Cattle
Quality Criteria Met	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
382 Fence	F	F	F	F	F	F	F	F	F	N/A	F	F	F	F	F	F	F	-	F	F	F
472 Use Exclusion	+	+	+	+	0/+	+	+	+	+	0	+	+	+	+	+	+	+	+	N/A	+	+
512 Pasture Planting	+	+	0	+	+	+	+	+	+	-/0	+	+	+	+	+	0	0	+	+	+	+
516 Pipeline	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	+	F	+	F	F	F
528A Prescribed Grazing	+	+	0	+	+	+	+	+	+	N/A	+	+	+	+	+	+	+	N/A	+	+	+
561 Heavy Use Area Protection	+	+	0	+	+	+	0	+	+	0	N/A	+	N/A	N/A	+	+	+	F	N/A	+	+
575 Animal Trails and Walkways	+	+	0	+	0	+	0	+	+	0	N/A	+	N/A	N/A	F	N/A	+	F	N/A	+	+
590 Nutrient Management	+	0/+	0/+	0	+	+	+	+	0	0/+	0	+	+	+	+	+	+	N/A	+	+	+
595 Pest Management	0/+	0/+	0	0	0/+	0	0	0	+	+	N/A	+	+	+							
614 Watering Facility	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	+	F	+	F	F	F
642 Water Well	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	+	F	+	F	F	F
645 Wildlife Upland Habitat Mgmt.	+	+	+	+	+	+	+	+	+	0	+	+	+	+	N/A	+	+	N/A	N/A	+	+

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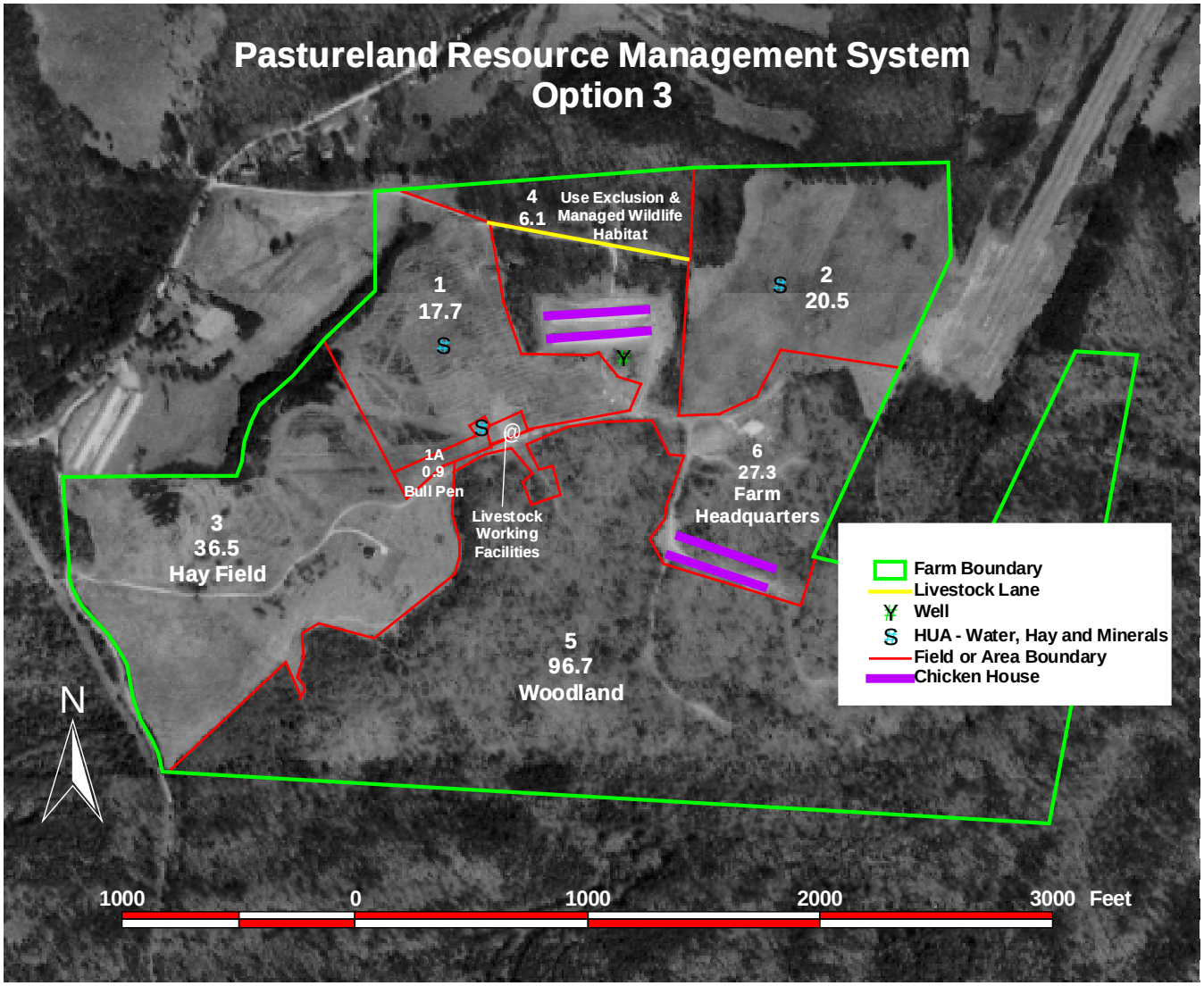
Option 3: **A continuous stocking system is planned.**



Option 3 – Cow-calf operation. A continuous stocking system is planned. The existing tall fescue/weeds were killed. The pastures were planted to common bermudagrass. Tall fescue (either a novel endophyte or endophyte-infected variety) was sodseeded into the established common bermudagrass to provide warm- and cool-season forage production. Including common bermudagrass in the pastures reduces tall fescue toxicity symptoms. Cattle movement between the two pastures is not managed. During periods of surplus/deficit forage, temporary fencing is used to adjust grazed acreage. Proper minimum grazing height for the forages grown is observed. Fencing is used to exclude livestock from natural springs and a stream, and cattle are supplied drinking water from a well using pipeline, and automatic, freeze-proof drinkers. Minerals, water, and hay are supplied in two common use areas where heavy use area protection has been installed. Hay is tested for quality and fed in hay rings. Cattle move between the two pastures using a heavy use area protection lane system. The bull is separated from the herd at appropriate times to facilitate a 90-day controlled breeding season. Calving is planned to correspond with a period of high quality forage production. Cows are identified with ear tags, and production, vaccination and culling records are kept. Nutrients are applied according to a nutrient management plan. Pesticides are applied according to Extension recommendations and product guidelines. Wildlife food plots are established for turkey. Woodland grazing is minimized. The wildlife Habitat Suitability Index is 0.37.

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Quality Criteria Met	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
382 Fence	F	F	F	F	F	F	F	F	F	N/A	F	F	F	F	F	F	F	-	F	F	F
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512 Pasture Planting	+	+	0	+	+	+	+	+	+	-/0	+	+	+	+	+	0	0	+	+	+	+
516 Pipeline	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	+	F	+	F	F	F
528A Prescribed Grazing	+	+	0	+	+	+	+	+	+	N/A	+	+	+	+	+	+	+	N/A	+	+	+
561 Heavy Use Area Protection	+	+	0	+	+	+	0	+	+	0	N/A	+	N/A	N/A	+	+	+	F	N/A	+	+
575 Animal Trails and Walkways	+	+	0	+	0	+	0	+	+	0	N/A	+	N/A	N/A	F	N/A	+	F	N/A	+	+
590 Nutrient Management	+	0/+	0/+	0	+	+	+	+	0	0/+	0	+	+	+	+	+	+	N/A	+	+	+
595 Pest Management	0/+	0/+	0	0	0/+	0	0	0	+	+	N/A	+	+	+							
614 Watering Facility	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	+	F	+	F	F	F
642 Water Well	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	+	F	+	F	F	F
645 Wildlife Upland Habitat Mgmt.	+	+	+	+	+	+	+	+	+	0	+	+	+	+	N/A	+	+	N/A	N/A	+	+

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Concepts emphasized in the examples that should be applied regardless of the location of the livestock – forage operation:

- To the extent required or possible, use mixtures or combinations of adapted warm- and cool-season forage species to provide yearlong grazing. This may involve planting small grains and/or cool-season legumes for winter grazing on cropland fields or dormant warm-season pastures.
- Ensure the quantity and quality of the forage provided meets the manager's performance objectives for the type and class of livestock on the operation.
- Observe the proper minimum grazing height for the forage species to maintain healthy, productive pastures.
- Protect water quality by managing livestock access to natural water bodies and by following a nutrient management plan.