USDA

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Forest Service

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Allotment Management Plan

Sunflower Allotment

Mesa Ranger District
Tonto National Forest
Arizona

This Allotment Management Plan implements direction established in the October 1985 Tonto National Forest Plan and the October 2015 decision notice for Sunflower Allotment. This Allotment Management Plan is made part of your Term Grazing Permit in accordance of that permit.

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Agreed to by: Horsecreek Ranches by Gatewood / Eden Date: 8-10-17
Permittee

Approved by: _____ Date: 8-10-17
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Mesa District Ranger

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Sunflower Allotment Management Plan

Allotment Description

Sunflower Allotment encompasses approximately 155,480 acres northeast of Fountain Hills, Arizona extending from Salt River and Saguaro Lake up along Four Peaks mountains, ending just south of Sunflower, Arizona. It lies east and west of State Route 87 and is accessed by numerous forest roads.

Allotment Management

Permitted Use

Permitted use may vary from 225 to 525 head of livestock yearlong. Table 1 shows the range of numbers per grazing unit. Any annual adjustments would be planned and authorized by District Ranger. Grazing permit will be issued for 525 cow/calf pairs. Initial stocking will not exceed "Estimated Initial Stocking" listed below. Annual authorized livestock numbers may be adjusted from initial stocking. Stock and monitor approach will be used to establish grazing capacity over the long term, five to ten years. Annual actual permitted levels, generally 15%, will be determined by Mesa District Ranger, Range Staff and permittee based on results of monitoring and successful implementation of management practices. Other considerations include development of range improvements, forage utilization patterns, economic factors, and climate forecasts.

Table 4: Range of Numbers. AUMs calculated based on a conversation rate of 1 for an adult cow.

Unit	Pastures	Estimated Initial Stocking (cow/calf pairs)	Maximum Stocking – Upper Limit (cow/calf pairs)
Cottonwood East	Alder Creek Cane Springs North Cane Springs South	50 – 75	100 – 125
Cottonwood West	Adams North (new) South	50 – 75	100 – 125
Cline	Ballantine Cline Mud Spring	75 – 100	125 – 150
Dos S	Maverick Picadilla Pine Creek	50 – 75	100 – 125
Dos S/Desert Unit	Sycamore Creek Riparian Otero Ranger Station Adams, west of SR 87	Non-Use to benefit riparian resources, sensitive species and in Adams pasture, conflict with livestock grazing and recreation. Permitttee has also requested non-use due to heavy Off Road Vehicle Use and other recreation. If conditions change, further analysis will determine if grazing is appropriate.	
Dos S Pasture (002284) and Proposed New Pasture north of Dos S private land	New fence from Dos S private land, north to the Round Valley Pasture (002303) on the east side of Sycamore Creek.	Not a part of the rotation. Pastures would be used as holding pastures when moving between units or pastures.	
TOTAL		**225-325**	**425-525**

Initial stocking, within any given Unit, will not occur until all existing water developments and fences within each unit are functional to Forest Service standards. All new developments or reconstruction of existing improvements will be constructed under additional permit modifications prior to livestock entering forest. Before validation of grazing permit or individual units, an inspection will be conducted by Forest Service personnel and permittee to evaluate range condition, water distribution and availability, and ensure improvements are functional.

Active management practices such as herding and salting will minimize livestock drift between pastures. If these practices do not correct livestock drift, permittee will be responsible for immediately locating areas of concern and installing fence.

Each Unit will have livestock ear tagged with different colors in order to differentiate herd. Stocking rates, within each unit, will be independent from other units and managed as separate herds.

Grazing System

Pastures will be grazed in a rotational grazing system. Pastures within each Unit will allow herbaceous and woody plant physiological needs in order to achieve desired resource conditions, through periodic deferment. Pasture use periods will remain flexible in consideration of estimated AUMs. Actual pasture season of use will depend on observed resource conditions. Weather and climatic conditions, water availability and growing conditions will be evaluated regularly to assist in pasture season of use. Length of grazing will be considered and managed for desired grazing intensity and utilization guidelines.

Table 2: General Rotation Schedule

Sequence	Year A	Year B	Year C	Year D	Year E
First	Pasture A	Pasture C	Pasture B	Pasture A	Pasture C
Second	Pasture B	Pasture A	Pasture C	Pasture B	Pasture A
Rest	Pasture C	Pasture B	Pasture A	Pasture C	Pasture B

Range Improvements

Responsibilities

Existing Improvements

Permittee is responsible for maintenance of all range improvements, listed on Table 2 and in term grazing permit for course of their usable life. Improvements will be maintained to standards and practices agreed upon and detailed in yearly AOI. Any request to change maintenance requirements on existing improvements based on climatic conditions, such as drought, will be approved by District Ranger.

Improvement maintenance activities within existing footprint and without heavy machinery (i.e. backhoe, dozer, front loader, etc.) may proceed without further Forest Service approvals. These activities include:

- Pipeline repair or replacement
- Fence repair or replacement
- Corral repair or replacement
- Water trough replacement

Improvement maintenance activities that require heavy machinery will require a permit modification on Form R3-220-10. For stock tanks near existing access roads, maintenance may occur after inspection by your range specialist and authorized through a permit modification.

Some maintenance activities will require additional evaluation and consultation before they may proceed. For heritage, an archeological signed Inventory Standards and Accounting form prior to cleaning a stock tank away from an existing road. This documentation will only be prepared once and filed at District; further heritage form will not be required and referred to for future maintenance activities. These activities include:

- Stock tank maintenance cleaning away from roads (i.e. off-road) where prior access is unknown,
- Locations where there are known heritage resources within the project area,
- Wells re-drilled next to existing wells,
- New windmill construction or new windmills built next to existing windmills,
- Fence installation in a new location or outside of existing fence line footprint,
- Replacement of any facility that is outside of its existing footprint.

You will need to keep a record of all ongoing or completed maintenance activities and report them to your Range Staff each year at your Annual Operating Instructions meeting. These above guidelines only refer to Heritage Resources.

Any maintenance or reconstruction of improvements throughout allotment will need to meet Forest Plan standards and management for Management Area 3D, 3E, 3H, and 3I (1985 TNF Plan, as amended). Archeological and biological clearance may be required for reconstruction of existing improvements. For example, mechanized equipment may not be used in wilderness without prior approval.

A schedule of maintenance of listed improvements in term grazing permit, requires normal maintenance to maintain the improvements in usable, sound condition. If range improvements deteriorate beyond point that normal maintenance may repair, improvement will be considered a new project. Permittee and Forest Service range staff will coordinate to determine appropriate course of action.

During tenure of grazing permit, some existing improvements could be determined no longer feasible because of location, competing uses, livestock needs, or type is determined no longer necessary to maintain. List of these improvements will be discussed with Forest Officer, and when resolution is made a modification will be made to permit of removal on permit and on ground. Allotment administration will determine whether identified structural improvements are necessary or need to be updated for continued use.

Specific improvement maintenance will be detailed in AOI's and discussed at yearly meetings.

Table 3: Existing Improvement List

Improvement Number	Improvement name	Type	Year Constructed	Location
COTTONWOOD WEST UNIT				
002184/341019	Water Wire Corral	Corral		Cottonwood West – North Pasture
002204/341039	Bagley Tank	Earthen Stock tank		Cottonwood West – South Pasture
002307/341127	The Rolls Pasture	Allotment interior fence		Cottonwood West – South Pasture
002187/341002	Cottonwood Ranch Corral	Corral		Cottonwood West – South Pasture

002217/341052	Cottonwood Well	Well with pumpjack		Cottonwood West – South Pasture
002218/341053	Cottonwood Ranch Water System	Masonry Water Storage		Cottonwood West – South Pasture
002282/341103	Cottonwood Pasture	Allotment interior fence		Cottonwood West – South Pasture
002293/341114	Mesquite Spring Pasture	Allotment interior fence		Cottonwood West – South Pasture
002328/341145	Mesquite Spring Corral	Corral		Cottonwood West – South Pasture
002197/341032	Hughes Corral	Corral		Cottonwood West – South Pasture
000716/341001	Hughes Well	Vertical Drilled Well		Cottonwood West – Adams Pasture
002206/341041	Hughes Tank	Earthen Stock Tank		Cottonwood West – Adams Pasture
002306/341126	Hughes Pasture	Allotment Interior Fence		Cottonwood West – Adams Pasture
002325/341142	Hughes Tank Pasture	Allotment Interior Fence		Cottonwood West – Adams Pasture
CLINE UNIT				
002229/341063	Fisher Spring	Spring Development		Ballantine Pasture
002244/341072	Pine Mountain Spring	Spring Development		Ballantine Pasture
002172/341011	Three-Bar-Sunflower Fence	Allotment Boundary Fence		Mud Springs Pasture
002198/341033	Tahanus Spring Corral	Corral		Mud Springs Pasture
002231/341065	Mud Spring	Spring Development		Mud Springs Pasture
002235/341067	Willow Spring	Spring Development		Mud Springs Pasture
002242/341070	Bushy Basin Spring	Spring Development		Mud Springs Pasture
002355	Bushy Trick Tank #1-Big Ridge	Trick Tank		Mud Springs Pasture
002177/341015	Bushy Trick Tank #2-Lower Pine	Trick Tank		Mud Springs Pasture
002230/341064	Cline Pasture Spring	Spring Development		Cline Pasture
002236/341068	Coyote Spring	Spring Development		Cline Pasture
002255/341079	Mountain Spring	Spring Development		Cline Pasture
002256/341079 PL	Mountain Spring Pipeline	Steel Pipeline		Cline Pasture
002267/341089	Razorback Fence	Fence		Cline Pasture

002281/341102	Cline Cabin Pasture	Allotment Interior Fence		Cline Pasture
002322/341139	Cline Corral	Corral		Cline Pasture
		DOS S UNIT		
002252/341076	Brush Corral Spring	Spring Development		Mud Springs Pasture
002215/341050	Highway Tank	Earthen Stock Tank		Maverick Pasture
0A2172/341169	Sunflower – 7K	Allotment Boundary Fence		Pine Creek Pasture
002216/341051	Boulder Mountain Cabin	Cabin		Pine Creek Pasture
002225/341060	Boulder Mountain Spring	Spring Development		Pine Creek Pasture
002246/341073	Medlers Seep	Spring Development		Pine Creek Pasture
002259/341083	Mud Spring	Spring Development		Pine Creek Pasture
002260/341083	Mud Spring Pipeline	Steel Pipeline		Pine Creek Pasture
002265/341087	Tunnel Spring	Spring Development		Pine Creek Pasture
002296/341117	Cypress Trap Pasture	Allotment Interior Fence		Pine Creek Pasture
002317/341134	Boulder Cabin Corral	Corral		Pine Creek Pasture
002329/341146	Camp Creek Spring	Spring Development		Pine Creek Pasture
002291/341112	Bushnell Trap Pasture	Allotment Interior Fence		Picadilla Pasture
002223/341058	Dos S Spring	Spring Development		Picadilla Pasture
002228/341061	Mine Mountain Spring/Pipeline	Spring Development		Picadilla Pasture
002257/341081	Mesquite Well Water Storage	Water Storage		Picadilla Pasture
002284/341105	Dos S Pasture	Allotment Interior Fence		Picadilla Pasture
002290/341111	Mine Mountain Trap	Allotment Interior Fence		Picadilla Pasture
		COTTONWOOD EAST UNIT		

R05326/341172	Three-Bar-Sunflower Fence	Allotment Boundary Fence		Cane Springs North Pasture
002207/341042	Cane Spring Tank	Earthen Stock Tank		Cane Springs North Pasture
002234/341066	Brown Cabin Spring	Spring Development		Cane Springs North Pasture
002243/341071	Cienega Spring	Spring Development		Cane Springs North Pasture
002263/341085	Talc Spring	Spring Development		Cane Springs North Pasture
002337/341153	Browns Cabin Corral	Corral		Cane Springs North Pasture
002338/341154	Browns Cabin Trap	Allotment Interior Fence		Cane Springs North Pasture
002180/341016	Cane Springs Cabin	Cabin		Cane Springs South Pasture
002186/341021	Cane Spring Corral	Corral		Cane Springs South Pasture
002220/341055	Cane Spring	Spring Development		Cane Springs South Pasture
002221/341056	Cane Spring Pipeline	Steel Pipeline		Cane Springs South Pasture
002276/341097	Cane Spring Pasture	Allotment Interior Fence		Cane Springs South Pasture
002277/341098	Cane Spring Trap #1	Allotment Interior Fence		Cane Springs South Pasture
002278/341099	Cane Spring Water Lot	Allotment Interior Fence		Cane Springs South Pasture
00279/341100	Cane Spring Trap #2	Allotment Interior Fence		Cane Springs South Pasture
002335/341151	Cane Spring Pipe Corral	Corral		Cane Springs South Pasture
002323/341094	Adams Camp Corral	Corral		Alder Creek Pasture
002213/341094	Alder Creek Trap	Allotment Interior Fence		Alder Creek Pasture

Water Development Standards: Troughs, Water Systems, and Stock tanks

1. Spring source facilities should be adequately protected (i.e. buried or encased) or fenced and fences maintained to prevent livestock from getting into the source box, unless otherwise stated.

2. Open top storage tanks are potential traps for wildlife and wildlife ramps are also required, otherwise will have a top placed.
3. Head box lids or covers shall be in place to prevent dirt, rodents, or other refuse from entering head box. Head boxes will be constructed of concrete, metal, treated wood or other durable material. The start of the pipeline, inside the box, should be fitted with a tee to prevent debris from entering the pipe.
4. All outlet pipes and valves from head boxes should be functioning and must not leak.
5. All pipes should be large enough to carry the flow of the water development, generally no smaller than 1" for above ground HDPE pipe.
6. Troughs which become elevated from trampling livestock should be periodically backfilled to maintain a useable height for livestock, authorization may be needed.
7. Troughs which become uneven due to settling should be reset and leveled, authorization may be needed.
8. Metal troughs should be kept clear of ground, when possible, with at least 2" to 4" of clearance under the bottom of the trough to prevent rusting or decomposition.
9. On troughs, overflow pipes must be kept clear. Overflow water should be piped away from troughs at least 50 feet away from trough. End of overflow pipe must be protected from livestock trampling.
10. Inlet and outlet pipe shall be protected by anchoring to trough with a single post next to a section of vertical pipe and a brace or pole supporting a section of horizontal pipe. Inlet and outlet pipeline should be buried to the extent possible for their protection.
11. Troughs will be equipped with a wildlife escape and access ramps from which wildlife can escape or drink from trough. Ramp must be fixed to one side of trough.
12. Troughs, storage tanks, and pipelines will be drained and cleaned periodically to minimize moss growth, debris buildup, and damage from freezing.
13. Poles, posts, and trough framing materials used in water development construction will be maintained, repaired, or replaced as needed. Materials must not be taller than the trough and wires should not be placed over trough to allow access for watering avian species.
14. All above ground pipeline should have support structures, to keep pipe at gradient and prevent sagging.
15. Horizontal wells must contain a shut off valve and reducer. Entire exterior of a well can be earth covered to prevent freezing.
16. Pipelines with air and drain valves will be covered with fine screen to prevent rodents and dirt from entering pipeline. Screens must be replaced as needed.
17. Pipeline leaks will be repaired or damaged section repaired with materials similar to materials from construction.
18. Pipelines with valve cover boxes will be kept covered and repaired as needed.
19. Stock tanks will be cleared of debris, floating logs, dead animals, etc. Spillways will be cleaned and maintained to prevent washing out or plugging. Rodent damage and damaging vegetation on dams will be reported to Forest officer.

20. Water development components (e.g., rusted out troughs, broken sections of pipe, etc.) replaced during maintenance or reconstruction will be removed from Forest and properly disposed of.
21. All water improvements will be maintained to these standards prior to livestock entering pasture. After livestock leave pasture, all water improvements will be prepared for winter and potential freezing conditions. These improvements will be left in good order and ready to be turned on for following pasture rotation. All troughs will be filled with water for wildlife prior to water shut off.

Fence and Corral Standards

1. All broken wire will be spliced and repaired in such a manner that tension on a wire is maintained. Wire splices will be made with similar wire used in construction. A 12 gauge wire is preferred.
2. Broken or rotten posts, broken braces and missing staples will be replaced as needed to fence.
3. Wires will be re-stretched as needed.
4. Broken or missing stays will be replaced as needed.
5. Top wire on range fences should be kept at 42 inches in height, and bottom wire should be smooth and 18 inches above ground. Standard range fences are 3 strands barbed wire and 1 smooth wire.
6. Staples should not be driven so deep into post that wire is compromised.
7. All gates will be closed before livestock enter new pastures. It is understood that recreationists utilize pasture gates and sometimes are left open. Permittee is responsible for livestock to remain in pasture authorized. If gates are constantly left open, forest official will work with permittee to remedy situation.
8. Wire gate tension should be sufficient to prevent sagging while maintaining functionality. Gate loops are constructed of smooth wire.
9. Trees which fall on fences will be cut and removed as needed. Broken wire will be spliced and re-stretched. Broken poles will be replaced.
10. Compromised sections of log or pole fences and corrals will be replaced.
11. Corrals are to be kept clean of trash, in good repair, and in useable condition.
12. Fences are maintained at, or near as possible to, the standards required to turn livestock.
13. Metal components of range fences and corrals (e.g., wire, stays, t-posts, gates, etc.) replaced during maintenance or reconstruction will be removed from Forest and properly disposed of.

Mesa Ranger District understands permittee is not responsible for trash left by recreation users. Permittee is responsible to ensure improvements on allotment are in functional condition, as listed above, and materials disposed of to update improvement will be removed from Forest and disposed of properly.

New Improvements

Before implementation of new improvements, all existing improvements will be brought up to agency standards. An exception to this may be that particular existing improvement is determined to be no longer feasible.

Proposed fences will be installed prior to any livestock returning to affected units/pastures. However it is not necessary for all proposed waters to be completed in any specific order or even the same year. All new troughs will be placed 300 feet from riparian areas to avoid impacts. Funding for project installation may come from permittee funding, Range Betterment Funds, potential grants and nay others, based on availability of funds and management objectives.

All new improvements will require heritage clearance and an additional permit modification. Additional sideboards include:

- New spring developments will be constructed with a spring box that is designed to leave residual flow at spring head to prevent dewatering.
- Any new spring development will be fenced to exclude livestock access with trough provided outside of exclosure for livestock and wildlife.
- New troughs will be placed uplands, at least 300 feet away from riparian areas.
- New troughs will be placed at least ¼ mile away from Sonoran desert tortoise preferred habitat, which includes rocky, boulder-covered hills and mountains in Sonoran desert scrub.
- Improvements proposed within Sonoran desert tortoise habitat will require pre-construction surveys and monitoring to ensure that individual tortoises are not present within action area.

West Cottonwood Unit – Cottonwood North, Cottonwood South and Adams pastures

- Cottonwood West – North Unit fence: Construct roughly 1 mile fence from southeast corner of existing Cottonwood pasture east and tie into Cane Spring road. Another 2 miles of fence from southwest corner of Mesquite Springs Pasture will tie south into northern tip of Cottonwood pasture. Hughes pasture and Rolls Trap will be incorporated into existing pasture (renamed Cottonwood West – South Unit)
- Cottonwood Well extension: Install 1 1/5 miles of HDPE pipeline to convey water from Cottonwood well to a new 300 gallon trough located in Cottonwood South pasture uplands south of well.
- Rolls Trap Storage: Install 10,000 gallon storage tank, 1 ½ mile HDPE pipeline and 300 gallon trough located in uplands away from trap in Cottonwood South pasture. Water will be supplied from Mine Mountain Spring when available. Water to fill storage tank will be hauled in.
- Mine Mountain Spring Underground Storage: Bury a 10,000 gallon storage tank to store water for existing pipeline in Cottonwood North pasture. Location is in Four Peaks Wilderness and implementation strategies will incorporate these guidelines.
- Mine Mountain Spring extension: From the vicinity of Taylor corral and trough eighth and last existing trough, extend above ground pipeline and add another 300 gallon trough, located in Cottonwood North uplands (T4N, R9E, Sections 17, 20). Location is in Four Peaks Wilderness and implementation strategies will incorporate these guidelines.
- Exclosure fence: A fence will be installed above and below Hidden Water Spring (T3N, R9E, Section 21) to allow riparian vegetation to improve. This spring is currently fenced to exclude livestock access to protect an established Gila Topminnow population. An existing trough is

located outside of current exclosure and will remain in place for livestock. This location is in Four Peaks Wilderness and no mechanized or mechanical equipment is authorized.

Cline Unit – Ballantine, Mud Spring, Cline

- Additional Storage tank and trough: Located off Forest Road 3484 (T4N, R9E, Section 3) a storage tank equal to or less than 10,000 gallons will supply water to a new 300 gallon trough (T5N, R9E, Section 34) in Cline pasture.
- Mountain Spring extension: Install a new pipeline to convey water to new 300 gallon trough in Ballantine pasture (T5N, R9E, Section 34). Finished pipeline will supply water to 5 troughs.
- Unit pasture separation: Two sections of fence will separate Dos S Unit, Picadilla and Ballantine pastures (T5N, R9E, Section 31). Remaining pasture separation will be accomplished by natural barriers.

Dos S Unit – Maverick, Picadilla, Pine Creek

- Haul Water: Located off Forest Road 3537 in Maverick pasture (T6N, R8E, Section 35) a new storage tank, equal or less than 10,000 gallons, above ground pipe and a new 300 gallon trough will be installed (Section 2).
- Mud Spring extension: In Pine Creek pasture an additional storage tank, equal or less than 10,000 gallons will be installed to hold additional water for existing four troughs.

Travel Management Guidelines

Off-road vehicle use by pickup, trailer, ATV, UTV, or motorcycle needed to transport materials or machinery to maintain or inspect structural range improvements (i.e. fences, corrals, cattle guards, pipelines, water delivery systems, troughs, earthen tanks) assigned in part three of your term permit as your responsibility for maintenance is authorized. Any heavy equipment accessing an improvement for maintenance or reconstruction may need further approval. Existing routes or the shortest, most direct route to the improvement must be used and new route construction (i.e. blading a path) is not allowed without additional authorization.

Off-road vehicle use to place supplements in strategic locations for livestock management purposes may be authorized by the District Ranger in your Annual Operating Instructions when requested. Vehicle use to gather or move livestock off-road is not authorized. Cross-country motorized travel is not allowed when conditions are such that cross-country travel would cause unacceptable natural and/or heritage resource damage.

Any other requirements in your term grazing permit, such as restrictions due to Threatened or Endangered Species or Wilderness still apply.

Cattle Allotment Management Practices

Livestock Management

Livestock management, including herding and salting, is critical to controlling cattle in appropriate pastures or among areas with natural boundaries. Tonto National Forest Grazing Practices are as follows:

- Salt for livestock management should not be placed any closer than quarter of a mile from developed or live water, recreation sites or designated trails. No salting will occur within or adjacent to identified/known heritage sites. Salt placed by permittee will be removed from pastures when cattle have left been removed.
- Supplements or salt will be placed at least ¼ mile from Sonoran desert tortoise preferred habitat, which includes rocky, boulder-covered hills and mountains in Sonoran desert scrub.
- Place supplements or salt where forage is abundant and current grazing levels are low.
- Supplements or salt should not be placed at any one location more than once during grazing season to prevent concentration of livestock.
- Efforts will be made to all troughs will be left full of water and operational year round for wildlife accessibility, unless in limited circumstances where extreme freezing conditions may damage facilities. Limited circumstances will be outlined in AOI, by specific improvement.
- Cattle should be drifted instead of trailed wherever possible. For example, livestock will be drifted, in small numbers, rather than moved all at once, to avoid heavier disturbance and potentially soil compaction.
- When entering next scheduled pasture, all livestock shall be removed from previous pasture within two weeks.
- Time spent in each pasture may vary depending on weather and when seasonal utilization standards are met. It is permittees' responsibility to monitor the utilization and move cattle before utilization standards are exceeded.
- Permittees will ensure enough time is allowed to remove livestock to comply with pasture move date(s) and avoid unauthorized or excess use.
- An actual use record and/or improvement maintenance record may be required from permittee at discretion of Forest Service.
- Permittee will ensure all infrastructure is functioning prior to entering next scheduled pasture. All troughs will be left full of water and operational year round.
- Coordinate with Arizona Game and Fish Department and incorporate their Guidelines for Handling Sonoran Desert Tortoises during grazing and rangeland activities.

Monitoring

Practices

Following monitoring activities will be carried out by grazing permittee and Forest Service either during or at the end of grazing season. Not all types of monitoring practices need to be conducted during this

time frame. Forest Service monitoring results will be shared with permittees to improve livestock management. All monitoring information collected by permittees and Forest Service will be included in the applicable district allotment file.

Allotment Inspections/Compliance Monitoring

Compliance monitoring ensures livestock are distributed in correct pastures and areas authorized for grazing. Monitoring includes but is not limited to, improvement maintenance inspections, forage utilization and livestock counts. These inspections will occur throughout grazing year.

Utilization measurements are accomplished by following by procedures in the Sampling Vegetation Attributes (1999), Utilization Studies and Residual Measurements (1999). Possible data monitoring could include browse utilization measurements, perennial grass stubble height measurements, photo points, and or height/weight relationships for certain perennial grass species. Utilization would be monitored on key forage species, which are native perennial grasses along with native perennial shrubs that are palatable to livestock.

At a minimum, monitoring would in key areas should be monitored. Data may also be collected from other locations, meeting key area definition. Collection procedures and interpretation would consider guidance contained in the Principles of Obtaining and Interpreting Utilization Data on Southwest Rangelands (Smith et al. 2005) publication.

Noxious Weed monitoring

Noxious weeds located in these allotments would be treated as needed. Weed inventory and treatment will be coordinated with permittee. Noxious weed monitoring is carried out at the same time as allotment inspections are conducted. As noxious weed populations are found they are mapped, monitored, and treated. Treatment methods would follow guidelines established in "Final Environmental Assessment for Integrated Treatment of Noxious or Invasive Weeds".

Wildlife monitoring

Wildlife biologist will conduct project related monitoring on Indicator and/or T&E species, according to United States Fish and Wildlife Service protocols. Range management related monitoring will be spread out over season and limited to any critical area during essential times. If through monitoring, project installation is found to "may affect" any listed species and/or proposed species, consultation may be initiated.

Heritage Resources monitoring

In cooperation with Forest Archaeologist special care will be taken to protect heritage resources, historic and prehistoric sites, from impacts caused by range construction projects or livestock concentrations. An archaeological survey will be conducted prior to construction of any new range improvements and/or location selection where impacts to heritage resource sites are avoided.

Existing range facilities (water troughs, corrals) where cattle regularly congregate are periodically inspected to determine whether or not livestock are causing damage to heritage resource sites.

Riparian monitoring

Changes in riparian vegetation and stream channel geomorphology condition and trend will be measured at five to ten year intervals. Acceptable methods are found in *Multiple Indicator Monitoring of Stream Channels and Streamside Vegetation* (Burton, et al. 2011).

Key Areas

A key area is a portion of rangeland selected because of its location, grazing or browsing value, or use. It serves as a monitoring and evaluation point for range condition, trend, or degree of grazing use. Annual monitoring in key areas can be used for short term data evaluation. These key areas are selected to reflect overall acceptability of current grazing management over total rangeland condition.

These monitoring methods could include, but are not limited to utilization and stubble height monitoring, annual riparian monitoring, and photo point protocols.

Data will be used, along with supporting information to determine when livestock must be moved from one pasture to another and to make any necessary adjustments to livestock numbers and/or season of use (determined in AOI).

Final utilization and/or stubble height readings, where appropriate, will be taken at the end of pasture use, along with end of growing season use of each year. Annual monitoring will follow accepted Forest Service protocols set forth by the monitoring handbook.

Key areas include but are not limited to:

- Benchmark locations: reading the range plots and parker 3 step locations
- Additional locations that meet definition above

Benchmarks

Condition and long-term trend monitoring will be conducted in some of the key areas used for annual monitoring. Information will be used to determine if the area is meeting or moving towards desired conditions. Long-term trend data will be used to measure changes in plant community composition, cover, structure, soil conditions, frequency, and management of grazing in a trend status. Annual adjustments may be conducted in order to progress toward long-term desired conditions. If indicators are downward, range specialist and permittee will determine if cause is livestock related or OHV.

Periodic monitoring of vegetative trend, on decade intervals, will include cover and frequency, in which Parker 3 Step Clusters or other similar procedures will be used. As described below, indicators of downward trend would be reversed for upward trend. For example, desirable and intermediate species are increasing in vigor.

Indicators of downward trend for vegetation include:

- Desirable and intermediate species decreasing in vigor
- Lack of young plants from desirable and intermediate species
- Invasion by undesirable species.
- Hedged and high lined shrubs. Dead branches, generally indicating that shrubs are dying back.

Indicators of downward trend in soil stability include:

- Rill marks, which are small but conspicuous water channels around vegetation.
- Active gullies are raw, actively down cutting, and may have head cuts. This type of gully may vary in depth from a few inches to several feet deep.
- Alluvial deposits; soil material transported and laid down as small fans in headwater drainages.
- Soil remnants; original topsoil held in place by vegetation or roots.
- Active terraces; usually caused by hooves of animals; stair step in appearance on side-slopes
- Pedestalled plants; exposed plant crown or roots.
- Wind-scoured depressions between plants, or wind deposits of soil
- Soil buildup behind plants, logs, and trees on upslope side.

Long-term monitoring will follow accepted Forest Service protocols determined by the Forest Service Monitoring Handbook, including documents listed above. Examples of these protocols include but not limited to, repeat photography, pace transects, quadrat frequency, and dry weight rank.

Table 3: Benchmark Locations

Study Name	Unit - Pasture	Location
Pace Transect 1, 2, 3	Dos S Unit – Pine Creek	T5N R8E &R9E, N1/2 Section 24 and all of Section 13 (Ballentine Trail Area) and T6N R9E, all of Section 21 and T5N R9E N ½ Section 6
Pace Transect 1, 2, 3	Dos S Unit – Maverick	T6N R8E S1/2 NE ¼ NE ¼ Section 33
Pace Transect D	Desert Unit	12S 0450048 3721156
Cluster 12	Desert Unit	12S 0456680 3726578
Pace Transect 1, 2, 3 (originally Cluster 10)	Dos S Unit	12S 0450469 3722173
Cluster 13	Desert Unit	12S 0450469 3722173
Pace Transect 7a, b, c	Dos S Unit	12S 0457793 3737018
Pace Transect 1, 2, 3	Dos S Unit – Adams	T4N R8E Section 22 SW ¼ SW ¼ SE ¼ and Section 27 W ½ and Section 28 E ½ S ½ and Section 33 N ½ W ½
Cluster 5	Dos S Unit	12S 0452949 3743143
Cluster 6	Dos S Unit	12S 0451495 3739245
Cluster 9	Dos S Unit	12S 0451686 3727001
Pace Transect 1, 2, 3 (originally Cluster 10)	Dos S Unit/Desert Study Exclosure	12S 0450355 3722201
Cluster 12	Dos S Unit/Desert Study Exclosure	12S 0456684 3726577
Cluster 13	Desert Unit	12S 0456816 3726608
Cluster 14	Dos S Unit/Desert Study Exclosure	
Pace Transect 5	Dos S Unit	12S 0454426 3740663
Pace Transect 1	Dos S Unit – Picadilla	T4N R9E Sections 17, 18 S ½ Section 8, NE ¼ Section 19,

Standards and Guidelines

Forest Plan

Land and Resource Management Plan (Forest Plan) defines long-term direction for managing Tonto National Forest. Forest Plan provides for multiple use and sustained yield of goods and services from lands in a way that maximizes long-term net public benefits in an environmentally sound manner [36 Code of Federal Regulations (CFR) 219.1(a)]. In October of 1985 the Tonto National Forest implemented Forest Management Plan with direction related to livestock grazing and Range Management Program Criteria (Forest Plan pg. 24).

Allowable Utilization & Stubble Height Standards

Grazing will be managed to achieve long-term goals of pasture management. It is the responsibility as permittee to take action so that livestock grazing does not exceed vegetative use thresholds. Please arrange for an allotment inspection by Forest Service if seasonal vegetative use of available forage approach threshold presented below. Once riparian use thresholds are met, cattle will be moved from riparian area or to next scheduled pasture, even if forage remains available in uplands.

Table 4: Allowable Use

Vegetation	Use Threshold
Upland Herbaceous Use	30-40% of current year's growth
Upland Browse Species	50% of current year's growth
Riparian Herbaceous Use	Limit to 40% of plant species biomass for deer grass and maintain 6-8 inches of stubble height of emergent species such as rushes and sedges.
Riparian Woody Species	Limited to 50% of leaders from current year's growth

Administrative Actions

If monitoring indicates that desired resource conditions are not being achieved in a desired time frame, management may need to be modified. The range specialist, permittee and district ranger will evaluate potential causes for not meeting desired conditions. If changes are needed, group will outline potential strategies that may be implemented. When determinations are made, documentation will occur through annual instructions and in permit and allotment files. Such changes may include adjustments to specific livestock numbers, specific grazing dates, class of animal, or pasture rotations. These changes will not exceed limiting for timing, intensity, duration, and frequency as already described.

Necessary changes will be implemented through annual operating instructions. These instructions may be modified throughout grazing season to respond to unforeseen events.

If the following occur it may necessitate changes in management of this allotment:

- Through monitoring, management objectives are not being achieved, or trend toward desired conditions are not occurring;
- Annual indicators of grazing use or guidelines are not met;
- Climatic events, fire, flood, or uses and activities detrimentally impacting resource conditions.

Then the following actions may be enacted to comply with Forest Plan:

- Extending or shortening time in pastures based on utilization levels in uplands and riparian areas;
- Assessing pasture readiness and changing its position in the seasonal rotation;
- Time or season of pasture use;
- Resting a pasture for one or more growing seasons;
- High intensity, short duration or other grazing strategies;
- Complete removal of livestock in event of extended drought, severe fire, or depleted rangelands until rangelands have recovered;
- Decrease or increase herd size within limits of permitted numbers;
- Temporarily close off water in a portion of pasture to manipulate grazing pressure and intensity of use;
- Herding livestock;
- Excluding livestock from specific areas temporarily or permanently for other resource objectives; or
- Changing or limiting season of use to minimize impacts to riparian vegetation and water quality.