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# Smith Canyon Allotment Biological Assessment

Chino Valley Ranger District, Prescott National Forest, Yavapai County, AZ  
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### **APPENDICES:**

Appendix A – Maps

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<b>Table 1. Summary of Effects for species</b>			
<b>Species</b>	<b>Status</b>	<b>Determination</b>	<b>Page #</b>
Roundtail chub	Proposed Threatened	May affect	11

### **A – Proposed Action:**

**Smith Canyon Allotment:** Authorize a range of livestock numbers from 200-275 head of cattle yearlong. The upper limit is equivalent to 3,300 Animal Unit Months (AUMs) of available forage use. The annual authorization will vary based on forage production, water availability, and resource conditions. Annual stocking could fall below the low end of the proposed stocking range. There are five large main pastures and two smaller pastures used in a rotational grazing system. Pasture rest and deferment will be scheduled to provide for achieving desired resource conditions.

#### **Adaptive Management**

The proposal includes the application of adaptive management principles. Adaptive management is designed to provide sufficient flexibility to allow management to address changes in climatic conditions, seasonal fluctuations in forage production and other dynamic influences on the ecosystem in order to effectively make progress toward or maintain desired conditions of the rangeland and other resources. Adaptive management will also include the implementation of resource protection measures.

Under the adaptive management approach, regular/annual monitoring may suggest the need for administrative changes in livestock management. The need for adaptation would be based on the magnitude or repeated re-occurrence of deviations from guidelines provided, or due to indications of a lack of progress toward desired resource conditions. The timing of such management changes would reflect the urgency of the need for adaptation. Annual Operating Instructions and the Allotment Management Plan may be modified as appropriate to adapt management within the parameters of this proposal.

If monitoring indicates that progress toward desired conditions is not being achieved on the allotment, management will be modified. Modifications may include adjustments in timing, intensity and duration of grazing. Timing is the time of year the livestock are present in a pasture. Intensity is the degree to which forage is removed through grazing and trampling by livestock. Duration is the length of time livestock are present in a given pasture.

These modifications would be made through administrative decisions such as: the specific number of head stocked on the allotment; the class of animals stocked (cow/calf pairs vs. yearlings, steers or heifers, etc.); specific dates of grazing; livestock herd movement; and/or periods of rest, deferment or non-use of portions or all of the allotments for an appropriate period of time, as conditions warrant. Such changes will not result in exceeding the AUMs authorized for livestock use that are developed through the analysis.

**Smith Canyon Allotment – Biological Assessment****Resource Protection Measures**

Resource protection measures will be incorporated into the project as design features to protect forest resources and to maintain or make progress toward desired conditions. Best Management Practices will be implemented to comply with the Clean Water Act.

Allotment-wide Measures: On those portions of the allotment where no specific resource concerns were identified by the Interdisciplinary (ID) Team, livestock will be managed with the objective of maintaining or improving the condition of rangeland resources through the use of grazing intensity guidelines. Grazing intensity is measured by determining the level of utilization on forage plants. Utilization is the proportion or degree of current year's forage production that is consumed or destroyed by animals (Interagency Technical Reference 1996). Allowable utilization levels are guidelines to be achieved as an average over the long term to maintain or improve rangeland vegetation and long-term soil productivity. Relative utilization may be measured during the growing season and can be utilized as a tool to manage livestock so that expectations of end of growing season utilization measurements can be achieved.

Holechek and Galt (2000<sup>1</sup>, 2004<sup>2</sup>) provide a comprehensive review of studies related to residual leaf lengths on southwestern forage species and growth forms as indicators of grazing intensity. They concluded that grazing at moderate or conservative intensities will generally result in maintaining or improving rangeland conditions over time. In addition to using utilization levels as a tool to manage livestock grazing impacts, the critical stubble height necessary for key forage species to maintain plant health and watershed protection values will also be considered. Allowable utilization guidelines will be applied across the allotment to provide rangeland managers with information needed to adapt management through adjustments, as may be needed, on an annual basis. Utilization data can be used: (1) to identify use patterns; (2) to help establish cause-and-effect interpretations of range trend data; and (3) to aid in adjusting stocking rates when combined with other monitoring data (Interagency Technical Reference 1996). Grazing intensity and forage use guidelines for areas of the allotment that are generally described to be in satisfactory condition include:

1. A management guideline of 35-45% utilization of key forage plants in upland key areas as measured at the end of the growing season;
2. Up to 50-60% leaders browsed on key upland woody species;
3. Minimum stubble height on key riparian herbaceous species: four to six inches where sedges and rushes are key and eight inches where deergrass is key;
4. Up to 20% use by weight on key woody species within riparian areas; or less than 50% of terminal leaders browsed on woody species less than 6 feet tall.

**Smith Canyon:** There are 7 main pastures on the allotment that were evaluated for soil and vegetation condition by the interdisciplinary team. The desired condition for vegetation is the maintenance of vegetation with mid- to high similarity to the site potential of the soil map unit, providing for ecological functionality and resiliency following disturbance while sustaining long-term productivity of the land. The desired soil condition is to be in satisfactory functioning condition or trending towards that state, providing for nutrient cycling, soil stability, and hydrologic functions. Desired conditions for vegetation and soil are being met in the Cottonwood, Jones, Moano, and portions of the Granites and Spider pastures. The following is a list of areas that are not meeting desired conditions:

- **Smith Canyon Pasture:** Key soil map unit Terrestrial Ecosystem Unit Inventory (TEUI) 427, there is a low-similarity between existing perennial grass cover and composition as compared to what the soil and climate is capable of supporting. The management objective is to improve the canopy cover and diversity of perennial grasses. The soil condition is rated as unsatisfactory. The management objective is to improve graminoid cover and the spatial distribution of vegetation to improve soil organic matter, soil stability, and to assist in improving compacted soils. Project design features include integrating rest to improve soil compaction

<sup>1</sup> Holechek, J.L. and D. Galt. 2000. Grazing Intensity Guidelines. *Rangelands* 22 (3):11-14.

<sup>2</sup> Holechek, J. and D. Galt. 2004. More on Stubble Height Guidelines. *Rangelands* 26 (4):3-7.

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and controlling water access to improve pasture distribution. Prescribe incidental use levels (0-30%) to promote biomass retention and subsequent litter development. Also in this pasture, key soil map unit TEUI 461 is in impaired soil condition. The management objective for soils is to increase litter cover levels and decrease soil compaction. Design features include integrating seasonal deferment or rest and improving livestock distribution by controlling access to waters and herding.

- **Granites Pasture:** Key soil map unit TEUI 461 is not meeting desired condition for soils and has a mixture of unsatisfactory and impaired soil condition. The other inventoried soil map unit, TEUI 477, was meeting desired condition for vegetation and soil. The management objective for TEUI 461 is to improve litter and graminoid cover and vegetation spatial distribution. Design features include deferred season of use to allow further graminoid biomass retention and control access to water facilities to improve distribution. An additional water source is proposed that would distribute cattle away from the area needing improvement.
- **Spider Pasture:** Key soil map unit TEUI 486 is not meeting desired condition for soils and displays a mixture of satisfactory and unsatisfactory soil condition. The other inventoried soil map unit, TEUI 462, was meeting desired condition for vegetation and soil. The management objective for TEUI 486 is to improve grass and litter cover and vegetation spatial distribution within the mosaic openings in this soil type. There are areas within this soil type that are not producing enough forage to be considered in forage capacity calculations. Project design feature is to implement incidental use (0-30%) in the no capacity areas of TEUI 486.
- **Smith Mesa Pasture:** Key soil map unit TEUI 490 is not meeting desired condition for soils that display a mixture of impaired and unsatisfactory soil condition. The management objective is to improve compacted soils and vegetation spatial gap distribution and maintain or improve graminoid cover and vegetative ground cover levels that are similar to enclosure reference conditions and TEUI potential. Project design features include the integration of rest to alleviate soil compaction and the use of management practices such as controlling water access and supplement locations to discourage concentrated use in TEUI 490 **with incidental use levels prescribed as 0-30% until conditions improve.** If these management options are not successful in improving soil condition, then a fencing option is proposed that would split the pasture and allow for more control of livestock access to areas needing improvement.

Once desired conditions for vegetation or soil are being met in areas needing improvement, then the allotment-wide utilization standards could be applied.

**Riparian Areas:** On the Smith Canyon Allotment, Cottonwood Canyon, and Smith Canyon, riparian areas were evaluated by the interdisciplinary team (IDT). Where there are intermittent or perennial reaches of these drainages, they were found to be in Proper Functioning Condition (PFC). The management objective is to encourage woody plant recruitment and herbaceous plant establishment where the potential exists.

There are numerous localized springs within the project area. Where developed riparian vegetation exists it will be evaluated to determine if the existing vegetation is meeting desired conditions for groundwater dependent ecosystems given the existing livestock uses. Where desired conditions are not being met that can be attributed to livestock management, it may be a future practice to protect the vegetated area by fencing, and provide livestock water away from the protected area by adding a pipeline and trough outside the fenced area. No springs were identified at this time needing protection, but this option exists if monitoring shows that it is needed.

**Wildlife:** There is occurrence of one fish species that is proposed for protection under the Endangered Species Act on this allotment as well as additional suitable habitat for that species. There are also known golden eagle nest sites on and near the allotment. Habitat considerations for other wildlife species will be considered in this analysis.

Additional resource protection measures may be implemented. These measures will be designed to address site-specific resource concerns and may include, but are not limited to, such things as

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temporary fencing, electric fencing, drift fences, additional livestock enclosures, water pipelines, storage and troughs; reconstruction of non-functional improvements and construction of new improvements such as spring boxes, drift fences, and water gaps.

**Structural Range Improvements**

Construction of New Range Improvements: This proposal includes construction of the following new structural improvements that have been developed to address resource concerns or improve grazing management. Upland water developments will provide livestock water away from riparian areas and allow for achievement or maintenance of desired conditions for riparian areas. Monitoring may indicate that some of these improvements are not necessary; however, if some or all of these improvements are not implemented, the upper limit of permitted livestock numbers may not be achievable on a sustained basis, or pasture use periods may be shortened.

**Smith Canyon:**

Because of limited road access for large vehicles like well-drilling rigs, the proposed water developments on the Smith Canyon Allotment would likely be trick tanks (catchment apron that directs rainfall into a storage tank and pipeline system with troughs), or earthen stock tanks (dug out areas that collect rainfall directed from shallow ditches).

- Construct 3 reliable water developments in Smith Canyon Pasture: one north of Sheridan Lake in the north half of section 21; one on the south benches in NE quarter of section 35; one in north half of section 6. Two of these (section 21 and 35) are to replace existing earthen stock tanks that are non-functional and replace with trick tanks.
- Five additional water developments in the following locations: Cottonwood Pasture SW quarter of section 31; Granites Pasture north half section 4; Moano Pasture west half of section 22 (replace non-functional earthen stock tank); Spider Pasture NE quarter of section 32; Jones Pasture NW quarter of section 33.
- Construct drift fences to better control livestock distribution: one in Smith Canyon Pasture near Sycamore Spring; one in Smith Mesa Pasture along the trail west of Horseshoe Tank; and one in the Granites Pasture along the trail north of Saddle Tank.
- Construct fences (water lots) around Alkaline Tank and Dyke Pond in the Smith Canyon Pasture to better control livestock use patterns in the pasture.
- Construct an east-west fence to split Smith Mesa Pasture into Mesa and Rincon Pastures if controlling access to water does not sufficiently improve distribution and result in achieving desired resource conditions.
- Expand the existing fencing at Alkaline Spring to include protection for the spring area.

Maintenance of Range Improvements: The Term Grazing Permit includes a list of all improvements which the permittee will continue to maintain at a level that effectively provides for their intended uses and purposes. Range improvements will be inspected periodically during the term of the permit to document condition. Annual Operating Instructions (AOIs) will identify range improvements in need of maintenance. Existing improvements may be replaced when conditions warrant.

Access to Improvements: Authorization for cross-country motorized travel is provided for the permittee to administer the livestock operation and maintain improvements under the terms and conditions of the Term Grazing Permit.

Annual authorization for actions implementing management direction in the Allotment Management Plan will be included in the Annual Operating Instructions, such as a description of the anticipated level of cross- county travel, travel needed for improvement maintenance, new improvement construction, or reconstruction of existing improvements.

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All authorizations for cross-country motorized travel are subject to existing regulations intended to protect natural and/or heritage resources. Cross-country travel is not allowed when such travel would cause unacceptable resource damage.

**Monitoring**

In order to evaluate whether grazing management is making progress towards meeting desired resource conditions, two types of monitoring would be conducted:

1. Implementation monitoring would be conducted by the Forest Service, with possible assistance from the permittee, and may include, but is not limited to the following: livestock actual use data, compliance with pasture rotation schedules, grazing intensity evaluations during the grazing season (within key and critical areas), utilization at the end of the growing season (within key areas), and visual observation of vegetation and ground cover.

2. Effectiveness monitoring to evaluate the success of management in achieving the desired objectives would occur within key areas at an interval of ten (10) years or less. Effectiveness monitoring may also be conducted if data and observations from implementation monitoring (annual monitoring) indicate a need. This type of monitoring can include species composition, plant cover, frequency or density, and/or vegetative ground cover monitored at key areas and at areas identified with site-specific resource concerns. Both qualitative and quantitative monitoring methods can be used.

**B – Affected Environment:**

The Smith Canyon Allotment is located on the Chino Valley District of the Prescott National Forest (PNF) and represents the project area for this analysis, an area of approximately 48,000 acres. The allotment is located in the southwest portion of the district, approximately 17 miles west of Chino Valley, Arizona. Elevation ranges from 3,195 feet at the junction of Smith Canyon and Cottonwood Creek to ~6,200 feet on Sheridan Mountain. The allotment is bordered by the Old Camp, Stevens and Williamson Valley Allotments on the north, Yolo South Allotment and deeded land on the west, and Tank Creek and Toohey Allotments on the south. 83% of the allotment is in the Santa Maria River watershed, the remaining 17% is in the Big Chino Watershed. The western four fifths of the allotment is drained by Smith Canyon and Cottonwood Canyon which are tributaries of the Santa Maria River. Riparian vegetation occurs along these stretches dominated by woody species such as cottonwood, velvet ash, and willows, with some areas of aggradation with grass and grass like vegetation where sediment has built up to form stream banks. There are a few areas providing flat to gentle slopes on mesa tops such as Smith Mesa in the northern portion and in the vicinity of Dillon Field. Elevation ranges from 3,195 feet at the junction of Smith Canyon and Cottonwood Creek to ~6,200 feet on Sheridan Mountain. The topography is rough and broken with some flat mesas and more gentle country in the far eastern portion.

Vegetation on the allotment consists primarily of Pinyon Juniper evergreen shrub and Interior Chaparral, with ten percent considered Juniper grassland. Canopy cover from shrub species is moderately to extremely thick in some locations to the extent that herbaceous forage is reduced or absent. A portion of the forage base of the allotment is provided by desirable browse species such as turbinella oak with mountain mahogany, deerbrush, and skunkbush in smaller quantities. Perennial grasses can be locally abundant, especially in juniper woodlands that have been previously thinned, and south aspects. Important forage grasses on the allotment include blue grama, sideoats grama, three-awns, sand dropseed, vine mesquite and squirreltail.

Cottonwood Springs is a tributary of Cottonwood Canyon and has approximately one mile of perennial water. Another 4.5 miles of perennial stream habitat was identified by the AZGFD during surveys in Cottonwood Creek. Natural barriers in the stream channel have prevented non-native fish from expanding upstream, thereby creating excellent opportunities for stocking native fish to expand their ranges.

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Recreation activity on the allotment is primarily associated with camping, off road vehicle use, and hunting. Access is not limited. There are no developed recreation sites on the allotment, though several areas receive heavy impact from these activities. Big game hunting opportunities exist for deer, elk, bear, turkey and javelina.

<b>Table 2. Potential Native Vegetation Type (PNVT)</b>			
<b>PNVT</b>	<b>TEUI included Within</b>	<b>Acreage</b>	<b>Percent of Allotment</b>
Piñon-Juniper Evergreen Shrub	430, 432, 434, 461, 462, 464, 477, 479, 481, 485, 486, 491	28,285	60
Juniper Grassland	427, 428, 490	5,742	12
Interior Chaparral	47, 425, 436, 448, 475, 476, 483, 551	12,451	26
Colorado Plateau Grassland	45	17	0
Riparian Gallery Forest	41, 48, 50	459	0
Ponderosa Pine-Evergreen Oak	505, 563	76	0
Ponderosa Pine-Gambel Oak	55	80	0
<b>TOTAL ACRES</b>		<b>47,110</b>	

## **C– Environmental effects (physical environment):**

### **1. Proposed Action:**

#### **a) Timing/Season of Use/Stocking Rate:**

A term grazing permit will be issued providing for livestock numbers of 200-275 head of cattle, cow/calf pairs and bulls yearlong.

The estimated grazing capacity on the Smith Canyon Allotment is based on these sources: actual use records compiled from 2000 to 2014 (shown in Table 3) and application of calculations based upon Holechek (1988) and shown in Appendix 2. These sources indicate that the allotment would support a range of livestock numbers based on fluctuating conditions.

The actual use records for the allotment from 2000 through 2014 show a range of stocking levels from 240 Animal-Months (AMs) in 2003, and up to 3,088 AMs in 2009. This upper number is equivalent to 257 adult cattle year long. Over time, if grazing intensity is too high, indirect effects can occur such as a loss of plant species and a resultant shift in composition to less-preferred forage plants, and total forage production can be reduced. Inspection records show occasional instances of use above standards, but there is no indication of repeated overuse causing damage to plant physiology.

Using the methods outlined in Holecheck (1988), grazing capacity estimates were made on the allotment as a whole by calculating the total amount of forage production by TEUI map unit as shown in the Terrestrial Ecosystem Survey of the Prescott NF (“FORG” value). Animal Units<sup>3</sup> calculated at 297 (3617 AUM) when 45% of the available forage estimate is allocated to livestock. The forage production values given in the TES survey are overall average for TEUI units forest-wide and actual site specific production may vary considerably. Yearly fluctuations in forage production based on precipitation levels will be taken into account by adjusting yearly stocking through adaptive management.

As with any capacity estimate, monitoring over time will be necessary to validate the proposed stocking rate. The adaptive management approach to grazing management seeks to balance stocking levels with forage production on a yearly basis. This allows for stocking in response to changes in forage production that naturally occur as a result of fluctuations in precipitation levels and seasonality. The maximum level of stocking (275 head yearlong) that is proposed may not be

<sup>3</sup> Animal Units and Animal Months used in these calculations are based upon the Society for Range Management (1974) definition: An animal unit is one mature (1000lb) cow. This animal would be expected to consume 2.6% of its body weight per day or 26 lbs.



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achievable in all years, but the actual use records show that the allotment has been stocked on average at 68% of the upper limit in the recent past. The last 3 years the allotment has been stocked at full numbers and during our analysis we did not find excessive use at any key areas.

Yearlong grazing in a rest rotation pasture system with Alternative 1 will allow for rest in each pasture. This will allow for improved vigor for warm-season grasses such as blue grama, sideoats grama, ring muhly, and black grama grasses that are found on the allotment and cool-season grasses such as New Mexico feathergrass, threeawns and squirreltail. Compliance with allowable use levels should provide for maintaining and improving the cool-season grass species that are present, and maintain the warm season grass species diversity.

**b) Structural Range Improvements/ Structural Resource Protection Measures:**

The construction of new water sources can result in the removal of vegetation in areas up to ¼-acre each. Water sources will draw livestock to use forage within proximity of the water source. Grazing impacts may be locally heavy within ¼-mile of a water source. Rotation strategies for pastures will help forage plants to recover after use. The new water sources will provide for dispersion of the grazing herd into under-utilized areas, and remove impact on and around current water sources, springs and riparian areas especially. Access to existing improvements for maintenance and new improvements by overland travel with machinery will damage some herbaceous plants in a limited area. These plants should recover quickly once precipitation occurs. No new roads will be developed to construct new improvements. Travel ways to access new improvements will be surveyed for cultural properties to avoid impacts during construction. Employing Best Management Practices (BMPs) that limit travel to when soils are dry should mitigate long-term effects to soils and retain the productive potential for vegetation.

**c) Grazing Intensity:**

Range research supports the concept that forage plant productivity, and overall ecological condition of rangelands can be improved or maintained through properly managed livestock grazing (Holecheck, et al. 1999). The conservative utilization guidelines as prescribed for this project have been shown to maintain forage production (Holecheck et al. 2004). A study by Navarro, et al (2002) of Chihuahuan desert rangelands in New Mexico showed that from 1952 through 1999, the amount of rangeland classified in late seral stage or climax ecological condition increased from 25% to 38% while grazed at 34% average utilization. Ecological condition fluctuated most during periodic drought events in this study. Loeser, et al. (2007) compared the effects to vegetation composition and cover of three grazing practices on a semiarid grassland site near Flagstaff, AZ. The study was conducted during a period of recurrent drought from 1997 to 2004. The three grazing treatments were no grazing, high-impact grazing, and moderate grazing (less than 50% biomass removal). The study showed that the effect of the various grazing treatments on plant cover depended on environmental conditions that fluctuate over time, such as precipitation. They found that high-impact grazing brought about a decrease in plant cover over time, but treatment plots where cattle had been removed demonstrated no consistent differences in cover from the moderately grazed treatment plots. Climate and rainfall will have the most significant impact on the cover and vigor of perennial grasses when grazing is properly managed. A study describing 30 years of weather influence on ungrazed areas in New Mexico found that sideoats grama reduced in canopy cover by almost half in 2007 as compared to 1977 in response to decreased precipitation (Moir 2011). Research by Molinar et al. (2011) showed that during a 38-year study period on Chihuahuan desert rangelands, managed livestock grazing and excluded livestock grazing had the same long-term effects on change in plant frequency and rangeland ecological condition when use levels were kept at conservative or moderate rates in most years. The prescribed use levels would allow for retaining 55-65% of the plant biomass on-site as residual biomass. This residual biomass, or mulch, provides beneficial functions by protecting the soil surface from erosion, enhancing water infiltration, and shading the soil surface from evaporation of soil water. The benefits of retaining sufficient residual mulch have been shown to translate into increased forage production in a number of studies discussed by Molinar et al (2001). Effects of site specific resource protection measures for areas are discussed below.

In Smith Canyon pasture there are two soil map units that are unsatisfactory for soils and one is unsatisfactory for vegetation. Utilization in these areas will be set at 0-30%. Light use will be accomplished by limiting access to water developments through new water lots constructed around existing earthen stock tanks on the "north benches" and construction of a drift fence that will help prevent unauthorized use in this pasture. Effects of these structures, elimination of unauthorized use and light use levels should result in increased biomass and reduced impact on the soil in these areas.

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In TEUI 461 diversity is low and with lower impact to “increaser grasses” other species may be able to increase over time. Reducing or eliminating unauthorized use is key to light use levels and will provide increased success at improving diversity.

In Granites pasture TEUI 461 is not meeting desired condition for soils. TEUI 461, surrounds Walker tank, 1 of 2 existing reliable sources of water in this pasture. The management objective is to improve litter and graminoid cover and vegetation spatial distribution. Design features includes rest or deferred season of use to allow further graminoid biomass retention and controlling access to Walker tank to reduce impacts in TEUI 461. Continued rest and deferring use seasonally should lead to meeting objectives to improve soil. A new water development in the northern portion of this pasture will also alleviate the need for perennial use of Walker tank. Seasonal deferment allows plants too fully mature and full rest will allow that vegetative material to remain on site until new growth occurs. Natural die off of some portion of the roots of perennial plants adds to soil organic matter. Above ground vegetation that is not consumed, but falls or is trampled to the surface of the soil provides protection and enhances water infiltration.

In Spider pasture the project design feature is to implement incidental use (0-30%) in the no capacity areas of TEUI 486. Incidental use will allow the plants that are there to mature and produce more roots and seeds. The biomass (>70%) left behind from limited use will also be retained on site to protect and be incorporated into the soil. No new structural improvements are planned for this TEUI.

In Smith Mesa pasture project design features is to implement light use (0-30%) include the integration of rest, the construction of drift fencing, and controlling water access and supplement locations that will discourage concentrated use in TEUI 490. Rest and deferment are beneficial to graminoid plants, in that it allows them to fully develop root and seed. The perennial nature of these plant and root and leaf and stem die back provide organic material to the soil. The stem and leaf material become litter and protect the upper layer of soil, providing shade and retaining moisture. Reduced impact from livestock near the water sources in this TEUI will result in less impact on the soils and less compaction. Drift fencing will reduce or eliminate unauthorized use in Smith Mesa pasture. Yearlong or extended season grazing can damage a plants ability to fully mature, and reduce effectiveness of its roots. This will benefit the soils as described above. If these management options are not successful in improving soil condition, then a fencing option is proposed that would split the pasture and allow for more control of livestock access to areas needing improvement.

**d) Summary:**

Grazing by cattle can directly affect upland plants by reducing plant height, total canopy cover, and ground cover. The degree of these effects is influenced by utilization guidelines and timing of use. Over time, if grazing intensity is too high, indirect effects can occur such as a loss of plant species and a resultant shift in composition to less-preferred forage plants, and total forage production can be reduced. At the Key TEUI inventory sites on the allotment the existing canopy cover and species composition is found to be meeting desired condition for vegetation at all but one location, TEUI 427. Grazing management that includes growing season rest, adherence to allowable use levels, and adequate precipitation is essential to achieving optimal plant vigor and production. By following these guidelines the desired conditions for vegetation should be sustainable at those locations that are meeting desired condition. At the key TEUIs in Smith Canyon, Granites, Spider and Smith Mesa pastures that are not meeting either vegetation or soil desired conditions special design has been made as described above in the Site Specific Resource Protection Measures (para 4). Following project designed site specific protection measures, and adequate precipitation is essential to achieving optimal plant vigor and production. The proposed new water sources and fences will aid in proper livestock control and distribution so that under-utilized areas will take away some of the grazing pressure from traditional congregation areas. More reliable upland water will also alleviate cattle watering in riparian areas or relying solely on springs. These areas should respond favorably and trend toward satisfactory conditions under this management design.

**2. Cumulative Effects:**

The cumulative effects analysis area considered for effects on range/vegetation resources consists of the Smith Canyon Allotment project area. The past and present activities and events that have affected the vegetation include livestock grazing, prescribed fire, juniper cutting, and roads. These activities may affect vegetation in ways similar to livestock grazing through removal of herbaceous plant canopy cover. Indirectly these activities may affect vegetative productivity by causing soil compaction that leads to reduced water infiltration and then to reduced plant growth. Removal of

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vegetation can expose the soil to erosion and thereby reduce long-term productive potential for vegetation.

Site visits show that impacts from recreational activities on the allotment are limited to small, localized areas consisting of dispersed camping spots along main roads. The Arizona Motorcycle Riders Association Sheridan Mountain Showdown uses the Sheridan Mountain trails for an 80 mile timed race. Long-term impacts from 100 plus years of grazing on the allotment are reflected in baseline conditions for vegetation, discussed previously. There is evidence of browse use on desirable shrubs by deer and other wildlife, but this use is minimal over the entire allotment. Allowable use guidelines do not distinguish between wildlife use and livestock use. Vegetation effects of past wildfire or prescribed burning are not evident on the allotment at the current time. Limited past or current mining activity is evident on the allotment. Juniper thinning activities in the past have caused a reduced tree canopy from site potential, and increased canopy cover of grasses. Some juniper removal practices in the past, such as chaining, could have negatively impacted herbaceous vegetation in the short term, but these areas have since recovered. Some woodcutting activities have caused unauthorized roads or trails to be developed that are devoid or limited in herbaceous plant cover. These effects are on a small scale. Where roads exist on the allotment there is an absence of vegetation. No new roads are planned, and this effect should remain constant and localized. Occasional road maintenance may damage or remove small amounts of vegetation adjacent to roads. Run-off from improperly drained roads has the potential to accelerate soil erosion and remove existing plants. The impacts created through livestock grazing, improvement construction, adaptive management, and vegetation management described for alternative 1, when added to the other past, present and future activities do not together accumulate to levels that are considered to be significant for the vegetative resources, nor are they expected to lead to irreversible effects to vegetation.

**D – Projects contributing to cumulative effects under NEPA:**

The cumulative effects analysis area considered for effects on range/vegetation resources consists of the Williamson Valley Allotment project area. The past and present activities and events that have affected the vegetation include livestock grazing, past prescribed fire, ponderosa pine and juniper cutting, and roads. These activities may affect vegetation in ways similar to livestock grazing through removal of herbaceous plant canopy cover. Indirectly these activities may affect vegetative productivity by causing soil compaction that leads to reduced water infiltration and then to reduced plant growth. Removal of vegetation can expose the soil to erosion and thereby reduce long-term productive potential for vegetation.

Site visits show that impacts from recreational activities on the allotment are limited to small, localized areas consisting of dispersed camping spots along main roads, mainly in the Camp Wood area. Motor bike activity is high: an annual Arizona Motorcycle Riders Association sponsored event uses the Sheridan Mountain Smith Mesa OHV trail system. Long-term impacts from 100 plus years of grazing on the allotment are reflected in baseline conditions for vegetation, discussed previously. Allowable use guidelines do not distinguish between wildlife use and livestock use. Vegetation effects of past prescribed burning are evident on the allotment at the current time, in the form of regenerating seral stages. Limited past or current mining activity is evident on the allotment. Juniper thinning activities in the past have caused a reduced tree canopy from site potential, and increased canopy cover of grasses. Some juniper removal practices in the past, such as chaining, could have negatively impacted herbaceous vegetation in the short term, but these areas have since recovered. Some woodcutting activities have caused unauthorized roads or trails to be developed that are devoid or limited in herbaceous plant cover. These effects are on a small scale. Where roads exist on the allotment there is an absence of vegetation. No new roads are planned, and this effect should remain constant and localized. Occasional road maintenance may damage or remove small amounts of vegetation adjacent to roads. Run-off from improperly drained roads has the potential to accelerate soil erosion and remove existing plants. The impacts created through livestock grazing, improvement construction, adaptive management, and vegetation management described for alternative 1, when added to the other past, present and future activities do not together accumulate to levels that are considered to be significant for the vegetative resources, nor are they expected to lead to irreversible effects to vegetation.

## Smith Canyon Allotment – Biological Assessment

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**E– ESA species and habitats – NEPA analysis:**

Table 3 compares the known habitat and distribution for each species with the project area and proposed action.

Table 3. Federally listed species and habitats under the Endangered Species Act.

<b>Species</b> Common name <i>Scientific Name</i>	<b>Status</b>	<b>Species background information</b> The known distribution or habitat association for the species.	<b>Project Information</b> Project area is in predominantly juniper and chaparral vegetation with some ponderosa pine and riparian.
<b>Fish:</b>			
<b>Roundtail chub</b> <i>Gila robusta</i>	Proposed Threatened	Commonly found in pool habitats and near instream cover. Known in the Verde River, Gap Creek, Cottonwood Canyon, and Sycamore Creek drainage (Santa Maria River) on the PNF.	Species is known to occur within the project area.

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**Environmental Consequences (wildlife & their habitats):****Proposed Action:**

The only species known to occur within the project area is the round-tail chub (RTC) (Map 1). The species was detected during surveys in 2012 (AZGFD 2012) and additional habitat within the allotment was identified as being suitable for introduction of the species. The habitat includes Cottonwood Canyon and is divided by natural barriers within the stream course. RTC are known to occur within about 1 mile of habitat on the southwest corner of the allotment in the Smith Canyon Pasture. They do not occur above a natural barrier in the stream course, and more importantly, neither do any non-native fish; making Cottonwood Canyon an ideal location for putting native RTC.

The habitat within the stream course is rocky and filled with large boulders. Cattle do not typically enter the stream course where the RTC occur and where AZGFD have proposed to put the fish above the natural barrier. Livestock grazing has been ongoing in the area since 1941. The habitat was assessed in the presence of the current ongoing livestock grazing and the report contains no mention of any concerns or negative habitat impacts from the livestock grazing to the fish habitat (AZGFD 2012).

Livestock would not be expected to enter the areas proposed for putting RTC in Cottonwood Canyon. On the remote chance that a cow did get into the stream course in Cottonwood Canyon, it would be highly unlikely for a cow to encounter a fish given the rocky nature of the stream habitat. The current grazing regime is providing quality habitat for RTC in the occupied and suitable reaches within the allotment. This is a site specific deviation from the Southwestern Region 3 Programmatic Framework for Streamlining Consultation on Livestock Grazing Activities (USFS 2015).

**Cumulative effects:**

There are no known projects in the area designed to improve aquatic habitat. Therefore, neither of these alternatives would contribute to any cumulative effects for this species.

Smith Canyon Allotment – Biological Assessment

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**F– ESA species and habitats – Biological evaluation & determination of effects:**

The purpose of this biological assessment is to document the determination of effects of the proposed action, the no action, and other action alternatives on plants, animals, and habitats federally listed under the Endangered Species Act (ESA).

**Based on the effects analyses above,**

✓ I find that this project may affect, is not likely to adversely affect the round tail chub.

**Signature:**



*April 25, 2016*

Noel Fletcher  
Wildlife Biologist  
Prescott NF

Date

\*\*\*\*\*

**Literature cited:**

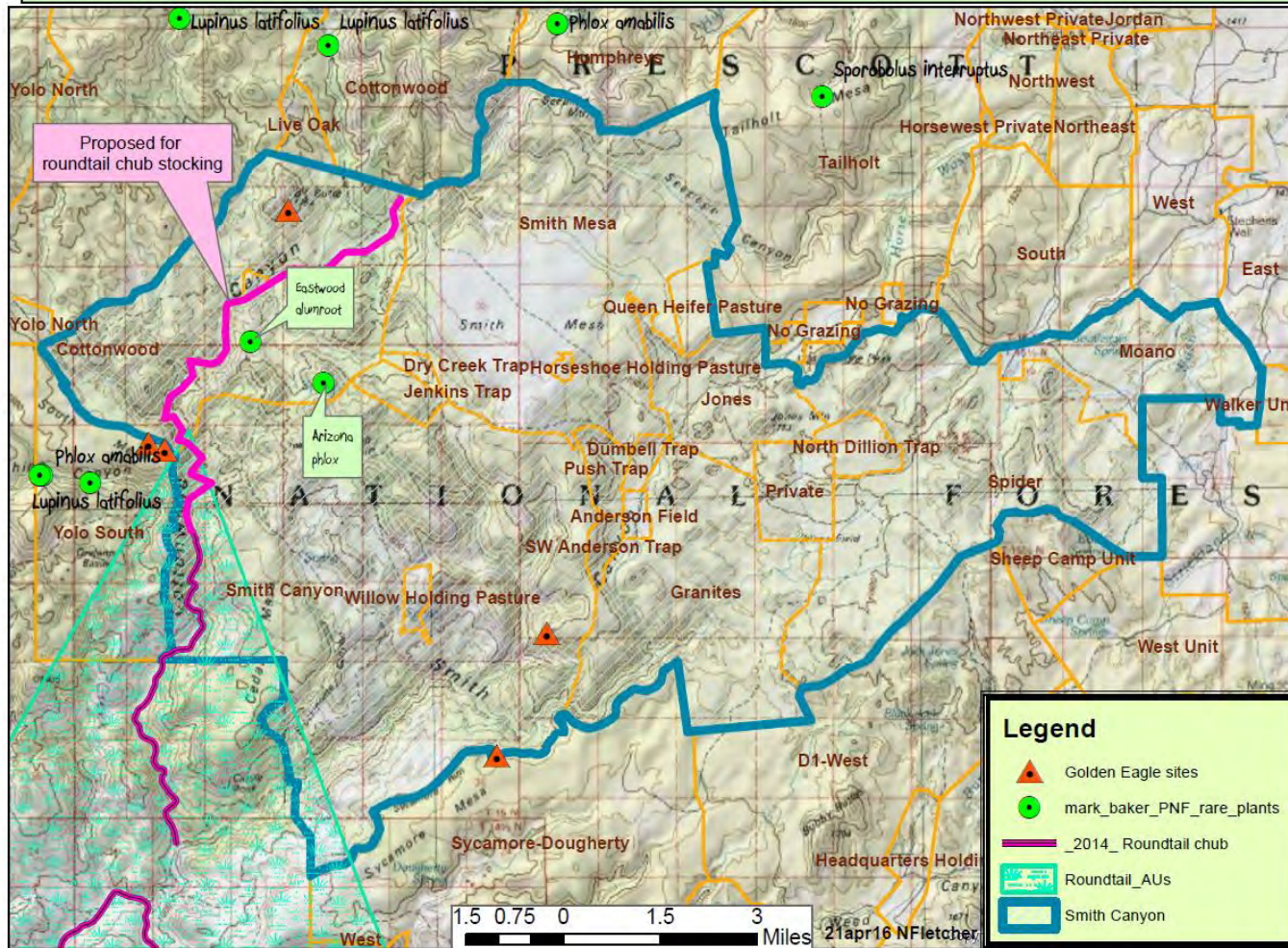
Arizona Game and Fish Department. 2012. Environmental Assessment Checklist. Cottonwood Canyon Native Fish Translocation.

US Forest Service. 2015. Framework for Streamlining Consultation on Livestock Grazing Activities.

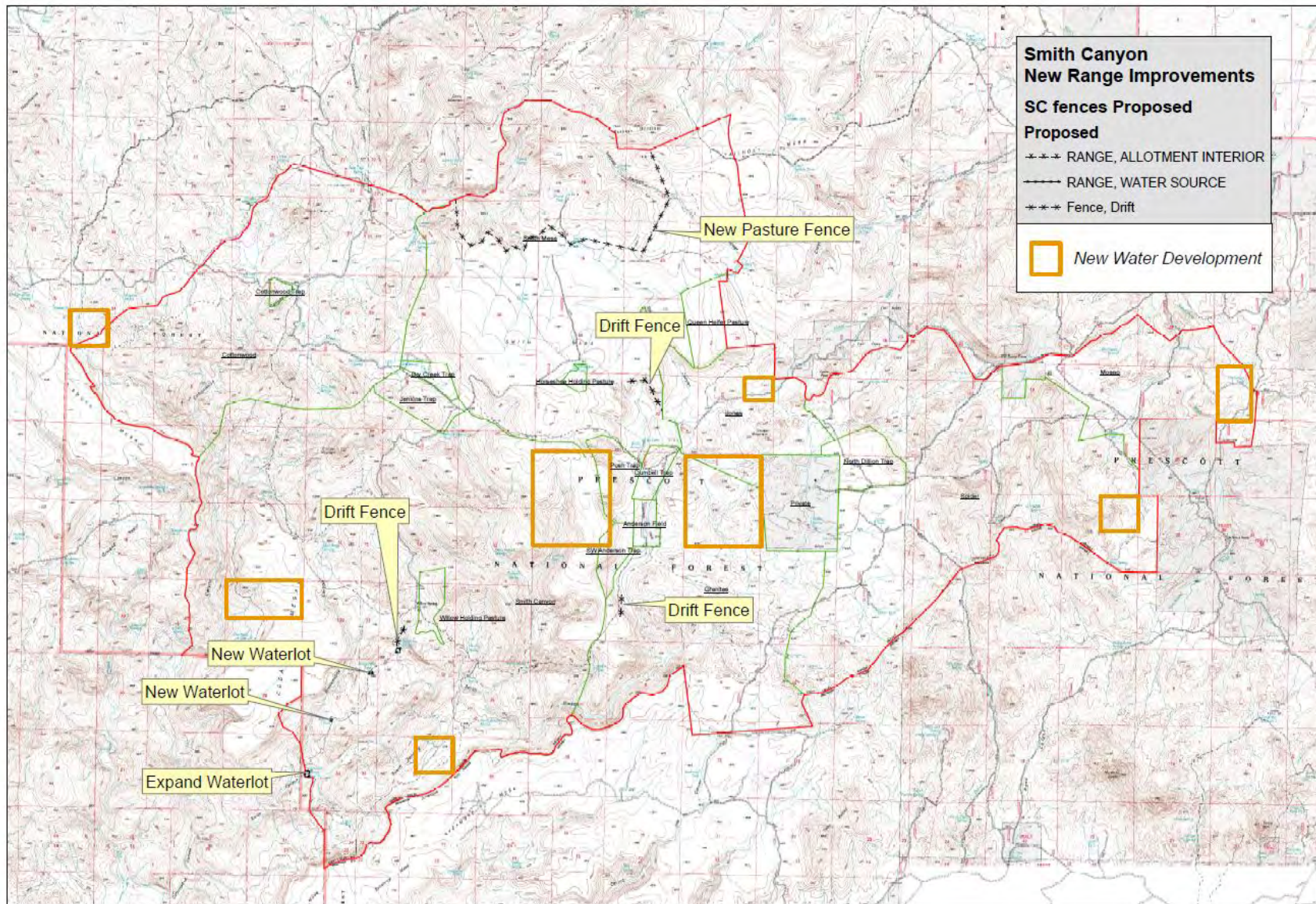
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APPENDIX A – MAPS

Smith Canyon Allotment - Chino Valley RD - Prescott NF



Map 1. Smith Canyon Allotment – WFRP Resources



Map 2. Proposed Improvements for Smith Canyon Allotment