ESTABLISHMENT RECORD

for

HAUFER WASH RESEARCH NATURAL AREA

within

Tonto National Forest

Gila County, Arizona

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Haufer Wash Research Natural Area

Tonto National Forest

Gila County, Arizona

Prepared by _____ Date _____
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Recommended by _____ Date _____
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INTRODUCTION

The Haufer Wash Research Natural Area (HWRNA) occupies 680 acres (275.4 hectares) of semi-desert grassland and desertscrub in the Tonto Basin of central Arizona. The RNA is located in Tonto Basin Ranger District of the Tonto National Forest in Gila County on reserved public domain National Forest Land.

This HWRNA was established as a range exclusion in the early 1930's. Prior this time it was subjected to severe overgrazing by sheep and cattle. Initially proposed in 1972 by the Tonto National Forest (Establishment Report March 8, 1972), the Regional RNA Task Group has recently endorsed the establishment of this RNA for its special research and management interest (USDA Forest Service, 1984).

LAND MANAGEMENT PLANNING

The Southwest Regional Guide (USDA Forest Service, 1983), current Tonto National Forest planning documents, and the Forest Plan and Environmental Impact Statement (USDA Forest Service, 1985a/1985b) include the Haufer Wash. The environmental analysis conducted as part of the planning process supports the recommendation to establish this site as a Research Natural Area.

JUSTIFICATION STATEMENT FOR ESTABLISHMENT OF AREA

Prior to its establishment in the early 1930's as a range exclusion, this RNA was severely overgrazed by sheep and cattle. Today the area has important benchmark value because it contains semidesert grassland/scrub vegetation after over 50 years of recovery following livestock exclusion. The vegetation, soil, landform, and climate of the RNA is representative of thousands of acres with ongoing livestock management on the Tonto Basin, as well as adjacent allotments within the semidesert grass/scrub ranges of the Tonto Basin and Roosevelt Lake Districts. Haufer Wash, therefore, provides outstanding oportunities for land managers to compare and monitor effects of resource management techniques.

PRINCIPAL DISTINGUISHING FEATURES

A mosaic of desertscrub and semidesert grasasland cover types which have been exclosed to livestock grazing for greater than 50 years following severe overgrazing by sheep and cattle.

LOCATION

The HWRNA is located within the Tonto Basin Ranger District of the Tonto National Forest in Gila County, Arizona (Figs. 1 & 2). The center of the area is at latitude 33° 56′ north and longitude 111° 20′ west. Specifically the area lies in portions of protracted sections 21, 22, 27 and 28 of T7N R10E, which are included on the USGS Kayler Butte 7.5′ topographic quadrangle (Fig. 3). The boundary of the RNA is a fence built in the early 1930's as a range exclusion. Elevation ranges from a low of ca. 2450 feet (747 meters), where a small wash meets Highway 188 on the southeast boundary; to high of ca. 2950 feet (900 meters) at the western most extension of the RNA near Oak Spring. The RNA contains 680 acres (274.7 hectares). Haufer Wash RNA is located along Arizona Highway 188 10.6 miles (17.1 km) south of the junction of 188 with the Beeline Highway (Arizona Highway 87), the road crosses Haufer Wash. The fenceline crossing Haufer Wash west of 188 is the eastern boundary of the RNA and is more particulalrly described as follows:

Beginning at a point on the westerly Right-of-Way fence of State Highway NO. 188, in Section 27, approximately 0.19 miles north of the intersection with Forest Development Road No. 598, said point being at the intersection of the above mentioned range fence and approximately 66 feet west of a cattleguard crossing Highway 188;
THENCE,northerly of said range fence, approximately 66 feet west of and generally parallel to the centerline of Highway 188, for approximately 0.21 miles to where the Right-of-Way fence continues north and the range fence bears northwest;
THENCE, generally northerly on said range fence as it follows the top of a hydropgraphic divide between small drainages to the east and west, for approximately 0.92 miles to a summit with a shown elevation of 2818 feet;
THENCE, generally westerly and southwesterly on said range fence ona hydrographic divide between Spring Canyon to the north and a small unnamed intermittent stream to the south, for approximately 2.12 miles to a point where said fence corners and bears east at an approximate elevation of 2980 feet;
THENCE, generally southeasterly on said range fence on a hydrographic divide between a tributary to, and Haufer Wash. to the south and unnamed intermittent stream to the north, for approximmately 1.89 miles to the intersection with the afore mentioned Right-of-Way fence and the point of beginning, containing approximately 680 acres (274.7 hectares).

AREA BY COVER TYPES

Information on cover types was obtained from the Southwestern RNA Progress Report (USFS, 1984), Warren and Treadwell (1980) and a field reconnaisance.

Küchler

A portion of the area corresponds to cover type K-052, Grama-Tobosa Shrubsteppe (Küchler, 1964).

Society of American Foresters

The HWRNA is nonforested and is not covered by SAF cover types (Eyre, 1980).

Habitat Types or Plant Associations

The Southwestern Region of the USFS has not developed a habitat type classification system for scrubland vegetation. Using the classification system proposed by Brown et al. (1979), four plant associations are described for Haufer Wash RNA. Determination of the plant associations is based on information obtained from Warren and Treadwell's study (1980) of the vegetation on the nearby Three-Bar Wildlife Study Area, the Southwestern RNA Progress Report (1984) and a field reconaissance within the RNA. The plant associations within the RNA are Mesquite-Catclaw-Desert Broom, Jojoba-Canotia-Scrub Oak, Jojoba-Catclaw Acacia-Prickly Pear and Mesquite-Turpentine Brush-Prickly Pear Associations (Fig. 4). The estimated areas for these plant associations are provided below:

Table 1. Estimated areas of vegetative cover types of the Haufer Wash Research Natural Area

Type (Plant Association)	Surface Area Acres	Hectares
1. Mesquite-Catclcaw Acicia-Desert Broom	66	27
2. Jojoba-Conotia-Scrub Oak	195	80
3. Jojoba-Catclaw Acacia-Prickly Pear	118	48
4. Mesquite-Turpentine Brush-Prickly Pear	302	122
Total Area	680	275

PHYSICAL AND CLIMATIC CONDITIONS

The Haufer Wash RNA is situated in the Tonto Basin, which is within a transitionsal zone between the two major physiographic provinces in Arizona, the Colorado Plateau and Basin and Range province. The RNA proper is on an old alluvial terrace of Tertiary origin consisting of old valley fill materials that are stratified and weakly to moderately consolidated (Broderick, 1974). Haufer Wash bisects the RNA and consists of highly stratified recent alluvium. A variety of deeply-disected steep toeslopes adjoin the wash. South and north-facing toeslopes

support distinctively different plant communities. North and west of Haufer Wash is a large, gently sloping alluvial surface, (often referred to as a mesa top or bajada in the Southwest).

The climate is very mild with few days of freezing temperatures. Daytime temperatures during the summer often exceed 100°F, with nighttime temperature in the 80's and 90's. Winter temperature ranges to near freezing with 250 frost-free days. Annual precipitation averages 14 inches and falls as rain with 59% falling during the warm season May-October (USDA Forest Service, 1986). Climatic influences vary greatly due to the mosaic of topographical features associated with steep toe slopes, streamside terraces and the mesa top.

DESCRIPTION OF VALUES

Flora

The information on cover types was obtained from the Southwestern RNA Progress Report (August, 1983), Warren and Treadwell (1980) and a field reconnaisance. Three cover types are present in the RNA. Note that these cover types describe existing vegetation and do not refer to potential natural vegetation.

1. Mesquite-Catclaw Acacial Desert Broom Association (154.1216). This small, intermittent drainage (just north of Haufer Wash) does not contain enough water discharge to support obligate riparian vegetation. Major shrubs are whitehorn acacias (Acacia greggii, A. constricta), burrobush (Hymenoclea sp), and desert broom (Baccharis sarothroides). Occasional shrubs include desert willow (Chilopsis linearis), hackberry (Celtis reticulata), Juniper (likely Juniperus erythrocarpa), scunkbush (Rhus trilobata), algerita (Berberis haematocarpa), and Condalia. Common cacti are prickly pears (Opuntia engelmanii) and cholla (Opuntia acanthocarpa, O. leptocaulis). A few turbinella oak (Quercus turbinella), cliffrose (Cowania mexican) and creosote (Larrea divaricata) occur.

Two plant cover types are associated with steep toeslopes which adjoin the washand and these are related to exposure.

2. Jojoba-Canotia-Scrub Oak Association (154.1236). Restricted to north-facing toeslopes. Here crucifixion thorn (Canotia holacantha) prevails, along with jojoba, bush buckwheat (Eriogonum fasciculatum), false mesquite, shrubby bedstraw (Galium stellatum), juniper (Juniperus erythrocarpa), and (Mendora scabra). The sites examined are quite grassy. Needle-and-thread (Stipa speciosa) and side-oat grama (Bouteloua curtipendula) are common. These aspects are too cold in winter for saguaro, but other "Sonoran" species such as buckhorn cholla (Opuntia acanthocarpa) and the palatable herb, Porophylum gracilis, can be found.

3. Jojoba-Catclaw Acacia-Prickly Pear Association (154.1237). On the south-facing alluvial toeslopes are extensions of the Sonoran desert. Conspicuous plants include jojoba (Simmondsia chinensis), saquaro (Cerus giganteus), brittle bush (Encelia farinosa), ocotillo (Fouqueria splendens), and false mesquite (Calliandra eriophora). Frequently encountered

grasses include three awns (Aristida spp), bush muhly (Muhlenbergia porteri), and slim tridens (Tridens muticus). A small, fish-hook cactus (Mamalaria sp) is common.

4. Mesquite-Turpentine Brush-Prickly Pear Association (143.1661). The west portions of the RNA above Oak Spring canyon are gently sloping alluvial (bajada) surfaces. Historically, this terrain was grazed hard. Today such grassland increasers as mesquite (Prosopsis juliflora), engelman prickly pear, turpentine bush (Haplopappus laricifolius), and snakeweed (Gutierrezia sp.) still dominate. The most common perennial grass is a species of three-awn. However, patches of curly mesquite (Hilaria belangeri) are found on the fine-textured, montmorillonitic clay soils. Other plants of the mesa tops include false mesquite, buckwheat (Eriogonum wrightii), ratany (Krameria parviflora), algerita, globemallow (Sphaeralcea sp.), hedgehog cactus (Echinocereus fendleri), and catclaw acacia. Red berried junipers are widely scattered (canopy cover from trace to about one percent). Along gentle drainages blue paloverde (Cercidium floridum) occurs occasionally.

This latter plant association describes existing vegetation. Potential natural vegetation correpsonds to Kuchler's grama - tobosa shrubsteppe, K-058 (Kuchler, 1964).

There are no known listed, proposed or threatened endangered plant species within the RNA. The following list was compiled from field observations by Reggie Fletcher, USFS Southwest Region botanist (4/29/85, 5/1/85, 5/3/85).

An Abbreviated Plant List for Haufer Wash RNA

Shrubs and Woody Lianas	Common Name
Acacia constricta I	Catclaw Acacia
Acacia greggii I	Whitethorn Acacia
Agave chrysantha R	
Artemisia ludoviciana ssp. albula I	
Atriplex canescens R	
Baccharis brachyphylla I	
Baccharis sarothroides C	
Berberis haematocarpa C	Algerita
Brickellia atractyloides var atractyloides I	
Calliandra eriopylla C	False Mesquite
Canotia holacantha I	Crucifixion Thorn
Carnegia gigantea I	
Cassia covesii R	
Ceanothus greggii C	
Cercidium microphyllum R	
Chilopsis linearis C	Desert Willow
Cowania stansburiana R	
Dalea formosa C	
Dalea parryi R	
Dasylirion wheeleri R	
Echinocereus fasciculatus var fasciculatus R	
Echinocereus pectinatus I	
Encelia farinosa C	Brittle Bush

Encelia frutescens R	
Ephedra trifurca R	Ocotillo
Fouqueiria splendens I	
Frazinus anomala var lowellii R	
Gutierrezia sarothrae C	
Haplopappus gracilus R	Turpentine Bush
Haplopappus larcifolius C	
Hymenoclea monogyra C	
Hymenopappus flavescens var cano-tomentosus R	
Koeberlinia spinosa R	
Krameria grayi R	Ratany
Krameria parvifolia I	
Lotus rigidus I	
Lycium exsertum I	
Mammillaria microcarpa I	
Mimosa biuncifera C	Buckhorn Cholla
Opuntia acanthocarpa I	
Opuntia chlorotica C	Cholla
Opuntia leptocaulis I	
Prosopis velutina I	
Rhamnus crocea R	Skunkbush
Rhus trilobata var anisophylla R	
Salvia calumbariae R	Jojoba
Simmondsia chinensis C	Globemallow Yucca
Sphaeralcea fendleri I	
baccata R	

Herbs

Acamptopappus sphaerocephalus I	
Ambrosia acanthicarpa C	
Amsinckia sp. R	
Androsace occidentalis R	
Arabis perennans R	
Arenaria douglasii C	
Artemisia ludoviciana ssp. albula I	
Astragalus nothoxys R	
Astragalus nuttallianus R	
Avena barbata R	
Baeria chrysotoma C	
Baileya multiradiata C	
Castilleja chromosa C	
Castilleja lanata I	
Centaurea melitensis R	
Chorizanthe brevicornu R	
Chrysopsis sp. C	
Cirsium neomexicanum C	
Cryptantha muricata R	
Cuscuta indecora C	
Daucus pusillus C	
Delphinium virescens ssp. wootonii R	
Dichelostemma pulchellum R	
Draba cuneifolia R	
Dyssodia porophylloides R	

Eriastrum diffusum C
Eriastrum eremicum C
Erigeron divergens C
Eriogonum arizonicum C
Eriogonum fasciculatum C Bush Buckwheat
Eriogonum inflatum I
Eriogonum trichopes C
Eriogonum wrightii C Buckwheat
Erodium cicutarium R
Euphorbia capitellata R
Euphorbia melandenia C
Evax multicaulis R
Funastrum heterophyllum R
Gaillardia pulchella R
Galium proliferum C
Galium stellatum var eremicum R
Gaura coccinea I
Gaura gracilis C
Gilia tenuiflora I
Gomphrena sonorae R
Hedeoma nanum C
Herniaria cinera R
Janusia gracilis R Lepidium lasiocarpum var lasiocarpum I
Lesquerella gordoni I
Linum aristatum R
Linum puberulum R
Lomatum puberulum R
Lotus humistratus I
Lotus salsuginosus R
Lupinus bicolor I
Malcothrix sp. R
Marrubium vulgare R
Maurandya antirrhiniflora I
Melampodium lencanthum C
Mendora scraba R
Mentzelia pumila R
Mirabilis bigelovii I
Nama hispidum R
Nemacladus glanduliferus I
Orthocarpus purpurascens I
Oxybaphus coccineus R
Parietaria pennsuylvanica R
Penstemon eatonii ssp. exsertus R
Penstemon microphyllus I
Penstemon thurberi R
Perezia wrightii R
Phacelia crenulata var crenulata R
Phacelia ramosissima I
Phoradendrom californicum R
Plantago purshii C
Plantago rhodosperma C
Polygala alba R
Polygala macradenia R
Polygala scoparioides R

Porophyllum gracile R
Psilostrophe cooperi R
Psoralea tenuiflora I
Senecio monoensis R
Senecio quercetorum C
Silene noctiflora I
Sonchus asper R
Stephanomeria pauciflora R
Stylochline micropoides R
Troidanis biflora C
Verbena bipinnatifida R
Vicia exigua R

Grasses and Grass-like Plants

Andropogon cirratus R
Andropogon sp. R
Aristida glauca C
Aristida longiseta C
Aristida purpurea C
Aristida wrightii C
Boutelona aristidoides R
Boutelona curtipendula I — Side-oats Grama
Bromus rubens C
Bromus trinii C
Festuca octaflora I
Hilaria belangeri C
Hordeum leporinum R
Muhlenbergia porteri I
Sitanion hystrix I
Sporobolus wrightii R
Stipa neomexicana R — Needle-and-thread
Stipa speciosa I
Tridens muticus I — Slim Tridens
Tridens pulchellus R

Trees

Juniperus erythrocarpa I — Red-berried Juniper
Quercus turbinella I — Turbinella Oak
Quercus turbinella X R — Turbinella Oak

Relative Abundance:

R = rare
I = infrequent
C = common

Fauna

The HWRNA is potential habitat for desert tortoise (Gopherus agassizii) and Gila monster (Heloderma suspectum). The desert tortoise is listed as a threatened (Group 3) wildlife species in Arizona by the Arizona Game and Fish Commission (1982). Desert tortoise and Gila monster are both currently under review for listing (Category 2) by the U.S. Fish and Wildlife Service (1985).

The RNA provides good habitat for several species of wildlife including mule deer (Odocoileus hemionus), Coyote (Canis latrans), grey fox (Urocyon cineroargenteus), javelina (Tayassu tajacu), desert cottontail rabbit (Sylvilagus auduboni), black-tailed jackrabbit (Lepus californicus), and Gambel's quail (Callipela gambelii) (from Establishment Report March 8, 1972). The following animal list was derived from the RUN WILD III computer-stored data base (Lehmkuhl and Patton 1982) from the following vegetation associations for Gila county, Arizona:

423.102 Bouteloua-Yucca Association
531.104 Simmondsia chinensis Association

Abbreviated Animal List for Haufer Wash RNA.

BIRDS:

Kite, Mississippi	Ictinia mississippiensis
Lark, Horned	Eremophilia alpestris
Mockingbird, Northern	Mimus polyglottos
Oriole, Scott's	Icterus parisorum
Phoebe, Say's	Sayoris saya
Shrike, Loggerhead	Lanius ludovicianus
Sparrow, Black-Throated	Amphispiza bilineata
Thrasher, Curve-billed	Toxostoma curvirostre
Towhee, Brown	Pipilo fuscus
Towhee, Green-tailed	Pipilo chlorurus

MAMMALS

Bat, Pallid	Antrozous pallidus
Chipmunk, Cliff	Tamias dorsalis
Cottontail, Desert	Sylvilagus audubonii
Coyote	Canis latrans
Deer, Mule	Odocoileus hemionus
Jackrabbit, Black-tailed	Lepus californicus
Pronghorn	Antilocapra american
Squirrel, Harris' Antelope	Ammospermohilus harrisii
Squirrel, Rock	Spermophilus variegatus
Squirrel, Spotted Ground	Spermophilus spilosoma

Geology

The entire area is underlain by Quaternary-Tertiary sediments: old valley fill deposits of semi consolidated

sedimentary material of fluvial origin (Arizona Highway Department, 1961).

Soils

In the wash, soils are dominantly Ustic Torrifluvents, sandy-skeletal, mixed and thermic (USDA Forest Service, 1986). These are very deep, excessively drained soils forming in transported parent materials derived from various sources.

The dissected alluvial breaks are occupied by an association of Typic Ustochrepts, loamy-skeletal, mixed and thermic; and Ustochreptic Calciorthids, loamy-skeletal, mixed and thermic. The Typic Ustochrepts are on north aspects and Ustochreptic Calciorthids are on south aspects. These soils are forming in transported parent materials from mixed sources. They are quite similar morphologically and differ mainly in their soil climate regimes; the Ustochreptic Calciorthild being somewhat warmer and drier. The mesa tops are occupied by Aridic Haplustolfs, fine, mixed and thermic; and Aridic Haplustalfs, fine, montmorillonitic and thermic. Those soils having montmorillonitic mineralogy are characterized by thicker argillic horizon and higher clay contents than the soils having mixed mineralogy. Otherwise the two soils are quite similar. The montmerillonitic soils are normally associated with areas having higher cover percentages of Hilaria belangerl.

Cultural

The location of the Haufer Wash RNA near the "Ruins" noted on the USGS map at Oak Spring suggests that others would be included within the boundaries. Five prehistoric Salado sites, ranging from lithic scatters to single-room habitations in association with agricultural check dams have been identified in a singe transect survey conducted along an unnamed drainage within the RNA boundaries. It is expected that sites exist near the other drainages as well.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

No known significant mineral resources exist within this area. Although Bureau of Land Management records indicate that both lode and placer claims were located in the recent past upon lands involved within the RNA, the BLM has closed the associated claim case files due to the lack of required assessment work.

Grazing

A fenced enclosure which has been closed to all grazing since the early 1930's. There is little evidence of disturbance by man in the area. No conflicts or impacts associated with this area.

Timber

This area has entirely within the desert scrub vegetation type. There are no timber resources and fuelwood harvest potential is virtually non-existent.

Watershed Values

This area drains east into Tonto Creek and then south into Roosevelt Lake through a series of ephemeral streams. This area represents less than 10% of the total watershed in the area.

Recreation Values

Recreation use of this area consists of both small game and big game hunting. The hunting use will not conflict with potential research projects.

Wildlife and Plant Values

Potential habitat exists for desert tortoise and gila monster which are candidate for federal listing as T&E species. No T&E plant species are known to occur in the area.

Wilderness, Wild and Scenic River, National Recreation Area Values

There are no congressionally designated area like those mentioned above for this area.

Transportation Plans

The existing State Route 188 right-of-way alignment is contiguous to the southeast boundary of the proposed RNA. As this highway is a major access route to the Roosevelt Lake recreation area, increases in traffic volumes may eventually require road improvement and/or realignment to provide for public safety. Should these occur, they would not adversely affect the RNA. The eastern most 1000 feet of Forest Road #598 is approximately 700 feet south of and approximately parallel to the southeast boundary of the proposed RNA. Forest Road is also approximately 700 south of and approximately parallel to the eastern most 1000 feet of the southern boundary of the proposed RNA. There are no plans to realign or improve this lightly used road.

Utility Corridor Plans

There is a 21.5 KV powerline located approximately 1/4 mile east of the proposed RNA. Improvements to this line or additional powerline corridors have not been proposed for this area. There is a 20 foot wide Right-of-Way for Mountain States Telephone and Telegraph Co. lying within the Southeast portion of the RNA, approximately 300' west of and parallel to State Highway 188.

MANAGEMENT PLANNING

Land Management Planning

The Haufer Wash RNA is in Tonto National Forest Plan Management Area 6E (see Appendix). Management emphasis is to provide opportunities for nondisruptive research and education,

Vegetation Management

There will be no harvest of forest products including fuelwood. Unplanned ignitions outside the area which threaten the area will be suppressed. The area is assigned no grazing capacity.

ADMINISTRATIVE RECORDS AND PROTECTION

Administration and protection of the Haufer Wash RNA will be the responsibility of the Tonto National Forest. The District Ranger, Tonto Basin Ranger District, Roosevelt, AZ has direct responsibility.

The Director of the Rocky Mountain Forest and Range Experiment Station, or his designee, will be responsible for any studies or research conducted in the area, and request to conduct research in the area should be referred to him. He, or his designee, will evaluate research proposals and coordinate all studies and research in the area with the District Ranger and RNA research coordinator. All plant and animal specimens collected in the course of research conducted in the area will be properly preserved and maintained within university or federal agency herbaria and museums, approved by the Rocky Mountain Station Director.

Records for the Haufer Wash RNA will be maintained in the following offices:

Regional Forester, Southwestern Region, Albuquerque, NM
Rocky Mountain Station, Fort Collins, CO
Rocky Mountain Forest and Range Experiment Station, Tempe, AZ
Tonto National Forest, Phoenix, AZ
District Ranger, Tonto Basin Ranger District, Roosevelt, AZ

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APPENDIX

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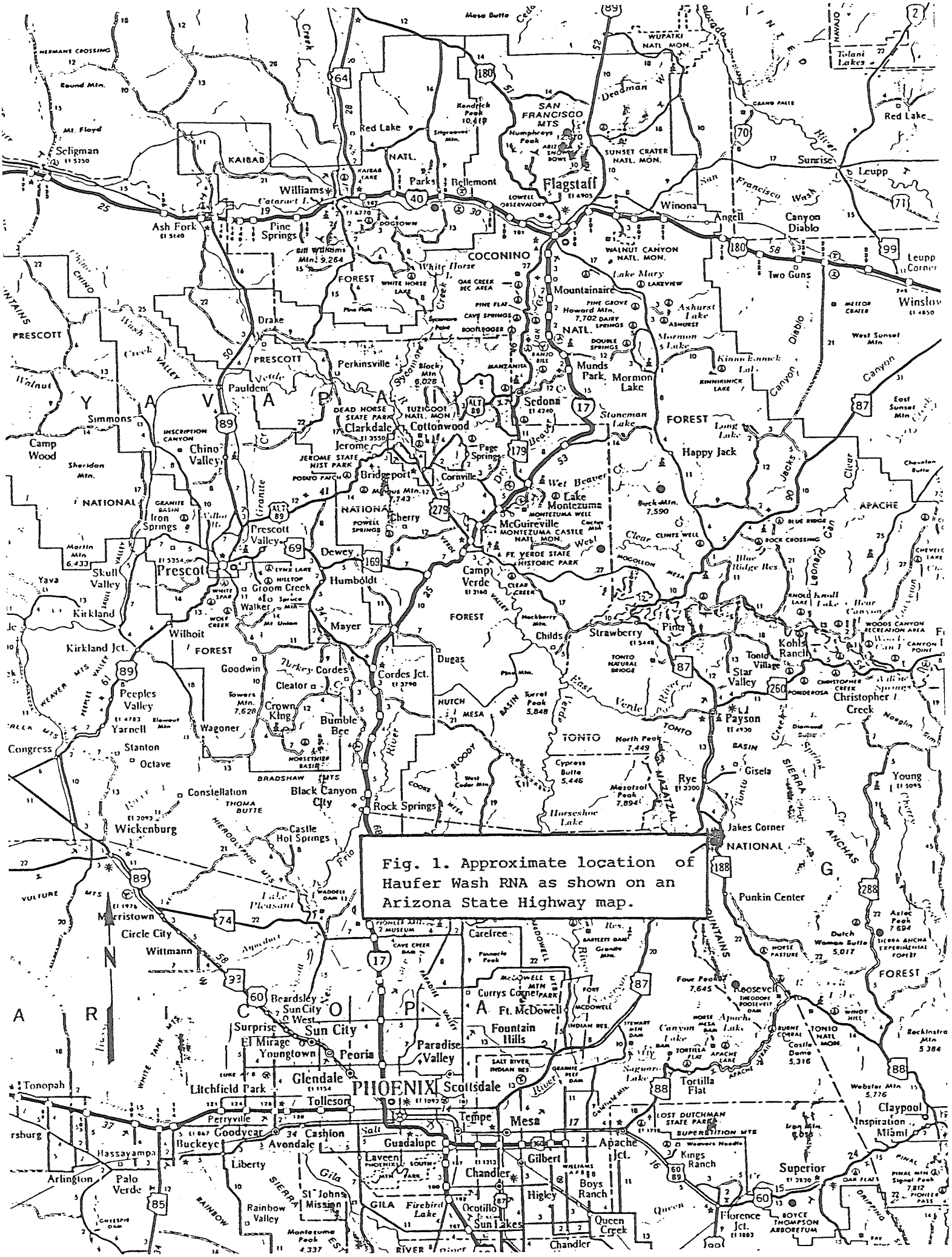


Fig. 1. Approximate location of Haufer Wash RNA as shown on an Arizona State Highway map.

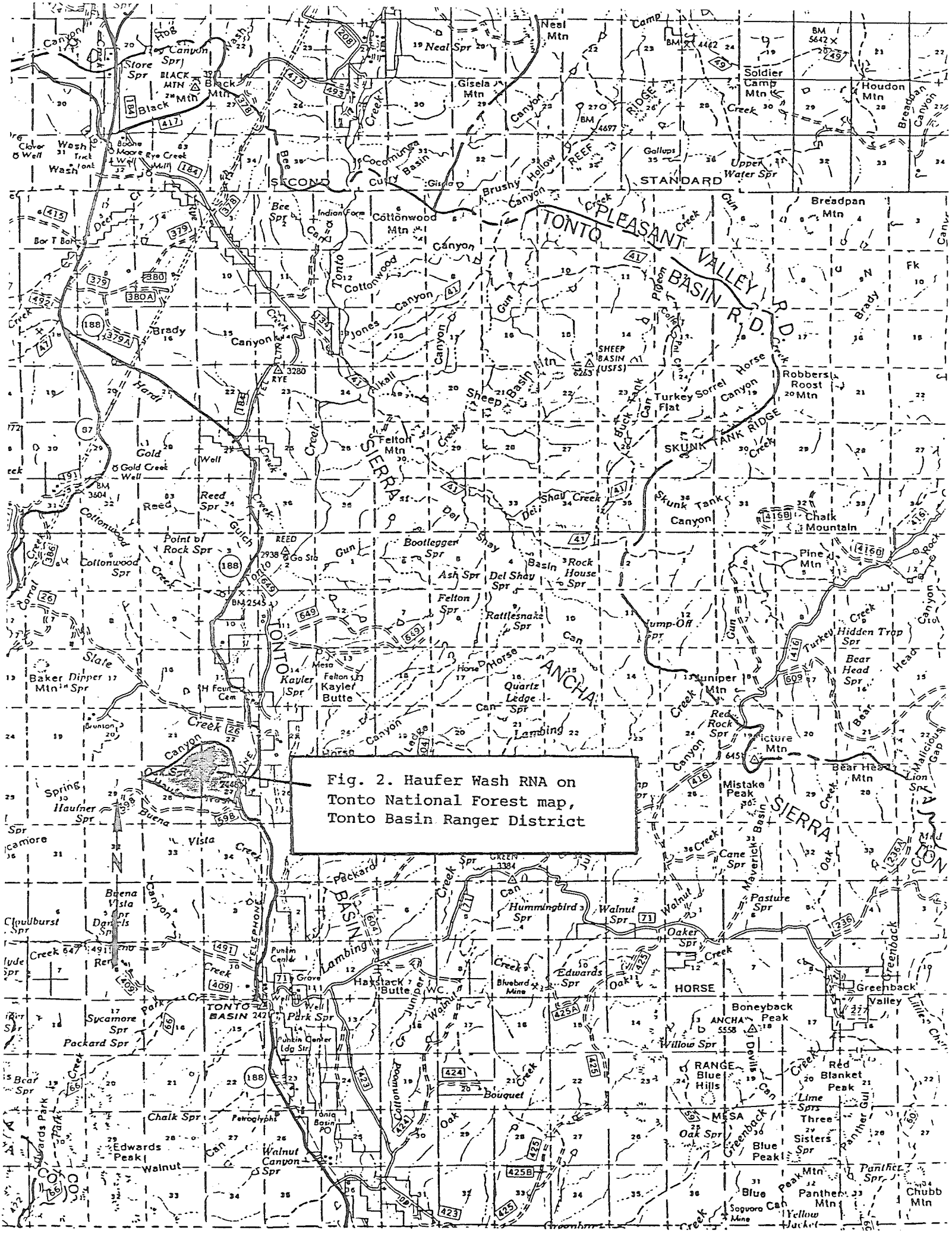


Fig. 2. Haufer Wash RNA on Tonto National Forest map, Tonto Basin Ranger District

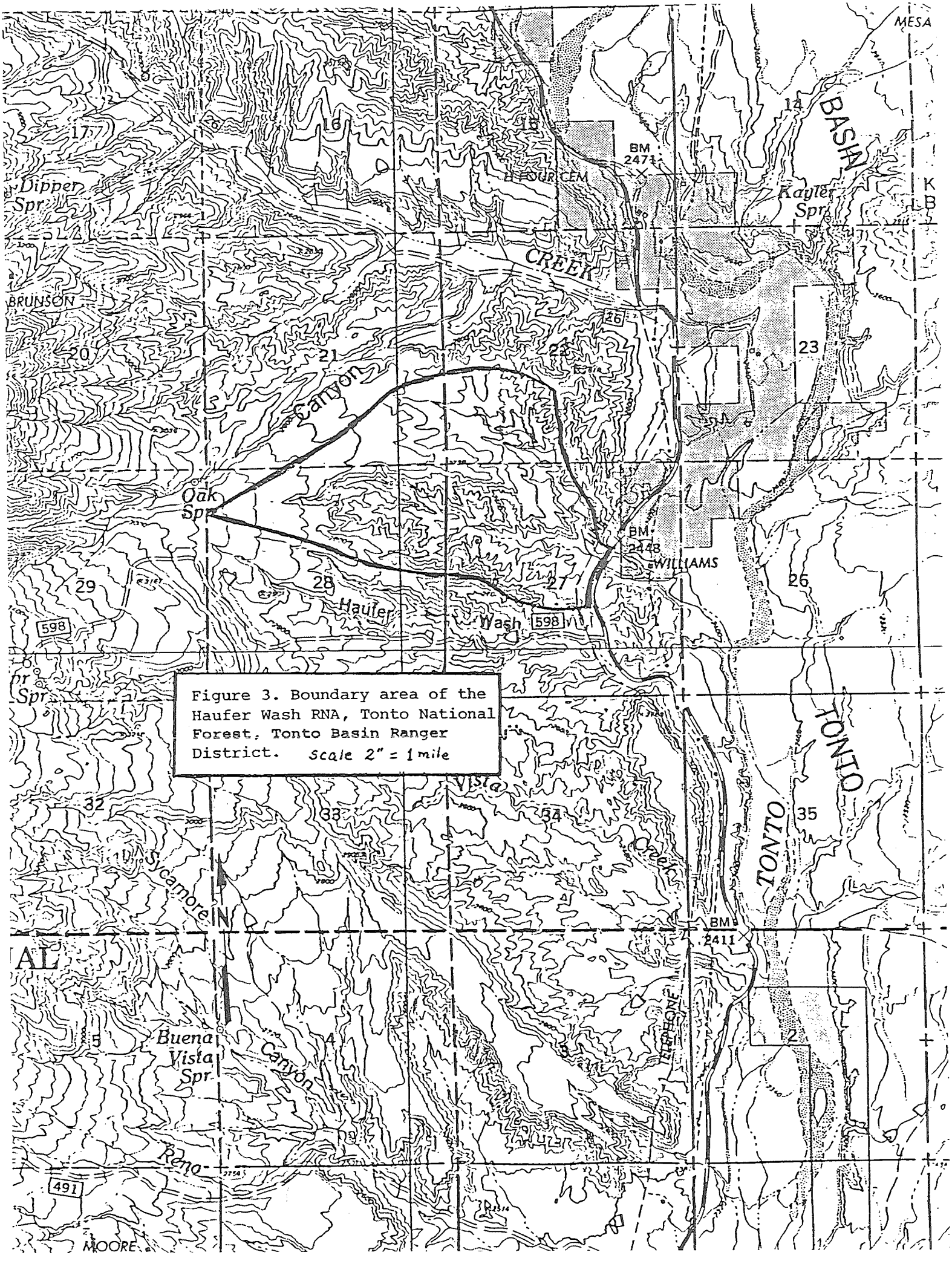
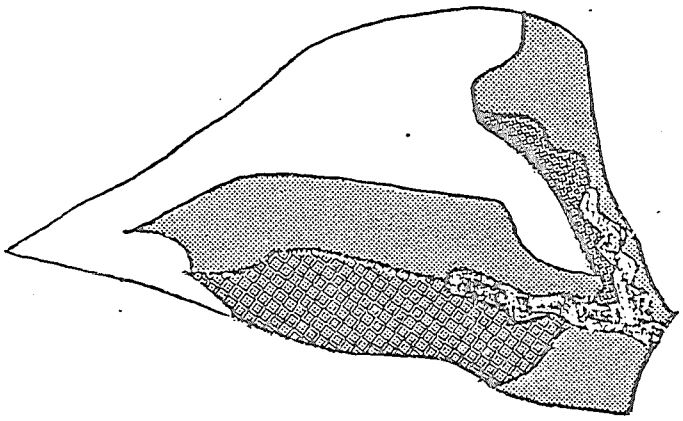


Figure 3. Boundary area of the Haufer Wash RNA, Tonto National Forest, Tonto Basin Ranger District. *Scale 2" = 1 mile*



Jojoba/Canotia/Scrub oak Association.

Jojoba/Catclaw acacia/Pricklypear cactus Association.

Mesquite/Turpentine bush/Pricklypear cactus Association

Mesquite/Catclaw acacia/Desert broom Association.

Figure 4. Distribution of plant associations in the Haufer Wash RNA, Tonto National Forest, Tonto Basin Ranger District.

Research Natural Areas

USDA Forest Service, Rocky Mountain, Intermountain, Southwestern and Great Plains States

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USDA Forest Service
Northern Region,
Rocky Mountain Region,
Southwestern Region,
Intermountain Region,
Rocky Mountain Research
Station,
and the
Montana Natural Heritage
Program

HAUFER WASH

General Information S.USNAHP*96

- Created: 1988
- Size: 680 (acres)
- Elevation Range: 2450 - 2950ft
- Location: *Haufer Wash RNA lies within the Tonto Basin of central Arizona. It is located in the foothills of the Mazatzal Mountains along the southwest edge of Roosevelt Lake above and along State Highway 118.*

Site Description

This RNA occupies an old alluvial terrace of valley fill materials that are stratified and weakly consolidated. A variety of deeply-dissected steep toeslopes adjoin Haufer Wash which bisects the RNA. Vegetation is comprised of a mosaic of desertscrub and semidesert grassland communities. The RNA was fenced to exclude livestock in the 1930's because of its highly erodible nature and severe overgrazing by livestock. This RNA provides an important benchmark reference area for examining vegetation and site recovery following exclusion of livestock for over 60 years. The area now contains nice examples of relict grasslands which are thought to be representative of the surrounding landscape.

Climate and Enviromental Information

Data not Available

Vegetation - Haufer Wash

Jojoba-Catclaw Acacia Mesquite-Turpentine Bush-Prickly Pear Mesquite-Catclaw Acacia-Desert Broom

Photo Notes and Observations

Haufer Wash RNA Recon; 9-2-2006

Birds and wildlife sighting (Sarah Lantz, AZGFD):

Gambel's Quail
Curve-Billed Thrasher
Canyon Towhee
Northern Flicker
Black-Tailed Gnat Catcher
Black-Throated Sparrow
Verdin
Bard Owl + Roost/Hunting Site

Deer Tracks
Coyote Scat
Prickly pear Herbivory

Note!!! I followed "Figure 2. Haufer Wash RNA on Tonto National Forest Map, Tonto Basin Ranger District" included in the packet of information that you gave me. There is a discrepancy between this figure and the included "figure 3" (on the following page). I chose to go with the larger circumscription of the RNA. I apologize if this was incorrect. At least this approach may produce a more complete collection of plant specimens for the area and vicinity, or good images of adjacent fire and grazing disturbance.

General Observations about the site:
Haufer Wash- Vertical banks of loose sediment including large cobbles in lower strata. Scattered evidence of cattle including hoof prints and pies. Wash dense with acacia and prosopis; sumac, juniper, berberis, and live oak also present in protected sites or north-facing slopes. Upland south-facing toeslopes look like 'badlands' with opuntia, ocotillo, jojoba, acacia, and occasional ephedra. Use the species list for now in regards to more specifics on forbs and shrubs, or vegetative communities.

Uplands north of Haufer Wash in western portion of RNA- Degraded range conditions with scattered, well-spaced shrubs. Recent evidence of cattle include cow pies, hoof prints, and very little to non-existent grass cover.

Uplands south of Tonto Wash in northern portion of RNA- Heavily impacted by stand replacing fire

Eastern Portion of RNA- Badlands of loose sediment with various toeslopes, grades, and aspects

Photo notes:
1. Haufer Wash; view W in stream channel with incision of fine sediments
2. Haufer Wash; sedimentary profile with coarse cobbles below, finer deposits above
3. Haufer Wash; stream channel incision
4. Haufer Wash; sedimentary profile through cut, badland slope
5. Haufer Wash; flank badland slope dominated by *Opuntia*

6. Haufer Wash; sedimentary profile colonized by *Mentzelia*
7. Haufer Wash; stream incision
8. Haufer Wash; stream incision
9. Haufer Wash; oxbow headcutting and faint OHV tracks
10. Haufer Wash; *Yucca* and channel
11. Haufer Wash; *Yucca* shrub
12. Haufer Wash; collecting *Yucca*
13. "..."
14. Haufer Wash; *Nolina* and channel
15. Haufer Wash
16. Opuntia; herbivory- Havelina/Coyote?
17. Opuntia; close-up of wasps feeding on fruit
18. "..."
19. Haufer Wash; close-up of common grass (tentative generic ID is *Andropogon*)
20. Haufer Wash; view of *Opuntia*-dominated, south-facing badland slope
21. "..."
22. Haufer Wash; narrowing of canyon
23. Haufer Wash; juniper and *Yucca* in narrow bottom
24. Haufer Wash; Bard Owl (sighted) roost and white wash
25. Haufer Wash; bone fragments below Bard Owl roost
26. "..."; small mammal skull and shiny wrapper
27. Haufer Wash; sandstone constriction
28. "..."
29. Haufer Wash; *Bromus rubens* in channel
30. "..."
31. Haufer Wash; claw marks in sandstone pavement at constriction of channel
32. "..."
33. Haufer Wash; exposed roots permeating through soil and rock
34. Haufer Wash; cryptobiotic crust
35. Haufer Wash; close-up of spider on upland slope
36. Haufer Wash; view E above wash along badland slope with Opuntia
37. Haufer Wash; view E into mesquite-dominated wash and lower slopes
38. Haufer Wash; view W (towards Mazatzals) of wash and Mesquites
39. Uplands N of Haufer Wash; view W with fruiting Opuntia
40. Uplands N of Haufer Wash; view E with Opuntia, Jojoba, and Prosopis
41. Uplands N of Haufer Wash; view E with Opuntia, Acacia, and Saguaro
42. Uplands N of Haufer Wash; close-up of *Cylindropuntia* flower
43. Uplands N of Haufer Wash; fresh cow pies
44. Uplands N of Haufer Wash; view E of degraded (overgrazed?) conditions with *Opuntia* dominant
45. "..."; view to S
46. "..."; view to W
47. Uplands N of Haufer Wash; hammered understory and faint cattle trail amidst shrubs
48. Uplands N of Haufer Wash; view N showing lack of vegetative differences across E-W, cattle exclosure (boundary of RNA?)
49. Uplands N of Haufer Wash; Cattle hoof prints

50. Uplands N of Haufer Wash; Burn on the northern portion of the RNA
51. Uplands N of Haufer Wash; charred shrub remnant
52. Uplands N of Haufer Wash; post-fire regeneration of shrub
53. Uplands N of Haufer Wash; Fire-kill
54. Uplands N of Haufer Wash; view N showing scattered mortality and regeneration
55. Uplands N of Haufer Wash; view N along ridge above Tonto Creek
56. Uplands N of Haufer Wash; view S along ridge (above Tonto Creek) of stand replacing fire
57. N-facing slope of Tonto Creek; view N of stand-replacing fire
58. Badlands in eastern portion of RNA; view N showing toe slopes and varied topography associated with loose sediment / patterns of erosion
59. Badlands in eastern portion of RNA; view E
60. "..."
61. Badlands in eastern portion of RNA between; view SE
62. Unnamed drainage to immediate north of Haufer Wash in badlands; S-facing slope with Saguaros
63. "..."

ESTABLISHMENT RECORD

for

HAUFER WASH RESEARCH NATURAL AREA

within

Tonto National Forest

Gila County, Arizona

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Haufer Wash Research Natural Area

Tonto National Forest

Gila County, Arizona

Prepared by _____ Date _____
Mark H. Cochran, The Nature Conservancy
Andrew W. Laurenzi, The Nature Conservancy

Recommended by _____ Date _____
Delbert Griego, District Ranger,
Tonto Basin Ranger District

Recommended by _____ Date _____
James L. Kimball, Forest Supervisor,
Tonto National Forest

Recommended by _____ Date _____
John W. Russell, Chairperson,
Southwestern Research Natural
Area Committee

Recommended by _____ Date _____
Sotero Muniz, Regional Forester,
Southwest Region

Recommended by _____ Date _____
Charles M. Loveless, Station Director
Rocky Mountain Forest and Range
Experiment Station

INTRODUCTION

The Haufer Wash Research Natural Area (HWRNA) occupies 680 acres (275.4 hectares) of semi-desert grassland and desertscrub in the Tonto Basin of central Arizona. The RNA is located in Tonto Basin Ranger District of the Tonto National Forest in Gila County on reserved public domain National Forest Land.

This HWRNA was established as a range exclusion in the early 1930's. Prior this time it was subjected to severe overgrazing by sheep and cattle. Initially proposed in 1972 by the Tonto National Forest (Establishment Report March 8, 1972), the Regional RNA Task Group has recently endorsed the establishment of this RNA for its special research and management interest (USDA Forest Service, 1984).

LAND MANAGEMENT PLANNING

The Southwest Regional Guide (USDA Forest Service, 1983), current Tonto National Forest planning documents, and the Forest Plan and Environmental Impact Statement (USDA Forest Service, 1985a/1985b) include the Haufer Wash. The environmental analysis conducted as part of the planning process supports the recommendation to establish this site as a Research Natural Area.

JUSTIFICATION STATEMENT FOR ESTABLISHMENT OF AREA

Prior to its establishment in the early 1930's as a range exclusion, this RNA was severely overgrazed by sheep and cattle. Today the area has important benchmark value because it contains semidesert grassland/scrub vegetation after over 50 years of recovery following livestock exclusion. The vegetation, soil, landform, and climate of the RNA is representative of thousands of acres with ongoing livestock management on the Tonto Basin, as well as adjacent allotments within the semidesert grass/scrub ranges of the Tonto Basin and Roosevelt Lake Districts. Haufer Wash, therefore, provides outstanding oportunities for land managers to compare and monitor effects of resource management techniques.

PRINCIPAL DISTINGUISHING FEATURES

A mosaic of desertscrub and semidesert grasasland cover types which have been exclosed to livestock grazing for greater than 50 years following severe overgrazing by sheep and cattle.

LOCATION

The HWRNA is located within the Tonto Basin Ranger District of the Tonto National Forest in Gila County, Arizona (Figs. 1 & 2). The center of the area is at latitude 33° 56′ north and longitude 111° 20′ west. Specifically the area lies in portions of protracted sections 21, 22, 27 and 28 of T7N R10E, which are included on the USGS Kayler Butte 7.5′ topographic quadrangle (Fig. 3). The boundary of the RNA is a fence built in the early 1930's as a range exclusion. Elevation ranges from a low of ca. 2450 feet (747 meters), where a small wash meets Highway 188 on the southeast boundary; to high of ca. 2950 feet (900 meters) at the western most extension of the RNA near Oak Spring. The RNA contains 680 acres (274.7 hectares). Haufer Wash RNA is located along Arizona Highway 188 10.6 miles (17.1 km) south of the junction of 188 with the Beeline Highway (Arizona Highway 87), the road crosses Haufer Wash. The fenceline crossing Haufer Wash west of 188 is the eastern boundary of the RNA and is more particulalrly described as follows:

Beginning at a point on the westerly Right-of-Way fence of State Highway NO. 188, in Section 27, approximately 0.19 miles north of the intersection with Forest Development Road No. 598, said point being at the intersection of the above mentioned range fence and approximately 66 feet west of a cattleguard crossing Highway 188;
THENCE,northerly of said range fence, approximately 66 feet west of and generally parallel to the centerline of Highway 188, for approximately 0.21 miles to where the Right-of-Way fence continues north and the range fence bears northwest;
THENCE, generally northerly on said range fence as it follows the top of a hydropgraphic divide between small drainages to the east and west, for approximately 0.92 miles to a summit with a shown elevation of 2818 feet;
THENCE, generally westerly and southwesterly on said range fence ona hydrographic divide between Spring Canyon to the north and a small unnamed intermittent stream to the south, for approximately 2.12 miles to a point where said fence corners and bears east at an approximate elevation of 2980 feet;
THENCE, generally southeasterly on said range fence on a hydrographic divide between a tributary to, and Haufer Wash. to the south and unnamed intermittent stream to the north, for approximmately 1.89 miles to the intersection with the afore mentioned Right-of-Way fence and the point of beginning, containing approximately 680 acres (274.7 hectares).

AREA BY COVER TYPES

Information on cover types was obtained from the Southwestern RNA Progress Report (USFS, 1984), Warren and Treadwell (1980) and a field reconnaisance.

Küchler

A portion of the area corresponds to cover type K-052, Grama-Tobosa Shrubsteppe (Küchler, 1964).

Society of American Foresters

The HWRNA is nonforested and is not covered by SAF cover types (Eyre, 1980).

Habitat Types or Plant Associations

The Southwestern Region of the USFS has not developed a habitat type classification system for scrubland vegetation. Using the classification system proposed by Brown et al. (1979), four plant associations are described for Haufer Wash RNA. Determination of the plant associations is based on information obtained from Warren and Treadwell's study (1980) of the vegetation on the nearby Three-Bar Wildlife Study Area, the Southwestern RNA Progress Report (1984) and a field reconaissance within the RNA. The plant associations within the RNA are Mesquite-Catclaw-Desert Broom, Jojoba-Canotia-Scrub Oak, Jojoba-Catclaw Acacia-Prickly Pear and Mesquite-Turpentine Brush-Prickly Pear Associations (Fig. 4). The estimated areas for these plant associations are provided below:

Table 1. Estimated areas of vegetative cover types of the Haufer Wash Research Natural Area

Type (Plant Association)	Surface Area Acres	Hectares
1. Mesquite-Catclcaw Acicia-Desert Broom	66	27
2. Jojoba-Conotia-Scrub Oak	195	80
3. Jojoba-Catclaw Acacia-Prickly Pear	118	48
4. Mesquite-Turpentine Brush-Prickly Pear	302	122
Total Area	680	275

PHYSICAL AND CLIMATIC CONDITIONS

The Haufer Wash RNA is situated in the Tonto Basin, which is within a transitionsal zone between the two major physiographic provinces in Arizona, the Colorado Plateau and Basin and Range province. The RNA proper is on an old alluvial terrace of Tertiary origin consisting of old valley fill materials that are stratified and weakly to moderately consolidated (Broderick, 1974). Haufer Wash bisects the RNA and consists of highly stratified recent alluvium. A variety of deeply-disected steep toeslopes adjoin the wash. South and north-facing toeslopes

support distinctively different plant communities. North and west of Haufer Wash is a large, gently sloping alluvial surface, (often referred to as a mesa top or bajada in the Southwest).

The climate is very mild with few days of freezing temperatures. Daytime temperatures during the summer often exceed 100°F, with nighttime temperature in the 80's and 90's. Winter temperature ranges to near freezing with 250 frost-free days. Annual precipitation averages 14 inches and falls as rain with 59% falling during the warm season May-October (USDA Forest Service, 1986). Climatic influences vary greatly due to the mosaic of topographical features associated with steep toe slopes, streamside terraces and the mesa top.

DESCRIPTION OF VALUES

Flora

The information on cover types was obtained from the Southwestern RNA Progress Report (August, 1983), Warren and Treadwell (1980) and a field reconnaisance. Three cover types are present in the RNA. Note that these cover types describe existing vegetation and do not refer to potential natural vegetation.

1. Mesquite-Catclaw Acacial Desert Broom Association (154.1216). This small, intermittent drainage (just north of Haufer Wash) does not contain enough water discharge to support obligate riparian vegetation. Major shrubs are whitehorn acacias (Acacia greggii, A. constricta), burrobush (Hymenoclea sp), and desert broom (Baccharis sarothroides). Occasional shrubs include desert willow (Chilopsis linearis), hackberry (Celtis reticulata), Juniper (likely Juniperus erythrocarpa), scunkbush (Rhus trilobata), algerita (Berberis haematocarpa), and Condalia. Common cacti are prickly pears (Opuntia engelmanii) and cholla (Opuntia acanthocarpa, O. leptocaulis). A few turbinella oak (Quercus turbinella), cliffrose (Cowania mexican) and creosote (Larrea divaricata) occur.

Two plant cover types are associated with steep toeslopes which adjoin the washand and these are related to exposure.

2. Jojoba-Canotia-Scrub Oak Association (154.1236). Restricted to north-facing toeslopes. Here crucifixion thorn (Canotia holacantha) prevails, along with jojoba, bush buckwheat (Eriogonum fasciculatum), false mesquite, shrubby bedstraw (Galium stellatum), juniper (Juniperus erythrocarpa), and (Mendora scabra). The sites examined are quite grassy. Needle-and-thread (Stipa speciosa) and side-oat grama (Bouteloua curtipendula) are common. These aspects are too cold in winter for saguaro, but other "Sonoran" species such as buckhorn cholla (Opuntia acanthocarpa) and the palatable herb, Porophylum gracilis, can be found.

3. Jojoba-Catclaw Acacia-Prickly Pear Association (154.1237). On the south-facing alluvial toeslopes are extensions of the Sonoran desert. Conspicuous plants include jojoba (Simmondsia chinensis), saguaro (Cerus giganteus), brittle bush (Encelia farinosa), ocotillo (Fouqueria splendens), and false mesquite (Calliandra eriophora). Frequently encountered

grasses include three awns (Aristida spp), bush muhly (Muhlenbergia porteri), and slim tridens (Tridens muticus). A small, fish-hook cactus (Mamalaria sp) is common.

4. Mesquite-Turpentine Brush-Prickly Pear Association (143.1661). The west portions of the RNA above Oak Spring canyon are gently sloping alluvial (bajada) surfaces. Historically, this terrain was grazed hard. Today such grassland increasers as mesquite (Prosopsis juliflora), engelman prickly pear, turpentine bush (Haplopappus laricifolius), and snakeweed (Gutierrezia sp.) still dominate. The most common perennial grass is a species of three-awn. However, patches of curly mesquite (Hilaria belangeri) are found on the fine-textured, montmorillonitic clay soils. Other plants of the mesa tops include false mesquite, buckwheat (Eriogonum wrightii), ratany (Krameria parviflora), algerita, globemallow (Sphaeralcea sp.), hedgehog cactus (Echinocereus fendleri), and catclaw acacia. Red berried junipers are widely scattered (canopy cover from trace to about one percent). Along gentle drainages blue paloverde (Cercidium floridum) occurs occasionally.

This latter plant association describes existing vegetation. Potential natural vegetation correpsonds to Kuchler's grama - tobosa shrubsteppe, K-058 (Kuchler, 1964).

There are no known listed, proposed or threatened endangered plant species within the RNA. The following list was compiled from field observations by Reggie Fletcher, USFS Southwest Region botanist (4/29/85, 5/1/85, 5/3/85).

An Abbreviated Plant List for Haufer Wash RNA

Shrubs and Woody Lianas	Common Name
Acacia constricta I	Catclaw Acacia
Acacia greggii I	Whitethorn Acacia
Agave chrysantha R	
Artemisia ludoviciana ssp. albula I	
Atriplex canescens R	
Baccharis brachyphylla I	
Baccharis sarothroides C	
Berberis haematocarpa C	Algerita
Brickellia atractyloides var atractyloides I	
Calliandra eriopylla C	False Mesquite
Canotia holacantha I	Crucifixion Thorn
Carnegia gigantea I	
Cassia covesii R	
Ceanothus greggii C	
Cercidium microphyllum R	
Chilopsis linearis C	Desert Willow
Cowania stansburiana R	
Dalea formosa C	
Dalea parryi R	
Dasylirion wheeleri R	
Echinocereus fasciculatus var fasciculatus R	
Echinocereus pectinatus I	
Encelia farinosa C	Brittle Bush

Encelia frutescens R	
Ephedra trifurca R	
Fouqueiria splendens I	Ocotillo
Frazinus anomala var lowellii R	
Gutierrezia sarothrae C	
Haplopappus gracilus R	
Haplopappus larcifolius C	Turpentine Bush
Hymenoclea monogyra C	
Hymenopappus flavescens var cano-tomentosus R	
Koeberlinia spinosa R	
Krameria grayi R	
Krameria parvifolia I	Ratany
Lotus rigidus I	
Lycium exsertum I	
Mammillaria microcarpa I	
Mimosa biuncifera C	
Opuntia acanthocarpa I	Buckhorn Cholla
Opuntia chlorotica C	
Opuntia leptocaulis I	Cholla
Prosopis velutina I	
Rhamnus crocea R	
Rhus trilobata var anisophylla R	Skunkbush
Salvia calumbariae R	
Simmondsia chinensis C	Jojoba
Sphaeralcea fendleri I	Globemallow Yucca
baccata R	

<u>Herbs</u>

Acamptopappus sphaerocephalus I
Ambrosia acanthicarpa C
Amsinckia sp. R
Androsace occidentalis R
Arabis perennans R
Arenaria douglasii C
Artemisia ludoviciana ssp. albula I
Astragalus nothoxys R
Astragalus nuttallianus R
Avena barbata R
Baeria chrysotoma C
Baileya multiradiata C
Castilleja chromosa C
Castilleja lanata I
Centaurea melitensis R
Chorizanthe brevicornu R
Chrysopsis sp. C
Cirsium neomexicanum C
Cryptantha muricata R
Cuscuta indecora C
Daucus pusillus C
Delphinium virescens ssp. wootonii R
Dichelostemma pulchellum R
Draba cuneifolia R
Dyssodia porophylloides R

Eriastrum diffusum C
Eriastrum eremicum C
Erigeron divergens C
Eriogonum arizonicum C
Eriogonum fasciculatum C Bush Buckwheat
Eriogonum inflatum I
Eriogonum trichopes C
Eriogonum wrightii C Buckwheat
Erodium cicutarium R
Euphorbia capitellata R
Euphorbia melandenia C
Evax multicaulis R
Funastrum heterophyllum R
Gaillardia pulchella R
Galium proliferum C
Galium stellatum var eremicum R
Gaura coccinea I
Gaura gracilis C
Gilia tenuiflora I
Gomphrena sonorae R
Hedeoma nanum C
Herniaria cinera R
Janusia gracilis R Lepidium lasiocarpum var lasiocarpum I
Lesquerella gordoni I
Linum aristatum R
Linum puberulum R
Lomatum puberulum R
Lotus humistratus I
Lotus salsuginosus R
Lupinus bicolor I
Malcothrix sp. R
Marrubium vulgare R
Maurandya antirrhiniflora I
Melampodium lencanthum C
Mendora scraba R
Mentzelia pumila R
Mirabilis bigelovii I
Nama hispidum R
Nemacladus glanduliferus I
Orthocarpus purpurascens I
Oxybaphus coccineus R
Parietaria pennsuylvanica R
Penstemon eatonii ssp. exsertus R
Penstemon microphyllus I
Penstemon thurberi R
Perezia wrightii R
Phacelia crenulata var crenulata R
Phacelia ramosissima I
Phoradendrom californicum R
Plantago purshii C
Plantago rhodosperma C
Polygala alba R
Polygala macradenia R
Polygala scoparioides R

Porophyllum gracile R
Psilostrophe cooperi R
Psoralea tenuiflora I
Senecio monoensis R
Senecio quercetorum C
Silene noctiflora I
Sonchus asper R
Stephanomeria pauciflora R
Stylochline micropoides R
Troidanis biflora C
Verbena bipinnatifida R
Vicia exigua R

Grasses and Grass-like Plants

Andropogon cirratus R
Andropogon sp. R
Aristida glauca C
Aristida longiseta C
Aristida purpurea C
Aristida wrightii C
Boutelona aristidoides R
Boutelona curtipendula I — Side-oats Grama
Bromus rubens C
Bromus trinii C
Festuca octaflora I
Hilaria belangeri C
Hordeum leporinum R
Muhlenbergia porteri I
Sitanion hystrix I
Sporobolus wrightii R
Stipa neomexicana R
Stipa speciosa I — Needle-and-thread
Tridens muticus I — Slim Tridens
Tridens pulchellus R

Trees

Juniperus erythrocarpa I — Red-berried Juniper
Quercus turbinella I — Turbinella Oak
Quercus turbinella X R — Turbinella Oak

Relative Abundance:

R = rare
I = infrequent
C = common

Fauna

The HWRNA is potential habitat for desert tortoise (Gopherus agassizii) and Gila monster (Heloderma suspectum). The desert tortoise is listed as a threatened (Group 3) wildlife species in Arizona by the Arizona Game and Fish Commission (1982). Desert tortoise and Gila monster are both currently under review for listing (Category 2) by the U.S. Fish and Wildlife Service (1985).

The RNA provides good habitat for several species of wildlife including mule deer (Odocoileus hemionus), Coyote (Canis latrans), grey fox (Urocyon cineroargenteus), javelina (Tayassu tajacu), desert cottontail rabbit (Sylvilagus auduboni), black-tailed jackrabbit (Lepus californicus), and Gambel's quail (Callipela gambelii) (from Establishment Report March 8, 1972). The following animal list was derived from the RUN WILD III computer-stored data base (Lehmkuhl and Patton 1982) from the following vegetation associations for Gila county, Arizona:

423.102 Bouteloua-Yucca Association
531.104 Simmondsia chinensis Association

Abbreviated Animal List for Haufer Wash RNA.

BIRDS:

Kite, Mississippi	Ictinia mississippiensis
Lark, Horned	Eremophilia alpestris
Mockingbird, Northern	Mimus polyglottos
Oriole, Scott's	Icterus parisorum
Phoebe, Say's	Sayoris saya
Shrike, Loggerhead	Lanius ludovicianus
Sparrow, Black-Throated	Amphispiza bilineata
Thrasher, Curve-billed	Toxostoma curvirostre
Towhee, Brown	Pipilo fuscus
Towhee, Green-tailed	Pipilo chlorurus

MAMMALS

Bat, Pallid	Antrozous pallidus
Chipmunk, Cliff	Tamias dorsalis
Cottontail, Desert	Sylvilagus audubonii
Coyote	Canis latrans
Deer, Mule	Odocoileus hemionus
Jackrabbit, Black-tailed	Lepus californicus
Pronghorn	Antilocapra american
Squirrel, Harris' Antelope	Ammospermohilus harrisii
Squirrel, Rock	Spermophilus variegatus
Squirrel, Spotted Ground	Spermophilus spilosoma

Geology

The entire area is underlain by Quaternary-Tertiary sediments: old valley fill deposits of semi consolidated

sedimentary material of fluvial origin (Arizona Highway Department, 1961).

Soils

In the wash, soils are dominantly Ustic Torrifluvents, sandy-skeletal, mixed and thermic (USDA Forest Service, 1986). These are very deep, excessively drained soils forming in transported parent materials derived from various sources.

The dissected alluvial breaks are occupied by an association of Typic Ustochrepts, loamy-skeletal, mixed and thermic; and Ustochreptic Calciorthids, loamy-skeletal, mixed and thermic. The Typic Ustochrepts are on north aspects and Ustochreptic Calciorthids are on south aspects. These soils are forming in transported parent materials from mixed sources. They are quite similar morphologically and differ mainly in their soil climate regimes; the Ustochreptic Calciorthild being somewhat warmer and drier. The mesa tops are occupied by Aridic Haplustolfs, fine, mixed and thermic; and Aridic Haplustalfs, fine, montmorillonitic and thermic. Those soils having montmorillonitic mineralogy are characterized by thicker argillic horizon and higher clay contents than the soils having mixed mineralogy. Otherwise the two soils are quite similar. The montmerillonitic soils are normally associated with areas having higher cover percentages of Hilaria belangerl.

Cultural

The location of the Haufer Wash RNA near the "Ruins" noted on the USGS map at Oak Spring suggests that others would be included within the boundaries. Five prehistoric Salado sites, ranging from lithic scatters to single-room habitations in association with agricultural check dams have been identified in a singe transect survey conducted along an unnamed drainage within the RNA boundaries. It is expected that sites exist near the other drainages as well.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

No known significant mineral resources exist within this area. Although Bureau of Land Management records indicate that both lode and placer claims were located in the recent past upon lands involved within the RNA, the BLM has closed the associated claim case files due to the lack of required assessment work.

Grazing

A fenced enclosure which has been closed to all grazing since the early 1930's. There is little evidence of disturbance by man in the area. No conflicts or impacts associated with this area.

Timber

This area has entirely within the desert scrub vegetation type. There are no timber resources and fuelwood harvest potential is virtually non-existent.

Watershed Values

This area drains east into Tonto Creek and then south into Roosevelt Lake through a series of ephemeral streams. This area represents less than 10% of the total watershed in the area.

Recreation Values

Recreation use of this area consists of both small game and big game hunting. The hunting use will not conflict with potential research projects.

Wildlife and Plant Values

Potential habitat exists for desert tortoise and gila monster which are candidate for federal listing as T&E species. No T&E plant species are known to occur in the area.

Wilderness, Wild and Scenic River, National Recreation Area Values

There are no congressionally designated area like those mentioned above for this area.

Transportation Plans

The existing State Route 188 right-of-way alignment is contiguous to the southeast boundary of the proposed RNA. As this highway is a major access route to the Roosevelt Lake recreation area, increases in traffic volumes may eventually require road improvement and/or realignment to provide for public safety. Should these occur, they would not adversely affect the RNA. The eastern most 1000 feet of Forest Road #598 is approximately 700 feet south of and approximately parallel to the southeast boundary of the proposed RNA. Forest Road is also approximately 700 south of and approximately parallel to the eastern most 1000 feet of the southern boundary of the proposed RNA. There are no plans to realign or improve this lightly used road.

Utility Corridor Plans

There is a 21.5 KV powerline located approximately 1/4 mile east of the proposed RNA. Improvements to this line or additional powerline corridors have not been proposed for this area. There is a 20 foot wide Right-of-Way for Mountain States Telephone and Telegraph Co. lying within the Southeast portion of the RNA, approximately 300' west of and parallel to State Highway 188.

MANAGEMENT PLANNING

Land Management Planning

The Haufer Wash RNA is in Tonto National Forest Plan Management Area 6E (see Appendix). Management emphasis is to provide opportunities for nondisruptive research and education,

Vegetation Management

There will be no harvest of forest products including fuelwood. Unplanned ignitions outside the area which threaten the area will be suppressed. The area is assigned no grazing capacity.

ADMINISTRATIVE RECORDS AND PROTECTION

Administration and protection of the Haufer Wash RNA will be the responsibility of the Tonto National Forest. The District Ranger, Tonto Basin Ranger District, Roosevelt, AZ has direct responsibility.

The Director of the Rocky Mountain Forest and Range Experiment Station, or his designee, will be responsible for any studies or research conducted in the area, and request to conduct research in the area should be referred to him. He, or his designee, will evaluate research proposals and coordinate all studies and research in the area with the District Ranger and RNA research coordinator. All plant and animal specimens collected in the course of research conducted in the area will be properly preserved and maintained within university or federal agency herbaria and museums, approved by the Rocky Mountain Station Director.

Records for the Haufer Wash RNA will be maintained in the following offices:

Regional Forester, Southwestern Region, Albuquerque, NM
Rocky Mountain Station, Fort Collins, CO
Rocky Mountain Forest and Range Experiment Station, Tempe, AZ
Tonto National Forest, Phoenix, AZ
District Ranger, Tonto Basin Ranger District, Roosevelt, AZ

REFERENCES

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Eyre, F.H., ed. 1980. Forest cover types of the United States and Canada. Society of American Foresters, Washington, D.C. 148 pp.

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APPENDIX

These pages are reproduced from the
Tonto National Forest Plan

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Haufer Wash Research Natural Area

Tonto National Forest

Gila County, Arizona

Prepared by Andrew Laurenzi / Mark H. Cochran Date 7/6/87
Mark H. Cochran, The Nature Conservancy
Andrew W. Laurenzi, The Nature Conservancy

Recommended by Fred S Salinas Date 5/9/88
Fredrick S. Salinas, Acting District Ranger
Tonto Basin Ranger District

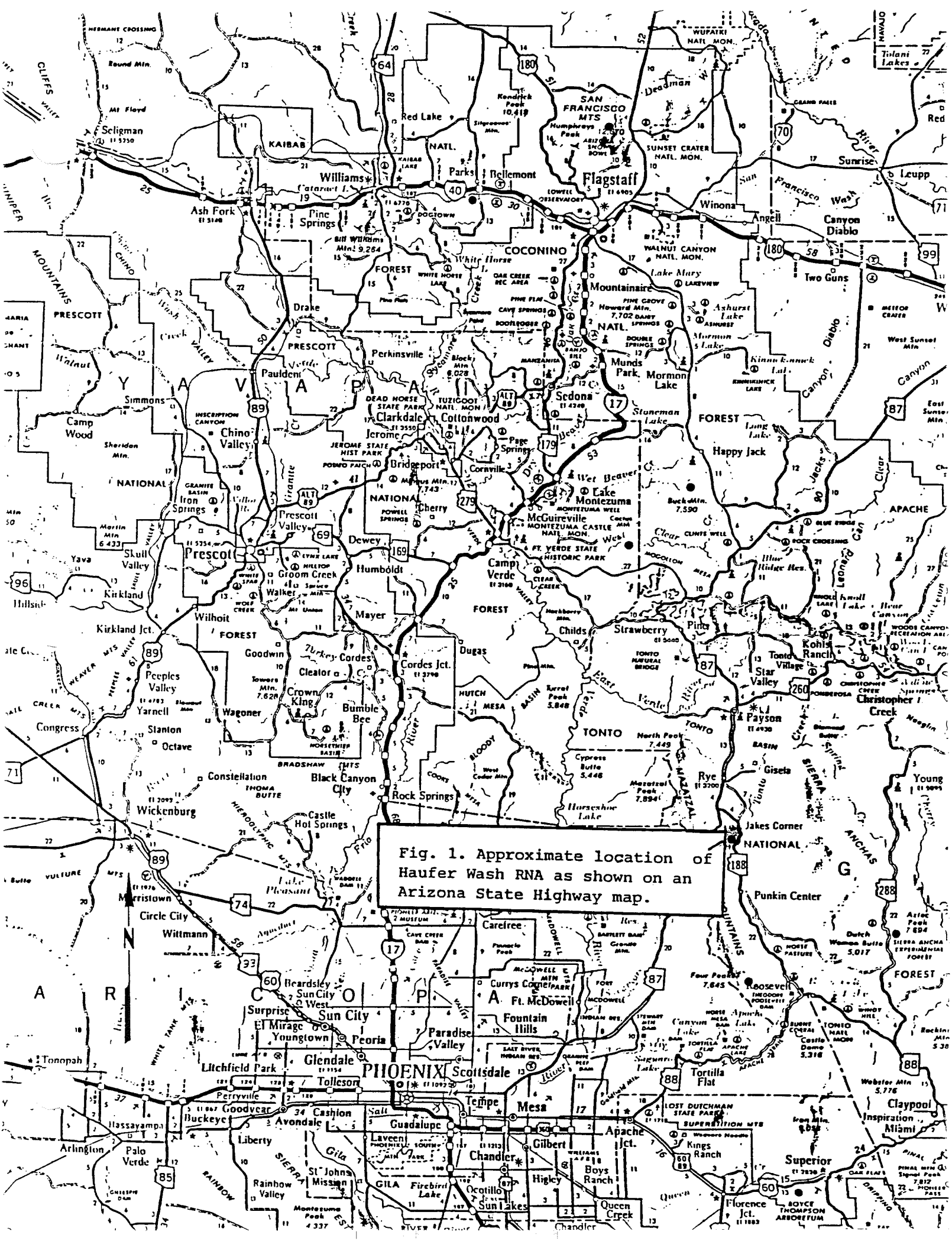
Recommended by James L. Kimball Date 5/16/88
James L. Kimball, Forest Supervisor
Tonto National Forest

Recommended by John W Russell Date 5-24-88
John W. Russell, Chairperson,
Southwestern Research Natural
Area Committee

Recommended by David Hall Date 6/16/88
for Sotero Muniz, Regional Forester,
Southwest Region

Recommended by Charles M. Loveless Date Sept. 28, 1988
Charles M. Loveless, Station Director
Rocky Mountain Forest and Range
Experiment Station

The abovesigned certify that all applicable land management planning and environmental analysis requirements have been met and that boundaries are clearly identified in accordance with FSM 4063.21, Mapping and Recordation and FSM 4063.41 5.e(3) in arriving at this recommendation.


Seligman
KAIBAB
Williams
Ash Fork
Pine Springs
Red Lake
Parks
Bellemont
Flagstaff
SAN FRANCISCO MTS
Humphreys Peak 12,633
Kendrick Peak 10,419
SUNSET CRATER NATL. MON.
Sunrise
Leupp
Winona
Angell
Canyon Diablo
COCONINO FOREST
WALNUT CANYON NATL. MON.
Two Guns
Mountainaire
Lake Mary
Ashurst Lake
Munds Park
Mormon Lake
Sedona
Drake
PRESCOTT
PRESCOTT FOREST
Perkinsville
Paulden
Simmons
Camp Wood
Chino Valley
Jerome
Clarkdale
Cottonwood
Bridgeport
Page Springs
Cornville
Wet Beaver
Lake Montezuma
McGuireville
Cherry
Iron Springs
Prescott Valley
Prescott
Dewey
Skull Valley
Kirkland
Humboldt
Camp Verde
Happy Jack
Stoneman Lake
Long Lake
APACHE
Blue Ridge Res.
Clear Creek
Wilhoit
Kirkland Jct.
Mayer
Childs
Strawberry
Pine
Goodwin
Cordes Jct.
Dugas
Kohls Ranch
Tonto Village
Star Valley
Peeples Valley
Yarnell
Wagoner
Crown King
Bumble Bee
Cleator
Cordes
Christopher Creek
Payson
Congress
Stanton
Octave
Constellation
Black Canyon City
Rock Springs
TONTO FOREST
TONTO NATURAL BRIDGE
Gisela
Young
Wickenburg
Castle Hot Springs
Jakes Corner
NATIONAL
Punkin Center
Morristown
Circle City
Lake Pleasant
Carefree
Currys Corner
Ft. McDowell
Fountain Hills
Paradise Valley
Wittmann
Beardsley
Sun City West
Sun City
Surprise
El Mirage
Youngtown
Peoria
Roosevelt
FOREST
Four Peaks 7,645
Tonopah
Glendale
Litchfield Park
PHOENIX
Scottsdale
Tolleson
Tortilla Flat
Goodyear
Buckeye
Cashion
Avondale
Tempe
Mesa
Guadalupe
Claypool
Inspiration
Miami
Hassayampa
Arlington
Palo Verde
Liberty
Laveen
Chandler
Gilbert
Apache Jct.
Kings Ranch
Superior
Boys Ranch
Higley
Florence Jct.
Rainbow Valley
St. Johns Mission
Firebird Lake
Ocotillo
Sun Lakes
Queen Creek
Chandler
ARIZONA
Fig. 1. Approximate location of Haufer Wash RNA as shown on an Arizona State Highway map.

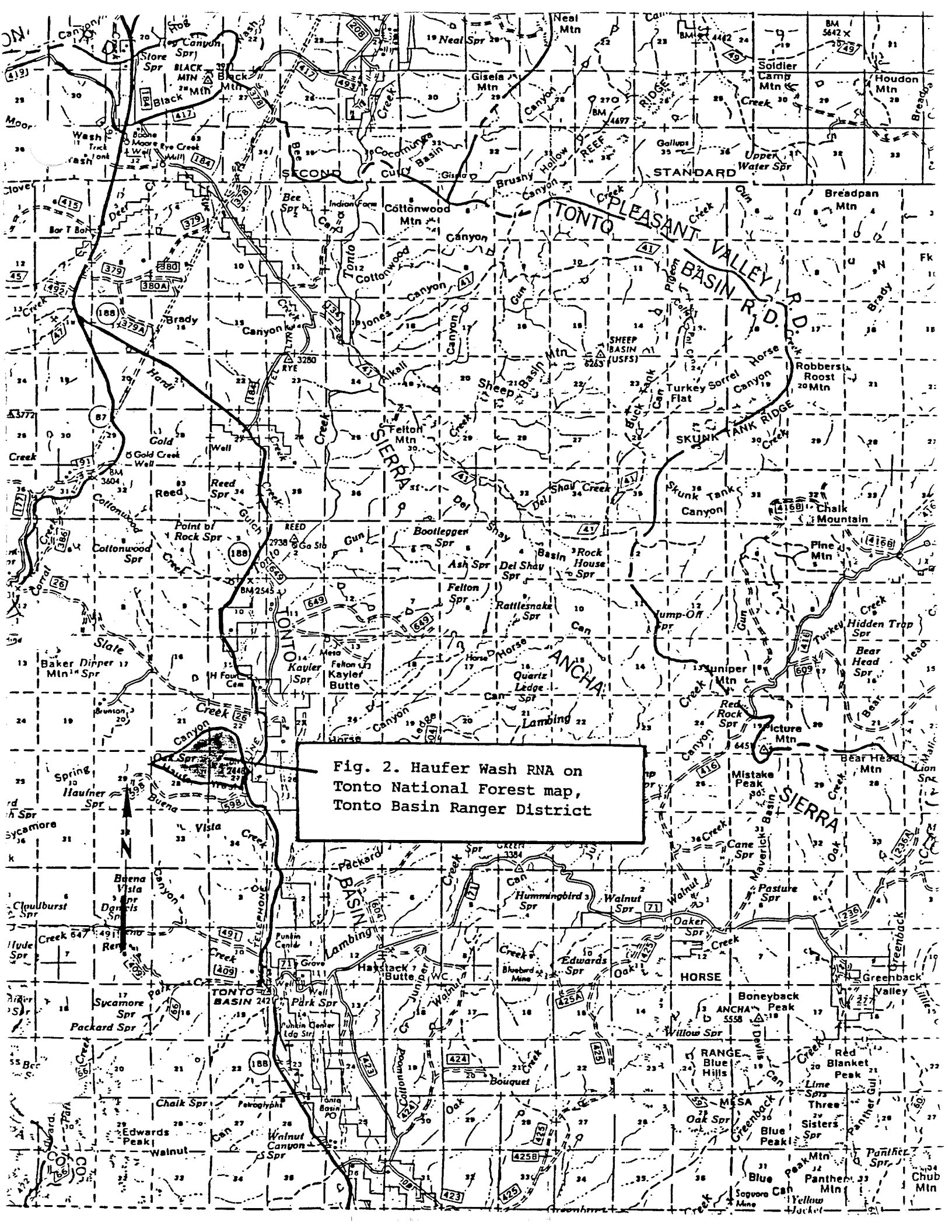


Fig. 2. Haufer Wash RNA on
Tonto National Forest map,
Tonto Basin Ranger District

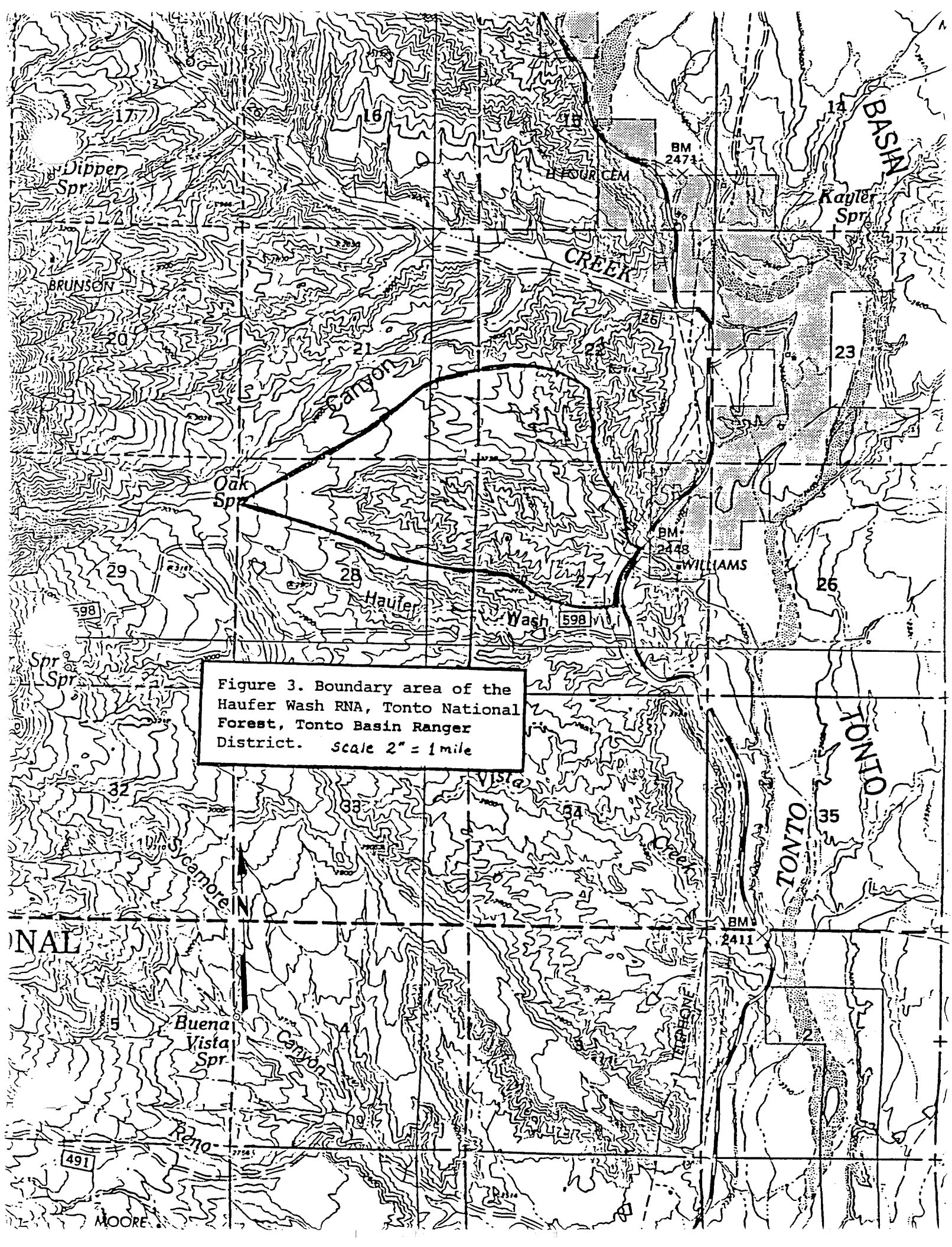
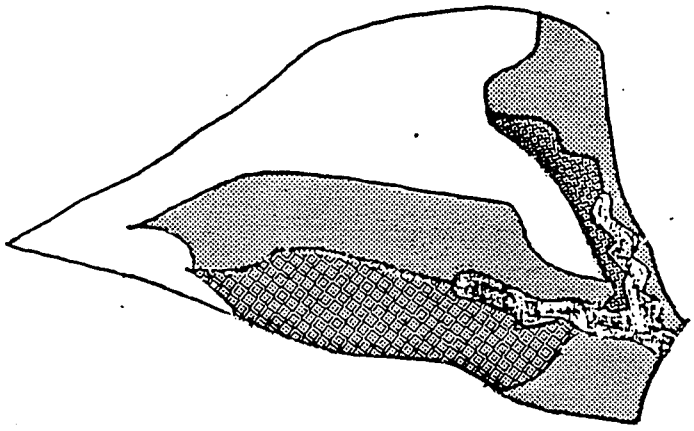


Figure 3. Boundary area of the Haufer Wash RNA, Tonto National Forest, Tonto Basin Ranger District. *Scale 2" = 1 mile*



Jojoba/Canotia/Scrub oak Association.

Jojoba/Catclaw acacia/Pricklypear cactus Association.

Mesquite/Turpentine bush/Pricklypear cactus Association

Mesquite/Catclaw acacia/Desert broom Association.

Figure 4. Distribution of plant associations in the Haufer Wash RNA, Tonto National Forest, Tonto Basin Ranger District.

United States Department of Agriculture | Forest Service | R-3

Reply to: 4060 Research Facilities

Date: November 1, 1982

Subject: Proposed Research Natural Area-Tonto N.F.

To: RNA Committee

Enclosed is our report and recommendations upon reviewing the proposed RNA program for the Tonto National Forest. The field review was conducted July 26-30, 1982, by Larry Schmidt, Will Moir, and Dave Stewart plus various district staff of the Tonto National Forest. We feel that Dave Stewart did an outstanding job in preparing for and conducting this review with us. It is clear that the Tonto's staff has good understanding of the Federal Research Natural Area program and the contributions that RNA lands can make to improved forest management.

We sincerely appreciate the efforts of the Tonto's staff in making this a successful review.

LARRY SCHMIDT
RNA Task Group Leader

Enclosure

Haufer Wash RNA

Ecosystems: 143.12 Grama-Tobosa, K-058; TES Juniperus erythrocarpa-Prosopis velutina-Berberis haematocarpa-Bouteloua eriopoda (Ustic/Thermic of Tonto Basin gradient 27)

Haufer Wash recommended RNA contains ecosystems described as semidesert grass-shrub in central Arizona (Martin 1975, Paulsen and Ares 1962). Prior to its establishment in the early 1930's as a range exclusion, it was evidently utilized severely by sheep and cattle. Today the area has special research and management interest because it contains vegetation after over 50 years of recovery following livestock exclusion. Because the soil, landform, climate, and vegetation potential represent thousands of acres of ongoing livestock management on the Tonto Allotment, as well as adjacent allotments within the semidesert grass-shrub ranges of the Tonto Basin and Roosevelt Lake Districts, Haufer Wash provides an outstanding perspective for managers and research. It was proposed by the Tonto National Forest as a RNA in 1972 (see Establishment Report March 8, 1972). The Regional RNA Task Force again endorses its RNA establishment after over a half century of livestock exclusion.

The boundary is the fence indicated in the 1972 establishment report and redrawn on the enclosed topographic quadrangle. The fence needs to be checked and repaired here and there, but primarily at the mouth of Haufer Wash where cattle can now enter (as well as off-road vehicles). This fence encloses 660 acres.

The RNA Task Force believes that the values and justification for this land as a research natural area, stated in the establishment report of 1972, are completely valid. Protection of the area has generally been continued in the ensuing decade so that the ecosystems continue to reflect the aforementioned benchmark characteristics. In addition, these ecosystems fulfill a major representation presently inadequate, namely the Grama-tobosa type or semidesert grass-shrub range.

The cover type descriptions in the 1972 report are somewhat inaccurate. For example, creosote bush is not a "major species." The following, from reconnaissance in July 1982, are brief vegetation descriptions. See map for areas and boundaries.

1. Wash. This small, intermittent drainage (just north of Haufer Wash) does not contain enough water discharge to support a strongly distinctive riparian vegetation. Major shrubs are catclaw and whitehorn acacias (Acacia greggii, A Constricta), burrobush (Hymenoclea sp), and desert broom (Baccharis sarothroides). Occasional shrubs include desert willow (Chilopsis linearis), hackberry (Celtis reticulata), Juniper (likely Juniperus erythrocarpa), scunkbush (Rhus trilobata), algerita (Berberis haematocarpa), and Condalia. Common cacti are pricly pears (Opuntia engelmanni) and chollas (Opuntia acanthocarpa, O. leptocaulis). A few turbinella oak (Quercus turbinella), cliffrose (Cowania mexicana) and creosotebush (Larrea divaricata) occur.

2. Dissected Alluvial Breaks. Most of the area consists of deep old valley-fill alluvium. Where this has been dissected by Holocene stream action, a variety of steep toeslopes adjoin the wash. On the south-facing alluvial toeslopes are extensions of Sonoran desert. Conspicuous plants include jojoba (Simmondsia chinensis), saguaro (Cereus giganteus), brittle bush (Encelia farinosa), ocotillo (Fouqueria splendens), and false mesquite (Calliandra eriophora). These slopes are very grassy. Frequently encountered grasses include three awns (Aristida spp), bush muhly (Muhlendergia porteri), and slim tridens (Tridens muticus). A small, fish-hook cactus (Mammalaria sp) is common.

The north facing toeslopes contrast. Here crucifixion thorn (Canotia holacantha) prevails, along with jojoba, bush buckwheat (Eriogonum fasciculatum), false mesquite, shrubby bedstraw (Galium stellatum), juniper (Juniperus erythrocarpa), and menodora (Mendora scabra). The sites examined were quite grassy. Needle-and-thread (Stipa speciosa) and side-oat grama (Bouteloua curtipendula) were common. These aspects are too cold in winter for saguaro, but such other "sonoran" species as buckhorn cholla (Opuntia acanthocarpa) and the highly palatable herb, Porophyllum gracilis, could be found.

3. Mesa tops. The west portions of the RNA above oak spring canyon are gently sloping alluvial (bajada) surfaces. Historically, this terrain was grazed hard. Today such grassland increasors as mesquite (Prosopis juliflora), engelmann prickly pear, turpentine bush (Haplopappus laricifolius), and snakeweed (Gutierrezia sp.) still dominate. The most common perennial grass is a species of three-awn. However, patches of curly mesquite (Hilaria belangeri) are found on the fine-textured, montmorillonitic clay soils. Other plants of the mesa tops include false mesquite, buckwheat (Eriogonum wrightii), ratany (Krameria parviflora), algerita, globemallow (Sphaeralcea sp.), hedgehog cactus (Echinocereus fendleri), and catlaw acacia. Red berried junipers are widely scattered (canopy cover from trace to about one percent). Along gentle drainages one found occasional blue paloverde (Cercidium floridum).

Environmental Assessment

Haufer Wash Research Natural Area
Tonto National Forest
Tonto Basin Ranger District
Gila County, Arizona

Proposed Action

The proposed action is to establish the Haufer Wash "proposed" Research Natural Area (RNA) identified in the Land and Resource Management Plan (Forest plan) for the Tonto National Forest as the Haufer Wash RNA, and to manage it according to the direction provided in the Forest Plan (Management Area 6E, page 178). The proposed action, formal designation of the RNA by the Chief of the Forest Service, will amend the Forest Plan.

Purpose and Need for Action

The purpose of establishing the Haufer Wash RNA is to contribute to a series of RNA's designated to "illustrate adequately or typify for research or education purposes, the important forest and range types in each forest region, as well as other plant communities that have special or unique characteristics of scientific interest and importance" (36 CFR 251.23). Haufer Wash RNA contributes to this series of RNA's by providing an example of semidesert grassland and desert scrub vegetation as discussed in the Forest Plan, page 178. An evaluation by the Regional RNA Committee, pursuant to direction in Forest Service Manual (FSM) 4063.04b, of the need for RNA's identified these types as suitable and desirable for inclusion in the national network. Establishment of the Haufer Wash RNA provides long-term protection and recognition of semidesert grassland and desert scrub vegetation types.

The Haufer Wash area was identified in the Forest Plan as a "proposed" RNA based on the relatively undisturbed conditions of semidesert grassland and desert scrub vegetation types in the area at that time. Comments received from interested and affected members of the public supported establishment of an RNA in the area. Site conditions and public concerns have been reviewed; no important changes have occurred.

Conditions and environmental effects of designation are the same as described on page 171 of the EIS for the Forest Plan. Site specific conditions and effects are as follows:

-Grazing has been excluded from the area since the early 1930's.

-No known significant mineral resources exist within the area.

-There are no timber resources and potential for fuelwood harvest is virtually non-existent.

-Recreation use is light and consists of small and big-game hunting.

-No threatened or endangered plant or animals are known to occur in the area.

-There are no roads or trails in the proposed RNA, and the need for new roads or trails in the RNA is extremely unlikely.

Designation of alternate RNA's for protection of these types was considered during Forest Plan development. Haufer Wash was determined at that time to provide the most appropriate site for inclusion in the national network for protection of semidesert grassland and desert scrub vegetation types.

Alternatives and Environmental Consequences

Alternative A, Proposed Action

Alternative A would designate a 680-acre (275 hectares) area as the Haufer Wash RNA. This alternative will provide long-term protection for the area. Management of the area will limit recreation use to non-motorized dispersed recreation at a low intensity and reduced service level, rangeland will be managed at Level A (exclusion), and no harvest of forest products, including fuelwood, will be allowed. Unplanned ignitions within the area will receive appropriate suppression action, wildfires burning outside that threaten the area will be suppressed. Use restrictions will be imposed as necessary to keep areas in their natural or unmodified condition (Forest Plan, page 178). Haufer Wash Research Natural Area will be withdrawn from mineral entry should future and as-yet-unknown information be found to require withdrawal for the protection and management of the basic objectives and purposes of the RNA.

The environmental consequences of Alternative A are described in the EIS for the Tonto Forest Plan (page 171). No adverse or irreversible environmental consequences are envisioned. Irretrievable effects result from resource outputs either reduced or lost as a result of special area designation. There are no significant cumulative effects of establishing the RNA.

Alternative B, No Action

This alternative continues management according to direction in the Forest Plan (page 178) for the "proposed" RNA. Haufer Wash RNA is recommended in Management Area 6E of the Tonto National Forest Plan (page 178). Management emphasis is to provide opportunities for nondisruptive research and education. Use restrictions will be imposed as necessary to keep the area in an unmodified or natural condition.

Management of the area will be the same as for Alternative A. However, only short-term protection of the area, dependent on the life of the Forest Plan, would be provided.

The environmental consequences of Alternative B, the "No Action" alternative, are as described in the EIS for the Tonto Forest Plan (page 171). No adverse or irreversible environmental effects are anticipated. Irretrievable effects result from resource outputs either reduced or lost as a result of special area designation.

Agencies and Persons Consulted

In the process of updating information to determine whether or not conditions had changed since adoption of the Forest Plan, several groups and individuals who may have additional information regarding Haufer Wash RNA were contacted. Representatives from the national office of The Nature Conservancy, the Arizona Chapter of The Nature Conservancy, Arizona Heritage Program, Arizona Game and Fish Department, and Arizona Cattle Growers Association were contacted. In addition, the interdisciplinary team for the Tonto Basin Allotment, which includes Haufer Wash, discussed the Haufer Wash RNA during meetings on October 10, 1990, and April 8, 1992. No additional concerns were raised by these groups. Documentation of the contacts made and summaries of the comments are attached to this Environmental Assessment.

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DESIGNATION ORDER

By virtue of the authority vested in me by the Secretary of Agriculture under regulations 7 CFR 2.42 and 36 CFR 251.23, I hereby establish the HAVIEA WASH Research Natural Area. The HW Research Natural Area shall be comprised of the following land: (**Insert Legal Description**).

Regional Forester, David F. Jolly, recommended the establishment of the HW Research Natural Area in the TONTO National Forest Land and Resource Plan. That recommendation was the result of an analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. The results of the Regional Forester's analysis are documented in the Final Environmental Impact Statement for the National Forest Land and Resource Management Plan and the Establishment Record which are available to the public.

The HW Research Natural Area will be managed in compliance with all relevant laws, regulations, and manual direction regarding Research Natural Areas. The HW Research Natural Area will be administered in accordance with the management direction identified in the Establishment Record. The Tonto National Forest Land and Resource Management Plan is hereby amended to be consistent with the management direction identified in the Establishment Record and this designation order. Directions on pages [redacted] of the Tonto National Forest Land and Resource Management Plan are replaced by the direction on pages [redacted] of the Establishment Record. This direction will remain in effect unless amended pursuant to 36 CFR 219.10. This is a nonsignificant amendment of the Tonto National Forest Land and Resource Management Plan.

The Forest Supervisor of the Tonto National Forest shall notify the public of this amendment and will mail a copy of the Designation Order and amended direction to all persons on the Tonto Land and Resource Management Plan mailing list.

Based on the environmental analysis documented in the National Forest Land and Resource Management Plan and the Establishment Record I find that the designation of the HW Research Natural Area is not a major federal action significantly affecting the quality of the human environment.

This decision is subject to appeal pursuant to 36 CFR 211.18. A Notice of Appeal must be in writing and submitted to:

Chief
USDA, Forest Service
P.O. Box 96090
Washington, D.C. 20013-6090

The Notice of Appeal must be submitted within 45 days form the date of this decision. Within five days of receipt, the Chief will transmit the Notice of Appeal and a copy of the Designation order to the Secretary of Agriculture for review at the Secretary's discretion. The appeal will be deemed denied if the Secretary takes no action within ten days of receiving the appeal.

_____ Chief

_____ Date

ESTABLISHMENT RECORD

for

HAUFER WASH RESEARCH NATURAL AREA

within

Tontó National Forest

Gila County, Arizona

INTRODUCTION

The Haufer Wash Research Natural Area (HWRNA) occupies 680 acres (275.4 hectares) of semi-desert grassland and desertscrub in the Tonto Basin of central Arizona. The RNA is located in Tonto Basin Ranger District of the Tonto National Forest in Gila County on reserved public domain National Forest Land.

This HWRNA was established as a range exclusion in the early 1930's. Prior this time it was subjected to severe overgrazing by sheep and cattle. Initially proposed in 1972 by the Tonto National Forest (Establishment Report March 8, 1972), the Regional RNA Task Group has recently endorsed the establishment of this RNA for its special research and management interest (USDA Forest Service, 1984).

LAND MANAGEMENT PLANNING

The Southwest Regional Guide (USDA Forest Service, 1983), current Tonto National Forest planning documents, and the Forest Plan and Environmental Impact Statement (USDA Forest Service, 1985a/1985b) include the Haufer Wash. The environmental analysis conducted as part of the planning process supports the recommendation to establish this site as a Research Natural Area.

JUSTIFICATION STATEMENT FOR ESTABLISHMENT OF AREA

Prior to its establishment in the early 1930's as a range exclusion, this RNA was severely overgrazed by sheep and cattle. Today the area has important benchmark value because it contains semidesert grassland/scrub vegetation after over 50 years of recovery following livestock exclusion. The vegetation, soil, landform, and climate of the RNA is representative of thousands of acres with ongoing livestock management on the Tonto Basin, as well as adjacent allotments within the semidesert grass/scrub ranges of the Tonto Basin and Roosevelt Lake Districts. Haufer Wash, therefore, provides outstanding oportunities for land managers to compare and monitor effects of resource management techniques.

PRINCIPAL DISTINGUISHING FEATURES

A mosaic of desertscrub and semidesert grasasland cover types which have been exclosed to livestock grazing for greater than 50 years following severe overgrazing by sheep and cattle.

LOCATION

The HWRNA is located within the Tonto Basin Ranger District of the Tonto National Forest in Gila County, Arizona (Figs. 1 & 2). The center of the area is at latitude 33° 56′ north and longitude 111° 20′ west. Specifically the area lies in portions of protracted sections 21, 22, 27 and 28 of T7N R10E, which are included on the USGS Kayler Butte 7.5′ topographic quadrangle (Fig. 3). The boundary of the RNA is a fence built in the early 1930's as a range exclusion. Elevation ranges from a low of ca. 2450 feet (747 meters), where a small wash meets Highway 188 on the southeast boundary; to high of ca. 2950 feet (900 meters) at the western most extension of the RNA near Oak Spring. The RNA contains 680 acres (274.7 hectares). Haufer Wash RNA is located along Arizona Highway 188 10.6 miles (17.1 km) south of the junction of 188 with the Beeline Highway (Arizona Highway 87), the road crosses Haufer Wash. The fenceline crossing Haufer Wash west of 188 is the eastern boundary of the RNA and is more particulalrly described as follows:

Beginning at a point on the westerly Right-of-Way fence of State Highway NO. 188, in Section 27, approximately 0.19 miles north of the intersection with Forest Development Road No. 598, said point being at the intersection of the above mentioned range fence and approximately 66 feet west of a cattleguard crossing Highway 188;
THENCE,northerly of said range fence, approximately 66 feet west of and generally parallel to the centerline of Highway 188, for approximately 0.21 miles to where the Right-of-Way fence continues north and the range fence bears northwest;
THENCE, generally northerly on said range fence as it follows the top of a hydropgraphic divide between small drainages to the east and west, for approximately 0.92 miles to a summit with a shown elevation of 2818 feet;
THENCE, generally westerly and southwesterly on said range fence ona hydrographic divide between Spring Canyon to the north and a small unnamed intermittent stream to the south, for approximately 2.12 miles to a point where said fence corners and bears east at an approximate elevation of 2980 feet;
THENCE, generally southeasterly on said range fence on a hydrographic divide between a tributary to, and Haufer Wash. to the south and unnamed intermittent stream to the north, for approximmately 1.89 miles to the intersection with the afore mentioned Right-of-Way fence and the point of beginning, containing approximately 680 acres (274.7 hectares).

AREA BY COVER TYPES

Information on cover types was obtained from the Southwestern RNA Progress Report (USFS, 1984), Warren and Treadwell (1980) and a field reconnaisance.

Küchler

A portion of the area corresponds to cover type K-52, Grama-Tobosa Shrubsteppe (Küchler, 1964).

Society of American Foresters

The HWRNA is nonforested and is not covered by SAF cover types (Eyre, 1980).

Habitat Types or Plant Associations

The Southwestern Region of the USFS has not developed a habitat type classification system for scrubland vegetation. Using the classification system proposed by Brown et al. (1979), four plant associations are described for Haufer Wash RNA. Determination of the plant associations is based on information obtained from Warren and Treadwell's study (1980) of the vegetation on the nearby Three-Bar Wildlife Study Area, the Southwestern RNA Progress Report (1984) and a field reconaissance within the RNA. The plant associations within the RNA are Mesquite-Catclaw-Desert Broom, Jojoba-Canotia-Scrub Oak, Jojoba-Catclaw Acacia-Prickly Pear and Mesquite-Turpentine Brush-Prickly Pear Associations (Fig. 4). The estimated areas for these plant associations are provided below:

Table 1. Estimated areas of vegetative cover types of the Haufer Wash Research Natural Area

Type (Plant Association)	Surface Area Acres	Hectares
1. Mesquite-Catclcaw Acicia-Desert Broom	66	27
2. Jojoba-Conotia-Scrub Oak	195	80
3. Jojoba-Catclaw Acacia-Prickly Pear	118	48
4. Mesquite-Turpentine Brush-Prickly Pear	302	122
Total Area	680	275

PHYSICAL AND CLIMATIC CONDITIONS

The Haufer Wash RNA is situated in the Tonto Basin, which is within a transitionsal zone between the two major physiographic provinces in Arizona, the Colorado Plateau and Basin and Range province. The RNA proper is on an old alluvial terrace of Tertiary origin consisting of old valley fill materials that are stratified and weakly to moderately consolidated (Broderick, 1974). Haufer Wash bisects the RNA and consists of highly stratified recent alluvium. A variety of deeply-disected steep toeslopes adjoin the wash. South and north-facing toeslopes

support distinctively different plant communities. North and west of Haufer Wash is a large, gently sloping alluvial surface, (often referred to as a mesa top or bajada in the Southwest).

The climate is very mild with few days of freezing temperatures. Daytime temperatures during the summer often exceed 100°F, with nighttime temperature in the 80's and 90's. Winter temperature ranges to near freezing with 250 frost-free days. Annual precipitation averages 14 inches and falls as rain with 59% falling during the warm season May-October (USDA Forest Service, 1986). Climatic influences vary greatly due to the mosaic of topographical features associated with steep toe slopes, streamside terraces and the mesa top.

DESCRIPTION OF VALUES

Flora

The information on cover types was obtained from the Southwestern RNA Progress Report (August, 1983), Warren and Treadwell (1980) and a field reconnaisance. Three cover types are present in the RNA. Note that these cover types describe existing vegetation and do not refer to potential natural vegetation.

1. Mesquite-Catclaw Acacia1 Desert Broom Association (154.1216). This small, intermittent drainage (just north of Haufer Wash) does not contain enough water discharge to support obligate riparian vegetation. Major shrubs are whitehorn acacias (Acacia greggii, A. constricta), burrobush (Hymenoclea sp), and desert broom (Baccharis sarothroides). Occasional shrubs include desert willow (Chilopsis linearis), hackberry (Celtis reticulata), Juniper (likely Juniperus erythrocarpa), scunkbush (Rhus trilobata), algerita (Berberis haematocarpa), and Condalia. Common cacti are prickly pears (Opuntia engelmanii) and cholla (Opuntia acanthocarpa, O. leptocaulis). A few turbinella oak (Quercus turbinella), cliffrose (Cowania mexican) and creosote (Larrea divaricata) occur.

Two plant cover types are associated with steep toeslopes which adjoin the washand and these are related to exposure.

2. Jojoba-Canotia-Scrub Oak Association (154.1236). Restricted to north-facing toeslopes. Here crucifixion thorn (Canotia holacantha) prevails, along with jojoba, bush buckwheat (Eriogonum fasciculatum), false mesquite, shrubby bedstraw (Galium stellatum), juniper (Juniperus erythrocarpa), and (Mendora scabra). The sites examined are quite grassy. Needle-and-thread (Stipa speciosa) and side-oat grama (Bouteloua curtipendula) are common. These aspects are too cold in winter for saguaro, but other "Sonoran" species such as buckhorn cholla (Opuntia acanthocarpa) and the palatable herb, Porophylum gracilis, can be found.

3. Jojoba-Catclaw Acacia-Prickly Pear Association (154.1237). On the south-facing alluvial toeslopes are extensions of the Sonoran desert. Conspicuous plants include jojoba (Simmondsia chinensis), saquaro (Cerus giganteus), brittle bush (Encelia farinosa), ocotillo (Fouqueria splendens), and false mesquite (Calliandra eriophora). Frequently encountered

grasses include three awns (Aristida spp), bush muhly (Muhlenbergia porteri), and slim tridens (Tridens muticus). A small, fish-hook cactus (Mamalaria sp) is common.

4. Mesquite-Turpentine Brush-Prickly Pear Association (143.1661). The west portions of the RNA above Oak Spring canyon are gently sloping alluvial (bajada) surfaces. Historically, this terrain was grazed hard. Today such grassland increasers as mesquite (Prosopsis juliflora), engelman prickly pear, turpentine bush (Haplopappus laricifolius), and snakeweed (Gutierrezia sp.) still dominate. The most common perennial grass is a species of three-awn. However, patches of curly mesquite (Hilaria belangeri) are found on the fine-textured, montmorillonitic clay soils. Other plants of the mesa tops include false mesquite, buckwheat (Eriogonum wrightii), ratany (Krameria parviflora), algerita, globemallow (Sphaeralcea sp.), hedgehog cactus (Echinocereus fendleri), and catclaw acacia. Red berried junipers are widely scattered (canopy cover from trace to about one percent). Along gentle drainages blue paloverde (Cercidium floridum) occurs occasionally.

This latter plant association describes existing vegetation. Potential natural vegetation correpsonds to Kuchler's grama - tobosa shrubsteppe, K-058 (Kuchler, 1964).

There are no known listed, proposed or threatened endangered plant species within the RNA. The following list was compiled from field observations by Reggie Fletcher, USFS Southwest Region botanist (4/29/85, 5/1/85, 5/3/85).

An Abbreviated Plant List for Haufer Wash RNA

Shrubs and Woody Lianas	Common Name
Acacia constricta I	Catclaw Acacia
Acacia greggii I	Whitethorn Acacia
Agave chrysantha R	
Artemisia ludoviciana ssp. albula I	
Atriplex canescens R	
Baccharis brachyphylla I	
Baccharis sarothroides C	
Berberis haematocarpa C	Algerita
Brickellia atractyloides var atractyloides I	
Calliandra eriopylla C	False Mesquite
Canotia holacantha I	Crucifixion Thorn
Carnegia gigantea I	
Cassia covesii R	
Ceanothus greggii C	
Cercidium microphyllum R	
Chilopsis linearis C	Desert Willow
Cowania stansburiana R	
Dalea formosa C	
Dalea parryi R	
Dasylirion wheeleri R	
Echinocereus fasciculatus var fasciculatus R	
Echinocereus pectinatus I	
Encelia farinosa C	Brittle Bush

Encelia frutescens R	
Ephedra trifurca R	
Fouqueiria splendens I	Ocotillo
Frazinus anomala var lowellii R	
Gutierrezia sarothrae C	
Haplopappus gracilus R	
Haplopappus larcifolius C	Turpentine Bush
Hymenoclea monogyra C	
Hymenopappus flavescens var cano-tomentosus R	
Koeberlinia spinosa R	
Krameria grayi R	
Krameria parvifolia I	Ratany
Lotus rigidus I	
Lycium exsertum I	
Mammillaria microcarpa I	
Mimosa biuncifera C	
Opuntia acanthocarpa I	Buckhorn Cholla
Opuntia chlorotica C	
Opuntia leptocaulis I	Cholla
Prosopis velutina I	
Rhamnus crocea R	
Rhus trilobata var anisophylla R	Skunkbush
Salvia calumbariae R	
Simmondsia chinensis C	Jojoba
Sphaeralcea fendleri I	Globemallow Yucca
baccata R	

Herbs

Acamptopappus sphaerocephalus I
Ambrosia acanthicarpa C
Amsinckia sp. R
Androsace occidentalis R
Arabis perennans R
Arenaria douglasii C
Artemisia ludoviciana ssp. albula I
Astragalus nothoxys R
Astragalus nuttallianus R
Avena barbata R
Baeria chrysotoma C
Baileya multiradiata C
Castilleja chromosa C
Castilleja lanata I
Centaurea melitensis R
Chorizanthe brevicornu R
Chrysopsis sp. C
Cirsium neomexicanum C
Cryptantha muricata R
Cuscuta indecora C
Daucus pusillus C
Delphinium virescens ssp. wootonii R
Dichelostemma pulchellum R
Draba cuneifolia R
Dyssodia porophylloides R

Eriastrum diffusum C
Eriastrum eremicum C
Erigeron divergens C
Eriogonum arizonicum C
Eriogonum fasciculatum C Bush Buckwheat
Eriogonum inflatum I
Eriogonum trichopes C
Eriogonum wrightii C Buckwheat
Erodium cicutarium R
Euphorbia capitellata R
Euphorbia melandenia C
Evax multicaulis R
Funastrum heterophyllum R
Gaillardia pulchella R
Galium proliferum C
Galium stellatum var eremicum R
Gaura coccinea I
Gaura gracilis C
Gilia tenuiflora I
Gomphrena sonorae R
Hedeoma nanum C
Herniaria cinera R
Janusia gracilis R Lepidium lasiocarpum var lasiocarpum I
Lesquerella gordoni I
Linum aristatum R
Linum puberulum R
Lomatum puberulum R
Lotus humistratus I
Lotus salsuginosus R
Lupinus bicolor I
Malcothrix sp. R
Marrubium vulgare R
Maurandya antirrhiniflora I
Melampodium lencanthum C
Mendora scraba R
Mentzelia pumila R
Mirabilis bigelovii I
Nama hispidum R
Nemacladus glanduliferus I
Orthocarpus purpurascens I
Oxybaphus coccineus R
Parietaria pennsylvanica R
Penstemon eatonii ssp. exsertus R
Penstemon microphyllus I
Penstemon thurberi R
Perezia wrightii R
Phacelia crenulata var crenulata R
Phacelia ramosissima I
Phoradendrom californicum R
Plantago purshii C
Plantago rhodosperma C
Polygala alba R
Polygala macradenia R
Polygala scoparioides R

Porophyllum gracile R
Psilostrophe cooperi R
Psoralea tenuiflora I
Senecio monoensis R
Senecio quercetorum C
Silene noctiflora I
Sonchus asper R
Stephanomeria pauciflora R
Stylochline micropoides R
Troidanis biflora C
Verbena bipinnatifida R
Vicia exigua R

Grasses and Grass-like Plants

Andropogon cirratus R
Andropogon sp. R
Aristida glauca C
Aristida longiseta C
Aristida purpurea C
Aristida wrightii C
Boutelona aristidoides R
Boutelona curtipendula I — Side-oats Grama
Bromus rubens C
Bromus trinii C
Festuca octaflora I
Hilaria belangeri C
Hordeum leporinum R
Muhlenbergia porteri I
Sitanion hystrix I
Sporobolus wrightii R
Stipa neomexicana R
Stipa speciosa I — Needle-and-thread
Tridens muticus I — Slim Tridens
Tridens pulchellus R

Trees

Juniperus erythrocarpa I — Red-berried Juniper
Quercus turbinella I — Turbinella Oak
Quercus turbinella X R — Turbinella Oak

Relative Abundance:

R = rare
I = infrequent
C = common

Fauna

The HWRNA is potential habitat for desert tortoise (Gopherus agassizii) and Gila monster (Heloderma suspectum). The desert tortoise is listed as a threatened (Group 3) wildlife species in Arizona by the Arizona Game and Fish Commission (1982). Desert tortoise and Gila monster are both currently under review for listing (Category 2) by the U.S. Fish and Wildlife Service (1985).

The RNA provides good habitat for several species of wildlife including mule deer (Odocoileus hemionus), Coyote (Canis latrans), grey fox (Urocyon cineroargenteus), javelina (Tayassu tajacu), desert cottontail rabbit (Sylvilagus auduboni), black-tailed jackrabbit (Lepus californicus), and Gambel's quail (Callipela gambelii) (from Establishment Report March 8, 1972). The following animal list was derived from the RUN WILD III computer-stored data base (Lehmkuhl and Patton 1982) from the following vegetation associations for Gila county, Arizona:

423.102 Bouteloua-Yucca Association
531.104 Simmondsia chinensis Association

Abbreviated Animal List for Haufer Wash RNA.

BIRDS:

Kite, Mississippi	Ictinia mississippiensis
Lark, Horned	Eremophilia alpestris
Mockingbird, Northern	Mimus polyglottos
Oriole, Scott's	Icterus parisorum
Phoebe, Say's	Sayoris saya
Shrike, Loggerhead	Lanius ludovicianus
Sparrow, Black-Throated	Amphispiza bilineata
Thrasher, Curve-billed	Toxostoma curvirostre
Towhee, Brown	Pipilo fuscus
Towhee, Green-tailed	Pipilo chlorurus

MAMMALS

Bat, Pallid	Antrozous pallidus
Chipmunk, Cliff	Tamias dorsalis
Cottontail, Desert	Sylvilagus audubonii
Coyote	Canis latrans
Deer, Mule	Odocoileus hemionus
Jackrabbit, Black-tailed	Lepus californicus
Pronghorn	Antilocapra american
Squirrel, Harris' Antelope	Ammospermohilus harrisii
Squirrel, Rock	Spermophilus variegatus
Squirrel, Spotted Ground	Spermophilus spilosoma

Geology

The entire area is underlain by Quaternary-Tertiary sediments: old valley fill deposits of semi consolidated

sedimentary material of fluvial origin (Arizona Highway Department, 1961).

Soils

In the wash, soils are dominantly Ustic Torrifluvents, sandy-skeletal, mixed and thermic (USDA Forest Service, 1986). These are very deep, excessively drained soils forming in transported parent materials derived from various sources.

The dissected alluvial breaks are occupied by an association of Typic Ustochrepts, loamy-skeletal, mixed and thermic; and Ustochreptic Calciorthids, loamy-skeletal, mixed and thermic. The Typic Ustochrepts are on north aspects and Ustochreptic Calciorthids are on south aspects. These soils are forming in transported parent materials from mixed sources. They are quite similar morphologically and differ mainly in their soil climate regimes; the Ustochreptic Calciorthild being somewhat warmer and drier. The mesa tops are occupied by Aridic Haplustolfs, fine, mixed and thermic; and Aridic Haplustalfs, fine, montmorillonitic and thermic. Those soils having montmorillonitic mineralogy are characterized by thicker argillic horizon and higher clay contents than the soils having mixed mineralogy. Otherwise the two soils are quite similar. The montmerillonitic soils are normally associated with areas having higher cover percentages of Hilaria belangeri.

Cultural

The location of the Haufer Wash RNA near the "Ruins" noted on the USGS map at Oak Spring suggests that others would be included within the boundaries. Five prehistoric Salado sites, ranging from lithic scatters to single-room habitations in association with agricultural check dams have been identified in a singe transect survey conducted along an unnamed drainage within the RNA boundaries. It is expected that sites exist near the other drainages as well.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

No known significant mineral resources exist within this area. Although Bureau of Land Management records indicate that both lode and placer claims were located in the recent past upon lands involved within the RNA, the BLM has closed the associated claim case files due to the lack of required assessment work.

Grazing

A fenced enclosure which has been closed to all grazing since the early 1930's. There is little evidence of disturbance by man in the area. No conflicts or impacts associated with this area.

Timber

This area has entirely within the desert scrub vegetation type. There are no timber resources and fuelwood harvest potential is virtually non-existent.

Watershed Values

This area drains east into Tonto Creek and then south into Roosevelt Lake through a series of ephemeral streams. This area represents less than 10% of the total watershed in the area.

Recreation Values

Recreation use of this area consists of both small game and big game hunting. The hunting use will not conflict with potential research projects.

Wildlife and Plant Values

Potential habitat exists for desert tortoise and gila monster which are candidate for federal listing as T&E species. No T&E plant species are known to occur in the area.

Wilderness, Wild and Scenic River, National Recreation Area Values

There are no congressionally designated area like those mentioned above for this area.

Transportation Plans

The existing State Route 188 right-of-way alignment is contiguous to the southeast boundary of the proposed RNA. As this highway is a major access route to the Roosevelt Lake recreation area, increases in traffic volumes may eventually require road improvement and/or realignment to provide for public safety. Should these occur, they would not adversely affect the RNA. The eastern most 1000 feet of Forest Road #598 is approximately 700 feet south of and approximately parallel to the southeast boundary of the proposed RNA. Forest Road is also approximately 700 south of and approximately parallel to the eastern most 1000 feet of the southern boundary of the proposed RNA. There are no plans to realign or improve this lightly used road.

Utility Corridor Plans

There is a 21.5 KV powerline located approximately 1/4 mile east of the proposed RNA. Improvements to this line or additional powerline corridors have not been proposed for this area. There is a 20 foot wide Right-of-Way for Mountain States Telephone and Telegraph Co. lying within the Southeast portion of the RNA, approximately 300' west of and parallel to State Highway 188.

MANAGEMENT PLANNING

Land Management Planning

The Haufer Wash RNA is in Tonto National Forest Plan Management Area 6E (see Appendix). Management emphasis is to provide opportunities for nondisruptive research and education,

Vegetation Management

There will be no harvest of forest products including fuelwood. Unplanned ignitions outside the area which threaten the area will be suppressed. The area is assigned no grazing capacity.

ADMINISTRATIVE RECORDS AND PROTECTION

Administration and protection of the Haufer Wash RNA will be the responsibility of the Tonto National Forest. The District Ranger, Tonto Basin Ranger District, Roosevelt, AZ has direct responsibility.

The Director of the Rocky Mountain Forest and Range Experiment Station, or his designee, will be responsible for any studies or research conducted in the area, and request to conduct research in the area should be referred to him. He, or his designee, will evaluate research proposals and coordinate all studies and research in the area with the District Ranger and RNA research coordinator. All plant and animal specimens collected in the course of research conducted in the area will be properly preserved and maintained within university or federal agency herbaria and museums, approved by the Rocky Mountain Station Director.

Records for the Haufer Wash RNA will be maintained in the following offices:

Regional Forester, Southwestern Region, Albuquerque, NM
Rocky Mountain Station, Fort Collins, CO
Rocky Mountain Forest and Range Experiment Station, Tempe, AZ
Tonto National Forest, Phoenix, AZ
District Ranger, Tonto Basin Ranger District, Roosevelt, AZ

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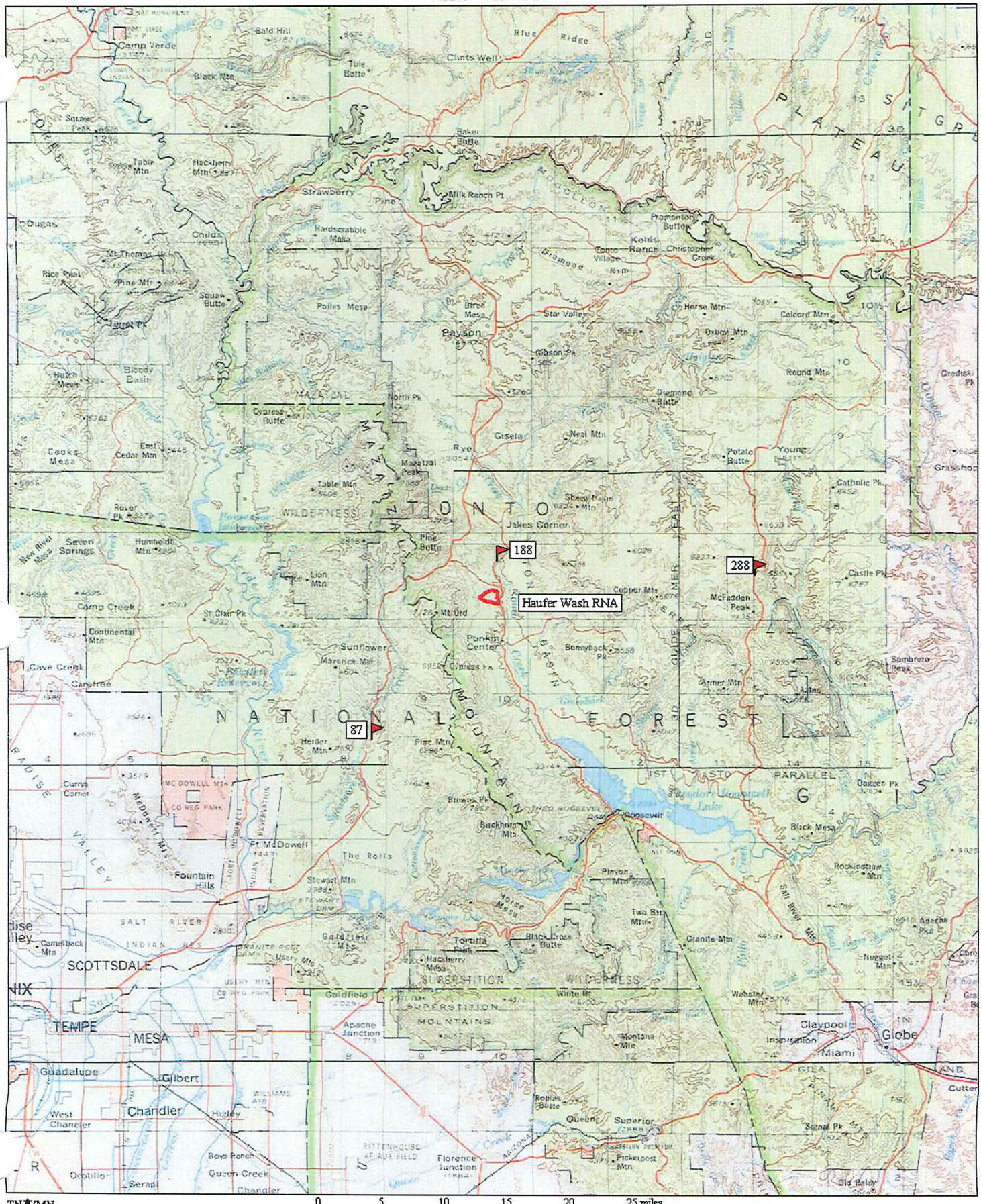
APPENDIX

These pages are reproduced from the
Tonto National Forest Plan

Kuchler, A.W. 1966. Potential Natural Vegetation. Department of Interior, Geologic Survey. 1969. Washington, D

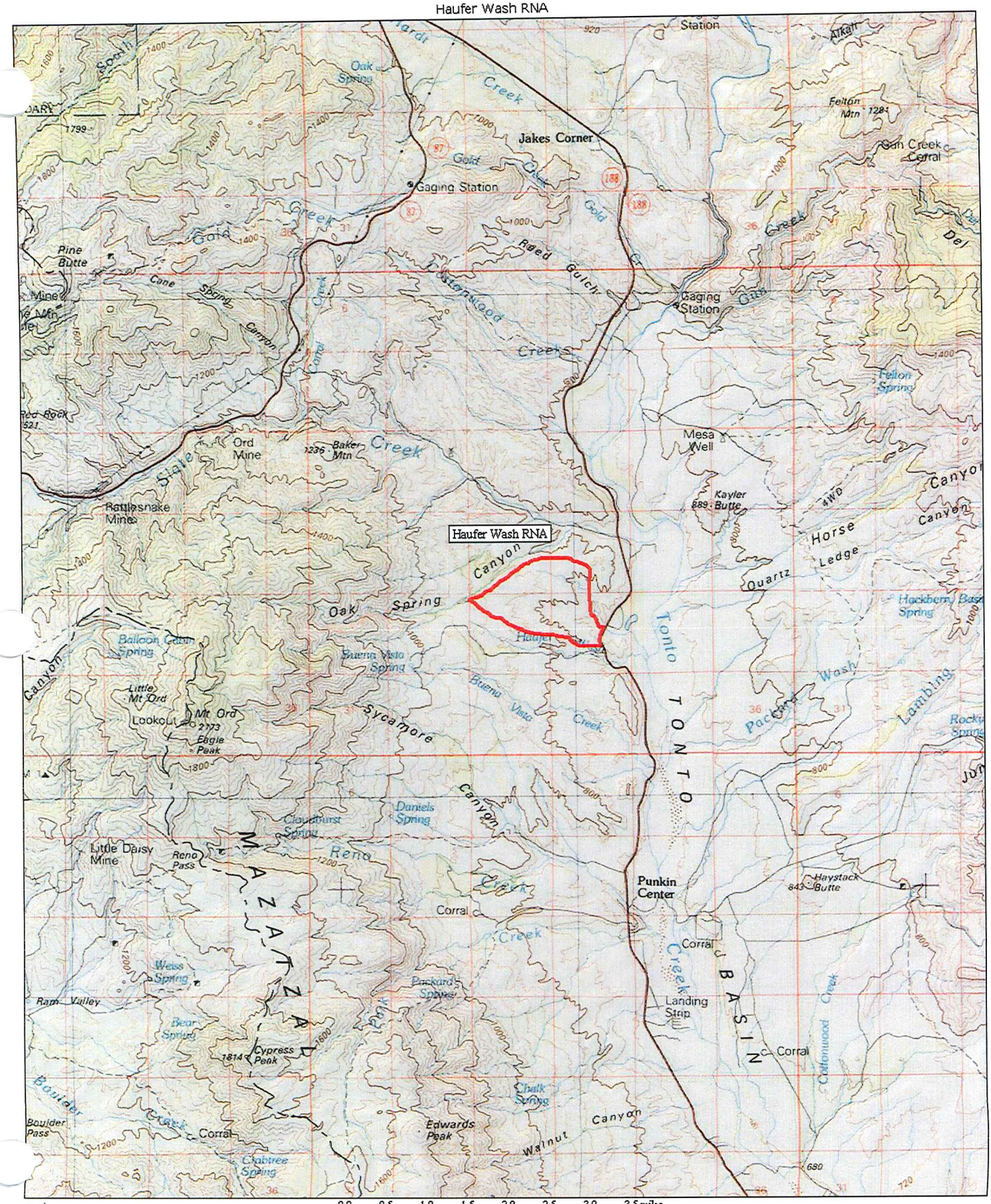
Haufer Wash RNA



TN 11¼° MN

0 5 10 15 20 25 miles
0 5 10 15 20 25 30 35 40 km

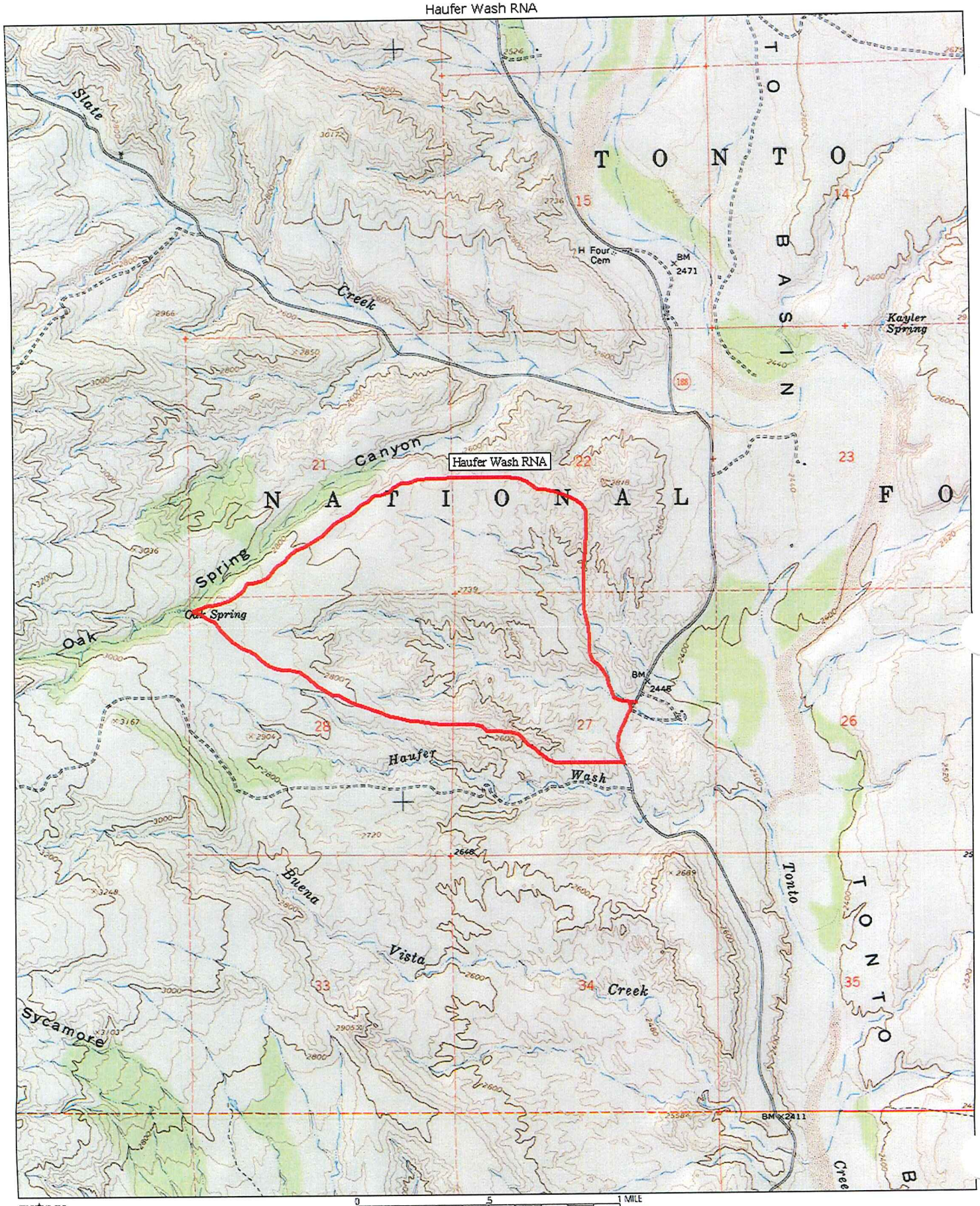
Haufer Wash RNA



TN 11½°

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 miles
0 1 2 3 4 5 km

Haufer Wash RNA



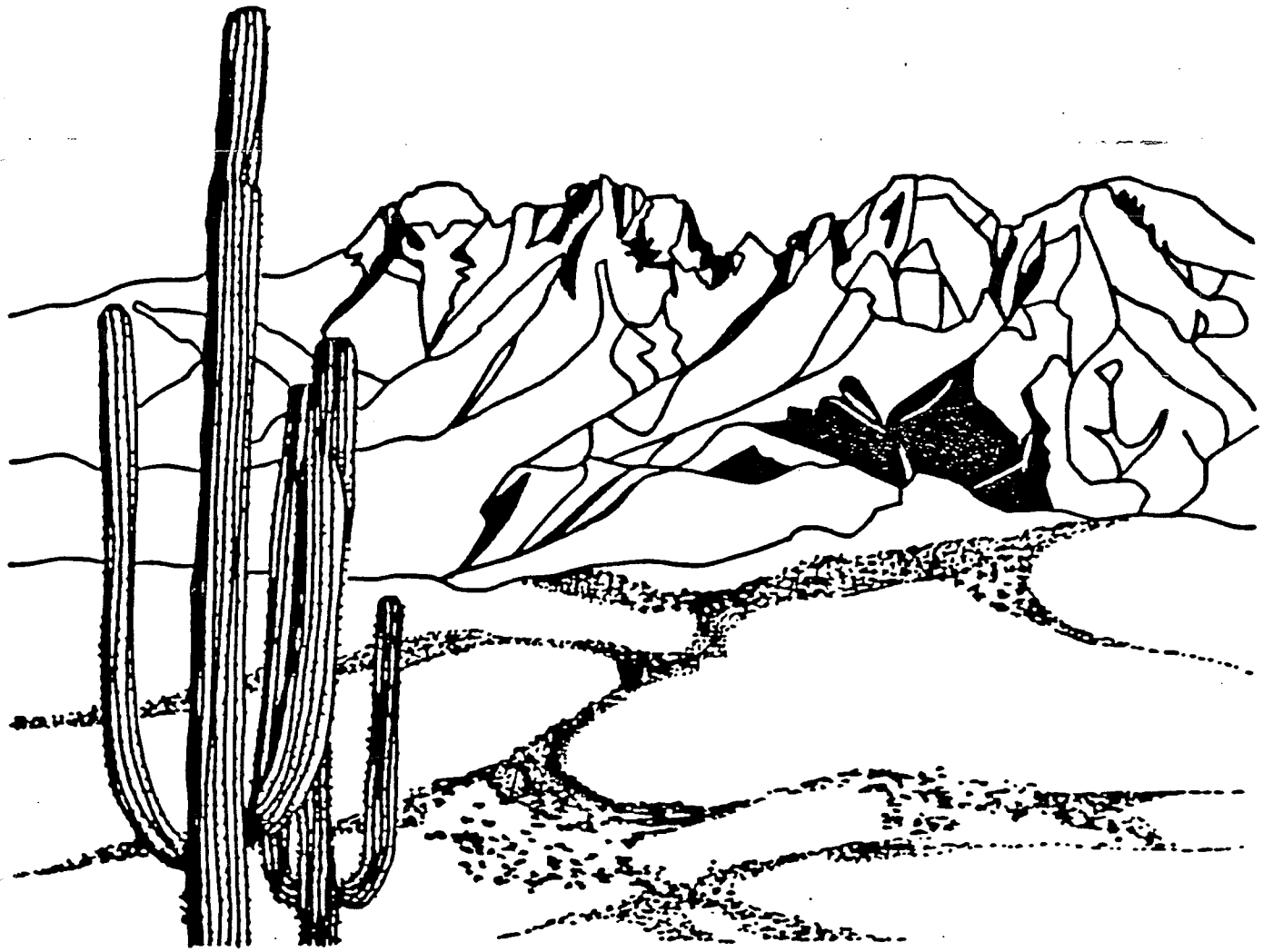
United States
Department of
Agriculture

Forest Service

Southwestern
Region

October 1985

Tonto National Forest Plan



MANAGEMENT AREA 6E

Prescription: #41

Description: Haufer Wash Research Natural Area, 3½ miles north of Punkin Center adjcent to State Highway #188. Vegetation consists of 680 acres of the Sonoran desertscrub vegetation type. This area is currently not grazed.

Analysis Areas: 5200

Management Emphasis: Manage to provide opportunities for nondisruptive research and education. Use restrictions will be imposed as necessary to keep areas in their natural or unmodified condition. There will be no harvest of forest products, including fuelwood.

Wildfires outside the natural area which endanger the area will be extinguished in an appropriate manner as will person-caused fires within the area. Unplanned ignitions within the area will receive appropriate suppression action.

Timber Suitability: All acres unsuitable.

Decision Units	Activities	Applicable Analysis Areas	Standards and Guidelines
DU 1, 2	A03	All	VQO of preservation will be met.
DU 1	A15	All	Manage dispersed recreation at low intensity reduced service level. ORV use prohibited. Post all boundaries. Manage ROS Classes (see Appendix E) according to existing inventory as follows: ROS CLASS — % of MGMT. AREA SP — 80 SPM — 20 TOTAL — 100
DU 16	D02	All	Manage suitable rangeland at Level A. Little change is expected in range condition during the first decade.
DU 42	J04	All	Process withdrawals for locatable minerals by 1988. Issue no surface occupancy stipulations for leasing activities.
DU 56	P08, P09	All	Unplanned ignitions will receive appropriate suppression action. Wildfires burning outside which threaten area will be suppressed.