

Research Natural Areas

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

SEARCH RNAs BY

County

GO

BUSH HIGHWAY

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General Information

S.USNAHP*95

- Created: 1973
- Size: 488 (acres)
- Elevation Range: 2000 - 2000ft
- Location: *Bush Highway RNA is located along the east side of the old Bush Highway, two miles north of Saquaro Lake in central Arizona.*

Site Description

This Sonoran Desert RNA historically supported saquaro and paloverde dominated communities. Since the area is not fenced, it has received heavy grazing use over the years. In 1996, a stand-replacement fire burned the entire RNA and adjacent areas, setting the plant communities back to early successional stages. The non-native and invasive grass red brome (*Bromus rubens*) provided the primary fuel, making a stand replacement fire possible. It is probable that future fire events outside the natural fire regime will limit the recovery potential for this RNA.

Climate and Enviromental Information

Data not Available

Vegetation - Bush Highway

Palo Verde-Cactus Shrub (K 37)

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ESTABLISHMENT REPORT

Bush Highway Research Natural Area

Tonto National Forest
Maricopa County, Arizona

Narrative Report

I. Principal Distinguishing Features

The proposed Bush Highway Research Natural Area is quite typical of the Palo Verde-Cactus Shrub type. The general area vegetation in the surrounding area is commonly referred to as the Southern Desert Shrub type. The topography is all gently rolling with a general slope to the south. The drainages are well developed and lead directly into Saguaro Lake which is on the Salt River, a distance of one and one-half miles south. The old Bush Highway traverses the west side of the proposed area. This road is often used by recreationists, thus resulting in existing and an increasing potential for disturbance by off-highway vehicular travel.

II. Location

The area is described as all of Sec. 16, T13N, R8E of the Gila and Salt River base and meridians lying east of the old Bush Highway. The acreage is approximately 488 acres all being in National Forest status. The area is under the administration of the Mesa District Ranger of the Tonto National Forest (see attached map).

III. The Area by Cover Type

The majority of the area is presently in a mixture of Palo Verde-Cactus shrubs. The exception is a rather broad draw bottom characterized by mesquite trees (see map). Kuchler shows it to be in the transition between Oak-Juniper and Mountain Mahogany-Oak shrub (type K-32). However, it is felt that this is not the correct type. At present, the state of vegetation development more nearly approaches a K-43, Palo Verde-Cactus shrub type. The more important species presently found on the area are bursage (Franseria dumosa), coffeeberry (Simmondsia chinensis), saguaro cactus (Cereus giganteus), cat-claw (Acacia spp.), creosotebush (Larrea tridentata), Palo Verde (Cercidium microphyllum), false mesquite (Calliandra eriophylla), wolfberry (Lycium spp.), cactus (Opuntia spp.) and Mormon tea (Ephedra spp.).

Prior to 1875, the area is reported to have supported a higher density of perennial grasses than presently exists on the site. The shrub cover was less than presently found. The common grass species were bush muhly (Muhlenbergia porteri), perennial three-awn (Aristida spp.), side-oats grama (Bouteloua curtipendula) and galleta (Hilaria jamesii).

Photo Notes and Observations

Bush Highway RNA Recon; 9-1-2006

Birds and wildlife sighting (Sarah Lantz, AZGFD):

Black-throated sparrow	Whiptail Lizards
Cactus Wren	Jackrabbit
Gambel's Quail	Rock Squirrel
Curve-Billed Thrasher	Bees
Turkey Vulture	Butterflies/Caterpillars
Bushtit	
Morning Dove	
Northern Flicker	
Gila Woodpecker	

General Observations about the site:

Wash bank and bottoms- Mesquite and Palo Verde densest; Iron Wood (old-no young trees) sparingly present; Rattlesnake Weed (*Euphorbia/Chamaesyce*) dominant, along with forbs Verbena, Four O'Clock, *Epilobium* spp., *Senna*, and Climbing Milkweed (*Sarcostemma cynanchoides*); significant cover of unidentified bunchgrass, possibly Big Sacaton (*Sporobolus wrightii*).

Upland slopes- Some remnant patches of Palo Verde-Cactus shrub vegetation type including Saguaro, although shrub and cactus carcasses from fire evident (no charcoal-blown away). Post-fire shrub communities dominated by Brittlebush (mostly southern portion of RNA) and Jojoba (mostly northern portion of RNA), with White Bur Sage and Ocotillo also present. Report on other shrubs awaits verification of collected specimens.

Recreation- Extensive OHV use and road networks; a fair amount of trash including shotgun shells and bullets

Photo notes:

1. View 68 deg (ENE) to Four Peaks showing heavy OHV use
2. Cholla (*Cylindropuntia*) and Saguaro (*Carnegie gigantea*)
3. View approx. SW-heavy OHV use
4. View 142 deg (SE) to Weaver's Needle, Superstition Mtns.; Saguaro in foreground
5. "...."; Lanscape view
6. Close-up of Mesquite (*Prosopis*) fruit
7. Evidence of burn and encroaching *Euphorbiaceae*
8. Paperflower (*Psilostrophe*) close-up
9. Paperflower bush
10. Desert Marigold (*Baileya multiradiata*)
11. Evidence of shooting; shot gun shells and spent bullets in *Euphorbiaceae*
12. View approx. S in 1st drainage with Palo Verde, Iron Wood, Mesquite, and OHV road
13. Teddybear Cholla and Ocotillo (*Fouquieria splendens*)

14. Teddybear Cholla
15. Ocotillo carcass
16. View approx S. along ridge and OHV road
17. View S; foreground dominated by Brittlebush (*Encelia farinosa*), mesquite on drainage slopes
18. View SE with Weaver Needle; south trending drainage and OHV road on ridge
19. "...” Close-up
20. View N showing demarcation of Mesquite drainage and xeric vegetation/bare slopes
21. View S along OHV ridge; mesquite-dominated sandy wash below
22. Close-up of depauperate ground and *Euphorbiaceae* (*Euphorbia* or *Chaemasyce*)
23. View N in head of wash-catchment
24. View S in main wash with fresh OHV tracks and Mesquite
25. OHV road (E-W) into wash
26. Close-up of *Eriogonum*
27. View S along drainage with Saguaro carcass
28. View ENE with Four Peaks; Mesquite confined to drainage
29. View SW of vegetation on upland, E-facing slope
30. Invasive Buffelgrass (*Pennisetum ciliare*) on W-facing slope
31. Blackfoot Daisy (*Melampodium leucanthum*) bush
32. Blackfoot Daisy close-up
33. Close-up of a Hawk (Sphinx) Moth Caterpillar
34. "...”
35. Close-up of *Panicum* on E-facing slope; leaving major drainage on east edge of RNA
36. Close-up of *Mammillaria*
37. View ENE with Four Peaks, OHV road
38. View SE with Weaver Needle, ridge, and drainage running S to Saguaro Reservoir
39. View ENE with Four Peaks and ROLLS OHV signage; near west edge of RNA and entrance to FR 204G
40. Remnant Palo Verde-Cactus shrub type amidst successional veg; view ENE with Four Peaks in background
41. OHV road network in drainage
42. Landscape view of seral-stage cover
43. OHV eroded slope and road network
44. Landscape view ENE with Four Peaks and S-oriented, parallel drainages
45. View S into drainage; Brittlebush in foreground, Saguaro and desert shrub below
46. View S; landscape
47. View SW; along road network
48. View NE; major Mesquite dominated drainage on eastern edge of RNA, OHV road on ridge in foreground
49. "...”
50. "Road Closure” signage on active OHV road
51. Saguaro mortality- possible fire mortality?

During periods of favorable moisture and temperature, the area supports fair to heavy stands of annuals. Among the most common are red brome (Bromus rubens), Filaree (Erodium cicutarium), owl clover (Orthocarpus purpurascens) and Indian wheat (Plantago purshii). The density of annuals is dependent on annual precipitation. It is possible that grazing has played a part in stimulating the annuals.

The drainage bottom in the extreme eastern side of the proposed area (see map) is a fairly broad sandy flood plain. This flood plain supports a moderately dense stand of mesquite trees (Prosopis spp.). There is little other perennial vegetation on the flood plain.

IV. Physical and Climatic Conditions

A. The proposed Research Natural Area currently receives only light grazing by permitted livestock. Basically, this use is limited to those times when annuals are available; however, there has been grazing on the area since 1880, or earlier since the 1870's. It is safe to say that grazing use was heavy to extreme. This was due to three factors: (1) the location of the area to the Salt River (the river being one of the few permanent sources of water in this area); (2) the location of the proposed area to a long-standing sheep driveway; and (3) the massive numbers of livestock in this portion of Arizona during the 1880's. The Heber-Reno driveway is one mile west of the proposed area and has a history of heavy use by sheep from 1875 through about 1930 when the sheep use began to drop off.

B. Topography and Soils

The topography is gently rolling with a general slope to the south. Most of the drainages are well developed. The drainage is directly into Saguaro Lake. Saguaro Lake is a man-made lake on the Salt River and is located one and a half miles south of the southern boundary of the proposed Research Area. Elevation is approximately 2000+ feet above sea level. Soils have not been mapped and classified. However, they are described as a stony, sandy clay varying in depth from shallow to deep in the drainages. They are derived from sand and gravel conglomerates mostly developed from granite base rock to the east. Detailed soils information will need to be obtained before a complete evaluation of a Research Natural Area potential can be made.

C. Climate

The average annual precipitation is approximately 12 inches, all of which falls in the form of rain. The 1938-60 mean

measured at Stuart Mountain dam two miles south of the southern boundary is 11.37 inches. The high measurement at the dam was 19.84 inches (1951), with a low measurement of 3.93 inches (1956). A typical monthly spread of rainfall is as follows:

January	1.45"	July	1.20"
February	0.89"	August	1.67"
March	1.18"	September	1.09"
April	0.55"	October	0.86"
May	0.19"	November	0.82"
June	0.16"	December	1.31"

The evapo-transpiration is 100 inches, plus or minus, per year. The climate is rather typical of desert conditions insofar as temperatures are concerned. During the summer, daytime temperatures are usually above 100°F with winter temperatures seldom going below freezing. The range is normally between 25°F and 115°F. The growing season can be considered as practically yearlong. Plant growth will occur whenever moisture is available with favorable temperature conditions. Soil temperatures become very high during the more favorable growth periods, thus making seedling establishment very difficult.

V. Description of Values

A. Flora

The proposed Research Natural Area is quite typical of a relatively large area in the foothills at the lower elevations of Arizona under the influence of desert climatic conditions.

The area has been lightly used for the past several years; however, grazing has possibly had an effect on the existing vegetation. Closure to grazing will allow for observations in vegetation changes over a period of years. The annual flora will add to the Research Natural Area values of this site, especially as it relates to the amenity values of the desert vegetation. Detailed inventories, especially soils, are needed before the full value of this area can be assessed from the vegetation point of view.

B. Geology

There are no known direct geological values in the area. There are no known minerals or mineral activity in the area or in the immediate vicinity.

C. Fauna

Wildlife in this area is mostly comprised of upland game, dove, quail, cottontail rabbit, jack rabbit and a variety of song birds. It is possible that javelina might be present on the area during certain times of the year. Other species found in the area are coyote, fox, mule deer and numerous reptiles, snakes and lizards. The desert tortoise can also be found in the vicinity. Various kinds of small rodents inhabit this type.

D. Recreation

The area receives moderate use by hunters. Drainage bottoms are usable by off-road vehicles and have received some use by this type of vehicle. It will be necessary to prevent the continuance of this type of use. It will then be possible to compare this area with similar areas with off-road vehicles' use. There is use by hikers and others interested in observing desert vegetation. The highest value of the area is in the form of amenity value.

E. Water Use

Water production from this area is minor due to the very low rainfall. There are no places to construct water storage facilities which would interfere with the subject area.

VI. Recommendation

The Region 3 Research Natural Area Committee recommends that the proposed Bush Highway Research Natural Area be established. The constraints of this area should be recognized and thoroughly evaluated when detailed inventories are conducted.

March 15, 1973

Date

Robert M. Williamson *RMS*
Region 3 Natural Area Committee Member

3/15/73

Date

Fred J. Werth *RMS*
Tonto National Forest Supervisor

4/6/73

Date

W. D. Hunt
Regional Forester

May 30, 1973
Date

Karl F. Weger
Director of Rocky Mountain Station

Aug 14 1973
Date

F. Leroy Bond *ams*
Director of Division of Recreation

Aug. 16, 1973
Date

M.B. Dickerman *ams*
Deputy Chief of Research

Appendix A

ORDER

By virtue of the authority vested in me by the Regulations posted in 36 CFR 251.23, I hereby designate as the Bush Highway Research Natural Area the lands described in the preceding report by the Region 3 Research Natural Area Committee, dated March 7, 1972; said lands shall hereafter be administered as a Research Natural Area, subject to the said regulations and instructions thereunder.

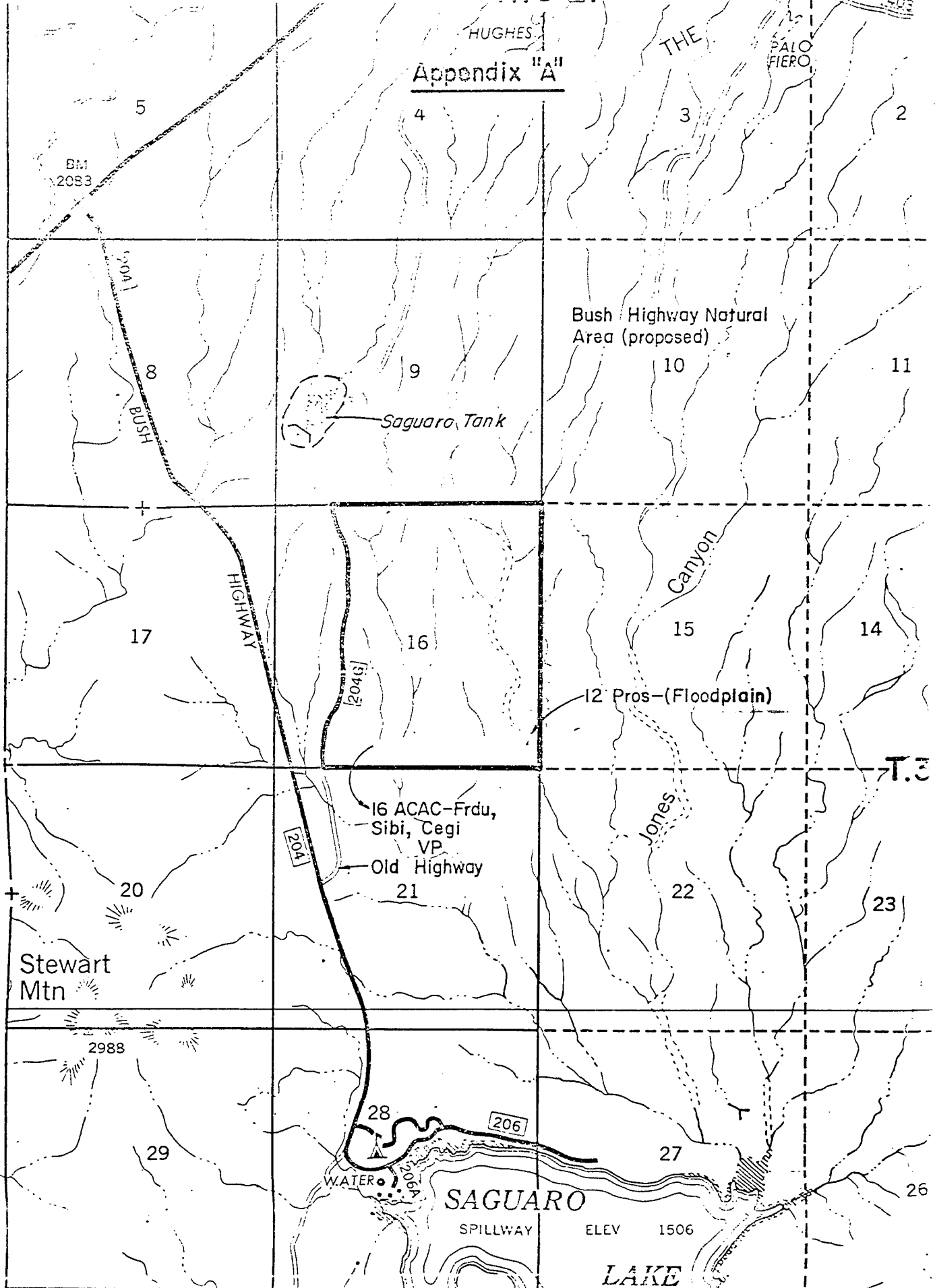
AUGUST 17, 1973

Date

John R. McGuire by *Rubens*

Chief, Forest Service

Appendix "A"



Appendix B



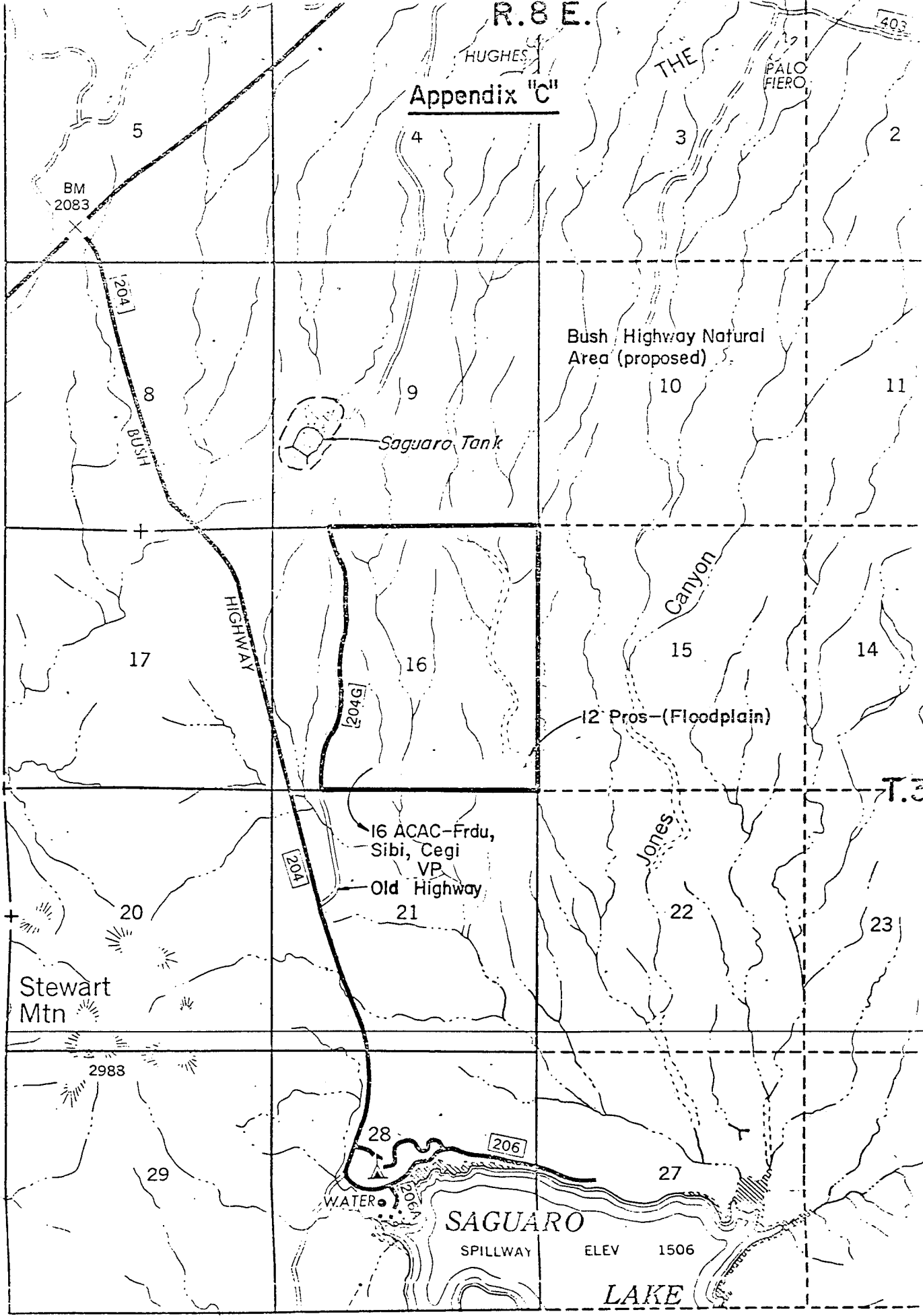
Bush Highway Research Natural Area



Bush Highway Research Natural Area

R. 8 E.

Appendix "C"



Bush Highway Natural Area (proposed)

Saguaro Tank

HIGHWAY

Canyon

12 Pros-(Floodplain)

16 ACAC-Frdu, Sibi, Cegi VP
Old Highway

Stewart Mtn

SAGUARO

SPILLWAY

ELEV 1506

LAKE

403

T. 3

BM 2083

5

4

3

2

8

9

10

11

17

16

15

14

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21

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2983

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WATER

ENVIRONMENTAL ANALYSIS REPORT
BUSH HIGHWAY RESEARCH NATURAL AREA

MESA RANGER DISTRICT
TONTON NATIONAL FOREST
REGION 3

Prepared By _____
Forester

Date

Submitted By Frank S. Leonard
District Ranger

6/16/72
Date

Approved By Fred J. White
Forest Supervisor

9/15/72 WJ
Date

I. INTRODUCTION AND DESCRIPTION

- A. Bush Highway Research Natural Area
- B. To provide an area of approximately 480 acres in the Palo Verde - Cactus Shrub type (Kuchler Type 43) that may be made available for ecological study by scientists within and outside the Forest Service.
- C. Desert Management Zone. Mesa District, Tonto National Forest.
- D. The portion of Sec 16 T3N R8E lying east of the old Bush Highway. It is located approximately $1\frac{1}{2}$ miles north of Saguaro Lake.
- E. 488 Acres.
- F. All National Forest System land.
- G. Topography is gently rolling broken by desert washes. The aspect is southerly. The elevation is approximately 2,000 ft. Soils are of a stony sandy clay varying in depth from shallow to deep in the drainages and derived from sand and gravel conglomerates mostly developed from granitic base rock. Temperatures in the summer exceed 100°F. with occasional winter temperatures slightly below freezing. Annual precipitation averages approximately 12" with about 8" received during the October - March season. Summer rainfall occurs during the July - August period in the form of high intensity short duration thunderstorms.

II. SUMMARY

The proposed Bush Highway Research Natural Area, if established, is compatible with National Forest System management objectives. The establishment of the Area will have very little effect on resources in the area. Information obtained from the Area should provide additional information concerning the ecological processes in the Palo Verde - Cactus Shrub type.

III. EVALUATION OF PROPOSAL ON THE ENVIRONMENT

- A. Environmental Effects
 - 1. Natural Beauty - If fenced, the fence could detract from the natural desert landscape.

2. Outdoor Recreation - If the area is fenced, the fence could restrict movement of hunters and hikers.

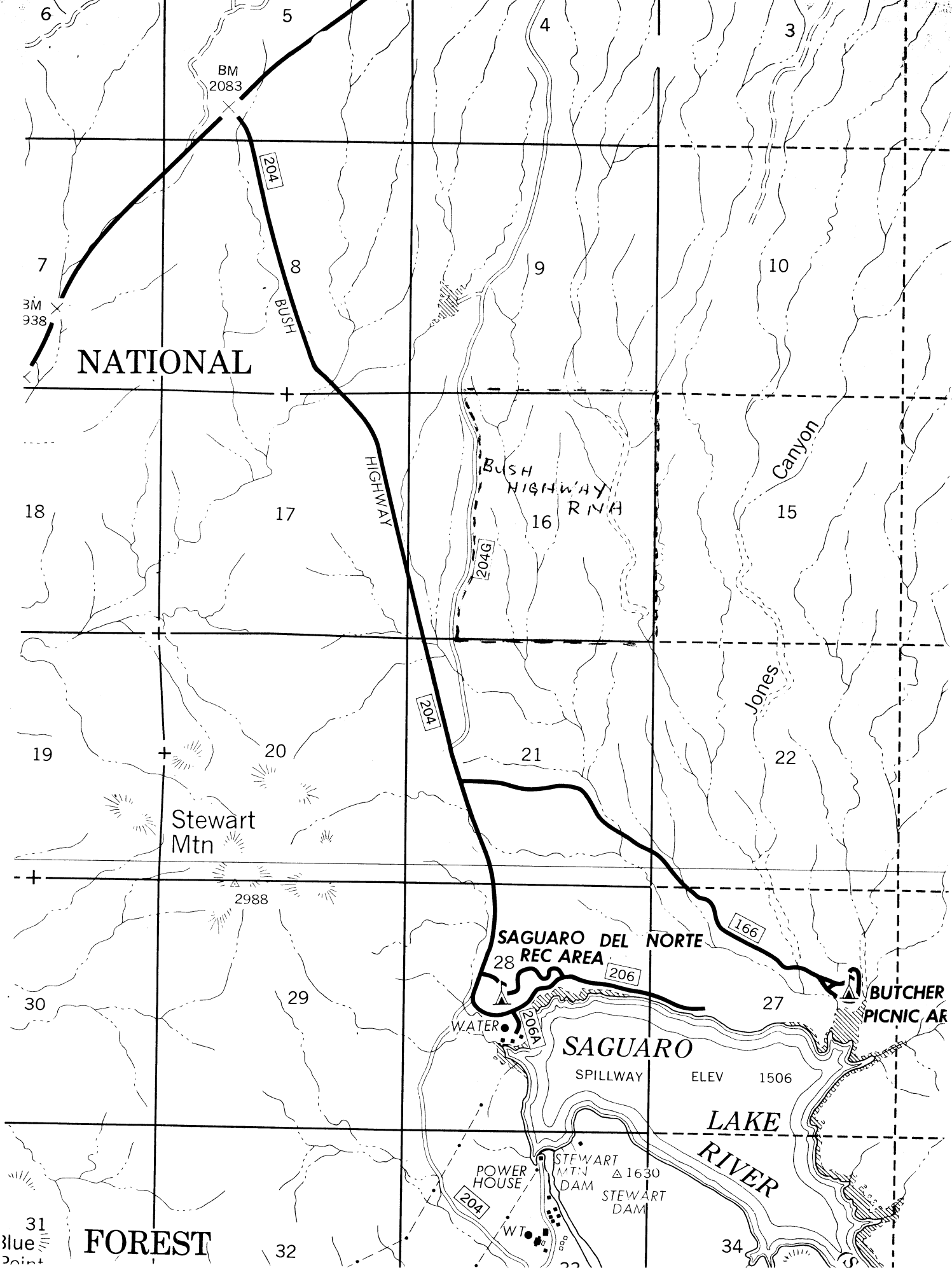
3. Range - The area is part of the Sunflower grazing allotment and receives light use by permitted cattle. Livestock are permitted yearlong, but the proposed area receives its greatest use during the winter months when annual vegetation is available. Fencing of the area could cause a problem in movement of livestock. If the proposed area is not fenced then the development of additional livestock waters adjacent to the proposed area could increase livestock use of the area.

4. Minerals - The area contains no known mining claims at present. Future mineral locations could diminish the value of the area for its intended purpose.

It is not considered that the establishment of the Research Natural Area will have any effect on Air, Soils, Timber, Water, Wilderness, Fire, Insect and Disease, Land ownership, Land Use, Transportation or Archeology.

IV. RECOMMENDATIONS

1. It is recommended this report be approved.
2. If fenced, use materials that will blend with the natural environment. Use green or buff colored posts.
3. Prohibit the development of new livestock waters within 1 mile of the boundary of the proposed Research Natural Area unless the area is fenced.
4. If the Area is fenced, it should be done as part of the R/W fence along the Saguaro Lake Road. Walk thru gates only should be provided.
5. The Area should be withdrawn from mineral entry.



NATIONAL

HIGHWAY

BUSH HIGHWAY

Canyon

Jones

Stewart Mtn

SAGUARO DEL NORTE REC AREA

SAGUARO

SPILLWAY ELEV 1506

LAKE RIVER

BUTCHER PICNIC AREA

STEWART MOUNTAIN DAM
STEWART DAM

POWER HOUSE

FOREST

31
Blue
Point

Bush Highway RNA

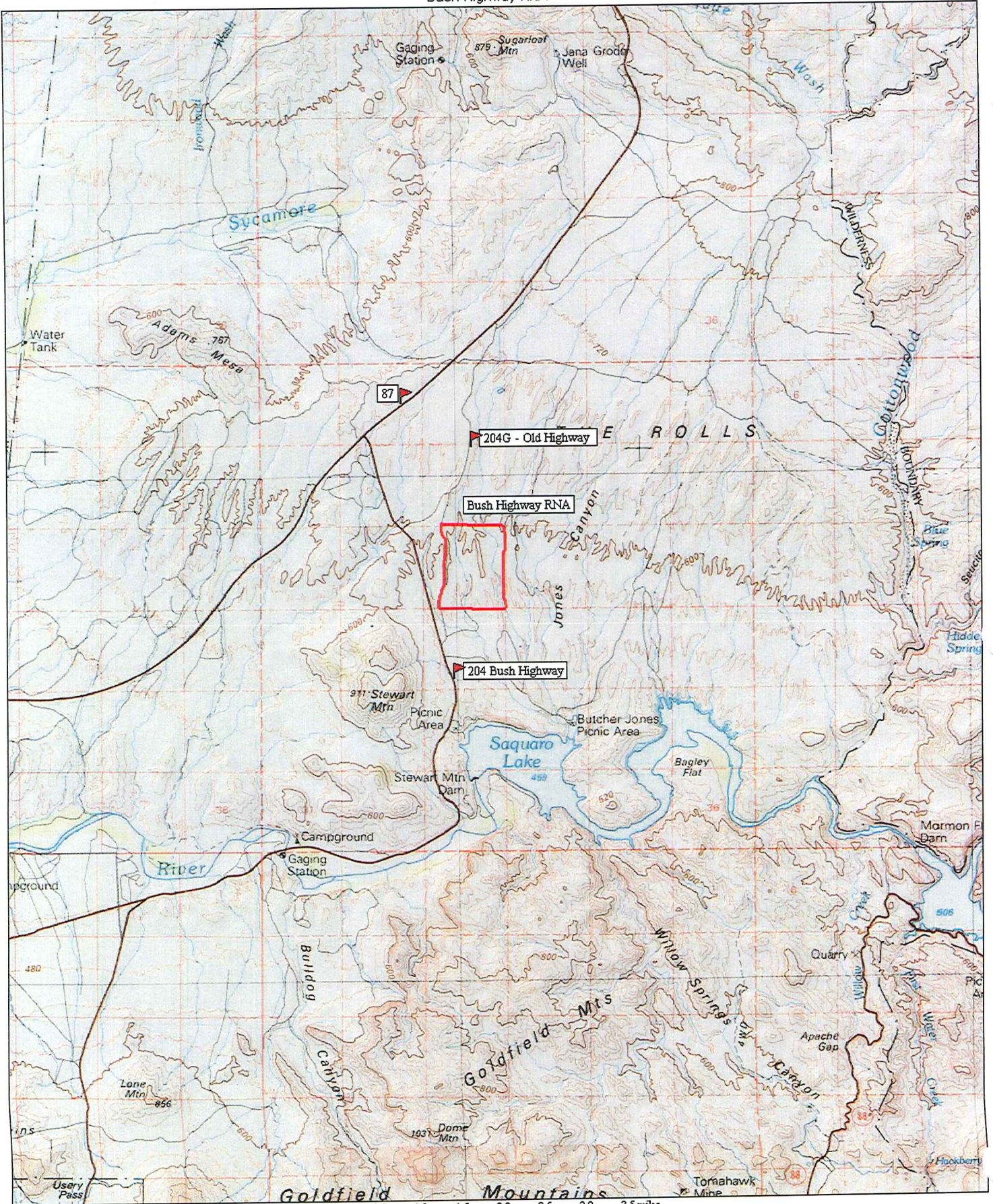


Bush Highway RNA

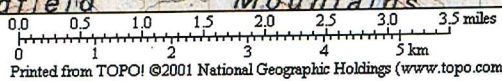
TN/MN
11 1/2°

0 5 10 15 20 25 miles
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Bush Highway RNA

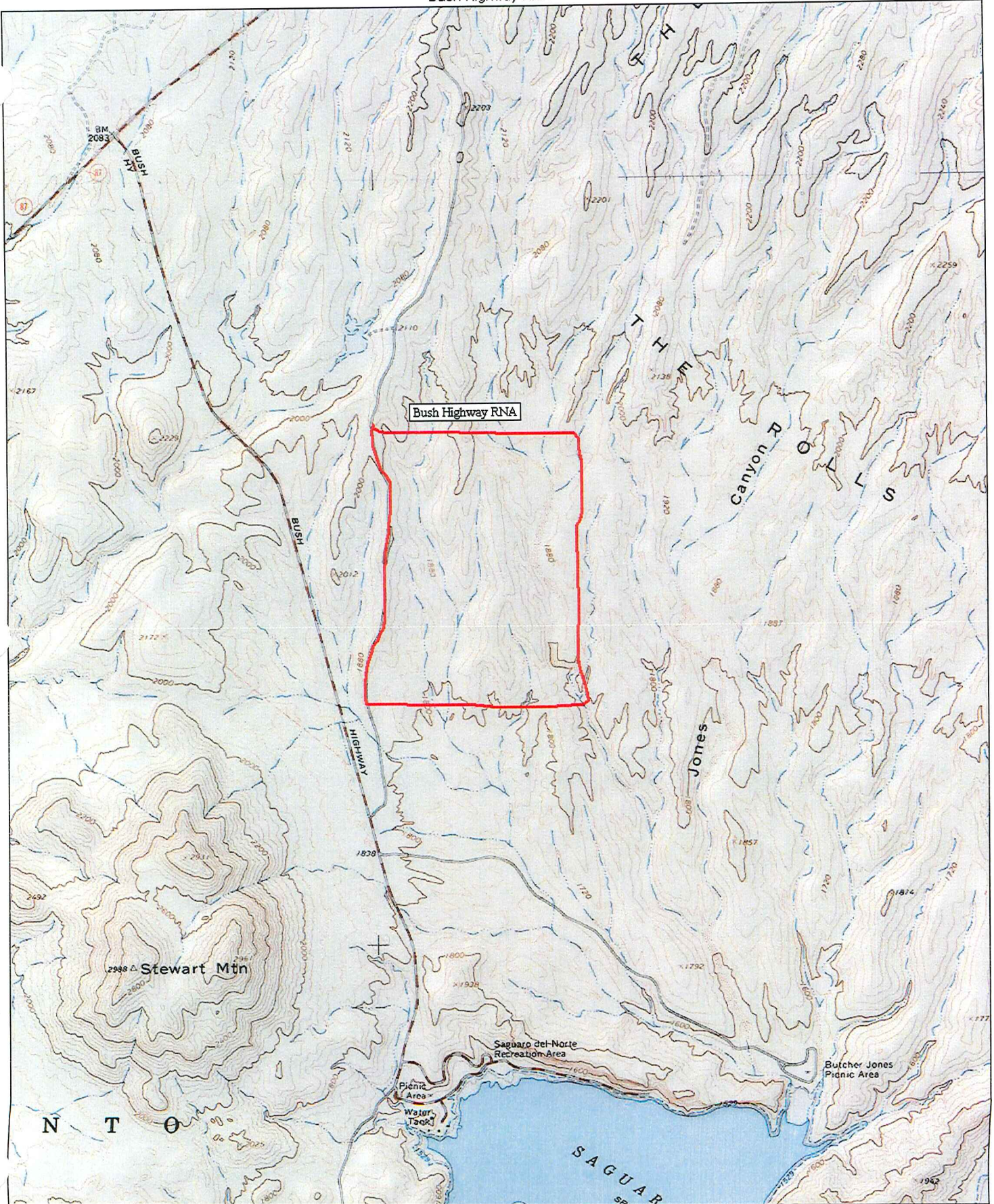


TN 111°



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Bush Highway RNA



TN MN
111°

0 5 10 MILE
0 1000 FEET 0 500 1000 METERS

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USDA-FOREST SERVICE PHOTOGRAPHIC RECORD <i>(See FSM 1643.52)</i>	PHOTOGRAPHER R. Orr	DATE SUBMITTED 2/2/83
	HEADQUARTERS UNIT Tonto N.F.	LOCATION Mesa Ranger District

INITIAL DISTRIBUTION OF PRINTS AND FORM 1600-1:

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INSTRUCTIONS: Submit to Washington Office in quadruplicate. Permanent numbers will be assigned and the forms will be distributed as follows: (1) Washington Office, (2) RO or Station, (3) Forest or Center and (4) Photographer.

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TEMP.	PERMANENT (To be filled in by the WO)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1			1-12-83	Arizona Tonto N.F. Mesa R.D. Maricopa County	Bush Highway Research Natural area. Photo taken from west boundary (old Bush Hwy) looking N and E. Reference Four Peaks in the middle background. <div style="text-align: center; margin-top: 20px;"> </div>	C print from slide

USDA-FOREST SERVICE PHOTOGRAPHIC RECORD <i>(See FSM 1643.52)</i>	PHOTOGRAPHER R. Orr	DATE SUBMITTED 2/2/83
	HEADQUARTERS UNIT Tonto N.F.	LOCATION Mesa Ranger District

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
2			1-12-83	Arizona, Tonto NF. Mesa R.D. Maricopa County	Bush Highway Research Natural area. Photo taken from southwest corner looking N and E. Reference Pine Mountain in middle background. <div style="text-align: center; margin-top: 20px;"> </div>	C print from slide

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD
(See FSM 1643.52)

PHOTOGRAPHER

R. Orr

DATE SUBMITTED

2/2/83

HEADQUARTERS UNIT

Tonto N.F.

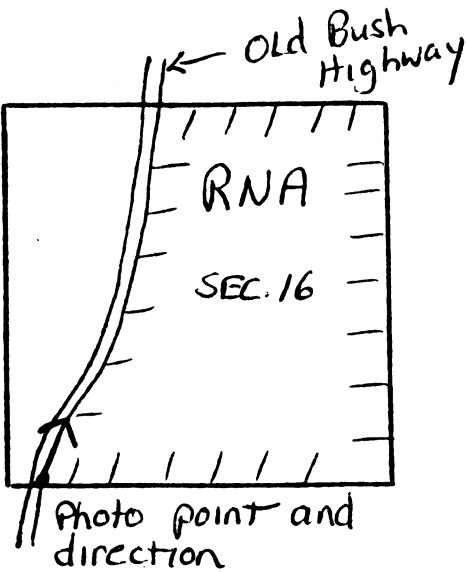
LOCATION

Mesa Ranger District

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TEMP.	PERMANENT (To be filled in by the WO)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
3			1-12-83	Arizona Tonto N.F. Mesa R.D. Maricopa County	<p>Bush Highway Research Natural area. Photo taken from the southwest corner looking N along the west boundary (old Bush Highway). This is presently the only boundary for this RNA that can be located on the ground.</p> 	C print from slide