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Forest
Service

Southwestern
Region

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Research Natural Area Process for Forest Plan Revision under the 1982 Planning Rule Provisions

Research Natural Area Work Group
October 30, 2009

Operational Draft: This document is prepared to provide guidance to Forest Plan revision teams. As this guidance is implemented, we expect to learn improved ways to do this work. As we learn, this document will be updated. This document was reviewed and revised as appropriate in October 2009 to conform to the requirements of the 1982 Planning Rule provisions.

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RNA Identification for Forest Plan Revision under the 1982 Planning Rule Provisions

Purpose and Organizational Summary

This paper describes how to incorporate Research Natural Areas (RNAs) into the Forest Plan Revision process. It is divided into three, primary sections:

Section I. Introduction and definition of RNAs as Special Areas.

Section II. Describes the Regional RNA inventory and analysis of ecological representativeness used to determine the need for additional RNAs in the Region.

Section III. Provides National Forests processes for:

Reviewing established RNAs and their overall conditions.

Reviewing the regional *RNA Ecological Representativeness Evaluation* and determining if your Forest has candidate RNA areas that may fill the need to cover a specific PNVT. This includes proposed RNAs (from current Forest Plans, but never formally established), as well as newly identified areas on your Forest that might be candidate areas for an RNA.

Note: Section II is a Regional effort, while Section III is performed by the Forests utilizing the Regional information from Section II.

Section IV. CER Phase II: Management Direction for new RNAs as “Preliminary Administrative Recommendations.”

Section V. Formal RNA Establishment and NEPA Compliance.

Section I. Introduction

RNAs are considered a type of Special Area. Special Areas are places or areas within the National Forest System designated because of their unique or special characteristics (FSM 1905 – Definitions). These designations may occur because of Congressional action, through statute, or through separate administrative processes. Existing Forest Plans have administratively designated special areas, such as RNAs, botanic areas, or geologic areas.

RNAs, as types of special areas must be supported by the desired conditions and other plan components developed in the revised forest plans. The Need for Change¹ assessment is appropriate for evaluation of conditions and management direction for established RNAs or for disestablishment of existing RNAs.² Any recommendations for designation of new, or previously proposed RNAs may be made during revision. Formal RNA establishment, projects, or activities would have to be handled in a subsequent site-specific NEPA process. Note: While Forests must

¹ Need for Change: A finding by the responsible official that there is a need to modify plan components through a review of new issues and information, monitoring and evaluation results, and changes in law or regulation.

² It is highly unlikely that Forest Plans would recommend the disestablishment of congressionally designated RNAs. There are no Congressionally designated RNAs in the Southwestern Region. References to disestablishment throughout the remainder of this document are focused on levels below that of Congress.

consider or analyze the need for new RNAs during Plan Revision, they are not *required* to establish new RNAs if not found necessary or appropriate during the analysis.

Research Natural Areas are defined as “**physical or biological units in which current natural conditions are maintained insofar as possible. These conditions are ordinarily achieved by allowing natural physical and biological processes to prevail without human intervention. Research Natural Areas are principally for non-manipulative research, observation, and study (FSM 4063). They are designated to “maintain a wide spectrum of high quality representative areas that represent the major forms of variability found in forest, shrubland, grassland, alpine, and natural situations that have scientific interest and importance that, in combination, form a national network of ecological areas for research, education, and maintenance of biological diversity”** (FSM 4063.02). How each responsible official chooses to handle these existing designations will be based on the need for change evaluations, and on the desired conditions collaboratively identified during the development of the revised plan.

Section II. RNAs in the Southwestern Region

The Southwestern Region is in the unique position of having three categories of RNAs.

1. **Established RNAs:** there currently are 18 designated or formally established RNAs in the Southwestern Region.
2. **Previously proposed RNAs:** during the first round of Forest Planning, 28 RNAs were proposed (recommended) and included in Forest Plans with the intent of having them formally established subsequent to finalization of the Forest Plans. These previously proposed RNAs were never formally established as RNAs but have been managed, for the most part, as if they were formally designated.
3. **New potential RNAs:** new potential RNAs, which may be identified to help fulfill the Regional need for RNAs in underrepresented ecosystems and vegetation types.

A region-wide coarse-filter assessment of RNA ecological representation (see below) has been conducted to help identify ecosystems and vegetation types that are underrepresented among the Region’s currently established RNAs. Previously proposed and new potential RNAs may be put forth as “Preliminary Administrative Recommendations” during Forest Plan Revision if they meet a current need identified in this regional process.

A. Regional RNA Inventory

One of the overall goals of this Work Group was to provide a Region-wide inventory of existing and previously proposed RNAs as identified in existing Forest Plans. This was done by examining existing Forest Plans, RNA GIS files, and RNA establishment records. All records were reviewed and organized by Forest. RNAs were considered designated, only if they had received formal approval complete with the appropriate signatures as documented in the establishment records. This inventory resulted in a list of 18 designated or formally established RNAs in the Southwestern Region, and 28 RNAs that were previously proposed (recommended) and included in Forest Plans but never formally established.

RNA establishment records (designated and previously proposed) were digitized and placed on CDs and organized by Forest. Established and previously proposed RNA boundaries were

digitized, and placed into GIS layers, organized by National Forest, and are provided via DVD. Additionally, to assist the coarse-filter analysis of RNA representativeness in the Region, the inventory was organized by vegetation type, and four main GIS ecological datasets were reviewed to help determine how well the established and previously proposed RNAs represent vegetation types and ecosystems in the Southwest, including:

- R3 Climate Regime
- The Nature Conservancy (AZ) Priority Conservation Areas
- Ecoregions (Cleland et al. 2007)
- R3 Potential Natural Vegetation (PNVT)

In addition to the data sets listed above, 16 ecological GIS datasets³ also were used to aid in the identification of ecological areas that might be representative of essential RNA reference areas.

B. Ecological Representativeness of Established RNAs in the Region

Once the GIS RNA inventory was compiled, it was used to organize the data needed to provide a coarse-filter analysis of existing established RNAs, and help evaluate the need for additional RNAs in the Region. This analysis assessed the representativeness of existing RNAs within the Region, while identifying underrepresented ecosystems. The objective of this effort was to support an effective *ecological* distribution of RNAs across major climate gradients, biophysical settings (PNVTs), and to some extent, across important vegetation types within life zones. A simultaneous effort was made to consider the *geographic* distribution of RNAs across ecological sections and subsections of the region (Cleland et al. 2007). In the process, we considered the distribution of biophysical settings across other reserve designations (e.g., wilderness) to help prioritize the establishment of additional RNAs⁴.

For this assessment, the distribution of existing RNAs and other protected lands, inside and outside the agency, were compared with the distribution of PNVT classes (general ecosystem types), ecological sections, and Terrestrial Ecological Unit Inventory (TEUI) climate gradients (Winthers et al. 2005). This assessment was conducted under the assumption that future proposed RNAs would be designated for the purposes of research and establishing reference sites across all major ecosystem types. This assessment also considered the value of other reserve lands, such as wilderness or National Monument lands, that are not designated as RNAs but still serve as reference areas by the way they're managed for natural values. As a result, while some ecosystem types may be poorly represented in the R3 network of RNAs (e.g., Colorado Plateau/Great Basin Grasslands), they are nevertheless accommodated through other management designations, and therefore may be lower priority for designating additional RNAs.

Also, this simple assessment is not meant to replace assessments by others, including the Southwestern Region Research Natural Area Progress Report (Schmidt et al., 1984), but to supplement other assessments and revisit the distribution of RNAs, considering different strata (e.g., climate gradient), at a time when Forest Plans are being revised across the Region. The 1984 assessment is not outdated, and in large part corroborates the current effort. Many of the proposed RNAs identified in 1984 respond well to RNA needs identified in the current effort.

³ See Appendix A for a full list of ecological GIS datasets used in this analysis.

⁴ See Appendix A for a list of the six major climate gradients and 30 major ecosystem types.

Representativeness Findings

RNA Representativeness rankings are provided in a MS Excel file, titled: R3 RNA PNV Assessment, provided on the RNA Information DVDs. As represented in the spreadsheet, RNA needs were ranked on a scale of 1 to 3. A rank of 1 reflects the least degree of need according to those criteria of representativeness used for this assessment (PNVT is well represented). A rank of 2 indicates that the PNV is represented, moderately, but more representation across the Region may be warranted. A rank of 3 reflects very little to no representation of a particular PNV. In this assessment, ranks of 2 and 3 are considered to be appropriate for RNA recommendations.

The maps cover only those PNV classes that ranked out 2 or 3 on the representativeness scale.

Again, RNA needs were considered according to the distribution of currently protected lands across PNV classes, ecological sections, and TEUI climate gradients. Notice that ecoregion stratification is included for the National Grassland assessment and not the National Forest assessment: tabular summaries (i.e., RNA/reserve by PNV by ecoregion) were not available for the National Forests. A tabular summary was not made for National Grassland either, but the distribution of RNA/reserves among ecoregions can be assumed since there are no reserves, and since those ecoregions are unique to the Great Plains apart from National Forest units.

Not surprisingly, in the area of the National Grasslands, where no RNAs or protected lands exist, several ecosystems unique to the National Grasslands were identified for potential RNAs. In the case of riparian PNVs, additional insights are needed to determine the uniqueness of these ecosystems, described very generally for the Region, but in detail by TEUI. This is likewise the case for several PNVs in both the Grasslands and Forests, as noted under the Comments column. Several PNVs were also identified for National Forest lands where the representation of RNAs across PNV classes and across the Region and/or climate gradients was low.

In addition to this guidance paper, each Forest will be provided a DVD containing the entire previously proposed RNA establishment record for each RNA. This DVD will also contain all GIS RNA datasets and other associated ecological, climatic, and Ecoregion layers. The initial results of the regional PNV GIS analysis will be included on this DVD in a Microsoft Excel spreadsheet.

Section III. Forest Plan Revision and RNAs

This section is divided into two parts. Part A describes steps for including established RNAs in Forest Plan Revision. Part B describes steps for inclusion of previously proposed RNAs and new proposed RNAs in the Revision process. Both A and B include steps for evaluating the current conditions of established and previously proposed RNAs in order to determine if they retain the ecological qualities necessary for RNAs. This evaluation of RNA conditions (Step 2 in A and B) is guided by a set of RNA evaluation criteria listed in Tables 1 and 2. These conditions and management direction criteria are based on guidance in FSM 4063.02 for RNA Objectives and FSM 4063.3 Protection and Management Direction.

A. Established RNAs (Figure 1).

Step 1. Review Regional RNA Inventory and GIS coverage of established RNAs in the Southwestern Region for your Forest. The established RNAs inventory includes only those RNAs that have had formal approval, including the appropriate signatures.

Step 2. If the Forest has established RNAs, review and evaluate the existing Forest Plan direction for your RNA(s) as part of the need for change evaluations. The Forest may also provide recommendation for removal of designation (disestablishment) of existing RNAs, if catastrophic circumstances have significantly altered conditions for which a Research Natural Area was originally created such that it no longer may serve that function (FSM 4063.03). Evaluate the need for new, additional, or corrective management direction. If the evaluation finds that there is a need to revise the direction in your current Forest Plan pertaining to a specific RNA, this constitutes a Need-for-Change in management direction, and should be documented as such. However, if the condition is just a matter of implementing the existing management direction, there is no need to change that direction in the revised Forest Plan. Use Table 1, below, to document your evaluation of your established RNAs. Use a separate table for each RNA on the Forest. This table then becomes documentation of the process you conducted.

Step 3. New or revised management direction for established RNAs needs to be supported by desired conditions and other plan components as part of development of the revised plan. If current management direction is sufficient, bring this direction forward into the Revised Forest Plan.

Step 4. If there is no need to change the RNA management direction, the original establishment record NEPA is sufficient. No further action is needed during plan revision.

Table 1. Review of RNA Management Direction

STEP	Criteria	YES (State Justification if necessary due to circumstances)	NO (state justification)
	<p>Does current Forest Plan management direction protect this RNA against human-caused environmental disruptions in this RNA?</p> <p>What are some of the threats that may affect this RNA? Motorized use? Trespass? Mineral exploration or development?</p> <p>Emerging recreational uses (examples: rock climbing, mountain bike use, increased vegetation loss/disturbance from camping, primary and social trails, previously proposed requests for public cabin or backcountry hut use, increasing uses that require a degree of infrastructure, if only temporary (corrals, livestock highlines)? Note: If an area has been used for livestock grazing, it is not necessarily eliminated from RNA inclusion. What needs to be determined is how grazing has affected the values that are being considered for the area’s inclusion as an RNA (FSM 4063.3.3).</p>		<p>Briefly describe the disturbance or disruption that may affect the RNA’s quality.</p>
	<p>Does the RNA continue to be managed as a physical or biological unit in which current natural conditions are maintained to the extent possible? These conditions are ordinarily achieved by allowing natural physical and biological processes to prevail without human intervention. However, under unusual circumstances, deliberate manipulation may be utilized to maintain the unique feature that the Research Natural Area was established to protect.</p>		<p>Describe the ways that the RNA may not have been managed in a way that maintains its natural conditions.</p>
	<p>Are natural physical and biological processes being allowed to prevail without human intervention in the RNA? However, under unusual circumstances, deliberate manipulation may be utilized to maintain the unique feature that the Research Natural Area was established to protect.</p>		<p>Describe processes that have been halted or altered in the RNA.</p>
	<p>What is the current status of mineral entry for this RNA? Failure to withdraw an area from mineral entry should not be viewed as a deterrent to selection and establishment of a desirable Research Natural Area (FSM 4063.35).</p>	<p>Briefly state if the RNA has been withdrawn from mineral entry.</p>	

B. Previously Proposed and New RNAs (Figure 2).

This series of steps for assessing the need for additional RNAs on your Forests occurs during development of the revised plan.

Step 1

- a. Review the MS Excel file, titled R3 RNA PNVN Assessment spreadsheets, and associated RNA PNVN maps for potential RNA needs on your specific Forest, provided on the RNA Information DVDs. The assessment of representativeness was divided into one for the National Grasslands and one for Arizona and New Mexico. RNA needs were assessed on a scale of 1-low need, 2-moderate need, and 3-high need, to reflect the priority for additional RNA lands according to those representativeness criteria used in this assessment (see description of rankings on page 5 under Representativeness Findings). The maps cover only those PNVN classes that ranked out 2 or 3 on the representativeness scale.
- b. Review the file titled “Aquatic Habitats” provided on the RNA Information DVDs. This list of eight aquatic habitats comes from the Arizona and New Mexico State Comprehensive Wildlife plans, and should be viewed as additional ecological categories for consideration when evaluating an area as a potential RNA. Note that some RNA PNVN areas may include good reference examples of aquatic habitats that may be an important contribution to a potential RNA. Some outstanding aquatic habitats may be appropriate as individual RNAs, regardless of PNVN.
- c. Assess previously proposed RNAs that may be listed in your current Forest Plan to see if they meet an identified need. The R3 RNA PNVN Assessment spreadsheet and RNA PNVN maps have been provided on the RNA Information DVDs, as discussed above.

After reviewing the RNA representativeness assessment documents, answer the following questions. Record your answers in the appropriate boxes in the following worksheet:

- Are there areas on your Forest that contain the PNVN classes that fall into the 2 or 3 rankings for low representation for a particular PNVN class?
- Is there an outstanding example of an aquatic habitat that may be appropriate as a potential RNA?
- Do your previously proposed RNAs fall within PNVN classes with rankings of 2 or 3?

If NO: Document the separate “no” answers in the table provide, below. If the answers to all three questions are “no,” then document your findings by describing your review of the Regional RNA assessment material as part of your Special Areas Plan Component. This documentation should include a short description of the Regional process (from this paper), your review of the assessment, and your finding that no areas are appropriate for RNA establishment on your Forest.

If YES to any of the above question: Move on to Step 2, below.

Step 2. If you answer **YES** to any of the above questions, then determine if those areas (newly identified or previously proposed) qualify as possible RNAs. Use the questions listed under Step 2, in the following table, to help determine RNA quality. As you proceed through each question, document your reasons for answering **YES** or **NO** in the appropriate box. While it may be adequate to answer some questions as **YES** or **NO** without further elaboration, some answers may need further explanation. Fill out a table for each potential RNA. The table (or some similar

method) then may be used as part of your documentation for showing how your team assessed RNA potential at the Forest level (see Step 3, below). **Remember:** previously proposed RNAs need to be located in a PNVT class ranked at 2 or 3, and/or be associated with an outstanding aquatic habitat, and their quality needs to be assessed using the questions listed in the table below. Previously proposed RNAs should not be brought forward into the revised plan unless they fill a need as described above. If this is the case, it will be considered a new recommendation in the revised Plan. Current management direction may or may not be adequate and should be reviewed.

The worksheet and questions are meant as an aid to determining the ecological conditions and quality of a potential RNA. We recommend that if a predominant number of questions are answered as YES, then the area is likely a good candidate for recommendation as an RNA in your revised Forest Plan. The reverse may be a good rule of thumb when the majority of the questions are answered as NO. However, this is not by any means to be considered as “carved in stone” guidance. After going through this evaluation process, it ultimately up to the Responsible Official (Forest Supervisor) to decide whether or not an area will be proposed as a recommended RNA for the revised plan. Forests may want to coordinate with adjoining Forests when recommended RNA boundaries are shared.

Step 3. Include those RNAs that qualify (newly identified or previously proposed) and are put forth by the Responsible Official (Forest Supervisor) as preliminary administrative recommendations in the revised Forest Plan. Ensure that the recommended RNAs are supported by desired conditions and other plan components in the revised plan. Include management direction as appropriate for protecting the integrity of the recommended RNAs (see FSM 4063.3).

Step 4. After Forest Plan Revision, in conjunction with the Regional RNA Committee, compile the RNA establishment records and conduct the appropriate level of NEPA in a Forest Plan Amendment to fully establish those RNAs recommended in the Revised Forest Plan.

Table 2. Review of Representative Ecological Conditions

Step	Criteria	YES (state justification)	NO (state justification)
1	Review RNA Representative Assessment Spreadsheet		
	<ul style="list-style-type: none"> • Are there areas on your Forest that contain the PNVT classes that fall into the 2 or 3 rankings for low representation for a particular PNVT class? • Is there an outstanding example of an aquatic habitat that may be appropriate as a potential RNA? • If you have previously proposed RNAs in your current Forest Plan, do they fall within PNVT classes with rankings of 2 or 3? 	If “yes,” answer the rest of the questions in Column 2.	If “No,” document that no RNA-appropriate veg-types, with the 2 or 3 ranking, appear on the Forest.
2	Use the Conditions listed below to determine if these low-representative PNVT class areas or aquatic habitats are appropriate for RNA establishment	State reason why the area meets the criterion	State reason why the area does not meet the criterion
	Area contributes to a wide spectrum of high quality representative areas that represent the major forms of variability found in forest, shrubland, grassland, alpine, aquatic habitats, and natural situations of scientific interest and importance that in combination form a national network of ecological areas for research, education, and maintenance of biological diversity. RNA represents a specific vegetation type or ecosystem as identified by the Regional ecological RNA evaluation.		
	Area contributes or continues to contribute to the preservation and maintenance of genetic diversity, including threatened, endangered, aquatic systems, and sensitive species.		
	Area serves as a baseline or reference area for the study of long-term ecological processes such as disturbance, hydrologic processes, climate change, or other processes.		
	Area serves as a control area for comparing results from manipulative research.		
	Area boundaries encompass an area large enough to provide essentially unmodified conditions within their interiors, which are necessary in accordance with the objectives stated in the establishment record (FSM 4063.02), and to protect the ecological processes, features, and/or qualities for which the RNA was established. Although not required, entire small drainages are ideal because they maintain interrelationships of terrestrial and aquatic systems.		
	Area shows little or no evidence of major disturbances by humans. Activities, such as livestock grazing and other uses have not had affected area beyond ability to recover. No evidence of timber cutting in past 50 years.		
	Area reflects its original, near-pristine condition <i>as closely as possible</i> .		
	The best available, qualified area was chosen. In certain geographic regions and in certain community types, it may be impossible to find candidate areas that do not contain exotic plant or animal life.		

Section IV. Revised Plan Development: Management Direction

During plan revision, newly recommended⁵ RNAs need to support Desired Conditions and be supported by other Plan Components, and protected under appropriate management direction. RNA management direction (in the revised Forest Plan) is meant to support and promote the basic objectives and purposes of establishing the area⁶. We recommend that this management direction be derived from the RNA Management Standards, and Resource Protection Guidelines in FSM 4063.3. No doubt, each RNA will need more specific management direction, and we provide the below as a beginning point for developing that direction.

RNA Management Standards

The RNA Management Standards (see FSM 4063.3), listed below, are recommended as management direction to help ensure protection of newly recommended RNAs in your revised Forest Plan (CER Phase II).

1. **Ecological Processes.** The prime consideration in managing Research Natural Areas is maintenance of natural conditions and processes. To the extent practicable, protect Research Natural Areas against human activities that directly or indirectly modify the integrity of the ecological processes.
2. **Logging and Wood Gathering.** Do not permit logging or wood gathering activities in Research Natural Areas unless required for restoration of an area to natural conditions.
3. **Livestock.** In Research Natural Areas where livestock grazing is not part of the management prescription, the Regional Forester and Station Director have the responsibility, as appropriate, to establish a level of acceptable casual or incidental livestock use that can be tolerated and is consistent with the management prescription for the RNA (4063.04b). Where grazing is needed to establish or maintain vegetative communities, define objectives for grazing.
4. **Exotic Plants and Animal Life.** Remove exotic plants or animals from the RNA to the extent practicable. Where pest management activities are prescribed, they shall be as specific as possible against target organisms and induce minimal impact to other components of the ecosystem. The release of biological control organisms for exotic species control should be carefully considered to avoid the introduction of other exotic species.
5. **Recreational Use.** Recreational use should be restricted or prohibited if such use threatens or interferes with the objectives or purposes for which the Research Natural Area is established.
6. **Special Orders.** Where special orders are needed to limit, restrict, or control specific activities such as camping, seasons of use or other uses, that are not compatible with the objectives of the Research Natural Area, the Forest Supervisor issues orders pursuant to

⁵ Newly recommend RNAs are ones that were not previously established and are recommended by the Responsible Official during revision as “Preliminary Administrative Recommendations” for RNA establishment. The actual formal RNA establishment process (briefly described in Section V in this paper) would occur after the revised plan has been signed.

⁶ In consultation with Forest Supervisors and District Rangers, Station Directors have authority to approve all management plans and to oversee and coordinate approved research on all Research Natural Areas, except for those Research Natural Areas in congressionally designated areas (FSM 4063.04b.1.b).

- 36 CFR Part 261, Subpart B, to protect an area's features. Any such orders shall incorporate the special closure provisions of 36 CFR 261.53 (See FSM 5353 for penalties applicable to violations of orders.)
7. **Roads, Trails, Fences, Signs, or Buildings.** Do not permit new roads, trails, fences, or signs on an established Research Natural Area unless they contribute to the objectives or to the protection of the area. Boundary fencing is permitted for protection against livestock or excessive human use. Buildings are not permitted. In rare instances, temporary gauging stations and instrument shelters may be desirable. Follow procedures set forth at FSM 4063.31 for authorizing temporary physical improvements.

Resource Protection Guidelines

In addition to the RNA Management Standards listed above, FSM 4063.32 also stipulates the following Resource Protection Guidelines, which should be included as management direction in part of your revised Forest Plan.

1. Specific management direction for RNAs must contain measures to address fire, insect, disease, and animal activity. As a general guide, extinguish as quickly as possible fires that endanger Research Natural Areas using means that would cause minimal damage to the area (FSM 4063.41). When drafting protection guidelines, describe desired prescribed and natural burn practices using means of control that cause minimal damage. Allow natural fires to burn only within a prescription designed to accomplish objectives of the specific natural area. Take no actions against endemic insects, diseases, wild plants, or animals, unless the Regional Forester and Station Director deem such action necessary to protect the features for which the Research Natural Area was established, or to protect adjacent resources. If exotic plants or animals have been introduced into an established Research Natural Area, the Station Director and the Regional Forester may exercise control measures that are in keeping with established management principles and standards to eradicate them, when practical (FSM 4063.3).
2. In protecting Research Natural Areas within congressionally designated areas (FSM 4063.05), the management direction for the Research Natural Area must meet statutory mandates (FSM 1920).
3. Follow the provisions set forth in FSM 2360 where the Research Natural Area is likely to involve cultural resources listed in the National Register of Historic Places.

Section V. Formal RNA Establishment and NEPA Compliance

The following process occurs after the approval of the revised Forest Plan.

Upon approval of the Forest Plan, the Forest will send the recommended RNA records (FSM 4063.41) and documents to the Regional RNA Committee. The Regional RNA Committee then compiles an establishment record, ecological evaluation, and NEPA environmental assessment (FSM 1950 and FSH 1909.15). After compiling the necessary documentation, the Committee recommends to the Regional Forester and Station Director the establishment of the RNA. In summary, for formal establishment, each recommended RNA must be documented with an establishment record, ecological evaluation, NEPA environmental assessment (EA), and subsequent amendment to the Forest Plan.

Additionally, it is the responsibility of Regional Foresters, with the concurrence of Station Directors, to approve all new RNAs. For new RNAs it is the responsibility of Regional Foresters and Station Directors to establish a Regional Research Natural Area Committee to determine needs for Research Natural Areas within each Region and each National Forest and, with assistance from this committee, to prepare an establishment record for recommended RNAs (FSM 4063.41). We anticipate that an official RNA Committee will be established in the future, which will guide RNA establishment and NEPA processes for those RNAs recommended in the Forest Plan Revision process.

Section VI: References

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Appendix A: Ecological GIS Datasets, Major Climate Gradients, and Southwestern Region Ecosystem Types

GIS Layers Used in the Inventory of RNA Ecological “Representativeness” for Previously proposed RNAs:

Layer Name	Description	Source	Vintage
pRNA	R3 Previously proposed RNAs	R3 corporate GDB	Current
eRNA	R3 Established RNAs	R3 corporate GDB	Current
Admin_Forest	R3 Forest boundaries	R3 corporate GDB	Current
ecomap_2007	Ecoregions	McNab et al.	2007
BLM_Nat_Mon	BLM National Monuments	BLM	Current
BLM_NCA	BLM National Conservation Areas	BLM	Current
NPS_Bndry	National Parks	NPS	Current
USFWS_refuges	USFWS Refuges	USFWS	Current
NWPS	NWPS Wilderness Areas	NWPS	Current
vcnp	Valles Caldera National Preserve	R3 corporate GDB	Current
Conservation_Area	TNC Conservation Areas	TNCAZ PCA	2007
Ecoregion	TNC Ecoregions	TNCAZ PCA	2007
bk_pnvt	Black Kettle PNVT	R3RO Ecology	Current
krb_pnvt	Kiowa-Rita Blanca PNVT	R3RO Ecology	Current
nm_vddt	NM VDDT	R3 Ecological Sustainability	04/2008
r3_tes_grad*	R3 Climate Regime	R3RO Ecology	2007

The region includes six major climate gradients (USDA-Forest Service 1991, 2006):

- LSC – Low sun cold has >50% of annual precipitation occurs in low sun period, October-March. Soil temperature regime is frigid.
- HSC – High sun cold has >50% of annual precipitation occurs in high sun period, April-September. Soil temperature regime is frigid.
- LSM – Low sun mild has >50% of annual precipitation occurs in low sun period, October-March. Soil temperature regime is mesic.
- HSM – High sun mild has >50% of annual precipitation occurs in high sun period, April-September. Soil temperature regime is mesic.
- SMA – Semi-arid; higher elevation plains that are drier (ustic soil moisture regime) and colder (mesic soil temperature regime).
- SHU – Subhumid; lower elevation plains that are wetter (udic soil moisture regime) and warmer (thermic soil temperature regime).

Multiple biophysical settings can occur within any one climate gradient. Over 30 major ecosystem types have been identified for the Southwestern Region:

Wetland / Cienega	Ponderosa Pine Forest
Cottonwood Willow Riparian Forest	Ponderosa Pine – Evergreen Oak
Mixed Broadleaf Deciduous Riparian Forest	Montane / Subalpine Grassland
Desert Communities	Montane Willow Riparian Forest
Semi-Desert Grassland	Mixed Conifer - Frequent Fire
Colorado Plateau / Great Basin Grassland	Mixed Conifer w/ Aspen
Sagebrush Shrubland	Gallery Coniferous Riparian Forest
Interior Chaparral	Spruce-Fir Forest
Madrean Encinal Woodland	Alpine and Tundra
Madrean Pine-Oak Woodland	Great Plains Grassland (Black Kettle NG)
Juniper Grassland	Oklahoma Oak Woodland
PJ Sagebrush	Shinnery Oak (Black Kettle NG)
PJ Evergreen Shrub	Shortgrass Prairie (Kiowa-Rita Blanca NGs)
PJ Woodland	Sandsage
Mountain Mahogany Shrubland	Texas Pinyon-Juniper Woodland
Gambel Oak Shrubland	

Appendix B: List of Preparers

Name	Unit	Resource Specialty	Comment
Richard Periman	RO Planning	Regional Soc. Econ.	Team Leader
Charlie McDonald	RO WFRP	Regional RNA Coordinator	
Todd Mowrer	RMRS		RMRS RNA Coordinator
Rosemary Pendleton	RMRS		RMRS RNA R3 Liaison
Paula Cote	Carson		Forest Planner
Jennifer Kevil	Coconino	Recreation/Special Areas	
Roxanne Turley	Cibola Grasslands	Recreation/Special Areas	
Kathleen Hawkos	RO – GIS	GIS Specialist	GIS support
Amy Unthank	RO Wildlife	Fisheries Biologist	Aquatic Habitat Exp.
Jack Triepke	RO EAP/WAP	Ecology and Air Coord.	RNA PNVT Asmt.