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Service

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Environmental Assessment

Jimenez Aviary Construction and Forest Plan Amendment #1

USDA Forest Service
Southern Region
Caribbean National Forest
Municipality of Rio Grande, Puerto Rico

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SUMMARY

The USDA Forest Service in coordination with the USDI Fish and Wildlife Service and the Puerto Rico Department of Natural Resources and Environment (DNRE), proposes to construct a new aviary for breeding Puerto Rican Parrots. This project will include issuing a special use permit to the USFWS for the management of the facility for a 20 year period and will also include an amendment of the 1997 Caribbean National Forest Land and Resource Management Plan (LRMP) to increase Management Area 1 (Administrative Site) by 15 acres, increase Management Area 4 (Integrated) by 53 acres, reduce Managmeent Area 8 (Timber Demonstration) by 39 acres and reduce Management Area 2 (Developed Recreation) by 29 acres.

The project area is located approximately one kilometer west of the junction of Forest Road 191 and PR 9966 on the Caribbean National Forest, Puerto Rico.

This action is needed, because the existing facilities have an unreliable source of electricity, and the birds frequently suffer from persistent respiratory problems caused by cool moist conditions at the current high elevation site. In addition, human disturbance and periodic landslides are problematic for the management of the site.

The proposed action will impact a portion of an existing stand of tortugo prieto (ravenia urbani) trees. This tree species is identified by the Forest Service as a Region 8 sensitive species. The effects will not lead toward federal listing of this species. Additional effects include short-term disturbance to visitors from construction activities and equipment along Forest Road 191 and impacts to portions of historic Forest Road 191 and a historic trail at the access road to the proposed facility.

In addition to the proposed action, the Forest Service also evaluated the alternative of No Action. This alternative would maintain the existing aviary facilities and not amend the Forest Plan.

Six other locations were evaluated prior to beginning the NEPA analysis. While the other locations were determined to have a higher rating than the existing site, they were not sufficiently better to merit the cost of detailed NEPA analysis, nor were they believed to justify the construction costs of a new facility.

Based upon the effects of the alternatives, the responsible official will decide whether to authorize the construction of a new facility, issuing a special use permit to the USDI FWS, and amending the Forest Plan, or continuing the use of the existing facilities.

INTRODUCTION

Document Structure

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and

cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four parts:

- *Introduction:* The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- *Comparison of Alternatives, including the Proposed Action:* This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- *Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by affected resource area. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.
- *Agencies and Persons Consulted:* This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- *Appendices:* The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Caribbean National Forest Supervisors office in Rio Grande, Puerto Rico.

Background

The Puerto Rican Parrot is listed as an Endangered species by the USDI Fish and Wildlife Service. In a recent census within the parrot's critical area, 23 individuals were documented. Breeding and releasing birds is critical to achieving the overall Puerto Rican parrot recovery plan estimate of 250 pairs for full recovery.

A successful breeding and releasing program requires an aviary capable of breeding healthy birds. The Luquillo aviary, located approximately one-quarter mile south of Mount Britton, is the current aviary used on the Caribbean National Forest and operated by the USDI Fish and Wildlife Service.

Because of problems associated with the existing site, a site selection panel was assembled in November 2000. The panel consisted of two aviary managers, one wildlife research scientist, and one natural resource specialist.

This panel requested comments from over 20 Recovery Project partners on site criteria essential to select a better location. A total of seven sites were evaluated and the top three sites were analyzed in detail (Project Record Document 1). The evaluation was based on five key criteria which included disease risk, security, climate, logistics and

infrastructure. The Jimenez site was identified as the highest rated of these sites based on the combined evaluation criteria. Based on this analysis, the Jimenez site was determined to justify construction costs and costs associated with NEPA analysis.

Purpose and Need for Action

The purpose of this proposal is to improve the breeding facilities of the Puerto Rican parrot. This action is needed, because the existing facility was originally designed as quarters for military personnel during World War II. The age and location of the Luquillo Aviary contribute to a variety of complications, which can hinder the successful breeding of the Puerto Rican Parrot.

Uncontrolled access at the current aviary presents security risks and increases costs of protecting the birds. The distance from the US Fish and Wildlife Service and Forest Service offices can delay access time in emergency situations. Frequent landslides along Forest Road 191 can further isolate the site and can prohibit access from the site entirely.

The Luquillo Aviary receives electrical power from the south side of the forest. These power lines are as much as 60 years old and result in frequent power outages at the facility. These power outages can require days to weeks to repair due to the remote location of the south-side power lines. Two electrical generators are maintained on site, but lack of power for incubators during critical breeding periods can still occur.

In addition, the Luquillo Aviary is located at an elevation of approximately 700 meters above sea level. At this elevation, cool moist conditions result in persistent presence of mold and fungi, which can cause a fungal infection known as aspergellus. This infection results in respiratory problems for both parrots and humans at the site.

This action responds to the goals and objectives outlined in the 1997 Caribbean Forest Land and Resource Management Plan, and helps move the project area towards desired conditions described in that plan. The primary Forest Plan goal related to this project is the first Wildlife and Fish Goal on page 4-12 of the 1997 LRMP, "Protect and maintain the Forests biodiversity, including all native organisms and ecological processes. Promote the population viability of all Federally-classified plant and animal species through the implementation of protective management guidelines, status surveys, habitat improvement, and through other cooperative recovery actions such as species reintroduction into suitable, historically-occupied habitats"

Proposed Action

The action proposed by the Forest Service to meet the purpose and need is to construct new aviary facilities approximately one kilometer west of the junction of Forest Road 191 and PR 9966 and issue a special use permit to the USDI Fish and Wildlife Service for the management of the facilities.

Construction of the facility will require a non-significant amendment to the 1997 Caribbean National Forest Land and Resource Management Plan (LRMP).

The amendment would affect 68 acres of lands currently allocated to Management Area 2 (Developed Recreation), Management Area 8 (Timber Demonstration), and Management Area 4 (Integrated). Approximately 15 acres of these Management Areas would be changed to Management Area 1 (Administrative Site). The remainder would be changed to Management Area 4.

Decision Framework

Given the purpose and need, the deciding official will review the alternatives described in this Environmental Assessment in order to make the following decisions:

1) Authorize the construction of the Jimenez Aviary facilities.
2) Authorize the issuance of a special use permit to the USDI Fish and Wildlife Service to operate the facilities for a period of 20 years at which time the special use permit will be reviewed for potential renewal.
3) Amend the 1997 Caribbean National Forest Land and Resource Management Plan to increase Management Area 1 (Administrative Site) by 15 acres, increase Management Area 4 (Integrated) by 53 acres, reduce Management Area 8 (Timber Demonstration) by 39 acres and reduce Management Area 2 (Developed Recreation) by 29 acres.

Future management of the Luquillo Aviary is not included in this analysis. Management of the existing facility could include a variety of options and will be taken under consideration in the future.

Public Involvement

When this proposal was first developed in November 2000, a public involvement strategy was developed to ensure that potentially interested members of the public and other government agencies receive timely information about the proposed action. Additionally, a letter inviting the public and interested organizations and governmental agencies was sent on November 2, 2000, with a deadline for submitting responses to no later than November 20, 2000. Approximately, a dozen written responses were submitted. Input was received from:

- Forest Service Employees
- Puerto Rico Department of Natural Resources and Environmental (DNER)
- United States Fish and Wildlife (USFWS)
- International Institute of Tropical Forestry
- University of PR, Humacao
- Biology Unit, Naval Station Roosevelt Roads

Pursuant to 36 CFR 215, the proposal was made available to the public and other agencies for comment during a combined scoping and review and comment period beginning on April 14, 2004 through May 25, 2004. The public was notified of this project by mailing the project description to the Forest Plan mailing list and publication of a legal notice in each of the two newspapers of record (El Nuevo Dia, and the San Juan Star).

Using the comments from the public, and other agencies, the interdisciplinary team developed a list of issues to address.

Issues

The Forest Service separated the issues into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly caused by implementing the proposed action and which would drive development of alternatives. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; 4) conjectural and not supported by scientific or factual evidence or 5) concerns which could be addressed through alternative design or mitigation measures. The effects of the fifth category of non-significant issues are described in this Environmental Assessment.

The Forest Service identified the following significant issues:

1) The proposed location has the potential to impact a stand of tortugo prieto (ravenia urbani), and Puerto Rican Rain Tree (brunfelsia which is identified by the USDA Forest Service as a Regional sensitive species.
2) Construction activities may affect heritage resources including portions of historic forest road 191, and the historic trail located at the entrance to the proposed aviary.

The Forest Service identified the following non-significant issues:

1) The proposed location would preclude future relocation of a restaurant previously identified during the Forest Plan Revision process.
2) Construction activities have the potential to impact Federally listed Threatened and Endangered species.
3) Construction activities have the potential to create sedimentation.
4) Construction activities have the potential to create delays for tourists on Forest Road 191.

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered for the Jimenez Aviary project. It includes a description and map of each alternative considered.

Alternatives

Alternative 1

No Action

Under the No Action alternative, current management area prescriptions would continue to guide management of the project area. A new aviary would not be constructed. The existing Luquillo aviary would continue to be used as the sole facilities for breeding of Puerto Rican Parrots on the Caribbean National Forest.

Parrots at the existing aviary would continue to be affected by respiratory conditions resulting from the high elevation facility. Other management concerns such as security risks would continue to impede the breeding efforts.

None of the Region 8 sensitive plant species would be impacted.

The Historic Trail number 37 and portions of PR-191 would remain intact.

Future management options at the proposed site would remain open for other opportunities.

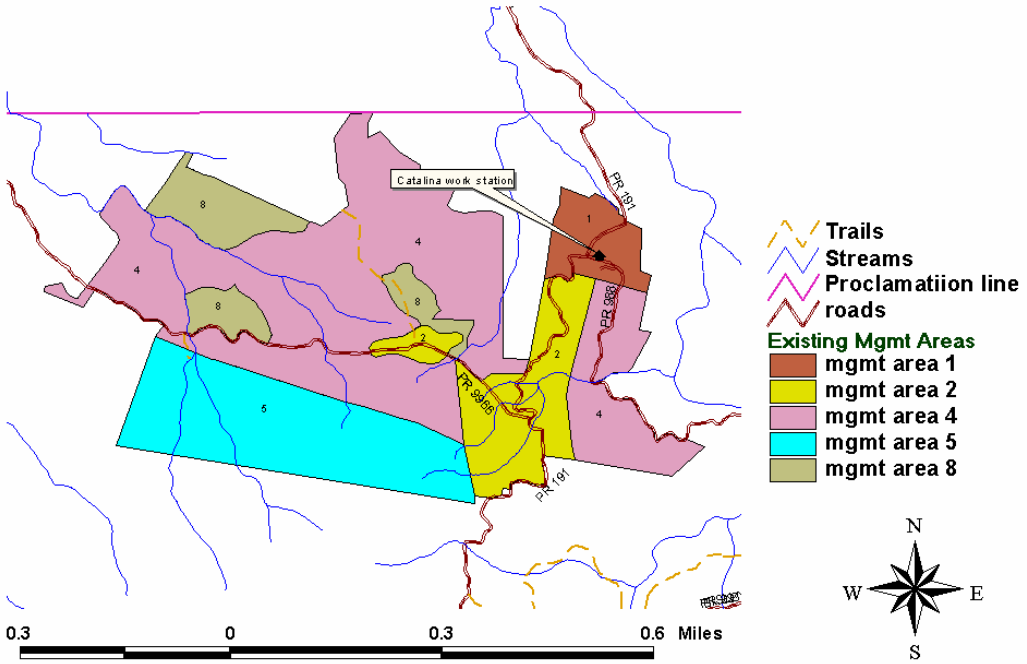


Figure 1. Current Management Areas

Present Luquillo Aviary Site

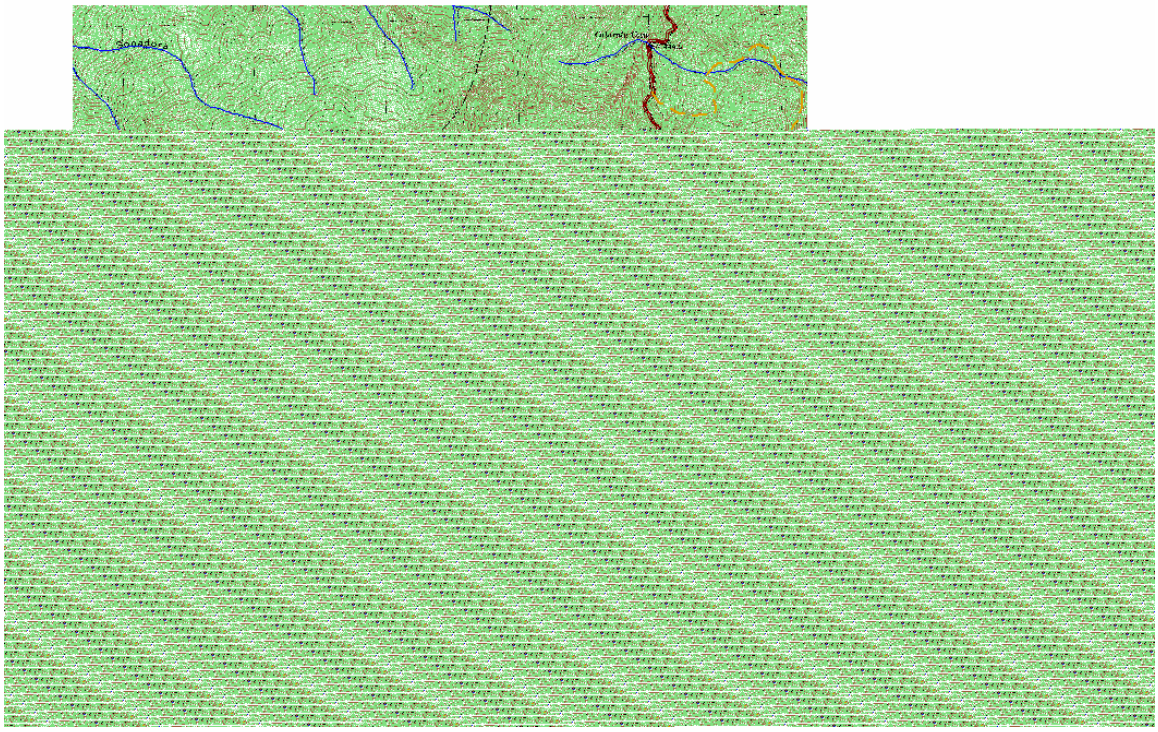


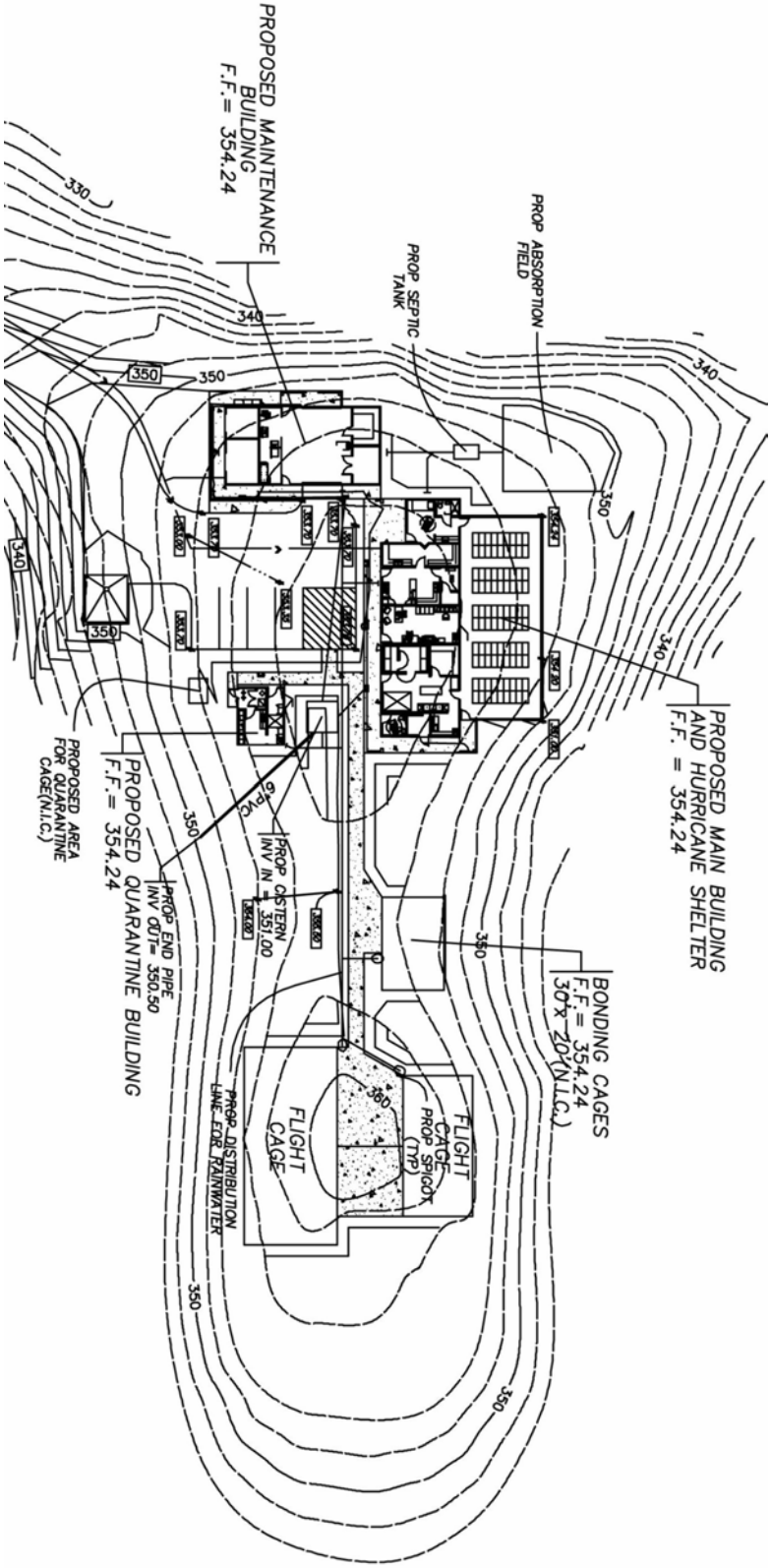
Figure 2. Present Luquillo Aviary Site.

Alternative 2

The Proposed Action

Located approximately one kilometer west of the junction of Forest Road 191 and PR 9966, the proposed facilities will include three buildings totaling approximately 5,200 square feet. The buildings will house facilities for breeding and rearing Puerto Rican Parrots and will include an office, temporary quarters, hurricane area, and a quarantine building. In addition, three cage areas will be constructed. An access road of approximately 475 feet will extend from the Jimenez Road (PR 9966) to the building location. The total footprint of the buildings, access road, and parking area will be approximately one half acre (5,200 sq/ft buildings, 8,030 sq/ft access road, 2,500 sq/ft parking, 4,025 sq/ft cages) The total cleared area resulting from construction will be approximately 1.5 acres. Construction activities will remove approximately 4,800 cubic yards of organic material, which will be relocated to a previously disturbed site at the El Portal administrative site to aide in the restoration of that site.

The facility will require use of approximately 5,000 gallons of water per week. Potable water will be provided by a combination of rainwater collection on the site and water


PROPOSED MAIN BUILDING
AND HURRICANE SHELTER
F.F. = 354.24
PROP ABSORPTION FIELD
PROP SEPTIC TANK
PROPOSED MAINTENANCE BUILDING
F.F.= 354.24
BONDING CAGES
F.F.= 354.24
30'x 20'(N.I.C.)
FLIGHT CAGE
PROP SPIGOT (TYP)
FLIGHT CAGE
PROP DISTRIBUTION LINE FOR RAINWATER
PROP CISTERN INV IN = 351.00
6"PVC
PROP END PIPE INV OUT= 350.50
PROPOSED QUARANTINE BUILDING
F.F.= 354.24
PROPOSED AREA FOR QUARANTINE CAGE(N.I.C.)
330
340
350

Alternatives Considered, but Eliminated from Detailed Study

Five additional locations were considered as potential sites for locating the new aviary facilities. Analysis of these sites is documented in the Puerto Rican Parrot Aviary Relocation Report (Project Record Document 1). This evaluation was based on five key criteria, which included disease risk, security, climate, logistics and infrastructure.

The additional sites considered met or exceeded the existing site conditions for some criteria, but their overall rating was considered not to be high enough to justify construction costs and the costs associated with NEPA analysis.

Mitigation

Mitigation measures were developed to reduce some of the potential impacts from the construction of a new aviary.

Soil and Water

1. Limit clearing of vegetation to the minimum required for the project and delineate the site boundary.
2. Require contractors to prepare and implement an erosion and sediment control plan.
3. Place silt fences, hay bales or other sediment entrapment devices around potential sediment sources during earthmoving phases of construction. Place erosion control mats on areas of steep soils, low vegetative cover, or unstable soils.
4. Re-establish vegetation on disturbed areas or exposed soil to prevent erosion and sedimentation using native vegetation.
5. Keep machinery out of stream channels.
6. Require that vehicle maintenance occur at least 100 ft from streams and off-forest.
7. Require preparation of hazardous materials prevention and cleanup plan.
8. Use only native vegetation or species already established in the area for landscaping, rehabilitation or stabilization.
9. Store wastes generated during construction in containers and dispose of them in an authorized landfill.
10. Install a construction limitation fence on site.
11. Dispose of all waste materials off-Forest and in accordance with Commonwealth regulations. Require that all materials be removed within one month after project completion.
12. Visually inspect turbidity of Quebrada Jimenez headwaters and Rio Tabonuco on a weekly basis until construction activities are completed.
13. Remove excavated organic matter from construction activities and place in the previously excavated site at the El Portal Administrative site to aid in restoration

of that site and ensure that the material is properly disposed of. This site will be protected by a gabion structure to retain fill material.

14. The trees that are to be removed from the aviary site will be cut into manageable sizes and be dispersed along with the topsoil removed. The removed material needs to be spread out evenly along the site.
15. Use retention structures as needed to retain any possible movement of soil. These may include gabions, erosion control mat and silt fences. These structures will remain in place until the soil becomes stabilized and revegetated.

Wildlife and Fish

1. Time any high-intensity noise generating construction activity e.g.(vegetation clearing, foundation construction) outside the raptor/parrot nest selection and breeding seasons.
2. Monitor construction site monthly for the presence of threatened and endangered species.
3. Require contractor to remove garbage from construction site to avoid attracting rats.
4. A qualified resource technician will be available on-site during the initiation of heavy earth movements to make sure any P.R. Boas are not harmed. If a boa is encountered they will be removed from the activity site without physical injury.
5. One month prior to the construction phase of the project, there shall be another series of bird point count conducted to reassure that either P.R. Broad-winged Hawk or P.R. Sharp-shinned Hawk are at the site. If either of the raptors is documented at the site, biological technicians will try to notice the direction of flight to search for nests for protection from this or future projects. USFWS (Rio Abajo and Boqueron Offices) and contractors on the site will be notified for their information and records.

Plants

1. Limit clearing of vegetation to the minimum required for the project.
2. Develop a management plan to protect trees in the vicinity of the construction site.
3. Prior to construction, transplantable Tortugo Prieto trees will be removed to El Portal Nursery for future relocation.
4. The Tortugo Prieto trees will be flagged off and noted on a map to protect local populations within the site. Approximately 570 seedlings and shrubs of *Ravenia* will be transplanted to pots. Prepare approximately 20 cuttings from each adult tree to be impacted.
5. Approximately 100 seedling and shrubs of *Brunfelsia* will be transplanted to pots.
6. Brunfelsia seeds will be sown at El Portal Nursery and at FCPR nurseries.
7. The Chupacallo trees in any form of danger will be flagged off to protect local populations within the site. No physical manipulation will be allowed to the trees

or their roots and all activities will not occur within 50 feet of these protected plots.

8. Monitor remaining Tortugo Prieto trees for potential secondary impacts following construction.

Heritage Resources

1) All mitigation measures agreed upon in the Memorandum of Agreement (MOA; Appendix A) among the Caribbean National Forest, the US Fish and Wildlife Service, and the State Historic Preservation Office (SHPO) and it's Mitigation Plan, will be implemented. As specified in the MOA and Mitigation Plan, some of these measures must be completed prior to construction and/or earth movement commencing; other mitigation measures will occur during construction.
2) If archaeological or historic resources are encountered during soil disturbing activities, the involved party will stop work in the area of the find until an qualified archaeologist evaluates the find's significance for NRHP eligibility.

Scenery

1) Limit clearing of vegetation to the minimum required for the project.

General

1) Require contractor to obtain all legally required permits.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the following table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 2. Alternative Comparison

Issue or Alternative Comparison Criteria	Alternative 1 (No Action)	Alternative 2
Aviary Site Location Criteria*		
Disease Risk	4	3
Security	3	3
Climate	3	4.5
Logistics	2	3.5
Infrastructure	3	4
Total	15	18
Heritage Resources		
Forest Road 191	No Effect	
Historic Trail	No Effect	
Threatened and Endangered Species Potentially within Project Area		
Puerto Rican Parrot, Puerto Rican Sharp-Shinned Hawk and Puerto Rican Broad-Winged Hawk	No Effect	No Effect
Puerto Rican Boa	No Effect	May affect, but not likely to adversely affect
Sensitive Species Potentially within Project Area		
Tortugo Prieto	No effect	May impact individuals but not likely to cause a trend to federal listing or a loss of viability
Tortugo Prieto individuals impacted	0	55 Lost 500 Transplanted
Puerto Rico Raintree	0	100 Transplanted
Forest Plan Amendment		
Management Area 1 (Administrative Site)	204	+15 Acres (219)
Management Area 2 (Developed Recreation)	1,158	-29 Acres (1,129)
Management Area 4 (Integrated)	6,216	+53 Acres (6,269)
Management Area 8 (Timber Management)	1,167	-39 Acres (1,128)

*** Rating scale from the Puerto Rican Parrot Aviary Relocation Report. 5=Excellent, 4=Good, 3=Acceptable, 2=Poor, 1=Not Recommended**

ENVIRONMENTAL CONSEQUENCES

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in the chart above.

Soil and Water

Affected Environment

Soil

The proposed aviary would be located approximately one kilometer west of the junction of Forest Road 191 and 966. The facilities will include three buildings totaling approximately 5,200 square feet. The total footprint of the buildings, access road, and parking area will be approximately 1.5 acres. The site is located on a ridge top area consisting of gentle slopes and 3 terraces with an average altitude of 495 meters at the highest point and a lowest point of 452 meters. The area is bordered on the north by steep forested slopes.

A review of CNF Soil Survey, shows two types of soils in the area. The first one is Humata-Zarzal complex and the second is Zarzal-Cristal complex. The Humata series consists of very deep, well drained soils on side slopes and ridges of strongly dissected uplands (NRCS, 2002). The Humatas soil makes up about 52 percent of the map unit, and the Zarzal soil makes up about 45 percent. This map unit occupies the most stable positions on the landscape.

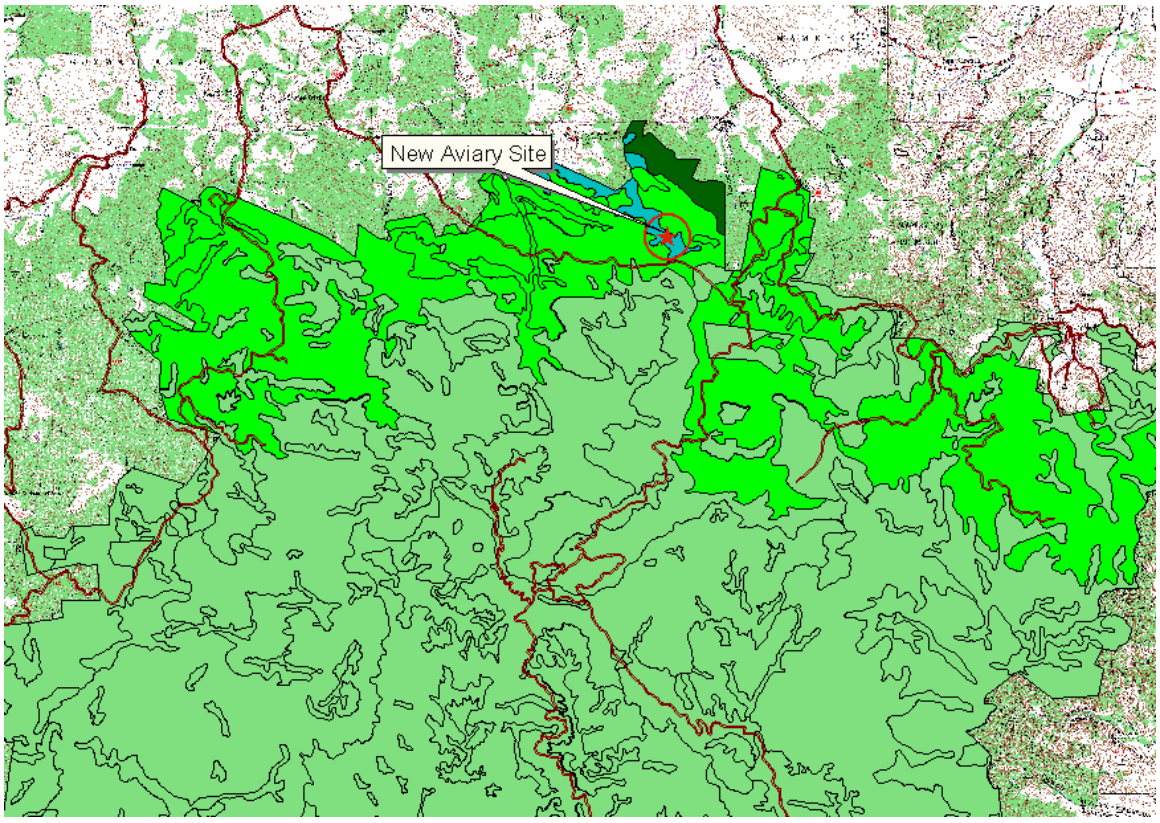


Figure 7. **Soils within the New Aviary Area. Blue is Humatas-Cristal Complex. Green is Zarzal Cristal Complex.**

The Zarzal-Cristal Complex consists of the very deep, well drained Zarzal soil and the very deep, somewhat poorly drained Cristal soil. The soils are on mountain side slopes dominantly at the lower elevations (<1,970 feet, or 600m, Tabonuco zone).

Water Resources

The Environmental Quality Board (EQB) establishes water quality standards for Puerto Rico. A review of Puerto Rico Water Quality Standards was conducted. The EQB 1990 policy states the "Where high quality waters constitute an outstanding National resource, such waters as of El Yunque National Forest …water quality shall be maintained and protected."

The proposed aviary site is located on the divide of Rio Mameyes and Rio Espíritu Santo watersheds. Due to steep slopes, no significant flood plains occur. The Rio Espíritu Santo Watershed covers an area of 4.0 sq. miles within the Forest, or 9.1% of the Forest. Water quality is good within the study area. Within the Espíritu Santo watershed we have a first order permanent tributary named Quebrada Jiménez. The headwaters of Quebrada Jimenez are located 0.25 miles (1,320 feet) west from the New Aviary site.

The Rio Mameyes watershed covers 6.88 sq. miles within the Forest, or 10.4% of the Forest. The stream has been designated as Wild and Scenic River. Rio Mameyes's water quality is optimum in the upper segments, since the entire corridor is located in the Baño de Oro Natural Area, and no development exits. Water quality is good in the lower segments, affected to some degree by recreation use on the Rio de la Mina (a tributary of the Mameyes), and the heavy use near Puente Roto (LRMP, 1997). Within the study area there is a first order permanent stream called Quebrada Tabonuco. This stream runs 0.25 miles (1,320 feet) east from the New Aviary site.

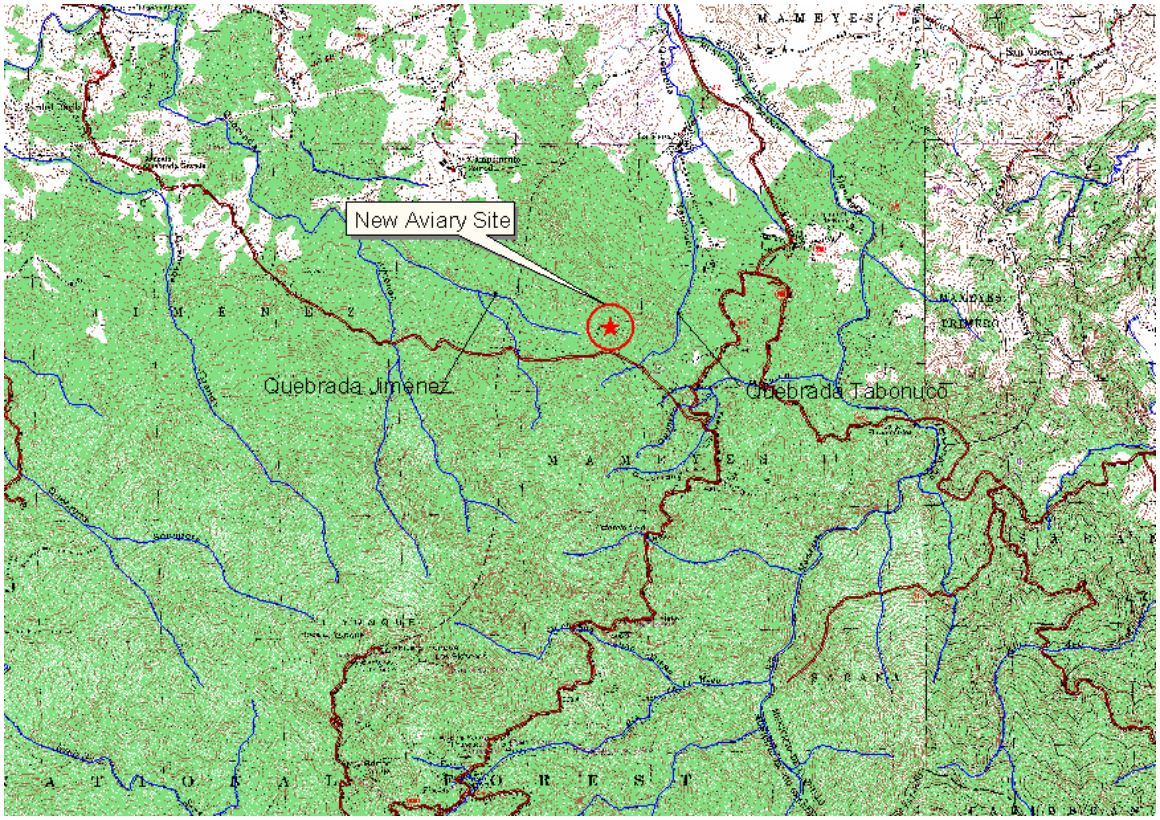


Figure 8. This map shows the streams within the study area.

A field survey showed no perennial, intermittent, or ephemeral streams on site.

The facility would require use of approximately 5,000 gallons of water per week. Potable water will be provided by a combination of rainwater collection on the site and water piped from the Forest Service's existing Catalina/El Portal water system.

Environmental Effects

Activities such as facilities and road construction, earth material relocation and electrical line placement can result in sediment transport due to runoff. "Best Management Practices" as defined in the Standards and Guidelines for the Revised Forest Plan, would be employed to reduce the potential for increased sedimentation and help stabilize sites.

First, the total cleared area resulting from facilities and road construction will be approximately 1.5 acres. These construction activities will result in removal of approximately 4,800 cubic yards (130,680 cubic feet) of organic material, which will be relocated to the El Portal administrative site. This site is an area located to the North of the El Portal Visitor Center's main structure. This site was originally impacted during the construction of El Portal in 1993. The area was intended to occupy 4 acres. The site has an access road. The topography is dominated by a gentle slope. There are no water bodies on site.

Second, electricity will be provided by buried lines along the road Right-of-way of Roads 191 and 9966. The distance will be 2.6 km (1.62 miles). The installation activity can result in a sediment yields comparable to road construction yields largely due soil exposure.

Sediments yields for the soil disturbing activities were calculated. The estimates in the following table are based on the same assumptions used in EIS for the Revised Forest Plan (FEIS-RFP, III-11 through 17, and Appendix B, pages 11-12.). The LRMP provides a sediment yield equation adapted to major Forest Management activities. It is assumed that road reconstruction would produce the same sediment yield per acre as new construction. This assumption can over-estimate sediment yields, but results are adequate for comparing alternatives. Construction is estimated to last one year. The sediment yields are anticipated to occur for up to one year at which time they would rapidly diminish. Alternative 1 shows baseline sediment yields of the no-action alternative and baseline sediment yields for all construction components are shown in Alternative 2.

Table 3. Summary of Sediment Yield Estimate above Baseline Levels.

Acres Disturbance	**Alternative 1**	**Alternative 2**
Buildings	0	0.12
Access Road	0	0.18
Deposit Site	0	3.0
Electrical Right of way	0	0.98
Estimated Sediment Yield (tons/year)		
Buildings	0.11	0.15
Access Road	0.16	2.41
Deposit Site	2.67	40.19
Electrical Right of way	0.88	13.13
Total	3.82	55.88

Depending on assumptions used, total sediment yield over the entire Forest is estimated to be between 25,000 and 75,000 tons annually, or on the order of 1,342 times the estimated amount of sediment produced by the proposed project.

In Alternative 1, the current situation would continue. There would be no human disturbance activities to soils in the project area and natural soil erosion patterns would continue to occur.

Cumulative Effects

An important cumulative effect resulting from facilities development is the non-point source pollution. Non-point sources may reduce water quality, aquatic habitat and other beneficial uses. Surface erosion and associated sedimentation are highly sensitive to road maintenance practices. Small changes in road drainage configuration can result in large changes in erosion (Forest Service, 1999). Road construction will result in a non-porous surface. The change in infiltration combined with site use will increase the variety and amount of pollutants such as oil, grease and chemicals from automobiles (EPA, 2000).

Table 4. Effects on Road Effects

Acres Disturbance	Alternative 1	Alternative 2
Road Construction	0	0.18
Surface Erosion	Minimal	Increases
Non-Point Source Pollution	None	Increases

Under Alternative 2, we can expect an increase in non-point source pollution.

Forest Plan Amendment

The construction of facilities would require a non-significant amendment to the LRMP. The amendment would affect sediment yields as follow:

Table 5. Alternative 1 Estimated Sediment Yields

Management Area	Current Management Area/ No Action	Estimated sediment yields (tons/year)
MA 2 (Developed Recreation)	29	37.1
MA 8 (Timber Demonstrations)	39	63.2
Total	68	100.3

Table 6: Alternative 2, Estimated Sediment Yields

Management Area	Alternative 1/ Construction	Estimated sediment yields (tons/year)
MA 4 (Integrated)	53	47.3
MA 1 (Administrative Site) 1/	15	19.2
Total	68	66.5

1/ Uses sediment yield equation of lowest production level to estimate yields for an Administrative Site

Alternative 2 will result in the lowest amount of sediment yield when compared with a no action alternative in which timber demonstration and developed recreation occur during the plan period.

Wildlife and Fish

Introduction

The Fauna of the Caribbean National Forest (CNF) is one of most distinguishable communities in the National Forest system. Species from this tropical U.S. National Forest exhibit traits unique only to tropical ecosystems. Both aquatic and terrestrial animal species on the Forest have many distinct characteristics that have evolved through interactions that promote specialization. Tropical rain forests have the greatest diversity of species of all communities (*Campbell, 1993*). In CNF species range from multiple species of terrestrial vertebrates, over 127 species, to an abundant array, 17 species, of freshwater fish. The CNF boast a spectacular degree of biodiversity in comparison to other National Forests.

Within this network of species and biotic interactions some species are classed together into meaningful management categories developed by land management agencies. Certain species that are in danger of extinction are categorized according to the severity of their status. Those classes are proposed, threatened, endangered and sensitive. In the National Environmental Policy Act (NEPA) process all fore mentioned categories are address in a Biological Evaluation (BE). In this project, 4 fauna species were addressed to ensure no adverse affects are committed them or a significant part of their habitat, official determinations were sent to U.S. Fish and Wildlife Service (USFWS). Refer to the BE for the proposed new aviary for the Puerto Rican parrot.

A second tier of species management classification to convey potential affects is presented as Management Indicator Species (MIS). MIS are animal or plant species

whose population changes are believed to indicate the effects of land management activities. The MIS concept was developed in response to Forest Planning requirements contained in the National Forest Management Act of 1976 (*16 USC 1600*). The concept is a planning tool to promote more effective management of habitats, both terrestrial and aquatic, on National Forest lands.

The Forest Plan establishes 12 animal MIS for the Forest: The following table provides a list of them with general locations where each species may be found.

Table 7. Forest MIS Species

Common Name	**Scientific Name**	Forest range
Puerto Rican Parrot	*Amazona vittata*	Forest interior
Sharp-shinned Hawk	*Accipiter striatus venator*	Forest-wide
Broad-winged Hawk	*Buteo platypterus brunnescens*	Forest-wide
Elfin Woods Warbler	*Dendroica angelae*	Dwarf forest region
Black-throated Blue Warbler	*Dendroica caerulescens*	Forest-wide
Tree-hole coqui	*Eleutherodactylus hedricki*	Mid-elevation sites
Warty Coqui	*Eleutherodactylus locustus*	Low to Mid-elevation sites
Burrow Coqui	*Eleutherodactylus unicolor*	Mid to high elevation sites
Yellow-bearded Anole	*Anolis gundlachi*	Forest wide
Sicydium plumieri	*Sicydium plumieri*	All Forest rivers
Agonostomus monticola	*Agonostomus monticola*	Two major Forest rivers
Macrobrachium carcinus	*Macrobrachium carcinus*	All Forest rivers

MIS are addressed in regards to the proposed project. Some species also are addressed in the BE because of their status. The MIS are addressed on a forest level. In other words, how will this project affect the population of each species on the Forest? The scope and type of activities of the project will determine most effects.

Field Surveys/Resource Contacts

In the month of April 2004 boa, coqui, and bird surveys were conducted at the proposed site to confirm the presence of any proposed, endangered, threatened, or sensitive (PETS) species. CNF biological technicians, whom have over 20 years of combined experience, conducted the surveys. In their methodology, the technicians used Geographical Positioning System (GPS) technology, which the data is relayed into Geographical Information Systems (GIS). Also, available to the technicians were snake handling equipment and binoculars to reach their objective. Following directives from the Forest Biologist data was captured and is included in the BE for the new aviary site. No PETS species were observed during the inspection. Also referred for experience in Puerto Rican Boa behavior were the research technicians at the Sabana research station of the International Institute of Tropical Forestry (IITF).

Forest Plan Direction/Other Direction

In the Forest Plan there is a desire to maintain the Forest's biodiversity—including species, genetic diversity and ecosystem processes (*USDA Forest Service (a), 1997*). Viable populations of native flora and fauna including proposed, endangered, threatened, and sensitive species are maintained or monitored. The ranges, distributions, population characteristics, habitat requirements and association of forest species are better understood through multiple year evaluations.

In the Forest Plan MIS are decided through a definition process. To display them, Table 2 shows the requirements for each species to be in this category.

Table 8. MIS Requirements

Category	Definition
1. Endangered species	A plan or animal species listed as endangered on Commonwealth and Federal list; i.e., that is in danger of extinction throughout all or a significant portion of its range (*FSM 2670*).
2. Threatened species	A plant or animal species listed as threatened on Commonwealth and Federal lists; i.e., that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (*FSM 2670.5*)
3. Sensitive species	A species for which population viability is a concern as evidenced by (a) significant current or predicted downward trends in population numbers or density; or (b) significant current or predicted downward trends in habitat capability that would further reduce a species' existing distribution (*FSM 2670.5*)
4. Rare species	A species for which population viability is a concern because the species exits at extremely low numbers over the Forest or is highly restricted in its distribution within the Forest.
5. Insular species	A species that occurs as one or more small, reproductively isolated populations on an island or group of islands.
6. Keystone species	A species whose presence and effect in an ecosystem are major factors affecting the structure, diversity, and function of the system (*FSH 2609.12*)
7. Emphasis species	A species for which there is high public demand (*FSM 2600*). Normally, these species are those commonly hunted, fished, or trapped, and are often of significant economic value.
8. Special interest	A species having high value for non-consumptive species recreational, cultural, educational, religious or scientific values (*FSH 2609.12*).
9. Species requiring special habitats	Habitats having productivity, rareness, or importance to a wildlife community such that the habitat itself is an important component of wildlife or fish diversity and may be used to focus planning and management (*FSH 2609.12*).
10. Ecological indicator	A species whose population dynamics reflect significant changes in the condition or productivity of and ecosystem (*FSM 2600*).

The following breaks down each species into each corresponding category.

Species	*MIS Category*
Puerto Rican parrot	1,5,7,8,9
Puerto Rican sharp-shinned hawk	5,8,10
Species	*MIS Category*
Puerto Rican broad-winged hawk	5,8,10
Elfin Woods warbler	3,5,8,9
Black-throated blue warbler	8
Yellow-bearded Anole	10
Tree-hole Coqui	8,9
Warty Coqui	3,8,9
Burrow Coqui	5,8,9
Goby	9,10
Mountain Mullet	9,10
River Shrimp	7,8,9

The following table helps indicate effects of management on some MIS elements of this framework.

Table 9. Management Effects on MIS.

MIS species	Analyzed Further	Relevance to this project (Potential Effects of Concern)
Puerto Rican Parrot	Yes	Beneficial effects expected. A new aviary will improve the status of the captive population. Healthy fledglings will lead to healthy adults.
Sharp-shinned Hawk	Yes	This species has a downward trend to its population on the forest and the island. No nests or individuals found in the vicinity, but possible temporary changes in activities at site. (refer to Biological Evaluation for new PRP aviary)
Broad-winged Hawk	Yes	This species has a downward trend to its population on the forest and the island. No nests or individuals found in the vicinity, but possible temporary changes in activities at site. (refer to Biological Evaluation for new PRP aviary)
Elfin Woods Warbler	No	Due to the proposed site of the aviary, which is located at 450 meters, the birds preferred habitat only exists around 1000 meters (dwarf forest).
Black-throated Blue Warbler	No	Possibly temporary warbler activity changes due to activities. No Black-throated blue warblers documented in survey
Tree-hole coqui	No	Possible temporary disruption in coqui activity. Preferred habitat is above 450 meters in elevation. No

		individuals were documented in night surveys.
Warty Coqui	No	Possible temporary disruption in coqui activity. Preferred habitat is found in the proposed aviary's elevation none were found in the proposed action site.
Burrow Coqui	No	Possible temporary disruption in coqui activity. Highly unlikely due to preferred habitat found above 670 meters above sea level. No individuals were documented in night surveys.
MIS species	Analyzed Further	Relevance to this project (Potential Effects of Concern)
Yellow-bearded Anole	No	Possible temporary disruption in lizard activity. The size and type of activity will not lead the species towards downward trends.
Sicydium plumieri	No	The proposed action will not have any significance to aquafauna. Mitigations for runoff are sufficient to reduce sediment runoff in local streams.
Agonostomus monticola	No	The proposed action will not have any significance to aquafauna. Mitigations for runoff is sufficient to reduce sediment runoff in local streams
Macrobrachium carcinus	No	The proposed action will not have any significance to aquafauna. Mitigations for runoff is sufficient to reduce sediment runoff in local streams

Affected Environment

At the proposed site there were no observations of MIS except for the Yellow-bearded Anole, but the species is abundant throughout the Forest and the island. The following table displays information for MIS on the forest.

Table 10 Forest MIS Summary

Management Indicator Species	Present population information	Management Indicator Species	Present population information
Puerto Rican Parrot	Populations are stable at 32 since the last post-breeding count in June 03	Tree-hole coqui	Coqui counts in FY03 show occurrences are stable
Sharp-shinned Hawk	None documented in FY03	Warty Coqui	Coqui counts in FY03 show fewer occurrences.
Broad-winged Hawk	Migratory bird counts FY03 show	Burrow Coqui	Coqui counts in FY03 show fewer

	2 identified in western sections		occurrences.
Elfin Woods Warbler	Christmas bird counts show 1 EWWA in the cloud forest	Yellow-bearded Anole	Less is reported from technicians in all areas of CNF.
Black-throated Blue Warbler	2 Warblers have been documented in Christmas counts in low elevations..	Sicydium plumieri	Population is stable in northern watersheds.
Agonostomus monticola	Population is stable in northern watersheds.		
Marcrobrachium carcinus	Population is stable in northern watersheds.		

Environmental Effects

Alternative 1: No Action

In this alternative, all of the MIS will directly remain in their present state. In the case for the Puerto Rican parrot the captive population will remain in the Luquillo Aviary and continue to have the same rate of success. Most young parrots will be hampered by pulmonary diseases and raised in an environment that reduces population vigor.

The P.R. Sharp-shinned hawk, P.R. Broad-winged hawk, P.R. Boa, Elfin woods warbler and Black-throated blue warbler will continue to exist throughout the Forest. Most of the fore mentioned species do show a slight downward trend (Delannoy, 1992 and Oberle, 2000), but intensive studies are needed to confirm this speculation. The Coqui and Lizard species will also continue to endure at their present rate. Again there is speculation that Coqui species are experiencing a slight downward trend; a future symposium scheduled in June 2004 at the University of Puerto Rico is bringing this question into future consideration. Aquatic species will continue to exist in the Forest's rivers and streams with trends showing an oscillating pattern in conjunction with the seasons.

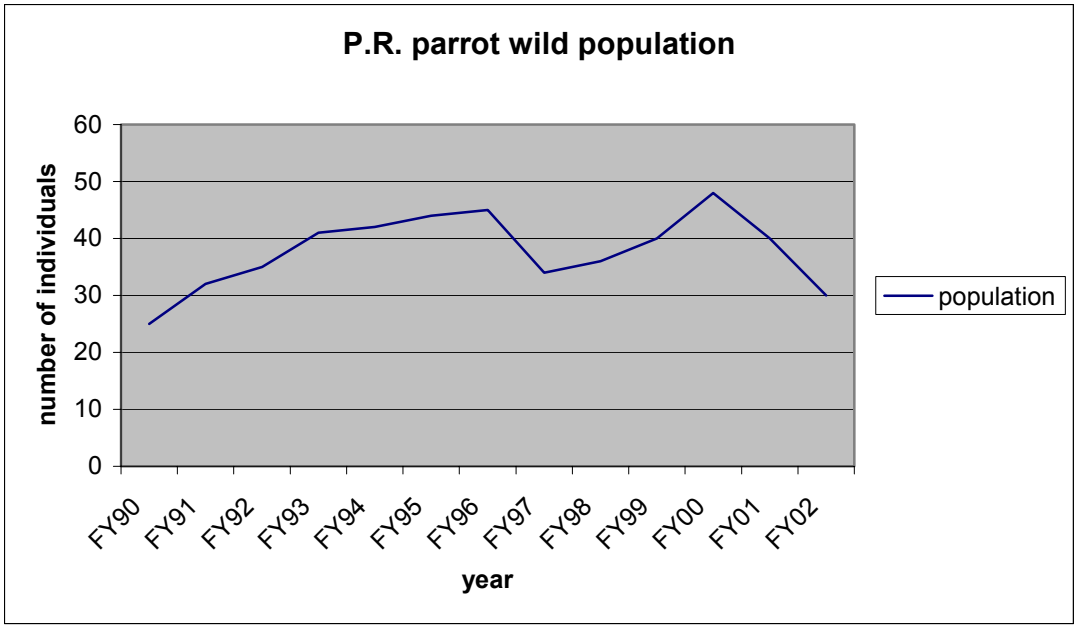
The immediate results are consistent with the Forest Plan for most of the MIS except for the Puerto Rican Parrot. Cumulatively, this alternative will not affect the remaining MIS in a negative manner. Most of the MIS will continue in the forest at their respective population rate. The Puerto Rican parrot wild flock will continue to be supplemented by individuals from the Luquillo Aviary, but the individual bird's health will always play a pivotal role in the future recovery of the species.

Alternative 2: Proposed Action

For all MIS except the Puerto Rican parrot the direct and indirect effects include no significant alteration to immediate population numbers. The following table shows the table of past data concerning the Puerto Rican parrot. Since there is a small population of PR parrots,, we can observe past and present trends and to a degree anticipate future directions from added management activities.

Table 11. Summary of Puerto Rican Parrot Recovery From 1990 to 2002

Year	91	92	93	94	95	96	97	98	99	00	01	02
Successful Nesting Attempts	5	6	6	6	5	3	3	4	2	5	5	2
Total Young Produced in the Wild	8	10	13	13	14	7	7	10	3	13	14	2
Young Fledged into the Wild	7	11	15	14	15	8	7	9	3	7	5	1
Population Estimate	32	35	41	42	44	45	34	36	40	48	40	30



Direct effects will show the present trend to level out to a stable number where new healthy wild flock members would be supplemented by the new aviary. Future carrying capacity for the current census area should level around 40 individuals.

Since the proposed actions are minute, population trends of MIS will not show any changes once the project is implemented. The logic behind this outcome is the size of the proposed action will only be approximately 2 acres in a site where many MIS has similar habitat in the surrounding area to move to; thus annual surveys will be irrelevant to show any changes for large populations. With such a small footprint and the mobility of most animals on the forest being peripatetic, this alternative will only temporary dissuade any occurrence of animals at the immediate site.

Indirectly forage resources and shelter habitat will not be altered to place any MIS in harm. There is ample and a wide variety of tropical vegetation in the surrounding area to provide sustenance for future needs for all species.

Cumulatively the operation of the new aviary and the remnants of the parrot caring activities will do the following:

1) produce low-levels of noise from captive parrot vocalization and small machinery;
2) provide a low number of human occupancy at the aviary for maintenance of facilities;
3) regrowth of vegetation around the activity site where movement of soil was necessary to provide a flat building area. Most regrowth of trees would occur around the periphery of the new aviary.

From these expected, results terrestrial and avian species would be reestablished in the approximate area. The low-level of noise and human occupancy will not frighten most forest species and MIS at that particular point. As projected by aviary designers, the regrowth of tropical vegetation at the edges will provide a low contrast between the aviary and the rest of the forest.

There are no future plan for more constructive or control experiments (research) in the area, so no further impacts are anticipated.

According to the Forest plan, the parrot will be provided improve grounds for propagation; thus, furthering the vitality of the population for the recovery effort of the endangered bird.

Threatened and Endangered Species
A Biological Evaluation and Biological Assessment was completed for this project and submitted to the USDI Fish and Wildlife Service for concurrence. The BE/BA is filed in the project record and is available for review on request. The following determinations were made regarding Threatened and Endangered Species.:

- No effects for the Puerto Rican Parrot, Puerto Rican Sharp-Shinned Hawk, and Puerto Rican Broad-Winged Hawk
- May affect, but not likely to adversely affect the Puerto Rican Boa.
- No effects for the Chupacallo trees.
- May impact individuals, but not likely to cause a trend to federal listing or a loss of viability for the Tortugo Prieto or Puerto Rican Rain Tree.
- No effects to all of the other Endangered Plants.
- The Forest Service does not anticipate adverse effects on the Coqui Species and other fauna or flora sensitive species.

Vegetation

Affected Environment
The vegetation is typical of secondary forest at a Tabonuco Forest Type. Seedlings of the climatic species are starting to be introduced into the site such as; Ausubo, Cacao Motillo and Tabonuco. Sierra Palm is a typical element also in this association, particularly in drainages. The general area was abundant with row planted mahogany, but later abandoned from management in the 1980's. A community of *Ravenia urbanii* (Tortugo Prieto), and *Brunfelsia portorricensis* (Puerto Rican Raintree) is also present in the project area.

Tortugo prieto was found to occur in an area of approximately 3,800 sq meters in the area. Approximely 570 individuals were identified within the area of potential impacts. A previous study at that site (Sylvia Perez and Leonardo Tollinchi, 2000) identified an area of 2,639 m² and gave an average of 27 mature trees with a seedling density of 4.75 seedlings per 100 sq. ft.

The species is reported as rare in the Luquillo Forest and Carite Forest. Perez and Tollinchi (2000) mentions it as also found in Guilarte Forest as reported by its "Oficial de Manejo", Ruben Padron.

A population of *Brunfelsia portorricensis* (a sensitive species) was also detected at the site. This group consists of approximately 100 individuals.

Field Surveys/Resource Contacts
Two surveys were conducted at the site. One survey was to determine the presence of plant species in the area. The second was to determine the potential impacts and how many individual could be transplanted from site before impact.

Environmental Effects

Alternative 1: No Action
Under the No Action Alternative, there will be no effect to the vegetation. Natural secondary succession will continue its course.

Alternative 2: Proposed Action
All the vegetation in an area of approximately 1.5 acres will be impacted by construction activities.

Impacts to the tortugo prieto trees present in the area will include the loss of 55 individuals (80% adult trees) and transplanting of 517 individuals. Transplanted plants will be taken to the El Portal Nursery and prepared for later transplanting.

All of the Puerto Rican Raintrees are in the area of direct construction activities. All 100 of these individuals have been identified for transplant. In addition, four fruits were collected (approx 150-200 seeds per fruit). Fruits will be shared with Puerto Rico Conservation Trust nurseries for reproduction of the species.

This action would be consistent with the revised Land and Resource Management Plan for activities occurring in Management Area 1 (Administrative Site).

Cumulative Effects
No additional activities have been identified which when combined with the proposed aviary would result in any cumulative effects.

Recreation

Introduction

The Caribbean National Forest is one of the most visited recreation areas in Puerto Rico. The Forest offers a diversity of recreational activities that range from visiting the El Portal Rain Forest Center to picnicking, bird watching, water play and hiking along its many trails. Hiking is one of the favorite activities enjoyed by Forest visitors. There are several levels of trails found in the Forest. Most of the trails are of moderate challenge while others are classified as challenging or primitive. Moderate Trails have a solid walking surface which can be either concrete or asphalt. Challenging Trails have a compacted earth surface and the Primitive Trails are covered with vegetation and other plant materials as well as compacted rocks soil.

Affected Environment

Forest Trail #37 is located at PR 9966, about 1 kilometer west of the intersection with PR191. The trail runs North to Northwest and has a distance of approximately 1 kilometer. The trail surface is currently visible and is used sparingly by people that know that the trail exist and that know there are fruits and vegetable found there.

Forest Trail #37 was clearly delineated on the Forest Quadrangle Map that was printed in 1981. In the *Environmental Impact Statement for the Revised Land and Resource Management Plan* dated 1997, the trail is not identified as and *Existing Recreation Trail* (Table III-8, page III-55). According to the Forest Archeologist, the trail was built in the 1930's by the CCC. Because of its isolation from the main Forest Recreation Corridor on PR 191 this trail has not been maintained or managed for over 20 years.

The site was once evaluated as a possible site for a Food Concession but this was discarded because of the lack of utilities and its isolated location. A new Food Concession was awarded in March 2004 at the Palma de Sierra Recreation Area located on PR 191 Recreation Corridor.

Environmental Effects

Alternative 1: No Action

Under the No Action alternative, there would be no effects on the recreation resource in the area. This alternative is fully consistent with the Forest Plan. The site would continue to be available for future proposals related to developed recreation. Any future developed recreation activities would require water and electric utilities since they are not currently in the area.

Alternative 2: Proposed Action

Presently there is very little documented use in the area and no proposals for developed recreation activities at or near the proposed site. In addition, potential future proposals could be accommodated at other locations should they be needed. As such, a change in

Resource Management Area will have no significant impact on the Recreation Resources that are found on the Forest. Trail #37 is located in a Resource Management Area 2, Developed Recreation. Construction activities will impact approximately 600 feet of the initial portion of the trail. Under this alternative, any future development of trail #37 would require rerouting the trail away from the aviary.

This alternative is consistent with Forest Plan direction.

The Forest Plan amendment under this alternative will not have any measurable effect on the recreation resource for the Caribbean National Forest.

Cumulative Effects
No other proposed activities have been identified which in combination with the proposed aviary would result in any cumulative effects to the recreation resource.

Heritage

Introduction
Prior to any ground disturbing activity, it is necessary to determine if there are any heritage resources within the proposed project area. On the Caribbean National Forest (CNF) typical heritage resources that might be encountered include prehistoric petroglyphs, Spanish-era gold mines and coffee plantation sites, Civilian Conservation Corps (CCC) constructions, and historic farmsteads. Generally we begin by researching the site files, literature, and historic maps, documents and aerial photographs of the project vicinity, and of the specifically proposed site. Then, a walk-over survey of the area is conducted to become better familiarized with the area, and in an preliminary effort to locate cultural resources. Based on signs of, or potential for cultural resources during this initial literature search and surface survey, a decision is made whether to proceed with more intensive sub-surface testing. If heritage resources are found, then they are evaluated to determine if they are significant and potentially eligible for inclusion on the National Register of Historic Places (NRHP). If they meet the necessary criteria, then, in consultation with the Puerto Rico State Historic Preservation Office (PR SHPO), measures are developed to protect, document, rehabilitate or in some way mitigate the impacts the project will have on these heritage resources.

The site selected for the proposed new aviary is located on the ridge line dividing the Mameyes and Jimenez watersheds in Mameyes II Ward of Rio Grande. The ridge line leads to a fairly level area consisting of three terraces and gentle slopes with an average altitude of 463 meters. It is bordered on the north by steep forested slopes. The vegetation on the site is dense secondary forest. For the purposes of heritage resources the area considered as the Area of Potential Effect (APE) for the proposed new Puerto Rican parrot aviary includes the corridor the utilities will take to the site, and the approximate three-acre area where the buildings, flight cages and related infrastructure are proposed. The utilities corridor begins with the waterline at the existing water plant at Catalina Work Center, goes above ground cross-country for a few hundred meters before reaching the PR 191 road in the vicinity of the Monte Sereno community; from there the

waterline joins the underground electric line; together they follow this road to its intersection with PR 9966, and follow this second road to the entrance of the proposed aviary site on the ridge. It is understood that staging areas will be on-site, with the exception of the overburden disposal area which will be located in the vicinity of El Portal Tropical Forest Center.

Field Surveys

The CNF consulted with the PR SHPO about the proposed new aviary in Jimenez Ward of Rio Grande; SHPO indicated that a Cultural Resource Assessment (Stage I, literature search and surface survey) was necessary. Over the last three years the Forest Service has conducted three separate surveys of the area, all of them have included a literature search and walk-over survey, as well as varying amounts of sub-surface testing. During the course of these surveys cultural resources that are potentially eligible for the NRHP were identified. Principal among these are the PR 191 roadway and a trail that represent CCC era projects on the Forest, and the earlier Hacienda Catalina historic coffee plantation. Some historic artifacts dating to the Nineteenth Century and limited amounts of prehistoric lithics were discovered in the proposed disposal area in the vicinity of El Portal, but those materials were discovered during implementation of the El Portal project almost a decade ago, and were reported and mitigated at that time.

The Stage I Cultural Resource Assessment report requested by PR SHPO documents the surveys with maps, photographs and descriptions, and is the bases for deciding that there are NRHP eligible historic properties within the APE of this proposed project.

Forest Plan/Other Direction

In matters concerning cultural resource compliance, the Caribbean National Forest is the lead federal agency for the proposed new aviary project. The Revised Land and Resource Management Plan, Caribbean National Forest/Luquillo Experimental Forest, Puerto Rico (1997:4-53 to 4-55) presents the Forest-wide Goals, Standards and Guidelines that must be followed for Heritage Resources. A Memorandum of Agreement between the CNF, the USFWS, and the Puerto Rico SHPO, further defines these responsibilities, and the Advisory Council on Historic Preservation was notified. Section 106 of the National Historic Preservation Act of 1966, as codified in 36 CFR Part 800, and other related legislation and regulations also apply to this type of federal undertaking.

Affected Environment

There is a wide variety of heritage resources on the Forest to consider before defining the affected environment, as evident by the ample account of these resources presented in the Final Environmental Impact Statement for the Revised LRMP/CNF-LEF (1997:III-75-77). However, the environment affected by the proposed new aviary is more limited in scope. By identifying known heritage resources in the vicinity it is possible to predict the kinds of heritage resources that might be present within the proposed project's area of potential impact. Heritage resources are buildings, artifacts, or archaeological sites that remain from human activity that occurred in the past. Heritage resources may have archaeological, historical and/or architectural values, and each is unique and irreplaceable. The area that is today the CNF encompasses a landscape used by a array of

cultural groups, beginning with the island's pre-Columbian population, spanning the Spanish colonial occupation, and reaching in to the twentieth century. In the mountains and thickly forested interior, in areas similar to the one under consideration, petroglyphs were often carved on large boulders by pre-Columbian people. There are three such prehistoric petroglyph sites within a 1.5 km radius of the proposed project: one in the Jimenez drainage; the second in the La Coca drainage; and the third in the Lower Mameyes drainage. In addition, prehistoric lithic procurement sites have been identified in the vicinity, and there is evidence of prehistoric activity within the proposed project area, in the form of small lithic scatters.

The Spanish colonial period is also represented in the vicinity of, and within the proposed aviary project. There are several early Nineteenth Century placer and shaft gold-mining sites within 3 km of the proposed project. As mentioned above, Nineteenth Century Spanish period artifacts were found almost ten years ago during the earth movement activities associated with the construction of El Portal. In addition, the coffee Hacienda Catalina, dating to the late 1800's through the mid 1900's, is located on both sides of the PR 191 road. Previous survey and testing of the Hacienda Catalina Site have shown that there is no significant historic material in the prism of the PR 191 roadbed. Historic homesteads of subsistence farmers are also common in the project vicinity.

The historical activities of the Civilian Conservation Corps (CCC) have produced the most prominent heritage resource in the environment affected by this proposed project. The CCC was a New Deal program started by President Franklin Roosevelt during the Great Depression; in Puerto Rico it started in 1933. One of the first projects the CCC undertook on the Forest was the construction of the "Mameyes to Rio Blanco Road" – which we know today as road PR 191. Built almost exclusively by hand, this road opened the Forest to recreation and other uses. Because the road construction started at Mameyes (today known as the Palmer community) and proceeded up hill from there, some of oldest section of this road is within the proposed project area. In addition to Forest roads, the CCC built structures, such as entrance portals, ranger residences, recreation homes, a research station, a fish hatchery, water systems, swimming pools, observation towers, picnic areas, trails and trail shelters. They also built large semi-permanent work camps that housed the hundreds of CCC enrollees during their tours of duty on the Forest. The first facilities the CCC built were made of local stone and logs, but by 1942 when the CCC program ended, steel reinforced concrete was the primary construction material. Within the proposed project area there are two CCC-built facilities -- the PR 191 road, and the Zarzal Ridge trail. The CCC had a significant and lasting influence on the Forest; their legacy is that even today, the most prominent and frequently used man-made features on the CNF were built by the CCC.

Environmental Effects

Alternative 1: No Action

This alternative will have no direct or indirect effects on the heritage resources. It is consistent with the Forest Plan for matters related to heritage resources. There are no irreversible/irretrievable impacts to heritage resources resulting from this action.

Alternative 2: Proposed Action

This alternative will result in direct impacts to NRHP eligible heritage resources. There will be limited impacts to the historic CCC-era PR 191 roadbed during excavation along the proposed utilities corridor; CCC-era bridges and retaining walls will have utility pipes bolted to them; and at the proposed aviary site, the access road and aviary structures will completely destroy a section of the CCC-era Zarzal Ridge trail. The current aviary building was originally a WW II army barracks, so when it is no longer occupied by an aviary, if it is determined to be eligible for the NRHP it would be available for rehabilitation and reuse following the Secretary of Interior's Standards and Guidelines.

Though one of the Forest Plan Goals is to protect heritage resources, another Goal seeks to investigate them. By recording the CCC-era road and trail features as part of the mitigation measures, there is an opportunity to investigate the construction methods and materials used in building this historic road and trail. This could lead to opportunities to interpret these types of CCC features – another of the Forest Plan Heritage Resources Goals. This proposed action follows the pertinent Forest Plan Standard and Guidelines for Heritage Resources, beginning with a survey for cultural resources, followed by the NRHP evaluation of the historic properties that were discovered, and ending with the mitigation of impacts, as is required by Section 106 of the NHPA when a proposed project will cause unavoidable impacts to heritage resources.

There is no potential for direct impacts to the historic Hacienda Catalina coffee plantation as a result of the proposed utility lines along PR 191 roadway. Some historic artifacts dating to the Nineteenth Century, and limited amounts of prehistoric lithics were discovered in the proposed disposal area in the vicinity of El Portal, but those materials were discovered during implementation of the El Portal project almost a decade ago, and were reported and mitigated at that time.

The potential impacts to the CCC-era PR 191 historic road and Zarzal Ridge trail are irreversible impacts.

Cumulative Effects

There are no known cumulative effects to heritage resources from this proposed project.

Forest Plan Amendment

The proposed non-significant Forest Plan amendment would change the management designation of the area proposed for the new aviary from its current designation of Developed Recreation to Administrative Site (15 acres); adjacent land would be changed from Timber Demonstration to Integrated (Recreation and Research; 53 acres) management area.
Cultural resources are protected in all management areas. Ground disturbing activities pose the greatest potential to impact cultural resources, so management areas where this potential is increased or decreased will have possible effects on the preservation of heritage resources. The proposed change to the Forest Plan of management area

designations for 58 acres of land have a direct relationship on how heritage resources will be protected and managed in the future. The range and types of projects and facilities that are common in Administrative Sites have the most potential for disturbing cultural resources, therefore by increasing the amount of land (by 15 acres) in this management area there is a greater potential to affect historic properties in this area (the proposed new aviary site and a buffer zone around it). However, Timber Demonstration areas also have a high potential for destruction of heritage resources, so by reducing the amount of land (by 39 acres) the potential for impacting cultural resources in this area adjacent to the proposed new aviary is reduced.

The proposed change in management areas would apply to all future situations that have the potential to affect heritage resources, but only in the areas where the proposed designation is changed, not across the entire planning area; there is the potential for either positive or negative effects.

Scenery

Introduction

The Caribbean National Forest has one of the most diverse ecosystems in Puerto Rico. The variety of flora and fauna that is found in the Forest makes it a very picturesque place to visit. Views within the Forest and out can be spectacular. The most spectacular scenery can be found along PR 191 with its many Vista Points and destinations such as Yokahu Tower, La Coca Falls and Juan Diego Creek.

Affected Environment

Scenery Management along PR 9966 is limited because of the low amount of traffic that passes along this road. There are several areas along PR 9966 that have views to the northern coastline of the island. The coastline is visible because of the high elevation where PR 9966 is located. There are two small bridges that cross the PR 9966 that provide views of the streams at these points.

The project site has dense vegetation and a great variety of trees and Sierra Palms. This condition limits the amount of Scenery Management that can be done at the site.

The construction process will obviously have some impact on the site. Many trees and palms will be removed or eliminated from the site. The ideal climate found on the CNF reforestation of the area will be evident and restoration will take 2 to 3 years. Scenery Management at the site will be accelerated with the transplanting of Ravenia urbani – Torturo Prieto, a sensitive tree species which is found at the site.

Environmental Effects

Alternative 1: No Action

Under this alternative there will be no effects to the scenery of the area. This alternative is fully consistent with the Forest Plan.

Alternative 2: Proposed Action

The *Revised Land and Resource Management Plan* dated 1997 (page 4-56) directs Management Area 1 – Administrative Sites to implement partial retention of Visual Quality Objectives. The proposed Aviary will have some visual impact to the site but will meet Management Area objectives. Scenery will be impacted during the construction phase, but the lush vegetation and its rapid reestablishment will bring the site back to pre-construction standards. The location of the proposed Aviary at this site will not alter the Scenery Management of the site. The limited traffic along PR 9966 will be impacted only during the construction period. The access road to the aviary will be the only element to impact the scenery at this location.

The Aviary buildings will be screened from the road by the existing vegetation found at the site. The low profile of the proposed buildings will limit visibility from north of the site.

This alternative would be consistent with the amended Forest Plan. The Forest Plan amendment will not have any measurable effect on the scenery resources for the Caribbean National Forest.

Cumulative Effects

No other proposed activities have been identified which in combination with the proposed aviary would result in any cumulative effects to the scenery of the area.

Social Economics

The proposed project is not anticipated to have any measurable impacts to social or economic indicators. These impacts are addressed in the FEIS for the 1997 Caribbean National Forest Land and Resource Management Plan, which this document tiers to. Some short-term economic benefits will occur as a result of the construction of the aviary, but these will not be significant nor long-term in nature.

Environmental Justice

Executive Order 12898, signed by President Bill Clinton on February 11, 1994, and titled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", provides that Federal agencies will make environmental justice part of their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of Federal programs on these populations. The Order requires the Forest Service to ensure effective public notification and access to information about the proposed action, to work to gain public participation in the analysis and decision processes, and to mitigate such effects if they could occur.

After examining the possible environmental and human impacts of the decision that will be made about the project, it has been determined there are no disproportionately high and adverse human health or environmental effects that would occur to minority or low income groups, or American Indian tribes, and that the public involvement efforts

undertaken by the Forest Supervisor were adequate to have identified such groups if they exist, or had an interest in the project.

Unavoidable Adverse Impacts

Under the Proposed Action, unavoidable adverse impacts i.e.(impacts that cannot be completely mitigated) include the disturbance of 1.5 acres of National Forest System lands.

Periodic delays to traffic on Forest Road 191 during construction activities can not be avoided. These delays will occur intermittently over the estimated 12 month construction period.

Irreversible and Irretrievable Commitment of Resources

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road.

Irreversible commitment of resources will include the impacts to approximately 500 feet of the historic trail located at the aviary access road. Damage to historic road PR191 will occur in four locations where electric lines must cross the road.

Irretrievable commitment of resources includes the vegetation removed from the construction activities on approximately 1.5 acres of National Forest system lands..

Cumulative Effects

No additional projects or activities within the area of potential effects were identified which could lead to cumulative effects as a result of this project.

Other Disclosures

NFMA Significance: This amendment is not a significant change in the 1997 Caribbean Revised Land and Resource Management Plan. The determination that this is a non-significant amendment is made in accordance with the regulations in 16 USC 1604(f)(4), 36 CFR 219.10(f), and the Forest Service Manual 1922.5, Land and Resource Mnagement Planning, Amendments. This plan amendment meets the criteria for a non-significant amendment because these changes will not “significantly alter the long-term relationship between levels of multiple-use goals and objectives originally projected…[or] have an important effect on the entire forest plan or affect resources throughout a large portion of the planning area during the planning period (FSM 1922.52)

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Soil Survey Staff. 2001. Soil Survey of Caribbean National Forest and Luquillo Experimental Forest, Commonwealth of Puerto Rico. United States Department of Agriculture, National Resources Conservation Service.

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CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

ID TEAM MEMBERS

Name	Role
Pedro Rios	Overall Project Coordinator
David Harris	IDT Leader
Carolyn Pabon	Forest Planning/NEPA Coordination
Maurice Hoelting	Regional Architect
Carolyn J Krupp	Special Uses
Felipe Cano	Wildlife/Fish Resources
Orlando Carrasquillo	Biological survey coordination
Edgardo F Martinez	Engineering
Manuel Ortiz	Engineering
Luis A Rivera	Vegetation Resources
Fernando Perez	Soil and Water Resources
Jeff Walker	Heritage Resources
Jose R Ortega	Recreation/Scenery Resources

FEDERAL, STATE, AND LOCAL AGENCIES:

Name	Agency
Fernando Nunez	USDI Fish and Wildlife Service
Edwin Muniz	USDI Fish and Wildlife Service
Jafet Velez	USDI Fish and Wildlife Service
Pablo Torrez	USDI Fish and Wildlife Service
Ricardo Valentin	Puerto Rico Dept. of Natural Resource and Environment
Jose Chabert	Puerto Rico Dept. of Natural Resource and Environment
	Puerto Rico Electric Power Authority

APPENDIX A RESPONSE TO COMMENTS

Individuals Groups and Agencies providing input during the 30 day Comment and Review Period.

Name	Representing
Frank Wadsworth	Sociedad de Historia Natural De Puerto Rico
Torregrosa de la Rosa	State Historic Preservation Office
Bijan Ashrafi Mahabadi	Municipio De San Juan, Cidudad Capital Departamento De Urbanismo
Juan Alicea Flores	Puerto Rico Electric Power Authority
Edwin Muniz	USDI Fish and Wildlife Service
Supervisor de Correo	Departamento de Transportacion y Obras Publicas
Ida de Jesus Collazo	University of Puerto Rico

Comment 1: Whatever the disadvantages of the climate at the present location, its isolation is an almost unique advantage. This is both from pathogens of the other feral parrots at lower elevation, and from human interference, already experienced even at the present location. The location proposed has neither of these advantages.
Response: Prior to the selection of the proposed site, these issues were considered. A site selection panel was assembled on Novermber 1, 2000. The panel consisted of two aviary managers, one wildlife research scientist, and one natural resource specialist. In addition, the panel consulted with a veterinarian and a civil engineer. The panel gathered responses and developed the following criteria:

- Disease Risk – Potential exposure to disease factors in the area.
- Security – Potential vulnerability to unauthorized entry or vandalism.
- Climate – The suitability of the local climate with to parrot husbandry.
- Logistics – Access to services and supplies.
- Infrastructure - Suitability of area for Architectural & Engineering work.

Five sites were identified using 3 acres as minimum construction area. Using a scale with a range of values of 5-Excellent, 4-Good, 3-Acceptable, 2-Poor, 1- Not recommended; the top 3 results obtained were:

Site	Disease Risk	Security	Climate	Logistics	Infrastructure	Total Score
1) Jimenez	**3**	**3**	**4.5**	**3.5**	**4**	**18.0**
2) Sonadora	**2**	**3.25**	**3.0**	**4**	**4**	**16.25**

3) Job Corps	**1.25**	**2**	**4**	**4.5**	**4.5**	**16.25**
4) 191 South	**3.75**	**4.5**	**3**	**2.5**	**2.75**	**16.5**
5) FDR 27	**4.5**	**5**	**2.5**	**2**	**2**	**16.0**
Luquillo aviary	**4**	**3**	**3**	**2**	**3**	**15.0**

The current Luquillo aviary was originally designed as quarters for military personnel during World War II. Presently, the facilities are deteriorated to such degree that they are considered unsafe to both the employees and the captive flock. The power supply often fails during the breeding season. This has a direct effect on the incubators and survival of hatchlings. The site is susceptible to deterioration and isolation caused by frequent landslides. The captive flock management options are limited by available space for the construction of new breeding cages.

We have discovered that the climate disadvantages that prompted the decision to relocate the Luquillo Puerto Rican parrot aviary underestimated the actual potential for diseases and human disruptions at the present location. As we gathered data on hatchability, embryonic mortality, and early chick mortality, we discovered that bacteria and fungus, mostly *Aspergillus,* thrive in such humid environment and are the major culprits of the low productivity at the aviary. Furthermore, the constant high tourist traffic near the aviary together with rumors about the released birds using the adjacent areas has brought frequent disturbances and disruptions to the breeding pairs.

Tourist traffic near the selected site is expected to be lower and the prevalence of pathogens may not be different from the Río Abajo aviary administered by the Puerto Rico Department of Natural and Environmental Resources.

Comment 2: As one enters 9966 westward from 191 there is a long straight upward slope. Precisely at the end of this slope, on the north side of the road, is a colony of tortugo prieto (Ravenia urbani) trees. This rare, endemic species would be a sacrifice difficult to mitigate if the proposed location were to coincide.
Response: The tortugo prieto is indeed an endemic species that is not found in vast quantities. The U.S. Forest Service has categorized this species as sensitive to ensure that this and other sensitive species are addressed in the National Environmental Policy Act (NEPA) process.

Our mitigations do take into account the local population of the sensitive trees in the proposed action area. The majority of the impacts to the trees will occur on the access road into the aviary site. A survey conducted by the Forest Botanist has estimated the proximate number of trees to be transplanted to safe locations. This procedure has been done before by the Forest Botanist with other trees and has begun a successful greenhouse operation at the El Portal visitor center.

Comment 3: During National Forest planning there was much discussion as to whether this approximate location was not the best place to relocate the former restaurant close to 191, nice view, less rainy, suitable for a trail into the forest, none of which is needed for an aviary. Should this still be in future development, the placing of an aviary there first would forever preclude a restaurant in the vicinity, since the two are incompatible.
Response: In the Land and Resources Management Plan (LRMP) of the Forest does refer to future developed recreation areas. In that regard a new restaurant has recently opened in the Sierra Palm recreation site to better serve forest visitors. The CNF does not plan to have further restaurant facilities to be open and so the proposed site will not and most likely not have any other human activities nearby once the aviary is finished.

Comment 4: How about Espiritu Santo, where the birds are by choice as a better location?
Response: Espiritu Santo area is indeed the bird's selected site because they are more protected from hurricanes. The natural shelter and resources in that vicinity have been known historically as the birds concentrated there after hurricanes Hugo and subsequently after Georges. The locale was considered and discarded because of its proximity to the human community and the security challenges. Furthermore, there are several species of psittacines already established in the area.

This site had a cumulative rating of 16.25 based on the established analysis criteria used for all potential sites. While this is a higher rating than the existing aviary, it is not considered to be a sufficient improvement to warrant the costs of analysis and construction.

Comment 5: We emphasize that construction and/or earth movement shall not commence in the project area until, the Section 106-review process, as codified in 36 CFR Part 800, has concluded.
Response: We concur and will not begin any activities prior to completion of the 106-review process.

Comment 6: Project managers need to coordinate with appropriate agencies to obtain corresponding permits and implement mitigation measures during construction with needed permits from the Junta de Calidad Ambiental.
Response: The building contractor will be required to obtain any required permits.

Comment 7: Project managers should ensure that the construction of the underground electric line to feed the facility meets PREPA's specifications.
Response: The Forest Service has worked with PREPA during the planning and development phase of this project to ensure that PREPA specifications are met.

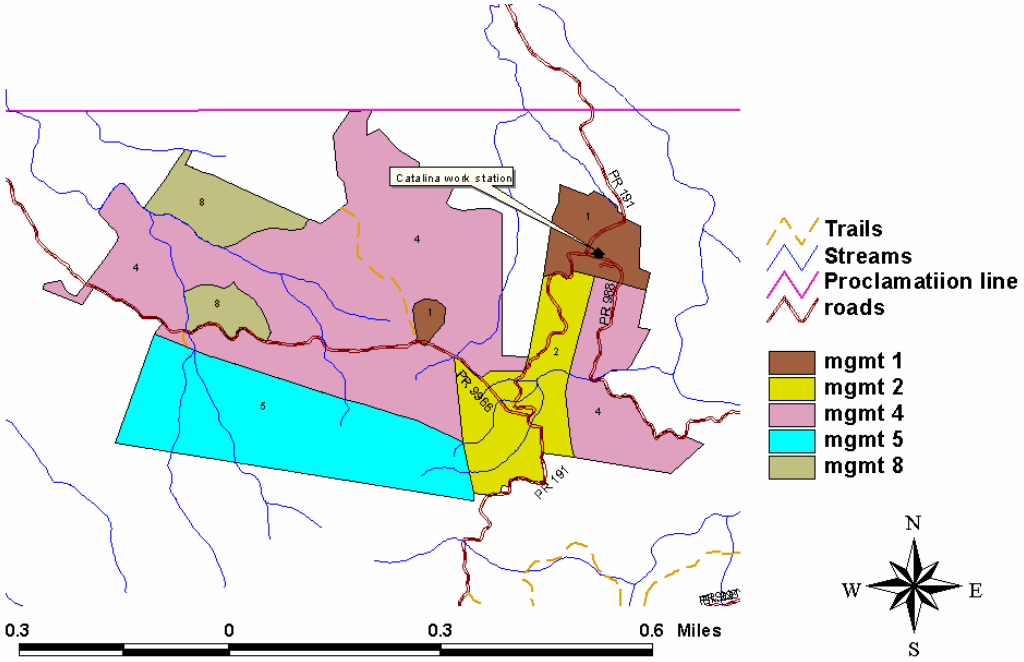
APPENDIX B AMENDED FOREST PLAN PAGES

1997 Caribbean Land and Resource Management Plan Table 4-4, Page 4-60. Management Area acreage changes based on Forest Plan Amendment #1 in Bold type.

Table 4-4. Management Area Acreages			
The Revised Plan responds to the "need for change" by increasing management areas with emphasis on protection, and by decreasing management areas with emphasis on use			
Managmeent Area	**Description**	**Acres Current Plan**	**Acres Revised Plan**
1	Administrative Sites	0	**219**
2	Developed Recreation	1,290	**1,129**
3	Communication Sites	70	196
4	Integrated	0	**6,269**
5	Wilderness	3,688	10,363
6	Research	3,714	919
7	Resarch Natural Area (RNA)	3,508	6,372
8	Timber Demonstration	0	**1,128**
9	Scenic/Recreation River Corridor	0	1,295
10	Dispersed Recreation	8,140	0
11	Timber Management	7,480	0
Total		27,890	27,890

The following map updates the Forest Plan 4-63, 4-67, 4-79, and 4-97.

Amendment #1 Management Area Changes



APPENDIX C, MOU HERITAGE RESOURCES

FS Agreement No. 04-MU-11081600-020
Cooperator Agreement No. _____

MEMORANDUM OF UNDERSTANDING
between

USDA FOREST SERVICE-Caribbean National Forest
and the
State Historic Preservation Office, Puerto Rico

This **MEMORANDUM OF UNDERSTANDING** is hereby entered into by and between the USDA Forest Service, hereinafter referred to as the Forest Service, and the State Historic Preservation Office, Puerto Rico, hereinafter referred to as the SHPO.

A. PURPOSE:

The Caribbean National Forest (CNF), has determined that the construction of the new Puerto Rican Parrot Aviary (Undertaking), in Mameyes II Ward, Rio Grande, Puerto Rico, will have an effect upon the Mameyes-Rio Blanco PR 191 Road, and the Trail 37 on Zarzal Ridge, properties which are eligible for inclusion in the National Register of Historic Places, and has consulted with the Puerto Rico State Historic Preservation Officer (SHPO), pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470(f)).

This MOU outlines how the mitigation will proceed, covers the analysis and disposition of artifacts and other records prepared or obtained pursuant to satisfactory mitigation, and the report of findings.

B. STATEMENT OF MUTUAL BENEFIT AND INTERESTS:

In accordance with 36 CFR Part 800, mitigation of adverse effects is required by law, The Caribbean National Forest (CNF), as lead federal agency in this undertaking, acknowledges and accepts the advice and conditions outlined in the Advisory Council on Historic Preservation's (ACHP) "Recommended Approach for Consultation on the Recovery of Significant Information from Archaeological Sites," published in the Federal Register, and agrees to follow the mitigation plan included in this MOU. The SHPO concurs with the proposed mitigation plan. Upon satisfactory completion of the work and final concurrence by the SHPO, the mitigation project will be completed.

C. FOREST SERVICE SHALL:

1. Ensure that the mitigation plan attached to this MOU and entitled "Stage III Mitigation Plan for the Mameyes-Rio Blanco PR 191 Road, and the Trail 37 on Zarzal Ridge, Mameyes II Ward, Rio Grande, Puerto Rico" (July 2004) is implemented prior to those Undertaking activities that could disturb these two historic properties. The mitigation plan includes a data recovery program, research design and methodology, laboratory analyses, the preparation and acceptance of all interim and final reports by the Puerto Rico SHPO, and adequate curation of the recovered artifacts, ecofacts and documentary material product of the data recovery efforts in accordance

with the Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation, the Advisory Council's publication, Treatment of Archaeological Properties (1980), 36 CFR Part 79, and all applicable federal requirements

2. Ensure that all materials and records resulting from the mitigation conducted at the Mameyes-Rio Blanco PR 191 Road, and the Trail 37 on Zarzal Ridge are curated in accordance with 36 CFR Part 79. The CNF shall accomplish this in consultation with the Puerto Rico SHPO. The curation of any recovered archaeological material shall be the responsibility of the CNF. The CNF shall provide for the curation and final repository site or sites for the collection, complying with all applicable federal standards, in coordination with the Puerto Rico SHPO

3. Ensure that any human remains encountered during data recovery and construction at the Mameyes-Rio Blanco PR 191 Road, and the Trail 37 on Zarzal Ridge will be properly excavated and treated, as stipulated in the "Memorandum of Understanding between the United States Forest Service – Caribbean National Forest, and the Puerto Rico State Historic Preservation Office", and in the "USDA Forest Service, Southern Region's Policy for the Treatment of Human Remains". The CNF shall ensure that all human remains are treated with dignity and respect, and will not be publicly displayed. The CNF shall also be responsible for their final disposition. Once all analyses of the human physical remains are completed, the CNF shall consult the Puerto Rico SHPO concerning their appropriate final disposition.

4. Submit a draft of the final report incorporating all analyses, to the Puerto Rico SHPO within four months of completion of "Part Two" fieldwork for review and comments, to be followed by the submission of the final report within two months after Puerto Rico SHPO's comments are received. If during the Undertaking, there are other cultural resources unearthed, the CNF will notify the Puerto Rico SHPO to assess the significance of the discovery and devise appropriate actions, including possible salvage operations.

D. SHPO SHALL:

1. Agree that the Undertaking may proceed within the construction site for the new Puerto Rican Parrot Aviary on Zarzal Ridge once "Part One" of the data recovery plan is successfully completed.

2. Agree that given that "Part Two" of the mitigation plan calls for monitoring and data recovery of sub-surface features of the Mameyes-Rio Grande PR 191 Road while the electric line trenching is underway, the end of fieldwork report will be submitted after the fieldwork and any ensuing laboratory analysis for "Part Two" of the mitigation plan have been completed.

E. IT IS MUTUALLY AGREED AND UNDERSTOOD BY ALL PARTIES THAT:

1. PARTICIPATION IN SIMILAR ACTIVITIES. This instrument in no way restricts the Forest Service or the Cooperator from participating in similar activities with other public or private agencies, organizations, and individuals.

2. COMMENCEMENT/EXPIRATION/TERMINATION. This MOU takes effect upon the signature of the Forest Service and SHPO and shall remain in effect for five (5) years from the date of execution. This MOU may be extended or amended upon written request of either the Forest Service or SHPO and the subsequent written concurrence of the other. Either the Forest Service or SHPO may terminate this MOU with a 60-day written notice to the other.

3. RESPONSIBILITIES OF PARTIES. The Forest Service and SHPO and their respective agencies and office will handle their own activities and utilize their own resources, including the

expenditure of their own funds, in pursuing these objectives. Each party will carry out its separate activities in a coordinated and mutually beneficial manner.

4. PRINCIPAL CONTACT. The principal contacts for this instrument are:

Forest Service Project Contact	Cooperator Project Contact
Jeff Walker, Forest Archaeologist	Elizabeth Sola Oliver, SHPO
USDA – Forest Service	State Historic Preservation Office
HC1, Box 13490	Office of the Governor, P. O. Box 9066581
Rio Grande, PR 00745	San Juan, PR 00906-6581
Phone: (787) 888-1610	Phone: (787) 721-3737
FAX: (787) 888-5685	FAX: (787) 722-3622
E-Mail: jwalker02@fs.fed.us	E-Mail: esola@prshpo.gobierno.pr

Forest Service Administrative Contact	Cooperator Administrative Contact
Ivette Martinez, Accountant	Same as Project Contact
USDA – Forest Service	
HC1, Box 13490	
Rio Grande, PR 00745	
Phone: (787) 888-5619	Phone:
FAX: (787) 888-5685	FAX:
E-Mail: imartine@fs.fed.us	E-Mail:

5. NON-FUND OBLIGATING DOCUMENT: Nothing in this MOU shall obligate either the Forest Service or SHPO to obligate or transfer any funds. Specific work projects or activities that involve the transfer of funds, services, or property among the various agencies and offices of the Forest Service and SHPO will require execution of separate agreements and be contingent upon the availability of appropriated funds. Such activities must be independently authorized by appropriate statutory authority. This MOU does not provide such authority. Negotiation, execution, and administration of each such agreement must comply with all applicable statues and regulations.

6. ESTABLISHMENT OF RESPONSIBILITY. This MOU is not intended to, and does not create, any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity, by a party against the United States, its agencies, its officers, or any person.

7. AUTHORIZED REPRESENTATIVES: By signature below, the cooperator certifies that the individuals listed in this document, as representatives of the cooperator, are authorized to act in their respective areas for matters related to this agreement.

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the last written date below.

COMMONWEALTH OF PUERTO RICO
STATE HISTORIC PRESERVATION OFFICE

Elizabeth Sola Oliver DATE
State Historic Preservation Officer

USDA FOREST SERVICE
CARIBBEAN NATIONAL FOREST

Pablo Cruz DATE
Forest Supervisor

The authority and format of this instrument has been reviewed and approved for signature.
/s/ Johnie O. Adams ***8/16/04***

Johnie O. Adams DATE
FS Agreements Coordinator

Stage III Mitigation Plan
for the Mameyes-Rio Blanco PR 191 Road
and the Trail 37 on Zarzal Ridge
Mameyes II Ward, Río Grande, Puerto Rico

July 2004

Caribbean National Forest (CNF) has determined that the construction of the new Puerto Rican Parrot Aviary, in Mameyes II Ward, Rio Grande, Puerto Rico, will have an adverse effect upon two National Register of Historic Places eligible sites, the Mameyes-Rio Blanco PR 191 Road, and the Trail 37 on Zarzal Ridge. Therefore, this Stage III Mitigation Plan was developed in consultation with the Puerto Rico SHPO, and in accordance with the Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation, the Advisory Council's publication, Treatment of Archaeological Properties (1980), 36 CFR Part 79, and all applicable federal requirements.

The CNF shall ensure that this Mitigation Plan for the Mameyes-Rio Blanco PR 191 Road, and the Trail 37 on Zarzal Ridge, Mameyes II Ward, Rio Grande, Puerto Rico, is implemented prior to or during those undertaking activities that will disturb these two historic properties. The mitigation plan includes:

a. Research Design
b. Data Recovery Program
c. Methodology

d. Laboratory Analyses
e. Interim Report
f. Final Report
g. Curation of Recovered Material and Documents

Research Design

Archival research and oral histories have been conducted over the last two decades in Puerto Rico and Washington, D.C. in an effort to find information, documents, maps, photographs or other materials relating to the Civilian Conservation Corps (CCC) in Puerto Rico, and specifically on the Caribbean National Forest. In the files of the Caribbean National Forest and in the National Archives in Washington, D.C. there are original engineering and architectural plans of several of the structures built on the CNF by the Civilian Conservation Corps between 1936 and 1942. However, as far as we know, there are no construction plans in existence for the Mameyes-Rio Blanco PR 191 Road, nor for the Trail 37 on Zarzal Ridge. In fact, to our knowledge, there are no construction plans for any historic road or trail on the Forest. Therefore, when opportunities arise to document the techniques and materials used in constructing these transportation systems it is necessary to exploit them. There are two different opportunities as a result of the new Puerto Rican Parrot Aviary Project; a chance to document a section of CCC trail, and a chance to document an early section of the CCC-built Mameyes –Rio Blanco Road.

Data Recovery Program

This data recovery program is developed to record archaeological and architectural features that form part of two transportation systems -- Mameyes-Rio Blanco PR 191 Road, and the Trail 37 on Zarzal Ridge -- that were constructed by the Civilian Conservation Corps in the 1930's on the Caribbean National Forest. There will be impacts to both of these properties, therefore this data recovery program has been designed to document and record any typical and unique features that occur within the impact portions of these two historic properties. Because of the site conditions and the way the construction project will be implemented the Data Recovery Program will be carried out in two parts.

Part One

Part One of the Data Recovery Plan calls for data recovery and monitoring of surface and sub-surface features on the CCC Trail 37 on Zarzal Ridge prior to any earth movement and construction activity that might impact it.

An approximately 200 meter long section of historic Trail 37, beginning on PR 9966 and heading north along the Zarzal Ridge, will be entirely destroyed by the construction of

the entrance road and the aviary structures. Initial documentation of this section of trail was already included in the Stage I report, but more detailed documentation will be included as part of the Stage III report prior to its destruction.

Part Two

Part Two of the Data Recovery Plan calls for data recovery and monitoring of sub-surface features on the Mameyes-Rio Blanco PR 191 Road while the electric line trenching is underway.

An electrical line will be placed along approximately one kilometer of the Mameyes-Rio Blanco PR 191 Road (Figure 1), beginning at the electrical pull-box at the entrance to the Monte Sereno Community and extending to the intersection with the PR 9966 Road. Along the majority of the route this electrical line will be placed about two feet underground in a trench to be excavated along the shoulder of the road. However, along about 20% (approximately 200 meters) of the route the trench will be along the edge of the historic roadbed itself; the electric line also will cross the road at four locations. At two of these locations (Monte Sereno entrance and PR 9966 Intersection) the historic roadbed has probably already been impacted in the past. A water line will also be placed on the surface along this same route, except where it crosses the road, where it will be placed in the electrical line trench. The entire route is on the edge of or within the CCC historic roadbed, so will be very compact material, in places covered with several layers of asphalt. In order to reduce impacts, and only excavate this trench one time, the archaeological documentation and monitoring will occur simultaneously with the electrical trench excavation by the construction contractor.

Methodology

The proposed methodology is to maximize the documentation and recording of the two historic properties prior to, and during their destruction. The primary documentation methods will be digital and color film photography, measured drawings, note-taking and collection of samples. These will follow standard archaeological methods for these types of procedures – mug boards, north arrows, scaled drawings, Munsel Soil Color readings, soil texture, etc., will be used.

The entire length of the impacts to the Mameyes-Rio Blanco PR 191 Road will not be recorded. Representative sections of the trench, measuring between one and ten meters, and uncommon sections of the same approximate length, will be recorded. A minimum of 50 meters (5%) of the electrical trench profile will be drawn, photographed and described. In those sections where the electrical conduit is bolted to the stone and masonry headwalls and bridges they will be recorded and photographed.

The entire length of the impacts to Trail 37 will not be recorded. A sketch map of the portion of the trail that will be destroyed has already been submitted in the Stage I report. Prior to the mechanical destruction of the trail section representative sections measuring

between one and five meters, and uncommon sections of the same approximate length will be recorded. A minimum of 20 meters (10%) of the trail will be drawn in detail, photographed and described.

During the entire trenching and earth movement process at both sites there will be a qualified Cultural Resources Technician present to monitor the operation. If any archaeological features or artifacts are found during this operation, the dirt from the area of the find will be screened using a ¼ inch mesh screen to search for additional artifacts. If additional artifacts are found, the contractor will be instructed to continue work elsewhere, and manual excavations in search of additional material or archaeological features will be conducted.

Laboratory Analyses

Because of the nature of the historic properties involved, it is not anticipated that many artifacts will be recovered as a result of this Mitigation Plan. However, we will be watchful for the occasional tool, nail, bottle glass, or other artifact, and if any are found their provenience will be recorded. Representative samples of any historic construction materials encountered will be saved. These artifacts and samples will be bagged and labeled according to standard archaeological field procedures. In the CNF Laboratory they will be cleaned and placed in clean, labeled bags. They will be stored in archival stable boxes in the CNF laboratory.

Interim Report

The end of fieldwork interim report will be submitted after the fieldwork and any ensuing laboratory analysis for "Part Two" of the mitigation plan have been completed.
It will be a brief synopsis of what was found during the fieldwork phase of the archaeological project.

Final Report

A Final Report will be prepared after the fieldwork, laboratory analysis, and monitoring has been completed. This will be a detailed report presenting the written, graphic and photographic documentation collected during the archaeological mitigation.

The CNF agrees to submit a Draft Final Report incorporating all analyses, for review and comments to the Puerto Rico SHPO within four months of completion of "Part Two" fieldwork. This will be followed by the submission of the Final Report within two months after Puerto Rico SHPO's comments are received.

Curation of Recovered Material and Documents

The CNF will ensure that all materials and records resulting from the mitigation conducted at the Mameyes-Rio Blanco PR 191 Road, and the Trail 37 on Zarzal Ridge are curated in accordance with 36 CFR Part 79. The CNF shall accomplish this in consultation with the Puerto Rico SHPO. The curation of any recovered archaeological material shall be the responsibility of the CNF. The CNF shall provide for the curation and final repository site or sites for the collection, complying with all applicable federal standards, in coordination with the Puerto Rico SHPO.

Other Terms and Conditions

The Caribbean National Forest will also:

- Include in the construction pre-work meeting with the firm that is awarded the construction contract, an awareness session about their legal responsibilities regarding informing about unanticipated finds, work displacement in the find area, and other cultural resources responsibilities as outlined in the contract.
- The CNF shall ensure that any human remains encountered during data recovery and construction at the Mameyes-Rio Blanco PR 191 Road, and the Trail 37 on Zarzal Ridge will be properly excavated and treated, as stipulated in the "Memorandum of Understanding between the United States Department of Agriculture – Caribbean National Forest, and the Puerto Rico State Historic Preservation Office", and in the "USDA Forest Service, Southern Region's Policy for the Treatment of Human Remains". The CNF shall ensure that all human remains are treated with dignity and respect, and will not be publicly displayed. The CNF shall also be responsible for their final disposition. Once all analyses of the human physical remains are completed, the CNF shall consult the Puerto Rico SHPO concerning their appropriate final disposition.
- Monitor the disposal area locate in the vicinity of El Portal (see Stage I report) during initial ground disturbing activities, and periodically thereafter.
- Have available a qualified archaeologist to evaluate any possible cultural resources found during the project.
- If during the Undertaking, there are other cultural resources unearthed, the CNF will notify the Puerto Rico SHPO to assess the significance of the discovery and devise appropriate actions, including possible salvage operations.