

## BURNED AREA REHABILITATION PLAN REVIEW AND APPROVAL

**I. Project Leader** approval that the Burned Area Rehabilitation Plan meets approved land management plan management objectives.

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*Project Leader, Great Dismal Swamp National Wildlife Refuge*

Date

**II. Regional Fire Management Coordinator** concurrence that the plan fits the technical definition for use of Rehabilitation finding.

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*Regional Fire Management Coordinator, Region 5*

Date

**III. Rehabilitation Funding Approval (check one box below):**

Approved

Approved with Revision (see attached)

Disapproved

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*Regional Director, Region 5*

Date

**IV. Rehabilitation Funding Approval (check one box below):**

Approved

Approved with Revision (see attached)

Disapproved

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*National Office*

Date

**Cross Cut Fire**  
**BURNED AREA REHABILITATION PLAN**

**UNIT:** *Great Dismal Swamp National Wildlife Refuge*

**LOCATION:** *Camden County, North Carolina*

**DATE:** *July 13, 2006 (Amendment submitted September 20, 2006)*

**PREPARED BY:** *Cross Cut Fire Rehabilitation Team*

Submitted By: \_\_\_\_\_ Date: \_\_\_\_\_  
*Refuge Forester/Rehabilitation Team Leader*

## **EXECUTIVE SUMMARY**

### **Introduction**

This Burned Area Rehabilitation Plan has been prepared in accordance with Department of the Interior and Fish and Wildlife Service policy. This plan provides rehabilitation recommendations for all lands burned within the Cross Cut Fire perimeter and downstream impact areas including public lands administered by the Service and other jurisdictions if necessary. The primary objectives of the Cross Cut Fire Burned Area Rehabilitation Plan are:

- To repair or improve lands unlikely to recover naturally from severe wildland fire damage by emulating historic or pre-fire ecosystem structure, function, diversity, and dynamics according to approved land management plans.
- Restore or establish healthy, stable ecosystems, even if these ecosystems cannot fully emulate historic or pre-fire conditions as specified in approved land management plans.

This plan addresses rehabilitation treatments. The burned area emergency response team conducted an analysis of fire damages throughout the lands impacted by the fire. The Refuge Forester evaluated and assessed fire damages and suppression impacts to vegetative resources and identified values at risk associated with vegetative losses.

A Burned Area Assessment Report is provided in Appendix I. The individual rehabilitation treatments specifications including effectiveness monitoring identified in the assessments can be found in Part F. A summary of the costs by jurisdictions is in Part E. Appendix II contains the National Environmental Policy Act (NEPA) compliance documentation summary. Appendix III contains the Burned Area Rehabilitation Plan maps. Appendix IV contains photo documentation. Appendix V contains supporting documentation.

### **Fire Background**

The Cross Cut Fire was initiated by lightning on April 24, 2006 in an area which had recently been cleared as part of an Atlantic white cedar (AWC) salvage timber sale and restoration project. Logs had not yet been removed from half the area pending the arrival of the contractor's helicopter, hence there was a large amount of dried woody fuel on site. The fire spread quickly and was also quite severe due to the heavy fuel loads and drought conditions at the time. The fire escalated into a Type 3 extended attack situation and interagency resources were ordered in to assist the suppression effort. The fire was controlled on May 2 and after prolonged mop-up was declared out on May 5. GPS recon determined the final fire size at 41 acres. This Rehabilitation Plan will address impacts of fire severity on regeneration of the historic native vegetation type.

### **Fire Damages and Threats to Human Safety and Natural and Cultural Resources**

An assessment of the burned area the day after the fire was declared out determined that the fire had consumed the entire litter layer and some of the upper duff layers to an average depth of two inches, greater in some places. Since the majority of viable AWC seed suitable for natural regeneration resides in the top inch of the litter layer, it was determined that nearly the entire seed bank for cedar re-

establishment had been destroyed. It should be noted that due to the absence of standing seed trees and distance from any neighboring stands, there was no reliable source of new seed.

### **Great Dismal Swamp National Wildlife Refuge Management Requirements**

AWC is an obligate wetland species that often occurs in dense, nearly monotypic stands in the outer coastal plain from Maine to Mississippi. Approximately 98% of the area once populated by cedar has disappeared since European colonization. The ecosystem cedar now dominates is considered globally threatened by The Nature Conservancy and critically endangered by Noss et al. (1995). Until recently, the largest remaining stands of AWC in the entire world occurred in the Dismal Swamp of Virginia and North Carolina.

The 111,203 acre Great Dismal Swamp National Wildlife Refuge was established in 1974. The Dismal Swamp Act of 1974 directed the U.S. Fish and Wildlife Service to “*Manage the area for the primary purpose of protecting and preserving a unique and outstanding ecosystem, as well as protecting and perpetuating the diversity of animal and plant life therein.....*”. Specific mention was made of maintaining the few remaining large stands of Atlantic white cedar.

An estimated 3,000 acres of the purest cedar stands were felled in a single 24-hour period on September 18, 2003 when Hurricane Isabel swept through the mid-Atlantic area. After contracting for NEPA project work and helicopter logging engineering, a Request for Proposals was issued for salvage of the cedar timber. Under terms of the Special Use Permit, proceeds of the sale were returned to the Refuge in the form of road improvements and removal of unmerchantable material. Objectives were twofold, fuel reduction to lessen wildfire hazard and clearing dead and down vegetation so that the seedbed could be prepared for natural cedar regeneration. The expectation was that there would be enough residual AWC seed in the litter and duff to facilitate dense seedling establishment. A contract was issued in 2004 and by the spring of 2006 work was well underway.

The Cross Cut Fire in April 2006 occurred in an area recently cleared by the salvage operation. The combination of heavy fuels and droughty conditions resulted in prolonged combustion of the surface and ground fuels including the entire litter layer and the top of the duff layer. Nearly the entire seed bank was consumed, and residual seed trees in and around the unit were killed by fire. With no external seed source available the inevitable result without intervention will be replacement of the former AWC stand with less desirable species such as red maple, swamp black gum, or pond pine.

The Comprehensive Conservation Plan for the Great Dismal Swamp National Wildlife Refuge (approved August 2006) contains two forest management objectives pertaining to AWC maintenance and restoration:

- *Restoration of 2,000 acres of Atlantic white cedar forests by 2006 using helicopters or other specialized equipment to remove trees that were destroyed or severely damaged by Hurricane Isabel*
- *Restoration of 8,000 acres of Atlantic white cedar forest by 2019*

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**PART A - FIRE LOCATION AND BACKGROUND INFORMATION**

Fire Name	Cross Cut
Fire Number	CJJ2
Agency Unit	VA-GDR Great Dismal Swamp NWR
Region	Northeast (5)
State	North Carolina
County(s)	Camden
Ignition Date/Cause	April 24, 2006 (lightning)
Jurisdiction	FWS
Total Acres	41
Date Contained	May 2, 2006

**PART B - NATURE OF PLAN**

Type of Action (check one box below)

<input type="checkbox"/>	Initial Submission
<input checked="" type="checkbox"/>	Amendment to the Initial Submission

## **PART C - REHABILITATION ASSESSMENT**

### Rehabilitation Objectives

- Establish Atlantic white cedar nursery seedlings throughout the burned area at a minimum density of 500 trees per acre.
- All seedlings planted will be derived from seed obtained within the Great Dismal Swamp NWR.
- Due to seedling unavailability in 2007, the site will be planted in the spring of 2008. A site preparation herbicide treatment will be applied in late summer 2007 to control competition prior to planting in 2008.
- Plantings will be accompanied with placement of protective tubing to discourage deer browsing; due to high cost and the desirability of providing a control or comparison area, only 50% of the seedlings will be protected with tubing.
- A successful rehabilitation effort will be measured by at least an 80% seedling survival six months to one year after planting (fall 2008 or spring 2009).

**PART D - TEAM ORGANIZATION**

I. Burned Area Emergency Response Team Members: *(List of technical specialists used to develop the plan)*

<b>Position</b>	<b>Team Member (Agency)</b>
Team Leader	<i>Bryan Poovey, Great Dismal Swamp NWR)</i>
Public Information	<i>Deloras Freeman, Great Dismal Swamp NWR</i>
Forester/Vegetation Specialist	<i>Bryan Poovey, Great Dismal Swamp NWR</i>
Wildlife Biologist	<i>Don Schwab, Great Dismal Swamp NWR</i>
Refuge Manager	<i>Suzanne Baird, Great Dismal Swamp NWR</i>
Photographer	<i>Bryan Poovey, Great Dismal Swamp NWR</i>



**PART F – INDIVIDUAL SPECIFICATION**

<b>TREATMENT/ACTIVITY NAME</b>	Purchase Seedlings	<b>PART E SPECIFICATION #</b>	1
<b>NFPORS TREATMENT CATEGORY*</b>	Reforestation	<b>FISCAL YEAR(S) (list each year):</b>	2008
<b>NFPORS TREATMENT TYPE *</b>	Nursery Stock	<b>WUI? Y / N</b>	N
<b>IMPACTED COMMUNITIES AT RISK</b>	None	<b>IMPACTED T&amp;E SPECIES</b>	None

E. See NFPORS Restoration & Rehabilitation module – Edit Treatment screen for applicable entries.

**WORK TO BE DONE** (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Atlantic white cedar seedlings are currently available from commercial tree nursery.</p> <p>B. Location/(Suitable) Sites: International Paper tree nursery, Bainbridge, GA</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> <li>All seedlings derived from Dismal Swamp seed source to ensure genetic continuity</li> <li>All seedlings in good condition and in appropriate growth stage for planting</li> <li>20,500 seedlings required to plant 41 acres at 500 trees/acre</li> </ol> <p>D. Purpose of Treatment Specifications: Meet ecosystem restoration objectives as stated in CCP</p> <p>E. Treatment Effectiveness Monitoring Proposed: See specification #4</p>
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**LABOR, MATERIALS AND OTHER COST:**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
TOTAL PERSONNEL SERVICE COST	\$0.00
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note:</b> Purchases require written justification that demonstrates cost benefits over leasing or renting.	<b>COST / ITEM</b>
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0.00
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b> 20,500 seedlings X \$500/thousand	<b>COST / ITEM</b>
TOTAL MATERIALS AND SUPPLY COST	\$10,250.00
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
TOTAL TRAVEL COST	\$0.00
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
TOTAL CONTRACT COST	\$10,250.00

**SPECIFICATION COST SUMMARY**

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY07	01/15/2008	03/31/2008	S	seedling	\$.50	20,500	\$10,250.00
FY__							
FY__							
FY__							
<b>TOTAL</b>							

**Work Agent:** C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

**SOURCE OF COST ESTIMATE**

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	M
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

**RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:**

List Relevant Documentation and Cross-Reference Location within the Accomplishment Report.

**TOTAL COST BY JURSDICTION**

<b>JURISDICTION</b>	<b>UNITS TREATED</b>	<b>COST</b>
U.S. Fish and Wildlife Service, Great Dismal Swamp NWR	41 acres	\$10,250.00
	<b>TOTAL COST</b>	<b>\$10,250.00</b>

<b>TREATMENT/ACTIVITY NAME</b>	Plant Seedlings	<b>PART E SPECIFICATION #</b>	2
<b>NFPORS TREATMENT CATEGORY*</b>	Reforestation	<b>FISCAL YEAR(S) (list each year):</b>	2008
<b>NFPORS TREATMENT TYPE *</b>	Planting	<b>WUI? Y / N</b>	N
<b>IMPACTED COMMUNITIES AT RISK</b>	None	<b>IMPACTED T&amp;E SPECIES</b>	None

E. See NFPORS Restoration & Rehabilitation module – Edit Treatment screen for applicable entries.

**WORK TO BE DONE** (describe or attach exact specifications of work to be done):

Number and Describe Each Task: A. General Description: Plant cedar seedlings, install protective deer tubing on 50% of seedlings B. Location/(Suitable) Sites: Entire 41 acre burned area C. Design/Construction Specifications: 1. Planting density to be 500 seedlings per acre 2. 50% of total seedlings on area (10,250 trees) will be protected from deer browsing with tubing. 3. 50% protected trees to be compared with 50% unprotected trees to assess effects of tubing on seedling survival and development D. Purpose of Treatment Specifications: Meet ecosystem restoration objectives as stated in CCP E. Treatment Effectiveness Monitoring Proposed: See specification #4
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**LABOR, MATERIALS AND OTHER COST:**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
TOTAL PERSONNEL SERVICE COST	\$0.00
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note:</b> Purchases require written justification that demonstrates cost benefits over leasing or renting.	<b>COST / ITEM</b>
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0.00
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
TOTAL MATERIALS AND SUPPLY COST	\$0.00
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
TOTAL TRAVEL COST	\$0.00
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
\$2,550.00 per thousand seedlings to include purchase and installation of shelters on 50% of trees X 20.5 thousand	\$52,275.00
TOTAL CONTRACT COST	\$52,275.00

**SPECIFICATION COST SUMMARY**

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY07	02/01/2008	03/31/2008	S	1,000	\$2,550	20.5	\$52,275.00
FY__							
FY__							
FY__							
<b>TOTAL</b>							

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

**SOURCE OF COST ESTIMATE**

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

**RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:**

List Relevant Documentation and Cross-Reference Location within the Accomplishment Report.

**TOTAL COST BY JURSDICTION**

JURSDICTION	UNITS TREATED	COST
U.S. Fish and Wildlife Service, Great Dismal Swamp NWR	41 acres	\$52,275.00
	<b>TOTAL COST</b>	\$52,275.00

TREATMENT/ACTIVITY NAME	Control Competition	PART E SPECIFICATION #	3
NFPORS TREATMENT CATEGORY*	Reforestation	FISCAL YEAR(S) (list each year):	2007
NFPORS TREATMENT TYPE *	Plantation Maintenance	WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	None	IMPACTED T&E SPECIES	None

\* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

**WORK TO BE DONE** (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Helicopter boom application of herbicide (Habitat) to control competing vegetation prior to planting</p> <p>B. Location/(Suitable) Sites: Entire 41 acre burned area</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> <li>1. Application rate of 1 quart/acre imazapyr</li> <li>2. Application to be done in late summer of 2007</li> <li>3. Treatment subject to approval of Pesticide Use Proposal</li> </ol> <p>D. Purpose of Treatment Specifications: Ensure effective control of competing woody vegetation based on prior experience and manufacturer recommendation.</p> <p>E. Treatment Effectiveness Monitoring Proposed: Long-term monitoring of seedling development in treated vs. untreated areas to be conducted beyond the time period specified in this Plan (post 2009)</p>
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**LABOR, MATERIALS AND OTHER COST:**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
TOTAL PERSONNEL SERVICE COST	
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note:</b> Purchases require written justification that demonstrates cost benefits over leasing or renting.	<b>COST / ITEM</b>
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
TOTAL MATERIALS AND SUPPLY COST	
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
TOTAL TRAVEL COST	
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b> \$120/acre X 41 acres	<b>COST / ITEM</b>
TOTAL CONTRACT COST	\$4,920.00

**SPECIFICATION COST SUMMARY**

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY__	08/01/2007	09/30/2007	S	acres	\$120	41	\$4,920.00
FY__							
FY__							
FY__							
<b>TOTAL</b>							\$4,920.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

**SOURCE OF COST ESTIMATE**

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

**RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:**

List Relevant Documentation and Cross-Reference Location within the Accomplishment Report.

**TOTAL COST BY JURSDICTION**

JURISDICTION	UNITS TREATED	COST
U.S. Fish and Wildlife Service, Great Dismal Swamp NWR	41 acres	\$4,920.00
	<b>TOTAL COST</b>	<b>\$4,920.00</b>

TREATMENT/ACTIVITY NAME	Monitoring	PART E SPECIFICATION #	4
NFPORS TREATMENT CATEGORY*	Monitoring	FISCAL YEAR(S) (list each year):	2009
NFPORS TREATMENT TYPE *	Treatment Effectiveness Monitoring	WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	None	IMPACTED T&E SPECIES	None

\* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

**WORK TO BE DONE** (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Monitor site in fall of 2008 or spring of 2009 to determine project success</p> <p>B. Location/(Suitable) Sites: Entire 41 acres</p> <p>C. Design/Construction Specifications: Data to be collected on each survey to include the following</p> <ol style="list-style-type: none"> <li>1. Survival of planted trees</li> <li>2. Height of planted trees by (10 cm) size class</li> <li>3. Natural cedar recruitment</li> <li>4. Assessment of competition</li> <li>5. Evidence of browsing</li> <li>6. General plot characterization</li> </ol> <p>D. Purpose of Treatment Specifications: Determine success of project in terms of seedling survival and development</p> <p>E. Treatment Effectiveness Monitoring Proposed: See above</p>
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**LABOR, MATERIALS AND OTHER COST:**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> Do not include contract personnel costs here (see contractor services below).	<b>COST / ITEM</b>
TOTAL PERSONNEL SERVICE COST	\$0.00
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note:</b> Purchases require written justification that demonstrates cost benefits over leasing or renting.	<b>COST / ITEM</b>
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0.00
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
TOTAL MATERIALS AND SUPPLY COST	\$0.00
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
TOTAL TRAVEL COST	\$0.00
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
\$210 per acre X 41 acres	
TOTAL CONTRACT COST	\$8,610.00

**SPECIFICATION COST SUMMARY**

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY07	10/01/08	03/31/2009	S	acre	\$210	41	\$8,610.00
FY08							
FY__							
FY__							
<b>TOTAL</b>							<b>\$8,610.00</b>

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

**SOURCE OF COST ESTIMATE**

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

**RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:**

List Relevant Documentation and Cross-Reference Location within the Accomplishment Report.

**TOTAL COST BY JURSDICTION**

<b>JURSDICTION</b>	<b>UNITS TREATED</b>	<b>COST</b>
U.S. Fish and Wildlife Service, Great Dismal Swamp NWR	41 acres	\$8,610.00
	<b>TOTAL COST</b>	<b>\$8,610.00</b>

## **PART G - RESTORATION REQUIREMENT**

Management is committed to continued stewardship and monitoring of the treatment area well beyond the three-year period funded under this Plan. A second monitoring survey will be conducted in 2013 to determine if a subsequent herbicide treatment is needed within the 2013-2016 time period to further release developing seedlings from excessive competition. Extra precautions may be needed to protect the trees from wildfire or herbivore browsing.

## **PART H - CONSULTATIONS**

*Not applicable*

## **APPENDIX I – CROSS CUT FIRE RESOURCE DAMAGE ASSESSMENT REPORT**

A foot reconnaissance of the burned area was conducted immediately after the fire was declared out on May 5. Systematic sampling of surface and ground conditions indicated that burn severity was uniform across the 41 acre area, but with some patchy variation consisting of slightly elevated hummocks interspersed with depressions burned as much as a foot below the surface. Overall the litter layer was completely consumed and the upper duff layer to a total depth averaging two inches. Based on a review of the literature and previous experience, it is known that the vast majority of viable Atlantic white cedar seeds occur in the top one inch of the litter layer. Thus it was determined that the available seed supply was almost completely consumed. This was confirmed two months later when a follow-up survey showed that natural AWC germination was nearly non-existent.

Recommendation of the Refuge Forester is to ensure continuation of the AWC vegetation type by planting nursery stock in spring 2008 at a density approximating former natural stands. Continuation of the native gene pool using rooted cuttings from Dismal Swamp parent stock will be ensured through contractual arrangements with a private nursery. Rehabilitation funds would be used to purchase the seedlings and contract to plant them out on the burned site. Additional funds would be used to purchase and install protective tubes (defense against deer browsing), conduct limited herbicide application prior to planting to reduce competition, and contract for post-planting monitoring to assess survival and growth of seedlings.

## **APPENDIX II - ENVIRONMENTAL COMPLIANCE**

### **Federal, State, and Private Lands Environmental Compliance Responsibilities**

All projects proposed in the Cross Cut Fire Burned Area Rehabilitation Plan that are prescribed, funded, or implemented by Federal agencies on Federal, State, or private lands are subject to compliance with the National Environmental Policy Act (NEPA) in accordance with the guidelines provided by the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508); Department of the Interior and Fish and Wildlife Service. This Appendix documents the burned area emergency response team considerations of NEPA compliance requirements for prescribed rehabilitation and monitoring actions described in this plan for all jurisdictions affected by the Cross Cut Fire.

The *Environmental Assessment for the Atlantic White Cedar Salvage and Restoration at the Great Dismal Swamp National Wildlife Refuge (September 2004)* includes supplemental planting of nursery stock as well as herbicide application to control competing vegetation under the Proposed Action. An Environmental Action Statement issued in December 2004 indicated that the Proposed Action did not have significant environmental effects as determined by the environmental assessment and finding of no significant impact.

### **Related Plans and Cumulative Impact Analysis**

**Comprehensive Conservation Plan.** It was determined that actions proposed in the Cross Cut Fire Burned Area Rehabilitation Plan are consistent with the management objectives established in the Comprehensive Conservation Plan. The Comprehensive Conservation Plan NEPA compliance process (Environmental Action Memorandum approved July 2006) specifically addresses:

- *Restoration of 2,000 acres of Atlantic white cedar forests by 2006 using helicopters or other specialized equipment to remove trees that were destroyed or severely damaged by Hurricane Isabel*
- *Restoration of 8,000 acres of Atlantic white cedar forest by 2019*

### **Cumulative Impact Analysis**

Cumulative effects are the environmental impacts resulting from the incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions, both Federal and non-Federal. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. The rehabilitation treatments for areas affected by the Cross Cut Fire, as proposed in the Cross Cut Fire Burned Area Rehabilitation Plan, do not result in an intensity of impact (i.e. major ground disturbance, etc.) that would cumulatively constitute a significant impact on the quality of the environment. The treatments are consistent with the above jurisdictional management plans and associated environmental compliance documents and categorical exclusions listed below.

### **Statement of Compliance for the Cross Cut Fire Burned Area Rehabilitation Plan.**

This section documents consideration given to the requirements of specific environmental laws in the development of the Cross Cut Fire Burned Area Rehabilitation Plan. Specific consultations initiated or completed during development and implementation of this plan are also documented. The following executive orders and legislative acts have been reviewed as they apply to the Cross Cut Fire Burned Area Rehabilitation Plan:

- National Historic Preservation Act (NHPA).
- Executive Order 11988. Flood plain Management.
- Executive Order 11990. Protection of Wetlands.
- Executive Order 12372. Intergovernmental Review.
- Executive Order 12892. Federal Actions to Address Environmental Justice in Minority and Low-income Populations.
- Endangered Species Act.
- Secretarial Order 3127. Federal Contaminated
- Clean Water Act.
- Clean Air Act.

## **CONSULTATIONS**

*Not applicable*

**NEPA Checklist:** If any of the following exception applies, the Burned Area Rehabilitation Plan cannot be Categorically Excluded and an Environmental Assessment (EA) is required.

(Yes) (No)

- (x) Adversely affect Public Health and Safety
- (x) Adversely affect historic or cultural resources, wilderness, wild and scenic rivers aquifers, prime farmlands, wetlands, floodplains, ecologically critical areas, or Natural Landmarks.
- (x) Have highly controversial environmental effects.
- (x) Have highly uncertain environmental effects or involve unique or unknown environmental risks.
- (x) Establish a precedent resulting in significant environmental effects.
- (x) Relates to other actions with individually insignificant but cumulatively significant environmental effects.
- (x) Adversely effects properties listed or eligible for listing in the National Register of Historic Places
- (x) Adversely affect a species listed or proposed to be listed as Threatened or Endangered.
- (x) Threaten to violate any laws or requirements imposed for the "protection of the environment" such as Executive Order 11988 (Floodplain Management) or Executive Order 11990 (Protection of Wetlands).

### **National Historic Preservation Act**

Ground Disturbance:

- None
- Ground disturbance did occur and an archeologist survey, required under section 110 of the NHPA will be prepared. A report will be prepared under contract as specified by the Burned Area Rehabilitation Plan.

A NHPA Clearance Form:

- Is required because the project may have affected a site that is eligible or on the national register. The clearance form is attached. SHPO has been consulted under Section 106 (see Cultural Resource Assessment, Appendix I).
- Is not required because the Burned Area Rehabilitation Plan has no potential to affect cultural resources (initial of cultural resource specialist).

### **Other Requirements**

(Yes) (No)

- (x) Does the Burned Area Rehabilitation Plan have potential to affect any Native American uses? If so, consultation with affiliated tribes is needed.
- ( ) Are any toxic chemicals, including pesticides or treated wood, proposed for use? If so, local agency integrated pest management specialists must be consulted. *Limited herbicide application is anticipated to release seedlings from hardwood competition. All herbicide applications will be subject to full Service review under FWS Pesticide Use Proposal.*

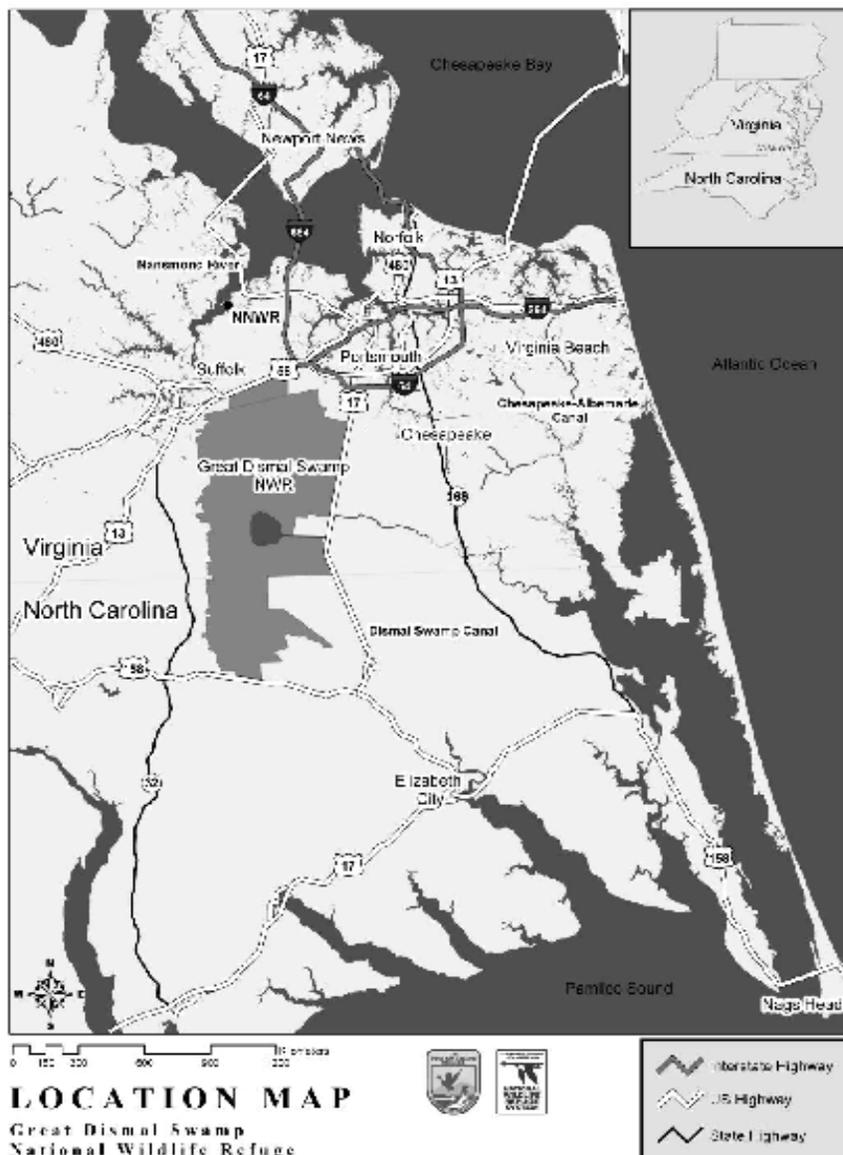
I have reviewed the proposals in the Cross Cut Fire Burned Area Rehabilitation Plan in accordance with the criteria above and have determined that the proposed actions would not involve any significant environmental effect. Therefore it is categorically excluded from further environmental (NEPA) review and documentation. Burned area emergency response team technical specialists have completed necessary coordination and consultation to insure compliance with the National Historic Preservation Act, Endangered Species Act, Clean Water Act and other Federal, State and local environment review requirements.

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Project Leader, Great Dismal Swamp NWR

Date

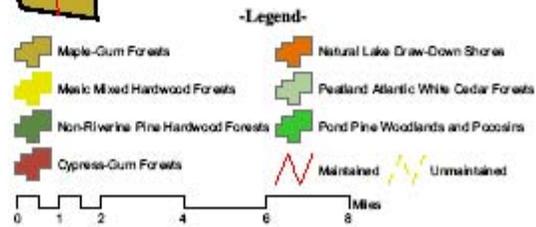
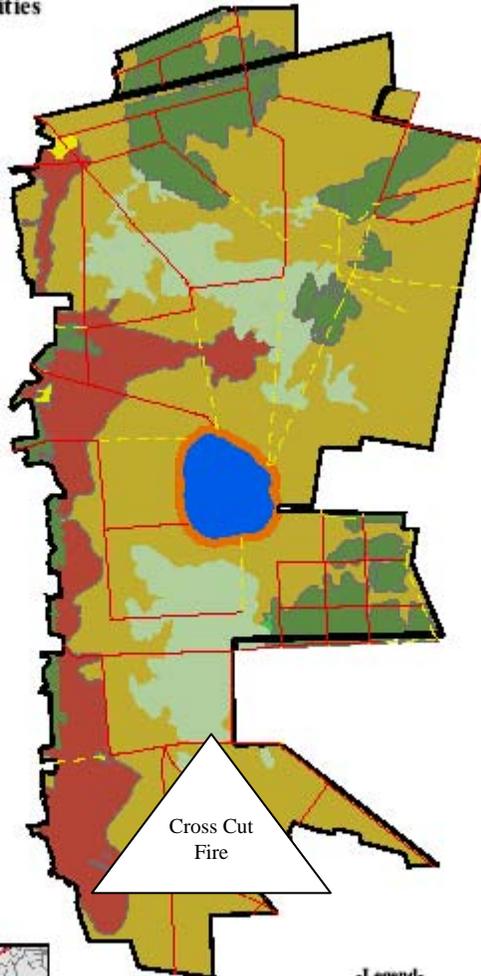
APPENDIX III - MAPS



Great Dismal Swamp National Wildlife Refuge  
Draft Comprehensive Conservation Plan Highlights

Figure 2-5.

**Great Dismal Swamp  
National Wildlife Refuge  
Forest Cover Communities**



## APPENDIX IV - PHOTO DOCUMENTATION



*Cross Cut Fire on April 24 showing active burning and adjacent unburned fuels*



*Same area on May 6 showing severe burning of litter and upper organic soils containing most of the Atlantic white cedar seed bank*

## **APPENDIX V - SUPPORT DOCUMENTS**

Atkinson, R.B., R.T. Belcher, D.A. Brown, and J.E. Perry. 2000. Atlantic White Cedar Restoration Ecology and Management. Proceedings of a Symposium: Christopher Newport University, May 31-June 2, 2000.

Laderman, A.D. 1989. The Ecology of Atlantic White Cedar Wetlands: A Community Profile. USDI Biological Report 85 (7.21).

Moore, S.E. 1996. Natural Regeneration of Atlantic White Cedar in the Great Dismal Swamp. Ph.D. Dissertation. North Carolina State University. 114 pp.

Noss, R.F., E.T. LaRoe, and J.M. Scott. 1995. Endangered Ecosystems of the United States: A Preliminary Assessment of Loss and Degradation. U.S. Department of the Interior, National Biological Services, Washington D.C.

U.S. Department of Interior. 2004. Departmental Manual 620 DM 3. Wildland Fire Management Burned Area Emergency Stabilization and Rehabilitation. 16 pp.

U.S. Department of Interior. 2006. Draft Interagency Burned Area Rehabilitation Guidebook. Version 1.2, 32 pp.

U.S. Department of Interior. 2006. Interagency Standards for Fire and Fire Aviation Operations, Chapter 11. Pages 11-13 to 11-14.

U.S. Fish and Wildlife Service. 2004. Environmental Assessment for the Atlantic White Cedar Salvage and Restoration at the Great Dismal Swamp National Wildlife Refuge. 21 pp.

U.S. Fish and Wildlife Service. 2006. Great Dismal Swamp National Wildlife Refuge and Nansemond National Wildlife Refuge, Final Comprehensive Conservation Plan. 258 pp.