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# Burned Area Rehabilitation Plan

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## FLICK CREEK FIRE



## Lake Chelan National Recreation Area



**BURNED AREA REHABILITATION PLAN REVIEW AND APPROVAL  
NATIONAL PARK SERVICE**

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

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Jack Oelfke, North Cascades National Park

Date

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

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Nelson Siefkin, Regional BAER Coordinator, Pacific West Region

Date

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

Approved

Approved with Revision (see attached)

Disapproved

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Jonathan B. Jarvis, Pacific West Region

Date

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

Approved

Approved with Revision (see attached)

Disapproved

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Mike Wallace, Director, Fire Management Program Center

Date

**Flick Creek Fire**  
**BURNED AREA REHABILITATION PLAN**

**UNIT:** Lake Chelan National Recreation Area

**LOCATION:** Stehekin, Washington

**DATE:** October 12, 2006

**PREPARED BY:** North Cascades National Park Service Complex BAER Team

Submitted By: \_\_\_\_\_  
William Paleck, Superintendent

Date: \_\_\_\_\_

## EXECUTIVE SUMMARY

### Introduction

This Burned Area Rehabilitation (BAR) Plan has been prepared in accordance with Department of the Interior and National Park Service (NPS) policy. This plan provides non-emergency rehabilitation recommendations for all lands administered by the NPS in Lake Chelan National Recreation Area (part of the North Cascades National Park Complex [NOCA]) burned within and around the Flick Creek Fire perimeter and downstream impact areas, including privately owned parcels. The Plan was prepared in accordance with *DM 620 Part 3: Burned Area Emergency Stabilization and Rehabilitation* and the draft *Interagency Burned Area Rehabilitation Guidebook*.

A Burned Area Emergency Response (BAER) plan for NPS administered lands on the Flick Creek Fire was also prepared and submitted in September 2006. In that plan, emergency stabilization treatments and activities were proposed to address issues with post-fire watershed conditions, various health and safety concerns, and imperiled cultural resources.

The Flick Creek fire started on July 26, 2006. The fire was human-caused, with an origin approximately 2.5 miles downlake of the Stehekin Landing, in the Flick Creek drainage. The fire grew quickly in the dry Douglas fir/ponderosa pine forest, reaching 1200 acres by the end of the first burning period. Limited suppression resources, several structures threatened along the Lake Chelan shoreline, and extremely steep terrain limited most suppression actions to structure protection the first few days of the fire. The initial fire strategy was to prevent fire movement uplake at the Hazard Creek drainage, to prevent fire from reaching the Stehekin Landing. That strategy was successful until Aug. 21, when the fire crossed into the Hazard Creek drainage in the upper elevations. The fire eventually moved into the Purple Creek and Imus Creek drainages before being contained just northward of Imus Creek, following cooler, wetter weather. The fire threatened numerous public, commercial and residential structures in several locations. Total fire acreage as of September 29 is estimated at 7883 acres. Suppression efforts including approximately 3.5 miles of hand and explosives line, 17 retardant drops, extensive helicopter water drops, fuel reduction around structures, and snag removal along powerlines. No structures were lost other than two trail bridges and associated infrastructure along trails.

The primary objectives of the Flick Creek Fire BAR 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.
- Repair or replace fire damaged minor operating facilities (e.g., campgrounds, interpretive signs and exhibits, shade shelters, fences, wildlife guzzlers, etc.)

The topics assessed in this plan include minor facilities and invasive species. Three specifications totaling \$354,135 are requested to perform BAR treatments and activities on the Flick Creek Fire.

## Minor Facilities

Minor facilities issues on the Flick Creek Fire include:

- Tread damage along the Lakeshore, Imus Loop, and Purple Creek trails and the burning of two wooden bridges at Fourmile Creek and Purple Creek are impediments to the completion of BAER and rehabilitation treatments slated to begin in the spring of 2007 and render these popular recreational facilities unusable by the public.

NPS staff conducted field and/or aerial reconnaissance of minor facilities within the burned area over several days in August and September 2006. Considerable sections (approximately 9850') of trail tread were lost due to roots burning out, or in some cases, burning of crib logs. Two wooden bridges on Fourmile Creek (30 ft. length) and Purple Creek (25 ft. length) were burned in the fire, as was the wooden signpost indicating the wooden bridge and horse ford locations across Fourmile Creek.

One specification (*R-2—Trails, Bridges and Signposts*) is proposed to address the need for minor facility repair on the Flick Fire in FY07-09.

## Invasive Plant Species

Invasive plant species issues on the Flick Creek Fire include:

- Establishment and expansion of invasive plant species into burned areas and the areas of fire suppression activity.

Vegetation specialists performed aerial and ground reconnaissance of the burned area in August and September 2006. Four noxious weed species are known to occur within the Flick Creek Fire burn perimeter and several others are of concern. Of these, common crupina (*Crupina vulgaris*) is considered the greatest threat. Crupina populations on adjacent USFS lands were found to increase following the 2001 Rex Fire. In addition to known populations, areas of concern for noxious weed infestation include locations where fire suppression actions were carried out such as constructed firelines, helispots, drop points, staging areas and retardant drops.

One specification (*R-1-Invasive Plant Species*) is proposed to identify and eradicate invasive plant species within the burn perimeter and areas of fire suppression activities from 2007 through 2009.

## Miscellaneous

One specification (*R-3-BAR Implementation Leader*) is proposed to fund the BAR Implementation Leader from 2007 through 2009.

## **Plan Organization**

Burned Area Assessments for minor facilities and vegetation and the three rehabilitation specifications are found below. Appendix I contains the National Environmental Policy Act (NEPA) compliance documentation summary, and supporting documentation is found in Appendix II.

## SUMMARY OF ACTIVITIES AND TREATMENTS

The summary of activities and cost table below identifies rehabilitation costs charged or proposed for funding from subactivity B11 funding sources.

### SUMMARY OF ACTIVITIES AND COSTS

LINE ITEM NUMBER	SPEC NUMBER	TITLE	UNIT	UNIT COST	NUMBER OF UNITS	WORK AGENT	COSTS
1	R-	Invasive Plant Species	Acre	\$ 2	945	F	\$ 206,84
2	R-	Trails, Bridges and Signposts	Mile	\$ 10,67	1	F	\$ 117,43
3	R-	BAR Implementation Leader	Yea	\$ 9,95	3	F	\$ 29,85
<b>TOTAL COSTS</b>							<b>\$ 354,13</b>

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

### SUMMARY OF COSTS BY FISCAL YEAR

LINE ITEM NUMBER	SPEC NUMBER	TITLE	UNIT	UNIT COST	NUMBER OF UNITS	WORK AGENT	COSTS FY 200	COSTS FY	COSTS FY	TOTAL COSTS
1	R-	Invasive Plant Species	Acre	\$ 2	945	F	\$ 85,73	\$ 65,36	\$ 55,75	\$ 206,84
2	R-	Trails, Bridges and Signposts	Mile	\$ 10,67	1	F	\$ 94,65	\$ 11,22	\$ 11,56	\$ 117,43
3	R-	BAR Implementation Leader	Yea	\$ 9,95	3	F	\$ 9,77	\$ 9,75	\$ 10,32	\$ 29,852
<b>TOTAL COSTS</b>							<b>\$ 190,15</b>	<b>\$ 86,33</b>	<b>\$ 77,64</b>	<b>\$ 354,13</b>

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

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**FIRE LOCATION AND BACKGROUND INFORMATION**

Fire Name	Flick Creek
Fire Number	WA-NCP-213
Agency Unit	WA-NCP; WA-OWF
Region	NPS-PWR; Region 6
State	Washington
County(s)	Chelan
Ignition Date/Cause	7.26/06, human-caused
Zone	NC Washington; Chelan-Stehekin Fire Management Unit
Date Fully Contained	Not applicable at this time
Jurisdiction	Acres
<i>Lake Chelan National Recreation Area (NPS)</i>	6873
<i>Okanagan-Wenatchee National Forest (USFS)</i>	1010
Total Acres	7883
Date Contained	10/03/06

**NATURE OF PLAN**

Type of Action (check one box below)

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

## TEAM ORGANIZATION, MEMBERS, AND RESOURCE ADVISORS

Burned Area Rehabilitation Team Members: *(List of technical specialists used to develop the plan)*

<b>Position</b>	<b>Team Member (Agency)</b>
Team Leader	Jack Oelfke, NPS Mel Bennett, USFS Terry Lillybridge, USFS Nelson Siefkin, NPS Richard Schwab, NPS
Public Information	Vicki Gempko, NPS
NEPA Compliance & Planning	Jack Oelfke, NPS; Vicki Gempko, NPS
Hydrologist	Marsha Davis, NPS Mel Bennett, USFS
Soil Scientist	Marsha Davis, NPS Mel Bennett, USFS
Geologist	Marsha Davis, NPS John Riedel, NPS
Cultural Resources/Archeologist	Andrea Weiser, NPS Robert Mierendorf, NPS
Vegetation Specialist	Mignonne Bivin, NPS Randy Niman, USFS; Brigitte Ranne, USFS
Wildlife Biologist	Robert Kuntz, NPS
GIS Specialist	Jack Rainford, USFS
Photographer	Rena Rex, USFS
<i>Other Technical Specialists</i>	

III. Resource Advisors: (Note: Resource Advisors are individuals who assisted the burned area emergency response team with the preparation of the plan. See Part H for a full list of agencies and individuals who were consulted or otherwise contributed to the development of the plan.)

<b>Name</b>	<b>Affiliation</b>
<i>Vicki Gempko</i>	<i>North Cascades National Park Service Complex</i>
<i>Brigitte Ranne</i>	<i>Okanagan-Wenatchee National Forest</i>

## **FLICK CREEK FIRE INFORMATION**

The Flick Creek fire (Map 1) started sometime before 1330 hours on July 26, 2006. The fire was human-caused, the result of an individual burning papers and failing to completely extinguish all burning embers before leaving the scene (From Fire Cause and Origin Report). The origin of the fire was within the Flick Creek drainage, approximately 600 ft. upslope of Lake Chelan, at around the 1600 ft. contour. Fuels near the origin were a mix of an overstory of Douglas fir and ponderosa pine, with a sparse understory of shrubs, grasses and some forbs. Bigleaf maple is also scattered in the midstory. Mistletoe (or witches broom) was prevalent throughout the forest, which provided ample ladder fuels into the upper canopy. The fire grew quickly, and was estimated to be 1200 acres by the end of the first burning period.

Due to numerous wildfires burning elsewhere in the country, suppression forces were limited, although a significant initial attack effort including smokejumpers, rappellers, heavy helicopters and over 20 ground firefighters delivered by boat attempted to catch this fire, the fire behavior and difficult terrain thwarted this effort. Given the rapid rate of fire spread and the need to suppress this fire as soon as possible, the park immediately ordered a Type I Team, given the threats to property owners along Lake Chelan, the close proximity of the Stehekin Landing and adjacent residential community uplake of the Landing, the very steep terrain, and burning conditions present at the fire. Suppression actions focused exclusively on protecting structures in the immediately vicinity of the fire. Structures are located on four private land parcels and an NPS campground (with a National Register structure there). Those lakeshore structures were evacuated on July 27, and by the time the Type I team arrived on July 28 the fire was estimated at 2000 acres. The Governor of the State of Washington visited the Stehekin community on July 28 to offer state support for the effort.

The initial WFSA selected an alternative that would prevent fire spread from advancing uplake (northwest) into the Hazard Creek watershed, thus preventing fire spread into the Stehekin Landing and the Stehekin Valley. This alternative used natural barriers to stop fire's progress in the upper elevations of the Flick Creek and Fourmile Creek watersheds, where the fire would eventually run into sparser fuels and cliffs. Downlake the fire would be stopped by the lack of fuels resulting from the 2001 Rex Creek fire, while protecting structures and inholdings on the Okanagan-Wenatchee National Forest lands there.

With available resources, some fireline was constructed around homes along the lakeshore. When tactically appropriate, the lakeshore trail was used to prevent fire from damaging structures. On July 31, the northward advance of the fire toward Stehekin was stopped by crews building handline with handtools and an explosives crew in very steep and rocky terrain. This effort was followed up with a small burn out operation between the handline and the advancing fire. By August 1 the explosive and hand lines were on the fire's north edge and fire progression was checked along the ridge dividing the Fourmile Creek and Hazard Creek watersheds (Map 2). By August 1 the fire acreage was measured at 4077 acres, with additional growth confined to the upper drainages of the Flick Creek and Fourmile watersheds. During this first week the fire also moved downlake (southeasterly) and crossed into the Fish Creek drainage on lands managed by the Forest Service, where it burned into the Rex Creek fire of 2001 and was contained there.

By August 4<sup>th</sup> fire activity was confined to the upper watersheds of Flick Creek and Fourmile drainages, and a Type II Team assumed command of the fire. On August 10<sup>th</sup> a contingency fireline was constructed along the ridge between Helispot 15 and a natural fuel break on the ridge separating Hazard creek from Fourmile Creek (Map 2). This was done to provide a fuel break at the northern edge of the fire in case the fire made a run toward the Hazard Creek watershed there. Fire activity largely was low intensity, single torching activity as the fire moved into the upper elevations of Fourmile Creek, where fuels were drying as the summer progressed. Throughout the first three weeks of August water drops were made to slow fire progression upslope in the Fourmile Creek watershed, and water drops and limited line construction was completed on spots near the northern edge of the fire at midslope elevations, above Helispot H-15. By August 20 fire size was measured at 4738 acres.

On August 21, low humidities and high wind pushed the fire into the upper end of Hazard Creek above the constructed handline mentioned above. This was a result of long distance spotting from multiple trees torching in the Fourmile Creek drainage. Approximately 80 acres were burning mostly in Hazard Creek with a small finger of fire working into the head of Purple Creek. All of this fire activity occurred above 6500'. Retardant was used to contain the fire spread in Hazard Creek and additional retardant was used to reinforce the handline constructed above Helispot 15.

Because the fire breached the chosen alternative in the original WFSAs, the WFSAs were amended and an alternative chosen that would focus on structure protection, the use of natural barriers, and the War Creek and Boulder Butte fires to prevent fire spread to the north. This, in combination with expected late fire season precipitation, would provide reasonable options for the incident command teams managing the incident.

At the head of Hazard and Purple Creek drainages, the fire activity became minimal, progressing slowly downslope, primarily through rolling debris. A 14 day FARSITE analysis of expected fire growth provided on August 24<sup>th</sup> concluded the fire would not reach the Stehekin Landing during the 14-day projection period. However by September 5 the fire had reached the 3100' contour in Hazard Creek; when it reached contours below the 3000' contour by September 7, a Level 2 evacuation notice was issued by the Chelan County Sheriff's Dept. On September 8 a Level 3 (mandatory evacuation) was issued for the homeowners at the mouth of Hazard Creek, and on September 9 that Level 3 notice was extended to the Stehekin Landing and uplake to the head of the lake. A Level 2 evacuation notice was issued for the area between the head of Lake Chelan and the Harlequin Bridge.

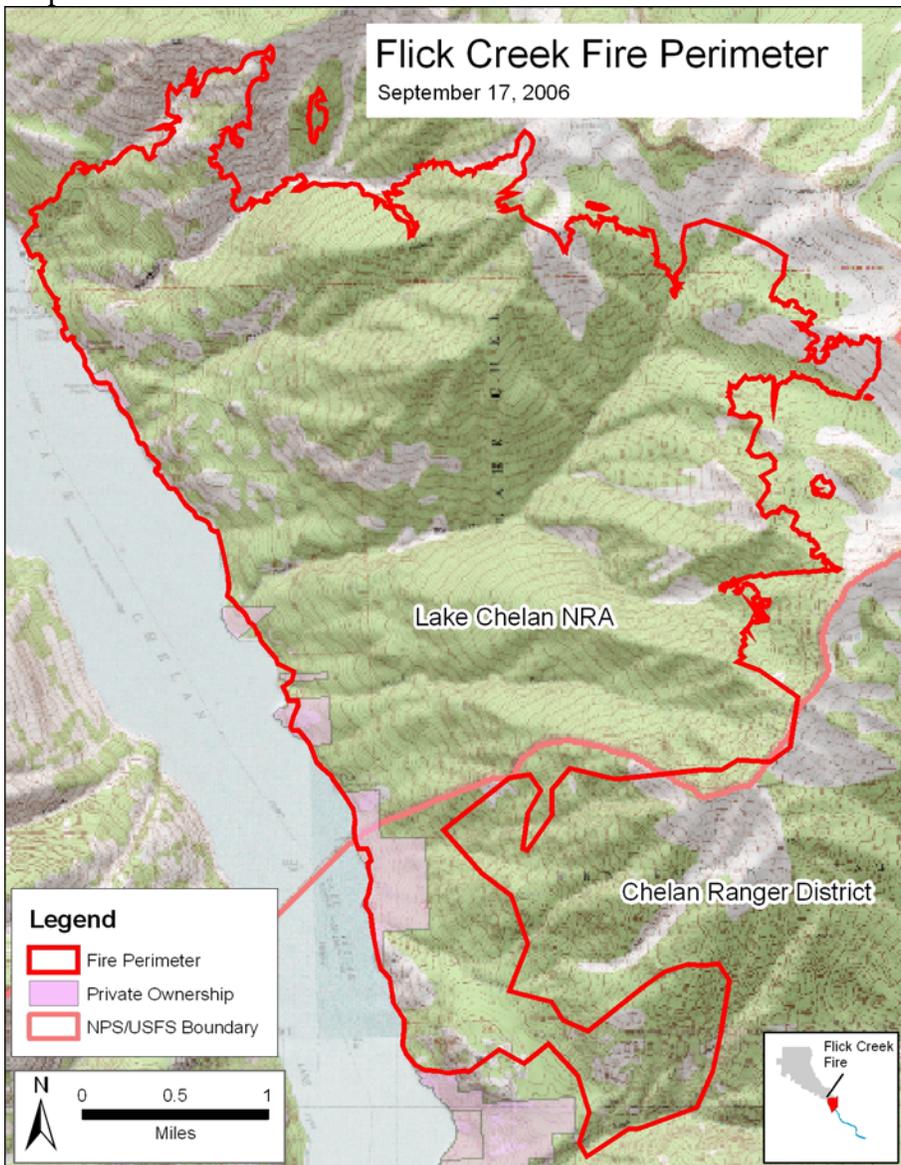
On September 10 the fire crossed onto the north side of the Purple Creek drainage. Burnouts around the Stehekin Landing were continued and completed on September 11 and 12. On September 13 the fire crossed Imus Creek, progressing northward. Seven retardant drops were made to slow the fire progression on the north edge. On September 14 cooler, moist weather moved in, with approximately 0.15" of rain falling on the fire. On September 15 a line around the north edge of the fire was completed. At this time the evacuation levels were dropped back to Level 2, and then to Level 1 on September 16. Mop-up efforts proceeded, and as of September 27 the fire has remained in check behind the control lines. Fire size is estimated at 7883 acres at this time, although it is recognized there has been some limited fire growth in the upper elevations of Fourmile Creek.

Due to the extreme terrain, most suppression efforts were limited to protecting structures and preventing the uplake spread of the fire. Most suppression efforts focused on water drops when helicopters were available; retardant drops occurred on 4 separate days, totaling 36,758 gallons of LCG-A and LCG-R

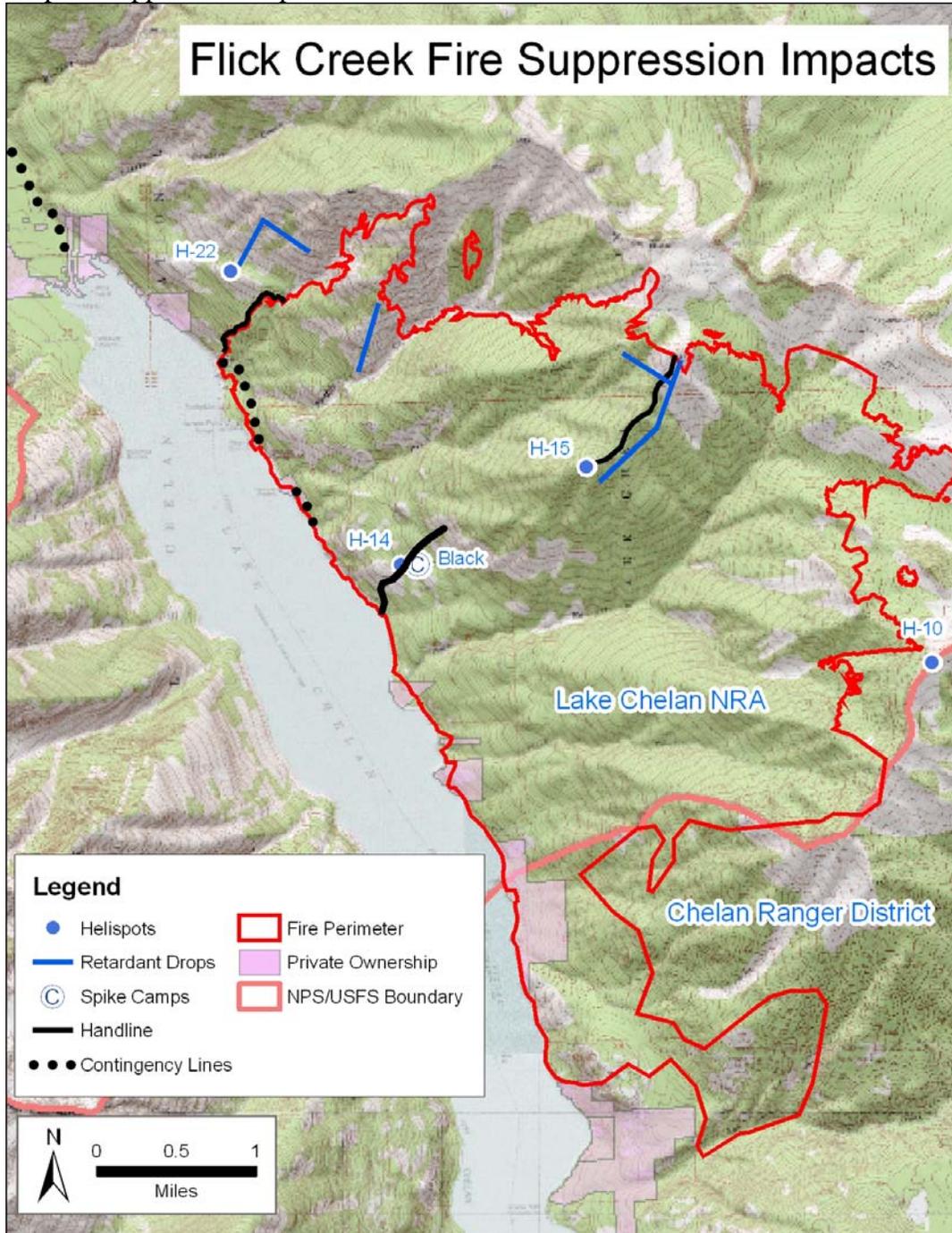
retardant (a retardant containing ammonium polyphosphate, clay thickener, and iron oxide colorant). Approximately 4000 feet of explosives were used, all reinforced by handline construction. Total handline construction, excluding the short handlines built adjacent to private and federal structures, was approximately 3.5 miles. Fuel reduction had been completed around most of these structures during the past several years. Additional fuel modification was completed throughout the Stehekin Landing and at private inholdings uplake of the Landing to the head of the lake. A contingency line was completed from the head of the lake to Boulder Creek in anticipation of the fire reaching that area. Numerous snags were dropped along the powerline corridor from the Landing to the head of the lake as well. Four helispots were constructed within NPS boundaries. Spike camps was established for a limited period at Lucerne (downlake of the fire on Forest Service lands near the mouth of Railroad Creek) and at Helispot 14; during the height of suppression actions in September most fire personnel were supported from various locations at the Stehekin Landing and in the Stehekin Valley (including Weaver Point Campground). Several local businesses were utilized to support fire personnel.

At the peak of suppression activity total fire personnel reached 134 people, including numerous interagency fire personnel, the Chelan County Sheriff's office, and the Chelan Public Utilities District. No structures were lost other than two trail bridges and infrastructure associated with hiking trails.

Map 1. Flick Creek Fire Perimeter



Map 2. Suppression Impacts of the Flick Creek Fire



**BURNED AREA ASSESSMENTS**



## **MINOR FACILITIES BURNED AREA ASSESSMENT**

### **OBJECTIVES**

Identify and mitigate non-emergency damage to minor facilities within the burned area.

### **ISSUES**

- Tread damage along the Lakeshore, Imus Loop, Purple Creek trails and the burning of two wooden bridges at Fourmile Creek and Purple Creek are impediments to the completion of BAER and BAR treatments slated to begin in the spring of 2007 and render these popular recreational facilities unusable by the public.

### **OBSERVATIONS**

#### **Background**

The Lakeshore Trail extends from the Stehekin Landing south through the burned area to lands administered by the USDA Forest Service. The trail is a popular day-hike for Stehekin visitors, as well as for backpackers accessing Stehekin from the south. The trail has been closed to public use since the initiation of the Flick Creek Fire. Approximately four miles of the Lakeshore Trail lie within the Flick Creek Fire perimeter.

The Purple Creek Trail extends seven miles through the burned area, from the Stehekin Landing to Purple Pass. This trail provides access to the Stehekin Valley from a network of trails on the eastern side of the park and adjoining USDA Forest Service lands. The Purple Creek Trail has also been closed to the public use since the start of the Flick Creek Fire.

The Imus Loop Trail is an interpretive trail that extends from the Golden West Visitor Center to Purple Point Campground, approximately ¼ mile through the burned area. The trail has been closed to the public use since the fire advanced uplake near the Stehekin Landing.

#### **Reconnaissance Methods**

Several NPS staff (PWRO and NOCA Geologists; Chief, Resource Management; Cultural Resource Specialist, Eastslope District Resource Management Specialist; Plant Ecologist; Chief, Maintenance; Stehekin Maintenance Foreman, and Trails staff) conducted field and/or aerial reconnaissance of minor facilities over several days in August and September 2006. Reconnaissance efforts concentrated on identifying and documenting potential hazard trees, trail tread and bridge conditions, potential debris flow routes and targets, and fire suppression impacts.

#### **Findings**

All of the downed logs and surface debris on the Lakeshore Trail within the Flick Creek Fire was removed during suppression rehabilitation activities. However, there are considerable sections of trail that have completely lost the tread due to roots burning out, or in some cases, crib logs burned out. The Lakeshore trail has 3200' of trail tread damage, with the worst damage over a continuous 400' section through an unstable scree slope.

The Purple Creek trail has 6700' of trail tread damage, spread out over 100 locations along a 4.5 mile trail segment. One segment of 635' length has continuous tread damage. In greater than 30 locations burnt roots have created holes and undermined the tread. There are at least 90 downed trees larger than 18" diameter.

At this time there is only minimal damage to the Imus Creek trail. There is minor tread work needed to repair approximately 500 ft of trail and removal of fallen logs following spring snow melt.

Two wooden trail bridges on Fourmile Creek (30 ft. long) and Purple Creek (25 ft. long) were burned in the fire, as was a wooden signpost indicating the bridge and horse ford locations across Fourmile Creek.

Map 3 shows the locations of the burned bridges and general tread damaged trail segments.

## **RECOMMENDATIONS**

### Specifications

#### *R-2: Trail tread, bridge replacement, and log removal*

All trail and bridge work will be completed according to NOCA trail standards. Those sections of trail that have been lost will be reworked to provide a standard trail surface. The two wooden bridges and signpost will be replaced in-kind.

Construction of the wooden bridges, trail tread repair and log removal will commence in the spring of 2007. BAR funds are also sought to continue trail repairs and log removal in 2008 and 2009.

## **CONSULTATIONS**

Tom Belcher, Chief of Maintenance, NOCA  
Paul Slinde, Stehekin Maintenance Foreman, NOCA  
Marsha Davis, Geologist, PWRO-NPS  
Vicki Gempko, Resource Management Specialist, NOCA  
Lacey Cunningham, Trails, NOCA  
Jerry Ainscough, Trails, NOCA  
Aaron Robinson, Trails, NOCA  
Andy Stout, Trails, NOCA  
Phil Garfoot, Trails, NOCA  
Bob Sheehan, Chelan District Ranger, Okanagan-Wenatchee National Forest

**PHOTOS OF TRAIL AND BRIDGE  
DAMAGE**



Undermined trail section, Lakeshore Trail



Burned remains of Fourmile Creek bridge



Loss of trail tread, burned over trail, Purple Crk



Purple Creek bridge with burning snag across it

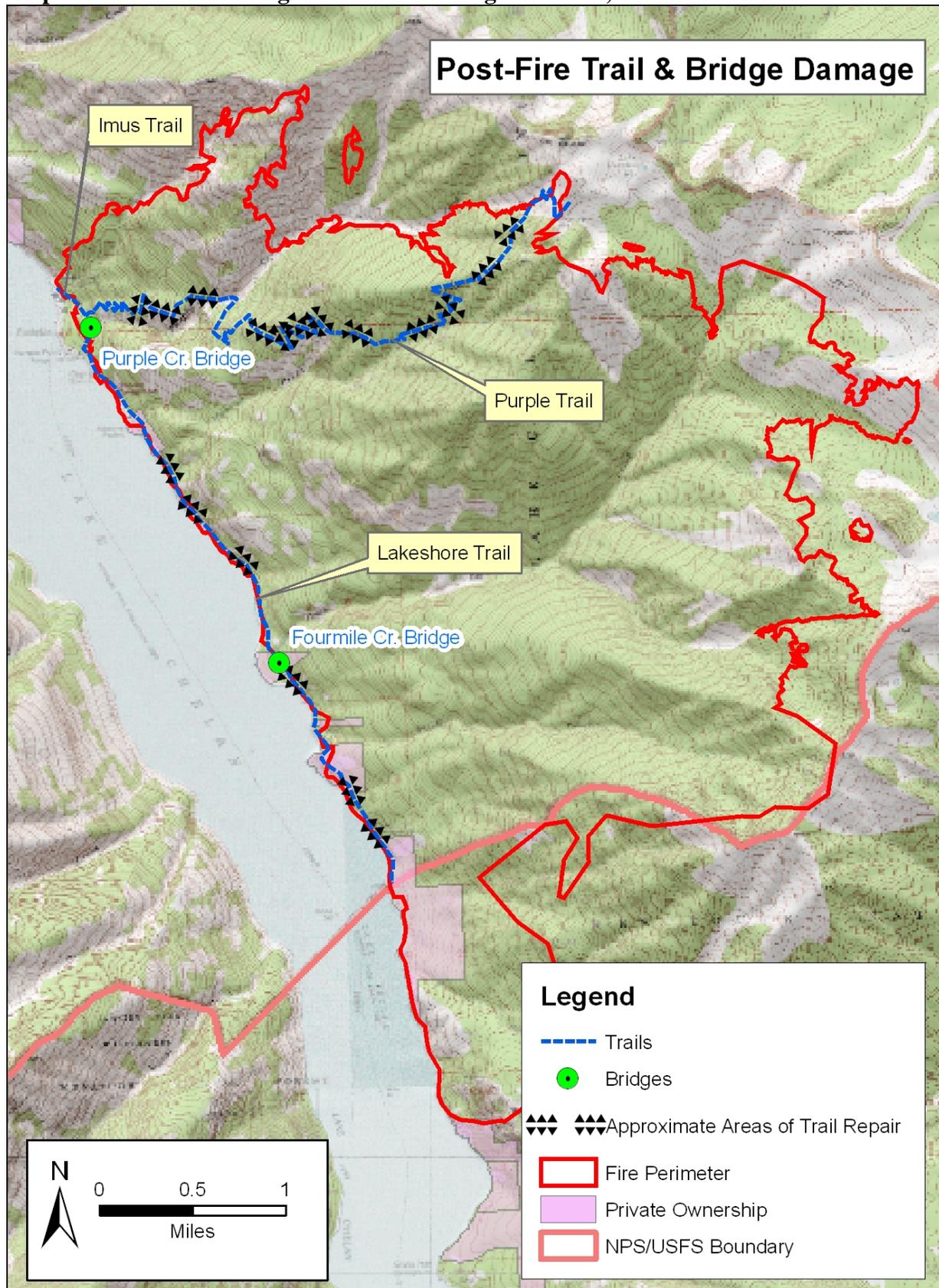


Trail buried by scree movement, Lakeshore Tr.



Purple Creek bridge after snag & bridge burned

Map 3. Trail Tread Damage and Burned Bridge locations, Flick Creek Fire



## **VEGETATION BURNED AREA ASSESSMENT**

### **OBJECTIVES**

- Evaluate and assess the fire impact to the vegetation resources including potential state listed plant species.
- Determine emergency stabilization, monitoring, early detection and eradication of weeds supported by specification to aid in the vegetation and soil stabilization efforts.
- Provide management recommendations to assist in habitat protection, revegetation, and rehabilitation if needed.

### **ISSUES**

- Establishment and expansion of invasive plant species into burned areas and locations of fire suppression activity.

### **OBSERVATIONS**

Findings and recommendations contained within this assessment are based on NOCA and US Forest Service staff reconnaissance of impacted areas and aerial surveys. On August 13, and September 20-21 2006, the NOCA Plant Ecologist surveyed the fire area via helicopter and ground surveys.

The Flick Creek Fire was a mixed severity fire. Most of the area was low severity with some areas of moderate and high severity.

### **Findings**

NOCA is floristically diverse, with approximately 1700 vascular plant species. NOCA has an existing vegetation map developed in 1990 under contract by Pacific Meridian Resources. In 2004, a revision of the existing vegetation map and the development of an associated vegetation classification system began by the NPS. These maps and classification are expected to be completed by 2010.

In the summer season of 2002, a contract botanist (Joe Arnett) surveyed the Stehekin area for sensitive plant species. This contract was initiated by the Fire Management Office of NOCA in preparation for proposed landscape prescribed burns on the walls above the Stehekin Valley. The vegetation community types were also documented in the course of the survey. The area surveyed in the contract spanned from the NPS/USFS boundary on the south to the Coon Lake drainage approximately 12 miles to the north.

The fire area has steep to very steep slopes. The forests on the site had open to very dense stands (dog-hair) of Douglas fir. Douglas fir/Ponderosa stands varied from dense forests to open woodlands. Understory of the forested stands ranged from very sparse to a dense cover of shrubs or forbs and grasses. Riparian forests were restricted to the narrow stream corridors. A dense shrub

layer dominated the understory of the riparian forests. Rock outcrops are abundant throughout the fire area.

The vegetation types documented in the Arnett survey, within the Flick Creek Fire area included rock outcrops, grassland patches, dry coniferous forest, riparian corridor, and seeps.

### Vegetation Type Descriptions

**Rock outcrops** are dominated by low shrubs, annual grasses and forbs, and perennial species. Species include *Cheilanthes gracillima*, *Polystichum lonchitis*, *Montia perfoliata*, *Arctostaphylos nevadensis*, *Bromus tectorum*, *Bromus mollis*, *Zigadenus venenosus*, *Z. paniculatus* and *Heuchara cylindrica*.

**Grassland patches** are often above or adjacent to rock outcrops. Species include ferns, annual and perennial grasses and herbs. Species include *Pseudoroegneria spicata*, *Aspidotis densa*, *Apocynum androsaemifolium*, *Lithophragma pariflora*, *Lomatium geyeri*, *L. brandegei* and *L. triternatum* and *Bromus carinatus*.

**Seeps** are found mostly in rock outcrops and are dominated by ephemeral herbaceous species. Species include *Plectritis macrocera*, *Saxifraga integriflora*, *Suksfordia ranunculifolia* and *Mimulus guttatus*.

**Dry coniferous forests** are dominated by Douglas fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*), mostly <12" DBH. The understory is sparse or absent. In some areas shrubs occur. Common shrubs include spirea (*Spirea betulifolia*), serviceberry (*Amelanchier alnifolia*), rose (*Rosa gymnocarpa*), and in moist areas big leafed maple (*Acer macrophyllum*) and Western dogwood (*Cornus nuttallii*) are abundant. There are occasional patches of well developed pine grass (*Calamagrostis rubencens*) in the understory.

**Riparian forest** occur along drainages and are dominated by a canopy of big leafed maple (*Acer macrophyllum*) with a shrub layer including thimbleberry (*Rubus parviflorus*) snowberry (*Symphoricarpus albus*), and oceanspray (*Holodiscus discolor*).

### State Listed Species

NOCA has no known federally listed plant species, but the Complex has approximately 58 potential state listed plant species. Two of these state listed plant species occur within the Flick Creek Fire: Sierra cliff brake (*Pellea brachyptera*) and giant helliborne (*Epipaticus gigantea*). The Sierra cliff brake is a state listed sensitive species, and giant helliborne is a state watch species. Two locations of giant helliborne and five locations of the Sierra cliff brake were identified in the 2001 Arnett survey within the Flick Creek Fire area. No post-fire surveys have been conducted to document the effect of the Flick Creek Fire on the on these sensitive plant species. Surveys are scheduled to be conducted in the 2007 field season.

### Invasive plant species

Approximately 250 species (14% of the NOCA flora) are invasive species. The Flick Creek Fire area has not been surveyed for invasive plant populations or the extent of these populations since the fire occurred. Four species are known to occur within the Flick Creek Fire area, Common crupina (*Crupina vulgaris*), six-week fescue (*Vulpia* spp.) Scott's broom (*Cytisus scoparius*) and Cheatgrass (*Bromus tectorum*). Other weeds of concern in the Flick Creek Fire area include Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*) and several knapweeds (*Centaurea* spp.).

Populations of invasive species within the fire area have not been mapped. In the 2006 summer season, Western Washington State University students began a mapping effort to document the location and extent of the cheatgrass populations in burn units proposed for prescribed burns on the valley walls above Stehekin Valley. Three of these units, Flick, Hazard and Imus, are contained within the area that was burned in the Flick Creek Fire. Only the northern portion of the Hazard Creek unit had been surveyed prior to the fire. NOCA staff observations of the Lakeshore Trail prior to the burn have reported extensive cheatgrass locations throughout the trail zone.

The primary weed of concern in and around the Flick Creek Fire area is common crupina which is a Class A noxious weed in the state of Washington. This plant currently infests 500 acres in and adjacent to the Flick Creek Fire (Map 4). Additionally, suitable crupina habitat within the Flick Creek Fire perimeter is widespread; east, south and west facing slopes below 3,000 ft. elevation. A portion of the established crupina population infestation was burned in the Rex Creek Fire in 2001. These burned populations were documented to increase in size and density as a result of the decreased canopy and ground cover. Common crupina, the six-week fescues and cheatgrass are winter annuals. These species germinate in the fall and early winter and begin active growth in the early spring, setting seed in the summer months. The thistles and knapweeds are perennial herbs and spread rapidly via wind dispersed seed. Scott's broom is a perennial shrub. Scott's broom, crupina and cheatgrass have been shown to be fire adapted species, increasing in frequency and density after fire.

Seventeen fire retardant drops over 4 days (August 20 and 21 and September 1 and 13, 2006) were made on the Flick Creek fire. A total 36,758 gallons of LCG-A and LCG-R retardant were dropped; both of these retardants consist of ammonium polyphosphate with a clay thickener and an iron oxide colorant. Fire retardant has been shown to have several effects on vegetation, including an increase annual grass biomass, decreases in foliar cover and species richness, and the reduction of post germination survivorship of some native legume species (Larson and Newman 1996; Adams and Simmons 1999). The likely effects of retardant drops on the vegetation of the Flick Creek Fire area are an increase in the cover and abundance of annual weedy grasses such as cheatgrass and six-week bromes.

## **RECOMMENDATIONS**

### Specifications

#### *R-1: Early detection and eradication of invasive plant species*

Monitoring of the Flick Creek Fire area for invasive plant populations is critical to identifying any new or expanding infestations of noxious weed species. Within the Flick Creek Fire area, vulnerable weed infestation zones for were identified by the USFS Chelan District botanist and

the NOCA plant ecologist. Early detection and control of the identified invasive species will occur within the burn areas, primarily along fire lines, helispots, private inholdings (with Wyden Authority), retardant drop locations and spike camp areas. Off site locations, not directly effected by fire suppression activities will also be surveyed. These include drop points, staging areas (Moore Point, Weaver Point and Lucerne) and any other off site areas where fire-related suppression activities occurred

Detection surveys will be conducted concurrently with the eradication of non-native target species. Seasonal teams will survey and map invasive species populations in areas considered having high infestation potential. Removal of plants will be accomplished by mechanical means unless the populations are deemed to be so large that this method would be ineffective. When large populations are encountered, these sites will be mapped for later treatment by chemical methods. All invasives will be bagged and removed off site. Field work will begin in April 1, 2007 and be completed by September 15, 2009.

Protocols for mapping and eradication of invasive plant populations are as follows:

- Invasive species polygons will be mapped using GPS units.
- Density, extent, cover and numbers (in cover classes) of plants will be recorded for each polygon.
- General site description (e.g., elevation, slope, aspect, and canopy cover) will be documented for each site.
- Approximate numbers of plants removed and phenological stage at the time of removal will be recorded.

#### Management (non-specification related)

##### *Survey, assess and monitor the State listed plant species*

A survey and assessment of state listed species will be performed and a monitoring plan developed to track the post-fire response of these plant populations. The surveys will be conducted in early summer 2007. Funding for these activities will be obtained from sources other than BAER or BAR.

##### *Public education*

Public education in the form of signing, interpretive talks, public meetings and brochures will be an important part of the continued reduction and control of invasive species management for the Flick Creek Fire.

## **REFERENCES**

Adams R and D. Simmons. 1999. Ecological effects of fire fighting foams and retardants: a summary. Australian Forestry. 62, 307-314.

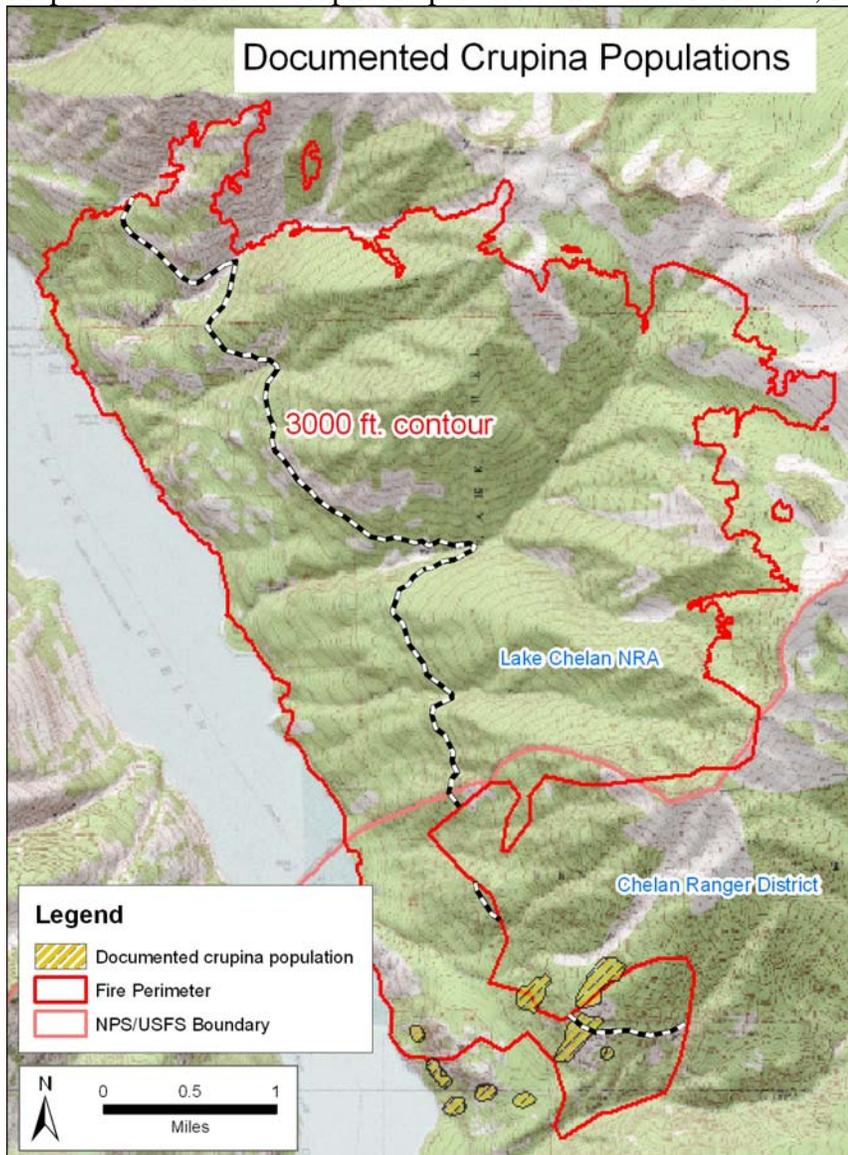
Arnett, J. 2002. Unpublished report. Sensitive plant surveys of the proposed landscape burn units in the Stehekin Valley, Lake Chelan NRA. NOCA Plant Ecologist files, Marblemount, WA.

FEIS (Fire Effects Information System) <http://www.fs.fed.us/database/feis/> 2004

Larson D., and W. Newton. 1996. Effects of fire retardant chemicals and fire suppressant foam on North Dakota prairie vegetation. Proceedings of the North Dakota Academy of Science 50, 137-144.

Lillybridge, T., B. Kovalchik, C. Williams and B. Smith. 1995. Field Guide for forested plant associations of the Wenatchee National Forest. PNW-GTR-359.

Map 4. Documented Crupina Populations and Suitable Habitat, Flick Creek Fire



## SPECIFICATIONS



Seedheads of Common Crupina (*Crupina vulgaris*), a Class A Noxious Weed in Washington

**PART F - INDIVIDUAL SPECIFICATION**

<b>TREATMENT/ACTIVITY NAME</b>	Invasive Plant Species	<b>PART E SPECIFICATION #</b>	R-1
<b>NFPORS TREATMENT CATEGORY*</b>	Invasive Species	<b>FISCAL YEAR(S) (list each year):</b>	2007 - 2009
<b>NFPORS TREATMENT TYPE *</b>	Hand Treatment	<b>WUI? Y / N</b>	Y
<b>IMPACTED COMMUNITIES AT RISK</b>	Stehekin	<b>IMPACTED T&amp;E SPECIES</b>	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):

<b>Number and Describe Each Task:</b>
<p><b>A. General Description:</b> Survey, map and eradicate invasive species surveys in vulnerable infestation sites within the 7900 acre Flick Creek Fire area. This work will be conducted from April 1, 2007 through September 1, 2009.</p> <p><b>B. Location/(Suitable Sites):</b> Detection and control of the identified invasive species will occur within the burn areas, along fire lines, helispots, private inholdings (with Wyden Authority), retardant drop areas, spike camp areas. Off site locations, not directly effected by fire suppression activities will also be surveyed. These include drop points, staging areas (Moore Point, Weaver Point and Lucerne) and any other off site areas where fire-related suppression activities occurred as well as retardant drop locations.</p> <p><b>C. Design/Construction Specifications:</b>                  1). Monitoring will consist of field inventory and mapping of new invasive species populations                  • Invasive species polygons will be mapped using GPS units.                  • Density, extent, cover and numbers (in cover classes) of plants will be recorded for each polygon.                  • General site description including elevation, slope, aspect, and canopy cover will also be documented for each site.                  • Approximate numbers of plants removed and phenological stage at the time of removal will be recorded                  2). Hand pull and mechanical removal of invasive plant populations                  3). Field work will be conducted April 1, 2007- September 1, 2009</p> <p><b>D. Purpose of Treatment Specifications:</b> Control of invasive species into susceptible burned areas that will change native plant community composition, structure and fire return intervals. Protect the ecological integrity of the site and the habitat of 2 State list plant species. This is supported by NPS policy, NOCA GMP and Resource Management plans and the Draft Fire Management plan.</p> <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> Sites mapped and treated in FY 1 will be visited in FY 2 and 3. Initiate follow-up mechanical treatment or chemical treatment if the populations have grown in size and/or density by 5% for all species except crupina. All detected crupina will be removed from the site. Data from this 3 year effort will be provided to the NPS EPMT for future planning, the NOCA IPM plan and I and M Long term monitoring protocol for exotic plants.</p>

**LABOR, MATERIALS AND OTHER COST:**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b> <b>Do not include contract personnel costs here (see contractor services below).</b>	<b>COST / ITEM</b>
GS-07 seasonal biological technician @\$1500/payperiods x 13 payperiods x 3 FY	\$ 60,965
GS-08 GIS specialist @\$2050/payperiods x 2 payperiods x 3 FY	\$ 12,673
GS-07 resource management specialist @\$1500/payperiods x 2 payperiods x 3 FY	\$ 12,620
GS-11 Plant Ecologist @\$1500/payperiods x 2 payperiods x 3 FY	\$ 17,330
GS-06 Administrative Assistant @\$1840/payperiod x 1 payperiod x 3 FY	\$ 5,686
GS-09 Interpreter @ \$2800/payperiod x 2 payperiods X FY1 and 1payperiod FY2 and FY3	\$ 7,513
SCA members @ 3000/6months-8 members X FY1 and 6 members FY2 and FY3	\$ 62,540
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 179,327</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):</b> <b>Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.</b>	<b>COST / ITEM</b>
Digital cameras, 2 @ \$480 / camera	\$ 920
GPS units Thales Mobile Mapper, 4 @ 1500/unit	\$ 6,000
Camping supp. (tents, stoves etc.)	\$ 3,800
1 vehicle @\$330/month/6 months X 3 FY	\$ 6,300
Ferry to Stehekin @\$25 round trip X 144 trips X 3 FY	\$ 3,600
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ 20,620</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
Misc. supplies (gloves etc.) \$500 X FY1, \$200 X FY 2 and 3	\$ 900
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 900</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
Travel and per diem, 6 months @\$2000 X FY 3	\$ 6,000
<b>TOTAL TRAVEL COST</b>	<b>\$ 6,000</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL CONTRACT COST</b>	<b>\$ -</b>

**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 2007	03/15/07	09/15/07	F	Acres	\$ 34	2500	\$ 85,730
FY 2008	03/15/08	09/15/08	F	Acres	\$ 22	3000	\$ 65,360
FY 2009	03/15/09	09/15/09	F	Acres	\$ 14	3950	\$ 55,757
<b>TOTAL</b>					<b>\$ 22</b>	<b>9450</b>	<b>\$ 206,847</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.	P
3. Estimate supported by cost guides from independent sources or other federal agencies.	P
4. Estimates based upon government wage rates and material cost.	P
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**

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**TOTAL COST BY JURISDICTION**

JURISDICTION	UNITS TREATED	COST
NPS North Cascades National Park	9450	\$ 206,847
	<b>TOTAL COST</b>	<b>\$ 206,847</b>

**PART F - INDIVIDUAL SPECIFICATION**

<b>TREATMENT/ACTIVITY NAME</b>	Trails, Bridges and Signposts	<b>PART E SPECIFICATION #</b>	R-2
<b>NFPORS TREATMENT CATEGORY*</b>	Trails	<b>FISCAL YEAR(S) (list each year):</b>	2007 - 2009
<b>NFPORS TREATMENT TYPE *</b>	Infrastructure	<b>WUI? Y / N</b>	Y
<b>IMPACTED COMMUNITIES AT RISK</b>	Stehekin	<b>IMPACTED T&amp;E SPECIES</b>	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):

<b>Number and Describe Each Task:</b>
<p><b>A. General Description:</b> Those sections of trails that have been lost will be reworked to provide a standard trail surface. Two wooden bridges will be replaced. A signpost will be replaced.</p> <p><b>B. Location/(Suitable Sites):</b></p> <ol style="list-style-type: none"> <li>1. Imus Loop</li> <li>2. Purple Creek</li> <li>3. Lakeshore Trails</li> </ol> <p><b>C. Design/Construction Specifications:</b></p> <ol style="list-style-type: none"> <li>1. Repair sections of trail damaged due to fire effects</li> <li>2. Replace Fourmile and Purple Creek bridge</li> <li>3. All trail and bridge work will be completed according to NOCA trail standards</li> <li>4. Replace wooden signpost to indicate locations of horse ford and hiker bridge</li> </ol> <p><b>D. Purpose of Treatment Specifications:</b> Provide safe access for public and employees along trails within the burn area.</p> <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> Completion of proposed work.</p>

**LABOR, MATERIALS AND OTHER COST: FISCAL YEAR 2007**

<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>
WG-8 Maintenance Mechanic (Trails) @ \$31.25/hr x 880	\$ 27,500
WG-5 Laborer (Trails) @ \$27.50/hr x 880	\$ 24,200
WG-4 Laborer (Trails) @ \$22.50/hr x 880	\$ 19,800
WG-4 Laborer (Trails) @ \$20.00/hr x 400	\$ 8,000
<b>TOTAL PERSONNEL SERVICE COST</b>	\$ 79,500
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):</b> Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	<b>COST / ITEM</b>
Helicopter transport of logs for bridge @ \$750 / hr x 4 hrs	\$ 3,000
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	\$ 3,000
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
Decking \$1000 / bridge x 2	\$ 2,000
Hardware \$300 / bridge x 2	\$ 600
Transport of materials \$1,500 / bridge x 2	\$ 3,000
Stringers and handrails \$1,400 / bridge x 2	\$ 2,800
<b>TOTAL MATERIALS AND SUPPLY COST</b>	\$ 8,400
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
Travel \$150 / person x 3 people x 7 trips	\$ 3,150
Travel \$150 / person x 2 people x 2 trips	\$ 600
<b>TOTAL TRAVEL COST</b>	\$ 3,750
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL CONTRACT COST</b>	\$ -
	\$ 94,650

**LABOR, MATERIALS AND OTHER COST: FISCAL YEAR 2008**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
WG-8 Maintenance Mechanic (Trails) @ \$32.25/hr x 120	\$ 3,870
WG-5 Laborer (Trails) @ \$28.38/hr x 120	\$ 3,406
WG-4 Laborer (Trails) @ \$23.13/hr x 80	\$ 1,850
WG-4 Laborer (Trails) @ \$20.63/hr x 80	\$ 1,650
<b>TOTAL PERSONNEL SERVICE COST</b>	\$ 10,776

<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	\$ -
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL MATERIALS AND SUPPLY COST</b>	\$ -
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
Travel \$150 / person x 3 people x 1 trips	\$ 450
<b>TOTAL TRAVEL COST</b>	\$ 450
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL CONTRACT COST</b>	\$ -
	\$ 11,226

**LABOR, MATERIALS AND OTHER COST: FISCAL YEAR 2009**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
WG-8 Maintenance Mechanic (Trails) @ \$33.25/hr x 120	\$ 3,990
WG-5 Laborer (Trails) @ \$29.25/hr x 120	\$ 3,510
WG-4 Laborer (Trails) @ \$23.88/hr x 80	\$ 1,910
WG-4 Laborer (Trails) @ \$20.63/hr x 80	\$ 1,700
<b>TOTAL PERSONNEL SERVICE COST</b>	\$ 11,110
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	\$ -
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL MATERIALS AND SUPPLY COST</b>	\$ -
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
Travel \$150 / person x 3 people x 1 trips	\$ 450
<b>TOTAL TRAVEL COST</b>	\$ 450
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL CONTRACT COST</b>	\$ -
	\$ 11,560

**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 2007	03/01/07	09/30/07	F	Miles	\$ 18,930	5	\$ 94,650
FY 2008	03/01/08	09/30/08	F	Miles	\$ 2,807	4	\$ 11,226
FY 2009	03/01/09	09/30/09	F	Miles	\$ 5,780	2	\$ 11,560
<b>TOTAL</b>					<b>\$ 10,676</b>	<b>11</b>	<b>\$ 117,436</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.	P,M,T
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**

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**TOTAL COST BY JURISDICTION**

JURISDICTION	UNITS TREATED	COST
NPS North Cascades National Park	11	\$ 117,436
	<b>TOTAL COST</b>	<b>\$ 117,436</b>

Specification Form Created September 23, 2006

**PART F - INDIVIDUAL SPECIFICATION**

<b>TREATMENT/ACTIVITY NAME</b>	BAR Implementation Leader	<b>PART E SPECIFICATION #</b>	R-3
<b>NFPORS TREATMENT CATEGORY*</b>	Administration	<b>FISCAL YEAR(S) (list each year):</b>	2007
<b>NFPORS TREATMENT TYPE *</b>	Contract Administration	<b>WUI? Y / N</b>	Y
<b>IMPACTED COMMUNITIES AT RISK</b>	Stehekin	<b>IMPACTED T&amp;E SPECIES</b>	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):

<b>Number and Describe Each Task:</b>
<p><b>A. General Description:</b> Provide funding to support a part-time BAR Implementation Leader to ensure prompt implementation of the rehabilitation treatments. The individual will provide management direction of rehabilitation treatments and monitoring specifications. Administrative support is provided to cover costs associated with expenses incurred by the Park to provide services for contracting, procurement, payroll, and other administrative services.</p> <p><b>B. Location/(Suitable Sites):</b> Flick Creek Fire, Northern Cascades National Park</p> <p><b>C. Design/Construction Specifications:</b></p> <ol style="list-style-type: none"> <li>1. Coordinate all aspects of rehabilitation actions approved in the Flick Creek Fire Burned Area Emergency Stabilization Plan including the contracting of treatment specifications and activities, administering contracts, document treatments installed, maintaining financial tracking of costs, reporting rehabilitation progress, submitting supplemental requests for funding, ensuring the completion of all approved treatments, entering data in NFPORS, and coordinating with private landowners, universities, research groups and other affected agencies.</li> <li>2. Contract and coordinate on-the-ground implementation of treatments including site orientation of contractors, developing daily/weekly work plans and supervising implementation activities.</li> <li>3. Monitor work to ensure compliance with all relevant Federal laws and regulations. Such laws and regulations include but are not limited to NEPA and NHPA mitigation requirements and all OSHA regulations and safety standards.</li> <li>4. Provide quarterly accomplishment reports in NFPORS and written fiscal year annual accomplishment reports detailing percent accomplishment for each project specification, dates of completion, funds expended, quality control inspection reports, and treatment effectiveness monitoring reports.</li> <li>5. At the completion of the one year funding cycle for treatments, the Implementation Leader will prepare an annual accomplishment report and budget request for the following year. At the end of the three years, a final report will be prepared to summarize all data requested in the quarterly reports and provide a comprehensive and objective compendium of lessons learned of the treatment effectiveness of the prescribed treatments based on the prescribed monitoring plans found within the BAR plan</li> </ol> <p><b>D. Purpose of Treatment Specifications:</b> To provide fiscal support for proper administration of the short and long-term treatments prescribed in the Flick Creek Fire BAR Plan.</p> <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> The Implementation Leader will conduct review of projects, financial accountability, and oversight and provide written and electronic monitoring reports as prescribe within DOI policy and the BAR plan.</p>

**LABOR, MATERIALS AND OTHER COST: FISCAL YEAR 2007**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
GS-7 Implementation Leader @ \$25.40/hr x 240	\$ 6,096
GS-5 Administrative Tech @ \$18.00/hr x 160	\$ 2,880
<b>TOTAL PERSONNEL SERVICE COST</b>	\$ 8,976
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	\$ -
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
Miscellaneous supplies	\$ 300
<b>TOTAL MATERIALS AND SUPPLY COST</b>	\$ 300
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
NFPORS reporting (Skagit district) 1 person @ \$500	\$ 500
<b>TOTAL TRAVEL COST</b>	\$ 500
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL CONTRACT COST</b>	\$ -
	\$ 9,776

**LABOR, MATERIALS AND OTHER COST: FISCAL YEAR 2008**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
GS-7 Implementation Leader @ \$26.16/hr x 240	\$ 6,280
GS-5 Administrative Tech @ \$18.54/hr x 160	\$ 2,670

**LABOR, MATERIALS AND OTHER COST: FISCAL YEAR 2008**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
GS-7 Implementation Leader @ \$26.16/hr x 240	\$ 6,280
GS-5 Administrative Tech @ \$18.54/hr x 160	\$ 2,670
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 8,950</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ -</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
Miscellaneous supplies	\$ 300
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 300</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
NFPORS reporting (Skagit district) 1 person @ \$500	\$ 500
<b>TOTAL TRAVEL COST</b>	<b>\$ 500</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL CONTRACT COST</b>	<b>\$ -</b>
	<b>\$ 9,750</b>

**LABOR, MATERIALS AND OTHER COST: FISCAL YEAR 2009**

<b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
GS-7 Implementation Leader @ \$26.95/hr x 240	\$ 6,470
GS-5 Administrative Tech @ \$19.10/hr x 160	\$ 3,056
<b>TOTAL PERSONNEL SERVICE COST</b>	<b>\$ 9,526</b>
<b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>	<b>\$ -</b>
<b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
Miscellaneous supplies	\$ 300
<b>TOTAL MATERIALS AND SUPPLY COST</b>	<b>\$ 300</b>
<b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
NFPORS reporting (Skagit district) 1 person @ \$500	\$ 500
<b>TOTAL TRAVEL COST</b>	<b>\$ 500</b>
<b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>	<b>COST / ITEM</b>
None	\$ -
<b>TOTAL CONTRACT COST</b>	<b>\$ -</b>
	<b>\$ 10,326</b>

**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 2007			F	Year	\$ 9,776	1	\$ 9,776
FY 2008			F	Year	\$ 9,750	1	\$ 9,750
FY 2009			F	Year	\$ 10,326	1	\$ 10,326
<b>TOTAL</b>					\$ 9,951	<b>3</b>	<b>\$ 29,852</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.	P,T
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**

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**TOTAL COST BY JURISDICTION**

JURISDICTION	UNITS TREATED	COST
NPS North Cascades National Park	1	\$ 29,852
	<b>TOTAL COST</b>	<b>\$ 29,852</b>

Specification Form Created September 23, 2006

**APPENDIX I - ENVIRONMENTAL COMPLIANCE**

FLICK CREEK FIRE BURNED AREA REHABILITATION PLAN  
Lake Chelan National Recreation Area  
Environmental Compliance Considerations and Documentation

**A. Federal Environmental Compliance Responsibilities**

All projects proposed in the Flick Creek Burned Area Rehabilitation (BAR) Plan that are prescribed, funded, or implemented on park 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)*. This Appendix documents the BAR Team considerations of NEPA compliance requirements for prescribed emergency stabilization and monitoring actions described in this plan for areas affected by the Flick Creek Fire in Lake Chelan National Recreation Area, Washington.

This plan identifies specific emergency stabilization, rehabilitation, and monitoring actions and recommendations designed to mitigate damages to resources as a result of the Flick Creek fire and associated fire suppression activities. The park must complete separate NEPA analyses and compliance for fire response activities not addressed in this plan.

Agency Specific Guidance: This NEPA documentation has been developed in accordance with National Park Service specific guidelines. Emergency stabilization actions proposed on National Park Service lands, involving the agencies permitting, funding, or implementation, must comply with regulations set forth in the *Department of the Interior Manual Part 516 (DM 12)*.

**B. Related Plans and Cumulative Impacts Analysis**

Lake Chelan National Recreation Area General Management Plan, 1995. These documents provide management guidance and identify land use decisions for the preservation of park resources and management of the backcountry and designated wilderness portions of the park.

North Cascades National Park Service Complex Fire Management Program EA, 2005: The document recommends utilization of the least intrusive and least resource damaging methods to manage unwanted wildland fire, and the least intrusive BAER/BAR actions required to mitigate actual or potential damage caused by the fire.

North Cascades National Park Service Complex Wildland Fire Management Plan 1991: The document references rehabilitation treatments in relation to suppression related activities.

North Cascades National Park Service Complex Hazardous Tree Management Plan 1995, revised 2000: The document outlines the Hazard Tree Assessment Protocol for rating hazardous trees in determining priority for treatment.

**Cumulative Impact Analysis:** The emergency stabilization treatments for the Flick Creek fire, as proposed in this 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 park management plans and associated environmental compliance



**Categorical Exclusion Form**  
North Cascades National Park  
Ross Lake National Recreation Area  
Lake Chelan National Recreation Area

**Project: Flick Creek Fire BAR Plan**

**Date: September 20, 2006**

**Project Location:** Lake Chelan National Recreation Area, Chelan County, Washington

**Describe the project, including location (reference the attached Environmental Screening Form (ESF), if appropriate):**

**Project Description:** There are three proposed treatments in the Flick Creek BAR Plan. Those treatments include:

1. Hire a BAR Implementation Leader
2. Repair bridges and tread along the Imus, Purple, and Lakeshore Trails for public safety and to maintain access for BAR treatments
3. Inventory, eradicate and monitor invasive plant species - non-herbicidal treatment.

All treatments are described in greater detail in the Flick Creek BAER/BAR Plan Resource Assessments.

**Mitigation(s):** The following projects listed above require mitigation, as described below:

- Project 2: Trail maintenance and bridge construction activities may be limited March 15 thru Sept 6 due to restrictions on helicopter and chainsaw use in the area surrounding an occupied spotted owl nest site.
- Project 3: A separate ESF will be completed if invasive plant species are encountered that require herbicidal treatment

Describe the category used to exclude action from further NEPA analysis and indicate the number of the category (see section 3-4 of NPS-12):

The following CE's apply, or other park compliance was completed through an approved plan, per each Project listed above:

Project 1: Part 516 DM 2, App. 1.1

Personnel actions and investigations and personnel services contracts

Project 2: DO-12 3.4C (3)

Routine maintenance and repairs to non-historic structures, facilities, utilities, grounds, and trails

Project 3: DO-12 3.4 E (3)

Removal of individual members of a non-threatened/endangered species or populations of pests and exotic plants that pose an imminent danger to visitors or an immediate threat to park resources



**ENVIRONMENTAL SCREENING FORM**

**Project Description and Location:**

This project proposes to implement the Flick Creek Fire BAR Plan. Please review the BAR plan for project descriptions, resource assessments and specifications. **NOTE:** Potential use of Herbicide (Project #3 Invasive plant species survey/ removal/ monitoring) will be addressed as a separate compliance action since the need for it is not known at this time.

	Yes	No	Data Needed to Determine								
<b>Mandatory Criteria (A-M). Would the proposal, if implemented:</b>											
A. Have significant adverse effects on public health or safety?		X									
B. Have adverse effects on such unique characteristics as historic or cultural resources; park, recreation, of refuge lands; wilderness areas; wild or scenic rivers; sole or principal drinking water aquifers; prime farm lands; wetlands; floodplains; or ecologically significant or critical areas, including those listed on the National Register of Natural Landmarks?		X									
C. Have highly controversial effects?		X									
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?		X									
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?		X									
F. Be directly related to other actions with individually insignificant, but cumulatively significant, environmental effects?		X									
G. Have adverse effects on properties listed or eligible for listing on the National Register of Historic Places?		X									
H. Have adverse effects on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have adverse effects on designated Critical Habitat for these species?		X	<p>The following mitigations apply March 15-Sept 6 to the surrounding area of occupied northern spotted owl nest sites</p> <table border="1"> <thead> <tr> <th>Equip</th> <th>Distance from nest site</th> </tr> </thead> <tbody> <tr> <td>Type 2 &amp; 3 helicopter</td> <td>120 yds</td> </tr> <tr> <td>impact pile driver, rock drill</td> <td>60 yds</td> </tr> <tr> <td>chainsaws</td> <td>65 yds</td> </tr> </tbody> </table>	Equip	Distance from nest site	Type 2 & 3 helicopter	120 yds	impact pile driver, rock drill	60 yds	chainsaws	65 yds
Equip	Distance from nest site										
Type 2 & 3 helicopter	120 yds										
impact pile driver, rock drill	60 yds										
chainsaws	65 yds										
I. Require compliance with Executive Order 11988 (Floodplain Management, Executive Order 11990 (Protection of Wetlands), of the Fish and Wildlife Coordination Act?		X									
J. Threaten to violate a federal, state, local, or tribal law for requirement imposed for the protection of the		X									

environment?											
K. Require a permit from a federal, state, or local agency to proceed, unless the agency from which the permit is required agrees that a CE is appropriate?		X									
L. Have the potential for significant impact as indicated by a federal, state, or local agency of Indian tribe?		X									
M. Have the potential to be controversial regardless of its impact?		X									
N. Have the potential to violate the NPS Organic Act by impairing park resources or values?		X									
<b>Are any measurable impacts possible in the following categories relating to physical, natural, or cultural resources?</b>											
A. Geological resources -soils, bedrock, streambank, etc.		X									
B. From geohazards?		X									
C. Air quality, traffic, or from noise?		X									
D. Water quality or quantity?		X									
E. Streamflow characteristics		X									
F. Floodplains or wetlands?		X									
G. Land use, including occupancy, income, values, ownership, type of land use?		X									
H. Rare or unusual vegetation - old growth timber, riparian, alpine, etc.?		X									
I. Species of special concern (plant or animal; state or federal listed or proposed for listing) or their habitat?		X	<p>The following mitigations apply March 15-Sept 6 to the surrounding area of occupied northern spotted owl nest sites</p> <table border="1"> <thead> <tr> <th>Equipmt</th> <th>Distance from nest site</th> </tr> </thead> <tbody> <tr> <td>Type 2 &amp; 3 helicopter</td> <td>120 yds</td> </tr> <tr> <td>impact pile driver, rock drill</td> <td>60 yds</td> </tr> <tr> <td>chainsaws</td> <td>65 yds</td> </tr> </tbody> </table>	Equipmt	Distance from nest site	Type 2 & 3 helicopter	120 yds	impact pile driver, rock drill	60 yds	chainsaws	65 yds
Equipmt	Distance from nest site										
Type 2 & 3 helicopter	120 yds										
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chainsaws	65 yds										
J. Unique ecosystems?		X									
K. Unique or important wildlife or wildlife habitat?		X									
L. Unique or important fish or fish habitat?		X									
M. Introduce or promote non-native species (plant or animal)?		X									
N. Recreation resources, including supply, demand, visitation, activities, etc.?		XX									
O. Visitor experience, aesthetic resources?		X									
P. Cultural resources, cultural landscape, sacred sites, etc.?		X									
Q. Socioeconomics, including employment, occupation, income changes, tax base, infrastructure?		X									
R. Minority and low-income populations. Ethnography, size, migration patterns, etc.?		X									
S. Energy resources?		X									
T. Other agency or tribal land use plans or policies?		X									
U. Resource, including energy, conservation potential?		X									

V. Urban quality, gateway communities, etc.?		X	
W. Long-term management of resources or land/resource productivity?		X	
X. Other important environmental resources?		X	

**Please answer the following questions:**

1. Are the personnel preparing this form familiar with the site, and/or has a site visit been conducted? (Attach additional pages noting when site visit took place, staff attending, etc.)  
Yes the BAR team conducted site visits on 8/13/06 and 9/20/06.
2. Has consultation with all affected agencies or tribes been completed? (Attach additional pages detailing the consultation, including the name, date, and summary of comments from other agency or tribal contacts.)

USFWS has been consulted and their recommendations on Northern spotted owls have been included

**Instructions:**

When you have completed a site visit (or if staff are familiar with the specifics of the site) and consultation with affected agencies and/or tribes, and if the answers in the checklist above are all "no", you may proceed to the categorical exclusion form if the action is described in section 3-4 of DO-12. If any answers in the checklist are "yes" or "data needed to determined," or if the action is not described in section 3-4, prepare an environmental assessment or environmental impact statement.

Attach maps, notes of site visits, agency consultation, relevant data or reports, the categorical exclusion form or other relevant information to this form to begin the statutory/administrative record file.

**Signatory**

In signing this form, you are saying you have completed a site visit or are familiar with the specifics of the site, that you have consulted with affected agencies and tribes, and that the answers to the questions posed in the checklist are, to the best of your knowledge, correct.

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Interdisciplinary Team Leader

Date

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Technical specialist

Date

## **APPENDIX II - SUPPORT DOCUMENTS**

### **Invasives treatment and monitoring Rationale for cost estimates and Wyden Authority**

#### **Logistics**

Costs for invasives treatment and monitoring are high due to the lack of roads in the burned area, the need to use boats to access the sites, and the need to set up spike camps for crews (travel time up the lake is too long for a daily commute – over 20 miles on the lake). All water used for spray operations must be packed up from the lake or staged using helicopters. The terrain is very steep and rocky, slowing survey and treatment efforts. Costs were estimated using real costs experienced by the Chelan Ranger District during its annual crupina control project and invasive treatment after the 2001 Rex Creek Fire.

#### **Monitoring**

Acres identified for monitoring were based on the acres in the burned area that are potential habitat for invasives, especially common crupina. Potential habitat was defined as areas under 3000 feet elevation and on south, east, and west slopes. The potential habitat model was developed using field experience with invasive plants on the north shore of Lake Chelan, after the Rex Creek Fire.

#### **Federal Land Treatment**

Treatment acres were predicted to be no more than twenty-five percent of the area monitored. It was assumed that new infestations would be relatively small in the first year after the fire. On Park Service land, estimated treatment acres are 225. On Forest Service land an estimated 170 acres will be treated.

#### **Wyden Treatments and Benefits to NPS and FS**

Since private parcels support both Crupina and other noxious weeds, it is imperative that weed populations on private parcels also be treated in order to maintain the integrity of weed management efforts on federal lands. Otherwise, federal lands will be re-infested from extant weed populations left unchecked on private parcels-so there is a direct benefit to federal lands from work on private lands. Land owner agreements will be pursued prior to implementation of private land treatments.

Acres for Wyden treatments were estimated based on acres of the private land parcels that were burned (either completely or partially). Estimated acres for Wyden treatments are the maximum expected. The Natural Resources Conservation Service has been contacted concerning availability of funds for private protection. They have no funds in their Emergency Watershed Protection funding to help fund private work. They will, however, provide information to landowners as requested.