



Forest
Service

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Environmental Assessment

Alpine Acres Hazardous Fuels Reduction

Heber-Kamas Ranger District, Uinta-Wasatch-Cache National Forest
Summit County, Utah

T1N R8E Sections 35 and 36; T1S R8E Sections 1 and 2 SLM

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TABLE OF CONTENTS

SUMMARY I

INTRODUCTION..... 1

 DOCUMENT STRUCTURE 1

 BACKGROUND..... 1

 PURPOSE AND NEED FOR ACTION..... 2

 PROPOSED ACTION..... 3

 DECISION FRAMEWORK..... 3

 PUBLIC INVOLVEMENT 3

 ISSUES 3

ALTERNATIVES, INCLUDING THE PROPOSED ACTION 6

 ALTERNATIVES 6

 MITIGATION COMMON TO ALL ALTERNATIVES 10

 COMPARISON OF ALTERNATIVES 10

ENVIRONMENTAL CONSEQUENCES..... 11

 LYNX ANALYSIS UNIT 11

 THE PROJECT AREA IS LOCATED WITHIN A LYNX ANALYSIS UNIT (LAU); THIS ANALYSIS IS TO LOOK AT
 THE EFFECTS OF THE PROPOSED ACTION 11

 INVENTORIED ROADLESS AREA 12

 FIRE BEHAVIOR..... 13

CONSULTATION AND COORDINATION..... 17

REFERENCES..... 18

LIST OF TABLES

TABLE G16. FROM FOREST PLAN - SNAG AND WOODY DEBRIS REQUIREMENTS 8

TABLE 1. COMPARISON OF ALTERNATIVES 11

TABLE 2. SUMMARIZED TREE DATA (N= 4 PLOTS). 14

TABLE 3. SUMMARIZED GROUND FUEL LOADING AREA (N= 4 PLOTS)..... 15

TABLE 4. FVS AND FFE MODELING - SIMULATED FIRE IN 2015 IN TREATMENT AND NO TREATMENT
 SCENARIOS 15

SUMMARY

The Uinta-Wasatch-Cache National Forest proposes to create a shaded fuel break 100 feet wide by approximately 1.4 miles long on the US Forest Service lands adjacent to the border of the Alpine Acres community. The project area is located at the top of Weber Canyon in Summit County and is within the Heber-Kamas Ranger District, Uinta-Wasatch-Cache National Forest, Utah. This action is needed, because Alpine Acres is listed as one of the 608 “Utah Communities at Risk for Wildland Fire” (FFSL 2008). Alpine Acres has also completed a Community Wildfire Protection Plan (CWPP) which documents fuel reduction and fuel breaks as high priorities.

The proposed action will reduce fuel loadings, decrease tree density, and increase basal crown height.

In addition to the proposed action, the Forest Service also evaluated the following alternatives:

- *No Action Alternative: No treatment would be implemented and the conditions would continue as they currently exist.*

Based upon the effects of the alternatives, the responsible official will decide whether or not to implement the proposed action.

INTRODUCTION

Document Structure ---

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four parts:

- *Introduction:* The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- *Comparison of Alternatives, including the Proposed Action:* This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- *Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by issues to be analyzed in depth. Within each section, the affected environment is described first, followed by a description of the existing condition that provides a baseline for evaluation and comparison of the alternatives that follow.
- *Agencies and Persons Consulted:* This section provides a list of preparers and agencies consulted during the development of the environmental assessment.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Heber-Kamas Ranger District Office in Heber City, Utah.

Background ---

The Alpine Acres community contains 86 cabins within approximately 640 acres of moderately heavy timbered mountainous terrain. Alpine Acres is listed as one of the 608 "Utah Communities at Risk for Wildland Fire" (FFSL 2008). It is in a box canyon with limited ingress /egress and extensive mountain pine beetle activity. The community is surrounded on three sides by National Forest System Lands.

On February 13, 2007 the Forest Service participated in a Community Wildfire Protection Plan (CWPP) meeting with representatives from the Alpine Acres Association, the Utah State Department of Natural Resources, Forestry, Fire, and State Lands (FFSL), and Summit County Fire. At this meeting, the need for treatment of the Forest Service lands adjacent to the Alpine Acres community was discussed. In March 2007, the CWPP was finalized and on May 5, 2007, the Forest Service met on-site with representatives from the Alpine Acres Association and FFSL to discuss and refine treatment priorities.

The group decided that the lack of fuel reduction to the surrounding Forest Service roads along with the heavy conifer fuel loading along the southern and southwestern Forest Service/private land ownership boundaries posed the biggest threats to the community, in terms of access for suppression vehicles and potential home loss, respectively. Through the Forest Service's planning process, the Interdisciplinary Team (IDT) (composed of Forest Service specialists from all potentially affected resources), decided that the best treatment strategy would be to create a shaded fuel break on the southern and southwest community boundaries. Forest Service Fire Management Officers determined that fuels along the surrounding Forest Service roads did not limit access for suppression vehicles, and treatment in these areas conflicted with management prescriptions designated in the Revised Wasatch-Cache National Forest Plan (Forest Plan) (USDA 2003a).

Purpose and Need for Action

The purpose of this initiative is to reduce hazardous fuels and future fire intensity on Forest Service lands that are adjacent to Alpine Acres, a community listed as one of the 608, "Utah Communities at Risk for Wildland Fire" (FFSL 2008). This action is needed to reduce potential impacts from wildland fire to Alpine Acres, to improve firefighter safety and increase their capability to protect the structures within Alpine Acres. This action responds to the goals and objectives outlined in the Revised Wasatch-Cache Forest Plan, is consistent with all applicable standards, guidelines, and management prescriptions for all resources, and helps move the project area towards desired conditions described in that plan (USDA Forest Service 2003a).

Specifically, this project responds to the Forest wide subgoal for fuels reduction (Page 4 - 21)

"4d. Reduce hazardous fuels (prescribed fire, silvicultural and mechanical treatments) with emphasis on interface communities (wildland/urban) and increase proactive participation of communities at risk."

and the Forest wide objectives for Wildland Urban Interface Fuels Management (Page 4-30 and 31).

"Purpose: To work with the States of Utah and Wyoming and communities at risk to reduce unwanted wildfire on or near the Forest. To emphasize the safety of people and the protection of property in the heavily populated and increasingly developed wildland urban interface adjacent to the national forest.....

Objectives to accomplish desired conditions:

4a. Treat approximately 2,000 wildland urban interface acres annually for a 10-year total of 20,000 acres.

4b. Expand outreach and education by helping communities and homeowners recognize fire hazards, and design fire resistant homes and landscapes by participating annually in Community Planning meetings and city or rural planning groups.

4c. Expand community participation in fuels treatment and restoration and assist in the development of community fire plans by assisting State and private groups to develop 3 – 5 fuel reduction plans annually."

Additionally, in the Western Uintas Management Area, the desired future condition for biodiversity/viability discusses "hand felling and underburning" as methods to reduce

fuels and buffer adjacent private lands (Page 4-179 and the desired future condition for social (non-recreation) in this Management Area is as follows (Page 4-190):

“Risks to private property from unwanted fire will be reduced through close coordination with local communities....”

Proposed Action _____

The action proposed by the Forest Service to meet the purpose and need is to create a shaded fuel break, approximately 1.4 miles long and 100 feet wide on average, on the Forest Service lands within 300 feet of the southwestern and southern private land boundary. Treatment would be approximately 17 acres.

Decision Framework _____

Given the purpose and need, the Heber-Kamas District Ranger will review the proposed action and the alternative in order to make the following decisions:

- Whether to implement the proposed action as is;
- Whether to implement an alternative to the proposed action; or
- Whether to take no action.

Public Involvement _____

The proposal was provided to the public and other agencies for comment during scoping on September 2, 2008. The project was published in the January 2009 Schedule of Proposed Actions for the Wasatch-Cache National Forest. In addition, as part of the public involvement process, the agency participated in several meetings with the community to develop the project.

On February 13, 2007 the agency Fire Ecologist, Fuels Planner, and Heber-Kamas Assistant Fire Management Officer participated in a CWPP meeting with representatives from the Alpine Acres Association, FFSL, and Summit County Fire. On May 5, 2007, the agency Fire Ecologist, Fuels Planner, Fuels Specialist, Silviculturalist, and the Kamas District Ranger met on-site with representatives from the Alpine Acres Association and FFSL to discuss and refine treatment priorities. See the project record for meeting documentation.

Using the comments from the public (see *Issues* section), the IDT developed a list of issues to address.

Issues _____

The Forest Service separated the issues into two groups: issues to be analyzed in depth and issues not to be analyzed in depth. Issues to be analyzed in depth were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; 4) conjectural and not supported by scientific or factual evidence; 5)

a comment or position statement. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)..." A list of issues not analyzed in depth and reasons regarding their categorization as not analyzed in depth may be found following the issues to be analyzed in depth in this document.

The following issues were identified to be analyzed in depth pursuant to 40 CFR 1501.7 based upon internal and public scoping:

Issue # 1 Impacts to Lynx Analysis Unit (LAU)#38: The proposed action falls within a LAU and may impact Lynx habitat.

Indicators: Percent of LAU impacted

Issue # 2 Impacts to the Lakes Roadless Area: The proposed action may impact the roadless area qualities.

Indicator: Changes to wilderness attributes or roadless character.

Issue # 3 Fire Behavior: The proposed action will change the way fire behaves as it crosses the fuel break.

Indicators: Flame length (feet); scorch height (feet); fire type (surface, crown etc.)

Issues considered, but eliminated from detailed analysis are as follows:

Migratory Birds: Although this project may result in an unintentional take if work is accomplished during the breeding season, this project complies with the Fish and Wildlife Service Director's Order #131 related to the applicability of the Migratory Bird Treaty Act to federal agencies and requirements for permits for "take". In addition, this project complies with Executive Order 13186 because the analysis meets agency obligations as defined under the December 8, 2008 Memorandum of Understanding between the Forest Service and Fish and Wildlife Service designed to complement Executive Order 13186. If new requirements or direction result from subsequent interagency memorandums of understanding pursuant to Executive Order 13186, this project will be evaluated to ensure it is consistent. See wildlife specialist report/BA/BE within the project record.

Noxious Weeds: Forest Plan standards and guidelines will be implemented to reduce the potential impacts of noxious weeds. The proposed treatment areas will be monitored for noxious weeds after implementation and treated if any are detected. See vegetation specialist report within the project record.

Cultural Resources/Heritage: The IDT identified impacts to cultural or historical resources as a potential issue. However, a cultural resource survey was conducted on the project area and no newly identified or previously recorded cultural resources were identified within the Area of Potential Effect (APE) of this proposed undertaking, thus there will be No Historic Properties affected by the project, as per 36 CFR 800.4 (d) (1).

Additionally, there are no known ethnographic or ethnohistoric Native American travel routes within the APE of this project. See heritage report within the project record.

Maintenance: The Utah Environmental Congress suggested that long-term maintenance based on monitoring is a programmatic decision. This is not a programmatic decision as this action applies specifically to this project only. Maintenance treatments will be used only to keep site conditions at levels documented by treatment specifications and are inherent to implementation of the project. However, if new information or changed circumstances relating to the environmental impacts of a proposed action come to the attention of the responsible official after a decision has been made, this information will be reviewed and the responsible official will determine whether or not a correction, supplement, revision or additional analysis is necessary (Forest Service Handbook (1909.15 Chapter 10, Section 18.1)).

TES Species: The potential effects of the project are evaluated for plant and animal species listed as threatened, endangered, candidate, or proposed under the Endangered Species Act and plant and animal species listed as sensitive by the Intermountain Region of the Forest Service. The Forest Service sensitive species evaluated are those listed for the Wasatch-Cache Forest in the list of Intermountain Region Proposed, Endangered, Threatened, and Sensitive Species (USDA Forest Service 2003b). In addition, potential effects were evaluated for Wasatch-Cache National Forest management indicator species (MIS), other species of concern (e.g., big game species), and migratory birds. There are no species which are likely to be adversely affected by the project treatments. See Wildlife specialist report/BA/BE, Fisheries Report, Botany BA/BE in the project Record.

Soil and Water Resources: The IDT identified effects to the soil and water resources as a potential issue. The project area runs across two main drainages including the Middle Fork and the Main Fork of the Weber River which contain Class II Riparian Habitat Conservation Areas (RHCA) and a wetland (Class III RHCA). The water in the Middle Fork and Main Fork Weber River is also used for Municipal purposes.

A 1998 study found four rivers on the Wasatch-Cache portion of the Uinta-Wasatch-Cache National Forest eligible for inclusion in the National Wild and Scenic Rivers System (NWSRS). This includes Middle Fork Weber and Main Weber rivers. The 2003 Wasatch-Cache Revised Forest Plan provided interim protection for these rivers until a suitability analysis and determination could be made (Management Prescriptions 2.1 and 2.3). In 2008, a suitability analysis was completed and a suitability determination rendered (Wild and Scenic River Suitability Study for National Forest System Lands in Utah Final Environmental Impact Statement and Record of Decision and Forest Plan Amendments, November 2008). Based on this analysis, it was determined that Middle Fork Weber and Main Weber rivers were not suitable for inclusion in the NWSRS. The Record of Decision for this EIS amended the 2003 Forest Plan in Amendment Number 5. For river segments that were determined eligible but are not determined suitable for inclusion in the National Wild and Scenic Rivers System, these river segments are no longer afforded agency protection as potential wild and scenic rivers.

The mitigation measures provided for the proposed action would reduce or eliminate potential effects to soil and water resources.

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered for the Alpine Acres Hazardous Fuel Reduction project. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public.

Alternatives

Alternative 1

No Action

Under the No Action alternative, current management plans would continue to guide management of the project area. No treatment would be implemented to accomplish project goals.

Alternative 2

The Proposed Action

Create a shaded fuel break, approximately 1.4 miles long and 100 feet wide on average, on the Forest Service lands within 300 feet of the southwestern and southern private land boundary. Approximately 17 acres would be treated. Treatment specifics include:

- Minimum 10 foot spacing between conifer crowns, more if on a slope. The fuel break edge would “wander” to take advantage of natural openings and improve aesthetics. Additionally, aspen along the Forest boundary should be maintained to comply with the Forest Plan (USDA Forest Service 2003a).
- Diseased, suppressed, dead, deformed, or damaged trees would be removed first, followed by healthy trees, as needed, to obtain 10-foot crown spacing.
- Most ladder fuels (vegetation that could allow a fire to move from lower to taller growing plants) would be removed. Ladder fuels include: shrubs in close proximity to taller vegetation, trees up to 10 feet tall, and limbs of larger trees up to a height of 6 feet.
- Approximately 10 coniferous sapling sized trees per acre would be retained to replace those that could potentially die in the future. Retained coniferous trees must be free from disease and outside of aspen clones. Preference would be given to Engelmann spruce (*Picea engelmannii*) and Douglas-fir (*Pseudotsuga menziesii*) to promote future diversity.
- Downed material should be piled, burned, and/or dragged to a chipper, depending on access.

- This action may take more than one season to implement to ensure that retained trees are wind hardened. Additionally, the fuel break will require maintenance, as vegetation will grow over time. Some “touch-up” after the initial treatment may occur several years after implementation. Maintenance activities (such as hand-cutting sprouts) would be determined based on treatment monitoring, but is expected on an approximate 5 or more year interval.
- A review would be done prior to future maintenance treatments to ensure there is no new information or changed circumstances. If changed conditions or new information exists, it will be determined at that time if supplementation or revision of this analysis, or new analysis is needed.
- Maintenance would include, removing dead and hazard trees, thinning of smaller trees and shrubs to maintain spacing and limbing up of trees once they reach a five inch diameter, piling, and burning of these trees and branches.

This proposed treatment falls within Management Prescription 3.1w Watershed Emphasis. Lands within this prescription consist of uplands identified as important watersheds. The following Standards (S) and Guidelines (G) apply (Pages 4-69 & 4-70):

(S3.1W) Timber harvest, road construction and new recreation facility development are not allowed.

(G3.1W-1) Vegetation/fuel treatment, prescribed fire, and wildland fire use are allowed for the purposes of maintaining, improving or restoring watersheds to desired conditions, and to protect property in the wildland urban interface.

Other applicable Forest Plan Standards (S) and Guidelines (G) that will be adhered to are as follows (Pages 4-36 to 4-56):

(S2) Apply runoff controls during project implementation to prevent pollutants including fuels, sediment, oils, from reaching surface and groundwater.

(S4) Place new sources of chemical and pathogenic pollutants where such pollutants will not reach surface or ground water.

S12) Prohibit forest vegetation treatments within active northern goshawk nest areas (approximately 30 acres) during the active nesting period.

(G6) In Riparian Habitat Conservation Areas when projects are implemented, retain natural and beneficial volumes of large woody debris.

(G7) Manage Class 2 Riparian Area Greenlines for 60% or more late-seral vegetation communities. Manage Class 3 Riparian Area Greenlines for 40% or more late-seral vegetation communities.

(G8) In stream channels naturally occurring debris shall not be removed unless it is a threat to life, property, important resource values, or is otherwise covered by legal agreement.

(G9) Avoid soil disturbing activities (those that remove surface organic matter exposing mineral soil) on steep, erosive, and unstable slopes, and in riparian, wetlands, floodplains, wet meadows, and alpine areas.

(G11) Use Best Management Practices and Soil and Water Conservation Practices during project level assessment and implementation to ensure maintenance of soil productivity, minimization of sediment discharge into streams, lakes and wetlands to protect of designated beneficial uses.

(G17) Where snags or coarse woody debris are below the desired range, the felling of snags and transport of felled snags or coarse wood off-site including firewood gathering will not be allowed, except to reduce hazards to humans or property along roads, trails, and in or adjacent to developed facilities.

(G16) When treating vegetation in the following cover types, maintain or restore snag and woody debris habitat components at the stand level (where they are available distributed over each treated 10 acres). If the minimum number of snags is unavailable, green trees should be substituted. If the minimum size is unavailable, then use largest trees available on site.

Table G16. From Forest Plan - snag and woody debris requirements

Forest Type	Snags			Woody Debris		
	Minimum Diameter (Inches)	Retention Density (minimum snags per 10 acres)	Minimum Snag Height (feet)	Minimum Coarse Debris (≥ 3 inches) Tons/10 Acres Down Logs	Minimum Down Logs (per 10 acres)	Minimum Log Size diameter/length (midpoint or largest available)
Spruce-Fir	18	30	30	100	50	12 inch/8 feet
Mixed Conifer	18	30	30	100	50	12 inch/8 feet
Douglas Fir	18	30	30	100	50	12 inch/8 feet
Lodgepole	8	30	15	50	50	8 inch/8 feet
Aspen-Lodgepole	8	30	15	50	50	8 inch/8 feet
Aspen	8	200	15	30	50	6 inch/8 feet

(G17) Where snags or coarse woody debris are below the desired range, the felling of snags and transport of felled snags or coarse wood off-site including firewood gathering will not be allowed, except to reduce hazards to humans or property along roads, trails, and in or adjacent to developed facilities.

(G45) Access routes for heavy equipment should be selected to limit disturbance to riparian vegetation and to limit the number of stream crossings.

(G67) Timber cutting on other than suitable lands may occur for such purposes as salvage, fuels management, insect and disease mitigation, protection or enhancement of biodiversity or wildlife habitat, or to perform research or administrative studies or scenic-resource management consistent with other management direction.

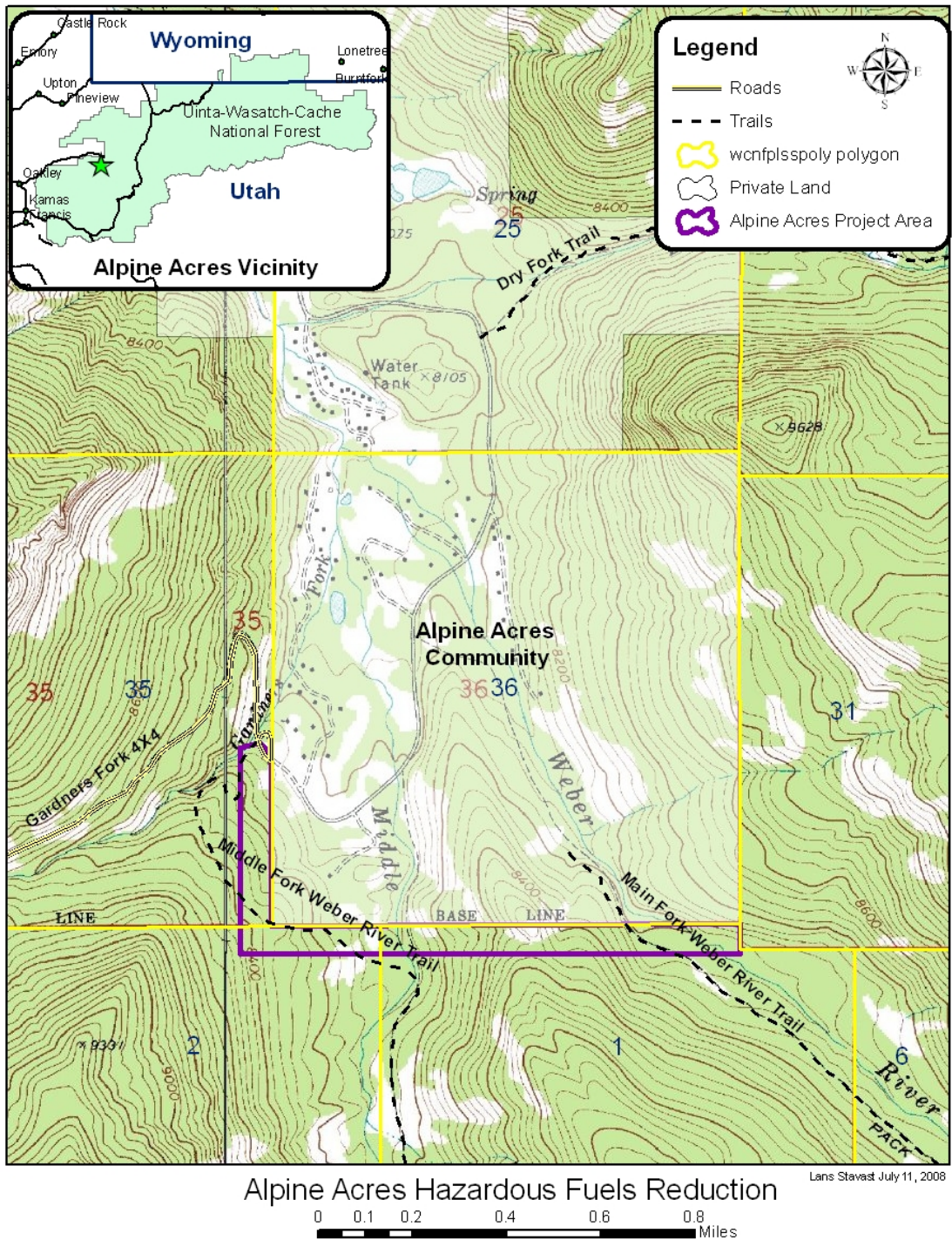


Figure 1. Alpine Acres Hazardous Fuels Reduction Map of Proposed Action.

Mitigation Common to All Alternatives _____

In response to public comments and issues raised by the IDT on the proposal, mitigation measures were developed to ease some of the potential impacts the proposed action may cause.

- Any noxious weeds released from the fuelbreak clearing will be monitored and treated (as per the Wasatch-Cache Noxious Weed Treatment EIS 2006)
- High use areas for project implementation that may be mistaken for trails will be obliterated and any potential ATV routes would be physically blocked from public use
- No equipment will be refueled within 300 feet of stream channel
- No hand trimmed branches will be left in the stream channels
- No downed materials will be burned within 100 feet of stream channels, riparian areas, wetlands, or wet meadows
- No work with equipment other than chainsaws will be conducted within 150 feet of the Main and Middle Forks of the Weber River or in the wetland/wet meadow/riparian areas when soils are saturated
- No woody debris located within the stream channel will be removed
- No activities will occur during the primary bird nesting season of April 1 – June 30 and if any Sensitive species nests are detected, they will be buffered by distances described in the Forest Plan (USDA Forest Service 2003a)

Comparison of Alternatives _____

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

Table 1. Comparison of Alternatives

Issue	Alternative 1 – No Action	Alternative 2 – Proposed Action
Impacts to LAU	None	0.02% of Suitable Lynx habitat with the LAU would be impacted.
Impacts to Lakes Inventoried Roadless Area	Beetle killed trees would remain decreasing visual appeal, and creating a falling hazard.	There would be < 1% of the Lakes Roadless Area treated (~17 acres). Treatments would not be noticeable to the casual observer after a couple of growing seasons. Short term (days) negative impact to air resources during the pile burning.
Fire Behavior	21 foot flame length 127 foot scorch height Crown Fire	3 foot Flame Length 16 foot Scorch Height Surface Fire

ENVIRONMENTAL CONSEQUENCES

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

Lynx Analysis Unit

The project area is located within a Lynx Analysis Unit (LAU); this analysis is to look at the effects of the proposed action.

Desired Conditions

The amount, distribution, and characteristics of vegetation (live and dead) are present at levels necessary to maintain habitat for viable populations of native and desired non-native wildlife species

Existing Conditions

The Alpine Acres mechanical fuels treatment lies within (LAU) #38.

Environmental Effects

Alternative 1 – No Action

There will be no direct or indirect effects to the LAU because the project would not be implemented.

Alternative 2 – Proposed Action

The potential response from Canada lynx would be insignificant and discountable because there is currently no known breeding population of Canada lynx in Utah and the

spatial scale of the action area is very small relative to the very large areas that individual lynx occupy or travel across. This level of impact represents only 0.02% of the total 57,016 suitable habitat acres within LAU #38.

Cummulative Effects

Cumulative effects are determined to be minor. Cumulative effects on wildlife include past timber sales of approximately 461 acres. Within the 6th order HUC Dry Creek subwatershed of 28,057 acres, the timber harvest described above represents impacts on only 2% of the subwatershed. It is therefore considered that cumulative effects are negligible.

Inventoried Roadless Area

The wilderness attributes and current condition in the Lakes Inventoried Roadless Area within the project boundary are currently as follows:

- *Untrammeled*- The area is relatively untrammeled. There are some pipelines that cross the project area taking water to nearby residences. There is a hiking trail that meanders in and out of project area at a number of points. Access to the area is somewhat limited due to surrounding private lands.
- *Natural* - The area appears natural with the exception of the view of the nearby residential development.
- *Undeveloped*- The area is directly adjacent to residential development on the north, and east. There are pipelines, roads, buildings and trails located in or adjacent to the project area. All of these features make human occupation apparent, and detract from the natural and undeveloped characteristics that are valued in roadless and wilderness areas.
- *Solitude*- The project is near residential development and is bounded along one side by private property. There is little chance of solitude being so close to housing.
- *Opportunity for Primitive Recreation*- There is a single track trail for hiking, backpacking and horseback riding. Opportunities for camping, fishing, snowmobiling, skiing and mountain climbing are moderate. Opportunities are low for hunting.
- *Special Features (ecological, geological, scenic or historical)*- The Main and Middle Fork of the Weber River run through the project area.
- *Manageability (as Wilderness)* –Adjacent human developments and infrastructure make managing the area as wilderness difficult. These factors also decrease the area's wilderness potential.

Alternative 1 - No Action

The roadless/wilderness characteristics/attributes would continue as they currently exist.

Alternative 2 - Proposed Action

Fire, a natural process, would be reintroduced into the area. The pile burning portion of the treatment would have a short term impact to air quality due to smoke emissions during ignitions. There would be a temporary loss of vegetation which would not detract from the natural appearance of the area, to the casual observer. There would be temporary decreases in the opportunity to experience solitude while the treatments are being implemented (3-4 months). There will be no effects to the opportunity for primitive recreation. No new facilities will be added or removed. Civilization is apparent and will remain so after the project. The manageability as wilderness should not change due to the implementation of this project.

While there will be very minor effects to some wilderness qualities or attributes, the overall suitability for wilderness designation and viability for wilderness potential will not change.

Cummulative Effects

Cummulative effects would be negligible for the Lakes Inventoried Roadless Area. This project is small in size and no other projects have been proposed for the future in the Lakes IRA and very little has been done in the recent past that would have residual effects on the Lakes IRA. Outside the Lakes IRA are housing developments and roads, which could have a minor impact on the roadless characteristics due to visual quality and solitude.

Fire Behavior

The analysis method is to describe the desired and existing conditions for vegetation and fuels in terms of structure, fuel loading, and the related expected fire behavior. The effects of the alternatives are discussed in terms of expected fire behavior. Determination of the existing condition and the effects of the alternatives on vegetation and fuels conditions are based on fuels monitoring plots established August 18 -19, 2008 within the project area, outputs from the Forest Vegetation Simulator (FVS) with the Fire and Fuels Extension (FFE), and Aerial Detection Surveys.

Desired Conditions:

Desired conditions within the project area are to have tree densities, crown base heights, and a ladder fuel structure adequate to prevent torching under most weather scenarios. This includes retaining most of the litter and duff biomass, maintaining native ground cover of herbaceous, graminoid, or young woody vegetation, and limiting non-native species establishment.

Existing Conditions:

The project area is dominated by quaking aspen (*Populus tremuloides*), subalpine fir (*Abies lasiocarpa*), lodgepole pine (*Pinus contorta*), and Douglas-fir (*Pseudotsuga menziesii*). Interspersed within these types are small meadow openings and riparian/wetland areas. According to plot data, there is a high percentage (91% of the total) of seedlings (or ladder fuels; trees <4.5 ft in height), most of which (90%) are

quaking aspen and subalpine fir (Table 2). Note, however, that there is high variability across the project area (high standard deviations and large ranges).

Lodgepole pine, as in much of the area, is heavily infested with active mountain pine beetle populations. Current mortality is contributing to both aerial and ground fuels. It can be expected that this will continue. The 2007 aerial detection survey (USDA 2008), which maps visible mortality from the previous year in the forested types shows active mountain pine beetle crossing both private and Forest Service managed lands to the east of the Middle Fork of the Weber River. These dead trees spotted in 2007 were actively infested in 2006. Field visits in 2008 show that lodgepole pine throughout the proposed area is affected by mountain pine beetle. It is expected that mortality in these trees will continue, or even increase over the next few years, and that most of the larger lodgepole pine will be killed.

Table 2. Summarized tree data (N= 4 plots).

Attribute	Average (trees/acre)	Standard Deviation	Range
Mature	283	99	230-430
Saplings	268	117	110-370
Seedlings	5,175	4,307	400-9,300
Quaking Aspen	3,800	4602	0 - 9300
Subalpine fir	850	1700	0 - 3400
Lodgepole pine	125	189	0 - 400
Douglas-fir	375	750	0 - 1500
Engelmann spruce	25	50	0 - 100
Total live	6,125	4231	900-9,630
Snags	78	59	10-150

No fires have been recorded in the Forest Records within the project area and no significant or stand replacing disturbance appears to have occurred in most of the project area for many years. At the 6th order Hydrologic Unit Code (HUC) scale (Dry Forks Upper Weber River, 28,057 acres), only two fires greater than 10 acres were reported between 1947 and 2008, both of which were human-caused (Dry Fork Fire, 250 acres, September 2000; unnamed fire, 27 acres, July 1963). Fourteen fires less than 5 acres (8 human-caused and 6 lightning fires) were also recorded within the greater watershed.

A Fire Regime Condition Class (FRCC) assessment was performed for this project in the Dry Forks Upper Weber River HUC 6 (see project record for details) on September 18, 2008. For this assessment, the aspen and coniferous species (spruce-fir, conifer-aspen, lodgepole pine, aspen, aspen-conifer, mixed conifer, and Douglas-fir) were evaluated together, as one stratum. Most of the aspen in this watershed was estimated to be pole-sized or smaller (closed canopy), putting it in a mostly mid-seral class. A small proportion (2%) was estimated in the pole-sized, open canopy class. A larger proportion (25%) of the stratum was estimated in the mature (late seral), open canopy class, but the largest proportion of the stratum (50%) is in late seral, closed canopy conifer stands. Compared to reference conditions, this indicated over-representation of the late seral

classes and under-representation of the early and mid-seral classes and resulted in a moderate seral stage departure (45%) from reference conditions.

Average total dead and down fuel loading (including duff and litter) is 46.4 tons/acre (Table 3). Duff and sound 1,000-hr fuels account for 77% of this value.

Table 3. Summarized ground fuel loading area (N= 4 plots)

Attribute	Average (tons per acre)	Standard Deviation	Range
1-hr	0.29	0.14	0.14-0.48
10-hr	1.93	0.69	1.24-2.85
100-hr	2.46	1.85	0.74-3.73
1000-hr Sound	13.5	11.5	6.34-30.5
1000-hr Rotten	3.75	2.15	2.2-6.8
Duff	22.3	17.8	1.5-44.3
Litter	2.13	1.90	0.4-4.1
Total	46.4		

The FVS and FFE models were used to predict changes in the fuel profile and fire behavior as a result of the proposed treatment. The input data set is based on monitoring plots (N=4). In order to create a comparison, the same treatment was applied to each plot and the average output was used in this analysis. In reality, the treatments on the ground will vary somewhat across the project area. The treatment consists of a removal of all trees less than 10 feet in height and thinning trees greater than 5 inches in diameter at breast height (DBH) to obtain 100 trees per acre in 2009. A pile and burn treatment was applied in 2010. A fire was simulated in 2015 in treated and un-treated scenarios to test the effectiveness of the treatment.

The indicators used in this analysis include¹: 1) crowning index, 2) torching index, 3) flame length, 4) scorch height, 5) canopy base height, and 6) crown bulk density. Table 4 shows the results from simulation modeling. Results indicate that under current conditions (i.e., the no treatment scenario), if a fire started, it could potentially threaten the community of Alpine Acres and jeopardize fire fighter safety.

Table 4. FVS and FFE modeling - simulated fire in 2015 in treatment and no treatment scenarios

Indicator	No Treatment	Treatment
Crowning index (miles/hr)	24	54
Torching index (miles/hr)	32	371
Flame length (ft)	21	3
Scorch Height (ft)	127	16
Canopy base height (ft)	10	21
Crown bulk density (lb/ft ³)	.06	.04
Fire type	Crown	Surface

¹ Crowning and torching indices are the wind speeds necessary to for a fire to spread between crowns or ignite a forested canopy, respectively.

Environmental Effects

Alternative 1 – No Action

Under this alternative, ground and aerial fuel loading would continue to be relatively heavy and would continue to increase as mountain pine beetle mortality continues. The risk of dangerous firefighting situations (e.g., high flame lengths, low torching and crowning indices) and undesirably severe effects from wildfires (such as high scorch heights, high burn severity on soils, and potentially noxious weed growth from extensive post-wildfire bare ground exposure) would continue. Areas of relatively pure aspen would likely continue to function somewhat to dampen fire behavior during the wetter summer months.

Alternative 2 – Proposed Action

Direct effects on fuels from the proposed action would be a reduction in fuel loading, both live and dead fuels (standing and downed). The indirect effect of this is that a future wildfire would have much reduced fire behavior (see Table 4), with expected shorter flame lengths, higher crowning/torching indices, and decreased scorch heights compared to untreated areas. As a result of this reduced fire behavior, it is more likely that firefighters can safely use the firebreak as an anchor point for backfires or to attempt to stop the wildfire's spread, and it is less likely that homes will be lost.

Effects on vegetation and fuels from maintenance activities are similar to the effects described above, but to a lesser degree, since only new growth or newly dead wood will be treated. Given the small project area, and minimal additional disturbance from maintenance, effects from maintenance activities will be minor.

Cumulative Effects

Cumulative effects on vegetation and fuels would be minimal, given the relatively small size of the project area. Few past actions have occurred on the National Forest lands and natural processes dominate any changes to the structure and/or composition of the forest. Significant vegetation and fuels alteration has occurred on adjacent private lands, within the Alpine Acres community. The Alpine Acres Hazardous Fuel Reduction project would contribute minimally to cumulative effects by reducing trees per acres, increasing canopy base heights, and reducing ground fuel loading.

CONSULTATION AND COORDINATION

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

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