

GREENWATER AND VICINITY COMMUNITY WILDFIRE PROTECTION PLAN

Prepared by the Greenwater Community Firewise Board with
assistance from the Washington State Department of Natural
Resources and Pierce County Fire Protection District # 26

Vicki Christiansen
Executive Director of Regulatory Programs/State Forester
Washington State Department of Natural Resources

Randy Acker
South Puget Sound Region Manager
Washington State Department of Natural Resources

Paul Sowers
Fire Chief
Pierce County Fire Protection District #26

Jim Hart
Commissioner
Pierce County Fire Protection District #26

Dan Hudson
Homeowner
Greenwater Village

Mike Smith
Owner
Greenwater General Store

Mike Fenimore
Homeowner
Lower Lumpy Lane

Reader's Guide to This Plan

This Community Wildfire Protection Plan (CWPP) is comprised of several major sections: an Introduction Section, a Planning Area Section, a Planning Process Section, a Risk Assessment Section, and a Mitigation Strategy Section

Introduction - Residents of the Greenwater community value their homes, woods and privacy. They also recognize that wildfires are the greatest threat to their community. This CWPP with its goals, objectives, and recommended projects serves the community by clarifying and refining priorities for the protection of life, property and critical infrastructure in the wildland-urban interface (WUI).

Planning Area – The Town of Greenwater and several residential developments are included in a WUI planning area of approximately 4,500 acres. Other homes are scattered throughout the area and separated by large areas of open forest. This area also includes private, industrial, state, federal owned forestlands and the Federation Forest State Park.

Planning Process – This document is part of an evolutionary, not a revolutionary process. After two successful fuels reduction/defensible space projects, a community firewise board was formed to develop this CWPP. Utilizing a Chelan County Conservation District format, local residents and county, state, and federal stakeholders have worked together to proactively plan and implement actions to protect lives, protect the community, and to reduce the risk of wildfires and related disasters.

Risk Assessment - “Risk is a combination of threat, vulnerability and consequences.”

A community risk assessment was completed in 2005 using data collected by the Washington State Department of Natural Resources. Risk factors included: values at risk, fire history, fuels, structure vulnerability and local protection capabilities.

Mitigation Strategies- Wildfires and other disasters cannot be eliminated and they will always have an impact on people, property and resources. The goal of the Greenwater community and associated stakeholders is to reduce the risks and to minimize the impacts utilizing the following strategies.

1. Improve fire risk awareness through fire prevention education and the Firewise Communities program
2. Define the community wildland interface boundaries
3. Plan, carry out and maintain hazard fuels reductions projects
4. Establish evacuation plan and maintain access/escape routes
5. Update the Community Firewise Mitigation Action Plan

Conclusion – The Greenwater and Vicinity Community Wildfire Protection Plan is a plan on the move rather than a plan on the shelf. First, this CWPP is our best opportunity to protect a WUI community from loss of life and catastrophic wildfire damage by reducing wildfire hazards before the fires ignite. Second, it is the basis for the Greenwater Community Hazard Mitigation Plan. A plan for improving this community's survivability from wildfires, floods, wind, snow- ice storms, lahars, earthquakes and other disasters.

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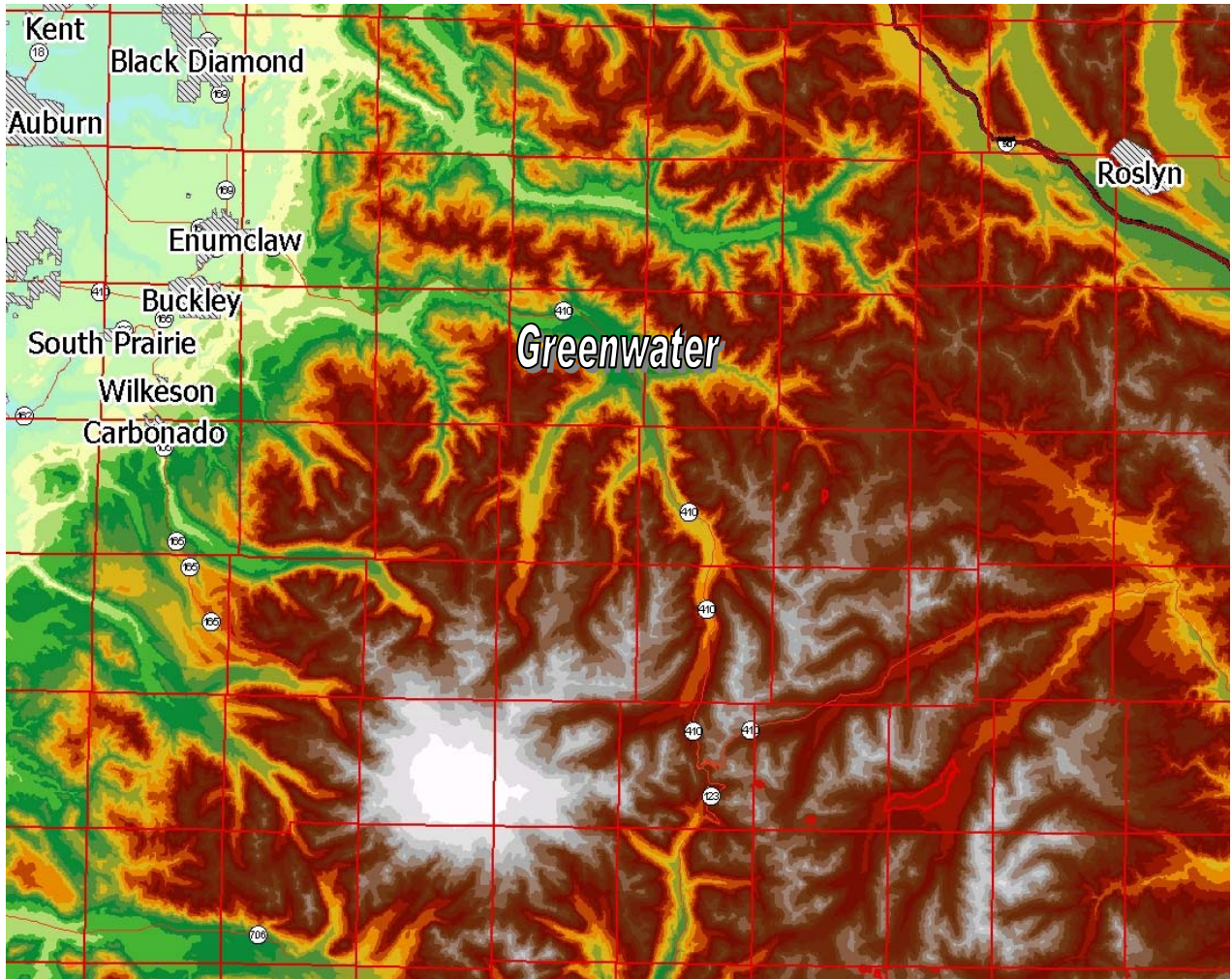
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Map of Greenwater and Upper White River Valley

INTRODUCTION

Vision and Goals

Residents of the Greenwater Community in King and Pierce Counties have been concerned about wildfires for some time. They also value their homes, woods and privacy. Therefore, local residents and county, state and federal stakeholders have joined together to proactively plan and implement actions to protect lives, protect their community and reduce the risk of wildfire and other related disasters.

Goals of the Greenwater Community Wildfire Protection Plan (CWPP) are to:

- Reduce the potential of losses (life, natural resources, property) because of wildfires in the wildland-urban interface.
- Protect people, structures, infrastructures and unique ecosystems that contribute to the community's way of life and the sustainability of the local and regional economy.
- Educate the community residents about the unique challenges of wildfire in the wildland-urban interface or properties where home are surrounded by forested lands.
- Establish mitigation priorities and continue strategies to reduce losses to wildfires in the Greenwater area (see Greenwater Community Firewise Mitigation Action Plan).
- Strategically locate and plan fuel reduction projects.
- Provide recommendations for alternative treatment methods, such as modifying forest stand density, fuel reduction techniques and abatement of treated slash.
- Meet or exceed the requirements of the National Fire Plan and FEMA for a community wildfire protection plan.

This CWPP is the result of these efforts and partnerships between private, local, state and federal interests. Whereas, wildfire is the greatest threat to the Greenwater community, this CWPP, its goals, objectives and recommended projects serves as the basis for the Greenwater Community Hazard Mitigation Plan.

Community Awareness

With this Community Wildfire Protection Plan, the Greenwater community can build on their past success story. They serve as a Firewise model for the other communities of South King and Pierce County. It is the hope of the Greenwater community that more residents will start efforts to make their properties "Firewise" and implement defensible space. They also want to provide input on land management decisions for adjacent industrial, federal and state lands.



Greenwater Home Before Fuel Reduction Project.



Greenwater Home with New Defensible Space.

PLANNING AREA

General Description of the Area

The Greenwater and vicinity planning area is approximately 4,500 acres and lies along both sides of State Route 410 east of Enumclaw and north of Mt. Rainier National Park in King and Pierce County. The planning area also includes the Federation Forest State Park, Hancock Timberlands, and private, state and federal owned forestlands.

The legal description primarily includes Sections 10, 11, 14, 24 and 25 within Townships 19 North and Ranges 8 and 9 East W.M.

Residential development on private land is a mixture of interface, intermix and rural in nature. Patches of dense forest and underbrush separate most homes. Therefore, the planning area encompasses the Wildland Urban Interface (WUI).

The Town of Greenwater and several residential developments exist in the planning area. Other homes are scattered throughout the area and separated by large areas of open forest. Patches of dense forest, brush and grass are concentrated along the bottoms of the Greenwater and White River drainages.

State Route 410 is the main artery to the town of Greenwater and Crystal River Ranch and Crystal Villages One, Two and Three subdivision. These subdivisions will be difficult to evacuate and defend in the event of a fast moving wildland fire. There is a mixture of overhead and underground power lines and public domestic water systems.

Town of Greenwater:

This community is located on the border between King and Pierce County along State Route 410 approximately 15 miles east of Enumclaw and 10 miles north of Mt. Rainier National Park. The topography is mountainous with elevations ranging from 1000 feet to over 5290 feet at Suntop Lookout. The Greenwater Community lies along the banks of the White and Greenwater rivers at about the 1000-foot elevation. The slopes on the hills above the community ranges from 33% to 88%. The legal description for this community is Section 10, Township 19 North, Range 9 East, and Willamette Meridian. The vegetation in the area is predominately second growth stand of short-needle conifer with a conifer/hardwood mix along the creeks and valley bottoms. The timber stands have a heavy shrub layer under the canopy. The area was first logged in the early 1900's. Few large snags are evident in the area. Recent logging units border the community to the west. These units are covered with heavy slash.

The community consists of older homes, which are very close together. Some of these homes have defensible space while others do not. Roadways are usually narrow and one-way in or out. If the brush on the roadsides is not maintained, very high fuel loads develop that pose problems for access of emergency vehicles and the evacuation of residents. There are no fire hydrants in this community. Overhead power lines provide electricity.

Crystal River Ranch and Crystal Villages One, Two, and Three:

These communities are located in Pierce County along both sides of the White River, 3 miles east of Greenwater on the boundary of the Mt. Baker-Snoqualmie National Forest. The topography is steep with elevations ranging from 1000 feet to 5290 feet at Suntop Lookout. The slopes in the area range from 8% to 45% on Gold Hill and surrounding ridges. The legal description for these communities is approximately Section 25, Township 19 North, Range 9 East, and W.M.

The vegetation in the area is predominately mixed second growth short-needled conifers and Western Red cedar with a heavy shrub layer under the canopy. The sub-division areas were logged approximately 35 years ago. Approximately 3 to 8 years ago, Hancock Timberlands Company logged areas to the west and south. More logging is planned to the south, on the ridge, overlooking Crystal River Ranch above Mt. View Drive.

These sub-division areas consist of newer homes. Most of the newer homes have a defensible space, with a few having shake roofs. Many of the older homes have a defensible space, but a few do not. Many of the homes have narrow, single-lane driveways. There are hydrants in these communities. A fair number of homeowners have pets and livestock. These animals could be a factor in an emergency evacuation. Overhead power lines provide electricity to these homes and others, including local USFS facilities, summer homes, church and scout's camps and the Crystal Mountain Ski Resort.

PLANNING PROCESS

“The incentive for communities to engage in comprehensive forest planning and prioritization was given new impetus with the enactment of the Healthy Forests Restoration Act (HFRA) in 2003. The Community Wildfire Protection Plan (CWPP) is the most effective way to take advantage of the HFRA, which provides communities with the opportunity to influence where and how federal agencies implement fuel reduction projects on federal lands and how additional federal funds may be distributed for projects on nonfederal lands.”

Kurt Naccarato, Idaho Department of Lands, Coeur d’Alene, ID.

In other words,

The big reasons a community at risk should complete a CWPP are:

1. CWPPS help establish priorities for fuels reduction projects on private, industrial, state and federal lands adjacent the communities.
2. Having a CWPP gives these communities the ability to define their own wildland urban interface (WUI) boundary. *
3. Completion of a CWPP will make these communities more competitive when applying for National Fire Plan grants, and national recognition as a FIREWISE COMMUNITIES/USA.

* The wildland-urban interface (WUI) boundary is commonly considered as the zone where structures and other human development meet and intermingle with undeveloped wildland or vegetative fuels.

This WUI zone poses tremendous risk to life, property, and infrastructure in associated communities and is one of the most dangerous and complicated situations firefighters face. The HFRA requires that three entities must mutually agree to the final content of a CWPP.

- The applicable local government representatives
- The local fire department; and
- The state entity responsible for forest management

In addition, these entities are directed to consult with and involve local representatives of the USFS and other interested parties or persons in the development of the plan. This process is intended to be open and collaborative, as described in the Ten-Year Strategy, involving local and state officials, federal land managers, and the broad range of stakeholders.

Note: In the absence of a CWPP, the HFRA limits the WUI to within ½ mile of a community’s boundary or within 1½ mile where mitigating circumstances exist, such as steep slopes or the presence of a critical evacuation route. At least 50 percent of all funds appropriated for projects under the HFRA must be used within the WUI as defined by either a CWPP or by the limited definition provided in the HFRA where no CWPP exists.

Plan Maintenance

Updates and edits to the CWPPs developed for Greenwater and vicinity will be performed yearly and will be coordinated by the Greenwater Firewise Board. It is expected that updates will be necessary in order to reflect recent work done to address issues identified in the CWPPs. Another important aspect of this plan will be the monitoring of effectiveness of projects implemented under this plan and to look at future projects.

Process and Partners

In 2002 the Greenwater community with help from the Washington State Department of Natural Resources and a federal grant began to organize their efforts to address fuel loads on private lands and educate the landowners about the risk of wildfires. Education of landowners began through one-on-one contact, through the Firewise workshop that took place in May 2002 and other community gatherings. The Firewise workshop explained the need for homeowners to clean up around their homes and drive ways, especially in forested areas. Firewise information was provided to homeowners that explained how to create defensible space around their homes. In 2004 Greenwater received additional grant monies to identify, prioritize and treat fuels in the area. After the successes of Phase One and Two, a Firewise Board was formed to develop Phase Three and a Greenwater Community Wildfire Protection Plan (CWPP).

RISK ASSESSMENT

“Risk is a combination of threat, vulnerability, and consequences.” George Forsman, Deputy Chief, Department of Homeland Security on National Public Radio, 6/16/06.

Values at Risk

- Town of Greenwater and surrounding communities has approximately 450 homes plus related structures.
- 1400 full and part-time residents in Greenwater, Crystal River Ranch and Villages 1, 2, and 3.
- Federation Forest State Park
- Mud Mountain Dam – Flood control for the White River into Auburn, Sumner and Kent.
- Federal, state, industrial, and private forestlands and numerous recreation sites.



Note: This small riverside cabin on the Greenwater River recently sold for a reportedly \$250,000

Fire Ecology

Historically, fires in the Greenwater and White River drainages have affected large areas of the sub-watersheds, but most likely left a mosaic of burned and unburned forest. Riparian areas probably burned lightly or not at all. Recovery of the forest canopy was relatively rapid. Timber harvest, which started slowly in the 1950s and accelerated in the 1970s, also affected large areas. The ecological effects of this type of vegetative disturbance may persist over a longer period of time. Weather, topography and fuels affect wildfire behavior. The Greenwater area like other mountainous east/west drainages areas of Western Washington is prone to “east wind episodes”. These episodes can support *extreme* fire behavior. The Greenwater landscape has many valleys with steep slopes and dense stands dominated by Douglas Fir, Western Hemlock, Western Red Cedar and hardwoods, which are primarily second or third growth trees, less than 20 inches in diameter. Many trees have commingled crowns and ladder fuels, and underlying brush.

Fire History

Excerpt from Forest Conditions in Cascade Range, Washington between the Washington and Mount Rainier Forest Reserves by Fred G. Plummer, USGS, 1902.

White River Watershed

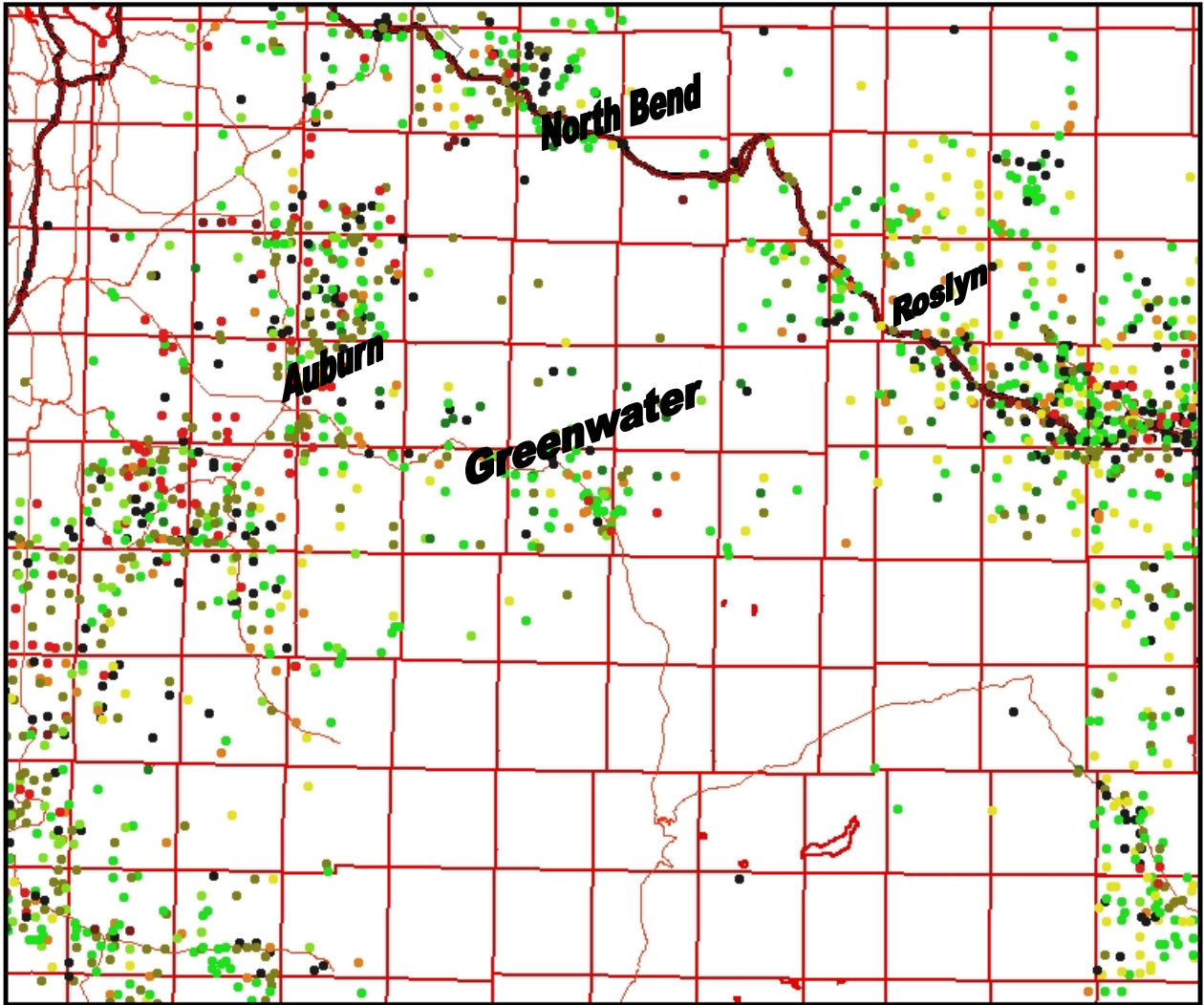
The main forks of White River are supplied by the glaciers and snowfields on the northeast side of Mount Rainier. One of the principal non-glacial tributaries is the Greenwater, which heads in the Cascade Mountains and is within the examined area.

The old Naches Pass trail, which, prior to the construction of the Northern Pacific Railway, was a well-traveled route from eastern Washington to Puget Sound, follows the Greenwater to the summit. Northward from a favorite camping place at the mouth of the Greenwater is an extensive burn, joining and probably synchronous with the large burn of the Green River Valley, which may thus be traced to campers and packers as well as to the right-of-way clearing of the Northern Pacific Railway. At and near Naches Pass, which is one day’s travel from the mouth of Greenwater and a camping place, are several smaller burns in light timber.**

The heavy timber of the bottom lands is red fir, red cedar, hemlock, and Engelmann spruce; on the hillsides there is noble fir, lovely fir, white fir, white pine, and Alaska cedar. Four thousand acres of the bottom lands may be classed as arable, as the soil is rich and deep, well watered, and less than 2,000 feet above the seas, but the clearing of this land for the plow will be so expensive as to be prohibitive for some time to come.

**** Town of Greenwater site.**

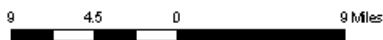
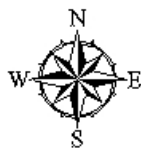
Historical records indicate that large-scale disturbance from fire and floods continue to be part of the natural process of the forest. Fire records indicate human activities to be the primary ignition source. However, lightning caused fires have and continue to account for wildland fire ignitions. See Fire History Map next page.

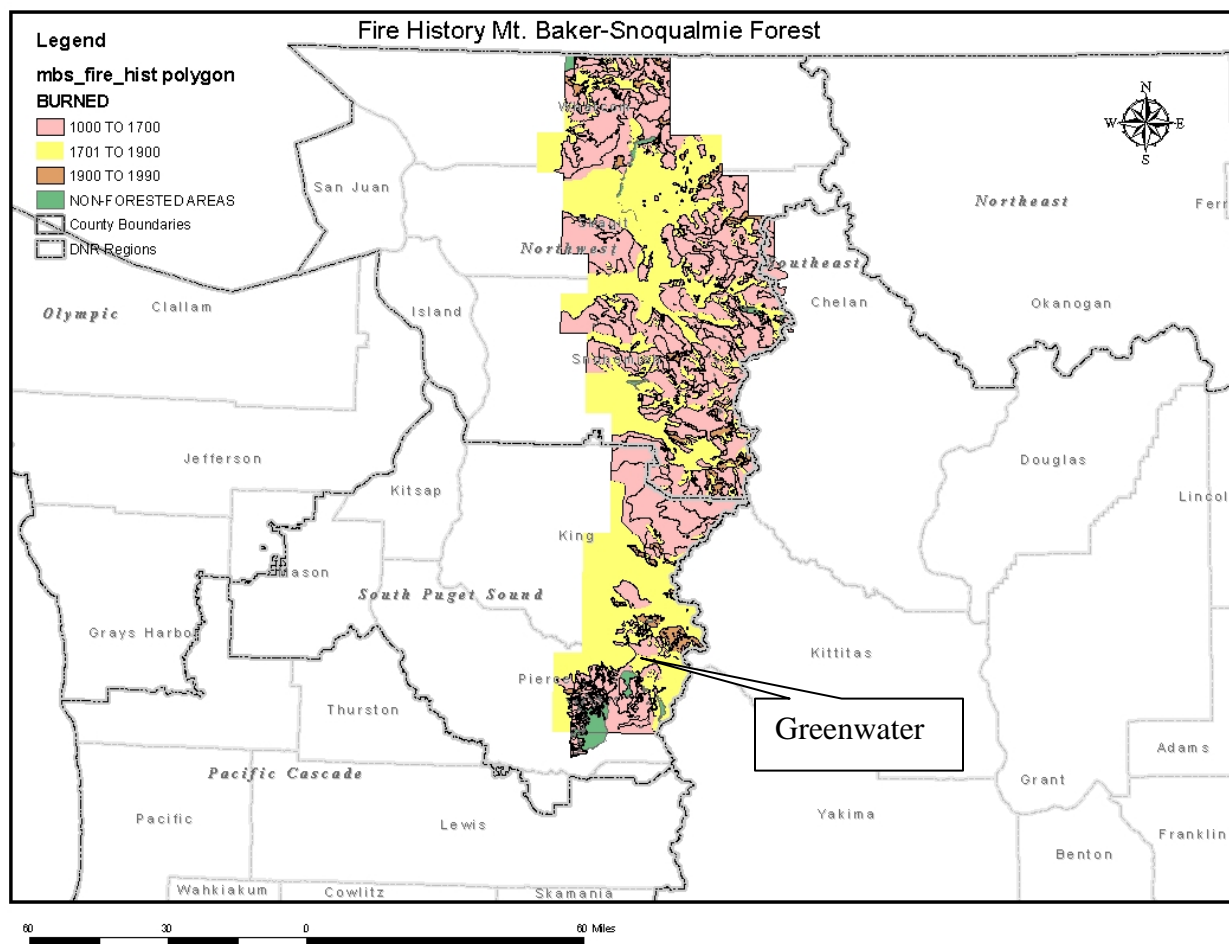


Fire History Map

Legend

- Lightning
- Arson
- Recreation
- Smoker
- Debris Burn
- Logging
- Children
- Railroad
- Miscellaneous
- Interstate
- U.S.
- State
- Local





Excerpt from Mt. Baker-Snoqualmie Fire Management Plan

FMU #1 Historical Fire Occurrence¹

Much of the lands composing the MBS experienced three great burning periods from 1300 to 1750, during the Little Ice Age. The first of these occurred about the year 1308: a very large fire or series of fires swept western Washington State. The second great burning episode occurred around the year 1500, with several fires burning. The biggest of these fires occurred about the year 1508. Remnants of this series of fires occur at mid elevations or stream bottoms in the Pacific silver fir and/or western hemlock zones of the MBS. These fires covered much of the low- to mid-elevation forests all the way to the Cascade Crest. The last of the three great burning episodes occurred around the year 1700, with one of the last big fires occurring about the year 1701. These fires covered a smaller area than the 1500 episode and were generally limited to the Western Hemlock Zone. Periods between these approximate 200-year fire return intervals likely experienced meteorological and/or fuel conditions not conducive to supporting landscape scale fire events.

Since the 1700's large fire episode, no evidence suggests a return of landscape scale wildland fire events in western Washington. Initiation of logging and mining activities in the 1870s and railroad activities in the early 1900's provided for an increase in human-caused ignitions and there were very active fire seasons in the 1910's and 1920's.

¹ This historical fire occurrence will also apply, with minor exceptions, to FMU #2; see below.

Individual fire records, from 1952 to present, provide insight into expected future fire trends on the MBS. Lightning has consistently been the greatest single statistical cause of wildland fires². Statistical human-caused ignition trends have varied somewhat over the last five decades. However, combining all eight human statistical causes, human-caused ignitions constitute the majority of annual fire starts on the Forest. This trend will likely continue for the foreseeable future, as sub-geographic populations and subsequent forest use increases. This is particularly true for the FMU #1 which contains most of the concentrated urban interface and road-accessed recreational opportunities. Also, much of the area within FMU #1 consists of valley bottoms and lower slopes, which tend to be less prone to lightning strikes.

Average annual statistical fire occurrence on the Forest over the last 34 years is 44 fires per year: 41 percent lightning caused and 59 percent human-caused.

Both human and lightning caused fires are most prominent during July and August, with 84 percent of lightning historical occurrence and 56 percent of human-caused fires during the same period. On average, lightning caused fires account for a slight majority of all fires during these months.

Considering lightning caused ignition distribution across the forest, 74 percent of historical lightning caused ignitions occur within the North Zone (Mt. Baker and Darrington Ranger Districts). When the summer drying trend continues into September, human-caused fires occur at rates comparable to July and August. See below for average annual and historical total fires by cause. See Table III-1 for data on fire occurrence, in five-year increments, 1990 through 2004.

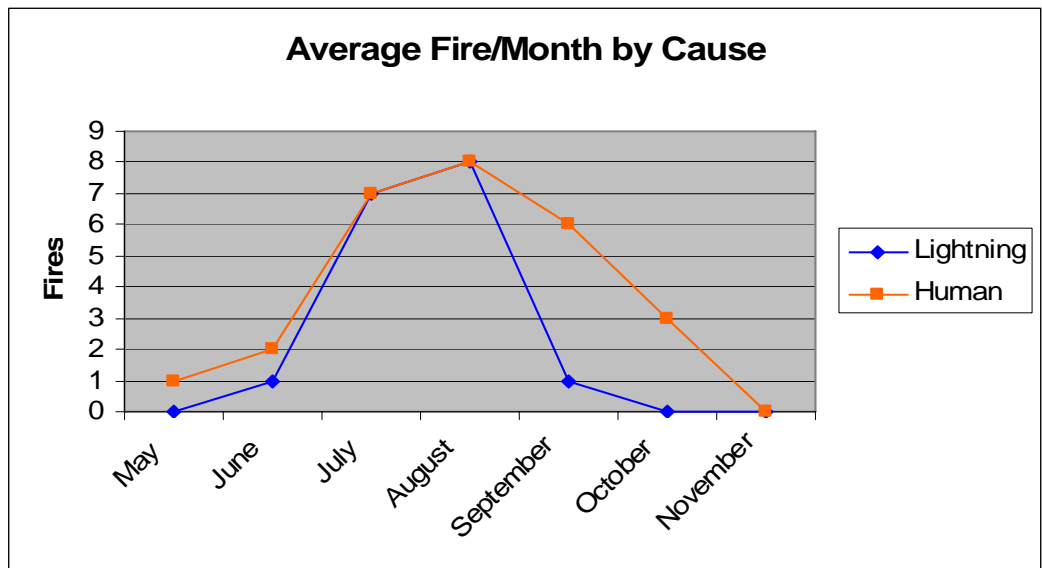


Figure 0-1 FMU #1 Average fire per month by cause

² Of the nine statistical causes of fire, eight are from human activities (such as smoking, campfires, railroads, etc.); the ninth is lightning.

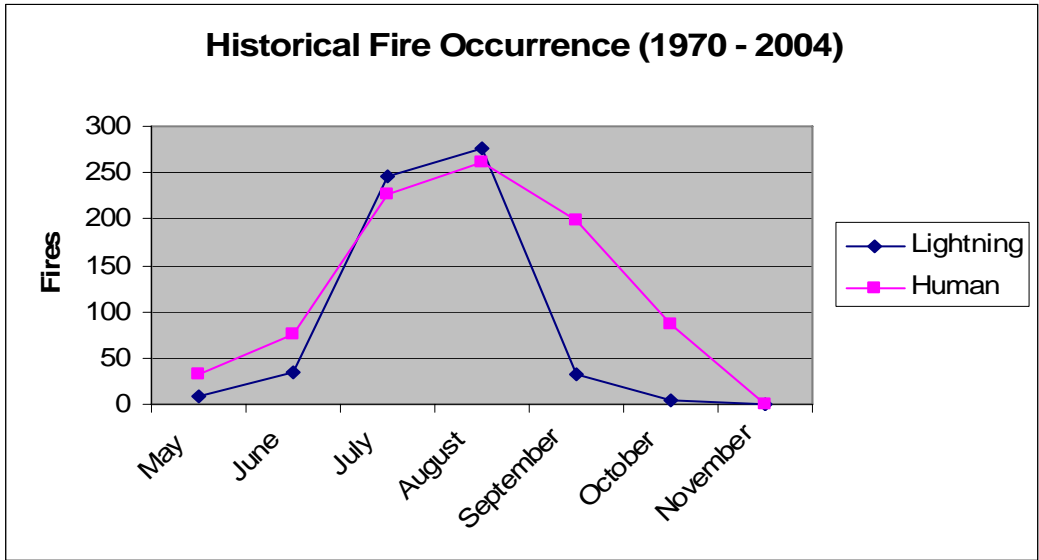


Figure 0-2 FMU #1 historic fire occurrence (1970-2004)

| Cause (Recreation includes Campfires, Smoking, Incendiary, Children, and Misc. Human) | 1980 – 1984 No. Fires / Acres | 1985 – 1989 No. Fires / Acres | 1990 – 1994 No. Fires / Acres | 1995 – 1999 No. Fires / Acres | 2000 – 2004 No. Fires - Acres |
|--|--|--|--|--|--|
| Lightning | 52 / 12 | 49 / 134 | 148 / 170 | 24 / 28 | 86 / 5,017 |
| Recreation | 85 / 21 | 152 / 428 | 109 / 618 | 114 / 72 | 88 / 22 |
| Equipment Use | 5 / 12 | 11 / 187 | 2 / 416 | 1 / 255 | 6 / 1 |
| Debris Burning | 12 / 138 | 6 / 50 | 8 / 17 | 3 / 1 | 0 / 0 |
| Railroad | 3 / 1 | 2 / 1 | 2 / 255 | 0 / 0 | 1 / 1 |
| Total | 157 / 184 | 220 / 800 | 269 / 1,476 | 142 / 356 | 181 / 5,041 |

Table III-1 Fire Occurrence, Five Year Increments by Cause

Since the early 1950's and until very recently, large fire events have been predominantly human-caused. The MBS 2003 and 2004 fires seasons deviated from this trend with multiple, relatively large lightning caused fires dominating both years.

Unseasonably dry spring, and poor winter mid-elevation snow pack produced live and dead fuel conditions conducive to large fire development. Meteorological conditions and subsequent fire danger correlate well with probability of fire occurrence. Large fire occurrence tends to be a function of position on slope rather than a specific NFDRS index or component threshold. Occurrence of multiple fire days and to a lesser extent, large fire events do increase at the 90th percentile ERC (ERC 30 calculated with NFDRS Fuel Model G).

The Fire Management Situation

Weather patterns influencing fire behavior and historical weather analysis

Forest-wide, fuel moistures peak out in late May to early June. As the Pacific storm track (jet stream) into western Washington State becomes less frequent, precipitation on the MBS begins to diminish. This, combined with longer daylight hours starts the drying trend that leads to fire season.

The climate of the MBS is typified by mild, wet winters and warm, dry summers. Average annual precipitation amounts range from 60 inches in the foothills to near 200 inches at the wettest, high-elevation sites with 160 to 180 inches common along the Cascade Crest. Much of this precipitation comes in the form of snow. Mid-elevation snow pack (2,000-4,000 feet) has shown to be significant for potential fire activity on mid-elevation slopes. Less than average snow accumulations and/or early melt at these elevations can lead to problem fire behavior during summer months.

Typically, early to mid-July experiences the start of an extended warm and dry period. It is during this time that dead fuel moistures on the forest reach their lowest point. This dry period often continues into August and can extend well into September before precipitation events resume and begin to moderate the potential fire behavior. Congruously, 68 percent of historical fire occurrence falls within July and August with September, June, May and November exhibiting historical fire occurrence in descending order.

During the summer season, Pacific high pressure off the coast of Alaska consistently brings in warm moist air from the south along with thunderstorms moving to the north. Generally, cells develop and move north along the Cascade Range. These cells are often associated with rain showers as well as dry lightning.

Foehn winds, known as east winds in Washington and Oregon states, can occur throughout the year on the MBS but are most prevalent in late summer/early fall. Caused by pressure gradients across the Cascades, east winds typically result in very warm, dry, gusty conditions. Historically, east wind events have varied influence on fire behavior across the forest. Very complex topography, common to Skykomish, Darrington, and Mt. Baker Ranger Districts, tends to hinder gradient wind flow in valleys and canyons. Less complex topography and greater east/west alignment of major drainages lends to better organized east wind events on the Snoqualmie RD. Hence, large fire events driven by foehn wind conditions are more common on the southern portion of the forest. This is particularly true in the White River and Snoqualmie River drainages though the Stillaguamish and Baker River valleys in the north can support organized foehn wind events.

The Pacific high pressure dominates summertime weather causing hot temperatures (75-90+ degrees), dry humidity (30-40%, frequently lower), and low 10-hour fuel moistures (3-5%). Summer rainfall is non-existent except for precipitation from passing thunderstorms, which mainly falls at higher elevations. Fall rains generally return in mid to late October. The ending of fire season is more variable than the start. Although dwindling sunlight provides less ground heating, season ending moisture is dependant on Pacific storm systems. The location of the jet stream plays a major role in determining the path of the storms. Early fall rains can bring much needed relief, however dry October months have recently become more common. Fire season is usually terminated with the first two to three inches of rain in October.

Fire season determination

Fire season on the forest has been determined to be approximately 120 days in length. The time period that best meets the needs of the Forest covers the period of June 1st through September 30th. Criteria used to establish the fire season include the time period needed to provide IA capability for the suppression of 90 percent of the forest fire activity.

Fuel conditions in FMU #1 likely to influence fire behavior

Human habitation has greatly influenced the amount and arrangement of fuel through fire suppression, logging, and other management activities. Private homes and other structures have also become part of the fuel arrangement adjacent to many areas of FMU #1.

Vegetation, while varied, is nearly contiguous along many development sites within and adjacent to the forest.

Dominant fuel conditions within FMU #1 are timber type fuels. National Fire Danger Rating System (NFDRS) fuel models G and H (NFFL Fuel Models 10 and 8 respectively) are most common with G representing western hemlock zone (lower elevations) and H representing silver fir and mountain hemlock zone (mid to higher elevations).

Lack of timber harvest activity over the last 15 years has reduced the slash fuel types within FMU #1. Lack of broadcast burning through much of the 1980's continues to provide viable fuel beds in reproduction stands with open-crown conditions suitable for sun and wind effects to directly impact surface fuels and subsequent surface fire.

Brush covered areas, void of timber overstory; generally function as surface fire barriers except under very dry conditions.

Fire regime alteration

The primary Fire Regimes (FR) on the forest includes FR IV and FR V. A variety of forest vegetation exists in FMU #1 which result in variable fire spread rates and intensities. These combinations are influenced by local topography, weather, fuel conditions and past management practice.

The majority of the forest is within the natural fire regime (FR IV and FR V). Large, catastrophic disturbances, while infrequent, are a primary agent of change on the forest, and over time, have been caused by floods and volcanic eruptions, as well as large fires.

FMU #1 Control problems and dominant topographic features

As discussed above, the landscape encompassed by FMU #1 is diverse, ranging from valley floors to very steep, complex terrain. Dense, highly productive conifer forests cover the majority of the lands. Mid elevations are characterized by steep slopes and streams covered with highly productive forested areas. The high elevation areas are generally included in the eight wilderness areas.

Much of the forest is not roaded and suppression resources must either hike in or utilize aircraft to gain access. Often, in these remote areas, steep slopes limit direct attack strategies.

Ground and surface fuel loadings, particularly in the western hemlock zone, can be extreme resulting in high fireline intensities and high resistance to control due to low fireline production rates. Typically, use of mechanized equipment is limited or not possible due to steep slopes and heavy timber.

Large fire occurrence is more a factor of position of fire on slope, as opposed to high fire danger indices or components. Gravity spotting can be a problematic fire spread mechanism within all timber vegetation zones but particularly so in the mid and higher elevation areas with less large timber litter component to hinder rolling debris.

End of Excerpt - Mt. Baker-Snoqualmie Fire Management Plan.

Fuels and Hazards

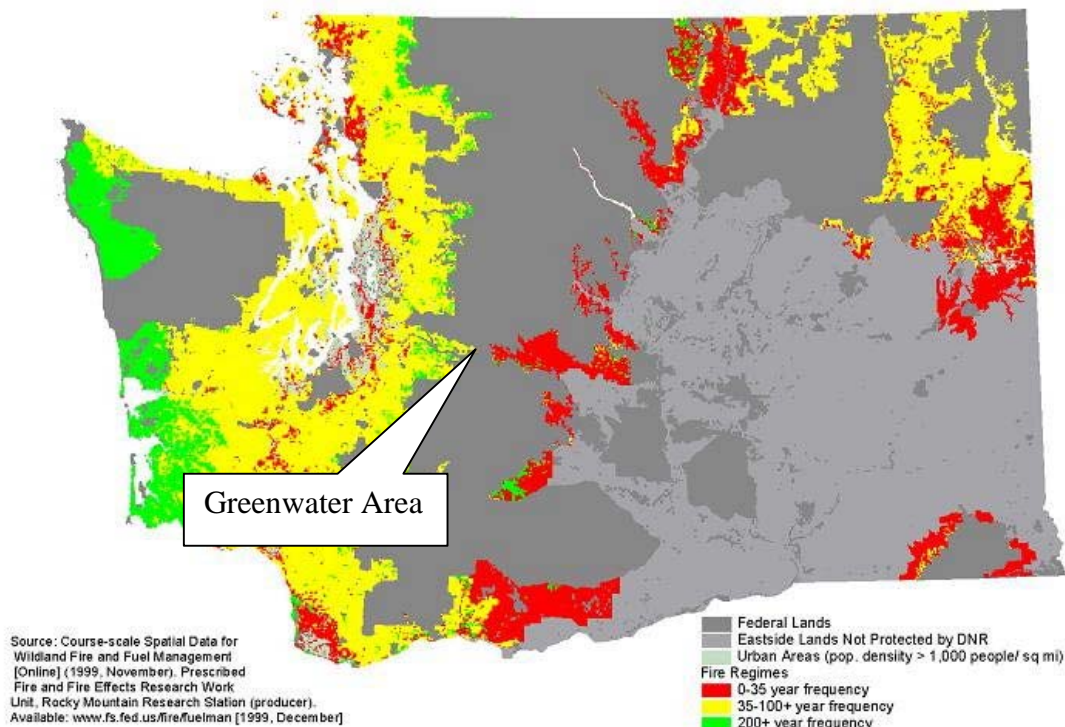
The WA-DNR has classified the Greenwater area as a “High Hazard Area” Wildland Urban Interface community. The U. S. Forest Service and Pierce County Fire Protection District #26, who are also responsible for fire protection in the area, support this classification. Past forestry and land owner activities have altered the normal fire regime and stand species composition in the area. Fuel reduction, fire prevention, detection and preparedness activities need to be greatly enhanced to protect this community at risk. The majority of the forested lands around Greenwater, Crystal River Ranch and Villages are mixed conifer or Douglas fir/Hardwood fuel types with extremely heavy fuel volumes. Also, there are other areas where dense, overstocked stands of trees exist.

For example, Crystal Village 3 is surrounded by an unmanaged stand of trees that was reportedly aerial seeded in the 1960’s (see photo). This stand has commingled tree crowns, ladder fuels, and a large amount of dead and down woody material. These fuels with their horizontal and vertical continuity will allow a fire to move rapidly into the crowns. Conditions exist for an intense, fast moving stand replacement wildfire with the potential for long-distance spotting. Due to the large amount of dead and down materials, smaller dozers and hand fire lines will be ineffective. Excavators, large dozers and engine crews will be needed. Aerial resources will be needed to cool the fire and allow ground crews to get close to suppress this type of wildfire

Timber Stand Aerial Seeded in the 1960’s – Crystal Village III.



Fire Regimes on DNR Protection



Fire Regimes and Condition Class Attributes

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human intervention; however the natural fire regime does take into account the influence of aboriginal burning (Agee 1993, Brown 1995). The five natural (historical) fire regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on dominant overstory vegetation. See above map – Fire Regimes on DNR Protection.

- Group I and II include fire return intervals in the 0-35 year range. Group I includes ponderosa pine, and other long-needle pine species, and dry-site Douglas fir. Group II includes the drier grassland types, tall grass prairie, and some chaparral ecosystems.
- Group III and IV include fire return intervals in the 35-100+ year range
- Group V is the long-interval (infrequent), stand replacement fire regime.

The first two-fire regime groups occupy nearly all the lower elevation zones across the United States. They have been most affected by the presence of human intervention and analysis shows that these types demonstrate the most significant departure from historical levels. The departures are affected largely by housing developments, agriculture, grazing, and logging. These areas are at the greatest risk to loss of highly valued resources, commodity interests, and human health and safety.

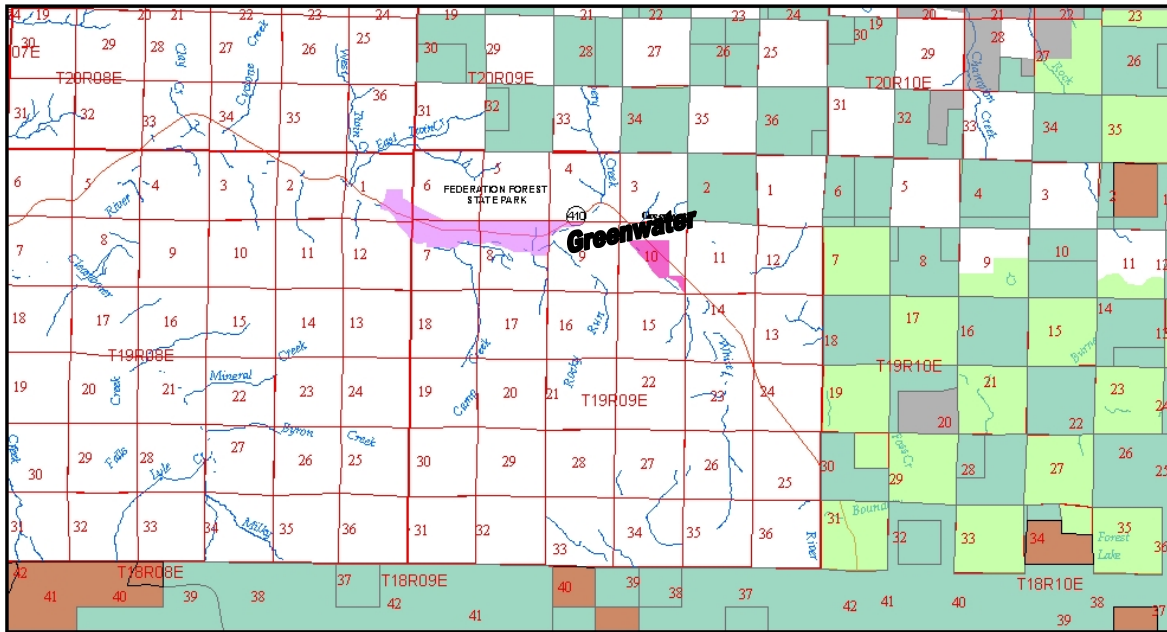
Three “Condition Classes” 1-low, 2-moderate and 3-high - have been developed to categorize the current conditions with respect to each of the five historic Fire Regime Groups. The relative risk

of fire-caused losses of key components that define the system increases for each respective higher numbered condition class, with little or no risk at the Class 1. Condition classes for federal lands in the Greenwater area are shown on the Conditions Class Map.

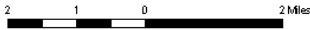
Note: Fire Regime Condition Class (FRCC) infers a relative departure from the natural fire regime's historical vegetative composition and structure, fuels, and fire frequency and severity. Determining risk to WUI or to structures is a complicated process because much of the risk is related to the vulnerability of structures, pattern of structure locations, road access, and response time of suppression resources.

Go to the following links for additional information on Fire Regime Condition Class.

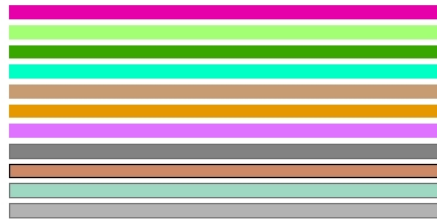
www.nifc.gov/preved/comm_guide/wildfire/fire_5.html
www.frcc.gov/faq.html



Greenwater Area - Federal Lands - Fire Regime Conditions Classes



Legend



- DNR-Managed Lands
- US Forest Service
- National Park Service
- US Fish and Wildlife Service
- US Bureau of Land Management
- Other Federal
- Other State
- County, Municipal or University
- Condition Class 1
- Condition Class 2
- Condition Class 3

Assessment-Structural Vulnerability

Residences within the Greenwater area are woven into the forest landscape. Accessibility, topography, and the surrounding vegetation all contribute to each structure's fire risk.

The NFPA Form 299 was used to develop risk assessments for all structures in the Greenwater area. A risk code was assigned to each structure based primarily on the fire fighters ability to reach and protect the structure without jeopardizing fire fighter safety. The risk codes included low (easiest to defend), moderate, and high (hardest to defend safely). See Attachment # 2 – NFPA Form 299.

In the spring of 2005, an updated risk assessment of all structures in Greenwater, Crystal River Ranches, Crystal Villages One, Two, and Three was completed by WA DNR staff and local volunteers utilizing a HP IPAQ, Garmin GPS, digital camera, and ESRI Arc Pad program. This hardware and software process saved many staff days and produced a product that is the database for this Community Wildfire Protection Plan and an "All Risk" Incident Action Plan (GWEIP) for incoming Incident Management Teams.

See Attachment # 3 – Greenwater Structures Risk Assessments Maps.

Protection Capabilities

Pierce County Fire District #26 provides structural fire protection and some initial attack wildfire activities for Greenwater area. The fire district has twenty-one volunteers with six of these firefighters having current "red cards". The district has two Type 1 structural engines, a Type 6 wildland engine and two Type 2 water tenders. The DNR provides fire protection for state and private lands in the area. There are two Type 6 wildland engine for this area of southeast King and northeast Pierce County. Initial attack response times for DNR resources average between 45 to 60 minutes for the Greenwater area. The USFS is the primary agency responsible for fire management on federal lands. There are a Type 3 and Type 4 wildland engines, based out of North Bend. These engines take turns patrolling this area of the Snoqualmie Ranger District. Initial attack response times for USFS engines to the Greenwater area may be 30 to 90 minutes.

The objectives of the Greenwater Structure Protection Plan are to safely and efficiently manage resources to protect life, property and resources in the event of an approaching wildland fire. Strategy decisions should take into account the following tactical considerations:

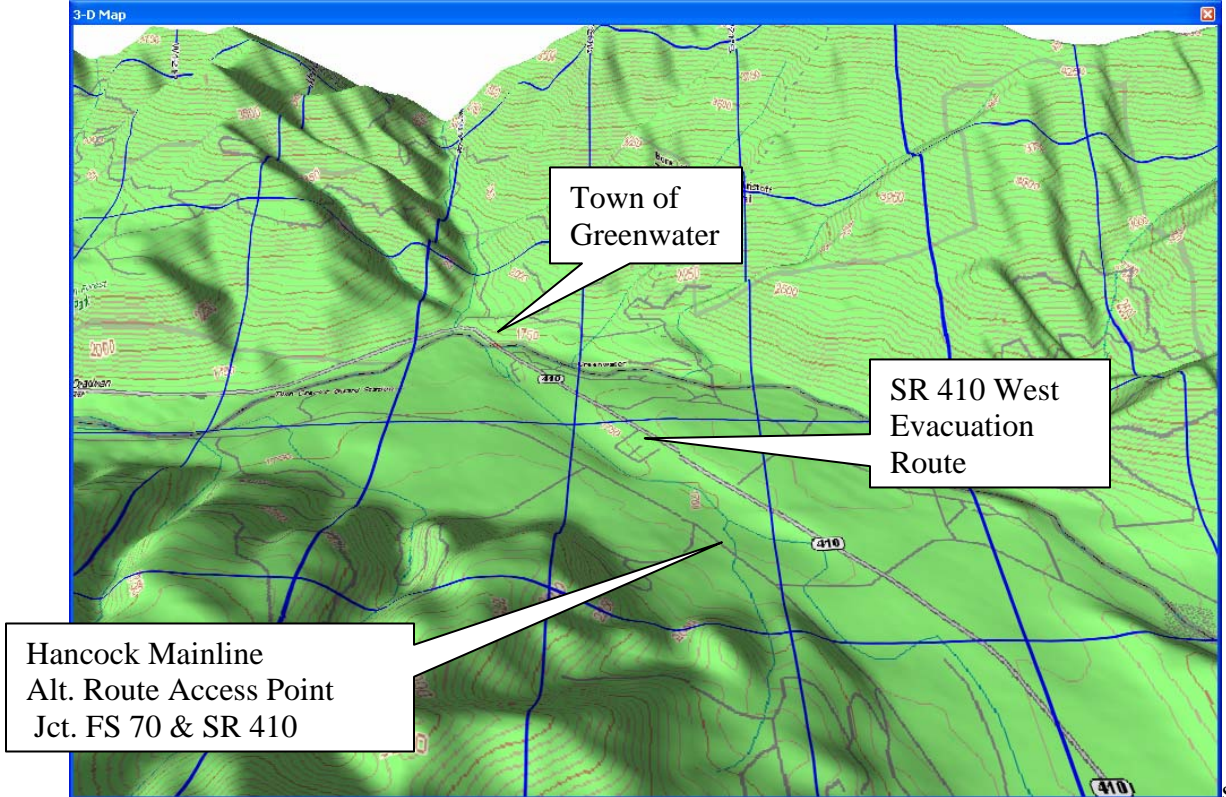
- Common areas have heavily forested pockets with some steep slopes. Lower slopes have lighter flashy fuels, mainly smaller trees, brush and grasses. A fire may move rapidly through these areas with potential torching, crowning and spotting across containment lines.
- Many homes would require maximum effort to defend, requiring prompt activation of this plan and the need to triage structures.
- Access to area subdivisions is described as "one way in - one way out" traffic control. Firefighter safety, apparatus staging and placement must be carefully considered.

MITIGATION STRATEGY

Emergency Access and Egress

State Route 410 is the main designated evacuation route from the Greenwater area. Fires that may be located east of Greenwater may force evacuation of residents towards Enumclaw (approximately 15 miles to the West) to the King County Fairgrounds. Another (westward) alternate evacuation route is the Hancock Timberlands main line. It also runs in the east-west direction and borders State Route 410 in many places. There are many access points in and around the Greenwater area to this alternate evacuation route. Although these access points are gated, some local residents, Greenwater Fire Dept, WA DNR, and the US Forest Service have keys for these gates. Note - not all roads in the Greenwater and vicinity area are paved or suitable for all types of vehicles (including fire equipment). Fires that may be located west of Greenwater may force evacuation east toward Yakima or Packwood.

For more detailed information see attachment- White River Valley Evacuation Plan.



Town of Greenwater 3D view of Evacuation Route

Sheltering in place

The “survivable home” concept has been introduced to Greenwater residents in literature and mini-Firewise workshops. Creating defensible space around homes has been a priority for many residents. They have reduced the fuel loads around approximately 65% of the homes in the area. Although not advised in all emergency situations “sheltering in place” may be an option to residents in the Greenwater area. Residents should stay in contact with local authorities and if at all possible comply with emergency evacuation and notification procedures.

Fuel Breaks

Greenwater community members, with assistance from WA-DNR and a federal grant, have implemented some shaded fuel breaks and access improvement projects. The eventual treatment goal is the creation of 200-foot wide shaded canopy fuel breaks, in designated areas, throughout the planning area. Fuel breaks on the eastern edge of Greenwater are to be anchored to the “natural” fuel breaks of the Greenwater and White Rivers.

| FUEL BREAKS | LOCATION | STATUS | PRIMARY OWNERSHIP | NOTES |
|-------------------------------------|-----------------------------|---|--|-----------------------------|
| Stubbs Road | East of Greenwater | Existing – 2004 | WA-DNR | Now 50 foot w/roadway |
| South side of SR 410 | East of Greenwater | Proposed - 2005 | WA-DNR | 2005-06 Project |
| Lower Lumpy Lane/SE 496th | King County Across bridge | Existing - 2004 | Community Watershed | Now 50 foot w/roadway |
| Bailey Rd. 628 th Ave E. | Crystal Village Three (CV3) | Existing – 2004 | Community property | Now 50 foot w/roadway |
| Crystal River Ranch | Power line Easement | Needs improvement | Crystal River Ranch-Community property | Now 25 feet W/trail |
| FS Rd. # 7140 | North of CV3 Gold Hill | Needs gate/Fuel Break Needs Improvement | US Forest Service | 2006-07 Project |
| Hancock Rd. # 8006 | Greenwater Fire Station | Around fire station, helispot and existing road behind yellow gate. | Hancock Timberlands | Needs thinning and brushing |
| | | | | |

GREATER GREENWATER AND VICINITY FUEL BREAKS

DNR- Stubbs Road Fuel Break – This shaded fuel break utilizes the Stubbs Road, State Route 410 and natural opening on DNR land to protect the south and east sides of the Greenwater Community. Washington DNR engine crews maintain this fuel break.

Lower Lumpy Lane Fuel Break – This shaded fuel break utilizes the Lower Lumpy Road and the power line-community watershed easement to protect the north side of the Greenwater Community. A private individual now owns the land/timber and permission is needed to improve upon the current shaded fuel break. The Lower Lumpy Homeowners Association will maintain this fuel break into the future. Puget Sound Energy and Asplundh Company will maintain the overhead powerlines.

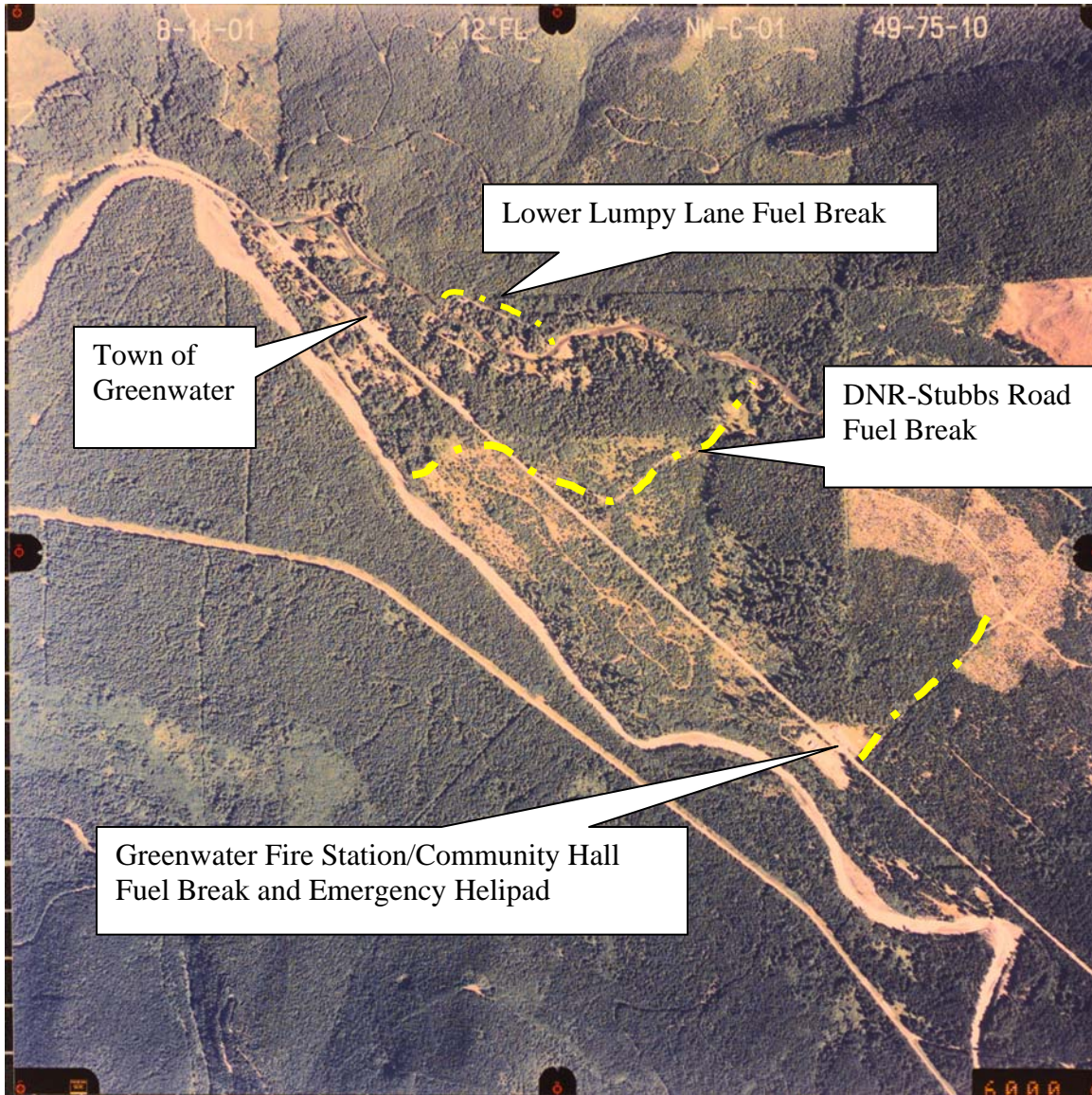
Greenwater Fire Station/Community Hall Fuel Break – This fuel break utilizes the Hancock Timber Road # 8006 to protect the Greenwater Fire Station, Community Hall and Heliport Site. Past agreements with Weyco were to maintain the approach/departure paths for the Heliport. A new agreement will have to be made with Hancock Timber to improve and maintain a 50 foot shaded fuel break along both sides of the 8006 road. Greenwater Fire volunteers and chainsaw trainees may accomplish the annual maintenance after the initial construction is finished.

CRYSTAL RIVER RANCH AND CRYSTAL RIVER VILLAGES FUEL BREAKS

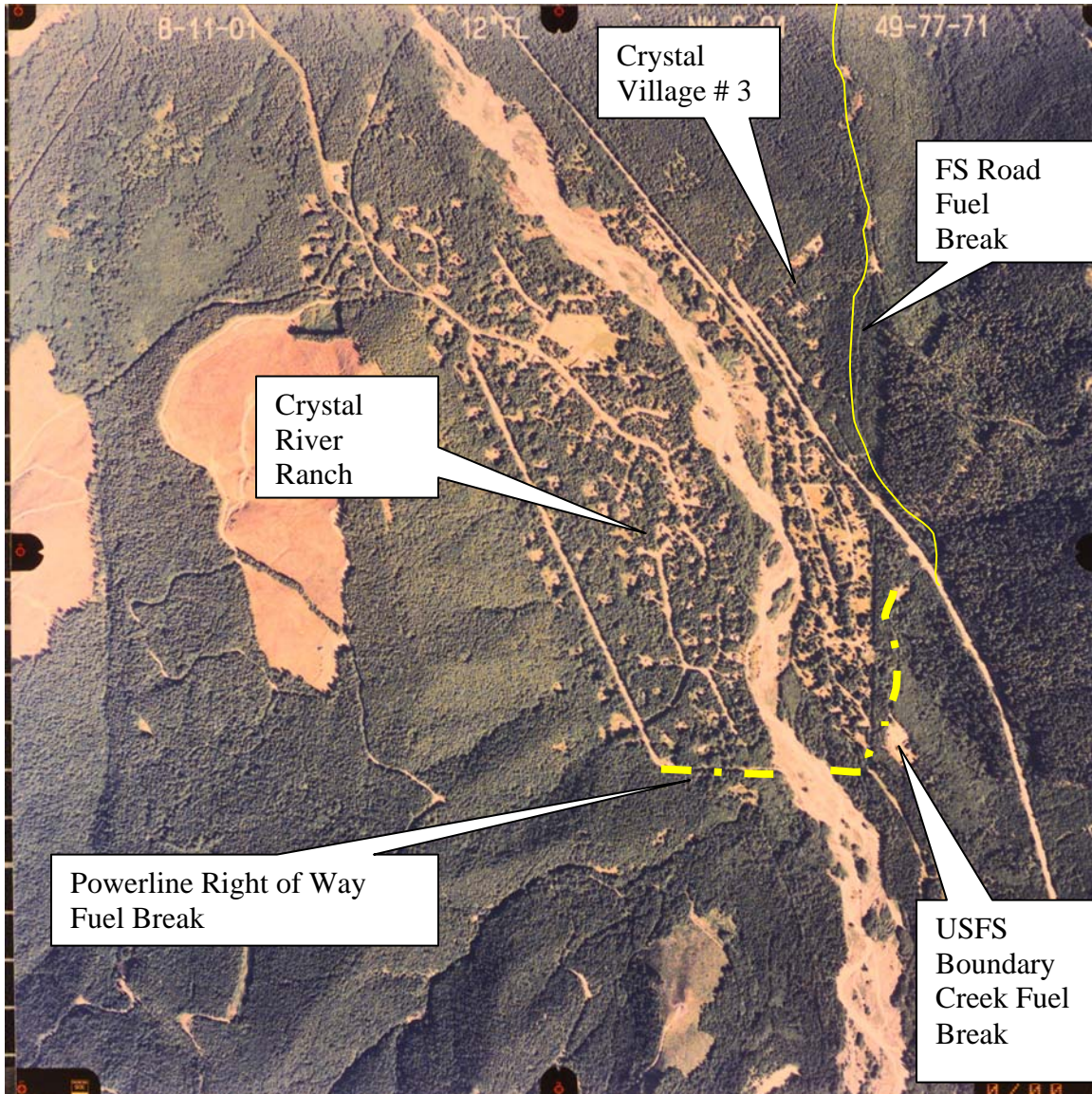
Crystal River Ranch/Villages Powerline Right of way Fuel Break – This fuel break utilizes the existing Powerline Right of Way to protect the east side of Crystal River Ranch and Crystal River Villages. The associated lands are a combination of USFS, Hancock Timberlands, and Crystal River Ranch and Crystal Villages ownerships. Construction specifications, annual maintenance agreements will have to be worked out.

USFS Boundary Creek Fuel Break- This fuel break utilized the existing Boundary Creek Road for the USFS Heavy Equipment Compound. This fuel break will protect the east side of Crystal Villages. The roadway is maintained by the USFS. USFS engine crews and chainsaw trainees may do future roadside brushing.

USFS ROAD # 7140 - This fuel break utilizes the existing FS Road # 7140 behind Crystal Village #3. This fuel break will protect the community and the domestic/firefighting water supply system. The gravel roadway is not maintained for public use. The trees and brush are encroaching upon the roadway. This road and shaded fuel break would provide a defensive position for protecting the community below. A gate would also protect the community and its water supply system/tank from illegal burning and other activities in the area. USFS engine crews and chainsaw trainees may accomplish the annual maintenance after the initial construction is finished.



Town of Greenwater – Shaded Fuel Breaks



Crystal River Ranch and Crystal Villages Fuel Breaks

ATTACHMENTS

Attachment # 1 – Upper White River Valley Evacuation Traffic Plan

Attachment # 2 – NFPA Form 299

Attachment # 3 – Greenwater Structures Risk Assessments Maps

Attachment # 4 – Greenwater Community Firewise Mitigation Action Plan 2005-2008

UPPER WHITE RIVER VALLEY EVACUATION TRAFFIC PLAN
PIERCE COUNTY, WASHINGTON
ESF 24 Tab 2

| | | |
|---|------------------------|-----------------------|
| Upper White River Valley Evacuation Plan | Effective Date: | Supersedes: NA |
| Page 1 of 13 | Approved by: | |

JOINT PRIMARY AGENCIES

Pierce County Sheriff’s Department
 Mt. Rainier National Park
 Washington State Patrol
 Pierce County Fire District #26 (Greenwater)
 Lewis County Sheriff’s Office
 Pierce County Department of Emergency Management
 Department of Natural Resources

SUPPORT AGENCIES

Lewis County Department of Emergency Management
 American Red Cross Tacoma-Pierce County Chapter
 Enumclaw School District
 KIRO News Radio AM 710 and KPLU FM 88.5
 National Weather Service
 Washington State Emergency Management Division
 Law Enforcement and other Public Safety Answering Points (911 Dispatch Centers)
 United States Forest Service

I. INTRODUCTION

A. Overview

The Upper White River Valley is located in northeast Pierce County. The area is approximately 25 miles in length beginning at the confluence of the Greenwater and White Rivers and extending eastward along SR-410 from the Greenwater community terminating at the north entrance to Mount Rainier National Park.

The Upper White River Valley contains public and private timberlands and outside of the business and community areas of Greenwater is sparsely populated. Urban facilities and services such as bus services, libraries, parks, or sewer service are not available. However, in the summertime more than ½ million tourists move through the area traveling to and from Mount Rainier National Park and the surrounding recreational areas of the Mt. Baker Snoqualmie National Forests.

SR-410 is the only access route to and through the Upper White River Valley. There are few county and USFS roads due to the rural nature of the region. Many of these roads are narrow, are mostly gravel surfaced, and have poor visibility.

Traffic congestion is an important transportation issue in the Upper White River Valley. While this region of Pierce County does not experience a significant amount of commuter traffic, it does have high volumes of recreational travel, which clogs the roadways and creates long traffic lines and parking problems. The recreation related congestion is seasonally affected, occurring both in the warm summer months with cross state traffic and Mt. Rainier National Park visitors, and on weekends during the winter with Crystal Mountain related recreational traffic.

B. Mission

The Upper White River Valley Evacuation Plan outlines an organized method to remove the residents and visitors of the Upper White River Valley to safety with minimal delay and confusion in the event of a threatening situation caused by volcanic, seismic, wildland fires, or other hazard requiring evacuation.

Additionally this plan provides guidelines for the feeding and sheltering of displaced persons evacuated from their homes and businesses in the upper valley.

C. Purpose

Representatives from the Department of Natural Resources, Pierce County Fire District 26 Greenwater, Pierce County Sheriff's Department, local school district, the National Park Service and county emergency management collaborated in the development of the Upper White River Valley Evacuation Plan. Their task was to identify methods for warning, emergency route identification and procedures for the movement and evacuation of affected persons, as quickly and safely as possible in a written format that was clear, concise and practical. This plan reflects their efforts.

D. Scope

The Upper White River Valley Evacuation Plan applies to persons located in the Greenwater region and above to Crystal Mountain Dam and the emergency responders servicing the area in the event that evacuation and movement are indicated for the safety of those persons. The need for evacuation and movement of persons may result from volcanic or seismic activity, hazardous materials releases, landslides, floods, wildland fires etc.

Using the experience and knowledge of the agency representatives this plan provides broad objectives that will provide the greatest protection of life that can be achieved with the available resources and time.

E. Organization

All movement and evacuation operations will follow the principles of the incident command system (ICS), which is a component of the national interagency incident management system. This will include on-scene command and unified command comprising emergency responders from lead and supporting agencies.

II. POLICIES

A. Authorities

This plan was created as a collaborative effort to meet the need for coordinated evacuation activities along the Upper White River Valley.

The Revised Code of Washington (RCW) 38.52 and Washington Administrative Code (WAC) 118.30 directly address the structure of governmental emergency management organizations and their responsibilities. RCW 38.52 provides the framework for mutual aid agreements and mandates the use of ICS in any multi-jurisdictional, multi-agency emergency response. The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288, as amended) addresses the federal government's authority in providing disaster response and recovery assistance.

Due to the multi-jurisdictional, multi-agency and inter-disciplinary nature of this plan there are too many existing emergency policies on the local level to list in this section. The aggregate of these policies is, in some way, reflected in both the Concept of Operations and the Responsibilities sections of this plan.

B. Limitations

The information and procedures included in this plan have been prepared utilizing the best information and planning assumptions available at the time of preparation. There is no guarantee implied by this plan that in emergency or disaster situations a perfect response will be practical or possible. This plan should be used as a guideline with consideration given to the unique needs of each and every situation.

III. SITUATION

A. Emergency/Disaster Conditions and Hazards

1. Mount Rainier is an episodically active volcano that towers more than 14,400 feet above expanding suburbs and communities in the valleys that lead to Puget Sound. Geologic study indicates that Mount Rainier has repeatedly produced lahars and debris flows. Comparable future lahars are to be expected. With today's population and continued growth in the valley, the impact would be catastrophic.

White River Debris Flow History

| <u>TYPE OF FLOW</u> | <u>AGE OR DATE</u> | <u>AREA REACHED</u> |
|----------------------------|---|---|
| Osceola Lahar | Approximately 5600 years ago – Washington DNR, Division of Geology and Earth Resources. | Enumclaw plateau to Lake Washington and Commencement Bay (now the Port of Tacoma) |
| | | |
| | | |
| | | |
| | | |

2. Other hazards include but are not limited to earthquakes, hazardous materials releases and explosions, wildland interface fires, and flooding.

C. Planning Assumptions

1. The inhabitants of the valley are expected to be self-sufficient for at least three days following an emergency or disaster. There is evidence that pre-disaster preparedness mitigates the impact of emergencies or disasters on those affected.
2. People will spontaneously evacuate areas when there is actual or perceived danger.
3. Loss of life and property will occur with a catastrophic event.
4. It is assumed that evacuations will last more than a few hours.
5. As response resources may be depleted or unavailable and essential systems may be rendered dysfunctional, the emergency responders can only make every reasonable effort to respond based on the situation, information and resources available at the time the situation occurs.
6. Transportation routes will be overwhelmed with people attempting to get to higher ground and out of harm's way. The stalemate will hinder the access of first responders to assist in traffic flow.
7. Debris may make streets and highways impassable and leave people stranded.
8. Vehicles will break down and block roadways.
9. Support agencies and incorporated cities and towns will perform tasks and expend resources under their own authorities, including implementation of mutual aid agreements, in addition to resources received under the authority of this plan.

10. Pierce County will not have all of the resources, either in type or in quantity that may be required for the movement and evacuation of persons in the event of a large and widespread emergency or disaster. Pierce County will coordinate with the incorporated county cities and towns and the state Emergency Management Division (WEMD) for the procurement of needed resources.
11. Mount Rainier National Park Rangers and staff will coordinate the evacuation of the park.
12. The increase of seasonal and holiday visitors to the park will significantly impact the evacuation effort.

IV. CONCEPT OF OPERATIONS

A. Emergency Notification

1. The effectiveness of emergency notification is dependent upon the type and magnitude of the event, the time from the first notification to the impact of the event, time of day, and severity of associated weather.
2. There are different methods of emergency notification but due to the close proximity of the Greenwater community to the mountain some may be less appropriate than others for use if the event is volcanic in nature. This limits emergency notification to the Emergency Alert System, NOAA weather radios, and amateur radio, door-to-door and public address systems.
 - a. The Emergency Alert System transmits emergency information when an emergency or disaster necessitates life saving actions. This information is received by radio, television and cable broadcasters and is quickly re-transmitted to the public. Federal, state and local government agencies and the National Weather Service generate Emergency Alert System messages. The National Weather Service is committed to serving the public in the delivery of all-hazard emergency notification and not just weather related events.
 - b. The NOAA weather radio and the media receive these signals simultaneously over the EAS channels. Through the NOAA weather radio, persons located in the Upper White River Valley are notified of the hazard and given emergency actions to take.
 - c. If the situation and resources permit, this method of emergency notification is supplemented with door-to-door and public address notification.

- d. 911 Dispatch Centers will follow established communications and call-out procedures to alert public safety providers.
- e. **A radio tower located in the Greenwater area will enhance emergency communications necessary to coordinate the evacuation and emergency response efforts. Communications previously restricted to landline telephone may be conducted over radio frequency.**
- f. licensed amateur radio operators will monitor and support field operations by relaying emergency information to appropriate agencies. Radio operators will report to the Greenwater Fire Department when indicated.

B. Emergency Management Concepts

1. Law enforcement is the lead agency in the evacuation and movement of people.
2. Public safety and emergency responders will not be committed into hazard area.
3. Field and emergency operations center (EOC) operations will adhere to the principles and guidelines described in ICS.
4. The Upper White River operational area is divided into four regional zones to optimize emergency operations and communications. They are the Greenwater Zone, Crystal River Ranch Zone, Crystal Villages Zone, and the Recreational Zone. ***If vehicle traffic is not restricted due to hazards, all operational zones will be managed through the Greenwater Zone.***
 - a. Greenwater Zone - On-scene Command
 - Command post for on-scene operations will be established at Greenwater Fire Station 1, located at 59705 SR 410 E, telephone 360-663-2522, fax number 360-663-0382. Primary Frequency utilized for operations will be OSCCR frequency - 156.135 MHz, and DEM (repeated) for Pierce County EOC to Greenwater ICP for overhead communications.
 - Incident commander will be the first arriving public safety responder and will be re-assigned if not initially filled by a senior ranking and qualified sheriff's deputy.
 - Staging of vehicles for on-scene operations will be established at the Greenwater Fire Department Headquarters Station (59705 SR-410) and cross the highway at WSDOT facility properties.
 - The LZ located at Station I (Lat/Long N 47 8.68" W121 38.17") will be secured for flight operations and a secondary LZ established at the WSDOT facility across the street from Station I.

- Public safety personnel unable to report to normal work locations after receiving notification of an emergency or disaster will report to the on-scene command.
- In large-scale events when establishing on-scene command and staging in the Greenwater Zone puts lives in danger, all resources will establish and report to an auxiliary command post at the King County Fairground facilities in Enumclaw.

b. Crystal River Ranch Zone -Unified Command

- When necessary, unified command and staging will be established in the Crystal River Ranch. The ICP will be established at the Crystal River Ranch House located at 16500 Alpine Drive E, phone 360-663-2416
- Appropriate agency personnel will automatically report to the Ranch House when indicated.
- Staging of response vehicles for supporting on-scene operations will be established at the Greenwater Fire Station II (Crystal River Ranch Road) (360) 663-0382.
- An emergency helispot/LZ for rotary wing aircraft will be established and secured in the Crystal River Ranch Ball fields (Lat/Long N47 6.622' W121 35.923')
- Public safety personnel unable to report to normal work locations after receiving notification of an emergency or disaster will report to the on-scene command.
- In large-scale events when establishing on-scene command and staging in the Crystal River Ranch Zone puts lives in danger, all resources will report to the Command Post established at the King County Fairgrounds in Enumclaw.

c. Crystal Village Zone -Unified Command

- When necessary, unified command and staging will be established at the Crystal Village III on the open area of Village Dr E.
- This is an extreme emergency only zone, as this zone will be unsupported by fixed site facilities and utilities.
- Appropriate agency personnel will automatically report to the command post when indicated.
- Staging of response vehicles for supporting on-scene operations will be established on Village Dr E.
- An emergency helispot/LZ for rotary wing aircraft will be established and secured at the northwest end of Village Drive E. (Lat/Long N 47 6.622" W 121 35.923")
- Public safety personnel unable to report to normal work locations after receiving notification of an emergency or disaster will report to the on-scene command.

- In large-scale events when establishing on-scene command and staging in the Crystal Village Zone puts lives in danger, all resources will report to the Recreational Zones Command Post in Enumclaw.
- d. Recreational Zone -Unified Command
- Unified command and staging will be established at the Ranger Creek Airstrip (Lat/Long N 47 1.135” W 121 32.178”). This is an extreme emergency only zone, as this zone will be unsupported by fixed site facilities and utilities.
 - Appropriate agency personnel will automatically report to the command post when indicated.
 - Staging of response vehicles for supporting on-scene operations will be established at the northwest end of the Ranger Creek airfield.
 - An emergency helispot/LZ for rotary wing aircraft will also be established separate from the paved runway and secured. (Lat/Long N 47 1.135” W 121 32.178”)
 - Public safety personnel unable to report to normal work locations after receiving notification of an emergency or disaster will report to the on-scene command.
 - In large-scale events when establishing on-scene command and staging in the Recreational Zone puts lives in danger, all resources will report to the King County Fairgrounds Command Post in Enumclaw.
5. Pierce County, King County, and Lewis County EOCs will open in support of field and command operations and will provide a liaison for unified command at the Upper White River zones when indicated.
6. Aircraft operations in support of all emergency operations will be coordinated through the Greenwater Zone – Greenwater Fire Headquarters Station.
- Control of Aircraft for on-scene operations will be established at Greenwater Fire Station 1 LZ. Helibase Manager will report to Greenwater Fire Station 1.
 - Primary LZ for rotary wing aircraft will be Greenwater Fire Station 1, and a Helispot will also be established at the WADOT facility across from Greenwater Fire.
 - Primary Airport for fixed wing Aircraft will be staged at Ranger Creek Airfield as the primary field for operations. The Airport Manager, when identified, will report to Greenwater Fire Station 1 for briefing then relocate to establish operations at Ranger Creek Airstrip. If operations at Ranger Creek Airfield place responders in the danger zone, then all personnel and air assets involved in aircraft operations will report to the Pierce County Airport where operations will be established.

C. Direction and Control

1. Direction and control under the principles and guidelines of ICS to manage the evacuation and movement activities establish common standards in organization, terminology and procedures. It provides a means (unified command) for the establishment of a common set of incident objectives and strategies during the multi-agency, multi-jurisdiction operations while maintaining individual agency/jurisdiction authority, responsibility and accountability.
2. The incident commander will be the first arriving public safety responder at the command post. Evacuation is a law enforcement activity and the IC will be re-assigned if necessary.
3. Effective coordination of the evacuation is dependent on continued communications among on-scene command, unified command and the EOCs (see Radio Frequencies Attachment).

D. Evacuation and Movement

1. Individual and family emergency preparedness and planning for three days of self-sufficiency enable a more rapid evacuation of the inhabitants of the Upper White River Valley.
2. With notification of a large-scale event requiring evacuation of the Upper White River Valley, all persons located in the area will rapidly begin to evacuate. Some events will be of such a magnitude that quick action to get to high ground will be the only life saving action available. The collection point for such spontaneous evacuations will be: north evacuations - will be the gravel pit located at mile post 5.5 of the USFS 70 road (Lat/Long N 47 W 121); south evacuations – Slippery Creek Road MP In such case all zones will evacuate immediately to their established local route of travel. Maps detailing these evacuation routes will be distributed to each residence in the Upper White River Valley areas.
3. For mass evacuations from the Upper White River Valley, **Traffic flow must continue until well outside the hazardous areas. For West bound evacuations traffic should not stop until the city of Enumclaw. For East bound evacuations traffic should not stop until the city of Packwood is reached. The first collection site and shelter location for westbound evacuations will be at the King County Fairgrounds. The first collection site and shelter location for eastbound evacuations is the Packwood Mill Site on the SE area of town.**

E. Collection and Shelter

1. Evacuated persons will report to the established collection point or shelter. For westbound evacuations, Enumclaw Fire Department and American Red Cross will conduct a brief registration of all arriving persons at the King County Fairgrounds. For eastbound evacuations, the Packwood Fire Department and the Lewis County EOC will coordinate and conduct a brief registration of all arriving persons at the Packwood Mill Facilities. The registration is required to determine the effectiveness of the evacuation and any subsequent need for search and rescue and should include the names, ages, and addresses of the evacuees and any emergency contacts, and a list of missing persons.
2. Not all evacuated persons will need shelter but each evacuation location will temporarily accommodate those who do. Additional shelters will open if needed. The American Red Cross Tacoma-Pierce County Chapter is the lead agency for shelter operations.

V. RESPONSIBILITIES

A. Greenwater Zone

1. Incident Command
 - The first arriving public safety responder to the command post will establish incident command. Evacuation is a law enforcement activity. The incident commander will be re-assigned to a qualified officer or deputy if necessary.
 - With input from other responding agencies, assess the situation and determine the hazard potential and initiate life safety operations, which include but is not limited to evacuation.
 - Determine resource needs.
 - Communicate situation and resource status and needs to unified command frequently.
2. Pierce County Sheriff's Department or Washington State Patrol
 - Appoint qualified deputy, trooper or officer to function as on-scene incident commander.
3. Mount Rainier National Park – White River Station
 - Accommodate and participate in on-scene command post.
 - Establish incident command for emergency operations within park boundaries.

- Support evacuation efforts outside of park if resources allow.

4. Pierce County Fire District #26 (Greenwater)

- Assign a staging officer and ready an area for arriving resources.
- Assign resource officer for resource check-in.
- With input from other responding agencies, assess the situation and determine the hazard potential and initiate life safety operations, which include but is not limited to evacuation.

5. Lewis County Sheriff's Office

- Support evacuation operations and traffic flow.
- Establish mobile command at Lewis County Fire District # (Packwood).

6. United States Forest Service and Department of Natural Resources

Coordinate with on-scene command for available resources.

7. Department of Transportation – Greenwater Maintenance Facility

Coordinate with on-scene command for available resources.

B. B Zone

1. Pierce County Sheriff's Department

- Establish unified command.
- Provide traffic control and facilitate continuous flow.
- Monitor and assess situation and resource needs.
- Communicate situation and resource status and needs to Pierce County EOC frequently.

2. Washington State Patrol

- Participate in unified command.
- Support emergency operations.

4. Fire Department
 - Conduct registration of evacuated persons at King County Fairground's collection site.
 - Liaison with the American Red Cross Tacoma-Pierce County Chapter for the housing and feeding of displaced persons.
5. American Red Cross Tacoma-Pierce County Chapter
 - Open shelters when indicated.
 - Assist in the registration of evacuated persons.
 - Liaison with unified command and the Pierce County EOC.
6. Enumclaw School District
 - Provide facilities for shelter operations.
 - Assist in the registration of evacuated persons, if resources allow.
 - Liaison with unified command, Enumclaw Fire Department and the American Red Cross Tacoma-Pierce County Chapter.
7. Mount Rainier National Park
 - Participate in unified command
 - Communicate park conditions to local authorities as soon as possible.
8. Pierce County Department of Emergency Management
 - Open EOC in support of field and command operations.
 - Participate in unified command.
 - Procure requested emergency resources.
 - Deploy TAC vehicle when indicated.
 - Maintain radio communications tower located in the Greenwater area.
 - Coordinate shelter openings with the American Red Cross Tacoma-Pierce County Chapter.

- Liaison with the WEMD in support of emergency operations and resource requests.
- Determine the need and initiate a Disaster Proclamation.

C. Support Operations

1. Lewis County Department of Emergency Management
 - Open EOC in support of emergency operations provided by county agencies.
 - Participate in unified command when indicated.
2. Law Enforcement Support Agency and other Public Safety Answering Points (911 Dispatch Centers)
 - Provide expeditious emergency notification of emergency response agencies according to established internal procedures.
 - Provide dispatch service to field units throughout the evacuation process.
3. Washington State Emergency Management Division
 - Provide expeditious emergency notification of emergency response agencies according to established internal procedures.
 - Liaison with the Pierce County EOC in support of field and command operations.
 - Transmit Emergency Alert System messages when indicated.
 - Liaison with the Pierce County, the governor and FEMA for a Presidential Declaration of Emergency when requested.
4. KIRO News Radio AM 710, KPLU FM 88.5 and National Weather Service
 - Transmit and broadcast prompt and accurate emergency notifications and information via the Emergency Alert System and, or NOAA Weather Radio.

VI. REFERENCES (published separately)

Emergency Alert System Pierce County Activation Procedures
 Pierce County Comprehensive Emergency Management Plan
 Lewis County Comprehensive Emergency Management Plan

American Red Cross Tacoma-Pierce County Chapter Disaster Plan
Mount Rainier All Hazards Response Plan
Mount Rainier Geo-Hazard Plan

VII. TERMS AND DEFINITIONS

Lahar – An Indonesian word for a flowing mass of mingled volcanic debris and water (Webster’s Ninth New Collegiate Dictionary).

VIII. ATTACHMENTS – An Evacuation Planning Guide for Homeowners

An Evacuation Planning Guide for Homeowners

Your community is at risk of wildfire, and there is a real possibility that you may need to evacuate your home secondary to a fire or other emergency event. You and your family should prepare a family evacuation plan before a disaster threatens.

Get Ready

- Keep your “Important Stuff” list handy.
- Keep sturdy boxes ready for collecting things on your list.
- Prepare an Emergency Supply Kit.

Make Plans with your Family.

- Where will your family members gather or make contact with other family members? Pre-designate meeting areas and contact numbers. Designate out-of-area family members or friends who will collect family location and condition information. If possible include your appropriate aged children in preparation planning.
- Have a pet evacuation plan as well. How will you transport your pets during an evacuation? Where will they be housed? Pets are not allowed in Red Cross Shelters. If you have large animals contact Animal Control or the Humane Association.
- Law Enforcement Authorities may be forced to close roads during a declared emergency.
- Make sure your evacuation plan includes the possibility that you may not be home, but other family members or pets may be home.
- Learn where the alternate route is located in case fire blocks your primary evacuation route.
- Check with your child’s school for Student Release Policy. They should have preparations for sheltering or busing to safer locations. To avoid mass confusion and congestion make plans to pick up children at school after the immediate crisis has passed.

Important Stuff:

Make a list of important items that you need or use on a daily basis. The following are examples. Make your own list and gather the items in advance.

- Prescription drugs.
- Eyeglasses or contact lenses.
- Important documents.

Emergency Supply Kit: In an emergency you will not have time to shop or gather supplies. Assemble a 72-hour emergency supply kit that is readily available.

- 3-Day Emergency Water Supply (1 gallon per day per person).
- 3-Day Emergency Food Supply that will not spoil, and a way to open containers.
- One change of clothing per person.
- One blanket or sleeping bag per person.
- Battery powered radio with spare batteries.
- Flashlight with spare batteries.
- Toiletry supplies.

Get Set

When evacuation seems imminent, put your plan into action

- Remember: Human life is always the priority.
- Park your car facing out to expedite departure.
- Load your 72-hour Emergency Supply Kit.
- Load pets last.
- Then, if there is time...
- Close windows and metal window blinds.

- ❑ Close doors, but leave them unlocked. Fire personnel will assume responsibility for security, and they may need to enter your home to protect it.
- ❑ Cluster lawn furniture and other items that may snag fire hose in out-of-way areas.
- ❑ Remove light curtains and other combustibles away from windows.
- ❑ Leave exterior lights on - it helps firefighters find your home in dark or smoky conditions.
- ❑ Leave sprinklers OFF (firefighters may need the water).

Get Moving - Go!

- ❑ Don't wait to be told to evacuate. Authorities may not have time to order an evacuation. If you feel threatened, leave on your own initiative.
- ❑ Obey law enforcement and fire officers. They understand the risk and act on current fire information. They are concerned for your safety.
- ❑ Drive with your headlights on. Drive carefully. Leave room for fire trucks—they are not very maneuverable!
- ❑ Do not block access roads. Emergency vehicles must have clear lanes to the fire.
- ❑ If your normal evacuation route is burning or you otherwise cannot safely leave, go to a recognized "safe zone" where fire suppression efforts will be concentrated.
- ❑ If there is an alternate route to leave your area – use it. Note: This route may be rough with sharp rocks that can cause a blowout on passenger cars, so drive carefully.
- ❑ If fire overtakes you, stay in the car. It is far safer inside than out.
- ❑ **Do Not Call 911 for non-emergencies.** Emergency Contact Numbers will be announced over the emergency communications network. Listen for these numbers on your car or battery-powered radio.
- ❑ Do not attempt to re-enter the area until after officials have declared it is safe to return.
- ❑ Check in at the designated Red Cross Evacuation Center. Even if you do not utilize emergency housing or require assistance, the Red Cross is responsible for tracking contact names and numbers for evacuees. Checking in will ensure others know you are safe.

Other Important Resources

Red Cross - www.redcross.org/services/disaster

US Department of Homeland Security - www.ready.gov

Attachment # 2 – NFPA Form 299

Wildfire Hazard Severity Form Checklist NFPA 299

This form may be used for individual houses or larger areas like developments or other types of applications

Greater Greenwater Community and Vicinity

| Name of area or address receiving assessment | Points | House or area | Notes |
|--|--------|---------------|----------------------------|
| A. Subdivision Design | | | |
| 1. Ingress and egress | | | |
| Two or more roads in/out | 0 | | |
| One road in/out | 7 | 7 | Narrow, gravel roads |
| 2. Road width | | | |
| Greater than 24 feet | 0 | | |
| Between 20 and 24 feet | 2 | 2 | |
| Less than 20 feet wide | 4 | | |
| 3. All-season road condition | | | |
| Surfaced, grade < 5% | 0 | 0 | |
| Surfaced, grade > 5% | 2 | | |
| Non-surfaced, grade < 5% | 2 | | |
| Non-surfaced, grade > 5% | 5 | | |
| Other than all-season | 7 | | |
| 4. Fire service access | | | |
| < = 300ft, with turnaround | 0 | | |
| > = 300ft, with turnaround | 2 | | |
| < = 300ft, no turnaround | 4 | 4 | |
| > = 300ft, no turnaround | 5 | | |
| 5. Street signs | | | |
| Present (4 in. in size and reflectorized) | 0 | 0 | |
| Not present | 5 | | |
| B. Vegetation (Fuel Models) | | | |
| 1. Predominant vegetation | | | |
| Light (grasses, forbs) | 5 | | |
| Medium (light brush and small trees) | 10 | | |
| Heavy (dense brush, timber, and hardwoods) | 20 | 20 | |
| Slash (timber harvest residue) | 25 | | |
| 2. Defensible space | | | |
| More than 100 ft of treatment from buildings | 1 | | |
| More than 71 -100 ft of treatment from buildings | 3 | | |
| 30-70 ft of treatment from buildings | 10 | 5 | Homes with Defensive space |
| Less than 30 feet | 25 | 15 | Homes on small rec. lots |
| C. Topography | | | |
| 1. Slope | | | |
| Less than 9% | 1 | 1 | |
| Between 10-20% | 4 | | |
| Between 21-30% | 7 | | |
| Between 31-40% | 8 | | |
| Greater than 41% | 10 | | |

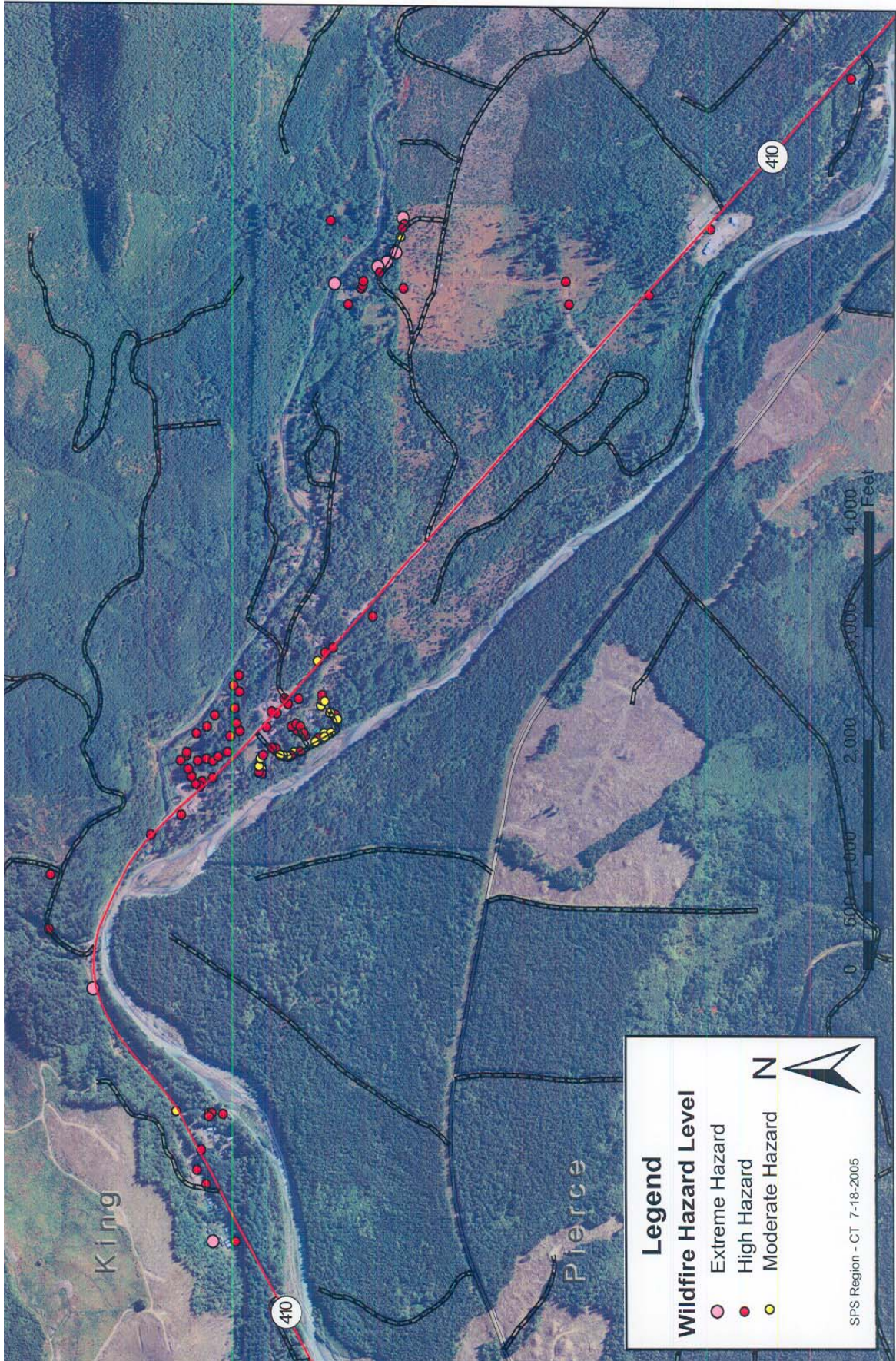
| | | |
|----|---|--|
| 54 | 0 | |
|----|---|--|

Totals for this page

| D. Additional Rating Factors | | or area | / 2 | |
|---|---------------|---------|-----------|-----------------------------|
| 1. Topography that adversely affects wildland fire behavior | 0 - 5 | 5 | | Mountainous valley |
| 2. Area with history of higher fire occurrence | 0 - 5 | 2 | | Past fire history |
| 3. Areas of unusually severe fire weather and winds | 0 - 5 | 2 | | East wind zone of Cascades |
| 4. Separation of adjacent structures | 0 - 5 | 3 | | Homes on small rec. lots |
| E. Roofing Materials | | | | |
| 1. Construction material | | | | |
| Class A roof (metal, tile) | 0 | | | |
| Class B roof (composite) | 3 | 3 | | Many new roofs are Class A |
| Class C roof (wood shingle) | 15 | | | or Class B roofs |
| Non-rated | 25 | | | |
| F. Existing Building Construction | | | | |
| 1. Materials (predominant) | | | | |
| Noncombustible siding/ deck | 0 | | | |
| Noncombustible siding/ wood deck | 5 | | | |
| Combustible siding and deck | 10 | 10 | | |
| 2. Setback from slopes > 30% | | | | |
| More than 30 feet to slope | 1 | | | |
| Less than 30 feet to slope | 5 | | | |
| Not applicable | 0 | 0 | | |
| G. Available Fire Protection | | | | |
| 1. Water source availability (on site) | | | | |
| 500 gpm pressurized hydrants < 1000ft apart | 0 | | | |
| 250 gpm pressurized hydrants < 1000ft apart | 1 | | | |
| More than 250 gpm non-pressurized, 2 hours | 3 | | | |
| Less than 250 gpm non-pressurized, 2 hours | 5 | | | Some areas have 2 in. Stand |
| No hydrants available | 10 | 10 | | Pipes from community wells |
| 2. Organized response resources | | | | |
| Station within 5 miles of structure | 1 | 1 | | PCFD # 26 |
| Station greater than 5 miles | 3 | | | |
| 3. Fixed fire protection | | | | |
| Sprinkler system (NFPA 13, 13R, 13D) | 0 | | | |
| None | 5 | 5 | | |
| H. Utilities (Gas and Electric | | | | |
| 1. Placement | | | | |
| All underground utilities | 0 | | | |
| One underground, one aboveground | 3 | | | |
| All aboveground | 5 | 5 | | |
| Totals for this page | | 46 | 0 | |
| I. Totals for Risk Assessments | | | | |
| Totals for page 1 and 2 | | 100 | #R EF! | High Hazard Area |
| ----- | | | | |
| 1. Low Hazard: | < 39 points | | | |
| 2. Moderate Hazard: | 40-69 points | | | |
| 3. High Hazard: | 70-112 points | | | |
| 4. Extreme Hazard: | 113 > points | | | |
| Census Data | | | | |
| Track number | | | | |
| Block group number | | | | |
| Block number (s) | | | | |

Attachment # 3– Greenwater Structure Risk Assessments Maps

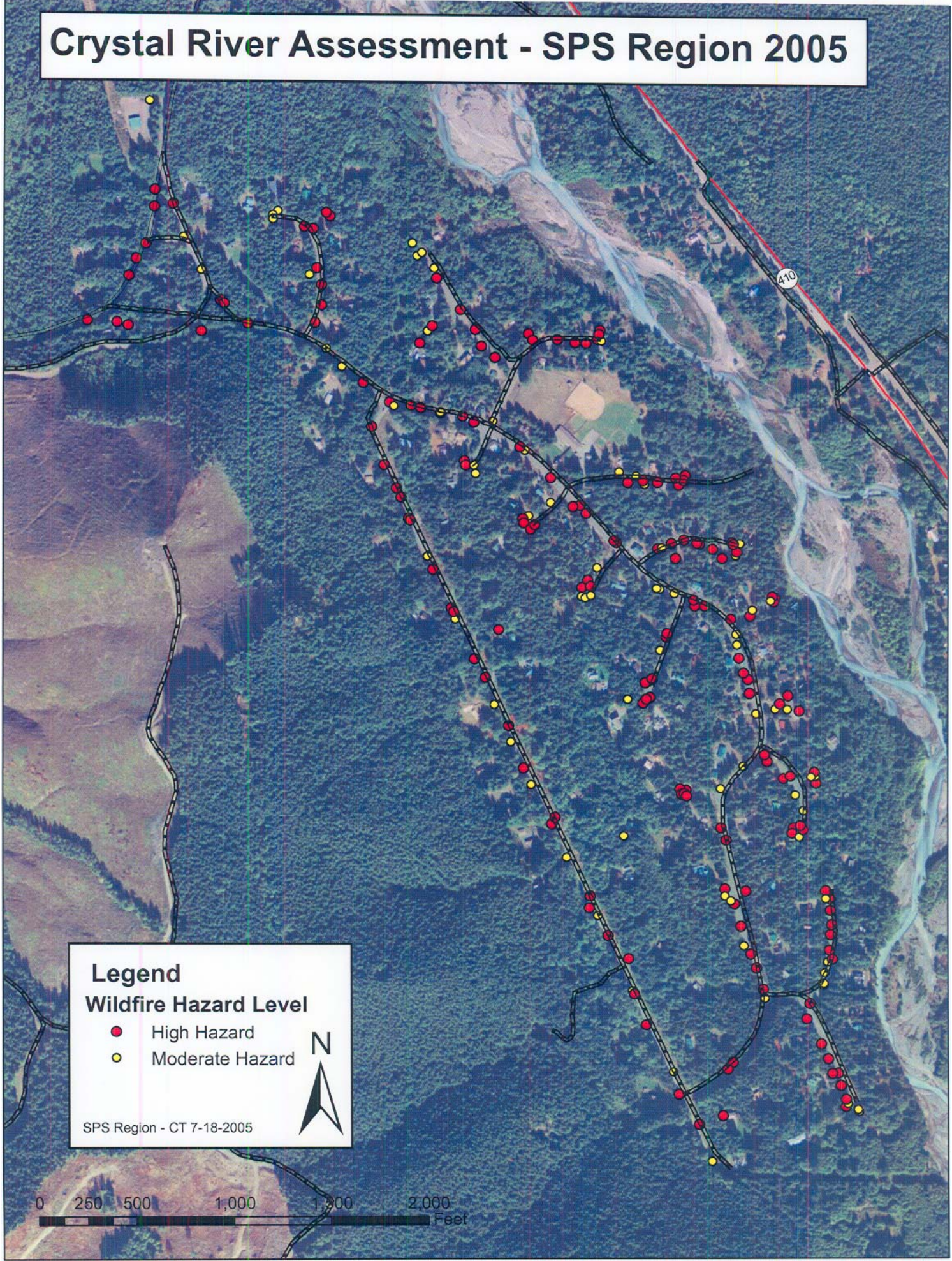
- **Greater Greenwater Assessments Map**
- **Lumpy Lane Assessments Map**
- **Crystal River Assessments Map**
- **Crystal Villages Assessments Map**



Lumpy Lane assessment- SPS Region 2005



Crystal River Assessment - SPS Region 2005



Legend

Wildfire Hazard Level

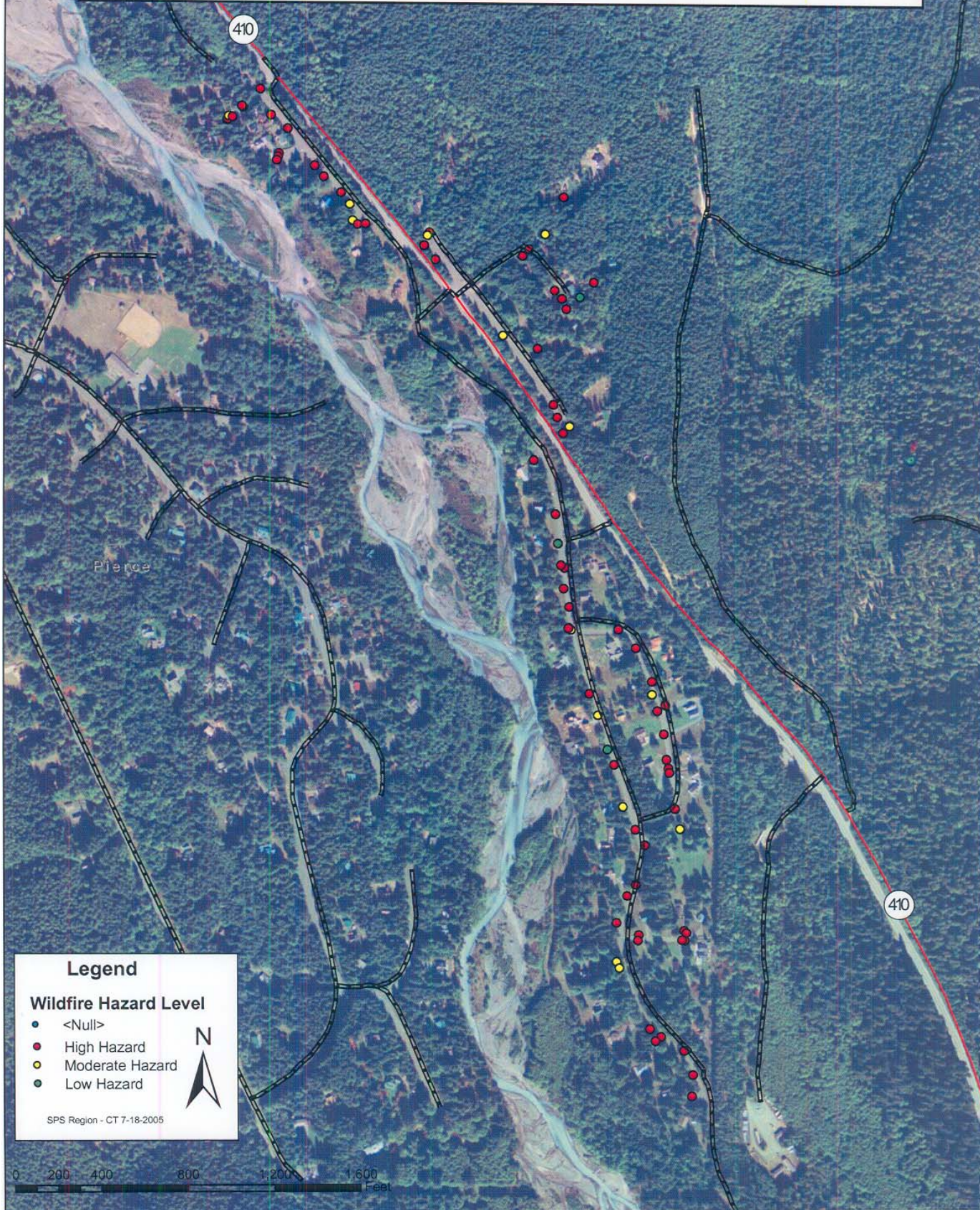
- High Hazard
- Moderate Hazard



SPS Region - CT 7-18-2005

0 250 500 1,000 1,500 2,000 Feet

Village 3 & 2 assessments - SPS Region 2005



Greenwater Community Firewise Mitigation Action Plan 2005 – 2008

Goals and Objectives:

1. Minimize the potential for loss of lives and homes during a wildland fire.
2. Protect Greenwater, Crystal River Ranch, Crystal River Villages and other developments from damage or loss due to a wildland fire.
3. Partner with Greenwater Fire Department, Washington State Department of Natural Resources, U. S. Forest Service, Washington State Parks, Hancock Timber and other public and private, neighboring landowners to our mutual benefit.
4. Serve as an example and leader in Wildland Prevention and Loss Mitigation for East King and Pierce Counties.
5. Become a recognized Firewise Communities/USA and maintain that status into perpetuity.

Plan History-Objectives and Accomplishments

2002 Phase One Objectives

1. Educate property owners of the dangers of wildfire.
2. Create a partnership to minimize the loss of structures and property.
3. Create defensible space in the wildland urban interface.

2002 Phase One Accomplishments

- 54 % of the existing 425 homes in the project area completed defensible space treatment.
- Community received recognition in National Fire Plan Accomplishments Report 2003 for Fuels Reduction project.

2004 Phase Two Objectives

1. Improve access of fire and emergency vehicles by reducing fuels and storm damage debris along roadways. Create escape routes for residents in one way in – one way out areas.
2. Utilize key roads/areas as shaded fuel breaks to protect the community from wildfires. Or utilize these same fuel breaks to protect the forest from fires started in the community.
3. Dispose of forest debris created by homeowners doing fuels reduction and defensible space projects.
4. Assist the elderly, handicapped and those homeowners unable to hire or do fuels reduction work and defensible space projects on their own homes.
5. Reinforce the education and community partnerships started in Phase One with an emphasis on improving the survivability of the community, including wildfires, floods, snow and ice storms, lahars, and other disasters.
6. Create a community spirit and co-operative that will continue the Firewise Communities/USA program.

2004 Phase Two Accomplishments

- 65 % of the existing homes in the project area have initiated defensible space treatments.
- 5 miles of shaded fuel breaks created by improving/utilizing key roads and areas.
- 20 acres of forest fuels treated producing 2,000 yards of chips for the local horse corral, trails and residents
- Community received national recognition in Home & Fire Magazine for chipping project and alternatives to burning of debris generated by Firewise project
- Firewise Board formed.

2005 Objectives:

1. Create a Disaster Mitigation Community Board of local residents, Homeowner's Associations representatives, and others
2. Complete Greenwater Emergency Incident Response Plan
3. Increase awareness of Wildfire and other Disasters problems by sponsoring Fire Department Open House, Disaster Awareness workshop and Living with Fire seminar in the community.
4. Sponsor community clean-up weekends
5. Prioritize, expand and extend shaded fuel break projects by utilizing local volunteers and interagency fire crews.
6. Finish and improve shaded fuel break on DNR Stubbs Road using DNR/USFS engine crews. Tie this fuel break into Greenwater and White Rivers crossing SR 410 east of Greenwater.
7. Create shaded fuel break east of Crystal River Villages utilizing the US Forest Service access road to Boundary Creek facilities using US Forest Service/DNR engine crews.

2005 Accomplishments

1. Greenwater Community Wildfire Risk Assessments updated and incorporated into draft Greenwater Community Wildfire Protection plan.
2. Greenwater Emergency Incident Response Plan and evacuation projects completed.
3. DNR engine crew extended the Stubbs Road fuel break across State Route 410.

2006 Phase Three Objectives

1. Greenwater Fire and Community Board will take the "lead" for Firewise education, fuels reduction, defensible space and alternatives to outdoor burning.
2. The shaded fuel break on the northern and eastern edges of Greenwater will be improved and extended. This will tie into the "natural" Greenwater and White Rivers fuel breaks.
3. The shaded fuel breaks in Crystal River Ranch and Crystal Villages along key roads and power line easements will be designated as immediate fuel breaks. These will also provide access for fire engines and escape routes for residents.

4. Other critical community watersheds and infrastructures will be protected by fuels reduction projects.
5. Mini-Firewise, Living with Fire and FEMA “Are You Ready “workshops will continue for full and part-time residents.
6. A “neighbor-helping-neighbor” program will assist elderly residents or handicapped and/or those unable to hire or do the work on their own.
7. Complete the Greenwater and Vicinity Community Wildfire and Protection Plan.
8. Goal - Work towards getting the Greenwater Community formally recognized as a Firewise Communities/USA community by December 31, 2006.

2007-2008 Action Items

1. Firewise Board and Homeowner’s associations will host and expand annual community events to include opportunities for mini-Firewise workshops, fire prevention education, alternatives to outdoor burning and volunteer opportunities for fuels reduction, defensible space and other work. For examples:
 - a. Debris clean up workday around the Greenwater Fire Hall/ Community Center.
 - b. Annual neighborhood/road clean up parties after winter wind, ice and snow storms.
 - c. Create and maintain a community emergency website with Firewise and fire prevention information.
 - d. Build and maintain Community signboards with Firewise, fire danger, burn ban, alternative to outdoor burning, evacuation routes and other general information.
2. Firewise Board will track progress, evaluate and update the Greenwater and Vicinity CWPP to keep it as a current and viable plan.

A Plan On The Move Rather Than A Plan On The Shelf