

# ***Draft Hazard Mitigation Plan Karuk Tribe of California***



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## ***The Karuk Hazard Mitigation Plan***

### ***Executive Summary***

We are the Karuk Araara', the upriver people, defined by our distinct culture and occupying the middle course of the Klamath and lower course of the Salmon Rivers, a remote, forestland area of northwestern California. We have lived in this region since the beginning of time and have survived extermination, termination, and assimilation while retaining our millennial ties to our land. As a modern day culture, we have sustained our traditions and our rights of sovereignty and self-determination.

Prior to 1900, our own "hazard mitigation," measures included burning the forest understory to prevent wildfire disasters. Karuk managed the prevailing natural environment to promote open forests that were naturally stable, safe, and ecologically productive.

As indicated on the maps supplied by FEMA, the land we now own, trust lands and private lands, is distributed over a large geographic area - from Yreka located on Interstate 5 westward to the mid-Klamath River region. The Karuk Araars' deepest traditions are founded on beliefs that are perpetuated in our yearly ceremonies to "fix the world," where the natural world and socioeconomic well-being of our people and land are enhanced and protected. We have developed this Hazard Mitigation Plan as an investment in our future to take care of our trust lands, ancestral lands, our tribal resources, and our people.

The Karuk Hazard Mitigation Plan (KHMP) will help alleviate disturbances that are detrimental to our safety, livelihoods, natural resources, and our material assets including homes, community facilities, utilities, roads, trails, animals, and spiritual

places. This plan will put us in a better position to compete for grants that further protect our resources and people, mitigating future threats to life and property.

***Requirement §201.4(c)(6):*** *The plan must be formally adopted by the Karuk Tribe of California prior to submittal to [FEMA] for final review and approval.*

The Tribal Council has reviewed the Karuk Draft Hazard Mitigation Plan. After FEMA reviews and returns the draft, the Tribe will sign an agreement that the Tribe will have 30 days to adopt the Final Karuk Mitigation Hazard Plan with a formal Resolution. We understand this plan to be an evolving document that will be updated every three years. The Karuk Tribe of California will comply with all applicable Federal statutes and regulations. In addition, the Tribe will amend this Plan to reflect new or revised Federal regulations or statutes, or changes in Tribal Law, organization, policy, or Tribal government operations. Such amendments will be added to the Plan as they are developed and deemed applicable.

The Karuk Tribe of California is having a public meeting in Happy Camp California in July 2006 so the public can ask questions and comment on the plan. This will help increase the public's awareness and reflect the public's views and opinions.

***Requirement §201.4(c)(1):*** *The Karuk Tribe of California plan must include a description of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how other agencies participated.*

### ***The Planning Process***

The Hazard Mitigation Planning Team (HMPT) met with FEMA on March 3, 2006, to talk about opportunities to repair flood

damages experienced locally in the first week of January 2006. FEMA and the Tribe have identified the flood damages that need to be repaired. This draft plan has been reviewed by the Karuk Tribal Council. The Draft Karuk Hazard Mitigation Plan (KHMP) was prepared in April through June 2006. The Tribe was apprised of its need to complete a HMP in order to be eligible to receive FEMA funding to repair the identified flood damage. The Karuk Tribal Council directed staff to develop a Hazard Mitigation Plan following the March 3, 2006, meeting with FEMA representatives. On March 20, Rick Hill attended a workshop for Tribes in Trinidad, CA. (FEMA-1628-DR-CA) FEMA is providing technical assistance. The Tribe's Hazard Mitigation Planning Team (HMPT) has met four times as a group to assess and cross walk resource data included in the draft. The HMPT has developed a plan that expresses the critical hazard needs and concerns of the Tribal Council and Community.

#### **Karuk Tribal Council**

Arch Super, Chairman  
 Leaf Hillman, Vice Chairman  
 Alvis Johnson  
 Robert Goodwin  
 Leon Hillman  
 Roy Arwood  
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 Robert Grant  
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#### **Karuk Hazard Mitigation Planning Team**

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Bill Tripp, Natural Resources Department  
 Laura Mayton, Chief Finance Officer  
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 Hester Miller, Planner/Editor  
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Through an interdisciplinary planning process we have assembled specialists (listed above) who have provided technical expertise to assess our hazard risks. The Tribe identified the most prevalent hazards, considered the most feasible ways to avoid or minimize these hazards, and developed mitigation strategies to reduce future losses. The methods used to assess the hazards and needs included: referencing Tribal and National Forest documents; historical interviews; GIS queries; newspapers; photography; data gathering, and Federal, State, and County, information. The information was verified for accuracy and extrapolated for the anticipated outcomes. We identified several of the area's most prevalent hazards, and profiled and inventoried the estimated losses that could result from hazardous incidents.

#### **Consulted Resources**

- The Karuk Tribe Newsletter
- Historic and current newspaper articles & publications
- Fred Burcell (historic accounts)
- Historical personal accounts of factual information
- Klamath National Forest Land Management Plan
- Six Rivers National Forest Land Management Plan
- U.S. Forest Service
- National Oceanic Atmospheric Administration (NOAA)
- Karuk Department of Natural Resources (KDNR)
- Karuk Tribal Housing Authority (KTHA)
- Existing Transportation System and Land Use Plan
- California State HMP

### ***The Karuk Community Profile***

As a modern government, the Karuk continue to successfully administer a number of programs. Our self-governance includes: housing divisions, health and dental clinics, People's Centers, education, languages, social services, substance abuse programs, Head Start, and senior nutrition programs in Happy Camp and Orleans, California. The Tribe employs over 120 people in administrative, health and social services, and natural resource programs.

As indicated on the maps FEMA provided the Tribe on March 20, 2006, the area we serve encompasses a large geographic area. Most Karuk living in our ancestral territory live in three communities within a 140-mile stretch of the mid-Klamath River region. 1,454, or 42% of the 3,474 enrolled Tribal members, live on or near Tribal trust land.

Yreka is our area's largest local community, yet relatively small with a population of 7,500. Siskiyou County, the area that spans most of our Ancestral Territory, has a population of 44,000. Yreka, situated on Interstate 5, is less vulnerable to wildfires and flood events than our Tribal lands west of the Interstate. However, Yreka is more vulnerable to earthquakes, and volcanic eruptions. Yreka, the Siskiyou County seat, has a small town infrastructure and hospital. Because Yreka is located on Interstate 5, it is less vulnerable to being isolated than other Tribal communities west of it. Yreka currently has a Karuk housing complex and medical and dental clinic, as well as a Karuk community center under construction.

Winter storms are the most common hazard disruptions we experience and can produce erosion, flooding, high winds, loss of power service and communication services, landslides, snow storms, and road closures

isolating our rural community's. Such disruptions can last for hours to days or longer based on the severity of events.

Happy Camp, Somes Bar, and Orleans are surrounded by National Forests that are highly susceptible to flooding, landslides, and wildfire disturbances. Happy Camp and Orleans have a large concentration of Tribal administration and housing facilities. Happy Camp has Tribal medical and dental clinics and Orleans has a medical clinic. The Tribe also has facilities and housing at Somes Bar. There are additional Tribal residents located along the Klamath River and in the Salmon River drainage.

### ***Karuk Tribal Lands***

The land the Karuk own includes approximately 650 acres of trust land and 1000 acres of fee land (fee land is owned by the Tribe but not yet in trust). These lands are mostly isolated parcels dispersed across central & western Siskiyou County and northeastern Humboldt County in California. They are generally located in small communities surrounded by National Forest Lands.

The Klamath Mountains that surround our Tribal lands are geologically and ecologically unique. The complexity of the areas geomorphology consists of: intrusions of shear zones; large dormant slides; moderate to steep mountain slopes; inner gorges; and stream terraces that are covered with hardwood mixed conifer forests. The physical and hydrologic characteristics of our ancestral lands are largely influenced by our climate and topography. Wildfires, severe storm events, floods, and degraded water quality in the Klamath River are the primary hazards presenting significant threats to our people, fisheries, wildlife,

natural and spiritual resources, facilities, homes, and assets.

**Requirement §201.4(c)(2)(i):** *The Karuk Tribe of California risk assessment shall include an] overview of the type . . . of all natural hazards that can affect the Tribe.*

**(and)**

**Requirement §201.4(c)(2)(i):** *The Karuk Tribe of California risk assessment shall include an overview of the location of all natural hazards that can affect the Tribe, including information on previous occurrences of hazard events, as well as the probability of future hazard events, using maps where appropriate.*

**Hazard Risk Assessment**

**Potential Hazards**

The Hazard Mitigation Planning Team (HMPT) identified natural- or human-induced hazards that could cause problems of varying degrees in our area. While the hazards we have identified are not intended to address all potential hazards, we consider these to be:

- Floods**
- Wildfires**
- Landslides**
- Drought**
- Water Contamination**
- Volcanoes**
- Dam Failure**
- Earthquakes**
- Road and Bridge Failure**

Precipitation amounts in our area vary from up to 90 inches to as little as 10 inches, with approximately 90% falling between October and May. Below 3,500' in elevation, rainfall predominates, while above 4,000', snowfall does. Deep snow accumulates in

the higher elevations during the winter. Summer precipitation occurs mainly in the form of thunderstorms, which are usually high intensity, short duration episodes.

Most local flooding is caused by rain-on-snow events. Also, forest openings, roads, or burned areas allow greater snow accumulations, which increases snowmelt runoff.

Over half of our Tribal facilities and housing tracts are located in low lying areas where floods can occur. Recent flood events occurred locally in 1955, 1964, 1997, and 2005. The most recent flooding did not damage any tribal facilities but flooding comparable to 1955 and 1964 or worse will damage Tribal facilities. Floods generally cut off our communities from outside power service and road access or other services because rivers and streams overflow, wash out roads, and cause landslides that block roads and down trees. In 1955, Happy Camp residents were without electricity for three to six weeks. Helicopters flew in provisions for stranded communities because bridges washed out.

Due to offshore storm events that are saturated with moisture, northwestern California has a chronic and destructive flood history. The largest flood in the area is believed to have been in 1861-62. Despite the construction of dams east of Interstate 5 on the Klamath River, our rural communities remain vulnerable to flooding. Land uses such as logging, agriculture, mining, and road building on steep slopes, from our perspective and experience, contribute to flooding.

The repetitive nature of flood damage is a concern because areas flooded in the past continue to be inundated again and again. Frequent and devastating floods occur

locally on the Klamath River and Salmon River and on all local streams.

Siskiyou and Humboldt Counties are subject to a variety of flood hazard types that occur in the various hydrologic regions with varying degrees of frequency. Flooding that occurs in this area is represented by the 1964 late winter storms that caused \$213 million in property damage in California.

***Historic Flooding Events***

Local flooding occurs when streams and rivers are inundated by rain-on-snow events. Historic accounts of flood events are primarily noted in newspaper archives. Newspaper accounts document flood events in: 1861, 1881, 1890, 1927, 1934, 1948-49, 1955, 1961, 1964, 1994, 1997, and 2005.

- In 1861 and 1961 the Klamath River near Seiad crested 37½ feet above the low water mark.
- In February 1927 the Salmon River rose 45 feet at Somes Bar and the Klamath River rose 51 feet at the mouth of the Salmon River.
- The 1955 Christmas flood washed out over 30 bridges in Siskiyou County. Many homes and outbuildings were lost. Bridges along the Klamath were lost and landslides blocked road access in many locations. Residents were without power and road access for over one month in many areas.
- In 1964, a flood brought excessive amounts of logging debris into local stream channels, blocking access. Salmon River area communities were completely isolated for several weeks.

- In 1997, the flood caused road failures on National Forest lands, costing over forty million dollars to repair.

Local flooding information presented below was provided by NOAA for the Klamath River zone in 2006.

Klamath River below Iron Gate Dam (Lat. 41°55'41", Long. 122°26'35") \*Historical Crests\* (Not official U.S.G.S. crest values):  
 (1) 13.63 ft on 12/22/1964 (29400 cfs)  
 (2) 13.1 ft on 01/01/1997 (20600 cfs)  
 (3) 11.3 ft on 01/16/1974 (18700 cfs)  
 (4) 9.58 ft on 03/24/1993 (11100 cfs)  
 (5) 9.24 ft on 03/11/1989 (10200 cfs)

Klamath River near Seiad Valley (Lat. 41°51'14", Long 123°13'52") \*Historical Crests\* (Not official U.S.G.S. crest values):  
 (1) 33.75 ft on 12/23/1964 (165000 cfs)  
 (2) 29.65 ft on 01/16/1974 (126000 cfs)  
 (3) 29.2 ft on 12/22/1955 (122000 cfs)  
 (4) 28.72 ft on 01/01/1997 (117000 cfs)  
 (5) 22.8 ft on 12/20/1981 (71500 cfs)

The floods of 1955 and 1964 constitute the dominant events in the last century.

***News Years Eve Flood, 2005-2006***

On Friday, December 30, 2005, the Klamath River flooded low lying areas on Highway 96. In addition, numerous streams flowed over Highway 96 as culverts could not contain the runoff. Debris slides (rocks, logs, and mud) covered Highway 96, the primary access in and out of western Siskiyou and northern Humboldt Counties. Travelers were stranded and cut off in unexpected places. In Happy Camp, a Red Cross shelter was set up at the elementary school where travelers were offered a hot meal and a place to sleep. In the Somes Bar/Orleans area, no services were provided.

Cal-Trans kept Highway 96 open as long as possible, but debris slides and water inundating the Klamath River around Granite Point near Seiad Valley forced the closure of Highway 96 at 5 pm on December 30. Emergency services and law enforcement worked around the clock to take care of the communities' needs for the next several days. Debris slides at Aubrey and Three Creeks south of Happy Camp and a massive debris slide south of Orleans isolated Orleans/Somes Bar from any assistance. As the overflow from streams and rivers dropped, the flood debris, landslides, washouts, and roads that were undermined continued to present hazards and block road access. Travelers were stranded in Happy Camp, Somes Bar, Orleans, and other small, isolated communities in western Siskiyou and northern Humboldt Counties for three days or longer, depending on location and road conditions. In the 2005 flood event, Highway 96 was submerged five (5) feet near Granite Point, just north of Seiad Valley.

### **Wildfires**

The map FEMA provided under the CDF Wildland Fire Threat Category indicates the entire area surrounding Karuk lands qualifies for very high wildfire hazards.

Wildfire outcomes are determined by weather, fuels, terrain, and, to a lesser extent, suppression efforts. Large scale, hot wildfires can cause catastrophic impacts to forests, particularly Karuk Trust lands and resources on National Forest lands we continue to use.

All the Karuk Ancestral Territory, roughly 1.4 million acres, is National Forest and nearly all of the land owned by the Tribe is at a high risk to fires. Each of our Tribal

communities in western Siskiyou and northern Humboldt Counties are surrounded by National Forest land that falls into High Wildfire Condition Classes. A century of National Forest management, specifically logging and fire suppression, has diminished the capacity of our local forests to withstand wildfire disturbances. This mismanagement, the Karuk feel, has adversely impaired the ecological integrity of our ancestral homelands. On National Forest lands, for example, there is now an unnaturally high build-up of fuel that promotes intense hot fires. Hot fire events under these conditions:

- Impairs watersheds' ability to hold soil in place and trap sediment before it enters stream systems. Hot wildfires present a significant risk to soil, especially in denuded watersheds, through accelerated erosion potential in the immediate post-fire environment, particularly when subjected to severe rainstorm events prior to vegetation recovery.
- Causes a short-term increase in the quantity and the delivery rate of water entering streams, having significant adverse effects downstream from the site of a fire, due to decreased water absorption because of vegetation killed.
- Increases runoff, which was especially evident at Aubrey Creek in the 2005 flood event, 19 miles south of Happy Camp.

Major wildfires over the past five decades caused wide-scale devastation almost over the entire Karuk Ancestral Territory, costing tax payers millions of dollars. These fires included the 1977 Hog Fire, the 1987 Complex, and the Megram Fire in 1999, and burned hundreds of thousand of acres. Other large scale wildfire events included the Dillon Complex in 1994 and the Pony Fires in 1996-1997. Fire salvage activities

can also create undesirable impacts due to additional land disturbances.

Large scale wildfires followed by episodes of heavy precipitation and snow melt inevitably produce high sediment deliveries that cause landslides, road failures, and adverse wreckage to fisheries, cultural resources sites, ceremonial areas, vegetation, and ecosystems' resilience.

### ***Landslide Events***

Northwestern California's proliferation of steep mountains and erosive soils puts it at high risk for landslides. Any slope of 15 degrees or greater is susceptible to mud flows or landslides. The majority of the terrain within the Karuk Ancestral Territory is greater than 40% slope and especially susceptible to erosion and landslides.

The area's geologic context is predominately metamorphic forms in the Orleans, Somes Bar, and Happy Camp areas, and includes volcanic forms in the Yreka area. Ultramafic bedrock is common in the mid-Klamath area and is highly fractured, containing numerous groundwater concentrations and springs. It has a high potential for slumping and landslides when saturated by storm events. On steep ground, metamorphic soils are usually more deeply weathered and subject to large earthflow landslides. Soils derived from granitic materials are also highly erodible when disturbed. These soils are extremely sensitive to road cuts and fills and are therefore prone to additional landsliding in future rainstorms. According to data collected, road-related landslide rates range from 60-800 times greater than undisturbed rates in granitic soils (de la Fuente and Haessig 1991). These granitic rocks form sandy, easily eroded soil when deeply weathered and are typically referred to as

decomposing granite (DG). This soil is susceptible to greatly accelerated surface erosion, channel erosion, and shallow debris sliding. Active earthflows present chronic problems during years of above average rainfall. Karuk lands are located on steep slopes or on flats adjacent to steep terrain and subject to potential landslide hazards. We have high incidences of landslides that close off our roads.

Landslides that can impact our resources, homes, roads, facilities, and other assets are typically triggered by heavy precipitation events or other cumulative impacts, including wildfire events. The intensity of past logging, road construction, and lack of road maintenance by the United States Forest Service has aggravated mass landslide incidents.

Intense rainfall that results in widespread landslides also increases coarse sediment deliveries to streams, which degrades spawning habitat and water quality for our salmon subsistence needs. Past landslide incidents that caused considerable disturbance occurred locally in 1955, 1964, 1974, 1997, and 2006.

### ***Dam Failure***

The structural failure of up river dams would cause complete devastation of river lowland areas creating water levels that are many times higher than ever recorded during flood events. Seismic activities, internal erosion, and terrorism could cause failure of Iron Gate, Copco I or II, Dwindell, or the J.C. Boyle dams.

### ***Road or Bridge Failure***

During periods of extreme flooding Highway 96 is subject to slides, mud flows, and complete road failure. Alternate dirt or

gravel surface road escape routes that climb out of the Klamath River canyon are also subject to closure because of snow, slides or road failure (e.g. Greyback Road). Bridges in Happy Camp, Orleans, Klamath River, and Seiad Valley are susceptible to failure during severe flooding. Bridge failure(s) essentially cut off inhabitants in western Siskiyou and/or northeastern Humboldt Counties. Flood events in 1955 and 1964 caused bridges to fail.

### ***Water Contamination***

The Bureau of Reclamation's massive Klamath Irrigation Project and runoff from pesticides, fertilizers, and animal waste has contaminated the Klamath River, degrading water quality. Additionally, contaminated storm water and high amounts of sediment can pollute the Klamath River. Water contamination affects the health of humans, animals, the ecosystem, and our subsistence use of salmon, eel, and sturgeon.

High water temperatures and low water flows decrease the oxygen supplies that can kill fish and introduce deadly aquatic diseases. The Karuk Tribe has conducted studies of deadly contamination in Iron Gate Reservoir that indicate extremely toxic algae.

Natural and human-induced hazards have significantly diminished the availability and quality of natural resources the Karuk depend on. The decline of our subsistence foods, especially salmon, has dramatically affected our People's quality of life and health. Our traditional diet and food sources have been significantly altered.

### ***Volcanic Eruptions***

Mount Shasta "has erupted, on the average, at least once per 800 years during the last 10,000 years, and about once per 600 years

during the last 4,500 years." The last known eruption was in 1786. The potential impacts of an eruption on the northwest face of Mount Shasta to Karuk domain could be tremendously devastating.

### ***Earthquakes***

Earthquake events in the region are not uncommon considering earthquake frequencies. California is considered high risk because of major faults and its history of earthquake events. While no major faults run through Siskiyou County, the Cascade Range, near Mount Shasta, is fairly susceptible, as indicated by the FEMA information maps. A recent earthquake event that rocked Eureka, CA was also felt by residents in Siskiyou County. Because our geography is extremely mountainous, the extent of damage from a major earthquake could be tremendous, cutting off access in and out of the area. There is only one primary access route in western Siskiyou County, Highway 96, which is narrow and winds through the mountains along the Klamath River.

The Earthquake Map provided by FEMA indicates that Tribal lands fall into 0-40% gravity, which is a moderate rating.

### ***Drought***

Tree ring studies, conducted by the Pacific Southwest Research Center for the Forest Service in Thompson Creek near Happy Camp, indicate that the past century (1900-2000) was the second wettest century in seven hundred years locally. Research also indicates that, prior to 1850, the Karuk landscape was managed for more open grassland oak woodlands, indicating that the previous centuries were dryer.

Drought events in the Klamath Mountains stress trees, as well as promote insect & disease attacks to forests that kill them. Prolonged drought kills forest stands due to lack of water. Drought conditions can encourage wide scale wildfires that can be extremely devastating. Prolonged episodes of drought can also impact domestic and tribal water systems. Local droughts occurred from 1977-87.

**Requirement §201.4(c)(2)(iii):** *The Karuk Tribe of California risk assessment shall include an overview and analysis of potential losses to the identified vulnerable structures, based on estimates provided in local risk assessment as well as the Tribal risk assessment. The Karuk Tribe of California shall estimate the potential dollar losses to Tribally-owned or operated buildings, infrastructure, and critical facilities located in the identified hazard areas.*

### **Hazards to Facilities and Infrastructure**

Protecting infrastructure is essential to the health and welfare of our communities. Local infrastructure needs include: roads and bridges that provide access for emergency vehicles, medical care, food, shelter, and water; utilities that provide water, electricity, and communication services; local law enforcement; emergency responders; medical facilities; fire stations; schools; tribal buildings; grocery stores; and other businesses essential to the community's economy and safety. Hazardous materials have the potential to impact public health in a disaster or a hazardous event and must be contained.

This assessment has taken into account the location of Tribal facilities and relevant infrastructure to better determine hazards that are likely to threaten life, specific

resources, facilities, housing, and roads. The following hazardous events make our facilities and infrastructure particularly vulnerable:

**Flooding:** Facilities or homes near lowland rivers or streams are highly vulnerable to flooding. This includes the Tribal Administration Offices and other Tribal facilities in Happy Camp, Tribal housing and facilities in Orleans, the Fish Hatchery in Orleans, Highway 96, and other low lying roads or settings that become inundated by overflowing streams and rivers. Erosion disturbances from flooding can cause significant damage and repair costs to Tribal resources, forest environments, and local rural infrastructure. Floods have a significant impact on accessibility due to landslides, road failure, and flooded roads.

**Landslides:** Typically result from storm events and are due to the area's geologic instability. The magnitude and occurrences are exacerbated by the extensive U.S.F.S. road network. A direct and immediate threat from landslides is the isolation created. As stated earlier in this document, there have been numerous occasions where assistance can only be provided by helicopter. A few residents are situated in locations that are vulnerable to landslide and erosion damages. These housing facilities are exposed to unstable slopes.

**Earthquakes:** In a very large localized earthquake (8.0), Tribal facilities & housing, roads, and bridges will be significantly damaged. Landslides activated by such an earthquake will present catastrophic damage and cripple local communities. An earthquake has the potential to cause major structural and/or non-structural damage to any non-retrofitted facilities. High liquefaction areas and locations susceptible

to mass land sliding are likely to sustain the heaviest damages.

**Wildfires** are very common west of Interstate 5 because the area is heavily forested, difficult to access, and has hot summers with lightning. Virtually all the Tribal communities, facilities, and housing west of Interstate 5 are threatened by wildfires.

### ***Cumulative Impacts of Fire and Flood Episodes on Tribal Resources***

Due to the unnatural build up of forest fuels, wildfires burn a high percentage of the forest canopy, exposing soils that are then extremely susceptible to storm events. These storm events, which displace large amounts of sediment, create costly damage to downstream Tribal assets such as homes, roads, and other infrastructure. Increased sediment levels can overwhelm stream systems by filling in deep pools and niches used by fish and other aquatic species, causing flooding and deposition in riparian habitats and damaging small-scale and large-scale private, tribal, or community water supply facilities. Moreover, these cumulative fire/storm event disturbances can have long-term adverse impacts on our fishery and other land-based subsistence & cultural resources needs.

### ***Protection of "Trust Resources" on Federal Lands***

While the Karuk have 650 acres of trust lands and over 1000 acres of fee lands, many of the Tribe's most valued resources (i.e. cultural assets) are located on federal lands, which encompass approximately 1.4 million acres of National Forest lands. Karuk cultural resources are trust resources the government is obligated to protect as part of its trust responsibility to Federal

Indian tribes. Karuk trust resources include: traditional subsistence foods such as fish, shellfish, wild game, acorns, mushrooms, and plants to make baskets and objects for ceremonial & sacred uses. Many irreplaceable cultural resources are adversely impacted by frequent fires and floods. In the past, floods have washed away burial sites and fires have incinerated cultural resources.

The Karuk Tribe of California maintains Fire/Fuels and Watershed Restoration programs as well as MOUs with local National Forest Offices that encourage the Karuk Tribe's involvement in wildfire suppression, fuel reduction projects, and watershed restoration (road decommissioning) activities. This allows the Tribe to monitor fire suppression, proactively reduce fuel loads, and reduce the threat posed by un-maintained road miles in its Ancestral Territory. In addition, the Tribe meets monthly with the U.S.F.S. to address other activities that may impact Karuk resources. When fire events occur, the Karuk Tribe encourages the U.S.F.S. to implement responsible mitigation to protect Tribal resources and needs. In some instances, there is not enough time to take the action(s) needed. For this reason, safeguarding our irreplaceable natural and cultural resources in advance is critical.

The December 31, 2005, flood impacted locations where ceremonial activities occur. It also affected areas where the Karuk are dependent on forest resources and road access to them. These resources include, but are not limited to:

- Ceremonial Grounds
- Gathering Sites for Subsistence
- Trails
- Road Access
- Fish Hatchery

**Requirement §201.4(c)(3)(i):** *The Tribal mitigation strategy shall include a description of Tribal goals to guide the selection of activities to mitigate and reduce potential losses.*

**General Mitigation Goals include:**

Completing a more detailed Tribal Emergency Response Operations Plan; applying for a FEMA Pre-Disaster Planning Grant; developing policies that improve coordinated planning and emergency response & preparedness among Tribal and non-Tribal communities; and educating the Tribal membership on how they can make their residences more defensible against hazardous incidents.

**Specific Hazard Mitigation Goals include:**

**Avalanches**

Avalanche threats are not considered high-priority for communities or resources within Karuk lands.

**Dam(s) Failures  
(Mitigation Goal D)**

Failure of dams and water storage facilities located upriver on the Klamath River could do severe damage to Karuk people, communities, and resources. See Flooding and Severe Storm Events below.

**Mitigation Goal D1: Minimize losses to human life and public safety.**

**Objectives:**

- **D1.1** Designate person responsible for an early warning system. Hold regular drills for community members to improve preparedness beginning in 2007.
- **D1.2** Identify and distribute real time escape routes and safe zones to the community over the next 2 years.

- **D1.3** Conduct yearly workshops that increase Tribal awareness and responses to emergency situations.
- **D1.4** Coordinate relief activities with other emergency response agencies in 2007.

**Mitigation Goal D2: Minimize losses to homes and facilities.**

**Objectives:**

- **D2.1** Prepare detailed GPS mapping of residences, structures, and infrastructure by 2008.
- **D2.2** Re-channel altered stream courses that may threaten structures and create plan to divert flood waters by 2008.
- **D2.3** Where possible, relocate or decommission structures and take actions that minimize hazard threats to Tribal infrastructure and resources by 2011.
- **D2.4** Coordinate relief activities with other emergency response agencies in 2007.

**Mitigation Goal D3: Protect cultural and environmental resources.**

**Objectives:**

- **D3.1** Identify 100% of cultural resources at risk by 2007 and implement protective measures based on findings by 2009.
- **D3.2** Re-channel altered stream courses that may threaten resources and divert or stop flood waters.
- **D3.3** Place cultural monitors on emergency and clean-up crews to establish Tribal cultural boundaries and supervise activity near them.
- **D3.4** Where impossible to protect resources through pre-planning, create priority list for post-recovery efforts.

### ***Droughts and Extreme Heat (Mitigation Goal DH)***

Drought episodes impact not only Karuk communities' water supplies and the People's health, but also essential cultural and subsistence resources due to low water levels and increased flammability of forest fuels. See Wildfires below.

#### **Mitigation Goal DH1: Protect public health and safety.**

##### **Objectives:**

- **DH1.1** Install water storage facilities for communities at risk by 2011.
- **DH1.2** Develop an assistance program for elders and others in Karuk communities during times of extreme heat by 2008.
- **DH1.3** Conduct planning aimed at reducing the severity of droughts with government and agricultural users so that fish species will be protected and water quality improved with quantity.
- **DH1.4** Adopt ordinances that conserve water during declared drought emergencies and maintain adequate flows for fish by 2007.
- **DH1.5** Reduce flammable fuels on Tribal lands and adjacent National Forests over the next 5 years.
- **DH1.6** Conduct workshops that increase awareness of water conservation measures.
- **DH1.7** Construct wells and purchase potable water trucks by 2008.

#### **Mitigation Goal DH2: Protect cultural and environmental resources.**

##### **Objectives:**

- **DH2.1** Conduct planning aimed at reducing the severity of droughts with government and agricultural users so that fish species will be

protected and water quality improved with quantity.

- **DH2.2** Adopt ordinances that conserve water during declared drought emergencies and maintain adequate flows for fish by 2007.
- **DH2.3** Reduce flammable fuels on Tribal lands and adjacent National Forests over the next 5 years.
- **DH2.4** Place cultural monitors on fire crews to establish Tribal cultural boundaries and supervise activity near them.

### ***Flooding and Severe Storm Events (Mitigation Goal F)***

Located along the Klamath River, the Karuk communities of Happy Camp and Orleans are prone to flooding and high water episodes, which are primarily caused by winter rain-on-snow events. Flooding along the River and its tributaries has historically resulted in losses of lives, homes, and cultural resources as well as structural damages. See Dam Failure above.

#### **Mitigation Goal F1: Minimize losses to human life and public safety.**

##### **Objectives:**

- **F1.1** Designate person responsible for an early warning system. Hold regular drills for community members to improve preparedness beginning in 2007.
- **F1.2** Identify and distribute real time escape routes and safe zones to the community over the next 2 years.
- **F1.3** Identify and adopt preparedness measures to reduce the disruption of: electrical power; food and water shortages; communications; medical services; and travel during storms and flood events by 2008.
- **F1.4** Provide: generators; food and water; emergency vehicles; and radio

communication equipment to Karuk communities.

- **F1.5** Conduct yearly workshops that provide search and rescue training as well as increase Tribal members' awareness of and responses to emergency situations.
- **F1.6** Coordinate relief activities with other emergency response agencies in 2007.

### **Mitigation Goal F2: Minimize losses to homes and facilities.**

#### **Objectives:**

- **F2.1** Prepare detailed GPS mapping of residences, structures, and infrastructure by 2008.
- **F2.2** Re-channel altered stream courses that may threaten structures and create plan to divert flood waters by 2008.
- **F2.3** Where possible, relocate or decommission structures and take actions that minimize hazard threats to Tribal infrastructure and resources by 2011.
- **F2.4** Conduct yearly workshops that provide search and rescue training as well as increase Tribal members' awareness of and responses to emergency situations.
- **F2.5** Coordinate relief activities with other emergency response agencies in 2007.

### **Mitigation Goal F3: Protect cultural and environmental resources.**

#### **Objectives:**

- **F3.1** Identify 100% of cultural resources at risk by 2007 and implement protective measures based on findings by 2009.
- **F3.2** Re-channel altered stream courses that may threaten resources

and create plan to divert or stop flood waters.

- **F3.3** Place cultural monitors on emergency and clean-up crews to establish Tribal cultural boundaries and supervise activity near them.
- **F3.4** Where impossible to protect resources through pre-planning, create priority list for post-recovery efforts.

### ***Earthquakes***

The largest earthquakes in our region have taken place offshore from Eureka, California, which is 130 miles away by highway. There have been two earthquakes this century, which resulted in life and property losses.

### ***Landslides and Road & Bridge Failures (Mitigation Goal LR)***

Much of the Klamath region contains unstable soil, steep mountains, and many roads. During winter rains, storms, and floods, especially rain-on-snow events, saturated soils frequently slide. Landslides block roads, threaten & destroy homes and facilities, and make public safety perilous to maintain.

### **Mitigation Goal LR1: Minimize impacts to public health and safety.**

#### **Objectives:**

- **LR1.1** Prepare detailed GPS mapping of residences, structures and infrastructure to aid clearing strategies and evacuation in an emergency by 2008.
- **LR1.2** Develop an assistance program for elders and others in Karuk communities by 2008.
- **LR1.3** Identify critical road infrastructure and current condition.

- **LR1.4** Identify and distribute real time escape routes and safe zones to the community over the next 2 years.
- **LR1.5** Identify hazards, post warnings, and develop alternative travel routes.
- **LR1.6** Conduct yearly workshops that increase Tribal awareness and responses to emergency situations.
- **LR1.7** Designate person responsible for an early warning system. Hold regular drills for community members to improve preparedness beginning in 2007.
- **LR1.8** Coordinate relief activities with other emergency response agencies in 2007.

**Mitigation Goal LR2: Minimize impacts to homes and other property.**

- **LR2.1** Prepare detailed GPS mapping of residences, structures, and infrastructure by 2008.
- **LR2.2** Where possible, relocate or decommission structures and take actions that minimize hazard threats to Tribal infrastructure and resources by 2011.
- **LR2.4** Coordinate relief activities with other emergency response agencies in 2007.

**Mitigation Goal LR3: Minimize impacts to cultural and natural resources.**

**Objectives:**

- **LR3.1** Identify 100% of cultural resources at risk by 2007 and implement protective measures based on findings by 2009.
- **LR3.2** In collaboration with U.S.F.S., continue implementing pro-active restoration projects and vigorously storm-proof identified critical road infrastructure with Tribal crews.

- **LR3.3** Where impossible to protect resources through pre-planning, create priority list for post-recovery efforts.

**Wildfires**

**(Mitigation Goals WF)**

Wildfires are a constant threat to Karuk communities during warmer months. Fires often start with lightening strikes, but extremely hot fires result from imbalances in nature such as bare, logged land; logging roads; and land with excessive fuel due to fire suppression practices. Wildfires that burn in these environments are especially dangerous for people and the environment. In the forest, bare soils become too hot and their composition becomes vulnerable to erosion and, in wet weather, landslides. Logging roads cut into mountains exacerbate this phenomenon. See Droughts and Extreme Heat above.

**Mitigation Goal WF1: Minimize losses to human life and public safety.**

**Objectives:**

- **WF1.1** Reduce flammable fuels on Tribal land and in adjacent National Forests over the next 5 years.
- **WF1.2** Prepare detailed GPS mapping of residences, structures and infrastructure to aid clearing strategies and evacuation in an emergency by 2008.
- **WF1.3** Develop an assistance program for elders and others in Karuk communities during times of wildfire disturbances by 2008.
- **WF1.4** Identify and distribute real time escape routes and safe zones to the community over the next 2 years.
- **WF1.5** Designate who will be responsible for the early warning systems.

- **WF1.6** Conduct yearly workshops that increase Tribal awareness and responses to emergency situations.
- **WF1.7** Coordinate relief activities with other emergency response agencies.
- **WF1.8** Install water storage tanks in strategic locations by 2008.

### **Mitigation Goal WF2: Protect cultural and natural resources**

#### **Objectives:**

- **WF2.1** Reduce flammable fuels on Tribal lands and adjacent National Forests over the next 5 years.
- **WF2.2** Identify 100% of cultural resources at risk by 2007 and implement protective measures based on findings by 2009.
- **WF2.3** Place cultural monitors on fire crews to establish Tribal cultural boundaries and supervise activity near them.
- **WF2.4** Where impossible to protect resources through pre-planning, create priority list for post-recovery efforts.

### **Mitigation Goal WF3: Minimize losses to homes and facilities.**

#### **Objectives:**

- **WF3.1** Prepare detailed GPS mapping of residences, structures, and infrastructure by 2008.
- **WF3.2** In collaboration with the U.S.F.S., direct Tribal hand crews to clear forest understory.
- **WF3.3** Where possible, relocate or decommission structures and take actions that minimize hazard threats to Tribal infrastructure and resources by 2011.
- **WF3.4** Clear around homes and buildings to reduce fuels.

- **WF3.5** Coordinate relief activities with other emergency response agencies in 2007.

### **Water Contamination (Mitigation Goal WC)**

Large amounts of silt behind dams, combined with pesticide by-products in irrigation run-off, pose a water contamination risk for Karuk communities situated down river, especially during storm or flood events. High water events of any kind create a concern for both public water supplies and traditional subsistence foods, especially fish, which are near the Klamath River and its tributaries. Water contamination concerns coincide with both Dam Failure and Flooding and Severe Storm Events, discussed above.

### **Mitigation Goal WC1: Protect public health and safety**

#### **Objectives:**

- **WC1.1** Prepare detailed GPS mapping of potentially threatened contaminated water resources over next year.
- **WC1.2** Encourage the Bureau of reclamation, the federal government, agricultural industries, and private power companies to take measures to protect the quality of water downstream from their activities.
- **WC1.3** Work to establish Tribal Water Quality Standard by late 2007.
- **WC1.4** Continue fishery recovery programs that help restore the health of aquatic systems.
- **WC1.5** Conduct workshops that increase Tribal awareness of water quality and implement water conservation measures that preserve the quality of water on Tribal lands.

**Mitigation Goal WC2: Minimize interruptions to public water supplies during an emergency**

**Objectives:**

- **WC2.1** Coordinate clean-up activities and adopt ordinances that help recover water quality in response with other agencies.
- **WC2.2** Conduct workshops that increase Tribal awareness of water quality and implement water conservation measures that preserve the quality of water on Tribal lands.
- **WC2.3** Construct wells and purchase a potable water trucks by 2008.

***Volcanoes***

Karuk lands are at a possible, though small, risk from volcanic activity. Mount Lassen was last active between 1914 and 1921. Mt. Shasta last erupted in 1786. 46 miles from Yreka, it is the closer of the two volcanoes to Karuk communities.

***Requirement §201.4(c)(3)(ii):*** *The Karuk Tribe of California mitigation strategy shall include a discussion of the Tribe's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: an evaluation of Tribal laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas [and] a discussion of Tribal funding capabilities for hazard mitigation projects.*

***Pre- and Post-Disaster Program Capacities***

The Karuk Tribe's pre- and post-hazard management capacity is limited because our programs and organization are entirely dependent on available federal funding. Our situation is compounded by the fact that our geographic location makes us highly

vulnerable to disaster events that further isolate our rural communities.

While the Karuk Tribe has been mostly dependent on local government responses to disaster relief, coordinating with law enforcement, search and rescue, the Red Cross, the Forest Service, State, and County agencies is essential in relief situations as we are the only medical provider in Orleans and Happy Camp. During the 2006 flood event we provided continuous emergency medical care, coordinating relief with the Red Cross and other agencies where communities were cut off from the outside world.

We have medical plans and general emergency management policies, but lack funding to develop more detailed comprehensive hazard mitigation program. We are interested in grant opportunities such as FEMA's Hazard Mitigation Grant Program (HMGP) and Flood Mitigation-FMA.

The Tribe has limited experience in post hazard damage assessments and response. Additional training is needed. The Tribe is developing the Karuk Emergency Response & Operations Plan (KEROP) that will comply with Federal and State Incident Management Systems. To refine and develop the plan in greater detail, we have an unmet need of \$40,000. For emergency response operations training we have an unmet need of \$ 25,000.

The Karuk Tribe of California has established MOUs with the Klamath and Six Rivers National Forests and Cal-Trans to facilitate a coordinated mitigation effort aimed at protecting Tribal resources within our Ancestral Territory from hazards. These MOUs allow the Tribe to monitor federal and state activities during and after hazard

incidents that may impair tribal lands and natural & cultural resources. In addition, Tribal preventative pre- and post-disaster mitigation planning activities include:

- Establishing property protection measures for structures located in hazard areas;
- Establishing partnerships at all levels of government and in each community to improve and implement methods that help protect property;
- Reducing or eliminating repetitive property losses due to flood, fire, and earthquake events; and
- Researching, developing, and adopting measures to mitigate damage to land-based resources, such as low-intensity, prescribed hand crew fuel reductions, road decommissioning, and storm-proofing roads on forest lands.

### ***Implementing Effective Emergency Management Response Activities***

The Tribe's infrastructure may be at risk for failure during or after an event. Maintaining partnerships with other emergency response entities will be important. Ensuring that critical facilities and infrastructure are retrofitted or built to standards that make them less vulnerable in a hazard event is important, though problematic due to the costs involved.

### ***Incident Readiness & Responsiveness***

When a hazard is pending, the Tribe will assemble a team to analyze high-risk areas and develop mitigation strategies that address the risks. The Team will utilize the Hazard Mitigation Plan and the Karuk Emergency Response Operations Plan to guide initial responses that help ensure the safety & health of tribal members and the protection of life & property. During an

incident the Council and Tribe will be updated at daily briefings.

Local hazard events frequently cause power outages and create significant disruptions to our communities and infrastructure. It is especially important that facilities designated as emergency shelters have back-up power generators. In flood events, many Tribal residents are often cut off from services due to road closures and without electrical power. Tribal heavy equipment, once acquired, will be utilized to re-open roads and assist in any manner deemed necessary to alleviate conditions. Generators can provide residents emergency power if the Tribe can purchase or rent generators. Tribal facilities that have emergency generators may be utilized also if residents have access to these facilities.

Individual households should be prepared for emergency situations. Assuring that Tribal households are informed of the necessity of maintaining a five day supply of provisions is critical. This includes a: five-gallon supply of water per person stored in sealed, unbreakable containers; supply of non-perishable packaged or canned food; non-electric can opener; first aid kit; prescription medications; battery-powered radio, flashlight; and extra batteries.

The Tribe will utilize GIS software to aid in reducing the risk of hazards. GIS will be used to: determine of areas of high risk and exposure; plan for road and utility network needs; and update and maintain data so there is consistency and coordination among all Tribal emergency response activities.

Restoration activities after a hazard event will be carried out in a responsible manner in order to: minimize impacts to the extent possible, conserve natural resources and ecosystems, as well as maintain natural

drainage courses. Property owners should use effective pollution prevention measures and maintain adequate water quality.

### ***Flood/Landslide Prevention Measures***

Flood and landslide prevention measures will include referencing past data and prioritizing prevention activities that can be addressed realistically. Flood/landslide hazard measures include: evacuation awareness and relocating resources, if practical; having policies and procedures in place that are readily available and useful; and providing provisions, shelter, and transportation, as needed. These measures may also include: sand bag diversions if time permits; emergency stream diversions; and clearing debris and reopening roads. Relocating structures that are now in flood planes is more problematic because of the cost involved.

### ***Karuk Tribal Landslide Prevention Measures***

Past and present exploitation of natural resources under the U.S.F.S. has led to significantly degraded watershed health with severe consequences. Extensive logging and the labyrinth of associated roads have led to severe and ongoing erosion and sedimentation problems. The Karuk Tribe is working diligently with the Forest Service and other partners to address these problems.

As with most federal agencies, the Forest Service is inadequately funded and does not have the resources to address the wide-array of issues related to watershed health. Specifically, chronic erosion problems related to logging roads that were poorly engineered plague U.S.F.S. lands. A declining budget has decreased road

maintenance leading to a steadily degenerating road system.

The potential for landslides and other erosion-causing events is abnormally high within the Ancestral Territory. For example, according to data collected in the Salmon River sub-basin, rates of road-related landslides range from 60 to 800 times greater than undisturbed rates in similar granitic soils (de la Fuente and Haessig 1991).

The Karuk Tribe addresses persistent erosion and subsequent deposition problems. The high likelihood of debris torrents poses the greatest threat during severe storm events. Reestablishment of historic hydrology is the primary objective.

In addition to the chronic sediment transport from these roads, the high number of stream crossings has a high potential for failure during a significant storm event. Stream crossing failures result in debris torrents that scour stream channels. Depending on slope position and channel gradient, these debris torrents can trigger successive debris torrents as they move downstream. As mentioned above, road related landslides rates in a nearby watershed ranges from 60-800 times greater than undisturbed rates in granitic soils (de la Fuente and Haessig 1991).

Specific management strategies adopted by the Karuk Tribe are to minimize hydrologic and erosion concerns by addressing the high road density and implementing restoration activities that include decommissioning & storm-proofing.

“Proper road closure is essential in preventing future erosion and sedimentation from abandoned roads and skid trails. Proper closure incorporates removal of temporary structures in watercourses,

returning stream crossing approaches to their original grades (Kochenderfer, 1970; Rothwell, 1978).

Road decommissioning projects remove unstable fill at stream crossings, swales, springs, and seeps and reestablish the natural hillslope drainage pattern along the intervening road reaches. Our treatment specifications detail the work schedule by itemizing: excavation & disposal sites and post-project erosion & sediment control measures. The treatment specifications require the removal of road fill from stream crossings, swales, and other unstable areas. Stream crossings are excavated to original width, depth, and slope to expose natural channel and buried topsoil. Unstable fill material with high failure potentials is excavated to reduce erosion hazard and expose buried topsoil. Excavated material is moved to stable road locations, placed along cutbanks, and then shaped to specific slope and compaction requirements.

Since 1997, our unique relationship with the Six Rivers and Klamath National Forests has allowed for cost-effective road decommissioning projects to occur within our Ancestral Territory. Since the inception of this program, we have removed approximately 301,136 cubic yards of fill material and designed over 46 miles of road decommissioning. To visualize this, imagine 30,114 dump trucks filled with fill material lined bumper-to-bumper for 114 miles.

### ***Karuk Tribal Fire Prevention Measures***

Our Karuk Ancestral Territory is one of the most rugged, rural environments in the United States. Steep, densely forested terrain and hot summers makes suppressing wildfires difficult, at best. The flammable National Forest lands that surround our

Tribal facilities, homes, and lands are a serious concern of the Tribe.

Due to federal policies of fire suppression and logging, there is an unprecedented accumulation of forest fuel west of Interstate 5 that has built up over the past eight decades. 1.4 million acres of our Ancestral Territory is managed by the U.S.F.S., which is faced with the daunting task of restoring our forests. From the Karuk perspective, additional federal funding should be made available to pre-treat these flammable lands, rather than trying to suppress destructive wildfires, which cost tax payers millions of dollars.

The Tribe supports initiatives that introduce low-intensity prescribed fire as well as mechanical & hand piling and brush burning to minimize chronic wildfire hazards. The Tribe has a twenty person fire crew working on federal and tribal lands to help reduce fire hazards, including thinning the understory and utilizing under-burning practices; however, due to federal funding, these critical mitigation activities are restricted.

Fires that do not pose a threat to life or property should *not* be suppressed because low-intensity fires can actually benefit forests by cleaning up the vegetation understory fuels.

### ***Flammable Forest Conditions***

Changes in the natural sequence of vegetation occur over time in response to current disturbances and forest types, past disturbances, and climate. Logging activities and a relatively wet climate over the past century, combined with fire exclusion, have altered local forests settings considerably. Two years after a fire on logged areas where the forest canopy has been removed, there may be more than 300

live hardwood sprouts and more than 1900 live brush sprouts per acre. With no overstory vegetation shading, sprouting brush competes with young trees and decaying wood does not hold moisture during the hot summer. The subsequent forest recovery cycle is prolonged due to successive fires across our homeland.

In the Klamath Mountains, low intensity fires are the natural, primary force for sustaining the vitality and natural resiliency of the forests. Before it was illegal to do so, Karuk people burned the forest understory. Wildfires were not a threat because prearranged fires promoted fire-resilient forest environments.

There is no complete substitute for fire as the natural force for promoting resilient, vigorous ecological processes. The challenge is how to integrate prearranged fire back into the land management process. Many forests are so flammable they need to be pre-treated before reintroducing fire.

The following Tribal fuel reduction activities have been completed on Tribal Forest lands that abut Tribal housing or facilities:

- A prescribed fire treatment on 12 acres in the Orleans near the mouth of Camp Creek;
- Mechanical and hand treatment fuels reductions surrounding Happy Camp housing, housing administration facilities, Head Start, and Economic Development;
- Hand crews have treated another estimated 10 acres around ceremonial grounds and Tribal owned trust lands in western Siskiyou County and northeastern Humboldt County.

The 20 person Karuk Fire Crew has been reducing fuels on National Forest lands that adjoin the community of Happy Camp. To date, 70 acres have been treated by mechanical and hand treatments. The Happy Camp Ranger District has coordinated rural community fuels reduction activities with the Tribe, striving to provide opportunities that utilize our Fire Crew to reduce wildfire hazards. In 2006, federal funding has been cut drastically for such programs.

### ***Reducing Tribal Facilities/Housing Fire Hazards***

The following protection measures are being applied around our Tribal facilities and housing resources in Happy Camp, Orleans, Yreka, and Somes Bar:

- Removal of flammable materials from roofs, rain gutters, decks, sidewalks, and parking areas;
- Removal of pine needles, leaves, and other flammable materials within 50' of structures;
- Lawns are kept green and watered in the summer;
- Vegetation within 100' of structures is being thinned to a 10' spacing between individual trees and shrubs. Trees are trimmed 10' or 1/3 of their crown; and
- Fire breaks have been cut around some residences and facilities.

### ***Tribal Capability Assessment***

#### ***Funding Limitations***

##### ***Wildland Fire Crew***

The Karuk Wildland Fire Crew needs an annual operating budget of \$300,000 for a fire engine, \$500,000 for a thirty man Suppression and Fuels Reduction Crew, and \$300,000 for supervision, fire equipment, and training. The unmet annual need is currently \$1,100,000.

##### ***Watershed Restoration Crew***

The Karuk Watershed Restoration Crew needs an initial investment of:

Caterpillar D7R Dozer: \$407,825

Caterpillar 325DL Excavator: \$290,000

Caterpillar 950 Loader: \$240,000

Caterpillar 140H Grader: \$293,000

Annual operating budget: \$120,000

Personnel costs: \$350,000

The unmet need is currently \$1,700,825.

##### ***Search and Rescue***

The Tribe would like to establish a collaborative, multi-agency search and rescue capacity and has an unmet need of \$150,000 annually for a vehicle, equipment & training, and a coordinator who would work with local agencies.

##### ***Emergency Communication Services***

The Karuk Tribe is planning to develop an Emergency Services Department that would be compatible with county, state, federal communications systems. The current cost of the equipment and unmet need is \$20,000.

##### ***Emergency Power Systems***

An assessment of emergency power generator needs to support our critical services that are currently unmet total \$200,000.

### ***Tribal Transportation Planning & Tribal Infrastructure Needs***

In order to assess the transportation needs and prepare a plan the Tribe has an unmet need of \$50,000. The Tribe needs to maintain improve and repair access to our rural housing, facilities, ceremonial, fisheries and transportation access for road maintenance with an unmet estimated unmet need of \$300,000.

##### ***Emergency Storage Facilities***

The Tribe has no adequate secure facilities for storing emergency provisions. The Tribe would like to construct facilities and has an unmet need of \$250,000 to construct a storage building.

##### ***Emergency Response Coordinator***

The Tribe has no Hazard Emergency Response positions. The Tribe would like to develop the position but has an unmet need of \$70,000 annually to support the program. This program could address HAZMAT, emergency response, training, and preparedness.

### ***Planning and the Development of Karuk Emergency Response Operations***

The Karuk Tribe has developed an Emergency Response Operations Plan (EROP) that identifies pre- & post-disaster procedures and mitigation actions for our hazard prone areas. The EROP strengthens the mitigation initiatives identified in this Hazard Mitigation Plan. The EROP focuses on preparedness, prevention, and disaster response. In a disaster situation, Karuk Emergency Response Teams will work in partnership with other agencies to help ensure there is sufficient water, food, medical care, shelter, fire services, and order.

The Karuk Tribe is an interdisciplinary player working directly under Incident Command with planning and operations on Wildfire incidents. We have been an interdisciplinary agency participant on at least twelve wildfire incidents within our Territory in the past decade. The Tribe's EROP is similar to what is used by State and Federal Wildland Fire Agencies. The Karuk Tribe of California's EROP is enclosed.

During hazard events, the Tribe will collaborate with the Forest Service, County, State, community services, Red Cross, and law enforcement, as needed. The Karuk EROP's pre-disaster and recovery-response activities include:

- Hazard Warnings
- Evacuation
- Education, including First Aid
- Shelter
- Food and Water
- Emergency Transportation
- Medical Care
- Emergency Power & Communication
- Damage Repair/Restoration

The designated Karuk Emergency Manager Coordinator (KEMC) will oversee the response activities, facilitating hazard relief and recovery/ restoration efforts. The KEMC will be responsible for implementing the Karuk Tribe's Hazard Mitigation Plan (HMP) and directing the response of Tribal departments, services, and operations to any situation deemed necessary by the Tribal Council. When a threat is present, the KEMC will meet with the Tribal Council prior to taking action, and then provide briefings daily or as needed.

Tribal emergency response teams under the supervision of the KEMC may participate in post-disaster repair work & emergency relief

activities or may be deployed in relief instances where disasters are foreseen.

***Requirement §201.4(c)(3)(iii): Tribal plans shall include an identification, evaluation, and prioritization of cost-effective, environmentally sound, and technically feasible mitigation actions and activities the Karuk Tribe of California is considering and an explanation of how each activity contributes to the overall mitigation strategy***  
*Updating and Monitoring the KHMP*

The Karuk Tribe complies with the National Environmental Policy Act (NEPA) and environmentally sound assessments prior to building facilities. Any disaster relief activities are conducted in such ways as to protect water quality and the environment. Hazardous materials are dealt with according to strict HAZMAT regulations, taking all appropriate safety measures.

Any hazard mitigation activity will be conducted in a cost effective manner consistent with our fiscal and project management policies. The Karuk Tribe applies contract and fiscal policies to all projects through internal services or the management, advertising, bidding, award, and closeout processes. Our Director of Administrative Programs and Compliance monitors all project activities to ensure that procurement and contract management policies are followed.

To the best of our ability, we will evaluate disaster incidents carefully and prioritize the hazard mitigation recovery activities as technically feasible as possible by using experienced and knowledgeable professionals. We will develop more detailed responses as each incident disturbance is evaluated.

The Karuk Tribal Council has prioritized the mitigation needs in the following sequence of importance based on our assessment and capabilities. These priorities will be contingent on available funding.

1. Approve and complete Tribal Emergency Response Plan.
2. Conduct disaster relief drills and workshops for Tribal staff and community members.
3. Provide a Tribal Emergency Response Coordinator position to oversee Hazard mitigation activities.
4. Secure funding for water, food, supplies, and storage containers for emergency disaster incidents.
5. Purchase emergency power generators.
6. Secure funding to treat the flammable forest fuel on Tribal lands and adjacent federal and private lands.
7. Identify cultural resources on federal lands and develop programs that protect those interests.
8. Improve coordination with other agencies.

**Requirement §201.4(c)(5)(i):** *The Standard Tribal Plan Maintenance Process must include an established method and schedule for monitoring, evaluating, and updating the plan.*

**(and)**

**Requirement §201.4(c)(5)(ii):** *The Standard Tribal Plan Maintenance Process must include a system for monitoring implementation of mitigation measures and project closeouts.*

***Maintaining the Plan:  
Monitoring, Evaluating, and Updating***

The Karuk Planning Department or Department of Natural Resources will oversee each mitigation project. Activities will be monitored weekly until repairs or relief activities are completed. Project activities will be undertaken in a manner that ensures activities are completed within a reasonable schedule. The Planning Department or Department of Natural Resources will identify any obstacles and resolve issues to complete the activity within scheduled time-frames. Quarterly reports will be submitted to the Tribal Council. Budget requests will be submitted to the Tribal Council on an annual or as needed basis.

<b><i>Monitoring Activity</i></b>	<b><i>Date Due</i></b>
Hazard Mitigation Plan	
Development	April- May-July 2006
Progress Report to Tribal Council	June 2006
Final HMP for FEMA	August 2006
Progress Report to Tribal Council	October 2006
HMP Review with Council	October 2006
Progress Report to Tribal Council	April 2007
HMP Review with Council	April 2007
Progress Report to Tribal Council	October 2007
HMP Review with Council	October 2007
Progress Report to Tribal Council	April 2007
HMP Review with Council	April 2007
Progress Report to Tribal Council	October 2007
HMP Review with Council	October 2007
Progress Report to Tribal Council	April 2008
HMP Review with Council	April 2008
Progress Report to Tribal Council	October 2008
HMP Review with Council	October 2008
Progress Report to Tribal Council	April 2009
HMP Review with Council	April 2009
Progress Report to Tribal Council	October 2009
HMP Review with Council	October 2009
Budget Requests	Indeterminate

As able, the Tribal Council and Emergency Manager Coordinator will identify on-going projects and activities in support of the

mitigation goals identified in the Tribes Hazard Mitigation Plan integrating necessary technical and fiscal resources to implement projects and activities. The various departments of the Tribal government will monitor project close-outs and include that information in reports to the Council and FEMA. Activity reports will be requested from appropriate programs and activities, and requirements will be coordinated to assure project implementation(s) attain the desired mitigation goals.

To ensure that the Karuk Hazard Mitigation Plan (KHMP) is effective, it will be evaluated and updated every three years for FEMA approval by the Karuk Tribe. The Emergency Manager Coordinator will make recommendations and provide for adequate Tribal Council oversight; oversee monitoring and mitigation strategies to assure the document reflects current hazard/risk analyses, development needs, and ordinance changes; meet annually with department managers and Tribal staff to assess and prioritize the cost-benefit analysis methodology that FEMA and the Tribe have developed; and coordinate with relevant departments or program managers in preparation for the three year plan update. Updates will be added to the back of the Plan as an addendum. Any new hazards will be analyzed in the addendum.

The Tribal Council will provide an opportunity for the members of the Tribe to review and consider the updates before submitting it to FEMA for approval and formally adopting it. In addition to the duties listed above, the Karuk EMC will also develop and coordinate the Karuk Tribe's emergency management and preparedness programs; plan, oversee, and provide training in all aspects and phases of emergency management; coordinate annual

updates of the Karuk Emergency Response Operations Plan; establish partnerships with local governments; and initiate public awareness and education campaigns for all hazards.

Public awareness programs can provide information about mitigation measures for different hazards as well as preparedness, response, and recovery measures after a disaster event. To increase the community's awareness of hazards, we will distribute information about them, develop a preparedness packet for Tribal members, provide workshops and training programs that address specific issues related to the hazards, and post and distribute hazard incident briefings as needed.

**Requirement §201.4(c)(3)(iv):** *[The State [Tribal] mitigation strategy shall include an] identification of current and potential sources of Federal, State [Tribal], local, or private funding to implement mitigation activities.*

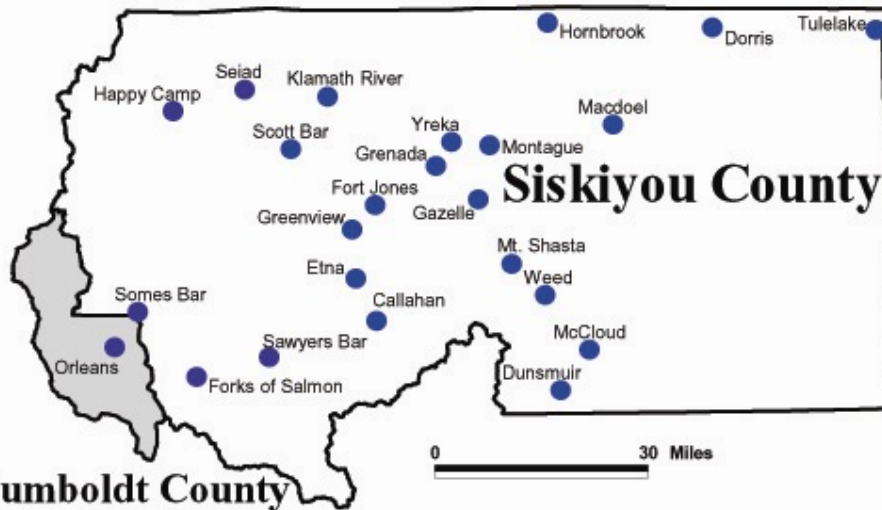
The Tribe's current funding and assistance sources include: BIA-Fire Suppression, Fuels Reduction, EPA - Water Quality Sampling and Watershed Restoration, NOAA Salmon Recovery, Fish & Wildlife-Program Funding, Bureau of Reclamation - AFA Funding, and FEMA - Technical Assistance for the Hazard Mitigation Plan.

### **Potential Funding Sources**

U.S. Natural Resource Conservation Service  
 U.S. Forest Service  
 U.S. Environmental Protection Agency  
 U.S. Geological Survey  
 Federal Emergency Management Agency  
 U.S. Bureau of Indian Affairs Roads Maintenance Program  
 U.S. Indian Health Service



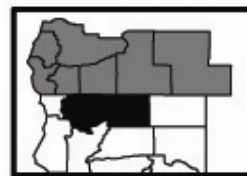
# Karuk Tribe of California's "Near Reservation" Service Area



Total Service Area - 4,264,880 Acres

## Humboldt County

The Karuk Tribe of California's Service Area was Designated by the Bureau of Indian Affairs  
 Federal Register, Vol. 65, No. 95  
 Tuesday, May 16, 2000  
 Tribe: Karuk Tribe of California  
 "Near Reservation" locations:  
 "The counties of Siskiyou, northeastern Humboldt from State Highway 96 milepost HUM 28.61 north to the Siskiyou County Line in the State of California."



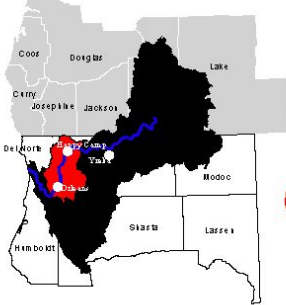
Area Enlarged



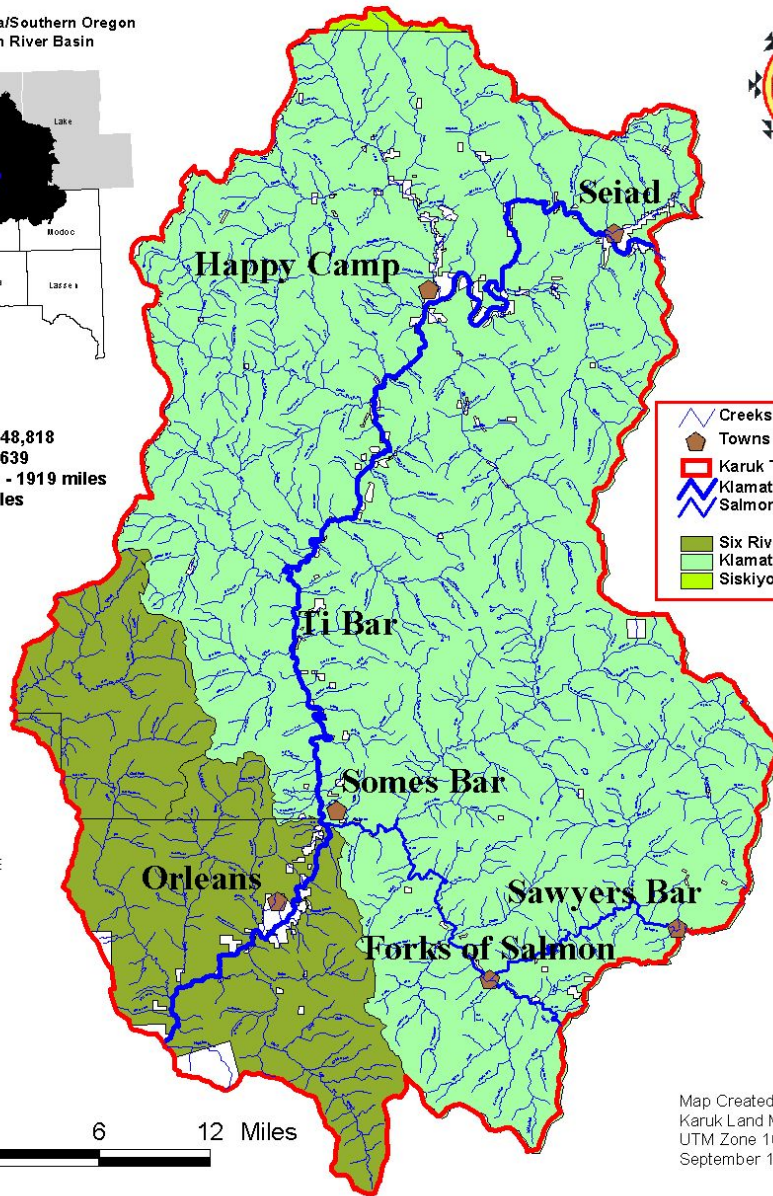
Map Created By Scott Quinn  
 Karuk Tribe of California  
 February 11, 2005  
 UTM Zone 10, NAD 27

# KARUK ABORIGINAL TERRITORY

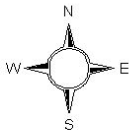
Northern California/Southern Oregon  
With Klamath River Basin



Total Acres - 1,048,818  
Square Miles - 1639  
Creeks & Rivers - 1919 miles  
Roads - 1825 miles

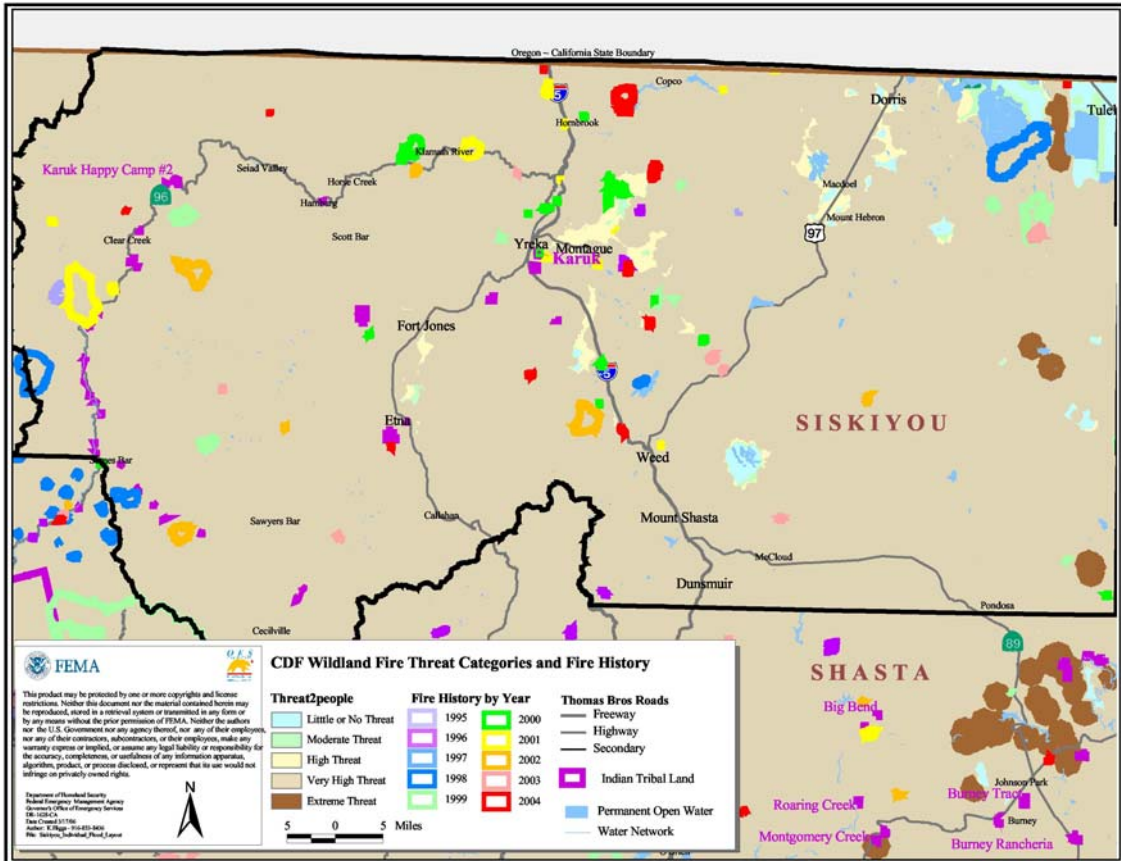


- ~ Creeks
- Towns
- ▭ Karuk Territory
- ▬ Klamath River
- ▬ Salmon River
- Six Rivers National Forest
- Klamath National Forest
- Siskiyou National Forest



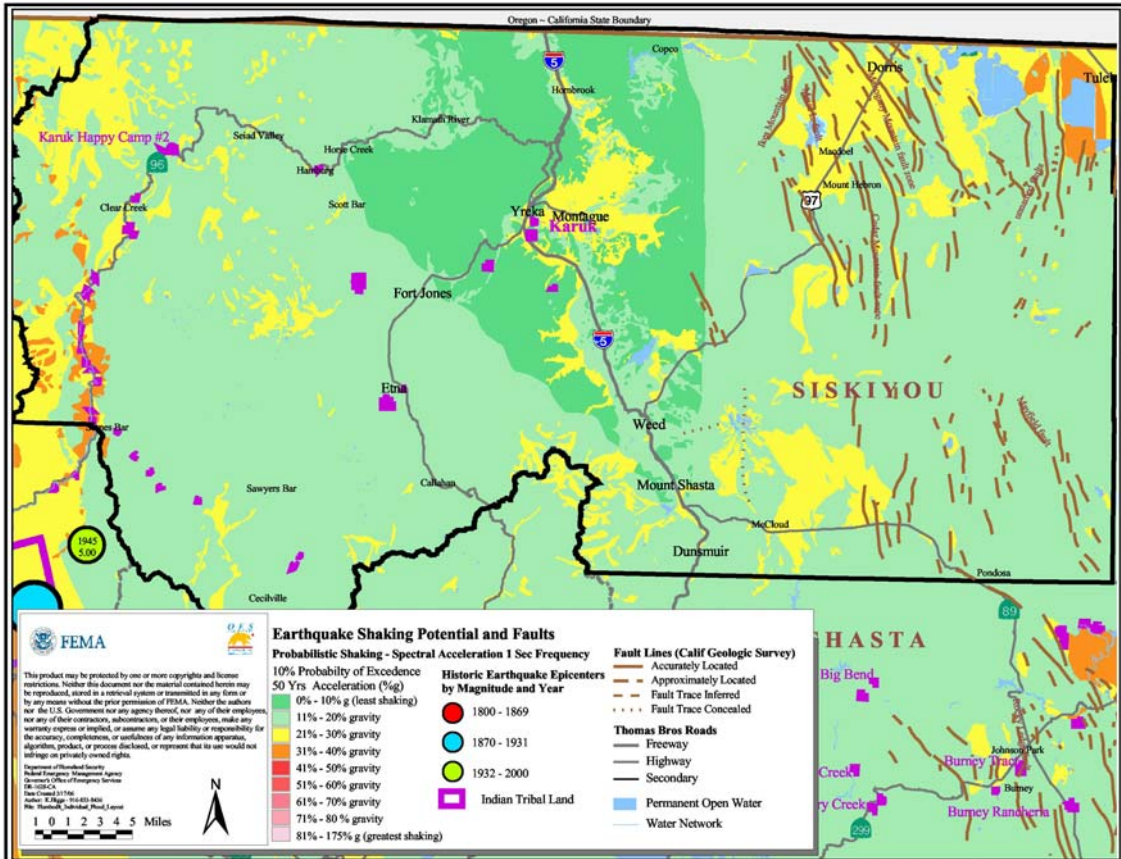
6 0 6 12 Miles

Map Created by Scott Quinn  
Karuk Land Manager  
UTM Zone 10, NAD 1927  
September 17, 2004



**Karuk Tribe of California Wildfire Threat and Fire History Map**





**Karuk Tribe of California Earthquake Map**



***Risk Summary Tables***

***(Attachments 1-4)***