# Oweekeno

# COMMUNITY WILDFIRE PROTECTION PLAN

August, 2006

Submitted to:

Central Coast Regional District
and Wuikinuxv Nation

By:

Hans Granander, RPF

# Wildfire Emergency Contacts

| Organization | Phone # |
|---|---|
| Oweekeno Fire Department – contact band office | 250-949-8625 |
| | |
| Forest Fire Reporting – Ministry of Forests | 1-800-663-5555 |
| Coastal Fire Centre – Ministry of Forests, Parksville | 1-250-951-4222 |
| North Island Mid Coast Fire Zone – MOF, Campbell River | 1-250-286-7645 |
| NI MC Fire Zone – Protection Officer, Tom Rushton | 1-250-286-6632 |
| NI MC Fire Zone – Hagensborg field office | 1-250-982-2000 |
| | |
| RCMP- Bella Bella | 957-2388 |
| | |
| Oweekeno Emergency – Lena Collins – Fire Chief | Home: 902-0592<br>Work: 949-8625 |
| Oweekeno Emergency – Maggie Rufus – Assistant Fire Chief | Home: 949-9868 |
| Translake Operation | 974-4033 |
| | |
| PEP – Provincial Emergency Program | 1-800-663-3456 |
| Central Coast Regional District Emergency<br>CCRD Emergency Coordinator | 1-250-799-5291<br>1-250-982-2424 |
| | |
| Coast Guard | 1-800-567-5111 |
| | |
| | |

Last update: July, 2006

# Executive Summary

Oweekeno is located at the head of Rivers Inlet in the Mid Coast, half way between Port Hardy and Bella Coola. The risk of wildfire is relatively low in this area compared to other parts of the Province; however, there is growing concern within the community, and recent fire occurrences confirm, that wildfire is a threat to communities in this part of the Province.

Evaluation of the Interface Community Fire Hazard for Oweekeno indicates a **moderate hazard**. This report documents the criteria that informed the evaluation and includes descriptions of the surrounding forest, the forest fuel types, community infrastructure, emergency response and special concerns that affect the rating.

As per the Ministry of Forests and Range analysis, Oweekeno has a **moderate probability of wildfire** but if a wildfire was to get started it would burn very intensively making control and fire suppression difficult.

Even a small interface fire affecting one or two homes would have a big effect on the community given its small size. Much of the work to mitigate the risk falls on the shoulders of local residents to address the forest fuel hazard around their homes and properties.

**Summary of Recommendations**:

1. First Nations are advised to make use of the resources available through FNESS to address capacity building, training, planning, policy development, preparedness and equipment resource needs.
2. Develop public education and information distribution program regarding wildfire regulation and implement this as part of the broader emergency preparedness program.
3. Include interface fire management as one of the hazards that the local emergency response group considers and addresses.
4. Integrate notification of Coast Guard in event of interface fire for assistance with evacuation if necessary.
5. Determine the band's level of responsibility for homes owned by the band. Develop education and incentive program for individuals to address fuel hazard around their homes.
6. Develop education/information program to raise awareness of how to minimize risk of wildfire ignition and develop a system to inform the population about daily fire danger rating and the associated restrictions on 'hot work' activities and campfires.
7. Establish program to methodically remove wild growing broom plants before problem gets too large.
8. Conduct S-100 Basic Forest Fire Fighting training for volunteer firemen on an annual basis.

9. Strengthen routine and ongoing communication between Oweekeno emergency response personnel and MOFR Fire Protection Officer.

**Mitigation**

- Conifer trees in the vicinity of homes should be pruned to a height of at least 2m. Branches overhanging houses or balconies should also be pruned back. Wild growing brush and other woody material should also be cleared from around houses. See Firesmart manual.
- Trees along the perimeter of the village should be pruned so that branches are at least 2 m above the ground (the higher the better). Smaller 'ladder' fuel trees should also be removed to minimize ability for fire to climb into the canopy.
- Work to reduce grass fuel loading by cutting during growing season and burning excess grass build up in fall or spring.
- Establish program to remove scotch broom plants before problem becomes unmanageable.

Oweekeno village on the shore of Wannock River which drains Oweekeno lake into Rivers Inlet.

# Foreword

This Community Wildfire Protection Plan was prepared on behalf of the Central Coast Regional District, Wuikinuxv Nation and the residents of Oweekeno village, with funding assistance from the Union of BC Municipalities. The plan provides an overview of the community, describes the surrounding forest fuel types, estimates the interface fire hazard and provides mitigating recommendations.

# Acknowledgement

Many people assisted with the development of this plan. Acknowledgement and gratitude is due to Stephen Waugh, Emergency Coordinator and Donna Mikkelson of the Central Coast Regional District; Paul Willie, Oweekeno Forestry Coordinator and Oweekeno Fire Chief Lena Collins.


# Disclaimer and limitation of liability

While care has been taken to provide accurate information, no assurance is given that the work is free from error or omission. The author assumes no liability for any damage or loss incurred as a result of the use of the information, statements or opinions contained in this document. Use of this information is at the reader's sole risk and discretion.

Oweekeno Community Wildfire Protection Plan

Prepared by:

Hans Granander, RPF  August 18, 2006

# Table of Contents


WILDFIRE EMERGENCY CONTACTS ..... II

EXECUTIVE SUMMARY ..... III

FOREWORD ..... V

ACKNOWLEDGEMENT ..... V

DISCLAIMER AND LIMITATION OF LIABILITY ..... V

TABLE OF CONTENTS ..... VII

1 INTRODUCTION ..... 1

1.1 Planning Area ..... 2

1.2 Legal Framework ..... 2

1.3 Local Fire Policies and Programs ..... 2
1.3.1 First Nations Emergency Services Society ..... 3

1.4 Key Wildfire Regulation Requirements ..... 4

1.5 Fire Planning Process ..... 6
1.5.1 Oweekeno Emergency Management & Response ..... 6

2 COMMUNITY PROFILE ..... 8

2.1 Geography ..... 8

2.2 Population and Community Description ..... 8

2.3 Socio-economic Condition ..... 9

2.4 Investments and Infrastructure ..... 9

2.5 Key Community Interface Fire Issues ..... 9

3 INTERFACE FIRE PLANNING UNITS ..... 11

3.1 Oweekeno IFPU ..... 11

4 WILDFIRE HAZARD ASSESSMENT ..... 14

**4.1 Forest Ecology** ..... **14**

**4.2 Fire Weather** ..... **15**

**4.3 Fire History** ..... **16**

**4.4 Risk of Wildfire Occurrence** ..... **17**

**4.5 Forest Fuels** ..... **17**
4.5.1 Forest Fuel Classification ..... 18

**4.6 Density of Developments** ..... **22**

**4.7 Hazard Rating** ..... **22**

**5 EMERGENCY OPERATIONS** ..... **23**

**5.1 Available Fire Fighting Resources** ..... **24**

**6 MITIGATION AND RECOMMENDATION SUMMARY** ..... **25**

**6.1 Mitigation Treatments** ..... **25**

**6.2 Recommendations Summary** ..... **25**

**7 MONITORING AND EVALUATION** ..... **27**

**8 BIBLIOGRAPHY** ..... **27**

**APPENDICES** ..... **28**

**Appendix A – Oweekeno Overview and IFPU Hazard Map** ..... **28**

**Appendix B – Satellite Image Map** ..... **28**

**Appendix C – Community Wildfire Hazard Assessment Forms** ..... **28**

**Appendix D – Fire Probability Map** ..... **28**

**Appendix E – Land and Forest Cover Map** ..... **28**

**Appendix F – Forest Fuel Type Map** ..... **28**

**Appendix G – Head Fire Intensity Map** ..... **28**

# 1 Introduction

The Central Coast Regional District (CCRD) is working to help the communities of the Central Coast become more resilient to disasters. All of the communities of the Central Coast are surrounded by coniferous forests and the potential for forest fires to cause significant damage to homes, businesses and facilities is a real threat and of growing concern. Virtually all of the homes and businesses in the Central Coast are built amongst trees in close proximity to the forest and therefore are situated in the 'interface' fire zone, where risks are highest.

To address this safety concern, the CCRD is working to make Central Coast communities 'Firesmart' and with the support from the Union of British Columbia Municipalities (UBCM), has commissioned the preparation of Community Wildfire Protection Plans (CWPP) for each community. The purposes of these plans are to:

- Assess, document and map interface wildfire hazard
- Recommend fire prevention and mitigation strategy
- Recommend implementation activities regarding zoning, by-laws, development and landscaping
- Enhance emergency response plans
- Propose public communication strategies
- Recommend plan monitoring and updating mechanisms.

Oweekeno village is located at the head of Rivers Inlet (see map in Appendix A) where forest fire danger is low compared to many other areas of the province. The landscape surrounding the village is characterized by steep, forested mountains that slope directly into Owikeno Lake or the Rivers Inlet. The village itself is situated on the relatively flat, high bench alluvial flood plain that separates Owikeno Lake from the ocean. The community is surrounded by dense second growth forest and there is increasing local concern that the community is at risk from a damaging interface fire.

In response to this identified concern, the CCRD has commissioned the preparation of the Oweekeno Community Wildfire Protection Plan and is presenting it to the Wuikinuxv Nation as helpful information. By no means should it be interpreted that the CCRD is imposing any requirements on the Wuikinuxv or that it assumes any responsibility on Indian Reserve lands. The CCRD's interests are to work cooperatively with all local First Nations and to coordinate emergency planning, preparation, mitigation and response programs for joint benefit.

## 1.1 Planning Area

The plan covers the area immediately surrounding Oweekeno village, including Rivers Inlet Camp (RIC) by the ocean.

## 1.2 Legal Framework

Interface fire is primarily addressed by the Provincial Wildfire Act (2005) and Regulations. This legislation spells out the authorities, obligations and responsibilities for the different layers of government, industry and individuals. The Provincial government has the authority to enter onto any land in the province to carry out fire control measures, including entering property, restricting access, order an evacuation and requisition persons and equipment. The government may also provide fire control assistance when requested by a local government.

Compared to previous versions of the fire legislation, greater responsibility is now placed on municipal governments to address use of fire and prevention of wildfire within their jurisdictions. With respect to the duties of a Regional District, unless they have established bylaws dealing with open fires or wildfire, then requirements still default to the Provincial standards under the direction of the Ministry of Forests and Range. Indian Reserve lands fall under Federal jurisdiction, but through agreement with Indian and Northern Affairs Canada (INAC), the Ministry of Forests will take action to suppress wildfires and then bill INAC for the costs.

At this time there is no legal requirement for the Central Coast Regional District or First Nations to carry out Community Wildfire Planning; however, in the interest of making Central Coast communities 'disaster resilient', the CCRD is undertaking this proactive and preventative initiative.

Other legislation that pertains to fire in and around communities includes:

- Forest and Range Practices Act
- Land and Parks Waste Management Act
- Open Burning Smoke Control Regulation

## 1.3 Local Fire Policies and Programs

The Central Coast Regional District is challenged financially with an extremely tight budget, limited due to its small tax assessment base. As such, the CCRD lacks administrative and other resources to take on a greater role in dealing with wildfire prevention and control. Therefore, the CCRD does not have any policies or regulations regarding wildland interface fire and, by default, rely on Provincial regulation, policies and

support to control wildfire. Furthermore, there are no local bylaws or zoning requirements dealing with wildfire prevention or mitigation.

Similarly, the Wuikinuxv Nation does not have any policies or bylaws regarding fire. Through this plan however, the CCRD and Wuikinuxv recognize the importance of determining the interface wildfire hazard and to inform residents so they can take voluntary action to reduce wildfire hazard in the vicinity of their homes and properties.

The Wuikinuxv Nation and CCRD's role as governments is more pronounced however, in the event of an actual interface wildfire. In this kind of crisis situation, the Wuikinuxv Nation and/or CCRD (for non-reserve lands) may issue a **Local State of Emergency** to invoke powers necessary to address the emergency, including the issuance of an Evacuation Order (please refer to CCRD Emergency Plan for further information).

Oweekeno has a volunteer fire department working under the authority of the Wuikinuxv Nation to respond to residential fires. The local fire fighting capacity is described in more detail in Section 5, Emergency Operations. It is clear however that there are inadequate resources to fight anything but the smallest interface fire and therefore quick assistance from outside the community is crucial.

### 1.3.1 First Nations Emergency Services Society

The First Nations Emergency Services Society (FNESS) is an organization, funded through INAC, specifically set up to help First Nations develop and sustain safer and healthier communities by providing programs, services and related training and education. Under their **Fire Services** program, Fire Surveys are conducted, First Responder training is provided, Fire Competitions are held, Fire Safety Public Education is available along with Firefighter training. Under the **Community Fire Life Safety Support Program**, training and assistance for Fire Chiefs to run an efficient and proper fire department is available.

FNESS is also available to provide emergency management guidance for dealing with issues like evacuation orders.

www.fness.bc.ca

**Recommendation:** First Nations are advised to make use of the resources available through FNESS to address capacity building, training, planning, policy development, preparedness and equipment resource needs.

## *1.4 Key Wildfire Regulation Requirements*

Given the small size of Central Coast communities, almost all of the settled areas are in close proximity to the forest. Since the provincial wildfire legislation pertains to, not only forested areas, but areas within specified distances of a forest, the regulations apply to most areas in the communities. Key elements of the regulations that apply to industries, businesses and residences include hazard assessments, hazard mitigation, restrictions on industrial activities, fire preparedness and permissible fire requirements.

The Provincial Wildfire regulations do not directly apply to Indian Reserve lands, which are under Federal jurisdiction. However, in the interest of due diligence, the adoption of the precautionary practices as described in the regulations is advisable.

*Note: The following is only a brief summary of the Wildfire Regulation. It is provided for basic information only. Those persons carrying out activities in the vicinity of a forest must refer to the current wildfire legislation for a complete understanding of the requirements. These regulations can be accessed at:*

www.for.gov.bc.ca/protect/

Although the regulations apply to most activities, particular emphasis is placed on 'industrial activity' and 'high risk activity'. In general, **industrial activity** refers to land clearing and activities related to forestry, like logging, processing and silviculture, but it also includes activities like refuse disposal and road maintenance. **High risk** activities, again generally, refers to forestry work, but it also includes welding, grinding, right of way grass mowing and use of pyrotechnics. These types of activities are undertaken regularly within Central Coast communities and it is important that people are aware of their responsibilities in these regards.

**Sufficient Fire Fighting Tools**

Anyone carrying out an industrial activity that has potential to cause wildfire is required to keep sufficient fire fighting hand tools on site.

**High Risk Activity Restriction**

Anyone carrying out a high risk activity within 300 m of a forest during fire season must determine the Fire Danger Class and conduct operations in accordance with any applicable restrictions (fire watch, early shift, shutdown, etc), must have adequate hand tools and adequate fire suppression system (fire pumps and water) on site.

**Precautions to Prevent Escape of Fire**

Anyone carrying out an industrial activity, including waste disposal, within 300 m of a forest must maintain sufficient fuel break to ensure fire does not escape.

**Hazard Assessment**

Anyone conducting industrial activity or operating a waste disposal site within 2 km of the boundary of the local government or a fire prevention district in a Regional District must conduct fire hazard assessment at 3 month intervals.

**Hazard Abatement**

For those areas where Hazard Assessments are required (within 2 km zone), fire hazard abatement is to be done within 6 months of the assessment.

**Permissible Open Fires**

There are four categories of permissible fires, three of which generally applies to communities:

- **Category 1 –** small fire (<1m height & diameter), including campfires.
- **Category 2 –** one or two moderately small fires (< 2m height & 3 m diameter), or grass fire <0.2 ha.
- **Category 3 –** 3 or more fires not exceeding 2 m in height or 3 m in diameter; or less than three fires and greater than 2 m in height or 3 m in diameter; or grass fires > 0.2 ha.

These categories require increasing levels of safeguards and the regulations should be referenced for the most up to date requirements. Most Central Coast communities burn their garbage in fires that fit the Category 3 designation and, as such, are required to:

- obey any burning restrictions
- do so in a safe manner
- obtain a burn registration number
- take all necessary precautions
- establish fuel break around fire
- ensure an adequate fire suppression system is available
- maintain a fire watch
- ensure fire does not exceed capacity to prevent escape.

Given the recent changes to the Wildfire Legislation, it is likely that many people are not aware of their responsibilities in regard to their industrial activities and use of fire.

**Recommendation:**
Develop public education and information distribution program regarding legal requirements for wildfire mitigation and precaution. Implement this as part of the broader emergency preparedness program.

## *1.5 Fire Planning Process*

A preliminary estimate of the 'Hazard, Risk and Vulnerability Analysis' (HRVA) was conducted in preparation for the Central Coast Outer Coast Emergency Plan (Draft, 2006). This analysis ranked interface wildfire as a hazard of concern for Oweekeno. To address this concern, the CCRD in cooperation with the Wuikinuxv Nation commissioned the development of a Community Wildfire Protection Plan.

The development of the Oweekeno CWPP was initiated at a meeting with key Wuikinuxv emergency personnel and the CCRD Emergency Coordinator on December 6 & 7, 2005. The following steps and tasks were taken to complete the Plan:

- Available forest inventory maps and data were assimilated.
- Strategic Threat Analysis maps and data were acquired.
- Background information on forest fire ecology, weather data and topography was summarized.
- Information on the community in terms of population, infrastructure, developments, activities and fire control resources was summarized.
- MOFR Fire Protection personnel were consulted.
- Field reconnaissance was conducted to determine forest fuel conditions.
- Interface Fire Planning Units (IFPU's) were identified.
- Hazard evaluation was conducted.
- A draft CWPP with hazard map was circulated for review and comment.
- Final CWPP completed.

### 1.5.1 Oweekeno Emergency Management & Response

With a population of around 100, Oweekeno village is one of the smallest communities in the Central Coast. Understandably, resources and services are very limited in a community of this size and people are required to wear many 'hats of responsibility'. There is no local government 'department' able to take on the burden of dealing with interface fire issues so the mitigation of interface fire hazard therefore

needs to be incorporated into the regular considerations of the local emergency management committee.

**Recommendation:** Include interface fire management as one of the hazards that the local emergency response group considers and addresses.

# 2 Community Profile

Oweekeno is a tiny village situated along the Wannock river which drains out of Owikeno Lake into Rivers Inlet. Home of the Wuikinuxv people, the village is accessible only by boat or plane. Economic activity is primarily related to band administration, fishing and forestry. Main infrastructure includes a new band office, school and the recently completed ceremonial long house. A road extends from the ocean at the head of Rivers Inlet where Translake's logging camp and log dump is situated (also known as RIC).

Figure 1 Oweekeno village with newest developments on the right.

## *2.1 Geography*

Oweekeno village is located on a flat alluvial terrace separating Owikeno Lake from the ocean. The surrounding terrain is very steep with forested mountains reaching elevations around 1500 m. Rivers Inlet to Owikeno Lake is oriented in an east – west direction. The village backs up to a large, steep, south facing forested mountain side.

## *2.2 Population and Community Description*

The population in Oweekeno village is around 100 people. The logging camp at RIC may have up to 20 workers staying there at any one time. Except for RIC, most residences, facilities and infrastructure are located on Indian Reserve lands and are contained within a well defined community boundary. Building density is characterized as 'mixed' with a density of 10-100 buildings per square kilometre. The population consists of young children and mature and old adults.

## 2.3 Socio-economic Condition

Many of the residents are existing on meagre incomes and are not in a position to easily recover from a catastrophic event (many people likely do not have insurance or finances to cover emergency expenses). Therefore, it is anticipated that federal and/or provincial emergency financial assistance will be required to help people affected by an interface fire.

Most housing is owned by individuals however, some structures are owned by the Wuikinuxv Nation and the responsibility for 'Firesmart' fuel management in the vicinity of band owned homes is unclear.

**Recommendation**
Determine the band's level of responsibility for homes owned by the band. Develop education and incentive program for individuals to address fuel hazard around their homes.

## 2.4 Investments and Infrastructure

Investments include Wuikinuxv owned facilities as well as private and corporate infrastructure:

- Residential homes
- Administration buildings
- School
- Public dock
- Gravel airstrip
- Fuel storage tanks at village and at RIC
- Variety of heavy machinery
- Small convenience story
- Community hall
- Roads
- Power generators
- Telephone & hydro lines
- Water lines.

Oweekeno has a community water system that provides ground water from a centralized pump powered by electricity.

## 2.5 Key Community Interface Fire Issues

- Emergency Evacuation: There are few emergency evacuation options for people in Oweekeno. There is only one short road that runs from RIC to Owikeno Lake, so if prolonged evacuation is called for, then air

or boat transportation would be necessary to take people to Port Hardy, Bella Bella or Bella Coola. The Coast Guard may be called upon to assist with this evacuation.

- Power outage: Community water system runs on pumps powered by electricity from the diesel generator. Water pressure is lost during power outage making fire hydrants useless.
- Power outage: Prolonged power outage would also cause food to spoil and there are no local stores that can re-supply the village.
- Fire fighter training: Volunteer fire fighters require training in forest fire fighting. Band requires financial assistance to either bring trainers in or send fire fighters out for training.
- Grass fire caused by cigarette smoking. Large number of smokers in village. In late summer there is build up of dry grass fuels that can easily be ignited by dropped cigarettes.

# 3 Interface Fire Planning Units

Community wildfire plans are broken down into Interface Fire Planning Units (IFPU) in order to facilitate differences in terms of fire hazard, values at risk, logistics and operational challenges. There is only one IFPU surrounding Oweeekeno.

## *3.1 Oweekeno IFPU*

The main characteristics of the Oweekeno IFPU are:

- Interface fire zone is primarily around the perimeter of the community, however community is so small that the whole community is in the interface zone.
- The newly developed eastern part of the community (school, admin building and residences) has good set back between buildings and the forested edge.
- In the older part of town, the mainline road going from RIC to the lake provides a fuel break between forest and settlement. The setbacks between housing and forest in this part of the village is variable – some adequate, while others could benefit from brushing, pruning and clearing/thinning.
- Buildings generally have metal or asphalt tile roofing but there are a few wood shake roofs.
- The garbage dump is located east of the community and downwind of prevailing summer winds.
- Fire hall with pickup truck and pumps and hose.
- There is good fire hydrant coverage throughout.
- There is good road access to all developed areas.

Figure 2 Center part of Oweekeno village. Clearing at top is where power generators are located. Note variable setbacks between houses and forest.

Figure 3 Western part of Oweekeno village.

Figure 4 Typical interface in Oweekeno.

Figure 5 New housing development. Good setback from forest interface.

# 4 Wildfire Hazard Assessment

Wildfire hazard is a function of the risk of occurrence in combination with the severity of impact. To determine the hazard, a review of local fire ecology, fire history, likely sources of ignition, forest fuel characteristics and density of developments in the interface is necessary. To objectively quantify the hazard, the Interface Community Fire Hazard Form (ICFH Form) was followed. Appendix C contains the hazard evaluation for each Interface Planning Unit.

In 2005, the Ministry of Forests and Range evaluated interface fire threats and the mapped results of this Strategic Threat Analysis (STA) has been incorporated into the evaluation of the hazard in Oweekeno. Information from the STA include: fire probability classification, building density analysis, probability of human and lightning caused ignition, head fire intensity and spotting potential.

The background information used to complete the hazard evaluation is explained in this section.

## *4.1 Forest Ecology*

Oweekeno village is located in the sub-montane very wet maritime variant of the Coastal Western Hemlock biogeoclimatic zone (CWH vm1) and as such is characterized as coastal rainforest. The climate in this variant is typically wet and humid with cool summers and mild winters. Although precipitation is high, it can vary considerably within this variant depending on local rain shadow effects of coastal mountains (Green et al, 1994). In terms of the provincial danger rating, the community is located in Danger Class 1.

The CWH vm1zone is classed Natural Disturbance Type 1 (MoF, 1995) where stand initiating disturbances are 'rare', with a mean return interval of 250-350 years. Most of these types of major disturbances that occur at this frequency in the outer coast area are primarily caused by wind but may also be due to landslides or, fire. The wet climate makes for very low natural fire occurrence; however, when fires are able to get started, it is during unusually dry conditions when the combination of high volumes of dry wood fuel makes for catastrophic fire situations (Beck, et al 2005). These intense fires 'terminate' forest stands but also 'initiate' new long lived plants. Initial re-vegetation is rapid but full recovery may take hundreds of years.

## *4.2 Fire Weather*

Historical weather data was provided by the Ministry of Forests and Range. There are five weather stations that apply to the Mid Coast Forest District. They are located in Hagensborg, McInnes Island, Machmell drainage, Port Hardy and Talchacko valley. None of these weather stations apply directly to the conditions at Oweekeno village, so fire weather history is estimated based on interpolation of data from the Machmell and Port Hardy weather stations. Table 1 and 2 summarizes the fire season weather conditions from 2001 to 2005 along with the Canadian Fire Weather Indices and Danger Class records for these two weather stations.

Table 1. Machmell weather and fire weather indices records (2001 – 2005).

| Factor | April | May | June | July | August | Sept | Oct |
|---|---|---|---|---|---|---|---|
| **Weather Data:** | | | | | | | |
| Mean Temp C | 12.2 | 13.9 | 18.2 | 20.0 | 20.4 | 15.5 | 10.4 |
| Relative Humidity | 59.5 | 61.5 | 59.3 | 62.4 | 64.5 | 73.1 | 79.5 |
| Wind Speed (km/hr) | 5.9 | 5.4 | 8.1 | 7.4 | 6.2 | 4.8 | 4.8 |
| Wind Direction | 193 | 159 | 223 | 274 | 250 | 240 | 203 |
| Precipitation (mm) | 80.4 | 80.9 | 80.4 | 67.3 | 128.9 | 171.3 | 259.6 |
| | | | | | | | |
| **Fuel Indices:** | | | | | | | |
| FFMC | 65.5 | 64.6 | 71.6 | 71.8 | 64.7 | 50.2 | 33.9 |
| DMC | 11.6 | 17.1 | 21.8 | 19.4 | 23.7 | 4.1 | 3.0 |
| DC | 33.5 | 88.7 | 141.3 | 182.9 | 216.7 | 55.5 | 14.4 |
| ISI | 1.8 | 2.1 | 3.8 | 2.9 | 2.7 | 0.8 | 0.6 |
| BUI | 12.6 | 21.6 | 29.9 | 29.7 | 34.8 | 6.3 | 3.7 |
| FW | 2.4 | 3.8 | 7.8 | 6.1 | 6.8 | 0.8 | 0.6 |
| | | | | | | | |
| **Danger Class (days/mnth)** | | | | | | | |
| Extreme | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| High | 0.0 | 1.7 | 4.3 | 1.8 | 4.8 | 0.0 | 0.0 |
| Moderate | 1.3 | 5.0 | 7.8 | 9.8 | 10.0 | 0.2 | 0.0 |
| Low | 10.7 | 10.3 | 8.3 | 11.2 | 7.2 | 8.2 | 4.0 |
| Very Low | 6.7 | 14.0 | 8.0 | 5.4 | 9.0 | 21.6 | 22.4 |

Table 2 Port Hardy weather and fire weather indices records (2001 – 2005).

| Factor | April | May | June | July | August | Sept | Oct |
|---|---|---|---|---|---|---|---|
| **Weather Data:** | | | | | | | |
| Mean Temp C | 9.6 | 10.9 | 14.1 | 15.5 | 15.7 | 13.4 | 10.3 |
| Relative Humidity | 74.6 | 74.4 | 74.5 | 77.2 | 81.4 | 82.7 | 83.0 |
| Wind Speed (km/hr) | 13.1 | 14.4 | 12.9 | 12.0 | 11.4 | 11.7 | 13.9 |
| Wind Direction | 102.0 | 112.8 | 130.1 | 130.5 | 108.3 | 102.0 | 128.2 |
| Precipitation (mm) | 4.3 | 3.7 | 2.6 | 2.3 | 3.4 | 4.3 | 8.9 |
| | | | | | | | |
| **Fuel Indices:** | | | | | | | |
| FFMC | 56.9 | 61.0 | 63.9 | 65.9 | 62.9 | 52.7 | 37.7 |
| DMC | 3.7 | 5.1 | 7.0 | 9.7 | 10.8 | 2.7 | 0.8 |
| DC | 18.9 | 56.5 | 105.8 | 164.5 | 222.1 | 102.0 | 21.6 |
| ISI | 1.0 | 1.5 | 1.6 | 2.0 | 1.7 | 0.8 | 0.3 |
| BUI | 4.7 | 7.8 | 11.7 | 16.1 | 18.6 | 4.8 | 1.4 |
| FW | 0.7 | 1.5 | 2.1 | 3.0 | 3.0 | 0.5 | 0.1 |
| | | | | | | | |
| **Danger Class (days/mnth)** | Rarely goes over danger class 3. | | | | | | |
| Extreme | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| High | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |
| Moderate | 0.0 | 0.2 | 1.6 | 3.6 | 3.4 | 0.2 | 0.0 |
| Low | 6.4 | 13.8 | 13.6 | 14.2 | 14.6 | 4.8 | 1.3 |
| Very Low | 14.6 | 16.4 | 14.6 | 13.2 | 12.8 | 24.8 | 29.8 |

The data shows that in the Machmell, on average, the Danger Class is high for 6% of the days during the fire season and moderate for 18% of the days. June and August had the highest number of days with high Danger Class. In Port Hardy, the Danger Class very rarely reached high and only reached moderate during 5% of the days during the fire season. It is reasonable to expect that the Danger Class at Oweekeno village will be slightly higher than Port Hardy and slightly lower than Machmell.

During hot, dry summer periods, inflow winds from the west are common, especially in the afternoon. Typically these winds are described as moderate to fresh breezes (20-40 km/hr) (Canadian Forest Fire Danger Rating System, CFFDRS). These winds will generate enough wave action at RIC to prevent float planes from landing there. Therefore, fires that start west of the village are of particular concern.

## *4.3 Fire History*

Historically, there have been a number of fires in the Rivers Inlet/Owikeno Lake area. In the last few years there have been a number of small fires recorded in the maritime area of the Mid Coast. Small lightning fires occurred in Oweekeno Lake in 2003 and 2004. In 2002 there was one fire in the Machmell and in 2005, a fire that grew to 39 ha in size occurred in

Johnston Channel (approximately 17 km NW of Bella Bella) along the power line connecting Ocean Falls to Bella Bella and Shearwater. Deemed to be human caused, this fire is significant not just in its size but also because it occurred in the very wet hyper-maritime zone in April when fuels are usually still wet from winter and spring rains. In recent years there have also been two minor fires within the Oweekeno village that the local fire department responded to. The residents see these recent incidents as warning signs of increasing fire danger due to changing climatic conditions.

## *4.4 Risk of Wildfire Occurrence*

Risk of occurrence is primarily affected by sources of ignition, the availability of fuel and its condition. Fire history indicates that natural forest fires are rare in the outer coast area and in recent years, human caused ignition is shown to be the main source. Ministry of Forest and Range's Strategic Threat Analysis shows that there is a **moderate fire probability** in the vicinity of Oweekeno area (Appendix D).

The Oweekeno village area is shown to be susceptible to both lightning and human caused fires. Accordingly, mitigation of hazard will depend on a combination of fuel management, education and precautionary application of industrial and high risk activities.

The main potential sources of human ignition in Oweekeno are untimely burning of debris, back yard camp fires and burning of garbage at the dump. Other accidental sources include children playing with matches or dropped cigarettes.

**Recommendation:** Develop education/information program to raise awareness of means to minimize risk of wildfire ignition and develop a system to inform the population about daily fire danger rating and the associated restrictions on 'hot work' activities and campfires.

## *4.5 Forest Fuels*

The forest surrounding Oweekeno is typical coastal western hemlock with amabilis fir, red cedar and Sitka spruce. The flat areas immediately surrounding the village are primarily 70 year old, well stocked second growth with some younger 10-20 year old regeneration east of the village. The mountain slopes north of the village contain old growth timber cedar/hembal timber. Strips of alder is found along creeks, the river bank and the mainline road.

In coastal ecosystems, the most volatile fuels are generally associated with slash build up from logging or land clearing. Except for the eastern areas of

the district, most of the larger fires in the Mid Coast have occurred in slash fuel types, thereby demonstrating the need to manage fuel loading associated with timber harvesting or forest clearing in the vicinity of the interface. Mature coastal forests generally do not burn easily, except in extreme cases and forested buffer strips have been a key 'fire break' strategy between large areas of slash loading. Often, slash fires will only burn into surrounding forest perimeter to the 'shadow line' (area of direct sunlight permeation from forest edge into the timber). Fuels exposed to open sunlight are often more volatile than those under the shadow of the forest canopy. It should be cautioned though that during extreme weather conditions (prolonged period of dry weather, hot temperatures and wind), then coastal forests will burn and due to the large amount of biomass, fires can be very intense and difficult to suppress.

Ministry of Forest and Range vegetation inventory data was relied on to provide forest cover information. Some minor modification of this information was made based on air photo review and field reconnaissance. Appendix E contains a map depicting the various land/forest cover types in the area and a satellite imagery map (compliments of Western Forest Products Ltd) is provided in Appendix B.

Scotch broom is a particularly, fire volatile, invasive plant specie that was noted to be present in small amounts in the village. Fortunately, the problem is not significant at the moment; however, the plant is a prolific weed that can spread rapidly unless preventative action is taken.

**Recommendation:**
Establish program to methodically remove wild growing broom plants before problem gets too large.

### 4.5.1 Forest Fuel Classification

The Canadian Forest Fire Danger Rating System (CFFDRS), developed by the Canadian Forest Service, classifies forest fuels into 16 major types. Most of these classifications were developed in eastern and northern forests and they do not fit very well in terms of describing coastal forest fuels. However, in order to provide some consistency, attempts have been made to best approximate the local fuels in terms of the CFFDR System. There are primarily three types of forest fuel classes in the vicinity of Oweekeno village:

- **Conifer second growth**: estimated to correspond to CFFDRS C3 Fuel Type. This type occupies much of the flats extending from Rivers Inlet to Owikeno Lake.
- **Conifer saplings**: estimated to correspond to CFFDRS C2 Fuel Type. This type is found east of the village and around the airstrip.

- **Mature Conifer:** estimated to correspond to CFFDRS C5 Fuel Type. A very minor component of this type is along north west edge of village.
- **Deciduous:** estimated to correspond to CFFDRS D1 fuel type. Pure deciduous stands are not very common in this area and in vicinity of Oweekeno village, it is found on the opposite side of the river (south side).
- **Mixed:** estimated to correspond to CFFDRS M2 fuel type. Minor amounts of this stand type are found scattered around the IFPU.
- **Slash:** estimated to correspond to CFFDRS S2 fuel type. Most recent slash is located on the south side of the Wannock River.

**Burning Difficulty:** In the description of the various fuel types, a subjective assessment is made regarding how easily the fuels will burn. In this context, a Burning Difficulty rating of 'low' means that fuels will usually not burn readily. A 'high' rating means the fuels can easily burn.

**Crowning Potential:** Subjective assessments of the various fuel type's potential for crown fire is also made. This assessment incorporated the fuel type, density and presence of ladder fuels. Wind also has a strong influence on crowning potential.

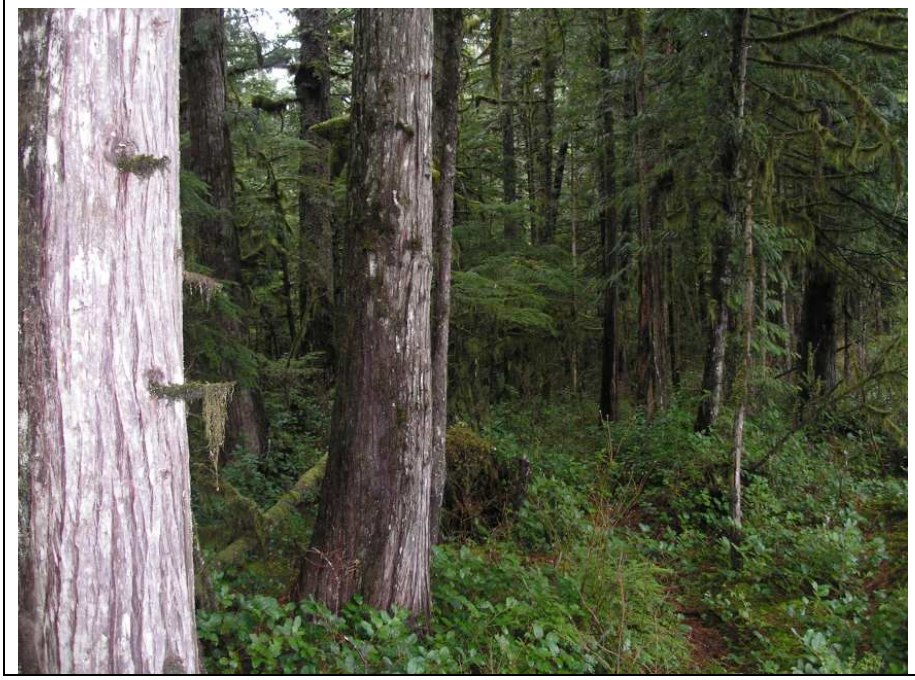
Forest Fuel types in vicinity of Oweekeno

**Conifer Second Growth (C3)**

- HS(D) 431
- Well stocked, thrifty second growth.
- 25 m height
- Live crown top 30%
- Crown closure 70%
- Duff 10 -15 cm.
- Moderate amount of rotting wood on forest floor.
- Understory vegetation is generally low except along edges and small openings where salmonberry thrives.
- Ladder fuels mainly along open edges.
- Burning difficulty is low with moderate crowning hazard.

**Conifer Saplings (C2)**

- Young HSC plantation.
- HSC 110
- 3-5 m tall.
- Crown closure 20%
- Dense brush in areas where crown closure is not achieved.
- Burning difficulty is low with high crowning potential, particularly in windy conditions.



**Mature Conifer (C5)**

- CH 731
- 20 m tall.
- Multiple canopy layers.
- Duff > 30 cm.
- Feather moss, sphagnum and salal on forest floor.
- Crown closure 50%
- Burning difficulty is low with high crowning potential, particularly if windy.

The distribution of these fuel types is shown on the Fuel Types map in Appendix F.

The MOFR has also generated an estimation of the anticipated fire intensity based on the types of forest in the vicinity. Termed Head Fire Intensity (HFI), it is the predicted energy output of the fire at the front or head of the

fire. It has become one of the standard gauges by which fire managers estimate the difficulty of controlling a fire and select appropriate suppression methods. It is measured in kilowatts per meter of fire front and is based on the Rate of Spread and the Total Fuel Consumption. This analysis indicates that the most of the forest types surrounding Oweekeno village would burn with very high intensity. The Head Fire Intensity map is provided in Appendix G.

## *4.6 Density of Developments*

In terms of the hazard assessment, the village is classified as 'rural' and surrounded by 'continuous forest'. In terms of values to protect, the Oweekeno IFPU is categorized as 'incomplete development' whereby interface fire is a threat throughout the community.

Building density is characterized as 'mixed' with a density of 10 – 100 buildings per square kilometre. Houses are typically one and two story, wood frame dwellings with mostly asphalt tile or metal roofing, although one or two homes have cedar shake roofing. Most buildings have good setbacks from forest edge although a small number of residences are located in amongst trees and could benefit from fuel reduction treatments like thinning and pruning.

## *4.7 Hazard Rating*

Using the Wildland Urban Interface Fire Hazard Assessment methodology, Oweekeno was determined to have a **moderate** interface fire hazard (see Appendix C for details). Under this hazard ranking, homes and structures are considered to be threatened by interface fire.

The main factors that influence this rating are:

- The low Fire Weather Potential due to coastal climate
- Fuel characteristics - thick duff layers and coniferous forest
- Volunteer fire department however response time is quick
- Good fire hydrant coverage
- Low historical incidence of fire.
- No significant extenuating factors
- Local concerns and observations of changing conditions.

# 5 Emergency Operations

**Please refer to the Central Coast Emergency Plan for up-to-date contact information.**

Oweekeno village has a volunteer fire department under authority of the Wuikinuxv Nation. The department consists of 3 (plus 2 new recruits) active volunteer fire fighters; however, all members may not be in the community on consistent basis. The fire hall is located in the center of town and is equipped with one pick up truck for transporting pump and hose. Due to the short distances, response time to a fire call is less than 15 minutes. There is good vehicular access to all areas within the community so the truck can reach all places. However, the ability to reach beyond the developed areas and into the forest is limited to around 100 m.

There is good fire hydrant coverage throughout the village

Translake operates a log re-haul from Owikeno Lake to RIC and has additional equipment and resources to deploy in case of fire.

It is a WCB requirement that those partaking in suppression of forest fires receive S-100 training annually. First response to an interface fire will likely be up to the local fire department, therefore it is imperative that fire fighters receive basic forest fire suppression training.

**Recommendation:**
To comply with WCB requirements, conduct S-100 Basic Forest Fire Fighting training annually for volunteer firemen.

For anything but the smallest interface fire, the Ministry of Forests and Range are relied upon to provide forest fire suppression support. During times of fire danger, the MOFR positions a 'rapattack' crew in Bella Coola that can quickly attack wildfires by helicopter while they are still relatively small. If initial attack efforts are insufficient, then additional fire fighting capabilities and resources can be quickly deployed from the Coast Fire Center in Campbell River.

Currently there is no mutual aid agreement in place between MOFR and the local fire department. It is recommended that contacts be enhanced between the Oweekeno emergency response group and the Fire Protection Officer responsible for the Mid Coast in order to open up communication lines and provide for timely information updates.

**Recommendation:** Strengthen routine and ongoing communication between Wuikinuxv emergency response personnel and MOFR Fire Protection Officer.

## *5.1 Available Fire Fighting Resources*

The following resources are available in Oweekeno;

**Fire Department**

- 5 volunteer fire fighters
- Pick up truck with pump and hose
- 8 lengths of hose
- SCBA (breathing devices)

**Translake** Note: Translake is in process of shutting down so availability of equipment can not be relied on after July, 2006.

- Fire suppression systems – pumps, hose.
- Trucks and loaders.

**Other**

- Fire hydrants – pressured by electric pump
- Heavy equipment – 1 rubber tired backhoe

**Accommodation**

Fire crew accommodation is available within the community:

- Tech Lodge – 6 rooms, 3 full bathrooms, kitchen
- Day Home – 2 rooms, 2 full bathrooms
- Teacherage – 2 rooms
- Cook shack – logging camp industrial kitchen and dining area.
- 2 Bed and breakfasts
- Tent space

# 6 Mitigation and Recommendation Summary

The main realistic opportunities to reduce interface wildfire in the vicinity of Oweekeno is through public education to reduce risk of human caused ignitions and to conduct fuel hazard reduction treatments in the vicinity of homes and structures. Much information can be accessed via the internet on how people can 'Firesmart' their homes and properties. The following government website is a good source:

www.for.gov.bc.ca/protect/

## *6.1 Mitigation Treatments*

- People are encouraged to ensure that conifer trees in the vicinity of their homes are pruned to a height of at least 2m. Branches overhanging houses or balconies should also be pruned back. Wild growing brush and other woody material should also be cleared from around houses. See Firesmart manual.
- Trees along the perimeter of the village should be pruned so that branches are at least 2 m above the ground (the higher the better). Smaller 'ladder' fuel trees should also be removed to minimize ability for fire to climb into the canopy.
- Work to reduce grass fuel loading by cutting during growing season and burning excess grass build up in fall or spring.
- Establish program to remove scotch broom plants before problem becomes unmanageable.
- Given the susceptibility of slash fuels to fire, it is imperative that any mitigative treatments involve the removal of slash build up.

## *6.2 Recommendations Summary*

The recommendations for follow up are re-iterated:

1. First Nations are advised to make use of the resources available through FNESS to address capacity building, training, planning, policy development, preparedness and equipment resource needs.
2. Develop public education and information distribution program regarding wildfire regulation and implement this as part of the broader emergency preparedness program.
3. Include interface fire management as one of the hazards that the local emergency response group considers and addresses.
4. Integrate notification of Coast Guard in event of interface fire for assistance with evacuation if necessary.

5. Determine the band's level of responsibility for homes owned by the band. Develop education and incentive program for individuals to address fuel hazard around their homes.
6. Develop education/information program to raise awareness of how to minimize risk of wildfire ignition and develop a system to inform the population about daily fire danger rating and the associated restrictions on 'hot work' activities and campfires.
7. Establish program to methodically remove wild growing broom plants before problem gets too large.
8. Conduct S-100 Basic Forest Fire Fighting training for volunteer firemen on an annual basis.
9. Strengthen routine and ongoing communication between Oweekeno emergency response personnel and MOFR Fire Protection Officer.

# 7 Monitoring and Evaluation

Forest fuel conditions and communities change over time and so this plan should be reviewed on an annual basis by the local emergency management committee and updated as required. If major developments or changes occur, such as forestry activity significantly changing the fuel loading of the surrounding forest, then the plan may require rewrite.

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# Appendices

***Appendix A – Oweekeno Overview and IFPU Hazard Map***

***Appendix B – Satellite Image Map***

***Appendix C – Community Wildfire Hazard Assessment Forms***

***Appendix D – Fire Probability Map***

***Appendix E – Land and Forest Cover Map***

***Appendix F – Forest Fuel Type Map***

***Appendix G – Head Fire Intensity Map***