# GRAND RAPIDS / SARATOGA
# COMMUNITY WILDFIRE PROTECTION PLAN


**NORTH CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION**

# GRAND RAPIDS / SARATOGA
# COMMUNITY WILDFIRE PROTECTION PLAN
# (CWPP)

prepared for:

Towns of Grand Rapids and Saratoga
CWPP Planning Committee

by:

*North Central Wisconsin Regional Planning Commission*

adopted by Town of Grand Rapids Board of Supervisors on:

**July 13, 2010**

adopted by Town of Saratoga Board of Supervisors on:

**July 7, 2010**

---

This plan was prepared at the request and under the supervision of the Towns of Grand Rapids and Saratoga CWPP Planning Committee and the Wisconsin Department of Natural Resources by the North Central Wisconsin Regional Planning Commission (NCWRPC). For more information, contact:

NORTH CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION
210 McCLELLAN STREET, SUITE 210
WAUSAU, WI 54403

Telephone: 715-849-5510 FAX: 715-849-5110 email: staff@ncwrpc.org
www.ncwrpc.org

**GRAND RAPIDS / SARATOGA CWPP**

## List of Figures



## List of Tables

# CHAPTER 1: INTRODUCTION

## PLAN PURPOSE

This plan is a Community Wildfire Protection Plan (CWPP) as defined in Title 1 of the Healthy Forest Restoration Act (HFRA) of 2003. The purpose of this CWPP is to provide the Towns of Grand Rapids and Saratoga, local fire departments, Wood County, and the Wisconsin Department of Natural Resources (WDNR) with information and tools to help them reduce potential risks associated with wildfires and to collaboratively identify wildfire mitigation actions that will provide solutions to address the impacts of wildfire hazards. The plan will also assist the citizens of the two towns to prevent wildfires and be better prepared to deal with wildfire hazards. The plan develops strategies aimed at protecting life, property, and the natural environment.

## COMMUNITY WILDFIRE PROTECTION PLAN

A CWPP is a written document that identifies how a community will reduce its risk from wildland fires. A CWPP is mutually agreed upon by local, state, and federal representatives and stakeholders.

A CWPP should be developed in any community that is in proximity to highly flammable wildland fuels, or is listed as an "at-risk" community in a federal or state risk assessment. The Towns of Grand Rapids and Saratoga are interspersed with highly flammable wildland fuels and have been identified as "very high risk" communities in the Wisconsin Communities-at-Risk (CAR) assessment.

A CWPP requires the following three elements:

- **Prioritized fuels reduction** – Identification and prioritization of wildland areas for hazardous fuels reduction treatments, as well as recommending methods for achieving hazardous fuels reductions on both private and public lands.

- **Treatment of structural ignitability** – Recommending measures that homeowners can take to reduce structural ignitability throughout the at-risk community.

- **Collaboration** – Ensure a collaborative effort between local and state government in consultation with federal agencies is used to prioritize fuels reductions and recommend measures to treat structural ignitability.

### Collaboration/Planning Committee

The Grand Rapids/Saratoga Community Wildfire Protection Plan development process is intended to be open and collaborative in its effort to improve the safety of the community and its resources. The Planning Committee was made up of representatives from the communities, local fire departments, and state agencies. Kris Tiles, UW Extension Basin Educator facilitated

participatory exercises with the group to encourage local input. The representatives listed below comprise the core decision-making team and mutually agreed on the plan's content.

- Don Bohn - Town of Grand Rapids
- Arne Nystrom – Town of Grand Rapids
- Terry Rickaby - Town of Saratoga
- Scott Bernette - Grand Rapids Fire Dept.
- Dan Forbes - Town of Saratoga
- Mike Hartje - Nekoosa Fire Dept.
- Dave Rheinschmidt - Nekoosa Fire Dept.
- John Frantz - Rome Fire Dept.
- Brian Luebke - WDNR
- Amy Luebke - WDNR
- Fritz Schubert – Wood County Parks & Forestry
- Marc Thompson - Brookhaven Estates Property Owners Assoc.
- Tom Buchholz - Wood County Emergency Mgmt

## Statement of Intent

The intent of this plan is to help fire protection agencies, community leaders, and natural resource professionals be better prepared to protect the community's residents, property, and natural resources against the negative impacts of wildfire.

## Planning Process

The steps in the Grand Rapids/Saratoga Community Wildfire Protection Plan process were adapted from the publication "Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities" as follows:

### 1. Convene Decision Makers and Involve Federal and State Agencies

The process began with a meeting of representatives from local government, local fire authorities, and state agencies on Tuesday, June 16, 2009 in the Town of Saratoga, Wisconsin. The meeting was facilitated by the Wisconsin Department of Natural Resources.

- This initial meeting provided overview information on CWPPs, the planning process, and available grant funding.

- A discussion on roles and responsibilities helped establish the planning committee (listed above) and determined that the North Central Wisconsin Regional Planning Commission would facilitate the process and draft the plan for the towns.

### 2. Engage Interested Parties

A broad range of interested organizations and stakeholders were contacted and encouraged to be part of the development of the CWPP. The contact list included

representatives of state, and local land management agencies, homeowner associations, Wood County Emergency Management, Wisconsin River Power Company and Plum Creek Timber Company. From these contacts, a working committee was established to guide the CWPP process.

### 3. Establish Community Base Maps

Working with WDNR and local representatives, the Regional Planning Commission developed maps of the communities that display inhabited areas at risk and areas that contain critical infrastructure. The maps also identify planning units of the towns as defined by the planning committee, as well as other features pertinent to CWPP plan making.

### 4. Develop a Community Risk Assessment

Working collaboratively, the WDNR, Regional Planning Commission and local representatives developed a risk assessment for the area based on fuel hazards, risk of wildfire occurrences, at-risk infrastructure and other community values at risk, and local preparedness and firefighting capability.

### 5. Establish Community Hazard Reduction Priorities and Recommendations to Reduce Structural Ignitability

From planning committee discussions, the towns established an overarching goal to "provide for public safety from wildfire." The committees then established prioritized objectives to achieve that goal. Objectives focused on fuel treatment, reducing structural ignitability, and improving fire response capability.

### 6. Develop an Action Plan and Assessment Strategy

Mitigation strategies were developed by the planning committee to help the towns meet the established mitigation objectives. The mitigation action plan details specific activities the towns plan to undertake to meet the established wildfire protection objectives.

### 7. Complete the Community Wildfire Protection Plan

Adoption of the CWPP by the Towns of Grand Rapids and Saratoga completes the plan. The plan is finalized after mutual agreement from the planning committee is achieved and public comment is considered and incorporated into the plan as applicable.

**Planning Goal and Objectives**

The Towns of Grand Rapids and Saratoga CWPP Planning Committee identified and prioritized the following goal and objectives to be the foundation for this Community Wildfire Protection Plan:

**Goal: Provide for public safety from wildfire**.

**Objective 1**: Reduce hazardous fuels on private land and around structures (home ignition zone).

**Objective 2**: Involve the public in assessing and reducing wildfire hazards in a safe and effective manner.

**Objective 3**: Identify and mitigate safety hazards to the public and firefighters.

**Objective 4**: Improve intergovernmental coordination and cooperation in wildfire planning and protection.

**Objective 5**: Reduce hazardous fuels on public land.

**Objective 6**: Create new approaches to getting wildfire prevention messages to the public.

**Objective 7**: Identify needs to improve local fire department suppression capabilities (both structural and wildfire)

## CHAPTER 2: COMMUNITY PROFILE AND EXISTING CONDITIONS/RISKS

This chapter looks at the community profile and some existing conditions in Grand Rapids and Saratoga that may add to the challenges of managing a wildfire, could further fuel a wildfire, or are considerations related to wildfire mitigation or management.

### LOCATION

The Towns of Grand Rapids and Saratoga are located in southeastern Wood County in central Wisconsin; see Map 1. The Towns are adjacent to the cities of Wisconsin Rapids and Nekoosa and the villages of Biron and Port Edwards as well as the Town of Port Edwards. Portage County lies to the east and Adams County to the south of the two towns.

### LAND OWNERSHIP

The Town of Grand Rapids consists of approximately 13,121 acres (20.5 square miles) while Saratoga has approximately 32,535 acres (50.8 square miles). Land ownership is primarily private with corporate land management companies holding significant area within the Town of Saratoga. Publicly held state and county land, which includes South Wood County Park, accounts for only a small percentage of the total area.

Since the majority of land is privately held and managed, government agencies will have to develop cooperative relationships with the private sector and general public to reduce the risk of wildfire within the two towns.

### LAND USE

Land use is an important determinant in the potential impact wildfire may have on an area and the necessary mitigation actions. Land use mapping depicts the activities or usage on the land surface such a woodlands or residential development. An understanding of the land use within the towns is an important consideration. Map 2 depicts the land use present in the Towns.

**TABLE 1: GENERALIZED LAND USE INVENTORY IN ACRES, 2009**

| *Type* | *Grand Rapids* | *Saratoga* | *Totals* |
|---|---|---|---|
| Agriculture* | 779 | 1,006 | 1,785 |
| Commercial/Industrial | 184 | 226 | 410 |
| Institutional/Governmental | 84 | 46 | 130 |
| Open Space | 743 | 1449 | 2,192 |
| Open Water | 180 | 1,122 | 1,302 |
| Recreation | 340 | 28 | 368 |
| Residential | 1,715 | 1,199 | 2,914 |
| Transportation | 553 | 594 | 1,147 |
| Woodlands | 8,543 | 26,864 | 35,407 |
| Total | 13,121 | 32,535 | 45,656 |

*Source: NCWRPC GIS* **Includes cranberry bogs.*

The majority of the land in the Towns (78 percent of the total acreage) is woodland, primarily in use for forestry and recreational activities; see Table 1. Of the remaining 22 percent of the total area, the land uses consist of residential development (6.4 percent), agricultural land (3.9 percent), transportation infrastructure (2.5 percent), commercial and industrial development (0.9 percent), and governmental, open space, recreation and water make up the remaining percentage.

**Woodlands**

Woodlands consist of land that remains undeveloped and includes forestlands (both managed and unmanaged), water features, and other natural areas. Woodlands account for the largest land use category within both Towns. With the exception of the notable amount of agricultural land and concentrated residential and scattered development throughout, the Towns are almost entirely covered by forest. The woodlands cover 8,543 acres of land, or 65 percent of the Town of Grand Rapids and another 26,864 acres or 83 percent of the Town of Saratoga.

Certain vegetation types present a higher flammability risk than other types. The following vegetation types in Grand Rapids and Saratoga present the highest flammability risk and are the most volatile (listed in order of highest to lowest risk): jack pine, red pine, oak, birch-aspen, and mixed hardwoods.

**Open Space**

Open space consists of natural areas that do not fit into the woodlands or agricultural categories and may include grasslands, wetlands (all types), bogs, floodplain areas, and other brush or shrub lands. This is a "catch-all" type of category that comprises 2,192 acres between the two towns.

Fire characteristics vary, but grasses and shrubs can be a fuel source for fast-moving fires that create a threat for nearby structures.

**Agricultural Land**

Agricultural land, including croplands, pastures, and open space, account for 1,785 acres of land between the towns. The agricultural land is scattered throughout.

Croplands/pastures are often open vegetation lands containing tall grasses that can be a source for fast-moving fires that create a threat for nearby structures.

**Residential Land**

Residential land within Grand Rapids includes about 1,715 acres or 13 percent of the Town's area. In Saratoga, residential land covers approximately 1,199 acres or 3.6 percent of the Town's area. Residential use in the Towns is primarily made up of single-family homes (94 percent in Grand Rapids and 85 percent in Saratoga). Mobile homes make up another 4 and 11 percent in Grand Rapids and Saratoga, respectively. The remaining residential land is comprised of multi-family homes, primarily duplex types. The number of residential units for seasonal use in both towns is less than 1 percent.

From a fire perspective, residential structures represent one of the primary values to protect from wildfire. Conversely, although not a leading cause, structure fires do cause wildland fires.

**Transportation Uses**
The local, county, and state roads running through the Towns fall under the land use category of transportation uses and account for 1,147 acres of land. A rail line traverses the northern end of the area in the Town of Grand Rapids running just south of Highway 54. This category does not include recreation trails.

Roads lead people into remote areas increasing fire risk in those hard-to-reach areas. However, roads present a duality in that they are a recognized ignition source but also aid in fighting fires by providing equipment access. Rail operations can be an ignition source for wildfire.

**Institutional / Governmental**
Institutional/governmental uses total about 130 acres of land, or 0.3 percent of the acreage in the Towns. The town halls, fire stations, and churches are the main uses within this category in the Towns.

**Commercial / Industrial Land**
Commercial and industrial uses make up 410 acres of land or 0.9 percent of the acreage between the two Towns. This development is scattered but primarily located along major roadways like state highways 13, 54 and 73 and the various county highways.

**Recreational Uses**
Grand Rapids has about 340 acres (about 2.5 percent) of land designated recreation within the Town, primarily within South Wood County Park. Saratoga contains only 28 acres (less than .10 percent). Uses include a private campground. Due to the town's wooded nature, a number of recreational uses exist within the woodlands land use category that is not counted under the recreational category.

It is important for both fire management personnel and recreational users to be mindful of the fact that campers, ATV users, and other 4x4 vehicle users can be a source of ignition in difficult to access areas with high hazard fuels.

## WILDLAND URBAN INTERFACE (WUI)

People are attracted to towns like Grand Rapids and Saratoga that offer rural living with convenient access to urban areas for employment and services. This demographic change is expanding the wildland-urban interface (WUI). The WUI is the area where structures and other human development meet and intermix with undeveloped wildland environment. The expansion of the WUI in recent decades has had significant implications for wildfire impact and management. The WUI creates an environment that enables fire to move swiftly between structural and vegetative fuels. Its expansion increases the likelihood that wildfires will threaten structures and people. The Towns of Grand Rapids and Saratoga are identified as wildland-urban interface areas of concern.

## DEVELOPMENT PATTERN

If a wildfire threatens the forestlands of Grand Rapids and Saratoga, many homes and structures within those forestlands are threatened as well, because of the development pattern within the towns. Development is concentrated in subdivisions and scattered along rural roads, as is often the case in Wisconsin towns. Outside of these concentrations of development, the vast majority of both Towns remain undeveloped with large, unfragmented tracts of forestland, many of which are highly flammable pine plantations.

## POPULATION AND HOUSING

### Population, Estimates, and Projections

Over the past 20 years, the Towns of Grand Rapids and Saratoga have experienced a steady population increase, as shown in Table 2. From 1980 to 2000, Saratoga experienced a significant increase in population with a 23.4 percent increase (1,020 persons), representing a higher percent change than Wood County or the state during the same time. Grand Rapids experienced a 6.6 percent increase (482 persons), similar to the County, but trailing the state in growth.

**TABLE 2: POPULATION TRENDS**

| | *1980* | *1990* | *2000* | *# '80-'00* | *% '80-'00* |
|---|---|---|---|---|---|
| Grand Rapids | 7,319 | 7,071 | 7,801 | 482 | 6.6 |
| Saratoga | 4,363 | 4,775 | 5,383 | 1,020 | 23.4 |
| Wood County | 72,799 | 73,605 | 77,555 | 4,756 | 6.5 |
| Wisconsin | 4,705,767 | 4,891,769 | 5,363,675 | 657,908 | 14.0 |

*Source: US Census and NCWRPC*

The Wisconsin Department of Administration (WDOA) Demographic Services Center annually produces population estimates for Wisconsin counties and municipalities. The estimates are based on the prior Census and analysis of contemporary data including housing units, dormitory and institutional populations, automobile registrations, residential electric meters, and others.

The 2008 population estimate for the Town of Grand Rapids is 7,998 persons representing another 197 persons over the 2000 population and a 2.5 percent increase. The 2008 population estimate for the Town of Saratoga is 5,548 persons representing another 165 persons over the 2000 population and a 3.1 percent increase.

In 2008, WDOA prepared baseline population projections to the year 2030 for Wisconsin counties and municipalities, utilizing a projection formula that calculates the annual population change over three varying time spans. From this formula, the average annual numerical population change is calculated, which is used to give communities preliminary population projections for a future date.

The Town of Grand Rapids' population projections prepared by WDOA predict a steady increase in population from 2010 to 2030, as shown in Table 3. The projection predicts a 2030

population of 8,287, which is an increase of 486 persons over the 2000 Census. The Town of Saratoga population projections predict an increase of 881 in population from 2000 to 2030.

| TABLE 3: POPULATION PROJECTIONS | | | | | |
|---|---|---|---|---|---|
| | ***2010*** | ***2020*** | ***2030*** | ***# '10-'30*** | ***% '10-'30*** |
| Grand Rapids | 8,077 | 8,249 | 8,287 | 210 | 2.6 |
| Saratoga | 5,670 | 6,018 | 6,264 | 594 | 10.5 |
| Wood County | 77,721 | 79,359 | 79,713 | 1,992 | 2.6 |
| Wisconsin | 5,777,370 | 6,202,810 | 6,541,180 | 763,810 | 13.2 |
| *Source: WDOA and NCWRPC* | | | | | |

**Population Impacts on Wildfire Risk**

A growing population in the Towns of Grand Rapids and Saratoga means more people are living within the wildland-urban interface and more people are exposed to the threat of wildfire. Based on statistics, population growth in the WUI is a great concern since 95 percent of forest fires in Wisconsin are caused by people. This fact is evident in Map 5 which displays the cause of past fire occurrences in the Towns from 1985-2005.

**Age Distribution**

Over time, there have been moderate shifts in the distribution of population within age groups in the Towns of Grand Rapids and Saratoga, see Table 4. The median age shifts upward as the population ages. The Towns of Grand Rapids and Saratoga have a slightly older population than the state as a whole.

| TABLE 4: AGE DISTRIBUTION 1990 TO 2000 | | | | | | |
|---|---|---|---|---|---|---|
| | | ***Percent of Population*** | | | | ***Median Age*** |
| | | ***< 5*** | ***5 - 17*** | ***18 - 64*** | ***65+*** | |
| Grand Rapids | 1990 | 7.6 | 24.0 | 61.8 | 6.6 | 32.9 |
| | 2000 | 5.9 | 22.7 | 62.9 | 8.5 | 38.4 |
| Saratoga | 1990 | 8.0 | 23.1 | 62.4 | 6.5 | 31.4 |
| | 2000 | 5.6 | 20.7 | 63.6 | 10.1 | 38.5 |
| Wood County | 1990 | 7.5 | 20.4 | 57.9 | 14.2 | 33.3 |
| | 2000 | 6.1 | 19.6 | 59.0 | 15.3 | 38.0 |
| Wisconsin | 1990 | 7.4 | 19.0 | 60.3 | 13.3 | 32.9 |
| | 2000 | 6.4 | 19.1 | 61.4 | 13.1 | 36.0 |
| *Source: U.S. Census and NCWRPC* | | | | | | |

**Age Distribution Impacts on Wildfire Risks**

It is helpful to keep in mind that the majority of the target audience for wildfire prevention messages is over 35 years of age, with a significant portion of the audience over 65. It is also important to consider that the pool of volunteers for staffing local volunteer fire departments (VFDs) will continue to face challenges. Many VFDs throughout Wisconsin and the U.S. face

recruitment challenges, especially in the 18 to 34 age group, as the median age continues to climb – attributed to aging baby-boomers.

**Employment Location**

Where employment is located affects the town's protection capabilities. Protection capabilities are at their lowest during the day because a number of volunteer firefighters work outside the area. Many volunteer fire departments lack firefighters during the day which can hinder fire suppression efforts.

**Housing Inventory**

The total number of housing units within the Towns increased by 437 in Grand Rapids and 365 in Saratoga between 1990 and 2000. These figures represent growth of 18 to 22 percent between the two towns, well above the county as a whole, see Table 5.

**TABLE 5: TOTAL HOUSING UNITS**

| | *1990* | *2000* | *# 90 - 00* | *% 90 - 00* |
|---|---|---|---|---|
| Grand Rapids | 2,417 | 2,854 | 437 | 18.1 |
| Saratoga | 1,693 | 2,058 | 365 | 21.6 |
| Wood County | 28,839 | 31,691 | 2,852 | 9.9 |
| Wisconsin | 2,055,774 | 2,321,144 | 265,370 | 12.9 |

*Source: US Census and NCWRPC*

The growth in the number of housing units in the towns since 2000 is reflected in Table 6. Overall housing unit additions in Grand Rapids have been on a steady decline, however recent figures are in-line with projected population growth. The numbers in Saratoga have been more variable. A negligible number of housing units are subtracted from year to year within a given community. For the distribution of houses and other structures within the towns, see Map 7.

**TABLE 6: HOUSING UNIT ADDITIONS 2001 - 2008**

| | *Grand Rapids* | *Saratoga* |
|---|---|---|
| 2001 | 31 | n/a |
| 2002 | 37 | 18 |
| 2003 | 25 | 16 |
| 2004 | 23 | 7 |
| 2005 | 21 | 8 |
| 2006 | 17 | 10 |
| 2007 | 11 | 13 |
| 2008 | 10 | 12 |
| Total | 175 | 84 |

*Source: Local Communities*

In 2000, the Town of Grand Rapids had 4.1 % of its housing stock built prior to 1940 compared with 6.8 % in Saratoga. The towns have much newer base of housing stock compared to Wood County as a whole.

The 2000 median value of housing units in Grand Rapids was $108,800 compared to Saratoga at $89,800. For Wood County the median housing value was $81,400

## WEATHER CONDITIONS/FIRE SEASON

The weather plays a very important role in how a fire will behave on a given day. Even a slight increase in wind speed can significantly increase the flame length and rate a fire will spread. A drop in relative humidity can make it easier for forest fuel to ignite and cause it to burn hotter and faster.

The National Weather Service (NWS) provides fire weather forecasts to land management agencies to aid in their fire planning, management, and control activities. These specialized forecasts are based on an interpretation and understanding of weather patterns that affect fire danger and behavior. Fire weather forecasting requires a unique understanding of environmental conditions, especially the relationship between topography, fuels, and weather.

History indicates spring to be the most active season for fire in Wisconsin since dead fuels are abundant, temperatures increase, winds are often gusty, and relative humidity often drops to very low levels. During the summer, there is usually a decrease in fire danger as fine grass fuels green up and fuel moisture increases. During the fall, there can be an increase in fire activity as trees drop their leaves and frost cures the fine fuels. However, due to shorter day length, higher humidity, and cooler temperatures fall fire season is typically not as active as the spring fire season. Typical fire weather seasons in Wisconsin are as follows:

- Spring – March 15 to June 1
- Summer – June 1 to September 1
- Fall – September 1 to November 15

These fire weather seasons are general dates. Wildland fires can occur during any month of the year whenever the ground is not snow covered.

## TREE AND VEGETATION MORTALITY

Tree and vegetation mortality creates more fuel for wildfire. In Grand Rapids and Saratoga, some causes of mortality include insect infestation, disease, drought, and downed trees from storms.

### Insect Infestation

Forestlands in Grand Rapids and Saratoga are generally in good health and free of significant insect infestation, though periodic outbreaks do occur and problems do exist in certain stand types. The following descriptions provide information on five insects of concern as identified by Wood County Parks & Forestry: jack pine budworm, forest tent caterpillar, gypsy moth, two-lined chestnut borer, and emerald ash borer.

Trees in poor health or under drought stress may decline and die after repeated severe defoliation. Furthermore, defoliation will sometimes cause stress in otherwise healthy trees that

may attract secondary pests, such as the two-lined chestnut borer. While the trees are bare, the lack of shade will decrease soil moisture during the dry season, which could cause mortality from lack of moisture.

**Jack Pine Budworm**
Outbreaks of this budworm occur predominately in stands of jack pine, although Scots, red, and white pines may also be attacked. Trees of all sizes are attacked. Defoliation by the jack pine budworm reduces tree growth, retards regeneration, and causes tree mortality.

**Forest Tent Caterpillars**
The forest tent caterpillar is one of the major defoliating caterpillars in Wisconsin. It is distributed throughout the United States and Canada wherever hardwood trees grow. Forest tent caterpillars cause defoliation and significant growth loss on broad-leaved trees and shrubs.

It is important to note that the forest tent caterpillars do not actually make "tents" in the trees. The commonly observed tree tents are made by the *eastern tent caterpillar*. These caterpillars differ from the forest tent caterpillar in that they do not cause serious harm to trees. However, wildfires are often caused by people attempting to burn the tents in an attempt to protect their trees.

**Gypsy Moth**
The gypsy moth is an invasive pest. The caterpillars feed on the leaves of many trees, especially oaks, and their populations can grow so quickly that they can strip all the leaves off of entire stands of trees, damaging them severely. Although gypsy moths may not directly cause tree mortality, they create a vulnerable forest that can lead to mortality.

**Emerald Ash Borer**
Emerald Ash Borer, a metallic wood-boring beetle, was first found in Wisconsin in August 2008. As of August 2009, it has been found in seven Wisconsin counties including Ozaukee, Vernon, Crawford, Brown, Kenosha, Washington and Milwaukee counties. The beetle's immature or larval form spends its life feeding beneath the bark of ash trees. As a result, the ash tree host suffers extensive damage to its vascular system, depriving the tree's crown of water and nutrients and typically killing its host in three to five years. Although ash trees are a significant component of hardwood forests in the state, ash trees are a small component of forests in the Towns of Grand Rapids and Saratoga. It is more commonly a shade tree planted in residential areas rather than a component of forests.

**Two-lined Chestnut Borer**
The two-lined chestnut borer is a common secondary pest in trees that have been defoliated several years in a row. Oaks that have been defoliated by insects such as gypsy moth or forest tent caterpillar can be attacked and killed by the two-lined chestnut borer.

**Disease**
Forestlands in Grand Rapids and Saratoga are generally in good health and free of significant disease, though periodic outbreaks do occur and problems do exist in certain stand types. The

following descriptions provide information on two diseases of concern in Wood County: red pine pocket mortality and oak wilt.

**Red Pine Pocket Mortality**
Red pine pocket mortality is caused by a complex of insects, such as red turpentine beetle and bark beetle, and root rot fungi. Thinned, plantation-grown red pines between 30 and 45 years are most likely to show signs of this syndrome. The pockets start small with a few dead trees surrounded by trees with reduced shoot growth and thin crowns. Each year a few trees on the edge of the pocket die and the pocket expands. As the disease progresses and red turpentine beetle attacks increase, the successful invasion of pine bark beetle occurs. The infestation of pine bark beetles kills the trees.

**Oak Wilt**
Oak wilt is caused by a fungus that forms a balloon-like swelling in the water conducting vessels of the oak tree. The obstruction in the vessel slows the movement of water within the tree causing the leaves to wilt and drop off.

Oaks in the red oak group (black, northern red, northern pin and others with pointed leaf edges) are most susceptible. Oaks in the white oak group (white, swamp white, burr, and others with rounded leaf edges) are less susceptible.

**Drought**
Drought is defined as a deficiency of precipitation over an extended period – usually a season or more. Drought is a normal, recurring climatic event that is expected to become more frequent as our climate changes. It occurs in virtually all climatic zones, but its characteristics vary significantly from one region to another.

Drought causes stress on vegetation that can cause forests to be more vulnerable to insects and disease as well as leading to mortality in situations of prolonged drought. If mortality occurs over contiguous forest blocks, an area of increased wildfire fuel will be present in that area. Drought conditions create dry forest fuels that can lead to additional wildfire starts and cause increased fire behavior. Drought can extend the active fire season into the summer and fall.

Much of Wisconsin has been suffering drought conditions for the last several years. As of this writing, the U.S. Drought Monitor was showing central Wisconsin, including Grand Rapids and Saratoga, still under abnormally dry agricultural and hydrologic conditions, meaning they are under moderate to severe drought.

## OTHER CONCERNS REGARDING WILDFIRE RISK

Other concerns regarding wildfire risk in the area include access to property, fuels near structures, and structural flammability. These conditions may add to the challenges of managing a wildfire or could provide additional fuel to a wildfire.

Educational efforts such as Firewise (discussed later in this plan) would be beneficial to residents to remedy the following situations. Mitigation tactics to address these concerns have been

developed for Grand Rapids and Saratoga and are discussed later in the section on "Treatment of Structural Ignitability."

**Access**

Some residential driveways in the Towns present challenges for firefighters to gain access to the property in case of a fire. Some driveways are very long with curves that are too sharp to allow emergency vehicles to gain access to the property. The lack of access or good turnarounds can pose a hazard to firefighters during a fast moving fire.

**Fuels Near Structures**

Within the Towns, many buildings have vegetation growing around them providing "fuel" near the structures. The area approximately 100-200 feet around all structures is referred to as the "home ignition zone." If left unmanaged, fire in this area can quickly move from vegetation to buildings.

**Structure Flammability**

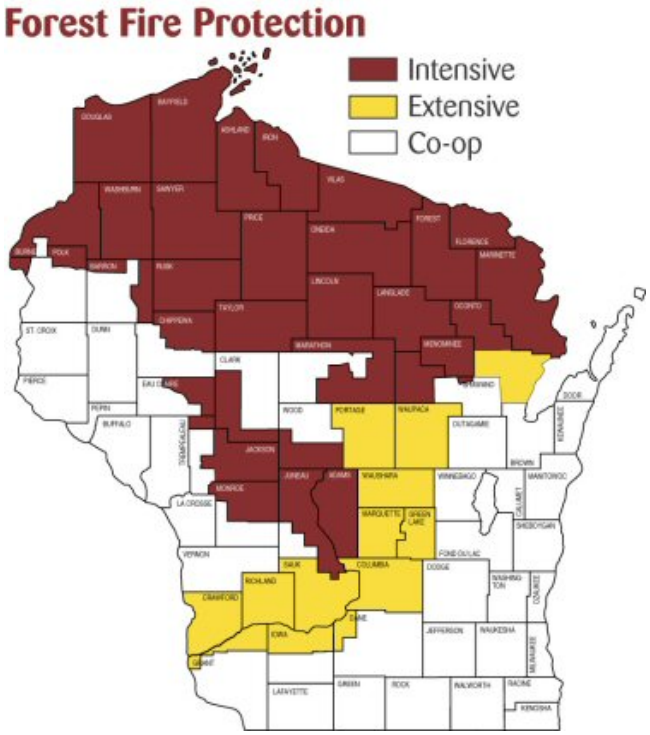
Residents in the Towns may not be well informed about how to reduce the flammability of their home. Buildings can provide fuel in a wildfire, including homes, garages, campers, and storage sheds. Anything attached to a structure, such as a deck, porch, or balcony is considered part of the structure. These structural attachments can provide the link for a fire to spread from the wildland to the building.

## FIRE PROTECTION BACKGROUND

The state of Wisconsin is divided into three fire protection areas: Co-op, Extensive, and Intensive, see Figure 1. Each fire protection area presents a different kind and degree of forest fire problem. The degree of protection has been determined by the amount of forested lands, the hazards and the risks present in the various parts of the state.

The Towns of Grand Rapids and Saratoga are located within the Intensive fire protection area. Intensive fire protection areas are the most heavily forested and contain the most fire hazards and risk in the state. They have more WDNR fire suppression resources and ranger stations. Fire detection is accomplished with fire towers, aerial patrols, and citizen reporting. The most restrictive debris burning laws are in effect in Intensive fire protection areas.

**FIGURE 1 WDNR Fire Protection Areas**




*Source: WDNR Website*

**Fire Suppression Responsibilities**

Primary responsibility for fire suppression activities within the towns falls to the WDNR and the local fire departments. In the Town of Grand Rapids the Grand Rapids Fire Department provides fire suppression while three different fire departments cover parts of the Town of Saratoga including Grand Rapids Fire Department, Nekoosa Fire Department and Rome Fire Department.

**Wisconsin Department of Natural Resources**

The WDNR has 54 ranger stations that are outfitted with firefighting vehicles, tractors/plows, and staff to support wildland fire control in Wisconsin. The Wisconsin Rapids Dispatch Group includes seven fire response units which cover Adams, Portage and parts of Marathon, Wood, Juneau, Columbia and Sauk counties.

The WDNR's Nekoosa Fire Response Unit (FRU) provides suppression for the Towns of Grand Rapids and Saratoga, and resources can be drawn from other stations as necessary. Table 7 identifies primary WDNR fire suppression resources within a one-hour response time for a wildfire occurring in Grand Rapids or Saratoga. In addition, the WDNR hires limited term employees as seasonal firefighters to assist with suppression and detection efforts. The WDNR has a number of mutual aid agreements with local fire departments, county and federal agencies, university and technical colleges, and private contractors. The State works with fire departments to provide wildfire suppression and in turn offers training and financial assistance through grants and group purchasing. In addition, the state often contracts larger pieces of heavy equipment and fire suppression aircraft to augment existing resources. The WDNR is prepared to mobilize units across the state as the need arises, and has the ability to request out-of-state resources through both the Great Lakes Forest Fire Compact and the Eastern Area Coordination Center.

| Table 7 WDNR Wildfire Suppression Resources (1 hour response window) | | |
|---|---|---|
| Station | Personnel | Apparatus |
| Nekoosa FRU | 1 Forester Ranger<br>2 Forestry Technicians<br>2 Foresters | 1 Type 6 Engine<br>2 Type 4 Engines w/ plow |
| Babcock FRU | 1 Forester Ranger<br>1 Forestry Technician<br>1 Sandhill Forester | 1 Type 6 Engine<br>1 Type 4 Engine w/ plow<br>1 Type 8 Engine |
| Friendship FRU | 1 Forester Ranger<br>3 Forestry Technicians<br>1Team Leader<br>2 Foresters | 1 Type 7 Engine<br>3 Type 4 Engines w/ plow<br>1 Type 8 Engine |
| Wisconsin Dells FRU | 1 Forester Ranger<br>2 Forestry Technicians | 1 Type 6 Engine<br>2 Type 4 Engines w/ plow |
| Whiting FRU | 1 Forester Ranger<br>1 Forestry Technician<br>2 Foresters | 1 Type 6 Engine<br>1 Type 4 Engine w/ plow<br>1 Type 8 Engine |
| Necedah FRU | 1 Forester Ranger<br>2 Forestry Technicians<br>1 Team Leader<br>1 Forester | 2 Type 7 Engine<br>2 Type 4 Engines w/ plow<br>1 Type 8 Engine |
| Wausau FRU | 1 Forester Ranger<br>1 Forestry Technicians<br>1Team Leader<br>2 Foresters | 1 Type 6 Engine<br>1 Type 4 Engine w/ plow<br>2 Type 8 Engines |
| Wautoma FRU | 2 Forester Ranger<br>2 Forestry Technicians<br>1 Forester | 2 Type 7 Engines<br>2 Type 4 Engines w/ plow<br>1 Bombadier |
| Waupaca FRU | 1 Forester Ranger<br>2 Forestry Technician<br>2 Forester | 1 Type 7 Engine<br>1 Type 4 Engine w/ plow<br>1 Type 8 Engine |
| Montello FRU | 1 Forester Ranger<br>1 Forestry Technicians<br>1 CO-OP Ranger | 1 Type 7 Engine<br>1 Type 4 Engine w/ plow<br>1 Type 4 Engine w/ muskeg<br>1 Type 8 Engine |
| Tomah FRU | 1 Forester Ranger<br>2 Forestry Technicians | 1 Type 7 Engine<br>2 Type 4 Engines w/ plow |
| Black River Falls | 1 Forester Ranger<br>3 Forestry Technicians | 1 Type 6 Engine<br>3 Type 4 Engines w/ plow |
| Pray FRU | 1 Forester Ranger<br>2 Forestry Technicians | 1 Type 6 Engine<br>2 Type 4 Engines w/ plow |
| Oshkosh Air Patrol | Pilot | 1 Aircraft |

*Source: WDNR*

**Wood County**

The Wood County Emergency Management Department is available to assist with planning, grant writing and administration, coordinating training exercises and other assistance related to

preparation and response to emergencies like wildfire. The County Emergency Management Director is the primary point of contact to obtain additional county and state (including National Guard) resources as needed. Wood County may also supply heavy equipment primarily through the County Highway Department, and the Wood County Sheriff's Department has a mobile command center bus available.

Wood County operates a countywide 911 emergency dispatch system. The county system has the capability to page both the fire departments and WDNR for citizen reported fires. This system has the capability to locate 911 calls from landlines as well as from cell phones.

**Grand Rapids Fire Department**
The Town of Grand Rapids Volunteer Fire Department provides fire suppression for the Town of Grand Rapids and the northeast quarter of the Town of Saratoga. The station is located at the corner of 48th Street and County Highway W just outside of Wisconsin Rapids. The Department provides structural and wildland fire suppression, rescue, basic emergency medical services, and a basic level of HAZMAT response capability. The fire suppression resources of the Department are shown in Table 8. The Department has numerous access points for water spaced around the towns and a well located at the fire station.

There are currently 45 volunteer members on the department plus a full-time chief. The Grand Rapids Fire Department has mutual aid agreements with surrounding community fire departments.

**Nekoosa Fire Department**
The City of Nekoosa Volunteer Fire Department provides fire suppression for the western half of the Town of Saratoga. The station is located at 951 Market Street adjacent to City Hall in Nekoosa. The Department provides structural and wildland fire suppression, rescue, basic emergency medical services, and a basic level of HAZMAT response capability. The fire suppression resources of the Department are shown in Table 8. There are 214 hydrants in the city of Nekoosa and 2 dry hydrants in the Town of Saratoga.

There are currently 30 volunteer members on the department including a chief. The Nekoosa Fire Department has mutual aid agreements with surrounding community fire departments.

**Rome Fire Department**
The Town of Rome Volunteer Fire Department provides fire suppression for the southeast quarter of the Town of Saratoga. The station is located at 1156 Alpine Drive adjacent to the Town Hall in Rome. The Department provides structural and wildland fire suppression, rescue, basic emergency medical services, and a basic level of HAZMAT response capability. The fire suppression resources of the Department are shown in Table 8. The Department has numerous access points for water spaced around the Town.

There are currently 40 volunteer members on the department including a full-time chief. The Rome Fire Department has mutual aid agreements with surrounding community fire departments.

| TABLE 8: LOCAL FIRE SUPPRESSION RESOURCES | | | | | | | |
|---|---|---|---|---|---|---|---|
| ***Dept.*** | ***Unit*** | ***Pump Cap.*** | ***Tank Cap.*** | ***Drop Tank Cap.*** | ***Personnel*** | | ***Misc. Equip.*** |
| Grand Rapids | Engine 1 | 1,500 | 1,000 | | 6 | | Class A Foam Tank |
| | Engine 3 | 1,250 | 1,000 | | 5 | | Class A Foam Tank, Jaws, Portable 500 gallon pump |
| | Ladder1 | 1,250 | 500 | | 4 | | 65' snorkle, Class A Foam, Port-A-Cafs Foam Unit |
| | Tanker 2 | 325 | 2,500 | 2,500 | 3 | | Class A Foam, Foam Unit & Back Cans |
| | Tanker 3 | 325 | 2,500 | 2,500 | 3 | | Class A Foam, Foam Unit & Back Cans |
| | Brush 1 | 200 | 250 | | 3 | | Class A Foam, Foam Unit & Back Cans |
| | Brush 2 | 25 | 100 | | 3 | | Back Cans, Foam Unit & Class A Foam |
| | Squad | | | | 8 | | Support Equipment & Set up as a DNR Fire Boss Unit |
| | Command | | | | 5 | | Chief's Equipment |
| | Ranger | | | | 3 | | Back Cans |
| Nekoosa | Engine 1 | 1,500 | 1,000 | | 7 | | Foam |
| | Engine 2 | 1,500 | 1,000 | | 7 | | Foam |
| | Brush 1 | 200 | 200 | | 2 | | Foam |
| | Tender 1 | 200 | 1,500 | 2,500 | 2 | | |
| | Engine 3 | 1,000 | 2,000 | 2,500 | 2 | | 500 gpm portable |
| | Rescue 1 | 0 | 0 | | 8 | | Jaws, 500 gpm portable |
| | ATV | 200 | 75 | | 2 | | |
| | Fire Boat | | | | | | |
| Rome | Engine 1 | 1,250 | 1,000 | | 5 | | Class A Foam |
| | Engine 2 | 1,250 | 1,000 | | 5 | | Class A Foam |
| | Brush 1 | | 350 | | 4 | | CAFS |
| | Tender 1 | 350 | 2,000 | yes | 2 | | 200 gpm portable Class A Foam |
| | Rescue 1 | | | | 4 | | Jaws |
| | Crew Trans | | | | 10 | | ATV - 2 |
| | Engine 3 | 1,500 | 1,000 | | 6 | | |
| | Tender 2 | 1,000 | 2,000 | yes | 2 | | 500 gpm portable Class A Foam |
| | Tender 3 | 500 | 3,500 | yes | 2 | | 500 gpm portable Class A Foam |
| | Fire Boat | | | | | | |

*Source: Local Fire Depts*

## Fire Policy and Programs

There are various programs and policies at the federal and state levels related to community fire planning, fire prevention, and suppression that affect the Towns. Each agency has laws regarding the use of fire and is able to investigate, enforce, and prosecute civil and criminal violations that arise out of fires originating within their jurisdiction. In general, burning laws regulate what, when, and how people can burn, and hold people responsible for damages and suppression costs if their fire escapes control.

**Federal**
The following information provides a brief overview of relevant federal policies and programs:

*Healthy Forests Restoration Act (HFRA)* – This federal law is designed to promote healthy watersheds and forests through fuels reduction projects on federal lands, community plans, insect and disease protection measures, storm damage clean-up, and threatened and endangered species protection. The HFRA also encourages biomass energy production through grants and assistance to communities to create market incentives for removal of otherwise valueless forest material.

*National Fire Plan (NFP)* – This is a federal interagency plan that focuses on firefighting, rehabilitation, hazardous fuels reduction, community assistance and accountability. The NFP is a long-term investment intended to help protect communities and natural resources. It establishes a commitment to communication, cooperation and collaboration between federal agencies, states, local governments, tribes and interested parties. Federal fire management agencies worked closely with these partners to prepare a 10-year Strategy and Implementation Plan. The NFP also calls for the development of Community Fire Plans to aid in implementing NFP goals.

**State**
The following information provides a brief overview of relevant state policies and programs:

*Permits* - The WDNR enforces burning laws and requires permits for debris burning. Permits can be obtained from local emergency fire wardens and DNR ranger stations. Refer to the WDNR web page at http://dnr.wi.gov/forestry/fire/burning-rp.htm to determine what is burnable with a permit and what is not permissible.

*Structure Zone Maps* - In 2007, the WDNR prepared structure zone map books for use by emergency services personnel in Wood County, including the Towns of Grand Rapids and Saratoga. These maps document structure locations and preplanned zones used to coordinate efforts to help protect life, property, and natural resources during fire emergencies. It is planned that structure zone maps will be updated every 5-7 years.

*Hazard Mitigation Program* - WDNR Forestry's Hazard Mitigation program is a funding mechanism utilized to reduce the risk of catastrophic wildfire impacting communities. It focuses on hazardous fuels reduction, prevention/education, and community planning in the wildland-urban interface. The program is a product of the USFS State Fire Assistance - National Fire Plan and has been functioning in Wisconsin since 2001. The program has promoted Firewise practices, resulted in the creation of Community Wildfire Protection Plans, and reduced flammable wildland fuels. Viable projects located in a Community at Risk are prioritized for funding.

**Local**
The following information provides a brief overview of relevant local policies and programs:

*Burning Ordinance* – The Town of Grand Rapids has its own specific burning regulations. You can view Ordinance 2 “An Ordinance Regulating Burning” online at www.tn.grandrapids.wi.gov.

# CHAPTER 3: RISK ASSESSMENT

The Wisconsin Department of Natural Resources has created a statewide list of Communities at Risk (CAR) to wildfire. According to this statewide risk assessment, the entire project area falls into the "very high risk" category (see Figure 2). In order to help the towns prioritize wildfire mitigation projects, a more localized risk assessment was completed by the CWPP Planning Committee.

The local risk assessment identifies the areas of the community most at risk from wildfire, enabling decision makers to focus efforts on the higher risk areas and prioritize resource allocations and mitigation activities.

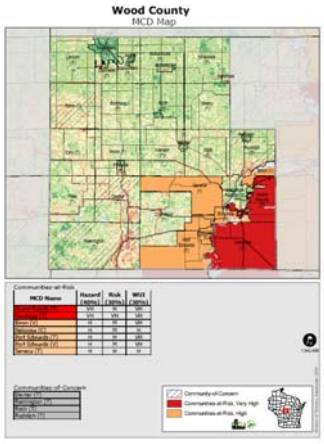



**Figure 2: WDNR CAR Map for Wood County**

## ELEMENTS OF RISK ASSESSMENT

The risk assessment evaluated wildfire risk in Grand Rapids and Saratoga by analyzing four key elements or "layers" of fire information. The four elements are hazard, risk, values, and protection capability. The Towns were evaluated to determine the areas most at-risk based on each of the four elements or layers of information. The four elements are defined below.

- **Hazard -** Natural conditions, including vegetation, soils, geology, and topographic features that may contribute to and affect the behavior of wildfire.

- **Risk -** The potential and frequency that wildfire ignitions might occur based upon historical occurrences over a 20-year period from 1985 to 2009.

- **Values -** The people, property, and significant / critical facilities or infrastructure that represents value to protect from losses in the event of wildfire.

- **Protection Capability -** The ability to protect the community from structural and wildland fires including preparation, response, and suppression.

## PLANNING UNITS

To aid the risk assessment, the Towns of Grand Rapids and Saratoga were divided into smaller, more manageable planning units. The CWPP Planning Committee identified planning units based upon commonalities within each planning unit, including distribution of developed areas and structures. The Planning Unit Boundaries Map (Map 3) displays the planning units identified in the Towns. The nine planning units are as follows:

1. North Grand Rapids
2. Airport

3. Lake Wazeecha
4. Timber Valley
5. Bloody Run
6. Northwest Saratoga
7. Northeast Saratoga
8. Southwest Saratoga
9. Southeast Saratoga

The following provides a description of each planning unit including the development pattern in the area, the number of structures, the number of significant/critical infrastructure, the total land acreage, and the total land area under residential land use and forestlands. The remaining land area of each planning unit is made up of open water, croplands/pastures, other non-forestland natural areas (including wetlands), roadways, and industrial, commercial, and institutional/governmental areas.

**1. North Grand Rapids Planning Unit**

The North Grand Rapids planning unit is that portion of the Town of Grand Rapids located north of County Highway W. This planning unit is comprised primarily of woodlands and some agriculture with residential areas concentrated on Highway W and State Highway 54. There is some scattered commercial and industrial property as well. Land records information data indicates that there are 628 structures. Significant infrastructure includes: a clinic, a bulk fuel storage facility, a school, and a technical college campus. Total land area of the planning unit is 6,454 acres with 6 percent (362 acres) developed residential and 75 percent (4,839 acres) woodlands.

**2. Airport Planning Unit**

The Airport planning unit includes a large part of the South Wood County Airport and the area of Grand Rapids surrounding the southern part of the City of Wisconsin Rapids and through the Fourmile Creek area south of Highway 54 and west of 48th Street. In addition to the airport, this planning unit is characterized by concentrated residential development adjacent to the City and in subdivisions around Fourmile Creek surrounded by woodlands. There are 855 structures and significant infrastructure includes the airport, town garage, electrical substation, town hall, police station, fire station and a school. Land area totals 2,397 acres with 19 percent (463 acres) in residential and 49 percent (1,180 acres) woodlands.

**3. Lake Wazeecha Planning Unit**

The Lake Wazeecha planning unit is comprised of the area around Lake Wazeecha between County Highways W and Z and east of 48th Street. Concentrated residential development surrounds the lake and totals 23 percent (436 acres) of the area. Significant tracts of woodland are interspersed between the subdivisions and cover 56 percent (1,082 acres) of the land area. Total land area of the planning unit is 1,932 acres. There are 954 structures and numerous significant facilities including: a communication tower, child development center and county campground.

**4. Timber Valley Planning Unit**

The Timber Valley planning unit includes the area of Grand Rapids located south of County Highway Z and west of 48th Street. This planning unit is characterized by significant concentration of subdivision development adjacent to a large tract of woodlands. The area adjacent to State Highway 13 is primarily agricultural with some residential and commercial use along the highway. There are 581 structures and one significant facility - a communications tower. Total land area of the planning unit is 1,059 acres with 34 percent (355 acres) developed residential and 45 percent (475 acres) woodlands.

**5. Bloody Run Planning Unit**

The Bloody Run planning unit covers the Town of Grand Rapids south of County Highway Z and east of 48th Avenue. This planning unit is characterized by residential development scattered along the road network and a few smaller subdivision areas. There are 178 structures, but no critical infrastructure. Land area totals 1,279 acres with 8 percent (100 acres) in residential and 76 percent (967 acres) woodlands.

**6. Northwest Saratoga Planning Unit**

The Northwest Saratoga planning unit roughly corresponds to the northwestern quadrant of the Town of Saratoga. This planning unit is characterized by scattered residential development with significant commercial development along State Highways 13 and 73 and some limited agriculture. There are 1,029 structures and significant facilities including the Town Hall, a communications tower, a recycling transfer site, 3 assisted living/group homes, a historic site, a waster water treatment plant and an electrical substation. Land area totals 7,622 acres with 6 percent (492 acres) in residential and 69 percent (5,230 acres) woodlands.

**7. Northeast Saratoga Planning Unit**

The Northeast Saratoga planning unit corresponds to the northeastern quadrant of the Town of Saratoga. This planning unit is characterized by scattered residential development with significant commercial development along State Highway 13 as well as some significant agricultural land. There are 804 structures and significant infrastructure including a communications tower, electrical substation and 2 assisted living/group homes. Land area totals 8,541 acres with 4 percent (376 acres) in residential and 84 percent (7,200 acres) woodlands.

**8. Southwest Saratoga Planning Unit**

The Southwest Saratoga planning unit corresponds to the southwestern quadrant of the Town of Saratoga. This planning unit is characterized by scattered residential and commercial development as well as some agricultural lands. There are 216 structures and significant facilities include a commercial campground and a petroleum pipeline. Land area totals 8,214 acres with 1 percent (121 acres) in residential and 85 percent (6,988 acres) woodlands.

**9. Southeast Saratoga Planning Unit**

The Southeast Saratoga planning unit corresponds to the southeastern quadrant of the Town of Saratoga. This planning unit is characterized by scattered residential with two smaller subdivisions and some commercial development on Highway 73 as well as some agricultural lands. There are 350 structures and significant infrastructure includes a bulk fuel storage facility.

Land area totals 8,157 acres with 3 percent (210 acres) in residential and 91 percent (7,445 acres) woodlands.

## RISK ASSESSMENT METHODOLOGY/ANALYSIS

The model used in this risk assessment was developed with guidance from the Wisconsin Department of Natural Resources based on approaches used in other CWPP planning processes. The risk assessment evaluated wildfire risk by analyzing four key elements or "layers" of fire information. The four elements were hazard, risk, values, and protection capability.

The Towns of Grand Rapids and Saratoga were evaluated by mapping each element to determine the areas of the towns that are most at-risk based on each of the four elements. The hazard element depicts the vegetation fire hazards (see USFS Fire Hazard Map – Map 4); the risk element displays the locations and causes of past fire occurrences (see Past Occurrences Map – Map 5); the values element displays the location of structures and critical and significant facilities and infrastructure (see Community Facilities Map – Map 6); and the protection capabilities element displays the location of firefighting infrastructure and facilities (see Protection Capability Map – Map 7).

Each of the four elements impacts the severity, frequency, or likelihood of a wildfire occurrence in different ways. Each data layer was analyzed and displayed using Geographic Information System (GIS) mapping. The GIS maps of each of the four elements were assessed by the CWPP Planning Committee and each planning unit was quantifiably ranked based on the risk level each committee member interpreted from the map. Values were compiled for each element and the planning units were ranked based on the average risk value calculated for each element.

The CWPP Planning Committee selected a weighting to be applied to each element, as some of the elements will have a greater influence on wildfire occurrence. This weighting was then applied to the ranked values of each of the four elements and averaged together to derive an overall risk assessment ranking based on the four elements combined. The resulting risk assessment defines the high fire risk areas for prioritization of treatment and resources. Figure 3 displays the ranking results for each element with the committee's averaged results. The weighting of each element and the overall risk assessment results are displayed.

**Figure 3: Grand Rapids / Saratoga CWPP**

**Risk Assessment Analysis Ranking Results**

*A relative scale of High (3), Medium (2) or Low (1) is used to grade each planning unit for each of the four risk factors.*

| **Fuel Hazard** | |
|---|---|
| ***Planning Unit*** | ***Level of Hazard*** |
| 1. N. Grand Rapids | MEDIUM |
| 2. Airport | MEDIUM |
| 3. Lake Wazeecha | MEDIUM |
| 4. Timber Valley | HIGH |
| 5. Bloody Run | HIGH |
| 6. NW Saratoga | MEDIUM |
| 7. NE Saratoga | HIGH |
| 8. SW Saratoga | HIGH |
| 9. SE Saratoga | HIGH |

| **Risk of Fire Occurrences** | |
|---|---|
| ***Planning Unit*** | ***Level of Risk*** |
| 1. N. Grand Rapids | LOW |
| 2. Airport | LOW |
| 3. Lake Wazeecha | HIGH |
| 4. Timber Valley | MEDIUM |
| 5. Bloody Run | MEDIUM |
| 6. NW Saratoga | MEDIUM |
| 7. NE Saratoga | MEDIUM |
| 8. SW Saratoga | LOW |
| 9. SE Saratoga | MEDIUM |

| **Critical/Significant Facilities** | |
|---|---|
| ***Planning Units*** | ***Level of Potential Loss*** |
| 1. N. Grand Rapids | MEDIUM |
| 2. Airport | HIGH |
| 3. Lake Wazeecha | HIGH |
| 4. Timber Valley | HIGH |
| 5. Bloody Run | HIGH |
| 6. NW Saratoga | HIGH |
| 7. NE Saratoga | HIGH |
| 8. SW Saratoga | LOW |
| 9. SE Saratoga | MEDIUM |

| **Protection Capability** | |
|---|---|
| ***Planning Units*** | ***Level of Risk*** |
| 1. N. Grand Rapids | MEDIUM |
| 2. Airport | MEDIUM |
| 3. Lake Wazeecha | MEDIUM |
| 4. Timber Valley | HIGH |
| 5. Bloody Run | HIGH |
| 6. NW Saratoga | MEDIUM |
| 7. NE Saratoga | MEDIUM |
| 8. SW Saratoga | MEDIUM |
| 9. SE Saratoga | MEDIUM |

***Assessment Weighting:***
***Fuel Hazard 40%***
***Past Occurrences 10%***
***Facilities 20%***
***Protection Capability 30%***

| **Overall Risk Assessment** | |
|---|---|
| ***Planning Unit*** | ***Overall Risk (Score)*** |
| 4. Timber Valley | HIGH (2.9) |
| 5. Bloody Run | HIGH (2.9) |
| 7. NE Saratoga | HIGH (2.6) |
| 9. SE Saratoga | HIGH (2.4) |
| 3. Lake Wazeecha | MEDIUM (2.3) |
| 8. SW Saratoga | MEDIUM (2.3) |
| 6. NW Saratoga | MEDIUM (2.2) |
| 2. Airport | MEDIUM (2.1) |
| 1. N. Grand Rapids | MEDIUM (1.9) |

***Risk Score Ranges***
***Low 1.0 - 1.6***
***Medium 1.7 - 2.3***
***High 2.4 - 3.0***

*Source: CWPP Planning Committee*

## Risk Assessment Mapping

Multiple data sets went into the mapping of the four element layers. The following information provides a summary of the data that went into mapping each of the four elements.

### Hazard

The hazard element map (see Map 4) involved an assessment of fuel hazard mapping obtained with the assistance of the US Forest Service. The USFS did extensive analysis to create a fire hazard map for parts of the northern lake states, which included the northern half of Wisconsin. Based on their experience with that project, Forest Service staff assisted the NCWRPC with creating a fire hazard map for the southeastern Wood County study area. Existing Landfire fire behavior fuel models and WISCLAND land cover data were used to assign hazard ratings to the map.

### Risk

The risk element map (see Map 5) involved an assessment of Wisconsin Department of Natural Resources data of wildfire occurrences in the Towns of Grand Rapids and Saratoga from 1985 to 2009.

### Values

The values element map (see Map 6) involved an assessment of the location of structures and their densities in each planning unit, along with the location of significant and critical facilities and infrastructure and their distances from each planning unit. The structure data came from Wood County Land Records and the location of significant and critical facilities and infrastructure came from various sources detailed below for each significant and critical facility and infrastructure type.

*Structures* - Structures include primary residences such as single-family and multi-family houses, and mobile homes; and commercial, industrial, and institutional/governmental facilities. This data was obtained from Wood County's Land Records Department.

*Significant/Critical Facilities and Infrastructure* - Significant/critical facilities and infrastructure include dry hydrants, water pickup sites, communication facilities, institutional/governmental facilities including schools, gas pipelines and substations, electric transmission lines and substations, fire departments, natural gas facilities, recycling centers, campgrounds and historic sites.

The location of transmission lines were obtained from ATC and historic sites were obtained from the Wisconsin State Historical Society. The delineation of the gas pipeline and the sites for the town halls, fire stations, and other town facilities were obtained from the CWPP Planning Committee. All other significant and critical facilities and infrastructure information was obtained from Wood County and NCWRPC land use inventories.

### Protection Capability

The protection capability element map (see Map 7) involved an assessment of the location of fire departments, dry hydrants, and water pickup sites in relation to each planning unit.

*Fire Departments* - The fire department data was obtained from the CWPP Planning Committee.

*Dry Hydrants* - Dry hydrants are designated locations where a fire suppression truck or pumper can draw water. Dry hydrants provide all-season access. Locations were obtained from the CWPP Planning Committee and WDNR records.

*Water Pickup Sites* - Water pickup sites are designated locations where a fire suppression truck or pumper can access a water source. Water pickup sites may not provide all-season access. Water pickup site locations were obtained from the CWPP Planning Committee and WDNR records.

# CHAPTER 4: MITIGATION STRATEGIES

This chapter describes wildfire mitigation strategies including:

- Treatment of Hazardous Fuels
- Treatment of Structural Ignitability
- Emergency Preparedness
- Protection Capability
- Wildfire Prevention

## TREATMENT OF HAZARDOUS FUELS

Hazardous fuels reduction is an important element in mitigating wildfire risk. Fuels reduction should be prioritized around high housing density areas on both public and private lands. Fuels reduction may include targeted timber harvests or thinning, chipping projects, or creating buffer zones or buffer strips where forested tracts come in contact with high density housing areas.

Private homeowners should be encouraged to follow recommendations for the home ignition zone. Subdivisions in high hazard forested areas are especially vulnerable due to the close proximity of homes to one another as well as surrounding vegetation. These residents should be encouraged to participate in the Firewise Community USA program in order to facilitate the reduction of hazardous fuels.

Throughout the Towns, areas of insect/disease infestation damage or storm damage should be addressed as needed as well as areas that have simply accumulated a significant fuel load over time. The long-term impact of the extended drought conditions should be monitored. Slash from power and rail line trimming should also be addressed.

**Firewise Communities Program**

The Firewise Communities Program is a national multi-agency program that promotes partnerships between community leaders, homeowners, planners, developers and others to promote wildfire preparedness before a fire starts. The Firewise program emphasizes local community responsibility for designing and maintaining safe communities through land use planning, mitigation activities, collective decision-making and effective response. Brookhaven Estates is the only organized subdivision in the two towns. Brookhaven Estates received Firewise Community/USA recognition in 2009 and continues to work to reduce the amount of hazardous fuel in the subdivision.

The WDNR has a lot of information and a great number of resources and links on Firewise at http://dnr.wi.gov/forestry/fire/prevention/firewise/index.htm. Additional Firewise information can be found at http://www.firewise.org/.

## TREATMENT OF STRUCTURAL IGNITABILITY

There are numerous factors which contribute to homes and communities being at risk to loss from wildfires, including hazardous fuel conditions. Structural ignitability is arguably the most critical element to home survivability during a wildland urban interface fire. Structural ignitability is the susceptibility of a structure to catching fire. Although some building construction elements can require a significant investment on the part of property owners, many structural ignitability factors are easily mitigated with little time and expense to homeowners.

This section of the plan will recommend treatment methods to mitigate structural ignitability including ways to modify home construction and the surrounding vegetation to decrease the susceptibility to ignition within the home ignition zone (HIZ).

### Building Codes/Permits

The State of Wisconsin requires its Uniform Dwelling Code (UDC) to be enforced in all municipalities. This code applies to all new one- and two-family dwellings built today and renovations or additions to dwellings built since June 1, 1980.

Since building requirements are established by the UDC, little opportunity exists to influence the building code to conform to Firewise guidelines. However, the Towns can work with Wood County to use the building permit process as an opportunity to provide wildfire educational materials to the builder at the time the permit is issued.

Keep in mind that ordinary maintenance repairs are not considered structural repairs, modifications, or additions. Therefore, a building permit is not required for non-structural repairs such as replacement of doors, windows, roofing, or siding. These modifications offer the best opportunities to alter structural ignitability. The Towns should work to come up with methods to educate the public when undertaking such repairs.

### The Home Ignition Zone

The home ignition zone is defined as the home and the area around the home extending out 100-200 feet, see Figure 4. This area can extend out to 200 feet if a home is on a steep slope or is in an area of heavy fuels, such as a pine forest or plantation. If properly managed with enough space and modified vegetation, this area can act as a fuel break and prevent fire from spreading directly to buildings and therefore improve the chance of a home surviving a wildfire. It is very important for homeowners to be aware of steps they can take on their property to reduce their risks. There are several helpful publications available for homeowners as well as the potential opportunity to have a home ignition zone assessment conducted by an expert.

### Recommendations for the Home Ignition Zone

The goal is to have short vegetation with high moisture content in the area within 30 feet of structures. If modified properly, this area can keep low intensity surface fire from reaching structures and provide a relatively safe area for firefighters to work in. The area around structures should be kept mowed short, and raked free of fallen leaves and needles. Plantings should be carefully spaced and have fire resistant qualities. Deciduous plants, shrubs, and trees are generally more fire resistant than evergreens. Tree limbs should be pruned back at least 10

feet from all structures and lower branches of conifers should be pruned up 6 to 10 feet from the ground.

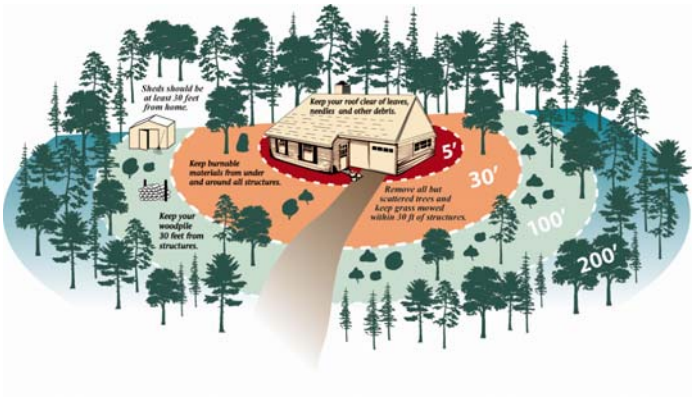



**Figure 4: The Home Ignition Zone**

Fuel breaks can be created by incorporating gravel, rock, brick, paving, or a water feature into landscape design. This is especially important within 5 feet of buildings. Nothing flammable should be placed or allowed to grow in this area. Firewood and other flammable materials (such as stacks of building materials, gasoline containers, and propane tanks) should be kept at least 30 feet from the home, garage, and sheds.

In the area 30 to 100 feet beyond structures, the goal is to maintain space between shrubs and trees and remove lower branches of evergreens. Trees in this zone should be spaced so their branches are at least 10 feet apart. Taller trees should have all limbs pruned at least six feet up from the ground. This greatly reduces the chance of grass fires (surface fires) spreading into the treetops (crown fires) and then moving on to adjacent trees. All dead or dying limbs should be removed throughout the tree canopy and dead, dying, and diseased trees should be removed from the area.

**Fire Resistant Plants**

All plants will burn under the right conditions. In general, plants that are low growing, open rather than densely branched, and low in resin content should be used in landscaping in high risk areas. Junipers, pines, spruce, and fir are resinous and highly flammable. Landscape management including landscape design, plant placement, pruning, irrigation, and clean up have a greater impact on whether a plant ignites than the species. Maintenance of landscape plants is critical to fire safety.

**Maintenance**

Roofs, rain gutters, and decks are natural traps for leaves, pine needles, and embers from a fire. These areas should be kept free of all material that could allow an ember to smolder and start a fire. Flammable materials and debris should never be allowed under decks and overhangs. The first 3 to 5 feet around structures and wooden fences should be kept free of all vegetation, living and dead. This area can instead be filled in with decorative stone or other non-flammable material.

**Building Materials**

Building materials can make a difference in how well a home withstands both the potential "direct threat" of flames and the "indirect threat" of flying embers.

Roofs - The roof is the most exposed portion of the home's exterior and the most at risk from flying embers. Most homes lost during wildfires are due to embers and flames igniting

combustible roofs. Roofs near any wildland area should be constructed of noncombustible materials such as composition shingles, tile or slate, or aluminum or steel. If it is not economically feasible to replace an existing wood shake roof, there are commercially available fire retardant treatments that may help slow the spread of a potential ignition or delay it. All roofs should be maintained to be free of accumulations of pine needles, leaves, or other material that may burn.

Decks and Fences - Any structure attached to a house is considered part of the house itself and is treated as the main house. The very nature of wooden decks (usually attached to the house and raised off the ground) makes them a fire concern. Decks elevated off the ground should be enclosed around the bottom with no larger than ¼-inch wire mesh screening to prevent embers from being trapped underneath.

Areas where the deck attaches to the house can be natural traps for leaves, pine needles, and embers from a fire. These areas should be kept clean and free of all material that could allow an ember to smolder and start a fire.

Wood fences can be highly flammable and are often attached to the house. For this reason, they should be avoided or at least well maintained. Vegetation that may ignite and hold a flame against the fence should be trimmed back or removed. There are some commercially available fire retardants that may help prevent or slow ignition of a fence. Consider separating the fence from the house with non-combustibles, such as metal, brick, or stone.

Siding - Siding should be constructed of fire-resistant materials. When a home is being built, added on to, or re-sided, fire-resistant materials such as stucco or masonry, or other modern fire-resistant products should be considered for use. Some siding materials, such as vinyl, will soften and melt in the heat of a wildfire and allow flying embers entry to attics or crawl spaces.

Windows - Windows can fail and provide openings for fire to get inside of a house. When building, remodeling, or replacing windows, the following considerations should be taken into account:

- Single-paned glass can break relatively easily from radiant heat or from windblown debris. Multi-paned windows will generally protect better against a wildfire.
- Reducing the size (square feet) of windows exposed to wildfire will reduce breakage. Smaller panes of glass will generally hold up better against a wildfire than will larger panes of glass.
- Tempered glass provides the best protection from high heat.

Eaves and Vents - Eaves can be a trap for firebrands and allow an ignition point up under a roof. For this reason, eaves should be enclosed or boxed. Eave vents, although necessary in home construction, can provide access into a home for flying embers. Therefore, they should be covered with a screen having a mesh opening of not more than 1/8 inch.

Rain Gutters - Rain gutters present a maintenance concern. They can be natural traps for embers to land, settle, and continue smoldering. Because of this, gutters should be kept clean and free of all accumulations of leaves, pine needles, or other material that could be ignited by embers.

Chimneys - Chimneys are both a construction and maintenance concern and present a risk of ignition from both inside and outside the home (chimney fires can cause a house fire: sparks from the chimney can ignite roofs and wildland fuels). Chimneys should be kept clean and covered with a mesh screen spark arrester to prevent firebrands from flying into the home and embers from flying out. This is a particular concern if the roof is constructed of flammable material.

## EMERGENCY PREPAREDNESS

### Evacuation Planning

The Towns of Grand Rapids and Saratoga plan to develop and refine evacuation plans. The evacuation plan directs evacuation route options for clustered development areas and main roads should an evacuation be necessary.

More than one ingress/egress point should be identified for most developed areas of the Towns. The preference is for two evacuation routes to be identified for residents to leave an area depending on the location and movement of the fire.

Moving a large number of people out of concentrated subdivisions or areas with limited ingress and egress can be a problem during a large forest fire. Evacuation problems can develop when roads are too narrow or in disrepair and do not allow efficient flow of emergency responders in and residents out. Problems also exist when roads are blocked by downed power lines, the direction of fire movement blocks escape routes, or visibility is reduced due to smoke.

Initial safety concerns dictate that evacuation plans receive a high priority during any large fire. WDNR Incident Management Team training includes evacuation concerns as part of simulation exercises. Further planning and training in cooperation with fire agencies, law enforcement, and disaster relief agencies is needed. It is also important to make community members aware of their local evacuation plan.

## PROTECTION CAPABILITY

### Access

Firefighters cannot protect property that they are unable to access. Roads leading to, through, and around subdivisions and isolated homes should be designed with emergency vehicles and two-way traffic in mind. Roads should be wide enough to handle both emergency vehicles entering the area, as well as other traffic leaving. Communities and local fire departments should continually educate and remind homeowners of the importance of having adequate access to their properties for emergency vehicles.

Suggested Recommendations:

- Road grades should not exceed ten percent and curves should be gentle and wide enough for large emergency vehicles to get around them.
- Road surfaces should be stable enough to support heavy equipment.
- Bridges should be constructed to accommodate the load of the largest apparatus typically used to respond to that location.
- Cul-de-sacs should have a 50-foot radius to allow emergency vehicles to maneuver and turn around.
- Turnouts large enough for heavy emergency vehicles should be constructed along one-way roads.
- Vegetation should be trimmed back to create a buffer area/firebreak along both sides of roads.
- Driveways should be a minimum of 12 feet wide with a minimum of 14 feet of overhead clearance. Driveways longer than 150 feet or those with sharp curves should be closer to 20 feet wide. If a driveway is longer than 300 feet, it should provide a turnout or turnaround for fire trucks. Locked or closed gates are discouraged.
- All roads and addresses should be clearly marked. Road and street signs, and fire number markers should be standardized, easy to read, and maintained in a readable condition using non-combustible materials. Addresses should be easily visible from the road.

These are recommended guidelines. Current or future ordinances may dictate specific criteria or standards that must be followed. Contact Town or Fire Department officials for details.

## WILDFIRE PREVENTION

Humans cause the vast majority of wildfires in Wisconsin. Therefore, it is recommended that communities take advantage of opportunities to educate community members on the local causes of wildfires, burning regulations, alternatives to burning including information on local brush drop-off sites, and the danger of wildfire in the area.

# CHAPTER 5: IMPLEMENTATION

## MITIGATION ACTION PLAN

Implementation of the Grand Rapids/Saratoga CWPP focuses on intermediate range needs for the next five years through mitigation projects selected by the towns. The Action Plan identifies priority mitigation projects that the towns will work to accomplish as well as when it should be done and who is responsible for overseeing the project. The projects in the Action Plan will better prepare the area for the threat of wildfire.

The CWPP Planning Committee intends to meet quarterly to review the Mitigation Action Plan and work on implementation. Regular reviews will continue on an annual basis with complete plan updates occurring every five years.

| Project | Responsible Party | Timeline |
|---|---|---|
| Continue to supply information in town newsletters, on town websites, and in town halls. | Towns of Grand Rapids & Saratoga | On-going |
| Set up prevention/wildland-urban interface display at local fire department open houses and other community events. | Towns of Grand Rapids & Saratoga | On-going |
| Continue to support the mitigation efforts of Brookhaven Estates, a subdivision in the Town of Grand Rapids, which is a recognized Firewise Community/USA. | Towns of Grand Rapids & Saratoga | On-going |
| Mail brochures to homeowners to educate on home ignition zone and recommendations for reducing structural ignitability. | Towns of Grand Rapids & Saratoga | Winter 2011 |
| Hold meetings or workshops to teach about the importance of the home ignition zone and recommendations for reducing structural ignitability. | Towns of Grand Rapids & Saratoga | Winter 2011 |
| Open landfill in Town of Saratoga for brush to be chipped by company to be sold for fuel. | Town of Saratoga | 2011 |
| Write or update town driveway ordinances to address width, height, and turnarounds. Educate property owners about driveway access issues. | Towns of Grand Rapids & Saratoga | 2011 |
| Develop and distribute a publication describing wildfire concerns, local issues, resources and the CWPP process. | Towns of Grand Rapids & Saratoga | 2011 |
| Fire Department/DNR joint property inspections. Start with high hazard neighborhoods in Planning Units 4, 5, and 9 (i.e. Manhattan Woods in PL 9). | Towns of Grand Rapids & Saratoga | 2011 |
| Offer town-wide curbside brush pick-up on a periodic basis. Consider offering home ignition zone assessments in conjunction with brush pick-up. | Towns of Grand Rapids & Saratoga | 2012 |
| Change fire number signs in towns so they are more visible. | Towns of Grand Rapids & Saratoga | 2013 |
| Work with property owners to continue to remove berms so fire equipment has better access to suppress wildfires. | Town of Saratoga | On-going |

# GLOSSARY

## A

**Aerial Fuels:** All live and dead vegetation in the forest canopy or above the surface fuels, including tree branches, twigs and cones, snags, moss, and high brush.

**Agency:** Any federal, state, county, or city organization participating with jurisdictional responsibilities.

## B

**Biomass (includes small-diameter wood):** The material from trees and woody plants, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, farm, rangeland, or wildland urban interface environment, that are the by-products of forest management, ecosystem restoration, or hazardous fuel reduction treatments.

**Biomass Utilization:** The harvest, sale, offer, trade, and/or use of woody biomass to produce a full range of wood products. These products include timber, engineered lumber, paper and pulp, furniture and value-added commodities, as well as bio-energy, bio-fuels (ethanol and diesel), and bio-based products (plastics and solvents).

**Brush:** A term that refers to dead woody vegetation on the forest floor. It is also referred to as "slash".

## C

**Chipping:** Reducing wood related material by mechanical means into small pieces to be used as mulch or fuel. Chipping and mulching are often used interchangeably.

**Crown Fire:** The movement of fire through the crowns of trees or shrubs more or less independently of the surface fire.

## D

**Dead Fuels:** Fuels with no living tissue in which moisture content is governed almost entirely by atmospheric moisture (relative humidity and precipitation), dry-bulb temperature, and solar radiation.

**Debris Burning Fire:** A fire spreading from any fire originally set for the purpose of clearing land or for rubbish, garbage, range, stubble, or meadow burning.

**Defensible Space:** An area either natural or manmade where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier to an advancing wildland fire. In practice, "defensible space" is defined as an area a minimum of 30 feet around a structure that adequately prepared for wildfire.

**Detection:** The act or system of discovering and locating fires.

**Duff:** The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves immediately above the mineral soil.

## E

**Escape Route:** A preplanned and understood route firefighters take to move to a safety zone or other low-risk area, such as an already burned area, previously constructed safety area, or a natural rocky area that is large enough to take refuge in without being burned. When escaped routes deviate from a defined physical path, they should be clearly marked (flagged).

**Emergency Burning Restrictions:** Under these conditions outdoor burning of any kind including burning in barrels, debris piles, grass or wood areas, campfires, using fireworks, smoking outdoors or disposing of matches, ashes or charcoal briquettes into the outdoors is prohibited as declared by the Secretary of the DNR.

## F

**Fire Behavior:** The manner in which a fire reacts to the influences of fuel, weather, and topography.

**Fire Line:** A control line that is scraped down to mineral soil.

**Fire Intensity:** A general term relating to the amount of heat energy released by a fire.

**Fire Perimeter:** The entire outside edge of the fire.

**Fire Season:** 1) Period(s) of the year during which wildland fires are likely to occur, spread, and affects resource values sufficient to warrant organized fire management activities. 2) A legally enacted time during which burning activities are regulated by state or local authority.

**Fire Weather:** The combined atmospheric elements that affect a wildland fire. This will include but not be limited to temperature, wind speed, and relative humidity.

**Firebrand:** Any source of heat, natural or man made, capable of igniting wildland fuels; flaming or glowing fuel particles that can be carried naturally by wind, convection currents, or gravity into unburned fuels. Also called "ember".

**Firewise Community:** A community that receives national recognition for working to create a safer community in the face of the wildfire threat. The Firewise Community focuses on hazard fuel reduction and outreach to homeowners to promote individual responsibility for safer home construction and design, landscaping, and maintenance.

**Firefighting Resources:** All people and major items of equipment that can or potentially could be assigned to fires.

**Flare-up:** Any sudden acceleration of fire spread or intensification of a fire. Unlike a blow-up, a flare-up lasts a relatively short time and does not radically change control plans.

**Fine Fuels:** Fuels such as grass, leaves, pine needles, and some kinds of slash that ignite readily and are consumed rapidly when dry.

**Fuel:** Combustible material. This includes, vegetation, such as grass, leaves, ground litter, plants, shrubs, and trees, as well as man-made objects like boats, cars and homes.

**Fuel Break:** A natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled.

**Fuel Loading:** The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area.

**Fuel Type:** An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

## G

**Ground Fire:** Fire that consumes the organic material beneath the surface litter ground, such as a peat fire.

## H

**Hazard Reduction:** Any treatment of a hazard that reduces the threat of ignition and fire intensity or rate of spread.

**Head of the Fire:** The most rapidly spreading portion of a fire's perimeter. Usually the downwind or uphill side.

**Home Ignition Zone:** Includes the home and an area surrounding the home within 100 to 200 feet.

**Hotspot:** A particularly active part of a fire.

# I

**Incendiary Fire:** A fire willfully set by anyone to burn vegetation or property not owned by the perpetrator and without the consent of the owner or his agent (arson)

**Incident:** A human-caused or natural occurrence, such as wildland fire, that requires emergency service action to prevent or reduce the loss of life or damage to property or natural resources.

**Initial Attack:** The control efforts taken by resources which are the first to arrive at the scene to protect lives and property and prevent further expansion of the fire.

**Interoperability:** Connecting people, data and diverse systems. Interoperability in regard to wildfires often focuses on getting diverse communication systems connected so that communication can occur between cooperating agencies, command and tactical units, air and ground units, etc.

# L

**Ladder Fuels:** Fuels that provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning.

**Litter:** Top layer of the forest, scrubland, or grassland floor, directly above the fermentation layer, composed of loose debris of dead sticks, branches, twigs, and recently fallen leaves or needles, little altered in structure by decomposition.

**Live Fuels:** Living plants, such as trees, grasses, and shrubs, in which the seasonal moisture content cycle is controlled largely by internal physiological mechanisms rather than by external weather influences.

# M

**Mutual Aid Agreement:** Written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel and equipment.

**Mutual Aid Box Alarm System (MABAS):** MABAS agencies, regardless of their geopolitical origin, are able to work together seamlessly on any emergency scene. All MABAS agencies operate on a common radio frequency and are activated for response through protocols developed to meet local risk needs. MABAS also provides mutual aid station coverage to a stricken community when their Fire/EMS resources are committed to an incident for an extended period.

# P

**Peak Fire Season:** That period of the fire season during which fires are expected to ignite most readily, to burn with greater than average intensity, and to create damages at an unacceptable level.

**Preparedness:** Condition or degree of being ready to cope with a potential fire situation.

**Prescribed Fire:** Any fire ignited by management actions under certain, predetermined conditions to meet specific objectives related to hazardous fuels or habitat improvement. A written, approved prescribed fire plan must exist.

**Prevention:** Activities directed at reducing the number of fires, including public education, law enforcement, personal contact, and reduction of fuel hazards.

# S

**Slash:** Debris left after logging, pruning, thinning, or brush cutting or natural events which may include logs, chips, bark, branches, stumps and broken understory trees or brush.

**Snag:** A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.

**Spark Arrester:** A device installed in a chimney, flue, or exhaust pipe to stop the emission of sparks and burning fragments.

**Spot Fire:** A fire ignited in unburned fuels outside the perimeter of the main fire by firebrands or embers.

**Staging Area:** Locations set up at an incident where resources can be placed while awaiting a tactical assignment on a three-minute available basis. Staging areas are managed by the operations section.

**Structure Fire:** Fire burning any part or all of any building, shelter, or other structure.

**Suppression:** All the work of extinguishing or containing a fire, beginning with its discovery.

**Surface Fire:** A fire that burns surface fuels such as litter, debris, leaves and small vegetation.

# T

**Torching:** The ignition and flare-up of a tree or small group of trees, usually from the bottom to the top.

# W

**Wildfire (or wildland fire):** Any nonstructural fire, other than prescribed fire, that occurs in the wildland.

**Wildland-Urban Interface:** The area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

# APPENDIX A
# FUNDING OPPORTUNITIES

## STATE ASSISTANCE

### Forest Fire Protection Grant

Forest Fire Protection (FFP) grants are available to increase forest fire protection and suppression capabilities through cooperative efforts with local fire departments and county fire associations as per s.917, 1997 Wisconsin Act 27, Stats.

Factors considered include:

1. Whether the fire departments serve in a WDNR organized fire protection area;
2. Whether fire departments respond to wildfires within their jurisdiction at no cost to the WDNR;
3. Whether fire departments have a majority of members meeting NFPA 1051 standards for firefighting training and;
4. Whether or not the fire department was awarded a FFP grant in the last funding cycle.

Fire departments that have executed a forest fire suppression agreement acceptable to WDNR are eligible to apply. County fire associations with a majority of the member fire departments having a forest fire suppression agreement with WDNR are eligible to apply. There is a 50 percent local match required. Eligible fire departments can receive a maximum grant award of $10,000. Eligible county fire associations can receive a maximum grant award of $25,000.

Wildland fire equipment is eligible in the following categories listed in priority order:

- Personal protective clothing
- Forest fire training
- Forest fire prevention projects
- Forest fire suppression equipment
- Dry hydrants
- Communications equipment
- Mapping equipment, maps, and GPS units
- Off road vehicles primarily used for forest fires including ATV's

A complete listing of eligible items can be found on the application web site. Applications are mailed to fire departments and county fire associations in late April. Applications must be returned to the WDNR by July 1 (unless otherwise provided for on the application) of the same year.

The FFP grant application packet is available online at http://dnr.wi.gov/org/caer/cfa/lr/ffp/grants.html. For more information, contact Eileen Trainor, Financial Assistance Specialist at (608) 267-0848 or by email at Eileen.Trainor@Wisconsin.gov.

**Wisconsin DNR – Division of Forestry Hazard Mitigation Program**

Hazard Mitigation Program grants aim to decrease the probability of a catastrophic wildfire affecting a Wisconsin community. Through the National Fire Plan program, states are able to compete for grants to fund projects that meet the goals of the program. The WDNR Division of Forestry manages these funds through their Hazard Mitigation Program. Projects fall under a few general categories: readiness, prevention, fuel breaks, and vegetation management. Communities with Community Wildfire Protection Plans receive priority consideration for these funds to conduct projects such fuels reduction, access improvement, prescribed burning, and education. Smaller associations within the community (e.g. lake associations) are eligible to apply for funds to carry out projects such as chipping days, defensible space creation, education, and property assessments.

The application materials typically become available in October and are due in early January. For additional information or application materials, contact Jolene Ackerman at the WDNR Division of Forestry at Jolene.Ackerman@wisconsin.gov or (608) 267-7677.

## FEDERAL ASSISTANCE

**Assistance to Firefighters Grant Program**

The purpose of the Assistance to Firefighters Grant (AFG) Program is to award one-year grants directly to fire departments and nonaffiliated emergency medical services (EMS) organizations of a state to enhance their abilities with respect to fire and fire-related hazards. The primary goal is to provide assistance to meet fire departments' and nonaffiliated EMS organizations' firefighting and emergency response needs. This program seeks to support organizations that lack the tools and resources necessary to protect the health and safety of the public and their emergency response personnel with respect to fire and all other hazards they may face.

The application period typically runs from March 6 to April 7. Each application includes a scored narrative with four parts:

- Project Description
- Financial Need
- Cost/Benefit
- Operational Outcomes

More information can be found online at http://www.firegrantsupport.com, by calling the grant help desk at (866) 274-0960 or by emailing Dawn Vick at dawn.vick@wisconsin.gov.

**Fire Prevention and Safety Grant Program**

The Fire Prevention and Safety (FP&S) grants are part of the Assistance to Firefighters Grants (AFG) and are under the purview of the Grant Programs Directorate in the Federal Emergency Management Agency. FP&S grants support projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to target high-risk populations and mitigate high incidences of death and injury. Examples of the types of projects supported by FP&S include fire prevention and public safety education campaigns, juvenile fire-setter interventions, media campaigns, and arson prevention and awareness programs. In fiscal year

2005, Congress reauthorized funding for FP&S and expanded the eligible uses of funds to include Firefighter Safety Research and Development.

The application period is open from October 22 to November 30. More information can be found online at http://www.firegrantsupport.com/fps/, by calling the grant help desk at (866) 274-0960 or by email at firegrants@dhs.gov.

**Staffing for Adequate Fire and Emergency Response Grant Program**

Staffing for Adequate Fire and Emergency Response (SAFER) grant was created to provide funding directly to fire departments and volunteer firefighter organizations in order to help them increase the number of trained, "front-line" firefighters available in their communities.

The goal of SAFER is to enhance the local fire departments' abilities to comply with staffing, response, and operational standards. Specifically, SAFER funds should assist local fire departments to increase their staffing and deployment capabilities in order to respond to emergencies whenever they may occur. Because of enhanced staffing, response times should be sufficiently reduced with an appropriate number of personnel assembled at the incident scene. In addition, the enhanced staffing should provide that all front-line/first-due apparatus of SAFER grantees have a minimum of four trained personnel to meet OSHA standards. Ultimately, a faster, safer, and more efficient incident scene will be established and communities will have adequate protection from fire and fire-related hazards.

The purpose of the SAFER grants is to award grants directly to volunteer, combination, and career fire departments to help the departments increase their cadre of firefighters. Ultimately, the goal is for SAFER grantees to enhance their ability to attain 24-hour staffing and thus assuring their communities have adequate protection from fire and fire-related hazards. The SAFER grants have two activities that will help grantees attain this goal:

1. Hiring of firefighters
2. Recruitment and retention of volunteer firefighters

The application period is open from July 30 to August 30. More information can be found online at http://www.firefrantsupport.com/safer/, by calling the grant help desk at (866) 274-0960 or by email at firegrants@dhs.gov.

# APPENDIX B
# ANNUAL UPDATE FORM

**Community Wildfire Protection Plan for Towns of Grand Rapids and Saratoga**
**Annual Update Form**

NAME OF TOWN: _____
FORM COMPLETED BY: _____ DATE: _____

STATUS OF PROJECT LIST:
(Explain the effort your community has made and describe successes/challenges faced.)

PROPOSED CHANGES TO PROJECT LIST:

PROJECTS PLANNED FOR NEXT PLANNING PERIOD:

ASSISTANCE NEEDED TO EXECUTE A SPECIFIC PROJECT:
**Project** (Reference the project list in the adopted plan): _____
Do you need help to develop a detailed **budget** for the project? Yes or No
Are you lacking **resources** to complete the project? Yes or No
Do you need **technical assistance**? Yes or No

Other assistance needed:

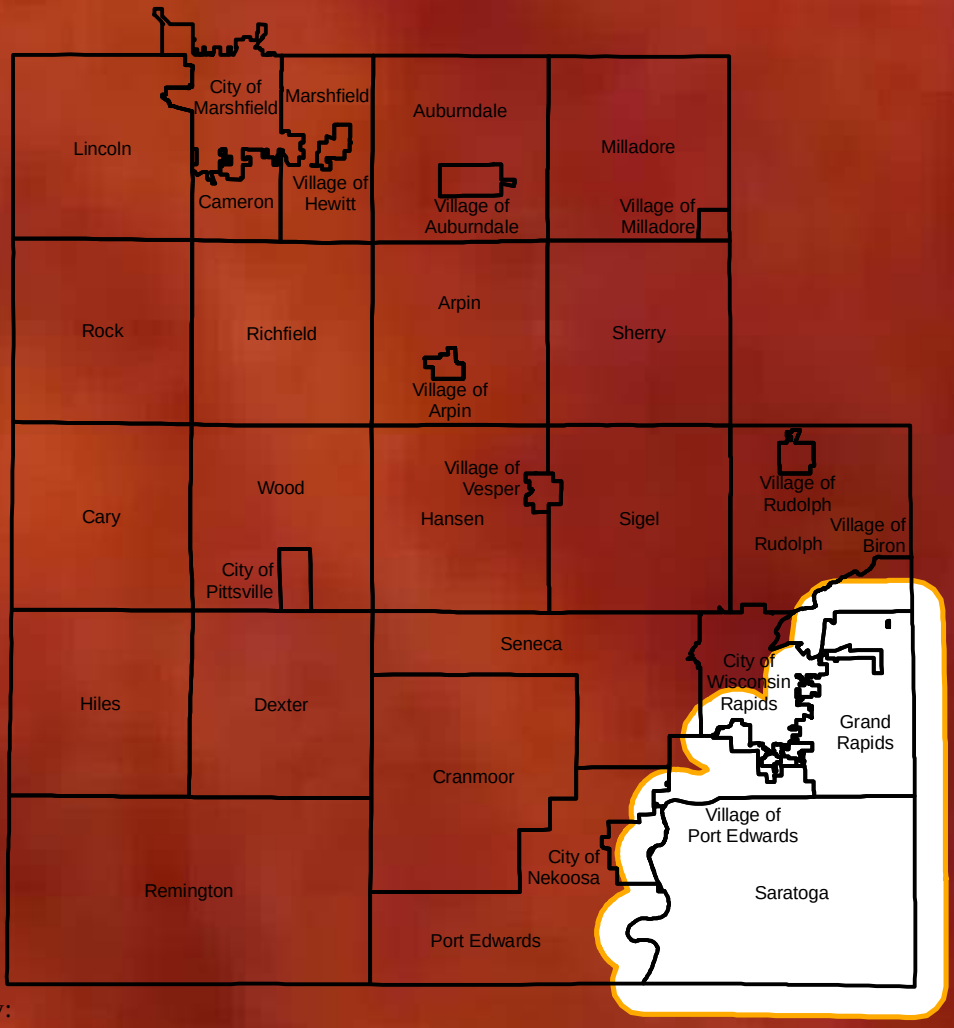
IMPROVEMENTS RECOMMENDED TO THE PLAN:

# APPENDIX C
# PLAN MAPS

# Town of Grand Rapids & Saratoga, Wood County

## Map 1

## Locational Reference Map



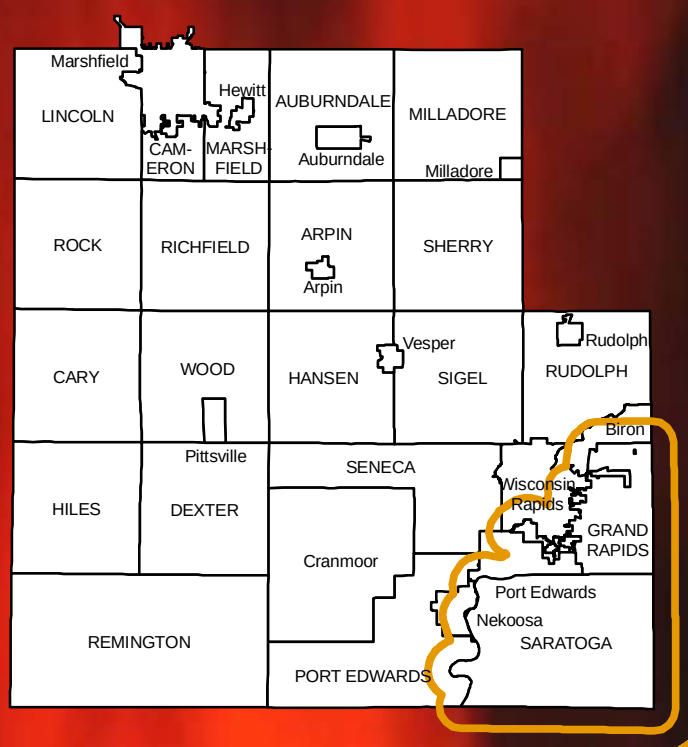


Prepared By:
North Central Wisconsin Regional Planning Commission
210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 - staff@ncwrpc.org - www.ncwrpc.org


Source: WI DNR, NCWRPC

# Town of Grand Rapids & Saratoga, Wood County

## Map 2
## Generalized Existing Land Use Map




N
S

0 0.5 1 2
Miles

Wisconsin River
Quinnell Creek
Twomile Creek
Wazeecha Lake
Ripple Creek
Fivemile Creek
Bloody Run
Nepco Lake
Harvey Creek
Sevenmile Creek
Lynn Creek
Ross Lake
Petenwell Lake
Tenmile Creek
Spring Branch

1 2 3 4 5 6 7 8 9

Minor Civil Divisions
Planning Unit Boundaries
Section Lines
US Highway
State Highways
County Highways
Local Roads
Railroad

Agriculture
Commercial
Cranberry Bog
Governmental
Industrial
Open Lands

Outdoor Recreation
Transportation
Residential
Water
Woodlands
Study Area

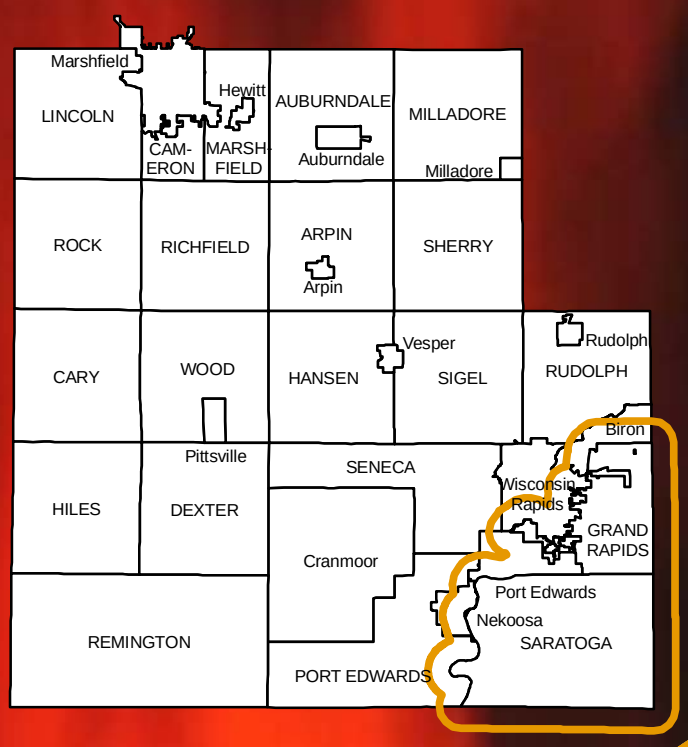
Source: WI DNR, NCWRPC, Wood Co.
2008 Airphoto Interpretation

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.


Prepared By:
North Central Wisconsin Regional Planning Commission
210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 - staff@ncwrpc.org - www.ncwrpc.org

# Town of Grand Rapids & Saratoga, Wood County

# Map 3
# Planning Units Map







N
S

0 0.5 1 2 Miles

Minor Civil Divisions
Section Lines
US Highway
State Highways
County Highways
Local Roads
Railroad
Planning Unit Boundaries
Study Area

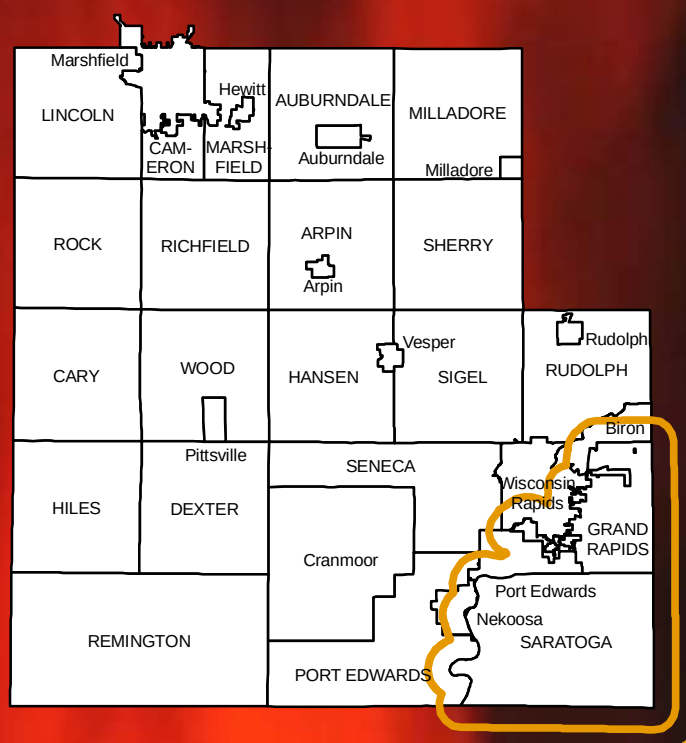
Source: WI DNR, NCWRPC, Wood Co.

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.


Prepared By:
North Central Wisconsin Regional Planning Commission
210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 - staff@ncwrpc.org - www.ncwrpc.org

# Town of Grand Rapids & Saratoga, Wood County

## Map 4
## Fire Hazard Map





0 0.5 1 2 Miles




**Legend**

- Minor Civil Divisions
- Planning Unit Boundaries
- Section Lines
- US Highway
- State Highways
- County Highways
- Local Roads
- Railroad
- Study Area

**Hazard Rating**

- Crown
- Very High Surface
- High Surface
- Moderate Surface
- Low Surface
- Very Low Surface
- Non-Burnable
- Water

Source: WI DNR, NCWRPC, Wood Co.
2008 Airphoto Interpretation

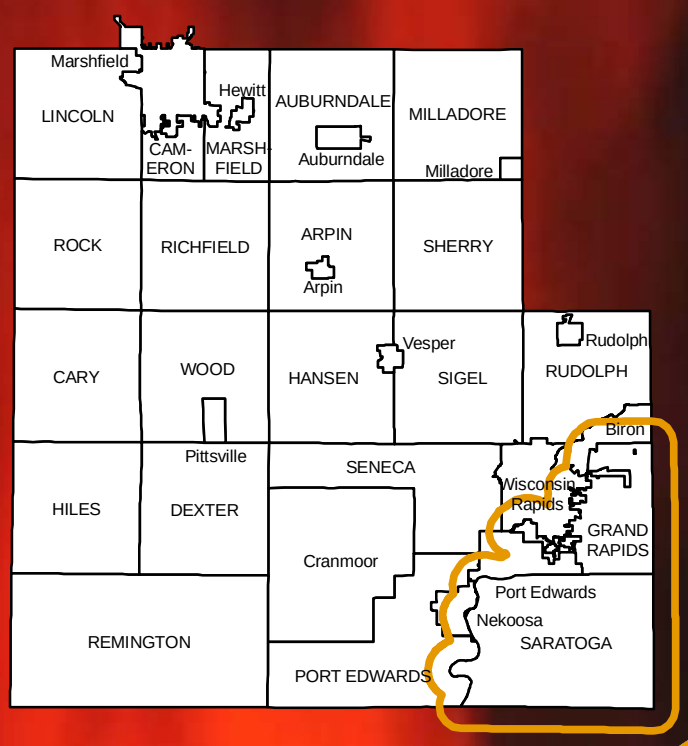


Prepared By:
North Central Wisconsin Regional Planning Commission
NCWRPC
210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 - staff@ncwrpc.org - www.ncwrpc.org

# Town of Grand Rapids & Saratoga, Wood County

## Map 5

## Fire Locations & Causes 1985 - 2009




N

S

0 0.5 1 2 Miles

Wisconsin River
Quinnell Creek
Twomile Creek
Fourmile Creek
Bloody Run
Nepco Lake
Fivemile Creek
Harvey Creek
Sevenmile Creek
Tenmile Creek
Ripple Creek
Lynn Creek
Ross Lake
Petenwell Lake
Spring Branch
Wazeecha Lake

Minor Civil Divisions
Section Lines
Planning Unit Boundaries
Study Area
US Highway
State Highways
County Highways
Local Roads
Railroad

Campfire
Debris
Equipment
Incendiary
Lightning
Misc
Smoking

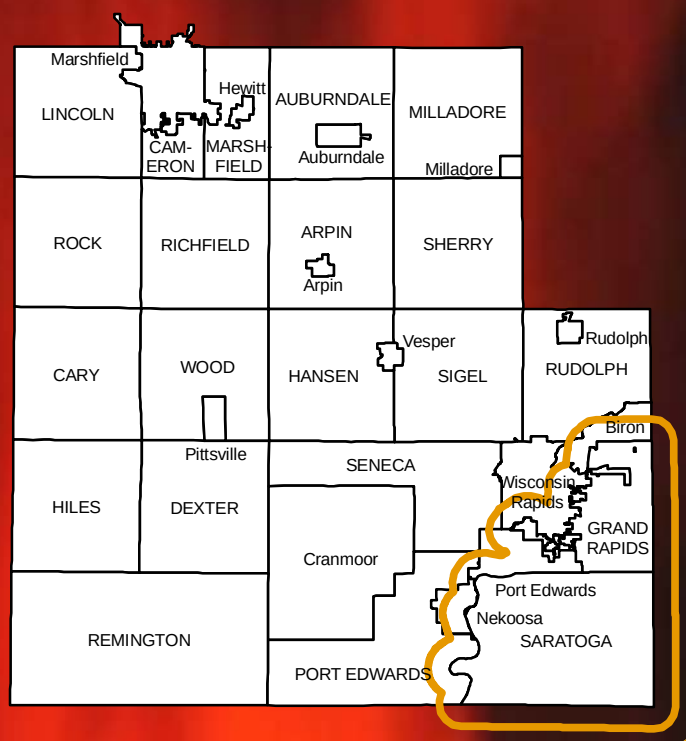
Source: WI DNR, NCWRPC, Wood Co.

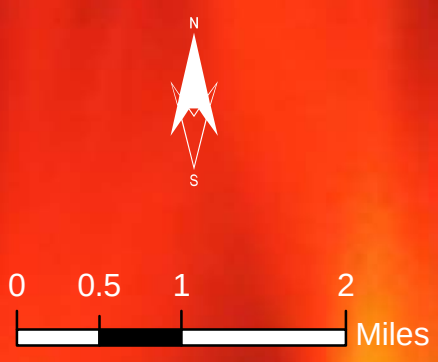
This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.


Prepared By:
North Central Wisconsin Regional Planning Commission
210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 - staff@ncwrpc.org - www.ncwrpc.org

# Town of Grand Rapids & Saratoga, Wood County

# Map 6
# Critical Facilities Map







Minor Civil Divisions
Section Lines
Planning Unit Boundaries
Study Area
State Highways
County Highways
Local Roads
Railroad
Water
Building Structures

Communication Tower
County
Private
Assisted Living / Group Homes
Public Water Supply
Waste Water Treatment Plant
Substations
Airport
Bulk Fuel
Business Park

Cemetery
Church
City Garage
City Hall
County Garage
Court House
Fire Station
Historic Places
Hospital
Landfill

Library
Museum
Police Department
School
Tech School
Town Garage
Town Hall
Town Hall / Police Station
Transfer Site
High Voltage Powerline
Pipeline

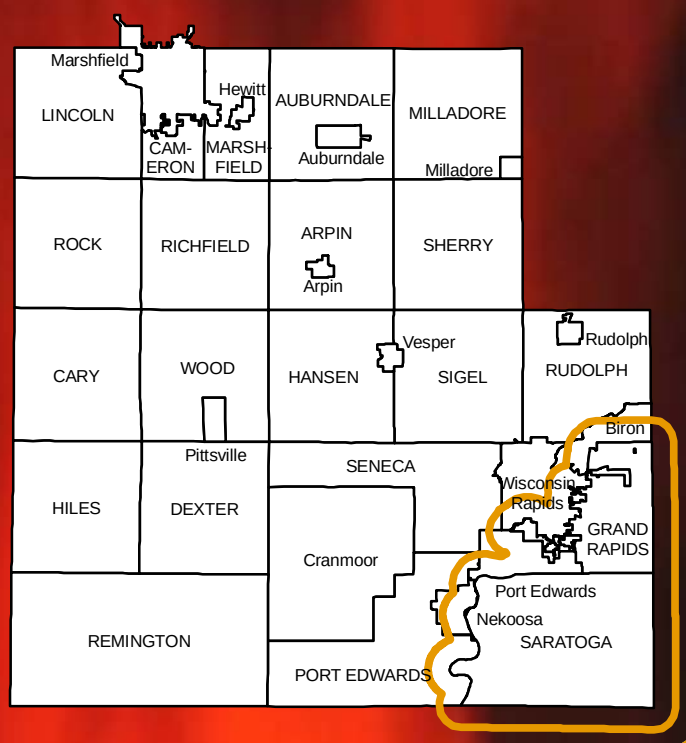
Source: WI DNR, NCWRPC, Wood Co. ATC

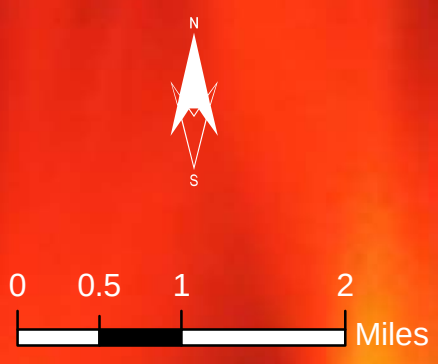
This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.


Prepared By:
North Central Wisconsin Regional Planning Commission
210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 - staff@ncwrpc.org - www.ncwrpc.org

# Town of Grand Rapids & Saratoga, Wood County

# Map 7
# Protection Capability Map







- Minor Civil Divisions
- Section Lines
- US Highway
- State Highways
- County Highways
- Local Roads
- Railroad
- Study Area
- Planning Unit Boundaries
- Boat Launches
- Dry Hydrant
- Pressurized Hydrant
- Water Access
- Fire Station
- DNR Station

Source: WI DNR, NCWRPC, Wood Co.



Prepared By:
North Central Wisconsin Regional Planning Commission
NCWRPC
210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 - staff@ncwrpc.org - www.ncwrpc.org