Community Hazard Assessments County of Maui Molokai

Coordinated and Developed by:

Hawaii Wildfire Management Organization, a 501(c)3 nonprofit organization dedicated to protecting Hawaii's communities and natural resources from wildfire.



In Collaboration with:

Hawaii Fire Department and State of Hawaii Department of Land and Natural Resources Division of Forestry and Wildlife





Disclaimer: The HWMO Hawaii Hazard Assessment Maps have been prepared to increase awareness on potential wildfire threats to communities across the Hawaiian islands. However, HWMO does not guarantee a house will survive a wildfire event and having a low hazard rating does not "fire proof" an individual house or a given area or subdivision; instead, reducing the hazard rating lowers wildfire threats and improves the potential for wildfire suppression to be successful.

It is important to recognize that the HWMO hazard assessment process is a qualitative ranking system that arbitrarily ranks different factors perceived to contribute to the threat of wildfires at the wildland-urban interface (WUI). The assessment does not include the full range of realistic fire and ember exposures at the WUI and offers no actual quantification of the potential exposure of homes to the ignition, spread, and intensity of wildfires or embers produced by wildfires. Furthermore, the HWMO Wildfire Hazard Assessment is a community-level assessment that produces a rating based on a select number of houses in a given area or subdivision. While such an approach gives an indication of the general wildfire risk for a given area, the actual risk of individual homes can deviate from this assessment based on the characteristics of the site around an individual home.

Subdivision Rating

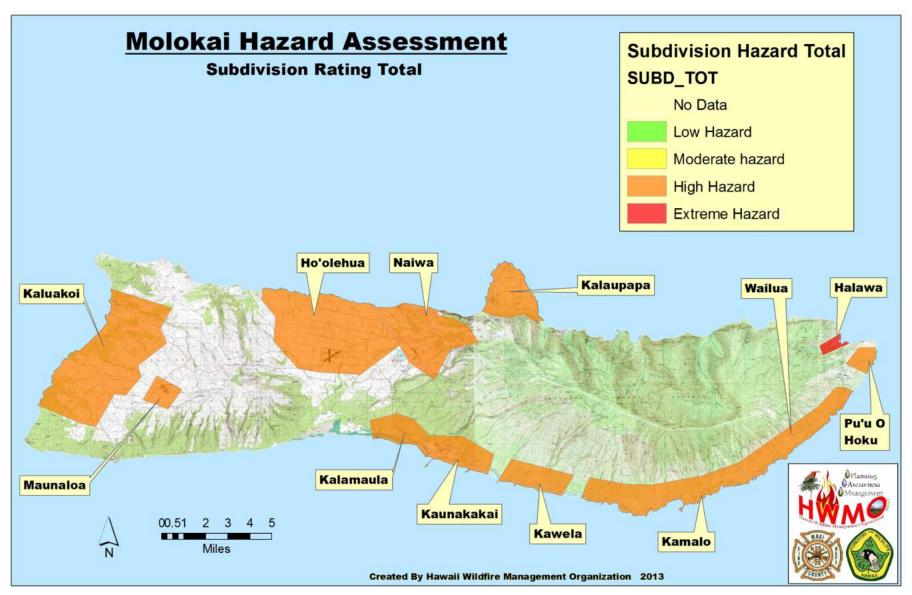
HWMO Wildfire Hazard Assessment Key

Subdivision Hazard Rating

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Rating Element	Low	Moderate	High
	(Score =1)	(Score=2)	(Score=3)
Ingress/ Egress	Multiple entrances and exits are well equipped for fire trucks with turnarounds.	Limited access routes. 2 ways in and 2 ways out. Moderate grades.	Narrow, dead end roads or 1 way in, 1 way out. Steep grades
Road Maintenance	Wide loop roads that are maintained, paved or solid surface with shoulders.	Roads maintained. Some narrow two lane roads with no shoulders.	Narrow and or single lane, minimally maintained, no shoulders.
Road Width	24'+ wide. Wide roads with drivable shoulders and good visibility allow two-way traffic. Streets in the downtown area are the widest streets in town. Interior streets are smaller and are easily blocked by parked vehicles.	20'-24' wide. Medium width roads with drivable shoulders and good visibility, support evacuation and emergency response time.	Less than 20 feet wide. Narrow roads coupled with poor visibility limit evacuation and emergency response. Traffic problems will occur. Entrapment is likely.
All-season Road Condition	Flat or gently sloping surfaced roads can support high volumes of large fire equipment.	Surfaced road with 5%+ grade or non-surfaced road with <5% grade that can still support fire equipment. Road and right-of-way maintenances is essential for access and visibility.	Narrow, steep, or non- surfaced roads are difficult to access. One-way traffic is a hazard. Overhanging brush may damage fire equipment. Jeep trails and seasonal roads limit 2wd emergency response equipment.
Fire Service Access	Adequate turnaround space is available for large fire equipment.	<300' with no turnaround. Short or dead-end streets will become crowded with homeowner's vehicles.	300'+ with no turnaround. Long dead-end streets will become crowded with vehicles. Two-way visibility is an issue.
Street signs	Present. Most are at least 4' in size and are reflectorized.	Present and reflectorized with some exceptions.	Not present.
Structure Density	Low structure density and low ignition probability.	Density and ignition probability are both moderate, or one is high but is balanced by the other being low.	Dense structures with high ignition probability.
Home Setbacks	Majority (50%+) of homes are set back from property lines and slopes by at least 30 feet.	10-50% of homes have defensible setbacks from property lines and sloped areas.	<10% of homes have defensible setbacks from property lines. Buildings located close to dangerous topographic features such as the tops of slopes.

HWMO Wildfire Hazard Assessment Key

Unmanaged, untended, undeveloped lands	Few to no weedy vacant lots. Few to no undeveloped unmaintained vegetated areas or corridors between homes. Less than 10% of lots remain undeveloped and pose an additional wildfire hazard due to lack of maintenance and/or restricted access.	Some isolated unmaintained lots or undeveloped vegetated areas within subdivision. 10-50% of lots have not been developed and pose an additional wildfire hazard due to lack of maintenance and/or restricted access. Hazard ranking is dependent on ignition risk, size of area, and fuel type.	Abundant unmanaged, vegetated corridors and vacant lots throughout community. Agricultural lands irregularly maintained leaving dry weedy species causing increased ignition risk. Numerous ladder fuels and high risk fuels. Greater than 75% of lots have not been developed or Separation of adjacent structures that can contribute to fire spread
Private landowner actions / Firewise landscaping and defensible space	70% of homes have improved survivable space around property, reduced ignition risk, hardened homes, and no ladder fuels.	30-70% homes have improved survivable space around property and well-maintained landscapes.	<30% of homes have defensible space, hardened home features, or Firewise landscaping
Proximity of subdivision to wildland areas	Wildland areas share no borders with the subdivision. Little to no undeveloped and unmaintained vegetated areas within community. Little to no ladder fuels along community boundaries.	Wildland areas adjoin subdivision on 1-2 sides.	Wildland areas surround subdivision on at least 3 sides.



Subdivision Rating - Ingress/Egress



Low Hazard

Multiple entrances and exits are well equipped for fire trucks with turnarounds.

MODERATE HAZARD

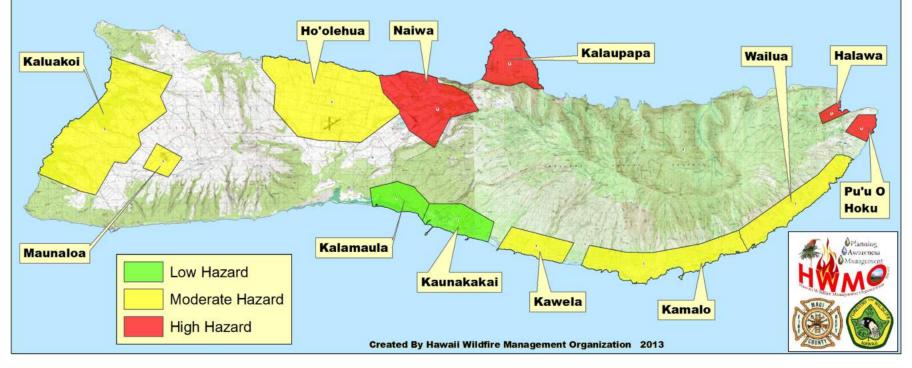
INGRESS / EGRESS

Limited access routes. Two ways in and two ways out. Moderate grades.

HIGH HAZARD

Narrow, dead end roads or one way in, One way out. Steep grades.





Subdivision Rating - Road Maintenance

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LOW HAZARD

Wide loop roads that are maintained, paved or solid surface with shoulders.

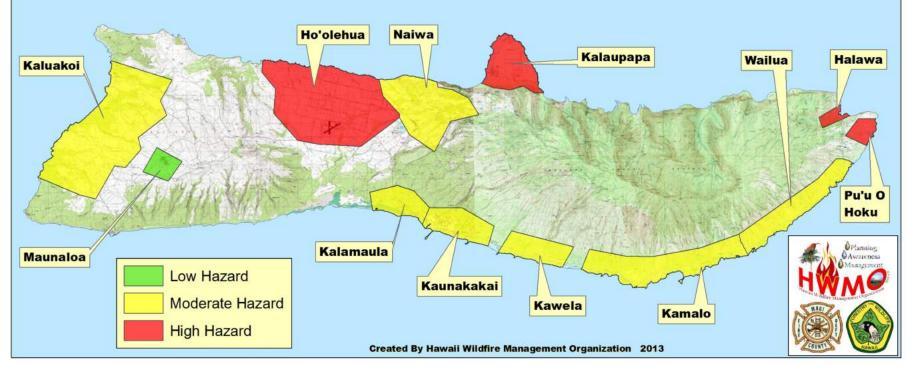
ROAD MAINTENANCE MODERATE HAZARD

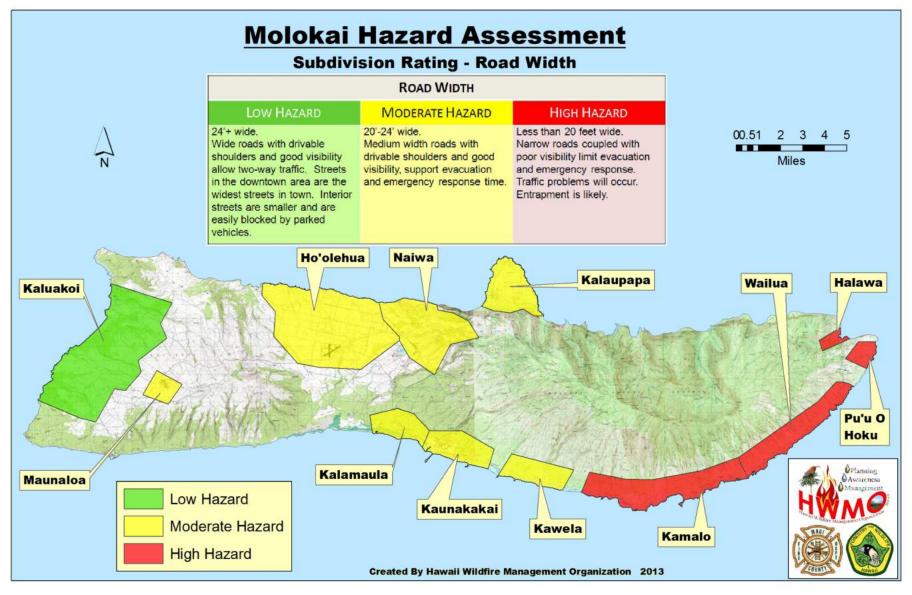
Roads maintained. Some narrow two lane roads with no shoulders.

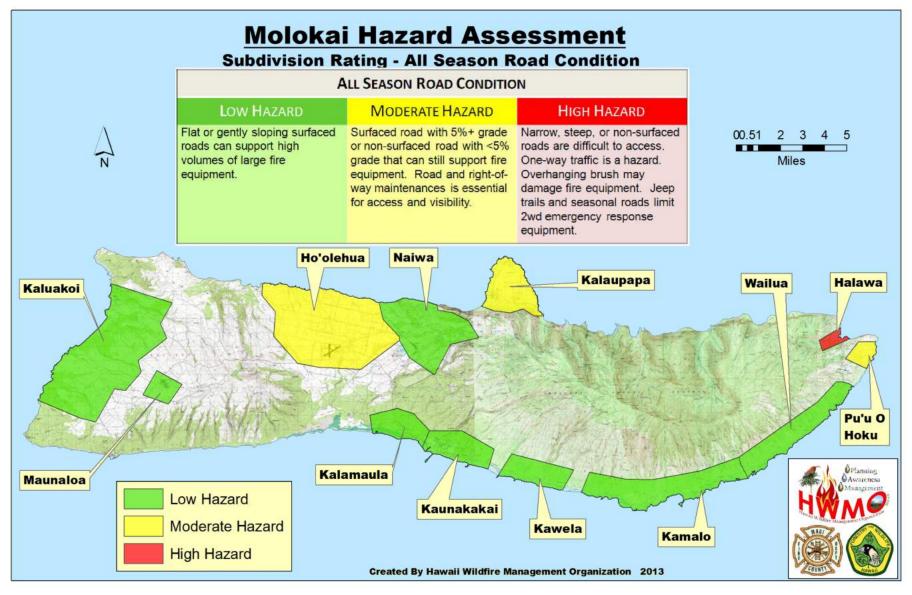
HIGH HAZARD

Narrow and or single lane, minimally maintained, no shoulders.

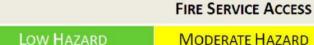








Subdivision Rating - Fire Service Access



Adequate turnaround space is available for large fire equipment.

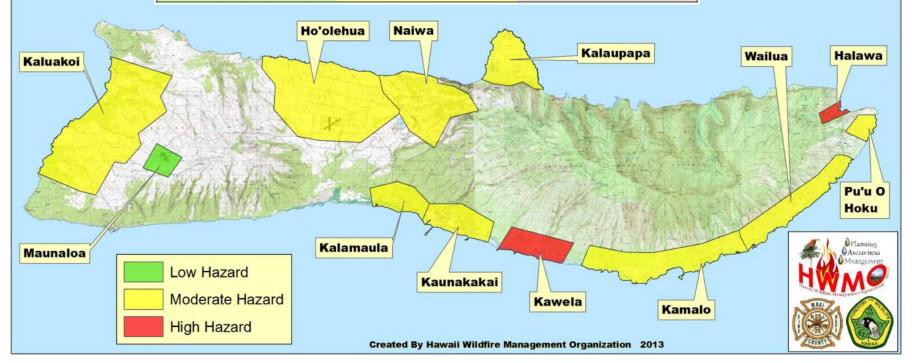
MODERATE HAZARD

<300' with no turnaround. Short or dead-end streets will become crowded with homeowner's vehicles.

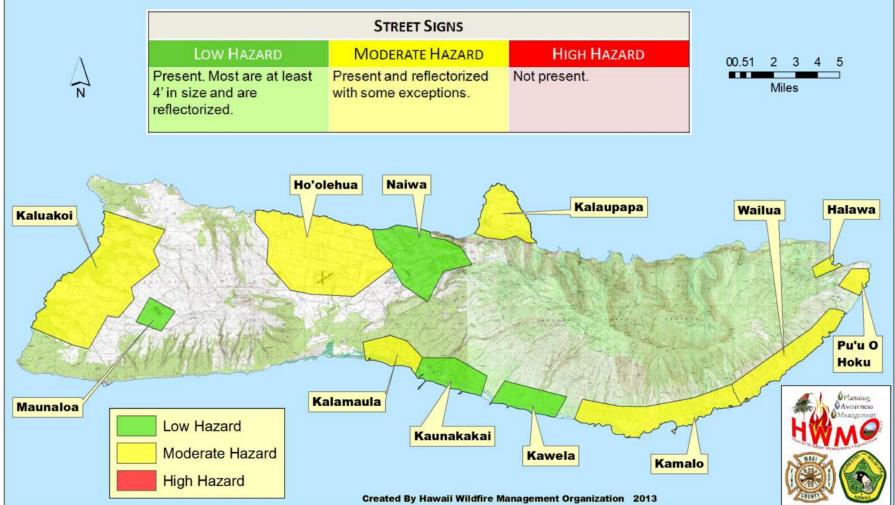
HIGH HAZARD

300'+ with no turnaround. Long dead-end streets will become crowded with vehicles. Two-way visibility is an issue.





Subdivision Rating - Street Signs



Subdivision Rating - Structure Density



Low Hazard

Low structure density and low ignition probability.

MODERATE HAZARD

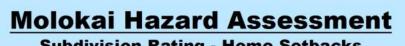
Density and ignition probability are both moderate, or one is high but is balanced by the other being low.

HIGH HAZARD

Dense structures with high ignition probability.











Low Hazard

Majority (50%+) of homes are set back from property lines and slopes by at least 30 feet.

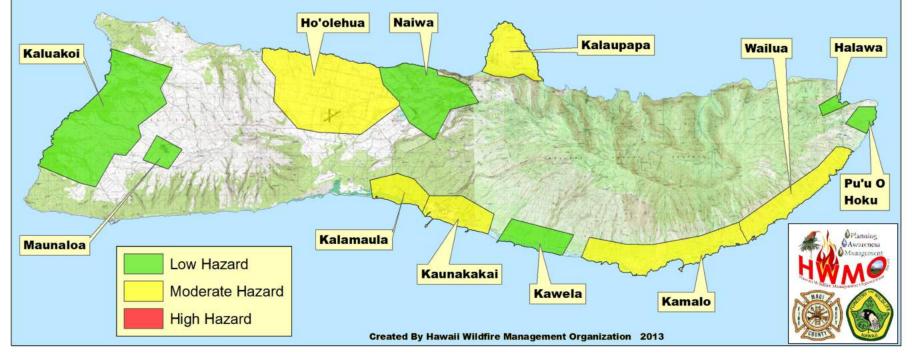
MODERATE HAZARD

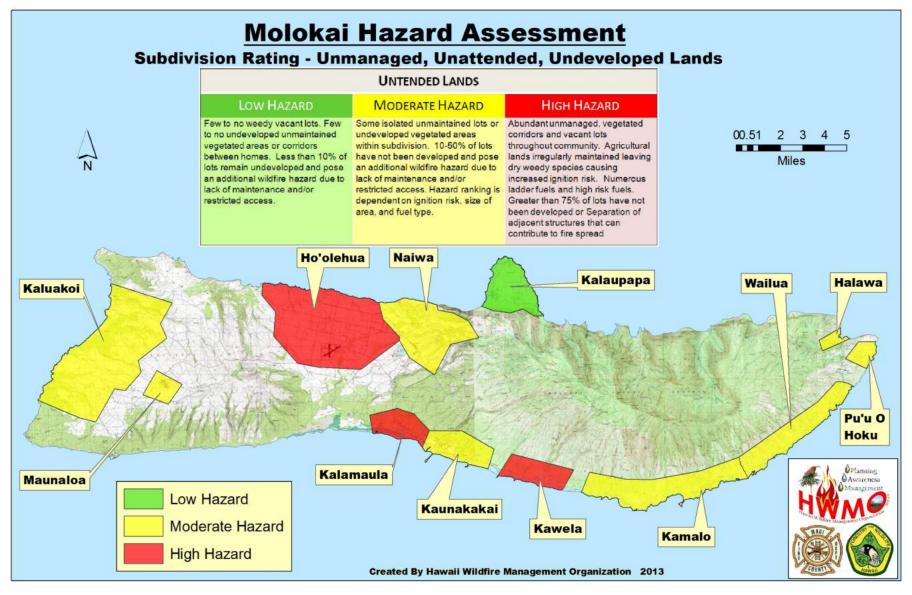
10-50% of homes have defensible setbacks from property lines and sloped areas.

HIGH HAZARD

<10% of homes have defensible setbacks from property lines. Buildings located close to dangerous topographic features such as the tops of slopes.







Subdivision Rating - Private Landowner Firewise Landscaping & Defensible Space

PRIVATE LANDOWNER FIREWISE LANDSCAPING/ DEFENSIBLE SPACE

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LOW HAZARD

70% of homes have improved survivable space around property, reduced ignition risk, hardened homes, and no ladder fuels.

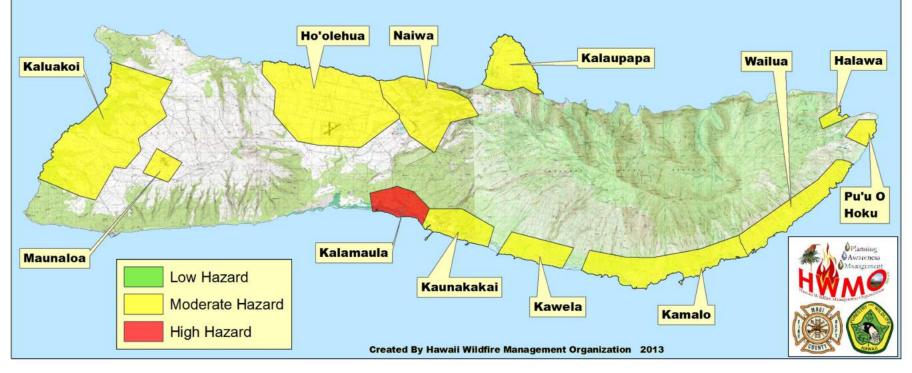
MODERATE HAZARD

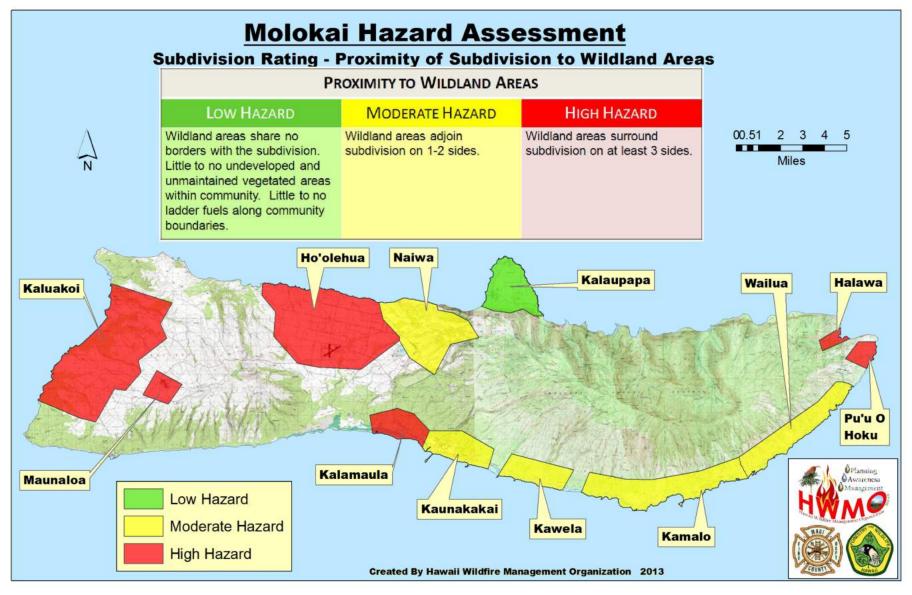
30-70% homes have improved survivable space around property and well-maintained landscapes.

HIGH HAZARD

<30% of homes have defensible space, hardened home features, or Firewise landscaping





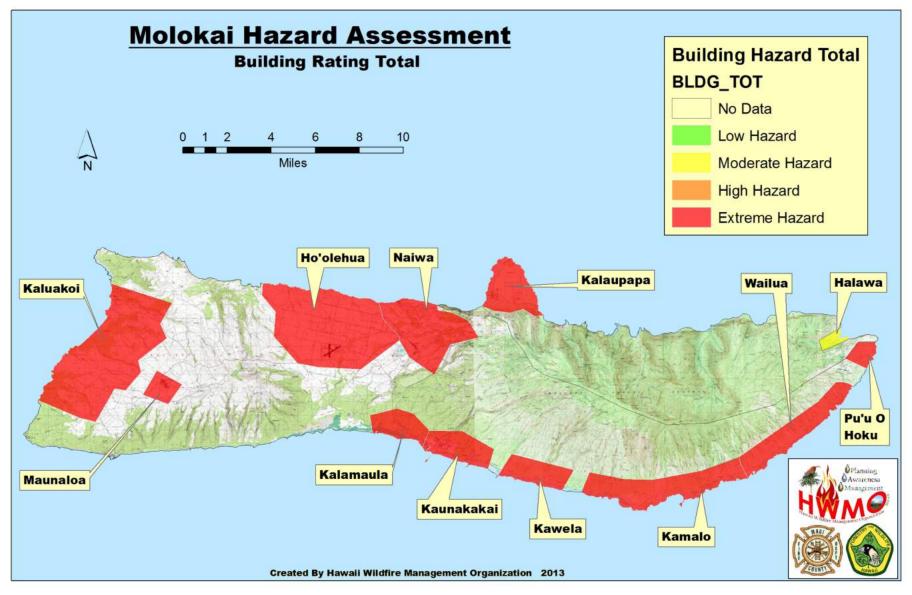


Building Rating

HWMO Wildfire Hazard Assessment Key

Building Hazard Rating

Rating Element	Low (1)	Moderate (2)	High (3)
Roofing Assembly	Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing material).	50-75% have Class A roofing.	Less than 50% of homes have Class A roofing.
Siding/ Soffits	Greater than 75% of homes have fire resistant siding and soffits.	50-75% of homes have fire resistant siding and soffits.	Less than 50% of homes have fire resistant siding and soffits.
Under-skirting around decks, lanais, post-and- pier structures.	Greater than 75% of homes have the equivalent of fine non-combustible mesh screening to protect underneath from flying embers and ignition	50-75% of homes have the equivalent of fine non-combustible mesh screening	Less than 50% of homes have the equivalent of fine non- combustible mesh screening
Utilities Placement- Gas and Electric	All underground or none.	One underground, one above ground.	Both above ground.
Structural Ignitability	Greater than 75% or houses are spaced with cleared boundaries. Flammables and combustible materials stored according to firesafe principles.	50-75% of homes store combustibles properly.	Less than 50% of homes store combustibles properly. Houses close to each other.



Building Rating - Roofing Assembly



Low Hazard

Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing

material).

ROOFING ASSEMBLY MODERATE HAZARD

50-75% have Class A roofing.

HIGH HAZARD

Less than 50% of homes have Class A roofing.





Building Rating - Siding/Soffits



Low Hazard

Greater than 75% of homes have fire resistant siding and soffits.

SIDING AND SOFFITS

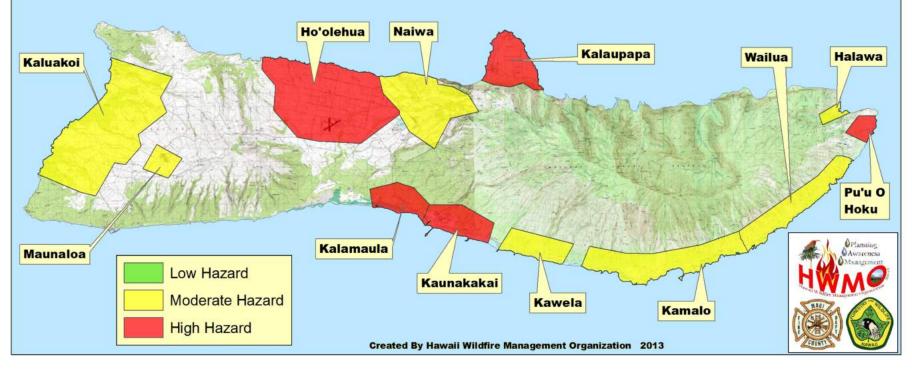
MODERATE HAZARD

50-75% of homes have fire resistant siding and soffits.

HIGH HAZARD

Less than 50% of homes have fire resistant siding and soffits.





Building Rating - Underskirting Around Decks, Lanais, Post & Pier Structures

UNDERSKIRTING AROUND DECKS/ POST-AND-PIER STRUCTURES

Low Hazard

Greater than 75% of homes have the equivalent of fine non-combustible mesh screening to protect underneath from flying embers and ignition.

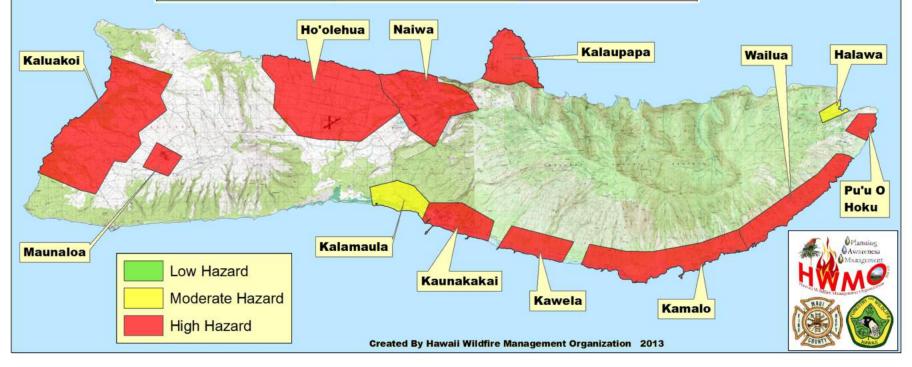
MODERATE HAZARD

50-75% of homes have the equivalent of fine non-combustible mesh screening.

HIGH HAZARD

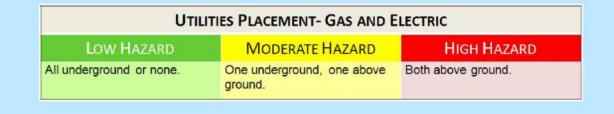
Less than 50% of homes have the equivalent of fine noncombustible mesh screening.



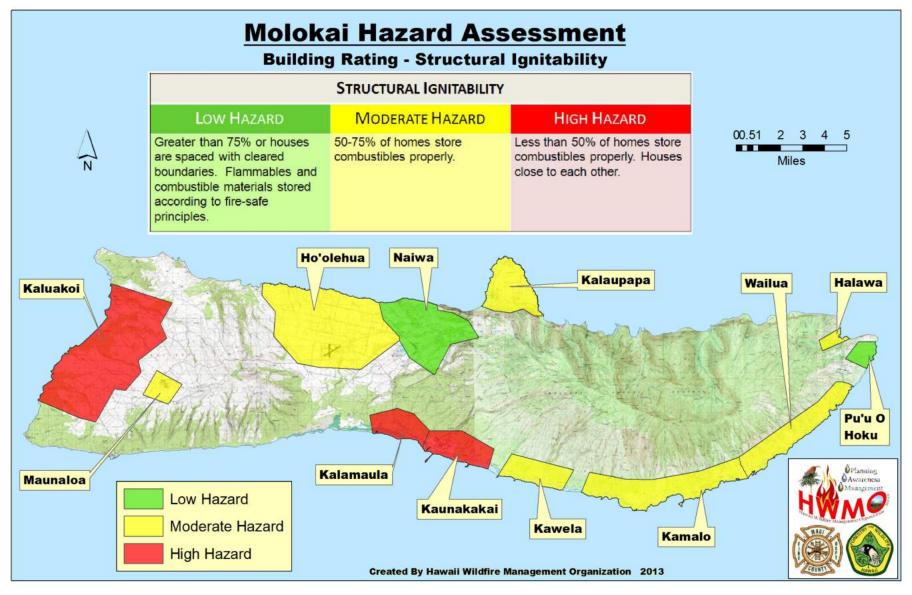


Building Rating - Utilities Placement; Gas & Electric

Miles





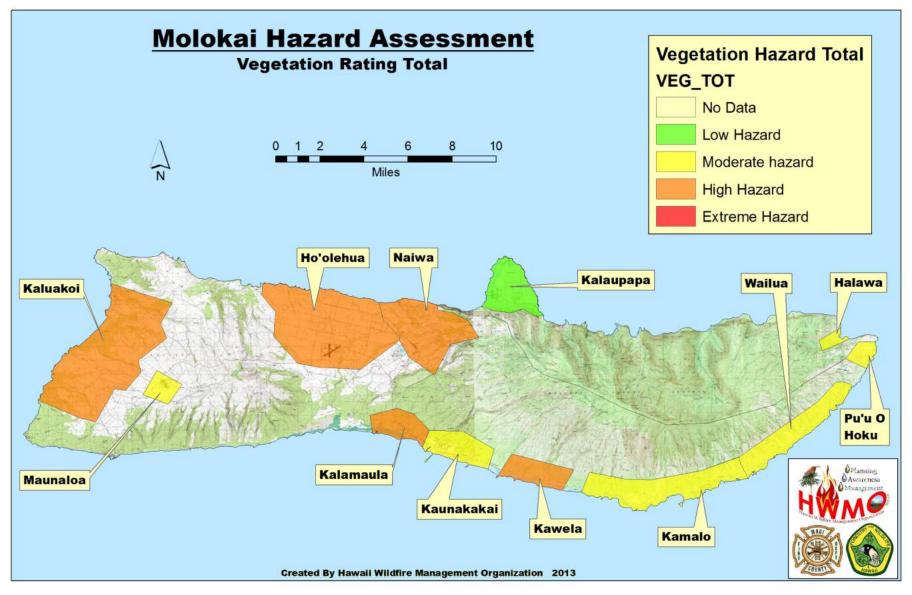


Vegetation Rating

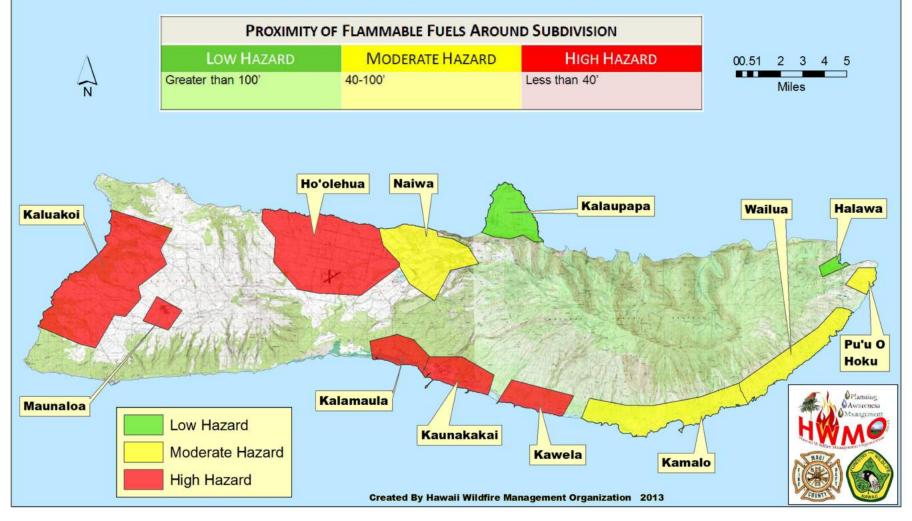
HWMO Wildfire Hazard Assessment Key

Vegetation Hazard Rating Rating Element Low (1) Moderate (2) High (3) Greater than 100' 40-100' Less than 40' **Proximity of** flammable fuels around subdivision Grasses less than 6 Dense grass, brush, Type of Grasses 6-12 inches in inches in height. height. Grasses 6-12" timber, and/or hardwoods. predominant Light leaf litter. tall. Light brush and Moderate to heavy dead vegetation within small trees. Patchy and downed vegetation. 300' of homes fuels. Fuels greater than 12 feet tall. Heavy vegetation. **Fuel loading** 0-30% cover 31-70% cover 71-100% cover Non-contiguous or Uninterrupted vegetation, Fuel structure and pervasive ladder fuels. patchwork arrangement arrangement. Little to no ladder fuels. Vegetation is treated 31-100 ft of vegetation Less than 30 ft of **Defensible Space/** 100 feet or more from vegetation treatment from treatment from **Fuels reduction** structures. structures. structures. around homes &

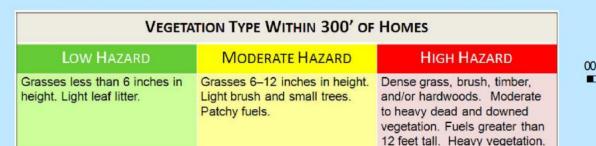
structures



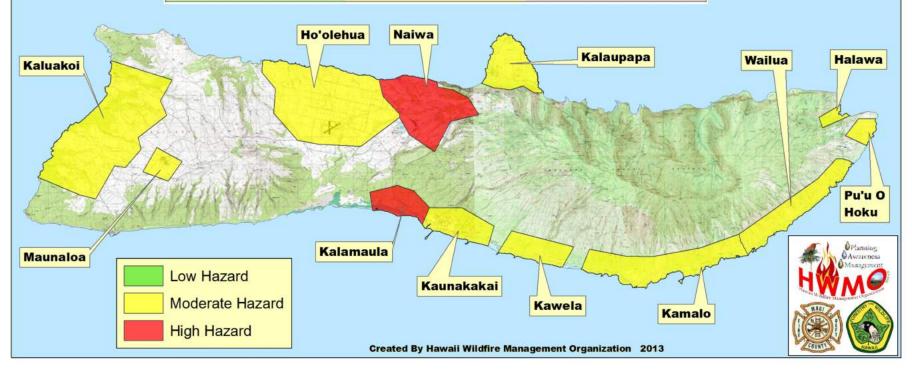
Vegetation Rating - Proximity of Flammable Fuels Around Subdivision



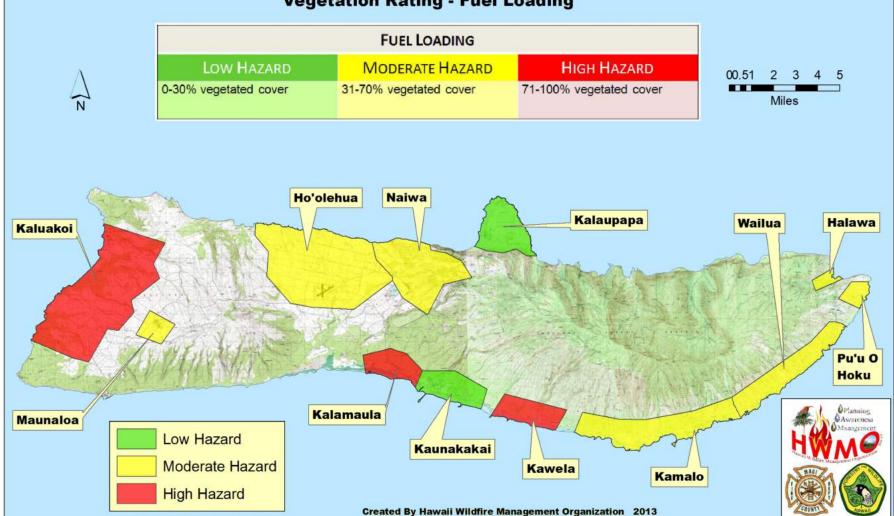
Vegetation Rating - Vegetation Within 300' of Homes



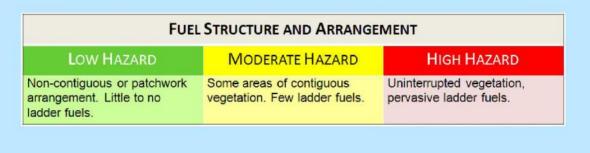
Miles



Vegetation Rating - Fuel Loading



Vegetation Rating - Fuel Structure & Arrangement



Miles



Vegetation Rating - Defensible Space: Fuels Reduction Around Homes & Structures



DEFENSIBLE SPACE- FUELS REDUCTION AROUND HOMES

treatment from structures.

LOW HAZARD MODERATE HAZARD

Vegetation is treated 100 feet or more from structures.

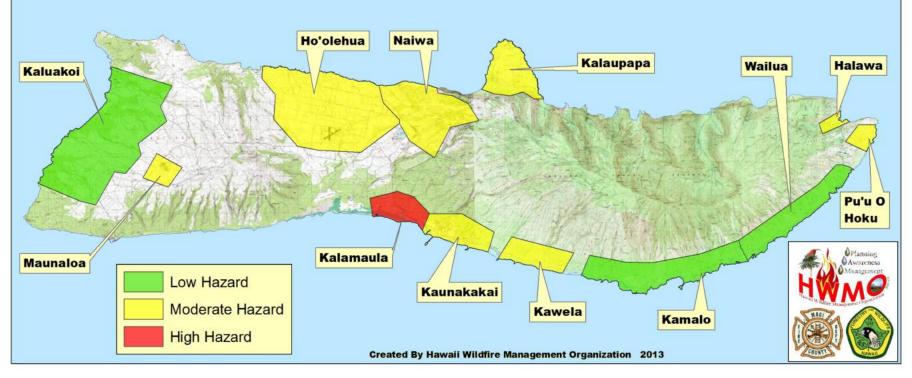
MODERATE HAZARD
31-100 ft. of vegetation

Less treatr

Less than 30 ft. of vegetation treatment from structures.

HIGH HAZARD

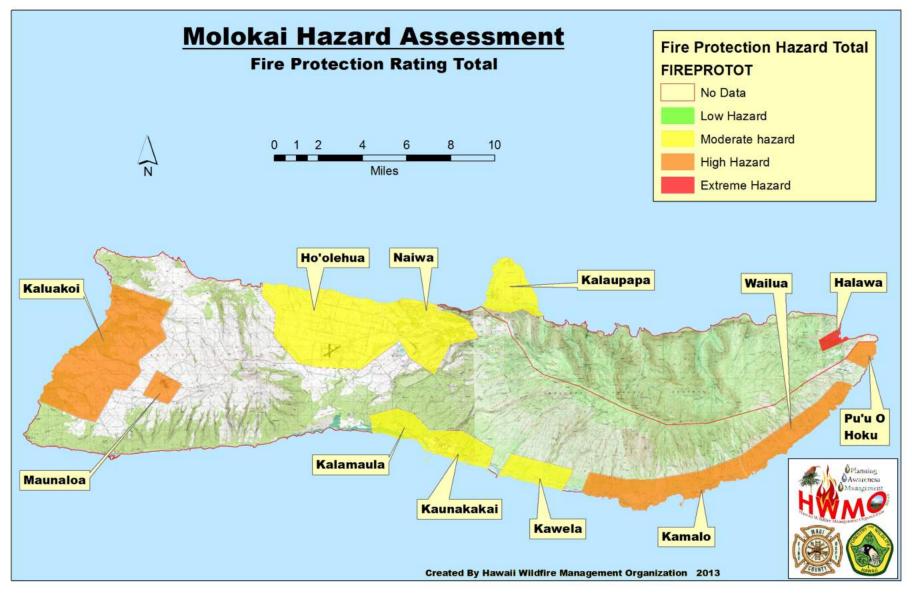




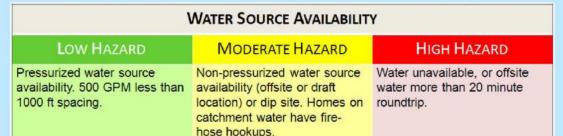
Fire Protection Rating

HWMO Wildfire Hazard Assessment Key

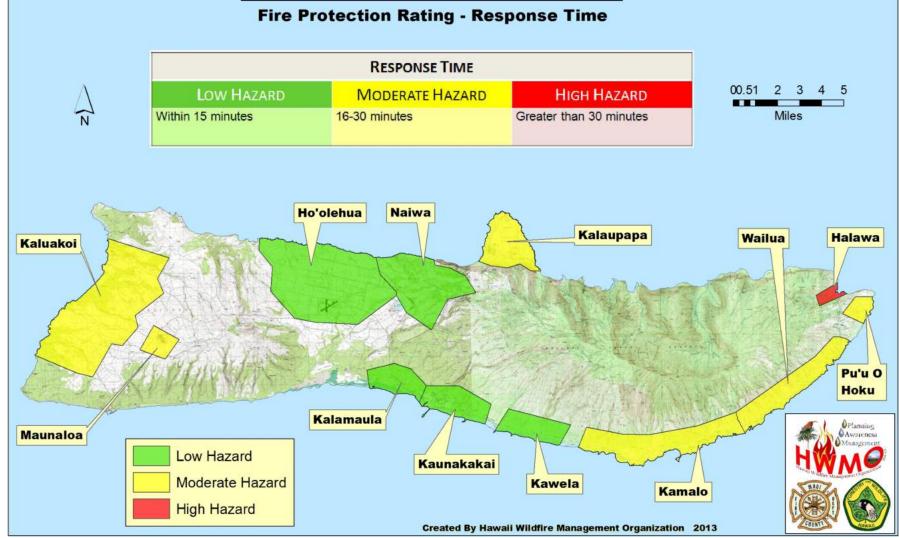
Fire Protection Hazard						
Rating Element	Low (1)	Moderate (2)	High (3)			
Water source availability	Pressurized water source availability. 500 GPM less than 1000 ft spacing.	Non-pressurized water source availability (offsite or draft location) or dipsite. Homes on catchment water have fire-hose hookups.	Water unavailable, or offsite water more than 20 minute roundtrip			
Response time	Within 15 minutes	16-30 minutes	Greater than 30 minutes			
Proximity to fire station	Less than 5 miles	6-10 miles	More than 10 miles			
Fire department structural training and expertise	Large fully paid fire department with personnel that meet NFPA or NWCG training requirements and have adequate equipment.	Mixed fire department. Some paid and some volunteer personnel. Limited experience, training, and equipment to fight fire.	Small, all volunteer fire department. Limited training, experience, and budget with regular turnover of personnel. Do not meet NFPA or NWCG standards.			
Wildland firefighting capability of initial response agency	Sufficient personnel, equipment, and wildland firefighting capability and experience. Good supply of structural and wildland fire apparatus and misc specialty equipment	Limited personnel, and or equipment but with some wildland firefighting expertise and training. Smaller supply of fire apparatus in fairly good repair with some specialty equipment.	Fire department non-existent or untrained/unequipped to fight wildland fire. Minimum amount of fire apparatus, which is old and in need of repair. None or little specialty equipment.			
Interagency Cooperation	Mutual aid agreements and resources available to deploy.	Mutual aid agreements but limited resource availability.	No mutual aid agreements.			
Local emergency operations group or other similar	Active EOG or CERT. Evacuation plan in place.	Limited participation in EOG or similar. Have some form of evacuation process.	EOG or CERT team, etc. organized and active, prepared for evacuation processes			
Community planning practices and ordinances	County/local laws, zoning ordinances, and codes require use of fire safe residential and subdivision designs. Fire department actively participates in planning process and enforces ordinances. Residents are compliant.	Have voluntary ordinances for fire safe practices. Local officials have an understanding of appropriate wildfire mitigation strategies. Fire department has limited input to fire safe planning and development efforts and limited enforcement. Residents are mostly compliant.	No local codes, laws, or ordinances requiring fire safe building or practices. Community standards for fire safe development and protection are marginal or non-existent. Little to no effort has been made in assessing and applying measures to reduce wildfire impact. Ordinances are not enforced and/or residents are not compliant.			
Community fire- safe efforts and programs already in place	Organized and active groups provide educational materials and programs throughout the community.	Limited provision of or interest in educational efforts. Fire Department or local group does some limited prevention and public education.	No interest or participation in educational programs. No prevention education by local fire department.			



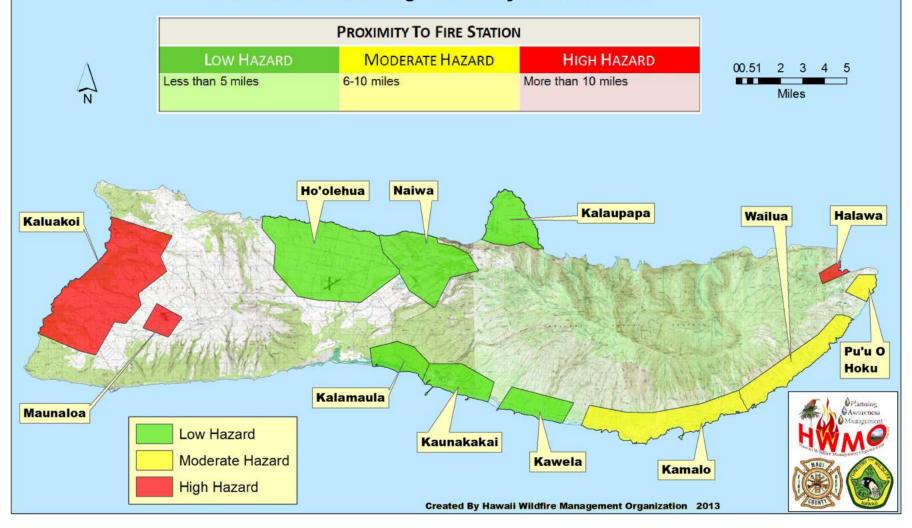
Fire Protection Rating - Water Source Availability







Fire Protection Rating - Proximity to Fire Station



Fire Protection Rating - Fire Department Structural Training & Expertise

FIRE DEPARTMENT STRUCTURAL TRAINING AND EXPERTISE

Low Hazard

with personnel that meet NFPA or NWCG training requirements and have adequate equipment.

MODERATE HAZARD

Large fully paid fire department Mixed fire department. Some paid and some volunteer personnel. Limited experience, training, and equipment to fight fire.

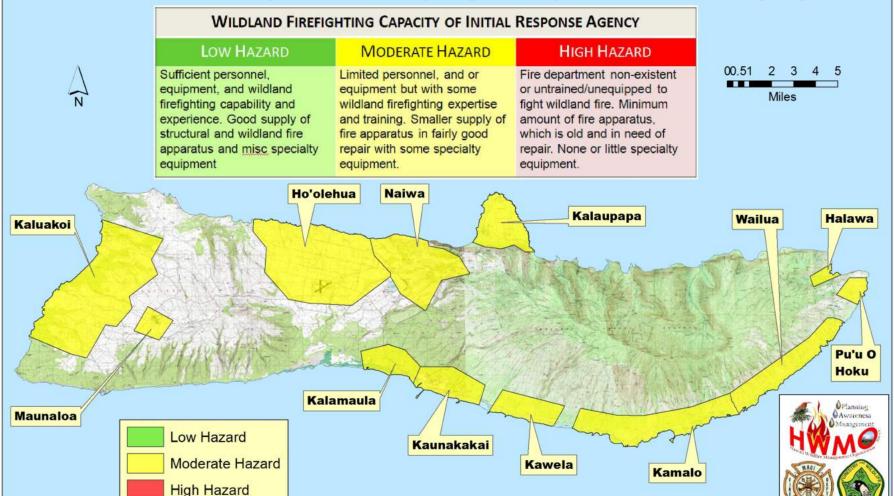
HIGH HAZARD

Small, all volunteer fire department. Limited training, experience, and budget with regular turnover of personnel. Do not meet NFPA or NWCG standards.



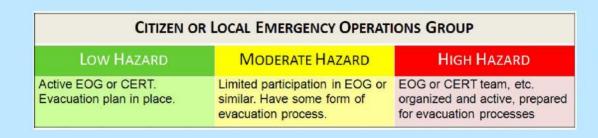


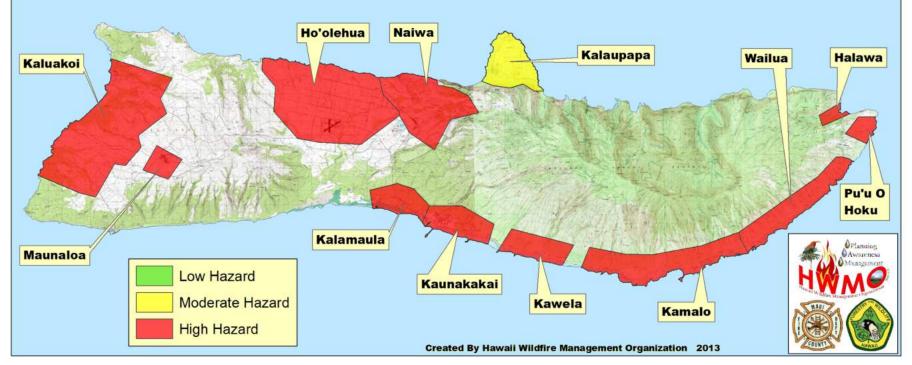
Fire Protection Rating - Wildland Firefighting Capacity Of Initial Response Agency

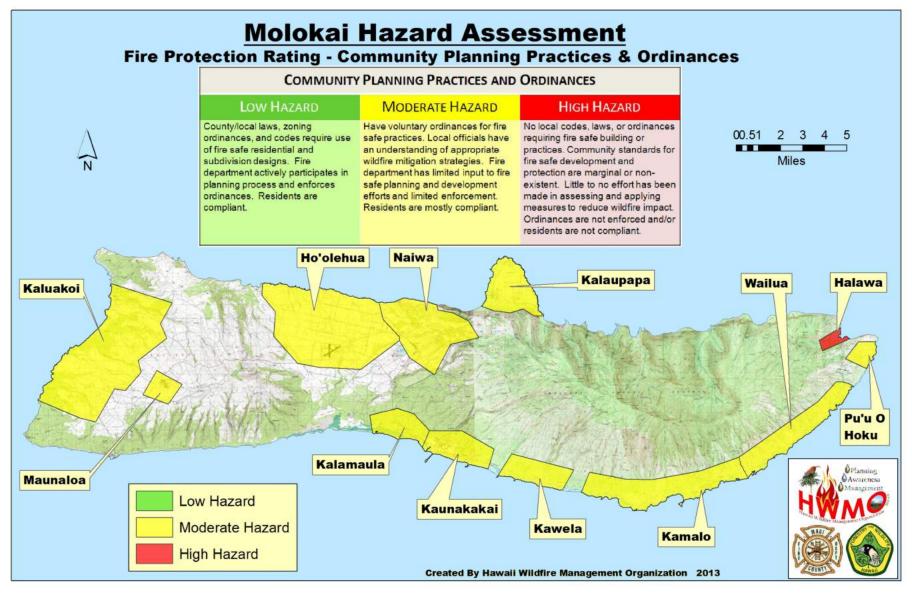


Created By Hawaii Wildfire Management Organization 2013

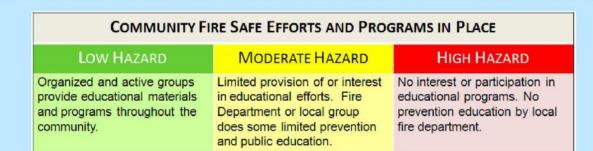
Fire Protection Rating - Local Emergency Operations Group or Citizen Group

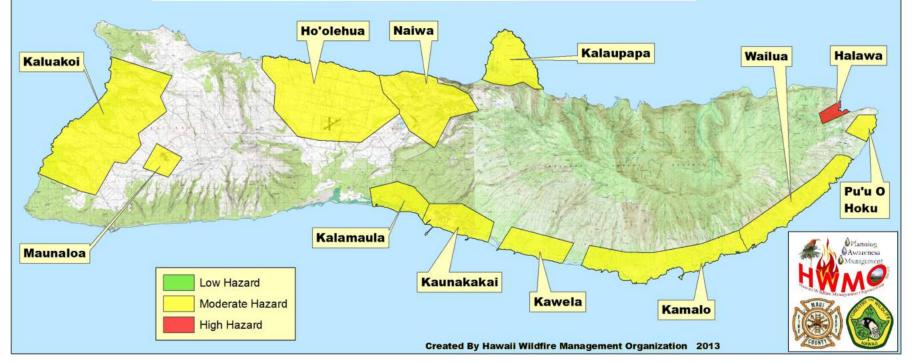






Fire Protection Rating - Community Fire Safe Efforts & Programs Already In Place



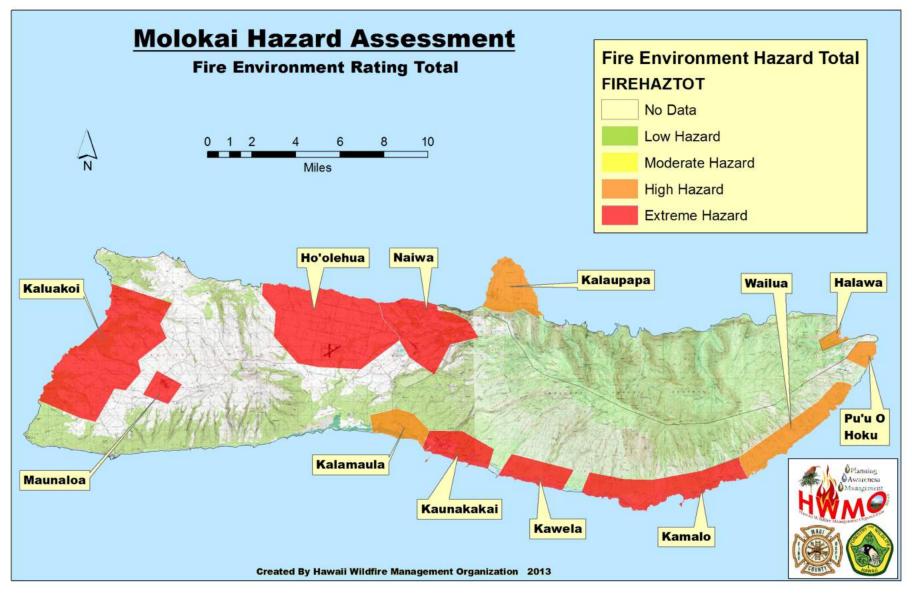


Fire Environment Rating

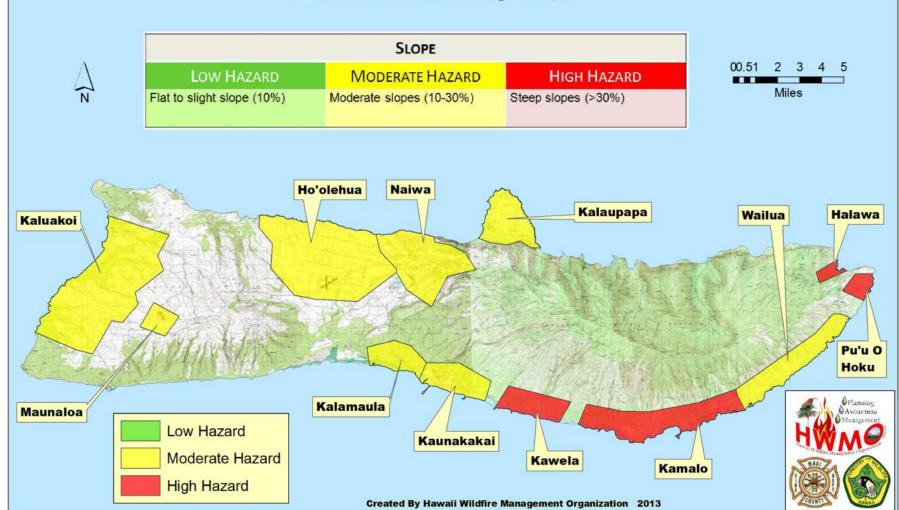
HWMO Wildfire Hazard Assessment Key

Fire Environment Hazard Rating
* Note: two elements have unique scoring for better assessment accuracy

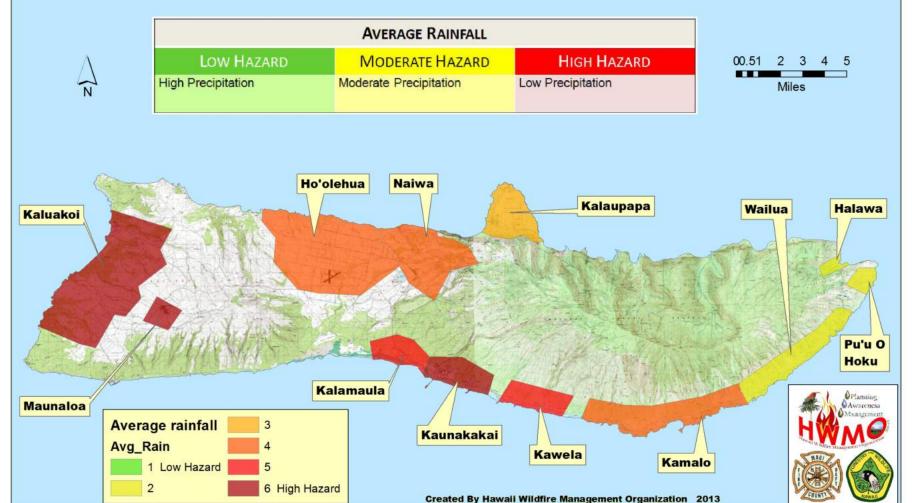
Rating Element	Low (1)		Moderate (2)		High (3)	
Slope	Flat to slight slope (10%)		Moderate slopes (10-30%)		Steep slopes (>30%)	
Average rainfall *Score 1-6 instead	High precipitation (Score=1)	(Score=2)	(Score=3)	(Score=4)	(Score=5)	Low precipitation (Score=6)
Prevailing wind speeds and direction *Score 1-4 instead	Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds.		Wind rarely (less than 10% of time) exceeds 15 mph.		Wind frequently (50% or more of time) exceeds 15 mph or frequent exposure to predominant winds or transitional/converging wind directions.	
Seasonal or periodic high hazard conditions	Area has no major seasonal increase of fire hazard.		Area is occasionally (e.g.,once per decade) exposed to fire prone conditions: drought, lightning storms, desiccated vegetation, and/or strong dry winds		Area is seasonally exposed to unusually severe fire weather, drought conditions, lightning storms, desiccated vegetation, and/or strong dry winds	
Ignition risk	Little to no natural (lightning or lava) ignition risk. No history of arson. Wildland areas absent or distant from public and/or vehicular access.		Some history of wildfire, but not particularly fire prone area due to prevailing lack of fire prone conditions, weather, and vegetation type.		Most historic wildfire events were anthropogenic with easy access to wildland areas via roads or proximity to development OR natural ignition sources such as lightning or lava are prevalent. Fire prone area. High rate of ignitions or history of large scale fires and/or severe wildfire events.	
Topographical features that adversely wildland fire behavior	None.				Major feature such as box canyon, ravines, chutes, saddles, transition zones.	



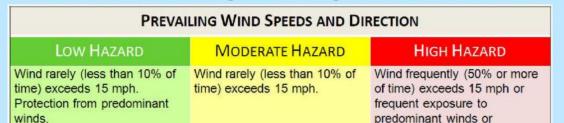
Fire Environment Rating - Slope



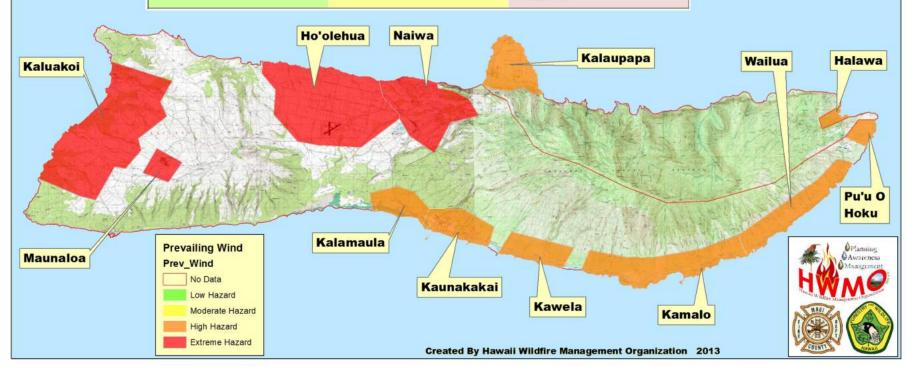
Fire Environment Rating - Average Rainfall



Fire Environment Rating - Prevailing Wind Speeds & Direction



Miles



transitional/converging wind

directions.

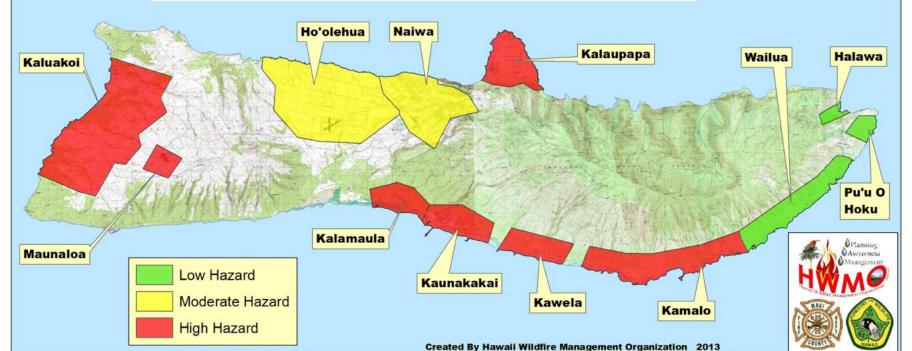
Fire Environment Rating - Seasonal or Periodic High Hazard Conditions

SEASONAL OR PERIODIC HIGH HAZARD CONDITIONS LOW HAZARD MODERATE HAZARD Area has no major seasonal increase of fire hazard. Area is occasionally (e.g., once per decade) exposed to fire prone conditions: drought, lightning storms, desiccated storms, desiccated vegetation,

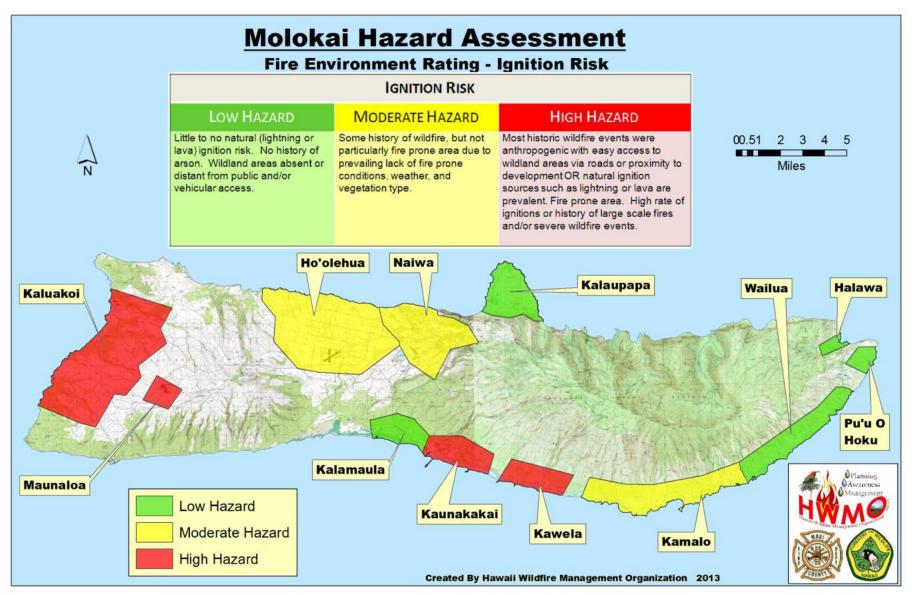
vegetation, and/or strong dry

winds.

Miles



and/or strong dry winds.



Fire Environment Rating - Topographic Features That Adversely Effect Wildland Fire Behavior

