



City of Sisters Wildfire Risk Assessment and Mitigation Plan

Section 1: High Priority Recommendations May 2022

At the request of the City of Sisters, Tamarack Wildfire Consulting has prepared this Wildfire Risk Assessment and Mitigation Plan for City-owned or managed properties. This first section, High Priority Recommendations, identifies four sites as the priorities for treatment. The areas are listed in the order of our recommended priority for treatment.

Background:

All of the following parcels exist in a fire-dependent ecosystem - a region that has evolved with wildfire and relies on it to maintain forest health by recycling nutrients into the soil, removing weaker plants and trees, promoting the next generation of trees and plants, and keeping damaging insects at bay. To maintain forest health it is important to restore fire where possible, but in some locations that isn't feasible. Therefore, the following recommendations focus mostly on fuels reduction without the use of fire as the primary tool for treatment.

Objectives:

The following locations need wildfire mitigations based on the present fuel-loading and/or the values at risk. These actions will not eliminate the chance of wildfire, but should greatly reduce fire intensity and spread. Fuel reduction is achieved by removing ladder fuels to keep fire on the ground and creating gaps between tree crowns and groups of trees. These recommendations are offered as guidance - strict adherence is not intended.

Terminology:

Crown: The part of a tree beginning from the lowest live branches to the top. Crown is defined in width and height. Crown diameter is the diameter of the crown from an overhead view.

Crown Spacing: The distance between crowns from dripline to dripline.

Dripline: The outermost circumference of a tree's canopy from which water drips to the ground.

Firewise: The National Fire Protection Association's (NFPA) Firewise program defines basic fire mitigation actions and parameters, including the zones around structures and other high-value or high-risk items that need protection. These zones are defined as:

- Immediate (0-5 feet from the structure)
- Intermediate (5-30 feet from the structure)
- Extended (30-100 feet from the structure)

Wastewater Treatment Plant - North Block (northern property line south to the fenceline)

This block is approximately 25 acres in size and acts as a “buffer” between the wastewater treatment plant and city limits. It’s rectangular in shape and bordered by the city limits to the north, a barbed wire fence to the south, a private pasture to the east, and the treatment plant access road to the west.

Assessments

- A significant amount of fuel reduction work has been completed in the areas adjacent to the homes (northwest part of the parcel) including regular mowing.
- Areas remain where mature ponderosa pines have brush, ponderosa saplings, and juniper under their driplines (see Image 1). This type of fuel loading can push wildfire into the crowns of the trees which could lead to crown fire in windy conditions.
- Further east along the north boundary, fuel loading increases around the development which is overstocked with live, even-aged trees and dead and down fuels on the forest floor (see Image 2). This area is currently at risk for a high intensity/high severity wildfire should one occur in the area.

Recommendations

- Thin conifer trees to create crown spacing of 15 feet between single and/or groups of trees. Group size is dependent on surrounding conditions (i.e. existence of clearings).
- Remove all trees growing under the driplines of more mature ponderosas.
- Cut all juniper within 18 feet, crown spacing, of a ponderosa pine.
- Prune tree limbs to 8 feet above the ground (or only remove 20% of live crown for shorter trees).
- Remove all brush beneath the drip lines of trees. Remove slash with minimal soil disturbance to reduce the spread of invasive plants like cheatgrass.
- Remove dead logs in areas near trees. They can be retained in open areas.
- Mow brush as needed every 3-5 years.
- Consider prescribed burning in small portions (2-5 acres at a time) using existing trails and access points as fire lines.
- We recommend a wildland professional to mark specific trees for removal.



Image 1: Fuel loading at WWTP North Block



Image 2: Heavy fuel loading near Five Pines

Well Site #1

This well site is the oldest in Sisters and is located in a forested area on private land just south of the city limits off of Elm Street / Three Creeks Road. The City has an easement with the property owner to operate and maintain the well site, access road, and buried water and electrical lines. With the current fuel loading this area is at higher risk than the other well sites.

Assessments

Structure:

- The structure contains the wellhead and is composed of concrete block with a wood cupola on a wood framed roof with metal roofing. Power to the site is buried.

Immediate zone (0-5 feet):

- This area is graveled and meets Firewise standards.

Intermediate zone (5-30 feet):

- Most of the area is graveled with little to no vegetation; except for the northwest corner where there are several ponderosa pine trees with a heavy needle litter layer.

Extended zone (30-100 feet):

- Most of the area is fairly open or stocked with deciduous trees/plants. However there are clumps of ponderosa pine trees in this zone.

Recommendations

Structure:

- Replace any ventilation screens with corrosion resistant, non-combustible wire mesh with openings no larger than 1/8th inch.
- Consider replacing cupola with something made of fire resistant material if possible. If not, make repairs to the cupola.
- Make repairs to the roof and repaint. Consider using fire retardant additives in paint for both roof eaves and cupola.

Immediate Zone (0-5):

- Maintain this area free of all plants and combustible material.
- Consider raking or leaf blowing this area monthly during fire season.

Intermediate Zone (5-30):

- Thin conifer trees to create crown spacing of 15 feet between single trees.
- Prune tree limbs to 8 feet above the ground (or only remove 20% of live crown for shorter trees).
- Remove all brush and heavy accumulations of leaf/needle litter.

Extended Zone (30-100):

- Thin conifer trees to create crown spacing of 15 feet between single and/or groups of trees. Group size is dependent on surrounding conditions (i.e. existence of clearings).
- Prune tree limbs to 8 feet above the ground (or remove 20% of live crown for shorter trees).
- Remove all brush beneath the drip lines of trees.

Note: Most of the recommendations in the Immediate and Intermediate Zones have been met. Some recommendations in the Extended Zone have not been met. Deciduous trees (such as aspen) do not need to be removed.



Image 3: Well #1 Building

Lazy Z Wastewater Site (forested area)

The parcel is approximately 62 acres and is heavily stocked with juniper trees intermixing with ponderosa pine. It is rectangular in shape and runs north-south. It is bordered by private property and US Highway 20 to the east, private property to the south, US Forest Service land to the west, and the City-owned Lazy Z pasture to the north.

Assessments

- Currently the woodlands are a high hazard area due to the parcel being overstocked with ponderosa pine and juniper with an understory of bitter brush (see Image 4).
- Brush is more prevalent near the highway.
- The proximity of the parcel to Highway 20 increases the chance of ignition from passing vehicles (cigarettes, car fire, etc.).
- The potential for rapid, high intensity fire spread - either on the ground or through the canopy - is high in its current state.

Recommendations

- Remove all juniper trees, except in openings where a ponderosa pine is further than 30 feet. Remove or pile and burn juniper slash.
- Thin remaining conifer trees to create crown spacing of 15 feet between single and/or groups of trees. Group size is dependent on surrounding conditions (i.e. existence of clearings).
- Prune tree limbs to 6 feet above ground (or remove 20% of live crown for shorter trees).
- Remove all brush beneath the driplines of trees.
- Mow brush within 300 feet of the boundary with the highway and private land.
- Explore opportunities to use prescribed fire on this parcel (possibly in partnership with the US Forest Service) to enhance forest health.

Note: Due to the presence of cheatgrass on the northern edge of this parcel (in the Lazy Z pasture), minimization of soil disturbance is very important to reduce the chance of cheatgrass spreading through the woodlands.



Image 4: Lazy Z Forested Parcel

Edgington Road Parcel (future well site)

This site is approximately 10 acres shaped in a narrow rectangle running east-west. It is bordered by private woodlands and pasture to the north and east, Edgington Road to the south, and US Forest Service land to the west.

Assessments

Structure:

- One old, small structure on site which is currently not being used (see Image 5).

Wildland Fuels:

- It is heavily stocked with ponderosa pine (especially in the area near the structure) and currently at risk of a high severity fire (see Image 6).
- There is a narrow strip of Forest Service land between the road and the City of Sisters parcel that is dense with juniper and brush.
- There are structures on private land on the eastside of the parcel, as well as a subdivision about 800 feet to the southwest.
- There is a high-voltage power line paralleling the southern property line across the road.

Recommendations

Structure:

- Remove structure if there are no plans for future use.

Wildland Fuels:

- Remove all juniper trees.
- Remove ponderosa pine trees under 8 inches DBH, unless they are 18 feet or further from another tree (trunk to trunk).
- Thin remaining conifer trees to create crown spacing of 15 feet between single and/or groups of trees. Group size is dependent on surrounding conditions (i.e. existence of clearings).
- Prune tree limbs to 8 feet above the ground (or only remove 20% of live crown for shorter trees).
- Remove all brush beneath the drip lines of trees.
- Remove all slash with minimal soil disturbance to minimize the spread of invasive plants like cheatgrass.
- Coordinate with the US Forest Service about removing juniper trees and brush along the strip between the road and the property owned by the City of Sisters.
- Mow brush and then mow every 3-5 years as needed.
- Explore opportunities to use prescribed fire on this parcel (possibly in partnership with the US Forest Service) to enhance forest health.

Note: If the footprint of the proposed well site is known, consider clearing the area when implementing the removal of trees.



Image 5: Edgington abandoned structure



Image 6: Edgington fuel loading



**City of Sisters
Wildfire Risk Assessment and Mitigation Plan**

**Section 2: Remaining Sites Recommendations
May 2022**

This section addresses the remaining City-owned or managed properties not mentioned in the High Priority Recommendations. The following sites are ranked based on a combination of their importance to city operations, their value, and the severity of current wildfire risk. However, it is solely up to City staff how and when these recommended mitigations should be addressed.

1. City Hall

Assessments

Structure:

Structure has cement fiber siding with stone veneer on the bottom 4 feet of the building. Exterior covered areas constructed of heavy timbers. Awnings have metal roofing. No attic or foundation ventilation was evident.

Immediate zone (0-5 feet):

This area consists of pavers in some areas and bark mulch around the majority of the building. This area also has plantings of woody shrubs (see Image 1).

Intermediate zone (5-30 feet):

Area consists of bark mulch and some manicured lawn with a few spruce trees and several ponderosa pines.

Extended zone (30-100 feet):

Manicured lawn with a few trees. Drainage swale lined with river rock and three small ponderosa pine trees. Heavy accumulation of dead leaves/needles and weeds.

Recommendations

Structure:

- None.

Immediate Zone (0-5):

- Remove all plants and combustible material (i.e. bark mulch). Consider replacing with gravel, pavers, or other mineral-based materials.
- Maintain this area as fire free by removing weeds, pine needles, and other plant materials on a regular basis.

Intermediate Zone (5-30):

- Remove all combustible material within five feet of the generator and transformer and replace with gravel (see Image 2).
- Prune spruce trees to 6 feet and remove bark mulch from under the driplines.

Extended Zone (30-100):

- Keep the lawn irrigated and maintained at 4 inches throughout the fire season.
- Clean out accumulations of leaves, needles, and weeds in the drainage swale several times a year.



Image 1: City Hall mulch and plants



Image 2: City Hall generator and vegetation

2. Creekside Campground and Day Use Park

The campground and park are located within the city. Overall risk of fire in the campground and park is relatively low, though there are areas of concern that could result in group torching and crown fire.

Assessments

Structures:

- Bathroom/shower building is constructed entirely of concrete and requires no mitigation.
- Storage shed is wood framed and sided with open eaves. Bird block is adequately screened with 1/8th inch opening wire mesh. The shed is surrounded by gravel and irrigated lawn and requires no mitigation.
- Pedestrian bridge is made of heavy timbers with cedar shake roofing (see Image 3).

Rest of Campground and Park:

- Spruce trees on the west and southern edges of the park pose a hazard to the ponderosa pine overstory. These were planted several years ago to provide visual screening for the adjacent residences. Many of the spruce trees have needle drape from the overstory pines which makes them more volatile in the event of a wildfire.
- High tree density near Whychus Creek.

Recommendations

Structures:

- Replace cedar shake roof on the pedestrian bridge with a non-combustible material.

Rest of Park and Campground

- Remove spruce trees under or near driplines of the overstory ponderosa trees. Consider replacing with alternative screening such as hardwoods, Oregon grape holly, or other fire resistant shrubs or trees.
- Remove juniper trees that are under ponderosa pine trees.
- Consider selective thinning in the areas where tree density is high.



Image 3: Creekside pedestrian bridge with shake shingles and heavy timbers.

3. Wastewater Treatment Plant (Remaining Forested Areas)

Assessments

The site comprises all of the open space south of the “buffer” parcel mentioned in the High Priorities section. This site is bordered on the north by a barbed-wire fence running east-west. Due to the frequent irrigation and mowing, there is low risk of a ground fire. Tree density levels are high in places and would support a crown fire. Overall forest health is poor, possibly because of tree density.

Recommendations

- Remove all juniper.
- Remove all suppressed and intermediate ponderosa pine (trees that are damaged or deformed and have a low probability of survival).
- Selectively thin trees to create gaps in the canopy to reduce risk of crown fire and promote forest health.
- Remove large woody debris, brush, and trees that are under the driplines of ponderosa pines.
- Prune tree limbs to 6 feet above ground (or remove 20% of live crown for shorter trees).
- Consider planting deciduous species in areas where more screening is desired, such as the northeastern portion of the parcel. Quaking aspen and native willow might do very well in the irrigated areas.
- Explore opportunities to use prescribed fire on this parcel (possibly in partnership with the US Forest Service) to enhance forest health and reduce the risk of a high-severity fire.

4. East Portal

Assessments

This is a large parcel within the city limits recently acquired by the City from the US Forest Service. The majority of the property is triangular-shaped and bordered by 3 major streets. A one acre parcel is located across W. Hood Ave from the main parcel. Structures include a public restroom and a shelter / information kiosk. Other improvements include a small parking area and driveway, wooden picnic benches, and informational signage.

The majority of the property is forested with ponderosa and juniper trees and covered in native bushes including rabbitbrush, sagebrush, and bitterbrush. In its current state, this parcel is capable of sustaining both ground and crown fire, especially being bordered to the west and northeast by forested parcels.

Structures:

- There are accumulations of pine needles on the roofs (see Image 4).
- There are louvered vents on the restroom which have insufficient screening (see Image 5).

Immediate zone (0-5 feet):

- This area has gravel, asphalt, or grass.

Intermediate zone (5-30 feet):

- Primarily brush, grass, and timber litter with some trees.

Extended zone (30-100 feet):

- Grass, brush, and ponderosa pine. Heavily stocked in some areas.

Recommendations**Structures:**

- Replace any ventilation screens with corrosion resistant, non-combustible wire mesh with openings no larger than 1/8th inch.
- Remove pine needle litter from roofs throughout the fire season.

Immediate Zone (0-5):

- Remove all plants and combustible material (see Images 4 and 6).
- Maintain this area as fire free by removing weeds, pine needles, and other plant materials on a regular basis.

Intermediate Zone (5-30):

- Thin conifer trees to create crown spacing of 15 feet between single trees.
- Prune tree limbs to 8 feet above the ground.
- Remove all brush and heavy accumulations of leaf/needle litter.

Extended Zone (30-100) and rest of the parcel:

- Thin conifer trees to create crown spacing of 15 feet between single and/or groups of trees. Group size is dependent on surrounding conditions (i.e. existence of clearings).
- Prune tree limbs to 8 feet above the ground (or only remove 20% of live crown for shorter trees).
- Remove brush under the driplines.
- Remove junipers that are within or close to driplines.
- Explore opportunities to use prescribed fire on this parcel (possibly in partnership with the US Forest Service) to enhance forest health.

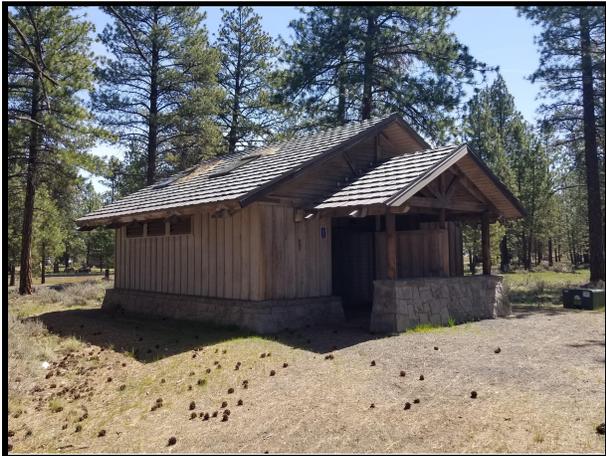


Image 4: East Portal restroom



Image 5: East Portal restroom vents



Image 6: East Portal shelter / kiosk

5. Sun Ranch Sewer Pump Station

Assessments

Structure:

Small structure with fiberglass housing.

Immediate zone (0-5 feet):

Structure is surrounded by 3-5 feet of concrete paving.

Intermediate zone (5-30 feet):

The electric service panel is located on a wooden structure. There is a wood fence with bark mulch, feather reed grass, and small arbor vitae trees (see Image 7).

Extended zone (30-100 feet):

Not applicable.

Recommendations

Structure:

- None.

Immediate Zone (0-5):

- Remove all plants and combustible material.
- Maintain this area as fire free.

Intermediate Zone (5-30):

- Replace mulch with gravel.
- Remove plants and replace them with fire-resistant plants.
- Consider treating the fence with fire retardant.
- Consider treating the service panel with fire retardant.

Extended Zone (30-100):

- Not applicable.



Image 7: Sun Ranch sewer pump station

6. Water Reservoir Site

Assessments

Structure:

The reservoir is constructed out of concrete and other non-flammable materials. There is a small out building (SE of the reservoir structure) with an open doorway.

Immediate zone (0-5 feet):

This area is graveled around both structures.

Intermediate zone (5-30 feet):

The first 20 feet around the reservoir is graveled with some brush outside the fence line in the 20-30 foot zone. There is some brush, saplings, and large woody debris to the east of the small structure in this zone.

Extended zone (30-100 feet):

This area is an easement on Forest Service land and includes an empty reservoir site to the SW which is a future well site. The Forest Service land is overstocked in places and has fuel loadings above NFPA recommendations for this zone.

Recommendations**Structure:**

- Replace any ventilation screens with corrosion resistant, non-combustible wire mesh with openings no larger than 1/8th inch.

Immediate Zone (0-5):

- Maintain this area as fire free. Remove organic litter (pine needles, pine cones, etc.) on an annual basis before fire season.

Intermediate Zone (5-30):

- Thin conifer trees to create crown spacing of 15 feet between single trees.
- Prune tree limbs to 8 feet above the ground (or only remove 20% of live crown for shorter trees).
- Remove all brush and heavy accumulations of leaf/needle litter.

Extended Zone (30-100):

- Thin conifer trees to create crown spacing of 15 feet between single and/or groups of trees. Group size is dependent on surrounding conditions (i.e. existence of clearings).
- Prune tree limbs to 8 feet (or only remove 20% of live crown for shorter trees).
- Remove all brush beneath the drip lines of trees.

Note: Most of the recommendations in the Immediate and Intermediate Zones have been met. Some recommendations in the Extended Zone have not been met. Deciduous trees (such as aspen) do not need to be removed. Continue to engage in discussions with the Forest Service on implementing fuels reduction on their land surrounding the reservoir site. The District Fire Management Officer is optimistic that work on this site could begin as early as spring of 2023.

7. Village Green Park

Assessments

Village Green Park has a low risk for a wildfire starting or spreading in the park. A well-maintained lawn exists throughout the park with mature ponderosa pine and juniper trees scattered throughout the parcel. A fire start is not likely to occur due to the well maintained lawn. The Gazebo and Picnic structures have shake roofs which would be in danger of igniting if an ember from a fire or spark from the chimney were to land on them (see Images 8 and 9).

Recommendations

- Replace cedar shake roofs with a non-combustible roofing material.
- Inspect chimney for a spark arrestor and install if needed.
- Consider selectively thinning juniper trees along S. Elm St. (across from the fire station).
- Remove pine needles and other woody debris from roofs on a regular basis during fire season.



Image 8: Village Green bandstand - shingles



Image 9: Village Green picnic shelter - shingles

8. Main Sewer Pump Station

Assessments

Structure:

The structure is brick with a wood framed roof and metal roofing. Soffits are ventilated with a continuous stamped metal louver. There are two louvered and screened doors and two walls have louvered openings for ventilation.

Immediate zone (0-5 feet):

This area is mostly bare soil with weeds.

Intermediate zone (5-30 feet):

This area is mostly bare soil with weeds and surrounded by fencing. Two sides are wood privacy fence and the other two sides are metal chain link fence.

Extended zone (30-100 feet):

This area is mostly bare soil with weeds. A transformer is surrounded by bark mulch. Juniper trees are overhanging the wood privacy fence.

Recommendations**Structure:**

- Replace any ventilation screens in disrepair or with openings larger than 1/8th inch with corrosion resistant, non-combustible wire mesh with openings no larger than 1/8th inch.

Immediate Zone (0-5):

- Remove all plants and combustible material.
- Maintain this area as fire free by removing weeds and debris on a regular basis during fire season.

Intermediate Zone (5-30):

- Trim grass and weeds regularly throughout the fire season to maintain a height of no more than 4 inches.
- Consider treating the wood fence with fire retardant.

Extended Zone (30-100):

- Remove all combustible material within 5 feet of the transformer, replace with gravel.
- Trim grass and weeds regularly throughout the fire season to maintain a height of no more than 4 inches.
- Prune juniper trees overhanging the wood fence. Consider treating fence with fire retardant.



Image : Main sewer pump station

9. Well Sites #2, #3, #4

These three well sites, while varying in location, share similar structures and landscaping. Therefore, they are grouped together in the event the City addresses the mitigations all at once.

Well Site #2

Assessments

Structure:

The structure contains the wellhead and is composed of concrete block with a wood framed roof with metal roofing and a ventilation hatch on the roof.

Immediate zone (0-5 feet):

This area is graveled though it has a number of weeds and two ornamental grasses. There is a concrete walkway in the front.

Intermediate zone (5-30 feet):

Partially graveled with weeds.

Extended zone (30-100 feet):

Not applicable.

Recommendations

Structure:

- Replace any ventilation screens in disrepair or with openings larger than 1/8th inch with corrosion-resistant, non-combustible wire mesh with openings no larger than 1/8th inch.

Immediate Zone (0-5):

- Remove all plants and combustible material.
- Maintain this area as fire free by removing weeds and debris on a regular basis during fire season.

Intermediate Zone (5-30):

- Trim grass and weeds regularly throughout the fire season to maintain a height of no more than 4 inches.

Extended Zone (30-100):

- Not Applicable

Well Site #3**Assessments****Structure:**

The structure has an asphalt shingle roof with stone veneer siding. Soffits are ventilated with a continuous stamped metal louver. Two walls have large ventilation openings (see Image 10).

Immediate zone (0-5 feet):

This area is partially graveled with some areas of bark mulch and weeds.

Intermediate zone (5-30 feet):

Mostly grass with a metal fence.

Extended zone (30-100 feet):

Not applicable.

Recommendations**Structure:**

- Replace any ventilation screens in disrepair or with openings larger than 1/8th inch with corrosion resistant, non-combustible wire mesh with openings no larger than 1/8th inch.

Immediate Zone (0-5):

- Remove all plants and combustible materials. Replace with gravel.

- Maintain this area as fire free by removing debris regularly during fire season.

Intermediate Zone (5-30):

- Trim grass and weeds regularly throughout the fire season to maintain a height of no more than 4 inches.

Extended Zone (30-100):

- Not applicable.

Well Site #4

Assessments

Structure:

The structure has an asphalt shingle roof with wood and stone veneer siding (see Image 11). Soffits are ventilated with a continuous stamped metal louver. Two walls have large ventilation openings.

Immediate zone (0-5 feet):

This area is graveled.

Intermediate zone (5-30 feet):

This area has a metal fence and native vegetation.

Extended zone (30-100 feet):

Not applicable.

Recommendations

Structure:

- Replace any ventilation screens in disrepair or with openings larger than 1/8th inch with corrosion resistant, non-combustible wire mesh with openings no larger than 1/8th inch.

Immediate Zone (0-5):

- Maintain this area as fire free by removing weeds and other debris on a regular basis during fire season.

Intermediate Zone (5-30):

- Trim grass and weeds regularly throughout the fire season to maintain a height of no more than 4 inches.

Extended Zone (30-100):

- Not applicable.



Image 10: Well # 3



Image 11: Well #4

10. Public Works Headquarters Buildings

Assessments

Structures:

There are 3 large structures; Public Works Headquarters, Public Works Shop, and the Wastewater Lab. Each has a low risk of wildfire due to construction materials and fire-rated roofs. There are louvered vents on the south side of the headquarters building which have insufficient screening (see Image 12). These vents are likely part of the HVAC system and may have volume requirements that could be restricted by smaller opening wire mesh.

Immediate zone (0-5 feet):

This area has gravel, asphalt, or grass.

Intermediate zone (5-30 feet):

Primarily gravel, asphalt, or grass.

Extended zone (30-100 feet):

There are some forested areas north and west of the buildings in the outer edge of this zone.

Recommendations

Structures:

- Replace any ventilation screens with corrosion resistant, non-combustible wire

mesh with openings no larger than 1/8th inch (dependent on if vents are connected to HVAC systems).

Immediate Zone (0-5):

- Remove all plants and combustible material.
- Keep vegetation on the south side of the buildings mowed to under 4 inches in height.
- Maintain this area as fire free by continuing to not store any combustible materials against the structure.

Intermediate Zone (5-30):

- Thin conifer trees to create crown spacing of 15 feet between single trees.
- Prune tree limbs to 8 feet above the ground.
- Remove all brush and heavy accumulations of leaf/needle litter.

Extended Zone (30-100):

- Thin conifer trees to create crown spacing of 15 feet between single and/or groups of trees. Group size is dependent on surrounding conditions (i.e. existence of clearings).
- Prune tree limbs to 8 feet above the ground (or only remove 20% of live crown for shorter trees).
- Remove all brush beneath the drip lines of trees.

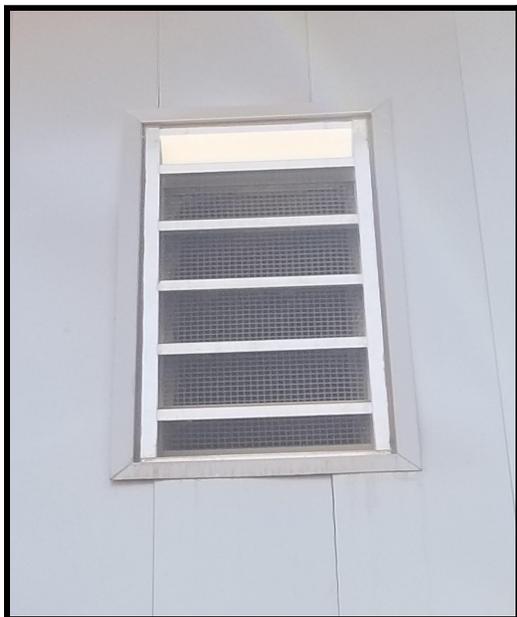


Image 12: Louvered vent on HQ building