Kent Taylor Civic Hall
200 NE Second Street
McMinnville, OR 97128

Joint City Council & Planning Commission
Work Session Meeting Agenda
Wednesday, January 21, 2026
6:00 p.m. – Work Session

Welcome! The public is strongly encouraged to participate remotely but there is seating at Civic Hall for those who are not able to participate remotely. However, if you are not feeling well, please stay home and take care of yourself.

You can live broadcast the City Council Meeting on cable channels Xfinity 11 and 331, Ziply Fiber 29 or webstream here:
www.mcm11.org/live
Download the "Cablecast" app on iOS, Android, Roku, Apple TV or Amazon Firestick and watch McMinnville City Council on all your devices.

JOINT WORK SESSION:
You may join online via Zoom Webinar Meeting:
https://mcminnvilleoregon.zoom.us/j/83711846321?pwd=fmC1R4LDuU90f3JIjhVzbuaBDOfOiT.1
Or you can call in and listen via Zoom: 1-253- 215- 8782
Webinar ID: 837 1184 6321

6:00 PM – JOINT CITY COUNCIL & PLANNING COMMISSION WORK SESSION – VIA ZOOM AND SEATING AT CIVIC HALL

1. MAYOR MORRIS CALLS JOINT MEETING TO ORDER
2. WORK SESSION – NATURAL RESOURCES PLANNING PROGRAM
3. WORK SESSION – NATURAL HAZARDS PLANNING PROGRAM
4. MAYOR MORRIS ADJOURNMENT OF JOINT MEETING

Meeting Accessibility Services and Americans with Disabilities Act (ADA) Notice: Kent Taylor Civic Hall is accessible to persons with disabilities. A request for an interpreter for the hearing impaired or for other accommodations for persons with disabilities should be made a least 48 hours before the meeting to the City Recorder (503) 435-5702 or *CityRecorderTeam@mcminnvilleoregon.gov*.

City of McMinnville
PLANNING

STAFF REPORT

DATE: **January 21, 2026**
TO: **Adam Garvin, Interim City Manager**
SUBMITTED BY: **Heather Richards, Community Development Director**
WRITTEN BY: **Taylor Graybehl, Senior Planner**
SUBJECT: **Work Session: Natural Resources**

Report in Brief:

This is a work session to provide the City Council and Planning Commission with an update on the City's Oregon Land Use Goal 5 (Natural Resources) planning effort, which is required as part of the City's recent Urban Growth Boundary amendment (April 2021).

This report outlines the work completed to date, answers to questions raised at the last joint work session on the topic, and key questions that staff would like to discuss with the City Council and Planning Commission to move the project forward to the next step.

Background:

In December 2020, the City of McMinnville adopted Ordinance No. 5098, formally approving the McMinnville Growth Management and Urbanization Plan (MGMUP) and the 2020 Urban Growth Boundary (UGB) Update. (This was then accepted and acknowledged by the Department of Land Conservation and Development without appeal in April, 2021). During the evaluation of land for the potential UGB expansion, the City identified a range of natural resources—both within the proposed expansion areas and the existing UGB—that warranted further study and protection.

To support this effort, the City retained Winterbrook Planning in 2021 to lead the Natural Resources planning process. Through this work, the City identified

key environmental assets, including riparian corridors, tree groves, scenic views, significant trees, and landmark trees, as priority resources for preservation and protection.

Riparian Corridors

Winterbrook Consulting completed a riparian corridor inventory for fish-bearing rivers and streams within McMinnville's newly adopted Urban Growth Boundary (UGB). The assessment followed the "safe harbor" provisions outlined in OAR 660-023-0090(5), consistent with Oregon's Statewide Planning Goal 5. According to these guidelines:

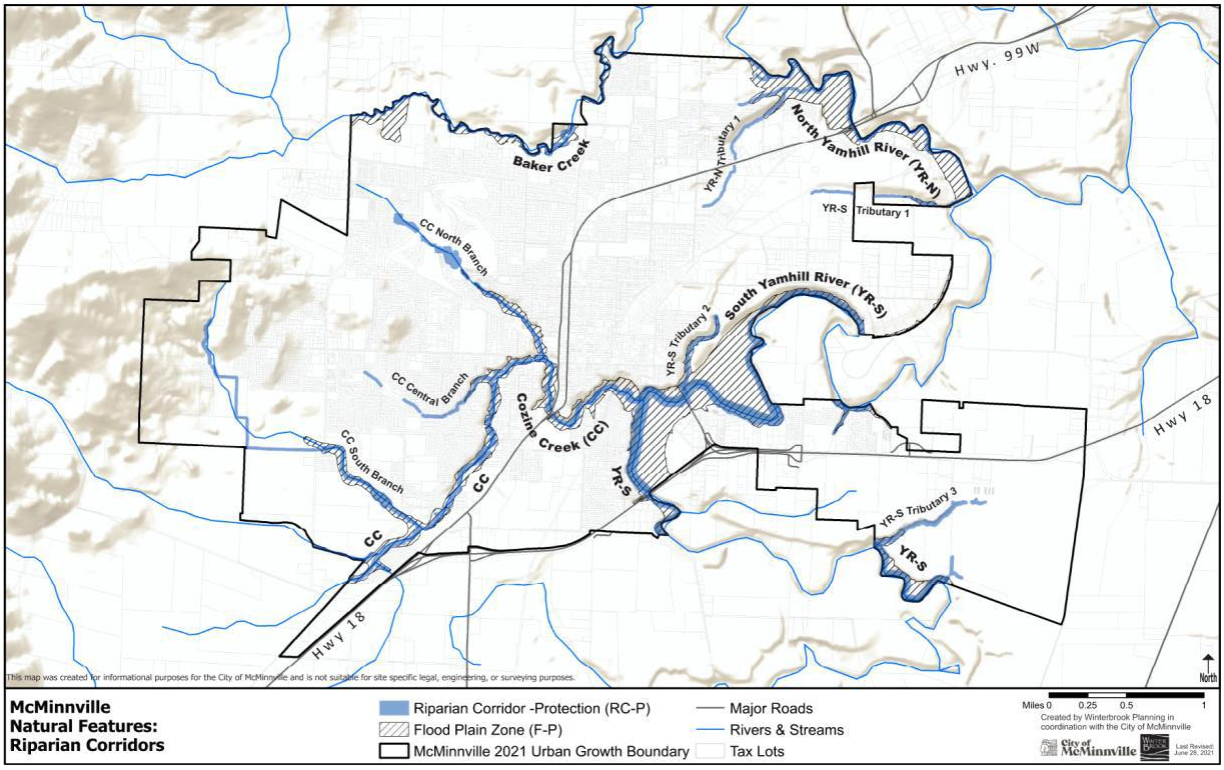
- Stream reaches with an average annual flow of 1,000 cubic feet per second (cfs) or greater require a 75-foot riparian corridor from the top-of-bank.
- Stream reaches with less than 1,000 cfs require a 50-foot riparian corridor.

The inventory process included two components:

1. Review of existing data to identify and assess riparian resources.
2. Field inventory to verify and supplement the existing information.

Below is a map identifying the Riparian Corridor Protection District (RC-P).

(see next page)



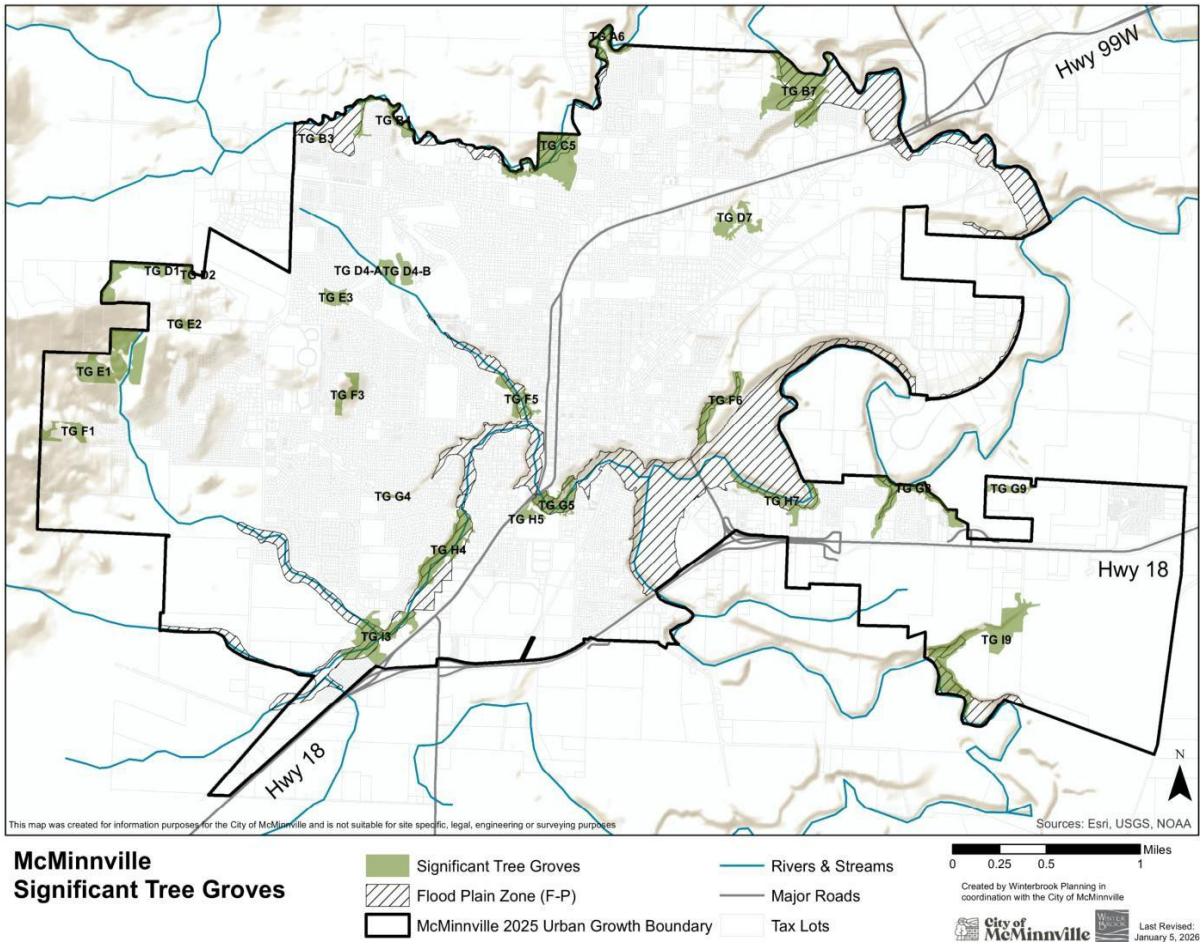
Significant Tree Groves

Winterbrook Consulting completed a Tree Grove Inventory for McMinnville under OAR 660-023-0030, identifying and evaluating groves based on size, condition, and ecological value.

Key Steps:

- Mapping: City staff and Winterbrook used aerial imagery and GIS to identify groves ≥1 acre outside floodplains. Thirty (30) tree groves were identified.
- Field Survey: Groves were assessed from public access points using Tree Grove Assessment (TGA) forms.
- Evaluation: 30 tree groves were scored (based on a total of 50 points) across 10 functional criteria.
- Results: 26 tree groves scored above 25 and were deemed "significant" and worthy of protection; management recommendations were provided where applicable.

Below is a map identifying the Tree Grove Protection Subdistrict (TG-P).



Scenic Viewpoint and Viewsheds

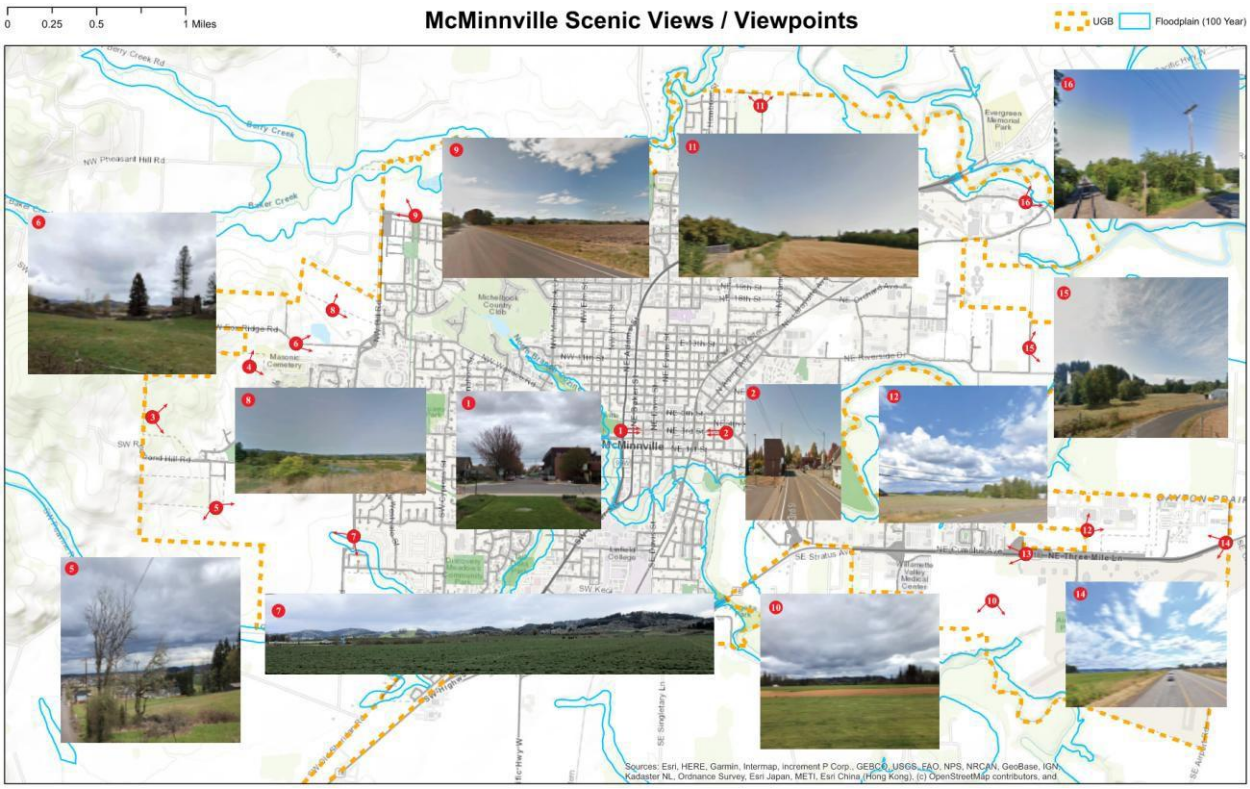
Winterbrook Planning and City staff identified 16 scenic viewpoints on public lands within McMinnville's Urban Growth Boundary. Selected through fieldwork and GIS analysis, each viewpoint offers valued views of the natural and built environment. The inventory includes mapped viewsheds and a summary of visible features.

Protected Viewsheds Include:

- Mountain views – Cascade Range, including Mt. Jefferson and Mt. Hood, and the Coast Range areas.
- Hill views - McMinnville's West Hills, Red Hills of Dundee, Amity Hills, and
- Chehalem Mountains, including forested areas.
- Agricultural land views - Cropland, pastures, orchards, and vineyards.

- Riparian corridor views - Forests and floodplains along the North and South Yamhill Rivers and Baker Creek.
- Gateway views - Views entering the City along Highway 18 and views of Downtown historic buildings and tree-lined streets.
- City views – Views of the City from the West Hills, including downtown, forested riparian corridors, and park views.

Below is a map identifying the scenic views and viewpoints.



June 18, 2025 Joint Work Session

A joint work session between the City Council and Planning Commission was held on June 18, 2025, to discuss the proposed program. Meeting materials and the session recording are available here https://www.mcminnvilleoregon.gov/citycouncil/page/joint-work-session-city-council-planning-commission-meeting-600-pm-2.

During the meeting, staff opened with a presentation explaining the program, followed by a time for the Planning Commissioners and City Councilors to ask questions or provide direction.

The following questions and directions remained from the meeting and are briefly answered below. Some of the programmatic questions are discussed in more detail in the discussion section of this staff report.

Question #1: Does our code give the Director the ability to assess the maliciousness of intent to determine what should be the fee for removing a protected tree, or does the code flatly determine it?

Staff Response: Please see the attached memo "Fee for Tree Removal".

Question #2: Economic hardship scope for applications to alter groves? Will it be subjective?

Staff Response: Section 17.47.280 requires applicants to seek a variance and meet specific criteria related to significant tree groves. The Planning Commission is responsible for reviewing these requests. While the Commission retains some discretion, approval is contingent upon the applicant demonstrating compliance with stringent standards.

Question #3: If the grove gets too small later (disease or invasives being removed), can the grove be eliminated from protection?

Staff Response: Yes, the grove would be removed from protection if it fell below the scoring or size thresholds for a significant tree grove.

Question #4: Concerns were raised about regulating individual trees on private property. What burden should be placed on private property, and how will the program be managed, considering the impact on staff resources?

Staff Response: Staff worked with the Landscape Review Committee to modify the significant and landmark tree program. Please see in "discussion" below for more details.

Work Completed Since the June 18, 2025 Joint Work Session

Since the June 18 work session, the City has taken the following steps to advance the natural resources program:

1. Property Owner Outreach: On August 8, 2025, the City notified property owners whose land includes potentially significant tree groves, allowing time for feedback or evidence to modify grove boundaries and designation. Responses included both support for the program and requests for modifications. As a result, some grove boundaries were adjusted, and one grove was removed from the significant list.
2. Landscape Review Committee Engagement: Staff met with the Landscape Review Committee on December 3 and 29 to review the proposed program. The Committee recommended adoption with revisions to the significant/landmark tree provisions.
3. Agency Coordination: Planning staff collaborated with internal departments and partner agencies to develop the inventories and draft code. This process included in-person meetings and two comment periods, each lasting two weeks.

The final bundle of tools recommended for natural resource management and protection are: inventory maps, McMinnville Municipal Code Title 17 amendments that include a new chapter entitled "Natural Resources Protections Overlay Zones" (Chapter 17.47) for riparian corridor and tree grove management and protection, updates to Chapter 17.58, "Trees", for significant and landmark trees, updates to Chapter 17.06, "Definitions" to incorporate new definitions, and a new Comprehensive Plan Chapter XI, "Natural Resources".

Discussion:

The City needs to complete its Natural Resources work. Questions remain about which protective measures the City wants to codify and how those measures affect both private and public development projects within the City, now and into the future. Specifically, staff seek guidance on two issues: riparian corridor boundaries and the significant/landmark tree program.

Riparian Corridor Boundaries

In 2022, the City Council directed staff to proceed under the state law's "safe harbor" for the inventory and management of riparian corridors. This "safe harbor" is a pre-approved inventory process by the State of Oregon that

allows cities to adopt riparian corridor protection districts without requiring additional analysis by the City, and said districts are not subject to appeal. City Council provided direction to use this safe harbor, as it was a streamlined approach that would save time and money in creating the inventory and reduce the opportunities for future appeals.

Under that direction, the inventory was prepared using the "safe harbor" provisions in OAR 660-023-0090(5). According to these guidelines:

- Stream reaches with an average annual flow of 1,000 cubic feet per second (cfs) or greater require a 75-foot riparian corridor from the top-of-bank.
- Stream reaches with less than 1,000 cfs require a 50-foot riparian corridor.

Using these guidelines, the South Yamhill River has a riparian corridor width of 75 feet from top-of-bank, and the remaining riparian corridors have a width of 50 feet from top-of-bank.

To comply with Council direction, the management program was prepared in accordance with the "safe harbor" provisions in OAR 660-023-0090(8). These guidelines are summarized as:

- Limits on Development: Permanent alteration of riparian areas is prohibited, except for limited uses (e.g., roads, utilities, water-dependent uses, and replacement of existing structures) that minimize intrusion.
- Vegetation Management: Removal of riparian vegetation is restricted, with allowances for removing non-native species (when replaced with native species) and vegetation necessary for water-related uses.
- Farm and Forest Zones: Vegetation removal in areas zoned for farm or forest use is exempt from regulation.
- Relief Mechanisms: The ordinance provides a process for hardship variances, correction of mapping errors, and relief for parcels rendered unbuildable by the ordinance.
- Alternative Protections: Limited development within the riparian corridor may be allowed if equal or better resource protection is demonstrated, provided no more than 50% of the riparian width is impacted.

The proposed program is presented in Chapter 17.47, "Natural Resources Protections Overlay Zones." The program has been crafted to meet all the above requirements.

Landmark Trees and Significant Trees

The proposed amendments to Chapter 17.58, "Trees," establish a framework for significant and landmark tree protection on private and public property within the Urban Growth Boundary (UGB). The update introduces two new categories of protected trees, Landmark Trees and Significant Trees. Also, it clarifies review procedures, establishes enforceable, consistent mitigation requirements, and aligns the chapter with current arboricultural best practices.

On June 18, 2025, concerns were raised regarding the potential scope and impact of the proposed Landmark and Significant Tree Program, particularly its effects on private property owners and city resources. The program is designed to safeguard trees exceeding a certain size on both public and private lands.

Following the June 18 meeting, city staff engaged with the Landscape Review Committee to address these concerns. As a result, the committee has recommended modifications to the program that continue to protect significant trees while also enhancing property rights and ensuring responsible use of city resources. These changes include increasing the minimum caliper threshold for a tree to be considered significant, exempting residential lots under 20,000 square feet that are developed with or have a building permit for a single-family residence or middle-housing, and allowing vacant properties to remove up to 2 significant trees per year. Staff concur with the Landscape Review Committee's recommendation.

Below is a summary of the program:

As proposed on June 18, 2025:

- Landmark Trees:
    - Trees located on public or private land within the UGB that are either:
        - 36 inches or greater in diameter at breast height (dbh), or
        - Oregon white oak trees that are 12 inches dbh or greater.
- Trees determined to be hazardous, diseased, dead, or nuisance species—as verified by the Planning Director in consultation with a

certified arborist—are excluded from this designation.

- Significant Trees:
    - Trees between 12 inches and 36 inches dbh on public or private land within the UGB, or
    - Trees 6 inches dbh or greater located within the F-P Flood Area Zone, the Natural Hazard – Protection (NH-P) Subdistrict, or the Riparian Corridor – Protection (RC-P) Subdistrict.
    - As with landmark trees, hazardous, diseased, dead, or nuisance trees are excluded based on professional assessment.

Landscape Review Committee and Staff Recommendation

- Landmark Trees:
    - Landmark Trees are identified in a City's tree inventory and designated voluntarily by property owners who choose to opt in.
- Significant Trees:

  A tree is considered Significant if it meets one of the following criteria:
    - It has a diameter at breast height (DBH) of 36 inches or more, or
    - It is an Oregon white oak with a DBH of 20 inches or more.
- Applicability. These standards apply to all Significant Trees located on public and private properties within the Urban Growth Boundary (UGB), with the following exceptions:
    - Small Residential Parcels:

      Parcels under 20,000 square feet that are either developed with, or have an active building permit for, the following housing types: cottage clusters, plexes, single dwellings, or townhouses.

      Note: Tree removal on these parcels does not require a permit, and replacement tree requirements do not apply.
    - Undeveloped Parcels:

      Up to two Significant Trees may be removed per calendar year without a permit, and replacement tree requirements do not apply.
    - Exempt Trees:

      Trees determined to be hazardous, diseased, dead, or nuisance species may be excluded based on a qualified professional assessment as accepted by the City. Replacement tree requirements do not apply.

Staff also recommends removing the "historic tree" category and consolidating that tree type under the proposed "landmark tree" category. This would reduce the number of lists that need to be maintained while still protecting individual trees categorized by age.

Next Steps

Pending discussion and questions from the Planning Commission and City Council, staff recommend bringing the draft program to the Planning Commission for a public hearing on March 19, 2026, to begin the adoption process. Before the hearing, the City will issue a Measure 56 notice to those properties that contain a significant tree grove.

Attachments:

1. Draft Chapter 17.06 "Definitions"
2. Draft Chapter 17.47 "Natural Resources Protection Overlay Zones"
3. Draft Chapter 17.58 "Trees"
4. Draft Comprehensive Chapter XI "Natural Resources"
5. Draft McMinnville Tree Grove Protections ESEE Analysis
6. Fee for Tree Removal Memo

Fiscal Impact:

This project currently has a contract for consultant support to complete the ESEE analysis and advise on the inventory methodologies. That contract is for $65,000 and is currently in the FY 26 adopted budget in the Community Development Department fund, 01-07-028-7750. The project is being managed and administered by planning staff.

Alternatives:

Alternative 1 [Staff Recommendation]: Direct staff to initiate the Ordinance adoption process, to bring the item before the Planning Commission on March 19, 2026.

Alternative 2: Direct Staff to return to a joint work session of the Planning Commission and City Council to further discuss the topic.

Alternative 3: Direct Staff to return to an individual work session with the Planning Commission or City Council to further discuss the topic.

Alternative 4: The Council may consider any other alternative not presented by staff.

THIS IS A DRAFT PRODUCT

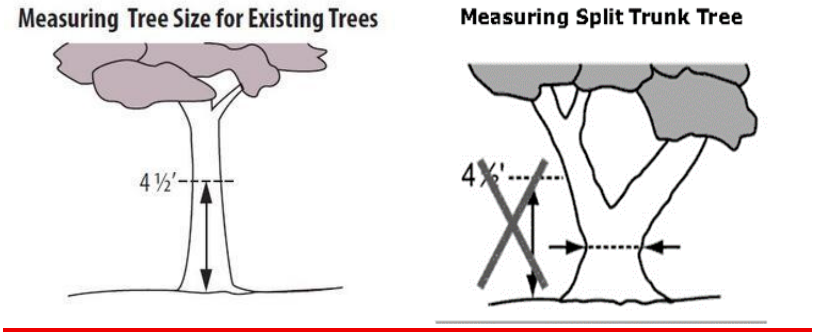
17.06.045 Tree Related Definitions. For the purpose of Trees (Chapter 17.58), the following definitions shall apply.

~~**Historic Tree** – Selected trees placed on an inventory based on the age, species, location, and historic significance.~~

Landmark Tree – Selected trees placed on an inventory based on the age, species, location, and historic significance.

Significant Tree – ~~Selected trees placed on an inventory based on the age, species, and location.~~ ***Trees located on public and private land within the McMinnville UGB that are either (1) 36 inches or greater dbh, or (2) Oregon white oak trees 20 inches dbh or greater. Significant trees do not include hazardous, diseased, dead, or nuisance trees as determined by the Planning Director in consultation with a Certified Arborist.***

Tree – Any woody plant having a trunk ~~five~~***six*** inches or more in diameter 4.5 feet above ground level at the base of the trunk. If a tree splits into multiple trunks below 4.5 feet, the trunk is measured at its most narrow point beneath the split.



17.06.070 Natural Resources Protection Overlay Zones. For the purposes of the Natural Resources Protection Overlay Zones (Chapter 17.47), the following definitions shall apply.

Certified Arborist. An arborist certified through the International Society of Arboriculture (ISA).

Critical Root Zone (CRZ). The area directly beneath the tree dripline that should not be disturbed by development. The CRZ for an individual tree is located in a radius from the tree at a rate of 1 foot of horizontal distance from the tree for each 1 inch diameter of a tree measured at 4.5 feet above ground level, or as determined by a certified arborist.

Landmark Tree. See definition in Section 17.06.045 Tree Related Definitions.

McMinnville Riparian Corridors Map. A map that identifies significant stream and river corridor resources within the McMinnville Urban Growth Boundary, including the South Yamhill River corridor and significant stream corridors. This generalized, composite map is based on the City of McMinnville Riparian Corridor Inventory.

McMinnville Significant Tree Grove Map. A map that identifies significant tree groves within the McMinnville Urban Growth Boundary. This map is based on the City of McMinnville Tree Grove Assessment.

Mitigation Plan. "Mitigation plan" means a detailed plan to compensate for identified adverse impacts on water resources and riparian setback areas from alteration, development, excavation or vegetation removal within the RC-P Subdistrict. A mitigation plan must be prepared by recognized experts, per the Planning Director's determination, in fish and wildlife biology, native trees and plants, and hydrological engineering, and typically requires the removal of invasive plants and re-planting with native plant species.

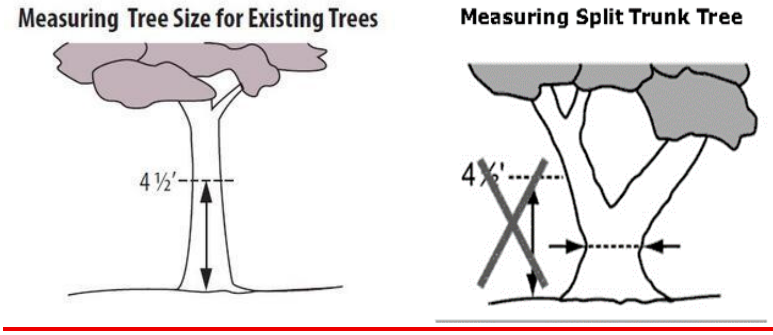
Native Plants. "Native plant species" are those listed on the Portland Plant List, which is incorporated by reference into this chapter.

Riparian Corridor. The "riparian corridor" includes significant (fish-bearing) rivers and streams and their respective "riparian setback" areas as documented in the Riparian Corridors Inventory and as shown on the RC-P Subdistrict map.

Top of Bank. "Top-of-bank" usually means a clearly recognizable sharp break in the stream bank. It has the same meaning as "bank-full stage" as defined in OAR 141- 085-0510(6). It is the stage or elevation at which water overflows the natural banks of streams and begins to inundate the upland. The methods used to determine tops-of-bank are found in the McMinnville Riparian Corridor Inventory Report.

Significant Tree - See definition in Section 17.06.045 Tree Related Definitions.

Tree – Any woody plant having a trunk six inches or more in diameter 4.5 feet above ground level at the base of the trunk. If a tree splits into multiple trunks below 4.5 feet, the trunk is measured at its most narrow point beneath the split.



Tree Grove Mitigation Plan (TGMP). A detailed plan to compensate for identified adverse impacts on tree groves and native vegetation within tree grove boundaries from alteration, development, excavation or vegetation removal within the TG-P Subdistrict. The TGMP must be prepared by a certified arborist. The TGMP must be consistent with the recommendations of a required WAMP, if applicable.

Wildfire Hazard Assessment and Mitigation Plan (WAMP). A plan prepared by certified arborist or professional forester in coordination with the McMinnville Fire District designed to assess and mitigate wildfire risks to people and property.

Chapter 17.47

NATURAL RESOURCES PROTECTIONS OVERLAY ZONES

(as amended by Ord. X, insert date)

Sections:

17.47.000 Natural Resources Protection Overlay Zones Subdistricts Generally. Natural Resource Protection Overlay Zones Subdistricts (NR Subdistricts) apply to significant natural resource areas that have level of local protection pursuant to Statewide Planning Goal 5 – Natural and Cultural Resources.

A. NR Subdistricts are based on adopted natural resource inventories – which include maps showing significant resource sites and supporting reports documenting the criteria and methods used to determine local resource site significance.
B. NR Subdistricts implement McMinnville Comprehensive Plan Chapter XI Natural Resources.
C. NR Subdistrict standards apply in addition to standards of the underlying base zone. In cases of conflict, the more restrictive standards control.

D. NR Subdistricts may overlap with Natural Hazard Protection and Mitigation Subdistricts. Generally, the review authority shall seek to harmonize subdistrict standards that appear to conflict. Where standards cannot be read together to achieve a consistent outcome:
   1. The more restrictive standards apply, except that
   2. NH-P and NH-M Subdistrict fuel reduction standards shall prevail in cases of unavoidable conflict with the significant tree and vegetation standards of this chapter. (Ord. X, year).

17.47.010 Definitions. The following definitions apply within the NR Subdistricts listed below and in Section 17.06.070.

A. Riparian Corridor – Protection (RC-P) Subdistrict Definitions
   1. Riparian Corridor. The "riparian corridor" includes significant (fish-bearing) rivers and streams and their respective "riparian setback" areas as documented in the Riparian Corridors Inventory and as shown on the RC-P Subdistrict map.
   2. Mitigation Plan. "Mitigation plan" means a detailed plan to compensate for identified adverse impacts on water resources and riparian setback areas from alteration, development, excavation or vegetation removal within the RC-P Subdistrict. A mitigation plan must be prepared by recognized experts, per the Planning Director's determination, in fish and wildlife biology, native trees and plants, and hydrological engineering, and typically requires the removal of invasive plants and re-planting with native plant species.
   3. Native Plants. "Native plant species" are those listed on the Portland Plant List, which is incorporated by reference into this chapter.
   4. Top of Bank. "Top-of-bank" usually means a clearly recognizable sharp break in the stream bank. It has the same meaning as "bank-full stage" as defined in OAR 141- 085-0510(6). It is the stage or elevation at which water overflows the natural banks of streams and begins to inundate the upland. The methods used to determine tops-of-bank are found in the McMinnville Riparian Corridor Inventory Report.
   5. The McMinnville Riparian Corridors Map. A map that identifies significant stream and river corridor resources within the McMinnville Urban Growth Boundary, including the South Yamhill River corridor and significant stream corridors. This generalized, composite map is based on the City of McMinnville Riparian Corridor Inventory.

B. Tree Grove – Protection (TG-P) Subdistrict Definitions. In addition to the definitions found in Subsection A, the following definitions apply to the review of development on properties with significant tree groves.
   1. Certified Arborist. An arborist certified through the International Society of Arboriculture (ISA).
   2. Critical Root Zone (CRZ). The area directly beneath the tree dripline that should not be disturbed by development. The CRZ for an individual tree is located in a radius from the tree at a rate of 1 foot of horizontal distance from the tree for each 1 inch diameter of a tree measured at 4.5 feet above ground level, or as determined by a certified arborist.

3. Landmark Tree – See definition in Section 17.06.045 Tree Related Definitions.
4. McMinnville Significant Tree Grove Map. A map that identifies significant tree groves within the McMinnville Urban Growth Boundary. This map is based on the City of McMinnville Tree Grove Assessment.
5. Significant Tree - See definition in Section 17.06.045 Tree Related Definitions.
6. Tree Grove Mitigation Plan (TGMP). A detailed plan to compensate for identified adverse impacts on tree groves and native vegetation within tree grove boundaries from alteration, development, excavation or vegetation removal within the TG-P Subdistrict. The TGMP must be prepared by a certified arborist. The TGMP must be consistent with the recommendations of a required WAMP, if applicable.
7. Wildfire Hazard Assessment and Mitigation Plan (WAMP). A plan prepared by certified arborist or professional forester in coordination with the McMinnville Fire District designed to assess and mitigate wildfire risks to people and property. (Ord. X, year).

Riparian Corridor Protection Subdistrict (RC-P Subdistrict)

17.47.100 Purpose and Intent of the RC-P Subdistrict. The RC-P Subdistrict implements the Riparian Corridor policies of the McMinnville Comprehensive Plan and operates in conjunction with Chapter 17.48 Floodplain Zone to resolve conflicts between development and protection of significant riparian corridors identified in the City of McMinnville Riparian Corridors Inventory (2021).

A. The RC-P Subdistrict protects mapped significant rivers and streams pursuant to Statewide Planning Goal 5 (Natural and Cultural Resources) as implemented by OAR 660-023-090 Riparian Corridor Safe Harbor.
B. Specifically, this chapter allows reasonable economic use of property while establishing clear and objective standards to:
    1. Protect significant streams and limit development in designated riparian corridors;
    2. Maintain and enhance water quality;
    3. Maximize flood storage capacity;
    4. Preserve significant trees and native plant cover;
    5. Minimize streambank erosion;
    6. Maintain and enhance fish and wildlife habitats; and
    7. Conserve scenic, recreational and educational values of significant riparian corridors. (Ord. X, year).

17.47.110 Applicability and General Provisions. The RC-P Subdistrict applies to all significant rivers and streams and their respective riparian setback areas, as shown on the McMinnville Riparian Corridors Map.

A. Development Standards. The standards and procedures of this chapter:
    1. Apply to all development proposed on property located within, or partially within, the RC-P Subdistrict;

2. Are in addition to the standards of the underlying zone; and
3. Supersede the standards of the underlying zone in cases of conflict.

B. Riparian Setback Area. The “riparian setback area” is measured horizontally from and parallel to the significant river or stream tops-of-bank. The riparian setback is the same as and consistent with the “riparian corridor boundary” in OAR 660-23-090(1)(d).
   1. The South Yamhill River riparian setback is 75 feet.
   2. The North Yamhill River, Cozine Creek, Baker Creek, and mapped tributaries' riparian setback is 50 feet.

C. Standard Riparian Setbacks. The applicant shall be responsible for surveying and mapping the precise location of the top-of-bank, on-site wetlands, and riparian setback at the time of application submittal.

D. Division of State Lands Notification Required. In addition to the restrictions and requirements of this Chapter, all proposed development activities affecting any wetland are subject to Oregon Division of State Lands (DSL) standards and approval.
   1. Where there is a difference, the more restrictive regulation shall apply.
   2. The applicant shall be responsible for notifying DSL whenever any portion of any wetland is proposed for development, in accordance with ORS 227.350. No application for development will be accepted as complete until documentation of such notification is provided.

E. Exemption for Developed Subdivision Lots. This subsection applies to lots of 10,000 square feet or less in an approved subdivision with a residential zone map designation, if the side or rear yards were cleared of riparian vegetation and either developed with structures or planted in lawns or shrubs prior to the effective date of this Ordinance (XXXXX Date).
   1. The Director may approve a request to reduce the riparian setback, without public notice, if aerial photographs clearly show that the riparian setback area extends into the developed portion of an approved residential lot of 10,000 square feet or less.
   2. The riparian setback area as applied to this lot may be reduced by as much as 50 percent, provided that the developed portion of the lot remains at least 25 feet from the top-of-bank of the significant stream or river.
   3. The Director shall maintain a record of the riparian setback reduction and the reasons for the decision.

F. City of McMinnville Exemption. When performed under the direction of the City (which includes the Water and Light Department), the following shall be exempt from the provisions of this chapter:
   1. Public emergencies, including emergency repairs to public facilities;
   2. Stream restoration and enhancement programs;
   3. Non-native vegetation removal;
   4. Planting of native plant species;
   5. Restoration and enhancement projects; and
   6. Routine maintenance, repair, and/or replacement of existing public facilities (including without limitation, street, stormwater, sewer, water, and electricity) projects.

G. Replacement of Structures and Impervious Surfaces. Building replacements limited to the footprint of existing buildings, and replacement of other impervious surfaces limited to the area of existing impervious surfaces shall be limited to the area of the existing impervious surface are exempt from the provisions of this Chapter.

H. Exemption for Routine Site Maintenance.

1. Routine maintenance of the site, including maintenance of lawns and planted landscaping areas existing on the effective date of this Ordinance (XXXXX Date). Additionally, the application of herbicides to non-native vegetation and the application of synthetic fertilizers is subject to applicable state and federal regulations and developed properties shall be subject to the restrictions set forth in the McMinnville Municipal Code;
2. Removal of non-native vegetation and replacement with native plant species, no closer than 10' from the top-of-bank or edge of wetland;
3. Maintenance pruning of existing significant and landmark trees shall be kept to a minimum and shall be in accordance with the American National Standards Institute (ANSI) A300 standards for Tree Care Operations. Under no circumstances shall the maintenance pruning be so severe that it compromises the tree's health, longevity, and/or resource functions. (Ord. X, year).

17.47.120 Permitted, Conditional and Prohibited Uses.

A. Department of State Lands (DSL) Concurrence Required. Development proposed within any wetland or stream, in addition to meeting the standards of this chapter, must also be approved by DSL. An application for development below the top-of-bank of any significant stream or river or within the boundaries of a delineated wetland requires documentation of DSL concurrence to be deemed complete.

B. Permitted and Conditional Uses. Table 17.47.120 Riparian Corridor below summarizes permitted, conditional and prohibited uses within the RC-P Subdistrict. A "Yes" indicates that the use is permitted ministerially, is allowed under prescribed conditions, subject to approval by the Director, or may be approved subject to discretionary criteria for conditional use permit review. A "No" indicates that the use is not permitted. A use that is not permitted may not be approved through the variance provisions of this chapter. (Ord. X, year).

Table 17.47.120 Riparian Corridor – Protection Subdistrict Use List

Regulated Activity & Procedure Type		
A. Permitted Uses– Ministerial	Riparian Setback Area	Mitigation Plan Required?
1. Determination of Riparian Setback boundaries	Yes	No
2. Reduction of Riparian Setback for developed residential lots	Yes	No

3. Low impact, passive, or water-related recreation facilities and trails including, but not limited to, viewing shelters, picnic tables, nature trails and interpretive signs	Yes	No
4. Irrigation pumps	Yes	No
5. Removal of non-native vegetation and replacement with native plant species, within 10' from the top-of-bank or edge of wetland	Yes	Yes
6. Removal of vegetation necessary for hazard prevention (diseased or hazardous trees)	Yes	No
7. Riparian Corridor restoration projects	Yes	Yes
B. Permitted Uses with Mitigation – Planning Director Approval with public notice	Riparian Setback Area	Mitigation Plan Required?
1. Canoe and non-motorized boat launch less than 10' in width subject to DSL approval	Yes	Yes
2. Private in-stream and streambank enhancement, including vegetation removal and replacement within 10 feet of the top-of-bank or edge of wetland	Yes	Yes
3. Adjustments to numeric standards of the underlying zone necessary to reduce impacts on wetlands and streams	No	Yes
4. Public facilities that appear on the City's Public Facilities Plan, including streets and roads	Yes	Yes
5. Local streets and driveways serving residences and public facilities	Yes	Yes
6. Drainage facilities	Yes	Yes
7. Utilities	Yes	Yes
8. Bridges, boardwalks, trails of pervious construction	Yes	Yes
C. Conditional Use or Variance Review subject to Planning Commission Approval at a Public Hearing	Riparian Setback Area	Mitigation Plan Required?
1. Economic Hardship Variances, subject to variance provisions of Chapter 17.47.180	Yes	Yes
2. Water-related and water-dependent uses not listed above, may be approved subject to conditional use provisions of Chapter 17.74.030	Yes	Yes
D. Prohibited Uses - unless specifically authorized above or exempted	Riparian Setback Area	Mitigation Plan Required?

1. Removal of native plant species	No	Not applicable
2. Placement of structures or impervious surfaces	No	Not applicable
3. Grading and placement of fill	No	Not applicable
4. Application of herbicides	No	Not applicable
5. Dumping of garbage or lawn debris or other materials not permitted within this Table.	No	Not applicable
6. Creation of a parcel that would be wholly within the RP-C Subdistrict or resulting in an unbuildable parcel, as determined by the Director.	No	Not applicable

17.47.130 Application Requirements. All development applications on lots within, or partially within, the RP-C Subdistrict shall submit the following information, in addition to other information required by this code.

A. Ministerial Uses. The applicant shall prepare a plan that demonstrates that the use will be constructed and located so as to minimize disturbance to significant tree and native vegetation within the RP-C Subdistrict boundaries. The Director may require additional information where necessary to determine RP-C Subdistrict district boundaries or to mitigate identified impacts from a proposed development, including but not limited to:
   1. A site survey as prescribed in Section 17.47.130(B);
   2. One or more of the reports described in Section 17.47.130(C).

B. Director and Planning Commission Review Uses: Site Specific Survey Required. If any use or activity is proposed within a riparian setback area, the applicant shall be responsible for preparing a survey of the area proposed for development that shows the following:
   1. The name, location and dimensions of significant rivers or streams, delineated on-site wetlands, and the tops of their respective streambanks as shown on the McMinnville Riparian Corridor Inventory.
   2. The area enclosed by the riparian setback.
   3. The 100-year floodplain if applicable.
   4. Land subject to the Natural Hazard – Mitigation (NH-P), Natural Hazard Protection (NH-P) and/or Tree Grove – Conservation (TG-C) Subdistricts.
   5. Steeply sloped areas where the slope of the land is 25% or greater.
   6. Existing public rights-of-way, structures, impervious surfaces, roads and utilities.
   7. Vegetation types (native and non-native);
   8. The driplines of significant trees or tree clusters of trees 6-inches or greater dbh that would be impacted by tree removal, major pruning or ground disturbance.
   9. Existing and proposed contours at 2-foot intervals, or as approved by the City Engineer or Planning Director.

C. Required Studies and Mitigation Reports. Each of the following studies shall be required for non-ministerial uses proposed within the RC-P Subdistrict. The following studies shall be required in addition to the submission of information

required for specific types of development and shall be prepared by professionals in their respective fields. The Planning Director may exempt permit applications from one or more of these studies, based on specific findings as to why the study is unnecessary to determine compliance with this chapter.

1. Hydrology and Soils Report. This report shall include information on the hydrological activities of the site, the effect of hydrologic conditions on the proposed development, and any hydrological or erosion hazards. This report shall also include soils characteristics of the site, their suitability for development, and erosion or slumping characteristics that might present a hazard to life and property, or adversely affect the use or stability of a public facility or utility. This report shall include information on the nature, distribution and strength of existing soils, the adequacy of the site for development purposes, and an assessment of grading procedures required to impose the minimum disturbance to the natural state. The report shall include recommendations to assure compliance with each applicable provision of this code as well as all applicable provisions of City building ordinances. The report shall be prepared and stamped by a professional engineer registered in Oregon.
2. Grading Plan. The grading plan shall be specific to a proposed physical structure or use and shall include information on terrain (2-foot intervals of property, or as approved by the City Engineer or Planning Director), drainage, direction of drainage flow, location of proposed structures and existing structures which may be affected by the proposed grading operations, water quality facilities, finished contours or elevations, including all cut and fill slopes and proposed drainage channels. Project designs including but not limited to locations of surface and subsurface devices, walls, dams, sediment basins, storage reservoirs, and other protective devices shall form part of the submission. The grading plan shall also include a construction phased erosion control plan consistent with the provisions of this code and a schedule of operations and shall be prepared by a professional engineer registered in Oregon.
3. Vegetation Report. This report shall consist of an assessment of existing vegetative cover, whether it is native or introduced, and how it will be altered by the proposed development. The report shall specifically identify disturbed areas (i.e., areas devoid of vegetation or areas that are dominated by non-native or invasive species) and the percentage of crown cover. The vegetation report shall include recommendations to assure compliance with each applicable provision of this code, and shall be prepared by a landscape architect, landscape designer, botanist, or arborist.
4. Streambank Conditions Report. This report is only necessary if a project will impact the area between 10 feet above the relevant stream or river tops-of-bank. The streambank conditions report shall consist of a survey of existing streambank conditions, including types of vegetative cover, the extent to which the streambank has been eroded, and the extent to which mitigation measures would be successful in maximizing fish and wildlife habitat values while preserving the stream's urban hydrological function. Measures for

improving fish and wildlife habitat and improving water quality will be clearly stated, as well as methods for immediate and long-term streambank stabilization. The streambank conditions report shall include recommendations to assure compliance with each applicable provision of this code, and shall be prepared by a wildlife biologist or other qualified individual in concert with a hydrological engineer registered in Oregon, both of whom must have experience in stream bank restoration. The report shall specify long-term maintenance measures necessary to carry out the proposed mitigation plan. (Ord. X, year).

17.47.140 Development Standards. The following shall apply to all development, including vegetation removal, and excavation, within the RC-P Subdistrict. No application for a use identified in Section 17.47.120 shall be deemed complete until the applicant has addressed each of these standards in writing.

A. Alternatives Considered. Except for stream corridor enhancement, most uses that require public notice are expected to develop outside of wetlands and riparian setback areas and will avoid removal of landmark and significant trees. Therefore, development applications that require public notice must carefully examine upland alternatives for the proposed use and explain the reasons why the proposed development cannot reasonably occur outside of the wetlands and the riparian setback area, and why landmark and significant trees must be removed to meet project objectives.
B. Minimize Siting Impacts. The proposed use shall be designed, located and constructed to minimize excavation, loss of native vegetation and significant trees, erosion, and adverse hydrological impacts on streams, rivers and wetlands.
    1. For development applications that require public notice, a stormwater report demonstrating consistency with adopted City of McMinnville Storm Drainage Design and Construction Standards must be provided.
    2. For all uses, the development shall be located as far from the stream, river or wetland and use as little of the wetland, riparian setback area, native vegetation and significant trees as possible, recognizing the operational needs of the proposed development.
C. Construction Materials and Methods. Where development within the riparian area is unavoidable, construction materials or methods used within the riparian setback area shall minimize damage to water quality, native vegetation and significant trees.
D. Residential Structures. Above-ground residential structures shall not be permitted within the RC-P Subdistrict without a variance as provided in Section 17.47.180.
    1. On-site flood storage capacity shall not decrease as a result of development. The cumulative effects of any proposed development shall not reduce flood storage capacity or raise base flood elevations on- or off-site.
    2. Development proposed within the 100- year floodplain shall be designed consistent with Chapter 17.48, F-P Flood Area Zone.
E. Avoid Steep Slopes. Within 50 feet of any water resource, excavation, significant tree and native vegetation removal shall be avoided on slopes of 25 percent or

greater and in areas with high erosion potential (as shown on National Resource Conservation Service (NRCS maps), except where necessary to construct public facilities or to ensure slope stability.

F. Minimize Impacts on Existing Vegetation. The following standards shall apply when construction activity is proposed in areas where native vegetation and significant trees are to be preserved.
   1. Work areas on the immediate site shall be carefully identified and marked to reduce potential damage to trees and vegetation.
   2. Significant and landmark trees shall not be used as anchors for stabilizing working equipment and the root zones shall be protected.
   3. During clearing operations, trees, and vegetation shall not be permitted to fall or be placed outside the work area.
   4. In areas designated for selective cutting or clearing, care in falling and removing trees and brush shall be taken to avoid injuring trees and shrubs to be left in place.
   5. Non-active stockpiles containing soil, or soil mixed with vegetation, shall not be permitted for longer than two weeks.

G. Mitigation Plan. If a use that requires public notice is proposed within a riparian setback area, a mitigation plan shall be prepared and implemented.
   1. The applicant shall be responsible for re-vegetating areas temporarily disturbed by excavation on a 1:1 basis. That is for each 100 square feet of riparian setback that is lost to development, at least 100 square feet of existing disturbed area within the riparian setback area or wetland shall be re-planted with native plant species. If it is determined that there is no suitable location for replacement plantings on-site, then the applicant shall pay a replacement fee in accordance with a fee schedule adopted by council.
   2. Where approval is granted to reduce the riparian setback area, the applicant shall be responsible for mitigating for the reduced setback by replacing non-native vegetation within the remaining, protected riparian setback area on a 1:1.5 basis. That is, for every 100 square feet of riparian setback that is lost to development, at least 150 square feet of existing disturbed area within the riparian setback area or wetland shall be replanted with native plant species. If it is determined that there is no suitable location for replacement plantings on-site, then the applicant shall pay a replacement fee in accordance with a fee schedule adopted by council.
   3. Where approval is granted for the removal of significant trees or landmark trees, the applicant is responsible for mitigation in conformance with Chapter 17.58 Trees.
   4. The re-vegetation plan shall provide for the replanting and maintenance of native plant species designed to achieve pre-disturbance conditions. The applicant shall be responsible for replacing any native plant species that do not survive the first two years after planting, and for ensuring the survival of any replacement plants for an additional two years after their replacement.

H. Water and Sewer Infiltration and Discharge. Water and sanitary sewer facilities shall be designed, located and constructed to avoid infiltration of floodwaters into the system, and to avoid discharges from such facilities to streams and wetlands.

I. On-Site Systems. On-site septic systems and private wells shall be prohibited within the RC-P Subdistrict.
J. Erosion Control Plan. If a use that requires public notice is proposed within a riparian setback area, any Storm Drainage Design and Construction Standards, including Erosion Control Standards as adopted or utilized by the City of McMinnville, shall apply.
K. Plan Implementation. A schedule of planned erosion control and re-vegetation measures shall be provided, which sets forth the progress of construction activities, and mitigating erosion control measures. (Ord. X, year).

17.47.150 Decision Options and Conditions of Approval.
A. Decision Options. The Approval Authority may approve, approve with conditions, or deny an application based on the provisions of this chapter. The Approval Authority may require conditions necessary to comply with the intent and provisions of this chapter.
B. Conditions. The required reports shall include design standards and recommendations necessary for the engineer and biologist, certified wetland scientist or other qualified individual to provide reasonable assurance that the standards of this section can be met with appropriate mitigation measures. These measures, along with staff recommendations, shall be incorporated as conditions into the final decision approving the proposed development.
C. Assurances and Penalties. Assurances and penalties for failure to comply with mitigation, engineering, erosion and water quality plans required under this section shall be as stated in Chapter 17.03 General Provisions. (Ord. X, year).

17.47.160 Administrative Adjustment to Underlying Zone Dimensional Standards. The purpose of this section is to allow adjustments to dimensional standards of the underlying zoning district to reduce or move the development footprint to minimize adverse impacts on natural resource values within the RC-P Subdistrict. The Planning Director may approve adjustment applications with public notice.
A. Adjustment Option. The Planning Director may approve up to a 50 percent adjustment to any dimensional standard (*e.g.*, setback, height or lot area) of the underlying zoning district to allow development consistent with the purposes of the RC-P Subdistrict.
B. Adjustment Criteria. A special RC-P adjustment may be requested when development is proposed on a lot or parcel within or adjacent to the RC-P Subdistrict. In order for the director to approve a dimensional adjustment to standards in the underlying zoning district, the applicant shall demonstrate that the following criteria are fully satisfied:
    1. The adjustment is the minimum necessary to allow a permitted use, while at the same time minimizing disturbance within riparian setback area.
    2. Explicit consideration has been given to maximizing vegetative cover, protecting significant trees, and minimizing excavation and impervious surface area on unbuildable land.
    3. Design options have been considered to reduce the impacts of development, including but not limited to multi-story construction, siting of the structure or

residence close to the street to reduce driveway distance, maximizing the use of native landscaping materials, and minimizing parking area and garage space.

4. In no case shall the impervious surface area of a middle housing residence (including the building footprint, driveway and parking areas, accessory structures, swimming pools and patios) exceed 3,000 square feet within the riparian setback.
5. Assurances are in place to guarantee that future development will not encroach further on land under the same ownership within the RC-P Subdistrict.
6. The Planning Director may impose any reasonable condition necessary to mitigate identified impacts resulting from development on otherwise unbuildable land. (Ord. X, year).

17.47.170 Density Transfer. Residential density transfer from land within the RC-P Subdistrict (the sending area) to contiguous property under the same ownership that is outside any applicable natural resource or hazard subdistricts (the receiving area), shall be permitted subject to the following standards.

A. Maximum Density. To encourage density transfer, the transfer area shall be subject to the development standards of the next higher residential zoning district, if there is available utility capacity.
B. Example. For example, density transfer from the RC-P Subdistrict to land with an underlying R-1 zone to the sending area on the same site but outside the Natural Resource Protection Subdistricts shall be capped at the density allowed in the R-2 zone. (Ord. X, year).

17.47.180 Economic Hardship Variances. Variances to the provisions of the RC-P Subdistrict shall be discouraged and may be considered only as a last resort when application of the riparian setback standard would result in a property (one or more contiguous lots under common ownership) having no reasonable economic use.

A. Variance Option. The Planning Commission shall hear and decide variances from dimensional provisions of this chapter, in accordance with the applicable criteria in Section 17.74.110.
B. Additional Criteria. In addition to the general variance criteria described in Section 17.74.110, the following additional criteria must be met to grant a variance to any dimensional provision of this chapter:
    1. The variance is necessary to allow reasonable economic use of the subject parcel of land, which is owned by the applicant, and which was not created after the effective date of this chapter.
    2. Strict application of the provisions of this chapter would otherwise result in the loss of a buildable site for a use that is permitted outright in the underlying zoning district, and for which the applicant has submitted a formal application.
    3. The applicant has exhausted all options available under this chapter to relieve the hardship.
    4. Based on review of all required studies described in Section 17.47.140, the variance is the minimum necessary to afford relief, considering the potential

for increased flood and erosion hazard, and potential adverse impacts on native vegetation, fish and wildlife habitat, and water quality.

5. Based on review of all required studies described in Section 17.47.140, any adverse impacts on water quality, erosion or slope stability that will result from approval of this hardship variance have been mitigated to the greatest extent possible.
6. Loss of significant trees, landmark trees, and vegetative cover shall be minimized. Any lost vegetative cover shall be replaced on-site, on a 1-to-1 basis by native trees and vegetation, or if it is determined that there is no suitable location for replacement plantings on-site, then the applicant shall pay a replacement fee in accordance with a fee schedule adopted by council. Any lost significant trees or landmark trees shall be replaced as identified in Chapter 17.58 Trees. (Ord. X, year).

17.47.190 Quasi-Judicial Determination of Top-of-Bank. The McMinnville Riparian Corridor Map determines the top-of-bank of significant stream and rivers based on GIS mapping technology for the entire McMinnville UGB area. The riparian setback area is measured from the top-of-bank and restricts land uses within its boundaries. The process below provides standards for site-specific top-of-bank determinations.

A. Application. One or more property owners with contiguous properties within the riparian setback area may submit a top-of-bank determination application to the Planning Director with the required fee. The application will follow “Director’s Review with Notification” procedures per Section 17.72.110.
   1. The application shall include a revised top-of-bank determination prepared by an Oregon registered engineer with experience in hydrology.
   2. The determination shall include a report and survey showing the revised top-of- bank (also known as the “bank-full stage”) based on the two-year flood interval.
   3. The determination shall delineate (with DSL concurrence) any wetland(s) that extend upland from the proposed top-of-bank.
   4. The city engineer shall review and approve or reject the revised top-of-bank determination with supporting facts and reasoning. The applicant will have the opportunity to revise per comments and resubmit for review and approval by the city engineer if additional time is provided for resubmission.
   5. Notice of the application shall be provided to the Oregon Department of State Lands, with a request for review and comment.
B. The Planning Director may approve, deny or further revise the top-of-bank determination based on the information provided in the application and the city engineer’s report.
C. If approved, the approved top-of-bank determination will be surveyed and recorded on applicable property deeds.
D. The City shall periodically amend the overlay zones to incorporate these approved top-of-bank changes. (Ord. X, year).

Tree Grove Protection Subdistrict (TG-P Subdistrict)

17.47.200 Purpose and Intent of the TG-P Subdistrict. The TG-P Subdistrict implements the Tree Grove protection policies of the McMinnville Comprehensive Plan. The TG-P Subdistrict operates in conjunction with Chapter 17.58 Trees, Chapter 17.48 F-P Flood Area Zone, Chapter 17.49 Natural Hazards Subdistrict, and Section 17.47.100 Riparian Corridors, to resolve conflicts between development and protection of significant tree groves identified in the City of McMinnville Tree Grove Inventory (2025). The TG-P Subdistrict protects mapped significant tree groves pursuant to Statewide Planning Goal 5 (Natural and Cultural Resources) as implemented by OAR 660-023. Specifically, this chapter allows reasonable economic use of property while establishing clear and objective standards to:

A. Protect significant tree groves and restrict development within their boundaries;
B. Provide shade and minimize runoff and erosion, thereby maintaining and enhancing water quality;
C. Preserve landmark and significant trees and native plant cover within tree groves, thereby maintaining and enhancing fish and wildlife habitats; and
D. Conserve scenic, recreational and educational values of significant tree groves. (Ord. X, year).

17.47.210 Applicability and General Provisions. The TG-P Subdistrict applies to all significant tree groves, as shown on the McMinnville Significant Tree Groves Map.

A. Development Standards. The standards and procedures of this chapter:
   1. Apply to all development proposed on property located within, or partially within, the TG-P Subdistrict;
   2. Are in addition to the standards of the underlying zone; and
   3. Supersede the standards of the underlying zone in cases of conflict.
B. Critical Root Zone (CRZ). The CRZ for an individual tree is located in a radius from the tree at a rate of 1 foot of horizontal distance from the tree for each 1 inch diameter of tree measured at 4.5 feet high, or as determined by a certified arborist. The CRZ for a tree grove is measured from the outer edge of the perimeter tree grove canopy.
   1. Alternative CRZ determinations must be performed by a certified arborist as part of the arborist report required by Section 17.47.230.
   2. The applicant shall be responsible for surveying and mapping the precise location of the CRZ and any additional measurements required by this code at the time of application submittal.
C. Exemption for Developed Subdivision Lots. This subsection does not apply to existing developed lots of 10,000 square feet or less, in an approved subdivision, with a residential zone map designation, if the relevant side or rear yards were cleared of trees and either developed with structures or planted in lawns or shrubs prior to the effective date of this Ordinance (insert date).
D. Exemption for Replacement of Structures and Impervious Surfaces. - Building replacements limited to the footprint of existing buildings, and replacement of other impervious surfaces limited to the area of existing impervious surface are exempt from the provisions of this Chapter.

E. City of McMinnville Exemption. When performed under the direction of the City (which includes the Water and Light Department) the following shall be exempt from the provisions of this chapter:
   1. Public emergencies, including emergency repairs to public facilities (which includes the Water and Light Department); and
   2. Routine maintenance and/or replacement of existing public facilities projects (which includes the Water and Light Department).
   3. City utility or road work in utility or road easements or rights-of-way. Any trees removed in the course of utility work shall be replaced in accordance with the standards of this Chapter.

F. Exemption for Routine Site Maintenance. The following maintenance activities shall be exempt from the provisions of this chapter:
   1. Routine maintenance of the site, including maintenance of lawns and planted landscaping areas existing on the effective date of this Ordinance (XXX Date). Additionally, the application of herbicides to non-native vegetation and the application of synthetic fertilizers is subject to applicable state and federal regulations and developed properties shall be subject to the restrictions set forth in the McMinnville Municipal Code;
   2. Removal of non-native vegetation and replacement with native plant species;
   3. Maintenance pruning of existing trees shall be kept to a minimum and shall be in accordance with the American National Standards Institute (ANSI) A300 standards for Tree Care Operations. Under no circumstances shall the maintenance pruning be so severe that it compromises the tree's health, longevity, and/or resource functions.

G. Exemption for Significant Tree Canopy over property lines. Tree canopy protections in this subsection only apply to properties that contain the trunks of trees with regulated canopy. In the case of development on property with significant tree grove canopy that extends over the subject parcel, but the trunks of the trees within the significant tree grove are not within the parcel, the provisions of this chapter do not apply. (Ord. X, year).

17.47.220 Permitted, Conditional and Prohibited Uses. Generally, land uses permitted by the underlying (base) zoning district are not allowed within the TG-P Subdistrict, except as set forth in in Table 17.47.220 below.

A. Permitted and Conditional Uses. Table 17.47.220 below summarizes permitted, conditional and prohibited uses within the TG-P Subdistrict. A “Yes” indicates that the use is permitted ministerially, is allowed under prescribed conditions subject to approval by the Director or may be approved subject to discretionary criteria for conditional use permit review. A “No” indicates that the use is not permitted. A use that is not permitted may not be approved through the variance provisions of this chapter. (Ord. X, year).

Table 17.47.220 Tree Grove – Protection Subdistrict Use List

Regulated Activity & Procedure Type

A. Permitted Uses– Ministerial Review	Significant Tree Groves	Tree Grove Mitigation Plan Required?
1. Low impact, passive, or water-related recreation facilities and trails including, but not limited to, viewing shelters, picnic tables, nature trails and interpretive signs	Yes	No
2. Removal of diseased or hazardous trees authorized in writing by a certified arborist and deemed necessary for hazard prevention	Yes	No
3. Tree Grove or wildlife habitat restoration projects including removal of non-native trees	Yes	Yes
4. Arborist determination of Tree Grove CRZ boundaries	Yes	No
B. Permitted Uses with Mitigation – Planning Director Approval with public notice	Significant Tree Groves	Tree Grove Mitigation Plan Required?
1. Public facilities that appear on the City's Public Facilities Plan when there is no reasonable alternative	Yes	Yes
2. Local streets and driveways serving residences and public facilities when there is no reasonable alternative	Yes	Yes
3. Public drainage facilities	Yes	Yes
4. Utility crossings and below-ground utilities	Yes	Yes
5. Adjustments to numeric standards of the underlying zone necessary to eliminate or reduce impacts on tree groves	Yes	No
6. Park improvements within significant tree groves where authorized by a parks master plan approved by the City Council	Yes	Yes
C. Conditional Use or Variance Review subject to Planning Commission Approval at a Public Hearing	Significant Tree Groves	Tree Grove Mitigation Plan Required?
1. Economic Hardship Variances, subject to variance provisions of Chapter 17.47.280	Yes	Yes
D. Prohibited Uses - unless specifically authorized above or exempted	Significant Tree Groves	Tree Grove Mitigation Plan Required?
1. Removal of native plant species	No	Not applicable
2. Placement of structures or impervious surfaces	No	Not applicable
3. Grading and placement of fill	No	Not applicable
4. Application of herbicides	No	Not applicable
5. Dumping of garbage or lawn debris or other unauthorized materials	No	Not applicable

6. Creation of a parcel that would be wholly within the TR-P district or resulting in an unbuildable parcel, as determined by the Director.	No	Not applicable

17.47.230 Application Requirements. All development applications on lots within, or partially within, the TG-P Subdistrict shall submit the following information, in addition to other information required by this code.

A. Ministerial Uses. The applicant shall prepare a plan that demonstrates that the use will be constructed and located to avoid removal of any significant trees within a tree grove The Director may require additional information where necessary to determine TG-P boundaries or to mitigate identified impacts from a proposed development, including but not limited to:
   1. A site survey as prescribed in Section 17.47.230(B); and
   2. One or more of the reports described in Section 17.47.230(C).

B. Director and Planning Commission Review Uses: Site Specific Survey Required. If any use or activity is proposed within a significant tree grove, the applicant shall be responsible for preparing a survey of the area proposed for development that shows the following:
   1. The name, location and dimensions of the significant tree grove, as shown on the McMinnville Tree Grove Assessment.
   2. The area enclosed by the tree grove canopy per Section 17.47.210(B).
   3. The 100-year floodplain if applicable.
   4. Land subject to the Natural Hazard – Mitigation (NH-P), Natural Hazard Protection (NH-P), and/or Riparian Corridor – Protection (RC-P) Subdistricts.
   5. Steeply sloped areas where the slope of the land is 25% or greater.
   6. Existing public rights-of-way, structures, roads and utilities.
   7. Vegetation types (native and non-native).
   8. The driplines of significant trees or tree clusters of trees 6-inches or greater dbh that would be impacted by tree removal, major pruning or ground disturbance.
   9. Existing and proposed contours at 2-foot intervals, or as approved by the City Engineer or Planning Director.

C. Required Studies and Mitigation Reports. Where required by Table 17.47.220, the applicant shall prepare the following studies in addition to the submission of information required for specific types of development. All required studies shall be prepared by professionals in their respective fields. The Planning Director may exempt permit applications from one or more of these studies, based on specific findings as to why the study is unnecessary to determine compliance with this chapter. This determination must be made, in writing, at or immediately following the required pre-application conference and prior to application submittal.
   1. Grading Plan. The grading plan shall be specific to a proposed physical structure or use and shall include information on terrain, drainage, direction of drainage flow, location of proposed structures and existing structures which may be affected by the proposed grading operations, water quality facilities, existing and finished contours (at 2-foot intervals, or as approved by the City

Engineer or Planning Director) including all cut and fill slopes and proposed drainage channels. Project designs including but not limited to locations of surface and subsurface devices, walls, dams, sediment basins, storage reservoirs, and other protective devices shall form part of the submission.

2. Arborist Report. This report, prepared by a Certified Arborist, shall identify the significant tree grove boundaries affecting the development site based on the driplines of perimeter trees. The arborist report also shall assess the health and driplines of any trees considered in the required alternatives analysis per Section 17.47.240.
3. Tree Grove Mitigation Report (TGMR). If development is proposed within a tree grove, then the arborist report shall be supplemented by a survey of existing trees and vegetative cover within a significant tree grove, whether it is native or introduced, and how it will be altered by the proposed development. The TGMR shall include recommendations to assure compliance with each applicable provision of this code and shall be prepared by an arborist or landscape architect with specific knowledge of native plant species, planting, susceptibility to wildfire, maintenance methods, and survival rates. (Ord. X, year).

17.47.240 Development Standards. The following shall apply to all development, including vegetation removal and excavation, allowed within the TG-P Subdistrict. No application for a use identified in Section 17.47.220 shall be deemed complete until the applicant has addressed each of these standards in writing.

A. Alternatives Considered. Development applications for allowed uses that require public notice must carefully examine alternatives for the proposed use and explain the reasons why the proposed development cannot reasonably occur outside of the significant tree grove boundary, why any significant trees must be removed to meet project objectives, and why native vegetation cannot reasonably be avoided.
B. Minimize Siting Impacts. The proposed use shall be designed, located and constructed to minimize excavation and erosion within significant tree groves (especially within CRZs), loss of native vegetation and significant trees, and adverse hydrological impacts on adjacent streams, rivers and wetlands.
    1. For development applications that require public notice, the certified arborist must certify that any adverse impacts on the health of remaining trees will be minimized consistent with best management practices.
    2. For all uses, the development shall avoid significant and landmark trees if possible, recognizing the operational needs of the proposed development.
C. Construction Materials and Methods. Where development within the significant tree grove is unavoidable, construction materials or methods used within the tree grove area shall minimize damage to water quality, native vegetation and significant trees.
D. Meet NR- and NH- Subdistrict Standards. All development must meet applicable natural resource and natural hazard subdistrict standards in addition to the provisions of this chapter. In cases of conflict, the more restrictive standard shall apply.

E. Avoid Steep Slopes. Removal of significant trees and native vegetation removal shall be avoided on slopes of 25 percent or greater and in areas of High Landslide Susceptibility (as shown on the Statewide Landslide Information Layer for Oregon, SLIDO), except where necessary to construct public facilities, or to ensure slope stability.

F. Minimize Impacts on Existing Vegetation. The following standards shall apply when construction activity is proposed in areas where native vegetation and significant trees are to be preserved.
   1. Work areas on the immediate site shall be carefully identified and marked to reduce potential damage to trees and vegetation.
   2. Trees shall not be used as anchors for stabilizing working equipment and the root zones shall be protected.
   3. During clearing operations, trees and vegetation shall not be permitted to fall or be placed outside the work area.
   4. In areas designated for selective cutting or clearing, care in falling and removing trees and brush shall be taken to avoid injuring trees and shrubs to be left in place.
   5. Non-active stockpiles containing soil, or soil mixed with vegetation, shall not be permitted for longer than two weeks.

G. Tree Grove Mitigation Plan (TGMP). If a TGMP is required:
   1. The applicant shall be responsible for re-vegetating areas temporarily disturbed by excavation on a 1:1 basis. For each 100 square feet of disturbed native vegetation removed, at least 100 square feet of cleared or non-native vegetation shall be re-planted with native, fire-resistant plant species.
   2. Where approval is granted within a significant tree grove, the applicant shall be responsible for mitigating native vegetation removal by replacing native vegetation within the remaining, protected tree grove on a 1:1.5 basis. That is, for each 100 square feet of disturbed native vegetation removed, at least 150 square feet of cleared or non-native vegetation shall be re-planted with native, fire-resistant plant species.
   3. Where approval is granted for the removal of significant trees or landmark trees, the applicant is responsible for mitigation in conformance with Chapter 17.58 Trees.
   4. The re-vegetation plan shall provide for the replanting and maintenance of native plant species designed to achieve pre-disturbance conditions. The applicant shall be responsible for replacing any native plant species that do not survive the first two years after planting, and for ensuring the survival of any replacement plants for an additional two years after their replacement.

H. Water and Sewer Infiltration and Discharge. Water and sanitary sewer facilities shall be designed, located and constructed to avoid infiltration of floodwaters into the system, and to avoid discharges from such facilities to streams and wetlands.

I. On-Site Systems. On-site septic systems and private wells shall be prohibited within the TG-P Subdistrict. (Ord. X, year).

17.47.250 Decision Options and Conditions of Approval

A. Decision Options. The Approval Authority may approve, approve with conditions, or deny an application based on the provisions of this chapter. The Approval Authority may require conditions necessary to comply with the intent and provisions of this chapter.
B. Conditions. The required reports shall include design standards and recommendations necessary for the engineer and biologist, certified wetland scientist or other qualified individual to provide reasonable assurance that the standards of this section can be met with appropriate mitigation measures. These measures, along with staff recommendations, shall be incorporated as conditions into the final decision approving the proposed development.
C. Assurances and Penalties. Assurances and penalties for failure to comply with mitigation, engineering, erosion and water quality plans required under this section shall be as stated in Chapter 17.03 General Provisions.

17.47.260 Administrative Adjustment to Underlying Zone Dimensional Standards. The purpose of this section is to allow adjustments to dimensional standards of the underlying zoning district to reduce or move the development footprint to minimize adverse impacts on natural resource values within the TG-P Subdistrict. The Planning Director may approve adjustment applications with public notice.

A. Adjustment Option. The Planning Director may approve up to a 50 percent adjustment to any dimensional standard (e.g., setback, height or lot area) of the underlying zoning district outside the boundaries of the significant tree grove to allow development consistent with the purposes of the TG-P Subdistrict.
B. Adjustment Criteria. A TG-P adjustment may be requested when development is proposed on a site within or partially within a TG-P Subdistrict. For the director to approve a dimensional adjustment to standards outside the tree grove boundary in the underlying zoning district, the applicant shall demonstrate that the following criteria are fully satisfied:
    1. The adjustment is the minimum necessary to allow a permitted use, while at the same time minimizing disturbance within significant tree grove area.
    2. Explicit consideration has been given to maximizing tree retention and vegetative cover, protecting significant and landmark trees, and minimizing excavation and impervious surface area.
    3. Design options have been considered to reduce the impacts of development, including but not limited to multi-story construction, siting of the structure or residence close to the street to reduce driveway distance, maximizing the use of native landscaping materials, and minimizing parking area and garage space.
    4. Assurances are in place to guarantee that future development will not encroach further on land under the same ownership within the TG-P Subdistrict.
    5. The Planning Director may impose any reasonable condition necessary to mitigate identified impacts resulting from development on otherwise unbuildable land. (Ord. X, year).

17.47.270 Density Transfer. Residential density transfer from land within the TG-P Subdistrict (the sending area) to contiguous property under the same ownership that is outside any applicable natural resource or hazard protection subdistricts (the receiving area), shall be permitted, subject to the following standards.

A. Maximum Density. To encourage density transfer, the transfer area shall be subject to the development standards of the next higher residential zoning district, if there is available utility capacity.
B. Example. For example, density transfer from the TG-P Subdistrict to land with an underlying R1 zone to the sending area on the same site but outside the Natural Hazards or Protection and the Natural Resource Protection Subdistricts shall be capped at the density allowed in the R2 zone. (Ord. X, year).

17.47.280 Economic Hardship Variances. Variances to the provisions of the TG-P Subdistrict shall be discouraged and may be considered only as a last resort when application of the TG-P Subdistrict would result in a property (one or more contiguous lots under common ownership) having no reasonable economic use.

A. Variance Option. The Planning Commission shall hear and decide variances from dimensional provisions of this chapter, in accordance with the criteria in Section 17.74.110.
B. Additional Criteria. In addition to the general variance criteria described in Section 17.74.110, the following additional criteria must be met to grant a variance to any dimensional provision of this chapter:
    1. The variance is necessary to allow reasonable economic use of the subject parcel or parcels of land owned by the applicant that were not created after the effective date of this chapter.
    2. Strict application of the provisions of this chapter would otherwise result in the loss of a buildable site for a use that is permitted outright in the underlying zoning district, and for which the applicant has submitted a formal application.
    3. The applicant has exhausted all options available under this chapter to relieve the hardship.
    4. Based on review of all required studies described in Section 17.47.240, the variance is the minimum necessary to afford relief, considering the potential for increased flood and erosion hazard, and potential adverse impacts on significant trees, native vegetation, fish and wildlife habitat, and water quality.
    5. Based on review of all required studies described in Section 17.47.240, any adverse impacts on tree canopy, water quality, erosion or slope stability that will result from approval of this hardship variance have been mitigated to the greatest extent possible.
    6. Loss of significant tree and vegetative cover shall be minimized. Any lost vegetative cover shall be replaced on-site at the basis established in Section 17.47.240(G). (Ord. X, year).

17.47.290 Verification of Tree Grove Boundaries. Significant tree grove boundaries may be appealed and must be verified occasionally to determine the true location of tree grove perimeters through a site-specific survey. Applications for development on a site that contains significant tree groves may request a determination that the subject

site or portions of the subject site is not subject to the standards of Chapter 17.47. Verifications shall be processed as outlined below.

A. Verifications shall be processed as a by the Planning Director without Notification.
B. Applicants for a determination under this section shall submit a site plan meeting the requirements of Chapter 17.72, as applicable, and provide a survey location of on-site significant trees within the significant tree grove and their respective CRZs.
C. Such requests may be approved provided that there is evidence substantiating that the tree grove perimeter boundaries identified on the McMinnville Significant Tree grove map are inconsistent with the CRZs of trees within the grove on site. (Ord. X, year).

17.47.300 Plan Amendment Option. Any owner of property affected by the Goal 5 significant tree grove protections may apply for a comprehensive plan amendment as provided in MMC Section 17.74.020. This amendment must be based on a specific development proposal. The effect of the amendment would be to remove Goal 5 protection from the property. The applicant must demonstrate that such an amendment is justified by either of the following:

A. ESEE analysis. The applicant may prepare an environmental, social, economic and energy (ESEE) consequences analysis prepared in compliance with OAR 660-23-040.
    1. The analysis must consider the ESEE consequences of allowing the proposed conflicting use, both the impacts on the specific resource site and the comparison with other comparable sites within the McMinnville Planning Area;
    2. The ESEE analysis must demonstrate to the satisfaction of the city council that the adverse economic consequences of not allowing the conflicting use are sufficient to justify the loss, or partial loss, of the resource;
    3. In particular, ESEE analysis must demonstrate why the use cannot be located on buildable land, consistent with the provisions of this chapter, and that there are no other sites within the City of McMinnville Planning Area that can meet the specific needs of the proposed use;
    4. The ESEE analysis must be prepared by a team consisting of a wildlife biologist or wetlands ecologist and a land use planner or land use attorney, all of whom are qualified in their respective fields and experienced in the preparation of Goal 5 ESEE analysis;
    5. If the application is approved, then the ESEE analysis must be incorporated by reference into the McMinnville Comprehensive Plan.
B. Demonstration of change. In this case, the applicant must demonstrate that the significant tree grove area site no longer meets the thresholds of significance or definition of a tree grove, relative to other comparable significant tree groves within the City of McMinnville Planning Area.
    1. Significance thresholds and tree grove definitions are described and applied in the McMinnville Tree Grove Assessment adopted by reference as part of this chapter.

2. To approve this claim, the city council must find that the decline in identified resource values did not result from a violation of this title.
3. If the application is approved, then the change must be integrated into the McMinnville Significant Tree Grove Map. (Ord. X, year).

THIS IS A DRAFT PRODUCT

CHAPTER 17.58

TREES

(as ~~adopted~~ ***amended*** by ~~Ord. 4654B Dec. 9, 1997~~ XXX)

Sections:

17.58.010 Purpose. The purpose of this ordinance is to establish and maintain the maximum amount of tree cover on public and private lands in the city; reduce costs for energy, stormwater management, and erosion control; provide tree-lined streets throughout the city; select, situate and maintain trees appropriately to minimize hazard, nuisance, damage, and maintenance costs; to enhance the appearance, beauty and charm of the City; to increase property values and build stronger ties within neighborhoods; to implement applicable adopted Downtown Improvement Plan provisions; to promote a diverse, healthy, and sustainable community forest; and to educate the public regarding community forest issues. (Ord. 5027 §2, 2017; Ord. 4816 §2, 2004; Ord. 4654B §1, 1997).

17.58.020 Applicability. The provisions of this ordinance shall apply to:

A. ~~Individual~~ ***All*** significant or ~~historic~~ ***landmark*** trees as defined in this ordinance ***located on public or private land within the Urban Growth Boundary (UGB).***
B. All ***street*** trees with trunks located completely or partially within any public area or right-of-way;
C. All trees on developable land and subject to or undergoing development review such as site plan review, tentative subdivision review, or partition review; (Ord. 5027 §2, 2017; Ord. 4654B §1, 1997).

17.58.030 Definitions. For the purpose of this section, refer to Section 17.06.045 for Tree related definitions. (Ord. 4952 §1, 2012).

17.58.040 Tree Removal/Replacement.

A. The removal or major pruning of a tree, if applicable under Section 17.58.020, shall require City approval, unless specifically designated as exempt by this ordinance. Persons wishing to remove or prune such trees shall file an application for a permit with the City. The applicant shall include information describing the location, type, and size of the subject tree or trees, and the reasons for the desired action, and the costs associated with tree removal, replacement, and repair of any other public infrastructure impacted by the tree removal or major pruning. Applications shall be reviewed by the ***"review authority" identified as the*** Planning Director or Planning Director's Designee (hereafter "Planning Director") or the Landscape Review Committee as provided in this Chapter, including Section 17.58.050. Only applications for Complex Tree Removal Permits shall be forwarded to the McMinnville Landscape Review Committee for a decision within 30 (thirty) days of submittal, except as authorized in Section 17.58.050. Requests for tree removal within the Downtown Tree Zone shall be submitted to the City. Such requests shall be acted upon as soon as practicable, with consideration given to public safety, value of the tree to the public, and work schedules. The Planning Director should attempt to make decisions on such requests within five calendar days of submittal. The Landscape Review Committee or the Planning Director, as appropriate, may approve, approve with conditions, or deny the request based on the criteria stated in Section 17.58.050. A decision of the committee or Planning Director may be appealed to the Planning Commission if written notice of the appeal is filed with the City within 15 (fifteen) days of the committee's or the Planning Director's decision. A decision made by the Planning Director's in response to a request to remove an unsafe tree, or a tree causing repeated and excessive damage to sidewalks, or other public or private improvements or structures shall be final, unless appealed by the applicant; no other party shall have standing to appeal.

B. Trees subject to this ordinance which are approved for removal or pruning shall be removed or pruned following accepted arboricultural pruning practices, such as those published by the International Society of Arboriculture (ISA) and any standards adopted by the City. The Planning Director, after consultation with appropriate city staff and/or a certified arborist, shall direct removal of downtown trees that are identified in a current Downtown Tree Zone inventory assessment as unhealthy, dangerous to the public, inappropriate for the downtown area, or otherwise in need of removal.

C. The applicant shall be responsible for all costs associated with the tree removal or pruning, or as otherwise required by this ordinance, and shall ensure that all work is done in a manner which ensures safety to individuals and public and private property.

D. Approval of a request to remove a tree ***subject to the standards of this chapter*** ~~may~~ ***shall*** be conditioned upon replacement of the tree with ~~another~~ tree***(s)*** approved by the city, ***and/***or a requirement to pay to the city an amount sufficient to fund the planting and establishment by the city of a tree, or trees ~~of similar value~~ ***in accordance with a fee schedule adopted by resolution***

of the council. ***The replacement and fee requirements shall be as established in this section***. ~~The value of the existing tree to be removed shall be calculated using the methods set forth in the edition then in effect of the "Guide for Plant Appraisal" published by the International Society of Arboriculture Council of Tree Landscape Appraisers. Every attempt should be made to plant replacement trees in the same general location as the tree being removed. In the event that a replacement tree cannot be planted in the same general location, a condition of approval may be required to allow for the replacement tree to be planted in another location in the Cityas part of the City's annual tree planting program.~~

1. ***Significant and Landmark Tree Removal and Major Pruning Generally.***
   a. ***Exemptions from this Standard.***
      1) ***Residential lots under 20,000 square feet are not subject to the significant tree provisions of this ordinance when:***
         a) ***Such lot is occupied by a cottage clusters, plexes, single dwelling, or townhouses; or***
         b) ***An application to construct a cottage clusters, plexes, single dwelling, or townhouses on such lot is being reviewed by the city. However, no significant trees may be removed prior to the approval of the building permit;***
         c) ***This exemption does not apply to significant trees within the F-P (Flood Area) Zone or to applicable Natural Hazard or Natural Resource Protection Subdistricts.***
      2) ***Undeveloped Parcels. Removal of up to two (2) significant trees during a calendar year, on an undeveloped parcel, shall be exempt from the provisions of this ordinance. This exemption does not apply to significant trees within the F-P (Flood Area) Zone or to applicable Natural Hazard or Natural Resource Protection Subdistricts.***
   b. ***Removal of significant trees shall only be permitted pursuant to the standards of subsections (2) and (3) below and Section 17.58.050.***
   c. ***Removal of landmark trees shall only be permitted pursuant to the standards of subsections (4) and (5) below and Section 17.58.050.***
   d. ***Major pruning of significant and landmark trees shall be reviewed subject to Section 17.58.050(B) Application for Tree Major Pruning Permit. Any tree may be pruned to meet wildfire fuel reduction requirements under the supervision of a certified arborist.***
2. ***Significant trees outside of Natural Resource and Natural Hazard Protection Subdistricts. If the review authority approves significant tree removal, the value of each significant tree to be removed shall be mitigated as follows:***
   a. ***Plant at least three (3) trees, with a minimum caliper of two (2) inches measured at six (6) inches above grade, on-site or on adjacent public land for each significant tree removed. Or if a certified arborist determines that there is no suitable location for replacement trees on-site or on adjacent public land, then the***

applicant shall either plant replacement trees on another property owned by the applicant or pay a replacement fee in accordance with a fee schedule adopted by resolution of the council.

3. Significant trees within NH-P, NH-M, TG-C and RC-P Subdistricts. Where limited significant tree removal is permitted consistent with applicable zoning standards, a tree mitigation plan shall be required, and replacement trees shall be determined by the required tree mitigation planting plan.
4. Landmark Trees outside of Natural Resource and Natural Hazard Protection Subdistricts.
   a. If removal is approved by the review authority on private land not required for public right-of-way dedication, the property owner or land developer shall provide the following mitigation:
      1) The payment of a fee in accordance with a fee schedule adopted by resolution of the council; and
      2) Plant at least three (3) trees, with a minimum caliper of two (2) inches measured at six (6) inches above grade, on-site or on adjacent public land for each significant tree removed. Or if a certified arborist determines that there is no suitable location for replacement trees on-site or on adjacent public land, then the applicant shall either plant replacement trees on another property owned by the applicant or pay a replacement fee in accordance with a fee schedule adopted by resolution of the council.
5. Landmark Trees within the NH-P, NH-M, TG-C and RC-P Subdistricts.
   a. Landmark trees shall be protected unless there is no practicable alternative means to construct a planned public facility identified on an adopted city master plan.
   b. If approved by the review authority for removal, the property owner or land developer shall provide the following mitigation:
      1) The payment of a fee in accordance with a fee schedule adopted by resolution of the council; and
      2) Plant at least three (3) trees, with a minimum caliper of two (2) inches measured at six (6) inches above grade, on-site or on adjacent public land for each significant tree removed. Or if a certified arborist determines that there is no suitable location for replacement trees on-site or on adjacent public land, then the applicant shall either plant replacement trees on another property owned by the applicant or pay a replacement fee in accordance with a fee schedule adopted by resolution of the council.
   c. Removal of landmark trees is subject to the standards of Chapter 17.47.
6. Trees on developable land and subject to or undergoing development review, such as site plan review, tentative subdivision review, or partition review. If approved by the review authority for

removal, the property owner or land developer shall provide the following mitigation:

1) ***Plant at least one (1) trees, with a minimum caliper of two (2) inches measured at six (6) inches above grade, on-site or on adjacent public land for each significant tree removed. Or if a certified arborist determines that there is no suitable location for replacement trees on-site or on adjacent public land, then the applicant shall either plant replacement trees on another property owned by the applicant or pay a replacement fee in accordance with a fee schedule adopted by resolution of the council.***

A. The applicant is responsible for grinding stumps and surface roots at least six inches below grade. At least a two-inch-thick layer of topsoil shall be placed over the remaining stump and surface roots. The area shall be crowned at least two inches above the surrounding grade to allow for settling and shall be raked smooth. The applicant shall restore any damaged turf areas and grades due to vehicular or mechanical operations. The area shall be re-seeded.

B. The applicant shall complete the tree removal, tree replacement if required, within six months of receiving notification of the Planning Director's or Landscape Review Committee's decision. The Planning Director or Landscape Review Committee may allow for additional time to complete the tree replacement to allow for planting in favorable seasons and to promote tree survivability. ***If applicable, the payment of fees shall occur prior to the removal of trees.***

C. Other conditions may be attached to the permit approval by the Planning Director or Landscape Review Committee as deemed necessary.

D. The planting of street trees shall be subject to the design drawings and specifications developed by the City in May 2014, as may be subsequently amended. Specific design drawings and specifications have been developed for trees outside the Downtown Tree Zone. Such design specifications may be periodically updated by the City. ~~to include specifications such as tree root barriers, watering tubes or structures, tree grates, and removable pavers, and shall graphically describe the proper method for planting trees to minimize the potential for sidewalk / tree root conflict.~~ (Ord. 5027 §2, 2017; Ord. 4816 §2, 2004; Ord. 4654B §1, 1997).

17.58.045 Downtown Trees.

A. The pruning and removal of street trees within the Downtown Tree Zone shall be the responsibility of the City, and shall be undertaken at public expense.

B. The planting of street trees shall be subject to the design drawings and specifications developed by the City in May 2014, as may be subsequently amended. Specific design drawings and specifications have been developed for trees within the Downtown Tree Zone. Such design specifications may be periodically updated by the City to include specifications such as tree root barriers, watering tubes or structures, tree grates, and removable pavers, and

shall graphically describe the proper method for planting trees within the Downtown Tree Zone to minimize the potential for sidewalk / tree root conflict.

C. The City shall adopt implementation measures that cause, through rotation over time, the development of a variable aged stand of trees within the Downtown Tree Zone. In order to implement this policy, the Planning Director shall authorize, but shall limit, annual tree removal within the downtown to no more than three (3) percent of the total number of existing downtown trees in the Downtown Tree Zone.

D. A street tree within the Downtown Tree Zone may be removed if the Planning Director determines that the tree is causing repeated and excessive damage to sidewalks or other public or private improvements or structures. (Ord. 5027 §2, 2017).

17.58.050 Application Review and Criteria.

A. Application for Simple Tree Removal Permit.
   1. Review. Applications for simple tree removal permits shall be reviewed by the Planning Director in accordance with the requirements of this Chapter on a form containing information required by the Planning Director .
   2. ***General*** Criteria. Each tree proposed for removal must meet at least one of the following criteria:
      a. The tree is a hazard as determined by a Certified arborist, and the arborist has demonstrated that less intensive options than removal, such as pruning, cabling, or bracing of limbs would not abate the hazard or would have a significant adverse effect on the health of the tree.
      b. The tree is dead or in an advanced state of decline.
      c. The tree species ***has been determined to be a*** ~~is on the~~ nuisance ***by the City*** ~~list for Oregon or the list of invasive trees published by OSU Extension~~.
      d. Tree is infested with pests or disease.
      e. The tree roots are causing damage to sidewalks or other infrastructure, and the damage can't reasonably be abated without removing the tree. In evaluating whether the damage can be reasonably abated without removing the tree, consideration shall be given to impacts of the necessary abatement on the tree's health, further damage to infrastructure that would occur if the tree is retained, and alternative methods of abatement that would retain and protect the tree and prevent further damage. When considering reasonable abatement methods, greater priority shall be placed on retention of larger, healthy trees.
      f. The tree has sustained physical damage to an extent that necessitates its removal to address an issue of safety or tree health and aesthetics.
      g. The proposed removal is part of an approved development project, a public improvement project where no reasonable alternative is available, is part of a street tree improvement program. When considering reasonable alternatives, greater priority shall be placed on retention of larger, healthy trees.

h. If the tree is on an adopted list or inventory of trees identified by the City as part of an adopted tree protection program, such as a Heritage Tree list the decision shall also meet any applicable requirements related to the protection of such trees.

~~i. The tree is in conflict with planned public improvements, no reasonable and practicable alternative to significant or landmark tree removal exists, and any required mitigation plans have been approved by the land use review authority.~~

3. Significant and Landmark Trees Removal Criteria. Each significant or landmark tree proposed for removal must meet at least one of the removal criteria of Section 17.58.050(A)(2) and all of the following criteria:

a. No reasonable and practicable alternative to significant or landmark tree removal exists, and any required mitigation plans have been approved by the review authority.

b. Is consistent with the tree removal provisions of applicable natural hazard and natural resource subdistricts, and a mitigation plan for tree loss has been approved by the land use authority.

c. The permit is consistent with the applicable standards of Section 17.58.040.

4. Arborist Verification. In order to meet any of the above criteria for removal verification of tree health or a tree's impacts on infrastructure shall be required, at the expense of the applicant, by a Certified Arborist acceptable to the City. The Planning Director may waive the requirement for verification by an Arborist if it is reasonable to determine a tree is dead by inspection or other documentation required by the Planning Director . (Ord. 5027 §2, 2017; Ord. 4816 §2, 2004; Ord. 4654B §1, 1997).

5. At the Planning Director's discretion, any simple tree removal permit application may be referred to the Landscape Review Committee for review, to be reviewed by the Committee within 30 days of submittal of the application.

B. Application for Tree Major Pruning Permit.

1. Review. Applications for major pruning of trees shall be reviewed by the Planning Director in accordance with the requirements of this Chapter on a form containing information required by the Planning Director .

2. Criteria. Each tree proposed for major pruning shall meet all of the following criteria:

a. The pruning is necessary to reduce risk of hazard, maintain or improve tree health and structure, or improve aesthetics in accordance with accepted arboricultural practices, or to achieve compliance with public standards such as vision clearance, vertical clearance above sidewalks or roadways, or separation from overhead utilities.

b. The proposed pruning shall be consistent with the public purposes of Section 17.58.010 and shall not adversely affect the health of the tree. When pruning is necessary to reduce risk of hazard or achieve

compliance with public standards, the tree structure and aesthetics shall be maintained to the extent practicable.

c. The proposed pruning will be performed consistent with accepted arboricultural practices, such as those published by the International Society of Arboriculture (ISA).

d. If the tree is on an adopted list or inventory of trees identified by the City as part of an adopted tree protection program, such as a Heritage Tree list, the decision shall also meet any applicable requirements related to the protection of such trees.

3. Arborist Verification. In order to meet any of the above criteria for major pruning, verification of the need and consistency with the criteria for the proposed pruning shall be required, at the expense of the applicant, by a Certified Arborist acceptable to the City.

4. At the Planning Director's discretion, any application for major pruning of a tree may be referred to the Landscape Review Committee for review, to be reviewed by the Committee within 30 days of submittal of the application.

C. Application for Complex Tree Removal Permit.

1. Review. Applications for complex tree removal permits shall be reviewed by the Landscape Review Committee in accordance with the procedures of this Chapter on a form containing information required by the Planning Director.

2. Criteria. An application for a complex tree removal permit shall meet all of the following criteria:

a. The tree removal is necessary to address a public purpose that is not addressed by the criteria for a Simple Tree Removal Permit, and the application does not merely circumvent the requirements for a Simple Tree Removal Permit.

b. The tree removal is necessary to promote the public health, safety, welfare, and/or to accomplish a public purpose or program identified in the City's adopted plans, goals, and/or policies.

c. The tree removal will be consistent with the overall furtherance of a healthy urban forest, including healthy, attractive street trees.

d. ***The permit is consistent with applicable standards of Section 17.58.040 Tree Removal / Replacement.***

3. The Landscape Review Committee may apply conditions of approval as specified in this Chapter and as may be necessary to offset the impact of the tree removal.

4. If the tree is on an adopted list or inventory of trees identified by the City as part of an adopted tree protection program, such as a Heritage Tree list, the decision shall also meet any applicable requirements related to the protection of such trees.

17.58.060 Permit Exemptions.

A. Emergency Removal of Hazardous Tree - If an imminent danger exists to the public or any private property owner or occupant, the City may issue an

emergency removal permit. The removal shall be in accordance with International Society of Arboriculture (ISA) standards.

B. Tree Impacting Public Infrastructure – If a tree is causing damage to or impacting public infrastructure that the adjacent property owner is not responsible for repairing, such as pedestrian ramps, utility vaults, or public storm or sanitary sewer lines, the tree removal may be approved by the Planning Director. The removal shall be in accordance with International Society of Arboriculture (ISA) standards. In the event that a replacement tree cannot be planted in the same general location as the tree removed, the replacement tree may be planted in another location in the City as part of the City's annual tree planting program.

C. Maintenance - Regular pruning maintenance which does not require the removal of over 20 percent of the tree's canopy, tree topping, or the disturbance of over 10 percent of the tree's root system is exempt from the provisions of this ordinance.

D. Removal of downtown trees at the direction and initiative of the Planning Director. (Ord. 5027 §2, 2017; Ord. 4816 §2, 2004; Ord. 4654B §1, 1997).

17.58.070 Tree Topping. It shall be unlawful for any person, firm, or the City to top any tree ***subject to the standards of this Chapter***. Trees severely damaged by storms or other causes or certain trees under utility wires or other obstructions where normal pruning practices are impractical may be exempted at the determination of the Planning Director or Landscape Review Committee, applying criteria developed by the City. (Ord. 4654B §1, 1997).

17.58.075 Protection of Trees.

A. It shall be unlawful for any person to remove, destroy, break, or injure any ~~street tree or public~~ tree ***subject to the standards of this Chapter***. Individuals convicted of removing or destroying a tree without City approval shall be subject to paying to the City ***a fee in accordance with a fee schedule adopted by resolution of the council.*** ~~an amount sufficient to fund the planting and establishment of a tree, or trees, of similar value~~. ~~The value of the removed or destroyed tree shall be calculated using the methods set forth in the edition then in effect of the "Guide for Plant Appraisal" published by the International Society of Arboriculture Council of Tree Landscape Appraisers.~~

B. It shall be unlawful for any person to attach or keep attached to any ~~street or public~~ tree ***subject to the standards of this Chapter*** or to the guard or stake intended for the protection of such tree, any rope, wire, chain, sign, or other device, except as a support for such tree.

C. During the construction, repair, alteration or removal of any building or structure it shall be unlawful for any owner or contractor to leave any ***tree subject to the standards of this Chapter*** ~~street tree or public tree~~ in the vicinity of such building or structure without a good and sufficient guard or protectors as shall prevent injury to such tree arising out of or by reason of such construction or removal.

D. Excavations shall not occur within the drip line of any street tree or public tree without approval of the City, applying criteria developed by the ***City*** ~~Landscape Review Committee~~. Utility pole installations are exempted from these requirements. During such excavation or construction, any such person shall guard any street tree or public tree within the drip line, or as may be required by the Planning Director or Landscape Review Committee.
E. All building material or other debris shall be kept outside of the drip line of any ***tree subject to the standards of this Chapter*** ~~street tree or public tree~~. (Ord. 4654B §1, 1997).

17.58.080 Street Tree Planting - When Required. All new residential development, commercial or industrial development, subdivisions, partitions, or parking lots fronting on a public roadway which has a designated curb-side planting strip or planting island shall be required to plant street trees in accordance with the standards listed in Section 17.58.090. (Ord. 4654B §1, 1997).

17.58.090 Street Tree Standards.

A. The species of the street trees to be planted shall be chosen from the McMinnville Street Tree List, as approved by Resolution 2019-26, and as may have been subsequently amended, unless approval of another species is given by the McMinnville Landscape Review Committee. The Landscape Review Committee may periodically update the McMinnville Street Tree List as necessary to reflect current arborist practices and industry standards.
B. Street trees shall be a minimum of two (2) inches in caliper measured at six (6) inches above ground level. All trees shall be healthy grown nursery stock with a single straight trunk, a well-developed leader with tops and roots characteristic of the species cultivar or variety. All trees must be free of insects, diseases, mechanical injury, and other objectionable features when planted.
C. Small or narrow stature trees (under 25 feet tall and less than 16 feet wide branching) should be spaced no greater than 20 feet apart; medium sized trees (25 feet to 40 feet tall, 16 feet to 35 feet wide branching) should be spaced no greater than 30 feet apart; and large trees (over 40 feet tall and more than 35 feet wide branching) should be spaced no greater than 40 feet apart. Within residential developments, street trees should be evenly spaced, with variations to the spacing permitted as approved by the City for specific site limitations and safety purposes. Within commercial and industrial development staggered, or irregular spacing is permitted, as may be approved by the McMinnville Landscape Review Committee. When planting replacement trees within the Downtown Tree Zone, consideration shall be given to the height of adjacent buildings.
D. Except as provided in this Section, street trees shall be planted within a curbside planter strip or tree wells consistent with the applicable standards and dimensions of the City's adopted Complete Street standards, with the street trees centered between back of curb and front of sidewalk. However, where a street with sidewalk was previously constructed to a different standard, the Planning Director may authorize deviation to the street tree planting standards,

with street trees planted in a narrower planter strip or behind the sidewalk. Except when authorized by the Planning Director, street trees shall not be planted within a curbside landscape strip narrower than four (4) feet in width between the sidewalk and curb. When nonconforming conditions do not allow for trees to be planted in tree wells or planter strips along major collector or arterial streets per the adopted Complete Street standards, street trees adjacent to major collector streets or arterial streets shall be placed a minimum of five (5) feet from the back edge of the sidewalk. Except when authorized by the Director, a street tree shall not be planted closer than two and one-half (2 1/2) feet from the face of a curb. These standards may be superseded by design drawings and specifications as periodically developed and adopted by the City.

E. Street trees shall not be planted within ten (10) feet of fire hydrants, utility poles, sanitary sewer, storm sewer or water lines, or within twenty (20) feet of street light standards or street intersections, or within five (5) feet of a private driveway or alley. New utility poles shall not be located within five (5) feet of an existing street tree. Variations to these distances may be granted by the Public Works Director and as may be required to ensure adequate clear vision.

F. Existing street trees shall be retained unless approved by the Planning Director for removal during site development or in conjunction with a street construction project. Sidewalks of variable width and elevation may be utilized as approved by the Planning Director to save existing street trees. Any street tree removed through demolition or construction within the street right-of-way, or as approved by the City, shall be replaced within the street right-of-way at a location approved by the city with a tree, or trees, of similar value. As an alternative the property owner may be required to pay to the City an amount sufficient to fund the planting and establishment by the city of a tree of similar value, ***in accordance with a fee schedule adopted by resolution of the council.*** ~~The value of the existing street tree to be removed shall be calculated using the methods set forth in the edition then in effect of the "Guide for Plant Appraisal" published by the International Society of Arboriculture Council of Tree Landscape Appraisers.~~ The developer or applicant shall be responsible for the cost of the planting, maintenance and establishment of the replacement tree.

G. Sidewalk cuts in concrete for tree planting shall be a minimum of four feet by six feet, with the long dimension parallel to the curb, and if located within the Downtown Tree Zone shall follow the design drawing or updated design drawings and specifications as periodically developed and adopted by the City. (Ord. 5027 §2, 2017; Ord. 4816 §2, 2004; Ord. 4654B §1, 1997).

17.58.100 Street Tree Plans.

A. Submittal.
   1. Subdivisions and Partitions: Street tree planting plans shall be submitted to the Planning Director for review and approval prior to the filing of a final subdivision or partition plat.
   2. Commercial, Industrial, Parking Lots, and Multi-dwelling Residential Development: Landscape plans, to include street tree planting as may be

required by this ordinance, shall be submitted to the Planning Director for review and approval prior to the issuance of a building permit.

B. Street Tree Plan Content. At a minimum, the street tree planting plan should:
   1. Indicate all existing trees, noting location, species, size (caliper and height) and condition;
   2. Indicate whether existing trees will be retained, removed or relocated;
   3. Indicate the measures to be taken during site development to ensure the protection of existing trees to be retained;
   4. Indicate the location, species, and size (caliper and height) of street trees to be planted;
   5. Indicate the location of proposed and existing utilities and driveways; and
   6. Indicate the location of rights-of-way, existing structures, driveways, and existing trees including their species, size, and condition, within twenty feet of the subject site. (Ord. 4654B §1, 1997).

17.58.110 Street Tree Planting.

A. Residential subdivisions and partitions.
   1. Planting Schedule: Street trees required of residential subdivisions and partitions shall be installed prior to submittal of a final subdivision plat or partition plat. As an alternative the applicant may file a surety bond or other approved security to assure the planting of the required street trees, as prescribed in Section 17.53.153.

B. Commercial, Industrial, Residential, Parking Lot Development.
   1. Planting Schedule: Street trees required of a commercial, industrial, residential, or parking lot development shall be installed at the time all other required landscaping is installed. (Ord. 4654B §1, 1997).

17.58.120 Street Tree Maintenance.

A. Street trees shall be continually maintained, including necessary watering, weeding, pruning and replacement, by the developer or property owner for one full growing season following planting, or as may be required by the City.

B. Street tree plans, or landscape plans including street trees, shall be maintained in perpetuity. In the event that a street tree must be replaced, the adjacent property owner or developer shall plant a replacement tree of a species from the approved street tree or landscape plan.

C. Maintenance of street trees, other than those located in the Downtown Tree Zone shall be the continuing obligation of the abutting property owner. The City shall undertake regular maintenance of street trees within the Downtown Tree Zone in accordance with appropriate horticultural practices including pruning and fertilizing to properly maintain the health of such trees. (Ord. 4816 §2, 2004; Ord. 4654B §1, 1997).

D. Street trees, as they grow, shall be pruned to provide at least eight (8) feet of clearance above sidewalks and thirteen (13) feet above local streets, fifteen (15) feet above collector streets, and eighteen (18) feet above arterial streets. This provision may be waived in the case of newly planted trees so long as they do not interfere with public travel, sight distances, or endanger public safety as

determined by the City. Major pruning, as defined in Section 17.58.020, of a street tree must be approved by the City in accordance with Sections 17.58.040 and 17.58.050. (Ord. 5027 §2, 2017; Ord. 4654B §1, 1997

THIS IS A DRAFT PRODUCT

PROPOSED AMENDMENTS TO THE MCMINNVILLE COMPREHENSIVE PLAN, VOLUME II

This entire chapter is new. Goal 1 addresses Natural Hazard and Goal 2 addresses Natural Resources

CHAPTER XI
NATURAL RESOURCES

GOAL XI 2: TO ADOPT INVENTORIES, POLICIES, AND GOALS FOR RIPARIAN COORDIORS, TREE GROVES, AND SCENIC VIEWS

Multi-Resource Policies

201.00 The City of McMinnville shall adopt and maintain the McMinnville Natural Resources Inventory as part of the McMinnville Comprehensive Plan (Volume I). The inventory shall include maps and text that identify the location, type and resource values for three types of natural resources: riparian corridors, tree groves and scenic views within the McMinnville UGB.

202.00 The City shall follow the process set forth in the Goal 5 Natural Resources Administrative Rule (OAR Chapter 660, Division 023) to prepare natural resource inventories, determine the significance of inventoried natural resource sites, identify conflicting uses, evaluate the ESEE (economic, social, environmental and energy) consequences of alternative protection program, and adopt comprehensive plan policies and land use regulations to protect significant natural resource sites.

203.00 Natural Resource policies shall be implemented by Chapter 17.47 Natural Resource Protection Overlay Zones. Each natural resource subdistrict shall include objective development standards to protect significant natural resource sites identified in adopted Natural Resources Inventories. In cases of conflict with underlying base zone standards, the standards of the applicable natural resource subdistrict shall control.

204.00 The City of McMinnville shall coordinate with the Greater Yamhill Watershed Council to facilitate watershed restoration and improvement projects in natural resource areas such as floodplains, riparian corridors, tree groves and scenic views. Shared natural resource protection goals include: (1) removal of invasive vegetation species; and (2) restoration and enhancement of wetlands that provide a variety of natural resource, water quality, and flood control benefit.

Riparian Corridor Policies

210.00 The City of McMinnville riparian corridor protection program supplements floodplain regulations by protecting and enhancing fish-bearing rivers and streams within the UGB from most types of urban development, in coordination with state and federal agency

requirements and the Greater Yamhill Watershed Council. The riparian protection program is implemented by Chapter 17.47 of the McMinnville Municipal Code.

211.00 The City of McMinnville shall apply the Riparian Corridor "safe harbor" provisions of OAR Chapter 660, Division 023 to inventory and protect riparian corridors within the McMinnville UGB. The McMinnville Riparian Corridor Inventory includes the North and South Yamhill Rivers, Cozine Creek, Baker Creek and their fish-bearing tributaries. The Riparian Corridor width measured from the inventoried top-of-bank shall be 75 feet from the South Yamhill River and 50 feet for all other fish-bearing rivers and streams.

212.00 The riparian corridor may be adjusted based on a site-specific determination of the top-of-bank as defined in OAR 660-023-0090(1)(g) prepared by an engineer with experience in hydrology registered in the state of Oregon.

Scenic Views and Viewsheds Policies

220.00 The City of McMinnville scenic view program is designed to ensure the protection of scenic viewpoints and corresponding viewsheds consistent with Great Neighborhood Principles.

221.00 The McMinnville Scenic Viewpoint and Viewshed Inventory identifies significant viewpoints within the McMinnville UGB and corresponding viewsheds both within and outside the McMinnville UGB. Viewsheds include the following characteristics:

1. Mountain views – Cascade Range, including Mt. Jefferson and Mt. Hood and the Coast Range areas.

2. Hill views - McMinnville's West Hills, Red Hills of Dundee, Amity Hills, and Chehalem Mountains, including forested areas.

3. Agricultural land views - Cropland, pastures, orchards, and vineyards.

4. Riparian corridor views - Forests and floodplains along North and South Yamhill Rivers and Baker Creek.

5. Gateway views - Views entering City along Highway 18 and views of Downtown historic buildings and tree-lined streets.

6. City views – Views of the City from the West Hills, including downtown, forested riparian corridors and park views.

222.00 Private Land with Scenic Viewpoints: An Economic, Social, Environmental and Energy (ESEE) analysis, consistent with OAR 660-023-0040, is required for area plans with a scenic viewpoint. The analysis shall consider alternative program options to protect identified scenic viewsheds, including but not limited to the layout and design of streets and open spaces, pedestrian and bicycle circulation systems, and the spacing and design of proposed buildings, landscaping and above-ground utilities.

223.00 Public Land with Scenic Viewpoints: Scenic views and viewsheds shall be considered in creation of and amendments to park master plans and public facilities master plans adopted by the City Council. Viewpoints and viewsheds shall be considered in the orientation and design of above-ground (vertical elements) infrastructure projects that could obstruct scenic views from public land or improvements.

Tree Grove Policies

224.00 The City of McMinnville shall apply the standard Goal 5 process set forth in OAR 660-023 to inventory, analyze and protect significant tree groves within the McMinnville UGB.

225.00 The McMinnville Tree Grove Inventory identified 27 significant tree groves within the McMinnville UGB. An ESEE analysis supports a limited protection program for Tree Groves. The protection program for the identified tree groves is implemented by Chapter 17.47 of the Municipal Code.

Tree Protection Policies

230.00 Landmark and Significant trees shall be protected when located within the UGB and only removed in qualifying circumstances as identified in Chapter 17.47 and Chapter 17.58 of the Municipal Code.

McMinnville Tree Grove Protections ESEE Analysis

Contents

Exhibits

- Exhibit A. Draft Chapter 17.47
- Exhibit B. McMinnville Tree Grove Inventory Report
- Exhibit C. McMinnville Significant Tree Grove Map
- Exhibit D. Citations and Bibliography

Introduction

This Economic, Social, Environmental, and Energy (ESEE) Analysis is prepared in accordance with Oregon Administrative Rules (OAR) 660-023-0030 and 660-023-0040. The Goal 5 process requires: (1) inventorying resources; (2) determining significance; (3) identifying conflicting uses and defining an impact area; (4) analyzing ESEE consequences of three program options—full protection, no protection, and limited protection; and (5) adopting a program to achieve Goal 5. This analysis supports policy decisions for significant tree groves within the McMinnville Urban Growth Boundary (UGB), balancing natural resource values with urban development needs.

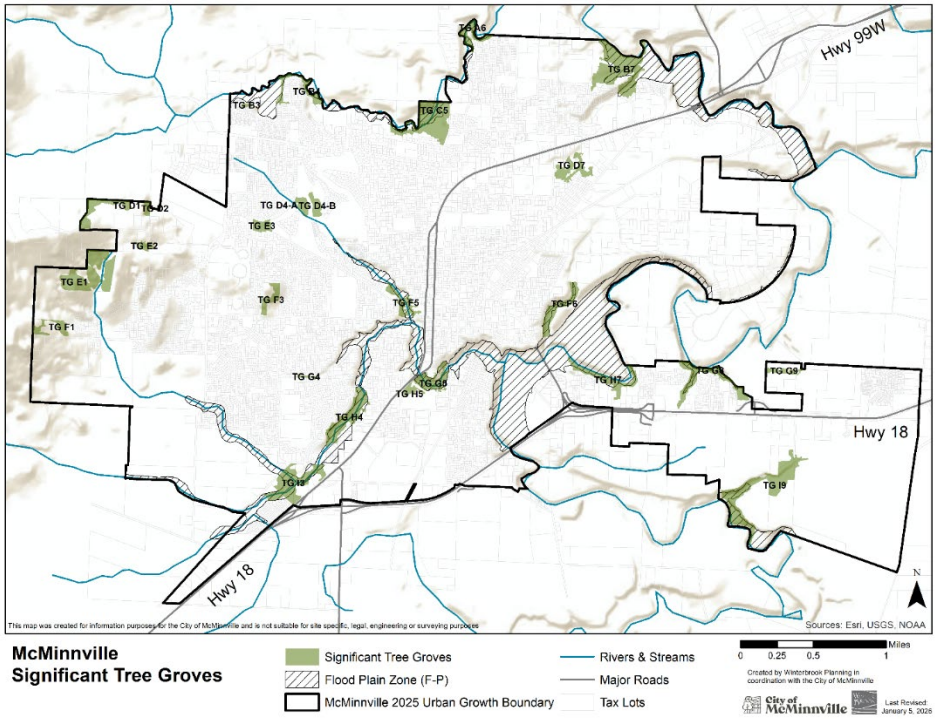
Inventory and Significance Determination

Under the Goal 5 Rule, local governments must inventory potential Goal 5 resources and then apply criteria to determine which resource sites are significant and which are not. Resource sites that do not qualify as "significant" are not subject to the ESEE decision-making process and therefore are not subject to local Goal 5 regulatory programs.

Consistent with OAR 23-023-0030 *Inventory Process*, Winterbrook followed a multi-step method to determine the location and the relative quantity and quality of tree groves within the McMinnville UGB.

Winterbrook inventoried tree groves with contiguous canopy cover of one acre or more located outside of floodplains. Linear and fragmented/developed areas were removed from the mapped groves in order to focus on larger, cohesive tree groves.

Winterbrook prepared GIS base maps to conduct field inventories. For each of the 30 groves, Winterbrook completed Tree Grove Assessment (TGA) forms and refined mapped tree grove boundaries based on field observations. Winterbrook then ranked each grove based on 10 criteria. Thirty tree groves sites were initially identified within the McMinnville study area. Twenty-six tree groves met the significance threshold with a score of 25 or greater. 390 acres of significant tree groves were identified within the McMinnville UGB. Further inventory details are available in Exhibit B. McMinnville Tree Grove Inventory Report.



Benefits of Tree Grove Protection

Tree groves provide an array of community benefits and support the Great Neighborhood Principles by enhancing livability, providing passive recreation opportunities, and buffering between uses. As documented further in Exhibit D. Citations and Bibliography, Tree Groves can provide the following benefits:

Economic

- Increase adjacent property values.
- Reduce stormwater infrastructure costs by slowing runoff and increasing infiltration and providing erosion control benefits.
- Lower energy costs by reducing heat island effects and providing natural cooling.
- May improve worker productivity and support tourism and retail spending.

Social

- Improve public health, reduce premature mortality, and support mental well-being.
- Enhance school performance and workplace focus when views of trees are present.
- Increase community pride and provide aesthetic and emotional value to neighborhoods.
- Buffer between land uses.
- Provide recreation opportunities.

Environmental

- Provide carbon sequestration and reduce air pollution.
- Mitigate heat island effects and lower local temperatures.
- Improve water quality, reduce nutrient leaching.
- Provide wildlife habitat and support local biodiversity.
- Reduce noise pollution.

Energy

- Micro-climate effects can reduce localized electricity consumption for cooling and heating through shade and wind buffering.
- Large trees provide greater annual carbon capture, making protection of mature groves more effective than planting alone

Draft Limited Protection Program

The limited protection program, attached as Exhibit A, was drafted to balance the ESEE consequences and meet the requirements of OAR 660-023-0050. The tree grove provisions of draft Chapter 17.47, which apply to areas of tree groves identified on the McMinnville Tree Groves Map, are summarized below.

Exemptions

- Routine Maintenance: Lawn/landscaping upkeep, removal of non-native plants (with native replacement), light pruning.
- City/Public Works: Emergency repairs, routine public facility maintenance, and utility/road work in easements (tree replacement still required).
- Small Developed Lots: Existing subdivision lots under 9,000 sq ft with already cleared yards before tree grove adoption.
- Like-for-Like Replacement: Rebuilding within the same footprint or replacing existing impervious area.
- Canopy Overhang: If tree grove trunks are not on the parcel, the section doesn't apply.

Table 1. Draft Tree Grove Use Summary

Activity / Use	Review Type	Mitigation Plan	Notes / Conditions
Low-impact recreation (trails, picnic tables, interpretive signs, viewing shelters)	Ministerial	No	Must avoid tree removal; designed to minimize disturbance
Removal of hazardous or diseased trees	Ministerial	No	Written arborist determination required
Tree grove/native habitat restoration (including removal of non-native species)	Ministerial	Yes	Restoration planting must use native species
Arborist determination/survey of Critical Root Zone (CRZ) boundaries	Ministerial	No	Used to verify site conditions for applications
Public facilities in City Public Facilities Plan	Director Review (w/ notice)	Yes	Must demonstrate no feasible alternative outside grove
Local streets or driveways for residences or facilities	Director Review (w/ notice)	Yes	Must minimize crossing/tree removal, and demonstrate no reasonable alternative
Public drainage facilities	Director Review (w/ notice)	Yes	Must avoid unnecessary excavation or grading

Utility crossings and underground utilities	Director Review (w/ notice)	Yes	Routing must minimize disturbance
Adjustments to underlying zoning standards to reduce impact on grove	Director Review (w/ notice)	No	Up to 50% dimensional adjustment allowed
Park improvements consistent with Park Master Plan	Director Review (w/ notice)	Yes	Must be explicitly authorized in master plan
Economic hardship variance	Planning Commission (public hearing)	Yes	Only if property has no reasonable economic use
Removal of native plant species	Prohibited	—	Except where part of approved restoration or mitigation
New structures or impervious surfaces	Prohibited	—	Unless specifically authorized in Chapter
Grading or placement of fill	Prohibited	—	Unless part of approved permitted use with mitigation
Creation of unbuildable parcel entirely within a tree grove.	Prohibited	—	

Additionally, draft Chapter 17.47 allows residential density transfer to reduce potential reductions in buildable land potential and details the process to amend areas of Goal 5 protections.

Findings for OAR 660-023-0040: ESEE Decision Process

ESEE Consequences

(1) Local governments shall develop a program to achieve Goal 5 for all significant resource sites based on an analysis of the economic, social, environmental, and energy (ESEE) consequences that could result from a decision to allow, limit, or prohibit a conflicting use. This rule describes four steps to be followed in conducting an ESEE analysis, as set out in detail in sections (2) through (5) of this rule. Local governments are not required to follow these steps sequentially, and some steps anticipate a return to a previous step. However, findings shall demonstrate that requirements under each of the steps have been met, regardless of the sequence followed by the local government. The ESEE analysis need not be lengthy or complex, but should

enable reviewers to gain a clear understanding of the conflicts and the consequences to be expected. The steps in the standard ESEE process are as follows:

(a) Identify conflicting uses;

(b) Determine the impact area;

(c) Analyze the ESEE consequences; and

(d) Develop a program to achieve Goal 5.

Findings: The McMinnville Natural Resources Project is a multi-year community project to inventory and prioritize specified natural resources within the McMinnville UGB, including tree groves. The inventory is used to balance the community's need for buildable land for housing and economic development with natural resource protection. This document provides the ESEE analysis for significant tree groves.

Conflicting Uses

(2) Identify conflicting uses. Local governments shall identify conflicting uses that exist, or could occur, with regard to significant Goal 5 resource sites. To identify these uses, local governments shall examine land uses allowed outright or conditionally within the zones applied to the resource site and in its impact area. Local governments are not required to consider allowed uses that would be unlikely to occur in the impact area because existing permanent uses occupy the site. The following shall also apply in the identification of conflicting uses:

(a) If no uses conflict with a significant resource site, acknowledged policies and land use regulations may be considered sufficient to protect the resource site. The determination that there are no conflicting uses must be based on the applicable zoning rather than ownership of the site. (Therefore, public ownership of a site does not by itself support a conclusion that there are no conflicting uses.)

(b) A local government may determine that one or more significant Goal 5 resource sites are conflicting uses with another significant resource site. The local government shall determine the level of protection for each significant site using the ESEE process and/or the requirements in OAR 660-023-0090 through 660-023-0230 (see 660-023-0020(1)).

Findings: The Goal 5 Rule (OAR 660-23-010) defines conflicting uses as follows:

> *"Conflicting use" is a land use, or other activity reasonably and customarily subject to land use regulations, that could adversely affect a significant Goal 5 resource (except as provided in OAR 660-023-0180(1)(b)). Local governments are not required to regard agricultural practices as conflicting uses.*

This section identifies land uses and activities that conflict with the preservation of Goal 5 resource values. The conflicts are based primarily on the applicable zoning within the City Limits, and on the applicable comprehensive plan designation within the unincorporated urban growth areas. Within the McMinnville City Limits, urban land uses are allowed outright and conditionally, subject to city land use review procedures. In unincorporated urban areas, county zoning applies, and future urban uses will be determined through the master planning process.

The primary means of identifying conflicting uses is to first determine what zone or zones (including overlay districts) apply to a particular resource site, and then to identify uses and activities that are allowed by the zoning and that conflict with full protection of inventoried resource values. Although McMinnville Comprehensive Plan designations and primary zoning districts prescribe land uses that conflict with preservation of significant natural resources, the primary conflicts occur at the time of site preparation and construction. Vegetation removal, grading and construction activities can have severe adverse impacts on natural resource values. These conflicts endure when vegetated areas are paved or built upon, making re-vegetation and soil permeability unlikely. Maintaining multiple layers of native vegetation is an important factor in determining wildlife habitat significance, water quality and groundwater recharge, and scenic value. Excavation results in loss of vegetation, exposed soils and increased erosion, and altered drainage patterns and water courses. Impervious surface areas decrease water recharge, create urban “heat islands,” and eliminate wildlife habitat.

In the McMinnville UGB, conflicts arise from uses allowed in residential, commercial, and industrial zones; public facilities and transportation improvements; and certain park or school developments, summarized below:

Residential Uses

The Low-Density Residential R-1 (9,000 SF min) and R-2 zones (7,000 SF min) allow single-family, duplex, triplex and fourplex dwellings, townhomes, tiny homes, single room occupancies, ADU’s, and cottage cluster housing.

In addition to uses allowed in the above zones, the Medium to High Density Residential R-3 (6,000 SF min), R-4 (5,00 SF min), R-5 (5,000 SF min), and O-R zones allow mobile home parks and apartments.

Residential development in these zones is typically allowed through the land division, design review, and planned development processes, or through building permit review for individual lots. All residential zones also allow public and semi-public uses (such as schools and childcare facilities) through the conditional use process. Higher density zones allow hospitals and nursing homes as conditional uses. These zones also allow streets and public facilities necessary to serve development. Vegetation removal and excavation necessary for construction are also allowed.

Industrial and Commercial Uses

Industrial and Commercial zones include the M-L, M-1, and M-2 Industrial zones, the C-1, C-2, and C-3 Commercial zones, These zones collectively allow industrial uses and varying intensities of office and commercial uses primarily through the building permit review process, although land divisions and conditional development or planned developments may also be land use options. Commercial and industrial buildings typically consist of a single story and require large parking lots and maneuvering areas. Commercial land is concentrated along Highway 99. Unlike residential areas, density transfer typically is not a viable option. McMinnville's industrial land base is concentrated in east and south McMinnville, near the airport and the Yamhill River.

Public Facilities Uses

Comprehensive plan policies, master plans (storm drainage, wastewater, water, airport, transportation), and capital projects identify infrastructure that occasionally intersects with significant tree groves. Construction typically entails vegetation removal, grading, and some impervious surface, creating direct conflicts with full protection. Public facilities and services provide the supportive framework necessary for urban development, and the provision of such facilities through the annexation process is the primary growth management tool.

Although facilities like sanitary sewer, water, electrical, and communication lines often are found in public street rights-of-way, sanitary sewer and stormwater management facilities function most efficiently under gravity-flow conditions and benefit from location in or adjacent to natural drainageways, which often intersect with riparian corridors and significant tree groves associated with riparian corridors.

The McMinnville Comprehensive Plan identifies the general land use pattern and resulting needs for public services and utilities. Public facilities that are located within a resource site or its respective impact area are considered conflicting uses. Vegetation removal and grading often accompany public facilities construction and are also considered conflicting uses.

McMinnville has an acknowledged Public Facilities Plan (1995). McMinnville also has detailed master plans for sanitary sewer, domestic water, and stormwater management. These facilities are most likely to conflict directly with full natural resource protection because often there is no reasonable alternative to routing these facilities through natural areas to serve nearby buildable land.

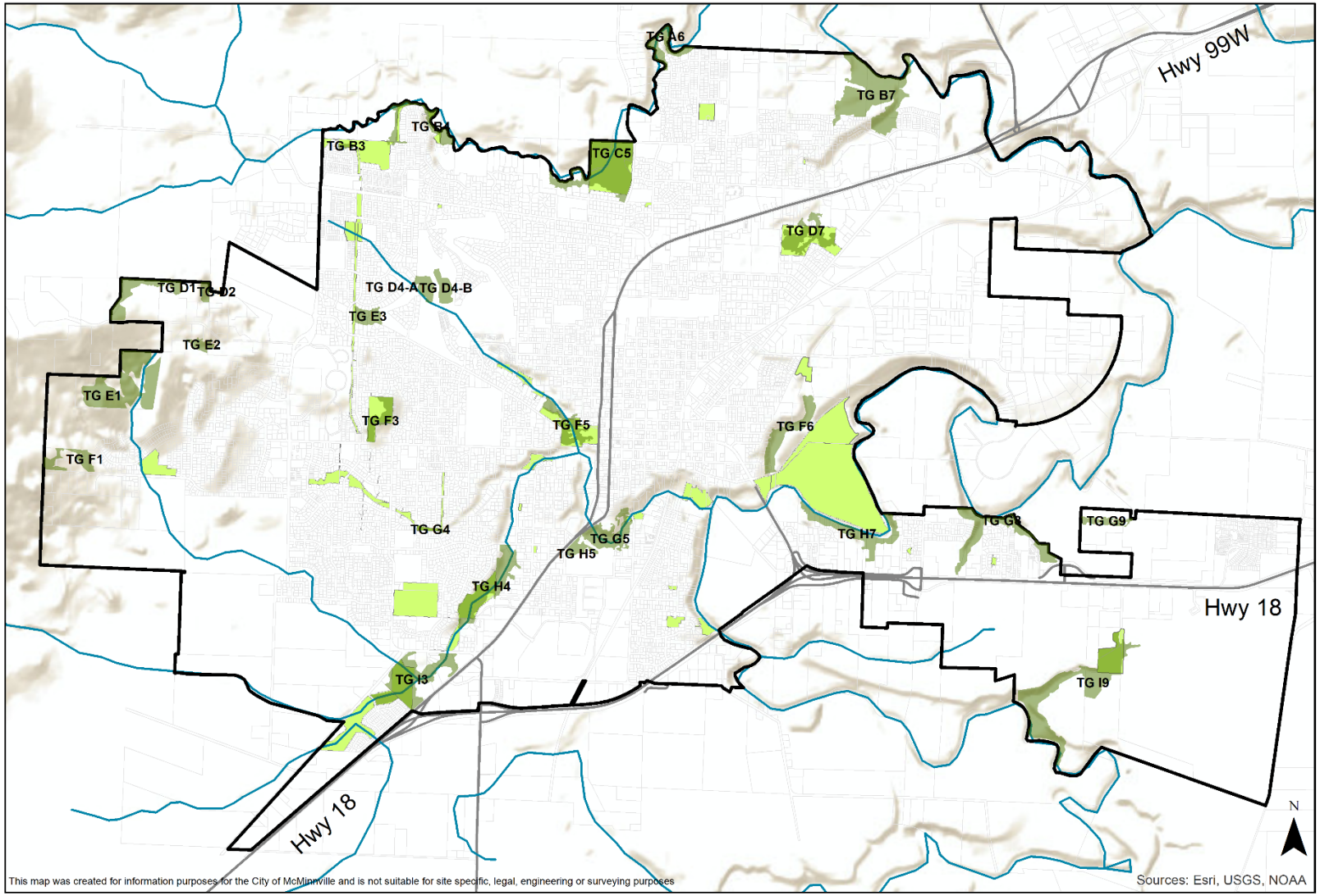
Street construction and expansion often conflict with resource conservation in urban areas. The McMinnville TSP (2010) identifies existing and proposed street locations, making it possible to identify specific street projects that conflict with full protection of significant tree groves.

Parks and School Uses

Park planning often protects on-site resources via design, but trails, small structures, and parking areas can affect tree groves. School sites may require buildings, fields, and parking lots that can conflict with resource protection; passive recreation is generally compatible.

The McMinnville Parks, Recreation, and Open Space Plan (2024) identifies planned park and recreational improvements to be placed on publicly owned land. Where significant natural resources are identified on land acquired for park purposes, these sites often are protected through the park master planning process. Minor conflicting uses include trails and passive recreational uses. Major conflicting uses include park buildings, parking lots, and athletic fields. Table 2 lists tree groves that overlap with parks.

No schools in the McMinnville public school system have potential conflicts with significant grove sites, none are located on public school property. TG H5 and TG G5 interacts with Linfield University property, which is zoned R-4.



McMinnville Significant Tree Groves and Parks

Significant Tree Groves
McMinnville 2025 Urban Growth Boundary
Parks
Rivers & Streams
Major Roads
Tax Lots

Miles
0 0.25 0.5 1

Created by Winterbrook Planning in coordination with the City of McMinnville

City of McMinnville

Last Revised: January 5, 2026

Existing Limits on Conflicting Uses: Natural Features Protection Zones and Subdistricts

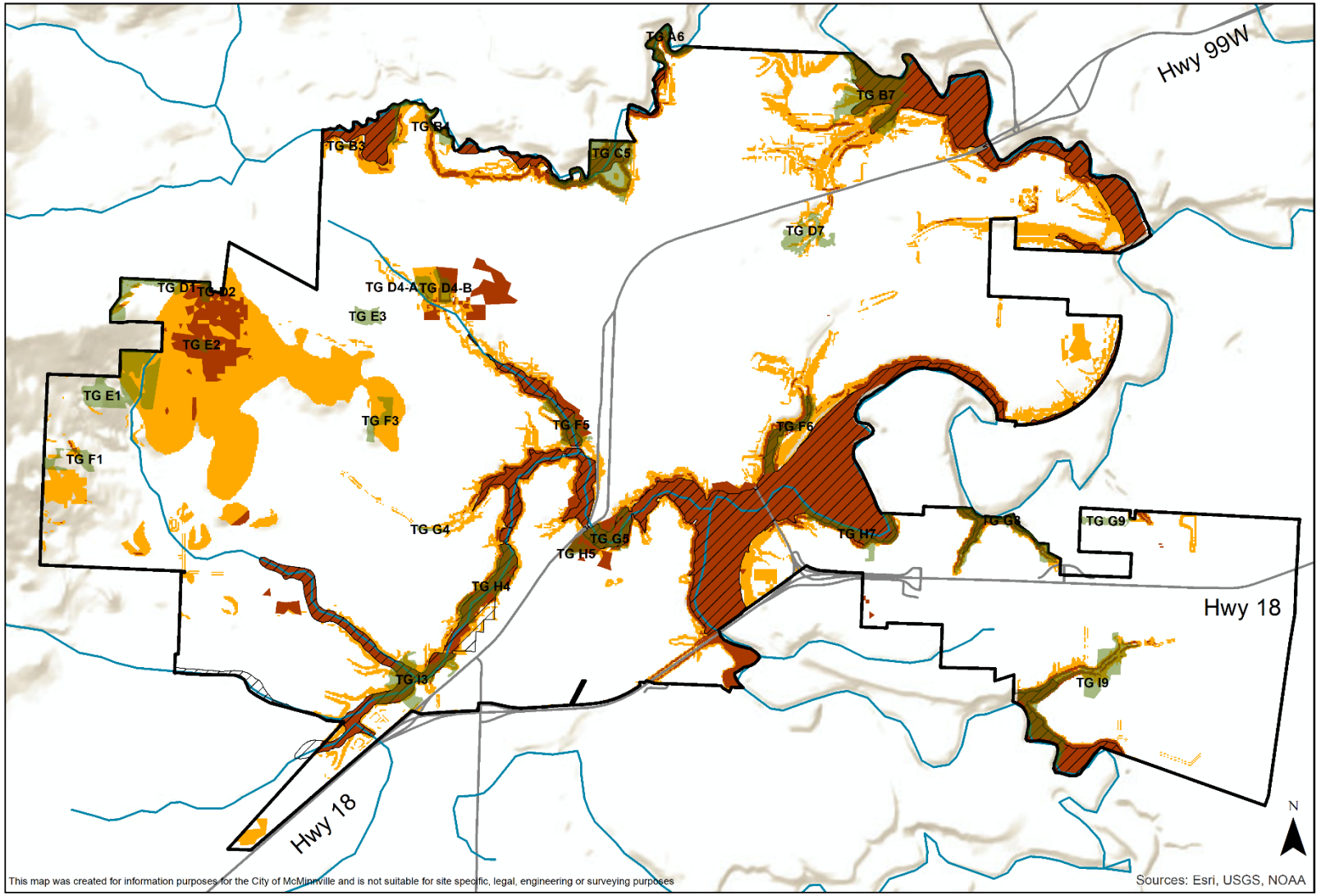
The Flood Area (F-P) Zone, the Natural Hazard-Protection (NH-P) subdistrict, and the Riparian Corridor - Protection (RC-P) subdistrict all have existing protections that limit the above-described conflicting uses. These zones restrict residential, industrial, and commercial development. Planned transportation and public facilities are allowed where there is no reasonable alternative.

In the F-P zone, no structures (other than sewage pump stations) are allowed outright. Recreational facilities with structures may be conditionally permitted, but little else is allowed.

The NH-P subdistrict applies to the entire F-P zone and to areas with multiple natural hazards. This subdistrict restricts most residential development (excepting 1 dwelling unit/lot), limits additional commercial and industrial structures and expansion, and requires mitigation in certain instances.

The RC-P subdistrict applies to riparian corridors, most of which lie within the 100-year floodplain and F-P zone. This subdistrict restricts vegetation removal and additional impervious surface; however, it does permit utility crossings with no reasonable alternative.

These subdistricts and zones already afford some protection to tree groves by limiting conflicting uses and limiting vegetation removal. The ESEE consequences of tree grove protection must be evaluated on the additional protections that could be afforded to tree groves under this program. Note that in all cases, land within the 100-year floodplain has a Floodplain base zone in addition to the NH-P subdistrict. Almost all of the land within the RC-P subdistrict is also within the 100-year floodplain. The FP zone, the NH-P subdistrict, and the RC-P subdistrict restrict tree removal. Therefore, significant tree groves within floodplains already have a high level of protection with few conflicting uses.


TG A6
TG B7
TG B4
TG B3
TG C5
Hwy 99W
TG D7
TG D1
TG D2
TG D4-A
TG D4-B
TG E3
TG E2
TG E1
TG F3
TG F5
TG F6
TG F1
TG G4
TG G8
TG H5
TG H7
TG G9
TG H4
Hwy 18
TG I3
TG I9
Hwy 18
N
This map was created for information purposes for the City of McMinnville and is not suitable for site specific, legal, engineering or surveying purposes
Sources: Esri, USGS, NOAA
McMinnville
Significant Tree Groves and Natural Hazards
Significant Tree Groves
Flood Plain Zone (F-P)
McMinnville 2025 Urban Growth Boundary
Rivers & Streams
Major Roads
Natural Hazard Subdistrict
Mitigation
Protection
Miles
0 0.25 0.5 1
Created by Winterbrook Planning in coordination with the City of McMinnville
City of McMinnville
Last Revised: January 5, 2026

The Conflicting Uses table below documents the various conflicting uses and existing subdistrict/zone protections for each tree grove.

Table 2. Conflicting Uses

Tree Grove ID	Tree Grove Acreage	Applicable City Base Zone(s)	Applicable UGA Comprehensive Plan Designations	Applicable FP NH-P, NH-M or RC-P Subdistrict(s)	Potential Public Facilities Conflicts	Potential Park or School Conflicts
A6	8.2	R-4, R-1		F-P, NH-M, NH-P	All	None
B3	1.9	R-4, EF-80		NH-M, NH-P	All	Baker Creek North Park
B4	9.8	R-2, R-4, EF-80		F-P, NH-M, NH-P	All	Oak Ridge Meadows and Baker Creek North
B7	45.7	R-2, R-4, C-3		F-P, NH-M, NH-P	All	None
C5	36.5	R-1, R-2, R-4	Residential	F-P, NH-M, NH-P	All	Rotary Nature Preserve
D1	12.0	N/A	Urban Holding	NH-M, NH-P	All	None
D2	2.5	N/A	Urban Holding	NH-M, NH-P	All	None
D4 (A & B)	11.1	R-1		NH-M, NH-P	All	None
D7	14.0	R-2, C-3, M-1	Residential	NH-M	All	Wortman Park
E1	47.1	R-1, R-2		NH-M	All	None
E2	3.4	N/A	Urban Holding	NH-M, NH-P	All	None
E3	6.1	R-1		None	All	BPA Pathway II

Tree Grove ID	Tree Grove Acreage	Applicable City Base Zone(s)	Applicable UGA Comprehensive Plan Designations	Applicable FP NH-P, NH-M or RC-P Subdistrict(s)	Potential Public Facilities Conflicts	Potential Park or School Conflicts
F1	44.7	R-1	Urban Holding	NH-M, NH-P	All	None
F3	7.9	R-1, R-2, R-4		NH-M	All	Quarry Park
F5	11.1	R-2		F-P, NH-M, NH-P	All	City Park
F6	15.1	R-2, M-2	Industrial	F-P, NH-M, NH-P		None
G4	1.5	R-2		NH-M	All	Ash Meadows, Gaucher St. Pathway
G5	14.8	R-4, O-R		F-P, NH-M, NH-P	All	Davis Dip, Linfield University
G8	20.3	R-1, R-2, R-4, C-3, A-H,		F-P, NH-M, NH-P	All	None
G9	4.5	C-3		NH-M	All	None
H4	24.7	R-2, R-3, R-4, C-3		F-P, NH-M, NH-P	All	Heather Hollow Park**,** Tall Oaks Cozine (undeveloped)
H5	4.1	R-4		NH-P	All	Linfield University
H7	16.5	R-1, R-2, R-4, C-1, C-3, M-2,	Residential	F-P, NH-M, NH-P	All	None
I3	29.5	R-1, R-4, C-3	Residential	F-P, NH-M, NH-P	All	Barber (undeveloped), Creekside Cozine (undeveloped)
I9	45.0	M-2, AF-20	Mixed Use Urban	F-P, NH-M, NH-P	All	Airport Park

Impact Area

(3) Determine the impact area. Local governments shall determine an impact area for each significant resource site. The impact area shall be drawn to include only the area in which allowed uses could adversely affect the identified resource. The impact area defines the geographic limits within which to conduct an ESEE analysis for the identified significant resource site.

Response: For this ESEE analysis, the impact area is the 390-acre area within the 26 significant tree groves, as depicted on the McMinnville Significant Tree Grove Map (2025).

ESEE Consequences

(4) Analyze the ESEE consequences. Local governments shall analyze the ESEE consequences that could result from decisions to allow, limit, or prohibit a conflicting use. The analysis may address each of the identified conflicting uses, or it may address a group of similar conflicting uses. A local government may conduct a single analysis for two or more resource sites that are within the same area or that are similarly situated and subject to the same zoning. The local government may establish a matrix of commonly occurring conflicting uses and apply the matrix to particular resource sites in order to facilitate the analysis. A local government may conduct a single analysis for a site containing more than one significant Goal 5 resource. The ESEE analysis must consider any applicable statewide goal or acknowledged plan requirements, including the requirements of Goal 5. The analyses of the ESEE consequences shall be adopted either as part of the plan or as a land use regulation.

Response: The Goal 5 Rule requires that local governments consider the economic, social, environmental, and energy (ESEE) consequences of three decision options that apply to significant tree groves:

- Full protection (prohibit all uses that conflict with full protection of a resource site);
- No protection (allow all conflicting uses without any Goal 5 regulations, other applicable local/state/federal rules still apply); and
- Limited protection (allow some conflicting uses with restrictions). The limited protection program in question is described in more detail in the Introduction section, and code provisions are provided as Exhibit A.

The four matrices below describe the ESEE consequences of full protection, no protection and limited protection for significant tree groves based on the conflicting use categories described in the previous sections:

- Residential Uses
- Industrial or Commercial Uses
- Public Facilities Uses
- Parks/Schools Uses

Economic Consequences

Commercial and industrial buildings typically consist of single-story buildings and require large parking lots and maneuvering areas. Unlike residential areas, density transfer often is not a viable option. McMinnville's industrial land base is concentrated in South McMinnville, near the airport and along the Yamhill River. Public facilities and services often conflict with the full protection of significant Goal 5 resource areas. As urban development occurs, an urban level of public facilities and services is required. Such services often must pass through significant resource areas to serve buildable land outside of such areas.

Economic Consequences across Conflicting Uses Table				
	Residential	**Industrial/Commercial**	**Public Facilities**	**Parks/Schools**
Full	Full protection precludes residential development within mapped tree groves. This limits the direct availability of buildable land within grove areas, potentially increasing per-unit infrastructure and land costs elsewhere in the UGB. Full protection may result in long-term avoided costs associated with stormwater infrastructure, heat island mitigation, and tree replacement. Developers may face higher design and permitting expenses to reconfigure	Industrial and commercial development within mapped tree groves would not be allowed. This limits the direct availability of buildable industrial and commercial land within grove areas and may make infrastructure costs for industrial and commercial development higher. Higher costs of commercial and industrial development could impact provision of local jobs, though job satisfaction and worker	Full protections would restrict utility crossings, likely increasing utility costs in the City more broadly and resulting in less efficient utility configurations. Full protection would likely increase transportation costs resulting from longer travel distances. Full protection may reduce stormwater	No school or park development could occur within tree groves; this could increase costs, particularly for park development, and limit low-cost and low-impact recreation opportunities.

	subdivisions around protected groves.	productivity could be increased with proximity to preserved tree groves.	infrastructure and compliance costs.	
No	No protection would allow unrestricted removal of groves for housing, reducing environmental services and increasing long-term public costs for stormwater and heat mitigation. This scenario would increase near-term development capacity and buildable area. No protection potentially reduces potential property value gain by losing proximity to tree groves.	No protection maximizes immediate flexibility for industrial and commercial site development, reducing entitlement and design costs. However, removal of all tree canopy increases long-term costs related to stormwater infrastructure, heat island effects, and future compliance with environmental regulations.	No protection would minimize construction costs and allow the most efficient layout of public facility lines; however, the stormwater benefits of tree groves would be reduced, potentially increasing costs.	No tree grove protection would maximize the flexibility of school and park development, which may decrease improvement costs. Loss of tree groves could also negatively impact the perceived value of nearby parks and schools.
Limited	The draft limited protection program allows limited utility impacts and clustered development that maintains overall housing supply and infrastructure efficiency while protecting key groves. The limited protection program captures natural infrastructure ecosystem benefits for residences (stormwater, cooling) while allowing some flexibility via density transfers. The limited protection program may slightly increase design and	Limited protection allows commercial and industrial development with defined standards requiring tree retention, setback adjustments, and incorporation of low-impact development practices. While this can increase initial site design and permitting costs, it maintains flexibility for site readiness while preserving key natural features that reduce long-term stormwater and heat mitigation costs.	Economic consequences of the draft limited protection program include reducing public and private stormwater collection and treatment costs. The limited protection program offers both flexibility for utility crossings and public facilities where there is no reasonable alternative, while	Park development authorized by the Parks Master Plan would be permitted with mitigation. This would allow identified park development while retaining the function and value of the tree groves. This could reduce infrastructure costs for parks. Additionally, low-impact recreation facilities and trails would be allowed, which

	entitlement costs but lowers long-term stormwater costs.		retaining tree grove benefits with mitigation.	provide low-cost recreation opportunities.

Economic Consequences Conclusion

Across all categories of conflicting uses, the limited protection program provides the most balanced economic outcome. Full protection would conserve long-term ecosystem services and avoid some stormwater infrastructure costs. However, it would also constrain employment and residential land supply and introduce routing inefficiencies for needed public facilities. No protection would offer maximum development flexibility but would forgo natural stormwater and cooling benefits. The limited protection program allows reasonable use of residential and employment lands while requiring mitigation and providing regulatory flexibility, preserving groves and retaining ecosystem services. This balanced approach minimizes long-term infrastructure and compliance costs while supporting economic development and efficient provision of utilities.

Social Consequences

Social consequences of tree grove protections address livability, public health, equity, recreation, and community identity. Tree groves provide social benefits through aesthetics, mental health, and safety.

Social Consequences across Conflicting Uses Table				
	Residential	**Industrial/Commercial**	**Public Facilities**	**Parks/Schools**
Full	Full protection of tree groves supports neighborhood livability, aesthetic character, and public health benefits associated with mature canopy retention. Residents benefit from shaded streetscapes, improved air quality, and visual distinction between development clusters, aligning with community identity goals. However, full	Full protection could have positive visual and worker wellness effects for industrial and commercial jobs near preserved groves; however, constrained employment land supply may pose social costs through less efficient utilization of commercial land.	Some infrastructure may require costly rerouting or less efficient configurations, imposing a burden on ratepayers. Less efficient transportation systems may impact commute times. The public may benefit from the	No school or park development could occur within tree groves. The groves would retain scenic and health benefits. Public access may be limited in fully protected areas, and there could be equity concerns if access is

	protection could reduce housing supply flexibility and may concentrate higher-density housing in fewer areas, possibly affecting housing equity or access.		stormwater and ecosystem services of full protection of tree groves.	unequal. Users of parks and schools may derive aesthetic and health benefits from proximity to protected groves.
No	No protection maximizes residential buildable land utilization; however, loss of canopy and green space diminishes livability, increases heat stress, and reduces mental health benefits.	Without protection, employment areas lose opportunities to incorporate natural buffers and shaded gathering areas. This can reduce aesthetic quality, workplace comfort, and compatibility with surrounding land uses, especially where industrial sites are adjacent to residential or mixed-use areas. No protection would maximize employment land uses.	No protection would allow public facilities to be built even if they interact with tree groves. This may benefit ratepayers incrementally, but could lose community trust and perceived environmental stewardship.	No protection could allow school and park development in tree groves but may result in loss of the groves and fewer passive recreation/education opportunities. Potential health and wellness benefits to park visitors and students could be lost.
Limited	The draft limited protection program protects groves while maintaining buildable land via density transfer and more flexible development standards. The limited program maintains neighborhood character and access to green space, providing social benefits through increased livability, health, recreation, and aesthetics in residential areas.	Limited protection maintains some tree canopy within employment areas, contributing to visual character and worker comfort. Employment areas could benefit from shaded pedestrian routes, improved site aesthetics, and buffering between industrial activities and adjacent uses. The draft program balances economic use with livability considerations in employment areas.	The draft program allows efficient utility service delivery and needed transportation corridors, while requiring mitigation where there are impacts to groves. This maintains the visual and aesthetic benefits of groves and the social benefit of efficient provision of public utilities.	The draft program permits City Council-approved park development with mitigation, maintaining access to natural amenities for residents and students.

Social Consequences Conclusion

The limited protection program best supports community livability, equitable access to natural amenities, and public health. Full protection would maximize urban canopy and the associated social and health benefits, but may constrain housing and employment land supply and concentrate growth pressures elsewhere. No protection would undermine the localized benefits of trees groves, including shade, mental health benefits, and community identity, particularly in public spaces such as parks. Limited protection preserves community access to the social benefits of mature tree groves while maintaining flexibility to deliver needed public facilities and parks where approved by the City Council. The limited protection program also allows some flexibility for residential and commercial development, allowing more compact development to preserve tree groves.

Environmental Consequences

Environmental consequences evaluate effects on habitat, water quality, air quality, and biodiversity. Tree groves contribute to stormwater control, habitat connectivity, and carbon sequestration. Tree grove protection may result in less efficient use of land, and a reduction in buildable land, potentially resulting in habitat loss in unprotected areas.

Environmental Consequences across Conflicting Uses Table				
	Residential	**Industrial/Commercial**	**Public Facilities**	**Parks/Schools**
Full	Full protection maximizes habitat, connectivity, water and air quality, slope stability, and climate resilience for residential uses. Canopy continuity, wildlife habitat functions, and infiltration capacity are preserved, reducing runoff velocities and sedimentation risk. Full protection, however, does not offer flexibility for designated buildable residential land, and	Full tree grove protection in industrial and commercial areas would allow increased stormwater infiltration and lower runoff volumes from industrial/commercial development, as well as maximizing habitat benefits in these areas. Full protection may result in less efficient/compact development patterns and use of buildable employment land, potentially impacting more	Full protection would provide increased stormwater infiltration and lower runoff volumes and retain the highest ecosystem function. Full protection does not allow for the most efficient configuration of utility lines and transportation infrastructure, potentially resulting in increased habitat disruption outside of protected areas and an increase in VMT's.	Full protection would retain tree grove benefits near parks and schools, contributing to localized habitat and water quality benefits.

	may not result in a more compact and efficient UGB.	habitat/ecosystem services in unprotected areas.		
No	No protection could result in significant loss of habitat and ecological functions, potentially increasing runoff and pollutants, and potentially raising urban heat. Development flexibility is maximized with no protections, though there may be potential increases in energy demand due to heat island expansion.	Allowing removal of tree groves in employment areas can lead to habitat loss, reduced infiltration, and increased runoff volumes. Air quality and urban ecosystem benefits could decline, though no protection would maximize development flexibility and efficiency.	No protection allows public facilities to be developed in the most efficient manner, potentially reducing overall environmental impacts; however, the potential stormwater and water quality benefits of tree groves could be lost, as well as other ecological functions if tree removal were needed.	No tree grove protection may impact tree grove ecosystem services of stormwater retention, habitat provision, and water quality near existing parks and schools.
Limited	The draft limited protection program allows limited residential development and prioritizes avoiding tree grove impacts. The draft program balances the retention of the environmental benefits of tree groves while allowing new residential housing through density transfer, increased setbacks, and exemptions for existing residential development.	Environmental functions of tree groves in industrial and commercial areas are mostly retained by restricting new commercial and industrial development in tree groves. Groves would continue to provide infiltration and air quality benefits. Impacts on buildable employment land may result in increased habitat losses in unprotected areas.	The draft limited protection program allows new public facility development identified in the Public Facilities Plan where no reasonable alternatives exist, and requires mitigation. These allowances maintain habitat and environmental functions while allowing efficient provision of public facilities.	Parks facilities in the limited protection program would be allowed on a limited basis, provided they are identified in the Parks Master Plan and include mitigation. This may impact some of the ecosystem services in a limited number of groves that overlap with parks.

Environmental Consequences Conclusion

Full protection maximizes habitat, water quality, climate benefits, and canopy preservation; however, it may lead to less compact development patterns and potential indirect environmental impacts elsewhere. No protection would result in

canopy loss, reduced stormwater infiltration, increased heat island effects, and diminished habitat connectivity. The limited protection program maintains core ecological functions, allows necessary infrastructure with mitigation, and incentivizes compact growth. The limited protection program supports a resilient urban forest, protects critical ecological functions, and maintains flexibility to minimize secondary environmental impacts associated with inefficient growth patterns.

Energy Consequences

Energy consequences considered for the scenarios include transportation connectivity (VMT) and efficient urban development. Energy consequences consider how vegetation retention influences local microclimate, building efficiency, and transportation energy use.

Energy Consequences across Conflicting Uses Table				
	Residential	**Industrial/Commercial**	**Public Facilities**	**Parks/Schools**
Full	Full protection preserves the benefits of microclimate regulation by maintaining shade and wind buffers adjacent to residential areas, thereby reducing household cooling energy demand. However, avoiding grove areas in subdivision design could result in longer infrastructure extensions and potentially dispersed housing patterns, which can increase vehicle miles traveled (VMT) and embedded energy costs in utility construction.	Full protection could improve industrial/commercial site cooling and comfort, though may require longer utility routes and less efficient development on employment lands, potentially increasing VMTs for employment.	Full protection may decrease efficiency for utilities and transportation networks and potentially increase energy demand for travel or utility routing.	Full preservation of groves may reduce cooling energy needs for community facilities and schools.
No	No protection could increase heat island effects and energy demand for cooling by reducing natural buffering. No protection would allow for the most efficient	Without tree canopy, industrial and commercial areas experience increased heat retention, elevating cooling demands in large structures and on paved yards.	No protection allows for unencumbered public facilities infrastructure development but may	No protection could reduce tree grove provision of microclimate benefits and could

	residential use of identified residential buildable land.	Lack of natural shading also increases thermal stress on infrastructure, raising energy and maintenance demands over time.	reduce energy savings from natural ecosystem services.	increase HVAC demand for adjacent schools and park facilities.
Limited	The draft limited protection program maintains most ecosystem benefits by generally preserving tree groves, which provide shade and wind buffering to reduce HVAC use, and by maintaining compact residential development through density transfer and design flexibility.	Limited protection retains most micro-climate benefits in employment areas while allowing efficient routing of key infrastructure for employment uses. The standards support compact employment development.	The limited protection program permits efficient routing of public utilities when there is no reasonable alternative, while maintaining the energy benefits of tree groves.	Allows limited park development, resulting in efficient provision of parks services, and retains microclimate energy benefits of tree groves.

Energy Consequences Conclusion

Retaining tree canopy provides micro-climate benefits that reduce heating and cooling energy demand. Full protection would maximize these benefits, but at the cost of reduced efficiency for public utility routing and development patterns. No protection would increase cooling loads, reduce shading, and contribute to higher long-term energy consumption. The limited protection program promotes compact urban form, energy-efficient public facility routing, and maintains most canopy-related micro-climate and shading benefits. This approach minimizes total energy demand while supporting efficient service delivery and compact land use patterns.

ESEE Analysis Conclusion

Based on the ESEE analysis, across the four consequences the limited protection program best achieves Goal 5 by conserving core tree grove functions and values while accommodating housing, employment, and key infrastructure. The program balances the ecosystem and social benefits of tree groves with allowing necessary urban development with mitigation.

Program to Achieve Goal 5

(5) Develop a program to achieve Goal 5. Local governments shall determine whether to allow, limit, or prohibit identified conflicting uses for significant resource sites. This decision shall be based upon and supported by the ESEE analysis. A decision to prohibit or limit conflicting uses protects a resource site. A decision to allow some or all conflicting uses for a particular site may also be consistent with Goal 5, provided it is supported by the ESEE analysis. One of the following determinations shall be reached with regard to conflicting uses for a significant resource site:

> *(a) A local government may decide that a significant resource site is of such importance compared to the conflicting uses, and the ESEE consequences of allowing the conflicting uses are so detrimental to the resource, that the conflicting uses should be prohibited.*
>
> *(b) A local government may decide that both the resource site and the conflicting uses are important compared to each other, and based on the ESEE analysis, the conflicting uses should be allowed in a limited way that protects the resource site to a desired extent.*
>
> *(c) A local government may decide that the conflicting use should be allowed fully, notwithstanding the possible impacts on the resource site. The ESEE analysis must demonstrate that the conflicting use is of sufficient importance relative to the resource site, and must indicate why measures to protect the resource to some extent should not be provided, as per subsection (b) of this section.*

Response: City must determine whether to prohibit, limit, or allow conflicting uses for significant resource sites based on the adopted ESEE analysis. For McMinnville's 26 significant tree groves identified on the McMinnville Tree Grove Map, the ESEE findings demonstrate that neither full prohibition nor full allowance of conflicting uses is warranted. Accordingly, the City has chosen to implement a limited protection program for all significant tree groves identified in the inventory. This program, codified in draft Chapter 17.47, allows essential residential, employment, public facility, and park development while applying standards designed to avoid, minimize, and mitigate impacts to tree groves. The program is designed to achieve a long-term balance between protection of significant natural tree groves and efficient urban development and provision of services.

A summary of the draft limited protection program is provided in the introduction; the draft limited protection program language is found in Exhibit A. Key program components include:

- Development standards that require avoidance and minimization of grove impacts.
- Mitigation requirements for unavoidable impacts, maintaining overall canopy and ecosystem function over time.
- Exemptions for routine maintenance, restoration activities, hazard tree removal, and emergency public facility repairs.
- Cluster development and density transfer provisions to preserve housing yield and maintain compact, efficient development patterns.
- Allowance for public facilities and park facilities improvements identified on approved City Master Plans when no practicable alternative exists, with required mitigation.
- Prohibitions on new structures and grading within groves unless expressly allowed under the program.

These sections provide essential exceptions for public facilities projects, connecting roads and bridges, water-dependent uses, removal of channel vegetation for flood control, and stream restoration and enhancement.

The limited protection program prioritizes preservation of tree groves while maintaining flexibility to accommodate planned urban growth, utility and transportation needs, and park investments. The program ensures continued provision of critical ecological services—including stormwater retention, shade, carbon storage, and habitat connectivity—alongside community benefits related to livability, recreation, and public health.

Therefore, the City elects to enact the limited protection program for all identified significant tree groves as the clear, objective, and practicable regulatory framework to achieve Goal 5.

Chapter 17.47

NATURAL RESOURCES PROTECTIONS OVERLAY ZONES

(as amended by Ord. X, insert date)

Sections:

17.47.000 Natural Resources Protection Overlay Zones Subdistricts Generally. Natural Resource Protection Overlay Zones Subdistricts (NR Subdistricts) apply to significant natural resource areas that have level of local protection pursuant to Statewide Planning Goal 5 – Natural and Cultural Resources.

A. NR Subdistricts are based on adopted natural resource inventories – which include maps showing significant resource sites and supporting reports documenting the criteria and methods used to determine local resource site significance.
B. NR Subdistricts implement McMinnville Comprehensive Plan Chapter XI Natural Resources.
C. NR Subdistrict standards apply in addition to standards of the underlying base zone. In cases of conflict, the more restrictive standards control.

D. NR Subdistricts may overlap with Natural Hazard Protection and Mitigation Subdistricts. Generally, the review authority shall seek to harmonize subdistrict standards that appear to conflict. Where standards cannot be read together to achieve a consistent outcome:
   1. The more restrictive standards apply, except that
   2. NH-P and NH-M Subdistrict fuel reduction standards shall prevail in cases of unavoidable conflict with the significant tree and vegetation standards of this chapter. (Ord. X, year).

17.47.010 Definitions. The following definitions apply within the NR Subdistricts listed below and in Section 17.06.070.

A. Riparian Corridor – Protection (RC-P) Subdistrict Definitions
   1. Riparian Corridor. The "riparian corridor" includes significant (fish-bearing) rivers and streams and their respective "riparian setback" areas as documented in the Riparian Corridors Inventory and as shown on the RC-P Subdistrict map.
   2. Mitigation Plan. "Mitigation plan" means a detailed plan to compensate for identified adverse impacts on water resources and riparian setback areas from alteration, development, excavation or vegetation removal within the RC-P Subdistrict. A mitigation plan must be prepared by recognized experts, per the Planning Director's determination, in fish and wildlife biology, native trees and plants, and hydrological engineering, and typically requires the removal of invasive plants and re-planting with native plant species.
   3. Native Plants. "Native plant species" are those listed on the Portland Plant List, which is incorporated by reference into this chapter.
   4. Top of Bank. "Top-of-bank" usually means a clearly recognizable sharp break in the stream bank. It has the same meaning as "bank-full stage" as defined in OAR 141- 085-0510(6). It is the stage or elevation at which water overflows the natural banks of streams and begins to inundate the upland. The methods used to determine tops-of-bank are found in the McMinnville Riparian Corridor Inventory Report.
   5. The McMinnville Riparian Corridors Map. A map that identifies significant stream and river corridor resources within the McMinnville Urban Growth Boundary, including the South Yamhill River corridor and significant stream corridors. This generalized, composite map is based on the City of McMinnville Riparian Corridor Inventory.

B. Tree Grove – Protection (TG-P) Subdistrict Definitions. In addition to the definitions found in Subsection A, the following definitions apply to the review of development on properties with significant tree groves.
   1. Certified Arborist. An arborist certified through the International Society of Arboriculture (ISA).
   2. Critical Root Zone (CRZ). The area directly beneath the tree dripline that should not be disturbed by development. The CRZ for an individual tree is located in a radius from the tree at a rate of 1 foot of horizontal distance from the tree for each 1 inch diameter of a tree measured at 4.5 feet above ground level, or as determined by a certified arborist.

3. Landmark Tree – Trees located on public or private land within the McMinnville UGB that are either (1) 36 inches or greater dbh, or (2) Oregon white oak trees 12 inches dbh or greater. Landmark trees do not include hazardous, diseased, dead or nuisance trees as determined by the Planning Director in consultation with a certified arborist.
4. McMinnville Significant Tree Grove Map. A map that identifies significant tree groves within the McMinnville Urban Growth Boundary. This map is based on the City of McMinnville Tree Grove Assessment.
5. Tree Grove Mitigation Plan (TGMP). A detailed plan to compensate for identified adverse impacts on tree groves and native vegetation within tree grove boundaries from alteration, development, excavation or vegetation removal within the TG-P Subdistrict. The TGMP must be prepared by a certified arborist. The TGMP must be consistent with the recommendations of a required WAMP, if applicable.
6. Wildfire Hazard Assessment and Mitigation Plan (WAMP). A plan prepared by certified arborist or professional forester in coordination with the McMinnville Fire District designed to assess and mitigate wildfire risks to people and property. (Ord. X, year).

Riparian Corridor Protection Subdistrict (RC-P Subdistrict)

17.47.100 Purpose and Intent of the RC-P Subdistrict. The RC-P Subdistrict implements the Riparian Corridor policies of the McMinnville Comprehensive Plan and operates in conjunction with Chapter 17.48 Floodplain Zone to resolve conflicts between development and protection of significant riparian corridors identified in the City of McMinnville Riparian Corridors Inventory (2021).

A. The RC-P Subdistrict protects mapped significant rivers and streams pursuant to Statewide Planning Goal 5 (Natural and Cultural Resources) as implemented by OAR 660-023-090 Riparian Corridor Safe Harbor.
B. Specifically, this chapter allows reasonable economic use of property while establishing clear and objective standards to:
    1. Protect significant streams and limit development in designated riparian corridors;
    2. Maintain and enhance water quality;
    3. Maximize flood storage capacity;
    4. Preserve significant trees and native plant cover;
    5. Minimize streambank erosion;
    6. Maintain and enhance fish and wildlife habitats; and
    7. Conserve scenic, recreational and educational values of significant riparian corridors. (Ord. X, year).

17.47.110 Applicability and General Provisions. The RC-P Subdistrict applies to all significant rivers and streams and their respective riparian setback areas, as shown on the McMinnville Riparian Corridors Map.

A. Development Standards. The standards and procedures of this chapter:

1. Apply to all development proposed on property located within, or partially within, the RC-P Subdistrict;
2. Are in addition to the standards of the underlying zone; and
3. Supersede the standards of the underlying zone in cases of conflict.

B. Riparian Setback Area. The “riparian setback area” is measured horizontally from and parallel to the significant river or stream tops-of-bank. The riparian setback is the same as and consistent with the “riparian corridor boundary” in OAR 660-23-090(1)(d).
   1. The South Yamhill River riparian setback is 75 feet.
   2. The North Yamhill River, Cozine Creek, Baker Creek, and mapped tributaries' riparian setback is 50 feet.

C. Standard Riparian Setbacks. The applicant shall be responsible for surveying and mapping the precise location of the top-of-bank, on-site wetlands, and riparian setback at the time of application submittal.

D. Division of State Lands Notification Required. In addition to the restrictions and requirements of this Chapter, all proposed development activities affecting any wetland are subject to Oregon Division of State Lands (DSL) standards and approval.
   1. Where there is a difference, the more restrictive regulation shall apply.
   2. The applicant shall be responsible for notifying DSL whenever any portion of any wetland is proposed for development, in accordance with ORS 227.350. No application for development will be accepted as complete until documentation of such notification is provided.

E. Exemption for Developed Subdivision Lots. This subsection applies to lots of 10,000 square feet or less created by a subdivision with a residential zone map designation, if the side or rear yards were cleared of riparian vegetation and either developed with structures or planted in lawns or shrubs prior to the effective date of this ordinance.
   1. The Director may approve a request to reduce the riparian setback, without public notice, if aerial photographs clearly show that the riparian setback area extends into the developed portion of an approved residential lot of 10,000 square feet or less.
   2. The riparian setback area as applied to this lot may be reduced by as much as 50 percent, provided that the developed portion of the lot remains at least 25 feet from the top-of-bank of the significant stream or river.
   3. The Director shall maintain a record of the riparian setback reduction and the reasons for the decision.

F. City of McMinnville Exemption. When performed under the direction of the City, the following shall be exempt from the provisions of this chapter:
   1. Public emergencies, including emergency repairs to public facilities;
   2. Stream restoration and enhancement programs;
   3. Non-native vegetation removal;
   4. Planting of native plant species;
   5. Restoration and enhancement projects; and
   6. Routine maintenance and/or replacement of existing public facilities projects.

G. Replacement of Structures and Impervious Surfaces. Building replacements limited to the footprint of existing buildings, and replacement of other impervious surfaces limited to the area of existing impervious surfaces shall be limited to the area of the existing impervious surface are exempt from the provisions of this Chapter.

H. Exemption for Routine Site Maintenance.
   1. Routine maintenance of the site, including maintenance of lawns and planted landscaping areas existing on the effective date of this ordinance. Additionally, the application of herbicides to non-native vegetation and the application of synthetic fertilizers is subject to applicable state and federal regulations and developed properties shall be subject to the restrictions set forth in the McMinnville Municipal Code;
   2. Removal of non-native vegetation and replacement with native plant species, no closer than 10' from the top-of-bank or edge of wetland;
   3. Maintenance pruning of existing significant trees shall be kept to a minimum and shall be in accordance with the American National Standards Institute (ANSI) A300 standards for Tree Care Operations. Under no circumstances shall the maintenance pruning be so severe that it compromises the tree's health, longevity, and/or resource functions. (Ord. X, year).

17.47.120 Permitted, Conditional and Prohibited Uses.

A. Department of State Lands (DSL) Concurrence Required. Development proposed within any wetland or stream, in addition to meeting the standards of this chapter, must also be approved by DSL. An application for development below the top-of-bank of any significant stream or river or within the boundaries of a delineated wetland requires documentation of DSL concurrence to be deemed complete.

B. Permitted and Conditional Uses. Table 17.47.120 Riparian Corridor-Protection Subdistrict Use List below summarizes permitted, conditional and prohibited uses within the RC-P Subdistrict. A "Yes" indicates that the use is permitted ministerially, is allowed under prescribed conditions, subject to approval by the Director, or may be approved subject to discretionary criteria for conditional use permit review. A "No" indicates that the use is not permitted. A use that is not permitted may not be approved through the variance provisions of this chapter. (Ord. X, year).

Table 17.47.120 Riparian Corridor – Protection Subdistrict Use List

Regulated Activity & Procedure Type		
A. Permitted Uses– Ministerial	Riparian Setback Area	Mitigation Plan Required?
1. Determination of Riparian Setback boundaries	Yes	No
2. Reduction of Riparian Setback for developed residential lots	Yes	No

3. Low impact, passive, or water-related recreation facilities and trails including, but not limited to, viewing shelters, picnic tables, nature trails and interpretive signs	Yes	No
4. Irrigation pumps	Yes	No
5. Removal of non-native vegetation and replacement with native plant species, within 10' from the top-of-bank or edge of wetland	Yes	Yes
6. Removal of vegetation necessary for hazard prevention (diseased or hazardous trees)	Yes	No
7. Riparian Corridor restoration projects	Yes	Yes
B. Permitted Uses with Mitigation – Planning Director Approval with public notice	Riparian Setback Area	Mitigation Plan Required?
1. Canoe and non-motorized boat launch less than 10' in width subject to DSL approval	Yes	Yes
2. Private in-stream and streambank enhancement, including vegetation removal and replacement within 10 feet of the top-of-bank or edge of wetland	Yes	Yes
3. Adjustments to numeric standards of the underlying zone necessary to reduce impacts on wetlands and streams	No	Yes
4. Public facilities that appear on the City's Public Facilities Plan, including streets and roads	Yes	Yes
5. Local streets and driveways serving residences and public facilities	Yes	Yes
6. Drainage facilities	Yes	Yes
7. Utilities	Yes	Yes
8. Bridges, boardwalks, trails of pervious construction	Yes	Yes
C. Conditional Use or Variance Review subject to Planning Commission Approval at a Public Hearing	Riparian Setback Area	Mitigation Plan Required?
1. Economic Hardship Variances, subject to variance provisions of Chapter 17.47.180	Yes	Yes
2. Water-related and water-dependent uses not listed above, may be approved subject to conditional use provisions of Chapter 17.74.030	Yes	Yes
D. Prohibited Uses - unless specifically authorized above or exempted	Riparian Setback Area	Mitigation Plan Required?

1. Removal of native plant species	No	Not applicable
2. Additions to or expansion of structures or impervious surfaces	No	Not applicable
3. Grading and placement of fill	No	Not applicable
4. Application of herbicides	No	Not applicable
5. Dumping of garbage or lawn debris or other materials not permitted within this Table.	No	Not applicable
6. Creation of a parcel that would be wholly within the RP-C Subdistrict or resulting in an unbuildable parcel, as determined by the Director.	No	Not applicable

17.47.130 Application Requirements. All development applications on lots within, or partially within, the RP-C Subdistrict shall submit the following information, in addition to other information required by this code.

A. Ministerial Uses. The applicant shall prepare a plan that demonstrates that the use will be constructed and located so as to minimize disturbance to significant tree and native vegetation within the RP-C Subdistrict boundaries. The Director may require additional information where necessary to determine RP-C Subdistrict district boundaries or to mitigate identified impacts from a proposed development, including but not limited to:
   1. A site survey as prescribed in Section 17.47.130(B);
   2. One or more of the reports described in Section 17.47.130(C).

B. Director and Planning Commission Review Uses: Site Specific Survey Required. If any use or activity is proposed within a riparian setback area, the applicant shall be responsible for preparing a survey of the area proposed for development that shows the following:
   1. The name, location and dimensions of significant rivers or streams, delineated on-site wetlands, and the tops of their respective streambanks as shown on the McMinnville Riparian Corridor Inventory.
   2. The area enclosed by the riparian setback.
   3. The 100-year floodplain if applicable.
   4. Land subject to the Natural Hazard – Mitigation (NH-P), Natural Hazard Protection (NH-P) and/or Tree Grove – Conservation (TG-C) Subdistricts.
   5. Steeply sloped areas where the slope of the land is 25% or greater.
   6. Existing public rights-of-way, structures, impervious surfaces, roads and utilities.
   7. Vegetation types (native and non-native);
   8. The driplines of significant trees or tree clusters of trees 5-inches or greater dbh that would be impacted by tree removal, major pruning or ground disturbance.
   9. Existing and proposed contours at 2-foot intervals, or as approved by the City Engineer or Planning Director.

C. Required Studies and Mitigation Reports. Each of the following studies shall be required for non-ministerial uses proposed within the RC-P Subdistrict. The

following studies shall be required in addition to the submission of information required for specific types of development and shall be prepared by professionals in their respective fields. The Planning Director may exempt permit applications from one or more of these studies, based on specific findings as to why the study is unnecessary to determine compliance with this chapter. .

1. Hydrology and Soils Report. This report shall include information on the hydrological activities of the site, the effect of hydrologic conditions on the proposed development, and any hydrological or erosion hazards. This report shall also include soils characteristics of the site, their suitability for development, and erosion or slumping characteristics that might present a hazard to life and property, or adversely affect the use or stability of a public facility or utility. This report shall include information on the nature, distribution and strength of existing soils, the adequacy of the site for development purposes, and an assessment of grading procedures required to impose the minimum disturbance to the natural state. The report shall include recommendations to assure compliance with each applicable provision of this code as well as all applicable provisions of City building ordinances. The report shall be prepared and stamped by a professional engineer registered in Oregon.
2. Grading Plan. The grading plan shall be specific to a proposed physical structure or use and shall include information on terrain (2-foot intervals of property, or as approved by the City Engineer or Planning Director), drainage, direction of drainage flow, location of proposed structures and existing structures which may be affected by the proposed grading operations, water quality facilities, finished contours or elevations, including all cut and fill slopes and proposed drainage channels. Project designs including but not limited to locations of surface and subsurface devices, walls, dams, sediment basins, storage reservoirs, and other protective devices shall form part of the submission. The grading plan shall also include a construction phased erosion control plan consistent with the provisions of this code and a schedule of operations and shall be prepared by a professional engineer registered in Oregon.
3. Vegetation Report. This report shall consist of an assessment of existing vegetative cover, whether it is native or introduced, and how it will be altered by the proposed development. The report shall specifically identify disturbed areas (i.e., areas devoid of vegetation or areas that are dominated by non-native or invasive species) and the percentage of crown cover. The vegetation report shall include recommendations to assure compliance with each applicable provision of this code, and shall be prepared by a landscape architect, landscape designer, botanist, or arborist.
4. Streambank Conditions Report. This report is only necessary if a project will impact the area between 10 feet above the relevant stream or river tops-of-bank. The streambank conditions report shall consist of a survey of existing streambank conditions, including types of vegetative cover, the extent to which the streambank has been eroded, and the extent to which mitigation measures would be successful in maximizing fish and wildlife habitat values

while preserving the stream's urban hydrological function. Measures for improving fish and wildlife habitat and improving water quality will be clearly stated, as well as methods for immediate and long-term streambank stabilization. The streambank conditions report shall include recommendations to assure compliance with each applicable provision of this code, and shall be prepared by a wildlife biologist or other qualified individual in concert with a hydrological engineer registered in Oregon, both of whom must have experience in stream bank restoration. The report shall specify long-term maintenance measures necessary to carry out the proposed mitigation plan. (Ord. X, year).

17.47.140 Development Standards. The following shall apply to all development, including vegetation removal, and excavation, within the RC-P Subdistrict. No application for a use identified in Section 17.47.120 shall be deemed complete until the applicant has addressed each of these standards in writing.

A. Alternatives Considered. Except for stream corridor enhancement, most uses that require public notice are expected to develop outside of wetlands and riparian setback areas and will avoid removal of landmark and significant trees. Therefore, development applications that require public notice must carefully examine upland alternatives for the proposed use and explain the reasons why the proposed development cannot reasonably occur outside of the wetlands and the riparian setback area, and why landmark and significant trees must be removed to meet project objectives.
B. Minimize Siting Impacts. The proposed use shall be designed, located and constructed to minimize excavation, loss of native vegetation and significant trees, erosion, and adverse hydrological impacts on streams, rivers and wetlands.
    1. For development applications that require public notice, a stormwater report demonstrating consistency with adopted City of McMinnville Storm Drainage Design and Construction Standards must be provided.
    2. For all uses, the development shall be located as far from the stream, river or wetland and use as little of the wetland, riparian setback area, native vegetation and significant trees as possible, recognizing the operational needs of the proposed development.
C. Construction Materials and Methods. Where development within the riparian area is unavoidable, construction materials or methods used within the riparian setback area shall minimize damage to water quality, native vegetation and significant trees.
D. Residential Structures. Above-ground residential structures shall not be permitted within the RC-P Subdistrict without a variance as provided in Section 17.47.180.
    1. On-site flood storage capacity shall not decrease as a result of development. The cumulative effects of any proposed development shall not reduce flood storage capacity or raise base flood elevations on- or off-site.
    2. Development proposed within the 100- year floodplain shall be designed consistent with Chapter 17.48, Floodplain Zone.

E. Avoid Steep Slopes. Within 50 feet of any water resource, excavation, significant tree and native vegetation removal shall be avoided on slopes of 25 percent or greater and in areas with high erosion potential (as shown on National Resource Conservation Service (NRCS maps), except where necessary to construct public facilities or to ensure slope stability.

F. Minimize Impacts on Existing Vegetation. The following standards shall apply when construction activity is proposed in areas where native vegetation and significant trees are to be preserved.
   1. Work areas on the immediate site shall be carefully identified and marked to reduce potential damage to trees and vegetation.
   2. Significant trees shall not be used as anchors for stabilizing working equipment and the root zones shall be protected.
   3. During clearing operations, significant trees and vegetation shall not be permitted to fall or be placed outside the work area.
   4. In areas designated for selective cutting or clearing, care in falling and removing trees and brush shall be taken to avoid injuring trees and shrubs to be left in place.
   5. Non-active stockpiles containing soil, or soil mixed with vegetation, shall not be permitted for longer than two weeks.

G. Mitigation Plan. If a use that requires public notice is proposed within a riparian setback area, a mitigation plan shall be prepared and implemented.
   1. The applicant shall be responsible for re-vegetating areas temporarily disturbed by excavation on a 1:1 basis. That is for each 100 square feet of riparian setback that is lost to development, at least 100 square feet of existing disturbed area within the riparian setback area or wetland shall be re-planted with native plant species. If it is determined that there is no suitable location for replacement plantings on-site, then the applicant shall pay a replacement fee in accordance with a fee schedule adopted by council.
   2. Where approval is granted to reduce the riparian setback area, the applicant shall be responsible for mitigating for the reduced setback by replacing non-native vegetation within the remaining, protected riparian setback area on a 1:1.5 basis. That is, for every 100 square feet of riparian setback that is lost to development, at least 150 square feet of existing disturbed area within the riparian setback area or wetland shall be replanted with native plant species. If it is determined that there is no suitable location for replacement plantings on-site, then the applicant shall pay a replacement fee in accordance with a fee schedule adopted by council.
   3. The re-vegetation plan shall provide for the replanting and maintenance of native plant species designed to achieve pre-disturbance conditions. The applicant shall be responsible for replacing any native plant species that do not survive the first two years after planting, and for ensuring the survival of any replacement plants for an additional two years after their replacement.

H. Water and Sewer Infiltration and Discharge. Water and sanitary sewer facilities shall be designed, located and constructed to avoid infiltration of floodwaters into the system, and to avoid discharges from such facilities to streams and wetlands.

I. On-Site Systems. On-site septic systems and private wells shall be prohibited within the RC-P Subdistrict.
J. Erosion Control Plan. If a use that requires public notice is proposed within a riparian setback area, any Storm Drainage Design and Construction Standards, including Erosion Control Standards as adopted or utilized by the City of McMinnville, shall apply.
K. Plan Implementation. A schedule of planned erosion control and re-vegetation measures shall be provided, which sets forth the progress of construction activities, and mitigating erosion control measures. (Ord. X, year).

17.47.150 Decision Options and Conditions of Approval.

A. Decision Options. The Approval Authority may approve, approve with conditions, or deny an application based on the provisions of this chapter. The Approval Authority may require conditions necessary to comply with the intent and provisions of this chapter.
B. Conditions. The required reports shall include design standards and recommendations necessary for the engineer and biologist, certified wetland scientist or other qualified individual to provide reasonable assurance that the standards of this section can be met with appropriate mitigation measures. These measures, along with staff recommendations, shall be incorporated as conditions into the final decision approving the proposed development.
C. Assurances and Penalties. Assurances and penalties for failure to comply with mitigation, engineering, erosion and water quality plans required under this section shall be as stated in Chapter 17.03 General Provisions. (Ord. X, year).

17.47.160 Administrative Adjustment to Underlying Zone Dimensional Standards. The purpose of this section is to allow adjustments to dimensional standards of the underlying zoning district to reduce or move the development footprint to minimize adverse impacts on natural resource values within the RC-P Subdistrict. The Planning Director may approve adjustment applications with public notice.

A. Adjustment Option. The Planning Director may approve up to a 50 percent adjustment to any dimensional standard (*e.g.*, setback, height or lot area) of the underlying zoning district to allow development consistent with the purposes of the RC-P Subdistrict.
B. Adjustment Criteria. A special RC-P adjustment may be requested when development is proposed on a lot or parcel within or adjacent to the RC-P Subdistrict. In order for the director to approve a dimensional adjustment to standards in the underlying zoning district, the applicant shall demonstrate that the following criteria are fully satisfied:
    1. The adjustment is the minimum necessary to allow a permitted use, while at the same time minimizing disturbance within riparian setback area.
    2. Explicit consideration has been given to maximizing vegetative cover, protecting significant trees, and minimizing excavation and impervious surface area on unbuildable land.
    3. Design options have been considered to reduce the impacts of development, including but not limited to multi-story construction, siting of the structure or

residence close to the street to reduce driveway distance, maximizing the use of native landscaping materials, and minimizing parking area and garage space.

4. In no case shall the impervious surface area of a middle housing residence (including the building footprint, driveway and parking areas, accessory structures, swimming pools and patios) exceed 3,000 square feet within the riparian setback.
5. Assurances are in place to guarantee that future development will not encroach further on land under the same ownership within the RC-P Subdistrict.
6. The Planning Director may impose any reasonable condition necessary to mitigate identified impacts resulting from development on otherwise unbuildable land. (Ord. X, year).

17.47.170 Density Transfer. Residential density transfer from land within the RC-P Subdistrict (the sending area) to contiguous property under the same ownership that is outside any applicable natural resource or hazard subdistricts (the receiving area), shall be permitted subject to the following standards.

A. Maximum Density. To encourage density transfer, the transfer area shall be subject to the development standards of the next higher residential zoning district, if there is available utility capacity.
B. Example. For example, density transfer from the RC-P Subdistrict to land with an underlying R-1 zone to the sending area on the same site but outside the Natural Resource Protection Subdistricts shall be capped at the density allowed in the R-2 zone. (Ord. X, year).

17.47.180 Economic Hardship Variances. Variances to the provisions of the RC-P Subdistrict shall be discouraged and may be considered only as a last resort when application of the riparian setback standard would result in a property (one or more contiguous lots under common ownership) having no reasonable economic use.

A. Variance Option. The Planning Commission shall hear and decide variances from dimensional provisions of this chapter, in accordance with the applicable criteria in Section 17.74.110.
B. Additional Criteria. In addition to the general variance criteria described in Section 17.74.110, the following additional criteria must be met to grant a variance to any dimensional provision of this chapter:
    1. The variance is necessary to allow reasonable economic use of the subject parcel of land, which is owned by the applicant, and which was not created after the effective date of this chapter.
    2. Strict application of the provisions of this chapter would otherwise result in the loss of a buildable site for a use that is permitted outright in the underlying zoning district, and for which the applicant has submitted a formal application.
    3. The applicant has exhausted all options available under this chapter to relieve the hardship.
    4. Based on review of all required studies described in Section 17.47.140, the variance is the minimum necessary to afford relief, considering the potential

for increased flood and erosion hazard, and potential adverse impacts on native vegetation, fish and wildlife habitat, and water quality.

5. Based on review of all required studies described in Section 17.47.140, any adverse impacts on water quality, erosion or slope stability that will result from approval of this hardship variance have been mitigated to the greatest extent possible.
6. Loss of significant tree and vegetative cover shall be minimized. Any lost vegetative cover shall be replaced on-site, on a 1-to-1 basis, by native trees and vegetation. (Ord. X, year).

17.47.190 Quasi-Judicial Determination of Top-of-Bank. The McMinnville Riparian Corridor Map determines the top-of-bank of significant stream and rivers based on GIS mapping technology for the entire McMinnville UGB area. The riparian setback area is measured from the top-of-bank and restricts land uses within its boundaries. The process below provides standards for site-specific top-of-bank determinations.

A. Application. One or more property owners with contiguous properties within the riparian setback area may submit a top-of-bank determination application to the Planning Director with the required fee. The application will follow "Director's Review with Notification" procedures per Section 17.72.110.
   1. The application shall include a revised top-of-bank determination prepared by an Oregon registered engineer with experience in hydrology.
   2. The determination shall include a report and survey showing the revised top-of- bank (also known as the "bank-full stage") based on the two-year flood interval.
   3. The determination shall delineate (with DSL concurrence) any wetland(s) that extend upland from the proposed top-of-bank.
   4. The city engineer shall review and approve or reject the revised top-of-bank determination with supporting facts and reasoning. The applicant will have the opportunity to revise per comments and resubmit for review and approval by the city engineer if additional time is provided for resubmission.
   5. Notice of the application shall be provided to the Oregon Department of State Lands, with a request for review and comment.
B. The Planning Director may approve, deny or further revise the top-of-bank determination based on the information provided in the application and the city engineer's report.
C. If approved, the approved top-of-bank determination will be surveyed and recorded on applicable property deeds.
D. The City shall periodically amend the overlay zones to incorporate these approved top-of-bank changes. (Ord. X, year).

Tree Grove Protection Subdistrict (TG-P Subdistrict)

17.47.200 Purpose and Intent of the TG-P Subdistrict. The TG-P Subdistrict implements the Tree Grove protection policies of the McMinnville Comprehensive Plan. The TG-P Subdistrict operates in conjunction with Chapter 17.58 Trees, Chapter 17.48 F-P Flood Area Zone, Chapter 17.49 Natural Hazards Subdistrict, and Section

17.47.100 Riparian Corridors, to resolve conflicts between development and protection of significant tree groves identified in the City of McMinnville Tree Grove Inventory (2025). The TG-P Subdistrict protects mapped significant tree groves pursuant to Statewide Planning Goal 5 (Natural and Cultural Resources) as implemented by OAR 660-023. Specifically, this chapter allows reasonable economic use of property while establishing clear and objective standards to:

A. Protect significant tree groves and restrict development within their boundaries;
B. Provide shade and minimize runoff and erosion, thereby maintaining and enhancing water quality;
C. Preserve landmark and significant trees and native plant cover within tree groves, thereby maintaining and enhancing fish and wildlife habitats; and
D. Conserve scenic, recreational and educational values of significant tree groves. (Ord. X, year).

17.47.210 Applicability and General Provisions. The TG-P Subdistrict applies to all significant tree groves, as shown on the McMinnville Significant Tree Groves Map.

A. Development Standards. The standards and procedures of this chapter:
    1. Apply to all development proposed on property located within, or partially within, the TG-P Subdistrict;
    2. Are in addition to the standards of the underlying zone; and
    3. Supersede the standards of the underlying zone in cases of conflict.
B. Critical Root Zone (CRZ). The CRZ for an individual tree is located in a radius from the tree at a rate of 1 foot of horizontal distance from the tree for each 1 inch diameter of tree measured at 4.5 feet high, or as determined by a certified arborist. The CRZ for a tree grove is measured from the outer edge of the perimeter tree grove canopy.
    1. Alternative CRZ determinations must be performed by a certified arborist as part of the arborist report required by Section 17.47.230.
    2. The applicant shall be responsible for surveying and mapping the precise location of the CRZ and any additional measurements required by this code at the time of application submittal.
C. Exemption for Developed Subdivision Lots. This subsection does not apply to existing developed lots of 10,000 square feet or less created by a subdivision a residential zone map designation, if the relevant side or rear yards were cleared of trees and either developed with structures or planted in lawns or shrubs prior to the effective date of this ordinance.
D. Exemption for Replacement of Structures and Impervious Surfaces. - Building replacements limited to the footprint of existing buildings, and replacement of other impervious surfaces limited to the area of existing impervious surface are exempt from the provisions of this Chapter.
E. City of McMinnville Exemption. When performed under the direction of the City the following shall be exempt from the provisions of this chapter:
    1. Public emergencies, including emergency repairs to public facilities; and
    2. Routine maintenance and/or replacement of existing public facilities projects.

3. City utility or road work in utility or road easements or rights-of-way. Any trees removed in the course of utility work shall be replaced in accordance with the standards of this Chapter.

F. Exemption for Routine Site Maintenance. The following maintenance activities shall be exempt from the provisions of this chapter:
   1. Routine maintenance of the site, including maintenance of lawns and planted landscaping areas existing on the effective date of this ordinance. Additionally, the application of herbicides to non-native vegetation and the application of synthetic fertilizers is subject to applicable state and federal regulations and developed properties shall be subject to the restrictions set forth in the McMinnville Municipal Code;
   2. Removal of non-native vegetation and replacement with native plant species;
   3. Maintenance pruning of existing trees shall be kept to a minimum and shall be in accordance with the American National Standards Institute (ANSI) A300 standards for Tree Care Operations. Under no circumstances shall the maintenance pruning be so severe that it compromises the tree's health, longevity, and/or resource functions.

G. Exemption for Significant Tree Canopy over property lines. Tree canopy protections in this subsection only apply to properties that contain the trunks of trees with regulated canopy. In the case of development on property with significant tree grove canopy that extends over the subject parcel, but the trunks of the trees within the significant tree grove are not within the parcel, the provisions of this chapter do not apply. (Ord. X, year).

17.47.220 Permitted, Conditional and Prohibited Uses. Generally, land uses permitted by the underlying (base) zoning district are not allowed within the TG-P Subdistrict, except as set forth in in Table 17.47.220 below.

A. Permitted and Conditional Uses. Table 17.47.220 below summarizes permitted, conditional and prohibited uses within the TG-P Subdistrict. A “Yes” indicates that the use is permitted ministerially, is allowed under prescribed conditions subject to approval by the Director or may be approved subject to discretionary criteria for conditional use permit review. A “No” indicates that the use is not permitted. A use that is not permitted may not be approved through the variance provisions of this chapter. (Ord. X, year).

Table 17.47.220 Tree Grove – Protection Subdistrict Use List

Regulated Activity & Procedure Type		
A. Permitted Uses– Ministerial Review	Significant Tree Groves	Tree Grove Mitigation Plan Required?
1. Low impact, passive, or water-related recreation facilities and trails including, but not limited to,	Yes	No

viewing shelters, picnic tables, nature trails and interpretive signs		
2. Removal of diseased or hazardous trees authorized in writing by a certified arborist and deemed necessary for hazard prevention	Yes	No
3. Tree Grove or wildlife habitat restoration projects including removal of non-native trees	Yes	Yes
4. Arborist determination of Tree Grove CRZ boundaries	Yes	No
B. Permitted Uses with Mitigation – Planning Director Approval with public notice	Significant Tree Groves	Tree Grove Mitigation Plan Required?
1. Public facilities that appear on the City's Public Facilities Plan when there is no reasonable alternative	Yes	Yes
2. Local streets and driveways serving residences and public facilities when there is no reasonable alternative	Yes	Yes
3. Public drainage facilities	Yes	Yes
4. Utility crossings and below-ground utilities	Yes	Yes
5. Adjustments to numeric standards of the underlying zone necessary to eliminate or reduce impacts on tree groves	Yes	No
6. Park improvements within significant tree groves where authorized by a parks master plan approved by the City Council	Yes	Yes
C. Conditional Use or Variance Review subject to Planning Commission Approval at a Public Hearing	Significant Tree Groves	Tree Grove Mitigation Plan Required?
1. Economic Hardship Variances, subject to variance provisions of Chapter 17.47.280	Yes	Yes
D. Prohibited Uses - unless specifically authorized above or exempted	Significant Tree Groves	Tree Grove Mitigation Plan Required?
1. Removal of native plant species	No	Not applicable
2. Placement of structures or impervious surfaces	No	Not applicable
3. Grading and placement of fill	No	Not applicable
4. Application of herbicides	No	Not applicable
5. Dumping of garbage or lawn debris or other unauthorized materials	No	Not applicable
6. Creation of a parcel that would be wholly within the TR-P district or resulting in an unbuildable parcel, as determined by the Director.	No	Not applicable

17.47.230 Application Requirements. All development applications on lots within, or partially within, the TG-P Subdistrict shall submit the following information, in addition to other information required by this code.

A. Ministerial Uses. The applicant shall prepare a plan that demonstrates that the use will be constructed and located to avoid removal of any significant trees within a tree grove The Director may require additional information where necessary to determine TG-P boundaries or to mitigate identified impacts from a proposed development, including but not limited to:
   1. A site survey as prescribed in Section 17.47.230(B); and
   2. One or more of the reports described in Section 17.47.230(C).

B. Director and Planning Commission Review Uses: Site Specific Survey Required. If any use or activity is proposed within a significant tree grove, the applicant shall be responsible for preparing a survey of the area proposed for development that shows the following:
   1. The name, location and dimensions of the significant tree grove, as shown on the McMinnville Tree Grove Assessment.
   2. The area enclosed by the tree grove canopy per Section 17.47.210(B).
   3. The 100-year floodplain if applicable.
   4. Land subject to the Natural Hazard – Mitigation (NH-P), Natural Hazard Protection (NH-P), and/or Riparian Corridor – Protection (RC-P) Subdistricts.
   5. Steeply sloped areas where the slope of the land is 25% or greater.
   6. Existing public rights-of-way, structures, roads and utilities.
   7. Vegetation types (native and non-native).
   8. The driplines of significant trees or tree clusters of trees 6-inches or greater dbh that would be impacted by tree removal, major pruning or ground disturbance.
   9. Existing and proposed contours at 2-foot intervals, or as approved by the City Engineer or Planning Director.

C. Required Studies and Mitigation Reports. Where required by Table 17.47.220, the applicant shall prepare the following studies in addition to the submission of information required for specific types of development. All required studies shall be prepared by professionals in their respective fields. The Planning Director may exempt permit applications from one or more of these studies, based on specific findings as to why the study is unnecessary to determine compliance with this chapter. This determination must be made, in writing, at or immediately following the required pre-application conference and prior to application submittal.
   1. Grading Plan. The grading plan shall be specific to a proposed physical structure or use and shall include information on terrain, drainage, direction of drainage flow, location of proposed structures and existing structures which may be affected by the proposed grading operations, water quality facilities, existing and finished contours (at 2-foot intervals, or as approved by the City Engineer or Planning Director) including all cut and fill slopes and proposed drainage channels. Project designs including but not limited to locations of surface and subsurface devices, walls, dams, sediment basins, storage reservoirs, and other protective devices shall form part of the submission.

2. Arborist Report. This report, prepared by a Certified Arborist, shall identify the significant tree grove boundaries affecting the development site based on the driplines of perimeter trees. The arborist report also shall assess the health and driplines of any trees considered in the required alternatives analysis per Section 17.47.240.
3. Tree Grove Mitigation Report (TGMR). If development is proposed within a tree grove, then the arborist report shall be supplemented by a survey of existing trees and vegetative cover within a significant tree grove, whether it is native or introduced, and how it will be altered by the proposed development. The TGMR shall include recommendations to assure compliance with each applicable provision of this code and shall be prepared by an arborist or landscape architect with specific knowledge of native plant species, planting, susceptibility to wildfire, maintenance methods, and survival rates. (Ord. X, year).

17.47.240 Development Standards. The following shall apply to all development, including vegetation removal and excavation, allowed within the TG-P Subdistrict. No application for a use identified in Section 17.47.220 shall be deemed complete until the applicant has addressed each of these standards in writing.

A. Alternatives Considered. Development applications for allowed uses that require public notice must carefully examine alternatives for the proposed use and explain the reasons why the proposed development cannot reasonably occur outside of the significant tree grove boundary, why any significant trees must be removed to meet project objectives, and why native vegetation cannot reasonably be avoided.
B. Minimize Siting Impacts. The proposed use shall be designed, located and constructed to minimize excavation and erosion within significant tree groves (especially within CRZs), loss of native vegetation and significant trees, and adverse hydrological impacts on adjacent streams, rivers and wetlands.
    1. For development applications that require public notice, the certified arborist must certify that any adverse impacts on the health of remaining trees will be minimized consistent with best management practices.
    2. For all uses, the development shall avoid significant and landmark trees if possible, recognizing the operational needs of the proposed development.
C. Construction Materials and Methods. Where development within the significant tree grove is unavoidable, construction materials or methods used within the tree grove area shall minimize damage to water quality, native vegetation and significant trees.
D. Meet NR- and NH- Subdistrict Standards. All development must meet applicable natural resource and natural hazard subdistrict standards in addition to the provisions of this chapter. In cases of conflict, the more restrictive standard shall apply.
E. Avoid Steep Slopes. Removal of significant trees and native vegetation removal shall be avoided on slopes of 25 percent or greater and in areas of High Landslide Susceptibility (as shown on the Statewide Landslide Information Layer

for Oregon, SLIDO), except where necessary to construct public facilities, or to ensure slope stability.

F. Minimize Impacts on Existing Vegetation. The following standards shall apply when construction activity is proposed in areas where native vegetation and significant trees are to be preserved.
   1. Work areas on the immediate site shall be carefully identified and marked to reduce potential damage to trees and vegetation.
   2. Significant trees shall not be used as anchors for stabilizing working equipment and the root zones shall be protected.
   3. During clearing operations, significant trees and vegetation shall not be permitted to fall or be placed outside the work area.
   4. In areas designated for selective cutting or clearing, care in falling and removing trees and brush shall be taken to avoid injuring trees and shrubs to be left in place.
   5. Non-active stockpiles containing soil, or soil mixed with vegetation, shall not be permitted for longer than two weeks.

G. Tree Grove Mitigation Plan (TGMP). If a TGMP is required:
   1. The applicant shall be responsible for re-vegetating areas temporarily disturbed by excavation on a 1:1 basis. That is, for each significant tree removed, at least 1 new tree shall be planted. Each new tree shall be at least two inches in caliper measured at six inches above ground. For each 100 square feet of disturbed native vegetation removed, at least 100 square feet of cleared or non-native vegetation shall be re-planted with native, fire-resistant plant species.
   2. Where approval is granted within a significant tree grove, the applicant shall be responsible for mitigating for significant tree and native vegetation removal by replacing significant trees and native vegetation within the remaining, protected tree grove on a 1:1.5 basis. That is, for each significant tree removed, at least 1.5 new trees shall be planted. Each new tree shall be at least two inches in caliper measured at six inches above ground. For each 100 square feet of disturbed native vegetation removed, at least 150 square feet of cleared or non-native vegetation shall be re-planted with native, fire-resistant plant species.
   3. The re-vegetation plan shall provide for the replanting and maintenance of native plant species designed to achieve pre-disturbance conditions. The applicant shall be responsible for replacing any native plant species that do not survive the first two years after planting, and for ensuring the survival of any replacement plants for an additional two years after their replacement.

H. Water and Sewer Infiltration and Discharge. Water and sanitary sewer facilities shall be designed, located and constructed to avoid infiltration of floodwaters into the system, and to avoid discharges from such facilities to streams and wetlands.

I. On-Site Systems. On-site septic systems and private wells shall be prohibited within the TG-P Subdistrict. (Ord. X, year).

17.47.250 Decision Options and Conditions of Approval

A. Decision Options. The Approval Authority may approve, approve with conditions, or deny an application based on the provisions of this chapter. The Approval Authority may require conditions necessary to comply with the intent and provisions of this chapter.
B. Conditions. The required reports shall include design standards and recommendations necessary for the engineer and biologist, certified wetland scientist or other qualified individual to provide reasonable assurance that the standards of this section can be met with appropriate mitigation measures. These measures, along with staff recommendations, shall be incorporated as conditions into the final decision approving the proposed development.
C. Assurances and Penalties. Assurances and penalties for failure to comply with mitigation, engineering, erosion and water quality plans required under this section shall be as stated in Chapter 17.03 General Provisions.

17.47.260 Administrative Adjustment to Underlying Zone Dimensional Standards. The purpose of this section is to allow adjustments to dimensional standards of the underlying zoning district to reduce or move the development footprint to minimize adverse impacts on natural resource values within the TG-P Subdistrict. The Planning Director may approve adjustment applications with public notice.

A. Adjustment Option. The Planning Director may approve up to a 50 percent adjustment to any dimensional standard (e.g., setback, height or lot area) of the underlying zoning district outside the boundaries of the significant tree grove to allow development consistent with the purposes of the TG-P Subdistrict.
B. Adjustment Criteria. A TG-P adjustment may be requested when development is proposed on a site within or partially within a TG-P Subdistrict. For the director to approve a dimensional adjustment to standards outside the tree grove boundary in the underlying zoning district, the applicant shall demonstrate that the following criteria are fully satisfied:
    1. The adjustment is the minimum necessary to allow a permitted use, while at the same time minimizing disturbance within significant tree grove area.
    2. Explicit consideration has been given to maximizing tree retention and vegetative cover, protecting significant and landmark trees, and minimizing excavation and impervious surface area.
    3. Design options have been considered to reduce the impacts of development, including but not limited to multi-story construction, siting of the structure or residence close to the street to reduce driveway distance, maximizing the use of native landscaping materials, and minimizing parking area and garage space.
    4. Assurances are in place to guarantee that future development will not encroach further on land under the same ownership within the TG-P Subdistrict.
    5. The Planning Director may impose any reasonable condition necessary to mitigate identified impacts resulting from development on otherwise unbuildable land. (Ord. X, year).

17.47.270 Density Transfer. Residential density transfer from land within the TG-P Subdistrict (the sending area) to contiguous property under the same ownership that is outside any applicable natural resource or hazard protection subdistricts (the receiving area), shall be permitted, subject to the following standards.

A. Maximum Density. To encourage density transfer, the transfer area shall be subject to the development standards of the next higher residential zoning district, if there is available utility capacity.
B. Example. For example, density transfer from the TG-P Subdistrict to land with an underlying R1 zone to the sending area on the same site but outside the Natural Hazards or Protection and the Natural Resource Protection Subdistricts shall be capped at the density allowed in the R2 zone. (Ord. X, year).

17.47.280 Economic Hardship Variances. Variances to the provisions of the TG-P Subdistrict shall be discouraged and may be considered only as a last resort when application of the TG-P Subdistrict would result in a property (one or more contiguous lots under common ownership) having no reasonable economic use.

C. Variance Option. The Planning Commission shall hear and decide variances from dimensional provisions of this chapter, in accordance with the criteria in Section 17.74.110.
D. Additional Criteria. In addition to the general variance criteria described in Section 17.74.110, the following additional criteria must be met to grant a variance to any dimensional provision of this chapter:
    1. The variance is necessary to allow reasonable economic use of the subject parcel or parcels of land owned by the applicant that were not created after the effective date of this chapter.
    2. Strict application of the provisions of this chapter would otherwise result in the loss of a buildable site for a use that is permitted outright in the underlying zoning district, and for which the applicant has submitted a formal application.
    3. The applicant has exhausted all options available under this chapter to relieve the hardship.
    4. Based on review of all required studies described in Section 17.47.240, the variance is the minimum necessary to afford relief, considering the potential for increased flood and erosion hazard, and potential adverse impacts on significant trees, native vegetation, fish and wildlife habitat, and water quality.
    5. Based on review of all required studies described in Section 17.47.240, any adverse impacts on tree canopy, water quality, erosion or slope stability that will result from approval of this hardship variance have been mitigated to the greatest extent possible.
    6. Loss of significant tree and vegetative cover shall be minimized. Any lost vegetative cover shall be replaced on-site at the basis established in Section 17.47.240(G). (Ord. X, year).

17.47.290 Verification of Tree Grove Boundaries. Significant tree grove boundaries may be appealed and must be verified occasionally to determine the true location of tree grove perimeters through a site-specific survey. Applications for development on a site that contains significant tree groves may request a determination that the subject

site or portions of the subject site is not subject to the standards of Chapter 17.47. Verifications shall be processed as outlined below.

A. Verifications shall be processed as a by the Planning Director without Notification.
B. Applicants for a determination under this section shall submit a site plan meeting the requirements of Chapter 17.72, as applicable, and provide a survey location of on-site significant trees within the significant tree grove and their respective CRZs.
C. Such requests may be approved provided that there is evidence substantiating that the tree grove perimeter boundaries identified on the McMinnville Significant Tree grove map are inconsistent with the CRZs of trees within the grove on site. (Ord. X, year).

17.47.300 Plan Amendment Option. Any owner of property affected by the Goal 5 significant tree grove protections may apply for a comprehensive plan amendment as provided in MMC Section 17.74.020. This amendment must be based on a specific development proposal. The effect of the amendment would be to remove Goal 5 protection from the property. The applicant must demonstrate that such an amendment is justified by either of the following:

A. ESEE analysis. The applicant may prepare an environmental, social, economic and energy (ESEE) consequences analysis prepared in compliance with OAR 660-23-040.
    1. The analysis must consider the ESEE consequences of allowing the proposed conflicting use, both the impacts on the specific resource site and the comparison with other comparable sites within the McMinnville Planning Area;
    2. The ESEE analysis must demonstrate to the satisfaction of the city council that the adverse economic consequences of not allowing the conflicting use are sufficient to justify the loss, or partial loss, of the resource;
    3. In particular, ESEE analysis must demonstrate why the use cannot be located on buildable land, consistent with the provisions of this chapter, and that there are no other sites within the City of McMinnville Planning Area that can meet the specific needs of the proposed use;
    4. The ESEE analysis must be prepared by a team consisting of a wildlife biologist or wetlands ecologist and a land use planner or land use attorney, all of whom are qualified in their respective fields and experienced in the preparation of Goal 5 ESEE analysis;
    5. If the application is approved, then the ESEE analysis must be incorporated by reference into the McMinnville Comprehensive Plan.
B. Demonstration of change. In this case, the applicant must demonstrate that the significant tree grove area site no longer meets the thresholds of significance or definition of a tree grove, relative to other comparable significant tree groves within the City of McMinnville Planning Area.
    1. Significance thresholds and tree grove definitions are described and applied in the McMinnville Tree Grove Assessment adopted by reference as part of this chapter.

2. To approve this claim, the city council must find that the decline in identified resource values did not result from a violation of this title.
3. If the application is approved, then the change must be integrated into the McMinnville Significant Tree Grove Map. (Ord. X, year).

City of McMinnville
Tree Grove Assessment Report

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WINTER BROOK
COMMUNITY RESOURCE PLANNING

City of McMinnville
Tree Grove Assessment

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Appendices

INTRODUCTION

Wooded areas are identified as significant natural features in the City of McMinnville's Great Neighborhood Policies. Under Policy 187.50.1:

> "*Great Neighborhoods are sensitive to the natural conditions and features of the land. Neighborhoods shall be designed to preserve significant natural features including, but not limited to**,** watercourses, sensitive lands, steep slopes, wetlands, **wooded areas,** and landmark trees."*

To implement Great Neighborhood Policies, the City authorized Winterbrook Planning to prepare an inventory and assessment of significant wooded areas (tree groves) within the McMinnville study area. The study area covers the City of McMinnville Urban Growth Boundary (UGB), including the 2020 adopted additions to the UGB. The purpose of the Tree Grove Assessment project is to document the location, quantity, and quality of tree groves in the study area, and to determine which of the groves are "significant."

The project follows the inventory process outlined in the Statewide Planning Goal 5 (Natural Resources) administrative rule (OAR Chapter 660 Division 023). The inventory will inform the development of policy encouraging the preservation of significant groves through an effective but limited tree grove protection program.

This report describes the methodology used to conduct the assessment and provides a summary of results and analysis. Appendix A contains the Tree Grove index and site maps. Appendix B contains the Tree Grove Assessment (TGA) data forms for each tree grove. The TGA forms include the tree grove information and assessment data described in the Tree Grove Inventory Methods section, below.

SUMMARY

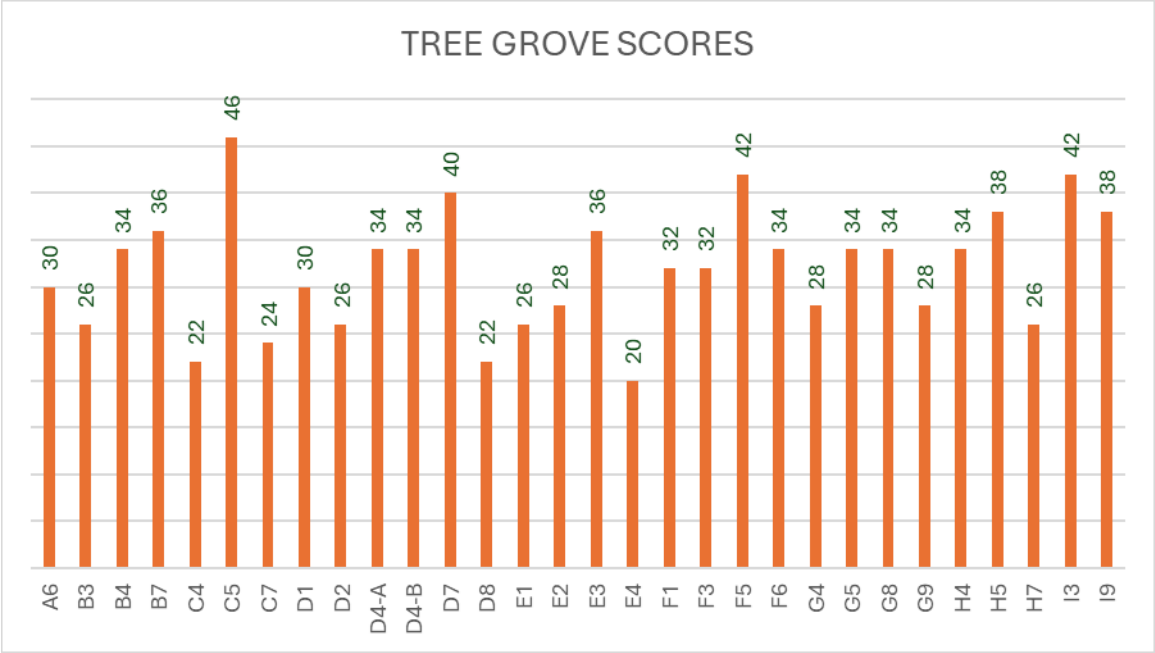
Winterbrook Planning conducted the tree grove assessment field work within the McMinnville urban growth boundary (UGB) between March and May 2021.

For the purposes of this project, a tree grove is defined as a stand of trees that are predominantly 25 feet or more in height with contiguous canopy cover of one acre or more located outside of floodplains. Tree groves generally do not include linear plantings that are one or two trees wide (e.g., street trees, rows of trees along a property line), or fragmented areas, such as treed areas with a high proportion of the canopy broken by houses, roads, and other developed uses.

As shown on Graph 1, 30 tree grove sites were identified within the McMinnville study area. The sites range from 1 to 47 acres, with a combined area of 403 acres. The average site size is 13 acres; the median size is 8 acres.

Overall TGA scores ranged from a high of 46 (Site C5) to a low of 20 (Site E4). The average score for all groves was 32; the median score for all groves was 33. Graph 1 shows a summary of the TGA scores.

Graph 1. Tree Grove Assessment Scores



TREE GROVE INVENTORY METHODS

Consistent with OAR 23-023-0030 Inventory Process, Winterbrook followed a multi-step method to determine the location and the relative quantity and quality of Tree Groves in McMinnville.

Initial Tree Grove Candidate Inventory

City planning staff prepared a preliminary map of potentially significant tree groves of two acres or greater outside the 100-year floodplain based on their review of aerial photography and local knowledge. City staff provided GIS maps showing the results of this work.

Using aerial photo interpretation, Winterbrook refined the tree grove boundaries to include groves (wooded subareas) with contiguous canopy cover of one acre or more located outside of floodplains; groves partially within floodplains were included in the inventory when the total non-floodplain area of the grove exceeded one acre. Linear and fragmented/developed areas were removed from the mapped groves to focus on larger, cohesive tree groves.

Tree Grove Field Inventory Methods

Using the updated base maps and inventory forms for each candidate grove, Winterbrook completed the field inventory. Tree groves were surveyed from public lands (e.g., parks, public trail networks, public streets and rights of way).

Winterbrook completed detailed Tree Grove Assessment (TGA) forms and refined mapped tree grove boundaries during field visits. The data collection and assessment parameters used are described below. Ground level photographs were taken for each grove that was accessible and visible. Once the field data was collected, information was transferred to electronic data sheets and the functional assessment rankings completed.

Survey Data

The TGA survey forms contain information on the general characteristics of the grove such as its size, location, and vegetation composition. The following survey data was recorded for each candidate tree grove in the field (except as noted below).

- *Site #* – The grove site number follows the GIS grid mapping system for the study area, generally a letter and number combination (e.g., B4). For groves spanning multiple maps, the map with the most prominent part of the grove was generally keyed as the site number.

- *Size* – Site acreage, reflecting any site boundary amendments made in the field; this calculation is provided by GIS.

- *Maps* – The map numbers for the subject grove, based on the GIS grid mapping system.

- *Score* – The cumulative total of points for the tree grove functional categories (see discussion below). Scoring was automated using Excel-based TGA forms. The range of potential scores for a given grove is 10 to 50 points. Those sites with the highest scores provide the highest number and quality of functions.

- *Location* – Site identifiers, such as street intersections, parks or creeks, or other characteristics aiding identification of the grove to which the TGA form pertains.

- *Floodplain* – Is any portion of the site part of a floodplain?

- *Observers* – Initials of field observers.

- *Date* – Date(s) of the field survey.

- *Trees* – General classification of forest or woodland community using National Vegetation Classification System (NVCS). Dominant, co-dominant and secondary tree species are typically noted here, as well as general understory characteristics or species.

Field Assessments

The assessment section of the survey focuses on the functional characteristics of the tree grove. Ten functional categories were evaluated, and each grove received a score of low (1), medium (3), or high (5) based on threshold factors established in each category as described below. The range of potential scores for a given grove is 10 to 50 points. Based on cumulative scores for each tree grove, a significance threshold was determined.

Following is a summary of the ten functional categories and their assessment factors.

1. **Grove Maturity/ Tree Size**: Scenic values tend to be a function of tree size or age. Also, mature trees are difficult or take a long time to replace. The primary assessment factor in this category is the percent of large trees (greater than 14" diameter at breast height (dbh)) in the grove. Multi-stem trees are evaluated by the size of the largest individual trunk at chest height.

2. **Grove Size**: The vitality and resilience of a grove generally increase with grove area. Scenic, natural and other values often increase with size as well. Based on local grove conditions, groves of greater than five acres are defined as large (high), groves between two and five acres are defined as medium, and groves of less than two acres are defined as small (low). Grove size was verified using GIS following any grove map refinements in the field.

3. **Health**: This category assesses the general health and condition of a grove, including signs of dieback, threats, and disturbance. Threats may include infestations of invasive plants such as English ivy that tend to degrade forest habitat functions and values. It may also include natural processes, such as beaver activity, that change the hydrologic regime to alter the existing tree grove composition and health.

4. **Visibility**: Groves that are clearly visible from major streets or public open space have greater value to the community. Assessment factors include visibility from an arterial or local street and/or public or private open space.

5. **Screening/Buffering**: Groves may serve as land use buffers. The value of buffering or screening is a function of the grove size, location and nearby uses. The greatest value to the community is when the tree grove provides a buffer between different types of uses, primarily between industrial/commercial use and residential/open space uses.

6. **Accessibility**: Accessibility is a function of ownership (public or private) and physical features (topography, trail access, etc.). Public access provides more opportunity for public use and enjoyment. Steep terrain and inaccessible features (wetlands, dense brush) may limit or preclude opportunities for public use.

7. **Rarity**: Unusual features, such as large size, rare species, or historic/landmark values, add to community value. This category considers whether such features are present, and whether they are uncommon or unique within the study area.

8. **Educational/Recreational Potential**: Groves with both public access and noteworthy features offer increased educational values. Groves with public or semi-public access and trail networks offer passive recreation values. Important factors include public versus private ownership and whether developed access exists. This category is a function of accessibility and rarity values: if either category ranks low, this function is low; if both rank medium, this function is medium; otherwise, this function is high.

9. **Wildlife Habitat Value and Connectivity**: Tree groves can provide important habitat for terrestrial wildlife species. The size, location and composition of a grove are all factors influencing the quality of habitat. Larger groves located near or connected to other habitat areas generally provide greater habitat value than smaller, isolated groves. Groves with a diverse mix of species and structure (such as mid-canopy trees, shrubs, groundcover, and standing or downed logs) generally provide higher value forage, cover and nesting habitat than groves with few species or with no understory. Groves with large trees, particularly Oregon oak trees, provide important habitat for sensitive bird species. Proximity to water sources improves habitat value as well.

10. **Level of Existing Development**: Groves located on undeveloped or partially developed sites offer the opportunity to protect groves through site planning. Groves surrounded by development tend to be more at risk.

Comments

The Comments section is used to make additional notes relevant to assessment, such as statements of overall quality, invasive species presence, land use context, unusual characteristics and clarifications on assessment rankings.

Management Recommendations

Where appropriate, grove management recommendations are noted in this section.

Geocoding

The location and score for each tree grove was geocoded for use on GIS overlay maps. These tree grove layers and information can be compared with GIS maps for other inventoried natural resources, and to other natural hazard layers prepared as part of a comprehensive Natural Hazards Inventory and ranking system.

INVENTORY RESULTS

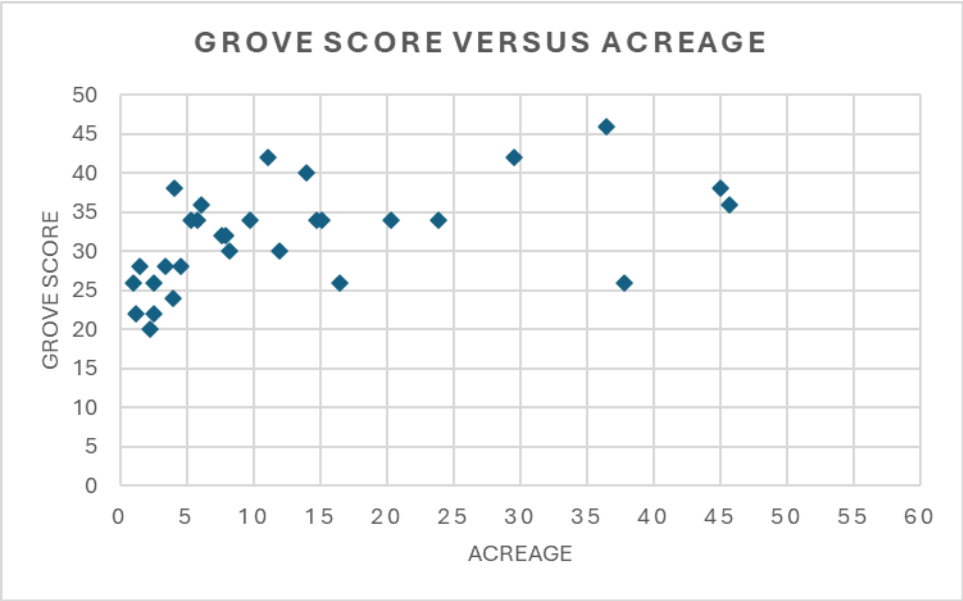
The tree grove assessment field work was conducted within the McMinnville study area between March and May 2021.

Tree Grove Location, Quantity and Quality

Thirty (30) tree groves sites were identified within the McMinnville study area. Many of the groves are associated with riparian corridors, including the North and South Yamhill Rivers and their major tributaries Cozine Creek and Baker Creek. Approximately half of the groves are partially within floodplain areas. The sites range from 1.2 to 47.1 acres, with a combined area of 450 acres. The average site size is 15 acres; the median size is 9.75 acres, indicating that several larger groves skew the average size upward significantly. The largest grove, Grove E1 on Redmond Hill, covers 47.1 acres.

Overall TGA scores ranged from a high of 46 (Site C5 at Tice Park/Rotary Nature Preserve, to a low of 20 (Site E4, Michelbook Country Club - South). The average score for all groves was 31.9; the median score was 33. As illustrated in Graph 3, there was no significant correlation between grove size and grove score. The largest four groves (all over 40 acres) ranged from scores of 26 to 38, while five smaller groves (of as small as four acres) scored 38 or higher.

Graph 3. Relationship of Grove Score to Size



Most tree groves are composed of a mix of tree species, with Douglas fir and Oregon oak or Oregon ash being the most common dominant species[1]. Other species present may include black cottonwood, bigleaf maple, western red cedar, red alder, Scouler willow, and bird cherry (an invasive species). Approximately 40% of the groves are dominated by one species, typically either Oregon oak, Oregon ash, Douglas fir or black cottonwood. Of the groves dominated by fir, some are densely stocked, even-aged plantations with minimal understory vegetation. These monocultures typically receive low TGA scores due to factors such as lower grove maturity, health, and habitat functions.

Some of the City's tree groves are badly infested with invasive plants, particularly in the understory. Tree groves along some river and stream banks have dense thickets of Himalayan blackberry, which can crowd out growth of understory plants. Another problem species includes English ivy, which forms dense mats on the ground and can climb, smother and topple large trees if not managed. Bird cherry and English holly are other noted invasive species. Invasive species management will be important to protecting the long-term health of the City's tree groves.

Thirteen (13), or 43 percent, of the grove sites are located partially within floodplain areas. A larger number – 17 groves (57%) – are located along riparian corridors. These groves generally support greater habitat complexity due to variation in the plant community related to moisture gradients between upland, riparian and wetland habitats. In areas influenced by

[1] See Appendix C for a key to scientific names of plants referenced in this study.

nearby streams or wetlands, Oregon ash, red alder, Pacific willow, and black cottonwood are dominants, while Douglas fir and bird cherry are often found at slightly higher elevations. The City's tree groves provide suitable habitat for three key bird species that are listed by the State as sensitive: olive-sided flycatcher (*Contopus cooperi)*, western bluebird (*Sialia mexicana)*, and white-breasted nuthatch (*Sitta carolinensis aculeata).* Maps created by Oregon Department of Fish and Wildlife (https://www.dfw.state.or.us/maps/compass/) indicate that habitat for one or more of the birds is found within 27 of the City's tree groves.

Table 1 summarizes key characteristics of tree groves within the McMinnville study area: their location, size, TGA score, inventory field dates, key bird habitat, and dominant vegetation.

Table 1. Characteristics of McMinnville Tree Groves

Grove#	Site / Location	Acres	Score	Field Date	Key Birds*	Dominant Species
A6	Lower Baker Creek / Harvest Ct	8.2	30	3.9.21	B, F, N	Douglas fir, Oregon ash
B3	Baker Creek Oaks	1.0	26	3.9.21	B, N	Oregon oak
B4	Upper Baker Creek / Pinot Noir Ct	9.75	34	3.9.21	B, F, N	Douglas fir, Oregon oak
B7	Grandhaven Dr (north)	45.7	36	3.9.21	B, F, N	Douglas fir, Oregon oak, Oregon ash
C4	Baker Crest Ct	1.2	22	3.9.21	B, F, N	Douglas fir, Oregon oak
C5	Tice Park / Rotary Nature Preserve	36.5	46	3.9.21	B, F, N	Douglas fir, Oregon oak, Oregon ash
C7	Grandhaven Dr (south)	4.0	26	3.9.21	B, F, N	Douglas fir, Black cottonwood
D1	Fox Ridge Rd (west)	12	30	3.9.21	B, F, N	Oregon oak, Douglas fir
D2	Fox Ridge Rd (east)	2.5	26	3.9.21	B, F, N	Oregon oak (no view, aerials only)
D4-A	Michelbook Country Club (west)	5.3	34	3.9.21		Douglas fir, Oregon oak
D4-B	Michelbook Country Club (east)	5.8	34	3.9.21	N	Douglas fir, Oregon oak
D7	Wortman Park	14	40	3.9.21		Oregon oak, Douglas fir
D8	Riverside Dr	2.5	22	3.9.21	B, F, N	Douglas fir plantation
E1	Redmond Hill	37.8	26	3.11.21	B, F, N	Douglas fir plantation
E2	Fox Ridge Rd / Masonic Cemetery	3.4	28	3.9.21	B, F, N	Douglas fir, Oregon oak
E3	Meadows Dr	6.1	36	3.9.21	N	Oregon ash – Forested wetland
E4	Michelbook Country Club (South)	2.3	20	3.9.21	B, F, N	Black cottonwood (linear feature)
F1	Redmond Hill (west)	7,6	32	3.11.21	B, F, N	Douglas fir, Oregon oak
F3	Quarry Park	7.9	32	4.7.21		Douglas fir
F5	City Park	11.1	42	3.9.21, 4.7.21	B, F, N	Douglas fir
F6	Public Works/ Oregon St	15.1	34	3.9.21	B, F, N	Douglas fir, Oregon ash
G4	Ash Meadows	1.5	28	3.11.21	N	Oregon ash
G5	Linfield College: Cozine Creek	14.75	34	3.11, 4.7.21	B, F, N	Douglas fir, Oregon ash
G8	Yamhill River branch / Kingwood	20.3	34	3.11.21	B, F, N	Douglas fir
G9	Evergreen Aviation Chapel	4.6	28	3.11.21	B, N	Oregon oak
H4	Tall Oaks/Cozine Creek	23.9	34	3.11.21	B, F, N	Douglas fir, Oregon oak
H5	Linfield College: Queen's Grove	4.1	38	3.11, 4.7.21	B, F, N	Oregon oak
H7	Yamhill River extension	16.5	26	3.11.21	B, F, N	Douglas fir
I3	Barbel/Grange	29.5	42	3.11.21	B, F, N	Douglas fir, Oregon ash
I9	Airport Park	45	38	3.11,	B, F, N	Douglas fir, Oregon oak, bigleaf maple

Grove#	Site / Location	Acres	Score	Field Date	Key Birds*	Dominant Species
				4.7.21		

* Key: Grove provides suitable habitat for B = western bluebird, F = olive-sided flycatcher, N = white-breasted nuthatch (ODFW 2021)

Significance determination

Tree groves that met the threshold definition of a grove and had a Tree Grove Assessment score of at least 25 out of 50 were deemed significant. An analysis of environmental, social, economic and energy consequences of regulatory alternatives (ESEE analysis) must be conducted and serve as the basis for any future City protection program.

Grove E4 (Michelbrook Country Club-South), C4 (Baker Crest Ct), C7 (Grandhaven Dr. (South)) and D8 (Riverside Dr) are below this threshold score and are therefore not significant. These groves will not be evaluated further in the development of a Goal 5 conservation program.

CONCLUSION

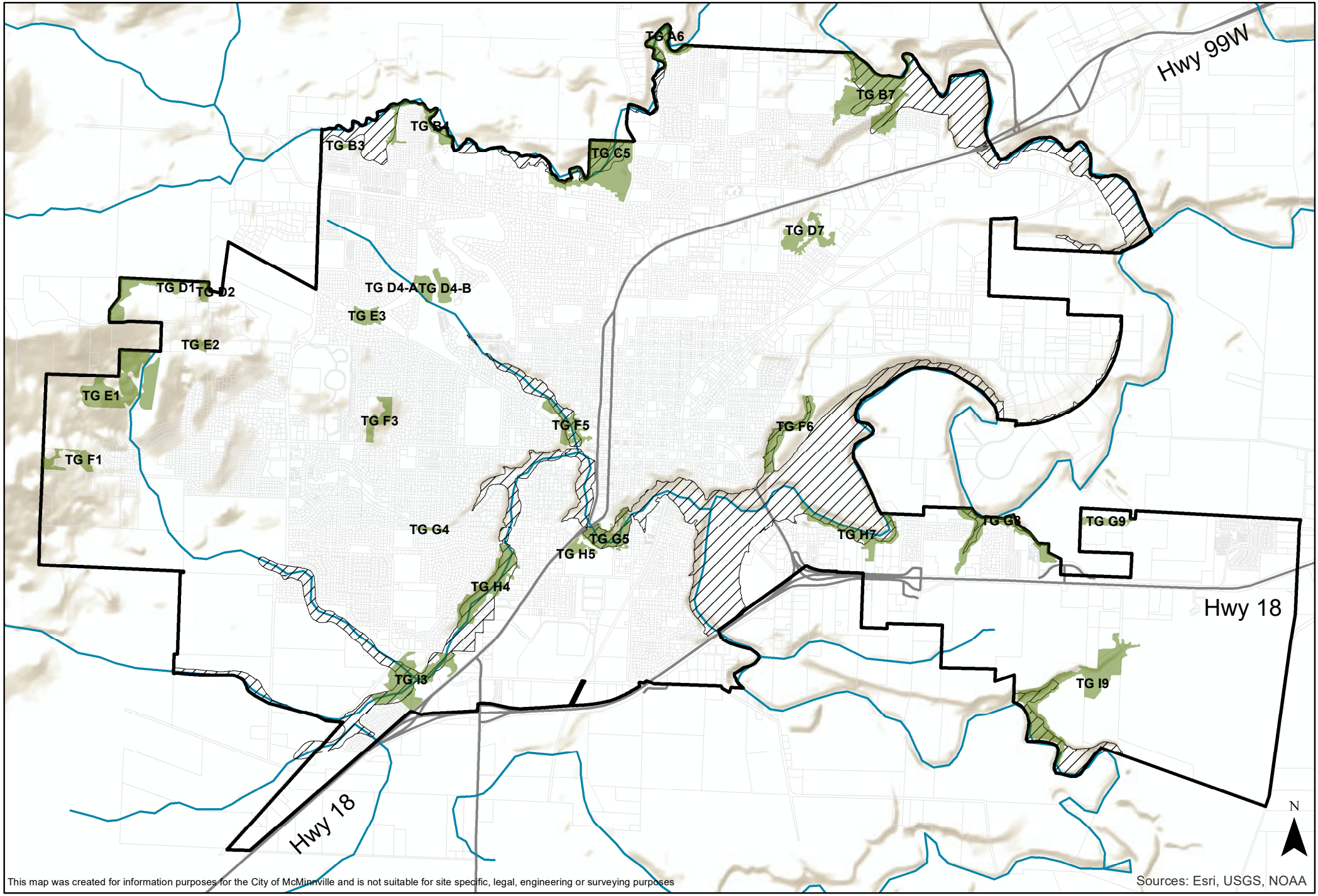
This Tree Grove Assessment report, together with the tree grove maps (Appendix A) and TGA assessment forms (Appendix B), document the location, quantity and quality of tree groves in McMinnville, and determine which groves are significant. Twenty-six tree groves in McMinnville are significant.

The City's tree groves, riparian areas and floodplains form an impressive network of open space and natural habitats that provide a variety of services and amenities to the McMinnville community. These include scenic, environmental, social and economic amenities.

NEXT STEPS

Tree groves that are partially within floodplains have existing local protection. Trees also provide erosion control, water quality and stormwater retention benefits. As part of the Goal 7 Natural Hazards inventory and protection program, Winterbrook will recommend additional protection for tree groves and large trees located on steep slopes and within floodplains and landslide areas.

The focus of new policy will be on the groves, or portions of groves, located outside of floodplain areas. For these areas, the next step in the Goal 5 process will be an analysis of Economic, Social, Environmental and Energy (ESEE) consequences of different conservation strategies, that will serve as the basis for policy recommendations encouraging the preservation and protection of significant groves through a limited tree grove protection program. The goal of the incentive-based program is to create a positive pull toward maintaining these groves and expanding them where desirable and feasible.



McMinnville Significant Tree Groves

Significant Tree Groves
Flood Plain Zone (F-P)
McMinnville 2025 Urban Growth Boundary
Rivers & Streams
Major Roads
Tax Lots

Miles
0 0.25 0.5 1

Created by Winterbrook Planning in coordination with the City of McMinnville

Amended on 01.20.2026

Last Revised: January 5, 2026

Exhibit D. Citations and Bibliography

Economic

Summary:

Economically, trees provide multiple benefits. Trees capture and store carbon dioxide, mitigating climate change. Trees reduce local air pollution, reducing health costs. Trees can increase tourism and consumer spending. Tree canopy is associated with higher property values. Trees are shown to reduce intensity and flow of stormwater, reducing infrastructure costs and improving water quality. While there are maintenance costs associated with trees, many studies find their costs are outweighed by the myriad of benefits.

Table 1. Economic Benefits and Costs

Topic	Applicability	Citation
Energy consumption	Urban trees can offset or reverse heat island effects, reducing energy consumption for air conditioning, potentially reducing air conditioning costs by 20%.	Akbari, H., Pomerantz, M., & Taha, H. (2001). Cool surfaces and shade trees to reduce energy use and improve air quality in urban areas. *Solar Energy*, *70*(3), 295–310. https://doi.org/10.1016/S0038-092X(00)00089-X
Stormwater management	Trees reduce high stormwater flows, improving the water quality and reducing high flow rates by intercepting precipitation, removing water from the soil via transpiration, and enhancing filtration.	Berland, A., Shiflett, S. A., Shuster, W. D., Garmestani, A. S., Goddard, H. C., Herrmann, D. L., & Hopton, M. E. (2017). The role of trees in urban stormwater management. *Landscape and Urban Planning*, *162*, 167–177. https://doi.org/10.1016/j.landurbplan.2017.02.017
Productivity	This comprehensive report summarizes the many benefits connecting with nature can have to humans. Research supports the finding that incorporating nature into the built environment has economic benefits to health and productivity. Incorporating nature can reduce worker illness and absenteeism, and increase staff retention, job performance, healing rates, learning rates, and retail sales.	Browning, W., Ryan, C., & Clancy, J. (2012, June 12). *The Economics of Biophilia*. http://clients.edmullen.com/terrapin/
Property Values	Hedonic models of greenspace contribution to residential property values show greenspaces have significant positive impacts on property values.	Conway, D., Li, C. Q., Wolch, J., Kahle, C., & Jerrett, M. (2010). A Spatial Autocorrelation Approach for Examining the Effects of Urban Greenspace on Residential Property Values. *The Journal of Real Estate Finance and Economics*, *41*(2), 150–169. https://doi.org/10.1007/s11146-008-9159-6
Energy consumption	Researchers studied the effect of shade trees on summertime electricity use, showing that shade trees on south and west sides of houses in particular can reduce summertime electricity use, and corresponding carbon emissions.	Donovan, G. H., & Butry, D. T. (2009). The value of shade: Estimating the effect of urban trees on summertime electricity use. *Energy and Buildings*, *41*(6), 662–668. https://doi.org/10.1016/j.enbuild.2009.01.002

Property Values	A hedonic model using Multnomah County, Oregon as the study area shows tree canopy up to ½ mile away from a property increases its sale price.	Kadish, J., & Netusil, N. R. (2012). Valuing vegetation in an urban watershed. *Landscape and Urban Planning*, *104*(1), 59–65. https://doi.org/10.1016/j.landurbplan.2011.09.004
Health, Productivity	In a study of an administrative office building in the University of Oregon, researchers found offices that overlooked trees and vegetation had the lowest rates of absenteeism in addition to reporting the highest preference for their office views. Employees with the trees and landscape view took 57 hours of sick leave per year in comparison to the employees with no view, who took 68.	Elzeyadi, I. (2011, October 7). *Daylighting-Bias and Biophilia: Quantifying the Impacts of Daylighting and Views on Occupants Health*.
Stormwater Management	A literature review on the role of trees in stormwater management shows how trees can retain rainfall, delay the flow of stormwater runoff, increase soil infiltration capacity, and transpire a considerable amount of water. Multiple points of retention make trees particularly beneficial to effectively reducing the volume and intensity of stormwater runoff.	Kuehler, E., Hathaway, J., & Tirpak, A. (2017). Quantifying the benefits of urban forest systems as a component of the green infrastructure stormwater treatment network. *Ecohydrology*, *10*(3), e1813. https://doi.org/10.1002/eco.1813
Productivity	A study of Chicago schools and greenspace show that tree cover near schools predicted better school performance on standardized math and reading tests, even controlling for school differences such as poverty, minority status, pupil-teacher ratio, % bilingual, and school size.	Kuo, M., Browning, M. H. E. M., Sachdeva, S., Lee, K., & Westphal, L. (2018). Might School Performance Grow on Trees? Examining the Link Between "Greenness" and Academic Achievement in Urban, High-Poverty Schools. *Frontiers in Psychology*, *9*, 1669. https://doi.org/10.3389/fpsyg.2018.01669
Health, Productivity	Employees who reported more contact to nature in the work environment (outdoor and indoor) had significantly less perceived stress and stress-related health complaints.	Largo-Wight, E., Chen, W. W., Dodd, V., & Weiler, R. (2011). Healthy Workplaces: The Effects of Nature Contact at Work on Employee Stress and Health. *Public Health Reports*, *126*(Suppl 1), 124–130. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3072911/
Productivity	A study examining public high schools found that views of trees and shrubs from classrooms and cafeterias was significantly and positively associated with student performance (standardized test scores, graduation rates, students attending college, and fewer occurrences of criminal behavior).	Matsuoka, R. H. (2010). Student performance and high school landscapes: Examining the links. *Landscape and Urban Planning*, *97*(4), 273–282. https://doi.org/10.1016/j.landurbplan.2010.06.011
Stormwater Management, Air Quality, Carbon Sequestration	In a review of urban trees in 5 cities, researchers found cities spent $13-$65/tree annually, however benefits ranged from $31-$89/tree. This results in an annual return of $1.37-$3.09 for every dollar invested. Quantified benefits include stormwater management, air quality benefits, carbon dioxide reductions, property value increases, and energy savings from reducing the heat island effect.	McPherson, G., Simpson, J. R., Peper, P. J., Maco, S. E., & Xiao, Q. (2005). Municipal Forest Benefits and Costs in Five US Cities. *Journal of Forestry*, 6.
Health, Productivity, Property Values, Air Quality,	A comprehensive review of studies on urban forests and greenery showed that urban residents experience a wide range of ecosystem services. There is well documented research on the effects of trees on property values, and more recently there have been valuations on the effect of urban greenery on physical, psychological and community health.	Nesbitt, L., Hotte, N., Barron, S., Cowan, J., & Sheppard, S. R. J. (2017). The social and economic value of cultural ecosystem services provided by urban forests in North America: A review and suggestions for future research. *Urban Forestry & Urban Greening*, *25*, 103–111. https://doi.org/10.1016/j.ufug.2017.05.005

Energy Consumption		
Property Values, Stormwater Management, Air Quality, Energy Consumption	A review of 115 studies on urban trees show demonstrated tree benefits of carbon sequestration, air quality improvement, stormwater attenuation, and energy conservation. Disservices include maintenance costs, pollens affecting allergies, light attenuation, and infrastructure damage. The benefit to cost ratio of trees was found to be between 4.48:1 and 24.3:1. The study concludes that urban trees are an effective way to mitigate the degradation of the environment in urban areas.	Roy, S., Byrne, J., & Pickering, C. (2012). A systematic quantitative review of urban tree benefits, costs, and assessment methods across cities in different climatic zones. *Urban Forestry & Urban Greening*, *11*(4), 351–363. https://doi.org/10.1016/j.ufug.2012.06.006
Property Values	A study of the value of urban tree cover in Minnesota shows a 10% increase in tree cover within 100 meters of a home increases the average home sale price by $1,371.	Sander, H., Polasky, S., & Haight, R. G. (2010). The value of urban tree cover: A hedonic property price model in Ramsey and Dakota Counties, Minnesota, USA. *Ecological Economics*, *69*(8), 1646–1656. https://doi.org/10.1016/j.ecolecon.2010.03.011
Property Values, Air Quality, Energy Consumption, Productivity	In a critical review of the benefits of trees, the authors discuss the many ways trees promote health, a strong economy, and benefit the planet. They conclude overwhelming evidence from the available scientific literature suggests that trees are a beneficial investment and help meet the United Nations Sustainable Development Goals to improve the quality of life for people.	Turner-Skoff, J. B., & Cavender, N. (2019). The benefits of trees for livable and sustainable communities. PLANTS, PEOPLE, PLANET, 1(4), 323–335. https://doi.org/10.1002/ppp3.39
Consumer Spending	A study on how consumer preferences in Central Business Districts were affected by the presence of urban forests found that trees are a significant atmospheric element of the business street. Trees are associated with positive district perceptions, patronage behavior, and product pricing.	Wolf, K. L. (2005). Business District Streetscapes, Trees, and Consumer Response. Journal of Forestry, 5.
Property Values, Consumer Spending	This literature review highlighted the economic impact urban trees have. Shoppers indicate they will travel further, visit longer, and spend 9-12% more for goods and services in central business districts that have a high-quality tree canopy. One study indicates that rental rates for commercial offices having a high-quality landscape were 7% higher than other, similar properties without such landscaping.	Wolf, K.L. (2010). *Community Economics - A Literature Review.* College of the Environment, University of Washington. https://depts.washington.edu/hhwb/Print_Economics.html

Social

Summary

Many of the social effects of trees overlap with the economic, environmental, and energy impacts cited in other sections of this analysis, such as the benefit to property values, consumer spending, reduction in air pollution, carbon mitigation, and reduction in the heat island effect. Other studies describe how urban forests can result in a reduction of aggression and crime, improved productivity and performance at work and in

school, improved mental health, and even reduction in premature mortality. Less quantifiable, but still demonstrated social benefits include the aesthetic and emotional value of trees and interaction with nature.

Table 2. Social Benefits and Costs

Topic	Applicability	Citation
Energy consumption, Physical Health	Urban trees can offset or reverse heat island effects, reducing energy consumption for air conditioning, potentially reducing air conditioning costs by 20%. This can reduce costs for residents and reduce the impact of extreme heat events.	Akbari, H., Pomerantz, M., & Taha, H. (2001). Cool surfaces and shade trees to reduce energy use and improve air quality in urban areas. *Solar Energy*, *70*(3), 295–310. https://doi.org/10.1016/S0038-092X(00)00089-X
Mental Health	Interaction with trees and nature is strongly linked to reduced symptoms of depression, better moods, reduced negative thoughts and increased life satisfaction.	Berman, M. G., Kross, E., Krpan, K. M., Askren, M. K., Burson, A., Deldin, P. J., Kaplan, S., Sherdell, L., Gotlib, I. H., & Jonides, J. (2012). Interacting with nature improves cognition and affect for individuals with depression. *Journal of Affective Disorders*, *140*(3), 300–305. https://doi.org/10.1016/j.jad.2012.03.012
Productivity, Physical Health, Mental Health	This comprehensive report summarizes the many reaching benefits connecting with nature can have to humans. Research supports the finding that incorporating nature into the built environment has economic benefits to health and productivity. Incorporating nature can reduce worker illness and absenteeism, and increase staff retention, job performance, healing rates, learning rates, and retail sales.	Browning, W., Ryan, C., & Clancy, J. (2012, June 12). *The Economics of Biophilia*. http://clients.edmullen.com/terrapin/
Physical Health, Mental Health, Public Safety	The author describes the social benefits of trees, including improved public health and crime reduction, and how these benefits should be included in urban forestry decision making. With improved air quality, reduced stress, increased exercise, and improved social connections, trees provide cost reductions in healthcare and crime.	Donovan, G. H. (2017). Including public-health benefits of trees in urban-forestry decision making. *Urban Forestry & Urban Greening*, *22*, 120–123. https://doi.org/10.1016/j.ufug.2017.02.010
Public Safety	In a study of crime in Portland, OR the authors found that trees in the right-of-way and large trees on individual lots were associated with less crime. However, they found that smaller, view-obstructing trees on individual lots can be associated higher rates of crime.	Donovan, G. H., & Prestemon, J. P. (2012). The Effect of Trees on Crime in Portland, Oregon. *Environment and Behavior*, *44*(1), 3–30.
Physical Health	In a study of the natural experiment created by the destruction of ash trees from the Emerald Ash Borer, the authors associated the increase in cardiovascular and respiratory deaths in humans with the infestation and death of ash trees.	Donovan, G. H., Butry, D. T., Michael, Y. L., Prestemon, J. P., Liebhold, A. M., Gatziolis, D., & Mao, M. Y. (2013). The Relationship Between Trees and Human Health: Evidence from the Spread of the Emerald Ash Borer. *American Journal of Preventive Medicine*, *44*(2), 139–145.
Mental Health, Aesthetics	People report not only an aesthetic preference for trees, but deep emotional ties. Study participants cited the sensory experience, symbolic value, and potential for social connection as reasons to plant and protect urban forests.	Dwyer, J. F., Schroeder, H. W., & Gobster, P. H. (1991). The significance of urban trees and forests: toward a deeper understanding of values. *Journal of Arboriculture 17(10):276-284*, *17*(10). http://www.fs.usda.gov/treesearch/pubs/14861
Physical Health, Productivity	In a study of an administrative office building in the University of Oregon, researchers found workers in offices that overlooked trees and vegetation had the	Elzeyadi, I. (2011, October 7). *Daylighting-Bias and Biophilia: Quantifying the Impacts of Daylighting and Views on Occupants Health*.

	lowest rates of absenteeism, in addition to reporting the highest preference for their office views. Employees with the trees and landscape view took 57 hours of sick leave per year in comparison to the employees with no view, who took 68.	
Public Safety	In a study of New Haven, CT, a 10% increase in tree canopy was associated with a 15% decrease in violent crime and a 14% decrease in property crime, independent of area educational attainment, income, density, race, and rental status.	Gilstad-Hayden, K., Wallace, L. R., Carroll-Scott, A., Meyer, S. R., Barbo, S., Murphy-Dunning, C., & Ickovics, J. R. (2015). Research note: Greater tree canopy cover is associated with lower rates of both violent and property crime in New Haven, CT. *Landscape and Urban Planning*, *143*, 248–253. https://doi.org/10.1016/j.landurbplan.2015.08.005
Property Values	Hedonic models using Multnomah County, Oregon as the study area show tree canopy up to ½ mile away from a property increases its sale price.	Kadish, J., & Netusil, N. R. (2012). Valuing vegetation in an urban watershed. *Landscape and Urban Planning*, *104*(1), 59–65. https://doi.org/10.1016/j.landurbplan.2011.09.004
Physical Health	Researchers modelled if the city of Philidelphia's plan to increase in canopy to cover 30% of the city has the potential to reduce premature mortality rates. They estimate that 403 premature deaths could be prevented annually if Philadelphia achieves its goal.	Kondo, M., Mueller, N., Locke, D., Roman, L., Rojas-Rueda, D., Schinasi, L., Gascon, M., & Nieuwenhuijsen, M. J. (2020). Health impact assessment of Philadelphia's 2025 tree canopy cover goals. *The Lancet Planetary Health*, *4*(4), e149–e157. https://doi.org/10.1016/S2542-5196(20)30058-9
Mental Health, Public Safety	Residents in public housing who had environments with tree canopy and greenspace had lower rates of aggression, violence, and mental fatigue in comparison to public housing residents living in barren areas. Researchers conjecture contact with nature reduces mental fatigue, therefore reducing violence and aggression.	Kuo, F. E., & Sullivan, W. C. (2001). *Aggression and Violence in the Inner City, Effects of Environment via Mental Fatigue*. 29.
Productivity	A study of Chicago schools and greenspace show that tree cover near schools predicted better school performance on standardized math and reading tests, even controlling for school differences such as poverty, minority status, pupil-teacher ratio, % bilingual, and school size.	Kuo, M., Browning, M. H. E. M., Sachdeva, S., Lee, K., & Westphal, L. (2018). Might School Performance Grow on Trees? Examining the Link Between "Greenness" and Academic Achievement in Urban, High-Poverty Schools. *Frontiers in Psychology*, *9*, 1669. https://doi.org/10.3389/fpsyg.2018.01669
Health, Productivity	Employees who reported more contact to nature in the work environment (outdoor and indoor) had significantly less perceived stress and stress-related health complaints.	Largo-Wight, E., Chen, W. W., Dodd, V., & Weiler, R. (2011). Healthy Workplaces: The Effects of Nature Contact at Work on Employee Stress and Health. *Public Health Reports*, *126*(Suppl 1), 124–130. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3072911/
Aesthetics, Health	A survey shows the public rated the social, environmental, and practical benefits of trees highly. They most highly valued the shade and cooling benefits, then the potential to help people feel calmer. They cited practical problems such as causing allergies but did not consider them reasons not to use trees. Generally, the public felt very positively toward trees.	Lohr, V., Pearson-Mims, C., Tarnai, J., & Dillman, D. (2004). How Urban Residents Rate and Rank the Benefits and Problems Associated with Trees in Cities. *Journal of Arboriculture*, *30*, 28–36. https://doi.org/10.48044/jauf.2004.004
Productivity, Mental Health, Public Safety	A study examining public high schools found that views of trees and shrubs from classrooms and cafeterias was significantly and positively associated with student performance (standardized test scores, graduation rates, students attending college, and fewer occurrences of criminal behavior).	Matsuoka, R. H. (2010). Student performance and high school landscapes: Examining the links. *Landscape and Urban Planning*, *97*(4), 273–282. https://doi.org/10.1016/j.landurbplan.2010.06.011

Productivity, Property Values, Air Quality, Energy Consumption	A comprehensive review of studies on urban forests and greenery showed that urban residents experience a wide range of ecosystem services. There is well-documented research on the effects of trees on property values, and more recently there have been valuations on the effect of urban greenery on physical, psychological and community health.	Nesbitt, L., Hotte, N., Barron, S., Cowan, J., & Sheppard, S. R. J. (2017). The social and economic value of cultural ecosystem services provided by urban forests in North America: A review and suggestions for future research. *Urban Forestry & Urban Greening*, *25*, 103–111. https://doi.org/10.1016/j.ufug.2017.05.005
Noise Pollution	Without roadside vegetation, observed noise levels were 78 dB on average. On average, vegetative barriers reduced traffic noise by 9-11 dB. Synthetic barriers were found to be inferior to tree belts in reducing noise.	Ow, L. F., & Ghosh, S. (2017). Urban cities and road traffic noise: Reduction through vegetation. *Applied Acoustics*, *120*, 15–20. https://doi.org/10.1016/j.apacoust.2017.01.007
Physical Health	Trees are associated with a 15 % reduction in local nitrogen dioxide, resulting in fewer respiratory problems in residents. In the US, health benefits from trees reducing nitrogen dioxide are estimated to be roughly $7 million annually).	Rao, M., George, L. A., Rosenstiel, T. N., Shandas, V., & Dinno, A. (2014). Assessing the relationship among urban trees, nitrogen dioxide, and respiratory health. *Environmental Pollution*, *194*, 96–104. https://doi.org/10.1016/j.envpol.2014.07.011
Aesthetics, Consumer Spending	Trees have a positive effect on the perceived aesthetics of urban squares and results in higher perceived valuation of nearby restaurants. The desired duration and frequency of visits are positively influenced by trees.	Rašković, S., & Decker, R. (2015). The influence of trees on the perception of urban squares. *Urban Forestry & Urban Greening*, *14*(2), 237–245. https://doi.org/10.1016/j.ufug.2015.02.003
Property Values	A study of the value of urban tree cover in Minnesota shows a 10% increase in tree cover within 100m of a home increases the average home sale price by $1,371.	Sander, H., Polasky, S., & Haight, R. G. (2010). The value of urban tree cover: A hedonic property price model in Ramsey and Dakota Counties, Minnesota, USA. *Ecological Economics*, *69*(8), 1646–1656. https://doi.org/10.1016/j.ecolecon.2010.03.011
Property Values, Air Quality, Physical Health, Mental Health, Productivity	In a critical review of the benefits of trees, the authors discuss the many ways trees promote health, a strong economy, and benefit the planet. They conclude overwhelming evidence from the available scientific literature suggests that trees are a beneficial investment and help meet the United Nations Sustainable Development Goals to improve the quality of life for people.	Turner-Skoff, J. B., & Cavender, N. (2019). The benefits of trees for livable and sustainable communities. PLANTS, PEOPLE, PLANET, 1(4), 323–335. https://doi.org/10.1002/ppp3.39
Property Values, Consumer Spending	This literature review highlighted the economic impact urban trees have. Shoppers indicate they will travel further, visit longer, and spend 9-12% more for goods and services in central business districts that have a high-quality tree canopy. One study indicates that rental rates for commercial offices having a high-quality landscape were 7% higher than other similar properties without such landscaping.	Wolf, K.L. (2010). *Community Economics - A Literature Review.* College of the Environment, University of Washington. https://depts.washington.edu/hhwb/Print_Economics.html
Physical Health, Mental Health	A summary of studies of how trees affect public well-being describes the positive benefits trees can have on the mental performance at the workplace, in schools, and higher education in addition to the emotional value of trees and nature.	Wolf, K.L., S. Krueger, and K. Flora. (2014). *Learning :: Green Cities: Good Health*. Green Cities: Good Health. https://depts.washington.edu/hhwb/Thm_WorkLearn.html

Environmental

Summary

Trees have wide ranging effects on the environment, both locally and globally. Trees have the ability to capture and store carbon, mitigating climate change. On a local level, they reduce air pollution. Evapotranspiration and shading reduce the heat island effect, reducing energy consumption used for air conditioning and reducing associated pollution. Trees reduce high stormwater flows, reduce noise pollution, provide habitat for local wildlife. Studies show that preserving large diameter trees and clusters of tree stands can more efficiently provide this array of ecosystem services.

Table 3 Environmental Benefits and Costs

Topic	Applicability	Citation
Building energy consumption	Evapotranspiration and shading from trees can help reduce peak summer temperatures by 1-5 degrees Celsius in surrounding microclimates.	Abdel Aziz, D. M. (2014). Effects of Tree Shading on Building's Energy Consumption. *Journal of Architectural Engineering Technology*, *03*(04). https://doi.org/10.4172/2168-9717.1000135
Building energy consumption	Urban trees can offset or reverse heat island effects, reducing energy consumption for air conditioning, potentially reducing air conditioning costs by 20%.	Akbari, H., Pomerantz, M., & Taha, H. (2001). Cool surfaces and shade trees to reduce energy use and improve air quality in urban areas. *Solar Energy*, *70*(3), 295–310. https://doi.org/10.1016/S0038-092X(00)00089-X
Building energy consumption, Carbon sequestration	Urban shade trees reduce air conditioning demand, thereby reducing energy consumption and associated air pollution and carbon emissions. Additionally, trees sequester carbon, reducing the rate of climate change.	Akbari, H. (2002). Shade trees reduce building energy use and CO2 emissions from power plants. *Environmental Pollution*, *116*, S119–S126. https://doi.org/10.1016/S0269-7491(01)00264-0
Stormwater management	Trees improve the water quality and reduce high stormwater flow rates by intercepting precipitation, removing water from the soil via transpiration and enhancing filtration.	Berland, A., Shiflett, S. A., Shuster, W. D., Garmestani, A. S., Goddard, H. C., Herrmann, D. L., & Hopton, M. E. (2017). The role of trees in urban stormwater management. *Landscape and Urban Planning*, *162*, 167–177. https://doi.org/10.1016/j.landurbplan.2017.02.017
Wildlife	Reviewing urban landscapes for wildlife diversity, researchers found newer housing developments that retained trees had the highest numbers of birds and greatest diversity of bird species.	James Barth, B., Ian FitzGibbon, S., & Stuart Wilson, R. (2015). New urban developments that retain more remnant trees have greater bird diversity. *Landscape and Urban Planning*, *136*, 122–129. https://doi.org/10.1016/j.landurbplan.2014.11.003
Stormwater Management	A literature review on the role of trees in stormwater management shows how trees can retain rainfall, delay the flow of stormwater runoff, increase soil infiltration capacity, and can transpire a considerable amount of water. Multiple points of retention make trees particularly beneficial to effectively reducing volume and intensity of stormwater runoff.	Kuehler, E., Hathaway, J., & Tirpak, A. (2017). Quantifying the benefits of urban forest systems as a component of the green infrastructure stormwater treatment network. *Ecohydrology*, *10*(3), e1813. https://doi.org/10.1002/eco.1813
Wildlife, Local Ecology	Scattered tree stands provide important ecological functions, increasing plant species richness, animal habitat, genetic diversity and connectivity.	Manning, A. D., Fischer, J., & Lindenmayer, D. B. (2006). Scattered trees are keystone structures – Implications for conservation.

		Biological Conservation, *132*(3), 311–321. https://doi.org/10.1016/j.biocon.2006.04.023
Stormwater Management, Air Quality, Carbon Sequestration	In a review of urban trees in 5 cities, researchers found cities spent $13-$65/tree annually, however benefits ranged from $31-$89/tree. This results in an annual return of $1.37-$3.09 for every dollar invested. Quantified benefits include stormwater management, air quality benefits, carbon dioxide reductions, property value increases, and energy savings from reducing the heat island effect.	McPherson, G., Simpson, J. R., Peper, P. J., Maco, S. E., & Xiao, Q. (2005). Municipal Forest Benefits and Costs in Five US Cities. *Journal of Forestry*, 6.
Stormwater Management, Local Ecology	Urban trees substantially reduce phosphorus leaching to groundwater, reducing harmful algal blooms and helping to prevent eutrophication.	Nidzgorski, D. A., & Hobbie, S. E. (2016). Urban trees reduce nutrient leaching to groundwater. *Ecological Applications: A Publication of the Ecological Society of America*, *26*(5), 1566–1580. https://doi.org/10.1002/15-0976
Carbon sequestration	It is estimated that urban trees in the United States currently store 700,000 million tons of carbon, thereby reducing atmospheric carbon dioxide, the primary driver of climate change.	Nowak, D. J., & Crane, D. E. (2002). Carbon storage and sequestration by urban trees in the USA. *Environmental Pollution*, *116*(3), 381–389. https://doi.org/10.1016/S0269-7491(01)00214-7
Carbon Sequestration	Annually, urban trees in the United States produce a total of $5.4 billion in value to air pollution removal, $4.8 billion in carbon sequestration, $5.4 billion in reduced building energy use and $2.7 billion in avoided pollutant emissions.	Nowak, D. J., & Greenfield, E. J. (2018). US Urban Forest Statistics, Values, and Projections. *Journal of Forestry*, *116*(2), 164–177. https://doi.org/10.1093/jofore/fvx004
Noise Pollution	Without roadside vegetation, observed noise levels were 78 dB on average. Vegetative barriers reduced traffic noise by 9-11 dB on average. Synthetic barriers were found to be inferior to tree belts in reducing noise.	Ow, L. F., & Ghosh, S. (2017). Urban cities and road traffic noise: Reduction through vegetation. *Applied Acoustics*, *120*, 15–20. https://doi.org/10.1016/j.apacoust.2017.01.007
Carbon sequestration	For most tree species, growth rate increases continuously with tree size. Not only do larger, established trees hold more carbon, but they sequester more carbon each year than smaller trees. Preserving established trees reaps more carbon sequestration than establishing new trees. Cities can maximize ecosystem services by conserving large-diameter trees.	Stephenson, N. L., Das, A. J., Condit, R., Russo, S. E., Baker, P. J., Beckman, N. G., Coomes, D. A., Lines, E. R., Morris, W. K., Rüger, N., Álvarez, E., Blundo, C., Bunyavejchewin, S., Chuyong, G., Davies, S. J., Duque, Á., Ewango, C. N., Flores, O., Franklin, J. F., … Zavala, M. A. (2014). Rate of tree carbon accumulation increases continuously with tree size. *Nature*, *507*(7490), 90–93. https://doi.org/10.1038/nature12914

Energy

Summary

Trees reduce energy consumption by reducing peak summer temperatures and the heat island effect through shading and evapotranspiration. Well-placed tree can reduce building heating needs by blocking cold winds. Trees mitigate climate change by capturing and storing carbon dioxide, larger trees both hold more carbon dioxide and sequester more carbon dioxide each year.

Table 4. Energy Benefits and Costs

Topic	Summary	Citation
Energy consumption	Evapotranspiration and shading from trees can help reduce peak summer temperatures by 1-5 degrees Celsius in surrounding microclimates.	Abdel Aziz, D. M. (2014). Effects of Tree Shading on Building's Energy Consumption. *Journal of Architectural Engineering Technology*, *03*(04). https://doi.org/10.4172/2168-9717.1000135
Energy consumption	Urban trees can offset or reverse heat island effects, reducing energy consumption for air conditioning, potentially reducing air conditioning costs by 20%. This reduces emissions from power plants. Trees act as windbreaks and can reduce building heating needs and energy consumption.	Akbari, H., Pomerantz, M., & Taha, H. (2001). Cool surfaces and shade trees to reduce energy use and improve air quality in urban areas. *Solar Energy*, *70*(3), 295–310. https://doi.org/10.1016/S0038-092X(00)00089-X
Energy consumption	Researchers studied the effect of shade trees on summertime electricity use, showing that shade trees on south and west sides of houses in particular can reduce summertime electricity use and corresponding carbon emissions.	Donovan, G. H., & Butry, D. T. (2009). The value of shade: Estimating the effect of urban trees on summertime electricity use. *Energy and Buildings*, *41*(6), 662–668. https://doi.org/10.1016/j.enbuild.2009.01.002
Carbon sequestration	It is estimated that urban trees in the United States currently store 700,000 million tons of carbon, thereby reducing atmospheric carbon dioxide, the primary driver of climate change.	Nowak, D. J., & Crane, D. E. (2002). Carbon storage and sequestration by urban trees in the USA. *Environmental Pollution*, *116*(3), 381–389. https://doi.org/10.1016/S0269-7491(01)00214-7
Carbon Sequestration	Annually, urban trees in the United States produce a total of $5.4 billion in value to air pollution removal, $ 4.8 billion in carbon sequestration, $5.4 billion in reduced building energy use and $2.7 billion in avoided pollutant emissions.	Nowak, D. J., & Greenfield, E. J. (2018). US Urban Forest Statistics, Values, and Projections. *Journal of Forestry*, *116*(2), 164–177. https://doi.org/10.1093/jofore/fvx004
Carbon sequestration	For most tree species, growth rate increases continuously with tree size. Not only do larger, established trees hold more carbon, but they sequester more carbon each year than smaller trees. Preserving established trees reaps more carbon sequestration than establishing new trees.	Stephenson, N. L., Das, A. J., Condit, R., Russo, S. E., Baker, P. J., Beckman, N. G., Coomes, D. A., Lines, E. R., Morris, W. K., Rüger, N., Álvarez, E., Blundo, C., Bunyavejchewin, S., Chuyong, G., Davies, S. J., Duque, Á., Ewango, C. N., Flores, O., Franklin, J. F., … Zavala, M. A. (2014). Rate of tree carbon accumulation increases continuously with tree size. *Nature*, *507*(7490), 90–93. https://doi.org/10.1038/nature12914

City of McMinnville
PLANNING

MEMORANDUM

DATE: **January 21, 2026**
TO: **Adam Garvin, Interim City Manager**
SUBMITTED BY: **Heather Richards, Community Development Director**
WRITTEN BY: **Taylor Graybehl, Senior Planner**
SUBJECT: **Work Session: Natural Resources – Fee for Tree Removal**

Background

At the June 18, 2025 joint work session, Question #1 asked whether the City's code gives the Planning Director the authority to assess malicious intent when determining the fee for removing a protected tree, or whether the fee is strictly predetermined.

Current McMinnville Practice

For trees subject to permit-removal requirements, mitigation has been based on the appraised value of the tree, calculated using the *Guide for Plant Appraisal* (current edition) published by the International Society of Arboriculture (ISA) Council of Tree & Landscape Appraisers. Under the proposed Significant Tree threshold (≥ 36" DBH), appraised values will often exceed mid- to high tens of thousands of dollars per tree.

Separately, the City has authority to assess civil penalties for code violations under Chapter 2.50, Code Compliance, of the McMinnville Municipal Code. Violations are categorized into eight classes, each with a corresponding penalty amount. Per Section 17.03.090, the City may assess a fee for a

violation, typically capped at the class level unless otherwise specified. The current schedule is:

- Class 1: $5,000
- Class 2: $2,000
- Class 3: $1,000
- Class 4: $500
- Class 5: $250
- Class 6: $100
- Class 7: $50
- Class 8: $25

Recommendation

Staff recommends granting the Planning Director authority to determine intent in tree removal and classify the violation accordingly. Specifically:

- Allow fee classification to range from Class 1 to Class 3, based on documented findings of intent of removal.
- This approach would establish a minimum penalty of $500 per tree (Class 3) and a maximum of $2,000 per tree (Class 1), providing flexibility while avoiding disproportionate penalties tied to ISA appraised values.

This method ensures penalties remain predictable, enforceable, and proportionate, while still allowing for enhanced consequences in cases of deliberate or malicious removal.

City of McMinnville

COMMUNITY DEVELOPMENT DEPARTMENT

STAFF REPORT

DATE: **January 21, 2026**
TO: **Adam Garvin, Interim City Manager**
SUBMITTED BY: **Heather Richards, Community Development Director**
WRITTEN BY: **Heather Richards, Community Development Director**
SUBJECT: **Work Session: Natural Hazards**

Report in Brief:

This is a work session to provide the City Council and Planning Commission with an update on the City's Oregon Land Use Goal 7 (Natural Hazards) planning effort, which is required as part of the City's recent Urban Growth Boundary amendment (April 2021).

This program consists of four proposed amendments per the following:

- Amendments to the McMinnville Municipal Code, Chapters 17.48, *Flood Area Zone*, and Chapter 17.49, *Natural Hazard Overlay Subdistricts* (Attachment 1 to this staff report).

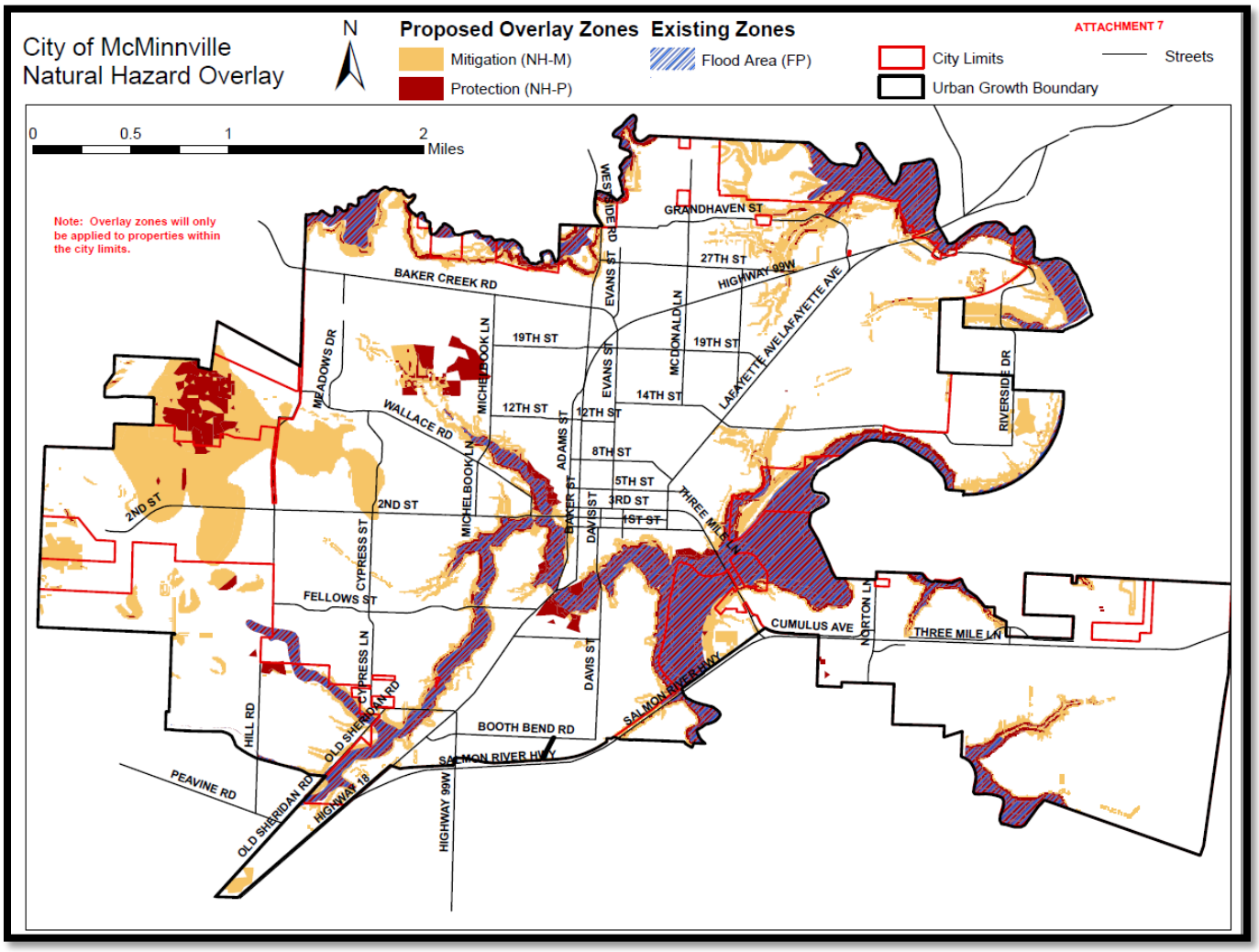
- Amendment to the McMinnville Comprehensive Plan, Volume II – Goals and Policies, adding a new Chapter XI, entitled *Natural Features* (Attachment 2 to this staff report).

- Amendment to the McMinnville Zone Map, adding the Natural Hazard Mitigation Zone (NH-M) and the Natural Hazard Protection Zone (NH-P) (Attachment 3 to this staff report).

- Amendment to the McMinnville Comprehensive Plan, Volume I – Background Elements, adopting the *2021 Natural Hazards Inventory and Management Program Options and Recommendations* and its Appendices (Attachment 4 to this staff report).

A website page has been developed for this effort: [Natural Hazards | McMinnville Oregon]

Background:



What is Natural Hazard Mitigation? Disasters occur when natural hazard events impact people, property and the environment. Natural hazard mitigation is the identification and implementation of actions that will reduce loss when the next disaster strikes. Implementing mitigation actions can also reduce the length of time

that essential services are unavailable after a disaster, protect critical facilities, reduce economic hardship, speed recovery, and reduce construction costs. Natural hazard mitigation is any sustained action taken to reduce or remove the long-term risk to life, property, and the environment from natural hazards. It is most effective when implemented under a comprehensive, long-term natural hazards mitigation plan, and integrated into other partner plans.

What is a Natural Hazards Mitigation Plan? A natural hazards mitigation plan identifies hazards, vulnerabilities, and risks facing a local, state or tribal government, and prioritizes actions to reduce the risk.

Natural hazard planning is not new to McMinnville. The original comprehensive plan in 1981 conducted natural hazard planning and from this effort, the Flood Area zone was realized. Per state regulations, when a city amends its UGB or when new hazard inventory data becomes available from the state, cities should update their natural hazard planning programs to evaluate the new land within their boundaries and/or the new data and develop a mitigation plan if appropriate.

Oregon Land Use Goal #7 requires local governments to evaluate the risk to people and property and assess the frequency, severity and location of the hazard; the effects of the hazard on existing and future development; the potential for development in the hazard area to increase the frequency and severity of the hazard; and the types and intensities of land uses to be allowed in the hazard area. In this effort, governments should allow an opportunity for citizen review and comment on the new data and the results of the evaluation, and adopt or amend, as necessary, based on the evaluation of risk, plan policies and implementing measures consistent with the following principles:

- Avoiding development in hazard areas where the risk to people and property cannot be mitigated; and

- Prohibiting the siting of essential facilities, major structures, hazardous facilities and special occupancy structures, as defined in the state building code.

Oregon Land Use Goal #7 further states that state agencies shall coordinate their natural hazard plans and programs with local governments and provide local governments with hazard inventory information.

In 2018, the Oregon Department of Geology and Mineral Industries updated their geohazards data. At the same time, the US Forest Service updated their Pacific Northwest Quantitative Wildfire Risk Assessment Data.

In 2019, Yamhill County with the aid of a grant from the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Program, updated the Yamhill County Multi-Jurisdictional Hazard Mitigation Plan, which was acknowledged by FEMA in December 22, 2020.

As a partner in that process, the City of McMinnville prepared an addendum to that plan that was adopted by the McMinnville City Council on December 8, 2020 by Resolution No. 2020-67. The McMinnville addendum identified a number of action items for the City of McMinnville including mapping and inventorying hazard areas and evaluating comprehensive plan policies and development regulations to ensure that the city is protecting people and property from natural hazard areas.

At the same time, the State of Oregon updated the Oregon Natural Hazards Mitigation Plan, which was approved by FEMA September 24, 2020.

The hazards normally identified in Oregon are floods, earthquakes, landslides, wildfires, tsunamis and coastal erosion.

McMinnville's existing comprehensive plan and zoning ordinance addresses flood hazards only – consistent with Federal Emergency Management Agency (FEMA) regulations related to the National Flood Insurance Program (NFIP). The comprehensive plan does not have a separate natural hazards element. The McMinnville Zoning Ordinance has a separate F-P Flood Hazard Zone that applies to land within the 100-year floodplain. However, the City currently lacks development standards for geological and wildfire hazards. The McMinnville Buildable Lands Inventory indicates slopes of 25% or greater and floodplains as unbuildable consistent with applicable state law.

In 2020, the City hired Winterbrook Community Resource Planning to prepare the initial draft of the McMinnville Natural Hazards Inventory, Management Program Options and Recommendations study. The study area at that time included (a) the

McMinnville Urban Growth Boundary (UGB) as it existed in June 2020 and (b) the UGB expansion study area within 1.5 miles of the existing UGB.

When the City initiated a UGB amendment process in 2020 simultaneously with the Natural Hazards Inventory and Review, the City considered the natural hazard inventory information provided in the initial draft report as part of the UGB analysis.

In December 2020, the City Council amended its UGB to include approximately 1,280 acres of land (of which 921 acres were considered "buildable"). The County subsequently adopted, and the Land Conservation and Development acknowledged, the UGB amendment in April 2021.

In April 2021, the City contracted with Winterbrook Planning to revise the 2020 natural hazards study to (a) focus on the expanded 2021 UGB, (b) include social vulnerabilities described in the *Oregon Natural Hazards Mitigation Plan* (Oregon NHMP) in the natural hazards composite ranking system, (c) amend the proposed Natural Hazard Mitigation and Protection maps accordingly, and (d) prepare draft amendments to the McMinnville Zoning Ordinance to include natural hazard mitigation and protection subdistrict maps and text.

The revised study includes an inventory of natural hazards based on available mapping sources, considers alternative management options, and suggests policy and mapping amendments to the McMinnville Comprehensive Plan to systematically address McMinnville's mappable natural hazards within the 2021 UGB.[1]

The revised natural hazards inventory includes a series of GIS (geographic information system) overlay maps showing moderate, high and severe hazard areas within the 2021 UGB and study area. The inventory also includes a description of the following natural hazards and how they may adversely affect life and property:

- **Geological Hazards** (areas subject to landslide, steep slope and earthquake liquefaction and shaking impacts)
- **Flood Hazards** (areas within the 100-year floodplain including the floodway)

[1] Winterbrook addresses relationships among natural hazards and natural resources (such as riparian and upland wildlife habitat and scenic views and viewpoints) in a separate white paper.

- **Wildfire Hazards** (areas that are particularly susceptible to wildfires due to topography, fuel and settlement patterns)
- **Composite Hazards** (areas with one or more overlapping natural hazard categories)

This work resulted in proposed amendments to the McMinnville Comprehensive Plan both in terms of new inventory and recommended programs and new policies for natural hazards. It also resulted in proposed amendments to the McMinnville Municipal Code and McMinnville Zone Map, introducing two new overlay districts, the Natural Hazard – Mitigation Zone (NH-M) and the Natural Hazard Protection Zone (NH-P). Regulations for the administration of both overlay zones is proposed as a new chapter 17.49, "Natural Hazards Overlay Subdistricts".

Several work sessions were conducted with the McMinnville City Council and Planning Commission informing them of the research and evaluation and seeking policy direction on how to move forward with mitigating the risk.

In August 2020, the McMinnville City Council asked city staff and the consultants to develop mitigation measures that would help to assess risk for people and property on land that had multiple hazards, and for those lands with moderate overlapping hazards to require additional assessments as part of the development review and with those lands that were identified as high hazard areas to limit development to low density and intensity development to protect people and property.

Impact to Properties:

Existing Uses are considered conforming within both the Natural Hazard Mitigation Zone and the Natural Hazard Protection Zone, and can be expanded by 50% of the habitable area without implicating the provisions of the natural hazards overlay.

The Natural Hazard – Mitigation Zone (NH-M) allows all permitted and conditional uses in the underlying zones to continue to be developed. However, based on the types of hazards on the property, the Community Development Director will determine if an additional study is needed to help inform the development to protect the people and property from a potential natural disaster. That study might be a geo-site assessment for those properties that have landslide, liquefaction or shaking

soil hazards, or a wildfire mitigation plan for those properties within a wildfire risk area. Development on slopes greater than 15% might be required by the City Engineer to provide an erosion control plan as part of their development review.

The Natural Hazard – Protection Zone (NH-P) allows all permitted and conditional uses in the underlying zones but limits the intensity and density of the uses by prohibiting large format commercial development, limiting land division and residential development to one unit per lot unless a planned development process is used to locate the more intensive development on land that is less hazardous. The Natural Hazard – Protection Zone also allows for a transfer of residential density rights to other properties within the city limits.

On February 16, 2023, city staff brought the final draft recommendations to the Planning Commission for review and discussion. At that work session, the Planning Commission directed city staff to identify the impact of hazard planning on property owners from the perspective of insurance provisions, and to develop an appeal process for property owners as well as the ability for property owners in the Natural Hazards – Protection overlay where development is limited to transfer their density rights to other properties within the city.

Insurance Risk:

City staff reached out to insurance agencies to inquire about the rise of this planning effort to home insurance policies. Most homeowners and some renters have insurance to protect their home and belongings. Homeowner and renter insurance typically covers certain natural hazards, such as water damage from heavy rain or snow. As long as it can be demonstrated that a domicile has been maintained in good working order, the majority of costs for repair and replacement can be recovered.

However, homeowner and renter insurance policies almost never cover floods, hurricanes, earthquakes, and other natural hazards. Coverage of these hazards events require separate policies that the homeowner initiates on their own. Due to the earthquake subduction zone in McMinnville, the city is already tagged as a hazard area for home insurance and insurers asked did not feel that this new information would impact anything.

Appeal Process:

City staff researched appeal processes in other communities for property owners to prove that their property should not be included in a hazard overlay. Based on that research, Section 17.49.95 was added to the draft code amendments per the following:

17.49.95 Verification of Natural Hazards Boundaries. A property owner may want to verify the Natural Hazards boundaries to determine the true location of a hazard area and its functional values on a site. This may be through a site-specific survey or a simple site visit in those cases where existing information demonstrates that the Natural Hazard significance rating does not apply to a site-specific area. Applications for development on a site located in a Natural Hazard area may request a determination that the subject site is not subject to the standards of Chapter 17.49. Verifications shall be processed as either a Type I or Type II process as outlined below.

A. Type I Verification.

1. *Applicants for a determination under this section shall submit a site plan meeting the requirements of Chapter 17.72, as applicable.*
2. *An applicant may request a Type I Verification determination by the community development director. Such requests may be approved provided that there is evidence substantiating that all the requirements of this chapter relative to the proposed use are satisfied and demonstrates that the property also satisfies the following criteria, as applicable:*
   a. *No natural features have been disturbed.*
   b. *No natural features have been changed.*
   c. *The property does not contain a natural hazard area as identified by the city's local natural hazards area maps.*
   d. *Evidence of prior land use approvals that conform to the natural hazards overlay districts, or which conformed to the natural hazard area overlay district that was in effect prior to the Natural Hazards code adoption date _____.*

B. *Type II Verification. Verifications of the Natural Hazards areas which cannot be determined pursuant to the standards of Chapter 17.49.95(A)(1) may be processed under the Type II permit procedure.*
   1. *Applicants for a determination under this section shall submit a site plan as applicable.*
   2. *Such requests may be approved provided that there is evidence that demonstrates in a report prepared by one or more qualified professionals with experience and credentials in natural resource areas, including wildlife biology, ecology, hydrology and forestry, that a resource function(s) and/or land feature(s) does not exist on a site-specific area.*
   3. *Verification to remove a recently developed area from the Natural Hazards shall show that all of the following have been met:*
      a. *All approved development in the Natural Hazards area has been completed*
      b. *All mitigation required for the approved development has been successful.*
      c. *The previously identified Natural Hazards area on the developed site no longer exist or have been subject to a significant detrimental impact.*

Transfer of Residential Density Rights:

City staff also researched transfer of density rights programs associated with natural hazard overlays in several other Oregon cities.

Planning Commissioners asked if the development rights could be sold; if the property owner needed to own both the giving property and the receiving property; and asked city staff to research a program with 100% transfer of development rights rather than the 50% recommended.

After some research and evaluation, staff is recommending that the city process for the program be fairly simple. The City would provide a certificate to the giving property that is recorded on the city's internal lien system. Any transfer of density rights program application would have the giving property owner's signature and the receiving property owner's signature as well as the certificate signed over to the

receiving property, so that the City is not managing the density rights as commodities.

That research is reflected in Section 17.49.170 below.

17.49.170 Residential Density Transfer. A transfer of development density from undeveloped buildable land within the Natural Hazard Protection zone to other property within the city limits is encouraged. Density transfer may occur through the planned development process, as indicated below. The transferring property does not need to be owned by the property owner of the receiving property, but both property owners need to sign the density transfer application to memorialize the transfer.

A. *Development Density to Transfer from National Hazard Protection Zone (NH-P). The land area from which density can be transferred excludes developed and unbuildable areas, such as riparian corridors, slopes 15% or greater, and easements. 100% of the development density of identified qualifying land within the NH-P zone may be transferred to any other residential zone.*
B. *Development Density in Receiving Area. Up to a maximum 20% reduction in average minimum lot size or lot area per unit requirements, is allowed in order to accommodate the density transfer. Developments utilizing a transfer of density will need to apply for a Planned Development pursuant to Chapter 17.51. The receiving area needs to be one parcel prior to subdivision.*
C. *If Density Transfer is Not Feasible. In situations where density transfer is not feasible, a maximum of one dwelling unit per 2.5 acres may be allowed on land zoned for residential use within the NH-P Subdistrict, consistent with the recommendations of a geotechnical engineering study and any conditions required by the review authority.*
D. *Recording of Density Transfer. In all cases where a residential density transfer is used, covenants or other legally binding agreements that run with the land shall preclude the further development of the land from which the density is transferred. The covenants or other legally binding agreements shall be recorded before the transferred density may be used..*

Public Engagement:

The City sent out notices to all impacted property owners both within the city limits and outside of the city limits but within the UGB (although the zoning overlays will not apply until such time that the property is annexed into the city limits), informing them of the proposed amendments and inviting them to one of two public information sessions hosted by planning staff. City staff also set up a project website with an interactive map to help property owners understand the hazards that were identified on their properties and have been meeting with impacted property owners to answer their questions and concerns.

The City noticed the Department of Land Conservation and Development and started the public hearing process in 2023 with the Planning Commission. The Planning Commission elected to continue the public hearings over several meetings due to the amount of public testimony received and the questions that came up during the hearing process.

Several impacted property owners testified expressing their concerns with the veracity of the data, the onerous of the reporting required, and how the City was applying the hazardous scoring to the properties.

Veracity of the Data: Planning Commissioners asked city staff to meet with DOGAMI and DLCD staff about the veracity of the data and asked if DOGAMI and DLCD staff could join the Planning Commission at a future meeting.

City staff organized a meeting with DOGAMI (Bill Burns, Engineering Geologist) and DLCD (Katherine Daniel, Natural Hazards Planner) to discuss the City's efforts, the reliance on DOGAMI data and whether the City's current proposed program was meeting the intent and mandate of Goal 7. Both staff representatives said that the City was doing what it needed to do with the best data available to the City and were supportive of the City's efforts, and both participated in one of the public hearings to share those findings with the Planning Commission and the general public.

***Types of Reports Required*:** Some of the property owners that testified expressed their concerns with the added costs of the reports required if their property was in one of these overlays. Planning Commissioners asked city staff to research whether there were other distinctive levels of data analysis that were less expensive than a Geological Site Assessment or a Geotechnical Report that could be required prior to the property owner incurring the expense for those reports.

Below is a link to a document that DOGAMI and DLCD staff prepared. In this document there is considerable discussion on how cities should mitigate hazards with site assessments and geo-tech reports.

Preparing for Landslide Hazards: A Land Use Guide for Oregon Communities

How to decide if a site-specific report is needed.

The general term geologic report refers to the engineering geologic report and the geotechnical engineering report. The difference is as follows:

- *Engineering geologic reports focus on how the earth (e.g., landforms, water table, soil, and bedrock) and earth processes (e.g., landslides and earthquakes) impact structures or potential structures and describe the degree of risk.*
- *Geotechnical engineering reports focus on the design of building products (e.g., structures, retaining walls, pavements) that can withstand or mitigate for subsurface and geologic conditions.*
- *There are two kinds of reports. The local jurisdiction develops its own criteria for triggering its geologic report (engineering geologic report or geotechnical engineering report) requirement on a site by site basis. For example, some communities adopt landslide hazard maps produced by DOGAMI and use these maps to determine if a site is in a hazard zone. If a site is in a hazard zone, generally a report is required. Communities may also use criteria such as percent slope or soil type to trigger a report requirement.*
- *Licensed professionals are generally required to stamp and sign their work products to identify for the public responsibility for the work. OSBGE and OSBEELS have requirements for stamp design and use. For geology work products, stamping requirements are as follows:*

- *When one geologist prepares all the geology work products in a report, that geologist must stamp and sign the final report.*
- *When multiple licensed professionals contribute work products to a report (for example, an RG or PE/GE contributing work products to a final report signed and stamped by a CEG), each professional must individually sign and stamp their own work products.*

The City also received comments from the Department of Land Conservation and Development, the McMinnville Public Works Department, McMinnville Parks and Recreation Department, McMinnville Water and Light, and private engineers and property owners. These were all evaluated and incorporated into the proposed amendments as appropriate.

Discussion:

There are still two items needed to finish the Natural Hazards program.

1) City staff is working with McMinnville Water and Light on the best language and methodology in which to incorporate their Electric Wildfire Mitigation Plan that was adopted in 2022.

2) Several property owners have approached City staff about the scoring methodology for calculating properties that should be in the Natural Hazard Mitigation Overlay Zone and properties that should be in the Natural Hazard Protection Zone. And city staff is looking for direction from the McMinnville City Council and the Planning Commission.

Natural Hazards Composite Ranking System

The Natural Hazards Composite Ranking System is explained starting on page 44 of the Natural Hazards Inventory, Management Program Options and Recommendations (See Attachment 4).

A scoring system for each type of hazard was determined based on probability of the hazard occurring and vulnerability of people and property to the hazard. Rankings

were from 0 to 5 with 0 being the lowest and 5 the highest. This system was modeled after the Oregon Natural Hazards Mitigation Plan Risk Assessment scoring system.

Properties then had cumulative scores determined based on the number and types of hazards on their properties. Those scores were then assigned to designated subareas per the following:

Table VII.4 Designation of NH Subdistricts Based on Ranking of Natural Hazards Subareas

Combined Subarea Hazard Risk	Natural Hazard Overlay Subdistrict
0 to 0.99	No NH-Subdistrict
1 to 1.499	Natural Hazard Mitigation Subdistrict (NH-M)
1.5 to 3.517	Natural Hazard Protection Subdistrict (NH-P)

Page 48 of Attachment 4

Several property owners have asked if it makes sense to adjust the thresholds of what score constitutes a Natural Hazard Mitigation Subdistrict and a Natural Hazard Protection Subdistrict, especially if the NH-M subdistrict requires further assessment. If the scores were adjusted down and some of the properties in the NH-P subdistrict were adjusted down to the NH-M subdistrict it would mean that they would need to do more assessment specific to their property to determine the level of hazard that exists and then that particular hazard would be mitigated per the professional recommendations of the authorized experts.

Staff will bring more information and scenarios to the work session for City Council and the Planning Commission to consider.

Next Steps

Pending discussion and questions from the Planning Commission and City Council, staff recommend resuming the public hearings at the Planning Commission on February 20, 2026.

Attachments:

1. Draft Proposed Code Amendments
2. Draft Proposed Comprehensive Plan Amendments, Chapter XI
3. Natural Hazard Maps
4. 2021 Natural Hazards Inventory and Management Program Options and Recommendations

Fiscal Impact:

This project is currently a staff managed effort with no contractual support.

Alternatives:

Alternative 1 [Staff Recommendation]: Direct staff to continue the Ordinance adoption process, bringing the item back to the Planning Commission on February 20, 2026.

Alternative 2: Direct Staff to return to a joint work session of the Planning Commission and City Council to further discuss the topic.

Alternative 3: Direct Staff to return to an individual work session with the Planning Commission or City Council to further discuss the topic.

Alternative 4: The Council may consider any other alternative not presented by staff.

ATTACHMENT 1

PROPOSED AMENDMENTS TO THE MCMINNVILLE MUNICIPAL CITY CODE – TITLE 17, ZONING ORDINANCE

New proposed language is represented by **red, bold font**, deleted language is represented by ~~strikethrough font.~~

ZONING*

Chapters:

* Prior ordinance history: Ord. 3380 as amended by Ords. 3392, 3441, 3497, 3557, 3565, 3603, 3614, 3633, 3677, 3694, 3707, 3742, 3764, 3803, 3817, 3888, 3898, 3925, 3933, 3966, 3967, 3968, 3983, 3995, 4001, 4011, 4017, 4025, 4043, 4046, and 4066.

Chapter 17.06

DEFINITIONS

17.06.015 General Definitions.

Buildable Land – buildable land is land within the city limits that is vacant and developed land likely to be redeveloped, that is suitable and available for development. Land is generally considered "suitable and available" unless it:

A. Is severely constrained by natural hazards as determined by Chapter 17.49 of the McMinnville Municipal Code;
B. Is subject to natural resource protection measures determined under Statewide Planning Goals 5, 6 or 15;
C. Has slopes of 25 percent or greater;
D. Is within the Flood Plain Zone; or
E. Cannot be provided with public facilities.

Natural Features (Significant) – distinctive or unique natural features including, but not limited to, watercourses, riparian corridors, wetlands, wildlife habitats documented for rare animal species (those that are proposed for listing or are listed under State or Federal law), rare plants (those that are proposed for listing or are listed under State or Federal law) and native plant communities, steep slopes, prominent topographic features, such as ridgelines and rock outcrops wooded areas identified for protection in McMinnville's adopted tree grove inventory, significant and landmark trees.

17.06.045 Tree Related Definitions. For the purpose of Trees (Chapter 17.58), the following definitions shall apply.

Hazardous Tree – A tree or part thereof growing on private or public property which endangers, obstructs or impairs the free and full use of a public area, including utilities within these areas or is afflicted with or weakened by a disease or injury.

~~**Historic Tree** – Selected trees placed on an inventory based on the age, species, location, and historic significance.~~

Landmark Tree – Selected trees placed on an inventory based on the age, species, location, and historic significance.

Major Pruning – Removal of over 20 percent of the tree's canopy, any tree topping, or disturbances of over 10 percent of the root system.

Public Tree – A tree located within a public right-of-way or on public land, such as a city park.

Repeated or Excessive – Two incidents within any three-year period requiring removal or repair of a public sidewalk.

Significant Tree – ~~Selected trees placed on an inventory based on the age, species, and location.~~ **Trees located on public and private land within the McMinnville UGB that are either (1) 36 inches or greater dbh, or (2) Oregon white oak trees 20 inches dbh or greater. Significant trees do not include hazardous, diseased, dead, or nuisance trees as determined by the Planning Director in consultation with a Certified Arborist.**

Tree – Any woody plant having a trunk ~~five~~**six** inches or more in diameter 4.5 feet above ground level at the base of the trunk. If a tree splits into multiple trunks below 4.5 feet, the trunk is measured at its most narrow point beneath the split.

Chapter 17.48

F-P FLOOD AREA ZONE

Sections:

17.48.005 Purpose. The purpose of a floodplain is to establish and regulate land uses in those areas designated as hazardous due to periodic flooding in order to protect the community from financial burdens through flood damage losses. Further, this zone is intended to protect natural floodways and drainage ways from encroachment by uses and/or indiscriminate land filling or diking which may adversely affect the overall stream and downstream flood levels, **wetland water quality or flood control values, tree canopy, native vegetation and water quality.** Finally, the floodplain zone shall set aside an area which shall, for the most part, be preserved in its natural state or farmed to provide open spaces, natural habitats, and recreational places. (Ord. 4128 (part), 1981; Ord. 3380 (part), 1968).

17.48.010 Established—Area Included. In accordance with Section 17.09.010, all property within the corporate limits of the City lying within Special Flood Hazard Areas (100-year flood) identified by the Federal Insurance Administration in the report entitled "The Flood Insurance Study for Yamhill County, Oregon and Incorporated Areas," (effective date March 2, 2010), and accompanying Flood Insurance Rate Maps (FIRM) is declared to be flood area zone property and subject to the requirements of this Chapter. (Ord. 4921 §4A, 2010; Ord. 4128 (part), 1981; Ord. 3380 (part), 1968).

17.48.020 Boundaries Indicated on Map. The boundaries for the zone established by Section 17.48.010 shall be indicated on the McMinnville Zoning Map. (Ord. 4128 (part), 1981; Ord. 3380 (part), 1968).

17.48.025 Definitions. For the purpose of this section refer to Section 17.06.030 for Flood Area related definitions. (Ord. 4952 §1, 2012).

17.48.030 Permitted Uses. In an F-P zone, the following uses and their accessory uses are permitted (subject to the provisions of Section 17.48.060 **and Chapter 17.49 Natural Hazard Subdistricts**):

A. Farming;
B. ~~Public~~ Park and recreation facility, not requiring the use of any structure;
C. Sewage pump station. (Ord. 4684 §1, 1998; Ord. 4128 (part), 1981; Ord. 3380 (part), 1968).

17.48.040 Conditional Uses. In an F-P zone, the following uses and their accessory uses may be permitted, subject to the provisions of Section 17.47, Section 17.48.045, Section 17.4and Chapters **17.49**, 17.72 and 17.74:

A. Boat landing and launching facility;
B. **Park and** ~~open land~~ recreation facility requiring the use of any structure;
C. Removal of sand, gravel, topsoil, or rock;
D. Landfill or diked land, including culvert and bridge installations, subject to the following procedures:
   1. Preliminary submittal of the proposal shall be made to the Planning Department, which shall check the proposal to ensure its compliance to the

ordinance. Said proposal shall then be submitted to the Planning Commission.

2. The City shall provide written notice to the City Recorder's office in adjacent communities, Yamhill County, and the Oregon Department of Land Conservation and Development prior to any alteration or relocation of a watercourse (i.e., stream channel), and shall submit a copy of that notification to the Federal Insurance Administration.
3. The Planning Department shall prescribe the form and information required for applications made for any conditional use listed in this subsection. No application shall be accepted unless it complies with such requirements and is verified as to the correctness thereto. There shall be included, as a part of the application, an accurate map. Such plans shall be in triplicate, drawn at a scale of not larger than one inch equals fifty feet nor smaller than one inch equals five hundred feet, and shall show:
    a. 100-year flood projection elevation on the subject site. State source of information.
    b. Property boundaries and dimensions.
    c. Ground elevations shown by contour lines of not less than two-foot vertical intervals. State source of information.
    d. Existing and proposed structures.
    e. Dimensions and elevations of existing and/or proposed fill.
    f. Location of stream channel in relationship to items "a" through "e" above.
    g. A typical valley cross-section showing the channel of the stream, elevation of land areas adjoining each side of the channel, cross-sectional areas to be occupied by the proposed fill and high-water information.
    h. Profile showing the slope of the bottom of the channel or flow line of the stream, and the slope line of the proposed fill.
    i. Specifications of fill material, grading, channel improvement or maintenance plans, dimensions, and restoration of completed project.
    j. **The location of applicable natural hazard on or adjacent to the subject site.**

E. Weapons Training Facility subject to the following conditions:
    1. The property on which the facility is located must be owned or leased by a Federal, State, or local government agency for the exclusive use of public safety personnel engaged in firearms or other related training;
    2. The facility must be located no closer than 2,640 feet (one-half mile) to any land planned and zoned for residential use; and
    3. Only those firearms or weapons authorized by a government agency and utilized for law enforcement related purposes shall be allowed within the area approved for a weapon training facility. Possession of other firearms or weapons at a weapon training facility site shall be considered a violation of this ordinance.
F. Wireless communications facilities, not to include antenna support structures and their associated facilities, subject to the provisions of Chapter 17.55 (Wireless Communications Facilities). (Ord. 4921 §4C, 2010; Ord. 4732, 2000;

Ord. 4684 §2, 1998; Ord. 4559 §1, 1994; Ord. 4128 (part), 1981; Ord. 3380 (part), 1968).

17.48.045 Conditional Use Factors. The Planning Commission shall consider the following factors and special conditions when making a decision regarding a conditional use in the floodplain zone:

A. Factors to be Considered:
   1. The danger to life and property due to increased flood heights or velocities caused by any proposed fill.
   2. The danger that materials may be swept onto other lands or downstream to the injury of others.
   3. The importance to the community of the service provided by the proposed facility.
   4. The availability of alternative locations not subject to flooding.
   5. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.
   6. The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.
   7. The compatibility of the proposed use with the potential of the site and the surrounding floodplain area for open space, natural habitats, and recreational places.
   8. The impact of the proposed use on fish, wildlife habitat**.**
   9. **The danger to life and property from landslides, wildfire or earthquakes due to excavation, vegetation removal and construction of the proposed use.**
   10. Such other factors which are relevant to the purposes of this section.

B. Special Conditions. Upon consideration of the factors listed above and the purposes of this section, the Planning Commission may attach such conditions to the granting of a conditional use permit as it deems necessary to further the purposes of this portion of the zoning ordinance. The following such conditions, but not exclusively limited thereto, may be included:
   1. Limitations on periods of use and operation, and upon the area to be filled and the elevation of the fill as well as to the kinds of material which may be so emplaced.
   2. Imposition of operational controls, sureties, and deed restrictions.
   3. Requirements for construction of channel modifications, dikes, levees, and other protective measures.
   4. Limitations on the removal or destruction of critical fish and wildlife habitat including any area of riparian vegetation. (Ord. 4128 (part), 1981; Ord. 3380 (part), 1968).
   5. **Limitations imposed by applicable natural hazard overlay zones per Chapter 17.49.**

[17.48.050 Signs. Moved to Chapter 17.62 (Signs), by Ord. 4900 November 5, 2008.]

17.48.060 Use Limitations. In an F-P zone, the following limitations shall apply:

A. No residence shall be constructed;
B. A lot shall not be less than one acre in area;
C. Within the floodway and flood fringe, no encroachment will be allowed which causes any increase in the flood height or which would result in hazardous velocities (see floodway schematic). To demonstrate compliance with this requirement, the applicant shall submit an engineering certification stating the proposed development will not impact the pre-project base floodway and flood fringe elevations. The certification shall be signed and sealed by a professional engineer and be supported by the appropriate technical data and studies, which are typically based upon the standard step-backwater computer model utilized to develop the 100-year floodway and flood fringe shown on the appropriate Federal Insurance Rate Map (FIRM) and tabulated in the adopted Flood Insurance Study. (Ord. 4921 §4D, 2010; Ord. 4684 §3, 1998; Ord. 4128 (part), 1981; Ord. 3380 (part), 1968).

17.48.070 Use of Other Base Flood Data. When base flood elevation data has not been provided (FIRM zones A), the applicant shall provide alternative base flood elevation as available from a Federal, State, or other source in order to comply with this chapter. (Ord. 4921 §4E, 2010)

17.48.080 Endangered Species Act Requirements. Certain fish, wildlife and plant species within the city may be protected by the federal Endangered Species Act (ESA) and therefore:

A. Before granting any development or building permit within the F-P zone, the applicant shall submit a Flood Habitat Assessment Report from a qualified expert indicating that the applicable requirements of the Endangered Species Act are satisfied;

B. All mitigation recommendations contained within the qualified report shall be included as permit conditions of approval; and

C. No authorization granted through this section shall be constructed to guarantee compliance with Endangered Species Act.

This whole chapter is new to the McMinnville Municipal Code

Chapter 17.49

NATURAL HAZARD OVERLAY SUBDISTRICTS

Sections:

17.49.00 Natural Hazard Subdistricts Generally. Natural Hazard Subdistricts (NH Subdistricts) implement the Natural Hazard Policies of the McMinnville Comprehensive Plan and are intended to protect life and property from inventoried natural hazard areas pursuant to Statewide Planning Goal 7 – Natural Hazards.

- **A. NH Subdistricts are based on adopted natural hazard inventories – which include maps showing significant resource sites and supporting reports documenting the criteria and methods used to determine local resource site significance.**
- **B. NH Subdistricts implement McMinnville Comprehensive Plan Chapter XI Natural Features policies related to Natural Hazards.**
- **C. NH Subdistrict boundaries appear on the official City Zoning Map.**
- **D. NH Subdistrict standards apply in addition to standards of the underlying base zone. In cases of conflict, the more restrictive NH Subdistrict standards control.**

17.49.10 Definitions. The following definitions apply within the NH-P and NH-M Subdistricts.

- **A. Landmark and Significant Trees. Please see definitions in Chapter 17.06.045, Definitions.**
- **B. Native Plants. "Native plant species" are those listed on the Portland Plant List, which is incorporated by reference into this chapter.**
- **C. Fire Resistant Plants. Fire-resistant plants burn at a relatively low intensity, slow rates of spread and with short flame lengths.[1] In addition to listed species, fire-resistant tree and plant species may be determined based on the professional opinions of licensed landscape architects, certified arborists or foresters. Fire-resistant vegetation has the following characteristics:**
  1. **Growth with little or no accumulation of dead vegetation (either on the ground or standing upright).**
  2. **Non-resinous plants.**
  3. **Low volume of total vegetation (for example, a grass area as opposed to a forest or shrub-covered land).**
  4. **Plants with high live fuel moisture (plants that contain a large amount of water in comparison to their dry weight).**
  5. **Drought-tolerant plants (deeply rooted plants with thick, heavy leaves).**
  6. **Stands without ladder fuels (plants without small, fine branches and limbs between the ground and the canopy of overtopping shrubs and trees).**
  7. **Plants requiring little maintenance (slow-growing plants that, when maintained, require little care).**

[1] A handbook entitled *Fire-resistant Landscape Plants for the Willamette Valley* (OSU Extension Service, 2015) provides a list of fire-resistant shrubs and plants applicable to the McMinnville area.

8. **Plants with woody stems and branches that require prolonged heating to ignite.**

Note: This list may be modified based on the professional opinions of licensed landscape architects, certified arborists, or foresters.

D. Fuel Reduction Area. An area where vegetation or material capable of allowing a fire to spread unchecked has been treated, cleared or modified to slow the rate and intensity of an advancing wildfire and to create an area for fire suppression operations. Establishment of a fuel reduction area does not include stripping the ground of all native vegetation.

E. Highly Flammable Trees and Plants. Plant species that have characteristics which make them more volatile by encouraging easy ignition and the spread of fire through their foliage due to low moisture content, dense dry leaves, needles, grass-like leaves, or volatile resins and oils. Highly flammable trees and plants generally include coniferous and resinous trees and shrubs.[2] In addition to listed species, highly flammable tree and plant species may be determined based on the professional opinions of licensed landscape architects, certified arborists, or foresters.

F. The McMinnville Natural Hazards Map. A map that identifies earthquake, steep slope, landslide, wildfire, and flood hazard areas within the McMinnville Urban Growth Boundary. This generalized, composite map is based on the McMinnville Natural Hazards Inventory – adopted _____ 2023, by Ordinance No. _____.

G. Certified Engineering Geologist. A registered geologist who is certified in the specialty of engineering geology under provisions of ORS 672.505 to 672.705.

H. Geotechnical Engineer. A professional engineer, registered in the State as provided by ORS 672.002 to 672.325, who by training, education and experience is qualified in the practice of geotechnical and soils engineering practices.

I. Routine Maintenance. Regular upkeep of physical properties (i.e. trees, vegetation, right-of-way improvements, land, buildings, and equipment, including recurring, preventive and on-going maintenance necessary to delay or prevent the failure of physical properties including but not limited to the removal and or replacement of such properties with like (size, form) materials.

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[2] Highly flammable trees and plants include at least the following:

A. Trees (including but not limited to):Acacia (*Acacia* sp.); Arborvitae (*Thuja* sp.); Cedar (*Cedrus* sp.); Cedar/Cypress (*Chamaecyparis* sp.); Cypress (Cupressus sp.); Douglas fir (*Pseudotsuga menziesi*); Fir (Abies sp.); Hemlock (Tsuga sp.); Juniper (*Juniperus* sp.); Pine (*Pinus* sp.); Sequoia (*Sequoia* sp.); Spruce (*Picea* sp.); and Yew (*Taxus* sp.).

B. Shrubs (including but not limited to): Blackberry (*Rubus armeniacus*); Juniper (*Juniperus* sp.)' Laurel sumac (*Malosma laurina*); Oregon grape (*Mahonia aquifolium*); Rosemary (*Rosmarinus* sp.); Scotch broom (*Cytisus scoparius*); and Wild Lilac (*Ceanothus* sp.).

C. Grasses and Ground Cover (including but not limited to): Dry annual grasses; Large bark mulch; and Pampas grass (*Cortaderia selloana*).

17.49.20 Purpose and Intent of the Natural Hazard Subdistricts.

The purpose and intent of this chapter are to comply with the McMinnville Comprehensive Plan, minimize the cumulative risks associated with inventoried natural hazards, while allowing reasonable economic use of land within the McMinnville city limits.

A. Comprehensive Plan. This chapter is designed to implement the Natural Hazard Policies found in Chapter XI Natural Features of the McMinnville Comprehensive Plan.

B. Reasonable Economic Use. This chapter is intended to allow reasonable economic use of property while establishing standards to avoid or mitigate cumulative risks related to earthquake liquefaction and shaking hazards, steep slope and landslide hazards, wildfire hazards and flood hazards. The burden of proof shall be on the applicant to bring forth evidence in support of the application and to provide sufficient information on which any decision has to be made on the application. Exceptions to this Chapter for reasonable economic use purposes shall be allowed by the City pursuant to the review criteria below:

1. **The application of this chapter would deny all reasonable economic use of the property;**
2. **No other reasonable economic use of the property has less impact on the landslide hazard area;**
3. **The proposed impact to the landslide hazard area is the minimum necessary to allow for reasonable economic use of the property;**
4. **The inability of the applicant to derive reasonable economic use of the property is not the result of actions by the applicant after the effective date of this chapter, or is predecessor; and**
5. **The proposal does not pose a significant threat to the public health, safety, or welfare on or off the development proposal site.**

C. Disclaimer. The degree of Natural Hazard protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger hazard events can and will occur on rare occasions. Landslide risks may be increased by man-made or natural causes.

1. **Areas impacted by other natural hazards may differ from those shown on the McMinnville Natural Hazards Map.**
2. **This Chapter does not imply that land outside the natural hazard areas or that uses permitted within such areas will be free from earthquake, steep slope, landslide, wildfire or flooding hazards. Nor does it imply that land outside of mapped hazard areas will be free from damage in a hazard event.**
3. **This Chapter shall not create liability on the part of the City of McMinnville, any officer or employee thereof, or the Federal Insurance Administration, for any hazard damages that result from reliance on this chapter, or any administrative decision lawfully made based on the provisions of this chapter.**

4. Compliance with the minimum standards established by this chapter is not intended to relieve any private party from liability for the design or construction of development which causes damage or injury by aggravating an existing and known hazard.

17.49.30 Applicability and General Provisions. The Natural Hazards Subdistricts apply to the mapped Natural Hazard Mitigation and Natural Hazard Protection overlay zones within the city limits. The provisions of this chapter apply to public and private development proposed within these overlays:

A. The following standards apply to public facilities, planned developments, land divisions, and new construction within the city limits:
   1. Oregon Structural Specialty Code Seismic Standards. All land within the McMinnville UGB is subject to moderate to severe earthquake shaking and liquefaction hazards. Oregon Structural Specialty Code and Residential Specialty Code seismic requirements shall apply to new construction in all city zones.
   2. City Erosion Control Standards. Any Storm Drainage Design and Construction Standards, including Erosion Control Standards as adopted or utilized by the City of McMinnville shall apply to all development in all city zones. The erosion control plan shall be prepared by an engineer registered in the State of Oregon. The City Engineer may require special erosion control standards for development:
      a. On slopes of 15% or greater; or
      b. Within the Flood Area Zone; or
      c. Within the NH-M and NH-P Subdistricts.

B. The Natural Hazard - Mitigation (NH-M) Subdistrict. The NH-M Subdistrict includes land with cumulative earthquake, landslide and/or wildlife hazard risk that can be mitigated on-site based on the recommendations of required studies. The NH-M Subdistrict therefore requires geological site assessments, geotechnical studies and/or wildfire impact studies that include recommendations to mitigate earthquake, landslide and/or wildfire risks on development sites.

C. The Natural Hazard – Protection (NH-P) Subdistrict. The NH-P Subdistrict generally applies to the 100-year floodplain and areas with high cumulative earthquake, landslide, wildfire and/or flooding risks (1) that are more difficult to or cannot be effectively mitigated on-site, and/or (2) where the location and density of development may be limited. Where development is permitted, it shall occur consistent with the recommendations of geological, geotechnical and/or wildfire impact studies. The Flood Area (F-P) Zone includes additional standards to avoid and/or mitigate flood hazards.

D. Determination of Site-Specific Natural Hazards and Mitigation Standards.
   1. Determination. The potential presence and severity of natural hazard types (earthquake liquefaction, earthquake shaking, slide hazards and

wildfire hazards) on specific properties is determined by referencing the McMinnville Natural Hazard Inventory GIS database.

A. The McMinnville Natural Hazard Inventory GIS database will be updated based on the best data available, provided either by the state or individual property owner analysis per the provisions of this chapter of the McMinnville Municipal Code.

B. All new data will be reviewed by the Planning Director prior to updating the McMinnville Natural Hazard Inventory GIS database.

C. Impacted property owners will be notified in writing if any updates to the McMinnville Natural Hazard Inventory GIS database impacts their property. If the change has been initiated by the property owner, the database and resulting overlay will be changed administratively. If the change to the database is initiated by the City due to new state or federal data, it will be treated as a legislative zoning map amendment following all of the appropriate noticing and decision-making processes outlined in Chapter 17.72 of the McMinnville Municipal Code,

2. Mitigation. Specific mitigation standards in this chapter depend on the presence (or absence) of specific natural hazards on a development site., and the appropriate mitigation standard associated with that natural hazard. For example:

A. If a dwelling is proposed within a moderate-to-severe wildfire hazard area, the fuel reduction area standards required to mitigate wildfire hazards will apply; or

B. If a dwelling is proposed within the NH-M subdistrict and the underlying hazards identified for that property are soil conditions, a geological site assessment will be required to ascertain construction, erosion control, and related design requirements for that dwelling.

E. <u>Overlap with Natural Resource Subdistricts.</u> Natural Hazard Subdistricts may overlap with Natural Resource Subdistricts, especially near riparian corridors and tree groves. Generally, the review authority shall seek to harmonize subdistrict standards that appear to conflict. However, where standards cannot be read together to achieve a consistent outcome:

1. The more restrictive standards apply, except that,

2. NH-P and NH-M Subdistrict fuel reduction area standards shall prevail in cases of unavoidable conflict with the significant tree and vegetation standards of this chapter.

F. <u>Significant and Landmark Trees.</u> Significant and landmark trees stabilize landslide prone areas and reduce erosion.

1. Significant and landmark trees as defined in Chapter 17.06.045, "Definitions, Trees", shall not be removed from land within Natural Hazard Subdistricts, except as provided in this chapter and Chapter 17.48 Trees.

2. Removal of significant and landmark trees within NH-M and NH-P Subdistricts may be permitted when authorized as part of a land use application subject to the provisions of this chapter, and Chapter 17.48, "Trees".

17.49.40 Permitted and Conditional Uses. The underlying zoning district determines permitted and conditional uses, subject to additional development limitations and standards required in the NH-M or NH-P Subdistricts.

A. Conforming Uses. Existing development within the NH-M or NH-P Subdistrict shall be considered conforming with respect to the development standards of the Subdistrict and may be expanded without meeting the substantive or procedural requirements of Chapter 17.63 Nonconforming Uses.

B. Exempt Uses. When performed per the direction of the City, and in compliance with the provisions of the City of McMinnville Construction Standards on file in the Engineering Division, the following shall be exempt from the provisions of this chapter:
   1. Farming activities permitted in the underlying zone.
   2. Public emergencies, including emergency repairs to public facilities.
   3. Stream restoration and enhancement programs outside of wildfire hazard areas.
   4. Invasive vegetation removal.
   5. Additions of up to 50% of the habitable floor area of building(s) constructed before the effective date of this ordinance, or date of annexation within the city limits whichever is later, subject to applicable building safety code standards, including applicable seismic and wildfire safety standards.
   6. Routine maintenance or replacement of existing public facilities projects.

17.49.50 Review Procedures. The natural hazard mitigation and protection standards in this chapter usually are applied in conjunction with a development application. Where a use is proposed within, or partially within, the NH-P or NH-M Subdistrict, the following procedures shall apply pursuant to Chapter 17.72 (Applications and Review Process).

A. Permitted Uses. Where a use is permitted outright in the applicable base zone (for example, residential, commercial, industrial or public uses), compliance with the standards of this chapter is determined by the Community Development or Planning Director, based on required natural hazard studies, as part of the site plan review process (if applicable), and prior to issuance of a building or construction permits.

B. Land Divisions. When land divisions are proposed pursuant to Chapter 17.53 Land Division Standards, compliance with the standards of this chapter is determined by the Planning Director, based on required natural hazard studies.

C. Planned Developments. When planned developments are proposed pursuant to Chapter 17.51 (Planned Development Overlay), compliance with the standards of this chapter is determined by the Planning Commission, based on required natural hazard studies.

D. Density Transfer. The Planning Commission shall review density transfer from land within the NH-P Subdistrict to buildable land, pursuant to Section 17.49.170 Density Transfer.

E. Conditional Uses and Variances.

1. Where a conditional use is proposed, compliance with the standards of this chapter is determined by the Planning Commission, based on required natural hazard studies, prior to issuance of building or construction permits.
2. Where a variance is requested, compliance with the variance criteria in this chapter is determined by the Planning Commission, based in part on required natural hazard studies, prior to issuance of building or construction permits.
3. Public Facilities. Construction of public facilities within natural hazard areas must follow the recommendations of required natural hazard studies.

17.49.60 Natural Hazard Subdistrict Application Requirements.

Development applications for all properties within the NH-M or NH-P Subdistricts shall accurately indicate the site-specific locations of specific types of natural hazard areas based on City GIS maps in relation to the proposed development. City planning staff will assist the applicant by providing GIS maps showing city information sources listed below. Development applications within or partially within natural hazard subdistricts shall include:

A. A site plan showing the proposed development on the site, drawn to a standard scale and including an illustrated scale for use in reductions.

B. Topography showing 2-foot contour intervals and slopes of:

1. 15 to 24.9 percent; and
2. 25 percent and greater.

C. The location of existing and proposed infrastructure necessary to serve the proposed development. Such infrastructure includes streets, driveways, water, sanitary sewer, and storm drainage.

D. The potential hazard impact area showing land uses and tree cover within 200 feet of the subject property.

E. A title block, north arrow, and bar scale.

F. Date(s) of field check(s).

G. A grading plan, if grading is to occur, showing existing and finished contours on the site, at two-foot contour intervals. Grading plans can be accepted with greater contour intervals with the approval of the City Engineer or the Building Official, per their appropriate authorities, if the size of the site or elevation changes across the site are such that two-foot contours do not clearly demonstrate the intent of the grading plan.

H. Information sources, such as soil survey maps and applicable McMinnville Natural Hazard and Natural Resource inventory maps.
I. Relevant City maps applicable to the site and impact area including the Zoning Map, natural hazard, and natural resource subdistrict maps.
J. Aerial photos, including their date and scale.
K. Depending on the type of natural hazard or natural resource identified on a proposed development site, the applicant shall be responsible for:
    1. Showing the precise location of each type of inventoried natural hazard or natural resource present on the development site;
    2. Submitting required flooding, seismic, geological and/or wildfire hazard mitigation studies as prescribed in Section 17.49.060; and
    3. Demonstrating compliance with recommended mitigation measures pursuant to required hazard studies.
L. The location and size of significant and landmark trees within 25 feet of any proposed disturbance area. If development is proposed within a wildfire area, the location and size of significant and landmark trees must be shown within 50 feet of the outer limits of above-ground construction.
M. Any other submittal requirements identified for development in areas with specific types of natural hazards, as specified in this chapter.

17.49.70 Required Natural Hazard Mitigation Reports. Depending on the natural hazards present on a particular property, the applicant for land development shall be responsible for preparing one or more of the following studies within the NH-M and NH-P Subdistricts.

A. Geological Site Assessment (also known as an Engineering Geologic Report) is an overview of existing geological conditions that includes recommendations for mitigation measures. The Site Assessment shall be completed and stamped by a Certified Engineering Geologist, licensed by the Oregon Board of Geologic Examiners. At a minimum, the Geological Site Assessment shall follow Oregon State Board of Geologic Examiners (OSBGE)'s guideline for preparing Engineering Geologic Reports and include the following elements:
    1. Relevant landslide and earthquake hazard information from the McMinnville Natural Hazards Inventory;
    2. A field investigation of the site and vicinity including a description of geologic hazards that may be present on the site;
    3. An analysis of the geological suitability of the site for proposed development;
    4. A description of any unusual or extreme geologic processes at work on the site, such as rapid erosion, landslide hazard, flood hazard, rockfall, subsidence, debris run-out, or other features;
    5. A description of any geologic hazards that may affect the proposed land use, including but not limited to slope stability, debris flow, flooding, topography, erosion hazard, shallow groundwater, springs, expansive soils, subsidence, fault rupture, landslide hazard, rockfall,

debris run out, or any other geologic hazard discovered by the investigation;

6. **Identification of any areas of the site that should be avoided for human-occupied structures;**
7. **An analysis of the feasibility of developing the site for the proposed land use(s);**
8. **Identification of any mitigation measures needed to address any anticipated geologic problems; and**
9. **Recommendations regarding the need for follow-up studies, such as a Geotechnical Engineering Report.**

B. Geotechnical (Soils Engineering) Report is prepared and stamped by a Licensed Civil Engineer, licensed in the Specialty of Geotechnical Engineering by the Oregon State Board of Examiners for Engineering and Land Surveying (OSBEELS). The Geotechnical Report usually makes specific recommendations to avoid or mitigate geological hazards. At a minimum, the Geotechnical Report shall include the following elements:

1. **Data regarding the nature, distribution and strength of existing soils on the site.**
2. **Analysis, conclusions, and recommendations for grading procedures and associated drainage requirements.**
3. **Design standards for corrective measures, including buttress fill, when necessary.**
4. **A professional opinion on the adequacy of the development site for the intended use considering the proposed grading in relation to soils engineering factors, such as slope stability.**
5. **The location of proposed development and public facilities; and**
6. **Relevant information from the McMinnville Natural Hazards Inventory.**

C. Wildfire Hazard Assessment and Mitigation Plan is prepared, in consultation with the McMinnville Fire Department, by a certified arborist or professional forester with experience in wildfire management. This plan must address wildfire mitigation standards in this chapter and may recommend additional fire safety standards. At a minimum, in addition to site plan requirements, the plan shall include:

1. **The location and dimensions of all existing and proposed structures, parking areas and driveways on the property.**
2. **The location, dimension, and grade of fire apparatus access roads and driveways serving all structures on the property. Grading plans can be accepted with greater contour intervals with the approval of the City Engineer or the Building Official, per their appropriate authorities, if the size of the site or elevation changes across the site are such that two-foot contours do not clearly demonstrate the intent of the grading plan.**
3. **The location and dimensions of all structures on adjoining properties located within 30 feet of a shared property line.**
4. **The location of all existing and proposed fire hydrants.**
5. **Site contours showing two foot intervals detailing elevation and slope.**

6. **A tree and vegetation management plan showing:**
   a. **The location, species and size of existing significant trees and landmark trees, including those to be removed and those to be retained, and whether they qualify as "fire-resistant" or "highly flammable" as defined in this chapter.**
   b. **The location, species and size of shrubs, including those to be removed and those to be retained, and whether they qualify as "fire-resistant" or "highly flammable" as defined in this chapter.**
   c. **Areas where trees will be removed to reduce overlapping tree canopies including a description of the tree species and diameter at breast height (DBH).**
   d. **New trees, shrubs and bushes to be planted including the species, location and size at maturity, and whether they qualify as "fire-resistant" or "highly flammable" as defined in this chapter.**
   e. **The location, species and size of all invasive plants (including trees) to be removed and replaced with native plants.**
7. **The location of and information addressing required fuel reduction area standards as described in Section 17.49.130.**
8. **A schedule and timetable for vegetation removal and thinning to meet fuel reduction area standards.**

17.49.80 Decision Options and Conditions. The Approval Authority may approve, approve with conditions, or deny an application based on the provisions of this chapter. The Approval Authority may require conditions necessary to comply with the intent and provisions of this chapter.

A. Approval Criteria.
1. **In the NH-M subdistrict, new development, redevelopment, or intensification of land use activities shall be sited and designed to minimize site instability and flooding/fire risk on or adjacent to the subject site, consistent with the recommendations of a Geologic Engineering Report and other technical hazard reports/assessments required by this section.**
2. **In the NH-P subdistrict, new development, redevelopment, or intensification of land use activities shall be avoided, and where this is infeasible, mitigation shall be required to lessen or minimize risks. Specifically, the development, as designed and mitigated through the recommendations of a Geologic Engineering Report or other technical hazard reports/assessments, will neither be subject to nor increase known site instability and flooding/fire risk on or adjacent to the subject site, due to project design, location on the site, or other reasons.**

B. Conditions. The required reports shall include design standards and recommendations necessary for the geologist or geotechnical engineer to provide reasonable assurance that the standards of this section can be met with appropriate mitigation measures. These measures, along

with staff recommendations, shall be incorporated as conditions into the final decision approving the proposed development.

C. Assurances and Penalties. Assurances and penalties for failure to comply with mitigation, engineering, erosion control plans required under this section shall be as stated in Chapter 17.03 General Provisions.

17.49.90 Land Divisions. No land division or property line adjustment shall be approved that would result in an unbuildable lot or parcel (*i.e.*, a lot or parcel where a permitted or conditional use could not be allowed because it would be unable meet the standards of this chapter).

17.49.95 Verification of Natural Hazards Boundaries. A property owner may want to verify the Natural Hazards boundaries to determine the true location of a hazard area and its functional values on a site. This may be through a site-specific survey or a simple site visit in those cases where existing information demonstrates that the Natural Hazard significance rating does not apply to a site-specific area. Applications for development on a site located in a Natural Hazard area may request a determination that the subject site is not subject to the standards of Chapter 17.49. Verifications shall be processed as either a Type I or Type II process as outlined below.

A. Type I Verification.
   1. Applicants for a determination under this section shall submit a site plan meeting the requirements of Chapter 17.72, as applicable.
   2. An applicant may request a Type I Verification determination by the community development director. Such requests may be approved provided that there is evidence substantiating that all the requirements of this chapter relative to the proposed use are satisfied and demonstrates that the property also satisfies the following criteria, as applicable:
      a. No natural features have been disturbed.
      b. No natural features have been changed.
      c. The property does not contain a natural hazard area as identified by the city's local natural hazards area maps.
      d. Evidence of prior land use approvals that conform to the natural hazards overlay districts, or which conformed to the natural hazard area overlay district that was in effect prior to the Natural Hazards code adoption date _____.

B. Type II Verification. Verifications of the Natural Hazards areas which cannot be determined pursuant to the standards of Chapter 17.49.95(A)(1) may be processed under the Type II permit procedure.
   1. Applicants for a determination under this section shall submit a site plan as applicable.
   2. Such requests may be approved provided that there is evidence that demonstrates in a report prepared by one or more qualified professionals with experience and credentials in natural resource areas, including wildlife biology, ecology, hydrology and forestry,

that a resource function(s) and/or land feature(s) does not exist on a site-specific area.

3. **Verification to remove a recently developed area from the Natural Hazards shall show that all of the following have been met:**
   a. **All approved development in the Natural Hazards area has been completed**
   b. **All mitigation required for the approved development has been successful.**
   c. **The previously identified Natural Hazards area on the developed site no longer exist or have been subject to a significant detrimental impact.**

Natural Hazards – Mitigation (NH-M) Subdistrict

17.49.100 Natural Hazards – Mitigation (NH-M) Subdistrict. The NH-M is intended to mitigate natural hazard impacts based on objective development standards for each applicable hazard type (earthquakes, steep slopes, landslides and wildfires) and the recommendations of required site-specific hazard studies.

17.49.110 Earthquake Mitigation Standards. Buildings and on-site construction projects must meet the seismic standards of the applicable Oregon Structural Specialty Code and Residential Specialty Code seismic requirements per Section 17.49.30.A.

17.49.120 Steep Slope and Landside Mitigation Standards. The following plans and development standards apply to steeply sloped land (15% or greater) within mapped landslide hazard areas on any proposed development site, as determined by the McMinnville Natural Hazards Inventory.

A. Required Plans.

1. **If slopes of 15% or greater exist on the development site, the applicant shall submit an Erosion Control Plan per Section 17.49.30.A.**
2. **If moderate to high landslide hazard areas exist on the development site, the applicant shall submit a Geological Site Assessment per Section 17.49.60.A.**
3. **The City may contract with an independent geologist or geotechnical engineer to review the Geological Site Assessment at the developer's expense.**

B. Development Standards. The applicant's site and building plans shall be consistent with the recommendations of the required Geological Site Assessment, including any changes and conditions required by the review authority after considering the recommendations of the independent peer reviewer.

1. **If the Geological Site Assessment recommends a Geotechnical Engineering Study, building and construction plans shall be consistent with the recommendations of this study.**
2. **Generally, development should avoid lots with an average slope of 25% and greater, except where consistent with the recommendations of the Geological Site Assessment.**
3. **Removal of landmark trees shall be prohibited – except where the review authority determines that there is no reasonable alternative available to achieve project objectives.**
4. **Removal of significant trees shall be the minimum necessary to meet project objectives or to comply with an approved wildfire mitigation plan.**
5. **Drainage shall not be altered such that potential for damage or risk to the proposed project or the natural hazard area is increased. Development shall provide adequate drainage and erosion control**

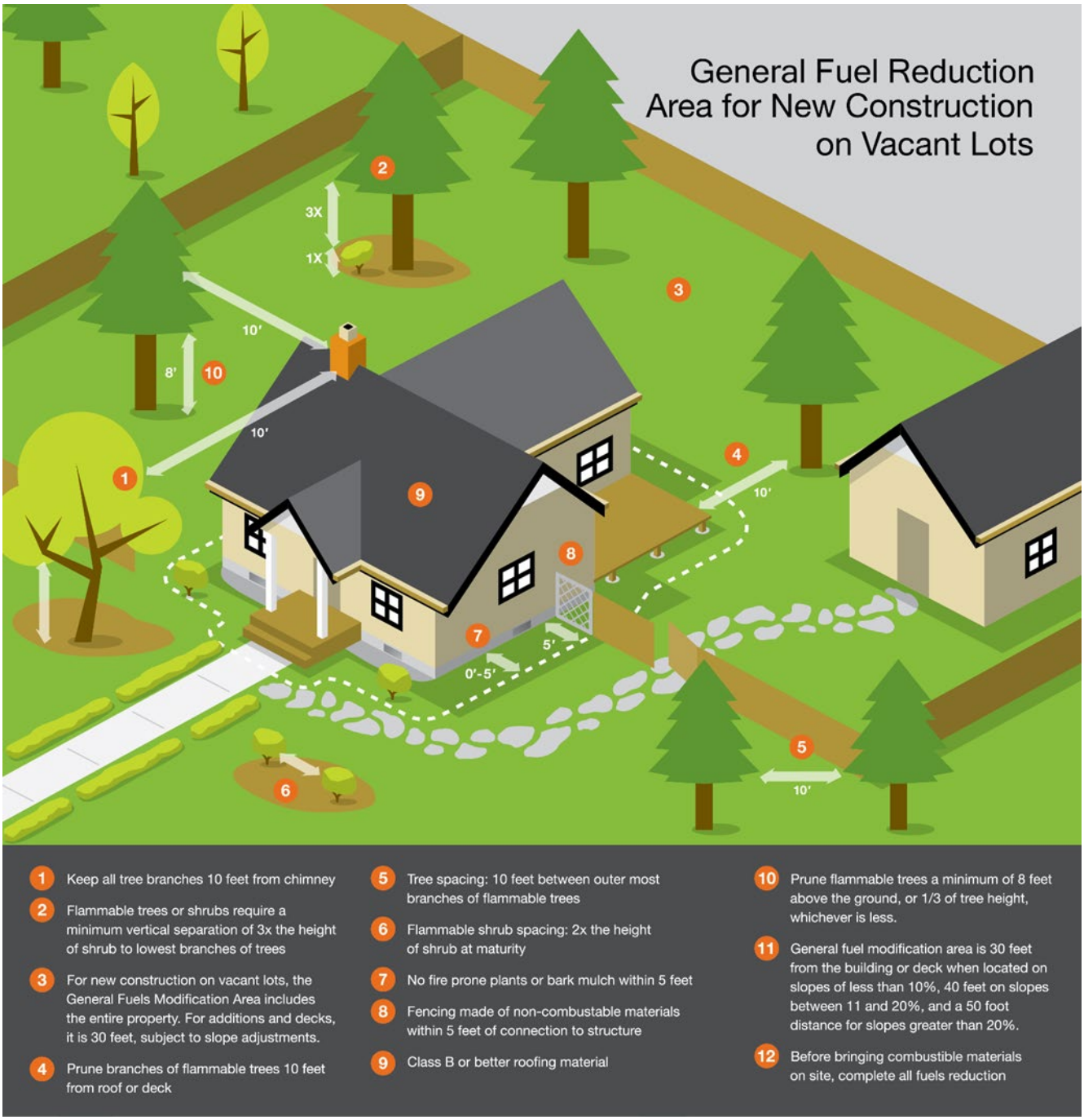
facilities that convey site drainage in a non-erosive manner in order to minimize hazards resulting from runoff, erosion, and other hydrologic impacts to streams, and riparian areas. Such drainage shall not impact adjacent property owners or public areas and shall comply with all building code requirements.

17.49.130 Wildfire Assessment and Mitigation Standards. This section supplements base zone development regulations to mitigate potential impacts of wildfire on land with moderate to severe wildlife areas shown on the McMinnville Natural Hazards Inventory Map.

A. Purpose. These standards balance the need to protect riparian corridors, and landmark and significant trees, while reducing fuel loads and facilitating firefighter access to structures in the event of a wildfire.
   1. The following studies and development standards apply to moderate, high and severe wildfire hazard areas on any proposed development site, as determined by the McMinnville Natural Hazards Inventory.
   2. In limited situations, removal or major pruning of significant trees may be required to meet the standards of this section. Removal of landmark trees shall only be considered as a last resort.

B. Required Wildfire Mitigation Plan. If moderate to severe wildfire hazards exist on or adjacent to a development site, or when a development site abuts a significant tree grove, the applicant shall prepare a Wildfire Mitigation Plan as prescribed by Section 17.49.060.C. The plan shall apply for the following land use applications:
   1. When a new habitable building, or an addition to an existing habitable building is proposed.
   2. Applications for Planned Developments and/or Land Divisions.

C. Fuel Reduction Area. To reduce fire spread both from and to structures on the property, and to adjoining properties, the establishment and maintenance of a fuel reduction area shall be required.
   1. The general fuel reduction area shall be measured thirty feet from the exterior walls of habitable structures on development sites with slopes of 10% or less.
   2. In steeply sloped areas, an additional ten feet of fuel reduction area shall be added for each 10% increase in slope. Thus, a 40-foot fuel reduction area would be required for a site with an average slope of 11-20%, and a 50-foot fuel reduction area would be required for a lot with a site with an average slope of 21-30%.



D. Vegetation and combustible materials within the fuel reduction area shall meet the following standards:

1. All standing dead and dying vegetation shall be removed from the property, except when considered ecologically beneficial (*e.g.*, a snag located in a riparian corridor).

2. Newly planted vegetation within 30 feet of any building or deck shall not include highly flammable species. The setback shall be increased by ten feet for each ten percent increase in the average slope of the

property (measured from the proposed building or buildings) over ten percent.

3. Within five feet of a new building, addition, or deck, existing highly flammable vegetation shall be removed. However,
   a. Land divisions and planned developments shall be designed to save landmark trees and minimize impacts on significant trees; and
   b. The placement and design of new buildings on an existing lot shall avoid landmark trees if possible and minimize impacts on significant trees.
4. Within five feet of a new building, addition, or deck, combustible man-made and natural materials are prohibited, including but not limited to bark mulch, stored wood, and accumulation of dry leaves and needles. Exception: Combustible materials may be permitted within five feet of a structure by the Planning Director in consultation with the Fire Marshall, if the portion of the structure adjoining the combustible material is constructed with ignition resistant building materials sufficient to reduce the spread of fire.
5. Tree crowns or limbs shall not extend into the vertical plane of a chimney outlet.
6. Highly flammable significant and landmark trees shall be maintained to provide at least a 10-foot clearance from new structures (and any subsequent additions thereto) measured as follows:
   a. Horizontally from a chimney outlet;
   b. From above the roof of a new building, or addition; and
   c. From the furthest extension of a new building, or addition or deck.
   d. If pruning a tree to meet the above requirements would compromise the health and survival of an existing tree(s), the standards a-c above may be modified by the Community Development or Planning Director in consultation with the Fire Marshall, but at a minimum, the trees shall be pruned to maintain at least eight feet of ground clearance.
7. Canopy spacing of the outermost limbs of highly flammable trees shall be separated by at least 10 feet at mature size within the fuel reduction area.
   a. Groups of trees that form a continuous canopy may be considered as one tree canopy.
   b. Canopy spacing requirements do not apply landmark trees, as defined in Chapter 17.58 Trees, or to fire-resistant trees.
8. Fire-resistant trees (i.e., trees that are not highly flammable) shall be maintained to provide clearance from structures as follows:
   a. 10 feet horizontal clearance from a chimney outlet.
   b. At no time shall tree crowns or limbs extend into the vertical plane of a chimney outlet.
   c. Tree limbs shall be pruned to ensure they do not touch any part of a structure including but not limited to roofs, eaves, and decks.

9. Existing highly flammable trees shall be pruned to provide a ground clearance of a minimum eight feet above the ground, or one-third of the tree height, whichever is less.
10. Existing highly flammable shrubs shall be maintained to provide a clearance from new structures and other flammable vegetation as follows:
    a. Five feet clearance from the furthest extension of a new building, addition, or deck.
    b. Separation from other highly flammable shrubs within the fuel reduction area shall be a minimum of two times the shrub's height at maturity.
11. Newly planted highly flammable shrubs shall be:
    a. A minimum of 30 feet from the furthest extension of any building addition or deck.
    b. Separated from other listed flammable shrubs by a minimum of two times the shrub's height at maturity.
    c. Located outside of the drip line of a highly flammable tree.
12. Where either the tree or vegetation is highly flammable: the vertical clearance between the top of understory vegetation (within the drip line of a tree) and the lowest tree limbs, shall be at least three times the height of vegetation.
13. Existing vegetation may be allowed to be retained consistent with an approved Wildfire Mitigation Plan, or upon written approval of the Planning Director in consultation with the Fire Marshall:
    a. To maintain slope stability;
    b. To preserve or enhance riparian functions and values;
    c. To protect or ensure the health of landmark or significant trees; or
    d. For aesthetic purposes.

E. Fuel reduction in areas steep slope / slide hazard areas, or significant riparian corridors, shall be included in the erosion control measures outlined in Section 17.49.060.

F. The Fuel Reduction Area may be reduced or waived when approved by the Planning Director in consultation with the Fire Marshall, based on a finding that fire risk has been reasonably reduced such as in cases where ignition resistant materials and construction methods, or vegetation type and separation, function to enhance the structure's protection from exterior wildfire exposure.

17.49.140 Reserved for Future Use

Natural Hazard – Protection (NH-P) Subdistrict

17.49.150 Natural Hazards – Protection (NH-P) Protection Subdistrict

The NH-P is intended to avoid, and where avoidance is not feasible, to mitigate natural hazard impacts to life and property from each applicable natural hazard type (earthquakes, steep slopes, landslides and wildfires).

A. Use Limitations and Development Standards. The NH-P Subdistrict includes use limitations and development standards to reduce composite risks to life and property associated with earthquakes, steep slopes, landslides, wildfires and flooding within its boundaries.

B. Mitigation Based on Required Studies. To mitigate for unavoidable impacts, proposed development must follow the recommendations of required site-specific hazard studies.

17.49.160 Use Limitations. The underlying zoning district determines permitted and conditional uses within the NH-P Subdistrict, subject to additional development limitations and standards required by the NH-P Subdistrict. Residential density transfer may be permitted as prescribed in Section 17.49.170. The following use limitations apply to land within the NH-P Subdistrict.

A. Creation of New Lots. Creation of new lots on land within the NH-P Subdistrict shall be prohibited, except when based on site-specific natural hazard impact studies and approved through the Chapter 17.48 Planned Development Overlay, or when a new lot or tract will be used solely for conservation of the natural hazard area and the owner agrees to record a deed restriction curtailing development on the conservation lot or tract.

B. Residential Zones. In residential zones, one dwelling unit shall be permitted for each lot-of-record, provided that:

1. **There is inadequate space to place a residence with a footprint of 2,000 square feet or less on the lot outside of the NH-P Subdistrict.**
2. **The recommendations of required natural hazard impact studies are followed.**
3. **Landmark trees are protected except where there is no reasonable alternative to allow a home with a 2,000 square foot footprint (or less) on a lot-of-record.**
4. **Impacts on significant trees shall be minimized, recognizing that tree removal may be required to meet Section 17.49.130 Wildfire Assessment and Mitigation requirements and fuel reduction requirements.**

C. Large-Format Commercial Development. Large format commercial development as defined in Chapter 17.56 shall not be permitted within the NH-P Subdistrict.

D. Commercial and Industrial Zones. In commercial and industrial zones, existing habitable structures and surface parking areas may be expanded by up to 50% within the NH-P Subdistrict, provided that:

1. There is inadequate space to expand the structure by 50% outside of the NH-P Subdistrict.
2. The proposed expansion is located outside mapped high risk landslide and wildfire areas and is designed to minimize the building footprint and loss of significant and landmark trees on land within the NH-P Subdistricts.
3. Outdoor storage areas are prohibited within the NH-P Subdistrict.
4. The recommendations of required natural hazard impact studies are followed.

E. Flood Area Zone (F-P Zone). Public uses are permitted within the F-P Zone, provided that:
1. Impacts on significant and landmark trees are minimized.
2. Scenic views are considered, enhanced and maintained.
3. The recommendations of required natural hazard studies are followed.

17.49.170 Residential Density Transfer. A transfer of development density from undeveloped buildable land within the Natural Hazard Protection zone to other property within the city limits is encouraged. Density transfer may occur through the planned development process, as indicated below. The transferring property does not need to be owned by the property owner of the receiving property, but both property owners need to sign the density transfer application to memorialize the transfer.

A. Development Density to Transfer from National Hazard Protection Zone (NH-P). The land area from which density can be transferred excludes developed and unbuildable areas, such as riparian corridors, slopes 15% or greater, and easements. 100% of the development density of identified qualifying land within the NH-P zone may be transferred to any other residential zone.

B. Development Density in Receiving Area. Up to a maximum 20% reduction in average minimum lot size or lot area per unit requirements, is allowed in order to accommodate the density transfer. Developments utilizing a transfer of density will need to apply for a Planned Development pursuant to Chapter 17.51. The receiving area needs to be one parcel prior to subdivision.

C. If Density Transfer is Not Feasible. In situations where density transfer is not feasible, a maximum of one dwelling unit per 2.5 acres may be allowed on land zoned for residential use within the NH-P Subdistrict, consistent with the recommendations of a geotechnical engineering study and any conditions required by the review authority.

D. Recording of Density Transfer. In all cases where a residential density transfer is used, covenants or other legally binding agreements that run with the land shall preclude the further development of the land from which the density is transferred. The covenants or other legally binding agreements shall be recorded before the transferred density may be used.

17.49.180 Earthquake Mitigation Standards. Buildings and on-site construction projects must meet the seismic standards of the applicable Oregon Structural Specialty Code and Residential Specialty Code seismic requirements per Section 17.49.30.A.

17.49.190 Steep Slope and Landside Mitigation Standards. The following plans and development standards apply to when development is authorized pursuant to Section 17.49.160 on steeply sloped land (15% or greater) and to mapped landslide hazard areas on any proposed development site, as determined by the McMinnville Natural Hazards Inventory.

A. Required Plans.
   1. If slopes of 15% or greater exist on the development site, the applicant shall submit an Erosion Control Plan per Section 17.49.30.A.
   2. If moderate to high landslide hazard areas existing on the development site, the applicant shall submit a Geological Site Assessment per Section 17.49.60.A.
   3. The City may contract with an independent geologist or geotechnical engineer to review the Geological Site Assessment.

B. Development Standards. Where development is authorized pursuant to Section 17.49.160 (Use Limitations), the applicant's site and building plans shall be consistent with the recommendations of the required Geological Site Assessment, including any changes and conditions required by the review authority after considering the recommendations of the independent peer reviewer.
   1. If the Geological Site Assessment recommends a Geotechnical Engineering Study, building and construction plans shall be consistent with the recommendations of this study.
   2. Generally, development should avoid slopes of 25% and greater, except where consistent with the recommendations of the Geological Site Assessment.
   3. Removal of landmark trees shall be prohibited – except where the review authority determines that there is no reasonable alternative available to achieve project objectives.
   4. Removal of significant trees shall be the minimum necessary to meet project objectives or to comply with an approved wildfire mitigation plan.
   5. Drainage shall not be altered such that potential for damage or risk to the proposed project or the natural hazard area is increased. Development shall provide adequate drainage and erosion control facilities that convey site drainage in a non-erosive manner in order to minimize hazards resulting from runoff, erosion, and other hydrologic impacts to streams, and riparian areas. Such drainage shall not impact adjacent property owners or public areas and shall comply with all building code requirements.

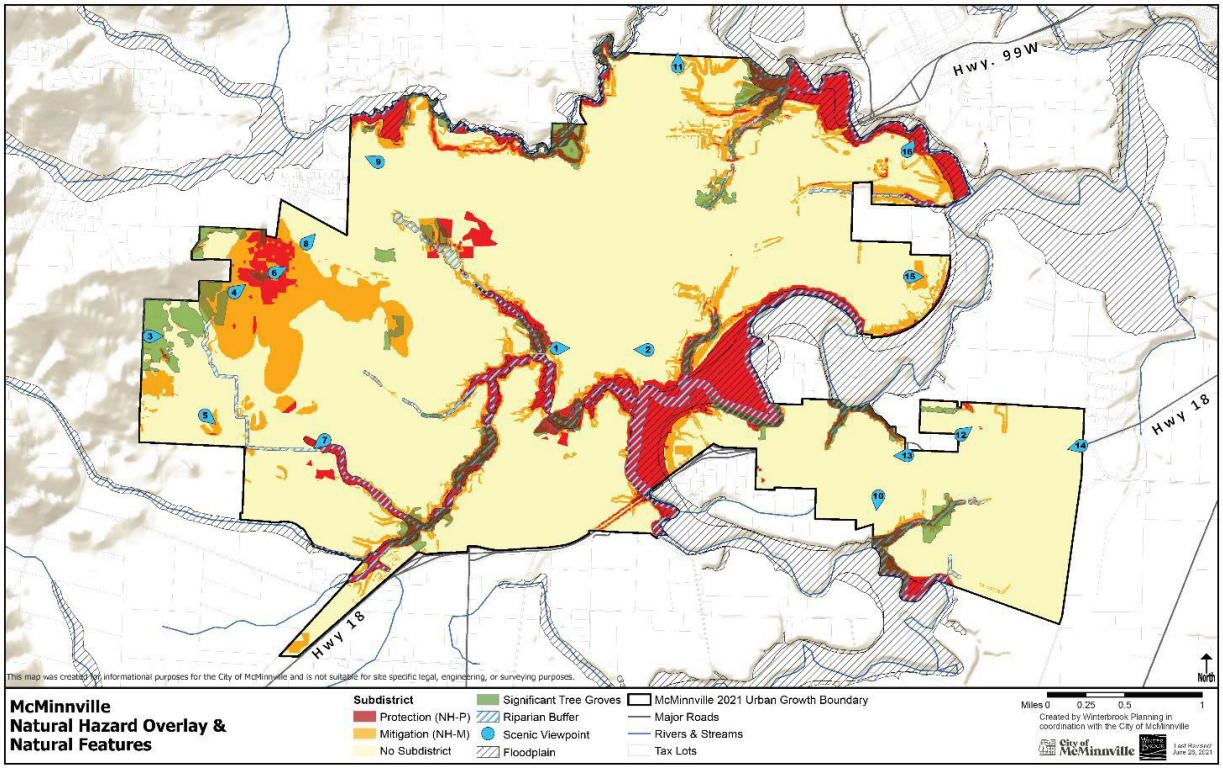
17.49.200 Wildfire Assessment and Mitigation Standards. Where development is permitted pursuant to Section 17.49.160 (Use Limitations), proposed development within mapped moderate to severe wildfire areas within the NH-P Subdistrict shall be subject to the Wildfire Assessment and Mitigation Stan

PROPOSED AMENDMENTS TO THE MCMINNVILLE COMPREHENSIVE PLAN, VOLUME II

This entire chapter is new. Goal 1 addresses Natural Hazard and Goal 2 addresses Natural Resources

CHAPTER XI
NATURAL FEATURES

GOAL XI 1: PROTECT LIFE AND PROPERTY FROM INVENTORIED NATURAL HAZARDS, INCLUDING FLOODING, GEOLOGICAL AND WILDFIRE HAZARDS.



NATURAL HAZARDS

Multi Hazards

Policies:

197.00 *The City of McMinnville shall adopt and maintain a Natural Hazards Inventory as part of the McMinnville Comprehensive Plan (Volume I). The inventory shall include maps and text that identify the location, type and risk level for three types of natural hazards: geological hazards (including steep slopes, earthquakes and landslides), flood hazards (land within the 100-year floodplain), and wildfire hazards within the UGB).*

197.10 The City of McMinnville shall apply public works construction standards, seismic building codes, and fire and life safety codes wherever natural hazards are identified in the Natural Hazards Inventory – including limited, moderate, and high combined risk subareas described the Natural Hazards Inventory.

197.20 The City of McMinnville shall establish a Natural Features (NF) overlay comprehensive plan designation to manage the cumulative effects of inventoried natural hazards in "moderate and high combined risk subareas" as described in Tables VII.1 and VII.2 of the Natural Hazards Inventory.

197.30 The NH overlay plan designation shall be implemented by two subdistricts based on cumulative ranking criteria found in Tables VII.1 and VII.2 of the Natural Hazards Inventory:

1. ***The Natural Hazards Mitigation Subdistrict (NH-M)**. The NH-M is intended to mitigate hazard impacts based on objective development standards for each applicable hazard type and the recommendations of required site-specific hazard studies.*
2. ***The Natural Hazards Protection Subdistrict (NH-P).** The NH-P Subdistrict is intended to prohibit most types of development and may allow for residential density transfer. Where development is allowed it shall be subject to objective development standards for each applicable hazard type and the recommendations of required site-specific hazard studies.*

197.40 The NH-M and NH-P Subdistricts shall include objective development standards for each type of natural hazard identified in the Natural Hazards Inventory, including landslides, earthquakes (liquefaction and shaking), floodplains, and wildfire hazards. Floodplains shall be protected by the underlying F-P Flood Hazard zone and the NH-P Subdistrict.

1. Maps showing the location and severity of each type of hazard in each subdistrict are available for public review and impacts on individual properties can be determined by city staff via the City's GIS database.

2. *In cases where hazard-specific development standards overlap, the more restrictive standard shall apply.*

3.

197.60 *Based on objective development standards and required hazard studies, the City of McMinnville may impose conditions of land use approval to protect life and property and mitigate natural hazard impacts in natural hazard subareas. Such conditions may include but are not limited to, conservation easements or dedication of hazard areas to the City.*

197.60 *Land division applications shall not create a lot that lacks sufficient buildable area to meet the minimum lot size and development standards applicable in the underlying zoning district.*

197.70 *New residential, commercial, and industrial construction shall be limited within the NH-P Subdistrict with the following exceptions:*

1. *Public facilities and environmental restoration projects may be permitted under objective development standards.*
2. *Residential density transfer from land within the NH-P Subdistrict to contiguous property under the same ownership that is outside both the floodplain and any applicable Natural Resource or Natural Hazard Subdistrict may be allowed.*
3. *The maximum density allowed in the transfer area shall be the maximum density allowed in the next higher residential zoning district. For example, density transfer from the NH-P land with an underlying R1 zone to land outside the Natural Hazards Overlay (NH-P and NH-M) shall be capped at the density allowed in the R2 zone.*
4. *In situations where density transfer is not feasible, a maximum of one dwelling unit per 2.5 acres may be allowed on land zoned for residential use, consistent with the recommendations of a geotechnical engineering study and any conditions required by the review authority.*

197.80 *In cases where the application of NH-P provisions would prohibit all reasonable economic use of an existing tract of land under common ownership, the City may grant an exception to allow a use permitted in the underlying zoning district that is not permitted in the NH-P Subdistrict. In making this decision, the applicant and City must:*

1. *Consider first whether the exception provisions of Policy 197.70 would relieve the hardship;*
2. *Consider potential uses that are allowed in the NH-P Subdistrict that could provide reasonable economic value;*
3. *Consider alternative development layouts and land use intensity that minimize impacts from natural hazards on people and property and other values associated with natural hazard areas;*
4. *Limit the intensity of the allowed land use to the minimum necessary to retain reasonable economic value of the subject tract; and*

5. *Meet all applicable development standards that apply to natural hazards in the NH-P zone.*

197.90 The City of McMinnville shall coordinate with Yamhill County to apply McMinnville Comprehensive Plan Chapter XI Natural Features Policies to unincorporated land within the Urban Growth Boundary, including the application of the NH overlay zone (the NH-M and NH-S subdistricts) and related development standards. In cases of conflict with state law governing farm and forest land, state law will prevail over the NH overlay zone standards. For example, agricultural and forest uses allowed in Agricultural and Forest zones shall continue to be allowed; and the more restrictive fire mitigation standards in the County's Forest zones will prevail over the less restrictive City fire mitigation standards.

197.100 The City of McMinnville shall coordinate with the Oregon Department of Geology and Mineral Industries (DOGAMI), the Department of Land Conservation and Development (DLCD), the McMinnville Fire Department, and Yamhill County in updates of the Yamhill County Multi-Jurisdictional Natural Hazards Mitigation Plan, the McMinnville Addendum to County NHMP, and the Yamhill County Community Wildfire Protection Plan. Updates to these plans will be considered in future updates to Chapter XI of the McMinnville Comprehensive Plan.

197.110 The City of McMinnville shall coordinate with the Greater Yamhill Watershed Council to facilitate watershed restoration and improvement projects in natural hazard areas such as floodplains and slide hazard areas. Shared natural hazard mitigation goals include: (1) removal of invasive vegetation species (that increase fuel for wildfires and clog waterways) and replacement with native species that reduce erosion, are more fire resistant and are less likely to clog waterways; and (2) restoration and enhancement of wetlands that provide flood control.

197.120 Tree removal and major pruning within the Floodplain Zone, the NH-M and NH- P Subdistricts shall be limited to minimize erosion and landslide potential and to maintain water quality

Geological Hazards

Geological hazards appear on the McMinnville Natural Hazards Inventory and include:

1. *Slopes of 25% or more;*
2. *Moderate, high and severe risk earthquake (liquefaction and shaking) risk areas; and*
3. *Moderate and high-risk landslide hazard areas.*

Policies:

198.10 The NH-P and NH-M Subdistricts shall apply to subareas with geological hazards as shown on the Natural Hazards Inventory. Specific geological

hazards found in each subdistrict are determined by referencing the McMinnville Natural Hazards Inventory and may be determined for individual properties by referencing the City's GIS database.

198.20 Residential and commercial construction in areas with moderate or high geological risk hazards – as indicated on the Natural Hazards Inventory – shall meet the seismic and slope stability provisions of the Oregon State Building Codes. The Building Official may require a geotechnical engineering study prior to approval of construction.

198.30 The City of McMinnville shall require erosion control measures prior to grading or construction in subareas with:

1. *Slopes of 15% or greater, and*
2. *Landslide hazards in the NH-M and NH-P Subdistricts.*

198.40 The City of McMinnville shall require geological reconnaissance studies with the submission of land development applications where geological hazards are present within the NH-M and NH-P Subdistricts. The recommendations of the geological reconnaissance study shall become conditions of land use approval unless specifically exempted or modified by the review authority.

198.50 Where recommended in a required geological reconnaissance study – or where determined necessary by the City Engineer or Building Official in moderate risk landslide hazard areas that are not included in the NH-M Subdistrict – a geotechnical engineering study may be required prior to grading, land development or construction.

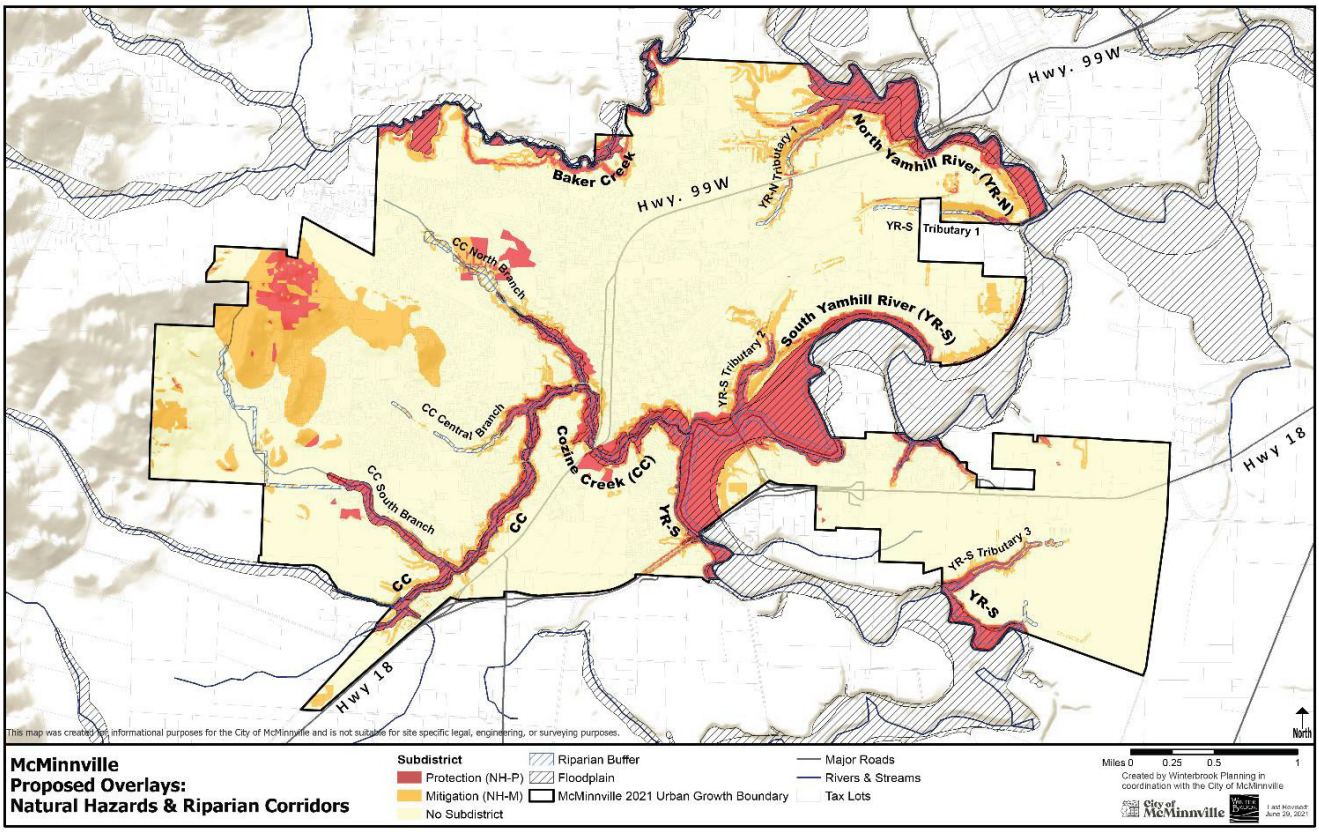
198.60 The City of McMinnville shall retain the services of a qualified geologist or geological engineer to review geological studies prepared for land use applicants.

1. *The City Engineer shall determine whether a second professional opinion is required.*
2. *The costs of peer review shall be borne by the applicant.*

198.70 The City shall consider adopting standards for public street and utility construction to moderate or higher geological hazard areas.

198.80 Because trees contribute to slope stability and reduce erosion, tree removal shall be limited in the NH-M Subdistricts.

Flood Hazards



Policies

199.00 *Flood hazards areas are located within the designated 100-year floodplain. The City of McMinnville will continue to prohibit most types of development within the 100-year floodplain consistent with the City's* ***F-P Flood Area Zone****. Most significant riparian corridors are also located in the F-P Zone.*

199.10 *Land within the F-P Zone is protected by applicable NH-P Subdistrict standards. Natural geological and wildfire hazards associated with the 100-year floodplain, including but not limited to landslide and wildfire hazard areas, are addressed in NH-P Subdistrict development standards.*

199.20 *The City of McMinnville is committed to continued participation in the National Flood Insurance Program (NFIP) through the enforcement of local floodplain management regulations.*

199.30 *The City of McMinnville will work with the Federal Emergency Management Agency (FEMA) to update Flood Insurance Rate Maps (FIRM). The City will request Oregon Department of Geology and Mineral Industries (DOGAMI) debris flow and lidar data be included in FIRM updates.*

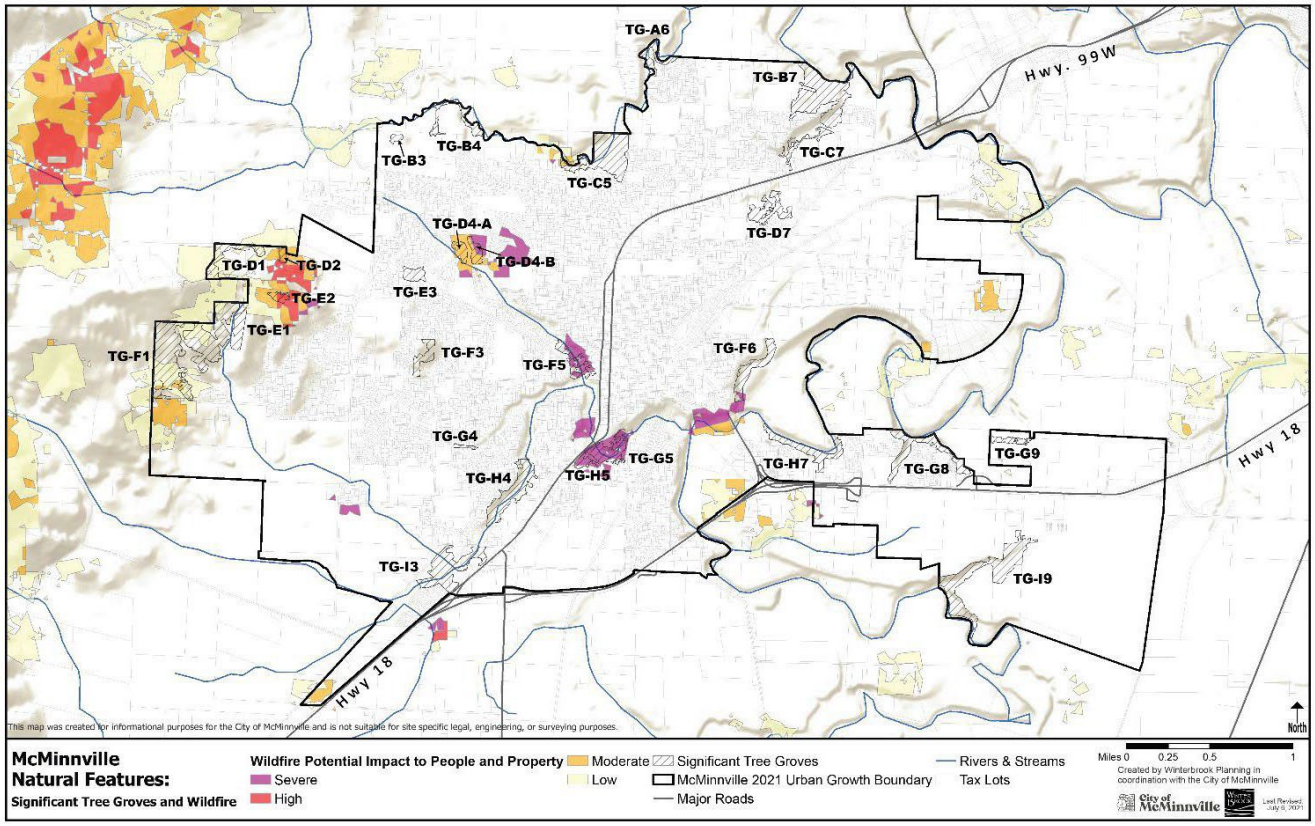
199.40 *The City of McMinnville will develop and maintain GIS maps of critical facilities identified in the McMinnville NHMP for all structures and residential development and commercial buildings within the 100-year and 500-year floodplains.*

199.50 *Because wetlands serve an important flood control function, wetland fill and removal shall not be permitted within the 100-year floodplain unless there is no reasonable alternative for a planned public works project.*

199.60 *The City of McMinnville will coordinate with the Greater Yamhill Watershed Council (or its affiliates) regarding stream and river restoration and enhancements projects to restore native vegetation, improve bank stability and improve water quality.*

199.70 *Because trees and vegetation reduce streambank failure and improve water quality, tree removal shall be limited in F-P Zone.*

Wildfire Hazards



Policies

200.00 *Moderate, high and severe wildfire hazard areas appear on the Natural Hazards Inventory and are generally associated with the West Hills and*

vegetated floodplains. Where wildfire hazards subareas overlap with geological or floodplain hazards, they may be subject to NH-P or NH-M Subdistrict requirements, consistent with the ranking criteria found in the Natural Hazards Inventory and as shown on Natural Hazards Inventory Map VII-1.

200.10 City staff shall coordinate with the McMinnville Fire Department and RFPD to encourage fire safety planning and education – especially in Wildfire Urban Interface zones and designated Fire Reduction Areas in the West Hills. The City of McMinnville shall continue to coordinate wildfire mitigation action items through the Yamhill County Community Wildfire Protection Plan.

200.20 Residential, commercial, and industrial development shall be limited in wildfire risk subareas in the NH-P Subdistrict; However, exceptions may be permitted pursuant to Natural Hazard Policies 197.70 and 197.80.

200.30 Development density in moderate to high wildfire risk areas in the NH-M Subdistrict may be limited where necessary to provide adequate space for fuel breaks in areas that are threatened by two or more natural hazards.

200.40 In the NH-P and NH-M Subdistricts with identified wildfire hazards, applicants for land divisions and new development (excluding home remodels or additions) shall prepare a Fire Prevention and Control Plan in coordination with the McMinnville Fire Department or RFPD. The plan shall be prepared by a certified arborist and shall consider necessary tree and vegetation removal, erosion control, and replacement of lost trees and vegetation with native, fire-resistant trees and vegetation.

200.50 The maximum density allowed within the NH-P Subdistrict shall be one unit per 2.5 acres or shall be subject to the density transfer provisions of Policy 197.70.

200.60 Based on the Fire Prevention and Control Plan, the following wildfire mitigation standards shall be met:

1. *Installation and maintenance of at least a 40-foot fuel break around each new dwelling or structure.*
2. *Where vegetation needs to be maintained for slope stability in a fuel break area, require plantings of fire-resistant or slow-burning plants. The City shall make a list of such plants available to the public.*
3. *Provision of one or more than one ingress/egress route or road widths wide enough to accommodate incoming fire apparatus and evacuating residents simultaneously in an emergency situation.*
4. *Roofs and siding with fire-resistant materials. Wood shake or shingle roofs are not allowed.*
5. *Design road placement to function as fire breaks in urban wildland*

interface developments.

6. *Chimneys of wood-burning devices to be equipped with spark arrester caps and/or screens.*
7. *Underground electrical distribution circuits if technically feasible.*
8. *Sprinkler systems in all dwelling units and occupied buildings.*

ATTACHMENT 3

City of McMinnville
Natural Hazard Overlay

N

Proposed Overlay Zones
- Mitigation (NH-M)
- Protection (NH-P)

Existing Zones
- Flood Area (FP)

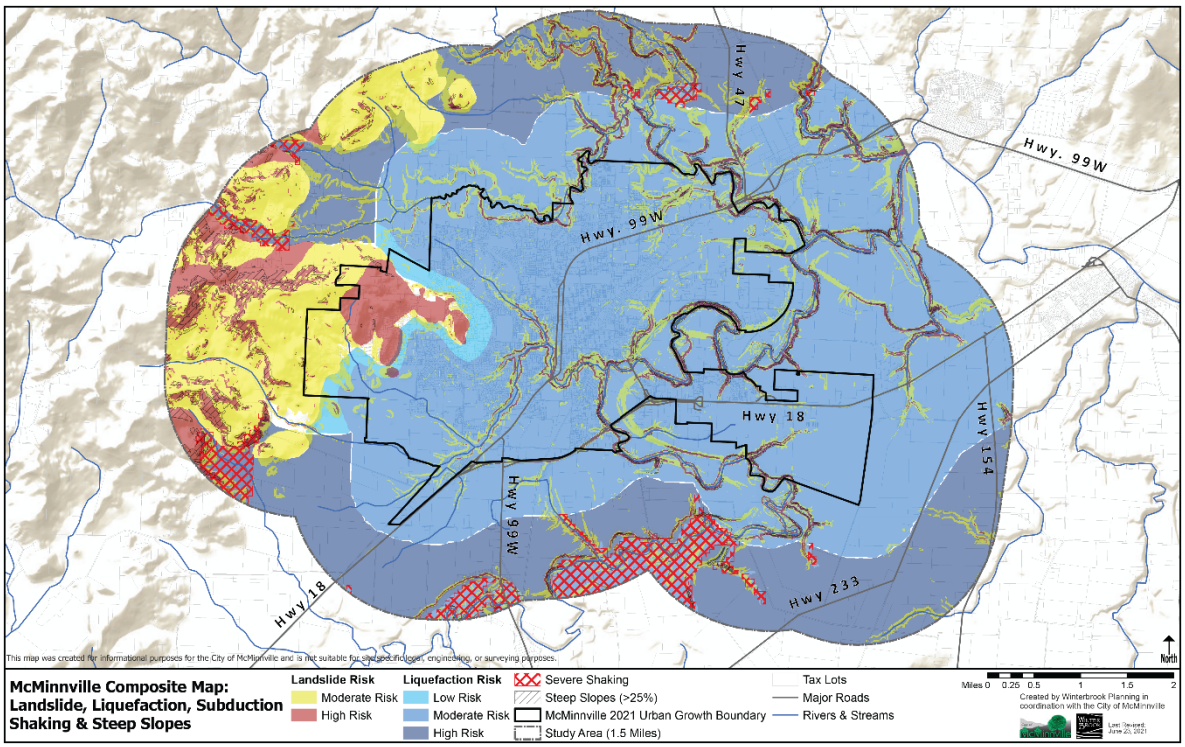
- City Limits
- Urban Growth Boundary
- Streets

0 0.5 1 2 Miles

Note: Overlay zones will only be applied to properties within the city limits.

BAKER CREEK RD
WEST SIDE RD
GRANDHAVEN ST
27TH ST
HIGHWAY 99W
EVANS ST
MCDONALD LN
LAFAYETTE AVE
19TH ST
MEADOWS DR
MICHELBOOK LN
WALLACE RD
12TH ST
14TH ST
ADAMS ST
8TH ST
5TH ST
3RD ST
1ST ST
BAKER ST
DAVIS ST
THREE MILE LN
RIVERSIDE DR
2ND ST
CYPRESS ST
FELLOWS ST
CYPRESS LN
OLD SHERIDAN RD
HILL RD
BOOTH BEND RD
SALMON RIVER HWY
CUMULUS AVE
NORTON LN
PEAVINE RD
HIGHWAY 18

ATTACHMENT 4



Natural Hazards Inventory & Management Program Options and Recommendations

Prepared by:

WINTER BROOK
COMMUNITY RESOURCE PLANNING

Winterbrook Planning | June 24, 2021 | *Draft*

Contents

Appendices

The following appendices support this report.

Appendix 1: Best Natural Hazards Mitigation Programs in Comparator Cities

Appendix 2: Natural Hazard Overlay Methodology

Appendix 3: REVISED Natural Hazard Inventory and Natural Hazard Overly Maps

Figures

Acronyms and Abbreviations

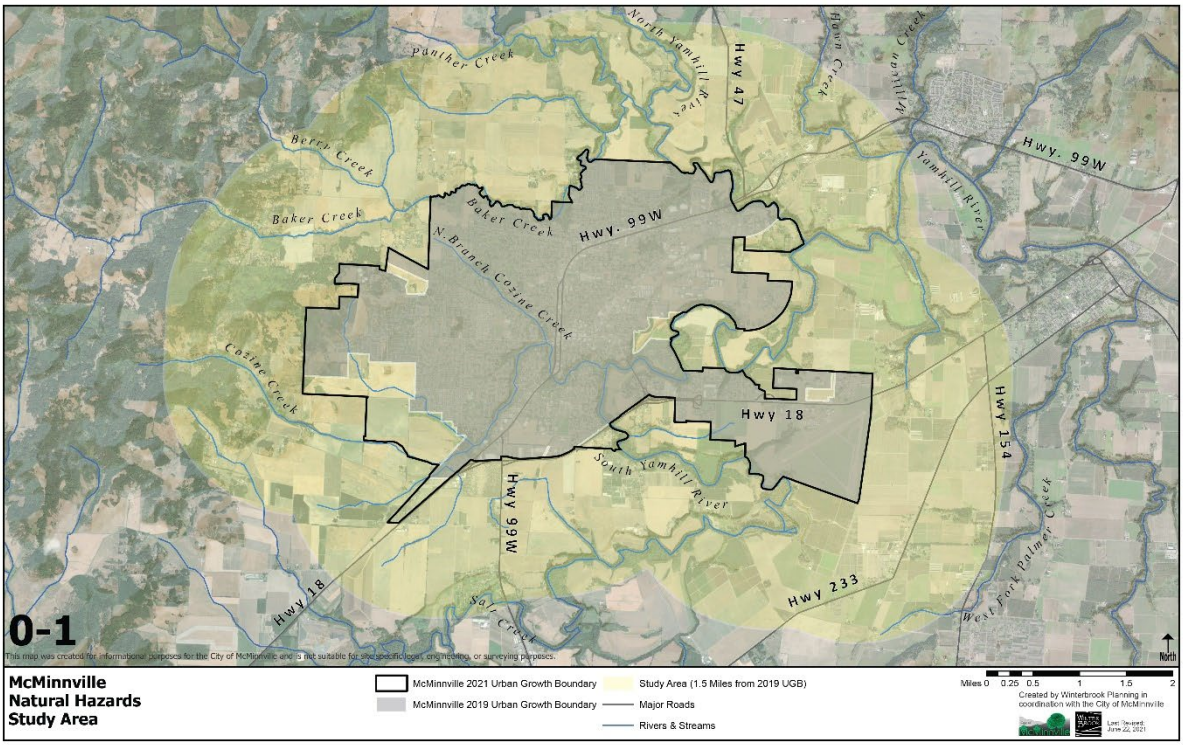
The following acronyms and abbreviations are used in this report.

- **BFE** – Base Flood Elevations
- **Cascadia** or **CSZ —** Cascadia Subduction Zone earthquake
- **CWPP** – *Yamhill County Community Wildfire Protection Plan*
- **DEM** – Digital Elevation Model
- **DOGAMI** – Oregon Department of Geology and Mineral Industries
- **FEMA** – Federal Emergency Management Agency
- **FIRM** – Flood Insurance Rate Map
- **Floodplain** – the 100-year floodplain including the floodway
- **GIS** – Geographic Information System
- **LIDAR** – Light Detection and Ranging
- **McMinnville NHMP** – *McMinnville Addendum to the Yamhill County Natural Hazards Mitigation Plan*
- **NFIP** – National Flood Insurance Program
- **NHO** – Natural Hazards Overlay (Comprehensive Plan Map Overlay)
    - **NH-M Subdistrict** – Natural Hazard Mitigation Subdistrict (Zoning Map Overlay)
    - **NH-P Subdistrict** – Natural Hazard Protection Subdistrict (Zoning Map Overlay)
- **OWRE** – *Oregon Wildfire Risk Explorer*
- **Oregon NHMP –** *Oregon Natural Hazards Mitigation Plan (2020)*
- **RFPD** – Rural Fire Protection Districts
- **SFHA** – Special Flood Hazard Area
- **Study Area** – the Natural Hazard Study Area (including land 1.5 miles from the 2019 UGB)
- **UGB** – McMinnville Urban Growth Boundary
- **UGMA** – Urban Growth Management Agreement
- **WUI Zone** – Wildland Urban Interface Zone

Introduction and Project Summary

In 2020, Winterbrook prepared the initial draft of the McMinnville Natural Hazards Inventory, Management Program Options and Recommendations study. The study area included (a) the McMinnville Urban Growth Boundary (UGB) as it existed in June 2020[1] and (b) the UGB expansion study area within 1.5 miles of the existing UGB[2]. The City considered inventory information provided in the initial draft report during the UGB amendment process. In December 2020, the City Council amended its UGB to include approximately 1,280 acres of land (of which 921 acres were considered "buildable"). The County subsequently adopted, and the Land Conservation and Development acknowledged, the UGB amendment. Figure 0-1 shows the 2021 UGB expansion area in relation to the previously existing 2019 and the Natural Hazards Study Area.

Figure 0-1 McMinnville 2019 UGB, 2021 UGB, and Natural Hazards Study Area



In March 2021, the City contracted with Winterbrook Planning to revise the 2020 Natural Hazards Study to:

a) Focus on the expanded 2021 UGB
b) Include social vulnerabilities described in the *Oregon Natural Hazards Mitigation Plan,* (Oregon NHMP) in the Natural Hazards Composite Ranking System,
c) Amend the proposed Natural Hazard Mitigation and Protection maps accordingly, and
d) Prepare draft amendments to the McMinnville Zoning Ordinance to include natural hazard mitigation and protection subdistrict maps and text.

[1] Referenced throughout this document as the 2019 UGB. (1 and 2 ? where are these referenced?_)
[2] Referenced throughout this document as the 2021 UGB.

This report represents the revised study including an inventory of natural hazards based on available mapping sources, considers alternative management options, and suggests policy and mapping amendments to the McMinnville Comprehensive Plan to systematically address McMinnville's mappable natural hazards within the 2021 UGB.[3]

The revised Natural Hazards Inventory includes a series of GIS (geographic information system) overlay maps showing moderate, high and severe hazard areas within the 2021 UGB and study area. The inventory also includes a description of the following natural hazards and how they may adversely affect life and property:

- **Geological Hazards** (areas subject to landslide, steep slope and earthquake liquefaction and shaking impacts)
- **Flood Hazards** (areas within the 100-year floodplain including the floodway)
- **Wildfire Hazards** (areas that are particularly susceptible to wildfires due to topography, fuel and settlement patterns)
- **Composite Hazards** (areas with one or more overlapping natural hazard categories)

McMinnville Comprehensive Plan

This revised study helps to implement recent amendments to the *McMinnville Comprehensive Plan* (Comprehensive Plan) to incorporate Great Neighborhood Principles and implementing policies.

> **Policy 187.40** **The Great Neighborhood Principles shall guide long range planning efforts including, but not limited to, master plans, small area plans, and annexation requests. The Great Neighborhood Principles shall also guide applicable current land use and development applications.**
>
> **Policy 187.50.1** directly addresses natural features (including Natural Hazard Management):
>
> 1. **Natural Feature Preservation**. Great Neighborhoods are sensitive to the natural conditions and features of the land. a. Neighborhoods shall be designed to preserve significant natural features including, but not limited to, watercourses, sensitive lands, steep slopes, wetlands, wooded areas, and landmark trees.

The existing comprehensive plan addresses flood hazards only – consistent with Federal Emergency Management Agency (FEMA) regulations related to the National Flood Insurance Program (NFIP). The current comprehensive plan does not have a separate natural hazards element. The McMinnville Zoning Ordinance has a separate F-P Flood Hazard Zone that applies to land within the 100-year floodplain. However, the City currently lacks development standards for geological and wildfire hazards. The McMinnville Buildable Lands Inventory (ECONorthwest, 2003) identifies slopes of 25% or greater and floodplains as unbuildable consistent with applicable state law.

[3] Winterbrook addresses relationships among natural hazards and natural resources (such as riparian and upland wildlife habitat and scenic views and viewpoints) in a separate white paper.

McMinnville Natural Hazards Mitigation Plan

Recognizing that McMinnville is subject to several other natural hazards, the City has participated in the preparation of the *McMinnville Addendum to the Yamhill County Natural Hazards Mitigation Plan* (McMinnville NHMP).[4]

The mission of the McMinnville NHMP is:

> ***To promote public policy and mitigation activities which will enhance the safety to life and property from natural hazards.***

The McMinnville NHMP includes the following natural hazard goals related to the management of natural hazards:

> ***GOAL 4: PREVENTIVE:*** *Develop and implement activities to protect human life, commerce, and property from natural hazards. Reduce losses and repetitive damage for chronic hazard events while promoting insurance coverage for catastrophic hazards.*
>
> ***GOAL 6: IMPLEMENTATION:*** *Implement strategies to mitigate the effects of natural hazards and increase the quality of life and resilience of economies in Yamhill County.*
>
> ***GOAL 7: DEVELOPMENT:*** *Communities appropriately apply development standards that consider the potential impacts of natural hazards.*

The McMinnville NHMP includes a series of GIS hazard maps and recommends specific "measures" to implement these goals. These recommended natural hazard mitigation measures, along with the natural hazard management practices of six comparable Oregon cities, provide the foundation for developing a geographically based natural hazards management program.

Oregon Natural Hazards Mitigation Plan

The Oregon NHMP was amended in 2020 and incorporates social equity factors when ranking natural hazard risks. Broadly, the State risk assessment is based on 3 variables, (1) the probability of the event happening, (2) the physical vulnerability of the event happening, and (3) the social vulnerability of the event happening. The Oregon NHMP groups these factors by county. Winterbrook included the State's ranking for physical and social vulnerabilities with the localized probability of the natural hazard event occurring. This inclusion provides the revised ranking system presented in Chapters V and VI of this report.

Statewide Planning Goal 7 (Natural Hazards)

As recognized by Goal 7 (Natural Hazards), natural hazards pose risks to life and property that can be mitigated by effective planning. Goal 7 requires each local government to identify and develop programs to mitigate impacts for natural hazards.

> *A. NATURAL HAZARD PLANNING:*
>
> *1. Local governments shall adopt comprehensive plans inventories, policies and implementing measures) to reduce risk to people and property from natural hazards.*

[4] The McMinnville NHMP also considers information found in the *Yamhill County Community Wildfire Protection Plan* (Yamhill County CWPP).

2. Natural hazards for purposes of this goal are: floods (coastal and riverine), landslides, earthquakes and related hazards, tsunamis, coastal erosion, and wildfires. Local governments may identify and plan for other natural hazards.

This report meets Goal 7 requirements by (a) inventorying natural hazards and assessing the risks they pose to people and property and (b) recommending a program to mitigate the effects of mapped natural hazards within the McMinnville UGB and study area.

Overlapping Natural Hazards

In this report, Winterbrook also looks at relationships that exist among natural hazards based on a series of geographic information system (GIS) overlay maps.

- For example, McMinnville's West Hills and associated downslope areas are especially threatened by a combination of geological, wildfire and flood hazards.
- In low-lying areas, the Yamhill River and its tributaries are subject to overlapping flooding, slide hazards (bank failures) and wildfires fueled by riparian vegetation in dry conditions.
- Most of the McMinnville study area outside the West Hills is subject to strong or very strong earthquake liquefaction and shaking hazards due to underlying soil conditions.

Recognizing these inter-relationships and the threats posed by natural hazards to people, public infrastructure and private property, Winterbrook proposes a natural hazards mitigation program that addresses the combined impacts of geological, flood and wildfire hazards. The proposed program includes amendments to the McMinnville Comprehensive Plan and Plan Map that would include:

- A new Chapter XI: Natural Features that includes policies addressing multi-hazard, geological, flooding and wildfire impacts and mitigation within the McMinnville Natural Hazards Study Area.
- A new Natural Hazards Overlay Map that would be implemented by two zoning subdistricts – with graduated development standards depending on the combination of and severity of hazards found in specific geographic subareas in the community.

Report Organization

In addition to the Introduction, this report is organized into seven sections:

- **Section I Revised Inventory Methods** and information sources. The study area includes land within the McMinnville 2021 UGB and land within 1.5 miles of the 2019 UGB. The Inventory considers mappable geological, flooding and wildfire hazard areas.

- **Section II Revised Geological Hazards Inventory** is based on the McMinnville NHMP (which in turn is largely based on Oregon Department of Geology and Mineral Industries (DOGAMI) data). The Geological Hazards Inventory focuses on land within the McMinnville study area and includes areas susceptible to landslides, earthquake liquefaction and earthquake shaking. Inventory maps show moderate, high and severe hazard areas and include descriptions of and threats from each type of geological hazard.

- **Section III Revised Flood Hazard Inventory** is based on existing FEMA maps of the 100-year floodplain. This inventory will likely change based on planned updates and improved data sources.

- **Section IV Revised Wildfire Hazard Inventory** is based on the McMinnville NHMP, the Yamhill County CWPP, and application of the *Oregon Wildfire Risk Explorer* to the McMinnville study area.

- **Section V Natural Hazards – Cumulative Impacts Analysis** is based on Winterbrook's analysis of overlapping natural hazards maps to better understand the spatial relationships that exist among McMinnville's geological, flooding and wildfire hazard areas. The revised Section V incorporates social factors from the Oregon NHMP.

- **Section VI Natural Hazards Management Options** is based on the recommendations of the McMinnville NHMP, the management programs of six comparator communities, the McMinnville-specific natural hazards inventory found in Sections II-V, and recognition of the cumulative impacts of overlapping natural hazards in McMinnville's West Hills and lower elevation drainage systems.

- **Section VII Natural Hazards Program Recommendations** is based on information found in Sections I – VI, comments from the McMinnville planning staff, evaluation of natural hazards programs in other communities, and Winterbrook's experience in preparing natural features management plans. Section VII provides the basis for Zoning Ordinance amendments that include text and maps for Natural Hazard Mitigation and Protection Subdistricts.

I. Natural Hazards Inventory Methods

Information Sources

Winterbrook conducted the McMinnville Natural Hazards Inventory in May and June of 2020 using publicly available sources of hazard information from:

- The Oregon Department of Geology and Mineral Industries (DOGAMI). DOGAMI GIS data is publicly accessible via the Oregon HazVu: Statewide Geohazards Viewer;[5]
- The *McMinnville Addendum to the Yamhill County Natural Hazards Mitigation Plan* (McMinnville MHMP); and
- The *Yamhill County Community Wildfire Protection Plan* (CWPP). Wildfire risk information is available for Oregon regions by using the Oregon Wildfire Risk Explorer.[6]
- Winterbrook amended the natural hazards ranking system to incorporate social indicators found in the 2020 Oregon NHMP in April-May 2021.

The McMinnville Natural Hazards Study Area

Working with Senior Planner Tom Schauer in 2020, Winterbrook reviewed GIS data sources for the Natural Hazards Study Area, which included two subareas shown in Figure I-1: (a) land within the McMinnville 2019 UGB and (b) land within UGB expansion study areas – generally 1.5 miles from the 2019 UGB.[7]

Mappable Hazards

In this study, Winterbrook focused on natural hazards within the 2021 McMinnville UGB that are (a) mappable using GIS technology (i.e., flood plains, steep slopes, soils subject to earthquake liquefaction and shaking, landslide areas, and areas susceptible to wildfires) and (b) classified in the McMinnville NHMP (which in turn is based on DOGAMI and CWPP information) as having moderate and high risk. Such areas are potentially subject to natural hazards overlay zones that include development standards to mitigate impacts.

The draft McMinnville NHMP describes and ranks McMinnville's vulnerability to the following mappable natural hazards[8] and suggests hazard-specific mitigation measures for moderate and high-risk hazards:

- Earthquake hazards (crustal and Cascadia Subduction Zone);
- Landslide and erosion hazards (including steep slopes);
- Flood hazards; and
- Wildfire hazards.

Working with City staff, Winterbrook prepared GIS base maps for moderate and high-risk natural hazard areas. As noted above, this analysis relies primarily on statewide mapping information provided by DOGAMI for flood

[5] https://www.oregongeology.org/hazvu/
[6] https://tools.oregonexplorer.info/OE_HtmlViewer/index.html?viewer=wildfireplanning
[7] The 1.5 mile study area represents an area of mutual interest between the city and county and area that was under consideration by the City of McMinnville for potential UGB expansion in 2020.
[8] Since only mappable hazards are subject to overlay zoning overlay regulations, Winterbrook did not consider drought, severe weather and volcanic events in this inventory.

and geological hazards. To map wildfire hazards we used the Oregon Wildfire Risk Explorer to generate several wildfire risks maps.

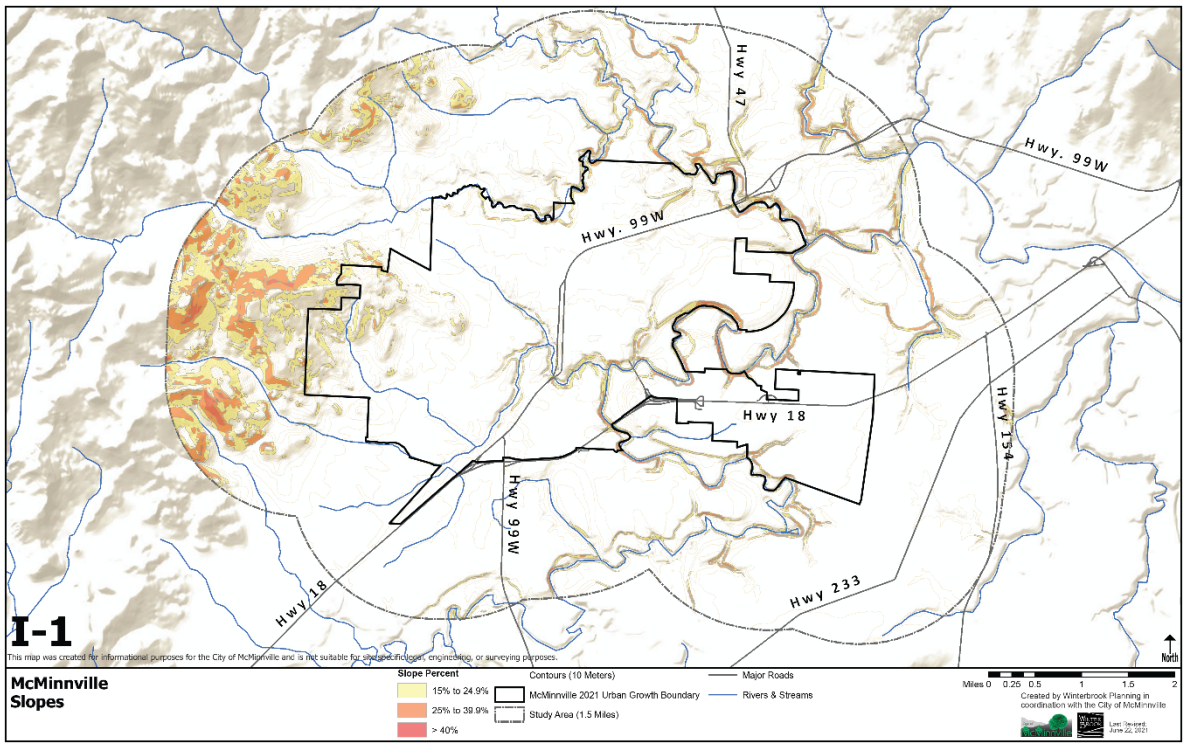
As discussed in Section V of this report, Winterbrook also prepared several composite hazard maps that show spatial relationships among geological, flooding and wildfire hazards. In 2021, Winterbrook worked with Associate Planner Jamie Fleckenstein to incorporate social indicators from the Oregon NHMP into this revised 2021 inventory.

Figure I-1 shows three slope categories within the McMinnville study area that are related to the location and severity of geological, flood (stream bank erosion) and wildfire hazards.

McMinnville Slope Hazards

Steep slopes are associated with wildfire hazards and geological hazards. Slope percentage is used by many jurisdictions to determine whether geological studies should be required prior to development. Slopes of 25% or greater are considered "unbuildable" when preparing buildable lands inventories under state housing rules. (OAR 660-008-005 Definitions) The City of McMinnville also requires sprinkler systems to reduce fire hazards on slopes of 15% or greater. For these reasons, slope percentage is considered in several of the composite maps found in the natural hazards inventory. Steep slopes are found mostly in McMinnville's West Hills and define the banks of the study area streams and rivers.

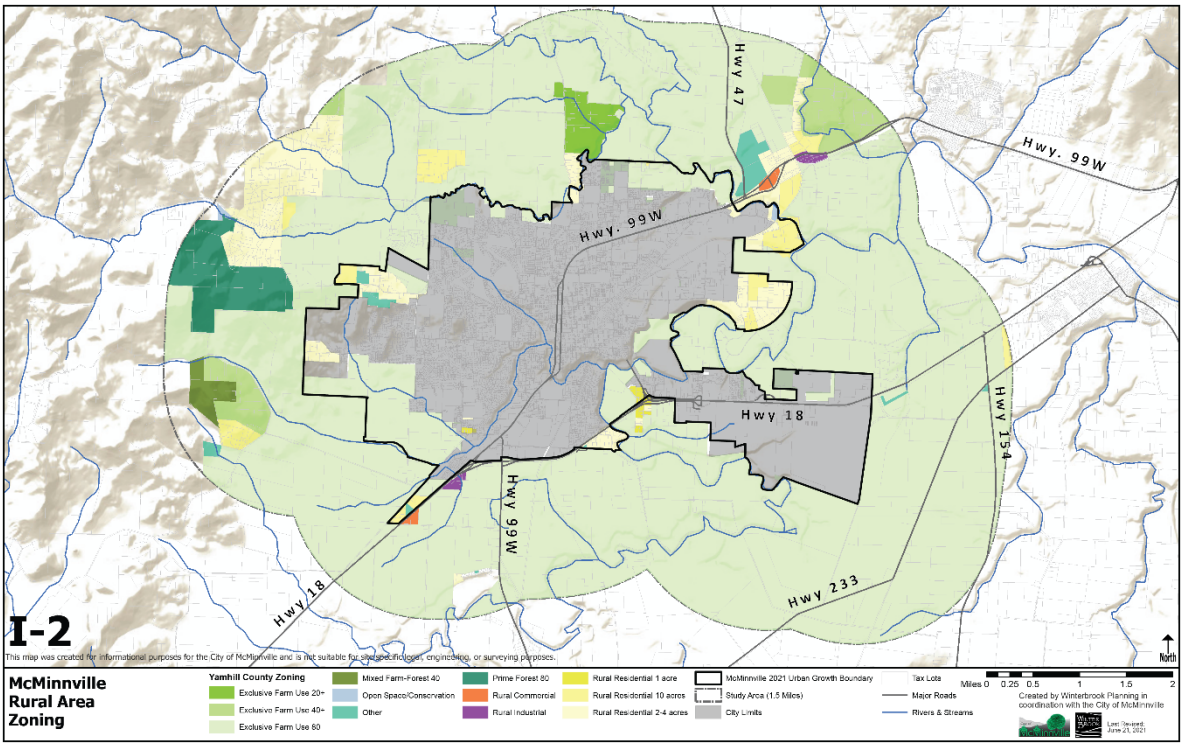
Figure I-1 McMinnville 2021 UGB and Study Areas Slopes



Yamhill County Zoning

Figure I-2 shows Yamhill County zoning outside the McMinnville City Limits. County zoning partially determines land use and density outside the 2021 McMinnville UGB – which in turn is related to hazard vulnerability to life and property. A larger scale and more readable zoning map is available in 11" X 17" format. In Yamhill County land that is zoned for forest use (the Agricultural Forest and Forestry Districts) in the forested West Hills is subject to specific wildfire protection (fuel reduction zones, fire suppression and access) standards for new structures.

Figure I-2 County Zoning within Study Area



II. Geological Hazards Inventory

Section II considers landslide, earthquake and steep slope hazards both individually and in combination.

Data Sources

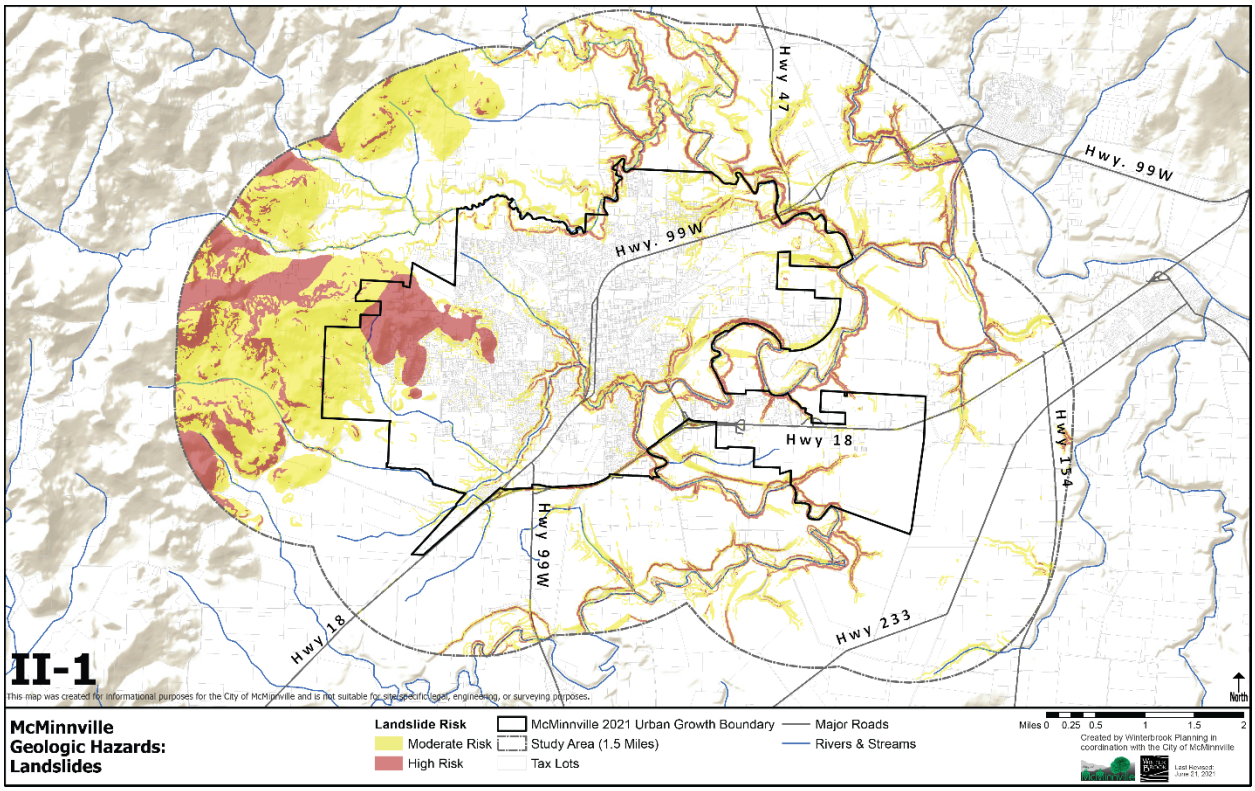
Winterbrook relied on landslide and slope hazard maps available on DOGAMI's Statewide Geohazards Viewer to identify potential landslide and slope hazards:

- DOGAMI: Landslide susceptibility
- DOGAMI: Landslide inventory - Statewide Landslide Information Database for Oregon (SLIDO)
- DOGAMI LIDAR: Hillshade and slope
- DOGAMI: Earthquake shaking and liquefaction risks

Landslide Hazard

The McMinnville NHMP describes and maps areas with moderate and high landslide hazard susceptibility based on the HazVu: Statewide Geohazards Viewer (DOGAMI). Figure II-1 shows moderate and high-risk landslide areas within the study area.

Figure II-1 Geological Hazards: Moderate and High Landslide Risk



Areas that are moderately and highly prone to landslides are found predominately in McMinnville's West Hills and secondarily along Baker Creek, Berry Creek, Cozine Creek and South Yamhill River embankments. Two high-risk landslide areas are located in McMinnville's West Hills: at lower elevation in the western extension of the UGB and at higher elevation in the western extension of the study area. Note that a large band of moderate landslide risk separates these two high-risk areas.

Earthquake Hazards

The McMinnville NHMP and this inventory consider and map the effects of two types of earthquakes:

1. Crustal earthquakes that could emanate from nearby faults and/or zones; and
2. The Cascade Subduction Zone Earthquake.

Potential earthquake hazards include two related and mappable effects: shaking from ground motion and liquefaction due to porous or "soft" soils can result from both types of earthquakes. Earthquakes can also trigger landslides in areas shown on Figure II-1.

Crustal and Cascadia Subduction Zone Earthquakes

The Yamhill County Multi-Jurisdictional NHMP describes the two types of earthquakes and explains their hazardous effects as follows (pp. 4-10 and 4-11):

> *"An earthquake is a sudden motion or trembling of the earth produced by the rupture of rocks due to stresses beyond the rocks' elastic limits. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. The most common effect of earthquakes is ground motion, or the vibration or shaking of the ground during an earthquake.*
>
> *The severity of ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. Ground motion causes waves in the earth's interior, also known as seismic waves, and along the earth's surface, known as surface waves. …*
>
> *In addition to ground motion, several secondary hazards can occur from earthquakes, such as surface faulting. Surface faulting is the differential movement of two sides of a fault at the earth's surface. Displacement along faults, both in terms of length and width, varies but can be significant (up to 20 feet), as can the length of the surface rupture (up to 200 miles). Surface faulting can cause severe damage to linear structures, such as railways, highways, pipelines and tunnels.*
>
> *Earthquake-related ground failure due to liquefaction is another secondary hazard. Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its structure, and causing some of the empty spaces between granules to collapse. Porewater pressure may also increase sufficiently to cause the soil to briefly become fluid.*
>
> *Liquefaction causes lateral spreads (horizontal movements of commonly 10 to 15 feet, but up to 100 feet), flow failures (massive flows of soil, typically hundreds of feet, but up to 12 miles) and loss of bearing strength (soil deformations causing structures to settle or tip). Liquefaction can cause severe damage to property.*
>
> *The most common earthquakes that occur in Oregon are crustal, intraplate or great subduction earthquakes. Yamhill County is most susceptible to deep intraplate and subduction zone earthquakes. These are described as follows:*
>
> ***Crustal earthquakes**: These generally occur along shallow faults near the earth's surface. Crustal earthquakes make up the majority of earthquakes in the Cascadia area (western Washington, Oregon and northwestern California) and are a result of fault movement in the Earth's surface. These shallow earthquakes are usually less than 7.5 magnitude and strong shaking generally lasts 20 to 60 seconds. Aftershocks, as well as tsunamis and landslides, are anticipated after a crustal event. The Mount Angel Fault is located approximately 15 miles from Yamhill County, and is responsible for the 5.7 magnitude Spring Break Quake in 1993.*

> ***Great subduction earthquakes****: occur offshore of the Oregon and Washington Coasts along the Cascadia Subduction Zone. This zone is the result of the Juan de Fuca plate being pushed under the North American plate. Earthquakes centered along this zone can be as great as 9.0 magnitude. Geologic evidence demonstrates approximately 500 years between events with the last significant event on January 26, 1700. Aftershocks up to 7.0 magnitude are anticipated to cause additional damage. Liquefaction, tsunamis and landslides are expected as a result of a great subduction earthquake.*

Quoting from the DOGAMI website https://www.oregongeology.org/earthquakes/earthquakehome.htm

> *Earthquake hazards have been recognized as one of the major natural hazards in Oregon since the late 1980s, a result of the geologic research to identify and characterize the Cascadia subduction zone and crustal faults. The March 1993 Scotts Mills earthquake (M5.6) and the September 1993 Klamath Falls earthquakes (M5.9 and M6.0) demonstrated the potential hazards of crustal earthquakes in Oregon.*

According to the McMinnville NHMP (p. MA-37)

> *Within the Northern Willamette Valley that includes Yamhill County, two potential faults and/or zones can generate high-magnitude earthquakes. These include the Cascadia Subduction Zone and the Gales Creek-Newberg-Mt. Angel Structural Zone (including the Newberg Fault).*

Crustal earthquakes can cause serious local damage, as recognized in the Yamhill County Natural Hazard Mitigation Plan (2014):

> *Crustal earthquakes also occur in the Willamette valley although with smaller expected magnitudes (M 5.0-M 7.0). Although these earthquakes are expected to be much smaller than a Cascadia Subduction Zone earthquake, they are more likely to occur close to population centers and are capable of causing severe shaking and damage in localized areas.*

Although crustal earthquakes are more common than great subduction earthquakes (see https://pnsn.org/earthquakes/recent), the Cascadia Subduction Zone (CSZ or Cascadia) earthquake is certain to occur sometime in the future and could occur at any time.

Again, according to the McMinnville NHMP:

> ***Cascadia Subduction Zone***
>
> *The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year. Scientists have found evidence that 11 large, tsunami-producing earthquakes have occurred off the Pacific Northwest coast in the past 6,000 years. These earthquakes took place roughly between 300 and 5,400 years ago with an average occurrence interval of about 510 years. The most recent of these large earthquakes took place in approximately 1700 A.D.*

The city's proximity to the Cascadia Subduction Zone, potential slope instability, and the prevalence of certain soils subject to liquefaction, and amplification combine to give the City a high-risk profile. Due to the expected pattern of damage resulting from a CSZ event, the Oregon Resilience Plan divides the State into four distinct zones, and places McMinnville within the "Valley Zone" (Valley Zone, from the summit of the Coast Range to the summit of the Cascades). Within the Northwest Oregon region, damage, and shaking is expected to be strong, and widespread - an event will be disruptive to daily life, and commerce, and the main priority is expected to be restoring services to business and residents.

Quoting from the Cascadia Playbook (Oregon Office of Emergency Management, 2018):

> *A Cascadia event is based on the threat of a catastrophic magnitude 9.0 Subduction Zone earthquake and resultant tsunami. Coastal counties will experience a devastating tsunami on top of severe ground shaking (up to five minutes). Shaking intensity will be less in the I-5 Corridor and Southern, Central, and Eastern Oregon, but older buildings may incur extended damage. Expected Impacts*
>
> - *Ground shaking for 4-6 minutes causing massive critical infrastructure damage*
> - *Liquefaction and landslides causing disruption of transportation routes*
> - *Tsunami inundation to coastal areas with as little as 15 minutes warning*
> - *Up to 25,000 fatalities resulting from combined effects of earthquakes and tsunami*
> - *Tens of thousands of buildings and structures destroyed or damaged*
> - *Tens of thousands of people in need of shelter because of destroyed or damaged households*
> - *$30+ billion in economic loss*

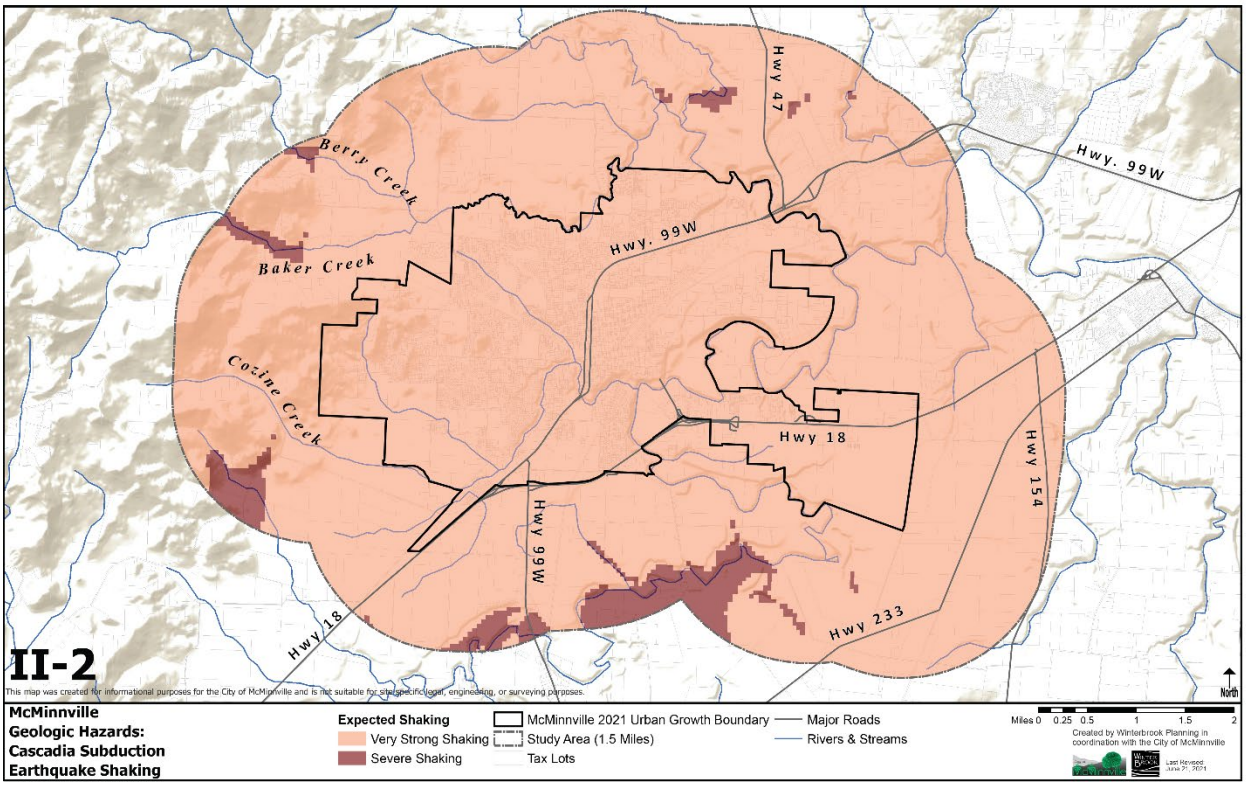
Although coastal communities will experience greater impacts than Willamette Valley communities, McMinnville's location at the base of the Coast Range makes it highly susceptible to Cascadia Subduction Zone earthquake damage. **Because the impacts from the Cascadia Subduction Zone earthquake would be so severe, Winterbrook's analysis and recommendations focus on impacts from the Cascadia event.**

Earthquake Shaking Hazard Areas

DOGAMI provides data and maps for both crustal and subduction earthquakes. Since great subduction earthquakes are more severe and has a high probability of occurring occur over the next 50 years, Winterbrook used DOGAMI subduction earthquake mapping for this analysis.

Figure II-2 shows areas susceptible to "very strong" and "severe" shaking that could result from the Cascadia Subduction Zone Earthquake. As with a crustal earthquake, most of the study area will experience strong shaking in the subduction earthquake. Severe shaking areas include the upper Baker Creek valley and south of Cozine Creek as well as a large area southwest of the airport. The amended UGB did not include severe shaking areas.

Figure II-2 Geological Hazards: Cascadia Subduction Earthquake Shaking Risk

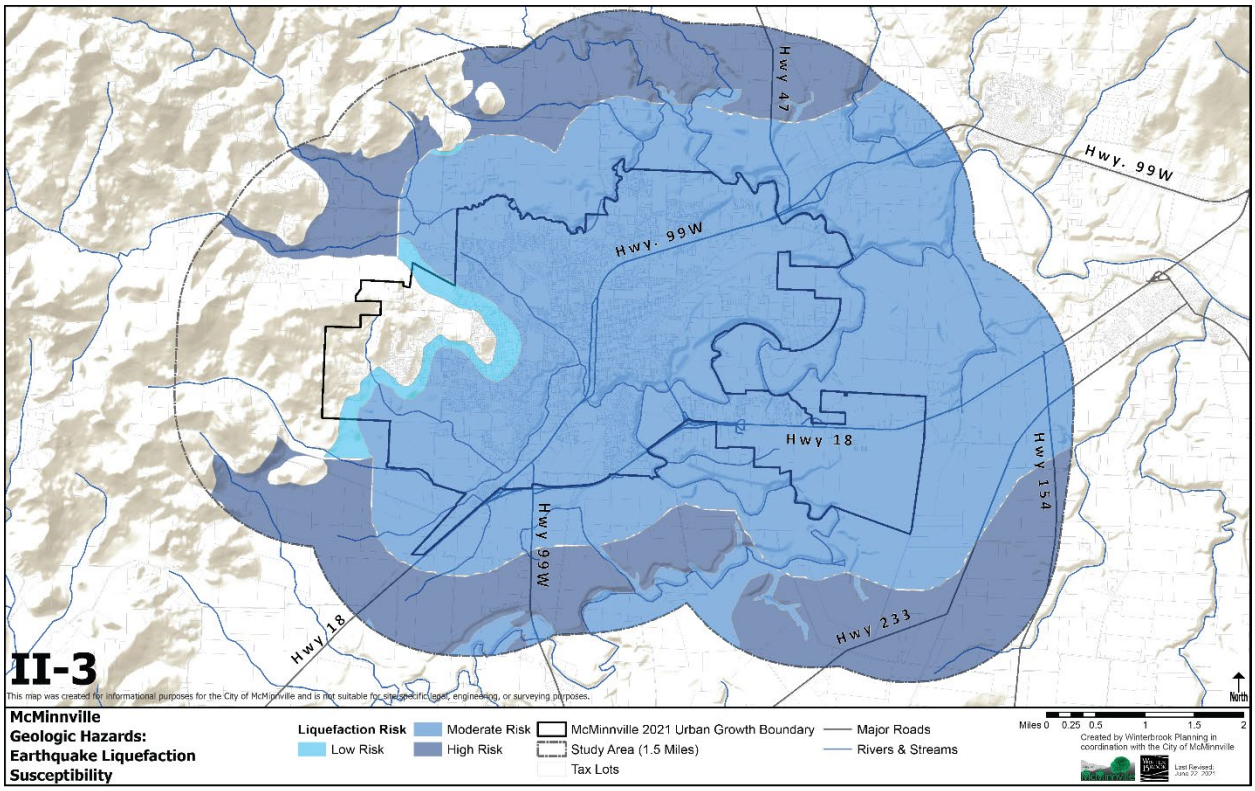


Earthquake Liquefaction Hazard Areas

Liquefaction occurs from both types of earthquakes and results from soft soils. All land within the existing UGB is subject to moderate liquefaction. Areas of moderate liquefaction extend about 0.5 miles north and south of the UGB, and much further beyond the study area boundary east of the UGB.

- Areas of high liquefaction susceptibility extend from 0.5 to 0.75 miles from the UGB to the north and south. The amended UGB did not include high liquefaction areas.
- The West Hills are characterized by high bedrock and less alluvial soil are not subject to liquefaction – except along stream corridors.
- Note the large moderate liquefaction area that extends into the high liquefaction areas southwest of the airport – at the bottom center of Figure II-4. This nodal extension is mapped as a severe shaking area on Figure II-3 which shows the relationship between moderate and high liquefaction and shaking areas.

Figure II-3 Geological Hazards: Earthquake Liquefaction Susceptibility

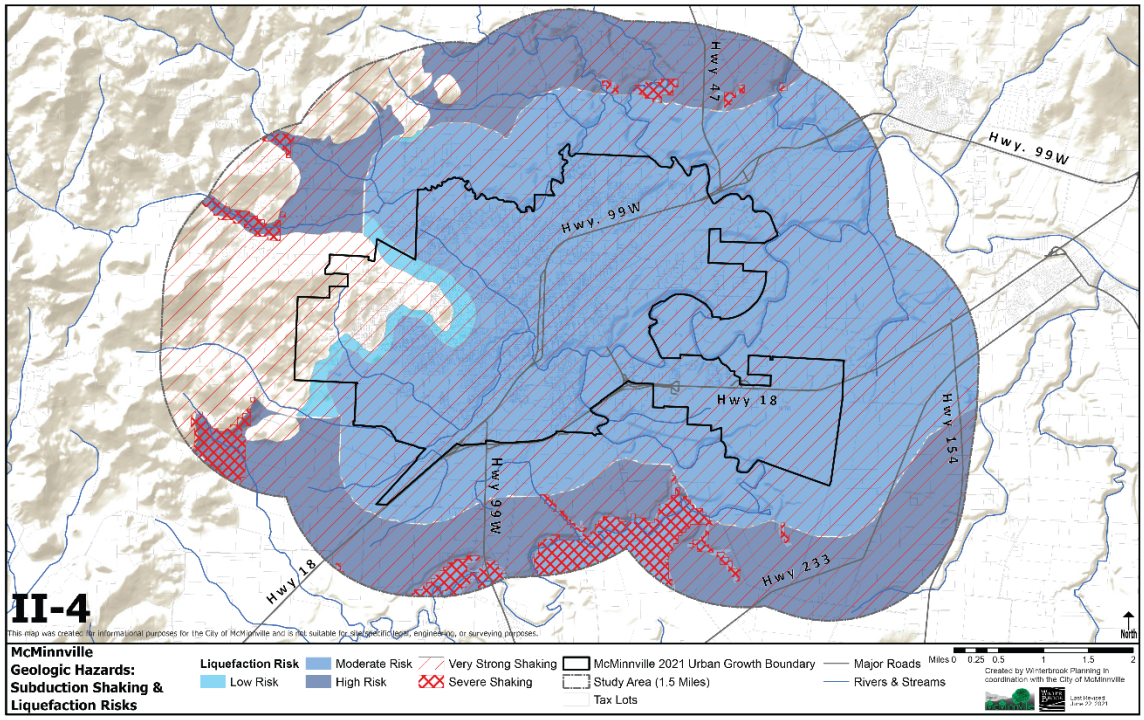


Combined Earthquake Liquefaction and Shaking Hazard Areas

Figure II-4 shows the relationship that exists among high and moderate liquefaction areas and "very strong" and "severe" earthquake shaking areas.

- Note that land within and extending outside the amended McMinnville UGB has moderate liquefaction risk and "very strong" shaking risk.
- However, a large band of high liquefaction risk and "severe" shaking risk is appears the northern and southern areas at a more or less uninform distance from the edge of the study area.
- Finally, note the severe shaking area southwest of the Airport (largely in the South Yamhill River floodplain) shown on Figure II-4 that corresponds roughly with the moderate liquefaction area shown on Figure II-3 above.
- The amended UGB did not include areas with severe shaking risk or high liquefaction risk.

Figure II-4 Geological Hazard: Cascadia Subduction Earthquake Liquefaction and Shaking Risk



Composite Geological Risk Maps

Figure II-5 is a composite map showing slopes of 15% or greater, landslide hazard and earthquake liquefaction hazard areas. We offer the following observations:

- Note the inverse relationship that exists between (a) steep slopes and the moderate to high-risk earthquake risks in the West Hills and (b) moderate to high risk earthquake liquefaction areas to the north, south and east of the UGB.
- Moderate risk geological hazard areas (relatively flat areas with moderate liquefaction hazards and low landslide hazards) are found to the north and south of the UGB. High risk earthquake liquefaction areas are located further to the northwest and south.
- In weighing geological hazard risks, it may be more advisable to direct future urban growth to areas that have areas with moderate geological hazard risk rather than higher risk areas.
- As shown more clearly on 11" by 17" maps accompanying this report, there is rough correlation between 15% and greater slopes and landslide hazard areas, indicating that slope percentage should not be the only threshold for requiring erosion control geotechnical studies.

Figure II-5 Geological Hazards Map: Landslide, Liquefaction, Subduction Shaking and Slopes

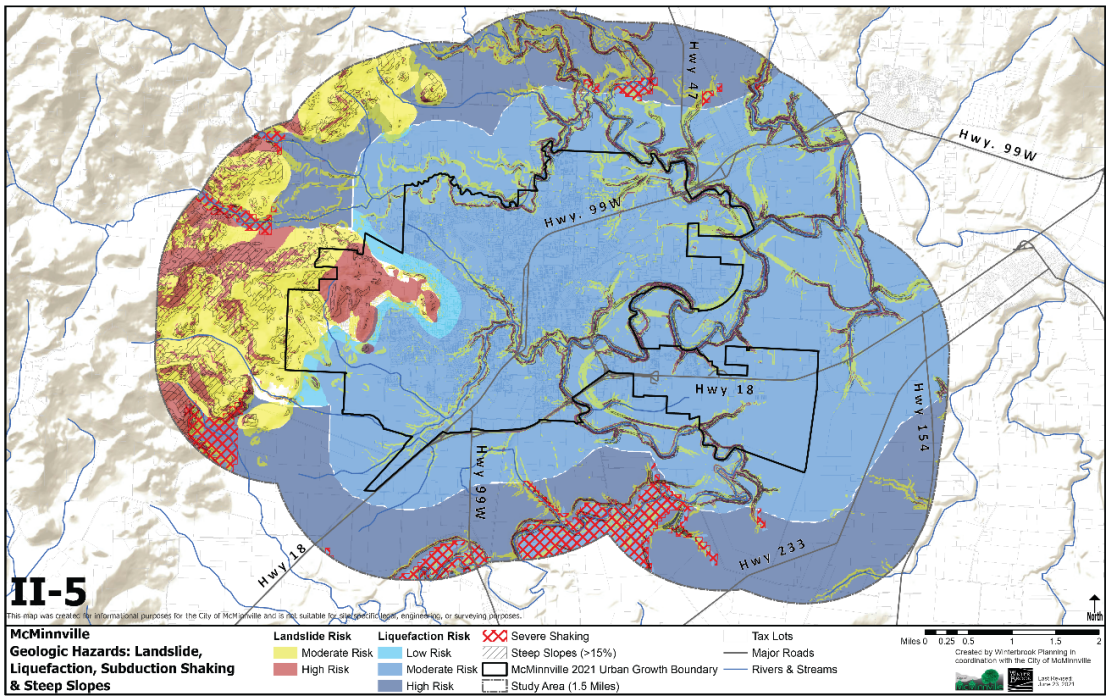
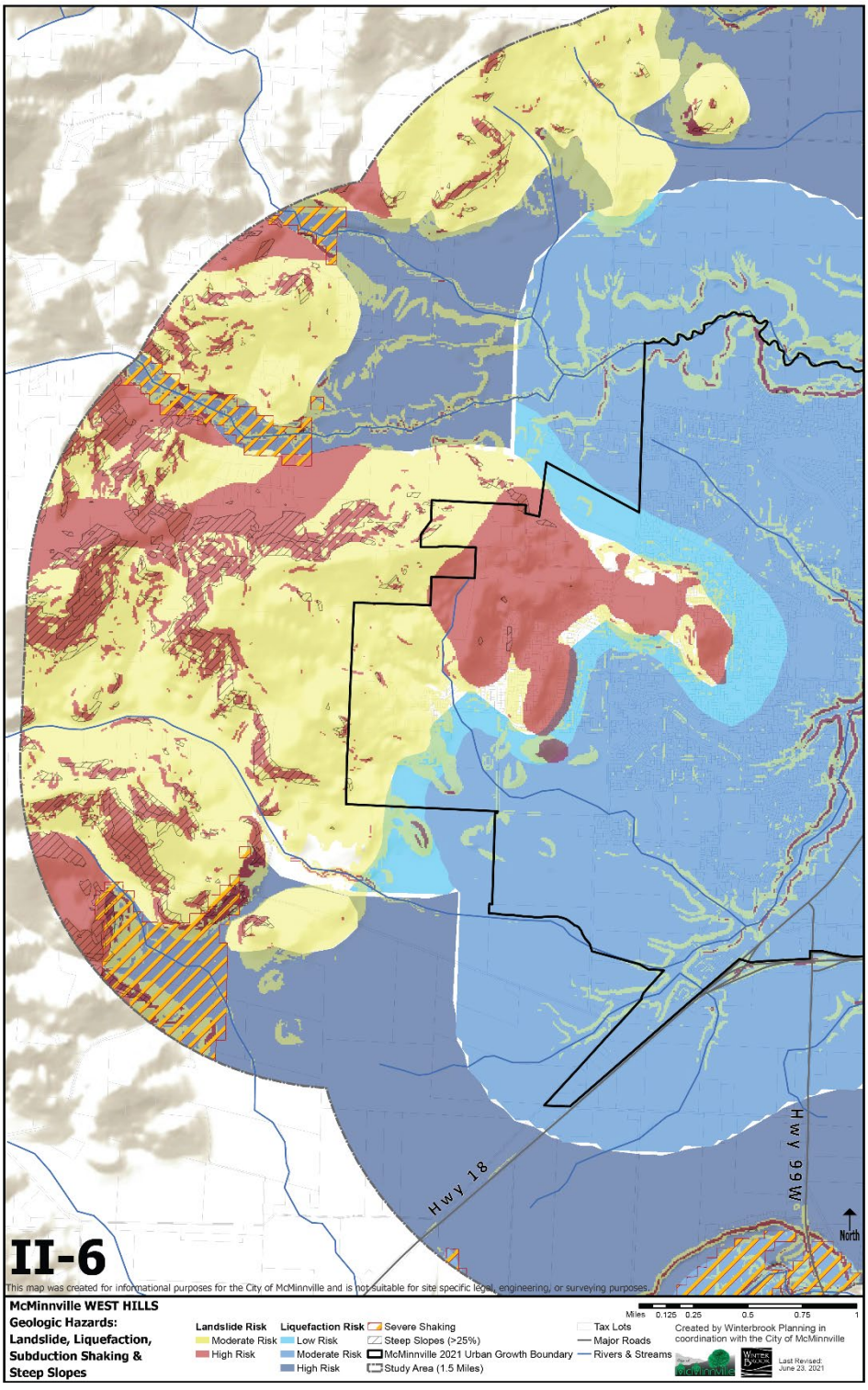


Figure II-6 zooms in on the West Hills to look more closely at the relationships among slopes of 25% and greater, moderate and high-risk landslide liquefactions areas, severe risk landslide shaking areas, and moderate to high risk landslide areas.

Please note the following:

- The high correlation between slopes of 25% or greater and high risk landslide areas.
- The inverse relationship between (a) moderate to high risk landslide areas and (b) high risk liquefaction areas and severe earthquake shaking areas north and south of the West Hills.

Figure II-6 West Hills Geological Map: Steep Slope, Severe Shaking, Landslide and Liquefaction Risk

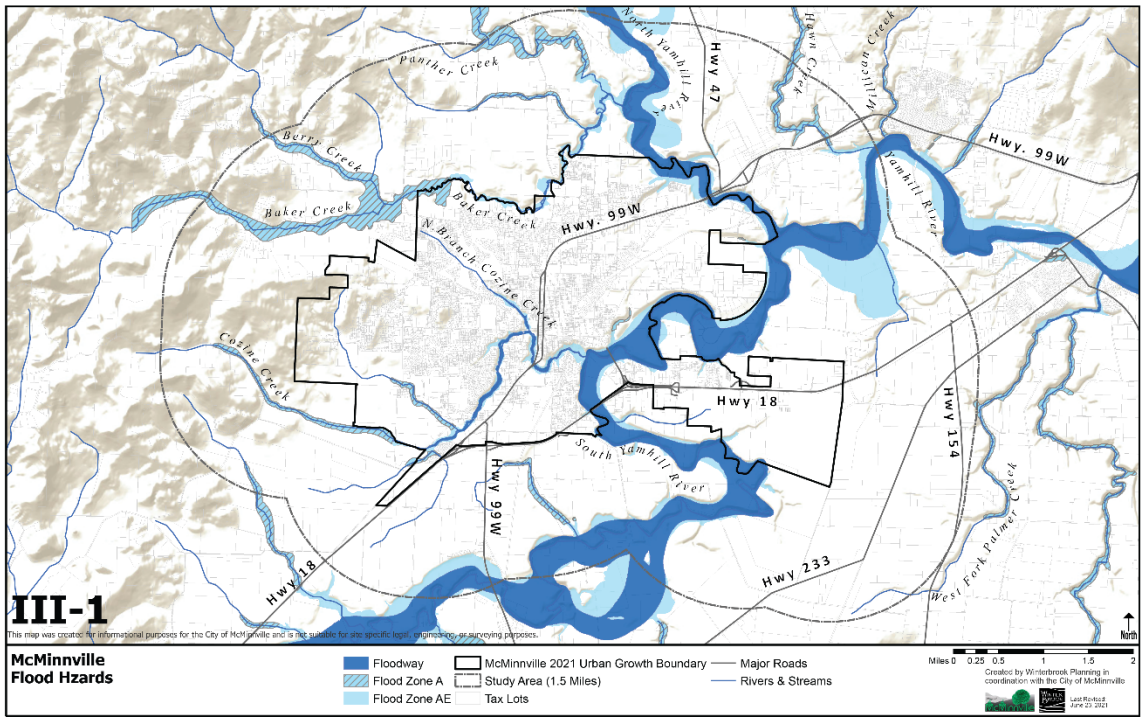


III. Flood Hazard Inventory

Flood Hazard GIS Data Sources and Analysis

Winterbrook relied on flood hazard maps available on DOGAMI's Statewide Geohazards Viewer found in the McMinnville NHMP. Flood hazards include: Zone A, Zone AE, and the Floodway.[9] As shown on Figure III-1, flood hazards within the study area are associated with Cozine Creek, Berry Creek, Baker Creek and the Yamhill River.

Figure III-1 Flood Hazard Map



[9] Winterbrook's understanding is FIRM maps were used as the basis for DOGAMI's statewide inventory.

FEMA Floodway Definition/Description:

A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Communities must regulate development in these floodways to ensure that there are no increases in upstream flood elevations. For streams and other watercourses where FEMA has provided Base Flood Elevations (BFEs), but no floodway has been designated, the community must review floodplain development on a case-by-case basis to ensure that increases in water surface elevations do not occur or identify the need to adopt a floodway if adequate information is available.

About Flood Zones: Flood hazard areas identified on the Flood Insurance Rate Map are identified as a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs on Figure III-1 are labeled Floodway, Zone A and Zone AE. Zone A indicates areas where base flood elevations (BFE) have not been fully determined. Additional work is required to define the BFEs in in the upper reaches of the Baker, Cozine and Berry Creek floodplains.

IV. Wildfire Hazard Inventory

Wildfire GIS Data Sources

The **Yamhill County Community Wildfire Protection Plan** (CWPP, Revised 2015) identifies two Wildland Urban Interface Zones (WUI Zones). Zone I is comprised mostly of commercial forest land in West Yamhill County. Zone II includes agricultural land, urban areas and forested uplands in East Yamhill County. The McMinnville study area is mostly within Zone II which includes agricultural, forest and rural residential land within the McMinnville study area.

According to the CCWP, Zone II has a "high" county-wide wildfire hazard ranking. However, some Zone II areas are more at risk than others. For example, rural residential forested slopes near the Newberg and McMinnville urban areas are more at risk than unpopulated agricultural land.

The McMinnville NHMP (pp. MA 50-52) summarizes key findings in the Yamhill County CWPP:

> *The location, and extent of a wildland fire vary depending on fuel, topography, and weather conditions. Weather, and urbanization conditions are primarily at cause for the hazard level. McMinnville has not experienced a wildfire within City limits. The city is surrounded by developed land, rivers, and/or irrigated agricultural land. However, some wooded areas are a concern in the case of a wildfire event, particularly in the western part of the city.*

Oregon Wildfire Risk Explorer

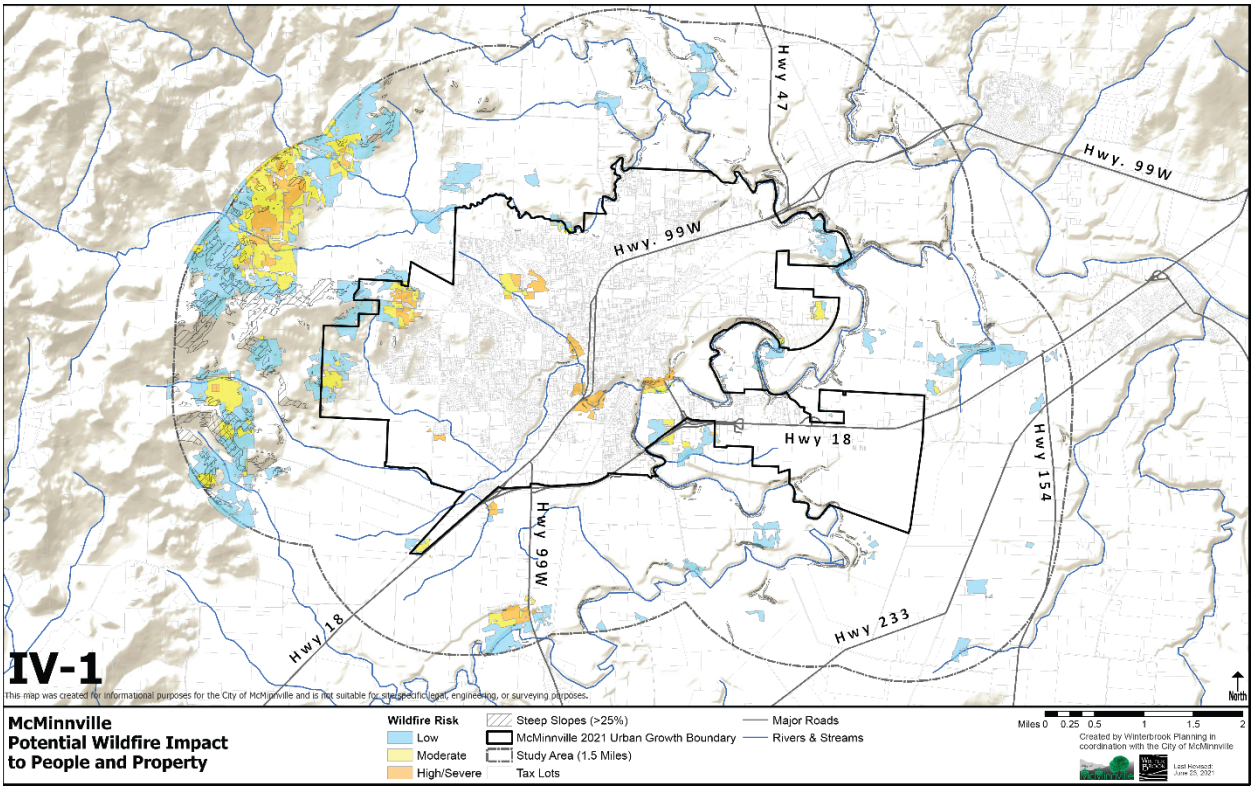
The OWRE Advanced Report provides wildfire risk information for a customized area of interest to support Community Wildfire Protection Plans (CWPPs), Natural Hazard Mitigation Plans (NHMPs), and fuels reduction and restoration treatments in wildfire-prone areas in Oregon. The OWRE Advanced Report provides landscape context of the current fire environment and fire history.

Using the *Oregon Wildfire Risk Explorer*, Winterbrook prepared an *Advanced Report* showing wildfire hazards to potential structures and the people who live and work in them. Figure IV-1 shows Wildfire Hazard to Potential Structures and the general location of McMinnville RFPD Risk Reduction Projects. According to the Risk Explorer:

> ***Hazard to Potential Structures:*** *Hazard to potential structures depicts the hazard to hypothetical structures in any area if a wildfire were to occur. This differs from Potential Impacts, as those estimates consider only where people and property currently exist. In contrast, this layer maps hazard to hypothetical structures across all directly exposed (burnable), and indirectly exposed (within 150 meters of burnable fuel) areas in Oregon. As with the Potential Impacts layers, the data layer does not take into account wildfire probability, it only shows exposure and susceptibility.*

As indicated in the description above, moderate and high risk areas shown on Figure IV-1 correlate highly with rural residential areas shown on Figure I-2. Moderate risk wildfire areas continue into the western extension of the McMinnville UGB. Please note that "Potential Impacts to People and Property" focuses on areas with structures. Thus, areas without structures (mainly in steeply sloped areas) have a lower risk to people and property. Finally, as discussed in Section V, hillsides denuded by recent wildfires are more susceptible to erosion and slide hazards due to loss of stabilizing vegetation.

Figure IV-1 Wildfire – Potential Impacts to People and Property with Steep Slopes



As a reminder, Figure I-2 in Section I of this report shows Yamhill County Zoning in the Natural Hazards Study Area. Yamhill County has effective fire prevention standards for structures in County Prime Forest and Mixed Forest zones.

V. Natural Hazards – Multi-Hazard Cumulative Impacts

Composite Geological Hazard Mapping Approach

The draft McMinnville NHMP mapped and evaluated a series of natural hazards more or less in isolation. The location and severity of each was mapped and assessed and potential community impacts and mitigation measures were identified.

As noted in Section I of this report, Winterbrook used GIS maps and information found in the McMinnville NHMP but focused on mappable natural hazards that exist within the McMinnville study area.

Section II went a step further than the McMinnville NHMP by evaluating relationships that exist among overlapping geological hazards. Figures II-3 through II-5 show overlapping geological hazard maps and a brief analysis of what these overlaps mean in terms of natural hazards planning.

The following composite natural hazards map (Figures V-1 through V-3) show relationships among hazards identified in Section II (Geological), Section III (Flooding) and Section IV (Wildfire).

Figure V-1 on the following page shows that land within the McMinnville UGB – with two notable exceptions – is relatively free of high risk areas. The two exceptions within the UGB include:

1. Flood hazards generally; and
2. High landslide risk hazard areas in the lower slopes of the West Hills and adjacent floodplains.

Most of the land within the amended UGB has moderate (as opposed to high) earthquake liquefaction susceptibility. Hazard conditions outside the UGB tell a different story. The moderate risk liquefaction area extends beyond the amended UGB to the north, northwest, southwest and south for about 0.5 to 0.75 miles before reaching high liquefaction risk areas.

Figure V-1 Composite Map: Landslide, Liquefaction and Flood Hazards

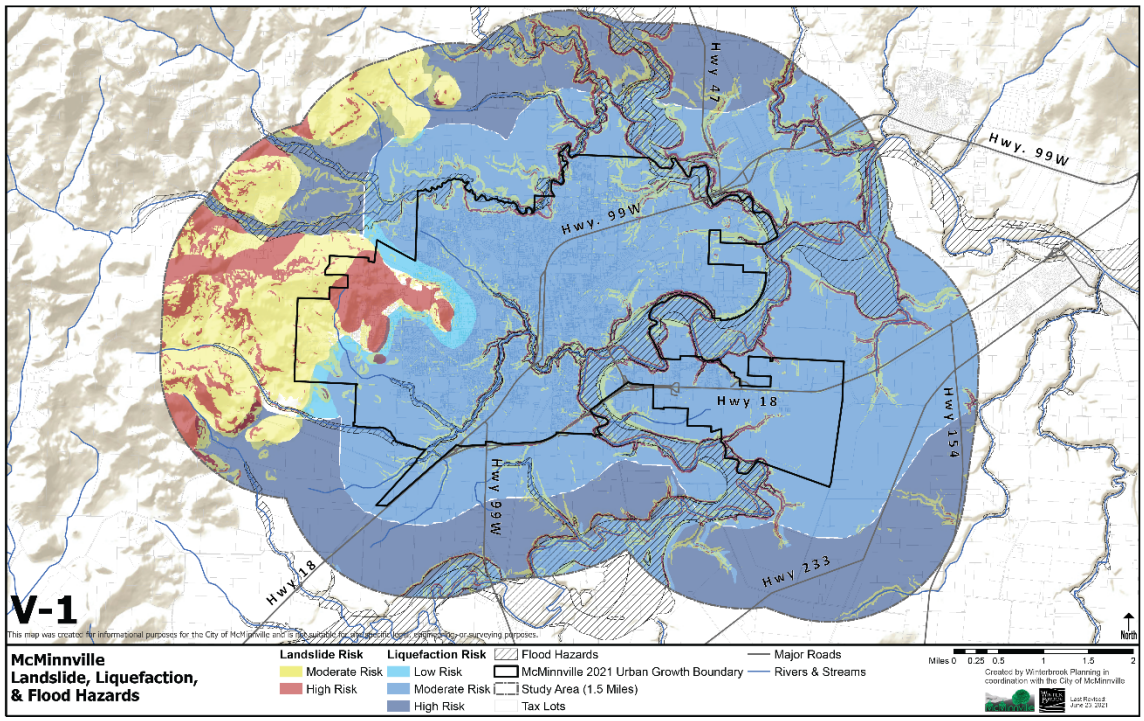


Figure V-1 shows the highest risk areas in the Natural Hazards Study Areas by mapping slopes of 25% and greater; high risk landslide, earthquake liquefaction; and the 100-year floodplain.

- This composite map makes it clear that land within the amended McMinnville UGB is relatively free of high-to-severe hazard risks.
- With the exception of the area served by Highway 18, the UGB has been largely defined by Baker and Cozine Creeks and the North and South Yamhill Rivers. Floodplains in these areas are protected from most types of development by City floodplain regulations.
- The primary high-to-severe hazards within the UGB include high risk landslide hazards in the West Hills and adjacent to protected floodplains.
- As discussed in Section II of this report (and shown on Figure II-4), high risk earthquake liquefaction and severe shaking areas are clearly defined to the west and south of the amended UGB.

To the west of the UGB, there is a moderate risk landslide area that extends to the West Hills' steeply sloped and high landslide risk areas.

Figure V-2 focuses on the West Hills in relation to lowlands west of Hwy 99W. Please note the following:

- The large high risk landslide area within the amended UGB is separated by a moderate risk landslide area just outside the UGB before reaching another band of high-risk landslide area.
- The West Hills are flanked to the north and south by high-risk earthquake liquefaction areas. As described earlier in Section II, Figure II-4 shows severe risk landslide shaking areas in Baker Creek and Cozine Creek alluvial plains.

Figure V-2 Composite Map: West Hill Slope, Landslide, High Earthquake Liquefaction Risk

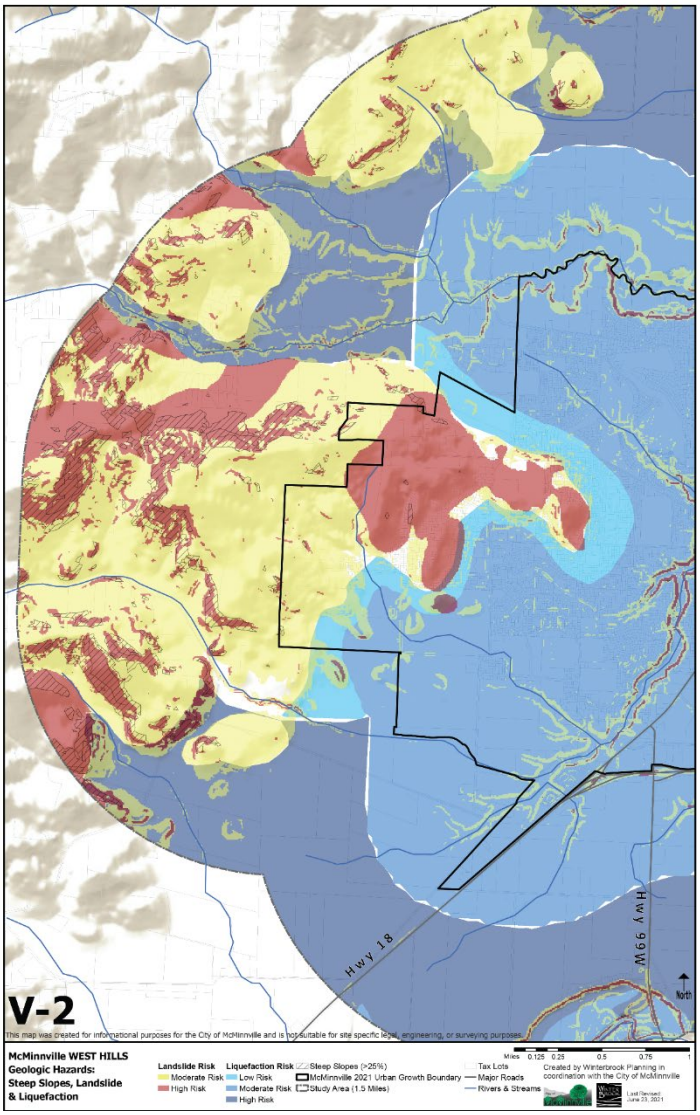


Figure V-3 shows the eastern (Valley) portion of McMinnville study area generally east of Highway 99W. The primary natural hazard in this area is flooding. Landslide hazard areas define the outer boundaries of floodplains that are subject to bank failure in high water conditions or in a major earthquake event. Note the areas of high-risk earthquake liquefaction hazards to the north and south of the UGB. In addition, the Yamhill River floodplain

southwest of the McMinnville Airport contains a severe earthquake shaking hazard area as shown in Section II on Figure II-4.

Figure V-3 Composite Map: East Valley Floodplain, Landslide and Liquefaction Risk

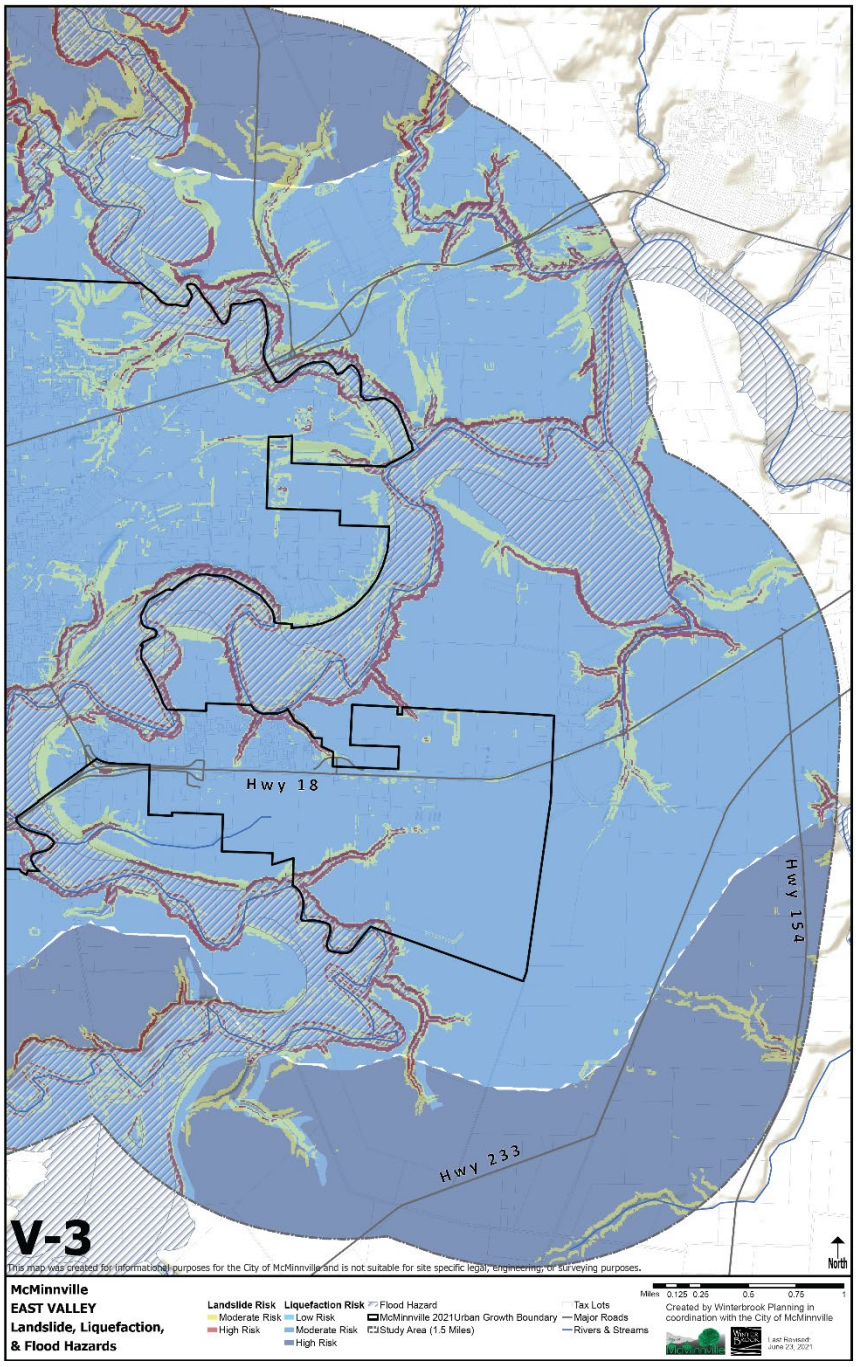


Figure V-4 combines wildfire, landslide and flood hazard risks and focuses on the West Hills and low-lying areas west of Highway 99W.

- Overall, there is some correlation between wildfire and landslide risk Higher wildfire risk areas correlate more with rural residential development in forested hillside areas with limited access.
- Note that low wildfire risk areas correlate with undeveloped areas because wildfire risk focus on impacts to people and structures. Thus, yellow areas shown on Figure V-4 still have wildfire risk – but are unlikely to damage structures; however, the danger still exists from larger scale wildfires.
- Note also that high wildfire risks occur near vegetated stream and river corridors.
- Finally, the CWPP and the McMinnville Fire Department has observed (6/24/20) that grasslands and grain crop areas are also susceptible to wildfire risk.

Figure V-4 Composite Map: West Hills Wildfire, Landslide, and Floodplain Risk

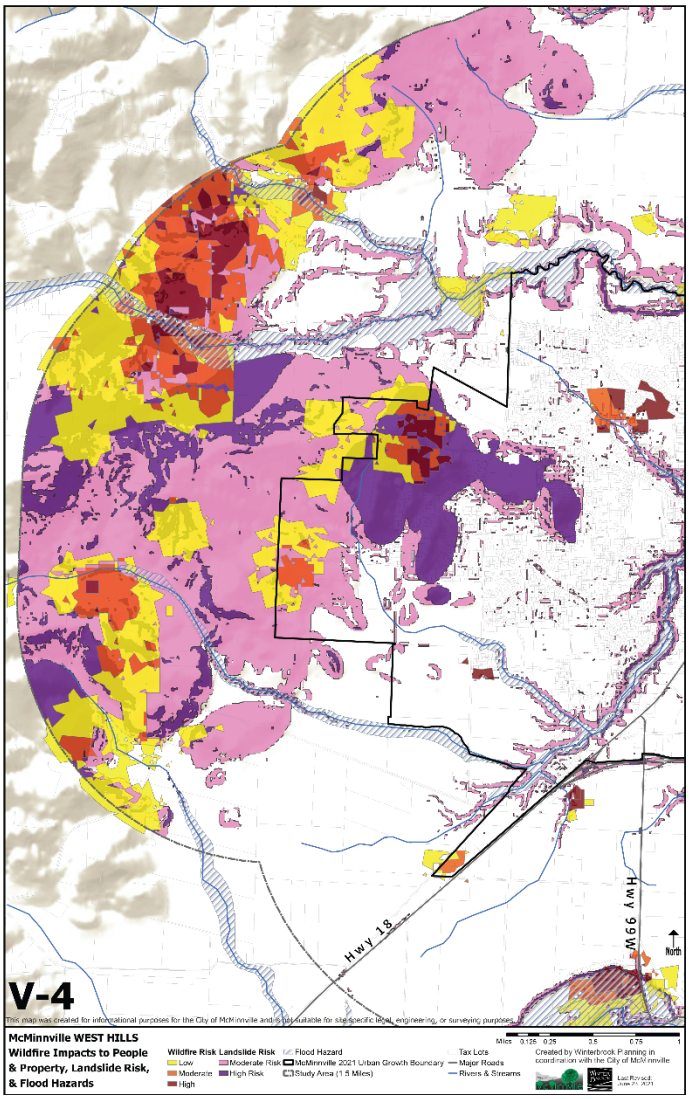
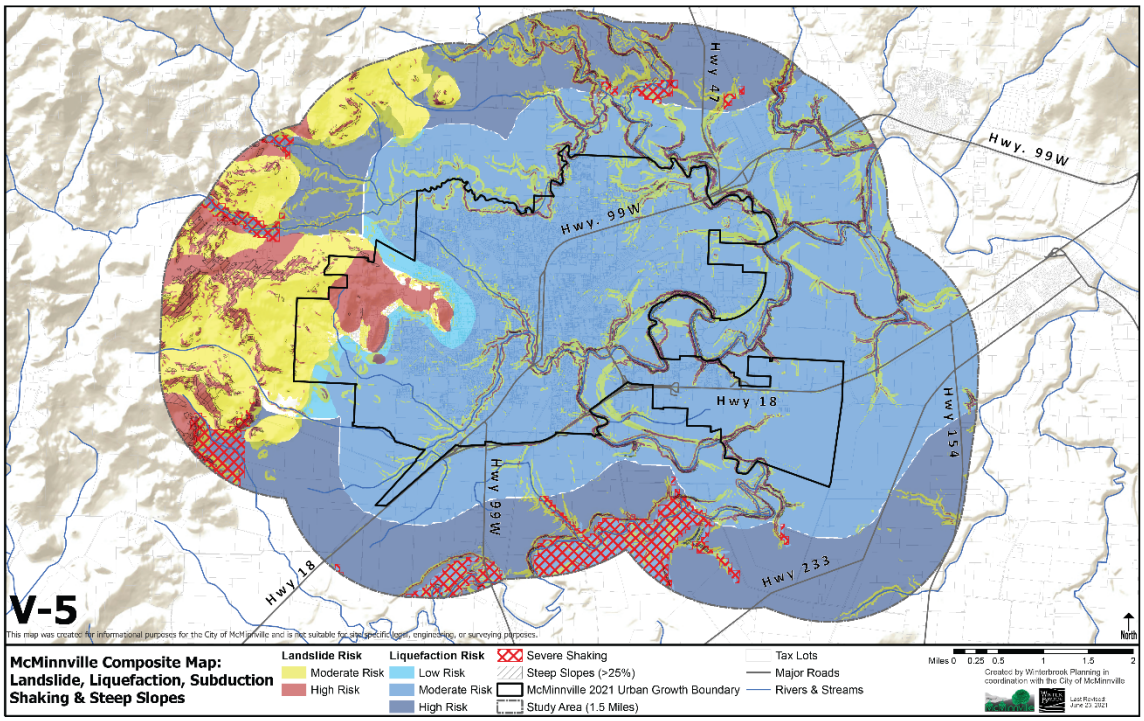


Figure V-5 combines geological hazard risks including landslides, earthquake shaking and liquefaction, and slopes of 25% or greater. As discussed in Section II of this report:

- The entire amended McMinnville UGB is subject to moderate earthquake liquefaction risk and (as shown on Figure II-4) very strong earthquake shaking risk.
- There is a band of moderate geological risk area that extends north, northwest, west, southeast, and south of the amended UGB for about a half to three-fourths of a mile.
- Beyond this relatively buildable band, there are:
    - High risk earthquake liquefaction hazard areas (to the north and south;
    - Severe risk earthquake shaking hazards to the south, southwest and northwest; and
    - High risk landslide areas with slopes of 25% or greater to the west.

Figure V-5 Composite Map: Landslide, Liquefaction, Subduction Shaking, and Steep Slopes



Combined Hazard Risk Summary

Figures II-4 through II-VI and Figures V-1 through V-5 show interrelationships among geological and flooding hazards. In summary:

- Although there is a correlation between slopes of 25% and greater and high landslide risk in the West Hills and therefore should be considered unbuildable – consistent with the findings of the 2020 Buildable Lands Inventory.
- Geological hazards (landslide and earthquake liquefaction / shaking) exist on slopes of 15% or less. Therefore, the composite geological maps are a better indicator than steep slopes to determine where geological studies and erosion control measures should be required.
- The composite geological and flooding maps show landslide hazards at the edge of most floodplains and the presence of high earthquake liquefaction and severe shaking hazards within all floodplain boundaries. Even relatively minor flood events can trigger bank failures in such areas. Since a major subduction

earthquake would undoubtedly trigger bank failures next to the 100-year floodplain, extending protection to adjacent landslide areas makes sense.

- The composite geological maps show an inverse relationship between earthquake risk on the one hand and landslide risk in the West Hills. Except for floodplain areas in the West Hills and Valley, earthquake liquefaction and shaking risk areas tend to end where landslide areas begin.
- Together, these high to severe geological hazards form a continuous ring located from 0.5 to 0.75 miles to the southeast, south, southwest, west, northwest and north of the amended McMinnville UGB.
- The composite wildfire, geological and flooding maps show that moderate and high wildfire hazards are associated with forested rural residential development in the West Hills. Wildfire hazard areas sometimes occur in moderate-to-steep slope hazard areas and vegetated floodplains throughout the study area.

The overlaps that exist among these types of hazards and supports the concept of a combined natural hazards overlay comprehensive plan map designation. As discussed in Section VII of this report, Winterbrook recommends the assignment of one of two natural hazard subdistricts based on combined natural hazard risk scores in specific geographic subareas. The methods for drawing subdistrict maps are discussed in Chapter VII.

VI. Natural Hazard Program Management Options

In Sections II-IV of this report, we inventoried three types of natural hazards:

- Geological Hazards (including landslides and subduction and crustal earthquakes)
- Flooding Hazards
- Wildfire Hazards

In Section V we analyzed the McMinnville NHMP and the Yamhill County CWPP and determined that substantial overlaps exist among these three general types of hazards.

In Section VI we analyze management options for each of these natural hazard categories based on:

1. Recommendations found in the draft 2020 McMinnville NHMP.
2. Management practices in six comparator cities described in Appendix 1.
3. Advanced natural hazards inventory work related to geological and wildfire hazards found in the draft McMinnville NHMP and Winterbrook's experience in preparing comprehensive natural hazard inventories and management programs for other Oregon jurisdictions.

McMinnville NHMP Multi-Hazard Action Items

The McMinnville NHMP includes five relevant "multi-hazard" recommendations that will be followed for each of the three natural hazard categories:

Table VI.1 McMinnville NHMP Recommended Natural Hazard Mitigation Measures

Policy Number	Policy Text	Evaluation
Multi-Hazard #2	Incorporate mitigation planning provisions into community planning processes such as comprehensive, capital improvement, land use, transportation plans, zoning ordinances, community development practices, etc.	**Section VII includes recommendations for amending the McMinnville Comprehensive Plan to include natural hazard inventory and management policies proposed to be implemented in the McMinnville Zoning Ordinance.**
Multi-Hazard #7	Develop and maintain GIS mapped hazard areas within the UGB.	**Sections II-V include a series of geological, flooding and wildfire hazards maps within the McMinnville UGB and within potential UGB expansion areas.**
Multi-Hazard #10	Establish a process to coordinate with state and Federal agencies to maintain up-to-date hazard data, maps and assessments.	**Section VII includes a policy to coordinate with state and federal agencies through periodic updates of the McMinnville NHMP and the Yamhill County CWPP.**

Policy Number	Policy Text	Evaluation
Multi-Hazard #11	Limit (e.g., reduced density, etc.) or prohibit development in high hazard areas.	**Section VI considers options to limit development in medium and high hazard areas – and to prohibit development in some high hazard areas. Section VII includes recommendations for a consolidated Natural Hazards Overlay District that limits or prohibits development depending on the hazard level and cumulative hazard impacts. As proposed, the NHOD would be applied to land within the McMinnville study area to guide future urban growth. Application of the NHOD outside the McMinnville City Limits would require an amendment to the Urban Growth Management Agreement (UGMA) between the City and Yamhill County.**
Multi-Hazard #12	Encourage mitigation practices in developments at risk to natural hazards.	**Section VI considers mitigation options and Section VII recommends specific mitigation measures.**

Geological Hazards

The text below considers (a) McMinnville NHMP geological hazards measures / action items and (b) geological hazards mitigation programs (comprehensive plan policies and development standards) in six comparator cities.

McMinnville NHMP – Recommended Measures

The draft McMinnville NHMP (Table MA-1 McMinnville Action Items) proposes specific mitigation measures / action items for each moderate-to-high risk geological hazards.

Table VI.2 McMinnville NHMP Recommended Geological Hazard Measures

Policy Number	Policy Text	Evaluation
Earthquake #5	Educate property owners about structural and non-structural retrofitting of vulnerable buildings and encourage retrofit.	**Section VII includes a policy recommendation to this effect.**
Earthquake #6	Develop an outreach program to educate and encourage homeowners and tenants to	**Section VII includes a policy recommendation to this effect.**

Policy Number	Policy Text	Evaluation
	secure furnishings, storage cabinets, and utilities to prevent injuries and damage.	
Landslide #1	Utilize technology, geologic resources and other available data (such as DOGAMI LIDAR data) to identify and map potential areas for landslides - high, moderate and low.	**Sections I -V of this report include available GIS data sources and tools to identify and map potential landslide areas – both singularly and in combination with earthquake, wildfire and flooding hazards.**
Landslide #2	Develop a process to limit future development in high landslide potential areas - permitting, geotechnical review, soil stabilization techniques, etc.	**Section VI considers procedural and substantive options to limit development in moderate and high hazard areas. Section VII includes recommendations for a consolidated Natural Hazards Overlay District that includes permitting, geotechnical review and stabilization measures for landslide and earthquake areas.**
Landslide #3	Development in steeply sloped areas (greater than 15%) should be subject to specific development requirements to control erosion.	**Sections II-V identify the importance of steep slopes in determining the location of severity of landslide and wildfire hazards. Section VI considers the use of a 15% slope threshold for triggering specific erosion control requirements. Section VII includes recommendations for a consolidated Natural Hazards Overlay District that includes slope and other geological triggers for erosion control review. This overlay could be applied within the Natural Hazards Study Area to evaluate risk when considering future UGB expansion areas.**
Landslide #4	Complete an inventory of locations where critical facilities, other buildings and infrastructure may be subject to landslides.	**Section VII includes a policy recommendation to this effect.**

Best Geological Hazard Mitigation Practices in Comparator Cities

Winterbrook has provided a detailed summary of comprehensive plan policies and mitigation practices for geological hazards (steep slopes, earthquakes, and landslides) in six comparator communities (Ashland, Grants Pass, Albany, Newberg, Redmond and Bend). **Please see Appendix 1 Best Natural Hazard Mitigation Practices in Comparator Cities.**

The cities of Albany, Ashland, Bend, Grants Pass and Newberg limit development in mapped steeply sloped areas.

- The threshold for application of hillside steep slope standards varies from 12 – 25% slope.
- Most of these cities require the implementation of recommendations from geological studies and erosion control measures prior to development.
- Some cities require reduced residential densities based on slope percentage (slope density ratio).
- Some cities allow for density transfer – often through the planned unit development process.

Table VI.3 summarizes geological hazard management practices by city.

Table VI.3 Summary of Geological Hazard Management Practices by City

City	Percent Slope Threshold	Geotechnical Report Required?	Slope Density Ratio?	Density Transfer Allowed?	Earthquake Impacts Regulated by Zoning?	Other Standards
Albany	12%	Yes	Yes	Yes	Not directly – may be addressed in geotechnical report	Yes – see below
Ashland	25%	Yes	Yes	Yes	Not directly – may be addressed in required geotechnical report	Yes – see below
Bend	10-20%	Maybe	No	Yes	Not directly – may be addressed if geotechnical report required	Yes – see below
Grants Pass	15%	Yes	No	No	Not directly – may be addressed in required geotechnical report	Yes- see below
Newberg	20%	Maybe	No	No	Not directly – may be addressed in required geotechnical report	Yes – see below
Redmond	N/A	Maybe	No	No	Not directly – may be addressed if geotechnical report required	Yes – see below
McMinnville	N/A	No	No	No	No	Yes – see Section VII of this report

- **Albany has several measures that guide implementation of hillside development policies:**
  - Measure 6. Require proposed hillside development to provide for the preservation and, if possible, enhancement of the site's natural features during all phases of the design and development process. This includes consideration of soils, vegetation, hydrology, wildlife habitat, views and visual orientation, both from the site and to the site, and unusual or unique natural features.
  - Measure 10. Require that all excavation and fill work and structural foundation work be approved by a registered engineer whenever the slope is greater than 30% or where there exists probability of geologic hazards such as perched water tables and/or landslide areas. Where appropriate, such approval shall include information from a soils engineer and engineering geologist.

- Measure 11. Increase minimum lot sizes (or minimum lot area per unit) on hillside areas, allowing higher densities for cluster developments approved through Planned Development as outlined in the following table:

Slope %	Standard Dev.	(RS 6.5 Lot)	PUD Devel.	(RS 6.5 Avg)
13 to 20	1.25	8125	1.00	6500
21 to 25	1.50	9750	1.15	7475
26 to 30	2.00	13000	1.40	9100
31 above	3.00	19500	2.00	13000

Albany's **Hillside Overlay District** applies to mapped areas of the city (primarily West Albany) with 12% or greater slope. Allowed density decreases as slope increases; however, density transfer is allowed through the PUD process when 20% of the site remains open space. Cut and fill activity should be minimized. A licensed engineer must approve excavation plans and foundation design.

- **Ashland's Physical and Environmental Constraints Overlay Zone** (Chapter 18.62) applies to mapped "Flood Plain Corridor Land, Hillside Land (slopes $\geq$ 25%, or Severe Constraint Land (including wildfire lands, floodways and slopes $\geq$ 35%)).
  - *"The above classifications are cumulative in their effect and, if a parcel of land falls under two or more classifications, it shall be subject to the regulations of each classification. Those restrictions applied shall pertain only to those portions of the land being developed and not necessarily to the whole parcel."*
  - Geotechnical engineering studies are required for development on slopes of 25% or greater.
  - Slopes $\geq$ 35% are considered unbuildable (maximum of 1 unit per acre provided geotechnical report recommendations are followed). No new lots may be created on such slopes. Hazardous or unstable areas of the site must be avoided.
  - The maximum cut slope height is 15 feet and the maximum fill slope height is 20 feet.
  - Trees must be protected based on an arborist report and must consider fire protection plan requirements in designated wildfire areas.

  On-site density transfer is allowed from non-buildable to buildable areas of the site (contiguous land under common ownership). The maximum allowable density on buildable areas of the site is twice the allowable density in the underlying zoning district.

- **Bend** maps and regulates development on "**sensitive lands"** which include both Goal 7 natural hazards and Goal 5 natural resources. Natural hazards included in the definition of "sensitive lands" include slopes of 10% or greater and land within the 100-year floodplain.
  - The Bend Comprehensive Plan includes policies to (a) coordinate with DOGAMI to identify fault lines in the community and (b) to review development "on slopes in excess of 10 percent shall give full consideration to the natural contours, drainage patterns, and vegetative features of the site to protect against temporary and long-term erosion." However, we could find no specific development standards to implement these policies.
  - Although the Bend Development Code defines steep slopes as 10% or greater (BDC 16.05.060), the threshold for requiring grading and erosion control permits (and possibly engineering reports) is slopes of 20% or greater. As part of grading permit review, the city "may" require an

engineering or geologist report if "the City determines that special circumstances warrant such information."
    - Minimum densities are determined after excluding "sensitive lands." (BDC 2.1.600) However, density transfer is allowed from land with slopes of 25% or greater to buildable areas on the same site if "sensitive lands" are protected by a conservation easement or dedication. There do not appear to be any restrictions on the amount of density that can be transferred.

- **Grants Pass** evaluated soil types for erosion and shrink-swell potential. The comprehensive plan identified slopes greater than 15 percent on the Slope Hazards map and found that development on slopes between 15 and 35 percent should be reviewed by a soils scientist and an engineer, while development on slopes over 35 percent should require geotechnical review.
    - The Grants Pass Slope Hazard District encompasses areas of at least 15 percent slope and contains two classes of slope: Class A (between 15 and 25 percent) and Class B (greater than 25 percent).
    - Development within the Slope Hazard District requires a Steep Slope Development Report and Grading and Erosion Plans. Class A documentation requires a licensed engineer stamp, while Class B requires a geotechnical engineer or engineering geologist stamp.
    - Restrictions on development within the Slope Hazard District include erosion control measures and retaining wall height is limited to 20 feet.

- **Newberg's Comprehensive Plan** identifies "hazardous areas" as areas with slopes 20 percent or greater, or with geological limitations. Development may be permitted in hazardous areas if consistent with sound engineering and planning criteria.
    - Comprehensive Plan Policy 5 states that "In other areas of potential or existing hazards, development shall be subject to special conditions. Reasonable development may be permitted in these areas when it can be shown, based on sound engineering and planning criteria, that adverse impacts can be mitigated and kept to a minimum. Hazardous areas shall be considered to be lands with slopes 20% or greater, potential and existing slide areas, fault areas, and areas with severe soil limitations."
    - **The Newberg Development Code** does not appear to have specific geological development regulations. However, sloped areas are regulated by Title 13 Public Utilities and Services, which "may require" additional erosion and sediment controls on slopes of 10 percent or more.

- **Redmond's Comprehensive Plan** includes several policies related to natural hazards:
    - Policy 4. Natural hazards that could result from new developments, such as runoff from paving projects and soil slippage due to weak foundation soils, shall be considered, evaluated and provided for.
    - Redmond's **Urbanization Study** indicates that "Redmond has no land that is unavailable for development due to physical constraints: steep slopes, wetlands, riparian areas, and floodplains. This is due to the city's location and the fact that the dry canyon is mostly in public ownership."
    - However, evaluation of hazards may be required during site and design review:

  The Redmond Development Code (RDC 8.3030) states that "Special Studies, Investigations and Reports. Special studies, investigations and reports may be required to ensure that the proposed development of a particular site does not adversely affect the surrounding community, does not create hazardous

conditions for persons or improvements on the site. These may include traffic impact studies impact of contaminated soils, soil conditions, flooding of waters and excessive storm water runoff, tree preservation, and other concerns of the development's impact on adjacent properties or public facilities."

Flood Hazards

The text below considers (a) McMinnville MHMP flood hazard measures / action items and (b) flood hazard mitigation programs (comprehensive plan policies and development standards) in six comparator cities.

McMinnville NHMP – Recommended Flood Hazard Measures

The draft McMinnville NHMP (Table MA-1 McMinnville Action Items) proposes specific mitigation measures / action items for flood hazards.

Table VI.4 McMinnville NHMP – Evaluation of Recommended Flood Hazard Mitigation Measures

Policy Number	Policy Text	Evaluation
Flood #1	Ensure continued compliance in the National Flood Insurance Program (NFIP) through enforcement of local floodplain management ordinances.	**The Comprehensive Plan already includes a policy to this effect.**
Flood #2	Work with FEMA to update FIRMs. Request DOGAMI debris flow and lidar data be included in FIRM updates. Use the updated FIRMS for land use and mitigation planning.	**Section III Flood Hazard Inventory relies on existing flood hazard information. Section VII includes a policy to update the flood hazard inventory in the future based on DOGAMI debris flow and lidar data.**
Flood #4	Develop and maintain GIS mapped critical facility inventory for all structures and residential and commercial buildings located within 100-year and 500-year floodplains.	**Section VII includes a policy recommendation to this effect.**

Best Flood Hazard Management Practices in Comparator Cities

As discussed below, the cities of Albany, Ashland, Bend, Grants Pass, Newberg and Redmond all limit development in mapped floodplain areas. **Please see Appendix 1 Best Natural Hazard Mitigation Practices in Comparator Cities** for a more detailed discussion of comprehensive plan policies and development regulations that limit development in flood hazard areas.

Table VI.5

City	Prohibit Development in Floodway	Limit Development in Flood Plain	Density Transfer Allowed?	Erosion Control Measures?	Other Standards
Albany	Yes	Yes	Yes	Yes	Yes – see below
Ashland	Yes	Yes	Yes	Yes	Yes – see below
Bend	Yes	Yes	No	Yes	Yes – see below
Grants Pass	Yes	Yes	No	No	Yes- see below
Newberg	Yes	Yes	No	No	Yes – see below
Redmond	Yes	Yes	No	No	Yes – see below
McMinnville	Yes	Yes	No	No	Yes – see Section VII of this report

Summary of Flood Hazard Management Practices by City

The Cities of Ashland, Albany, Bend, Grants Pass, Newberg and Redmond all have standard floodplain management programs consistent with FEMA standards. Development, if allowed within the 100-year floodplain, must be constructed one foot above flood level and meet other standards.

- Ashland's **Physical and Environmental Constraints Overlay Zone** regulates natural hazards as well as natural resources. Ashland integrates its floodplain management program with related natural resources (wetland and stream corridor) programs. In addition to designated floodplain areas, Ashland limits development in areas that have historically experienced flooding.
- Bend defines the 100-year floodplain as **"sensitive lands"** along with other natural hazards and natural resources (including wetlands and stream corridors).

Wildfire Hazards

Most comparator cities do not have reregulate wildfire hazards in their land use regulations. The text below considers (a) McMinnville NHMP wildfire hazard measures / action items and (b) wildfire hazard mitigation programs (comprehensive plan policies and development standards) in six comparator cities.

McMinnville NHMP – Recommended Measures

The draft McMinnville NHMP (Table MA-1 McMinnville Action Items) proposes specific mitigation measures / action items for wildfire hazards.

Table VI.5 McMinnville NHMP – Evaluation of Recommended Flood Hazard Mitigation Measures

Policy Number	Policy Text	Evaluation
Wildfire #1	Coordinate wildfire mitigation action items through the Yamhill County Community Wildfire Protection Plan.	**The CWPP was last revised in 2015. The revised version was considered in this report.**
Wildfire #3	Develop, implement, and enforce vegetation management codes/plans to reduce wildfire risk.	**Section V considers options for vegetation management measures – depending on the location of the wildfire hazard. Section VII includes recommendations for a consolidated Natural Hazards Overlay District that includes vegetation management provisions – again depending on the location of the hazard.**

Best Practices in Comparator Cities

Most comparator cities have participated in county community wildfire protection planning efforts. However, only Ashland has mapped and adopted zoning standards to protect life and property in designated wildlife hazard areas. **Please see Appendix 1 Best Natural Hazard Mitigation Practices in Comparator Cities** for a more detailed discussion of comprehensive plan policies and development regulations that limit development in wildfire hazard areas.

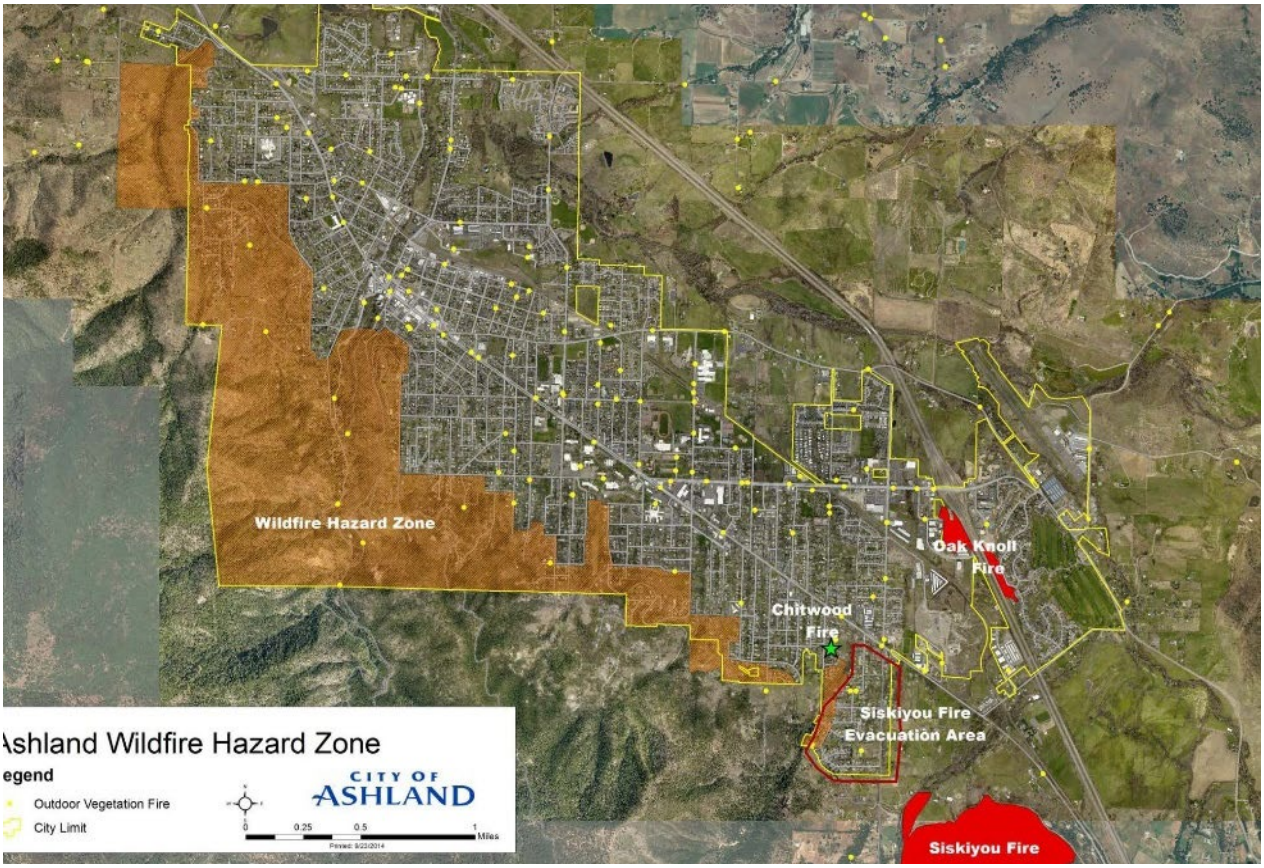
Ashland Wildfire Mitigation Program

Ashland's standards for wildfire mitigation mirror standards required by the Goal 4 administrative rule for structures in commercial forest zones. Ashland maps urban-wildland interface areas and has adopted several policies to protect life, property, and environmental resources:

- Policy 46. Require installation and maintenance of a 40-foot fuel break around each dwelling unit or structure.
- Policy 47. Require multi-dwelling unit developments to install and maintain a perimeter fuel break to prevent fire from entering the development, or to prevent a fire spreading from the development and threatening the Ashland Watershed. (Width of break is dependent on topography, aspect, vegetation, types and steepness of slopes.)
- Policy 48. Where vegetation needs to be maintained for slope stability in a fuel break area, require plantings of fire-resistant or slow-burning plants. The City shall make a list of such plants available to the public. (See "Wildfire Hazard Management in the Urban/Wildland Interface in Southern Oregon," by Claude Curran - May 1978.)
- Policy 49. Require more than one ingress/egress route or road widths wide enough to accommodate incoming fire apparatus and evacuating residents simultaneously in an emergency situation.
- Policy 50. Require roofs to be constructed of fire-resistant materials. Wood shake or shingle roofs are not allowed.

- Policy 51. Encourage road placement to function as fire breaks in urban/wildland interface developments.
- Policy 52. Require chimneys of wood-burning devices to be equipped with spark arrester caps and/or screens.
- Policy 53. Install all new electrical distribution circuits in the urban/wildland interface underground if technically feasible.
- Policy 54. The City shall encourage and support education/ information programs dealing with wildfire hazards in the urban/wildland interface. Information shall be made available through the City Building and Planning Departments to developers and builders wishing to build in the urban/wildland interface.

Figure VI-1 Ashland's Wildfire Hazard Overlay Zone



Ashland integrates natural resource, water quality, and hillside considerations with wildfire mitigation requirements:

- Any development or land division within these areas is required to prepare a Fire Prevention and Control Plan and establish and maintain a fuel modification area (generally crown separation, tall brush removal, tree trimming, etc.).
- "l. Where necessary for erosion control, slope stability, riparian and wetland preservation and enhancement, performing functions considered beneficial in water resource protection, or aesthetic

purposes, existing vegetation may be allowed to be retained consistent with an approved Fire Prevention and Control Plan, or upon written approval of the Staff Advisor in consultation with the Fire Code Official.

- m. Fuel modification in areas which are also classified as Hillside Lands or Water Resource Protection Zones shall be included in the erosion control measures outlined in section 18.3.10.090, Development Standards for Hillside Lands, and management plan for water resource protection zones in section 18.3.11.110.

Composite Approach – Cumulative Impacts

As discussed above, most comparator cities separately regulate flooding with geological hazards (to varying degrees).

- All flood maps and regulations are based on FEMA standards and restrict development within floodplains and floodways.
- Most cities have some variation on hillside development overlay zones triggered by minimum slopes – ranging from 10% to 20%.
- Ashland is unique among comparator cities in have a single multi-hazard overlay zone – supported by a series of hazard-specific maps – that includes development standards for geological, flooding and wildfire hazards.

VII. Natural Hazard Program Recommendations

McMinnville's Existing Natural Hazard Policy Framework

McMinnville Comprehensive Plan (2017)

Winterbrook was able to find two Comprehensive Plan policies directly related to natural hazards:

> ***2.00 The City of McMinnville shall continue to enforce appropriate development controls on lands with identified building constraints, including, but not limited to, excessive slope, limiting soil characteristics, and natural hazards.***
>
> ***9.00 The City of McMinnville shall continue to designate appropriate lands within its corporate imits as "floodplain" to prevent flood induced property damages and to retain and protect natural drainage ways from encroachment by inappropriate uses.***

Policy 71.07 applies the relatively low density R-1 zoning designation to steeply sloped portions of the West Hills:

> ***71.07 The R-1 zoning designation shall be applied to limited areas within the McMinnville urban growth boundary. These include: 1. The steeply sloped portions of the West Hills.***

As noted in the Introduction to this report, McMinnville recently adopted Great Neighborhood Principles that call for consideration of natural features the long-range and land use application planning processes. This report helps to implement these policies.

In addition to these general policies described above, the McMinnville Residential Land Study (ECONorthwest, 2003) excludes slopes of 25% and greater and land within the 100-year floodplain from the buildable lands inventory. It is our understanding that the City requires sprinklers for homes constructed on slopes of 15% or greater.

Otherwise, there do not appear to be any other natural hazard policies in the McMinnville Comprehensive Plan.

McMinnville NHMP Plan Direction

From the McMinnville NHMP (p. MA-13):

> ***Incorporate mitigation planning provisions into community planning processes such as comprehensive, capital improvement, land use, transportation plans, zoning ordinances, community development practices, etc.***
>
> > *Rationale: Comprehensive plans provide the framework for the physical design of a community. They shape overall growth and development while addressing economic, environmental and social issues. Oregon's statewide goals are accomplished through local comprehensive plans. State Law requires local governments to adopt a comprehensive plan and the zoning and land-division ordinances needed to put the plan into action.*
> >
> > *Integration of NHMPs into comprehensive plans and other plans will help to reduce a community's vulnerability to natural hazards, support in mitigation activities, help to*

increase the speed in which action items are implemented and therefore the speed in which communities recover from natural disasters.

Integration of NHMPs into local plans gives the action items identified in the NHMP legal status for guiding local decision-making regarding land use and/ or capital expenditures.

Implementation: Integrate natural hazards information and policies into the comprehensive plan and other plans.

Engage in collaborative planning and integration.

Coordinate future NHMP and comprehensive plan reviews and updates.

Proposed Natural Hazards Comprehensive Plan Amendments

The proposed Comprehensive Plan amendment package would include:

- Natural Hazard Inventory Maps and Descriptions (Sections II-V of this report).
- Natural Hazard Management Policy Framework (a new Chapter XI: Natural Features)
- Natural Hazard Overlay shown on the Comprehensive Plan Map (shown on Figure VII-1)

Proposed McMinnville Zoning Ordinance Amendments

Proposed natural hazards policies call for the adoption of two natural hazards subdistricts (that would overlay the underlying base zones (Residential, Commercial, Industrial, Floodplain and Agricultural Holding). The proposed natural hazards subdistricts are based on a ranking system and policy framework set forth below and would include hazard-specific protection and mitigation standards. The two proposed subdistricts are shown on Map VII-1 and could be referenced in a new Chapter 17.50 Natural Hazard Subdistricts:

- The Natural Hazards Mitigation (NH-M) Subdistrict
- The Natural Hazards Protection (NH-P) Subdistrict

Natural Hazards Inventory

The Natural Hazards Inventory (including text and embedded maps) is included in Sections I-V and VII of this report. Copies of 11" X 17" GIS Inventory maps are provided separately.

Natural Hazards Composite Ranking System

The proposed Natural Hazard composite ranking system is based on two scored variables: the probability of a natural hazard event occurring at a specific location within the 2021 UGB and the vulnerability assessment of the natural hazard event happening. The probability variable is determined by combining the natural hazard inventory maps into a single overlay that describes the combined probability for individual "subareas" (GIS polygons). The vulnerability variable is informed by the 2020 *Oregon Natural Hazards Mitigation Plan* (Oregon NHMP). The terms "subarea" and "polygon" are used interchangeably to describe the composite ranking system. Appendix 2 contains a detailed methodology of the steps used to create the Natural Hazard Overlays.

Natural Hazard Probability

A combined natural hazard probability can be created by assigning a consistent number scoring system and by using a series of GIS manipulations. The number scoring system used in the rank of the probability score is displayed in Table VII.1. The scores were determined in coordination with McMinnville Associate Planner Jamie

Fleckenstein, and they are consistent with the ranking scale used in the Oregon NHMP. The scale runs from 0 to 5, with 0 being no or low probability of the natural hazard event happening at that spatial location and 5 being a high or severe probability of the natural hazard event happening.

- **Natural Hazard Type** shows the types of natural hazards that may be present in any given subarea.
- **Hazard Probability** shows the hazard levels that may be present for each hazard probability in any given subarea.
- **Hazard Probability Score** shows the hazard score for each type and level of hazard probability that may be present in any given subarea.

Table VII.1 Natural Hazard Risk Assessment (2021)

Natural Hazard Type	Hazard Risk Level	Individual Hazard Score
Landslide	Moderate	2
	High	5
Cascadia Subduction Zone Earthquake		
Liquefaction	Moderate	2
	High	5
Shaking	Very Strong	2
	Severe	5
Slope	25%	5
Flood	Floodplain	5
Wildfire	Moderate	2
	High/Severe	5

Natural Hazard Vulnerability – Oregon Natural Hazards Mitigation Plan

The Oregon NHMP was completed in the Fall of 2020. To remain consistent with the State's assessment, the plan was considered and incorporated as part of the natural hazard composite ranking system. The Oregon NHMP presents a series of natural hazard risk assessments for all Oregon counties. For simplification at the state level, these risk assessments were calculated county wide. The Oregon NHMP is broadly based on three variables:

1. The probability of the event happening.
2. The physical vulnerability of the event happening, and
3. The social vulnerability of the event happening.

These variables are summarized for Yamhill County in Table V11.2.

Table VII.2 Oregon NHMP Risk Assessment for Yamhill County

Hazards for Yamhill County	Probability	Physical Vulnerability				Social Vulnerability	Vulnerability (Social + Physical)		Risk (Prob. + Physical Social)	
		State Buildings	State Critical Facilities	Local Critical Facilities	Total Combined & Rescaled		Total Combined & Rescaled	Vulnerability	Total Combined & Rescaled	Risk
Earthquake	4	3	3	2	2.67	4	3.33	Very High	3.56	Very High
Flood	4	1	1	2	1.33	4	2.67	Moderate	3.11	High
Landslide	5	1	1	2	1.33	4	2.67	Moderate	3.44	Very High
Volcanic	1.5	1	1	1	1	4	2.5	Moderate	2.17	Low
Wildfire Hazard	2	1	1	1	1	4	2.5	Moderate	2.33	Moderate
County Total									**2.92**	**High**

Physical vulnerabilities were determined by assessing the concentration of state-owned or leased facilities and local critical facilities. Social vulnerabilities were based on Centers for Disease Control and Prevention (CDC) social vulnerability index. The Oregon NHMP uses 2016 data and aggregates at the County level, normalizing it with other Oregon Counties, grouping counties into quintiles, and then included state determined "sensitivity" and "adaptive capacity" rankings.

Because the state assessment is county wide, the probability of the natural hazard event occurring is based on the county-wide probability, regardless of spatial sensitivity to the event within the county. For example, wildfire hazards that are more probable in the west hills would be assigned the same probability in that location as if they were to occur in the City center or suburban areas. Since more detailed spatial probability of a natural hazard event occur is available – as detailed in the inventory maps of this report – the composite mapping relies only on the combined physical and social vulnerabilities determined by the Oregon NHMP. The probabilities of the natural hazard event occurring are replaced with the more spatially sensitive information contained in the inventories. The vulnerability index was only applied to a subarea when there was a moderate or high/severe probability of that natural hazard event occurring.

Combined (Cumulative) Ranking Applied Individually to Hazard Subareas

Using GIS, Winterbrook assigned a combined natural hazard risk score based on both the probability of the event happening and the state determined vulnerability of the event happening. This score was calculated for each spatial subarea (polygon) within the 2021 McMinnville UGB. Total probabilities and vulnerabilities were summed and averaged to produce a total risk score on a scale from 0 to 5, where 0 is low to no risk of the natural hazard event and 5 is high/severe risks of multiple hazard events. Each polygon now has 10 contributing variables. The combined natural hazard risk is detailed in Table V11.3.

Table VII.3 Combined Natural Hazard Risk by Natural Hazard Type in McMinnville

Natural Hazard Type	Probability of the Hazard in McMinnville		Social + Physical Vulnerability
Landslide	Moderate	2	2.67
	High	5	2.67
Cascadia Subduction Zone Earthquake			(Earthquake) 3.33
Liquefaction	Moderate	2	
	High	5	
Shaking	Very Strong	2	
	Severe	5	
Slope	➢25%	5	-
Wildfire	Moderate	2	2.50
	High/Severe	5	
Flood	Floodplain	5	2.67
	Floodway	5	

For discussion purposes, the McMinnville study area can be divided into two generalized areas in relation to hazard characteristics: low-lying (Valley) areas and higher-elevation areas (West Hills). Characteristics of Valley and West Hills areas in relation to combined hazard scores are summarized below. Note that the entire McMinnville 2021 UGB has a "very strong" probability of shaking. This hazard is included in the combined natural hazard risk calculations for consistency but does not affect subdistrict determination. Because of this, policies are recommended to address "very strong" shaking risks.

Valley Area Hazard Characteristics

The Cascadia Subduction Earthquake and flooding pose the greatest long-term threats to life and property in low-lying areas. Moderate earthquake liquefaction risk and "very strong" shaking hazards are present on most land within the UGB. These areas overlap with the 100-year flood plain and would trigger river and stream bank failures in the event of a major earthquake.

Valley area hazard scores have several inter-related characteristics:

- Due to the presence of moderate earthquake liquefaction and shaking hazards in most UGB subareas, the highest combined hazard risk score *outside* the 100-year floodplain is 2.75.
- Because floodplain polygons (score of 5) also have moderate earthquake liquefaction and very strong shaking hazards, the combined hazard score for most floodplain subareas is 3.571. Floodplain polygons are also likely to have also has moderate to severe wildfire risk (due to riparian vegetation) and moderate to high landslide risks (bank failure).
- Steep slopes in the valley are also more likely to correlate with floodplain and floodway areas. When outside of the floodplain and floodways, steep slopes occur with moderate to high landslide risks in most areas.

West Hills Area Hazard Characteristics

In the West Hills, landslide, steep slope, and wildfire hazards are common and often overlap. Earthquake liquefaction and shaking risk areas may also be located within the floodplains of Cozine and Baker Creeks.

- Subareas with moderate to severe wildfire risks have a combined score between 0.983 and 2.55. These wildfire risk areas often have moderate to high landslide risks.
- Subareas with steeps slopes always overlap with moderate to high landslide risk areas.
- Some moderate liquefaction areas are present along the tributaries of Cozine and Baker Creeks.

Natural Hazards – Combined Risk Categories and Related NH Subdistricts Map

There are three broad categories of natural hazards in the McMinnville 2021 UGB. These categories relate to proposed Natural Hazards Subdistricts (NH-M and NH-P) and are based on the subarea combined hazard risk score (probabilities and vulnerabilities). Table VII.4 summarizes how Winterbrook applied the cumulative hazard score for each of the 87 subareas in the Natural Hazards Study Area to determine the level of natural hazard protection.

Table VII.4 Designation of NH Subdistricts Based on Ranking of Natural Hazards Subareas

Combined Subarea Hazard Risk	Natural Hazard Overlay Subdistrict
0 to 0.99	No NH-Subdistrict
1 to 1.499	Natural Hazard Mitigation Subdistrict (NH-M)
1.5 to 3.517	Natural Hazard Protection Subdistrict (NH-P)

- **Subareas that have one or more high risk hazards areas with a combined hazard risk of 1.5 or more would be subject to the proposed Natural Hazard Protection (NH-P) Subdistrict** The NH-P prohibits most types of development; however, uses such as public utilities and resource enhancement are subject to hazard-specific development standards as well as building and fire codes. This category includes land within (a) floodplains and adjacent landslide and wildfire risk areas, and (b) some West Hills subareas with a combination of steep slopes, high landslide risk and moderate to high wildfire risk.
- **Subareas that have one or more moderate-to-high hazard risks with a combined hazard risk between 1 and 1.499 would be subject to the proposed Natural Hazards Mitigation (NH-M) Subdistrict**. Uses allowed by the underlying zoning district are allowed in the NH-M Subdistrict and are subject to hazard-specific development standards as well as building and fire codes. Much of the land within the West Hills falls within this category. Additional areas along creek tributaries, but outside of the floodplain, are included in this subdistrict. A larger mitigation area in the northeast is associated with dense tree groves and therefore severe wildfire hazards.
- **Subareas that are subject to moderate liquefaction or moderate wildfires only have a combined hazard risk of less than 1 and would not be subject to zoning regulation – but are subject to seismic building codes, fire codes and construction standards**. Most of the land within the UGB falls into this category.

Figure VII-1 shows the proposed Natural Hazards Overlay with Natural Hazards Mitigation (NH-M) and Protection (NH-P) Subdistricts that are derived from GIS data and based on Tables VII.1 and VII.2.

- The Natural Hazards Overlay would be shown on the comprehensive plan map.
- The subdistricts would be included in the McMinnville Zoning Ordinance and shown on the McMinnville Zoning Map.

As discussed in the Chapter XI Natural Features policy framework below, the McMinnville Urban Growth Management Agreement with Yamhill County could also be amended to apply Chapter XI policies and natural hazards overlay maps and regulations within the Natural Hazards Study Areas.

Figure VII-1 Proposed McMinnville Natural Hazards Overlay – Study Area

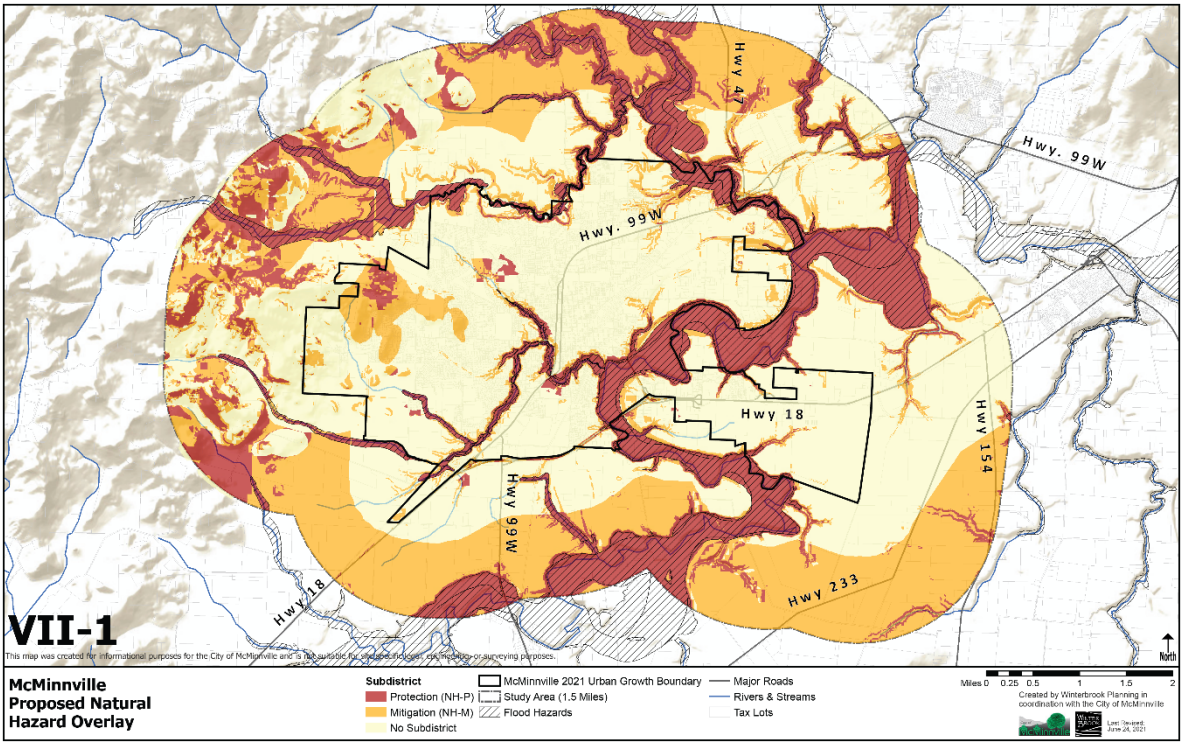
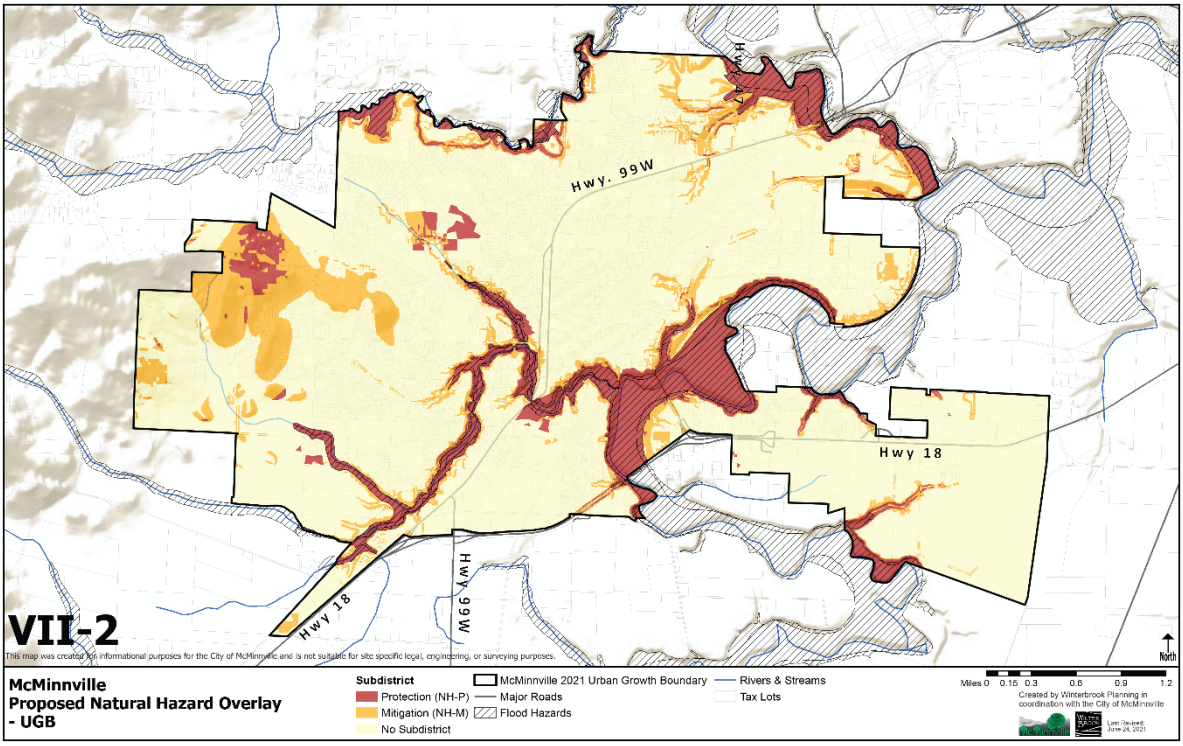


Figure VII-2 Proposed McMinnville Natural Hazards Overlay – 2021 Urban Growth Boundary



Recommended Natural Hazards Policy Framework

Winterbrook recommends that the following policy framework be added to the McMinnville Comprehensive Plan as a new Chapter XI: Natural Features.

Multi-Hazard Policies

Policy 197.00 The City of McMinnville shall adopt and maintain a Natural Hazards Inventory as part of the McMinnville Comprehensive Plan (Volume I). The inventory shall include maps and text that identify the location, type and risk level for three types of natural hazards: geological hazards (including steep slopes, earthquakes and landslides), flood hazards (land within the 100-year floodplain) and wildfire hazards within the study area (the UGB and the unincorporated outside the UGB).

Policy 197.00.010 The City of McMinnville shall apply public works construction standards, seismic building codes and fire and life safety codes wherever natural hazards are identified in the Natural Hazards Inventor – including limited, moderate and high combined risk subareas described in Table VII.1 of the Natural Hazards Inventory.

Policy 197.00.020 The City of McMinnville shall establish a **Natural Hazards (NH)** overlay zone to manage the cumulative effects of inventoried natural hazards in "moderate and high combined risk subareas" as described in Tables VII.1 and VII.2 of the Natural Hazards Inventory.

Policy 197.00.030 As shown on Figure VI-2, the NH overlay zone shall include two subdistricts based on cumulative ranking criteria found in Tables VII.1 and VII.2 of the Natural Hazards Inventory:

1. **The Natural Hazards Mitigation Subdistrict (NH-M)**. The NH-M is intended to mitigate hazard impacts based on objective development standards for each applicable hazard type and the recommendations of required site-specific hazard studies.
2. **The Natural Hazards Protection Subdistrict (NH-P).** The NH-P Subdistrict is intended to prohibit most types of development and may allow for residential density transfer. Where development is allowed it shall be subject to objective development standards for each applicable hazard type and the recommendations of required site-specific hazard studies.

Policy 197.00.040 The NH-M and NH-P Subdistricts shall include objective development standards for each type of natural hazard identified the Natural Hazards Inventory, including landslide, earthquake (liquefaction and shaking), floodplains and wildfire hazards. Floodplains shall be protected by the underlying F-P Flood Hazard zone and the NH-P Subdistrict.

1. Specific information regarding the location and severity for each type of hazard in each subdistrict are available in 11" X 17" format and in the City's GIS data base.
2. In cases where hazard-specific development standards overlap, the more restrictive standard shall apply.

Policy 197.00.060 Based on objective development standards and required hazard studies, the City of McMinnville may impose conditions of land use approval to protect life and property and mitigate natural hazard impacts in natural hazard subareas. Such conditions may include, but are not limited to, conservation easements or dedication of hazard areas to the City.

Policy 197.00.060 Land division applications shall not result in a lot that lacks sufficient buildable area to meet the minimum lot size and development standards applicable in the underlying zoning district.

Policy 197.00.070 New residential, commercial and industrial construction shall be prohibited within the NH-P Subdistrict with the following exceptions:

1. Public facilities and environmental restoration projects may be permitted under objective development standards.

2. Agricultural and forest uses are permitted within the NH-P Subdistrict in areas zoned for exclusive farm and commercial forest use.

3. Residential density transfer from land within the NH-P Subdistrict to contiguous property under the same ownership that is outside both the NH-M and NH-P Subdistricts may be allowed. The maximum density allowed in the transfer area shall be the maximum density allowed in the next higher residential zoning district. For example, density transfer from the NH-P land with an underlying R1 zone to land outside the Natural Hazards Overlay (NH-P and NH-M) shall be capped at the density allowed in the R2 zone.

4. In situations where density transfer is not feasible, one dwelling unit may be allowed on a vacant residential tract under common ownership that is outside the 100-year floodplain *if* consistent with the recommendations of a geotechnical engineering study and any conditions required by the review authority.

Policy 197.00.080 In cases where application of NH-P provisions would prohibit all reasonable economic use of an existing tract of land under common ownership, the City may grant an exception to allow a use permitted in

the underlying zoning district that is not permitted in the NH-P Subdistrict. In making this decision, the applicant and City must:

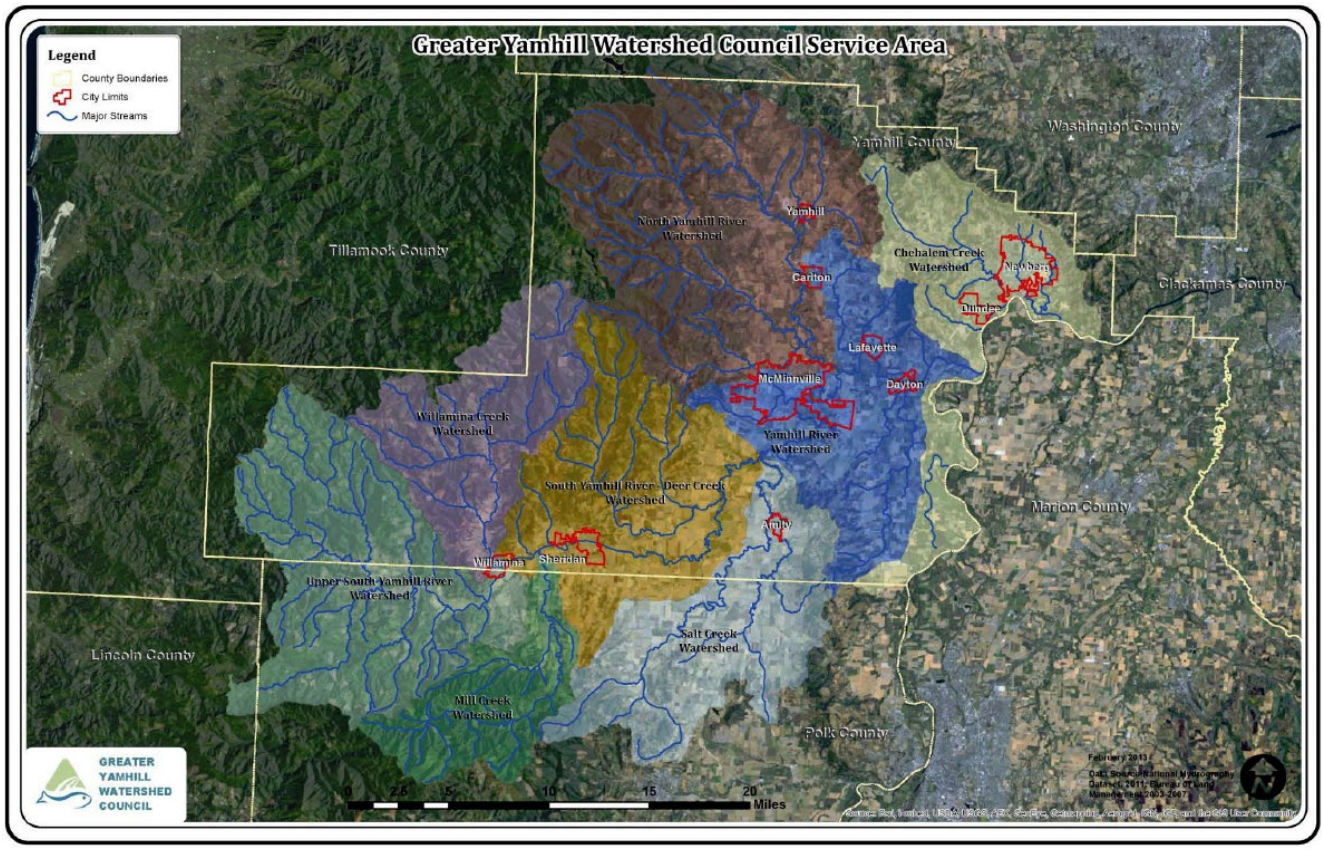
1. Consider first whether the exception provisions of Policy 197.00.070 would relieve the hardship;
2. Consider potential uses that are allowed in the NH-P Subdistrict that could provide reasonable economic value;
3. Consider alternative development layouts and land use intensity that minimize impacts from natural hazards on people and property and other values associated with natural hazard areas;
4. Limit the intensity of the allowed land use to the minimum necessary to retain reasonable economic value of the subject tract; and
5. Meet all applicable development standards that apply to natural hazards in the NH-P zone.

Policy 197.00.090 The City of McMinnville shall coordinate with Yamhill County to apply McMinnville Comprehensive Plan Chapter XI Natural Features Policies to unincorporated land within the Natural Hazards Study Area, including the application of the NH overlay zone (the NH-M and NH-S subdistricts) and related development standards. In cases of conflict with state law governing farm and forest land, state law will prevail over the NH overlay zone standards. For example, agricultural and forest uses allowed in Agricultural and Forest zones shall continue to be allowed; and the more restrictive fire mitigation standards in the County's forest zones will prevail over the less restrictive City fire mitigation standards.

Policy 197.00.100 The City of McMinnville shall coordinate with the Oregon Department of Geology and Mineral Industries (DOGAMI), the Department of Land Conservation and Development (DLCD), the McMinnville Fire Department, and Yamhill County in updates of the Yamhill County Multi-Jurisdictional Natural Hazards Mitigation Plan, the McMinnville Addendum to County NHMP, and the Yamhill County Community Wildfire Protection Plan. Updates to these plans will be considered in future updates to Chapter XI of the McMinnville Comprehensive Plan.

Policy 197.00.110 The City of McMinnville shall coordinate with the Greater Yamhill Watershed Council to facilitate watershed restoration and improvement projects in natural hazard areas such as floodplains and slide hazard areas. Shared natural hazard mitigation goals include: (1) removal of invasive vegetation species (that that increase fuel for wildfires and clog waterways) and replacement with native species that reduce erosion, are more fire resistant and are less likely to clog waterways; and (2) restoration and enhancement of wetlands that provide flood control.

Figure VII-3 Greater Yamhill Watershed Council Service Area



Policy 197.00.120 New development applications shall include a Tree Removal and Mitigation Plan within the NH-M and NH-P Subdistricts. To minimize erosion and landslide potential and to maintain water quality, removal of more than three trees over 6 inches dbh[10] in a calendar year shall require a Tree Removal and Mitigation Plan prepared by a certified arborist. The plan shall ensure replacement of lost trees with fire resistant native trees and vegetation. The following exceptions to this policy shall apply where:

1 Tree removal is permitted in the underlying Yamhill County farm or forest zone.
2 The proposal is part of a watershed restoration or enhancement project sponsored by a relevant Watershed Council that meets applicable City development standards.
3 The proposal is part of a fire protection program approved by the City of McMinnville Fire Department or RFPD. (See Wildfire Hazard Policies below.)
4 The proposal is necessary to meet fuel reduction standards in wildfire hazard areas pursuant to Wildfire Policies 200.050.00 and 200.060.00.

[10] Diameter at breast height – or 4'6" above ground.

Geological Hazard Policies

Policy 198.00 Geological hazards appear on the McMinnville Natural Hazards Inventory and include: (1) Slopes of 25% or more; (2) Moderate, high and severe risk earthquake (liquefaction and shaking) risk areas; and (3) Moderate and high-risk landslide hazard areas.

Policy 198.10 The NH-P and NH-M Subdistricts shall apply to subareas with geological hazards as shown on Map VII-2 of the Natural Hazards Inventory. Specific geological hazards found in each subdistrict are available in 11" X 17" format and in the City's GIS data base.

Policy 198.20 Residential and commercial construction in areas with moderate or high geological risk hazards – as indicated on the Natural Hazards Inventory – shall meet the seismic and slope stability provisions of the Oregon State Building Codes. The Building Official may require a geotechnical engineering study prior to approval of construction.

Policy 198.30 The City of McMinnville shall require erosion control measures prior to grading or construction in subareas with:

1. Slopes of 15% or greater, and
2. Landslide hazards in the NH-M and NH-P Subdistricts.

Policy 198.040.00 The City of McMinnville shall require geological reconnaissance studies with the submission of land development applications where geological hazards are present within the NH-M and NH-P Subdistricts. The recommendations of the geological reconnaissance study shall become conditions of land use approval unless specifically exempted or modified by the review authority.

Policy 198.50 Where recommended in a required geological reconnaissance study – or where determined necessary by the City Engineer or Building Official in moderate risk landslide hazard areas that are not included in the NH-M Subdistrict – a geotechnical engineering study may be required prior to grading, land development or construction.

Policy 198.60 The City of McMinnville shall retain the services of a qualified geologist or geological engineer to review geological studies prepared for land use applicants.

1. The City Engineer shall determine whether a second professional opinion is required.
2. The costs of peer review shall be borne by the applicant.

Policy 198.70 The City shall consider adopting standards for public street and utility construction to moderate or higher geological hazard areas.

Policy 198.80 Because trees contribute to slope stability and reduce erosion, tree removal shall be limited in the NH-M and NH-P Subdistricts pursuant to Policy 197.120.00.

Flood Hazard Policies

Policy 199.00 Flood hazards areas are located within the designated 100-year floodplain. The City of McMinnville will continue to prohibit most types of development within the 100-year floodplain consistent with the City's F-P Flood Hazard Zone.

Policy 199.10 Natural geological and wildfire hazards associated with the 100-year floodplain, including but not limited to overlapping landslide areas, will be addressed in NH-P Subdistrict development standards. Overlapping wildfire and geological hazards found in NH-P Subdistrict that overlay the F-P Flood Hazard Zone are available in 11" X 17" format and in the City's GIS data base.

Policy 199.20 The City of McMinnville is committed to continued participation in the National Flood Insurance Program (NFIP) through enforcement of local floodplain management regulations.

Policy 199.30 The City of McMinnville will work with the Federal Emergency Management Agency (FEMA) to update Flood Insurance Rate Maps (FIRM). The City will request Oregon Department of Geology and Mineral Industries (DOGAMI) debris flow and lidar data be included in FIRM updates.

Policy 199.40 The City of McMinnville will develop and maintain GIS maps of critical facilities identified in the McMinnville NHMP for all structures and residential development and commercial buildings within the 100-year and 500-year floodplains.

Policy 199.50 Because wetlands serve an important flood control function, wetland fill and removal shall not be permitted within the 100-year floodplain unless there is no reasonable alternative for a planned public works project.

Policy 199.60 The City of McMinnville will coordinate with the Greater Yamhill Watershed Council (or its affiliates) regarding stream and river restoration and enhancements projects to restore native vegetation, improve bank stability and improve water quality.

Policy 199.70 Because trees and vegetation reduce streambank failure and improve water quality, tree removal shall be limited in the NH-M and NH-P Subdistricts pursuant to Policy 197.120.00.

Wildfire Hazard Policies

Policy 200.00 Moderate, high, and severe wildfire hazard areas appear on the Natural Hazards Inventory and are generally associated with the West Hills and vegetated floodplains.

1. Where wildfire hazards subareas overlap with geological or floodplain hazards, they may be subject to NH-P or NH-M Subdistrict requirements, consistent with the ranking criteria found in the Natural Hazards Inventory and as shown on Natural Hazards Inventory Map VII-1.
2. Existing fire standards in Yamhill County forest zones shall continue to apply.

Policy 200.10 City staff shall coordinate with the McMinnville Fire Department and RFPD to encourage fire safety planning and education – especially in Wildfire Urban Interface zones and designated Fire Reduction Areas in the West Hills. The City of McMinnville shall continue to coordinate wildfire mitigation action items through the Yamhill County Community Wildfire Protection Plan.

Policy 200.20 Residential, commercial and industrial development shall not be permitted in wildfire risk subareas in the NH-P Subdistrict; However, exceptions may be permitted pursuant to Natural Hazard Policies 197.070.00 and 197.080.00.

Policy 200.30 Development density in wildfire risk areas in the NH-M Subdistrict may be limited where necessary to provide adequate space for fuel breaks in areas that are threatened by two or more natural hazards.

Policy 200.40 In the NH-P and NH-M Subdistricts with identified wildfire hazards, applicants for land divisions and new development (excluding home remodels or additions) shall prepare a Fire Prevention and Control Plan in coordination with the McMinnville Fire Department or RFPD. The plan shall be prepared by a certified arborist and shall consider necessary tree and vegetation removal, erosion control and replacement of lost trees and vegetation with native, fire-resistant trees and vegetation.

Policy 200.50 Based on the Fire Prevention and Control Plan, the following wildfire mitigation standards shall be met:

1. Installation and maintenance of at least a 40-foot fuel break around each new dwelling or structure.
2. Where vegetation needs to be maintained for slope stability in a fuel break area, require plantings of fire-resistant or slow-burning plants. The City shall make a list of such plants available to the public.
3. Provision of one or more than one ingress/egress route or road widths wide enough to accommodate incoming fire apparatus and evacuating residents simultaneously in an emergency situation.
4. Roofs and siding with fire-resistant materials. Wood shake or shingle roofs are not allowed.
5. Design road placement to function as fire breaks in urban wildland interface developments.
6. Chimneys of wood-burning devices to be equipped with spark arrester caps and/or screens.
7. Underground electrical distribution circuits if technically feasible.
8. Sprinkler systems in all dwelling units and occupied buildings.