



# Background Report: Natural Resources & Environmental Quality

Milwaukie  
Comprehensive  
Plan Update  
Block 3 Topic  
Area

Prepared for the  
Comprehensive  
Plan Advisory  
Committee  
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## Introduction

Natural Resources and Environmental Quality are interrelated topics that share many common goals, challenges, and regulatory approaches. As such, these topics are addressed together in this background report for the City's Comprehensive Plan update.

Milwaukie has a wealth of natural resources that shape the city's character. The Willamette River—one of Oregon's greatest natural resources—forms the city's western boundary. The city also contains wetlands, riparian zones, salmon-bearing creeks, terrestrial habitats, tree canopy, and a diversity of plant and animal species. The Milwaukie community greatly values these resources, both for their intrinsic qualities and for the important ecosystem services they provide: clean air and water, rainwater and floodwater management, outdoor recreation opportunities, and contribution to a sense of place and community. The Milwaukie community is committed to protecting its natural resources so that they continue to provide these valuable benefits for generations to come. The City plays an important role in advancing programs that enhance natural resource and maintaining rules to ensure their protection.

Environmental quality looks beyond specific natural resources, and incorporates the protection of air quality, water quality (both surface and groundwater), soils, and other land resources and systems, including the prevention or minimization of pollution of these resources. Maintaining and enhancing environmental quality is critical to achieving Milwaukie's vision for a healthy community and healthy ecosystems.

## Planning for Natural Resources & Environmental Quality

Oregon has a set of 19 Statewide Planning Goals, which serve as the foundation of the state's local land use planning program that is implemented at the local level through the Comprehensive Plan. Statewide Planning Goals 5 and 6 are addressed in this background report.

[Goal 5](#) is called Open Spaces, Scenic and Historic Area and Natural Resources, and establishes processes for local jurisdictions to "protect natural resources and conserve scenic, historic, and open space resources for present and future generations." Goal 5 identifies resources which must be inventoried and outlines planning and implementation guidelines for resource protection and conservation. *[Note: this background report focuses primarily on natural resources. Historic resources are addressed in a separate element of Milwaukie's Comprehensive Plan. While there is some discussion here of the habitat and ecosystem values of open spaces, the City's Comp Plan policies for open space largely overlap*

with the Recreational Needs and Willamette Greenway elements. Similarly, the City’s scenic resource policies mostly overlap with the Willamette Greenway policies for view protection. Further, given that the Greenway largely overlaps with the floodplain and habitat conservation areas, these scenic areas also have a major natural resource component.]

**Goal 6** is called Air, Water, and Land Resources Quality and guides local jurisdictions in protecting air, water, and land resources from pollution and pollutants, including solid waste, water waste, groundwater pollution, noise and thermal pollution, air pollution, and industry-related contaminants. Goal 6 instructs local jurisdictions to ensure that future development will not result in these pollutants (referred to as “waste and process discharges”) degrading, exceeding the carrying capacity, or threatening the availability of local air, water, and land resources.

The City of Milwaukie complies with Goals 5 and 6 through a variety of mechanisms, as discussed below.

**Natural Resources (Goal 5)**

The City’s Natural Resources (NR) Overlay Zone provides protection for water quality resources under Statewide Goal 6, as well as Title 3 of the Metro Urban Growth Management Functional Plan (UGMFP). It also protects designated natural resources under Statewide Goal 5 and Title 13 of the UGMFP. Title 13, also known as “Nature in Neighborhoods,” was adopted by Metro in 2005 to help local jurisdictions meet Goal 5. Milwaukie’s NR zone designates water quality resources (WQRs) and habitat conservation areas (HCAs). WQRs are intended to protect the functions and values of riparian and wetland resources from impacts of development; they include protected surface water features and their associated vegetated corridors. HCAs are intended to protect riparian areas and fish and wildlife habitat, as required by Title 13 of Metro’s UGMFP. HCAs also protect significant local Goal 5 resources, such as wetlands. The intent of the NR zone is to protect these water quality and habitat resources while allowing appropriate and habitat-friendly development. The NR zone also provides mitigation standards for the replacement of ecological functions and values lost through development in the WQRs and HCAs. Milwaukie’s adopted Natural Resources (NR) Administrative map is shown in Figure 1.

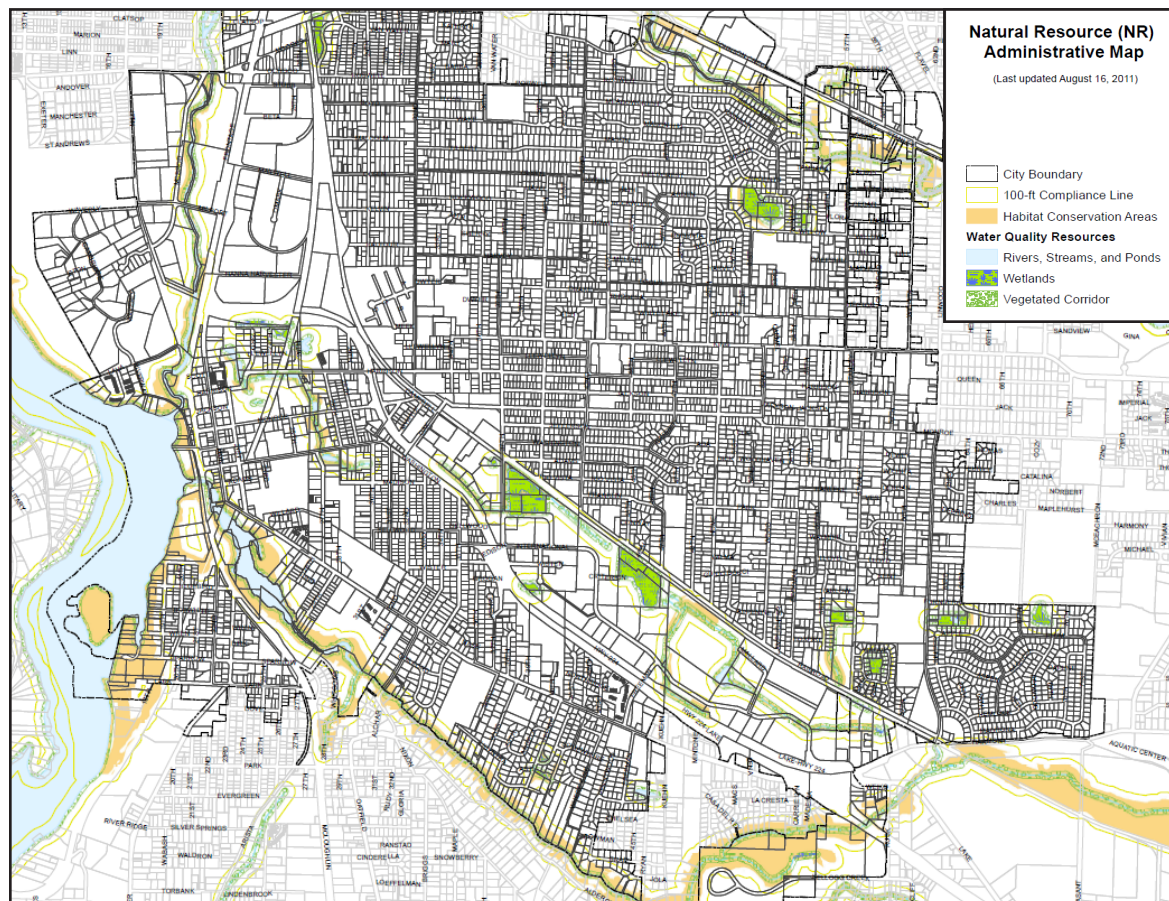


Figure 1: Milwaukie Natural Resources (NR) Administrative Map



City staff notes that the existing protections applied in Milwaukie’s NR zone are the minimum required by Titles 3 and 13 of Metro’s UGMFP. Metro’s Title 13 requirements are summarized below. Title 3 is summarized under the discussion of Statewide Planning Goal 6.

*Metro Title 13:* Nature in Neighborhoods is focused on protecting riparian and upland fish and wildlife habitat, and preventing water pollution for the protection of public health and safety. Title 13 provides a Regionally Significant Fish and Wildlife Habitat Inventory Map and Habitat Conservation Areas Map, with which Milwaukie’s NR Administrative Map substantially complies. Title 13’s performance standards and best management practices (BMPs) include provisions that encourage habitat-friendly development practices (e.g., pervious paving options, alternative stormwater treatment facilities, transferable development rights, etc.), and provisions that regulate development activity within designated HCAs. In 2011, Milwaukie adopted development code amendments to comply with Title 13.

Embedded in the State’s Goal 5 approach is an analysis of economic, social, environmental, and energy impacts (ESEE analysis). The state’s Procedures and Requirements for Complying with Goal 5 (OAR Chapter 660, Division 23) requires that local governments analyze the economic, social, environmental, and energy consequences that could result from a conflicting use within a significant Goal 5 resource area. Metro conducted an ESEE analysis as part of developing the Title 13 fish and wildlife habitat protection program. When Milwaukie first began its natural resources review process in 1987, it dropped some sites from the map of designated areas because of conflicting values (i.e., economic and/or social). The City’s ESEE analysis associated with its Title 13 code amendments in 2011 also resulted in lowering regulatory protection in some riparian areas. Goal 5 allows local jurisdictions to allow, limit, or prohibit conflicting uses for particular sites, as long as the ESEE analysis supports it.

It should be noted that while open spaces are not the focus of this background report, their connection to natural resources cannot be overlooked. Open spaces—including parks and natural areas, in addition to protected natural resource areas—provide valuable ecosystem services as well as urban habitat and wildlife corridors for small mammals, birds, and pollinators. While the NR zone provides protection for some open space areas, the lack of a City tree ordinance has resulted in loss of habitat, as elaborated in later sections of this report.

***Environmental Quality (Goal 6)***

Unlike Goal 5, there are no state Administrative Rules that set standards for meeting Goal 6. However, this statewide goal does include a series of non-mandatory “guidelines” for developing comprehensive plans. Beyond these guidelines, it relies entirely on other state and federal regulations for direction and implementation. At a federal level, the elements within Goal 6 correspond broadly to the Clean Air Act and Clean Water Act. At a state level, Goal 6 covers many areas regulated by the Oregon Department of Environmental Quality (DEQ) through its permitting actions, including regulated discharges to air and water bodies.

***Water Quality***

State definitions for wastewater and pollutants include pollutants carried by stormwater and the resulting impacts on habitat from stormwater flows. Goal 6 can be used as a justification for



*Milwaukie Community Members Planting at Minthorn North Natural Area*

protection of riparian areas and wetlands, due to their important function in the natural hydrology and water quality services of a watershed. Milwaukie's Natural Resources Overlay Zone provides protection for surface water quality resources under Statewide Goal 6 and Metro Title 3. Title 3: Water Quality and Flood Management provides a number of water quality performance standards, which all development within Water Quality Resource Areas must meet, per local codes. These include standards such as maintaining or restoring native vegetation, prohibiting uncontained hazardous materials, and allowing development in the Water Quality Resource Area only if there is no practicable alternative.

In addition, the City's groundwater resources should be protected under Goal 6. Groundwater provides Milwaukie's municipal drinking water supply, which is drawn from seven wells that pull from the Troutdale Aquifer. As such, protection of the City's groundwater from pollution is a critical public health concern.

#### *Noise*

Noise is considered one of the "waste and process discharges" addressed by Goal 6. Milwaukie largely regulates noise through the nuisance section of the Municipal Code (Title 8), which are not land use regulations. Chapter 8.08 designates prohibited noises and maximum permissible environmental noise and sound levels.

#### *Air Quality*

Air quality is largely regulated by DEQ, rather than by the City of Milwaukie. However, the City can impose conditions of approval on land use approvals that require minimizing air pollution and carbon emission impacts through actions such as vegetation plantings and conservation.

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## Natural Resources and Milwaukie's Comprehensive Plan

[Chapter 3 – Environmental and Natural Resources](#) of Milwaukie's existing Comprehensive Plan is broken into five individual elements, including the Open Spaces, Scenic Areas, and Natural Resources Element. This element includes one Goal Statement, three (3) objectives, and twenty-one (21) policies. The goal statement is: "to conserve open space and protect and enhance natural and scenic resources in order to create an aesthetically pleasing urban environment, while preserving and enhancing significant natural resources." Portions of the element were updated as recently as 2011, in acknowledgement of revised regulations for habitat conservation areas. The element objectives are summarized below.

- *Objective 1 – Open Space*  
Calls for the protection of Milwaukie's open space resources, in order to improve the quality of the environment, provide a diversity of natural visual character within the City, and provide residents with ecological, educational, and recreational experiences in a variety of environmental settings. Policies provide guidance for protection of open space, addressing topics such as incentives, public easements, land use designations, important waterways and other key features, and pedestrian connections and trails.
  - *Objective 2 – Natural Resources*  
Guides the preservation of important natural habitats and vegetation through protection and enhancement of major drainageways, springs, existing wetlands, riparian areas, water bodies, and significant tree and vegetative cover. Also acknowledges the important functions that these areas serve, such as flood protection, groundwater discharge and recharge, aesthetics, education, and recreation.
  - *Objective 3 – Scenic Areas*  
Stresses the Willamette River as an important scenic view in the City and calls for preserving the existing visual relationships for Willamette River viewing areas. Policies state that view opportunities between downtown and the river should be considered in plans for future development.
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## Environmental Quality and Milwaukie's Comprehensive Plan

The Air, Water, and Land Resources Quality Element of Chapter 3 of the Comprehensive Plan includes one Goal Statement, four (4) objectives, and eighteen (18) policies. As indicated by the goal statement, this element is geared toward meeting federal and State standards for air, noise, and water quality. Much of the background information in this element is outdated. While the objectives and underlying policies of the element are largely still relevant today, they should be updated to reflect more recent environmental conditions, trends and opportunities in Milwaukie and the region, as well as current community goals. The objectives associated with this element are summarized below.

- *Objective 1 – Regional Air Quality*  
Calls for continued participation in regional air quality plans, regional transportation efforts, and collaboration with the Oregon Department of Environmental Quality (DEQ).
- *Objective 2 – Local Air Quality*  
Aims to control air quality through local land use and transportation planning. Policies address monitoring of industrial activities, reducing vehicle emissions through increased transit ridership, and maintaining adequate employment to limit work-related trips.
- *Objective 3 – Noise*  
Calls for noise monitoring, enforcement, and protection programs. Also discusses noise mitigation techniques, including for areas along major roadways and between adjacent buildings.
- *Objective 3 – Water Quality*  
Encourages continued participation in regional sanitary sewer services, proper maintenance and upgrades to the City's sewer systems, and cooperation with state and local programs related to groundwater pollution sources.

## Natural Resources, Environmental Quality, and Milwaukie's Community

### Vision

In 2016-2017, the City of Milwaukie underwent an extensive public process to craft a vision and action plan. The process resulted in a new vision statement, with action items to achieve stated goals over the next 20 years. The vision, goals, and actions received input from a variety of people



Participants in the City's Earth Day Clean-Up Event

and groups. The City received input from the Vision Advisory Committee (VAC), staff, a technical advisory group, town halls, surveys, City Council, Planning Commission, and many more.

The following priority actions from the Milwaukie 2040 Vision and Action Plan capture the community's priorities that are associated directly or indirectly with planning for Natural Resources and Environmental Quality.

*Planet 1.1: Implement city programs, incentives and development code amendments that promote sustainable development and help to better integrate the built environment and natural environment.*

*Planet 1.4: Develop a strong tree ordinance that incentivizes tree protection, has equitable tree replacement standards, and provides adequate flexibility for property owners.*

*Planet 2.1: Develop a Natural Resource Plan and examine funding mechanisms for the restoration of Kellogg and Johnson Creeks and the removal of the Kellogg Dam.*

*Planet 2.2: Implement a plan and funding strategy for stormwater improvements that focuses on natural stormwater management and ensures that by 2040 all stormwater is treated before it is discharged into our creeks and river.*

*Place 1.9: Research and examine funding strategies for innovative local transit options that complement the regional transit network and help connect residents and employees to local amenities, employment areas and neighborhoods throughout the city.*

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## Assets & Trends Related to Natural Resources and Environmental Quality

### Planning

There are a number of assets and trends to consider when planning for natural resources and environmental quality. These include access to a variety of data sources, recent collaborative research efforts, and examples provided by other jurisdictions. A few of the most relevant assets and trends are discussed below.

#### *Tree Mapping Resources*

Milwaukie's urban forest is an asset highly valued by the community, which recognizes the multiple services a healthy urban canopy can provide. This is reflected in the goals and actions identified in the Community Vision and Action Plan that promote a thriving tree canopy in the city, as well as the Milwaukie Community Climate Action Plan which identifies the urban canopy as an important tool for climate mitigation, adaptation, and carbon sequestration. In March 2019, the City of Milwaukie is scheduled to adopt an Urban Forest Management Plan, which is intended to maximize the benefits, and guide the protection and management of the city's urban forest (a map of the city's tree canopy is provided in Figure 2). Milwaukie has also recently begun collaborating with Portland State University (PSU) on a Milwaukie version of the City of Portland's Branch Out PDX, which is geared toward improving Portland's air quality, public health and livability by expanding the city's urban forest, and recognizes the inequitable distribution of trees in Portland. A key component of the project will be the development of an interactive planting map to identify areas in Milwaukie where expanding the tree canopy will have direct benefit to social and environmental conditions. PSU has developed similar maps for other cities in the U.S., overlaying tree canopy data with urban heat island effect and demographics to prioritize locations where new trees could contribute most strongly to desired public health outcomes. The mapping tool is expected to help Milwaukie identify priority locations for tree planting in the city.

#### *Other Cities' Approaches to Tree Preservation and Protection*

Milwaukie is also taking inspiration from other communities in developing its tree protection and preservation policies, with the goal of crafting policies that fit the community's needs. The City is looking at actions by cities with similar tree canopy goals, which are noted in the Urban Forest Management Plan. For example, the City of Portland has a 33% tree canopy coverage goal and has strong tree protection policies and programs. Portland's 2018 Comprehensive Plan update includes a suite of policies related to the enhancement and equitable distribution of the



urban forest. The City also has procedures requiring tree permits for the removal of street trees and significant trees on private property, and requires Tree Review for certain development applications. Both Tigard, OR and Port Angeles, WA share Milwaukie's goal of achieving 40% tree canopy coverage for the city. Tigard's Urban Forestry Manual details the required procedures and standards for tree removal, replacement, and maintenance, and requires detailed site plans and accompanying reports as part of development applications. Portland, Wilsonville, Lake Oswego, and Hillsboro all have programs that preserve upland forest areas designated as Goal 5 resources.

*North Milwaukie Area and Johnson Creek*

The North Milwaukie Innovation Area (NMIA) is a major local and regional asset for manufacturing, transportation and jobs. The City adopted the NMIA Plan in 2017, intended to create a unified vision and plan for the future of this key employment area. Johnson Creek flows through the western portion of the NMIA. The stream poses challenges for industrial development in the NMIA because much of the area is within the City's Habitat Conservation Area (HCA) natural resource overlay zone that limits and/or requires mitigation for new development to occur. It also includes land within the base flood area identified on FEMA floodplain maps. However, the plan also identifies the stream as a key asset and calls for "capitaliz[ing] on Johnson Creek as a character-defining amenity that attracts new investment covering a mix of uses." The plan also calls for riparian restoration and enhanced stormwater management to improve water quality for the Johnson Creek watershed.

*Natural Resources Data and Mapping*

Through its Regional Land Information System (RLIS), Metro provides the City with GIS data regarding wetlands, Habitat Conservation Areas (upland habitat and riparian habitat areas), floodplain boundaries, other environmental data, and aerial photos. The Intertwine Alliance provides a suite of data and resources as part of its Regional Conservation Strategy. These include GIS data, a Biodiversity Guide, and conservation strategies for the greater Portland-Vancouver metropolitan region. The Federal Emergency Management Agency (FEMA) provides flood hazard mapping in support of the Risk Mapping, Assessment and Planning (Risk MAP) Program and National Flood Insurance Program.

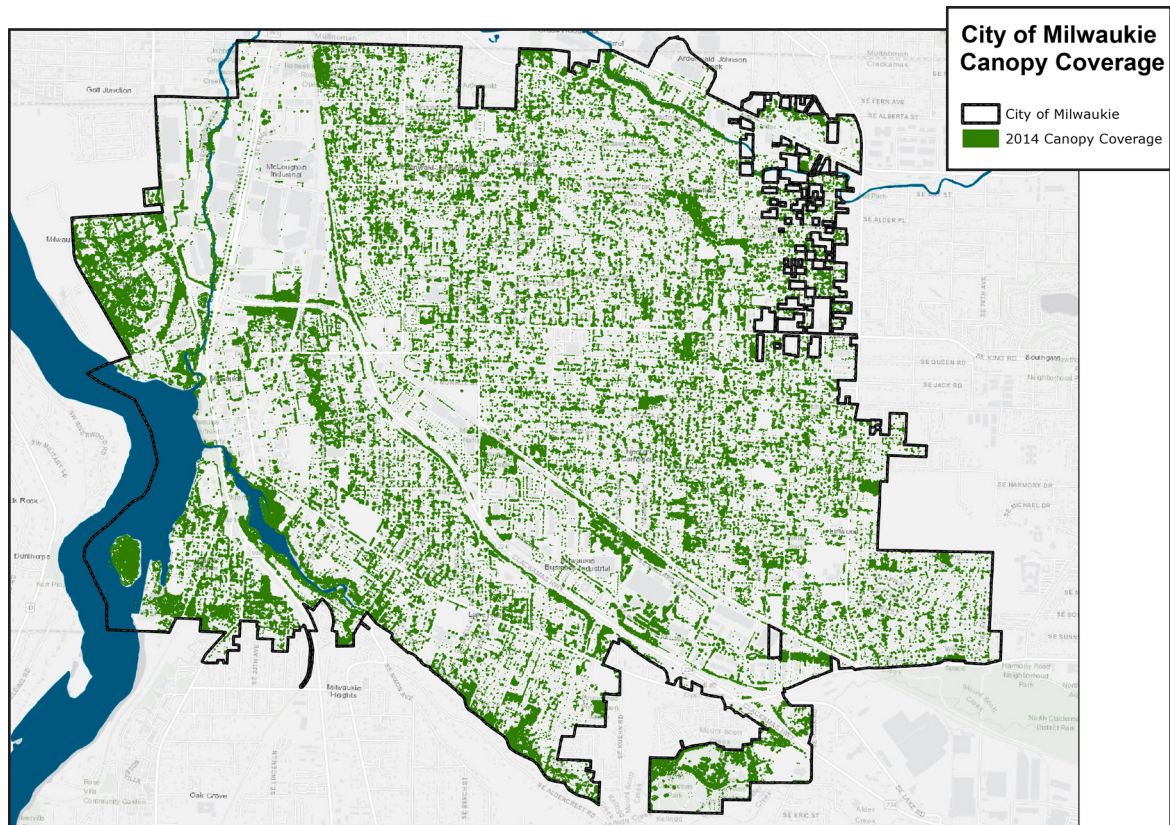


Figure 2: Milwaukie Canopy Coverage Map

## Opportunities & Challenges Influencing Natural Resources and Environmental Quality Planning

In considering the assets and trends identified above, there are opportunities to enhance Milwaukie's approach to planning for natural resources and environmental quality, while recognizing the challenges that the City may face. A few of these key opportunities and challenges are discussed below.

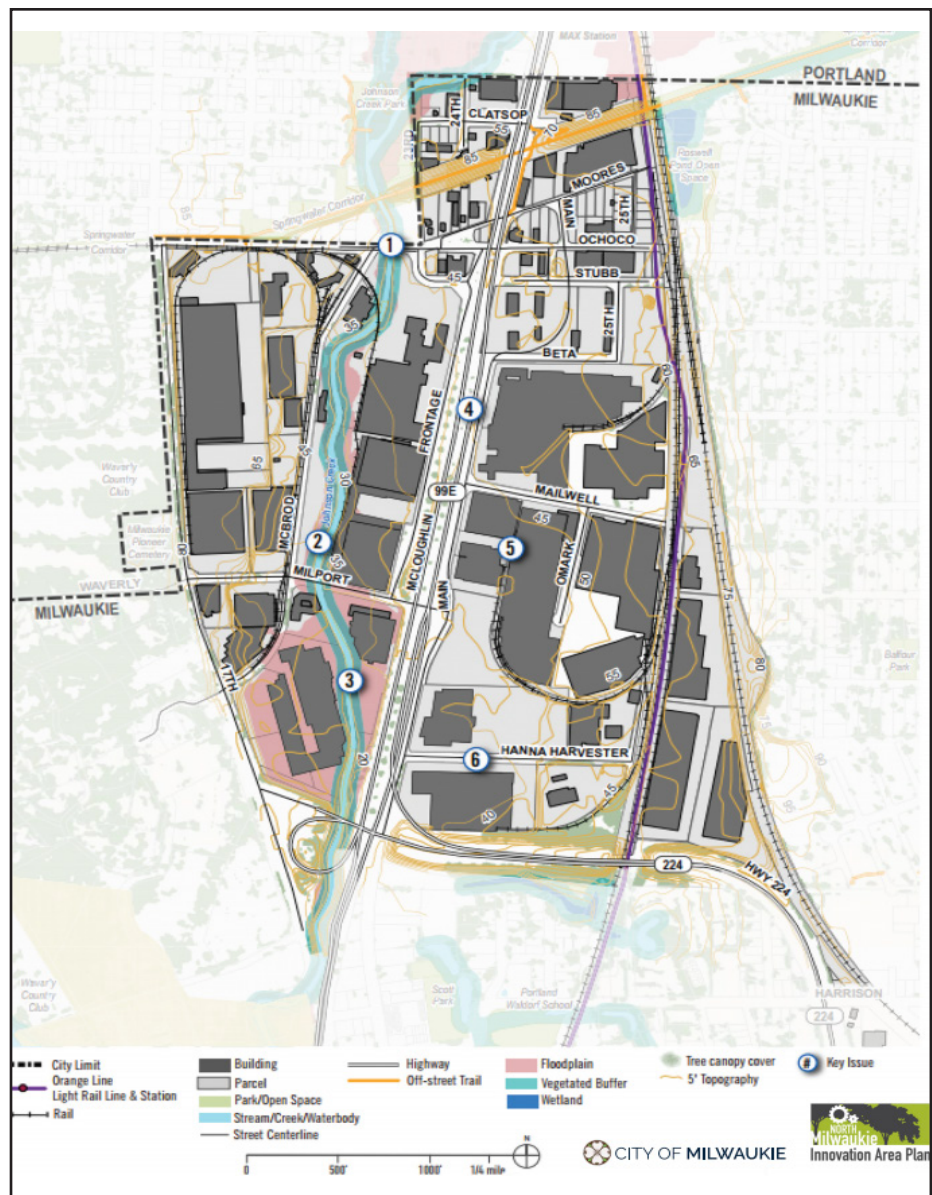
- Updates to the Open Spaces, Scenic Areas, and Natural Resources Element of Milwaukie's Comprehensive Plan will likely require a full Local Wetlands Inventory (LWI) to comply with Statewide Planning Goal 5. The City currently does not have an LWI that is approved by the Oregon Department of State Lands (DSL). An LWI aims to map all wetlands at least 0.5 acres or larger at an accuracy of approximately 25 feet on a parcel-based map, and to classify wetlands by type. The results of an LWI may necessitate changes to the City's NR Overlay zone.
- As noted above, tree preservation is a key community goal. But per Milwaukie's Vision & Action Plan, community members also desire flexibility for property owners and equitable tree replacement standards. The City's 2018 Urban Forest Management Plan identifies action items for increasing the tree canopy from 26% to 40% by 2040 (in alignment with the Milwaukie Community Climate Action Plan); implementing a permitting system for tree removal; adopting Municipal Code provisions addressing tree maintenance and planting; and conducting a public tree inventory. The latter two items will likely require a significant investment of staff time and/or money. The City's challenge will be to develop policies, processes, and programs to increase Milwaukie's tree canopy and protect existing trees using limited resources, without imposing overly onerous requirements on property owners.
- The City's urban forest provides a range of ecosystem services. Trees intercept rain water and prevent a portion of it from reaching the ground; they provide shade that cools streams; fallen leaves help build up the soil, which in turn retains moisture, slows and cleans runoff, and recharges the groundwater; tree roots absorb water that eventually is released into the atmosphere by transpiration. By reducing runoff and capturing pollutants, trees also help protect water quality in the Willamette, Kellogg Creek, and Johnson Creek, as well as other creeks. The urban forest is also home to diverse wildlife, and provides the food, shelter, and nesting opportunities that are essential to supporting it. Making stronger ties between trees, environmental quality, and wildlife habitat could strengthen the City's policies around tree preservation and protection. Enhanced policies should also address habitat connectivity.
- Environmental quality and climate change are closely related. In terms of air pollution, both problems are worsened by the burning of fossil fuels, and warmer temperatures and sunlight tend to exacerbate the formation of smog pollution. Regarding water quality, the expected increase in severity of storm events is likely to produce more stormwater runoff and strain the City's stormwater management system, and the higher regional temperatures caused by climate change pose challenges to natural water systems and drinking water quality. Natural resources provide valuable ecosystem services that mitigate climate change and help the community adapt to the new climate. This includes the services mentioned in the previous bullet, as well as sequestering carbon, reducing urban heat island effects, and providing shading and cooling of vulnerable communities. Milwaukie's Comprehensive Plan should recognize these critical connections in its environmental and natural resource goals and policies. The City has already taken critical steps to address climate change locally by adopting the Milwaukie Community Climate Action Plan in 2018, and will establish broader and longer-term climate change goals and policies with a new Climate Change and Energy chapter of the Comprehensive Plan. (Refer to the City's [Background Report on Climate Change / Energy](#) for more information.)
- While protection of natural resources is highly valued by the Milwaukie community, the City also has ambitious goals around economic development, and is looking to significantly increase the supply of housing to address the growing housing affordability crisis. These goals can sometimes be in conflict, as Milwaukie has a limited land supply



and natural resource protections limit development opportunities. Development restrictions in areas such as the NMIA limit the ability of existing industrial businesses to expand their operations and have the potential to limit the redevelopment that is envisioned for that area.

- Environmental health is closely linked to human health. The air we breathe, the water we drink, and our experience with the natural world all play a vital role in our physical and emotional health and wellbeing. For example, poor air quality can exacerbate human health conditions such as asthma and lung disease, and urban heat island effects can contribute to respiratory difficulties, heat-stroke and heat exhaustion. Conversely, access to nature has been shown to improve mental health, and reduce stress and mental illnesses such as depression. Also, negative health outcomes associated with poor air quality tend to disproportionately impact those with lower incomes and communities of color—a fact that is a key driver of the environmental justice movement.

Figure 3: Natural Resources in the NMIA Map



## Policy Questions, Observations, and Implications

The following questions and observations related for natural resources and environmental quality are important when considering how the Comprehensive Plan can support Milwaukie's Community Vision and address the assets, trends, and challenges identified in this report.

- Metro inventories for Title 3 and Title 13 resources have been adopted by the City but at a gross level. Adjustments to these inventories will be needed at the site level.
- In what manner and level of detail should urban forestry be integrated into the Comprehensive Plan? Some cities—such as Hillsboro and Portland—have incorporated urban forestry as a distinct policy sub-group within the natural resource or environmental health chapters of their Comp Plans. How can the Comp Plan ensure that trees are seen as necessary components of livability in the Milwaukie community? Because of the differences between developed property, streetscapes, parks, and other areas, Milwaukie's urban forest should not be viewed as a single unit for management purposes, it should be integrated.
- How can the City connect urban forestry goals with related Statewide Planning Goal 5 requirements, including protection of upland forest habitat? The City should consider possible responses including a Goal 5 resources inventory, ESEE analysis, protection measures, land use policies, or administrative decisions.
- What is the best approach to achieving the City's 40% tree canopy goal? Should it focus planting and protections in higher value areas (e.g., natural resource areas), in areas with less existing canopy, or in under-served areas to address inequity in canopy cover? Or should the City apply a consistent approach to tree planting and protections across all areas? The Urban Forest Management Plan recommends actions that align with each of these approaches, but the City may have to prioritize strategies based on available resources.
- How should Comprehensive Plan policies emphasize protection and integration of natural resources into new and existing development, while also balancing competing goals regarding housing and economic development, in order to best guide future development around environmentally sensitive areas? This is particularly challenging in areas like the North Milwaukie Innovation Area, with both high-value natural resources and critical employment opportunities.
- How can the Comp Plan make explicit connections between environmental and human health, and create equitable outcomes for both? This could be an opportunity to bolster the City's environmental and natural resources policies.
- City rights-of-way are currently exempt from natural resource protections. Is that appropriate, or should these publicly-owned areas be subject to similar limitations as private property?
- How should the Comp Plan connect its goals and policies around climate change with those for environmental quality and natural resources?
- Existing policies in the Air, Water and Land Resources Quality element do not specifically address "land resources," such as soils. Should the Comp Plan include policies that address soil loss, erosion, contamination, or other impacts to soil quality or function?
- The Comp Plan's environmental policies briefly address groundwater protection. How can these policies be strengthened, especially in the face of climate change and natural disasters, given that the City relies on groundwater for its drinking water supply?
- Existing Comp Plan policies also fail to address light pollution. "Dark Sky" policies that limit light pollution have been linked to reduced energy consumption as well as benefits to wildlife and human health.
- The City should examine the lens through which it sees interactions between natural resources and development, and consider how that relationship is expressed in local policies. Natural resources may pose a challenge to development, but development and the built environment is a massive challenge to natural systems, with the potential of changing them irreversibly.