Chapter 8: Infrastructure

Introduction

The Town of Orange prioritizes the preservation of its natural resources, including water resources and open space. Orange will continue its efforts to enhance the Town's environmental health and resiliency from natural hazards.

Existing Conditions

Water Resources

Several rivers, streams, ponds, and reservoirs make up Orange's landscape (see Figure 1). Water quality protection is critical to environmental health, as many Orange residents access drinking water through wells and public water supply sources located within the town.

One important way to protect water quality is through management of water runoff. Increasing the amount of impervious surface, such as parking lots and roads, can reduce groundwater infiltration and flow, which in turn, reduces the water supplied to wetlands and aquifers. It can also accelerate runoff and transmit pollutants more directly into the town's watercourses and waterbodies. In Orange, most of the existing draining infrastructure consists of traditional storm drains and catch basins. These catch basins discharge directly to surface waters without treatment.

Some rivers in Orange are considered impaired by CT Department of Energy & Environmental Protection (DEEP), including the Housatonic River, Wepawaug River, Race Brook, Indian River, and Silver Brook (see Figure 2). Managing water quality is of particular importance when promoting environmental and public health in these areas.

Water Supply

The majority of Orange is served by public water provided by the South Central Regional Water Authority (SCRWA) (see Figure 3). The SCRWA 2024 Annual Report states that they serve an estimated population of 11,019 residents in Orange.[1] Additionally, SCRWA possesses 580 acres of landholdings in Orange (see Chapter 7, Open Space map). Water supply is currently adequate in Orange, but extensions could be explored if needed as part of new developments.

[1] South Central Connecticut Regional Water Authority. *Annual Report Fiscal Year 2024*. Available at: https://www.rwater.com/about-us/corporate-annual-reports/.

Figure 1: Water Resources
Source: Esri, CT Department of Energy and Environmental Protection (CT DEEP), BFJ Planning

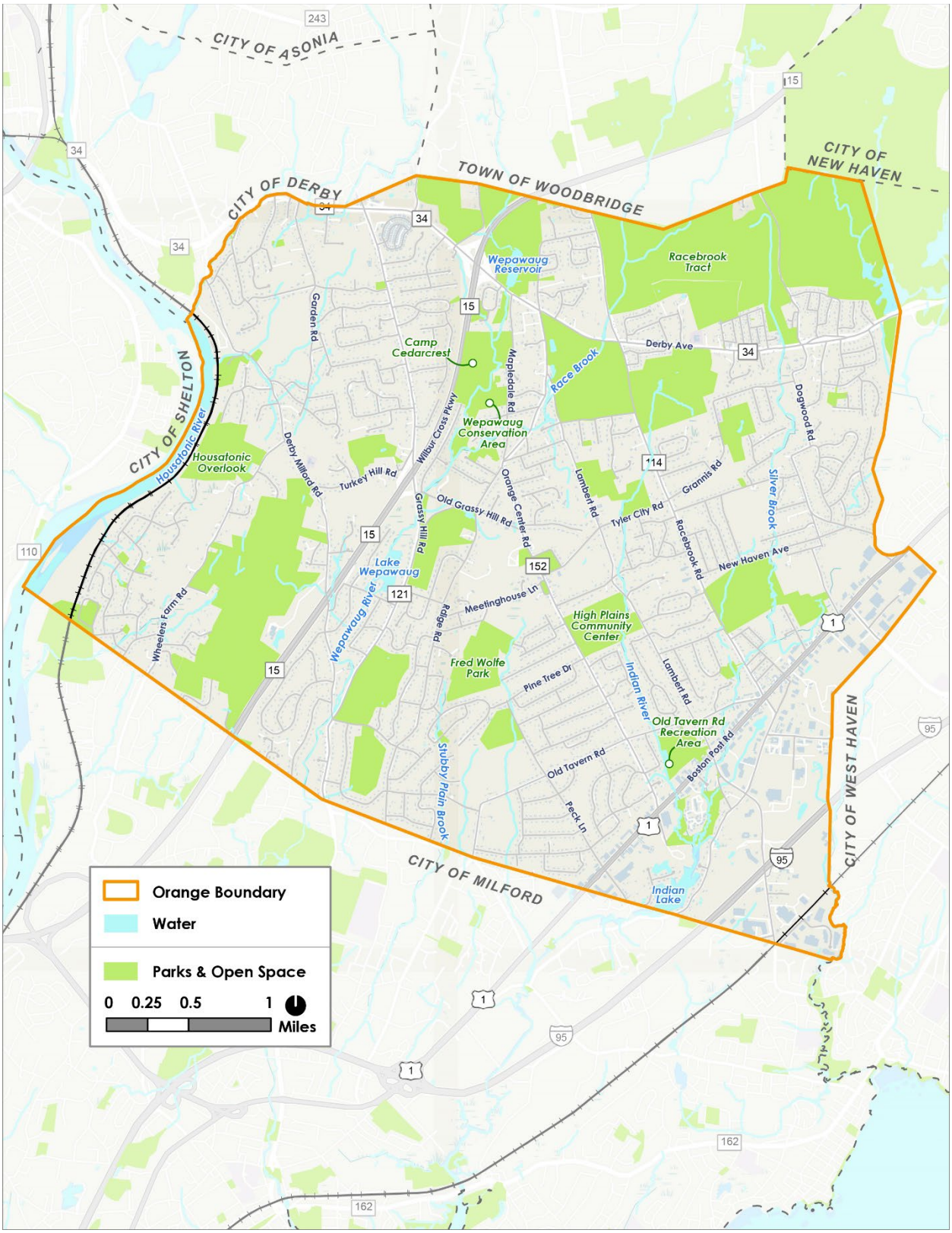


Figure 2: Impaired Waterbodies
Source: Esri, CT DEEP, BFJ Planning

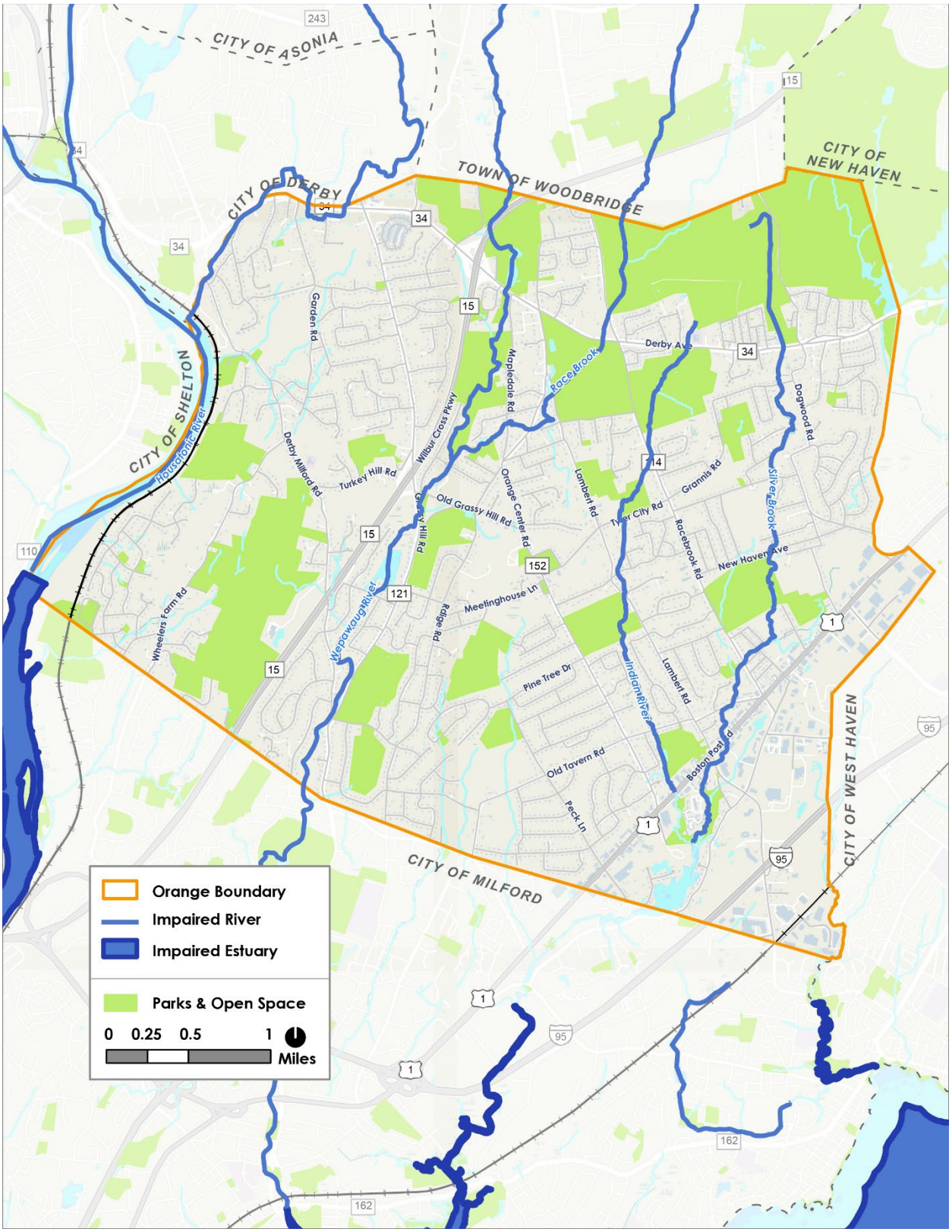
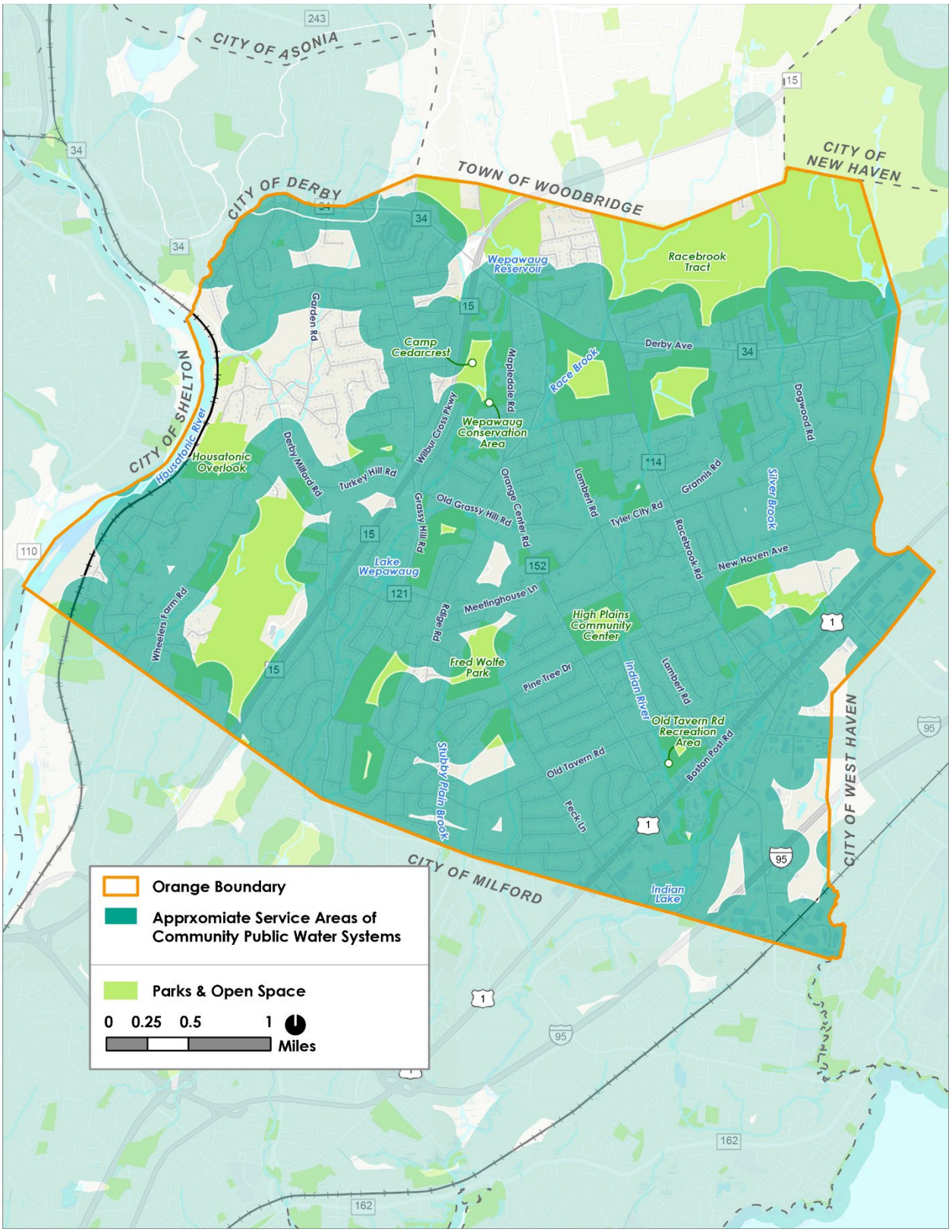


Figure 3: Service Areas of Community Public Water Systems
Source: Esri, CT Department of Public Health, BFJ Planning



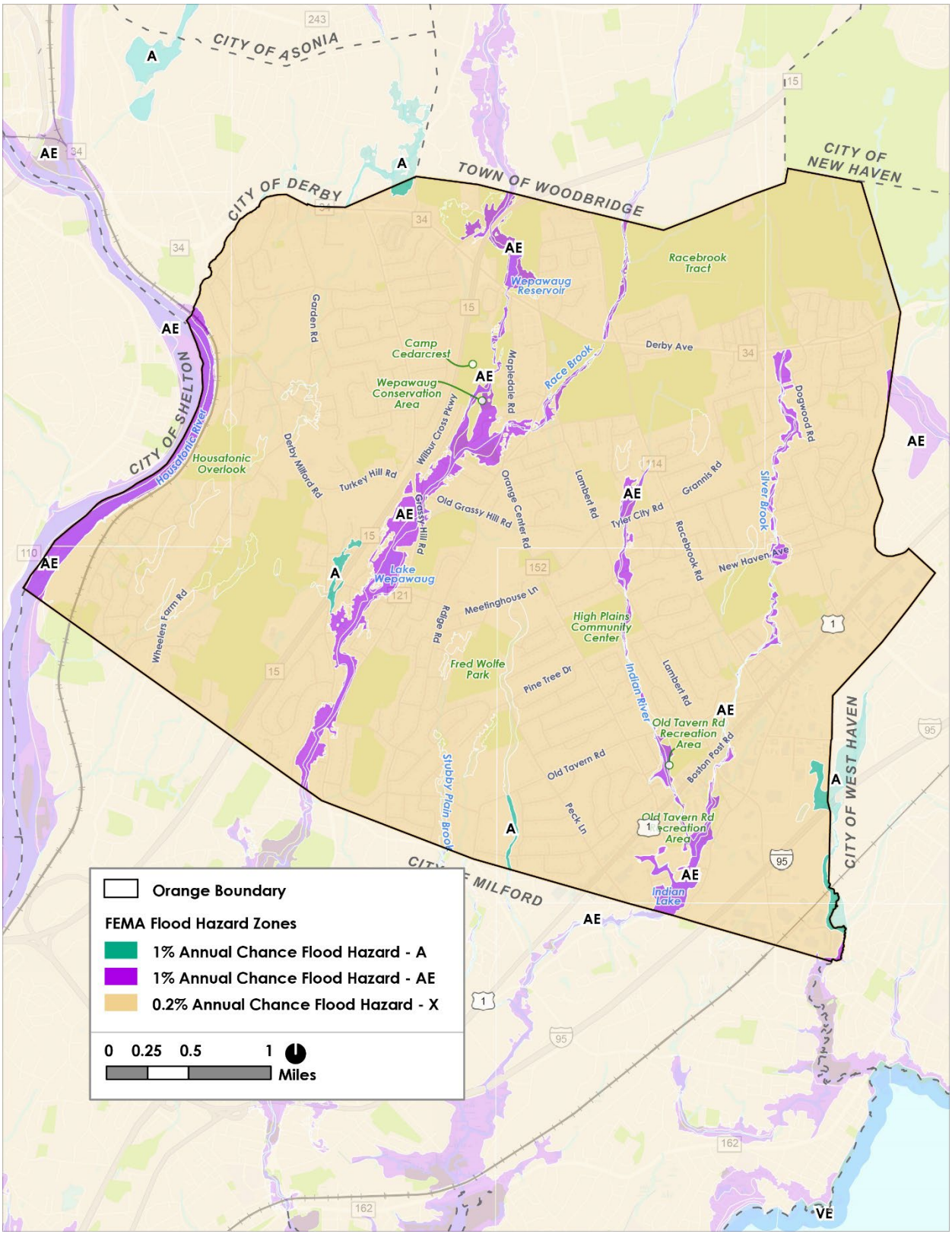
Stormwater Management

Managing stormwater is another key aspect of environmental health for Orange residents. Areas of localized flooding have increased in recent years following major storm events. For instance, a significant flooding occurred in town during 2021 due to Tropical Storms Elsa and Ida. Tropical Storm Elsa occurred on July 9, 2021, and Ida occurred on September 1, 2021, resulting in 4.09 inches of rain and 5.77 inches of rain respectively. In response to these events, a drainage study was performed by Cardinal Engineering on behalf of the Town of Orange in the neighborhoods of Old Country Road/Coachmans Lane, Derby-Milford Road, and Pine Tree Drive/Peck Lane. Strategies identified to mitigate the flooding in Orange include replacing various culverts.

Flood Zones

The Federal Emergency Management Agency (FEMA) provides spatial data on all floodplain areas for municipalities across the United States. A floodplain is defined as any land area susceptible to being inundated by floodwaters from any source. In Orange, areas with a 1% annual chance of flooding (Zones A and AE) are predominantly located in the immediate area surrounding the Housatonic River, Wepawaug River, Race Brook, Indian River, and Silver Brook (see Figure 4). Aside from these areas, most of Orange is located within the 500-year floodplain (Zone X). These areas are considered to be of minimal flood hazard.

Figure 4: FEMA Flood Zones
Source: Esri, FEMA National Flood Hazard Layer (NFHL), BFJ Planning



Sustainable Practices

Adopting sustainable practices is key to supporting a more resilient and healthier Orange that can adapt to climate change and be better prepared to recover from emergencies and natural disasters.

Sustainable Design/Green Building Practices

One way to encourage sustainable growth is to incentivize green building practices. Enforcing Low Impact Development (LID) techniques is one approach to creating more sustainable building practices, through minimizing the amount of impervious surfaces and promoting infiltration of stormwater runoff. Additionally, Leadership in Energy and Environmental Design (LEED), is a national standard for sustainable building design that encourages buildings to conserve energy and water, reduce carbon emissions, and promote stewardship of natural resources.

Energy Conservation

Orange can greatly increase its sustainability by transitioning to renewable energy sources for residents, businesses, and the municipality itself. Possible ways to facilitate this transition include replacing streetlights with energy-saving LEDs, installing solar panels on municipal buildings, and encouraging energy-efficient appliances for new development. EnergyStar, created by the EPA and US Department of Energy, promotes energy efficient products such as water heaters, furnaces, boilers, and windows. The Town could explore incentivizing EnergyStar products or products that meet its criteria in the development of new residential or commercial buildings.

Land Use Regulation

The Town can also explore amendments to its Zoning Code to promote sustainable land use strategies. Minimizing the amount of impervious surface townwide is extremely important to improving water quality and decreasing flooding following major storms. Limiting the percentage of impervious surface for new development is one strategy, as well as providing incentives for using pervious pavers, green roofs, and rain gardens.

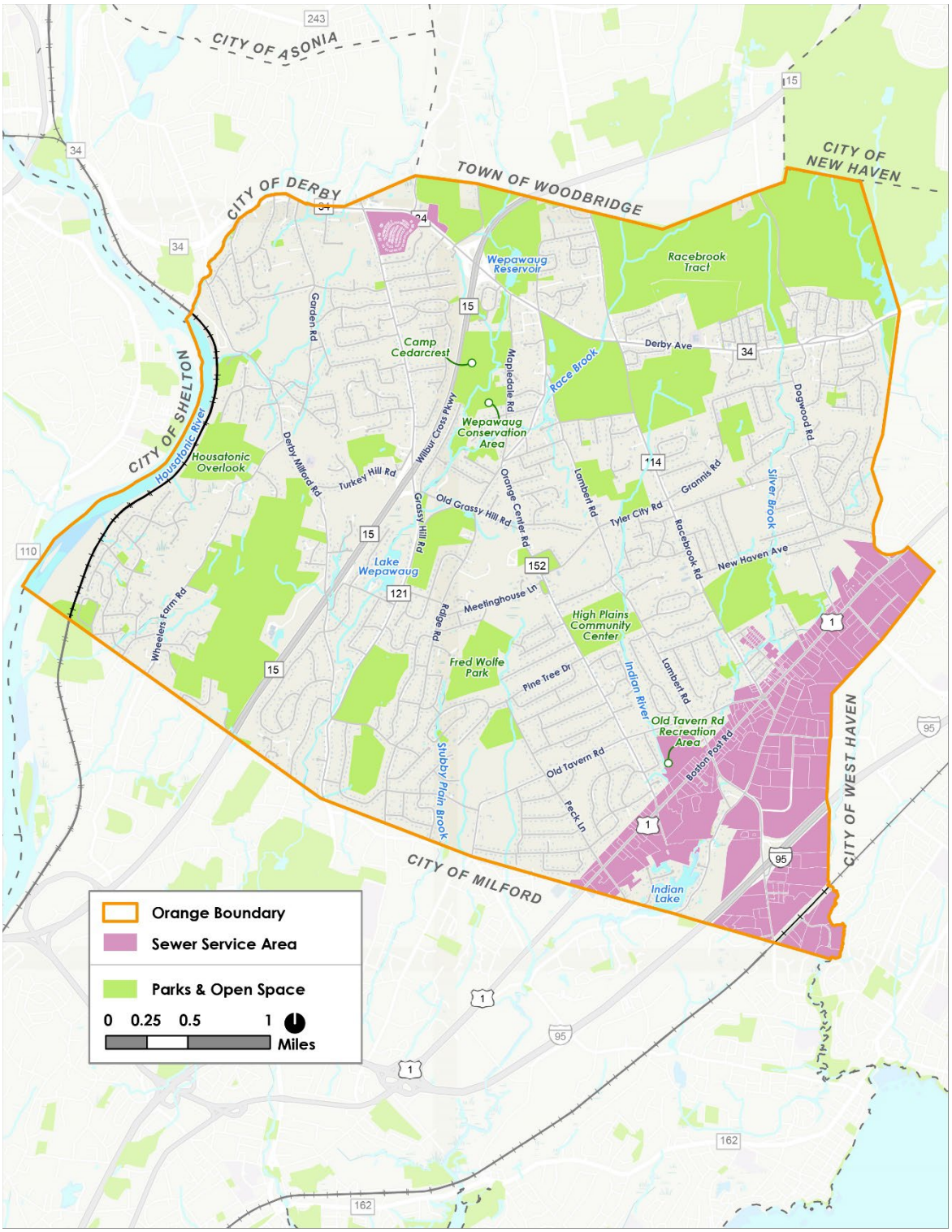
Sewage Treatment

The majority of residential areas in Orange use on-site septic systems for sewage treatment. However, the commercial and industrial areas, located around the Route 1/Post Road corridor, are served by public sewers. Sewer service is provided through intermunicipal agreements between Orange and the City of West Haven and City of Derby (see Figure 6).

Specifically, the northwestern area of Orange, on the corner of Derby Avenue and Grassy Hill Road uses the Derby Water Pollution Control Facility, whereas the area along the Post Road uses the West Haven wastewater treatment facility. Both agreements limit the area allowed to be served by sewers. Any parcels proposed for development outside of the agreed upon sewer service areas would necessitate an amendment to the intermunicipal agreements. These amendments must be approved by the Orange Board of Selectmen.

In 2022, sewer system capacity studies were conducted for the Boston Post Road and Woolco pump station sewersheds in response to proposed new developments. If there is continued interest in incorporating additional properties into existing intermunicipal sewer agreements, further investigation is needed to assess the cost and feasibility of expanding capacity.

Figure 5: Orange Sewer Service Area
Source: ESRI, Town of Orange, BFJ Planning



Recommendations

Water Resources

8.1 Manage Water Quality and Stormwater

8.1.1 Address storm drainage issues, particularly in neighborhoods experiencing flooding following storm events.

Sustainable Practices

8.2 Promote Sustainable Building Practices

8.2.1 Promote green building design for residential, commercial, and municipal buildings.
8.2.2 Incorporate land use regulations that minimize the creation of impervious surfaces.

8.3 Encourage Energy-Saving Practices

8.3.1 Explore the possibility of transitioning municipal facilities to more renewable energy sources, i.e. installing solar panels on roofs.
8.3.2 Transition municipal streetlights to energy-saving LEDs.
8.3.3 Consider incentivizing EnergyStar products or products that meet its criteria in the development of new residential or commercial buildings.

Public Water and Sewage Treatment

8.4 Manage Sewage Treatment and Public Water Supply

8.4.1 Maintain the capacity of Orange's public water and sewer systems.
8.4.2 Continue the use of septic systems in most areas of Orange and encourage or incentivize upgrades to the older or under-performing septic systems.
8.4.3 Evaluate necessary infrastructure upgrades and cost estimates for incorporating additional properties into existing intermunicipal sewer agreements.