# NORTH REDWOOD DEVELOPMENT CONCEPT PLAN

## Deliverable 1C: Project Memo #2

# Existing Conditions

February 2015

WALKER | MACY

LANDSCAPE ARCHITECTURE URBAN DESIGN PLANNING


Figure 1

NORTH REDWOOD DEVELOPMENT CONCEPT

**CONTEXT MAP**

## *Overview*

The City of Canby is a relatively small but rapidly growing community in the northern Willamette Valley of Oregon. Located less than 30 miles from the business centers of both Portland and Salem, Canby has experienced considerable demand for housing. Canby is expected to continue to be a place where people will be attracted to live. The extent of open space and protected farmland separating Canby from the Portland Metropolitan Area will help to maintain the unique small town character which continues to attract new residents seeking an alternative to an urban life style.

Canby has experienced cyclical but fairly steady growth for a number of years. The City of Canby's population is projected to show an 80% increase by 2035 with the addition of 4,951 new households and 3,490 new jobs (Metro Gamma Travel Forecast 2012). To accommodate this growth, the City will require incremental expansion. The 66-acre North Redwood site, on the northeast edge of the city, located in unincorporated Clackamas County inside the Canby Urban Growth Boundary, will likely absorb part of Canby's future growth. Annexation of the site requires citywide voter approval and also requires the City Council to adopt a Development Concept Plan (DCP) of which this Memo is one component.

In addition to conceptual land use and density alternatives, the DCP will also study the site's natural resources and consider how to protect these resources. The Plan will also build on the 2010 Transportation System Plan (TSP) and consider a supportive transportation system, opportunities for increased travel options, and optimal access locations for emergency service providers.

This memorandum outlines the existing conditions, opportunities, and constraints in the study area relevant to achieving project objectives. It also synthesizes existing plans, with an emphasis on embodying Canby's Community Values, protecting its natural resources, and creating a safer and more efficient transportation network in order to inform recommendations for conceptual development alternatives.


Eco-Park
NE Territorial Road
N Redwood Street
NE 19th Loop
19th Ave Loop
Natural Area
Willow Creek
NE 20th Ave
N Vine Street
N Walnut Street
NE 19th Ave
N Teakwood Street
N Teakwood Circle
Old Logging Road Trail
NE 18th
NE 17th Ave
N Ponderosa Street
NE 16th Ave
N Redwood Street
NE 15th Ave
NE 14th Pl
N Ponderosa Street
NE 13th Pl
NE 12th Ave
N Ponderosa Street
N Redwood Street
Spruce Ct
NE 10th Pl
NE 11th Ave
NE 11th Ave
Union Pacific RR
Hwy 99E
Otto Road
100'
NORTH REDWOOD DEVELOPMENT CONCEPT
BASE MAP
N
0
100
200
400
800
Feet

Figure 2

## *Site Context*

The study area, on the northeast edge of the City, is bounded by OR99E and the Union Pacific Railroad to the east and south, NE Territorial Road on the north and N Redwood Street on the west (Figures 1 and 2). The study area is within a half-mile walking distance of several significant open spaces along the Willamette River that will potentially be developed with further amenities in the future. It is also located in a prime position to create a link in the "Emerald Necklace", a conceptual open space and trail loop (envisioned by the City) that links parks, schools, and other public facilities. To the west of the site, the Old Logging Road Trail, a multi-use path, connects Baker Prairie Middle School at the south to City-owned open space on the banks of the Willamette River. Its proximity to the Pioneer Industrial Park employment center represents a potential draw for future homebuyers who wish to live close to their workplaces.

### *Planning and Regulatory Context*

*[Readers should refer to the 2007 Comprehensive Plan for an overall policy framework for future growth in Canby.]*

The study area has been identified since the first Comprehensive Plan's release in 1984, as a logical location for future urban growth. Currently land in the study area has not yet been annexed to the City and has a Clackamas County zoning designation of Rural Residential Farm Forest 5-Acre District (RRFF-5). Primary uses allowed by this zoning designation include rural home sites with a minimum of 5 acres for newly created lots, farm uses, and forest uses.

The project area is within the City of Canby's urban growth boundary (UGB) and the City has applied Comprehensive Plan designations for future development. If successfully annexed into the City, based on those Comprehensive Plan designations, approximately 46 acres (60%) would be zoned R-1 (low density residential); 19 acres (32%) would be zoned R 1.5 (medium density residential); and 2 acres (8 %) zoned R-2 (high density residential).

### *Canby Community Visioning*

In 2013, the City of Canby adopted a Community Vision that communicates the needs and priorities of its citizens, around four priority areas: Community, Parks and Recreation, Transportation and Public Safety, and Growth and Economic Development. The study area presents a number of opportunities for future urbanization to fulfill these community aspirations. For example, adequate development of bicycle and pedestrian infrastructure could make central Canby, employment and large format retailers easily-accessible from the study area, connecting residents to local businesses. Future development could provide key connections between residences and the Old Logging Road trail, fulfilling the community's desire for greater trail and off-street connections. It could also connect residents to a future bicycle trail leading northeast along US 99E to Oregon City and Willamette Falls.

View north of NE Territorial Road toward Eco Park and City-owned open space on the banks of the Willamette River

19th Avenue City Park viewed from study area's eastern perimeter

In terms of Transportation, the study area should have high-quality pedestrian and bicycle infrastructure to promote active transportation. Safe, attractive streets also help achieve Growth and Economic Development goals. Development should exemplify "pleasant, livable neighborhoods with tree-lined, wide, safe streets", including homes of high-quality construction. High-caliber development can help attract residents that are drawn to Canby's employment opportunities and quality of life.

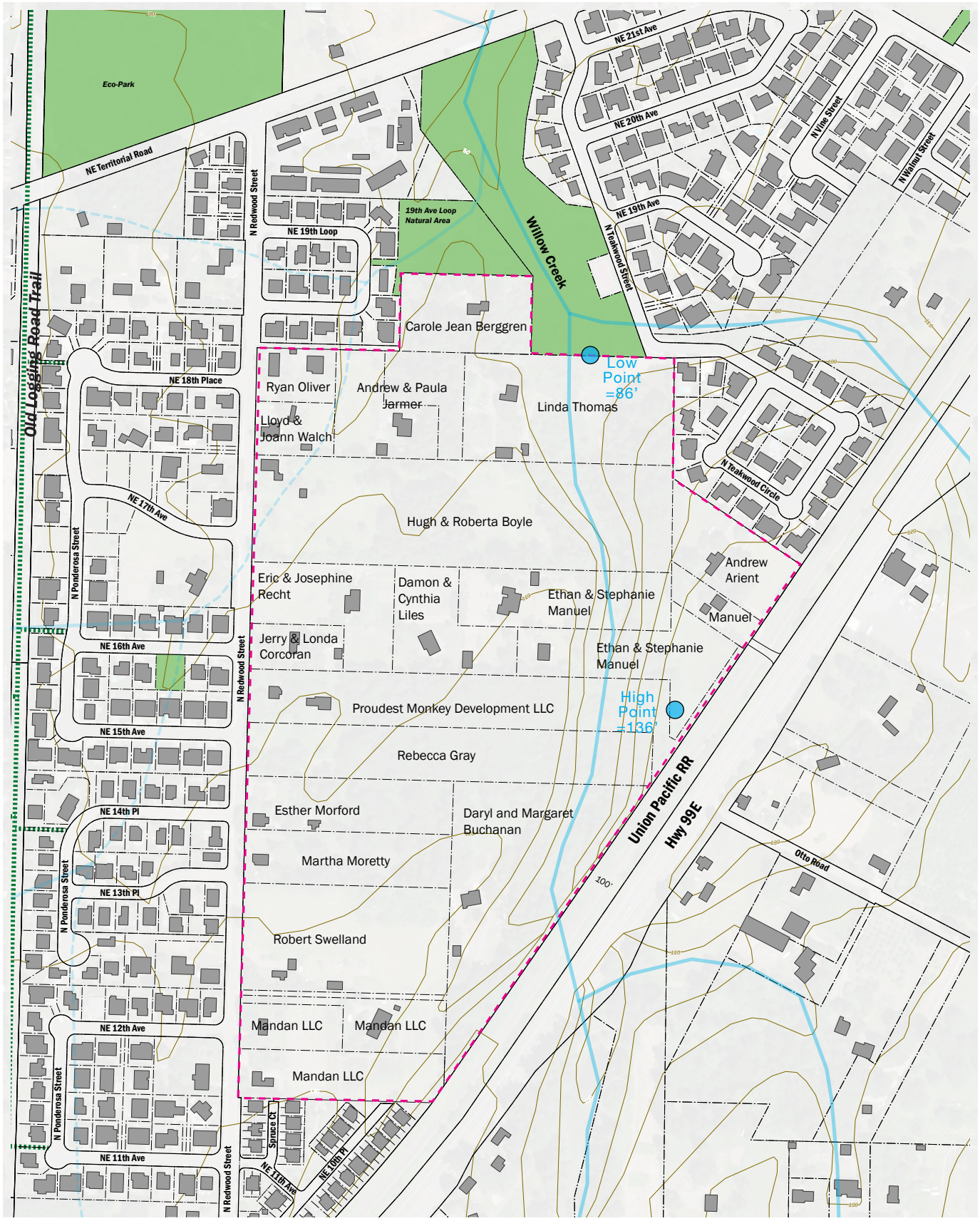



Figure 3

NORTH REDWOOD DEVELOPMENT CONCEPT
**BASE MAP**

N

0 **100** 200 400 800 **Feet**

### *Site Character*

This study area is situated in a bend of the Willamette River, with a rich nearby network of public open spaces and natural areas that will provide an identity and sense of place to future residents. North across NE Territorial Road, there are potential connections to the densely-forested Eco Park and the Willamette Wayside Natural Area. The site's topography is relatively flat, but slopes gently from the west and east toward the canyon of Willow Creek, which itself flows north to the Willamette. The high point on site is 136' above sea level (across from Otto Road) and the low point is 86', next to Willow Creek. Within the site, there is an opportunity for views into the Willow Creek drainage and a possible future linear park or trail along its course.

### *Edges and connections*

The site's proximity to the multi-use path along Old Logging Road creates an opportunity to link the site to regional amenities including parks, schools, and employment centers. OR 99E connects the site to Oregon City seven miles to the north and provides direct access to downtown Canby to the south. However, its high speeds and traffic volume -- along with the active United Pacific Railroad line that runs alongside it -- represent a physical and noise barrier between the site and the Pioneer Industrial Park to the south. Currently, only one property has driveway access across the railroad to the highway. This edge of the site will need attention to safety, access, and noise concerns. A significant residential edge to the west will require privacy and adjacency considerations when planning future development.

Recent clearing of existing trees by current property owner in study area

The Union Pacific Rail Road and OR99E border the study area to the south, creating a barrier

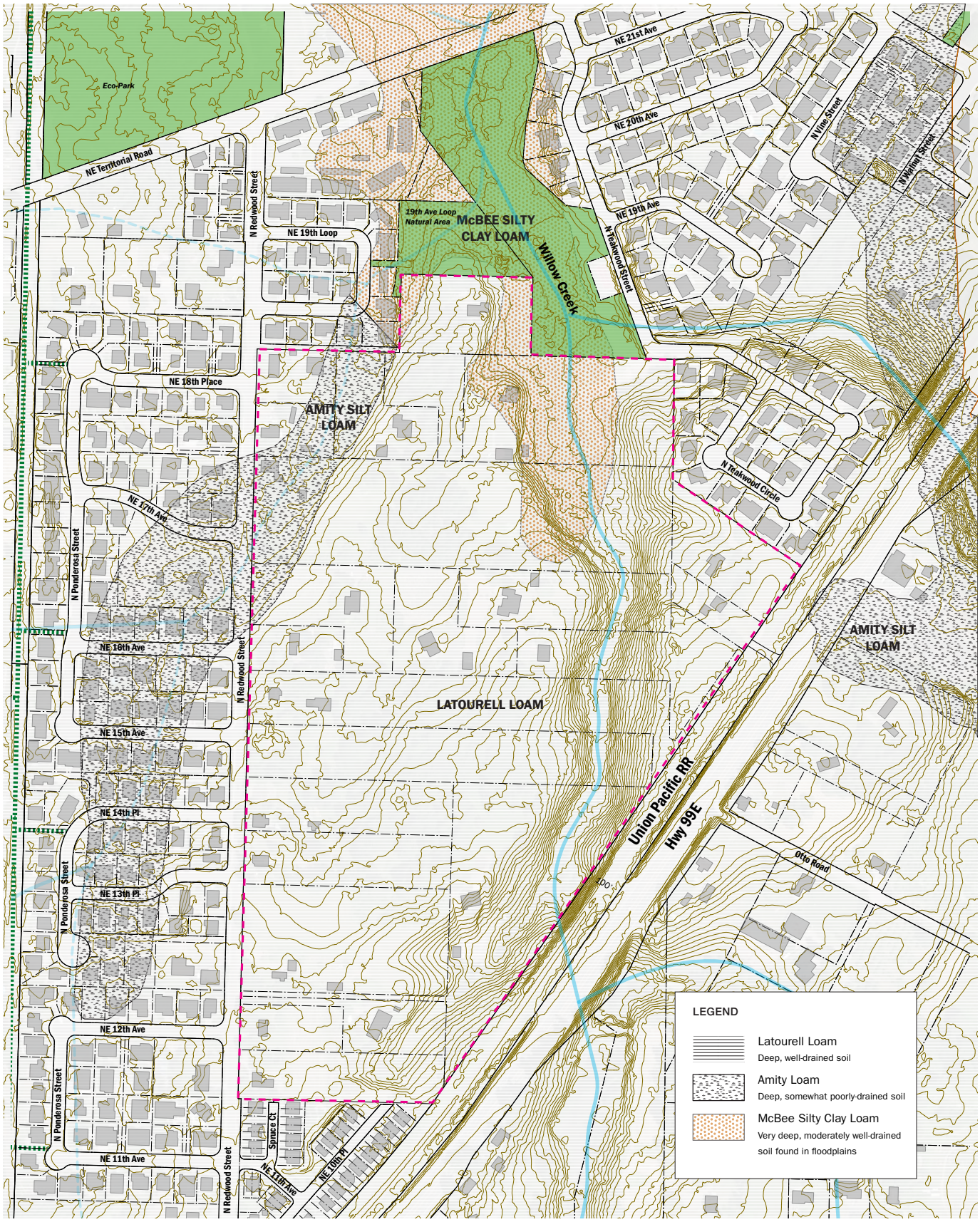



Figure 4: Soils

### *Environmental Context and Natural Resources*

To the north, the site is bordered by 19th Avenue City Park, creating a quiet edge. This natural area contains a portion of Willow Creek and acts as a buffer between the site and NE Territorial Road. Dense vegetation surrounds Willow Creek's passage through the site. Existing properties are currently accessed using private drives from the perimeter of the site, and most of the core of the land area is covered with tree stands; however, property owners have recently cleared some of these trees. Much of the site's vegetated area contains invasive species such as English Ivy and Himalayan Blackberry.

Willow Creek is a significant natural resource that runs through the site from south to north. As a spring-fed stream with an associated 100-year floodplain, Willow Creek is protected under Clackamas County Zoning and Development Ordinance Sections 703 and 704. The creek, in addition to being a visual amenity that can attract homebuyers, could potentially be central to stormwater catchment from the site's developed area. The City's parkland dedication development standards provide a tool to ensure some protection of the natural area along its banks. Federally-designated wetland areas exist upstream from site to the south, but there is no recognized wetland within the study area.

Soils in the study area (Figure 4) are primarily Latourell Loam, a well-drained, deep soil that is suitable for development. Amity Silt Loam and McBee Silty Clay Loam, the remaining two soil types, exist on several lots at the north end of the site. These soils are associated with Willow Creek and its drainages, and are largely encompassed by vegetated buffer areas. Currently, the site is densely vegetated, particularly along the banks of Willow Creek. According to County data, no heritage trees exist on site – however, existing trees can be a significant resource that improve property values and enhance the character of new development. A 2010 Portland-area study found that each street tree adds an average of $8,870 to the sale price of a house. [1]

1 Donovan, Geoffrey H., and David T. Butry. "Trees in the city: Valuing street trees in Portland, Oregon." *Landscape and Urban Planning* 94.2 (2010): 77-83.

The small canyon created by Willow Creek runs through the site from south to north

Federally-designated wetland upstream (south) from study area

The center of the site is densely vegetated, creating a distinct visual character, but invasive ivy dominates

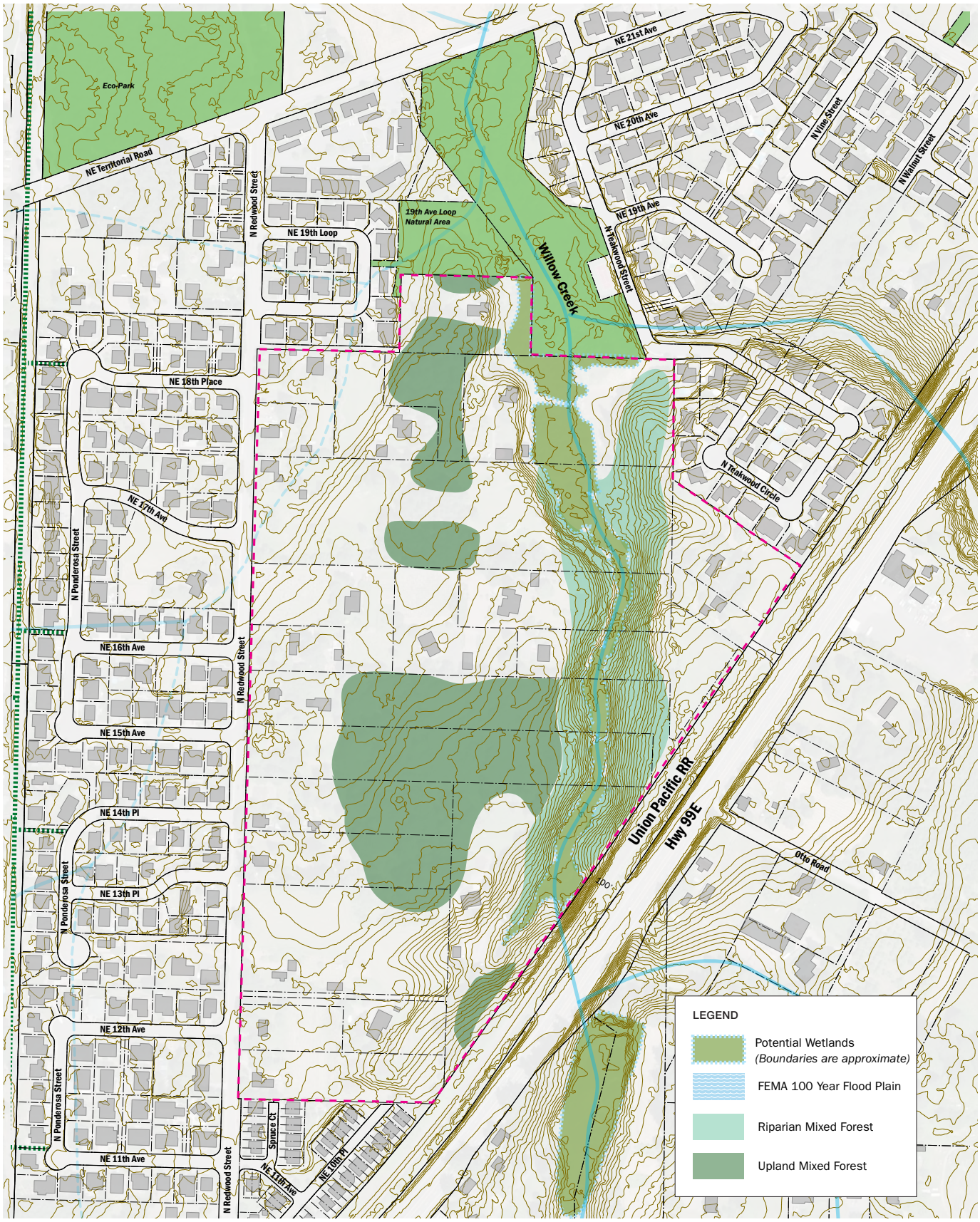



Figure 5: Environmental Conditions

## *Site Habitat and Wetland Assessment*

Pacific Habitat Services conducted a reconnaissance-level site assessment on February 3, 2015 to determine the approximate location and quality of wetlands and other natural resources along the Willow Creek riparian corridor. While the US Army Corps of Engineers' 1987 Wetland Delineation Manual and the more recent Western Mountains, Valleys and Coast Region regional supplement provide the guidelines and methodology for defining the regulatory boundaries of wetlands and other waters, this study only utilized those guidelines to roughly approximate the wetland boundaries.

Determining the precise limits of state and federally regulated wetlands would require more extensive soils and vegetation sampling by a wetland specialist on a lot by lot basis, a service needing to be arranged, as desired, by individual landowners. (Note that once any wetland delineation has been conducted and the boundaries approved by the Oregon Department of State Lands, those findings are valid for a period of 5 years.)

### *Wetlands*

Wetlands within the study area are primarily confined to the lower slopes and relatively broad floodplain of the Willow Creek ravine (Figure 5). These riparian wetlands occur within a mostly closed canopy forest in the southern portion of the study area, transitioning to a more open, scrub-shrub to emergent wetland as one nears the northern study area boundary. Reed canarygrass becomes the dominant groundcover species in these more open areas.

Soils within the Willow Creek ravine vary from deep silt loams high in organic matter on the lower slopes and slightly elevated floodplain terraces, to cobbly loams subject to seasonal stream overflows within the floodway. The lower terraces were saturated at or near the surface at the time of the site visit.

### *Willow Creek*

Willow Creek is a perennial stream that flows roughly south to north through the mostly forested ravine. During the site visit the flows were inundating much of the broad ravine bottom, nearly to the base of slope in some areas, with the active channel often poorly defined in those areas. Approximately 0.60 inch of rain fell in the 2 days prior to the site visit.

While the primary streamflows originate from a culvert beneath Hwy. 99E, flows are augmented by a smaller unnamed spring-fed stream that joins Willow Creek within TL 100. Additional seasonal springs were observed to discharge to the creek from near the base of the ravine on other parcels as well.

Water quality appears to be relatively high, presumably due to relatively well vegetated slopes within the watershed. The spring inputs may help to maintain these clear flows as well. Clackamas County currently regulates Willow Creek under their Rivers and Stream Conservation Areas (RSCA) ordinance. Willow Creek in the study area is subject to a 50' riparian protection setback on either side of the creek, as measured from the mean high water line. Once this area is brought into the City of Canby, it will be the City's discretion whether these setbacks are adopted, or new ones created.


Figure 6: Excerpt from Clackamas County RSCA map. Yellow line denotes Willow Creek, subject to 50' setbacks from mean high water.

### *Table 1: Current Vegetation List*

Table 1 provides a partial species list for the Willow Creek riparian area, along with whether the species is native or has been introduced to the site. Several species may be considered especially noxious or invasive, and may justify control efforts over time.

| Species Name | Common Name | Native/ Introduced?* |
|---|---|---|
| TREES | | |
| Abies grandis | Grand fir | N |
| Acer macrophyllum | Bigleaf maple | N |
| Alnus rubra | Red alder | N |
| Fraxinus latifolia | Oregon ash | N |
| Populus balsamifera ssp. trichocarpa | Black cottonwood | N |
| Pseudotsuga menziesii | Douglas fir | N |
| Thuja plicata | Western red cedar | N |
| | | |
| SHRUBS/ WOODY VINES | | |
| Acer circinatum | Vine maple | N |
| Berberis aquifolium | Tall Oregon grape | N |
| Corylus cornuta/ C. avellana? | hazelnut | N/I |
| Crataegus monogyna | One-seed hawthorn | I |
| Hedera helix | English ivy | I* |
| Ilex aquifolium | English holly | I |
| Oemleria cerasiformis | Indian plum | N |
| Prunus avium | Sweet cherry | I |
| Rubus armeniacus | Himalayan blackberry | I* |
| Rubus leucodermis | White stem raspberry | N |
| Rubus spectabilis | Salmonberry | N |
| Rubus ursinus | California dewberry | N |
| Salix spp. | Willows | N |
| Sambucus racemosa | Red elderberry | N |
| Symphoricarpos albus | Common snowberry | N |
| Vinca sp. | periwinkle | I |
| | | |
| HERBS | | |
| Agrostis spp. | Bentgrass | I |
| Arum italicum | Italian arum | I |
| Callitriche sp. | Water starwort | N/I? |
| Cardamine oligosperma | Little western bittercress | N |
| Carex hendersonii | Henderson's sedge | N |
| Carex leptopoda | Dewey's sedge | N |
| Carex obnupta | Slough sedge | N |
| Cirsium spp. (C. arvense, C. vulgare) | Canada and bull thistles | I* |
| Daucus carota | Queen Anne's lace | I |
| Equisetum arvense | Field horsetail | N |
| Galium aperine | Bedstraw | I |
| Geranium robertianum | Herb Robert | I |
| Geum macrophyllum | Large leafed avens | I |
| Holcus lanatus | Common velvetgrass | I |
| Lapsana communus | Nipplewort | I |
| Leucanthemum vulgare | Oxeye daisy | I |
| Lysichiton americanum | Skunk cabbage | N |
| Nasturtium officinale | Watercress | I |
| Oenanthe sarmentosa | Water parsley | N |
| Phalaris arundinacea | Reed canarygrass | I* |
| Polystichum munitum | Swordfern | N |
| Polypodium glycorrhiza | Licorice fern | N |
| Ranunculus repens | Creeping buttercup | I |
| Scirpus microcarpus | Small fruited bulrush | N |
| Solanum dulcamera | Climbing nightshade | I |

***These species tend to be especially invasive in disturbed habitats, warranting control efforts whenever possible.**

Table 1. Partial Species List (compiled during site visit February 3, 2015)

### *Vegetation Communities*

#### *Wetlands (Forested to Emergent)*

Vegetation within the Willow Creek ravine bottom has been greatly influenced by the availability of seasonal moisture in these areas. The primary woody species actually growing in the ravine bottom include red alder, salmonberry, and vine maple. Willows were also observed near the northern limits of the study area as the ravine broadens into a larger, more open bottomland dominated by reed canarygrass. Notable wetland herbaceous species (besides reed canarygrass) include slough sedge, water parsley, skunk cabbage, and watercress; these species are primarily located in areas subject to shallow seasonal inundation from stream flooding. (Figure 5)

Scattered stands of willow, cottonwood, and Oregon ash become more evident in the mostly open areas to the north of the study area.

#### *Riparian Mixed Evergreen-Deciduous Forest*

Riparian forest habitat quality is moderately high due to good structural diversity. The mixed evergreen-deciduous canopy is relatively mature and well developed, and includes western red cedar, red alder, Douglas fir, bigleaf maple, and black cottonwood. Several windthrown trees and standing snags provide added habitat structure to the stand as well.

The riparian understory, however, is of somewhat lower quality due to extensive infestation by non-native shrubs (esp. English ivy). The ivy in particular crowds out many other native shrubs and groundcover species, eliminating sources of food and cover for a variety of wildlife species. In addition, its presence in many of the tree crowns threatens the longterm health of these trees.

#### *Upland Mixed Evergreen-Deciduous Forest*

Several parcels also include relatively dense stands of upland forest that are comprised of either a mixed evergreen-deciduous canopy (typically Douglas fir and bigleaf maple), or are mostly Douglas fir. Portions of at least two lots have been subject to recent logging activity, with many of the deciduous trees left standing. In addition, smaller mixed tree stands (comprised of a variety of native as well as non-native species) are scattered about the residential lots as well, often with houses nestled among the trees.

#### *Developed/ Landscaped*

The developed or landscaped areas within the study area include previously cleared land that is now either occupied by structures, access roads, or driveways, or is maintained in an open condition (periodically mowed lawn or pasture, scattered landscape plantings, etc.). These conditions are typical of much of the study area outside the Willow Creek ravine.

### *Riparian Habitat Enhancement Opportunities*

The best opportunities for enhancing the Willow Creek riparian corridor within the study area will likely require some control of invasive non-native species. Such control efforts would open up areas of the understory that could then be enhanced by planting native species adapted to the site conditions.

As previously mentioned, English ivy dominates large areas of the forest understory and has infested many tree crowns as well. Unfortunately, attempting to control this vine alone constitutes a huge undertaking that could readily use up available resources, so may be best approached on a phased or limited control basis. The most immediate control effort with long term benefits would be to girdle the aerial vines in order to limit damage to the trees. Controlling the ivy groundcover could then be approached more gradually or in limited areas as resources allow.

Shade-tolerant native shrub plantings typically have a better chance of competing with the ivy than do herbaceous species, with the possible exception of sword fern. In addition, plantings of shade tolerant conifers (especially western red cedar, western hemlock, and grand fir) can provide additional year round cover near the creek.


Figure 7: Willamette Wayside Master Plan concept (2004)

## *Parks and Open Space Plans*

Goals 6 and 7 of Canby's Park and Recreation Master Plan (PRMP), updated in 2000, recommend acquisition to meet a community standard of 10 acres of developed park land per 1,000 residents (at an average of 2.7 persons per single family home), while requiring "[allocation of] land for neighborhood parks in rapidly developing areas on the edges of the City". Chapter 16.120 of the city's Title 16 implements the Comp Plan and Park and Recreation Master Plan's policies, by outlining parkland dedication standards for new development (or SDC cash dedicated in lieu). The basic formula for this parkland dedication is:

***(Maximum units in a plat) x (persons/unit) x 0.01 (acreage to be dedicated)***

*(Using a conservative benchmark to test this formula, if we were to imagine that the entire study area was eventually zoned at R-1, with a minimum lot area of 7000sf, then that would theoretically result in approx 300 units on 66 acres (accounting for roughly 20% of a site as roads). If we multiply this number by an average of 2.7 persons/unit, we get a total theoretical future population of 810. Multiplying this by the acreage ratio, results in a theoretical park acreage in the study area of about 8 acres. Clearly, since the future zoning will likely be for higher densities, the potential future park space may be higher.)*

The PRMP led to the creation of a Parks Acquisition Plan in 2001. This document recommends that vacant land in the site area be considered first for parks acquisition (currently, only two tax lots in the study area, a total of 5.9 acres, are vacant). The Acquisition Plan found that the study area and surrounding neighborhoods have a projected parks deficit of 44.1 acres at full build-out. Development of the North Redwood site provides an opportunity to set aside land for parks. Local residents interviewed for this study expressed concern at the City's lack of dedicated funding for maintenance of existing parks properties in the city.

The study area is one of these developing areas on the City's edge – and any development proposals will need to include dedicated park space. Certain factors are listed for consideration, including the fact that no more than 25% of the dedicated land can be in floodplain or steep slopes. There are also standards for obtaining credit for private park land provided. (see the box at right for park dedication standards)

In 2004, the Willamette Wayside Plan (Figure 7) outlined comprehensive recommendations for the development of the City-owned Fish Eddy property and adjacent open space areas. These included a future trail connection to Molalla State Park and future bicycle and pedestrian access through Eco Park to the river – these types of improvements and amenities would provide direct benefit to development in the study area.

Title 16 includes the following factors for the City to consider when deciding whether to accept land offered as part of proposals, or to accept cash in lieu. These factors are shown below.

**1. The topography, geology, public streets access to, parcel size, shape, and location of land in the development available for dedication;**

**2. Relationship of site to surrounding land uses and the surrounding transportation system;**

**3. Potential adverse/beneficial effects on environmentally sensitive areas;**

**4. Compatibility with the Park and Recreation Master Plan and Park and Open Space Acquisition Plan, Public Facilities element of the Comprehensive Plan, Transportation System Plan and the City of Canby Parks Capital Improvement Plan in effect at the time of dedication;**

**5. Opportunity for preservation of natural and historical features, scenic viewpoints, watershed environments, and sections of land for wildlife habitat.**

**6. Connections with, and continuity of, open space links, trails, and other major components of the open space system for parks.**

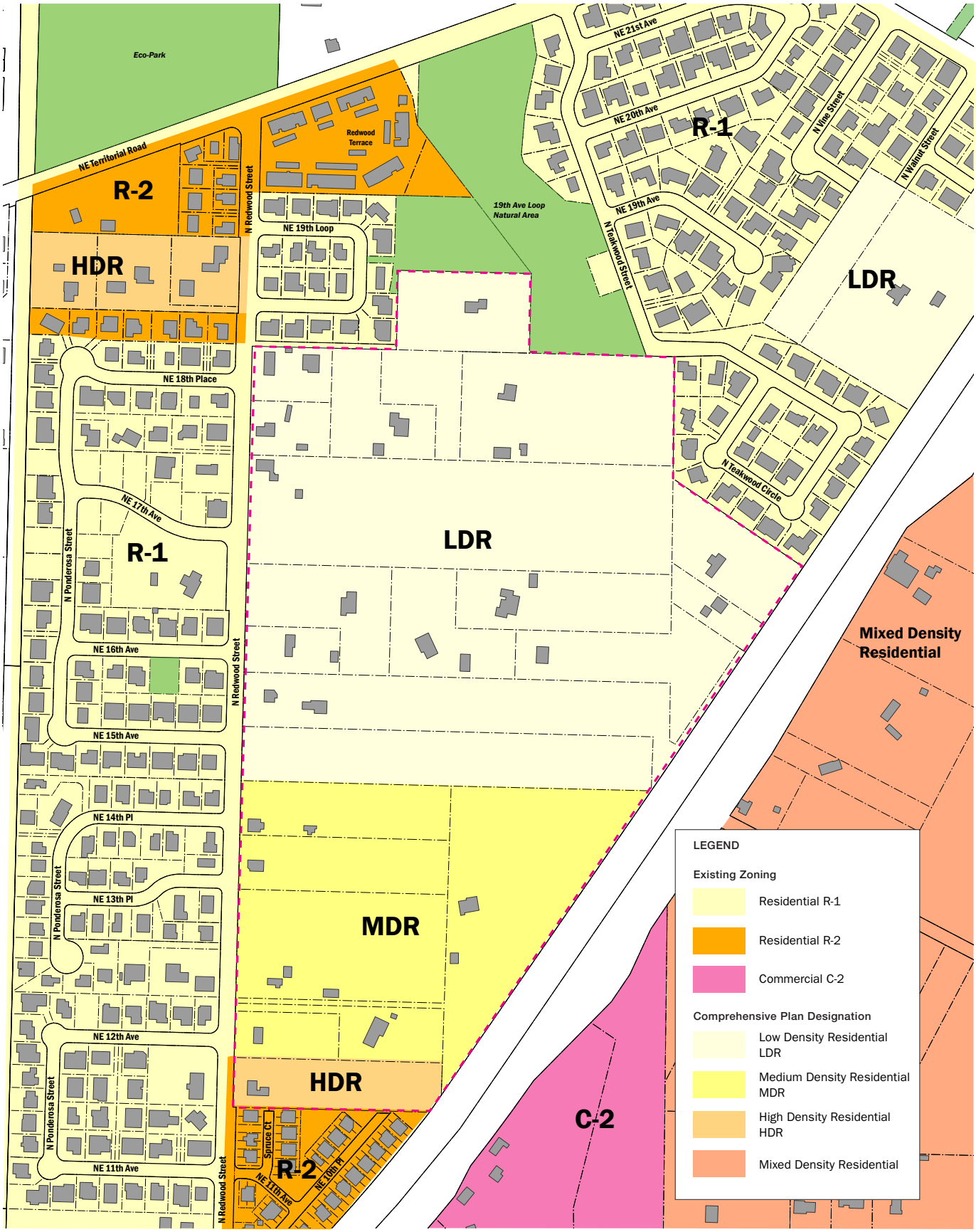
**7. Availability of previously acquired property;**

**8. Opportunity for shared use with other community facilities;**

**9. Opportunity for future expansion of the site; and**

**10. The feasibility of dedication.**

Willamette Wayside Plan site


Eco-Park
NE Territorial Road
R-2
HDR
Redwood Terrace
N Redwood Street
NE 19th Loop
19th Ave Loop Natural Area
NE 21st Ave
NE 20th Ave
R-1
N Vine Street
N Walnut Street
NE 19th Ave
N Teakwood Street
LDR
NE 18th Place
N Teakwood Circle
NE 17th Ave
R-1
N Ponderosa Street
LDR
NE 16th Ave
N Redwood Street
NE 15th Ave
Mixed Density Residential
NE 14th Pl
NE 13th Pl
N Ponderosa Street
MDR
NE 12th Ave
N Ponderosa Street
HDR
C-2
Spruce Ct
NE 11th Ave
R-2
NE 10th Pl
NE 11th Ave
N Redwood Street
LEGEND
Existing Zoning
Residential R-1
Residential R-2
Commercial C-2
Comprehensive Plan Designation
Low Density Residential LDR
Medium Density Residential MDR
High Density Residential HDR
Mixed Density Residential
NORTH REDWOOD DEVELOPMENT CONCEPT
ZONING
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400
800
Feet

Figure 8

## *Land Use Context*

As noted above, the site is currently zoned with a County designation of Rural Residential Farm Forest 5-Acre District (RRFF-5), but its comprehensive plan zoning designates 60% of the area as low-density residential (7,000 to 10,000 s.f. lot area), 32% as medium-density residential (5,000 to 6,5000 s.f. lot area), and 8% as high-density residential (minimum 14 du/acre). The small, high-density area is directly adjacent to an existing pocket of high-density residential bordering OR 99E to its south, called Garden Crossing. The study area is generally zoned on a transect, with higher density at the south closer to downtown and retail services and lower density toward the natural areas to the north (Figure 8).

There are 23 tax lots on the site and 18 property owners (Figure 9, right). Total real market value for both land and structures for all properties is estimated at $6,720,607. Only two lots do not have existing structures. (Table 2)

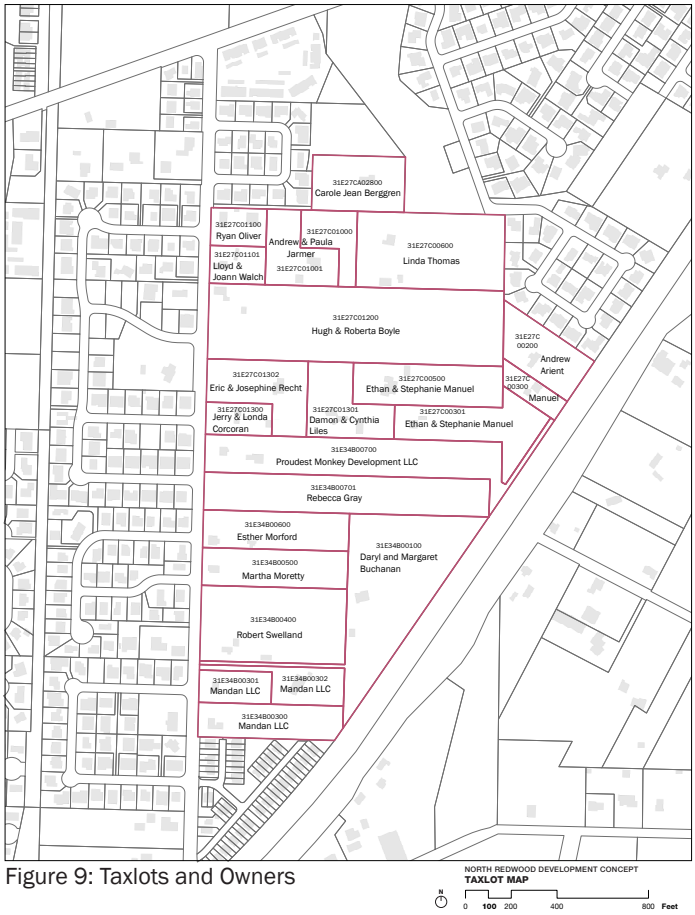


Figure 9: Taxlots and Owners

Table 2: Buildable land within the study area.

| Taxlot ID | Owner | Site Address | Year Built | Acreage |
|---|---|---|---|---|
| 31E27C 00200 | Andrew D Arient | 22781 S Hwy 99E 97013-2565 | 1979 | 2.0 |
| 31E27C 00300 | Ethan & Stephanie Manuel | 22881 S Hwy 99E 97013-2525 | 1944 | 0.7 |
| 31E27C 00301 | Ethan & Stephanie Manuel | 1650 N Redwood St 97013-2413 | 1992 | 2.7 |
| 31E27C 00500 | Ethan & Stephanie Manuel | 1612 N Redwood St 97013-2413 | 1964 | 2.7 |
| 31E27C 00600 | Linda J Thomas | 1864 N Redwood St 97013-2417 | 1987 | 4.9 |
| 31E27C 01000 | Andrew J & Paula J Jarmer | (No Situs) 97013 | No Structure | 1.2 |
| 31E27C 01001 | Andrew J & Paula J Jarmer | 1860 N Redwood St 97013-2417 | 1989 | 1.8 |
| 31E27C 01100 | Ryan T Oliver | 1850 N Redwood St 97013-2417 | 2006 | 0.9 |
| 31E27C 01101 | Lloyd A & Joann Walch | 1794 N Redwood St 97013-2415 | 1925 | 0.9 |
| 31E27C 01200 | Hugh R & Roberta M Boyle | 1758 N Redwood St 97013-2415 | 1925 | 9.8 |
| 31E27C 01300 | Jerry & Londa Corcoran | 1586 N Redwood St 97013-2411 | 1936 | 0.9 |
| 31E27C 01301 | Damon K & Cynthia L Liles | 1608 N Redwood St 97013-2413 | 1992 | 2.1 |
| 31E27C 01302 | Eric W & Josephine B Recht | 1594 N Redwood St 97013-2411 | 1992 | 2.4 |
| 31E27CA02800 | Carole Jean Berggren | 1868 N Redwood St 97013-2417 | 1939 | 2.3 |
| 31E34B 00100 | Daryl S & Margaret J Buchanan | 1260 N Redwood St 97013-2407 | 2002 | 6.8 |
| 31E34B 00300 | Mandan LLC | 1176 N Redwood St 97013-2404 | 1976 | 2.2 |
| 31E34B 00301 | Mandan LLC | 1212 N Redwood St 97013-2407 | 1955 | 1.0 |
| 31E34B 00302 | Mandan LLC | 1234 N Redwood St 97013-2407 | 1977 | 1.4 |
| 31E34B 00400 | Robert W Swelland Jr | 1268 N Redwood St 97013-2407 | 1935 | 4.8 |
| 31E34B 00500 | Martha Anne Moretty | 1350 N Redwood St 97013-2408 | 1940 | 2.4 |
| 31E34B 00600 | Esther L Morford | 1382 N Redwood St 97013-2408 | 1940 | 2.4 |
| 31E34B 00700 | Proudest Monkey Development LLC | 1548 N Redwood St 97013-2411 | 1920 | 5.2 |
| 31E34B 00701 | Rebecca S Gray | 1440 N Redwood St 97013-2410 | No Structure | 4.7 |
| | | **TOTAL** | – | **66.4** |

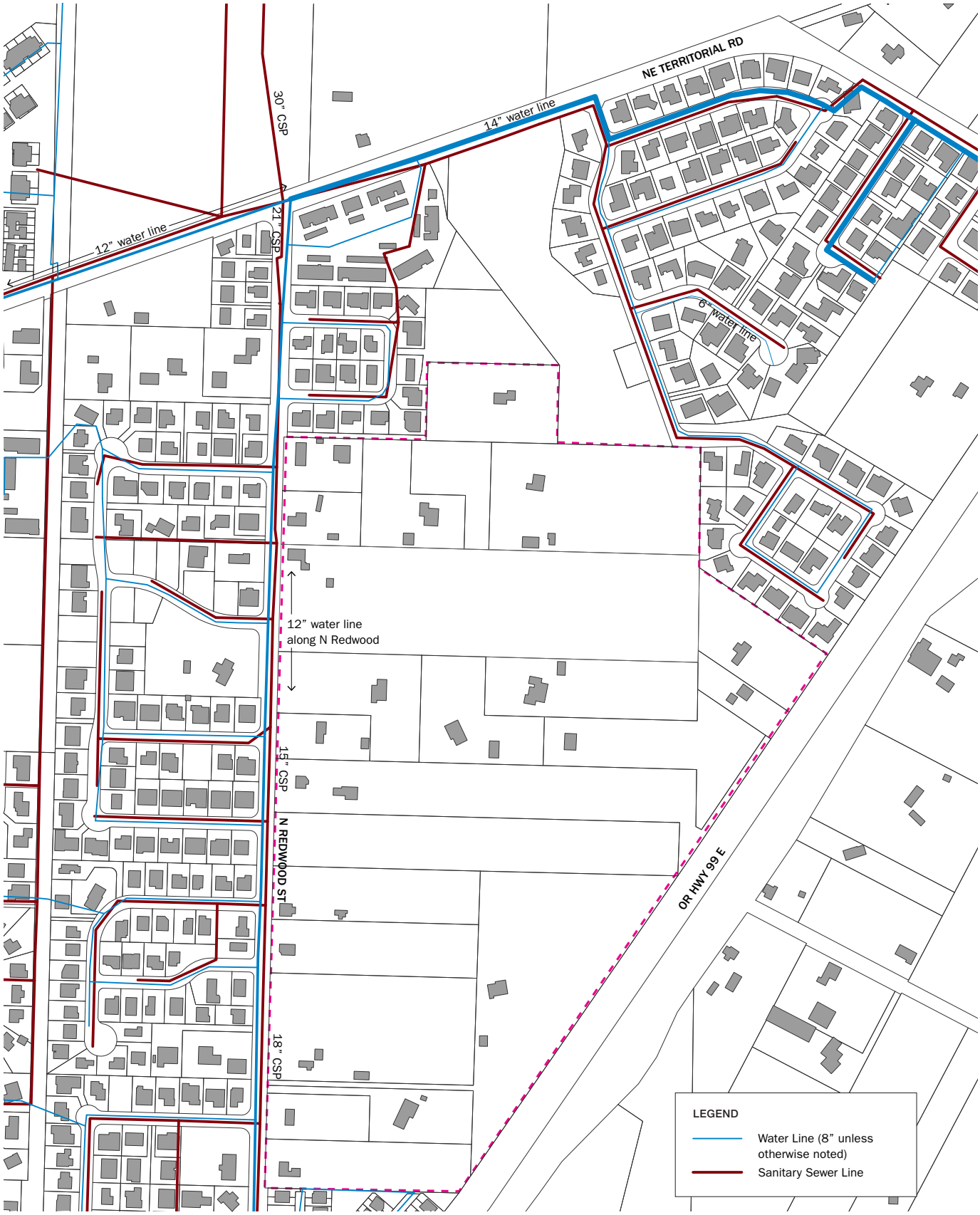



Figure 10

NORTH REDWOOD DEVELOPMENT CONCEPT
**UTILITIES MAP: WATER & SEWER**

## *Infrastructure*

### *Sanitary Sewer*

Sanitary sewer service is provided by the City of Canby. Systems are required to be approved by and to comply with the requirements of Oregon Department of Environmental Quality.

An existing sanitary sewer line is located in N Redwood Street, along the western project boundary (Figure 10). According to as-built information, the existing sewer line adjacent to the project is a 15-inch line and is approximately 8-foot deep. Beyond the project, the line increases in size to 21-inch and 30-inch as it reaches the wastewater treatment plant. The ability to connect to this line via gravity sewer would need to be evaluated based on proposed site grading to determine if the depth would allow for a gravity connection to the sewer. In addition, the capacity of this line should also be evaluated.

There are also existing sanitary sewer lines in N Teakwood Street at the northwest corner of the project site. The flow from the Teakwood Street sewer line flows to the Willow Creek Pump Station located at NE Territorial Road at Willow Creek. These lines should be evaluated to determine if the invert elevations are such that our project could connect, as well as if there is enough capacity in the existing lines to serve the project site. In addition, the pump station should be evaluated to determine if it has the capacity for additional flow.

### *Water*

Water within the City of Canby is provided by Canby Utility. Canby Utility completed a Water System Master Plan in 2010. The system analysis in the master plan included all areas within the Urban Growth Boundary, which includes the project site.

Waterlines adjacent to the project include an existing 12-inch waterline in N. Redwood Street and an 8-inch Line in N. Teakwood Street. A 14-inch transmission line is located in NE Territorial Road to the North. (Figure 10)

The Water System Master Plan notes several improvements that should be made to support future development. Improvements include an additional water supply source, a new 3.0 MG reservoir, and looping of existing water transmission lines. According to the Master Plan, these improvements are long term improvement goals scheduled for the years 2021 to 2030. Discussions with Canby Utility indicate that these improvements would not prohibit the development of this site. If the capital improvement projects are required to be able to serve the site, Canby Utility would time the improvements of those projects to occur along with development.

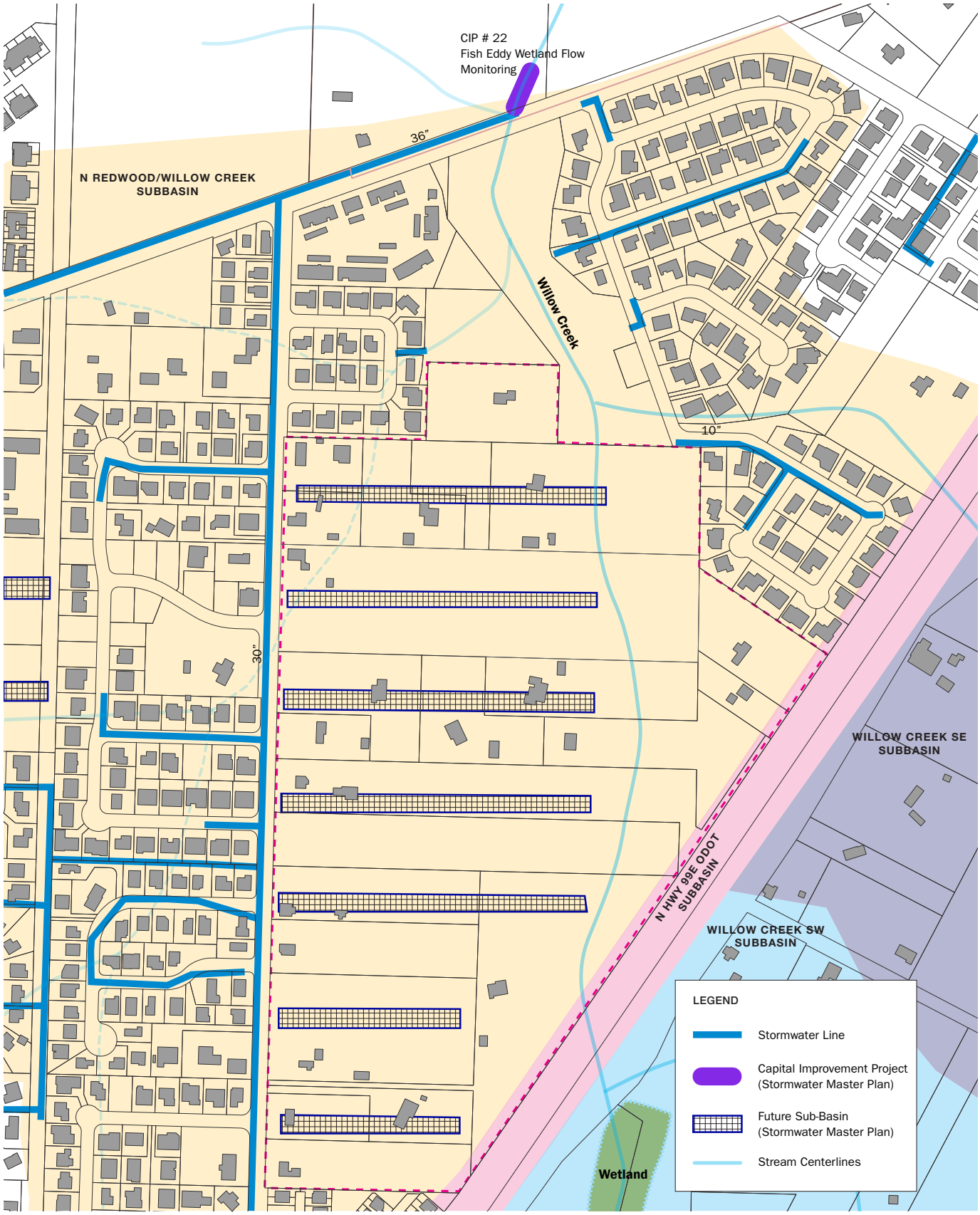



Figure 11

NORTH REDWOOD DEVELOPMENT CONCEPT
**STORMWATER MAP**

N

0 **100** 200 400 800 **Feet**

### *Storm Water Master Plan*

The City of Canby Public Works Design Standards require water quality and quantity treatment be provided for storm water runoff. Water quality treatment is to be provided per the Clean Water Services (CWS) design standards. Acceptable methods of treatment include vegetated swales, extended dry ponds, wetlands, LIDA treatment facilities, or proprietary treatment devices. Water quantity treatment is required unless it can be demonstrated that there are no adverse downstream impacts. Developed site peak discharge rates shall not exceed pre-developed rates for all storm events with a recurrence interval less than or equal to 25 year. Detention and retention facilities are both acceptable methods of water quantity treatment. Facilities shall be designed in accordance with CWS design standards.

Canby's 2013 Storm Water Master Plan makes stormwater management recommendations based on the assumption that the site and other areas zoned in the comprehensive plan will develop as zoned. The site is part of the Redwood/Willow Creek drainage basin. The existing basin has an impervious area of 22.2 acres. This would increase to approximately 34 acres with development. Modeling showed that the Willow Creek system, including existing conveyance pipes in N Redwood Street, has adequate capacity for the additional runoff. Seven future sub-basins are proposed within the site area. (Figure 11)

The N Redwood/Willow Creek drainage basin is planned to be part of the Fish Eddy Wetland Capital Improvement Project. As part of this project, a "treatment wetland will be part of a restoration of the entire Fish Eddy property to native seasonal wetland and wet prairie habitat." Storm water treatment will occur in a proposed treatment wetland. The Storm Water Master Plan anticipates that the runoff from development west of N Redwood Street will be piped to the existing conveyance system in N Redwood Street. This conveyance line discharges into the Fish Eddy property north of NE Territorial Road. Existing pipes in N Redwood Street should be evaluated based elevation of the existing pipes and the ability to drain this area to the N Redwood Street conveyance system, as well as the capacity of the existing conveyance lines.

Willow Creek crosses the site approximately 1000 feet east of N Redwood Street. Runoff from development between Willow Creek and Hwy 99 would be discharged directly into Willow Creek, which flows to the Willow Creek Wetlands and discharges through a weir structure to two 36-inch culverts under NE Territorial Road.

### *Franchise Utilities*

The project is within the service provider area for the following utilities:

- Electric – Canby Utility
- Natural Gas – NW Natural
- Telephone – Canby Telcom
- Cable – Wave Broadband

Canby Utility has indicated there are several locations in the vicinity of the project that could be used to provide power. When the site annexes into the district, they will be charged a fee from PGE, who provides power to Canby Utility, in accordance with their Service Territory Agreement. Canby Utility assesses that cost back to the property as part of the development cost. The amount of the fee is variable depending on the proposed use and type of development.

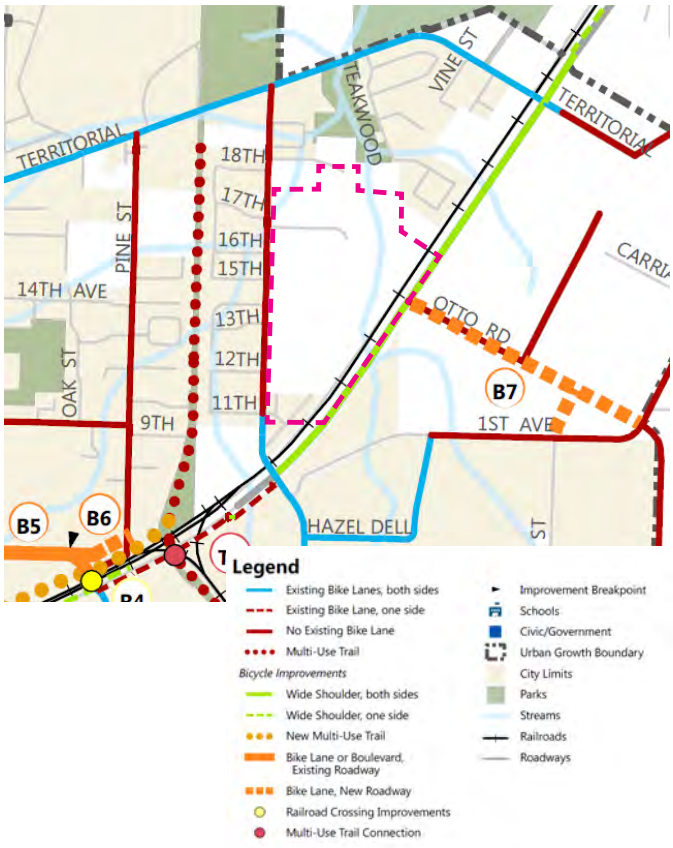
NW Natural has an existing 2-inch gas line in N Redwood Street for the length of the project site. In addition, a 2-inch line extends into the site to serve approximately five existing tax lots. NW Natural has indicated that they would be able to serve this site in the future.

Canby Telcom has verified that the project is located within their service district and can provide service to the site. In addition to phone service, Canby Telcom can also provide customers with internet and cable television services.

Location of proposed Fish Eddy treatment wetland


North Redwood Street


Financially Constrained Pedestrian Improvements (TSP Figure 5-1)




Financially Constrained Bicycle Improvements (TSP Figure 6-1)

## *2010 Transportation System Plan Summary*

The 2010 Canby Transportation System Plan (TSP) identified specific transportation improvement projects and programs needed throughout Canby to guide the City's transportation investment. These projects and programs support the City's goals and policies, serve planned growth through the year 2030, and improve safety and mobility for all travel modes in Canby. The TSP addressed all areas of Canby, including the North Redwood development area.

The sections from the 2010 TSP that are most applicable to the current North Redwood planning effort are summarized in the paragraphs below. Corresponding clips of figures—which are zoomed in on the project area—are also provided.

The majority of North Redwood Street only includes sidewalks along one side of the street (typically the west side). While no standalone project was identified as part of the TSP, sidewalks should be provided on both sides of North Redwood Street in conjunction with any roadway improvements so that the street meets Canby's Cross-Section Standards (see TSP Figure 7-5). It will also be beneficial to consider pedestrian crossings of North Redwood Street to facilitate connections to the Molalla Forest Road multi-use trail, which has multiple connection points to the neighborhoods on the west side of North Redwood Street. These improvements will help connect to the surrounding pedestrian network.

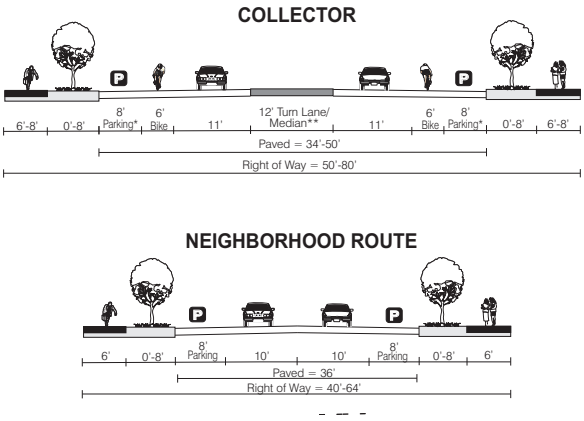
Other nearby pedestrian improvement needs include sidewalk infill on Territorial Road between Holly Street and Highway 99E (TSP Project S8) and sidewalks on the north side of Highway 99E (not a financially-constrained TSP project).

The only portion of North Redwood Street with bike lanes is the newer 500-foot section on the south end between Highway 99E and NE 11th Avenue. Because North Redwood Street is classified as a Collector street, it should include bike lanes on both sides of the road in conjunction with any roadway improvements to meet Canby's Cross-Section Standards. The bicycle network will also benefit from improved street crossings of North Redwood Street near connections to the Molalla Forest Road multi-use trail.

### *Functional Classification and Cross Sections*

Canby's functional classification hierarchy includes Arterials, Collectors, Neighborhood Routes, and Local Streets. North Redwood Street and Territorial Road are classified as Collectors, while Highway 99E is an Arterial. The potential future Otto Road extension would also be a Collector, while all the remaining streets that may be constructed in the project site would likely become local streets.

The Canby TSP provides Standard Cross-Sections for each of the City's functional classifications. The Collector cross-section includes two travel lanes with an optional center turn lane that may be used for turning vehicles or a pedestrian island. It also includes bike lanes and sidewalks along with optional on-street parking. Neighborhood Traffic Management (NTM) may also be used under special conditions.




***Notes:***

* On-Street Parking may be provided on neither, one, or both sides. Where turn lanes are provided, on-street parking should not be allowed.

** Turn Lane/Median section is optional and may consist of one of the following:

A. 12' Left-Turn Lane or Two-Way Left-Turn Lane with No Raised Median

B. 10' Raised, Landscaped Median with 1' Shy Distance on Either Side

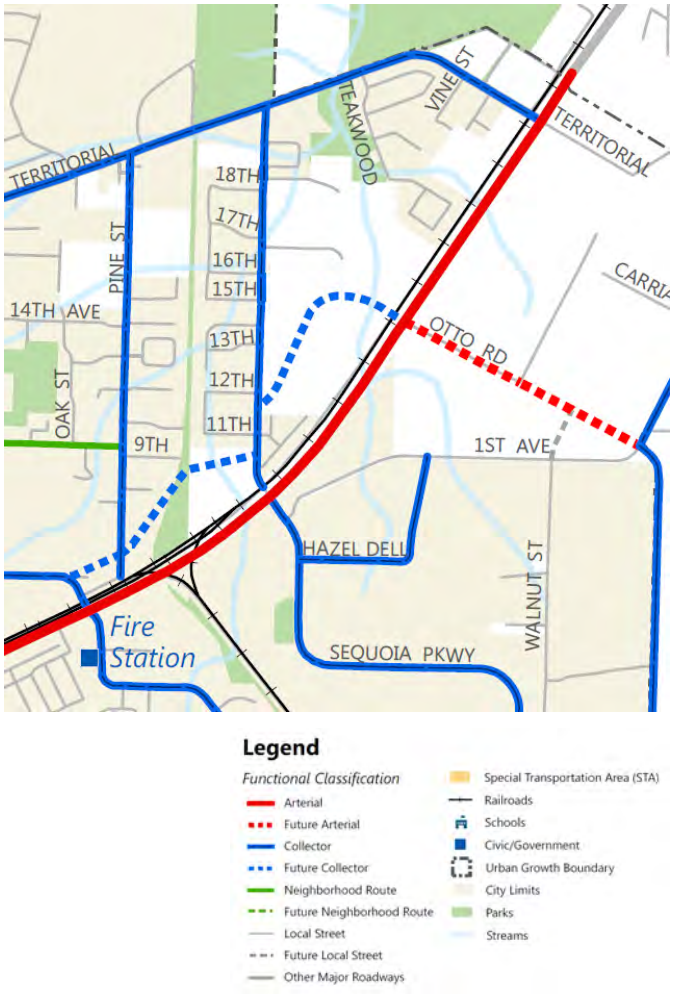
C. 10' Pedestrian Refuge (Level with Roadway) with 1' Shy Distance on Either Side

TSP Figure 7-5

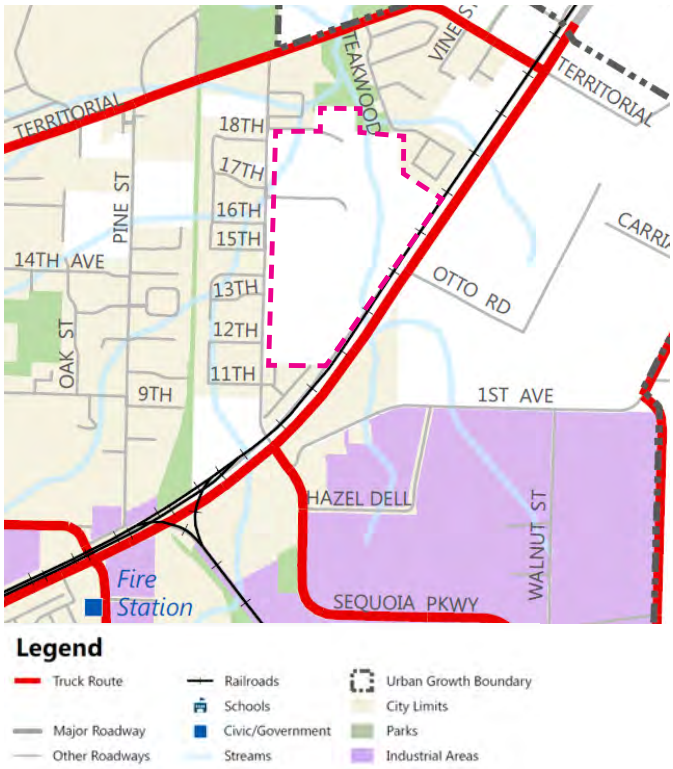
**Low Impact Street Design Characteristics**

| *Characteristic* | *Collectors* | *Neighborhood Routes* |
|---|---|---|
| ***Vehicle Lane Widths*** | *10-11 ft.* | *10 ft.* |
| ***On-Street Parking*** | *8 ft.-Optional* | *8 ft.- At least one side* |
| ***Bicycle Lanes (minimum)*** | *5-6 ft.* | *None* |
| ***Sidewalks (minimum)*** | *6-8 ft.* | *6 ft.* |
| ***Buffer/Planter Strip*** | *0-8 ft* | *0-8 ft* |
| ***Turn Lane/Median*** | *12 ft.-Optional* | *None* |
| ***Neighborhood Traffic Management (NTM)*** | *Under Special Conditions* | *Under Special Conditions* |
| ***Transit*** | *As appropriate* | *As appropriate* |
| ***Turn Lanes*** | *When Warranted* | *When Warranted* |

"Low Impact" standards require demonstration of hardship or other exceptional circumstances resulting from conditions of the adjacent properties and must be approved by City Staff.




Functional Classification (TSP Fig 7-1)




TSP Figure 7-2a Truck Routes (Existing System)

### *Truck Routes*

Highway 99E and Territorial Road are currently designated as truck routes. North Redwood Street is not a truck route, but a new Otto Road overcrossing (included as part of the Preferred Solution package) is intended to become a truck route and may require use of a short section of North Redwood Street. The purpose of having Otto Road become a truck route would be to provide access to the Clackamas County fairgrounds. Truck access to the fairgrounds now occurs on Pine Street; however, the TSP identifies the potential closure of the Pine Street crossing, at which time the Otto Road overcrossing and frontage road would fill this need.

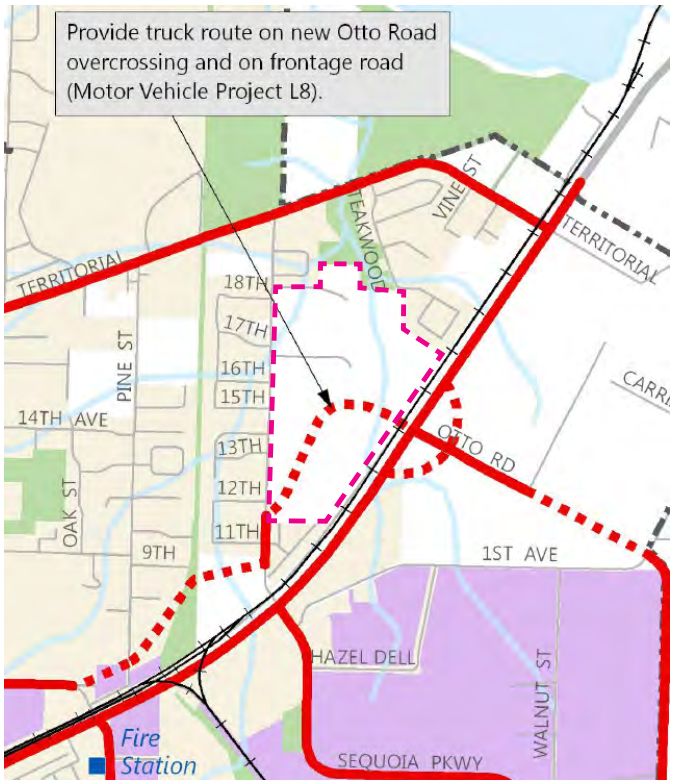
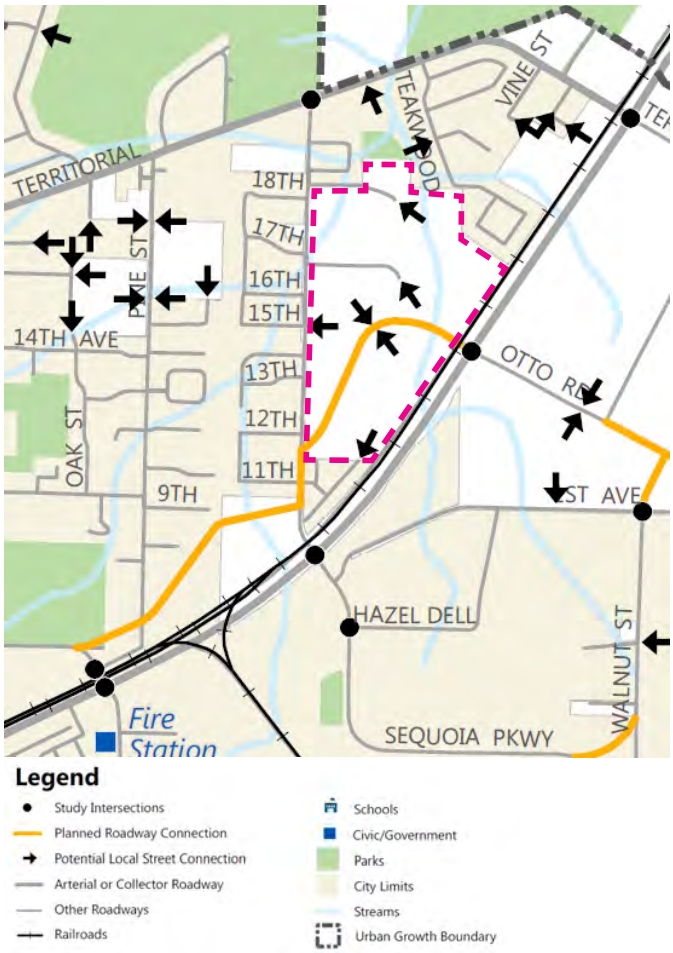



Figure 7-2b Truck Routes (Financially Constrained System)




TSP Figure 7-8 Local Street Connectivity

### *Local Street Connectivity*

The TSP also specifies the general locations where new local streets should be installed as the project site develops. The arrows in the figure represent potential connections and the general direction for the placement of the connection.[2] The purpose of these connections is to ensure that the new development site accommodates future local circulation between adjacent neighborhoods to improve connectivity for all modes of transportation. The guidelines that should be followed when selecting local street connections includes:

- Provide full street connections with spacing of no more than 500 feet between connections, except where prevented by barriers
- Provide bike and pedestrian access ways with spacing of no more than 300 feet, except where prevented by barriers (bike and pedestrian access ways should be considered at the end of cul-de-sacs)
- Limit use of cul-de-sacs and other closed-end street systems to situations where barriers prevent full street connections or to locations where pedestrian/ bike accesses are to be provided (approximately halfway between vehicular accesses)
- Include no close-end street longer than 150 feet or having no more than 30 dwelling units
- Include street cross-sections demonstrating dimensions of ROW improvements, with streets designed for posted or expected speed limits

Topography, railroads, and environmental conditions (such as wetland areas) limit the level of connectivity in Canby. Some stub end streets may become cul-de-sacs, extended cul-de-sacs, or only provide local connections. Pedestrian connections from the end of any stub end street that results in a cul-de-sac will be mandatory as future development occurs (with the exception of locations where topography, railroads, and environmental conditions make such connections infeasible). The goal is to improve city connectivity for all modes of transportation as feasible.

2 Other local street connections may be required as the City conducts development review.


TSP Figure 7-10 Financially Constrained Motor Vehicle Improvements

### *Financially Constrained Motor Vehicle Improvements*

Based on the City's existing and future motor vehicle needs, multiple improvement projects were identified throughout Canby. The only motor vehicle project in the immediate project vicinity is the potential Otto Road Overcrossing, which includes a bridge over both Highway 99E and the adjacent Union Pacific Railroad along with a frontage road connecting to North Pine Street. This project would reduce congestion on Highway 99E through Canby but was not included in the financially-constrained solutions package. It is beyond the financial projections for the City and would require significant property and building acquisitions.

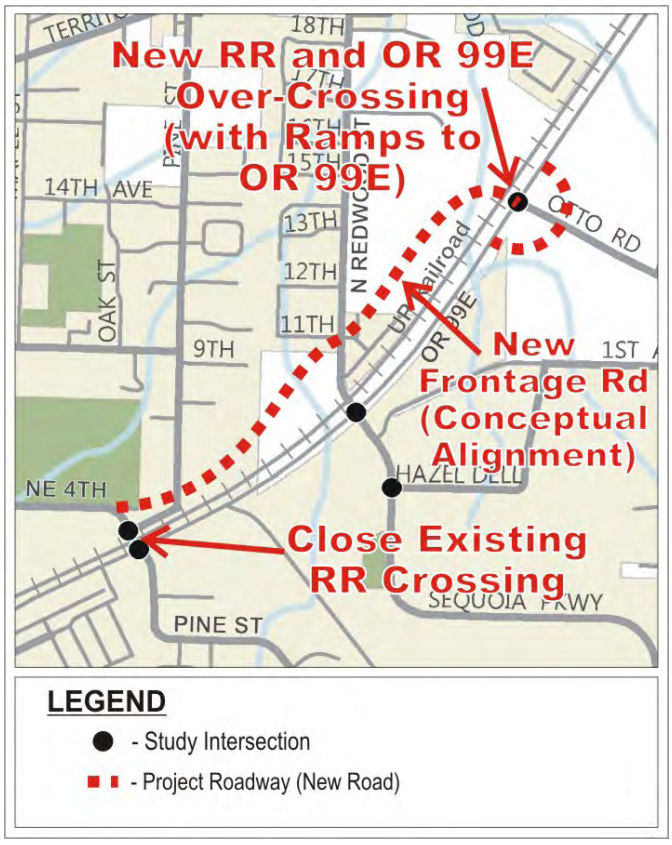



Figure 7-12 Preferred Package Additions (Otto Rd Overcrossing)

### *Neighborhood Traffic Management (NTM)*

Neighborhood Traffic Management (NTM) is a term used to describe traffic control devices typically used in residential neighborhoods to slow traffic or possibly reduce the volume of traffic. The City of Canby currently has limited NTM elements, mainly the use of narrow road widths that manage vehicle speed. However, the TSP recognized that as traffic congestion increases in the future, protecting the livability of neighborhoods may become an increasing need that requires the ability to mitigate impact.

An important consideration of NTM is the need to manage vehicle speeds and volumes with the need to maintain mobility, circulation, and function for service providers (e.g. emergency response). Table 7-5: Allowed Traffic Calming Measures by Roadway Functional Classification lists common NTM applications and suggests which devices may be supported by the Canby Fire District. If NTM is considered for North Redwood Street or any local streets planned for the project site, then coordination will be needed with emergency agency staff to ensure public safety is not compromised.

Table 7-5: Allowed Traffic Calming Measures by Roadway Functional Classification

| **Traffic Calming Measure** | **Is Measure Supported? (per Roadway Classification)**[a] | | |
|---|---|---|---|
| | *Arterial* | *Collector* | *Neighborhood Route/ Local Street* |
| Curb Extensions | Supported | Supported | Calming measures are supported on roads that have connectivity (more than two accesses) and are accepted and field tested by the Canby Fire District. |
| Roundabouts | Supported | Supported | |
| Medians and Pedestrian Islands | Supported | Supported | |
| Pavement Texture | Supported | Supported | |
| Speed Hump | Not Supported | Not Supported | |
| Raised Crosswalk | Not Supported | Not Supported | |
| Speed Cushion (provides emergency pass-through with no vertical deflection) | Not Supported | Not Supported | |
| Choker | Not Supported | Not Supported | |
| Traffic Circle | Not Supported | Not Supported | |
| Diverter (with emergency vehicle pass through) | Not Supported | Supported | |
| Chicanes | Not Supported | Not Supported | |

[a] Traffic calming measures are supported with the qualification that they meet Canby Fire District guidelines including minimum street width, emergency vehicle turning radius, and accessibility/connectivity.

### *Access Spacing Standards*

Access spacing standards along City roadways is another important consideration when developing or redeveloping a parcel of land. Table 7-2 of the Canby TSP specifies access spacing standards for City roadways based on functional classification. Non-conforming access should work to achieve a condition as close to standard as possible. For example, consolidated or shared accesses should be explored; however, parcels shall not be landlocked by access spacing policies.

### *Mobility Standards*

The Canby TSP specifies the mobility standards for signalized, all way stop, or roundabout intersections as level of service D and a volume to capacity ratio equal to or less than 0.85. The standards for unsignalized two way stop control intersections are level of service E and a volume to capacity ratio equal to or less than 0.90.

Table7-2: Access Spacing Standards for City Street Facilities[a]

| Street Facility | Maximum spacing[b] of roadways | Minimum spacing[b] of roadways | Minimum spacing[b] of roadway to driveway[c] | Minimum Spacing[b] driveway to driveway[c] |
|---|---|---|---|---|
| Arterial | 1,000 feet | 660 feet | 330 feet | 330 feet or combine |
| Collector | 600 feet | 250 feet | 100 feet | 100 feet or combine |
| Neighborhood/Local | 600 feet | 150 feet | 50 feet | 10 feet |

[a] Exceptions may be made in the downtown commercial district, if approved by the City Engineering or Public Works Department, where alleys and historic street grids do not conform to access spacing standards.

[b] Measured centerline to centerline

[c] Private access to arterial roadways shall only be granted through a requested variance of access spacing policies when access to a lower classification facility is not feasible (which shall include an access management plan evaluation)