



JOHNSON CREEK ACQUISITION STRATEGY: Investing in a Natural Area Network



JOHNSON CREEK ACQUISITION STRATEGY PARTNERS

This document was developed by staff from the following organizations.



Rivers and Trails Program



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INTRODUCTION

The Johnson Creek Conservation Partnership

The Johnson Creek Conservation Partnership (JCCP) is a collaborative effort by non-profits, government entities, and local stakeholders to prioritize future acquisition of high ecological value lands from willing sellers throughout the Johnson Creek Watershed. The JCCP reflects a shared commitment to leverage broad public support in the Portland metropolitan region to protect and restore aquatic and terrestrial habitats, to improve water quality, to increase public access to nature, and to facilitate environmental education. It also reflects recognition that, despite significant effort and achievements in the last 20 years, there remains an ongoing need for land conservation and habitat restoration in the Johnson Creek Watershed, that will need to be considered in conjunction with future development.

Purpose

The strategy of the land acquisition plan is three-fold: 1) To identify shared land acquisition priorities using a robust scientific methodology, 2) To pursue shared land acquisition priorities with existing resources and to leverage those resources aggressively, and 3) To demonstrate strong unity and a watershed-wide vision to secure additional resources (local, state, federal, and private), making the case that the JCCP has both the unique opportunity and responsibility to protect and restore ecologically significant land in the Johnson Creek Watershed on a large scale.

Opportunity

Building On Existing Achievements

In 1990, Gresham voters passed a \$10.25 million open space bond measure to acquire 152 acres of forested buttes in the upper Johnson Creek Watershed. The same year, voters established the North Clackamas Parks and Recreation District covering portions of the lower Johnson Creek Watershed. In 1995 and 2006, voters approved bond measures to protect natural areas and lands near rivers and streams throughout the Portland metropolitan region. Both measures included target areas in the Johnson Creek Watershed with regional and local share funds. To date, the 2006 bond measure has enabled preservation of 350 more acres in the watershed. The City of Portland's Johnson Creek Willing Seller Program enabled preservation of over 250 acres in the Johnson Creek Watershed, specifically targeting the Johnson Creek floodplain.

Leveraging Existing Resources

In 2004, voters approved a tax base for the East Multnomah Soil and Water Conservation District, including funding for conservation-related land acquisition. In 2008, the City of Portland launched the Grey to Green initiative with the goal of acquiring over 400 acres of natural areas in five years (not all within the Johnson Creek Watershed). The City of Portland's Bureau of Environmental Services has dedicated \$23 million toward this goal and the JCCP intends to leverage the City of Portland's funds as effectively as possible. Since 2008, 97 acres of natural area have been acquired in Johnson Creek via Grey to Green. As one of the largest public landowners in the Johnson Creek Watershed, Portland Parks & Recreation manages more than 1,500 acres of riparian, wetland, grassland, upland forest, and hybrid parks. Through collaboration and leveraged resources, the JCCP aspires to achieve a remarkable natural area network that would warrant a name such as Forest Park East.



Need for a Land Acquisition Plan

Ongoing Need for Habitat Conservation and Restoration

Johnson Creek and its tributaries provide documented habitat for Chinook salmon, coho salmon, and steelhead, which are federally listed as threatened species in the lower Columbia watershed. Species inhabiting or potentially inhabiting the watershed that are listed by the State of Oregon as sensitive include: the red-legged frog, painted turtle, red tree vole, California myotis (bat), fringed myotis (bat), hoary bat, silver-haired bat, common nighthawk, olive-sided flycatcher, pileated woodpecker, and white-breasted nuthatch. The Oregon Watershed Enhancement Board considers many of these listed species to be priority species in the Willamette Basin for land acquisition projects. Johnson Creek and its tributaries also act as corridors for the movement of birds, black-tailed deer, coyote, beavers, and numerous other animals. The City of Portland alone has designated over 1,000 acres in the Johnson Creek Watershed as Special Habitat Areas, patches of landscape that provide especially important fish and wildlife habitat areas. However, many opportunities still exist to support additional habitat and stream function needs; these can be met, in part, by targeted acquisition.

Development Projections

In the last decade, 6,000 acres in the Johnson Creek Watershed, more than 1/6 of the entire watershed, were incorporated into the Urban Growth Boundary (UGB). This includes parts of the City of Damascus and the communities of Pleasant Valley and Springwater. In the next 20 years, the Metro region is expected to grow by over a million people. In 2010, additional areas of the Johnson Creek Watershed near Highway 26 in both unincorporated Multnomah and Clackamas counties were designated as urban reserves, which are areas outside the current UGB suitable for accommodating population and job growth over the next 50 years.

HOW TO USE THIS DOCUMENT

This document is a land acquisition plan that outlines the JCCP's shared land acquisition priorities, which are identified as target areas, and details how and why the JCCP chose those target areas. This plan is a general guide, not a rigid prescription, and is intended to focus future land acquisition efforts in the Johnson Creek Watershed within target areas. This plan should be viewed as a living document, intended to be periodically reviewed and updated with new information.

Not every property in a target area is a high priority for acquisition, and this document does not supercede existing acquisition implementation by local jurisdictions. A property is considered for acquisition on its individual merits and assessed as to whether it meets the JCCP's guiding principles and criteria (see fold outs). All acquisitions based upon this plan are intended to be done through willing landowners. Neither this plan nor the JCCP endorses eminent domain, or the taking of land, as a conservation strategy. Furthermore, the JCCP will not acquire or own land. However, the JCCP may, and likely will, endorse specific land acquisitions by one or more of its members. Endorsement can aid members by elevating the importance of a land acquisition, thereby helping members secure support and leverage funding. Ongoing maintenance funds will be sought in conjunction with acquisition funding.

The JCCP also recognizes that a great deal of conservation and restoration planning has already been done in the Watershed. Consequently, the JCCP views this plan as an opportunity to synthesize individual planning efforts into a shared, watershed-wide land conservation plan that complements, rather than replaces, any one entity's plan.



working together



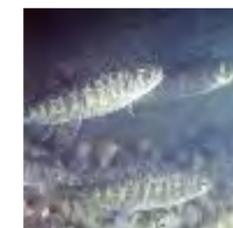
for protection and restoration



for increased public access and



environmental education





JOHNSON CREEK WATERSHED OVERVIEW

The Johnson Creek Watershed encompasses 54 square miles and falls under the jurisdictions of two counties, Multnomah and Clackamas, and the cities of Damascus, Gresham, Happy Valley, Milwaukie, and Portland. No city is entirely within the watershed's boundaries. Johnson Creek originates in the foothills of Mount Hood near the City of Boring in Clackamas County, and flows generally westward for approximately 25 miles before entering the Willamette River just south of the City of Portland in the City of Milwaukie, which is 18.5 river miles above the Willamette River's confluence with the Columbia River.

Current Land Use

Land use varies considerably between the upper and lower regions of the Johnson Creek Watershed. The upper watershed land use is predominantly rural residential and agricultural with less than 10 percent impervious surface. In contrast, the lower watershed is heavily urbanized, with mostly residential, commercial, and industrial land uses, and generally greater than 25 percent impervious surface.

As of 2006, an estimated 175,000 people lived in the watershed, making it one of the most densely populated watersheds in Oregon. Metro has added approximately 6,000 acres, or 1/6 of the watershed's total area, to the Urban Growth Boundary (UGB) in the last decade. Today 72% of Johnson Creek Watershed is within the UGB. In 2010, Metro designated additional areas of the watershed near Highway 26 in both Clackamas and Multnomah counties as Urban Reserves. Urban reserves are areas outside the UGB suitable for accommodating population and job growth. Approximately 4,600 acres of parks and open space have been preserved in the watershed. Voter-approved bond measures and other funds for the purchase of open space are continually adding to this total, with nearly 900 acres acquired since 1995.

Geology, Hydrology, and Water Quality

Between 13,000 and 15,000 years ago, large glacial floods known as the Missoula Floods deposited thick, relatively coarse sedimentary materials (sand, silt, gravel) in the northern side of the watershed west of Gresham and the southern side of the watershed west of I-205. These deposits resulted in permeable soils in this relatively flat portion of the watershed. In contrast, the southeastern portion of the watershed has volcanic buttes (the East Buttes), which are part of the Boring Volcanic Field ranging in age from approximately several hundred thousand years to 2.4 million years. These buttes are characterized by steep slopes and silty soils with low permeability, resulting in faster runoff. Consequently, most of the major tributaries of Johnson Creek



come from the southeastern portion of the watershed. The only exception is groundwater-fed Crystal Springs Creek, which flows into Johnson Creek from the north and is the closest major tributary to Johnson Creek's confluence with the Willamette River. Johnson Creek's other major tributaries are Veterans, Kelley, Butler, Hogan, Sunshine, and Badger creeks. These creeks contribute the most streamflow to mainstem Johnson Creek.

Hydrology in the Johnson Creek Watershed is driven by rainfall and groundwater inflows. High flows occur in the winter as a result of abundant precipitation. Floods resulting from storm events have caused erosion, bank scouring, and property damage in stream reaches lacking floodplain and riparian vegetation. Low flows in summer are sustained largely by groundwater inputs to the creek, but Johnson Creek's summer baseflow in the middle and upper watershed are typically below minimum flow targets established by the Oregon Department of Fish and Wildlife (ODFW) for salmonid-bearing streams in our area. In combination, these hydrology concerns highlight the need for regaining floodplain function throughout the watershed to benefit both developed and conservation areas within the watershed.

Another challenge in the Johnson Creek Watershed is water quality. Johnson Creek is on the Department of Environmental Quality's 303(d) (Water Quality Standards) list as an "impaired" waterbody as water quality testing show exceedances of set targets for bacteria, summer temperatures, and the chemical constituents dichlorodiphenyltrichloroethane (DDT), polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs). Other water quality problems include low dissolved oxygen levels, high levels of phosphorus and nitrogen at various locations, sediment and turbidity, and metals.

Habitats

The watershed contains a variety of habitats, including upland forest, riparian woodlands, wetlands, and streams. Upland forests were cleared in the early 1900s for agriculture, timber, and urban uses. Forest clearing of second growth has increased in recent years for housing development. Currently, only 8,000 acres in the Johnson Creek Watershed are forested, primarily on private lands in the eastern portion of the watershed. The amount of wetlands prior to settlement is unknown, but the loss of wetlands has been significant. The remaining wetlands are extremely diverse in size, stage of succession, and type (forested, scrub-shrub, emergent, wet meadows, and open water). The riparian corridor ranges from having extensive to little or no vegetation, depending on its location in the watershed and the land use. It typically consists of mixed deciduous-coniferous forest with shrubs. Stream habitats often have disconnected floodplains, lack in-stream complexity and large wood, and have the water quality and streamflow issues described above. Agricultural, urban, and suburban landscapes also can provide habitat, if managed correctly.

Watershed History

The Johnson Creek Watershed was originally inhabited and heavily used by Native Americans, primarily the Chinook, Clackamas, Northern Molalla, Tualatin, Siletz, and Kalapooia tribes. Settlers began clearing land in the watershed for farming and timber in the 1840s. Johnson Creek is named after one of those early settlers, William Johnson, who built a water-powered sawmill on the creek in 1846. At the time of settlement, the watershed was largely forested and contained many wetlands.

Farmers that moved into the watershed initially increased the meandering of the creek, inserting 180 degree bends to expand the floodplain and increase nutrient deposition. However, by the 1930s, the watershed had urbanized to the point that residents came to view flooding as a problem rather than a benefit. In response to flooding concerns, the Works Progress Administration (WPA) straightened, deepened, and simplified much of the lower 15 miles of Johnson Creek. WPA workers constructed dikes, removed riparian vegetation, and lined the streambed with large basalt tiles and rocks. The trapezoidal rock-lined stream channel is still visible in many areas of the lower watershed. The WPA's flood control efforts were largely ineffective and dramatically altered the creek, resulting in conditions that contributed to the decline in population and endangered species listing of most of Johnson Creek's salmonids.



As a result of increased knowledge and appreciation of natural areas, local stakeholders are currently working to reconnect Johnson Creek to its historic floodplain where feasible, and to restore fish and wildlife habitats in the watershed. In recent years, significant public and private investment has been directed toward restoration projects in the Johnson Creek Watershed. For example, in 2008 the City of Portland completed a project just south of the Springwater Corridor Trail at Powell Butte that created 100 acre-feet of floodwater storage, and restored 30 acres of in-stream and backwater rearing and refuge habitat for native fish. There are similar projects throughout the watershed,



notably at Tideman Johnson Natural Area, the confluence of Errol Creek and Johnson Creek, Kelley Creek confluence and Brookside Wetland.



THE NEED FOR NATURAL AREAS

The Johnson Creek Conservation Partnership (JCCP) envisions a future when Johnson Creek runs clean and cold, with abundant populations of salmon, amphibians, birds, and other native wildlife. We see the creek as a place of community pride – a natural seam that brings together diverse landscapes and connects diverse communities – a place to remember our past and draw hope for a prosperous and resilient future.

Rooted in a place of natural beauty, Oregonians cherish our excellent quality of life. We believe that ecological health and human prosperity are integrally linked – that our neighborhoods are healthier and more appealing when woven with healthy natural areas. Oregonians also believe in community – that when we work together we accomplish more, that we are more innovative and more effective. While political boundaries provide practical benefits, we also see ourselves as citizens of a larger ecological region that shapes and sustains us physically, socially and spiritually.

The Johnson Creek Conservation Partnership was formed based on this vision, these values and beliefs. Through our efforts, the partners share scientific expertise, set priorities, and seek funding to protect and enhance the watershed's most ecologically-important lands. Collectively, the partners have decades of experience working in the watershed. Recent acquisitions in the headwaters of Johnson Creek's tributaries protect valuable upland habitat and hydrologic processes needed to support stream health. In the mainstem, floodplain restoration is improving riparian habitats, while reducing hazards from frequent flooding. And restoration at Johnson Creek's confluence with the Willamette River restores in-stream habitat near the heart of Milwaukie's downtown and industrial districts. Together these projects provide a solid foundation for a broader effort to preserve and restore the watershed's natural areas to serve all its inhabitants.

Each partner has a unique role in restoring the health of Johnson Creek's ecosystems and each works in a specific geography. Some partners mobilize community action and educate citizens of the watershed; others construct large-scale restoration projects. Some work in a portion of the watershed, while others' efforts span the Metro region, beyond the watershed's boundaries. All of these projects and programs are critical to improve watershed conditions. The Partnership works across jurisdictional boundaries to expand on their individual efforts to re-establish functional ecological processes and achieve together much more than a single entity could accomplish on its own.

Benefits of Johnson Creek Conservation

The Partnership focuses on conserving and connecting natural areas to protect water quality, re-establish habitat corridors, and support healthy populations of native fish and wildlife. Through the Partnership's collaborative efforts and system-wide perspective we seek to establish a legacy of ecological health and biodiversity along Johnson Creek even as the watershed's population grows and its ecosystems and wildlife are shaped by climate change.

The Partnership uses a science-based approach to identify, prioritize and protect the most critical natural areas. The Partnership establishes acquisition priorities based on environmental factors such as the size of habitat areas, their existing biodiversity, ecological sensitivity and connections to other protected habitat. We also consider the potential benefits for local communities, including opportunities for people to learn from or enjoy being close to nature. Through the Partnership's efforts to preserve natural areas in the Johnson Creek watershed, we strive to achieve a number of environmental, social and economic benefits:

Water Quality – Impervious surfaces, such as roads, rooftops, driveways and parking lots, impair water quality by increasing runoff, increasing sediment, interfering with groundwater recharge, and flushing pollutants into local water bodies (Oregon Department Environmental Quality ODEQ 2000). Natural area acquisition supports improvement of water quality and flow in the creek and its tributaries by preserving riparian buffers, wetlands and upland areas that recharge aquifers, and filter sediments, toxics and excessive nutrients before they reach the creek and its tributaries. Through acquisition and restoration, impacts from septic systems, oil tanks and direct access to the creek from livestock can be addressed. Native trees and other vegetation can be preserved near creek headwaters, in groundwater recharge areas, near wetlands, and next to Johnson Creek and its tributaries to ensure more consistent, cleaner, and cooler stream flow.

Biodiversity – Johnson Creek represents an important opportunity to preserve and restore biodiversity within the Portland Metro region. Remnant populations of once plentiful salmon and other wildlife still remain within the watershed. Salmon are known to spawn in Crystal Springs and in portions of Johnson Creek. Many sensitive species live in the creek and its watershed including red-legged frog, painted turtle, fringed myotis (bat), common nighthawk, white-breasted nuthatch, American kestrel and western grey squirrel (ODFW 2011). Acquisition can protect and restore different habitat types within the watershed. Protecting stream channels will preserve and, in some cases, facilitate restoration of in-water habitat complexity and connections to historic floodplains. Because ecosystem diversity is a critical component of watershed health, the Partnership's acquisition strategy identifies a range of habitat types for protection. Acquiring large, intact natural areas and improving connections between these areas will re-establish and expand migration corridors throughout the Johnson Creek watershed. Not only does this support a diversity of native and migratory species, it also allows their habitats to evolve over time in response to climate change.



Recreation and Health – Natural areas are also human habitats – places to hike, bike, bird watch, contemplate or learn from nature. They provide clean air and water to sustain our bodies and reduce our susceptibility to illnesses like asthma. Trees shade and cool the air, moderating extreme heat, which can be a serious health risk. Having access to natural areas encourages outdoor exercise, and reduces stress and obesity. The quiet sounds and sights of nature soothe our psyches and provide a critical counterpoint to urban living. Research shows that access to natural areas is associated with reductions in domestic violence and workers having an enhanced sense of well-being (Hansmann 2007, Entrix 2010). From an equity perspective, it is particularly important to preserve and enhance access to nature for low-income and minority communities in the Johnson Creek watershed.



Education – Children play and learn differently when they're by a stream or in the woods, far from a computer screen or electrical outlet. Natural areas are their outdoor classrooms – places to learn about natural processes. There they learn by doing – testing water quality, identifying bugs, amphibians, trees and wildflowers. This is citizenship training too, preparing youth for their future responsibilities to sustain the health and prosperity of their families, their communities and the native ecosystems and wildlife that share the watershed. At a time of major ecological changes due to climate change and urbanization, this kind of environmental literacy is increasingly important.

Cultural Identity – Protecting natural areas is a commitment to the region's unique history and to the distinctive culture and character of each neighborhood within the watershed. Natural areas are places of community pride – places for gathering and celebration. Salmon, trout, lamprey, bald eagles, and beaver are iconic Pacific Northwest species that we take care of as a testament to our bond to this land. For many of us, especially Native Americans, nature is core to our personal and cultural identity, and spirituality (Millennium Ecosystem Assessment 2005).

Community Building – When so much of the world seems beyond our control, natural areas are places where we can take action to make positive changes. Through stewardship, community bonds are strengthened as neighbors work side-by-side to care for nature nearby. Working together, neighbors are empowered, build community and amend previous damage done to our natural systems.

Neighborhood Revitalization – For generations, people were drawn to Johnson Creek to work in its mills or on its farms, to hunt and fish, and appreciate its beauty. With increased development and frequent flooding, the creek came to be viewed less as a source of prosperity and more as a nuisance. That perception is changing again, and the Partnership seeks to actively continue Johnson Creek's renaissance as a community asset that attracts new residents and enhances neighborhood values. By acquiring floodplains, sensitive creek-side properties and critical uplands, homes and businesses will be protected from flood damage and communities will have more natural areas to enjoy. Because proximity to natural areas is

associated with increased property values, (Entrix, 2010; Bolitzer and Netusil 2001) the Partnership anticipates that the resulting open spaces will help spark revitalization in established neighborhoods in East Portland and Milwaukie, and provide a green network that will enhance emerging communities in Pleasant Valley and Damascus.

Public Infrastructure and Public Safety – Floodplains, riparian zones and upland forests provide for natural management of stormwater potentially reducing the need for costly investments in the construction and maintenance of pipe systems. By soaking up stormwater and enhancing groundwater flows, these natural areas can reduce the risks of flooding and landslides (ODFW 2008). The JCCP members have made significant investments in protecting and restoring floodplains and creek-side properties. Through future strategic investments in priority natural areas, the partnership can help safeguard past conservation efforts.

Climate Resiliency – Though there's much uncertainty about how changing weather patterns will affect local neighborhoods and local ecosystems, we do know that natural areas can be pivotal in reducing impacts. Natural areas store and slowly release stormwater, reducing flood damage resulting from extreme weather. They cool and clean the air, providing shade and evapotranspiration. Natural areas also provide critical migration corridors that allow wildlife and their habitat ranges to shift within the watershed and within the region (ODFW 2008).

Economic Development – The Partnership promotes natural area preservation for its economic benefits as well. Intact, healthy natural areas reduce the risks that flooding and landslides will displace households and businesses or cause property damage (Doppelt 2009). As hazards are reduced, properties gain value and industrial lands, underutilized for years due to frequent flooding, can redevelop as business owners gain confidence that their investments are secure. Preserved natural areas can also attract recreation and tourism dollars. Already, the Springwater Corridor Trail is a popular route for local residents as well as tourists interested in exploring the region's natural beauty by bike or on foot. Restaurants and bike shops are locating along the route. An expanded network of natural areas in the Johnson Creek watershed can become a "Forest Park East" that will become a regional destination drawing locals and visitors to the area.



Conclusion

In the Johnson Creek Watershed, there is an opportunity to preserve nature in and near our cities, even as growth occurs. The Johnson Creek Conservation Partnership exemplifies a watershed approach – by working across jurisdictional and organizational boundaries, the Partnership seeks to improve the watershed's natural functions and benefits. By working together, we strive to create a legacy of natural areas woven within our communities, so that all watershed inhabitants enjoy healthy places to live, work and play for many generations to come.

ESTABLISHING ACQUISITION PRIORITIES

The Johnson Creek Conservation Partnership (JCCP) identified priorities for land acquisition within the Johnson Creek Watershed using principles and criteria related to natural resource conservation, public accessibility and environmental education opportunities. This approach recognizes that acquiring land to preserve and enhance ecological function, and to improve access to nature benefits present and future generations.

The natural resource conservation principles are based on the Oregon Watershed Enhancement Board's (OWEB's) acquisition framework.¹ They are intended to be consistent with and support acquisition priorities identified by Metro (Johnson Creek Watershed Goals and Objectives²), the City of Portland (Natural Areas Acquisition Strategy³), the City of Gresham (City of Gresham's Capital Improvement Plan), and other local governments. Using natural resource information available for the entire watershed allows the JCCP to collaboratively leverage local, state and federal funding for acquisitions. The JCCP established the access and education criteria to complement natural resource conservation goals. Together these criteria help identify local acquisition priorities of watershed-wide significance that are worthy of collaborative conservation efforts.

Table I (on following page) links the acquisition principles/criteria to general natural features identified in the Watershed Action Plan (WAP) and Metro's regional habitat inventory. The table includes both protection and restoration priorities. Since natural resource information is always being updated, the mapping and inventories referenced in the table are not determinative. The acquisition target areas mapped from the principles are meant to be general. The JCCP acknowledges that additional information may be needed to fully apply the various principles/criteria (e.g. special or unique habitats or special status species).

Table II (pages 16-17) lists and details the supporting criteria related to public access and education adopted by the JCCP. Local trail, park, and environmental planners and non-governmental organization representatives met between March 2009 and October 2010 to define and refine these criteria. Partners identified and defined the 22 target areas based on the principles. The JCCP also supports using access analyses such as the Regional Equity Atlas, the Parks 2020 Vision, the Gresham Parks Master Plan and other sources to inform acquisition priorities that will help make access to nature more equitable within the Johnson Creek Watershed.

¹ The City of Portland has used the OWEB framework in its city-wide natural areas acquisition strategy. It is available online at: www.oregon.gov/OWEB/GRANTS/docs/acquisition/AcqPriorities_IntroFramework.pdf.

² Metro's target areas are available online at: www.oregonmetro.gov/index.cfm/golby.webId=26778

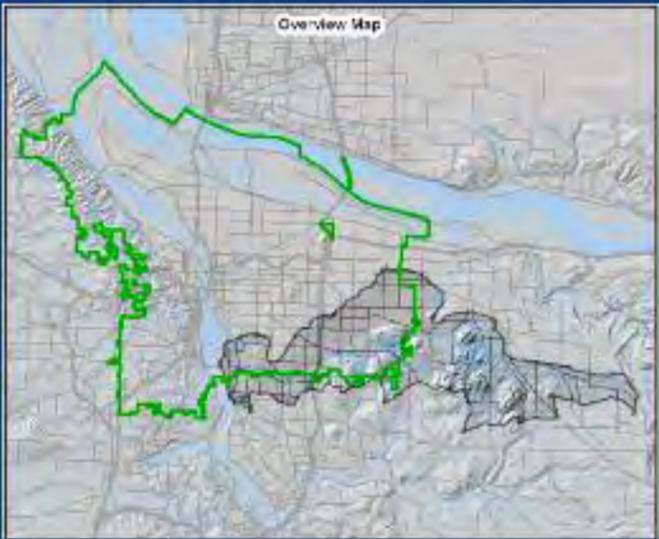
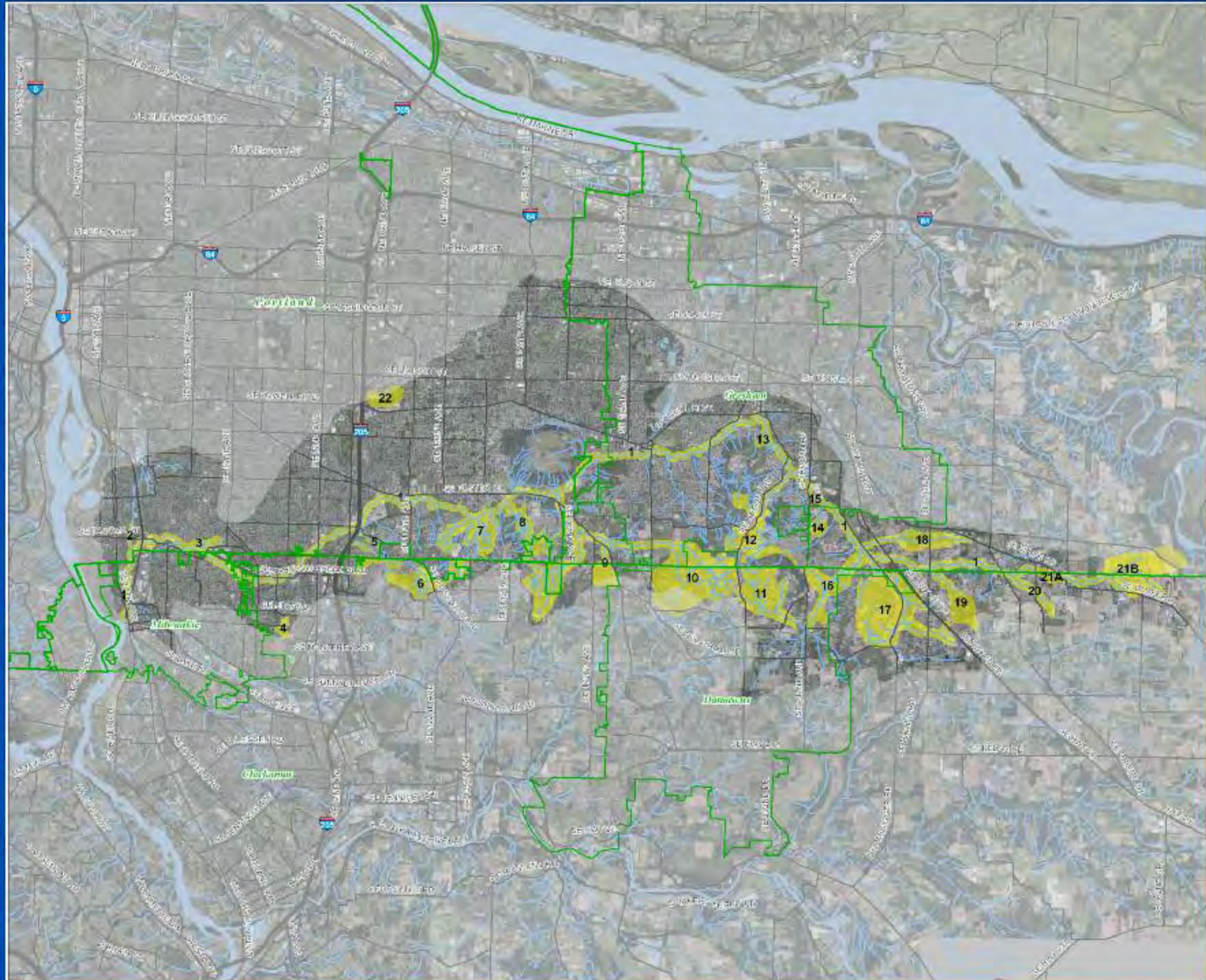
³ Portland Parks and Recreation's Johnson Creek target area is available online at: www.portlandonline.com/parks/index.cfm?c=44698&a=204502

Table 1 Primary Principles and Criteria for Natural Area Acquisition in the Johnson Creek Watershed

CONSERVATION PRINCIPLES/CRITERIA	DESCRIPTION (BASED ON OWEB FRAMEWORK)	GENERAL LANDSCAPE FEATURES AND DATA SOURCES	EXAMPLES
<p>1 Protecting large intact areas</p>	<p>Large areas, or smaller but key portions of larger landscapes, containing a diverse array of important fish and wildlife species and habitat types and relatively intact, functioning systems</p>	<p>Largest Class A and B Upland Wildlife Habitat identified in Metro’s regional fish and wildlife inventory</p>	<p>Proposed Buttes natural areas in Portland, Kelley Creek headwaters and Kelley Butte in Pleasant Valley, Mitchell Creek headwaters and Scouter Mountain in Portland and Happy Valley, Gresham Buttes, and Damascus Buttes in Upper Sunshine Creek</p>
<p>2 Protecting sites with exceptional biodiversity values (terrestrial and aquatic)</p>	<p>Areas containing aggregations of local endemics or at-risk species and habitat types, but only where the species or habitat types can be demonstrated to be viable and sustainable</p>	<p>Metro’s Habitats of Concern, confluence between tributaries and mainstem channels, and Special Status Habitats or sites important to Special Status Species identified by federal, state, and local sources; unique habitats specific to the Johnson Creek Watershed such as Hogan Cedar Groves</p>	<p>Gresham Buttes Habitat of Concern, Kelley Creek confluences, Five Creeks confluences</p>
<p>3 Securing transition areas threatened by development</p>	<p>Sites providing critical habitat or watershed function in areas undergoing transition from undeveloped to developed conditions</p>	<p>Regionally significant habitat most vulnerable to development in all jurisdictions within the watershed</p>	<p>Developable sites with regionally significant habitat</p>
<p>4 Improving connectivity, complementing existing networks (terrestrial and aquatic)</p>	<p>Sites that contribute to habitat connectivity by expanding or connecting areas already managed to protect watershed resources and functions; for example, acquiring a parcel connecting two sections of a publicly owned migratory corridor for fish or wildlife; includes inter- and intra-watershed connectivity as well as floodplain connectivity; parcels or sites that complete or complement existing networks or patterns of conserved areas; for example, a project contains land with a system type significantly underrepresented in the current network of lands managed for conservation purposes</p>	<p>Johnson Creek floodplain and riparian corridors in Core Restoration Area identified in the Watershed Action Plan (WAP); confluences between tributaries and unconstrained mainstem channels, other major stream confluence areas, and floodplain reconnection opportunities identified in the WAP; key headwater areas providing inter- and intra-watershed connectivity; unprotected sites that provide critical connectivity or functions in relationship to protected sites; for example connecting large intact forest patches and other terrestrial habitats or protecting Core Protection Areas that fall outside of existing riparian corridor protections (e.g. Metro Title 3 and Title 13)</p>	<p>Mainstem Johnson Creek in “Clackamas Dip;” Wheeler Creek confluence in Pleasant Valley, Badger Creek confluence in Reach 17, Sunshine Creek and tributaries; wetland headwaters in Kelley Creek; headwaters between Upper Kelley and Upper Hogan Creek; Fairview Creek connectivity; Scouter Mountain connectivity; Mt. Scott Creek Connectivity; Sandy River Connectivity.</p>
<p>5 Stabilizing areas “on the brink” preserving or restoring ecological and hydrological function</p>	<p>Areas where natural systems and processes are still functioning, but where a trend toward ecosystem degradation requires action to prevent conditions from “tipping” to an unrecoverable (or very difficult to recover) state; also, areas containing aggregations of local endemics or at-risk species and habitat types, but only where the species or habitat types can be demonstrated to be viable and sustainable</p>	<p>Areas where natural systems and processes are still functioning, but where a trend toward ecosystem degradation requires action to prevent conditions from “tipping” to an unrecoverable (or very difficult to recover) state; also, areas containing aggregations of local endemics or at-risk species and habitat types, but only where the species or habitat types can be demonstrated to be viable and sustainable</p>	<p>Reach 16 and Reach 17 in Gresham and Springwater Community; Core Protection and Restoration Reaches in Kelley Creek; whether or not a site has the potential as a stream and wetland mitigation bank should be considered and, if so, given additional merit - currently, the watershed is losing net area of stream and wetlands and associated hydrological and cleansing benefits as development is allowed to fill and mitigate outside of the watershed. This “death by 1,000 cuts” effect can negate the benefits of upslope stormwater management retrofits, or unravel creek restoration projects implemented throughout the watershed. Mitigation can also be a source of revenue for additional acquisition and restoration.</p>

Table II Supporting Principles and Criteria for Natural Area Acquisition in the Johnson Creek Watershed

PRINCIPLE/CRITERIA	DESCRIPTION	SUB-PRINCIPLES	EXAMPLES
<p>6</p> <p>Equitable Public Access to Nature</p>	<p>Identify and acquire properties that will expand and secure access to nature for all watershed residents</p>	<p>Protecting or creating natural areas close to population centers lacking nature nearby; securing sites that enhance access to existing natural areas, especially for transit users and pedestrians; securing for public ownership natural areas in less densely settled parts of the watershed likely to experience future growth; focusing on traditionally underserved groups</p>	<p>City of Damascus; soon to be designated urban reserves; areas identified as park-deficient in Regional Equity Atlas (can be linked to demographic information) Powellhurst Gilbert neighborhood; Southgate neighborhood</p>
<p>7</p> <p>Trail Connections</p>	<p>Identify and acquire properties that will create or enhance new trail connections in the watershed</p>	<p>Trailheads - key connectors between existing trails, particularly where improved trail connectivity aligns with the goal of increased habitat connectivity; sites providing existing unsecured access and visibility to Johnson Creek mainstem, major tributaries, or significant natural areas; improvements to Springwater Corridor Trail, Gresham-Fairview Trail, and other regional trails in the Watershed are a high priority</p>	<p>A specific need was identified to develop a regional trail alignment extending south of the Springwater Corridor somewhere between I-205 and the Gresham Fairview Trail to serve new growth areas into Damascus and Pleasant Valley. The three existing proposed southward trail alignments in this area are the Mt. Scott Trail, the Scouter Mountain Trail, and East Buttes Powerline Corridor Trail. The East Buttes Trail route up Kelley Creek corridor to the Powerline Corridor Trail provides a possible fourth trail route connecting to the south. The Mt. Scott Trail and the Scouter Mountain Trail could align with priorities for protecting upland wildlife corridors between Clatsop Butte and Scouter Mountain. The East Butte and East Butte Powerline Corridor Trail in contrast would align with restoration priorities in Kelley Creek Watershed.</p>
<p>8</p> <p>Environmental Education</p>	<p>Identify and acquire properties that will facilitate environmental education</p>	<p>Natural area sites near schools and community centers; sites with strong potential for public involvement in restoration activities; sites that increase a sense of place; properties adjacent to and capable of expanding the curricular range of existing education sites; sites well suited to interpretation, particularly where currently lacking</p>	
<p>9</p> <p>Protect Working Landscapes</p>	<p>Identify and protect, through conservation easements or other appropriate means, working lands (e.g. timber and agricultural properties) that provide ecological and hydrological value</p>	<p>Properties connected physically or hydrologically to key natural areas; properties currently operated by growers interested in securing long-term; properties with extensive riparian zones</p>	

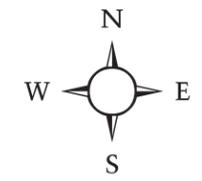


TARGET AREAS

Land Acquisition Protection Johnson Creek

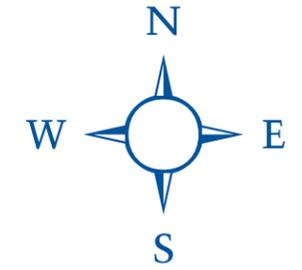
LEGEND:

-  Municipal Boundaries
-  Waterbodies
-  Rivers and Streams
-  Freeways and Roads
-  Target Acquisition Area

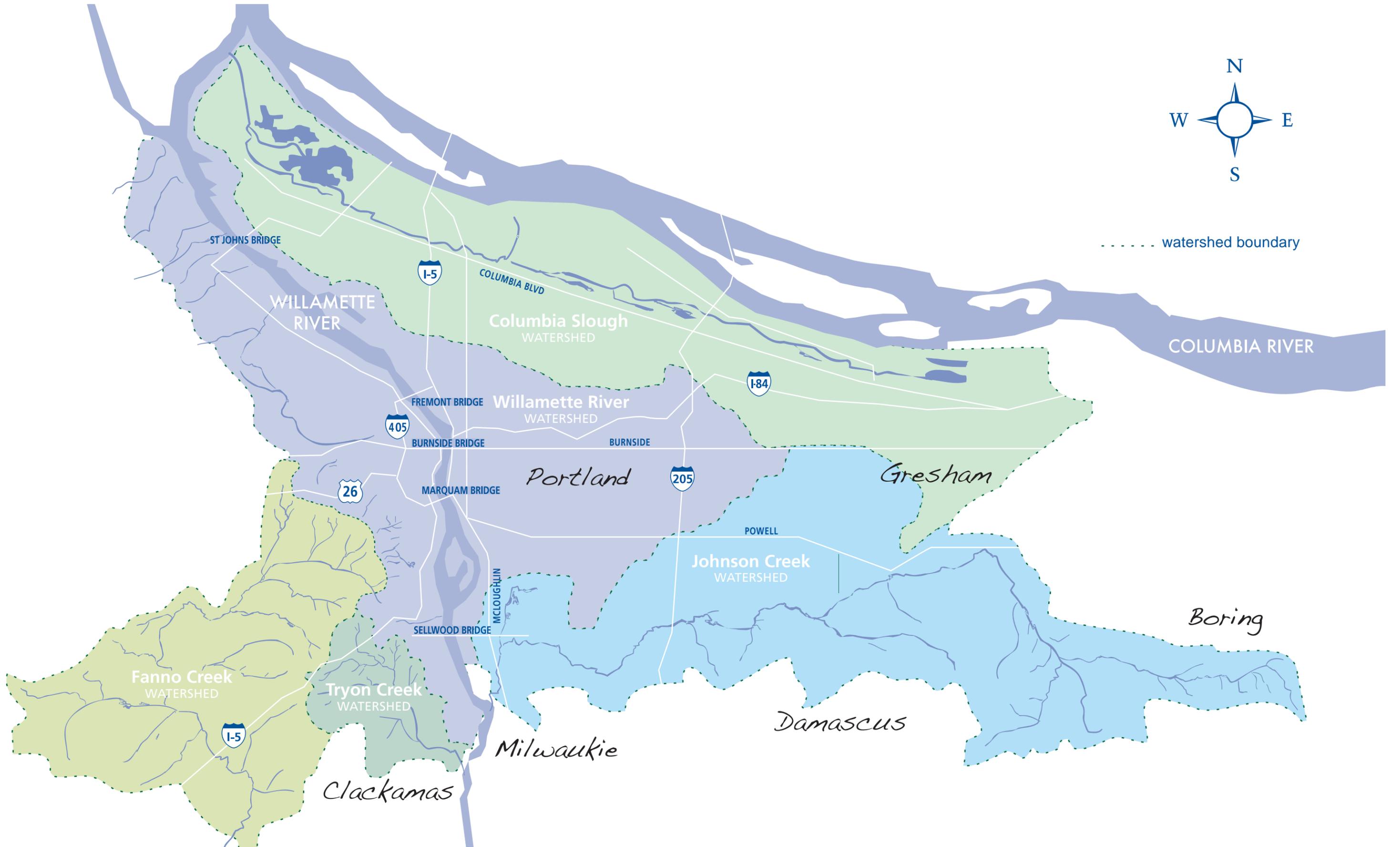


Prepared by: Strategic Analysis, Inc. Report # 2022-001. Date: 08/11/2022. Project: Johnson Creek Land Acquisition Protection.

AREA WATERSHEDS



..... watershed boundary



TARGET AREA 1

Mainstem Johnson Creek



TARGET AREA SIZE 1,911 acres
STREAM LENGTH 172,611 ft (32.70 mi) combined

LOCATION

Target Area 1 spans the entire mainstem of Johnson Creek, and includes the North Fork of Johnson Creek. The mainstem of Johnson Creek originates in Clackamas County, east of Boring, Oregon, and flows westerly approximately 25 miles through multiple jurisdictions to its confluence with the Willamette River in the City of Milwaukie. The North Fork of Johnson Creek originates near SE Orient Drive in the City of Gresham and enters the mainstem of Johnson Creek near SE Telford Road. This includes a 100 foot buffer on both sides of the stream through the length of the target area.

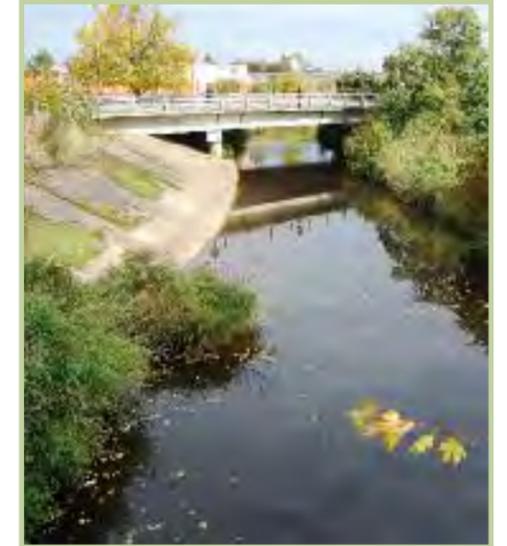
SIGNIFICANCE

- 1 Large intact area:** This target area contains intact but intermittent riparian, wetland, and upland forest habitat, which are still used by a variety of wildlife.
- 2 Biodiversity:** Target Area 1 contains the access point for fish to move from the Willamette River into the Johnson Creek watershed, which provides critical habitat for federally-listed Chinook and coho salmon, anadromous and resident steelhead and Pacific lamprey, a species of concern.
- 3 Development pressure:** Target Area 1 is threatened by development.
- 4 Network connectivity:** Contiguous stretches of publicly owned riparian property are needed to effectively implement floodplain, habitat, and water quality enhancement goals. Protecting and connecting riparian areas will increase the floodplain buffer and will allow implementation of those enhancement goals.

5 Protecting and restoring hydrological/ecological functions:

Historic actions have severely impacted stream and floodplain function on mainstem Johnson Creek. Degraded conditions include:

- Channelization in sections with some streambanks constrained by Works Progress Administration (WPA) rockwork, rip-rap, and building waste
- A lack of in-stream channel complexity and connection to the floodplain
- Unstable, eroded stream banks in some areas
- In-stream structures (bridges, waterfalls, and a fish ladder) that alter hydrologic function
- Invasive plant species (e.g., Himalayan blackberry, English ivy, reed canarygrass) that threaten native vegetation
- Untreated urban and agricultural stormwater runoff directly discharging to mainstem Johnson Creek



The following actions will enhance salmonid, riparian, and upland habitats and their functions:

- Removing artificial stream bank constraints and regrading the stream bank to reconnect the creek to its floodplain
- Adding large wood instream to improve channel habitat and hydraulic complexity and stabilize streambanks
- Removing invasive plant species then replanting with native species to help stabilize stream banks, improve water quality, and provide habitat
- Providing incentives and supporting creation of water quality and stormwater detention retrofits in upland areas to decrease negative impacts of urban runoff on Johnson Creek

6 Equitable access: Many parts of the lower reaches in Target Area 1 are surrounded by residential and commercial development, and access to natural areas is limited. Creating trails in locations that do not conflict with floodplain function, stream bank stabilization, or water quality goals (such as temperature) will increase public access.

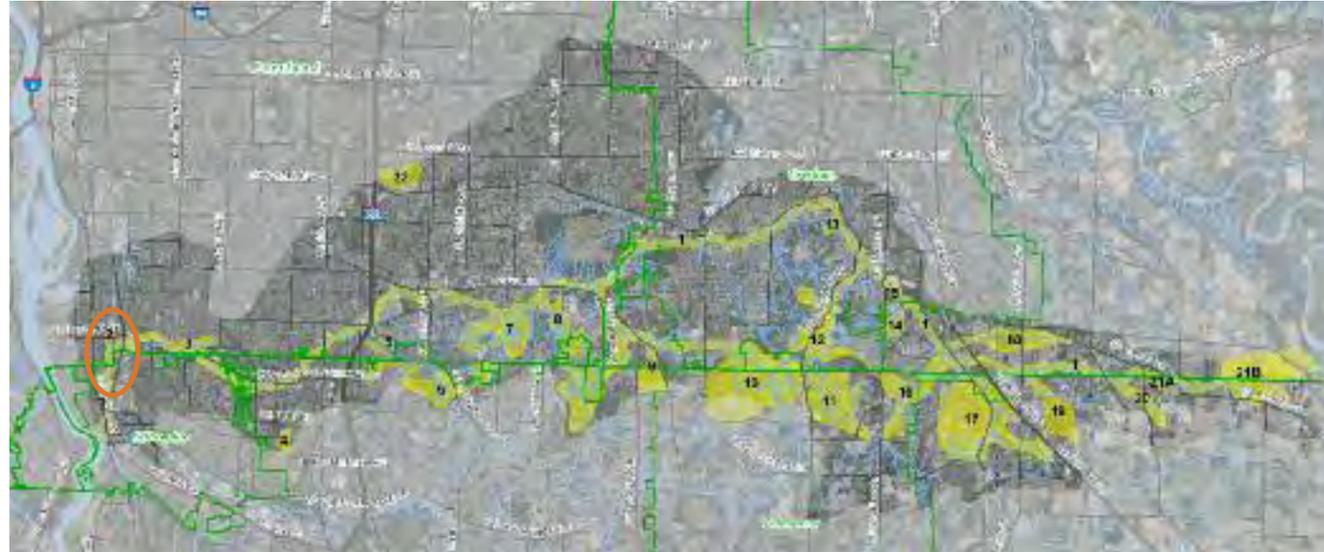
7 Trail connections: Opportunities exist to create and connect trails along the mainstem.

8 Environmental education: Target Area 1 is typically surrounded by residential and commercial development in the lower reaches, providing opportunities for environmental education.



TARGET AREA 2

Crystal Springs Creek



TARGET AREA SIZE 23.37 acres
STREAM LENGTH 3,062 ft (0.58 mi)

LOCATION

Crystal Springs Creek starts on the Reed College campus and in the Crystal Springs Rhododendron Garden (two separate branches) and enters Johnson Creek at Johnson Creek Park, about 1.25 river miles from the confluence of Johnson Creek and the Willamette River. All of Crystal Springs Creek is within the City of Portland. Target Area 2 is a subsection of Crystal Springs Creek, running from SE Lambert Street to SE Sherrett Street.

SIGNIFICANCE

2 Biodiversity: Crystal Springs Creek is a perennial spring-fed stream in the lower Johnson Creek watershed that provides a valuable source of cold water for Johnson Creek, as well as refuge for fish during high flow events in Johnson Creek. Steelhead, coho, and Pacific lamprey have been observed in Crystal Springs Creek, which has critical fish spawning and rearing habitat. The area surrounding Crystal Springs Creek contains wetland habitat that supports a variety of species, including river otter and great blue heron.

4 Network connectivity: Crystal Springs Creek provides a connection from Johnson Creek to multiple cold water springs at Crystal Springs Rhododendron Garden and Reed Lake. Several culverts on Crystal Springs Creek are fish passage barriers. Removing the fish passage barriers will increase stream connectivity and enhance salmonid habitat.

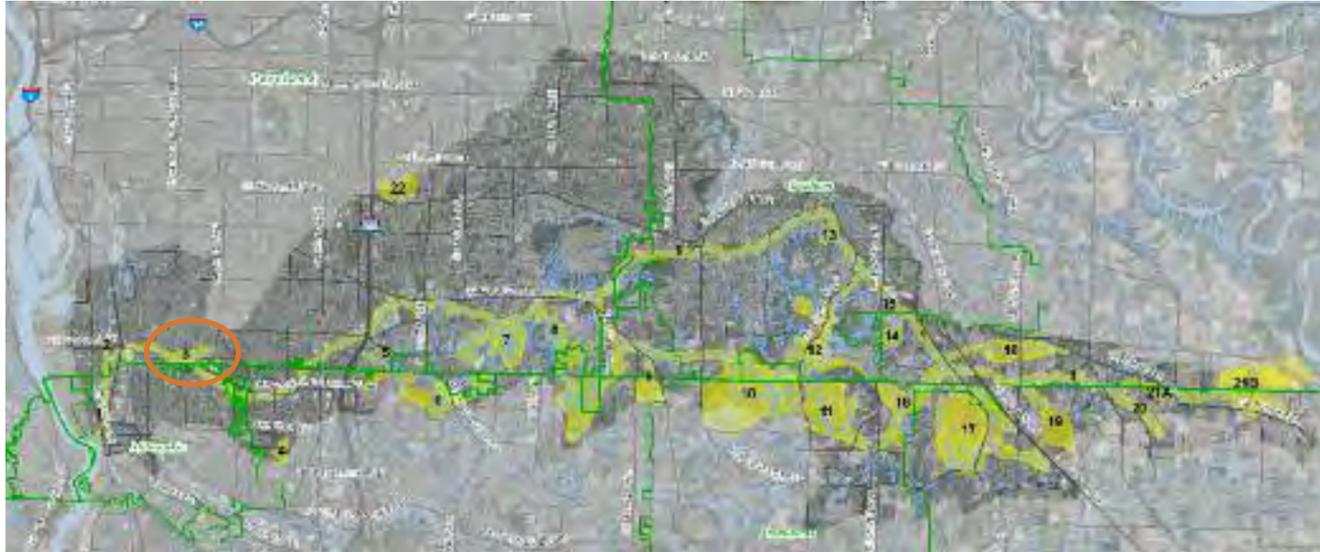
5 Protecting and restoring hydrological/ecological functions: Stream function is degraded in armored and channelized sections of Crystal Springs Creek, and invasive plant species (e.g., Himalayan blackberry, hedge bindweed, and clematis) threaten native vegetation. Several in-line ponds, including those in Westmoreland Park and the Rhododendron Garden, are heat sources to Crystal Springs Creek as well. Reconnecting the creek to the floodplain, removing invasive plant species then replanting with native vegetation, and removing the in-line ponds will improve riparian and wetland habitat.



TARGET AREA 3

Tideman Johnson Park, Johnson Creek Oxbow,

and Errol Creek



TARGET AREA SIZE 78.8 acres
STREAM LENGTH 6,907 ft (1.31 mi)

LOCATION

Target Area 3 is primarily located in the City of Portland, with a small portion in the City of Milwaukie and Clackamas County, near SE 37th Avenue and Johnson Creek Boulevard. It spans the area from about SE 36th Avenue to SE 45th Avenue, and includes the mainstem of Johnson Creek from Johnson Creek Boulevard to immediately downstream of Tideman Johnson Park, the Johnson Creek Oxbow, and Errol Creek.

SIGNIFICANCE

- 1 Large intact area:** Target Area 3 includes 40 acres of ecologically-intact habitat already in public ownership.
- 2 Biodiversity:** Target Area 3 contains a number of perennial streams and springs that flow into Johnson Creek from the north and south, including Errol Creek, which is a year-round cold water source for Johnson Creek. These streams provide important fish spawning and rearing habitat, fish refuge during high flows in Johnson Creek, and amphibian and wetland habitat.
- 3 Development pressure:** Target Area 3 is threatened by development.
- 4 Network connectivity:** Errol Creek connects Errol Wetland to Johnson Creek, but both creeks have fish passage barriers. Removing the culvert on Errol Creek and improving fish passage at the fish ladder on mainstem Johnson Creek will increase stream connectivity and salmonid habitat. Recent natural area acquisitions will make these actions possible.

5 Protecting and restoring hydrological/ecological functions: The riparian corridor lacks canopy cover and mature trees for large wood recruitment, stormwater outfalls drain untreated runoff from impervious areas directly to Johnson Creek and Errol Creek, and invasive plant species (like English ivy and Himalayan blackberry) threaten native vegetation. The following actions will enhance habitats and their functions:

- Adding meanders and placing wood instream will provide in-channel habitat diversity, encourage pool formation, and improve channel bed stability that enhances salmonid habitat.
- Reconnecting the creek to its floodplain and creating off-channel habitat will improve flood storage, water quality, and fish and wildlife habitat.
- Removing invasive plant species and replanting riparian vegetation will enhance upland habitat and the riparian corridor, particularly around lower Errol Creek.
- Removing outfalls or diverting outfalls to onsite stormwater treatment systems, like bio-filtration swales, will improve water quality.

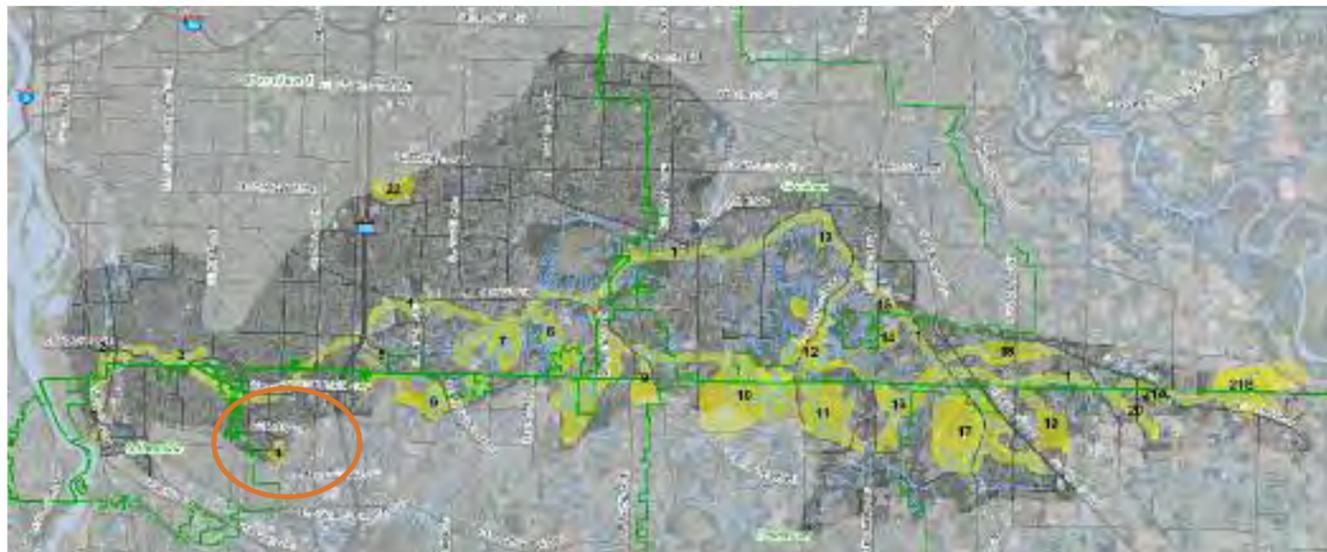
6 Equitable access: Trails and boardwalks in Tideman Johnson Park provide creek and wetland access, but additional trails are needed to make access more equitable among the surrounding communities.

8 Environmental education: The trail and boardwalk access to Johnson Creek and the surrounding wetland in Tideman Johnson Park make it a popular destination for environmental interpretation. Multiple schools use Target Area 3 for environmental education purposes.



TARGET AREA 4

Milwaukie Wetland



TARGET AREA SIZE 34 acres
STREAM LENGTH Not Applicable

LOCATION

Target Area 4 is located between the cities of Milwaukie and Happy Valley near SE 70th Avenue and SE Monroe Street. The area is south of the Johnson Creek mainstem in the lower watershed and adjacent to one of the last remaining large farmland properties within this highly urbanized area of the watershed.

SIGNIFICANCE

2 Biodiversity: Target Area 3 contains a number of perennial streams and springs that flow into Johnson Creek from the north and south, including Errol Creek, which is a year-round cold water source for Johnson Creek. These streams provide important fish spawning and rearing habitat, fish refuge during high flows in Johnson Creek, and amphibian and wetland habitat.



3 Development pressure: The area is zoned for residential development, making development likely.

5 Protecting and restoring hydrological/ecological functions: Invasive plant species, such as Himalayan blackberry and reed canarygrass, surround the wetland and exist at the boundaries of the nursery and farmland, threatening native vegetation. Removing invasive plant species and replanting with native vegetation will enhance wetland habitat.

6 Equitable access: Target Area 4 is within a highly urbanized area with few existing parks. Milwaukie Wetland will provide increased access to nature to diverse community members.

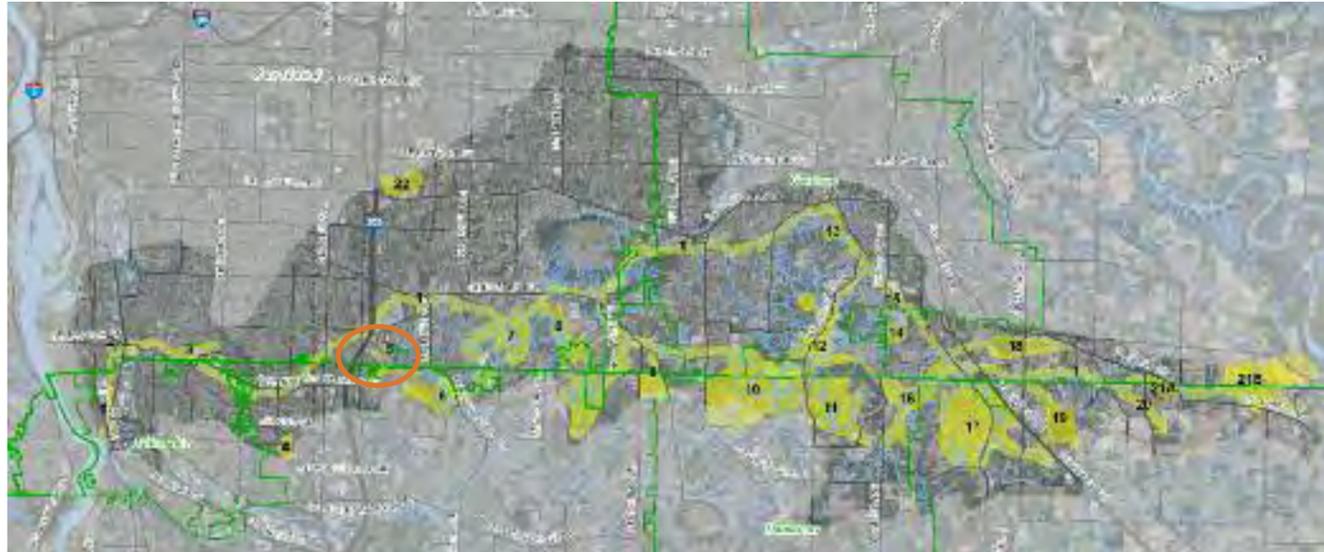
7 Trail connections: Land acquisition Target Area 4 will enable creation of a trail connecting the area to existing nearby trails.

8 Environmental education: The Milwaukie Wetland provides an excellent site for environmental education within a highly urbanized area.



TARGET AREA 5

Veterans Creek and Cottonwood Creek



TARGET AREA SIZE 51.35 acres
STREAM LENGTH 7,096 ft (1.34 mi) combined

LOCATION

Target Area 5 is located within the City of Portland just east of I-205. It extends from the City of Portland boundary and Lincoln Memorial Cemetery to just south of the confluence with Johnson Creek.

SIGNIFICANCE

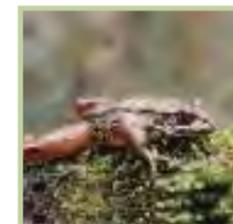
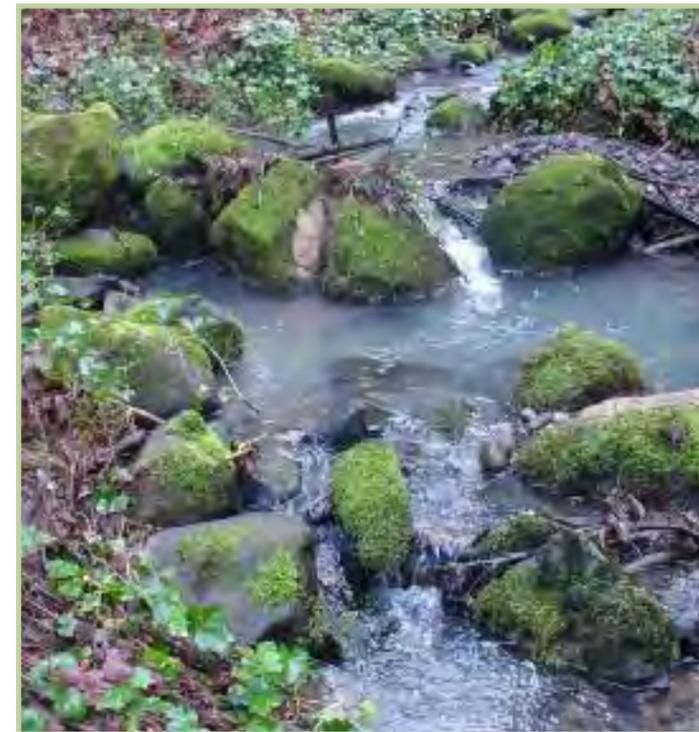
2 Biodiversity: Target Area 5 contains the lower reaches of Veterans Creek and the entire length of Cottonwood Creek, which drain the northwest slopes of Mt. Scott and flow into Johnson Creek east of I-205. Perennial flows from Veterans Creek and intermittent flows from Cottonwood Creek provide valuable cold water to Johnson Creek and provide fish refuge during high flow events in Johnson Creek. Veterans Creek and Cottonwood Creek have spawning and rearing habitat for coho and Chinook salmon and steelhead trout, which are federally listed as threatened, and cutthroat trout, which is a species of concern. Egg masses and tadpoles of the red-legged frog, also a species of concern, have been found in a man-made pond adjacent to Veterans Creek, and in other wetland habitats in Veterans and Cottonwood creeks.

3 Development pressure: Target Area 5 is dominated by riparian and upland forest areas with mature vegetation, and currently has few residential homes. However, high density development has been approved on some parcels with high natural resource value.

4 Network connectivity: There are multiple fish passage barriers on Veterans Creek and Cottonwood Creek. Removing the barriers will reconnect these creeks to Johnson Creek and will make important spawning and rearing habitat available for cutthroat and steelhead trout and coho and Chinook salmon.

5 Protecting and restoring hydrological/ecological functions: Lower sections of the creeks are concrete-lined and riparian canopy cover is lacking in areas. Invasive English ivy threatens to replace native understory plants and suffocate mature tree canopy. Removing concrete stream lining and invasive plant species then replanting with native vegetation will enhance aquatic and riparian habitat, as well as increase canopy cover. In 2011, the City of Portland purchased and began restoring two parcels of land that surround a section of Veterans Creek. Restoration efforts include removal of multiple fish passage barriers and invasive species, amphibian and wetland habitat enhancement, and riparian planting.

8 Environmental education: One site in Target Area 5 is currently used by the Johnson Creek Watershed Council for outreach and education. Students have been working on invasive plant removal in the area as well.



TARGET AREA 6

Headwaters of Veterans Creek, Wahoo Creek,

and Deardorff Creek



TARGET AREA SIZE 300 acres
STREAM LENGTH 8,298 ft (1.57 mi) combined

LOCATION

Target Area 6 is located at the top of Mt. Scott just east of I-205 and south of Mt. Scott Boulevard. It lies primarily within unincorporated Clackamas County with portions in the cities of Portland and Happy Valley.

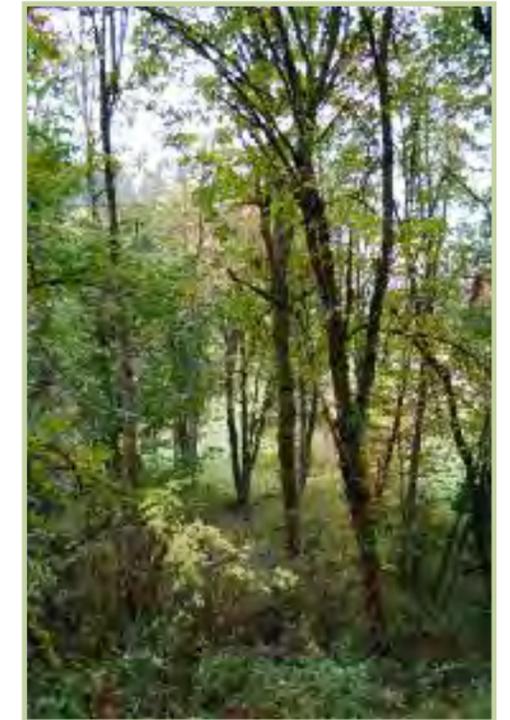
SIGNIFICANCE

- 1 Large intact area:** Target Area 6 contains the headwaters of Veterans Creek, Wahoo Creek, and Deardorff Creek. These perennial creeks and their intermittent tributaries are surrounded by 138 acres of undeveloped riparian, wetland, and upland forest habitats.
- 2 Biodiversity:** Target Area 6 contains a variety of habitats for sensitive native species such as red-legged frogs and pileated woodpeckers. Land acquisition will protect these riparian, wetland, and upland forest habitats and provide opportunities to enhance them.
- 3 Development pressure:** There could be continued development in Target Area 6, which would impact existing intact natural resources.
- 4 Network connectivity:** Acquisition in Target Area 6 will preserve the important connection between Target Areas 5 and 7, and provides a connection to the southern watershed.

5 Protecting and restoring hydrological/ecological functions: Target Area 6 contains multiple streams and drainageways, which provide natural stormwater management and contain valuable intact habitat. However, invasive plant species threaten native vegetation and riparian canopy cover is lacking along sections of the creeks. Removing invasive plant species and replanting with native vegetation will enhance riparian, wetland, and upland forest habitats.

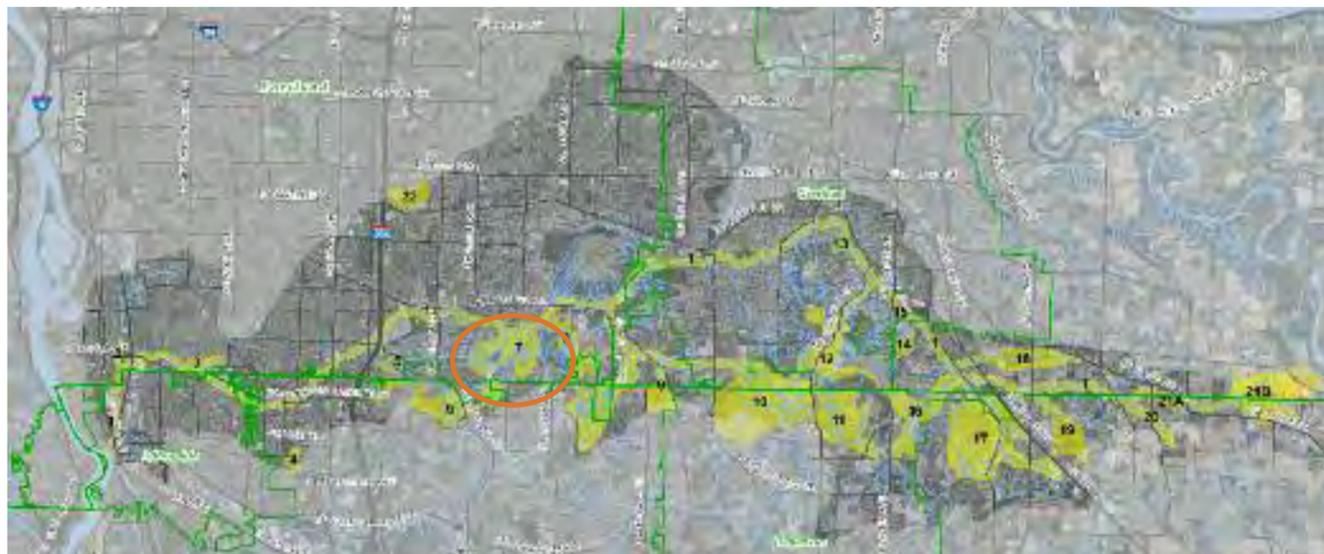
7 Trail connections: Target Area 6 includes the proposed Mt. Scott Regional Trail alignment, one of the four proposed north/south trail corridors located east of the I-205 trail and west of the Gresham-Fairview Trail identified as acquisition priorities by the Partnership during the planning process. Acquisition of the trail corridor could connect existing trails and align with conservation of upland areas.

8 Environmental education: Creating new trails will facilitate environmental education in this large, undeveloped area with a variety of habitats.



TARGET AREA 7

Wahoo Creek and Deardorff Creek



TARGET AREA SIZE 286.71 acres
STREAM LENGTH 19,636 ft (3.72 mi) combined

LOCATION

Target Area 7 is located within the City of Portland near SE 134th Avenue and Deardorff Road, and is surrounded by SE Foster Road to the north, SE 122nd Avenue to the west, SE Clatsop Street to the south, and SE 141st Avenue to the east.

SIGNIFICANCE

- 1 Large intact area:** Target Area 7 has large, high quality tracts of forest, and contains Wahoo Creek, Deardorff Creek, and their intermittent tributaries, which drain the northeast slope of Mt. Scott.
- 2 Biodiversity:** This area has a high quality upland forest system with interspersed perennial and seasonal streams and wetlands, which are habitats utilized by a variety of species such as giant Pacific salamanders, yellow warblers, and purple martins. Wahoo Creek and Deardorff Creek are tributaries to Johnson Creek that provide fish habitat and important fish refuge during high flow events in Johnson Creek. Wetland habitats exist adjacent to these creeks and near their confluences. Protection of the riparian, wetland, and upland forest habitats in Target Area 7 will help safeguard the area's biodiversity.
- 3 Development pressure:** Target Area 7 is threatened by development.
- 4 Network connectivity:** Target Area 7 provides a connection to other habitats in adjacent target areas (e.g. Johnson Creek mainstem and Barbara Welch Creek Watershed) and open spaces.

5 Protecting and restoring hydrological/ecological functions: Multiple forested streams and drainageways in Target Area 7 provide natural stormwater management and also provide valuable aquatic and terrestrial habitat. However, these ecosystem services and habitat types are compromised by invasive plant species that threaten native vegetation, the lack of riparian canopy cover along sections of creek, and a Works Progress Administration (WPA) project that lined Deardorff Creek at its confluence with Johnson Creek. Removing invasive plant species then replanting with native vegetation and removing lining in Deardorff Creek will enhance riparian, wetland, and upland forest habitats, thereby improving stormwater management.



7 Trail connections: Target Area 7 includes the proposed Mt. Scott Regional Trail alignment, one of the four proposed north/south trail corridors located east of the I-205 trail and west of the Gresham-Fairview Trail identified as acquisition priorities by the Partnership during the planning process. Land acquisition in Target Area 7 will allow creation of trail connections and provide a trail corridor that could align with conservation of upland areas.

8 Environmental education: The David Douglas School District has approval to build an elementary school nearby, which would increase environmental education opportunities in the area.



TARGET AREA 8

Barbara Welch Creek



TARGET AREA SIZE 101.66 acres
STREAM LENGTH 14,334 ft (2.71 mi)

LOCATION

Target Area 8 is located within the City of Portland, south of Johnson Creek and SE Foster Road at approximately SE 143rd Court, which is in the East Buttes and at the center of the Johnson Creek watershed. Barbara Welch Road occupies the former stream channel for 2,900 feet.

SIGNIFICANCE

- 1 Large intact area:** Target Area 8 contains Barbara Welch Creek, a tributary of Johnson Creek, and a portion of the Barbara Welch Creek watershed. The Barbara Welch watershed is approximately 222 acres, 88 acres of which are in public ownership. A large percentage of the private acreage is undeveloped, making acquisition of large, intact tracks of forest land possible. Target Area 8 is adjacent to Clatsop Butte.
- 2 Biodiversity:** Barbara Welch Creek is intermittent and does not support a fishery. However, its watershed supports a diverse wildlife community, which includes the red-legged frog, a species of concern. Land acquisition in Target Area 8 will protect amphibian and upland forest habitat.
- 3 Development pressure:** Target Area 8 is threatened by development.
- 4 Network connectivity:** Target Area 8 connects public forest lands on Clatsop Butte and East Ridge.

5 Protecting and restoring hydrological/ecological functions: The Barbara Welch watershed contains wetland habitat that provides stormwater management and a unique series of parallel stream channels resulting from the distinct geology of the area. Although the area has low levels of invasive plant species, these invasive plants are still a threat to mature tree canopy and native understory. Their removal will enhance riparian and upland habitats.

7 Trail connections: Target Area 8 includes the proposed Scouter Mountain Regional Trail alignment, one of the four proposed north/south trail corridors located east of the I-205 trail and west of the Gresham-Fairview Trail identified as acquisition priorities by the Partnership during the planning process. Another excellent potential trail could connect the 147th and Clatsop neighborhood with the Clatsop Butte neighborhood. Acquisition of the trail corridor could align with conservation of upland areas.



TARGET AREA 9

Mainstem Kelley Creek and Tributaries Clatsop



TARGET AREA SIZE 704.13 acres
STREAM LENGTH 48,871 ft (9.26 mi) combined

LOCATION

Target Area 9 is located primarily within unincorporated Multnomah County. Remaining portions of the target area are within unincorporated Clackamas County and the Urban Growth Boundaries of the cities of Portland, Gresham, and Happy Valley. The major street running through Target Area 9 is SE Foster Road with SE 162nd Avenue on the western edge and SE 190th Avenue on the eastern edge.

SIGNIFICANCE

2 Biodiversity: Target Area 9 contains Kelley Creek from its confluence with Johnson Creek at approximately River Mile 11 upstream to the base of Scouter Mountain, as well as the tributaries Clatsop and Mitchell creeks. The streams provide fish refuge during high flows in Johnson Creek and spawning and rearing habitat for fish, such as cutthroat trout. Steelhead and Pacific lamprey have been observed in Kelley Creek; part of this target area is federally designated critical habitat for steelhead. Wetland habitat is also present along Mitchell Creek. Land acquisition will protect salmonid, amphibian, riparian, wetland, and upland forest habitat.

3 Development pressure: These areas of unincorporated Multnomah and Clackamas counties will likely be annexed into the cities of Portland, Gresham, and Happy Valley in the future, creating significant development pressure in the area.

and Mitchell Creeks

4 Network connectivity: Target Area 9 is connected to Kelley Creek headwaters in Target Area 10. Multiple fish barriers exist in Target Area 9, including a dam on Kelley Creek, one culvert on Clatsop Creek, and three culverts on Mitchell Creek. Removing these fish passage barriers will improve stream connectivity and enhance salmonid habitat.

5 Protecting and restoring hydrological /ecological functions: The City of Portland's Lents neighborhood is downstream of Target Areas 9 and 10 and along a section of Johnson Creek that frequently floods. Protection and enhancement of natural areas in Target Area 9 will help prevent downstream flooding. Riparian canopy cover is lacking along stream sections. Planting native vegetation along creeks will enhance riparian habitat and increase canopy cover. In addition, a 75-acre area south of the Clackamas County line could provide significant wetland mitigation credits for future wetland impacts within the Johnson Creek/Kelley Creek basin if a mitigation bank is created.

7 Trail connections: Target Area 9 includes the proposed East Buttes Loop Regional Trail and the proposed Scouter Mountain Regional Trail alignment, two of the four proposed north/south trail corridors located east of the I-205 trail and west of the Gresham-Fairview Trail identified as acquisition priorities by the Partnership during the planning process. Acquisition of the trail corridor could lead to the creation of more trails and could align with enhancement of the riparian corridor along Kelley Creek or with conservation of upland areas along the Scouter Mountain Trail.

8 Environmental Education: Numerous student groups visit the Kelley Creek Confluence each year for environmental education. The site provides students an opportunity to learn about native plant species and macroinvertebrates, and is an observable urban refuge for cutthroat trout. New trails and restoration projects will encourage more environmental education.



TARGET AREA 10

Kelley Creek Headwaters



TARGET AREA SIZE 754.69 acres
STREAM LENGTH 9,272 ft (1.76 mi)

LOCATION

Target Area 10 is located south of the City of Gresham's Urban Growth Boundary and immediately east of the Pleasant Valley Plan District.

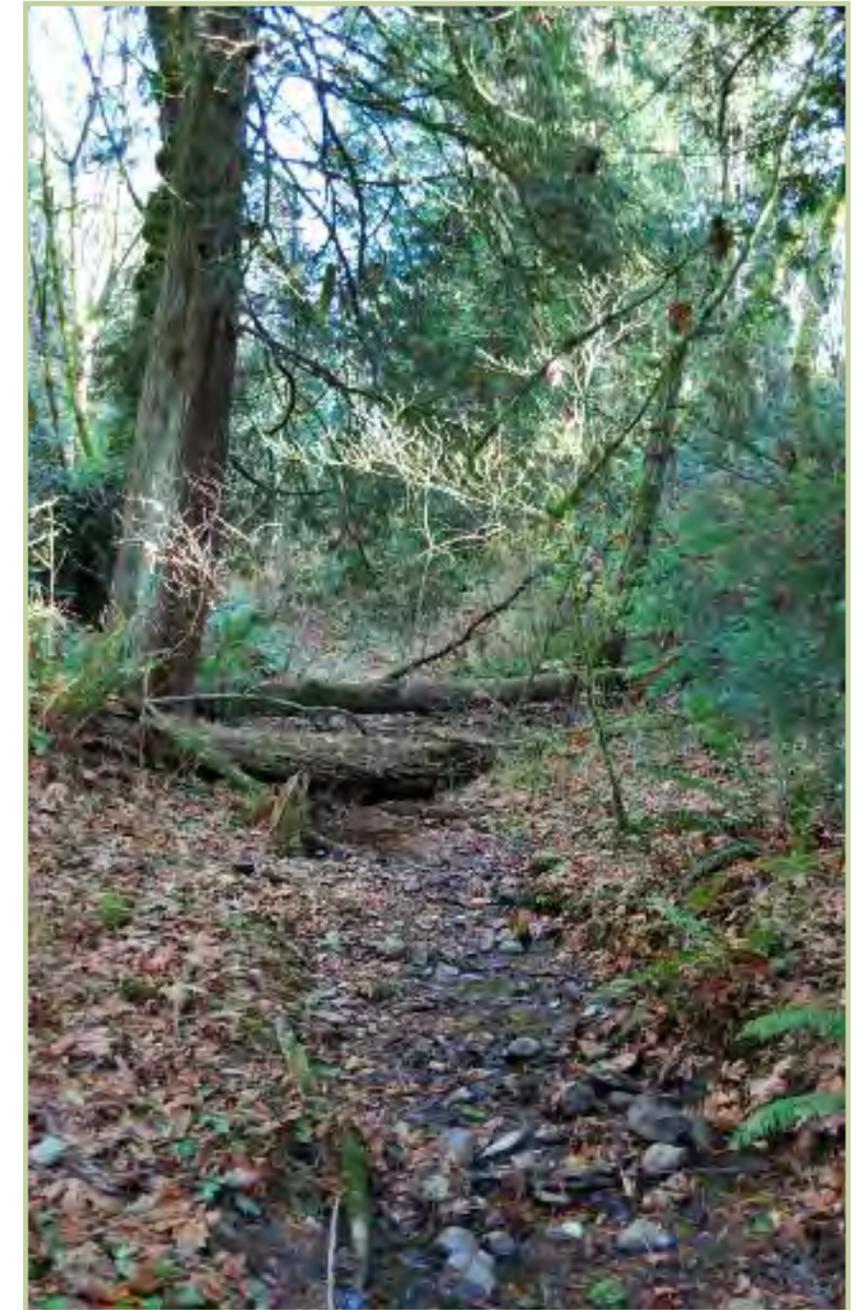
SIGNIFICANCE

- 1 Large intact area:** Target Area 10 contains the headwaters of Kelley Creek, which flows from the hillsides north and south of Rodlun Road. Kelley Creek flows west and northwest through the central and western portions of Target Area 10. Land uses in Target Area 10 include forestry, livestock pasture, rural residences, and parks and open space. The majority of the central and eastern portions of Target Area 10 remains forested. Tributaries within undeveloped areas that have not recently been logged generally have a healthy riparian area that is greater than 100 feet wide.
- 2 Biodiversity:** The rare plant species, tall bugbane, is present in Target Area 10, as well as the red-legged frog, a species of concern. Bird species recorded in Target Area 10 include: willow and Pacific-slope flycatchers; Townsend's, orange-crowned, and Wilson's warblers; Bewick's and winter wrens, warbling vireos, Western wood pewees, purple finches, golden-crowned kinglets, and red-breasted nuthatches. Acquiring land in Target Area 10 will protect riparian and upland forest habitat used by these and other species.
- 3 Development pressure:** Large private lots are fragmenting otherwise comparatively rare intact forested habitat within the Johnson Creek basin. There is also pressure to harvest trees in the area.

4 Network connectivity: Target Area 10 connects to the lower reaches of Kelley Creek in Target Area 9

5 Protecting and restoring hydrological/ecological functions: The City of Portland's Lents neighborhood is downstream of Target Areas 9 and 10 and along a section of Johnson Creek that frequently floods. Protection and enhancement of natural areas in Target Area 10, particularly wetlands, will help prevent downstream flooding. Canopy cover is lacking in the riparian zone and the riparian corridor is narrow along sections of the creeks that pass through pasture land, logged areas, and residential areas. Planting native vegetation and increasing riparian buffers will enhance aquatic and riparian habitat. In addition, invasive plant species (e.g. Himalayan blackberry, English ivy, and English holly) are present along the disturbed edges of the open spaces and within recently logged tracts of land. Removing invasive plant species and replanting with native vegetation will enhance upland forest habitats.

7 Trail connections: Land acquisition will enable creation of trail connections and open space connections.



TARGET AREA 11

Hogan Creek Headwaters



TARGET AREA SIZE **382.98 acres**
STREAM LENGTH **8,229 ft (1.56 mi) combined**

LOCATION

Target Area 11 is located within the City of Damascus, Clackamas County. SE 222nd Drive crosses the western portion of Target Area 11 and SE Borges Road crosses the southeastern portion.

SIGNIFICANCE

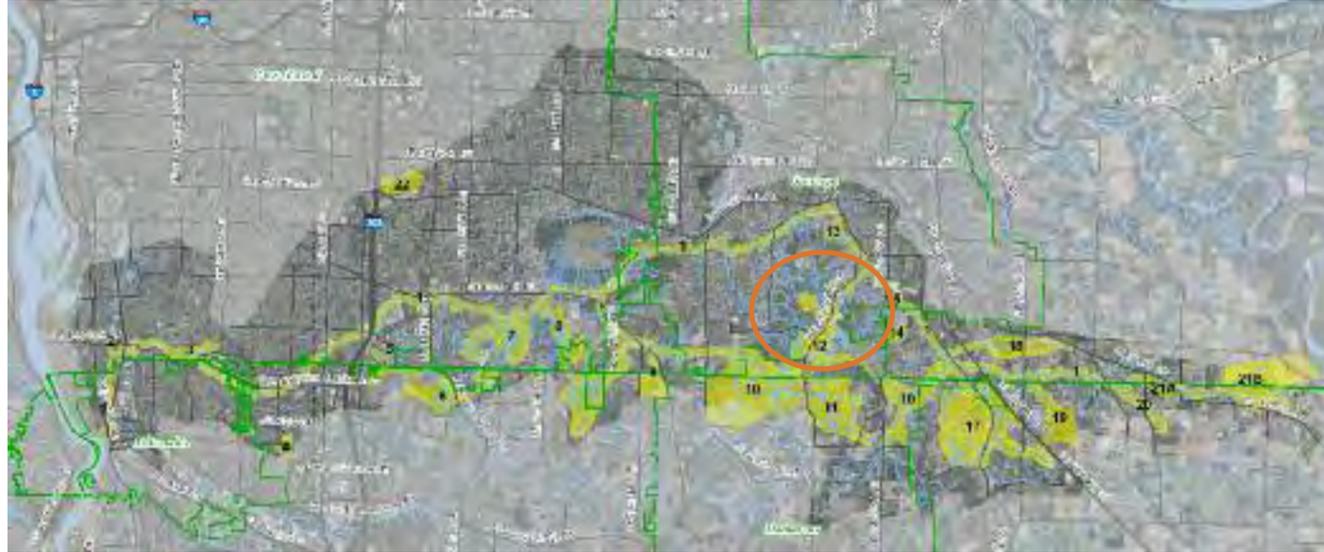
- 1 Large intact area:** Target Area 11 primarily drains to the south and southeast via tributaries to Sunshine Creek, but it also contains the upper most reaches of the Hogan Creek watershed in its northwest corner. These creeks are tributaries to Johnson Creek. The western portion of Target Area 11 is largely undeveloped with a mixture of mature coniferous-hardwood forests and young deciduous forests. Riparian areas are mostly forested as well.
- 2 Biodiversity:** A pond in the southeastern portion of Target Area 11 has the potential to provide habitat for amphibians and turtles.
- 3 Development pressure:** Habitat fragmentation from residential development in the eastern and central portions of Target Area 11 affects stream and upland forest habitat. Target Area 11 remains threatened by development.
- 4 Network connectivity:** In-channel ponds, habitat fragmentation in lower stream reaches draining Target Area 11, and nursery development in the riparian area downstream of Borges Road disrupt stream and wildlife corridor connectivity. Removing the in-channel ponds will improve stream connectivity. Land acquisition in Target Area 11 will create a connection to other large intact habitats.

- 5 Protecting and restoring hydrological/ecological functions:** Invasive plant species threaten native vegetation. Removing invasive plant species and replanting with native vegetation will enhance riparian and upland forest habitats.



TARGET AREA 12

Nechacokee Creek



TARGET AREA SIZE 364.77 acres
STREAM LENGTH 28,679 ft (5.43 mi) combined

LOCATION

Target Area 12 is located in the City of Gresham, Multnomah County, and generally parallels SE Regner Road.

SIGNIFICANCE

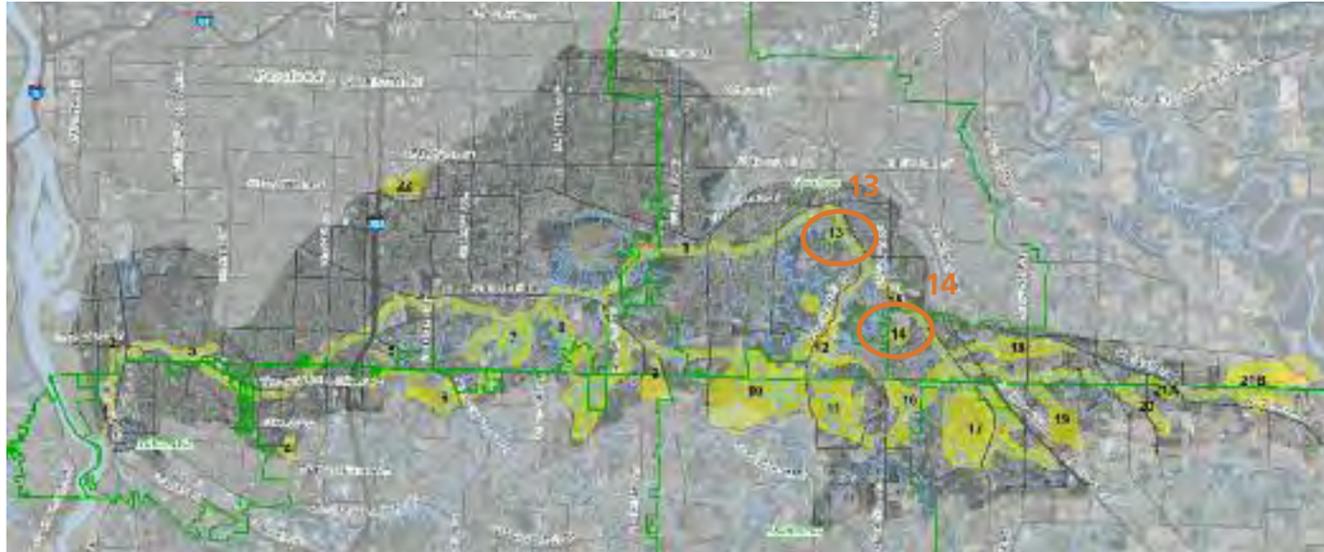
- 1 Large intact area:** Target Area 12 includes Nechacokee Creek and the headwaters of Meadow Creek, Butler Creek, Hogan Creek, and West Fork Hogan Creek, along with unnamed tributaries. Nechacokee Creek drains to Johnson Creek east of SE Regner Road. The lower stream reaches in Target Area 12 are perennial while the uppermost reaches are likely intermittent. The riparian areas along these streams are mostly forested, and the streams provide valuable sources of cold water for Johnson Creek. Portions of Target Area 12 are undeveloped with a mixture of mature coniferous hardwood forests and young deciduous forests. Land acquisition will protect the riparian and upland forest habitats along Nechacokee Creek and the headwaters of Meadow Creek, Butler Creek, Hogan Creek, and West Fork Hogan Creek.
- 3 Development pressure:** Residential development has fragmented habitat and future development will negatively impact the ability of these tributaries to provide cold water inputs to Johnson Creek.
- 4 Network connectivity:** Target Area 12 connects the forested upland on the East Buttes with riparian areas.

- 5 Protecting and restoring hydrological/ecological functions:** Invasive plant species threaten native vegetation. Removing invasive plant species and replanting with native vegetation will enhance and restore riparian and upland forest habitat.



TARGET AREA 13

Lower Miller Creek



TARGET 13 AREA SIZE 33.63 acres
STREAM LENGTH 5,725 ft (1.08 mi)

LOCATION

Target Area 13 is located in the City of Gresham, Multnomah County east of Forest Lawn Memorial Park, where Miller Creek flows into Johnson Creek.

SIGNIFICANCE

- 1 Large intact area:** Target Area 13 contains the confluence of Miller Creek and Johnson Creek and undeveloped tracts of land with a mixture of mature coniferous-hardwood forests and young deciduous forests.
- 3 Development pressure:** Lands in Target Area 13 can be subdivided and developed. Expansion of private development within existing land use designations in Target Area 13 will increase habitat fragmentation and disrupt the springs and wetland mosaic found on Gresham Butte. This could lead to the removal of forest and understory resources in a manner that will facilitate encroachment of aggressive riparian weeds, similar to neighboring butte areas with private development. Land acquisition will protect riparian and upland forest habitats along the lower reaches of Miller Creek, as well as a wooded corridor that connects the upper reach of Miller Creek and Gresham Butte to lower Miller Creek and Johnson Creek.
- 5 Protecting and restoring hydrological/ecological functions:** Invasive plant species threaten native vegetation. Removing invasive plant species and replanting with native vegetation will enhance riparian and upland forest habitat. In addition, Miller Creek provides a cold water source to Johnson Creek and improves floodplain connectivity in the area, both of which need protection.



TARGET AREA 14

Botefuhr and Brigman Creeks

TARGET 14 AREA SIZE 49.27 acres
STREAM LENGTH 2,230 ft (0.42 mi) combined

LOCATION

Target Area 14 is located in the City of Gresham Urban Growth Boundary (UGB), Multnomah County. The area is a wooded corridor between Botefuhr and Brigman creeks, east of SE Hogan Road and near their confluences with Johnson Creek.

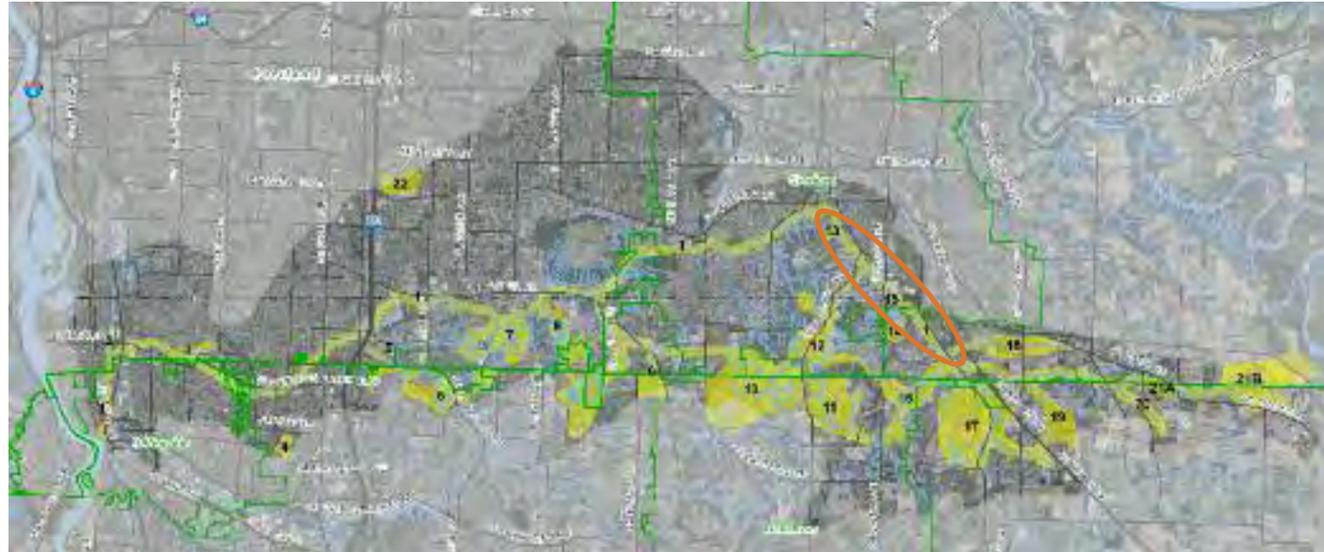
SIGNIFICANCE

- 1 Large intact area:** Target Area 14 contains a largely undeveloped, forested corridor on Hogan Butte where Botefuhr Creek and Brigman Creek connect with Johnson Creek. The confluences are located within the most natural and least disturbed section of Johnson Creek, according to a 1999 Oregon Department of Fish and Wildlife stream survey.
- 2 Biodiversity:** The forested corridor containing Botefuhr Creek and Brigman Creek is federally-designated as critical habitat for steelhead and salmon. Groundwater inputs from the lava dome butte provide cool water to mainstem Johnson Creek via these two creeks. From 2009 to 2011, spawning coho have been reported just downstream of the confluences of Botefuhr and Brigman creeks with Johnson Creek. In addition, the forested corridor is recognized as an increasingly scarce wildlife corridor for birds and mammals.
- 3 Development pressure:** Target Area 14 is threatened by development. Until the City of Gresham annexes this area or it is brought into public ownership, timber harvest is allowable within 25 feet of these tributaries.
- 4 Network connectivity:** Target Area 14 provides a wildlife corridor to other open spaces.
- 5 Protecting and restoring hydrological/ecological functions:** Invasive plant species threaten native vegetation. Removing invasive plant species and replanting with native vegetation will enhance and restore riparian and upland forest habitat.



TARGET AREA 15

Johnson Creek Reach 16 and 17



TARGET AREA SIZE 261.74 acres
STREAM LENGTH 11,090 ft (2.1 mi) combined

LOCATION

Target Area 15 is located in the City of Gresham, Multnomah County. It extends from Miller Creek to the Clackamas County Line.

SIGNIFICANCE

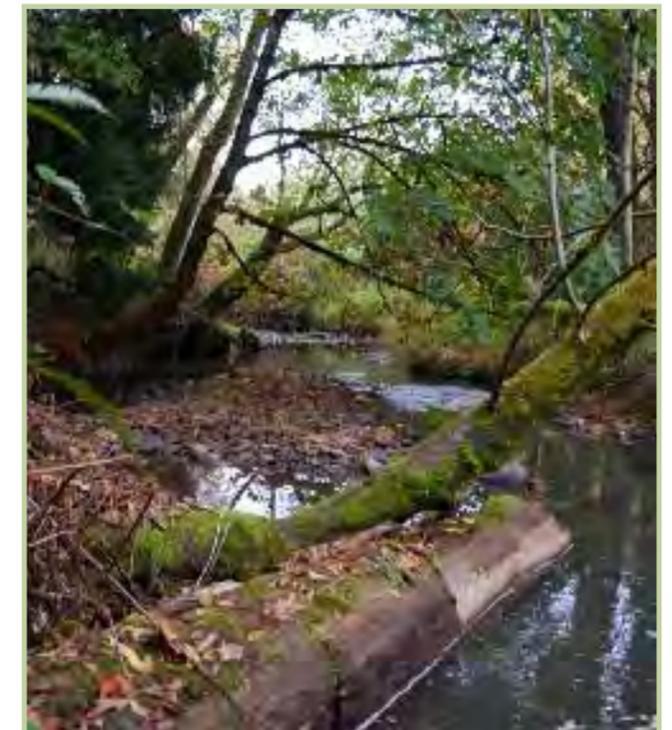
- 1 Large intact area:** Target Area 15 has a functional riparian corridor of second-growth forest and well-managed pastures that provide shade and woody debris to the creek, and filter stormwater.
- 2 Biodiversity:** Cutthroat trout, Pacific lamprey, coho salmon, and resident and anadromous steelhead have been observed in Target Area 15. The area contains fish spawning and rearing habitat, as well as secondary channels, large woody debris, and boulders that provide instream complexity and fish refuge. Ongoing investments by the City of Gresham and Metro have resulted in significant public ownership of known steelhead and coho spawning areas, but some salmonid and riparian habitats remain unprotected. Contiguous public ownership will allow a unique opportunity to realize large-scale stream restoration, and will allow for natural stream and floodplain function to a degree not typically achievable in an urban area.
- 3 Development pressure:** Reach 17 is currently zoned rural, and is not annexed within the City of Gresham. Agriculture and timber harvest are allowed, and could negatively affect known spawning and rearing habitat.

4 Network connectivity: Johnson Creek Reach 16 and 17 contain one of the most intact reaches of instream and riparian habitat on mainstem Johnson Creek, which resulted in their designation as Target Area 15 instead of remaining as part of Target Area 1. As a result, Target Area 15 provides connectivity between sections of Target Area 1. An old dam within the Ambleside area (just east of Hogan Road in Reach 16) creates a fish passage barrier during certain flows. Pooled water behind the dam measurably increases stream temperatures above state temperature targets for healthy salmon streams. Removing the old dam will reduce stream temperature and facilitate fish passage.



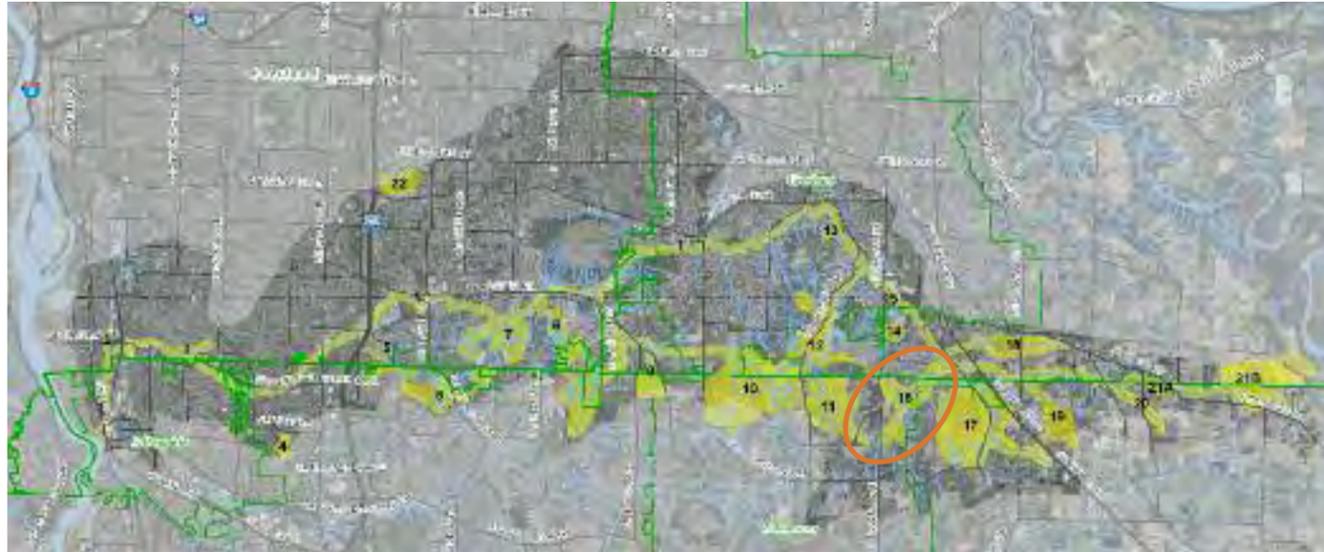
5 Protecting and restoring hydrological/ecological functions:

In-stream channel complexity and connection to the floodplain is lacking in some creek sections, riprap and cement are present in-stream, and some stream banks are unstable and eroding. In addition, invasive plant species (Himalayan blackberry, reed canarygrass, hedge bindweed, English ivy, and purple loosestrife) threaten riparian and upland native vegetation. Adding large wood and removing riprap, cement, and other bank anchoring materials will allow for stream channel migration, improve channel complexity, and enhance floodplain function. In addition, reconnecting the creek to the floodplain, removing invasive plant species, and replanting riparian vegetation will enhance salmonid and riparian habitat, as well as stabilize streambanks.



TARGET AREA 16

Sunshine Creek



TARGET AREA SIZE **297.34 acres**
STREAM LENGTH **15,021 ft (2.84 mi) combined**

LOCATION

The northern portion of Target Area 16 is located in the Springwater Community area of Multnomah County. The southern portion is within the City of Damascus and unincorporated Clackamas County. Target Area 16 extends from Sunshine Creek and its tributaries near the SE 242nd Avenue/SE Sunshine Valley Road intersection to the confluence of Sunshine Creek with Johnson Creek.

SIGNIFICANCE

- 1 Large intact area:** Target Area 16 contains Sunshine Creek, its tributaries, and a large wetland area adjacent to Sunshine Creek. It also has a mixture of forested and non-forested riparian and upland habitats. Land acquisition will protect salmonid, riparian, wetland, and upland forest habitats along Sunshine Creek and its tributaries.
- 2 Biodiversity:** Sunshine Creek and its tributaries are hydrologically-supported, in part, by numerous small springs on the butte that provide a valuable cold water source to Johnson Creek, even in dry weather. Juvenile coho salmon, rainbow trout, and adult cutthroat trout utilize the lower reaches of Sunshine Creek and amphibians are present throughout Target Area 16. Land acquisition will protect these important cold water sources and habitats needed by fish and amphibians.
- 3 Development pressure:** Residential development and farmland have fragmented habitat in Target Area 16 and the area is slated for future development.

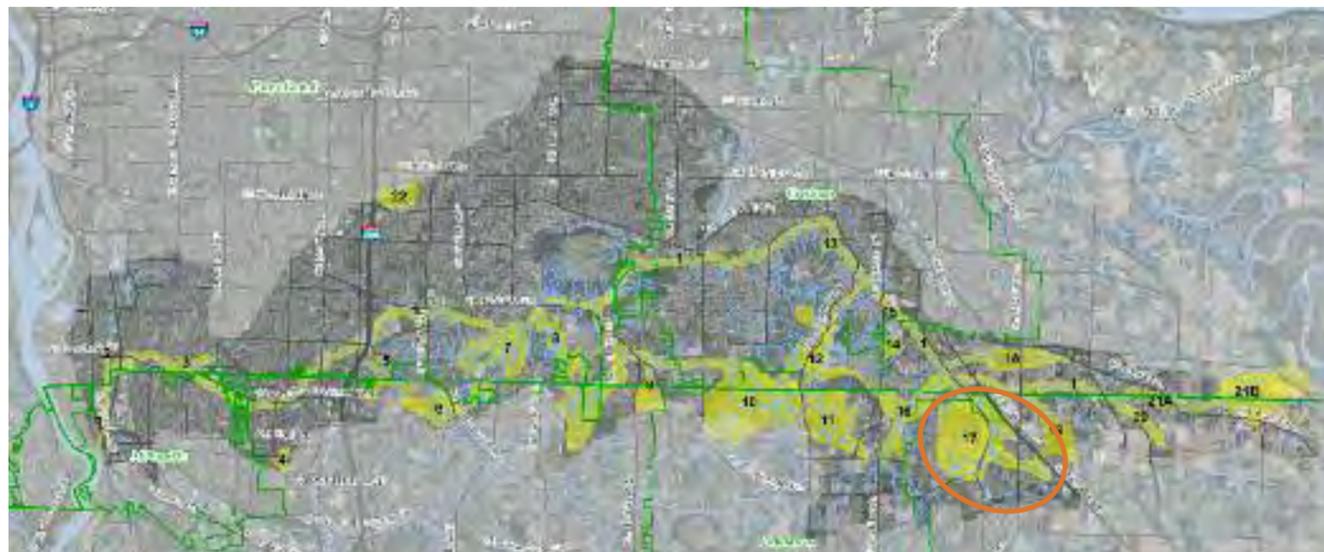
4 Network connectivity: Target Area 16 provides a forested wildlife corridor to Sunshine Valley.

5 Protecting and restoring hydrological/ecological functions: Invasive plant species threaten native vegetation and riparian vegetation is lacking along sections of the creek. Removing invasive plant species and replanting with native vegetation will enhance and restore riparian, wetland, and upland forest habitat. There is also potential for wetland enhancement in this target area.



TARGET AREA 17

Badger Creek



TARGET AREA SIZE **779.58 acres**
STREAM LENGTH **18,917 ft (3.58 mi) combined**

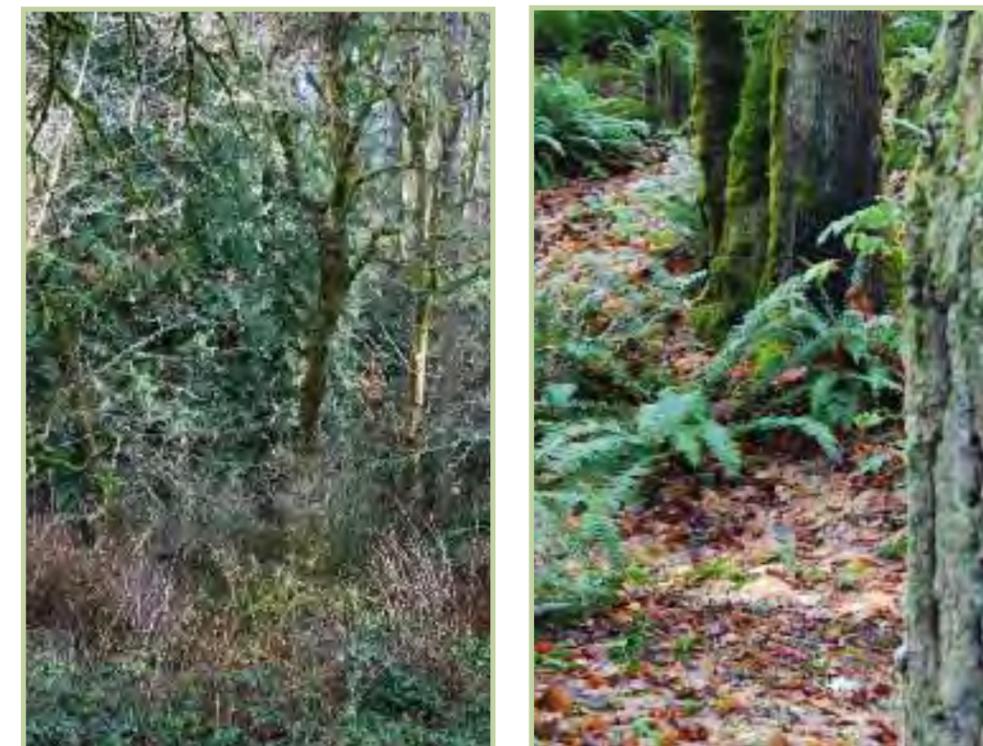
LOCATION

The northern portion of Target Area 17 is located within Multnomah County and the southern portion is within unincorporated Clackamas County. Target Area 17 includes Badger Creek and its tributaries from near the intersection of SE Telford Road and SE Sunshine Valley Road to the MacDonald Creek confluence with Johnson Creek. Highway 26 borders its eastern portion.

SIGNIFICANCE

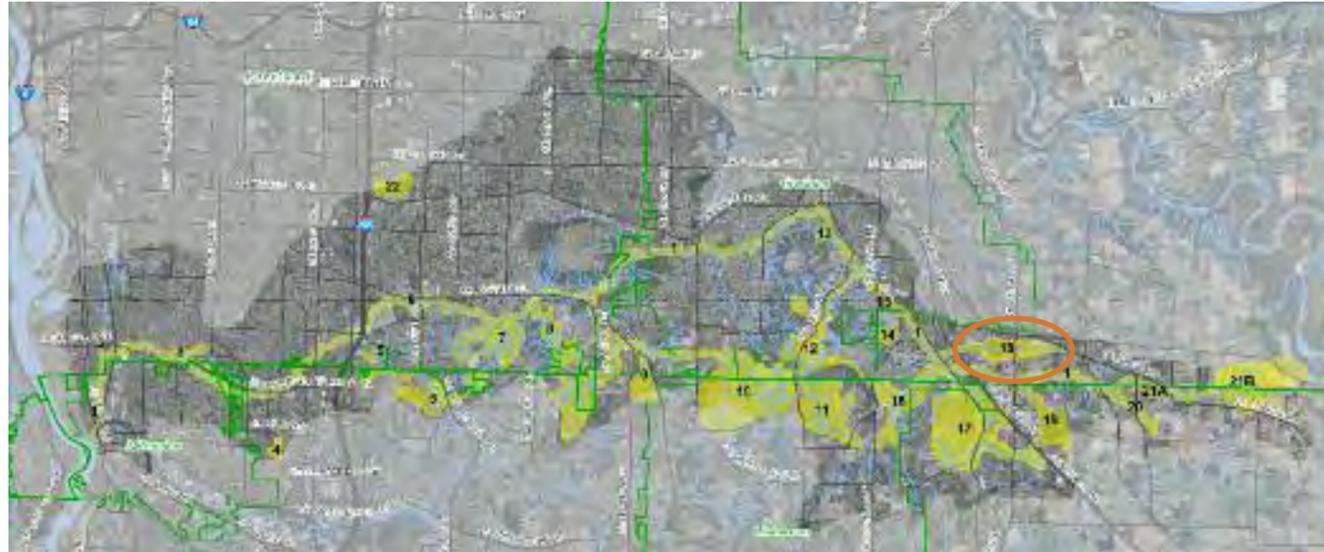
- 1 Large intact area:** Target Area 17 includes Badger Creek and its tributaries, as well as a large tract of mixed coniferous-hardwood forest habitat that is fragmented by residential development. The riparian areas are partially forested. Land acquisition will protect salmonid, riparian, and upland forest habitats along Badger Creek, MacDonald Creek, and their tributaries.
- 2 Biodiversity:** Badger Creek is a valuable cold water source for Johnson Creek, and supports coho, rainbow trout, and cutthroat trout.
- 3 Development pressure:** Target Area 17 is threatened by development and tree harvesting.
- 4 Network connectivity:** In-channel ponds create multiple fish passage barriers and increase stream temperature. Eliminating or modifying these in-channel ponds will improve connectivity and reduce stream temperatures.

- 5 Protecting and restoring hydrological/ecological functions:** Removing invasive plant species and restoring native vegetation will enhance riparian, wetland, and upland forest habitat, and improve water quality and aquatic habitat.



TARGET AREA 18

North Fork Extension



TARGET AREA SIZE 160.68 acres
STREAM LENGTH 5,024 ft (0.95 mi)

LOCATION

Target Area 18 is located in a largely agricultural and rural area of Multnomah County. Approximately half of Target Area 18 is within the City of Gresham's Urban Growth Boundary (UGB) while the other half is outside the UGB, but within an urban reserve. Target Area 1 captures the 100 foot buffer around the North Fork. Target Area 18 extends beyond the 100 foot buffer to include additional forest habitat.

SIGNIFICANCE

- 1 Large intact area:** Target Area 18 contains the North Fork of Johnson Creek, a perennial stream with low summer flows and many undeveloped riparian areas, such as a ¾-mile stretch of contiguous riparian forest between 120 and 240 feet wide from SE Anderson Road to SE 282nd Avenue. This stretch contains one of the best riparian forests and the largest cedar trees in the upper portions of the Johnson Creek watershed.
- 2 Biodiversity:** Target Area 18 provides habitat to salmonids, native freshwater mussels, willow flycatchers, yellow-breasted chat, western painted turtle, northwestern pond turtle, and northern red-legged frog.
- 3 Development pressure:** Land management decisions, such as timber harvest, could impact the valuable natural resource features in Target Area 18. The area is slated for future development.
- 4 Network connectivity:** Culverts at four road crossings are potential fish passage barriers and their removal or reconstruction will restore stream connectivity.

5 Protecting and restoring hydrological/ecological functions: The upland forest habitat is fragmented and sometimes lacks stream and wetland connectivity. Invasive plant species also threaten native vegetation. Reconnecting the creek with its floodplain will restore wetlands and improve the connection between the stream and upland forest habitat. Removing invasive plant species and replanting with native vegetation will enhance wetland and upland forest habitat diversity as well. Summer stream temperatures exceed Oregon Department of Wildlife (ODFW) temperature targets for steelhead and salmon. The creek lacks large woody debris that provides fish refugia and habitat complexity, and invasive plant species threaten native riparian vegetation. Removing invasive plant species and replanting native riparian species will enhance riparian habitat and canopy cover, particularly near the headwaters and mouth of North Fork Johnson Creek. Placing large wood instream will improve fish habitat. In addition, sediment enters the creek from adjacent agricultural lands. Increasing riparian buffers on farms and planting native riparian vegetation will reduce potential sediment, nutrient, and pesticide runoff.

9 Working landscapes: Through conservation easements or other appropriate means, there may be opportunities in this Target Area to protect important wildlife corridors and protect or enhance riparian buffers on or adjacent to working lands (e.g. timber and agricultural properties).



TARGET AREA 19

Unnamed Johnson Creek Tributary

between Bluff and Orient Roads



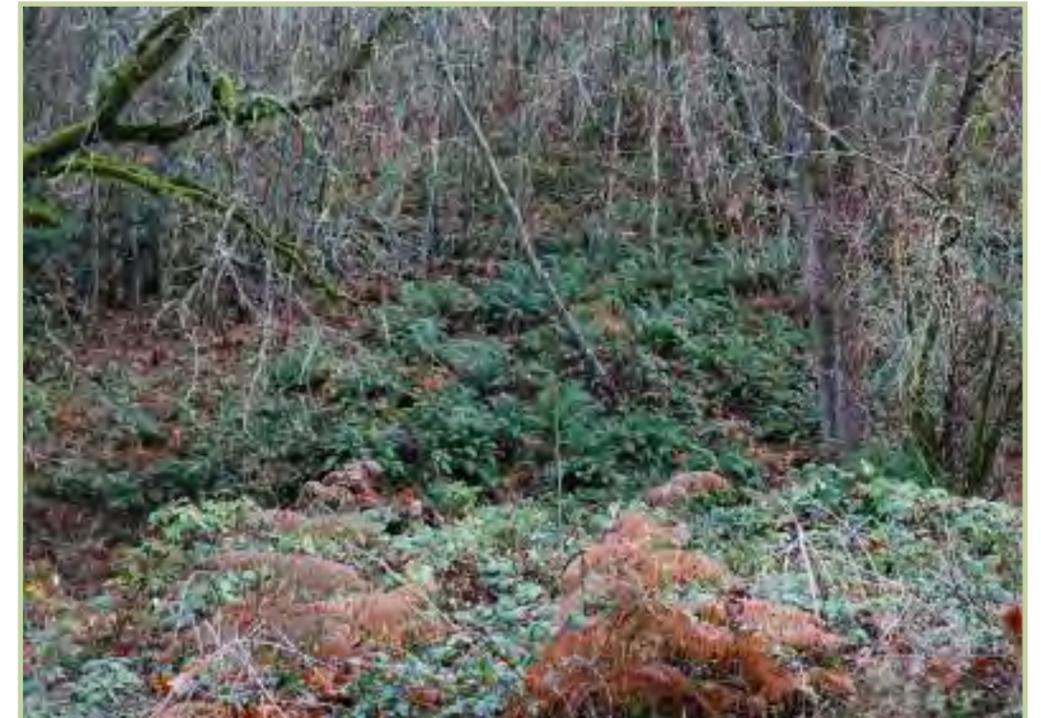
TARGET AREA SIZE 184.88 acres
STREAM LENGTH 2,279 ft (0.43 mi)

LOCATION

Target Area 19 is located just north of the City of Boring between Bluff Road and Orient Road.

SIGNIFICANCE

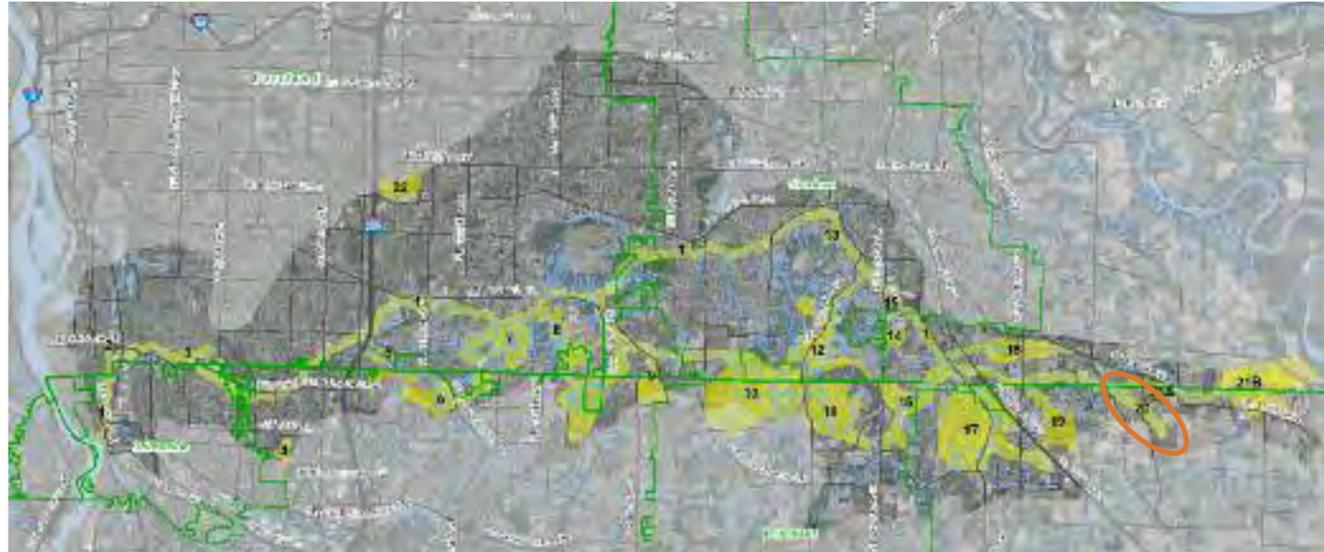
- 1 Large intact area:** Target Area 19 contains a large tract of upland forest habitat and an intermittent tributary to Johnson Creek. Most of Target Area 19 is covered by mature Douglas fir, Western redcedar, Western hemlock, and bigleaf maple trees, as well as a healthy understory of native forbs and shrubs. Land acquisition will protect these aquatic, riparian, and upland forest habitats.
- 3 Development pressure:** Target Area 19 is threatened by development.
- 4 Network connectivity:** Target Area 19 provides a wildlife corridor between existing open spaces.
- 5 Protecting and restoring hydrological/ecological functions:** The intermittent tributary to Johnson Creek likely provides fish refuge during high flow events in Johnson Creek. Invasive plant species (for example, English ivy, reed canarygrass, English holly, and Japanese knotweed) are threatening native vegetation. Removing invasive plant species and replanting with native vegetation will enhance and restore riparian and upland forest habitat.



TARGET AREA 20

Unnamed Johnson Creek Tributary

between 327th and Orient Drive



TARGET AREA SIZE 83.43 acres
STREAM LENGTH 4,948 ft (0.93 mi and 0.96 mi)

LOCATION

Target Area 20 is located between SE 327th Avenue and Orient Drive.

SIGNIFICANCE

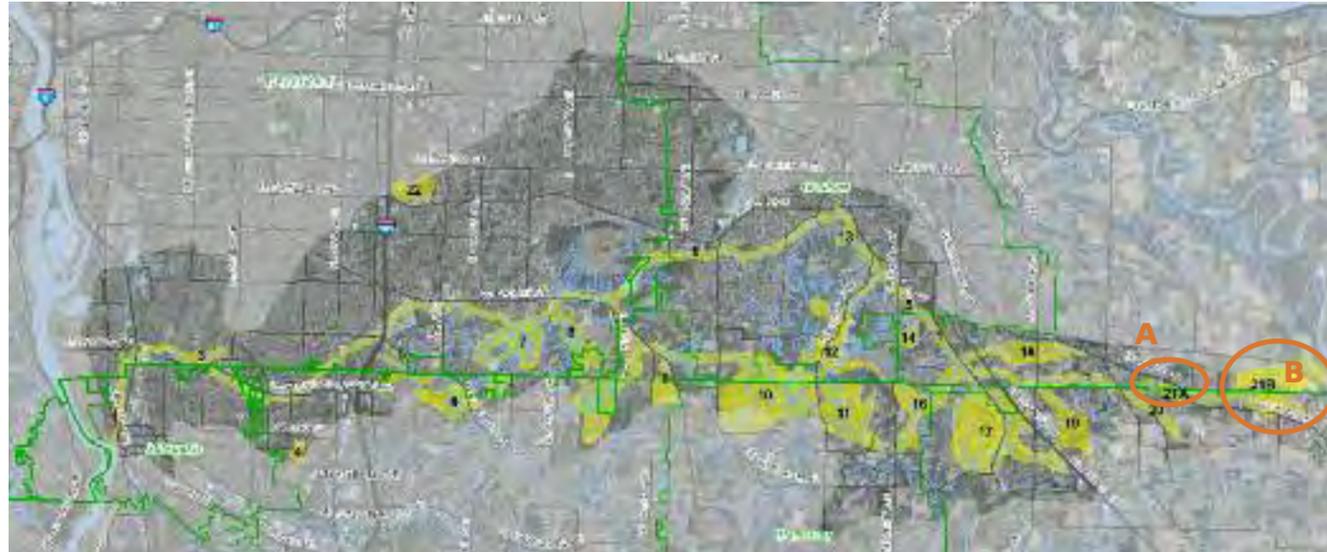
- 1 Large intact area:** Undeveloped riparian areas are scattered along the length of the tributary and include some large cedar trees.
- 2 Biodiversity:** Target Area 20 contains an intermittent tributary in the upper Johnson Creek watershed with potential habitat for Chinook and coho salmon, steelhead, and resident rainbow and steelhead trout. Residents have observed salmon in the tributary during high flow events and beaver activity along the tributary.
- 4 Network connectivity:** In-channel ponds create multiple fish passage barriers and increase stream temperature. Removing these ponds will improve water quality and restore stream connectivity to undeveloped stream reaches in the headwaters of Johnson Creek, thereby increasing salmonid habitat.
- 5 Protecting and restoring hydrological/ecological functions:** Floodplain connectivity is lacking along sections of the creek. Regrading, terracing, and then replanting with native riparian vegetation will reconnect the creek to its floodplain. In addition, very little native riparian vegetation exists along the tributary, the riparian corridor is narrow, and a small amount of invasive plant species (English ivy, reed canarygrass, and Himalayan blackberry) threaten native vegetation.

Removing invasive plant species, replanting native riparian species, and increasing the riparian buffer where possible will enhance canopy cover and riparian and upland forest habitat.

- 9 Working landscapes:** Through conservation easements or other appropriate means, there may be opportunities in this Target Area to protect and enhance riparian buffers on or adjacent to working lands (e.g. timber and agricultural properties).



Headwater Tributaries A and B to Johnson Creek



TARGET AREA SIZE **58.23 acres - in A** **427.58 acres - in B**
STREAM LENGTH **2,984 feet (0.57 mi) - in A** **8,963 feet (1.70 mi) - in B**

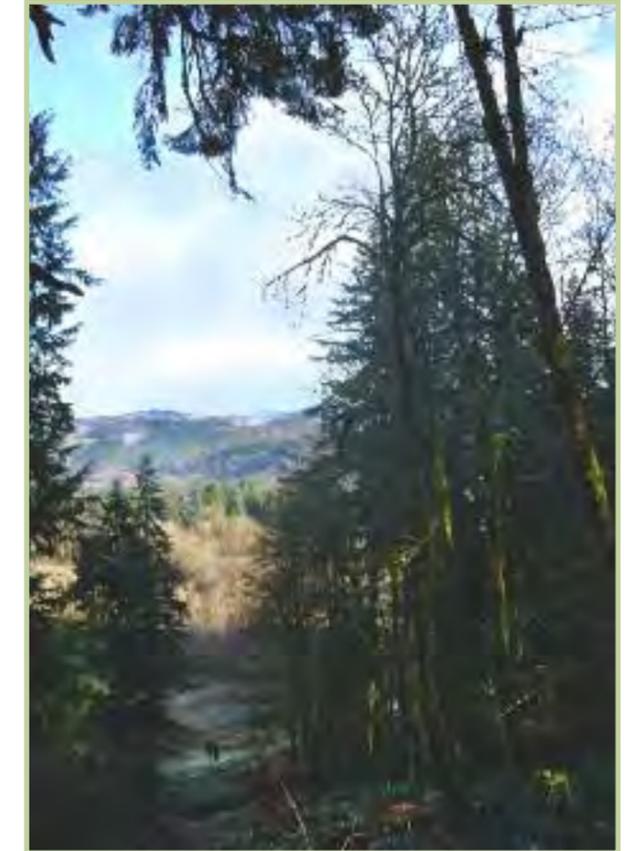
LOCATION

Target Area 21 weaves along the border of Multnomah and Clackamas counties. Both counties have designated these areas as rural reserves. Major road crossings include Pleasant Home and Revenue, Altman and 327th, Bluff, and Cottrell and 347th.

SIGNIFICANCE

- 2 Biodiversity:** Target Area 21 contains two perennial headwater streams that are approximately one mile upstream of a reach with spawning coho and winter steelhead. A few forested wetland areas exist.
- 3 Development pressure:** Riparian and upland forest habitats are currently fragmented, and riparian forests and farmland are threatened by development.
- 4 Network connectivity:** Target Area 21 provides a wildlife corridor between the Johnson Creek watershed and the Sandy River watershed, approximately 2 miles away. Land acquisition will protect this important wildlife corridor and upland forest habitat. Seven in-channel ponds may be barriers to fish passage and are increasing stream temperatures and sedimentation. Their removal will improve stream connectivity, increase salmonid habitat, and improve water quality.

5 Protecting and restoring hydrological/ecological functions: Riparian buffers along the tributaries are lacking along most stream reaches and the riparian corridor is intermittent, narrow, and lacking floodplain. Streams lack complexity and large wood. Runoff from adjacent agricultural lands may be increasing stream sedimentation and turbidity, and drain tiles in adjacent lands may be affecting stream base flows. Increasing riparian buffers, particularly on farmland, and planting native vegetation along streams will enhance riparian habitat and reduce possible sediment, fertilizers, and pesticide runoff. Regrading, terracing, and replanting with native vegetation will reconnect the creek with its original floodplain and enhance riparian and wetland habitat. Adding in-stream complexity, such as placing large wood in the channel and creating pool/riffle sequences, will enhance coho and winter steelhead habitat. Removing drain tiles on adjacent lands may improve base flows. Invasive plant species, particularly Himalayan blackberry and reed canarygrass, are abundant and threaten native vegetation. Their removal and replanting with native vegetation will enhance riparian and upland forest habitats.



9 Working landscapes: Through conservation easements or other appropriate means, there may be opportunities in this Target Area to protect important wildlife corridors and protect and enhance riparian buffers on or adjacent to working lands (e.g. timber and agricultural properties).



TARGET AREA 22

Kelly Butte



TARGET AREA SIZE 103.21 acres
STREAM LENGTH Not applicable

LOCATION

Target Area 22 is the butte north of Johnson Creek and east of I-205.

SIGNIFICANCE

- 1 Large intact area:** This target area contains an intact terrestrial, mixed forest habitat type among the dense urban fabric of southeast Portland.
- 2 Biodiversity:** Two locally rare plants grow on Kelly Butte: *Erythronium oregonum* and *Populus tremuloides*. The *Erythronium* is located at the base of the butte and the *Populus* at the top. An exceptionally diverse understory grows on the butte's flanks including many flora which are thought to be dependent on the Bretz Flood gravels and the well-drained south facing slope. Dried seed pods from the *Erythronium* have been found. English ivy is spreading in the area and, without proper management, could displace the *Erythronium*. The entire understory community is threatened by the extensive presence of ivy, *Hedera helix*. This weed is still expanding but in some locations has complete understory dominance. *Crataegus monogyna* is established throughout the site, but is concentrated near the top of the butte.
- 5 Protecting and restoring hydrological/ecological functions:** Protecting and restoring hydrological/ecological functions: The entire butte is threatened by the presence of ivy and other invasive species. Without management, it could outcompete the existing native understory.

6 Equitable access: The area east of I-205 in Portland is generally considered underserved in terms of parks and open space. Acquisition of Kelly Butte as a natural area would increase access to natural areas for this population.

8 Environmental education: Public ownership would enable nearby schools to use the site as a study area for terrestrial ecology and geology.



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JOHNSON CREEK ACQUISITION STRATEGY: Investing in a Natural Area Network

Partners: Audubon Society of Portland, City of Damascus, City of Gresham, City of Milwaukie, City of Portland Environmental Services and Portland Parks & Recreation, East Multnomah Soil & Conservation District, Johnson Creek Watershed Council, Metro, National Park Service, North Clackamas Parks and Recreation District, and Trust for Public Land