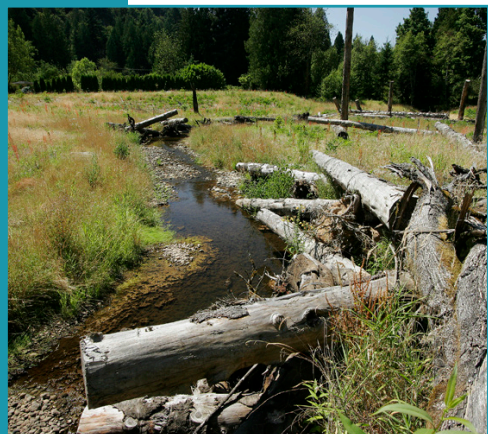
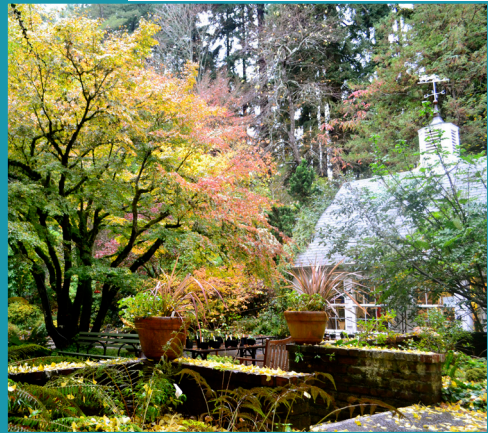


# ENVIRONMENTAL OVERLAY ZONE MAP CORRECTION PROJECT

## VOLUME 3, PART F: Johnson Creek, Natural Resources Inventory and ESEE Decisions

Discussion Draft  
November 2019



## How to Comment

You may submit comments to Bureau of Planning and Sustainability staff on the Environmental Overlay Zone Map Correction Discussion Draft by:

### Email

Send an email to [ezone@portlandoregon.gov](mailto:ezone@portlandoregon.gov)

### U.S. Mail

Bureau of Planning and Sustainability  
1900 SW 4<sup>th</sup> Avenue, Suite 7100  
Portland, Oregon 97201  
Attention: Ezone Map Correction Project

### For more information

Visit the project website: <https://www.portlandoregon.gov/bps/e-zone>  
Contact the project team: 503-823-4225

**COMMENTS DUE: January 31, 2020**

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The Bureau of Planning and Sustainability is committed to providing meaningful access.

For accommodations, modifications, translation, interpretation or other services, please contact at 503-823-7700 or use the City's TTY at 503-823-6868, or Oregon Relay Service at 711.

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Traducción o interpretación	Chuyển Ngữ hoặc Phiên Dịch	翻译或传译	Письменный или устный перевод	Traducere sau Interpretare
الترجمة التحريرية أو الشفهية	Письмовий або усний переклад	翻訳または通訳	Turjumida ama Fasiraadda	ການແປພາສາ ຫຼື ການອະທິບາຍ

503-823-7700 | [www.portlandoregon.gov/bps/71701](http://www.portlandoregon.gov/bps/71701)

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# Acknowledgements

This plan is the culmination of three years of work across the City of Portland. Many thanks to the thousands of stakeholders, property owners, renters, business owners and interested people who attended dozens of neighborhood and community meetings and invited staff to their homes and businesses to perform site visits.

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Volume 3, Part F, includes the results for resource sites in the Johnson Creek geography (see Map 1). For each resource site the following is presented:

1. Natural resources inventory of riparian corridors and wildlife habitat pursuant to OAR 660-023-0030, 660-023-0090 and 660-023-0110.
2. Economic, Social, Environmental and Energy analysis pursuant to OAR 660-023-0040.
3. Economic, Social, Environmental and Energy decisions pursuant to OAR 660-023-0040.
4. Program implementation recommendations pursuant to OAR 660-023-0050.

**Environmental Overlay Zone  
Map Correction Project**

**Johnson Creek  
Resource Geography**

- - - - - City Boundary  
 [Orange] Resource Sites  
 [Blue] Streams  
 [Blue] Wetlands  
 — Streets

The map displays the Johnson Creek area with various streets and resource sites. Streets shown include NE Tillamook St, NE Glisan St, NE Couch St, SE Belmont St, SE Yamhill St, SE Lincoln St, SE Division St, SE Powell Blvd, SE Foster Rd, SE Duke St, SE Johnson Creek Blvd, SE Fuller Rd, SE Sunnyside Rd, SE William Mott Rd, SE Monnet Rd, SE 172nd Ave, SE 174th Ave, SE 157th Ave, SE 148th Ave, SE 145th Ave, SE 140th Ave, SE 139th Ave, SE 135th Ave, SE 131st Ave, SE 127th Ave, SE 122nd Ave, SE 112th Ave, SE 92nd Ave, SE 82nd Ave, SE 52nd Ave, SE 32nd Ave, SE 31st Ave, SE 30th Ave, SE 28th Ave, SE 26th Ave, SE 24th Ave, SE 22nd Ave, SE 20th Ave, SE 18th Ave, SE 16th Ave, SE 14th Ave, SE 12th Ave, SE 10th Ave, SE 8th Ave, SE 6th Ave, SE 4th Ave, SE 2nd Ave, SE 1st Ave, SE 1/2nd Ave, SE 1/4th Ave, SE 1/8th Ave, SE 1/16th Ave, SE 1/32nd Ave, SE 1/64th Ave, SE 1/128th Ave, SE 1/256th Ave, SE 1/512th Ave, SE 1/1024th Ave, SE 1/2048th Ave, SE 1/4096th Ave, SE 1/8192th Ave, SE 1/16384th Ave, SE 1/32768th Ave, SE 1/65536th Ave, SE 1/131072th Ave, SE 1/262144th Ave, SE 1/524288th Ave, SE 1/1048576th Ave, SE 1/2097152th Ave, SE 1/4194304th Ave, SE 1/8388608th Ave, SE 1/16777216th Ave, SE 1/33554432th Ave, SE 1/67108864th Ave, SE 1/134217728th Ave, SE 1/268435456th Ave, SE 1/536870912th Ave, SE 1/1073741824th Ave, SE 1/2147483648th Ave, SE 1/4294967296th Ave, SE 1/8589934592th Ave, SE 1/17179869184th Ave, SE 1/34359738368th Ave, SE 1/68719476736th Ave, SE 1/137438953472th Ave, SE 1/274877906944th Ave, SE 1/549755813888th Ave, SE 1/1099511627776th Ave, SE 1/2199023255552th Ave, SE 1/4398046511104th Ave, SE 1/8796093022208th Ave, SE 1/17592186044416th Ave, SE 1/35184372088832th Ave, SE 1/70368744177664th Ave, SE 1/140737488355328th Ave, SE 1/281474976710656th Ave, SE 1/562949953421312th Ave, SE 1/1125899906842624th Ave, SE 1/2251799813685248th Ave, SE 1/4503599627370496th Ave, SE 1/9007199254740992th Ave, SE 1/18014398509481984th Ave, SE 1/36028797018963968th Ave, SE 1/72057594037927936th Ave, SE 1/144115188075855872th Ave, SE 1/288230376151711744th Ave, 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*Map 1: Johnson Creek Resource Geography*



## **B. How to Use this Document**

Below is a description of how to use the information found in this volume during quasi-judicial reviews.

### Significant Natural Resource Feature and Functions Descriptions and Maps

Natural resource features include rivers, streams, wetlands, flood area, vegetation (forest, woodland, shrubland and herbaceous), steep slopes and Special Habitat areas. These features are factual data that are mapped in the natural resources inventory. The descriptions are based on supplemental inventories, reports and site visits. Natural resource functions are the riparian corridor and wildlife habitat benefits provided by the features. The methodology uses to map and identify the natural resource features and function is documented in the Natural Resources Inventory (Appendix B) and Wetland Inventory Project (Appendix C).

The natural resource features maps can be updated at any time based on more current and accurate data, such as a wetland delineation. The environmental overlay zone boundaries may be corrected based on new topographic feature data through 33.885.070, Correction to the Official Zoning Maps, or through 33.430.250.D, Modification of Zone Boundaries.

### Economic, Social, Environmental and Energy Analysis

The general ESEE analysis and recommendations are found in Volume 2. For each resource site, the general ESEE analysis and recommendations are affirmed, clarified or modified based on resource site-specific information. An ESEE decision is made for each resource site. The ESEE decision describes which significant natural resource features and functions should be protected from the impacts of conflicting uses.

### Implementation

The results of the inventory and ESEE decision for each resource site are implemented by updates to the zoning code and maps found in Volume 1.

## C. Natural Resources Definitions

Additional details can be found in Appendix B: Natural Resources Inventory, and Appendix C: Updated Wetland Mapping Protocol.

### Waterbodies

Stream: A stream is a channel that has a defined bed and bank and carries water continuously for a week or more during at least the wet season (October through April). Streams may be naturally occurring or may be a relocated, altered or created channel. Streams may contribute water into another waterbody or the water may flow into a pipe or culvert. Streams may flow for some distance underground. Streams are also referred to as *drainageways*, *ditches*, or *drainages* in other City of Portland reports, codes and rules or by other agencies including but not limited to Oregon Department of State Land or US Army Corps of Engineers. Streams include:

- the water itself, including any vegetation, aquatic life or habitat;
- the channel, bed and banks located between the top-of-bank; the channel may contain water, whether or not water is actually present;
- intermittent streams, which flow continuously for weeks or months during the wet season and normally cease flowing for weeks or months during dry season;
- sloughs, which are slow-moving, canal-like channels that are primarily formed by tidal influences, backwater from a larger river system, or groundwater;
- oxbows and side channels connected by surface flow to the stream during a portion of the year; and
- drainage from wetlands, ponds, lakes, seeps or springs, which may or may not form a defined bed and bank.

Drainage: A drainage is an area on the land that conveys flowing water for only hours or days following a rainfall. If a drainage drains water from a wetland, pond, lake, seep, or spring even if it does not have a defined bed and bank, then it is classified as a stream.

Roadside Ditch: A roadside ditch is a constructed channel typically parallel and directly adjacent to a public or private road. A roadside ditch is designed to capture and convey stormwater runoff from the road and is routinely cleaned (i.e., mechanically scoured or scraped of vegetation and debris) to maintain water conveyance capacity. Naturally occurring streams and drainages that have been relocated due to the construction of a road are not considered a *roadside ditch*.

Wetlands: Areas where shallow water is present long enough to create hydric soils and could support hydrophilic vegetation, although due to landscaping, seeding, mowing or grazing hydrophilic vegetation may not be present.

Floodplain: Areas with a 1% or greater chance of flooding in any given year and areas that were inundated with water during the 1996 floods.

### Vegetation

Vegetation Patch: An area of contiguous vegetation greater than ½ acre in size containing a distinct pattern, distribution, and composition of vegetation relative to surrounding vegetated and non-vegetated areas.

Forest: Trees with their crowns overlapping, generally forming 60-100% of cover.

Woodland: Open stands of trees with crowns not usually touching, generally forming 25-60% of cover. Tree cover may be less than 25% in cases where it exceeds shrubland and herbaceous vegetation.

Shrubland: Shrubs generally greater than 0.5 m tall with individuals or clumps overlapping to not touching, generally forming more than 25% of cover with trees generally less than 25% of cover. Shrub cover may be less than 25% where it exceeds forest, woodland, and herbaceous vegetation. Vegetation dominated by woody vines (i.e., blackberry) is generally included in this class.

Herbaceous: Herbs (graminoids, forbs, ferns and shrubs less than 0.5m tall) dominant, generally forming at least 25% of cover. Herbaceous cover may be less than 25% where it exceeds forest, woodland and shrubland vegetation. This includes shrubs less than 0.5 m tall.

Steep slopes: Land with a 25% or greater slope.

Riparian Corridors: Rivers, streams, wetlands and flood area plus the areas bordering the waterbodies; the width of the riparian corridor varies by waterbody as well as the vegetation and slopes surrounding the waterbody.

Wildlife Habitat: Waterbodies, flood area, land, vegetation and other features that support fish and wildlife during one or more life cycle phase; manmade features may provide wildlife habitat.

Special Habitat Areas: Designated by the City of Portland in accordance with Metro's Urban Growth Management Functional Plan Title 13, Nature in Neighborhoods, areas that contain or support special status species, sensitive/unique plant populations, or other unique natural or manmade habitat features.

## D. Resource Site Boundaries

Statewide Land Use Planning Goal 5 requires local jurisdictions to establish resource sites within which the natural resources are inventoried and the ESEE analysis is performed. OAR 660-023-0010 defines resource site, or site, as “a particular area where resources are located. A site may consist of a parcel or lot or portion thereof or may include an area consisting of two or more contiguous lots or parcels.”

Portland established resource sites through the previously adopted conservation and protection plans. This project is remapping resource site boundaries to be more consistent and easier to implement.

The resource sites were remapped in the following way:

1. The previous resource site boundaries were used to the maximum extent practicable. The intent is to maintain consistency between the past plans and this project.
2. Resource site boundaries were expanded to capture contiguous or similar and adjacent natural resource features.
3. Resource site boundaries were expanded to eliminate unnecessary gaps between resource sites.
4. Very small resource sites, with similar natural resource features and functions, were consolidated into one single larger resource site.
5. Resource site boundaries were adjusted to include entire properties within a single resource site. In some cases, adjacent lots under the same ownership may be in different resource sites; however, in these situations the resource site boundary follows lot lines.
6. Centerlines of streets, bridges, railroad tracks or other transportation facilities are often used to delineate resource site boundaries.
7. The City Boundary or Urban Service Boundary is used along the edges of Portland to provide the outer edge of resource sites.



## E. Results

The results begin with a description of the Johnson Creek natural resources generally. The general description is applicable to each resource site. Following the general description are results for the resource sites. For each resource site the following information is provided:

1. Inventory of Natural Resources – The quantity and quality of natural resource features, such as streams miles or acres of forest, based on the Natural Resources Inventory methodology (Appendix B), Wetland Inventory Project (Appendix C) and site visits is presented. A description of the natural resources is also provided.
2. Determination of Significance – Statement of which natural resources are significant for purposes of State Land Use Planning Goal 5.
3. Resource Site-Specific ESEE – Additional analysis addressing site-specific conditions resulting in a decision for the resource site. The decision may confirm, clarify or modify the general ESEE recommendation found in Volume 2.
4. Maps
  - A. Zoning – base zones
  - B. Water Features – rivers, streams, wetlands and flood areas
  - C. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes, Special Habitat Areas
  - D. Riparian Corridors – natural resource features providing one or more riparian corridor functions
  - E. Wildlife Habitat – natural resource features providing one or more wildlife habitat functions
  - F. Determination of Significance – Goal 5 significant natural resources
  - G. ESEE Decision – where to strictly limit, limit and allow conflicting uses in areas of significant natural resources

## Johnson Creek Natural Resources

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.

Johnson Creek is one of the few free-flowing creeks within the Portland city limits, and the only major one on the east side. The creek links abutting natural areas, parks, and wetlands with highly urbanized residential and industrial areas. The creek is a continuum where differing land uses and their associated impacts and inputs can be seen and felt throughout its length.

### Flooding

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 flood area 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 the 1930s, the Works Progress Administration (WPA) cleaned and lined the creek channel. However, the channel has not been consistently maintained, and no significant improvements to it have occurred since. The typical reinforced riverbanks created by the WPA are not conducive to plant growth, and access to the creek is limited for wildlife. Water flow in the creek is severely restricted and flooding can be exacerbated by these channel restrictions.



*Example of WPA Modification, Johnson Creek near Foster Road*

As urban development progressed, an increasing proportion of the watershed area was covered with impervious surfaces such as driveways, streets, parking lots, and rooftops. This increase in impervious surface, coupled with the removal of native vegetation, resulted in the land surface becoming less permeable, further modifying stormwater runoff quantity and timing. Development activities and urban land uses have decreased infiltration of water through the soil and altered historic drainage patterns so that the quantity of runoff directly delivered to the stream has markedly increased.

Several factors affect annual mean flow of Johnson Creek. More precipitation falls in the southeastern area of the basin because of the topographic setting. Runoff from much of the northern and western areas of the basin does not flow into Johnson Creek due to permeable deposits, interception by combined sewer systems, and by groundwater flow away from Johnson Creek. Inflow from Crystal Springs Creek accounts for one-half of the increase in streamflow of Johnson Creek between the Sycamore and Milwaukie sites.

Low flows of Johnson Creek vary as a result of fluctuations in groundwater discharge to the creek, although past water uses may have decreased flows. The groundwater contributions to streamflow upstream of river mile (RM) 5.5 are small compared to contributions downstream of this point. Comparison of flows to a nearby basin indicates that diversions of surface water may have resulted in a 50 percent decrease in low flows from about 1955 to 1977 (USGS, 2009).

Runoff from the drainage basin area upstream of the Johnson Creek at Sycamore site contributes more to peak streamflow and peak volume than the drainage basin area between the Sycamore and Milwaukie sites. The average increase in annual peak streamflow and annual peak volume between the

two sites was 11 and 24 percent, respectively. Decreased contribution in the lower area of the drainage basin is a result of infiltration, interception by drywell and combined sewer systems, and temporary overbank storage (USGS, 2009).

### Geology

The majority of the Johnson Creek drainage basin is characterized by the geologic classification of alluvium. Alluvial deposits include all of the material in the channels of present-day streams, their flood plains, and abandoned channels. Alluvium consists of very poorly consolidated gravel and sand in the stream channels, gravel and sand lenses usually overlain by silt and minor clay on the flood plain, and organic material usually in abandoned channels beneath several feet of silt or clay.<sup>1</sup> Alluvial soils are deposited and subject to erosion and redeposition by water.

The thickness of the alluvium is variable. The sand and gravel is generally thin and rests on bed rock in small stream channels where gradients are high. The smaller flood-plain deposits of silt and gravel tend to be narrow, thinning out at the canyon sides, whereas the larger flood plains may contain recent alluvium up to 30 feet thick or more.

### Water Quality and Quantity

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 dichlorodiphenyltrichloroethan (DDT), polychlorinated biphenyls (PCBs), and polyacyclic 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.

Increased runoff and decreased infiltration during the winter has severely restricted ground water recharge. Rapid runoff over impermeable surfaces has had an effect on decreased groundwater levels necessary to provide streamflow to Johnson Creek during the drier months. Groundwater is the predominate source of streamflow in the summer. Decreasing summer flow as urbanization has occurred has caused local ponding, stagnation, and increased temperatures in some pans of the creek.

### Aquatic Habitat

Fish communities in Johnson Creek include both native and non-native species. Most of the native species present are those tolerant of warm water and disturbed conditions. These include red-sided shiners, sculpin, suckers, and speckled dace. Historically large populations of salmon inhabited Johnson Creek. Numbers declined dramatically once urbanization began and particularly after the channelization work was completed.

Winter-run adult steelhead return to spawn in Johnson Creek from mid-November through May. Two separate runs appear to peak in January-February and again in April-May. Eggs or salmon fry can be present in the gravel from December to July. Juvenile steelhead can remain in Johnson Creek for one to two years before migrating as smolts to salt water. Steelhead are likely to use the mainstem and tributaries.



Historically, coho salmon were observed in the lower reaches of Johnson Creek and Crystal Springs Creek from late September through early November. Eggs or coho fry could be within Johnson Creek gravels between October and March. Fry attempt to establish territories and remain in streams as juveniles for one to two years before smolts migrate to salt water.

Coastal subspecies of cutthroat trout are also present in Johnson Creek. This coastal subspecies has both sea-run and resident forms. No current documentation of the sea-run form exists. Data from 1992 and 1993 indicated that cutthroat trout were present in low numbers throughout the mainstem of Johnson Creek, but were more abundant in many of the smaller headwater tributaries.

Coastal cutthroat trout spawn from late December through February, and most fry emerge from the gravel by mid-April. Resident forms of coastal cutthroat trout typically remain in, or relatively close to their natal streams. Juvenile sea-run coastal cutthroat trout often spend a year in the small headwater streams and then move downstream into larger streams for the remainder of their freshwater residency. They can live in these larger stream systems for two to nine years, but typically spend three years in freshwater before migrating to the ocean.

Vegetation that borders most waterbodies, particularly rivers, streams and creeks, provides multiple riparian corridor functions. Loss of riparian vegetation and its replacement with impervious surfaces negatively impacts water quantity and quality by increasing water temperature extremes, sediment loading and water runoff, and decreasing groundwater recharge.

Riparian vegetation influences water quality and quantity, having an important effect on the growth, density, and biomass of anadromous and resident fish. Roots of herbaceous and woody vegetation tend to stabilize streambanks, retard erosion, and in places, create overhanging banks which serve as cover for fish. Live trees with overhanging canopies provide shading and control water temperatures suitable for spawning, egg and fry incubation, and rearing of anadromous and resident salmonids, and warm water fish. Additionally, riparian vegetation provides food as insects which drop into the creek from overhanging branches. Removing the forest canopy adjacent to and within the riparian area produces higher summer and lower winter water temperatures.

Sediment can affect fish survival if the concentrations are high enough. Excessive deposited sediment has serious impacts upon salmonid production by limiting the flow of intragravel water. This limits the supply of oxygen available to incubating eggs and alevins. If concentrations are high and persistent, silt may accumulate on the gill filaments of adult fish actually inhibiting the ability of the gills to aerate the blood, eventually causing death by anoxemia and carbon dioxide retention. Vegetation, particularly in wetlands, drainageways, and riparian areas can significantly reduce sedimentation in the creek bed through either filtering the particulates out as water passes through, or slowing flow velocities and allowing particulates to precipitate out.

Historically, large trees in the riparian buffer strip were the source of large debris (tree trunks and large limbs). The importance of large organic debris in streams has only recently been recognized as being an abundant and important part of natural forested streams. The fallen trees and logs provide high! y

productive side channels for food, resting pools, cover, and the accumulation of spawning gravel. Logs in the stream bed decay over time and serve as a basic food source for invertebrates, which in turn then become part of the available fish food.

Benthic macroinvertebrates are an important source of food for fish and other aquatic organisms. During 1999, Portland State University (Pan, et. al, 2001) conducted a pilot bio-assessment study of urban streams including Johnson Creek for Environmental Services. The main objective was to compare the differences of biota in two urban streams (Johnson and Tryon Creek) and two adjacent rural ecosystems (Clear Creek and Deep Creek). Of 65 sites sampled for physical, chemical, and biological parameters during late August through early September 1999, 30 were in Johnson Creek, 25 of which were on the main stem. Sites were sampled monthly for diatoms, macroinvertebrates, and water chemistry. The results of the study found that benthic communities are degraded in comparison to regional reference creeks within the same ecoregion. Specifically in Johnson Creek the results indicated marginal conditions for physical habitat, macroinvertebrates and lack of a quality food base.

Wetlands also play an important role in the health of a water body such as Johnson Creek. Under certain circumstances, wetlands are the most biologically productive lands, serving as an interface between aquatic and terrestrial habitats. For the Johnson Creek basin, functional values of wetlands include flood control, erosion control, sediment trapping, water quality, groundwater recharge and discharge, fish and wildlife habitat, aesthetics, education, and recreation. Due to filling and urbanization, few wetlands remain along Johnson Creek. Because of their rarity, retention of the remaining wetlands is critical to the overall environmental quality of the creek and basin as a whole.

Sensitive species known to reside in the riparian areas of Johnson Creek include three salamander species (long-toed, northwestern, and Columbia), two frog species, and one toad species. Painted turtles have been identified in the upper watershed (east of 162nd Street). Other sensitive species have been sighted in the following specific areas: salamanders at 162nd and Kelley Creek; great horned owls, red-legged frogs, hawks, and coyotes at 182nd and Springwater Corridor; and tall bugbane, (listed as a sensitive species on the ODFW state sensitive species list) at Powell Butte.

### Salmon

The following information is summarized from the Johnson Creek Salmonid Podetial with Future Urban Development, Climate Change and Restoration plan, March 2011, prepared by ICF International.

Coho generally spawn in small, lower-gradient stream reaches and side channels during mid-autumn or early winter. In Johnson Creek, coho likely spawn from mid-October through the end of January. Juvenile coho favor relatively slow-moving water such as pools downstream of riffles. Juvenile coho have been observed in lower mainstem reaches of Johnson Creek and in lower reaches of Crystal Springs. In Johnson Creek and nearby streams, smolts move into the Willamette River and then into the Columbia River estuary where they may feed and rear for periods of a few days to months prior to entering the ocean.

Native steelhead in the Willamette River are classified as winter-run (Busby et al. 1996). Summer-run steelhead may occur as well, but these are the result of hatchery releases in the Clackamas River and

elsewhere in the Willamette system. In the Clackamas River, winter steelhead usually spawn from January through April. However, in Johnson Creek, the spawning period would likely end earlier as a result of the warm temperatures in Johnson Creek late spring. Juvenile steelhead have been observed as far in the system as the City of Portland boundaries in Johnson Creek (Reach 16).

Fall Chinook spawn in mainstem reaches and generally favor larger river areas compared to coho and steelhead. Their natural distribution in Johnson Creek is unknown; however, it is likely that fall Chinook would favor the lower portions of the stream, especially the mainstem of Johnson Creek. Juvenile Chinook have been observed in lower Johnson Creek, especially the Crystal Spring tributary.

#### Riparian Habitat

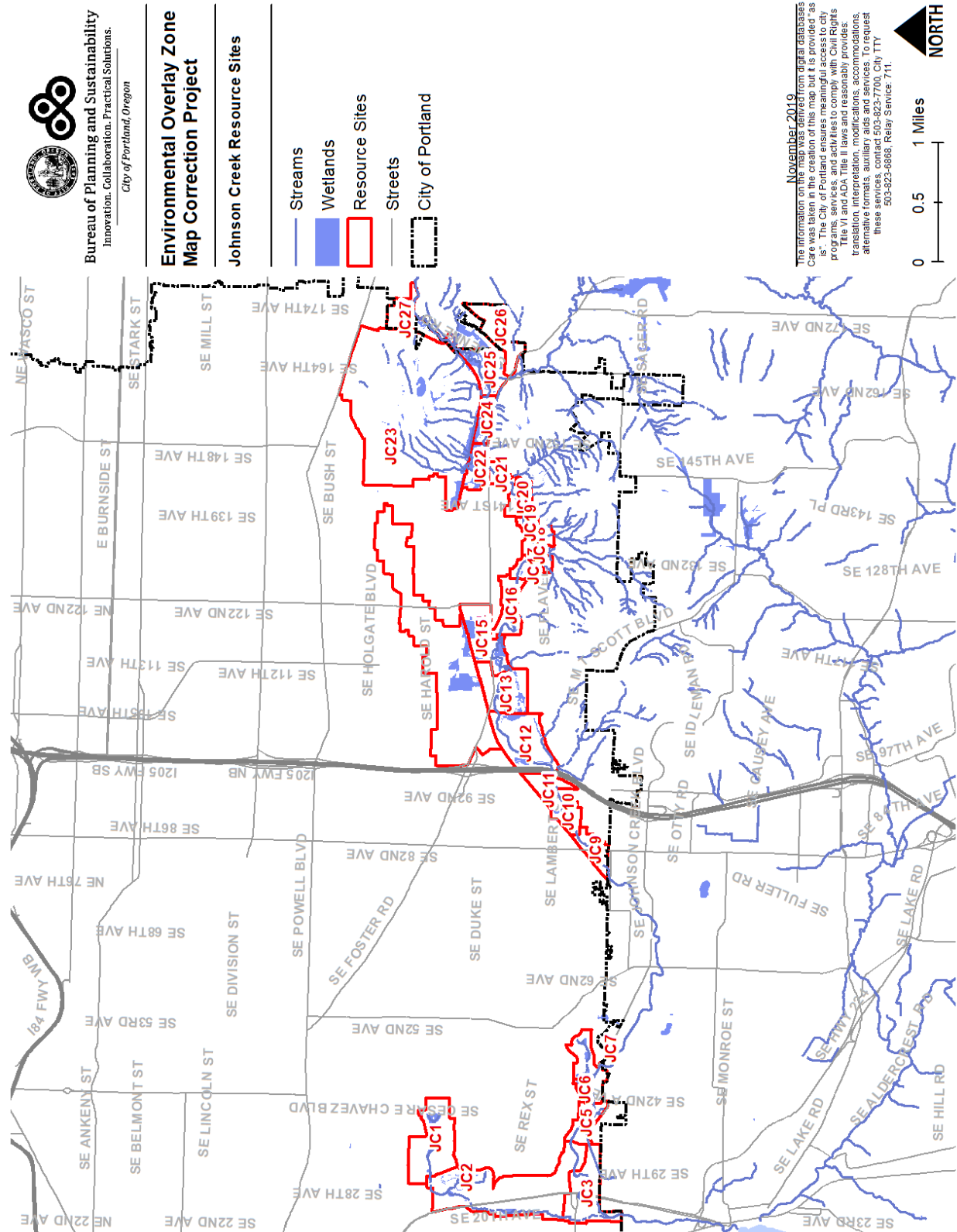
Riparian systems contain the four critical habitat components: water, cover, food and movement. Due to the variety of plant composition and structure, this natural resource element can encompass a great diversity of wildlife. A buffer strip of riparian vegetation left along streams to maintain suitable water temperatures for aquatic life and reducing impairment of water quality is considered excellent wildlife habitat. The value of a given riparian habitat varies from species to species, and even seasonally for the same species. The composition and structure of the upper canopy may extend the greatest influence for some species, while other species may select nesting and foraging areas on the basis of the understory, size of branches, extent of herbaceous ground cover, or the intermingling of several of these factors.

Many wildlife species use riparian zones. Songbird concentrations in riparian zones are often noted as being very high. Possibly because most species are diurnal and conspicuous by song or sight, there have been more riparian bird and habitat association studies than for any other wildlife group. Forested riparian vegetation is considered excellent songbird habitat and is often inhabited by species with specific habitat requirements. Riparian areas are important not only to breeding bird populations but to winter residents and migrants as well. Breeding bird densities in riparian communities are dependent upon specific riparian vegetative type and, as a result, are generally higher than in the surrounding habitat.

#### Terrestrial Wildlife Habitat and Uplands

Upland habitats also play an important role in overall watershed health and have a direct influence on hydrology and water quality of Johnson Creek.

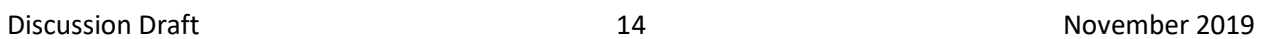
There is much evidence that the selection of habitat by species of wildlife is primarily related to the structure of the vegetation. This structure translates into many different resources for the different groups of animals that use them. These resources may be foraging sites, nesting sites, or protection from the weather and predators.



*Map 2: Johnson Creek Resource Sites*



**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resource Site No.:** 1



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site		JC1
		Study Area
<b>Stream (Miles)</b>		1.0
<b>Wetlands (acres)</b>		11.9
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>		75.9
Forest (acres)		22.9
Woodland (acres)		25.6
Shrubland (acres)		3.1
Herbaceous (acres)		24.3
<b>Flood Area*</b>		0.4
Vegetated (acres)		0.4
Non-vegetated (acres)		0.0
<b>Steep Slopes (acres)**</b>		29.3
<b>Impervious Surface (acres)</b>		25.0
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.		
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.		

Reed Lake is a year-round pond located on the college campus with associated wetland and upland areas. The high structural vegetative and species diversity provides habitat for wildlife including woodpecker, waterfowl (wintering and breeding), kingfisher and raptor species.

Reed Lake feeds into Crystal Springs and then into the lower mile of Johnson Creek. The source of water is ground water which emerges from the Portland Terraces. The Portland Terraces occupy 19 square miles of the Johnson Creek drainage basin and consist of silt deposits eroded during the Pleistocene flooding. A large proportion of the summer water flow into Johnson Creek is provided by this aquifer, drainage system, creating a water quantity and quality suitable for year-round fisheries on the lower portion of the Johnson Creek.

Site interspersed with Johnson Creek, Crystal Springs, and Oaks Bottom/Willamette River increases the value of this site. The canyon is a mixture of deciduous/coniferous riparian vegetation with small pockets of vegetated emergent islands. Large Grand Fir, Western Red Cedar, Douglas Fir, Big leaf Maple, and Red Alder form the overstory canopy. Elderberry, spirea, and willow form a shrub layer immediately adjacent to portions of the creek. The small islands are vegetated by spirea, cattail, and nightshade with pondweed on the surface of the water. Good amphibian habitat is provided by the numerous downed logs within the creek.

Reed Lake has scenic values which are enhanced by the 100-foot drop from the top of the canyon walls to the lake. With the exception of late winter, when there are no leaves on the deciduous trees, the canyon is completely enclosed with little visual intrusion from surrounding properties. The lake environment serves as an "outdoor classroom" for Reed College students, as well as for passive and active recreation including bird watching, picnicking, walking, canoeing and boating.

There has been some invasion of non-native plant species into the canyon. Water quality has been degraded with the loss of infiltration caused by surface and piped stormwater runoff, as well as general pollution from urbanization. However, overall the resource is of high quality, even though urbanization has impacted water recharge and vegetation.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC1</b>				
<b>Resource Site (acres) = 133.025187</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	24.4	5.6	12.7	42.8
percent total inventory site area	18.3%	4.2%	9.6%	32.1%
<b>Wildlife Habitat*</b>				
acres	0.0	33.5	0.3	33.8
percent total inventory site area	0.0%	25.2%	0.2%	25.4%
<b>Special Habitat Areas**</b>				
acres				32.8
percent total inventory site area				24.7%
<b>Combined Total<sup>+</sup></b>				
acres	33.2	3.3	7.1	43.6
percent total inventory site area	25.0%	2.5%	5.3%	32.8%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC1 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status plant and fish species.

## Resource Site Specific ESEE

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R7 and R5 base zones. Commercial uses are allowed in the C11 base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC01, with the following additional information that clarifies the analysis.

A significant portion of the resource site is occupied by Reed College, which is an institutional use. Reed College is one of 10 colleges and universities in Portland. Reed College was founded in 1908 and was established on a tract of land known as Crystal Springs Farm. In addition to the academic buildings there are 18 residence halls on the property.

Reed College plays an active and important role in protecting and restoring Reed Canyon and Crystal Springs. Many improvements, including a fish weir, have been installed to improve hydrology, water quality and fish habitat.

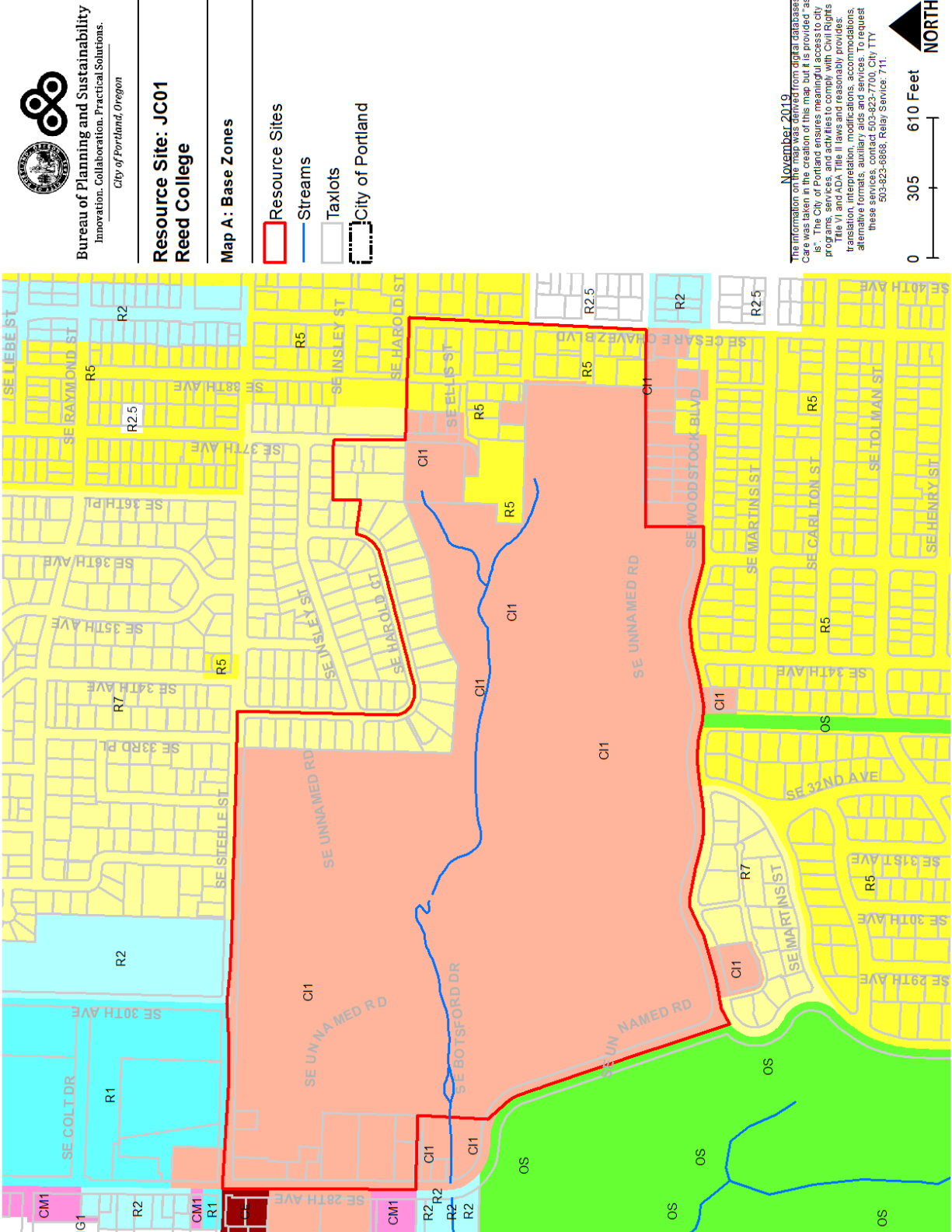
*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Crystal Springs, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

#### ESEE Decisions

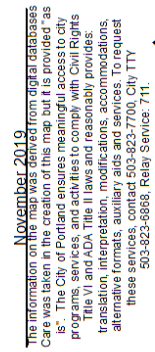
Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resource Site JC1 are:

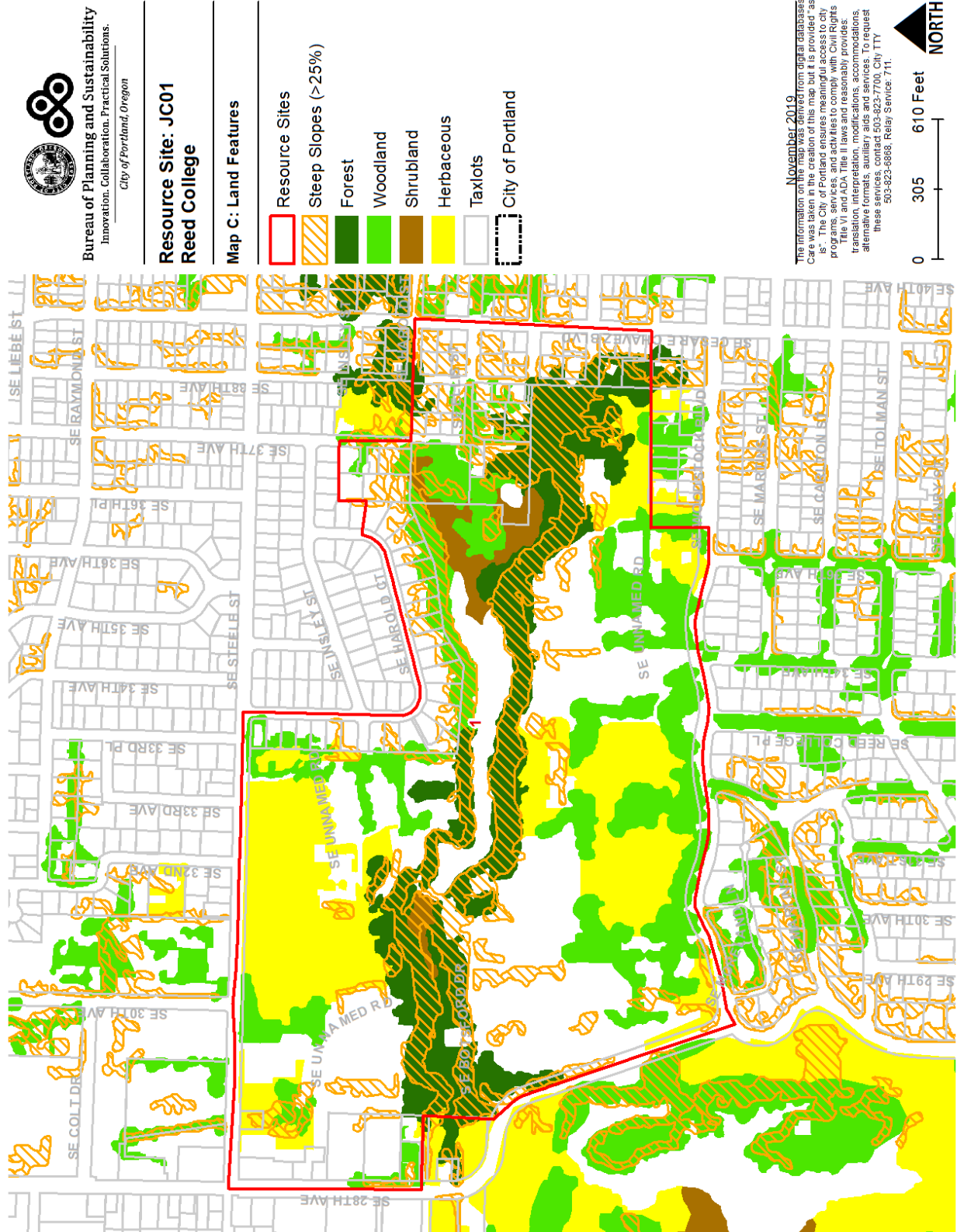
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 50 feet from stream top-of-bank or contiguous to but more than 30 feet from wetlands.
4. *Allow* conflicting uses within all other areas containing significant natural resources.

Table C: ESEE Decision for Resource Site JC1	
ESEE Decision	Acres
Strictly Limit	17.9
Limit	16.3
Allow	98.8

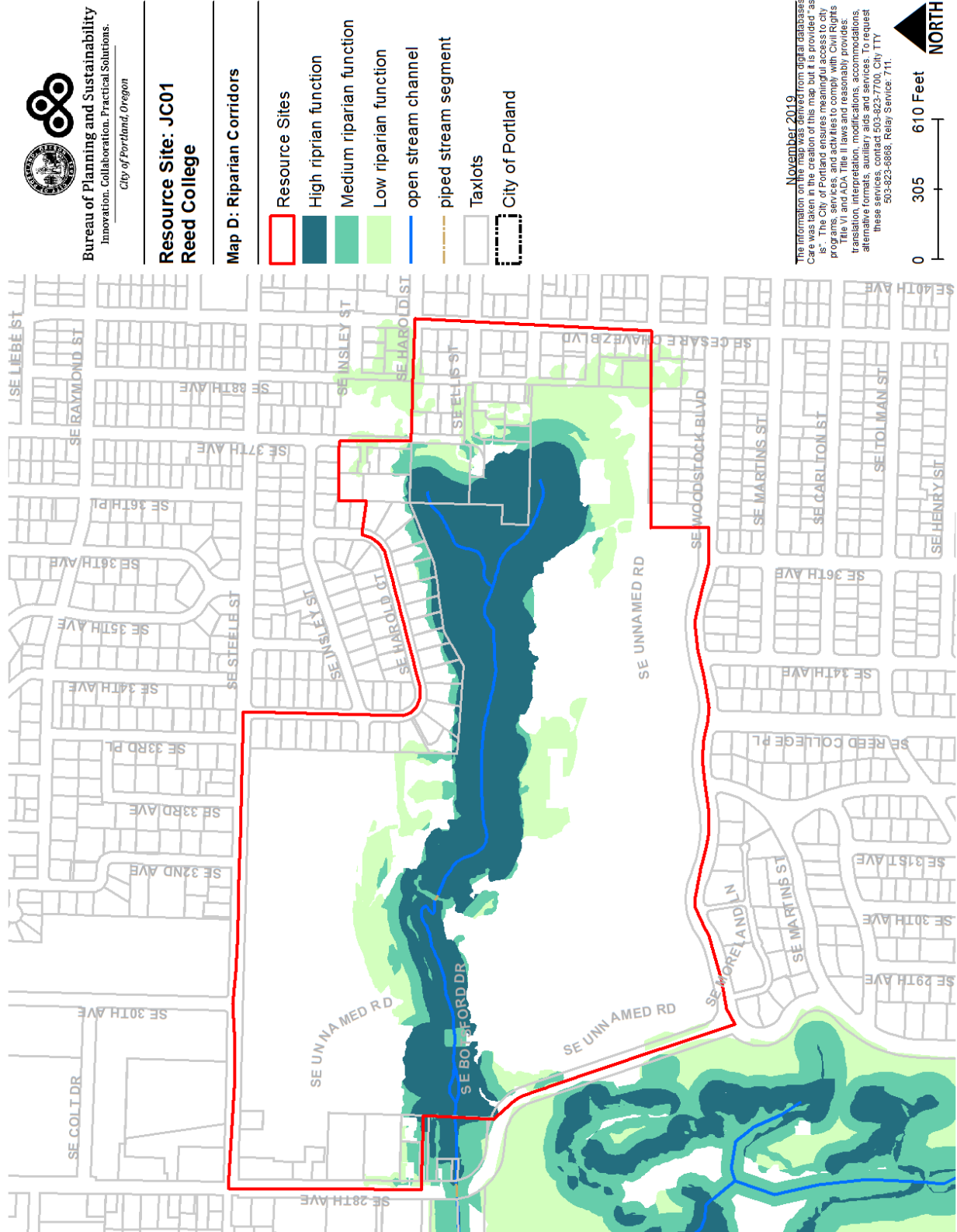


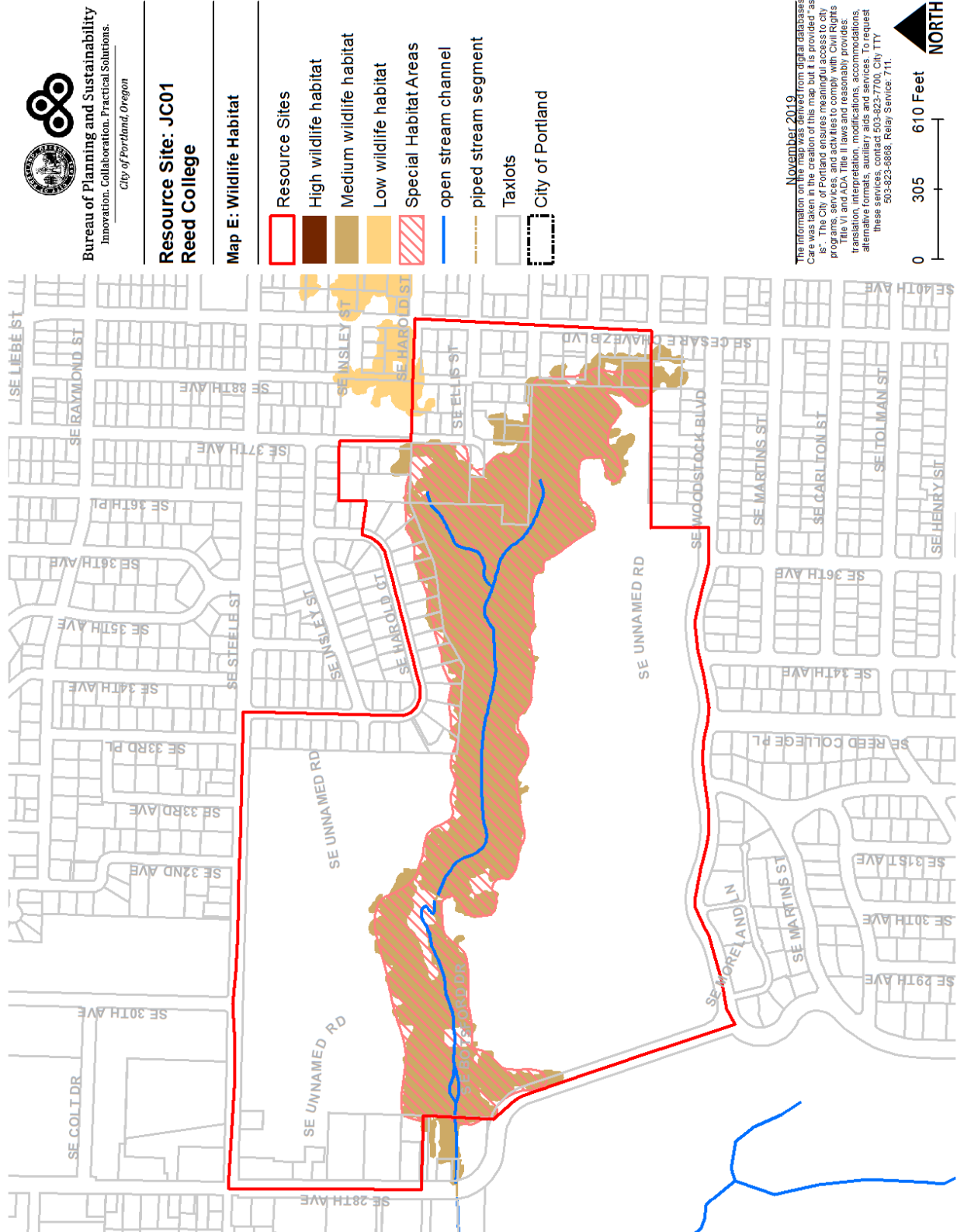


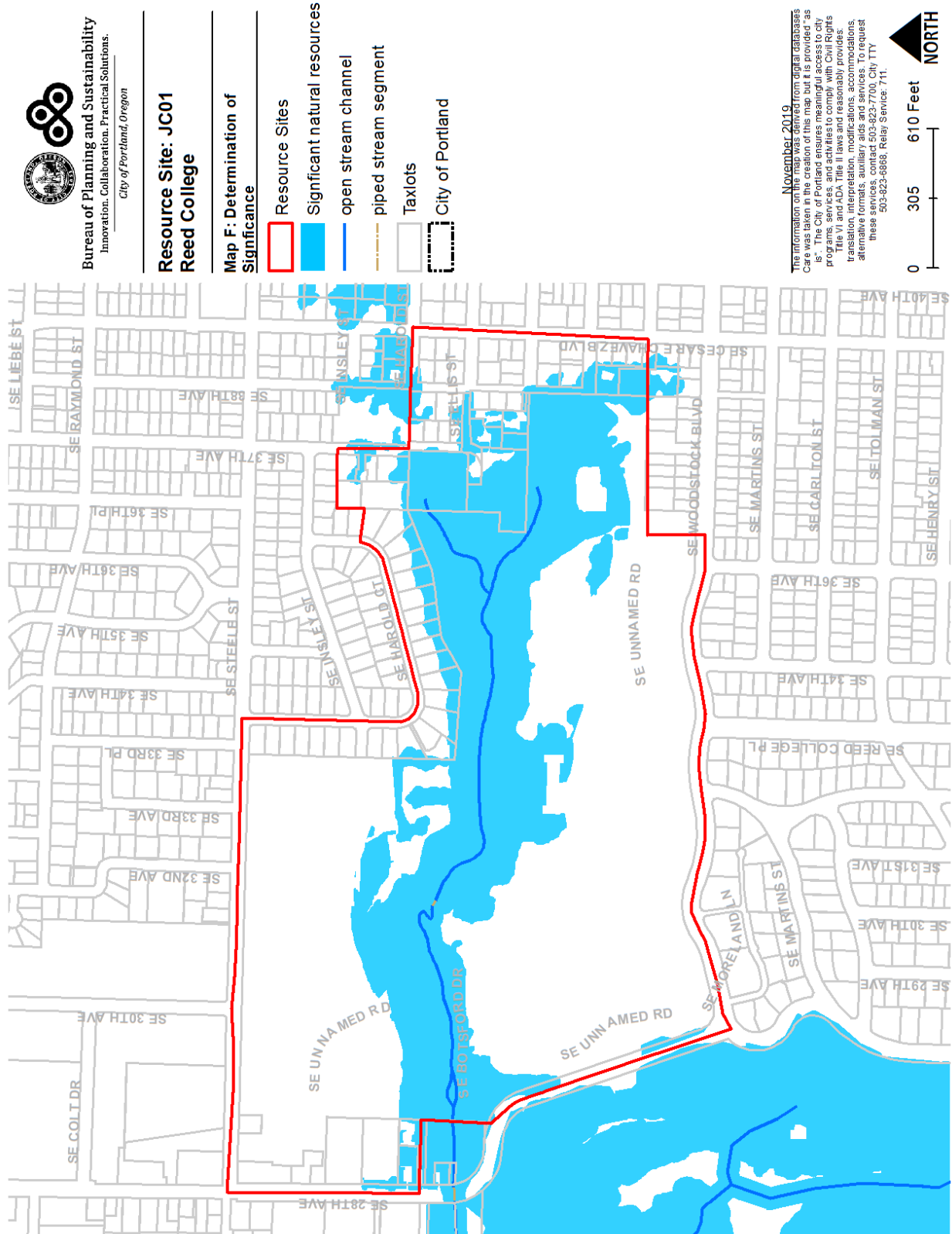


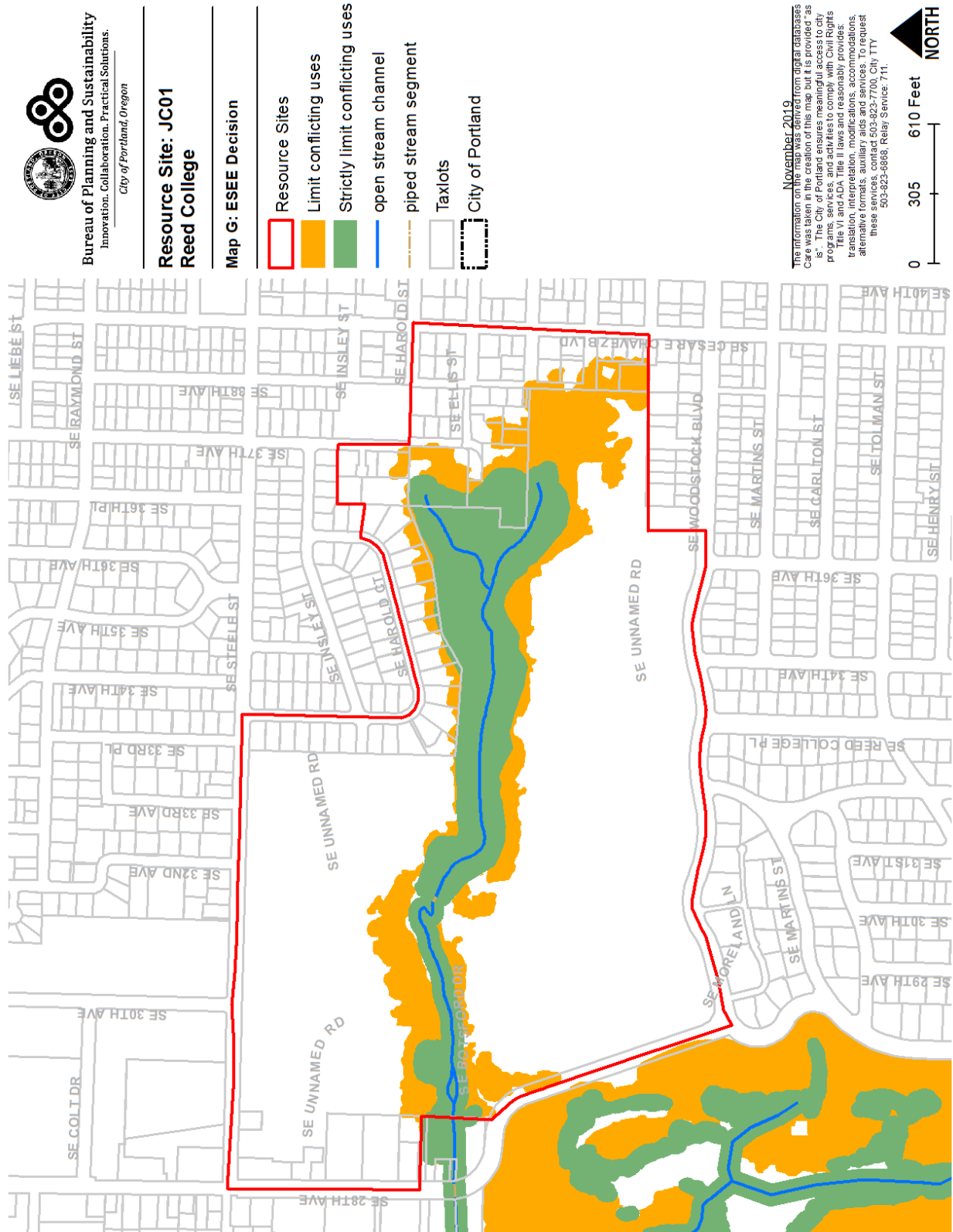








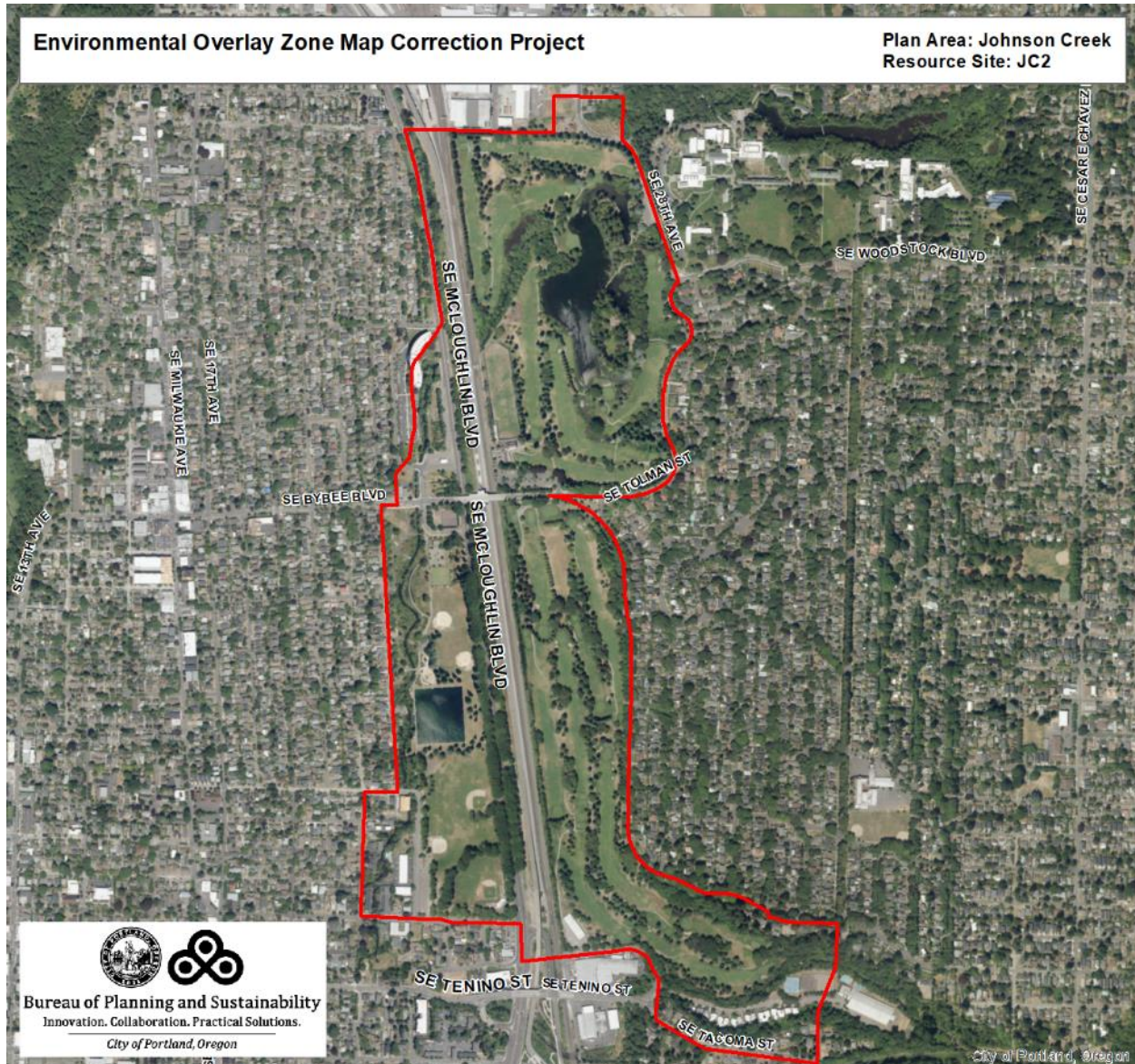






**Resource Site No.:** JC2      **Resource Site Name:** Crystal Springs

**Previous Plan:** Johnson Creek Basin Protection Plan   **Previous Resource Site No.:** 2



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site		JC2
		Study Area
<b>Stream (Miles)</b>		3.8
<b>Wetlands (acres)</b>		9.3
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>		206.8
Forest (acres)		14.4
Woodland (acres)		67.8
Shrubland (acres)		11.9
Herbaceous (acres)		112.7
<b>Flood Area*</b>		26.1
Vegetated (acres)		23.0
Non-vegetated (acres)		3.2
<b>Steep Slopes (acres)**</b>		26.6
<b>Impervious Surface (acres)</b>		69.2
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.		
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.		

This site is historic flood area now primarily a landscaped in Westmoreland Park, the Rhododendron Gardens, and Eastmoreland Golf Course. Crystal Springs and the Rhododendron Gardens provide scenic values and the later, also provides educational value. Golf course and park activities take advantage of the creeks, riparian areas, and wetlands primarily from an aesthetic standpoint. Single and multi-family residential development is also within small portions at the northwest, southwest, and southeast comers, and a single commercial lot on the corner of SE McLoughlin Boulevard and SE Tacoma is also included. Both Cyrstal Springs and Johnson Creek are located within this site. The area includes water bodies, two creek channels, fisheries, and extensive landscaped areas that provides rain infiltration and habitat.

Ninety percent of this, 101-acre site area has permeable surfaces which contribute to flow moderation and flood control. Native vegetation is limited. However, the golf course's cultivated grass provides food for resident and wintering waterfowl. In 1986, higher concentrations of both American and European widgeons were observed at Eastmoreland than anywhere else in Portland. This combination of grassland and adjacent water bodies provides important wintering habitat for waterfowl within the urban environment.

Rhododendron gardens consisting of azaleas, rhododendron, and other flowering shrubs provide food and nesting for hummingbirds and warblers in the spring and early summer. Golf course ponds and Crystal Springs Lake provide food and cover for wintering waterfowl. Mallards, wigeons, mergansers, shovelers wood ducks, and coot can commonly be observed. The Rhododendron gardens receive regular human use on a year-round basis, with higher numbers of visitors in spring and summer. The adjacent Eastmoreland Golf Course is used daily.

Crystal Springs is primarily spring fed, has a year-round flow, and receives little surface runoff. Crystal Springs supports coho, steelhead, cutthroat trout, and some migrating fall chinook. Crystal Springs, which flows into Johnson Creek just south of this site, is one of the few creeks within the Portland Metro area that still supports a population of native cut throat trout and steelhead. These fish spawn and migrate up Johnson Creek no farther than the Tideman Johnson Park area. A fish hatchery is located along Crystal Springs within this site. It is operated by a private volunteer and sponsored by the Oregon Department of Fish and Wildlife and stocked with Cutthroat Trout and Coho Salmon fry.

Vegetation along the stream banks provides some local temperature regulation of the stream for fish and limited habitat for passerine species and small mammals. The riparian fringe functions as a corridor for wildlife in a densely urbanized area.

Fences along the creek separating properties may inhibit travel by some mammal and herptile species throughout the length of the site.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC2</b>				
<b>Resource Site (acres) = 284.06674</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	32.5	50.8	50.5	133.9
percent total inventory site area	11.4%	17.9%	17.8%	47.1%
<b>Wildlife Habitat*</b>				
acres	0.0	12.3	17.4	29.6
percent total inventory site area	0.0%	4.3%	6.1%	10.4%
<b>Special Habitat Areas**</b>				
acres				1.3
percent total inventory site area				0.4%
<b>Combined Total<sup>+</sup></b>				
acres	32.5	53.2	59.9	145.5
percent total inventory site area	11.4%	18.7%	21.1%	51.2%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site 02 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status plant and fish species.

## Resource Site Specific ESEE

The General ESEE analysis, Volume 3, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R5, R2 and R1 base zones. Commercial uses are allowed in the C1 base zone. Open Space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC2, with the following additional information that clarifies the analysis.



The resource site includes the Rhododendron Garden, Eastmoreland Golf Course and Westmoreland Park. Portions of Crystal Springs flow from Reed College to the northeast and from wetlands within the resource site to Johnson Creek to the south. The parks and golf course provide outdoor recreational activities and access to nature, which have beneficial social consequences for public health. The open vegetated areas also provide stormwater management, flood control and air cooling, which have beneficial economic and energy consequences. The vegetated parks and golf course, although landscaped, is a large open area that provides wildlife habitat.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Crystal Springs and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for the negative consequences of intensification of recreational uses or additional development in areas of high or medium ranked natural resources should be required.

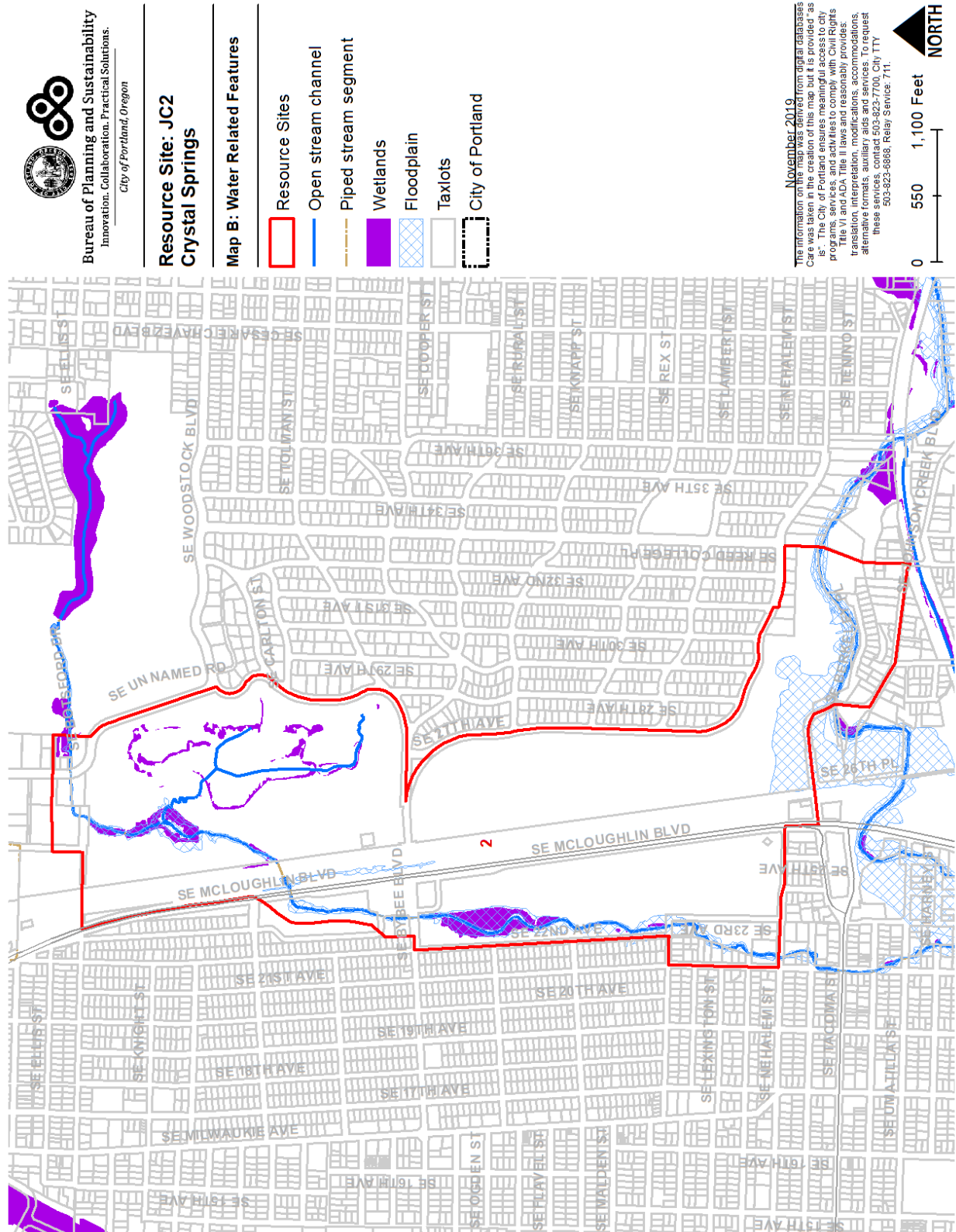
#### ESEE Decisions

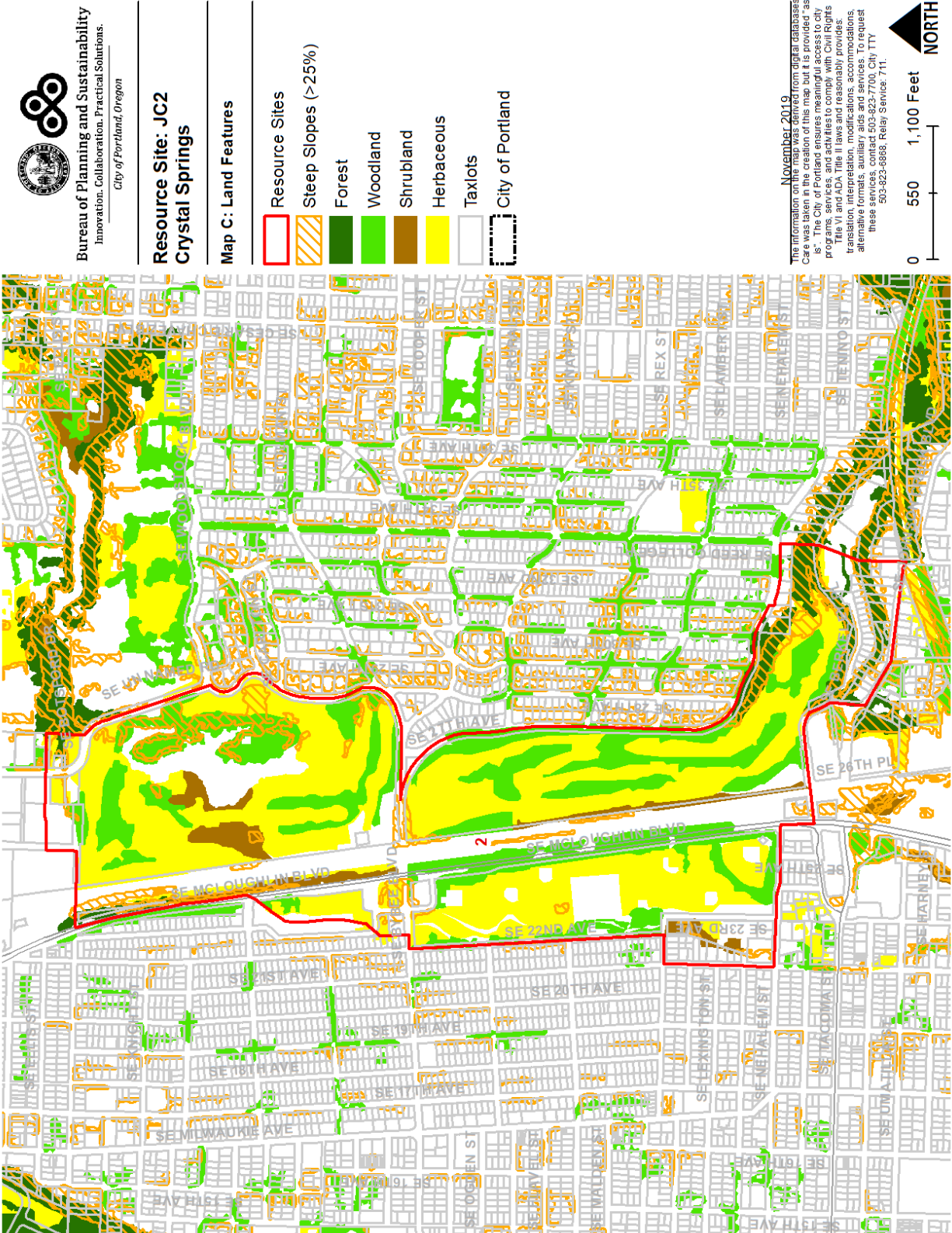
Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resource Site JC2 are:

1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 50 feet from stream top-of-bank or contiguous to but more than 30 feet from wetlands.
4. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
5. *Limit* conflicting uses within areas of shrubland or herbaceous vegetation within public parks and areas of forest or woodland vegetation contiguous to but outside of public parks.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

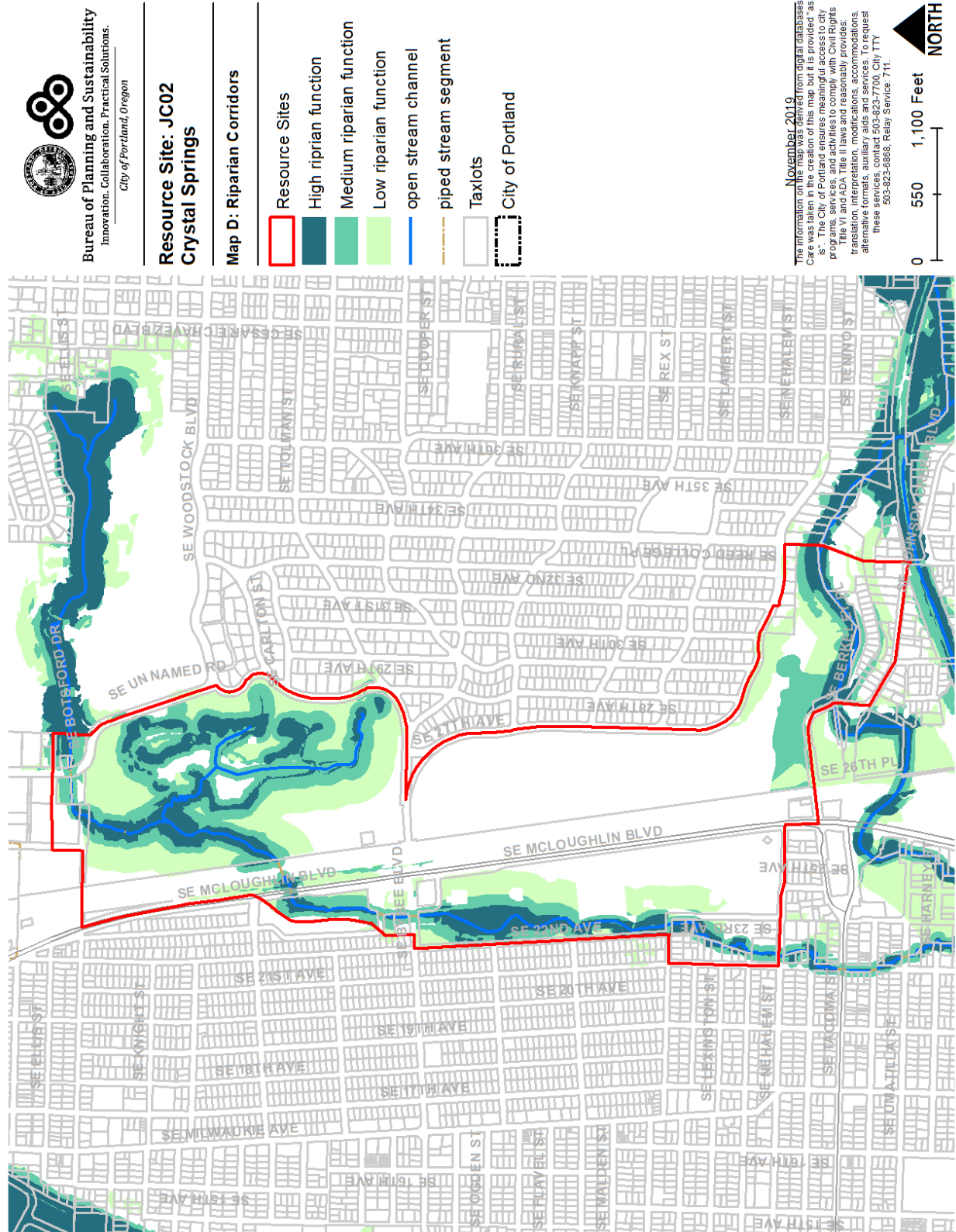
Table C: ESEE Decision for Resource Site JC2	
ESEE Decision	Acres
Strictly Limit	45.1
Limit	159.6
Allow	79.4

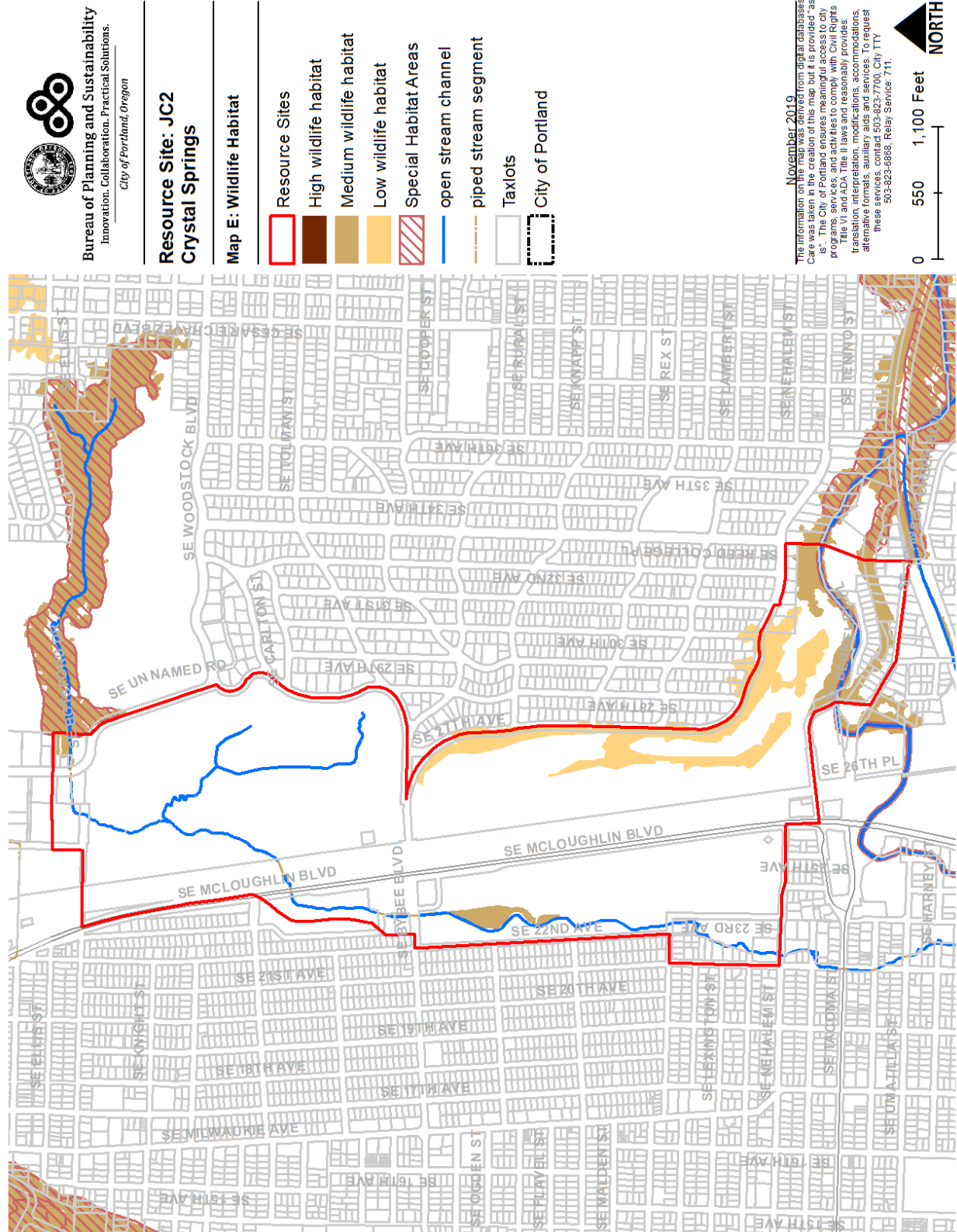




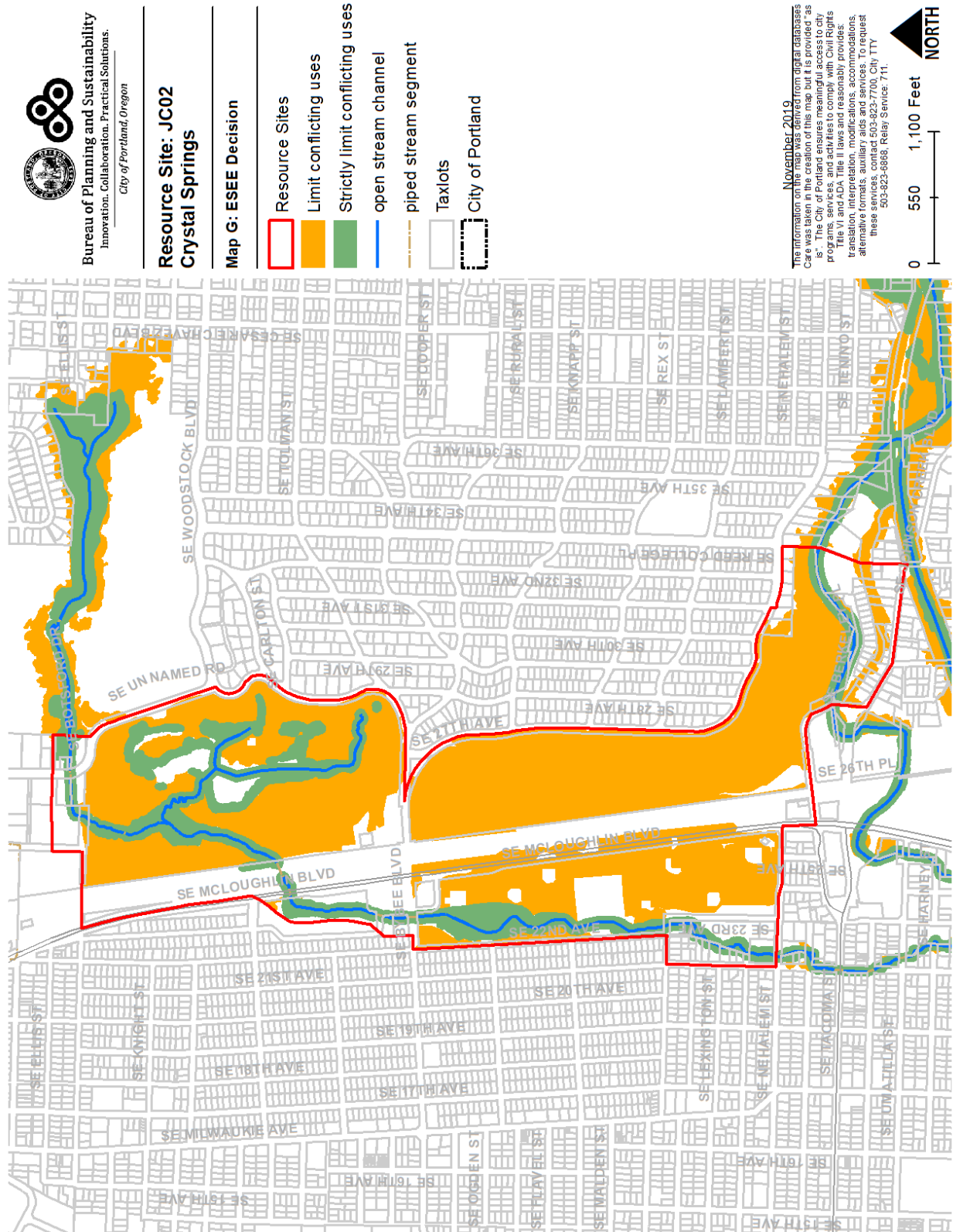






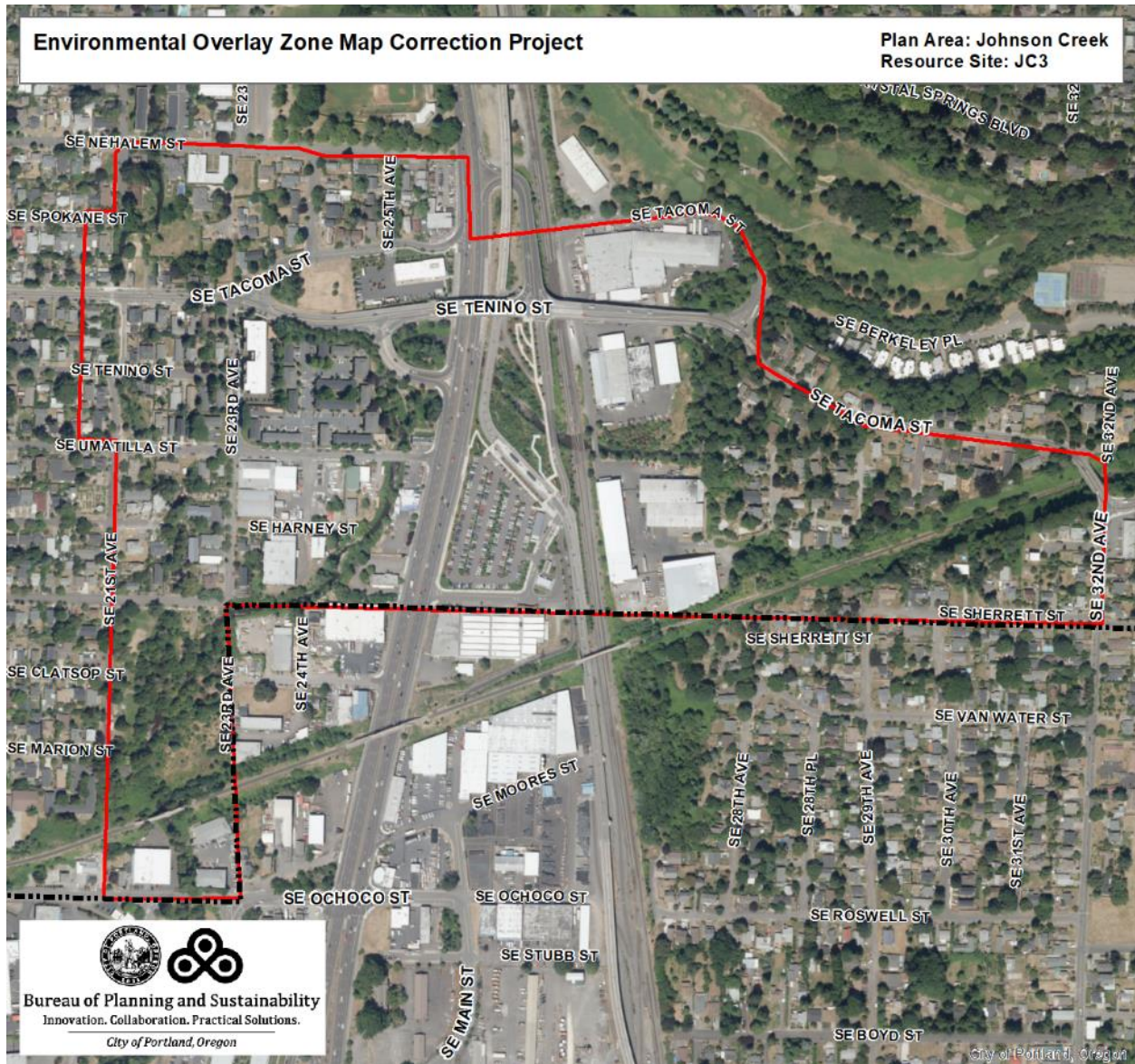








**Resource Site No.:** JC3      **Resource Site Name:** Johnson Creek Park  
**Previous Plan:** Johnson Creek Basin Protection Plan   **Previous Resource Site No.:** 3



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site		JC3
		Study Area
<b>Stream (Miles)</b>		0.0
<b>Wetlands (acres)</b>		1.1
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>		29.7
Forest (acres)		2.5
Woodland (acres)		14.4
Shrubland (acres)		2.7
Herbaceous (acres)		10.1
<b>Flood Area*</b>		32.7
Vegetated (acres)		11.6
Non-vegetated (acres)		21.1
<b>Steep Slopes (acres)**</b>		21.9
<b>Impervious Surface (acres)</b>		54.1
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.		
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.		

This site comprises the lower portion of Crystal Springs Creek, its confluence with Johnson Creek, and about one and one-quarter miles of Johnson Creek downstream from Johnson Creek Canyon. Adjacent lands are almost fully developed with a wide variety of land uses including single and multi-family housing, commercial, and industrial facilities. With the exception of residences abutting Crystal Springs Creek and Johnson Creek Park at the confluence of Crystal Springs and Johnson Creeks, water resources impacted by development.

This site borders the Milwaukie city limits and is mostly developed with primarily industrial and commercial land uses leaving the natural habitat diminished. At this point creek channel is generally 30-50 feet wide. Johnson Creek Park is park of about 10 acres, with about one-third (including the waterways) in natural condition.

The floodway varies from 90 to 300 feet wide and has a 10 to 50-foot strip of vegetation along the steep banks. Throughout this site Himalayan blackberry and reed canary grass are the dominant plant species with scattered stands of black cottonwood, alder, and willow. Creek banks have a 1: 1 slope, limiting access to the creek by mammal and herptile species. Lawns, parking areas, and roads are immediately adjacent to the narrow riparian vegetation. Lack of canopy cover and shade, and stormwater runoff from paved surfaces limit habitat quality for fish and aquatic invertebrates.

This stretch of Crystal Springs and Johnson Creeks provides limited wildlife habitat and is primarily used by urban-adapted wildlife species. However, the streams serve as a travel corridor for spawning cutthroat trout and steelhead between the Willamette River to Reed Lake and other areas along Johnson Creek.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC3</b>				
<b>Resource Site (acres) = 103.721867</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	16.2	14.2	22.5	52.9
percent total inventory site area	15.6%	13.7%	21.7%	51.0%
<b>Wildlife Habitat*</b>				
acres	0.0	3.3	0.0	3.3
percent total inventory site area	0.0%	3.2%	0.0%	3.2%
<b>Special Habitat Areas**</b>				
acres				3.5
percent total inventory site area				3.4%
<b>Combined Total<sup>+</sup></b>				
acres	16.3	14.4	22.2	52.9
percent total inventory site area	15.7%	13.9%	21.4%	51.0%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC3 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status plant and fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R5, R2 and R1 base zones. Industrial uses are allowed in the IG2 base zone. Employment uses are allowed in the EG2 base zone. Commercial uses are allowed in the CE base zone. Open Space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC3, with the following additional information that clarifies the analysis.

SE McLoughlin Blvd, which is also Oregon State Route 99E, and Union Pacific railroad run through the resource site, providing infrastructure for movement of people, goods and services. Commercial, employment and industrial uses provide employment opportunities in close proximity to residential areas. The confluence of Crystal Springs and Johnson Creek is an important area for fish and wildlife and provide access to nature which has beneficial consequences for public health.

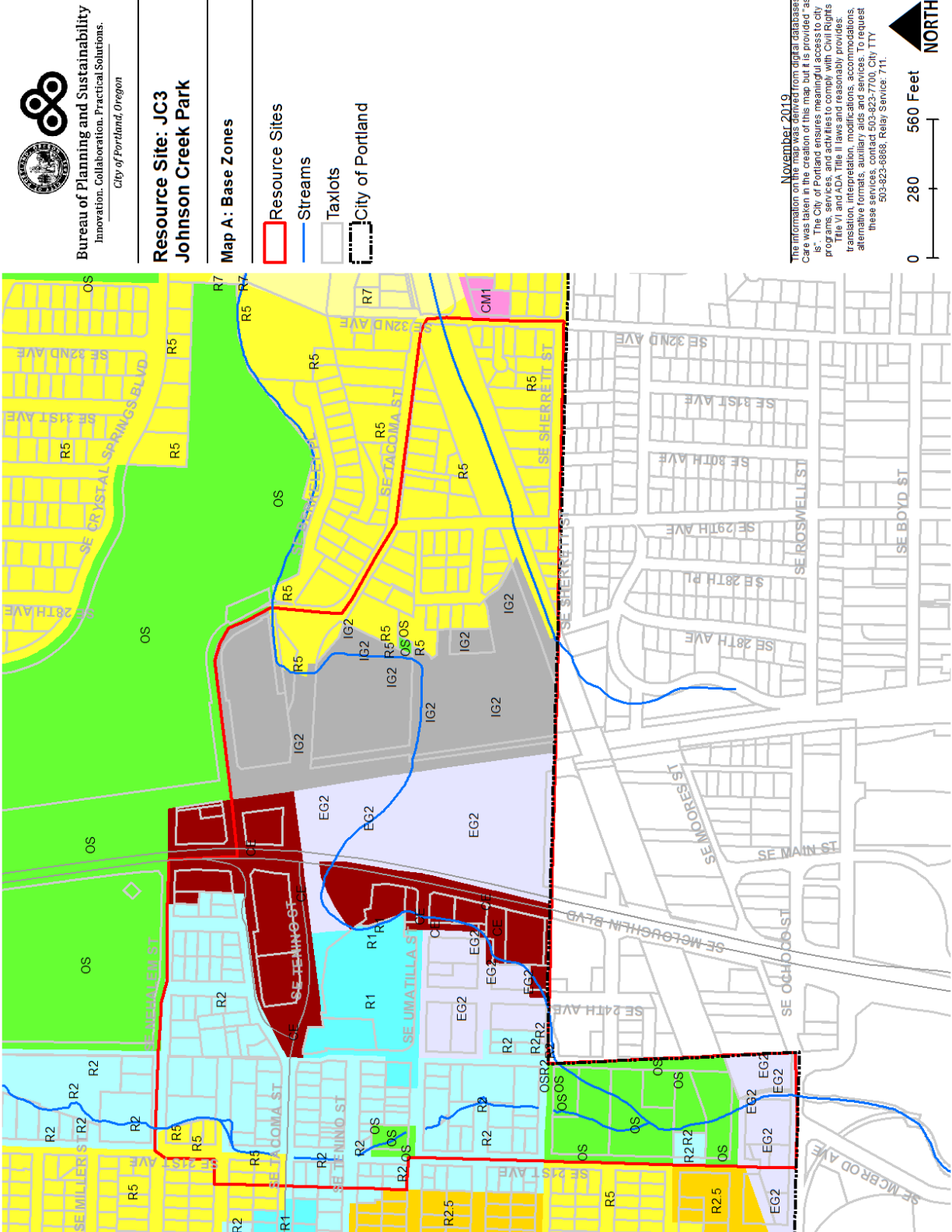
*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Crystal Springs, Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

### ESEE Decisions

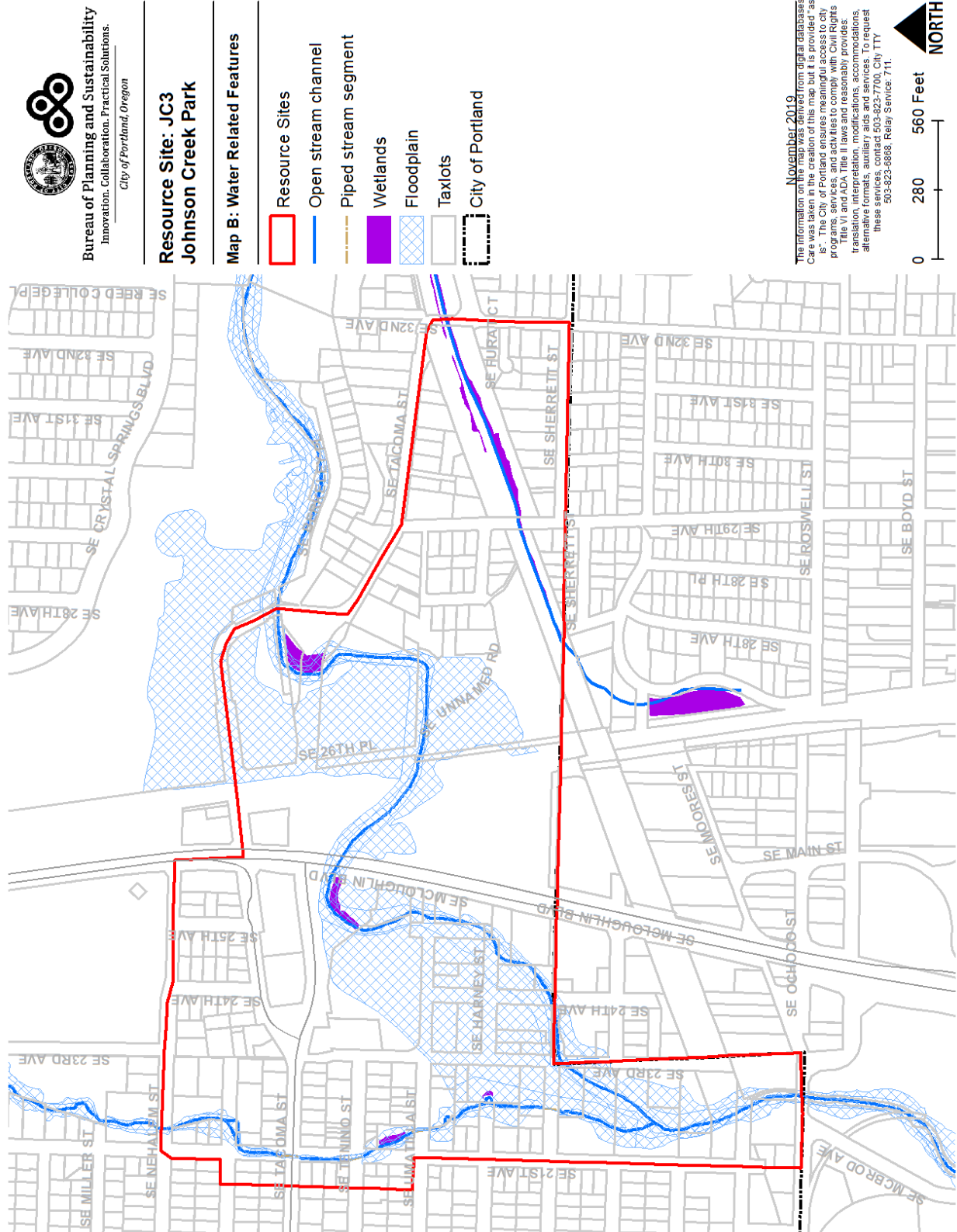
Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resources Site JC3 are:

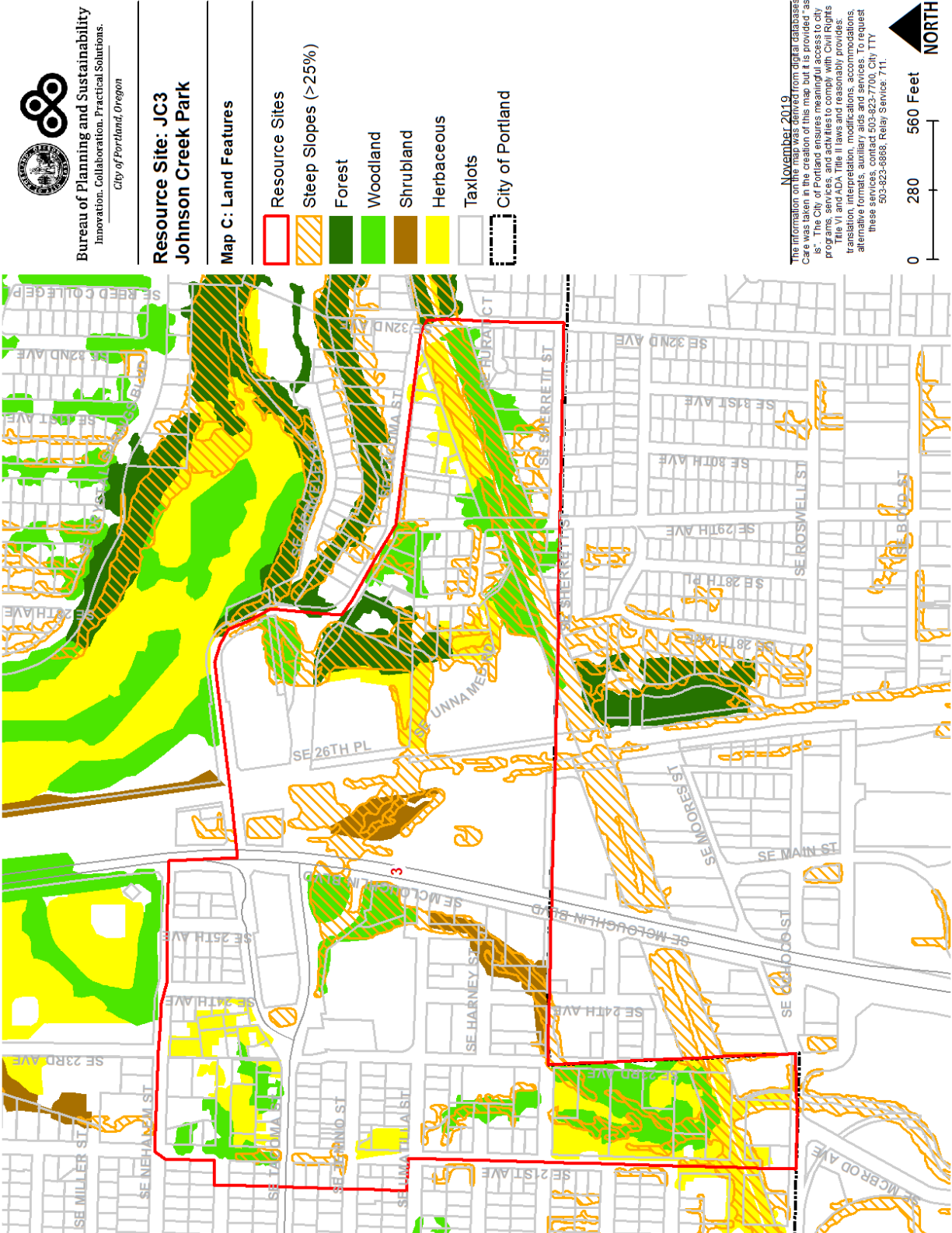
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 40 feet from stream top-of-bank.
4. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
5. *Limit* conflicting uses within areas of shrubland or herbaceous vegetation within public parks and areas of forest or woodland vegetation contiguous to but outside of public parks.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

Table C: ESEE Decision for Resource Site JC3	
ESEE Decision	Acres
Strictly Limit	19.1
Limit	9.0
Allow	75.6



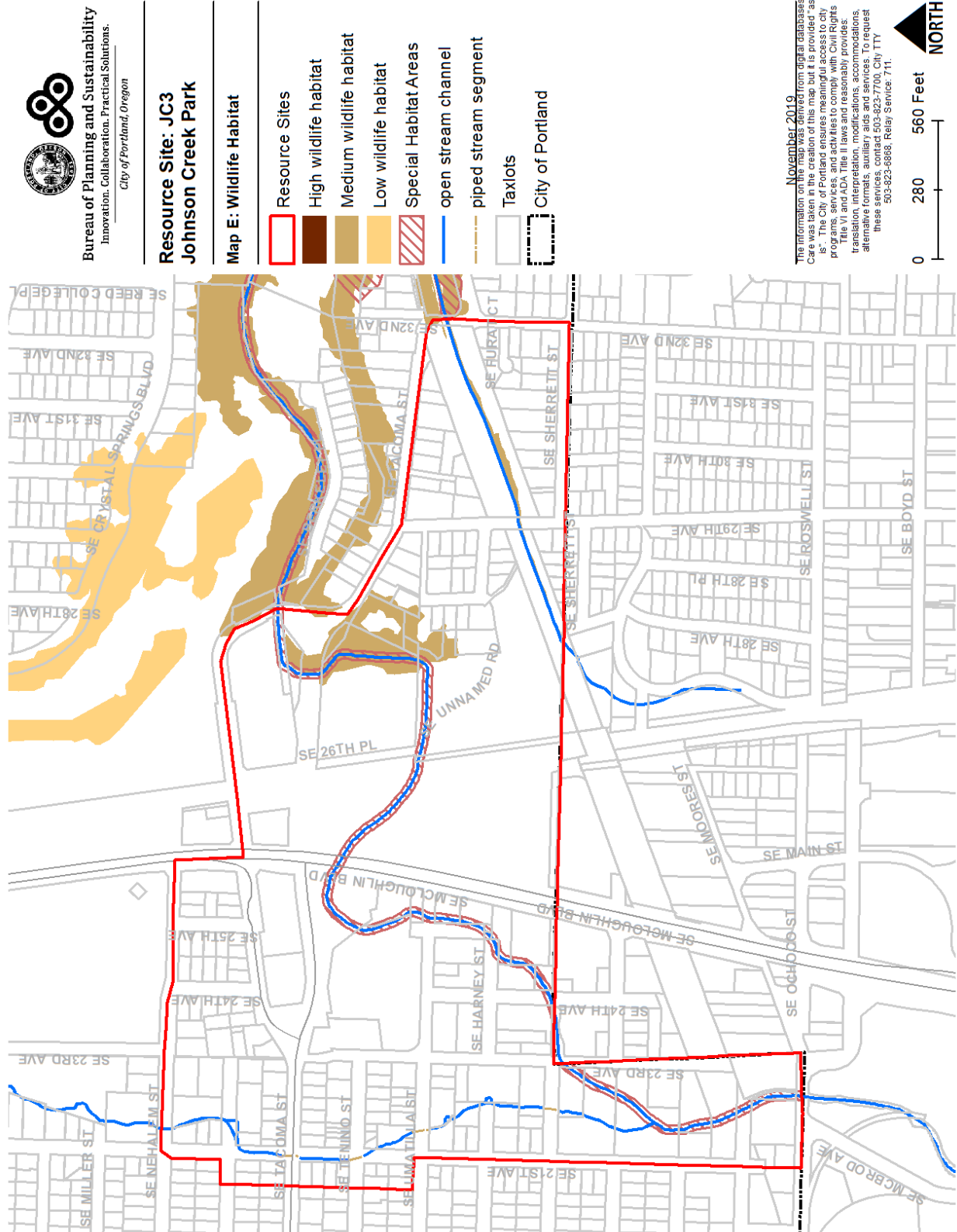


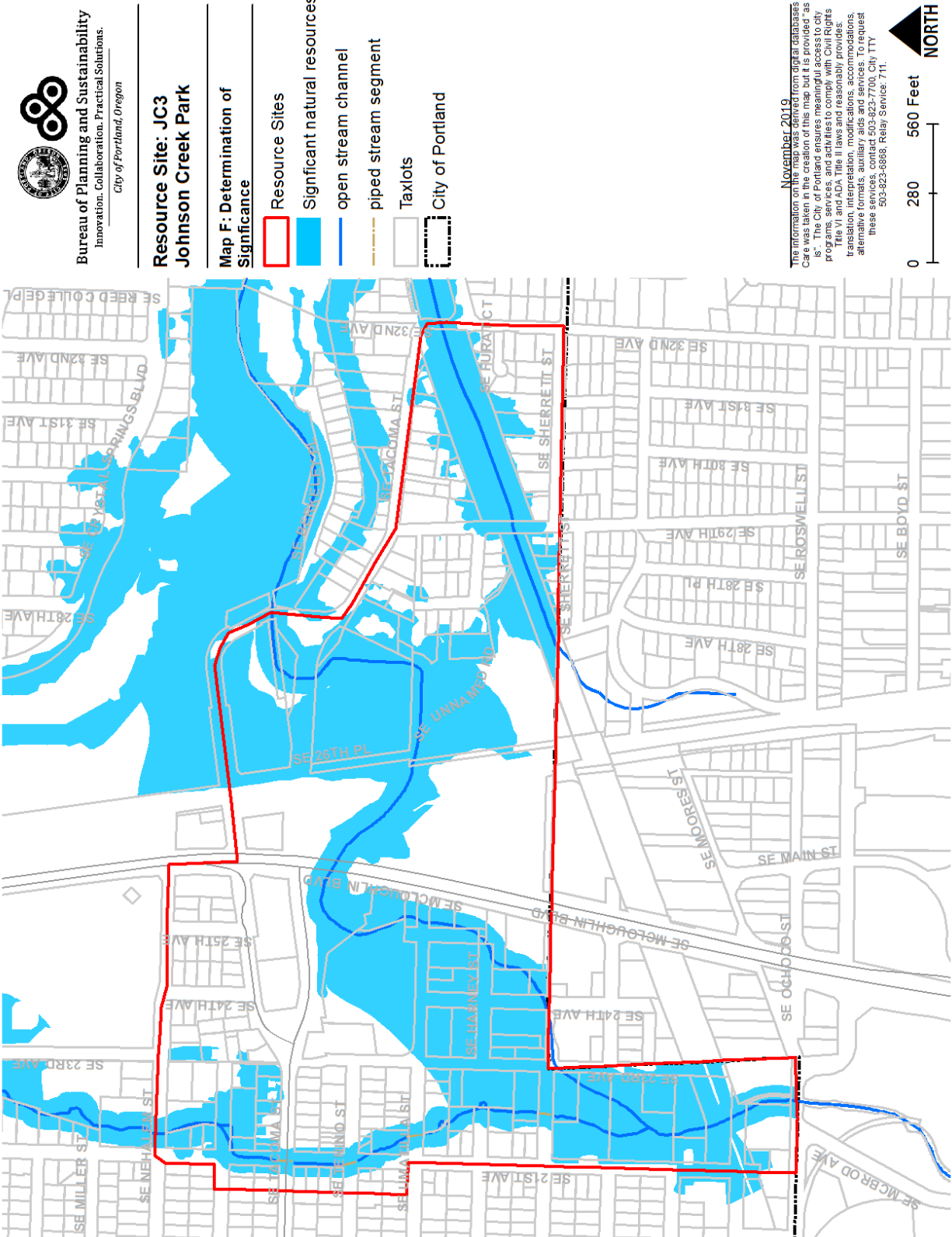


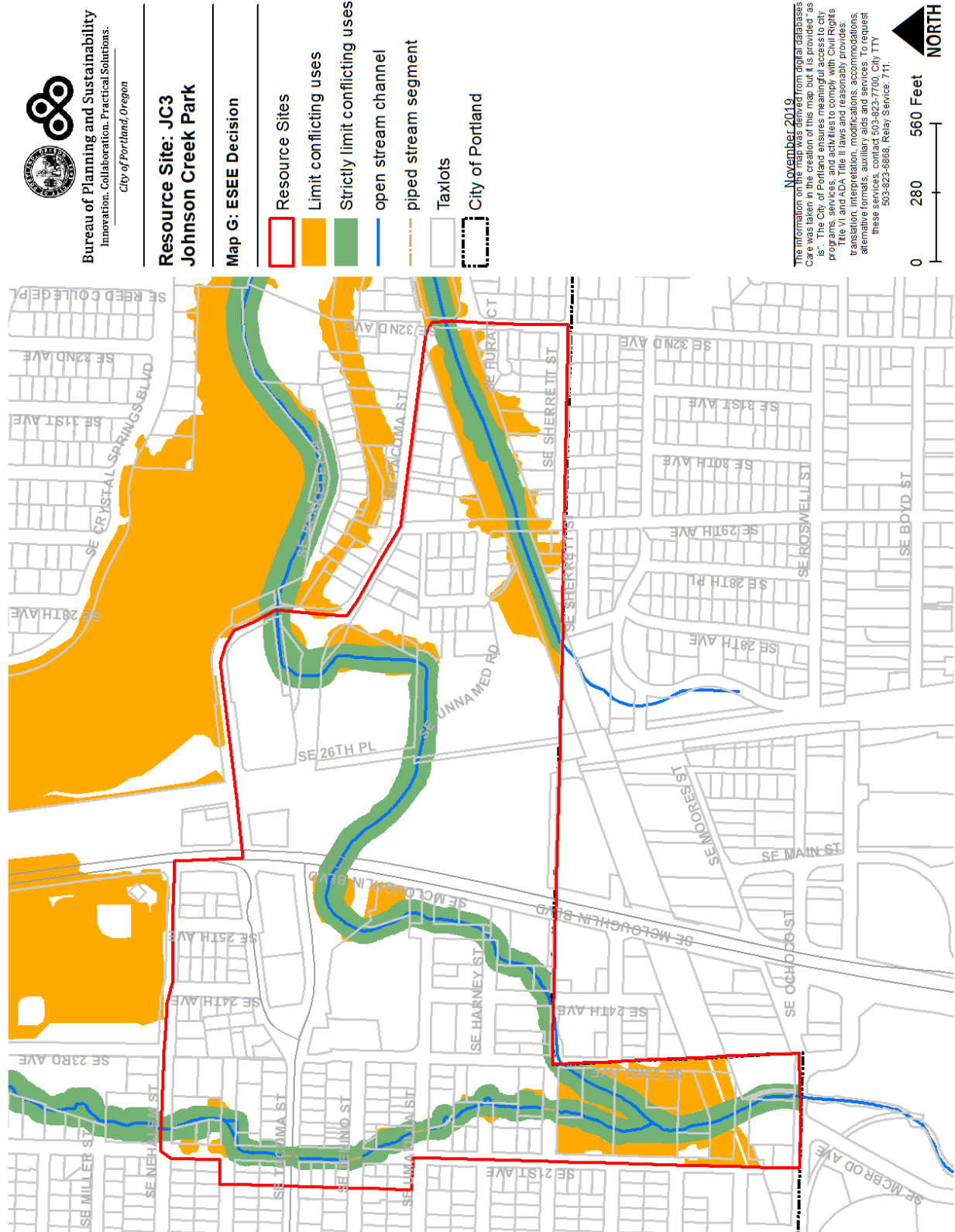












**Resource Site No.: JC4      Resource Site Name: Outside City/USB Limits**

**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resource Site No.:** 4

This resource site was included in the Johnson Creek Basin Protection Plan but is located outside City of Portland's city limits and urban service boundary. The City of Portland has no planning authority over the land and water in this resource site. Therefore, the resource site is being eliminated from the Ezone Map Correction Project. If, in the future the land and water is added to the urban service boundary or annexed into the City of Portland, a new inventory, ESEE analysis and ESEE decision should be done for the area based on existing conditions at that time.



**Resource Site No.:** JC5   **Resource Site Name:** Tideman-Johnson Park West  
**Previous Plan:** Johnson Creek Basin Protection Plan   **Previous Resource Site No.:** 5





## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC5	
	Study Area
<b>Stream (Miles)</b>	4.6
<b>Wetlands (acres)</b>	3.5
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	30.4
Forest (acres)	24.9
Woodland (acres)	3.0
Shrubland (acres)	0.0
Herbaceous (acres)	2.5
<b>Flood Area*</b>	5.5
Vegetated (acres)	5.3
Non-vegetated (acres)	0.3
<b>Steep Slopes (acres)**</b>	22.8
<b>Impervious Surface (acres)</b>	6.0
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

Resource Site JC5 includes the Johnson Creek channel and riparian zone in the vicinity of Tideman Johnson Park. This site mostly a wilderness canyon area with associated upland and adjacent wetland area, wildlife and fisheries travel corridor, gradual creek bank allowing access by animals, possible archaeological resources, and City park providing public access, scenic, and educational values. Land on both sides of the canyon are developed single family residential neighborhoods.

This site includes Tideman-Johnson Park, a six-acre parcel located near SE 39th Avenue on the north side of Johnson Creek. This park site was donated to the City of Portland in 1942 and remains relatively undeveloped. The lower elevations, or creek terrace, is cultivated with lawn and shade trees interspersed with native vegetation (cedar, fir, cottonwood, and oak).

The south bank vegetation of Johnson Creek is dominated by blackberry, maple, and alder. The southern canyon wall that rises 75 to 100 feet up to Johnson Creek Boulevard is an upland forest of Douglas Fir, Western Red Cedar, and Bigleaf Maple with some intrusion of introduced plants. The slope of the north canyon wall is gentler, providing easier access by wildlife species. It rises 60 feet above the flat, terraced area that is the center of Tideman-Johnson Park. Springs are located along the north and south canyon walls, providing moisture to the plant species and a minor water source to the creek.

At the eastern end of the park adjacent the creek channel there is 40-inch diameter cottonwood tree. This tree is a native, estimated at over 100 years old, and provides habitat for Great Blue Heron and owls.

A sanitary sewer line runs at grade and parallel to and in the creek channel for about fifty feet within Tideman-Johnson Park. The concrete sewer line is a barrier to fish migration. It is to this point that salmonids reportedly travel from the Willamette River and spawn.

Creek vegetation is primarily blackberries overhanging the channel, mixed with willow, cottonwood, grasses, and nettle. Small amounts of sedges and rushes line the littoral zone. Riparian vegetation provides food, nesting, and cover for passerine species and small mammals. The channel is suitable for feeding/resting by small fish. Reptiles and amphibians probably use the stream and riparian area. Waterfowl use the area for feeding and resting. Structural diversity on both sides of the creek is limited, but some food, cover, and nesting is provided by dense patches of shrubby vegetation and trees. Species observed include pileated woodpecker, downy woodpecker, kestrel, green backed heron, gray squirrel and garter snake.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC5</b>				
<b>Resource Site (acres) = 45.136881</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	20.9	7.5	3.6	32.1
percent total inventory site area	46.4%	16.7%	8.0%	71.1%
<b>Wildlife Habitat*</b>				
acres	0.0	28.3	0.0	28.3
percent total inventory site area	0.0%	62.8%	0.0%	62.8%
<b>Special Habitat Areas**</b>				
acres				23.9
percent total inventory site area				52.9%
<b>Combined Total<sup>+</sup></b>				
acres	27.4	5.0	0.3	32.6
percent total inventory site area	60.7%	11.0%	0.7%	72.3%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC5 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status plant and fish species.

## Resource Site Specific ESEE

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10, R7 and R5 base zones. Commercial uses are allowed in the MC1 base zone. Open Space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC5, with the following additional information that clarifies the analysis.

There are large wetlands in the resource site that are providing critical stormwater management and flood control for the properties all around the area. The stream, wetlands and tree canopy also provide stormwater management, air cooling and wildlife habitat. The natural resource in close proximity to homes provides access to nature.

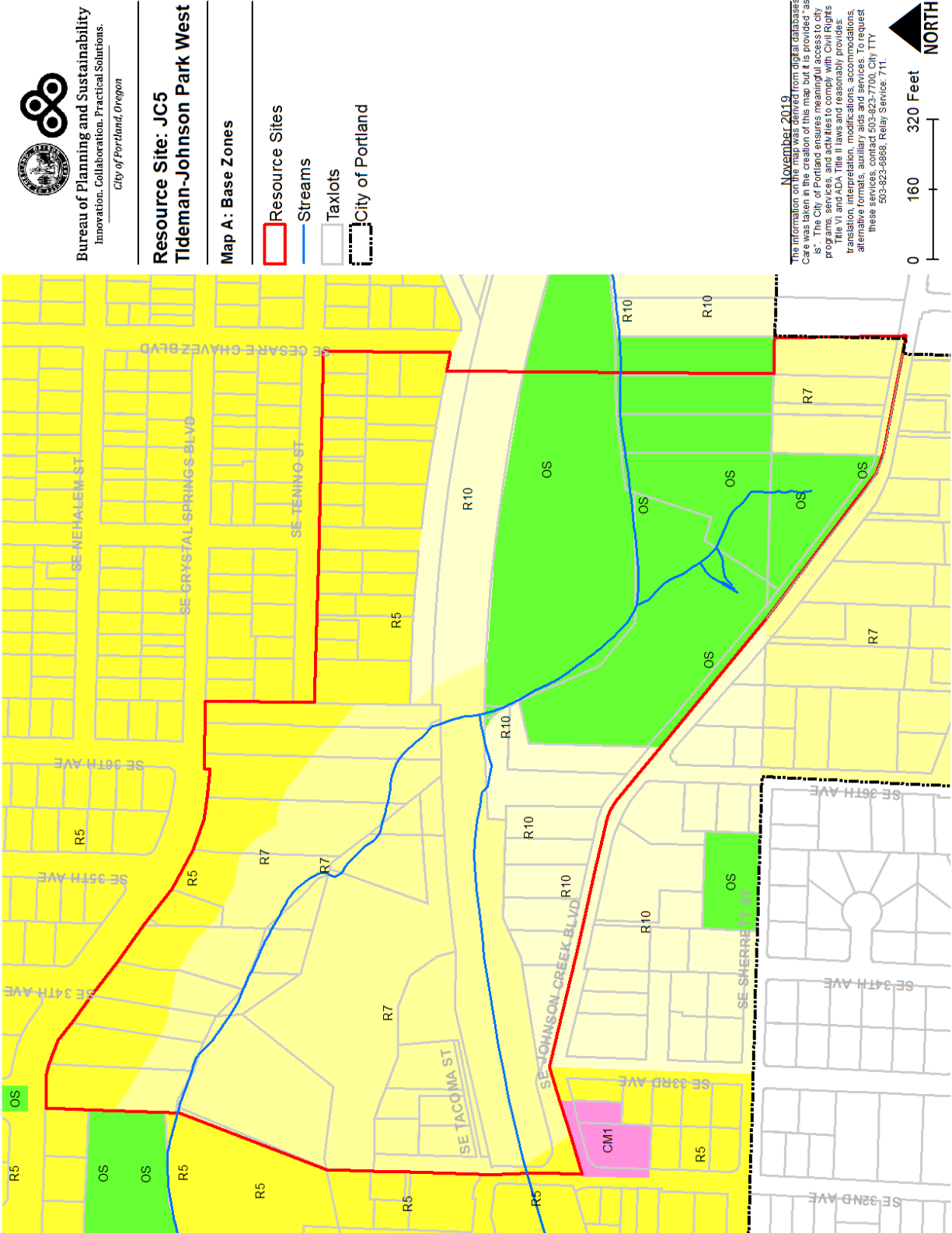
*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and the wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Clustering of new housing outside of riparian corridors and the flood area would reduce impacts on the significant resources. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

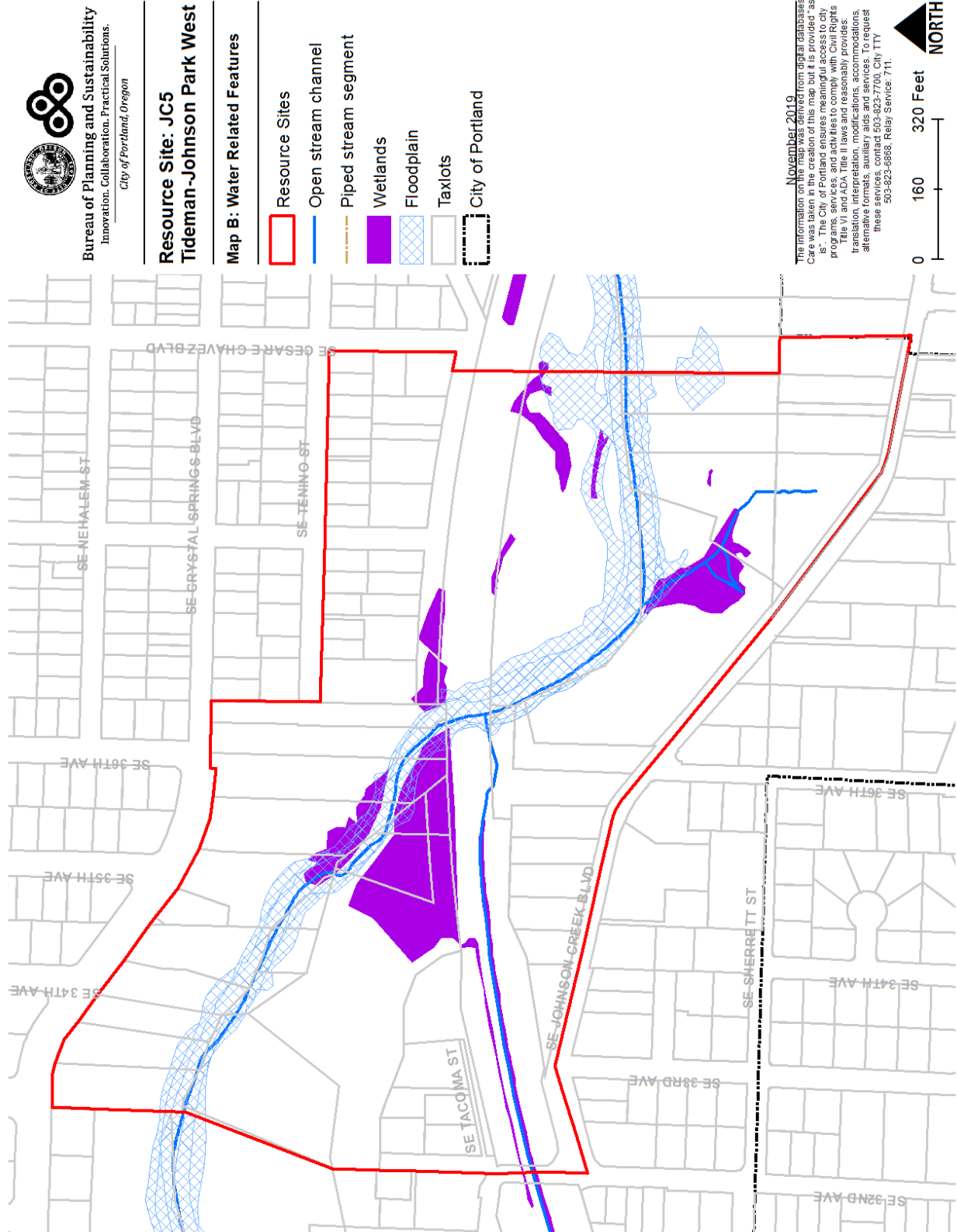
#### ESEE Decisions

Based on the General ESEE and resource site-specific ESEE, the ESEE decisions for Resources Site JC5 are:

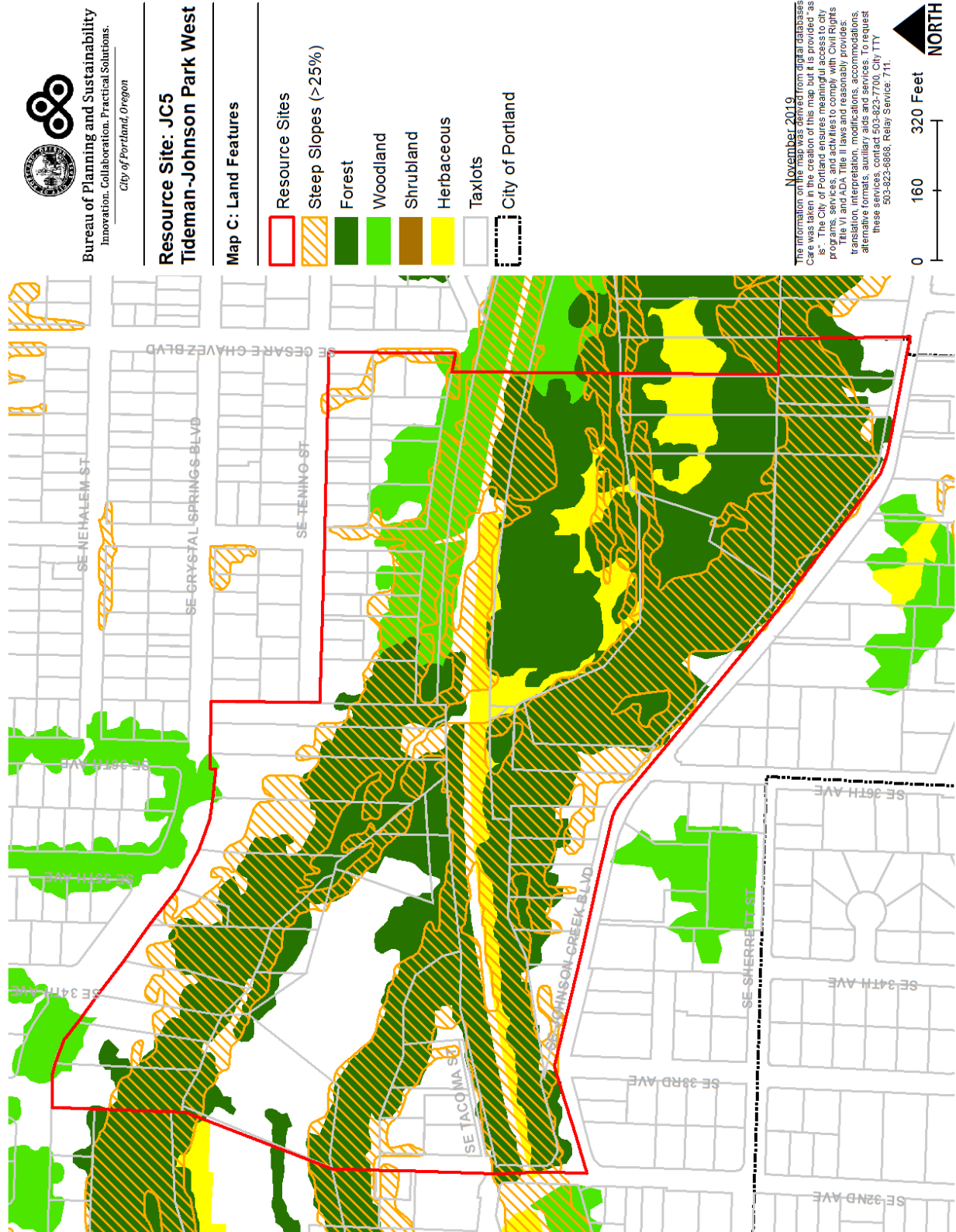
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 50 feet from stream top-of-bank, areas of forest or woodland vegetation contiguous to but more than 30 feet from wetlands.
4. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
5. *Limit* conflicting uses within areas of shrubland or herbaceous vegetation within public parks and areas of forest, woodland, shrubland or herbaceous vegetation contiguous to but outside of public parks.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

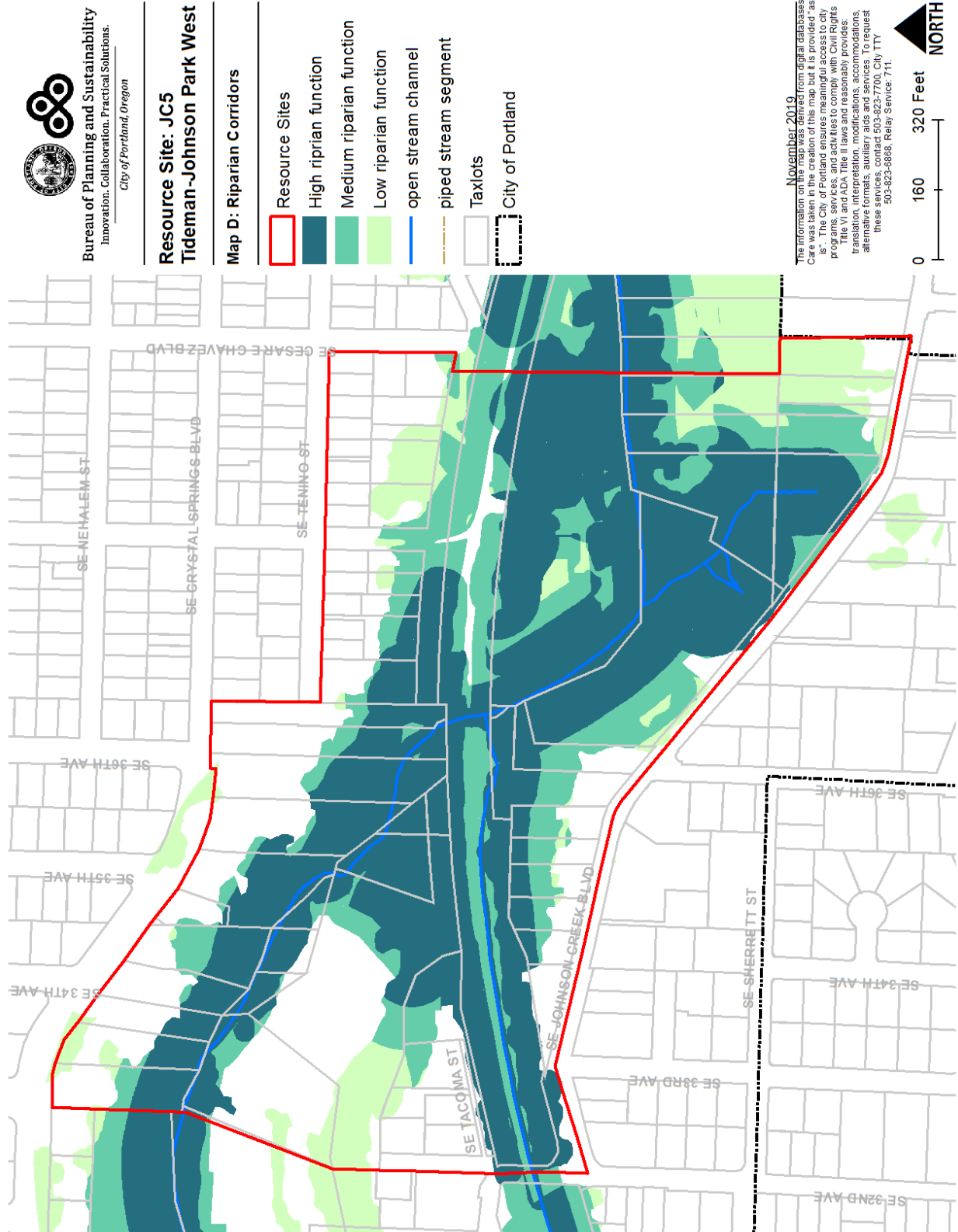
Table C: ESEE Decision for Resource Site JC5	
ESEE Decision	Acres
Strictly Limit	14.9
Limit	16.7
Allow	13.6

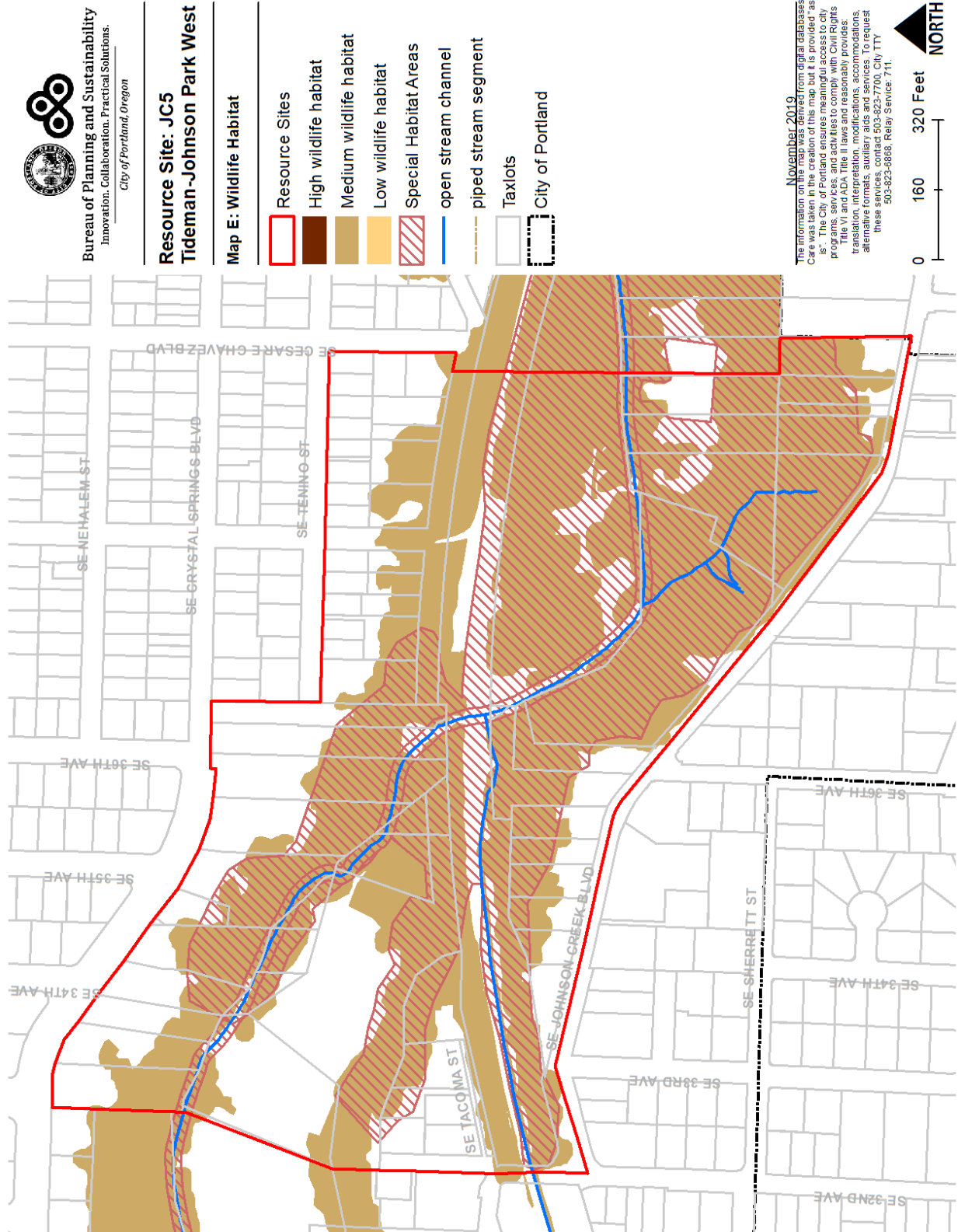


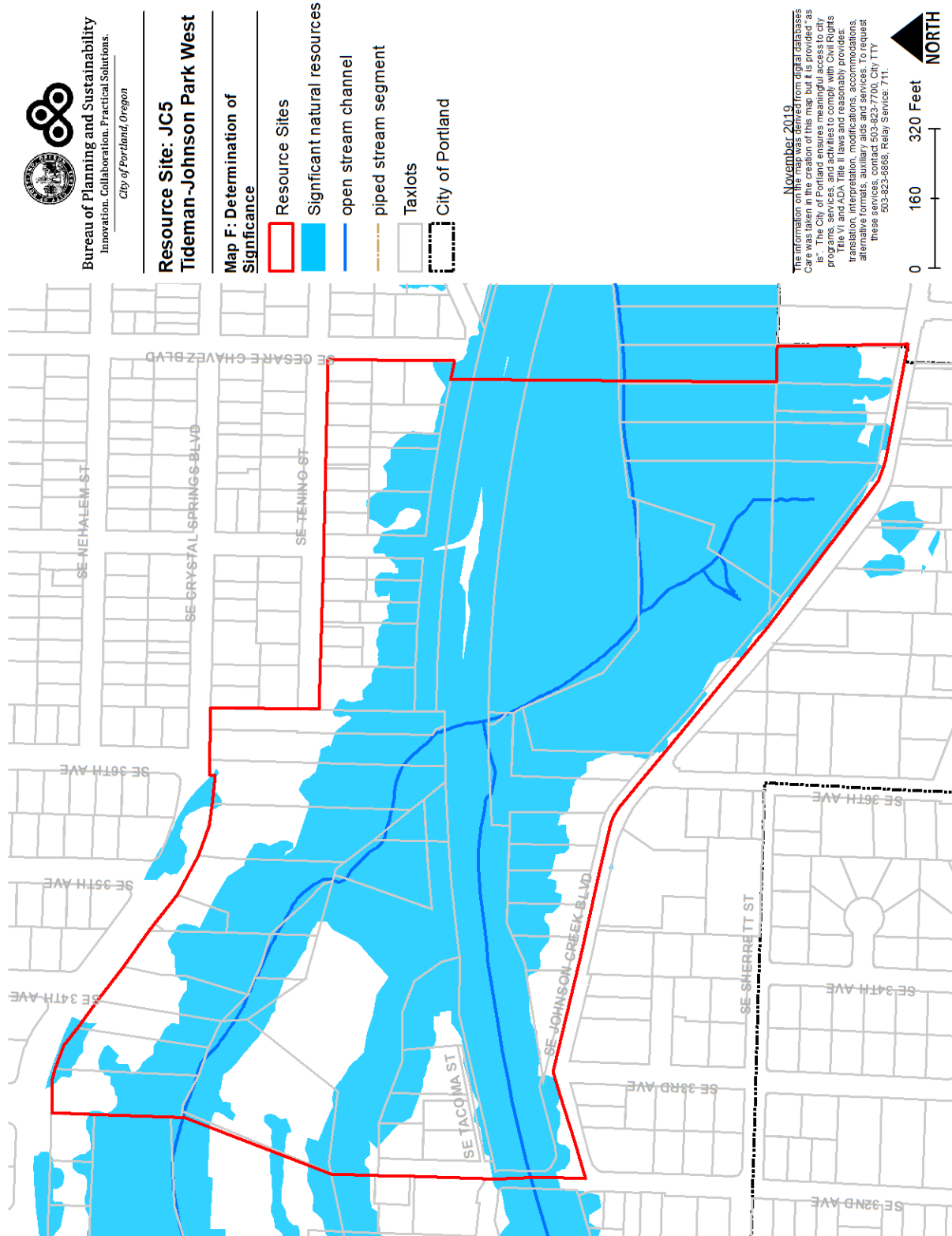


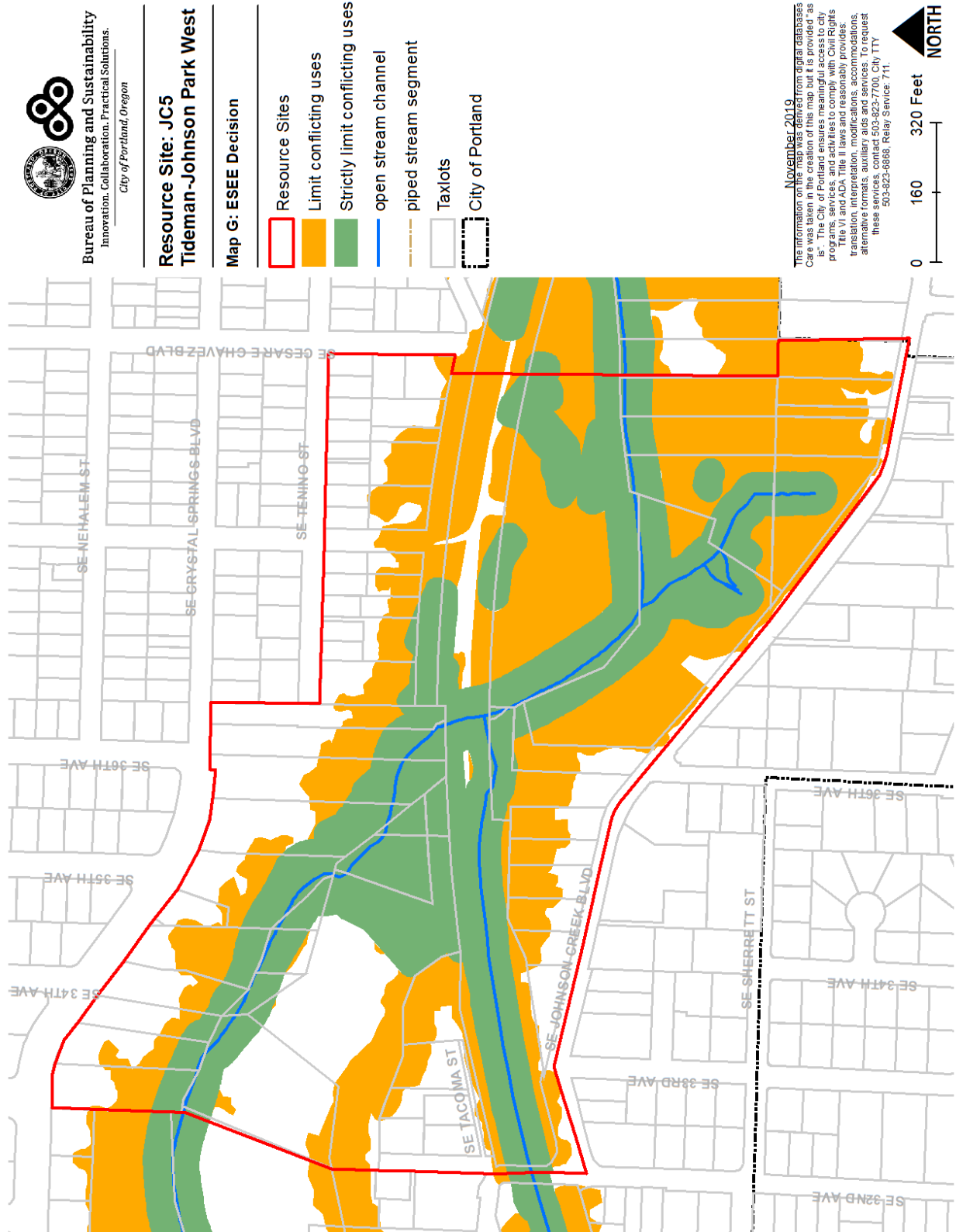








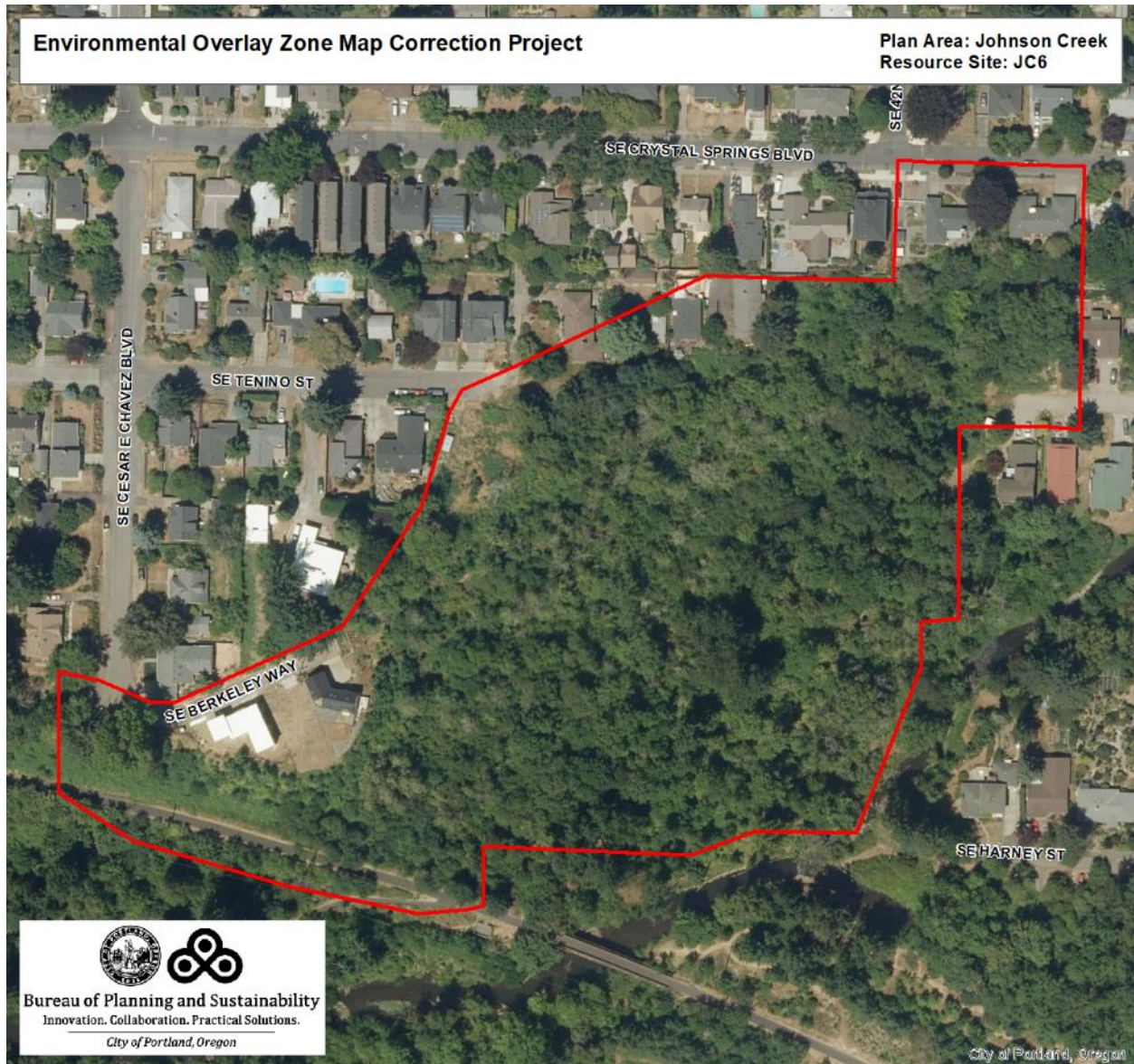






**Resource Site No.: JC6    Resource Site Name: 39<sup>th</sup> – 42<sup>nd</sup> Wetland**

**Previous Plan:** Johnson Creek Basin Protection Plan    **Previous Resource Site No.:** 6





## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC6	
	Study Area
<b>Stream (Miles)</b>	1.6
<b>Wetlands (acres)</b>	4.2
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	8.2
Forest (acres)	6.8
Woodland (acres)	1.4
Shrubland (acres)	0.0
Herbaceous (acres)	0.0
<b>Flood Area*</b>	0.7
Vegetated (acres)	0.7
Non-vegetated (acres)	0.0
<b>Steep Slopes (acres)**</b>	4.1
<b>Impervious Surface (acres)</b>	2.9
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

This site includes a wetland adjacent to Johnson Creek to the northeast of Tideman Johnson Park. The site has slopes on the north and west sides which separate it from the adjacent residential neighborhood. Dense Himalayan blackberry, willow, and red osier dogwood dominate the site with some variation in the riparian area. Shrubs and trees provide good structural diversity for habitat for birds and small mammals. Interspersion with other natural areas is good. Dense blackberries severely limit use of this site by humans.

This site includes a wetland that is adjacent a undeveloped park site and nearby upland forest. Although, much of this site is being taken over by Himalayan blackberry and reed canarygrass, the scarcity of wetlands along Johnson Creek makes it important. In this situation the dense Himalayan blackberry surrounding the wetland provide a buffer from human use.

This wetland and associated upland provide a biological and hydrological link to the creek corridor. The wetland provides habitat for redwing blackbirds, common yellowthroats, and other wildlife species. It also provides storm water retention, groundwater recharge, and water quality filtration to the adjacent Tideman Johnson Park and Johnson Creek. Himalayan blackberry and reed canarygrass reduce the habitat quality from what it would be if native plants occurred rather than the aggressive exotic plant species.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC6</b>				
<b>Resource Site (acres) = 9.806887</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	7.9	0.5	0.1	8.5
percent total inventory site area	80.3%	5.5%	0.6%	86.4%
<b>Wildlife Habitat*</b>				
acres	0.0	8.2	0.0	8.2
percent total inventory site area	0.0%	83.7%	0.0%	83.7%
<b>Special Habitat Areas**</b>				
acres				7.3
percent total inventory site area				74.7%
<b>Combined Total<sup>+</sup></b>				
acres	8.3	0.4	0.0	8.8
percent total inventory site area	85.1%	4.3%	0.0%	89.4%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC6 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status plant and fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 and R5 base zones. Open Space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC6, with the following additional information that clarifies the analysis.

There are large wetlands in the resource site that are providing critical stormwater management and flood control for the properties all around the area. The stream, wetlands and tree canopy also provide stormwater management, air cooling and wildlife habitat. The natural resource in close proximity to homes provides access to nature.

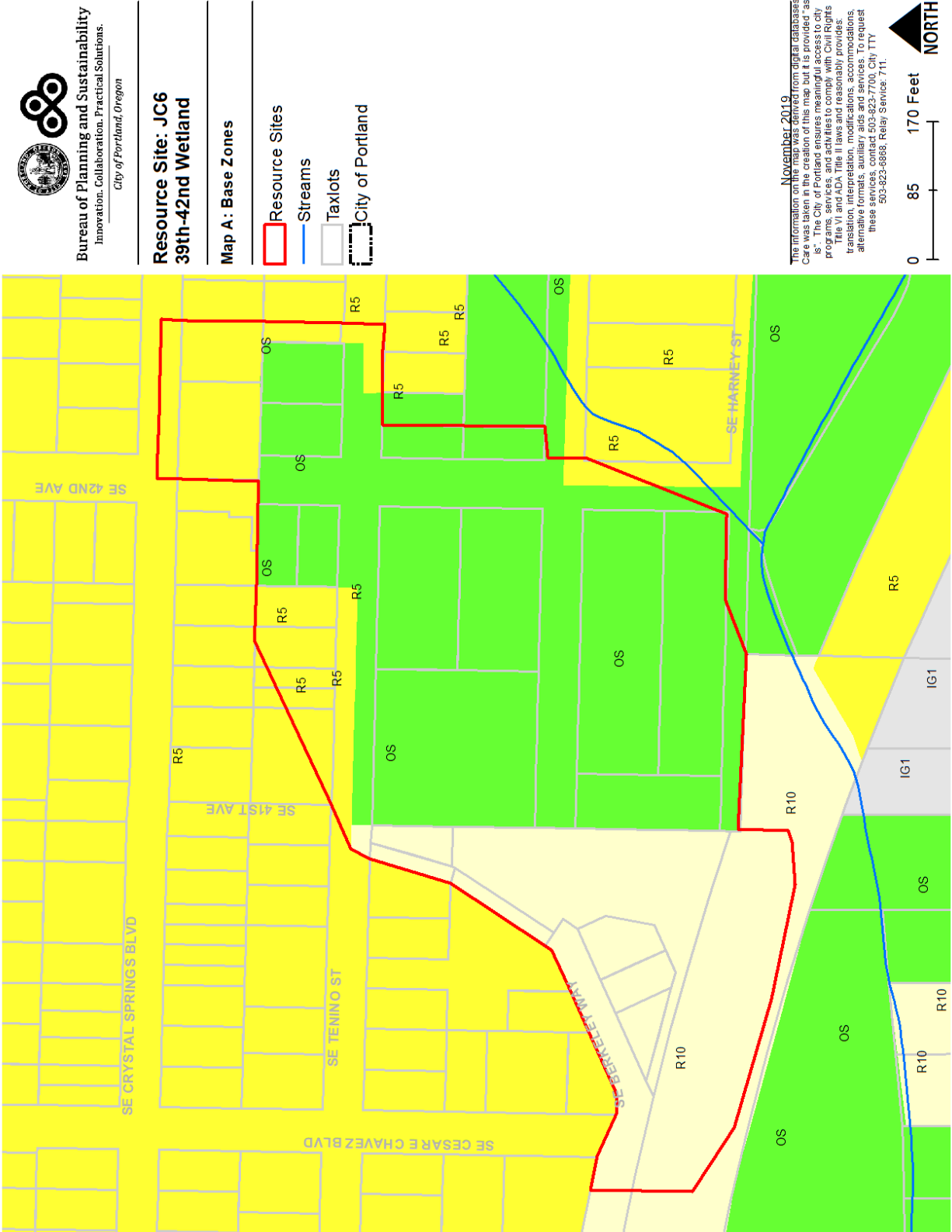
*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

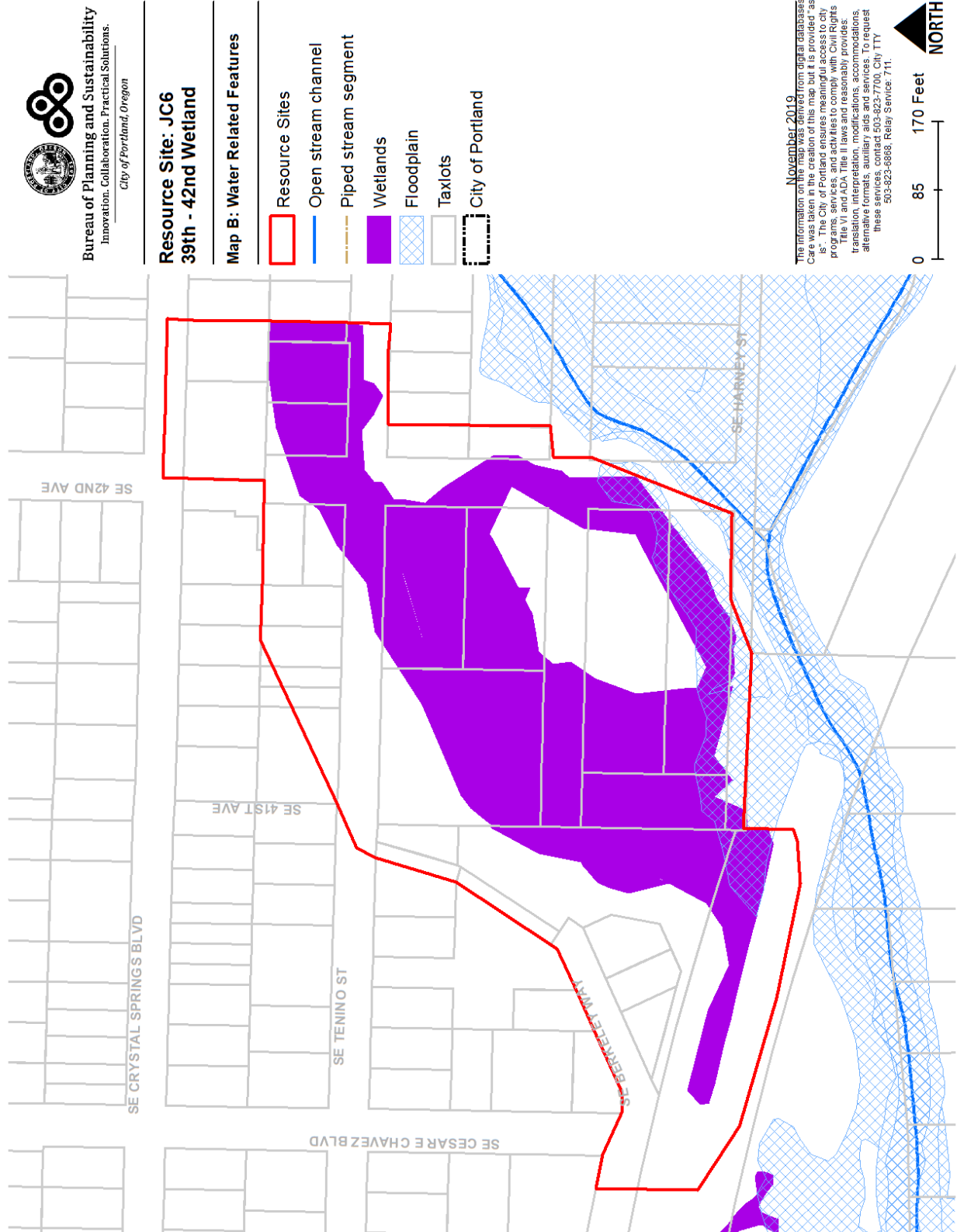
### ESEE Decisions

Based on the General ESEE and resource site-specific ESEE, the ESEE decisions for Resources Site JC6 are:

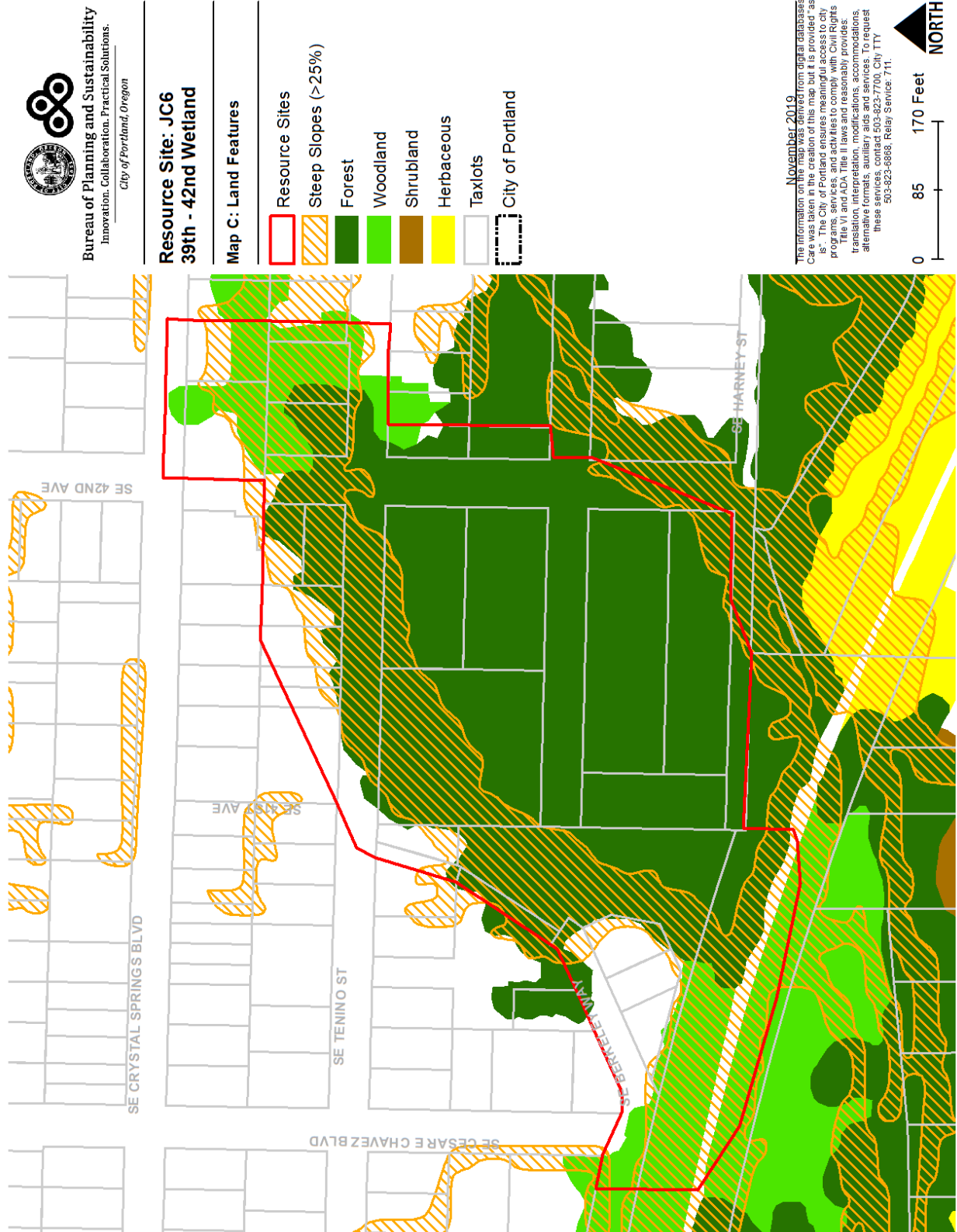
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 50 feet from stream top-of-bank and areas of forest or woodland vegetation contiguous to but more than 30 feet from wetlands.
4. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
5. *Allow* conflicting uses within all other areas containing significant natural resources.

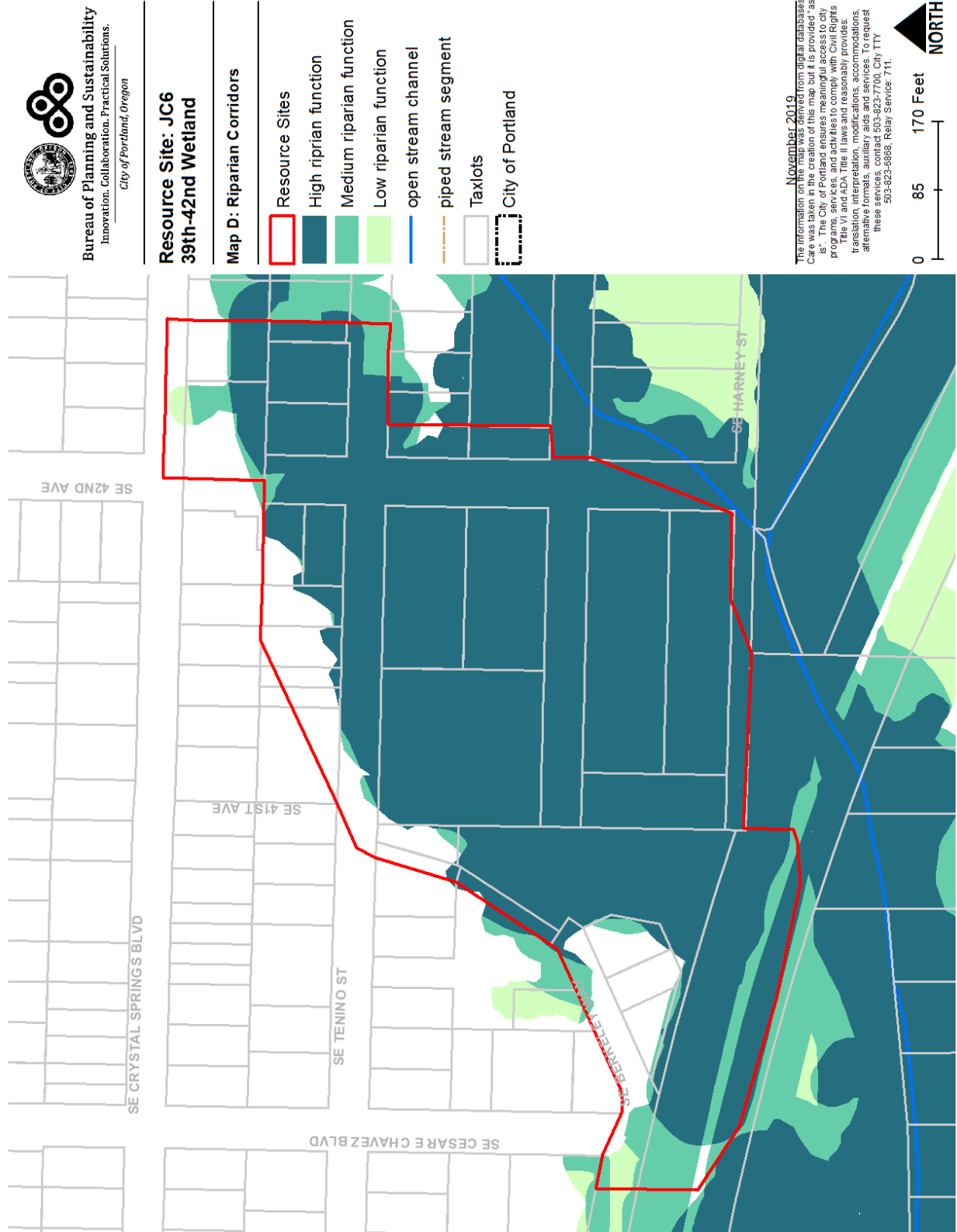
Table C: ESEE Decision for Resource Site JC6	
ESEE Decision	Acres
Strictly Limit	6.5
Limit	1.9
Allow	1.4

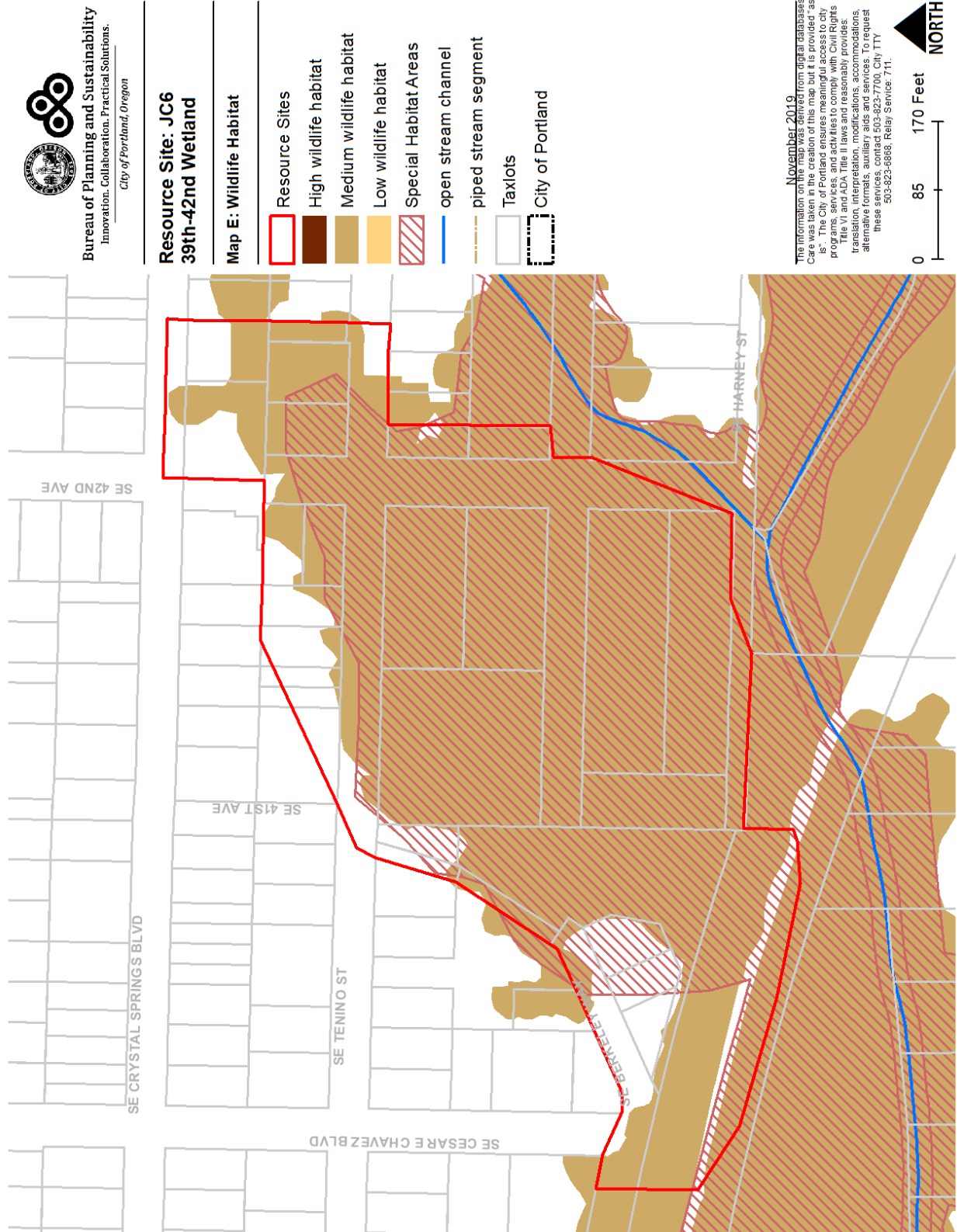


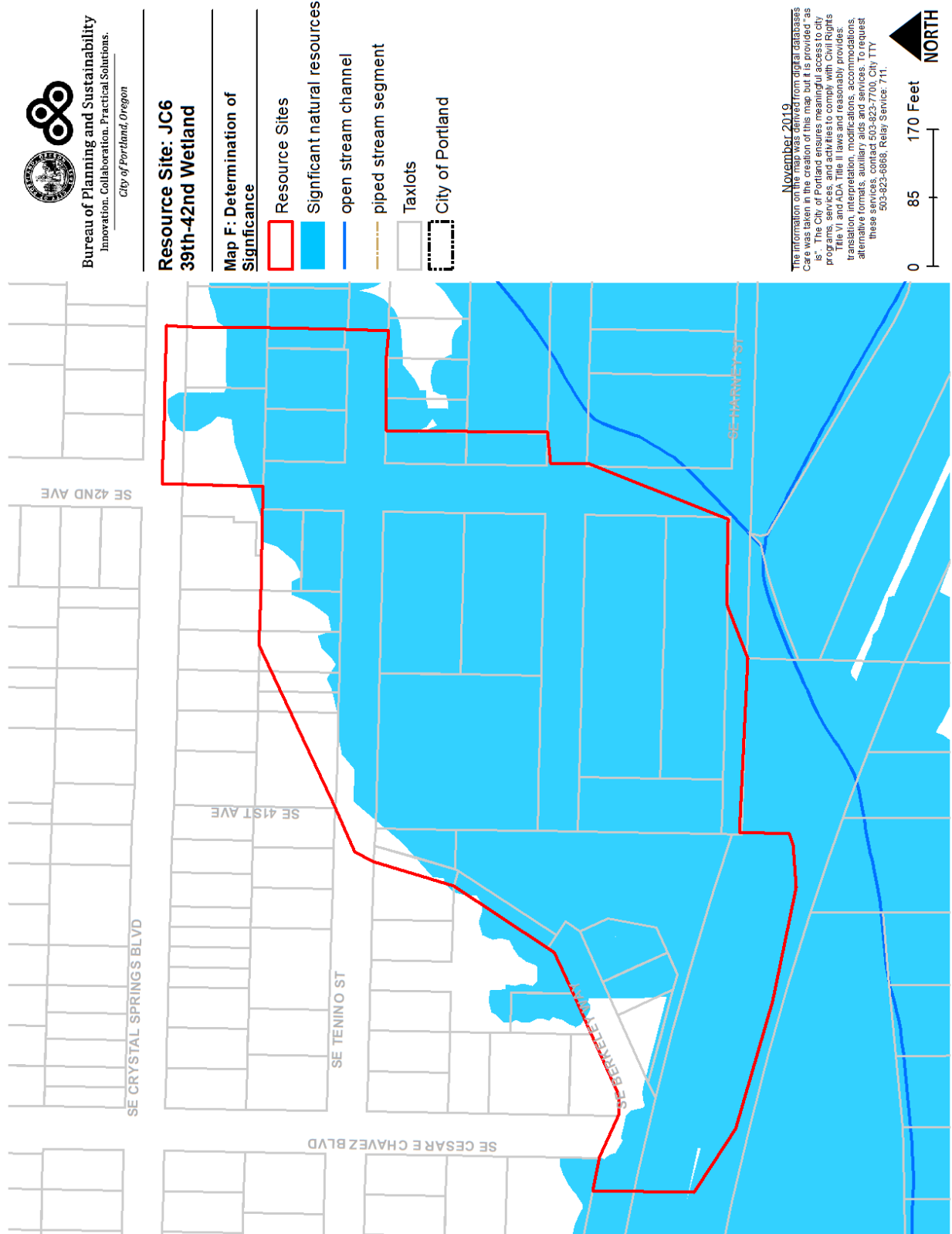


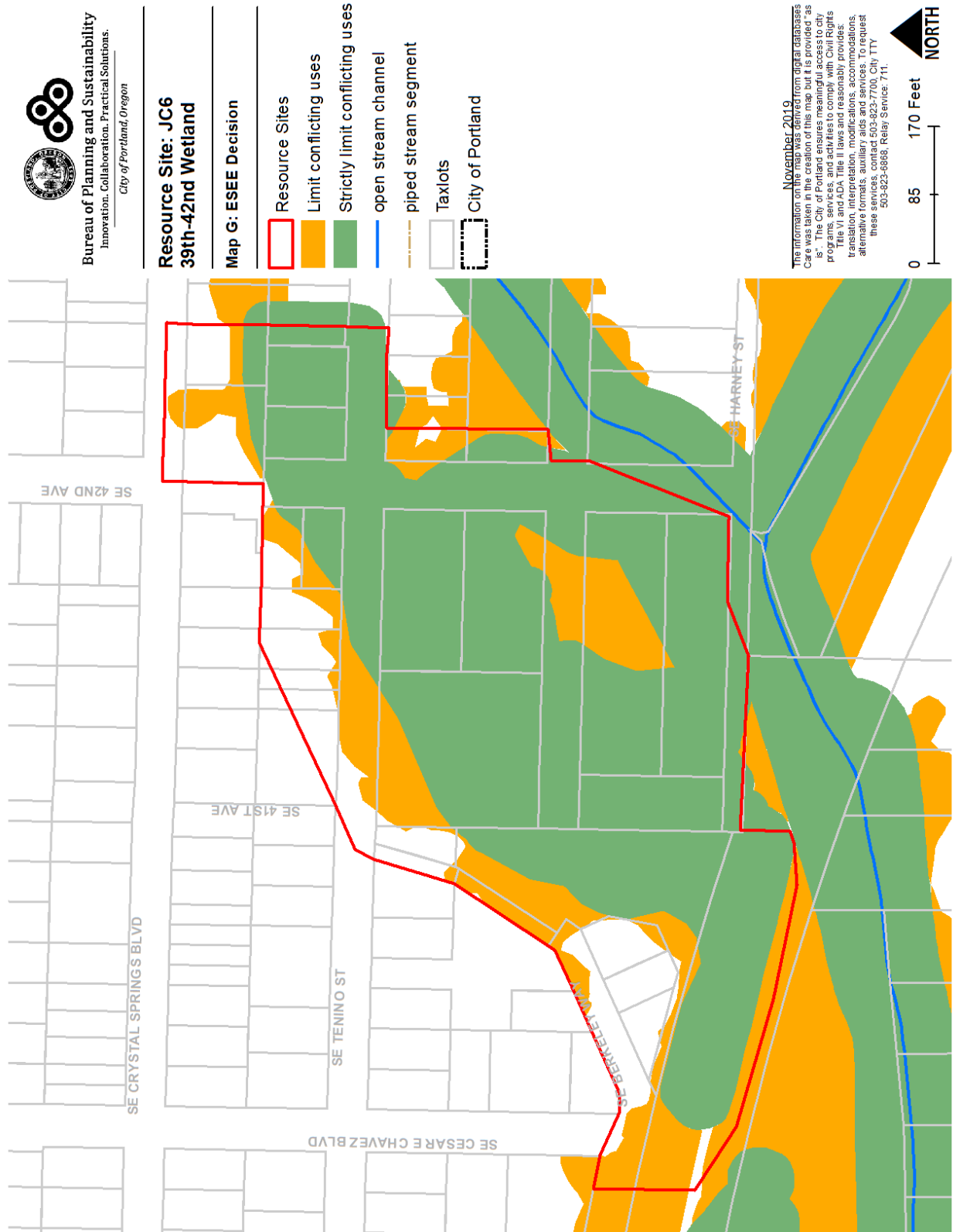














**Resource Site No.: JC7    Resource Site Name: WPA Fish Ladder Unit**  
**Previous Plan: Johnson Creek Basin Protection Plan    Previous Resource Site No.: 7**





## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC7	
	Study Area
<b>Stream (Miles)</b>	0.9
<b>Wetlands (acres)</b>	8.1
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	54.8
Forest (acres)	32.0
Woodland (acres)	4.7
Shrubland (acres)	9.9
Herbaceous (acres)	8.2
<b>Flood Area*</b>	26.0
Vegetated (acres)	11.3
Non-vegetated (acres)	14.8
<b>Steep Slopes (acres)**</b>	30.4
<b>Impervious Surface (acres)</b>	33.9
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

The resource site includes low density single-family residential development and commercial and industrial development. Johnson Creek divides just west of the SE 45th Avenue bridge, forming an island which makes up much of the site. Access is by a small bridge on SE Harney Street. Residential neighborhoods are located to the north and west, while commercial and industrial activities are to the east and south.

More than half of the site area is developed, while the remainder is creek and bank, wetlands, and slopes along the northern portion of the site which separate it from the neighborhood to the north.

An oxbow at this section of the creek was created by the WPA in the 1930's. The WPA also built a fish ladder, rock bridge, and waterfall. This stretch of the creek provides moderate to high wildlife habitat value. The water is usually shallow and slow moving through the oxbow. Portions of the creek bed adjacent to the oxbow have been riprapped. There are large pieces of concrete in the creek. The tree canopy is approximately 60% closed, dominated by alder and cottonwood. Shrub and herb canopies are denser, about 90% closed with willow and hawthorn. The ground cover consists primarily of the non-native species of reed canary grass, blackberry, and tansy. There is one large snag within the site that is being used by downy woodpecker and red breasted nuthatch.

The fish ladder and waterfall attract human visitation, resulting in garbage and broken glass scattered throughout the site. The site is also being used for yard debris disposal. The vegetated riparian areas is approximately 30-feet wide with good shading over the creek. There are some fish holes and the creek is well shaded, regulating the water temperature, enhancing the habitat for fish, and other aquatic species. Riprapping, steep banks, garbage, yard debris, and human use lessen the wildlife habitat use of this stretch of the creek. Interspersion is good, linking the adjacent wetland and Tideman Johnson Park.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC7</b>				
<b>Resource Site (acres) = 125.950691</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	29.9	10.2	27.0	67.1
percent total inventory site area	23.7%	8.1%	21.4%	53.3%
<b>Wildlife Habitat*</b>				
acres	0.0	38.2	0.0	38.2
percent total inventory site area	0.0%	30.3%	0.0%	30.3%
<b>Special Habitat Areas**</b>				
acres				32.9
percent total inventory site area				26.1%
<b>Combined Total<sup>+</sup></b>				
acres	40.6	8.8	18.5	67.8
percent total inventory site area	32.2%	7.0%	14.7%	53.9%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC7 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status plant and fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10, R5 and R2 base zones. Industrial uses are allowed in the IG1 base zone. Commercial uses are allowed in the CE base zone. Open Space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC7, with the following additional information that clarifies the analysis.

There is a large area of flood area and multiple large wetlands that provide stormwater management and flood control for the surrounding properties. The stream, wetlands and tree canopy also provide stormwater management, air cooling and wildlife habitat. The natural resource in close proximity to homes provides access to nature. There are also large industrial properties that provide employment opportunities.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Clustering of new residential development away from significant natural resources would reduce the impacts on the functions. New or expanded commercial or industrial development should meet a minimum setback from Johnson Creek and wetlands. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

### ESEE Decisions

Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resource Site JC7 are:

1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 50 feet from stream top-of-bank, and areas of forest or woodland vegetation contiguous to but more than 30 feet from wetlands.
4. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
5. *Allow* conflicting uses within all other areas containing significant natural resources.

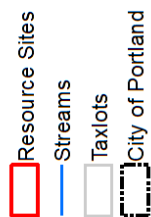
*Note – The ESEE decisions only apply within the city limits or in areas where Portland has planning authority. Portions of Resource Site JC7 are outside of Portland’s jurisdiction.*

Table C: ESEE Decision for Resource Site JC7	
ESEE Decision	Acres
Strictly Limit	23.5
Limit	19.2
Allow	83.2



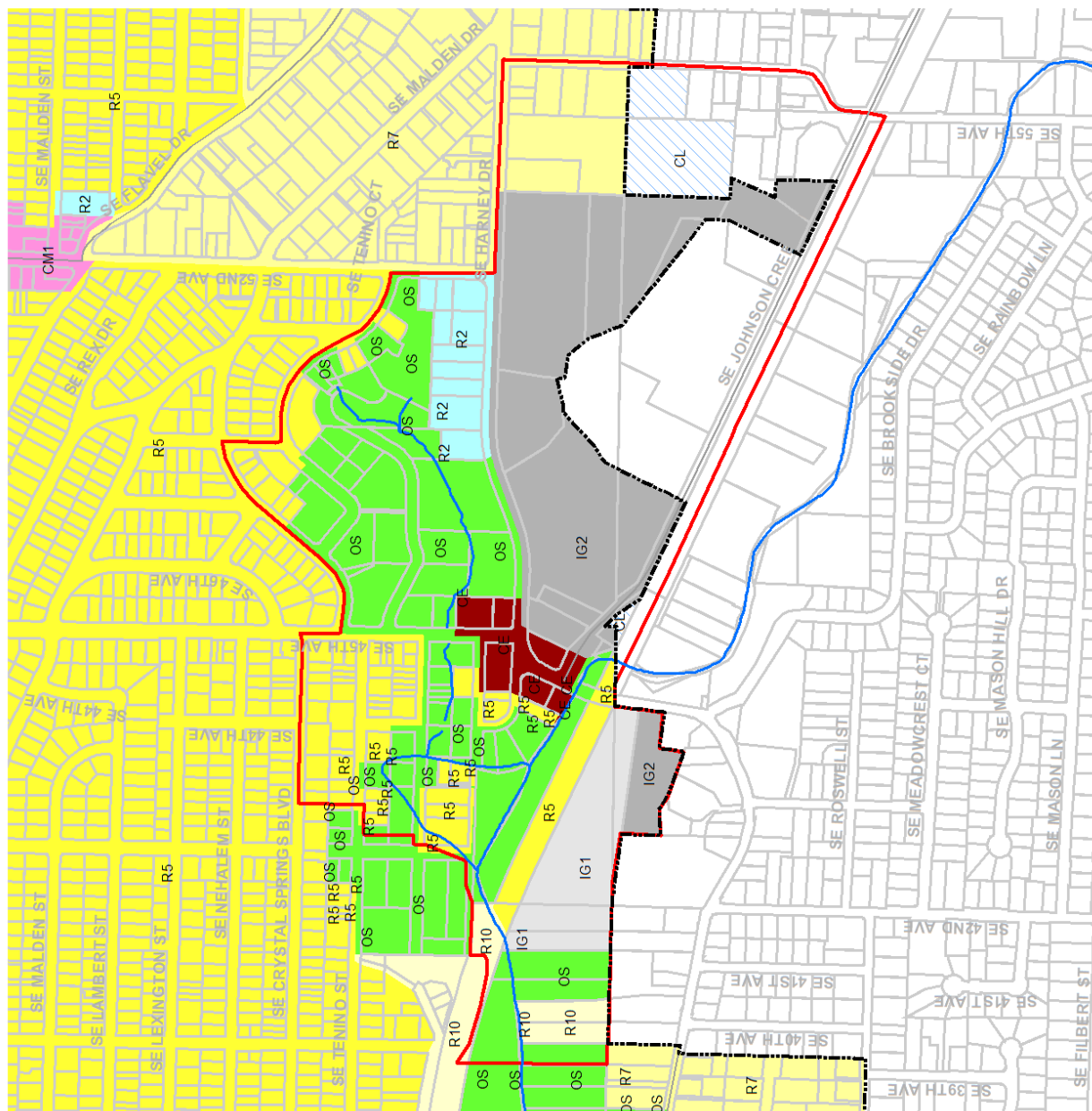
**Resource Site: JC7  
WPA Fish Ladder Unit**

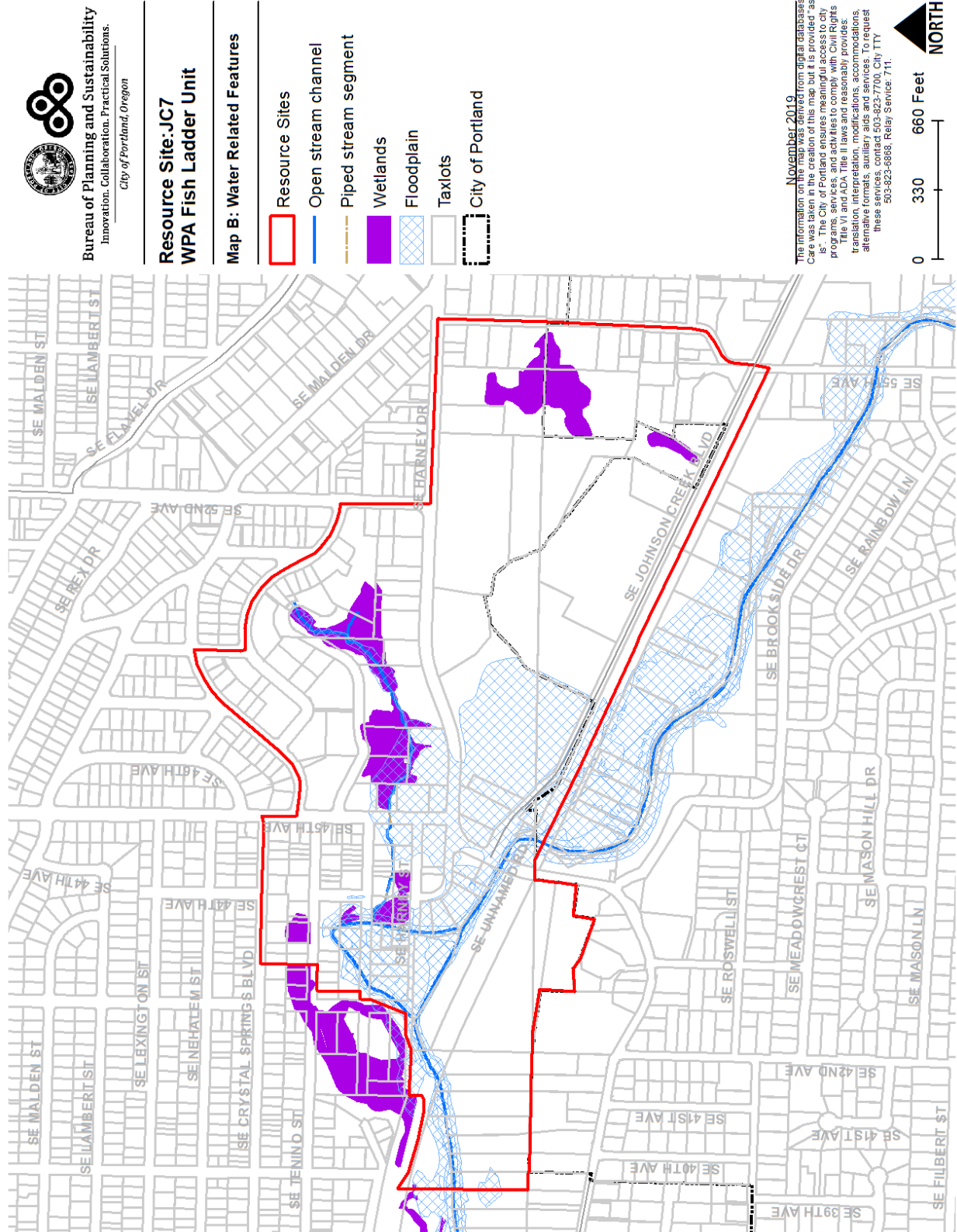
### Map A: Base Zones



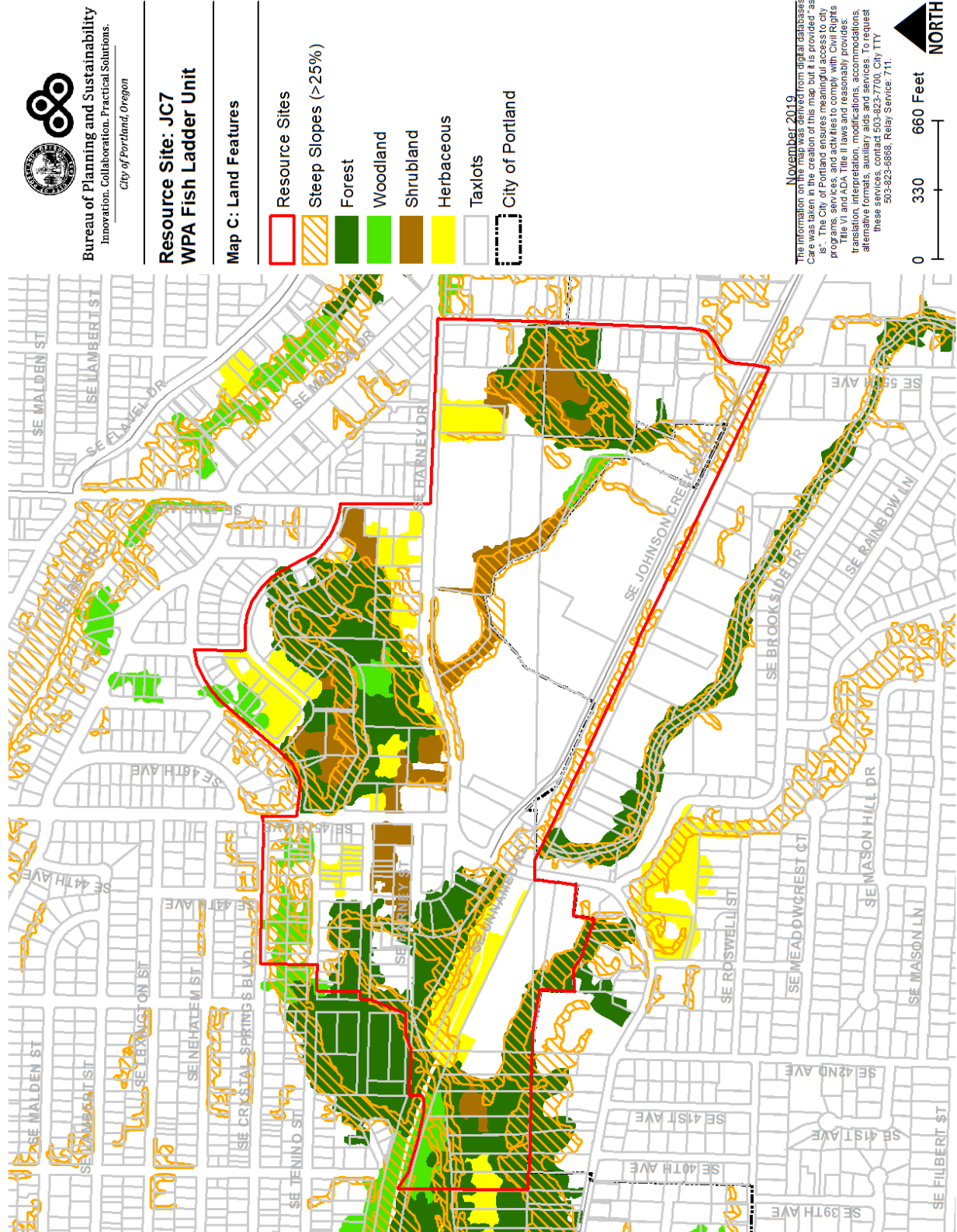
**November 2019**

The information on the map was derived from digital databases. Care was taken in the creation of this map, but it is provided "as is." The City of Portland ensures meaningful access to city services. Title VI and ADA Title II laws and regulations provide rights protection. The City of Portland provides accommodations, translation, interpretation, modifications and services. To request alternative formats, auxiliary aids and services, visit TTY: 503-823-6868, Relay Service: 711.

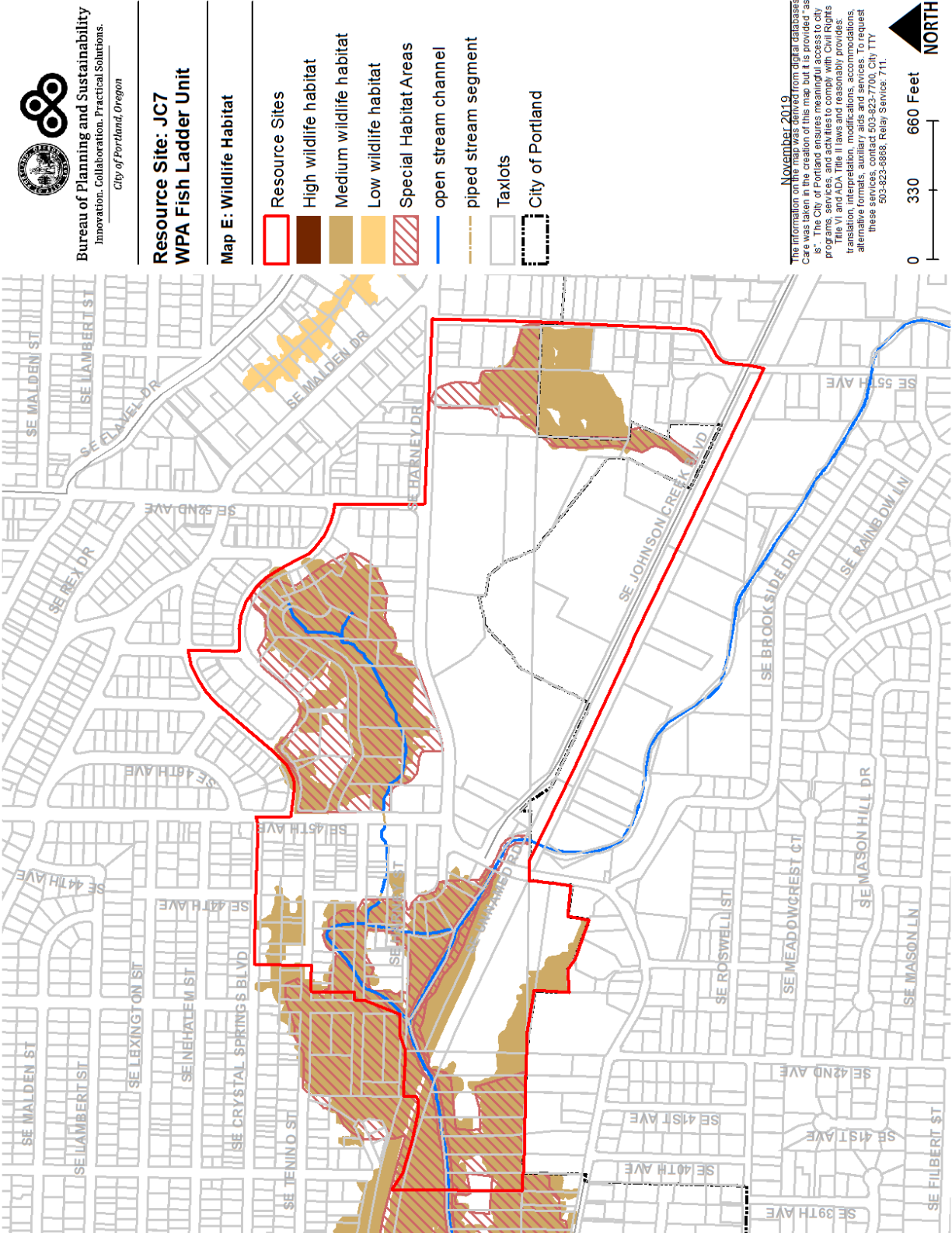


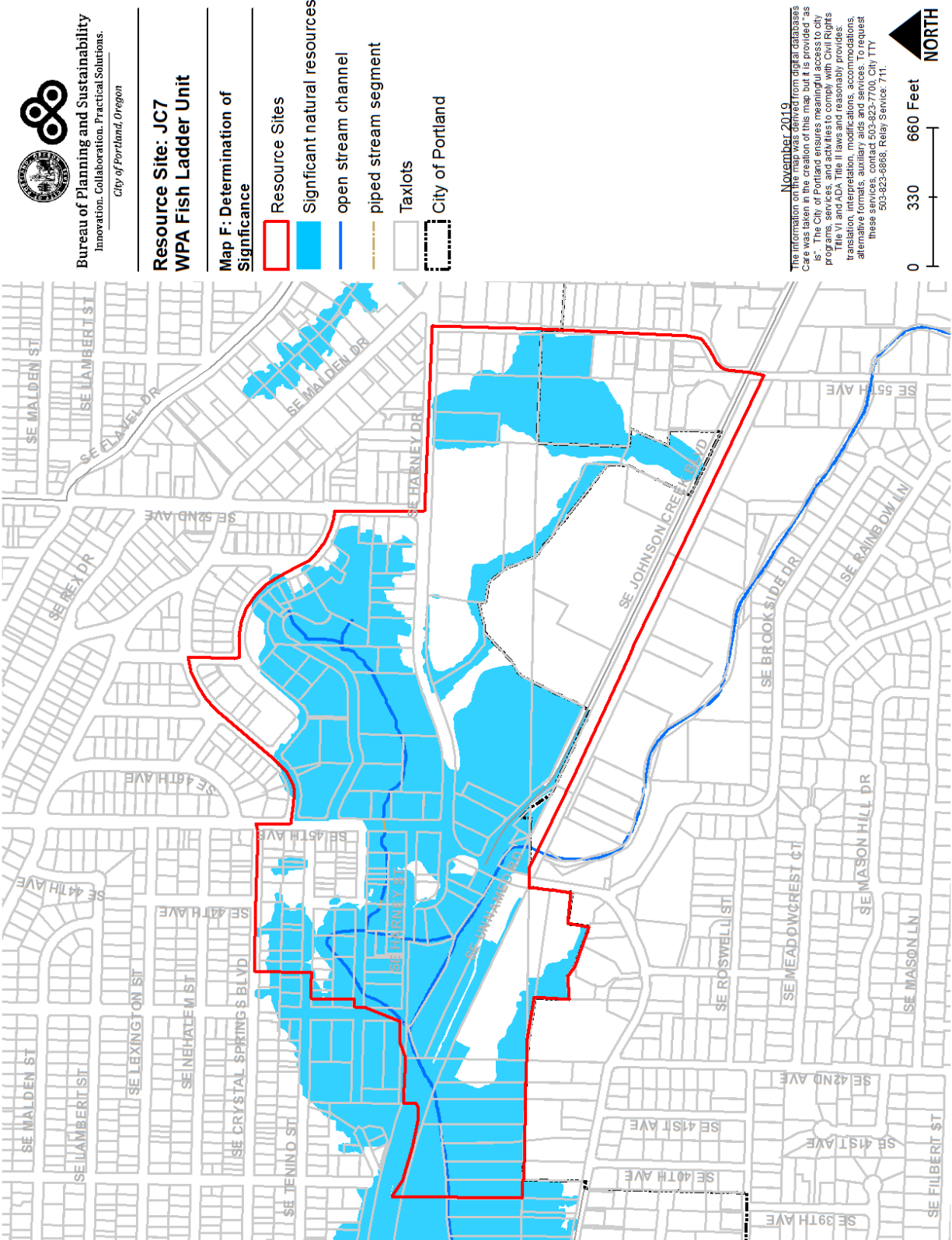




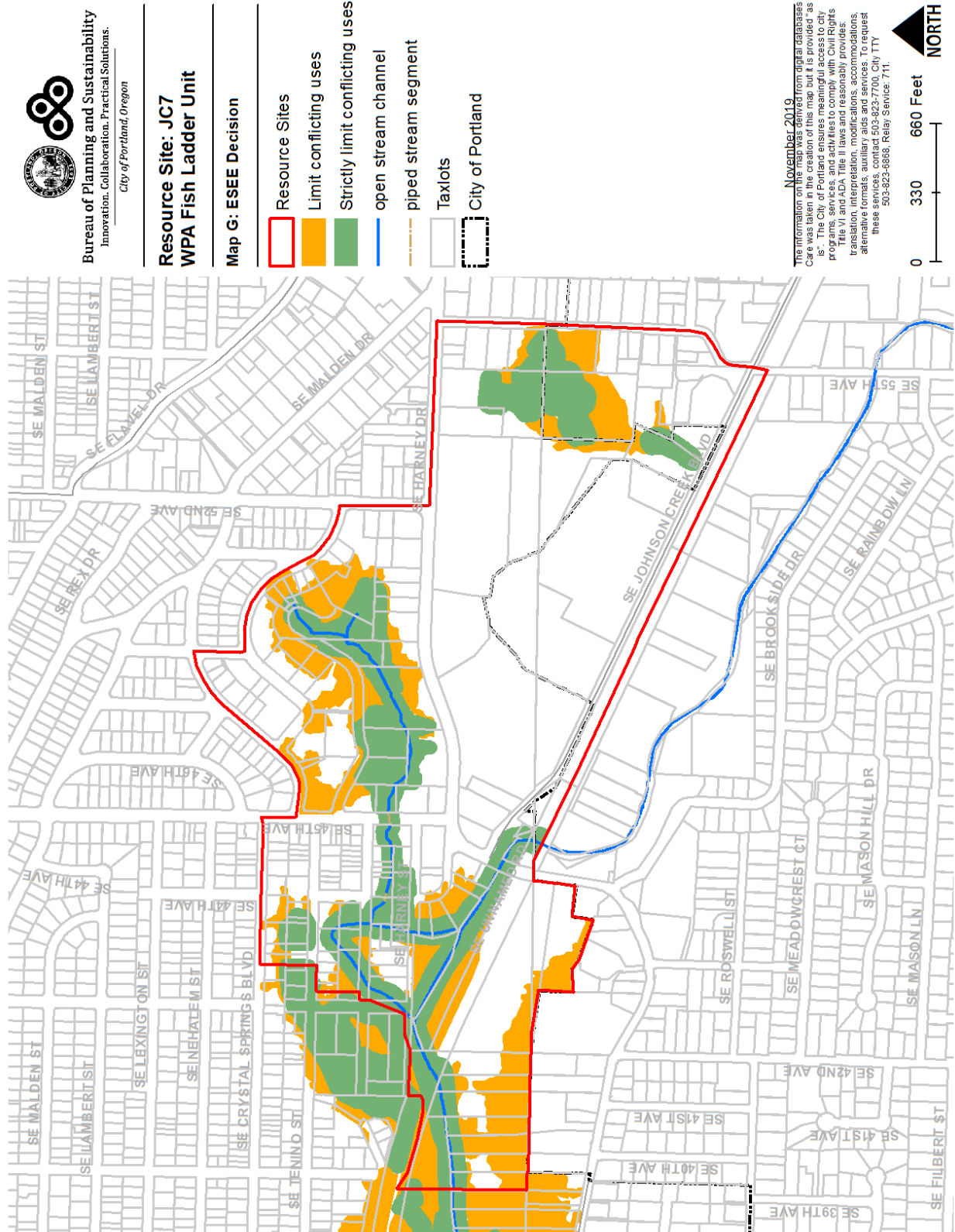












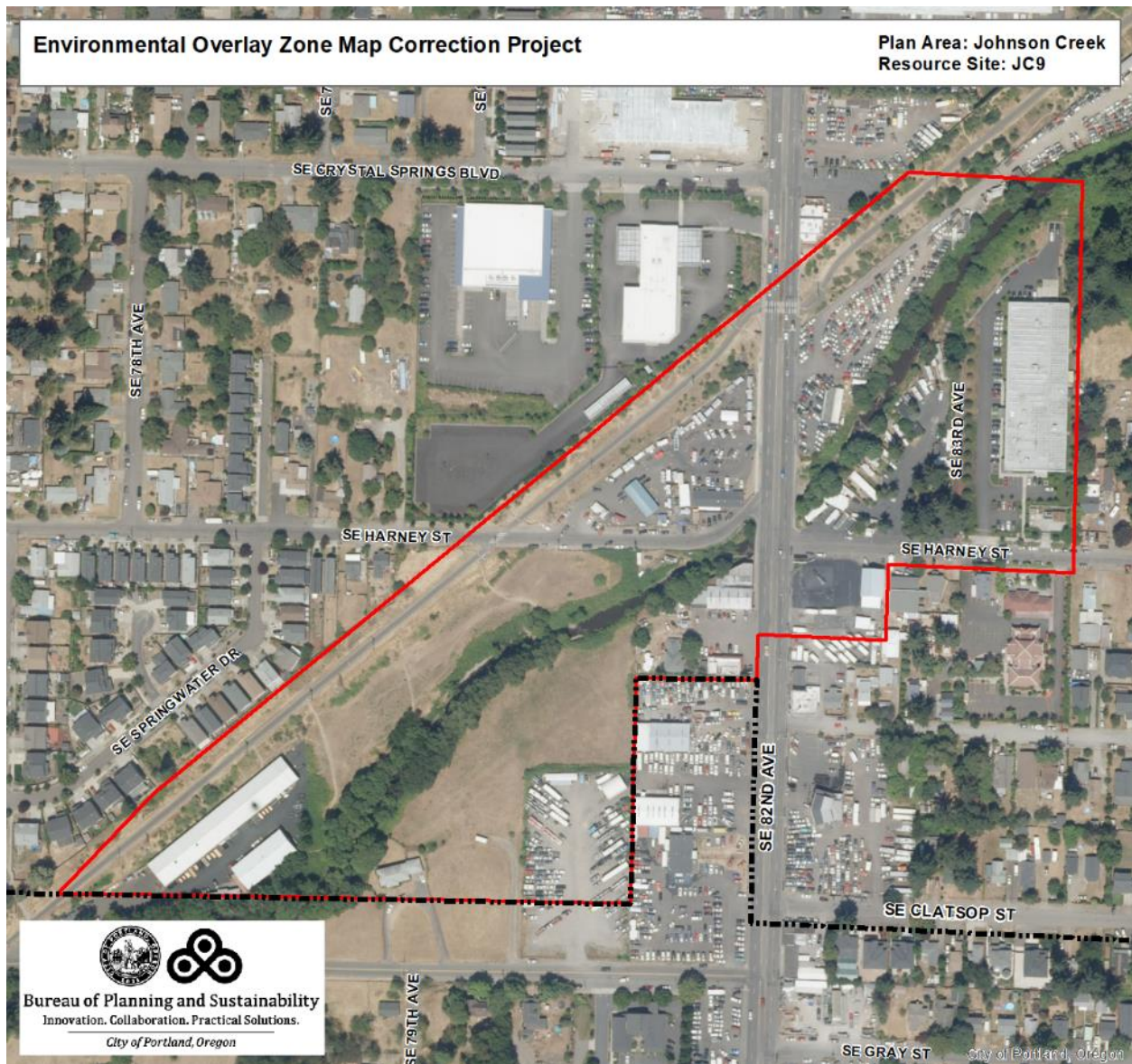
**Resource Site No.: JC8    Resource Site Name: Outside City/USB Limits**

**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resource Site No.:** 8

This resource site was included in the Johnson Creek Basin Protection Plan but is located outside City of Portland's city limits and urban service boundary. The City of Portland has no planning authority over the land and water in this resource site. Therefore, the resource site is being eliminated from the Ezone Map Correction Project. If, in the future the land and water is added to the urban service boundary or annexed into the City of Portland, a new inventory, ESEE analysis and ESEE decision should be done for the area based on existing conditions at that time.



**Resource Site No.:** JC9    **Resource Site Name:** 77<sup>th</sup> – 85<sup>th</sup> Ave. Unit  
**Previous Plan:** Johnson Creek Basin Protection Plan    **Previous Resource Site No.:** 9/10



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site		JC9
		Study Area
<b>Stream (Miles)</b>		0.7
<b>Wetlands (acres)</b>		0.0
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>		11.4
Forest (acres)		0.0
Woodland (acres)		1.5
Shrubland (acres)		0.0
Herbaceous (acres)		9.9
<b>Flood Area*</b>		3.1
Vegetated (acres)		2.7
Non-vegetated (acres)		0.4
<b>Steep Slopes (acres)**</b>		4.9
<b>Impervious Surface (acres)</b>		4.7
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.		
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.		

This stretch of Johnson Creek has a very steep, 1: 1 riprapped slope. Where present, the riparian, tree-covered strip is narrow, only about 10 feet wide, with some big leaf maple and willow. The primary ground cover is blackberry. The substrata is rocky with a lot of additional large garbage and debris. Bank erosion is problematic in the areas where the vegetation has been removed. There is little shading of the creek itself.

This site is, with the exception of the creek, in commercial, manufactured home park, and industrial use. The wildlife habitat quality of this stretch of the creek is limited by the removal of vegetation and development. A manufactured home park immediately adjacent to the south bank of the creek limits wildlife access to the creek. The homes are also partly in the flood area, increasing the risk to the structures. The steep banks are dominated by Himalayan blackberry and reed canarygrass growth. There is an abundance of garbage and grocery shopping carts throughout this stretch. The creek is exposed with little shade provided from the few scattered ash and big leaf maple trees. Remnants of an old bridge abutment still remain in the creek, acting as a garbage trap.

Properties abutting the creek are mostly paved, leaving an unpaved area of about 50-feet wide between each bank. The riparian vegetation is sparse. In its current condition, the primary resource is the creek itself. It serves as a travel corridor. The floodway, which occupies more than one-third of the site, represents a potential habitat area as redevelopment occurs. The floodway is over 200 feet wide across most of the site, widening to 470 feet at the eastern end. With the exception to a less than one-acre tract next to Hamey Street, the remainder of the ten-acre site is within the 100-year flood plain.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC9</b>				
<b>Resource Site (acres) = 23.572195</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	3.1	4.3	3.2	10.6
percent total inventory site area	13.1%	18.2%	13.7%	45.0%
<b>Wildlife Habitat*</b>				
acres	0.0	0.0	0.0	0.0
percent total inventory site area	0.0%	0.2%	0.0%	0.2%
<b>Special Habitat Areas**</b>				
acres				1.6
percent total inventory site area				6.7%
<b>Combined Total<sup>+</sup></b>				
acres	3.1	4.3	3.2	10.6
percent total inventory site area	13.2%	18.2%	13.7%	45.0%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC9 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; developed land within 50 feet of waterbodies; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the RMP base zone. Employment uses are allowed outright or conditionally in the EG2 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC9, with the following additional information that clarifies the analysis.

Much of the site is developed with warehouses and paved loading and storage areas. These uses provide an employment base in close proximity to residential areas. The manufactured home park is located along Johnson Creek and provide housing for lower income residents. But due to its location partially in the flood area, the residents are vulnerable to periodic flooding that could damage their property. New development could exacerbate the risk.

The riparian area around Johnson Creek has experienced significant tree removal but still provides functions including stormwater management and flood control. Resource enhancement in undeveloped areas around Johnson Creek would increase the social, environmental and energy benefits of the resources in the site. In particular, increasing flood capacity in undeveloped areas could reduce the risks to existing homes and businesses.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek, and maintaining the stormwater management and air-cooling functions of the tree canopy. Clustering

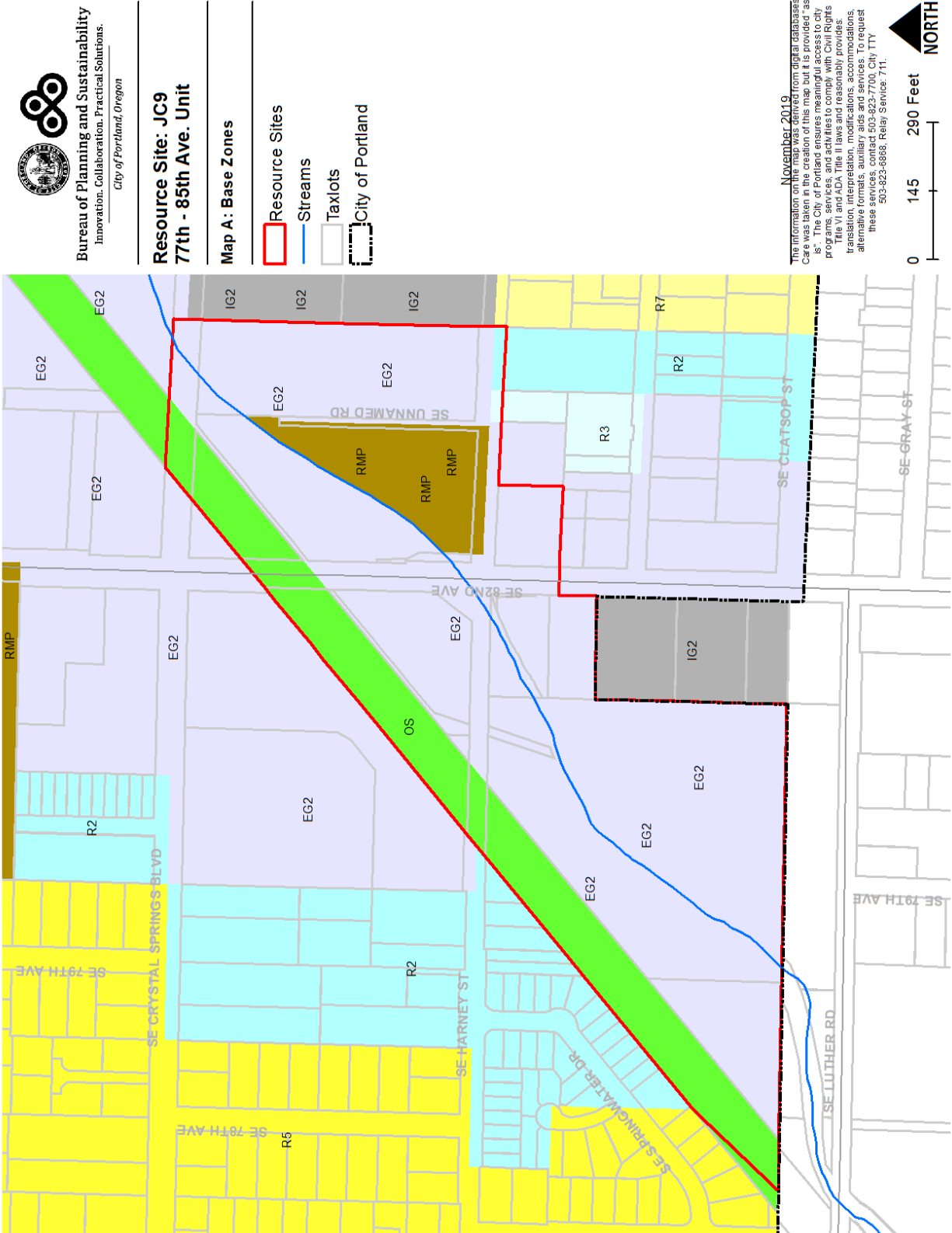
of new residential development away from significant natural resources would reduce the impacts on the functions and reduce risks to the structures. New or expanded employment or industrial development should meet a minimum setback from Johnson Creek. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

#### ESEE Decisions

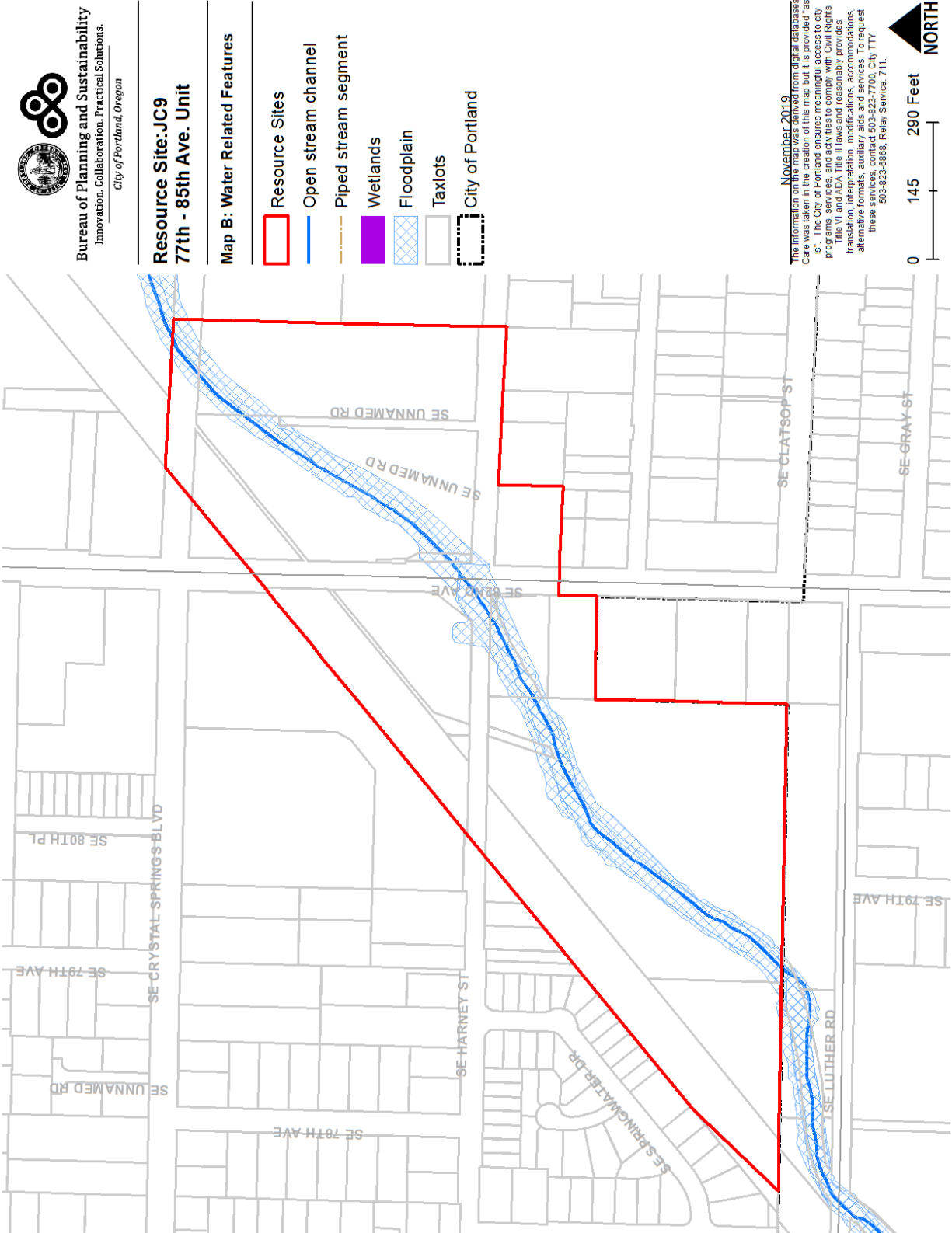
Based on the General ESEE and resource site-specific ESEE, the ESEE decisions for Resource Site JC9 are:

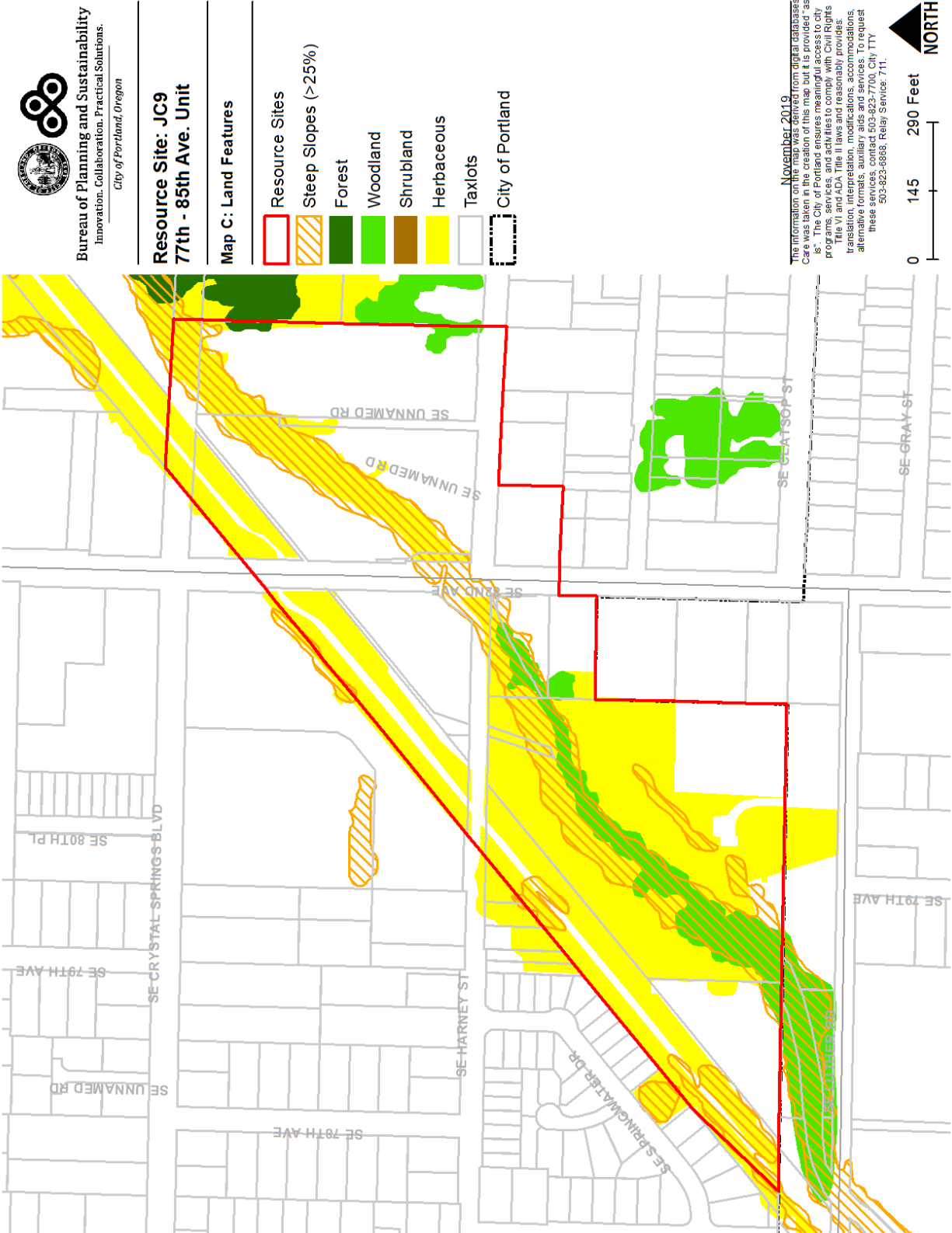
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within land between 50 and 75 feet of streams, land between 30 and 55 feet of wetlands,
4. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 75 feet from stream top-of-bank, and areas of forest or woodland vegetation contiguous to but more than 55 feet from wetlands.
5. *Allow* conflicting uses within all other areas containing significant natural resources.

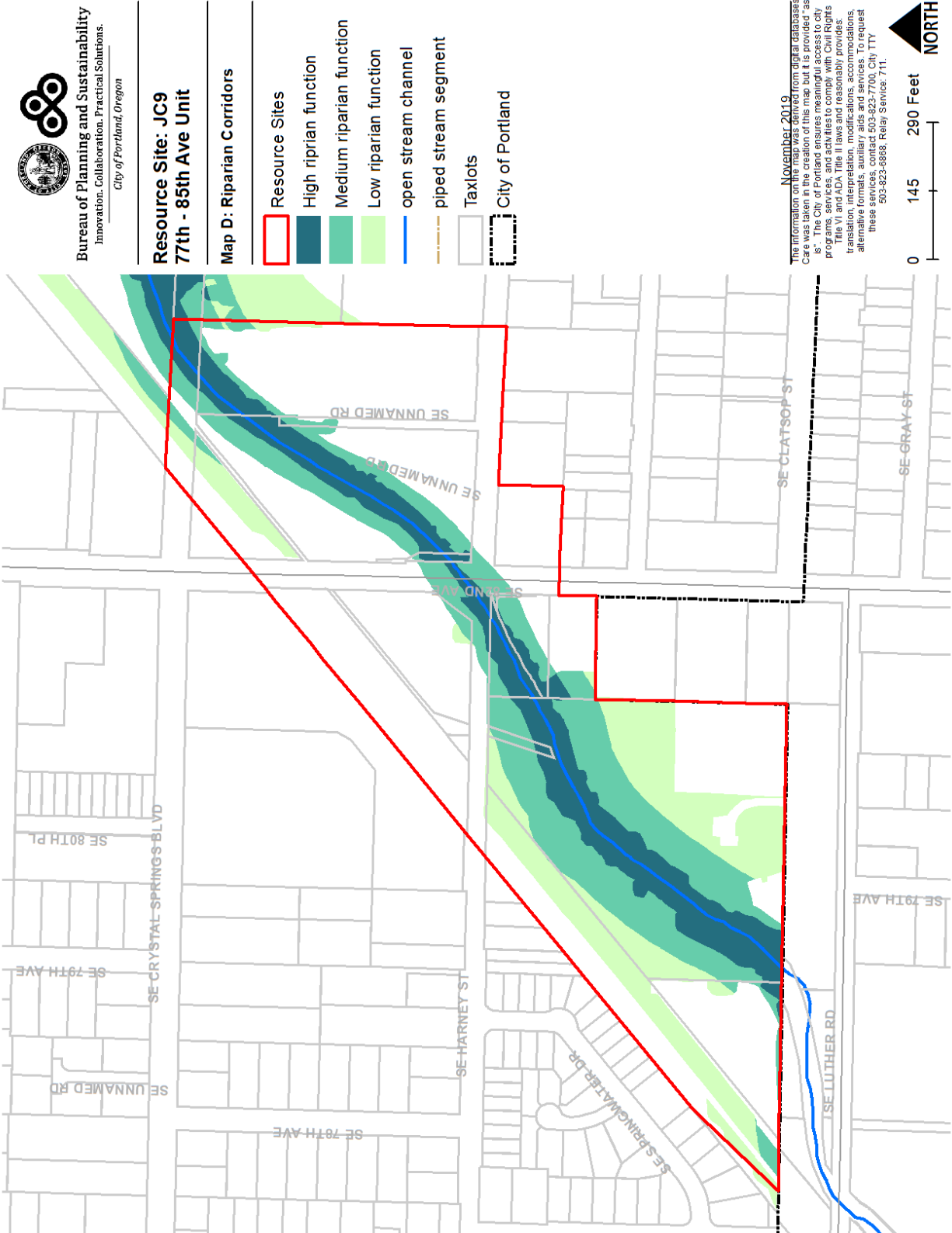
Table C: ESEE Decision for Resource Site JC9	
ESEE Decision	Acres
Strictly Limit	5.4
Limit	2.4
Allow	15.8

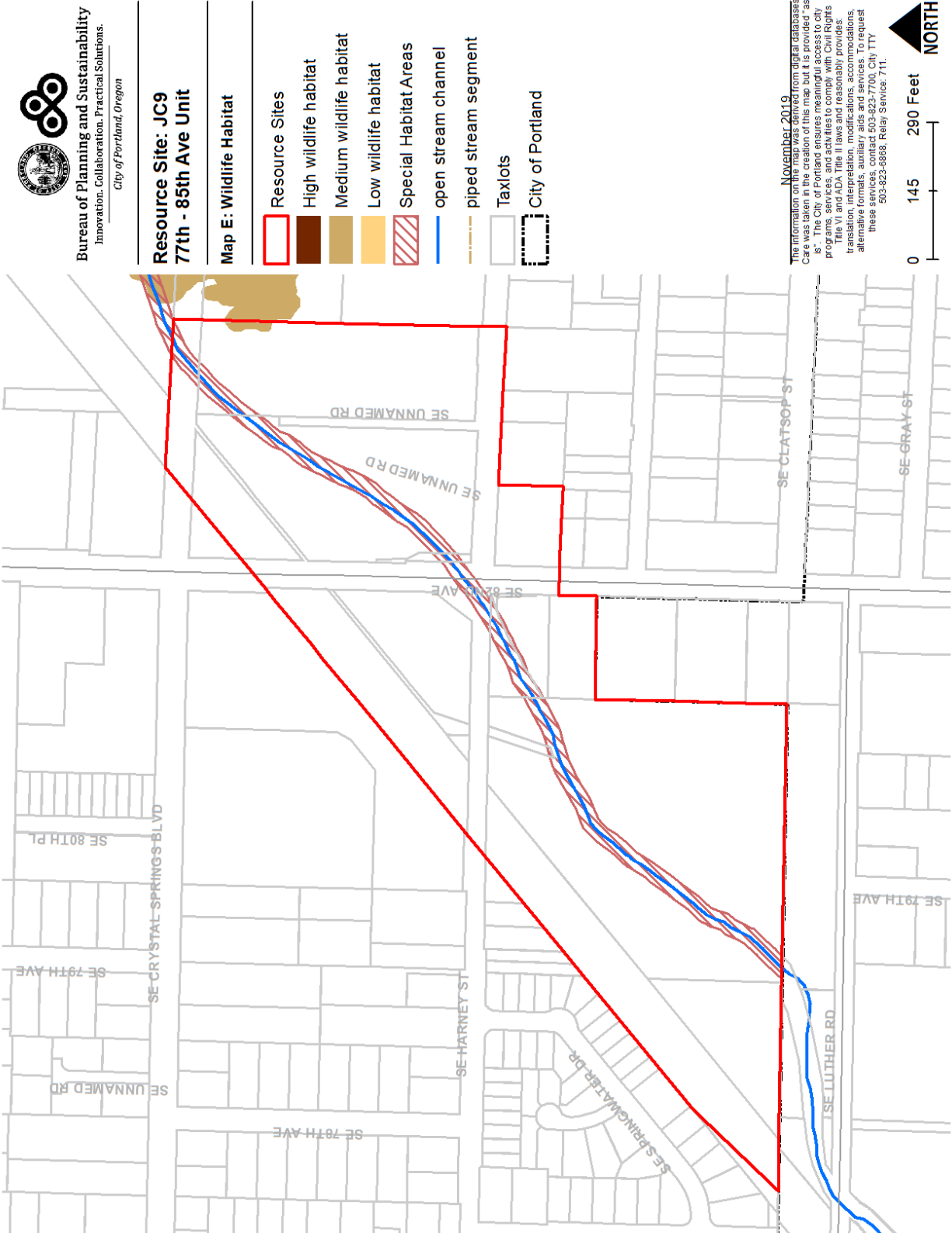


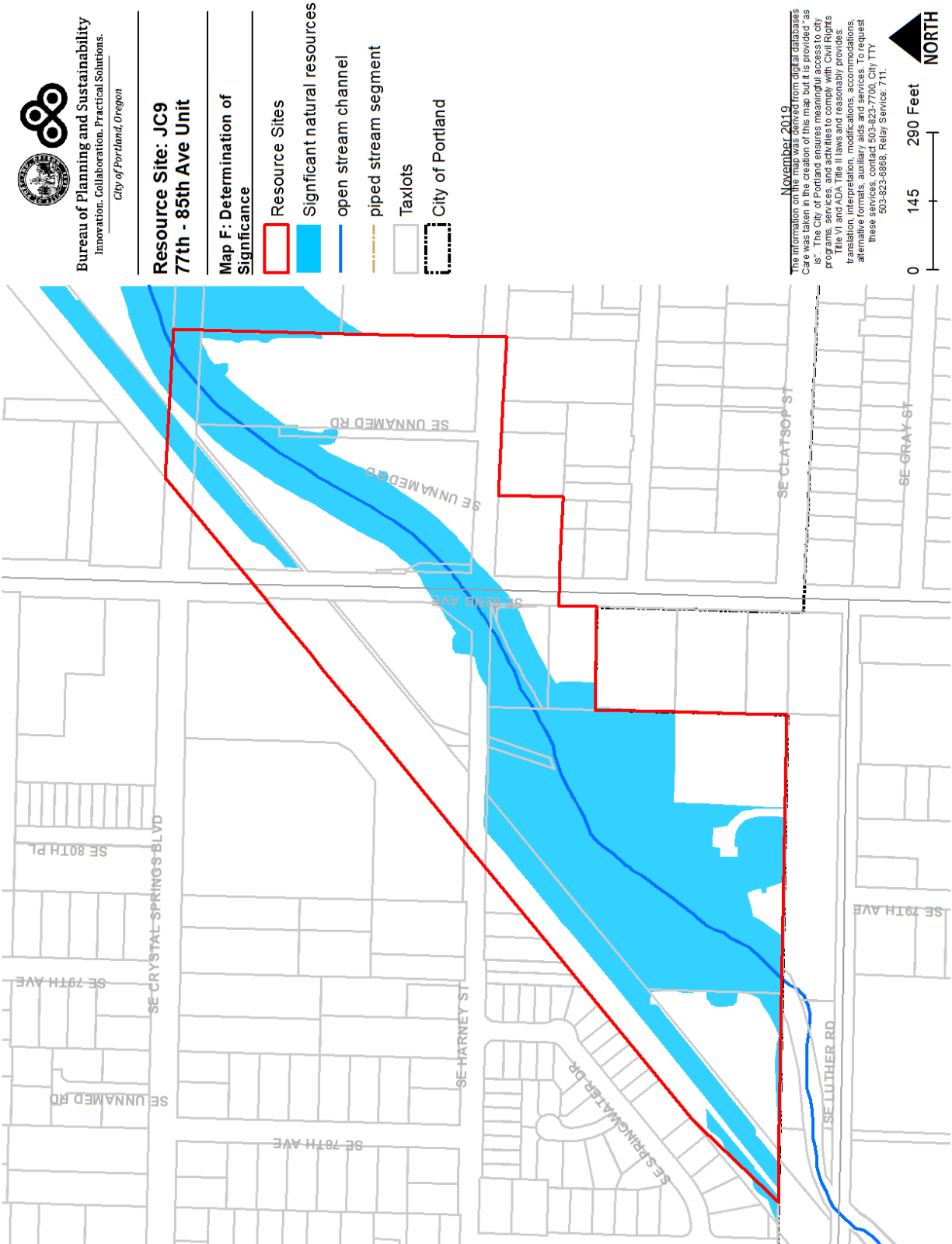


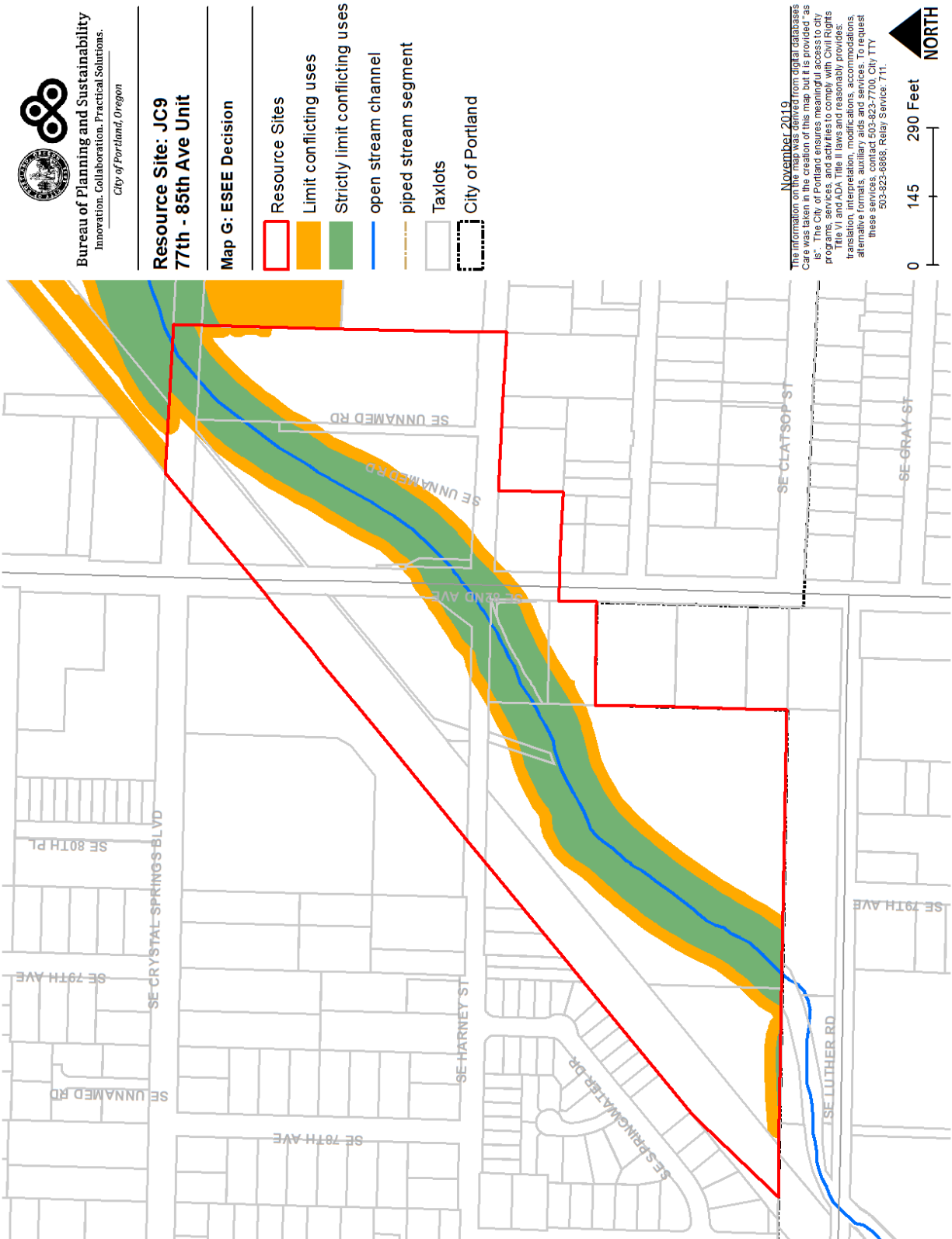














**Resource Site No.: JC10    Resource Site Name: West Lents Floodplain**  
**Previous Plan: Johnson Creek Basin Protection Plan    Previous Resource Site No. 11/12**



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC10	
	Study Area
<b>Stream (Miles)</b>	0.1
<b>Wetlands (acres)</b>	0.6
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	29.5
Forest (acres)	12.9
Woodland (acres)	2.2
Shrubland (acres)	0.8
Herbaceous (acres)	13.6
<b>Flood Area*</b>	27.2
Vegetated (acres)	20.9
Non-vegetated (acres)	6.3
<b>Steep Slopes (acres)**</b>	5.2
<b>Impervious Surface (acres)</b>	9.3
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

This is an unusual forested area, bordered on the east and south by single-family development, industrial and commercial activities on the west, and the Springwater Corridor on the north. Johnson Creek passes through it. Much of the site is within the flood area.

The forest has a 90% closed tree canopy, making it relatively dense. There are no other forested uplands near or adjacent the creek within several miles each side of this site. There are very few forests or woodlot pockets at the lower elevations on the east side of the City.

The rarity of a forested upland along Johnson Creek and on the east side of the City make this an important site. The forest is dominated by Douglas fir, red alder, and Bigleaf maple with a shrub layer of Oregon hazel, vine maple, and Himalayan blackberry. There is very little ground cover with large expanses of bare ground. The areas surrounding the forest is dense blackberry, making access to the site difficult. The trees and shrubs provide food for towhees, robin, black capped chickadees, kinglets and western wood peewees. The surrounding area is under-developed with large, half-acre parcels and a small 15-lot subdivision bordering the southeast corner of the forest. Use by domestic animals is high, which may limit use by wildlife species. Interspersion with other sites is gained by the adjacency of this forest to Johnson Creek.

Although the structural diversity of this forest has been decreased by the removal of much of the understory vegetation, the forest plays an important role in the Johnson Creek ecosystem by providing habitat for birds, mammals, and herptile species that require forested areas adjacent to the creek for cover, food, resting and breeding.

Outside of the creek corridor and forest, little resource is present. The steep banked section of Johnson Creek is vegetated by a closed canopy scrub, shrub-willow and blackberry community. The riparian strip is only about 10 feet wide in some areas. Interspersion with other areas is limited by the roads and interstate on all sides. There is a small island covered with reed canarygrass in the middle of the creek, providing potential nesting area for waterfowl. As the rest of Johnson Creek, this section functions as a travel corridor and water source for wildlife moving up and down the creek.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC10</b>				
<b>Resource Site (acres) = 48.174196</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	12.9	10.2	8.9	32.1
percent total inventory site area	26.8%	21.2%	18.5%	66.5%
<b>Wildlife Habitat*</b>				
acres	0.0	13.9	0.0	13.9
percent total inventory site area	0.0%	28.8%	0.0%	28.8%
<b>Special Habitat Areas**</b>				
acres				1.5
percent total inventory site area				3.2%
<b>Combined Total<sup>+</sup></b>				
acres	12.9	11.7	7.4	32.1
percent total inventory site area	26.8%	24.4%	15.3%	66.5%
* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water. ** Special Habitat Areas rank high for wildlife habitat. +Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC10 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of

waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## Resource Site Specific ESEE

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R7, R2 and RMP base zones. Industrial uses are allowed in the IG2 base zone. Employment uses are allowed in the EG2 base zone. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filling, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC10, with the following additional information that clarifies the analysis.

The large forested area is zoned for industrial uses but is currently undeveloped. While there is a lack of undeveloped industrial land in Portland to meet job growth projections, the value of this forest and flood area along Johnson Creek are critical for flow moderation, flood control, air-cooling and fish and wildlife habitat. Development should be strictly limited and mitigation for negative consequences of development should be required.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek

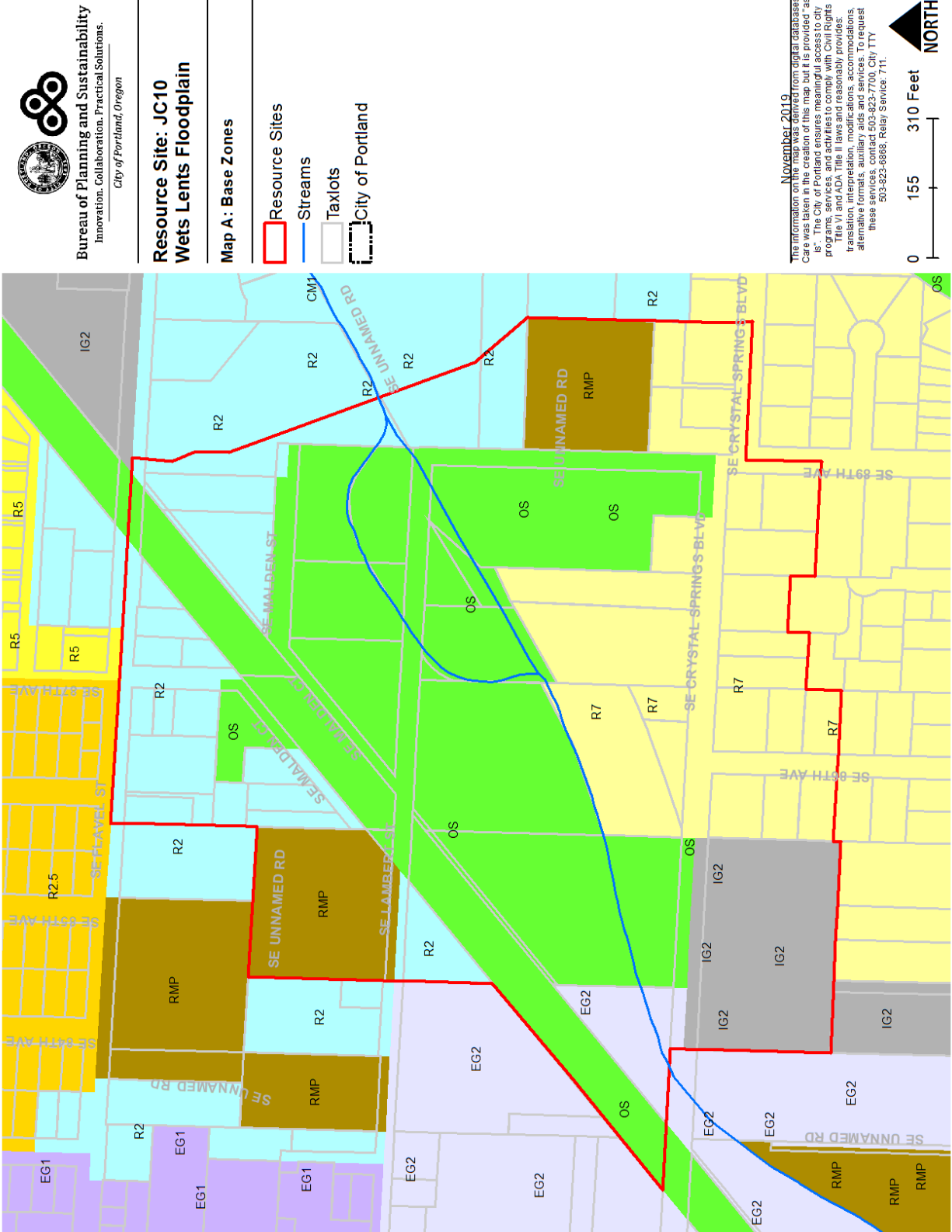
and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Clustering of new residential development away from significant natural resources would reduce the impacts on the functions. New or expanded commercial or industrial development should meet a minimum setback from Johnson Creek and wetlands. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

#### ESEE Decisions

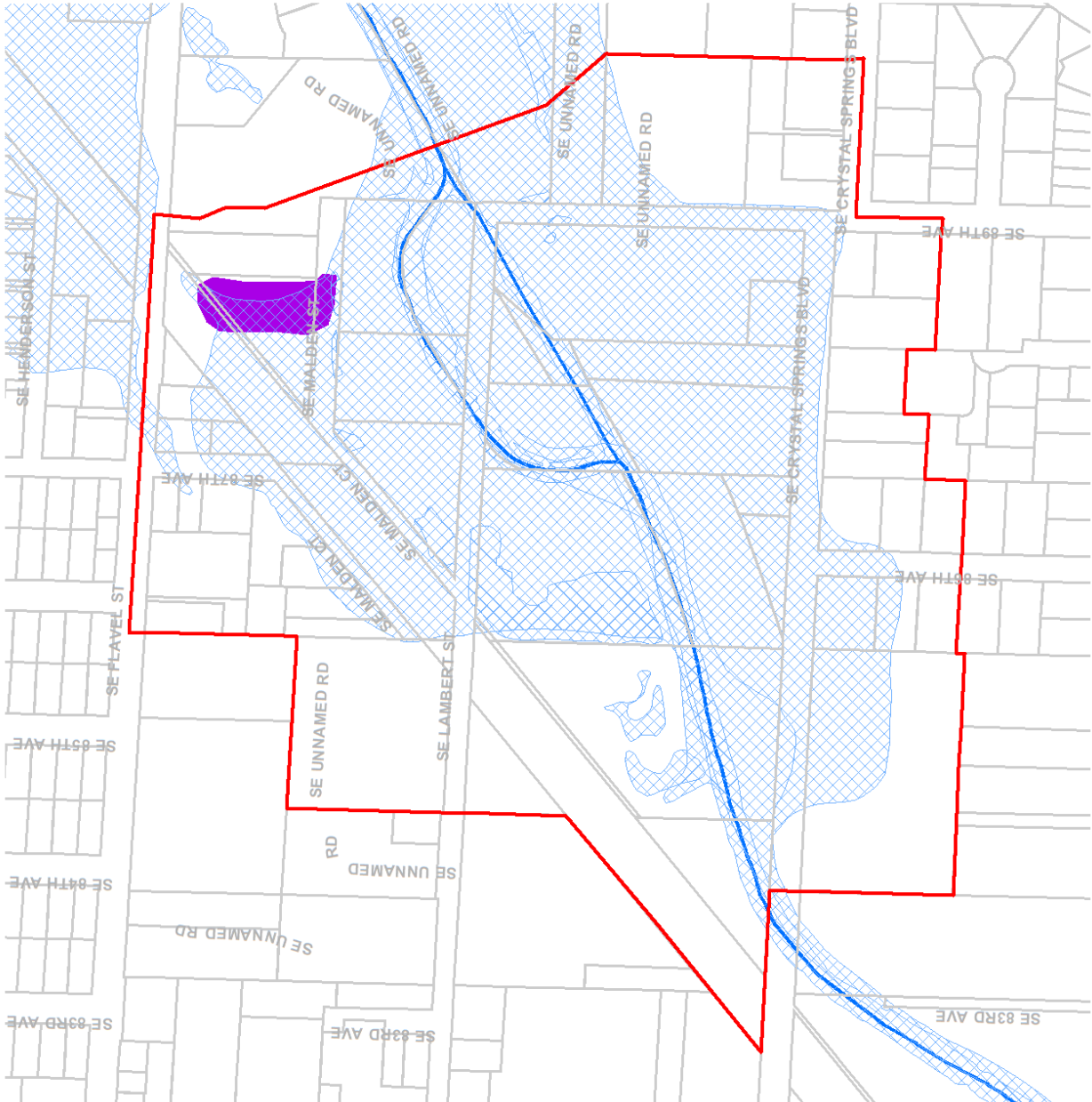
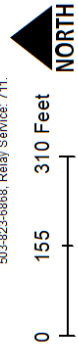
Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resource Site JC10 are:

1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 100 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Strictly limit* conflicting uses on areas of taxlot 1S2E21CA 2700 where previous unmitigated violations of environmental zoning occurred within the protection zone, including the unpermitted construction of new paved surfaces and buildings, and the unpermitted operation of a vehicle wrecking business.
4. *Strictly limit* conflicting uses on the island between two arms of Johnson Creek.
5. *Limit* conflicting uses within land between 100 and 125 feet of stream top-of-bank, land between 30 and 55 feet of wetlands,
6. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 125 feet from stream top-of-bank, areas of forest or woodland vegetation contiguous to but more than 55 feet from wetlands,
7. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
8. *Limit* conflicting uses within areas of shrubland or herbaceous vegetation within public parks and areas of forest, woodland, shrubland or herbaceous vegetation contiguous to but outside of public parks.
9. *Allow* conflicting uses within all other areas containing significant natural resources.

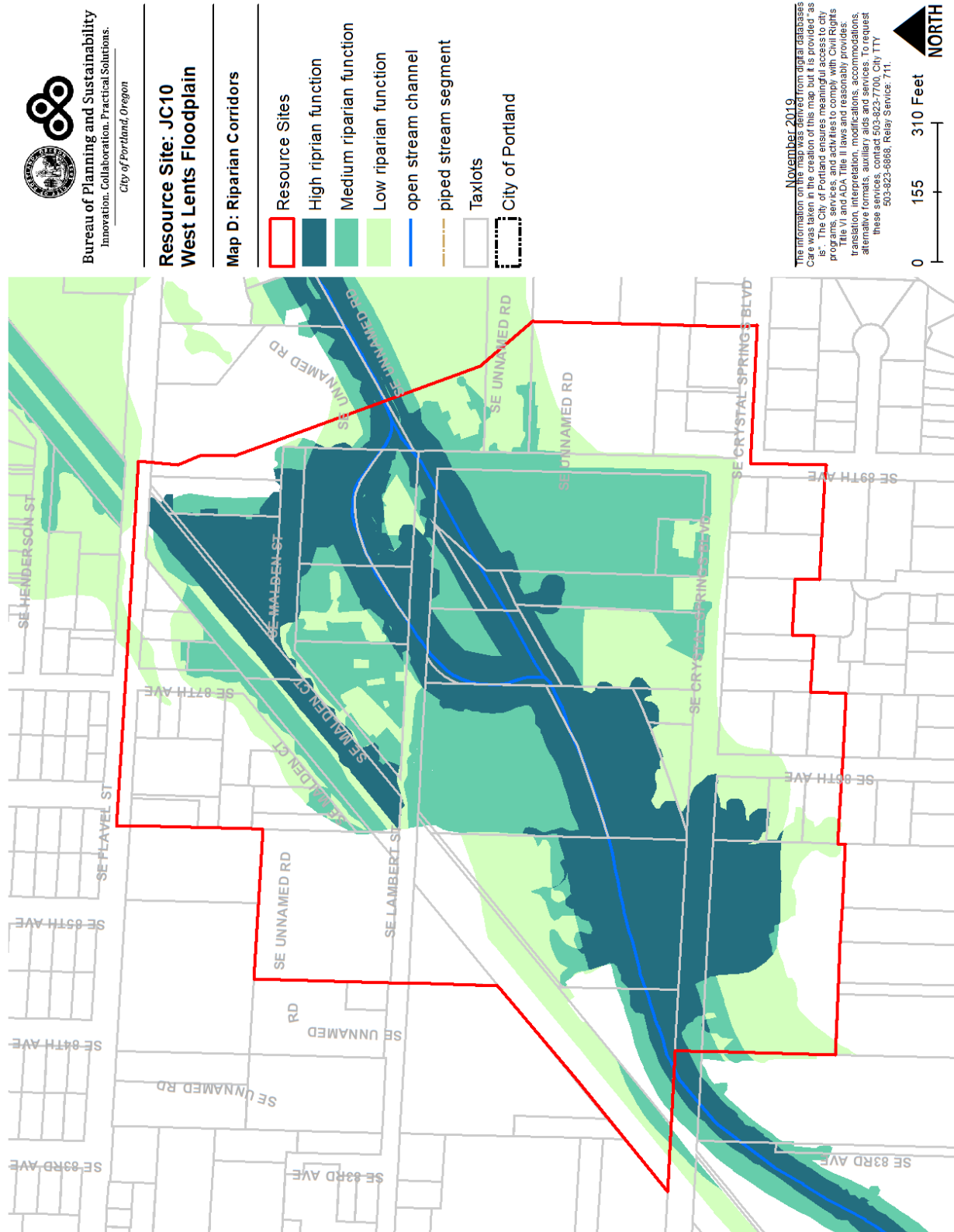
Table C: ESEE Decision for Resource Site JC10	
ESEE Decision	Acres
Strictly Limit	12.9
Limit	14.1
Allow	21.3

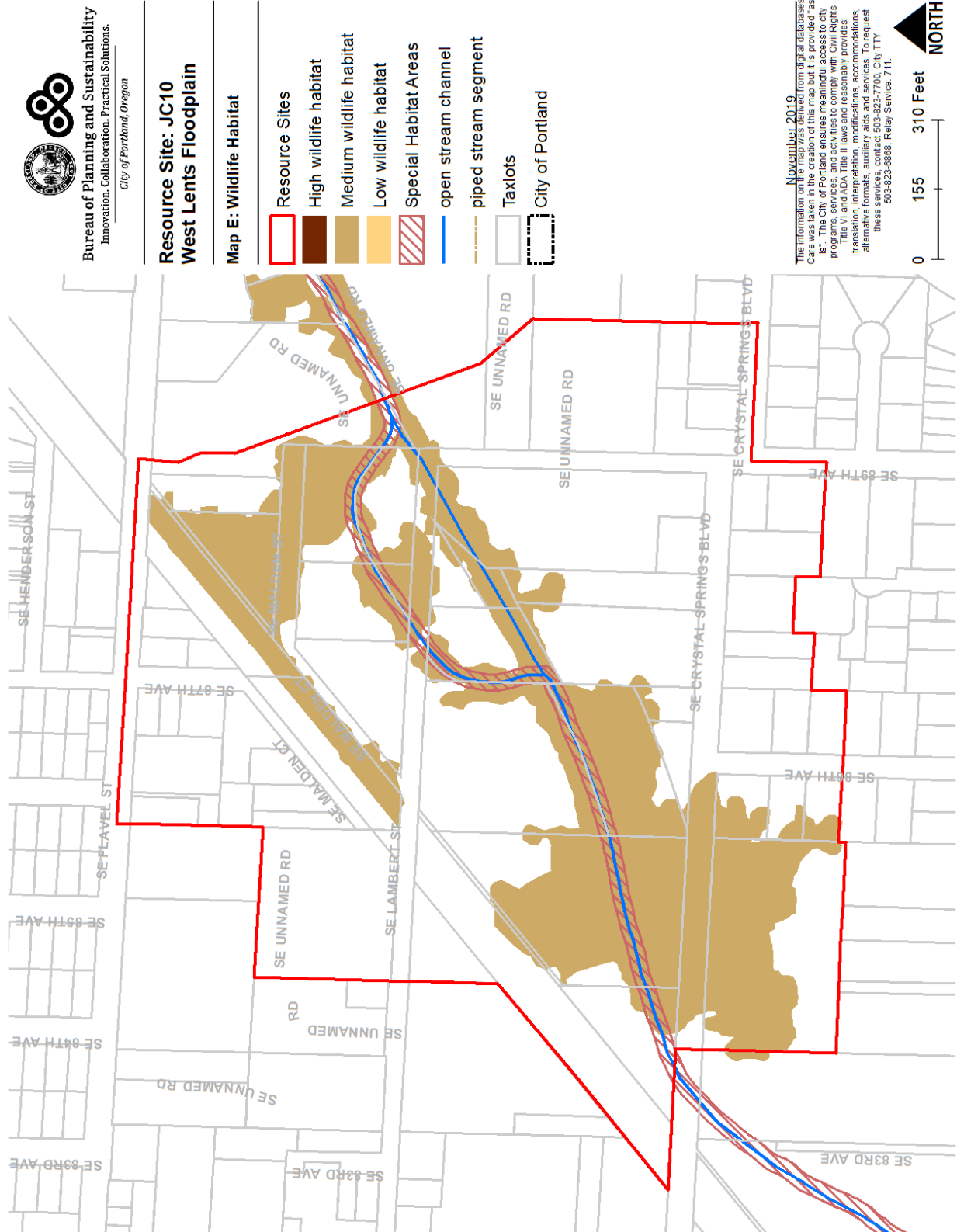


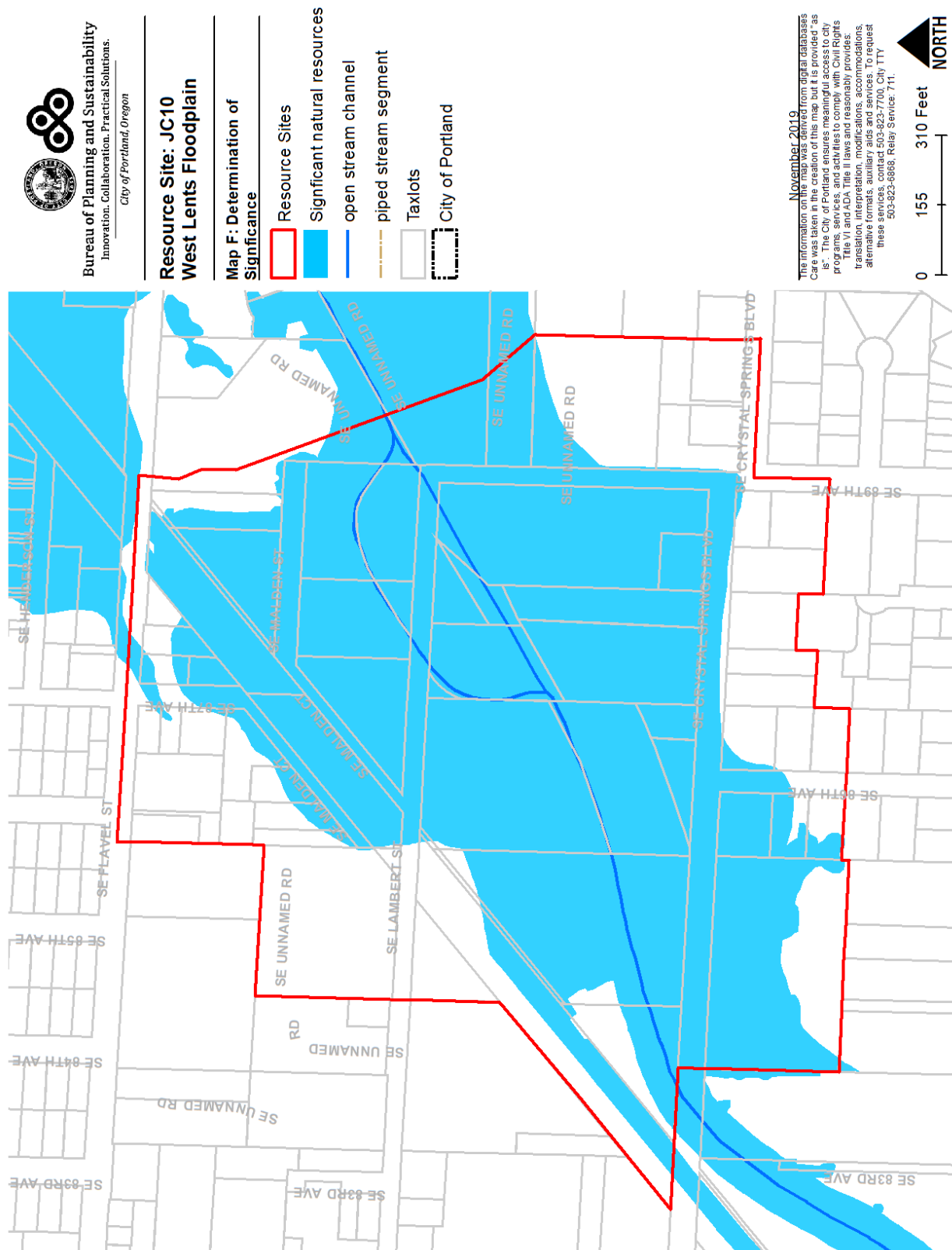


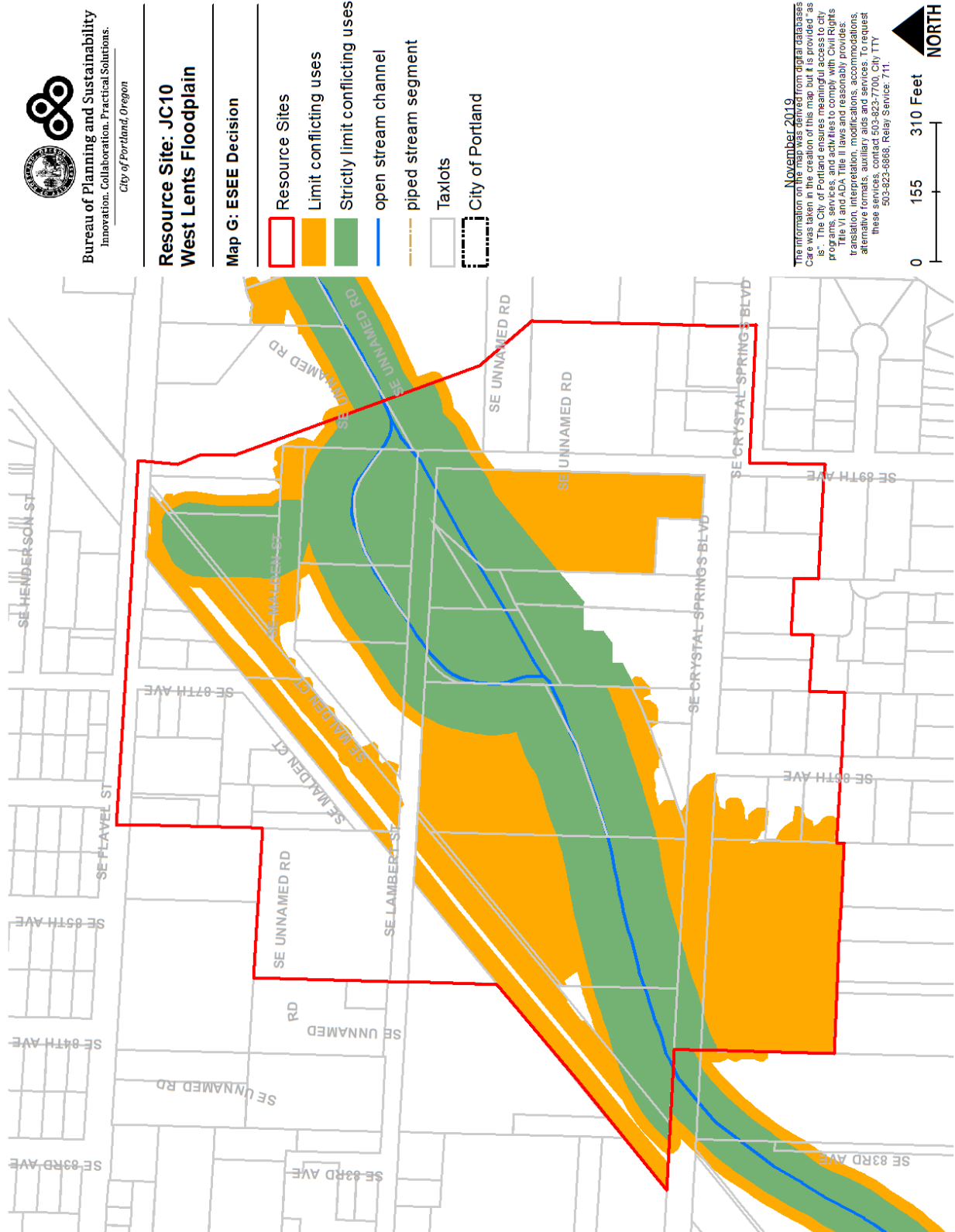






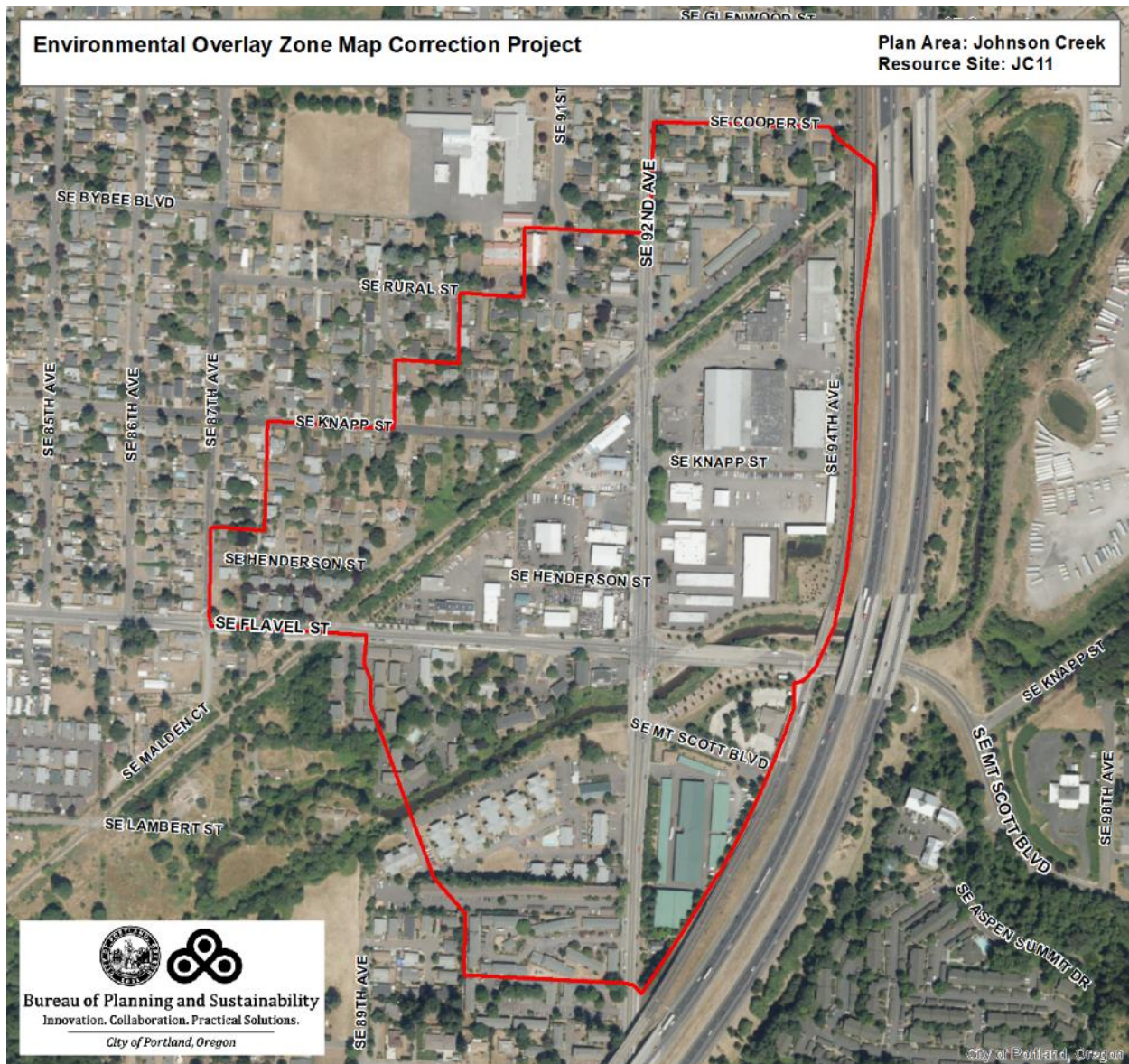








**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resource Site No.:** 12/13



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site		JC11
		Study Area
<b>Stream (Miles)</b>		0.6
<b>Wetlands (acres)</b>		0.0
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>		9.8
Forest (acres)		0.0
Woodland (acres)		3.1
Shrubland (acres)		0.0
Herbaceous (acres)		6.7
<b>Flood Area*</b>		43.3
Vegetated (acres)		8.0
Non-vegetated (acres)		35.3
<b>Steep Slopes (acres)**</b>		6.2
<b>Impervious Surface (acres)</b>		29.3
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.		
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.		

Natural resources are confined almost entirely to the creek and bank, unpaved portions of the I-205 right-of-way, and a large field on the southern portion of the site. The site is bounded by I-205 on the east and south, industrial activities along the north and northwest, and multi-family development to the southwest. Industrial activities also occupy the land between Johnson Creek and the Springwater Line.

This section of the creek was lined with concrete during construction of I-205. In spite of this, riparian shrubs are being reestablished, providing limited shading of the creek. As with the rest of Johnson Creek, this section functions as a travel corridor and water source for wildlife moving up and down the creek.

Almost all of the site is within the flood area, including industrial, commercial and residential development. The development and impervious surfaces reduce the lands ability to manage flood by reducing capacity and infiltration.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC11</b>				
<b>Resource Site (acres) = 77.781147</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	2.7	8.7	33.0	44.5
percent total inventory site area	3.5%	11.2%	42.4%	57.2%
<b>Wildlife Habitat*</b>				
acres	0.0	1.7	0.0	1.7
percent total inventory site area	0.0%	2.1%	0.0%	2.1%
<b>Special Habitat Areas**</b>				
acres				1.2
percent total inventory site area				1.6%
<b>Combined Total<sup>+</sup></b>				
acres	2.8	8.8	32.9	44.5
percent total inventory site area	3.6%	11.3%	42.3%	57.2%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC11 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; developed land within 50 feet of waterbodies; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site industrial uses are allowed outright or conditionally in the IG2 base zones. Employment uses are allowed in the EG2 base zone. Commercial uses are allowed in the CM1 base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC11, with the following additional information that clarifies the analysis.

Existing development in the flood area is at an increased risk from flooding. Expanded or new industrial, commercial or residential development and impervious surfaces in the flood area should be avoided and unavoidable impacts should be mitigated to maintain or enhance flood capacity and infiltration.

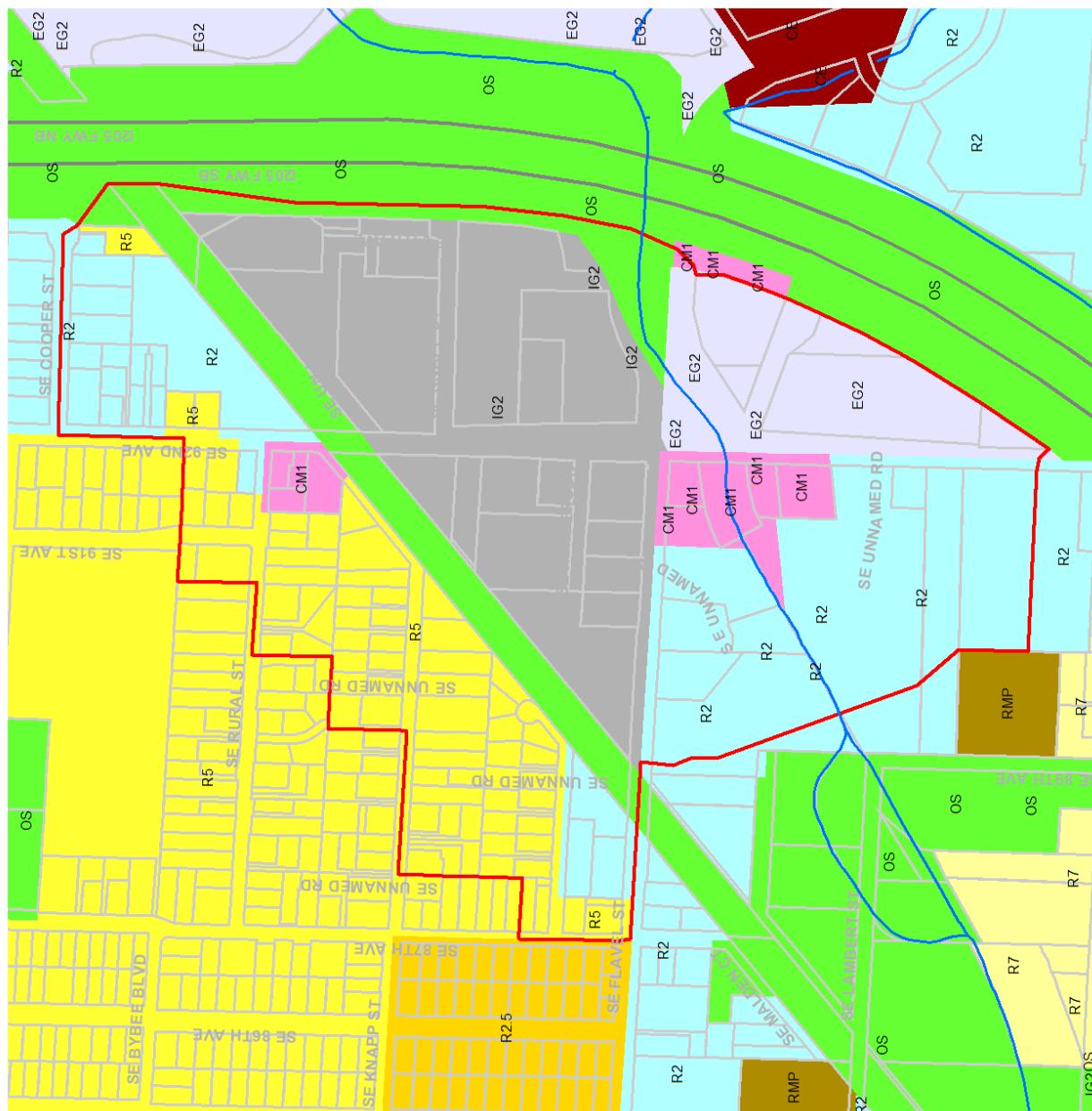
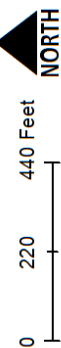
*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

### ESEE Decisions

Based on the General ESEE and resource site-specific ESEE, the ESEE decisions for Resource Site JC11 are:

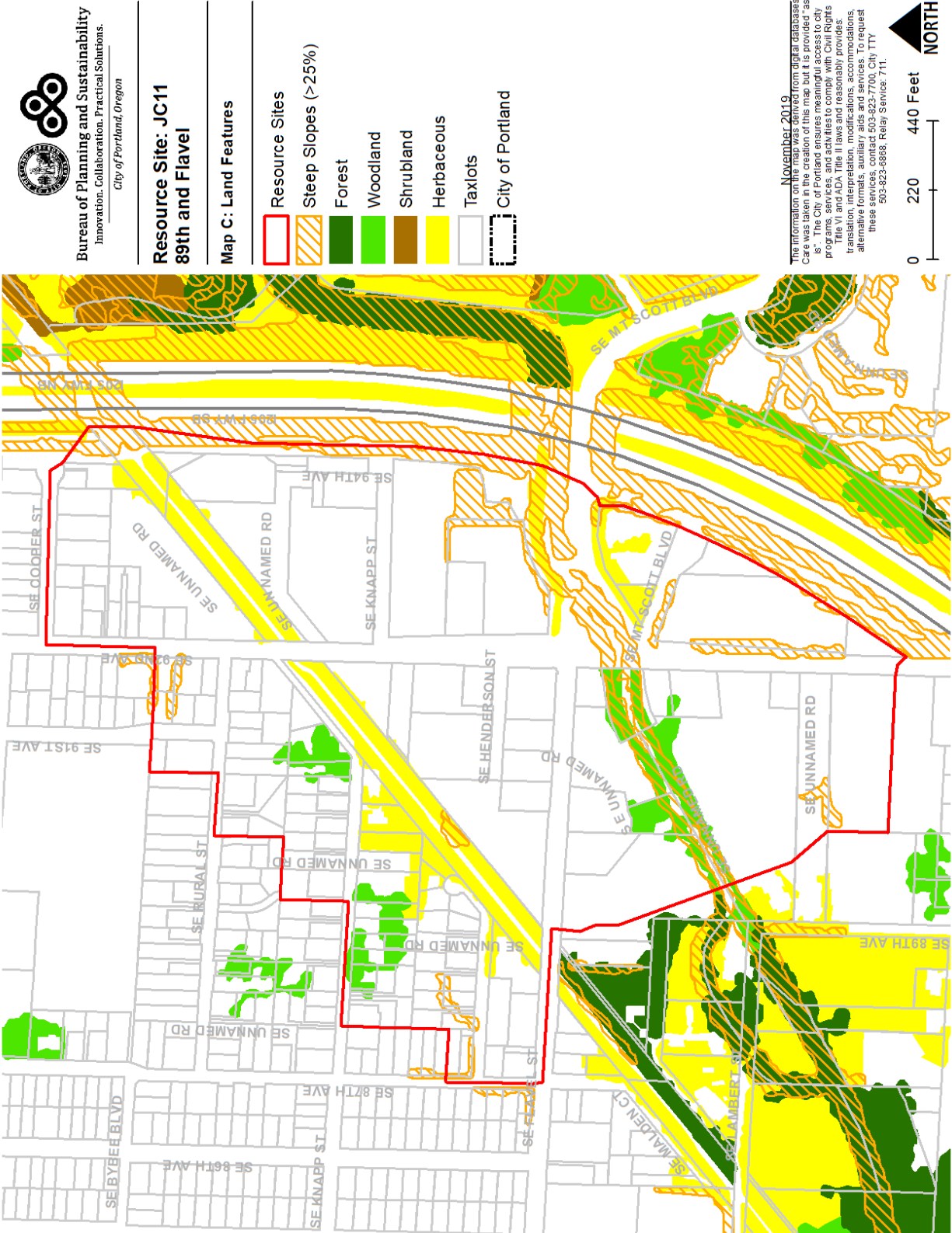
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within land between 50 and 75 feet of stream top-of-bank, 30 and 55 feet of wetland.
4. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 75 feet from stream top-of-bank, and areas of forest or woodland vegetation contiguous to but more than 55 feet from wetlands.
5. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

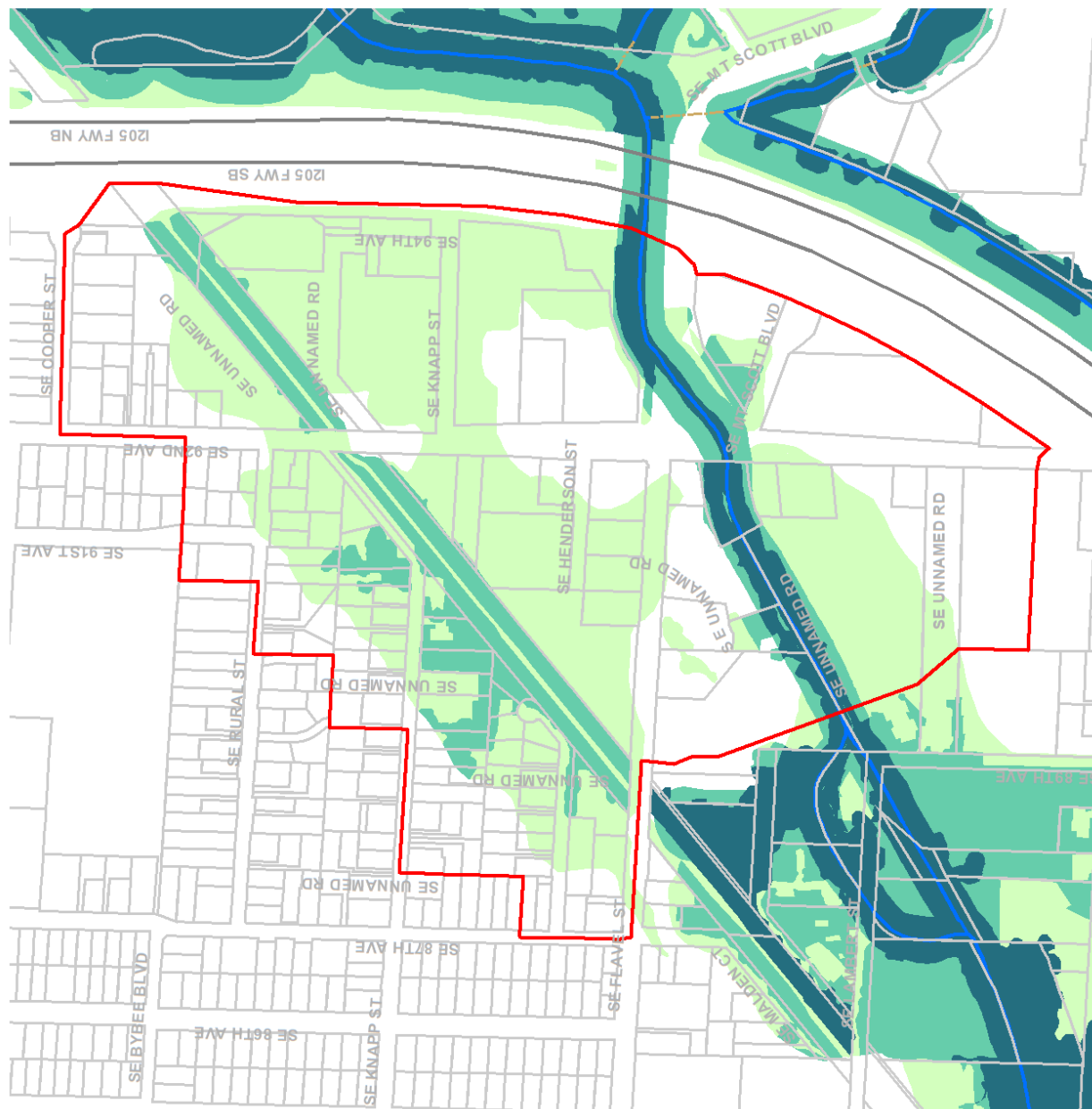
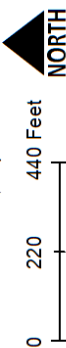
Table C: ESEE Decision for Resource Site JC11	
ESEE Decision	Acres
Strictly Limit	4.7
Limit	1.9
Allow	71.2



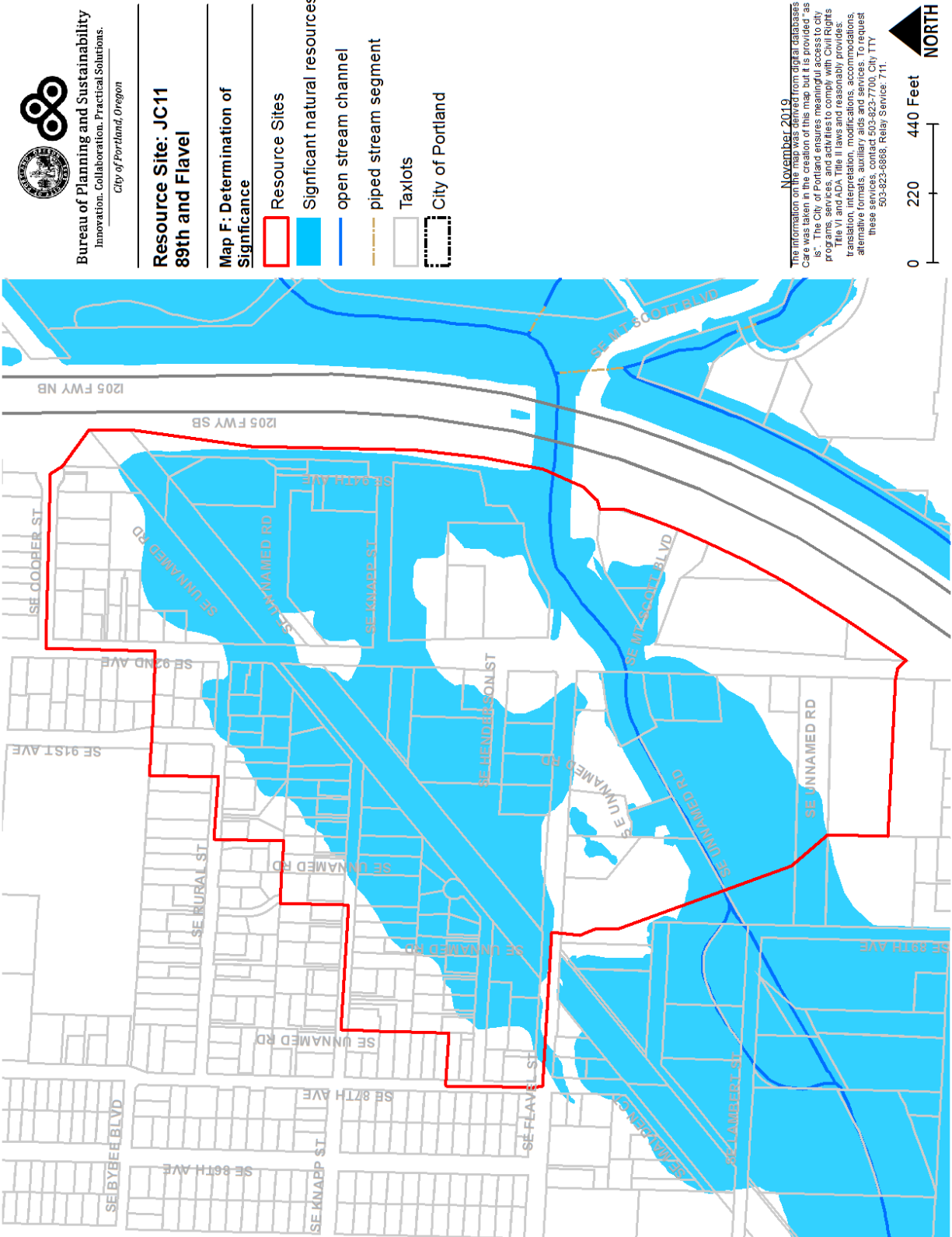




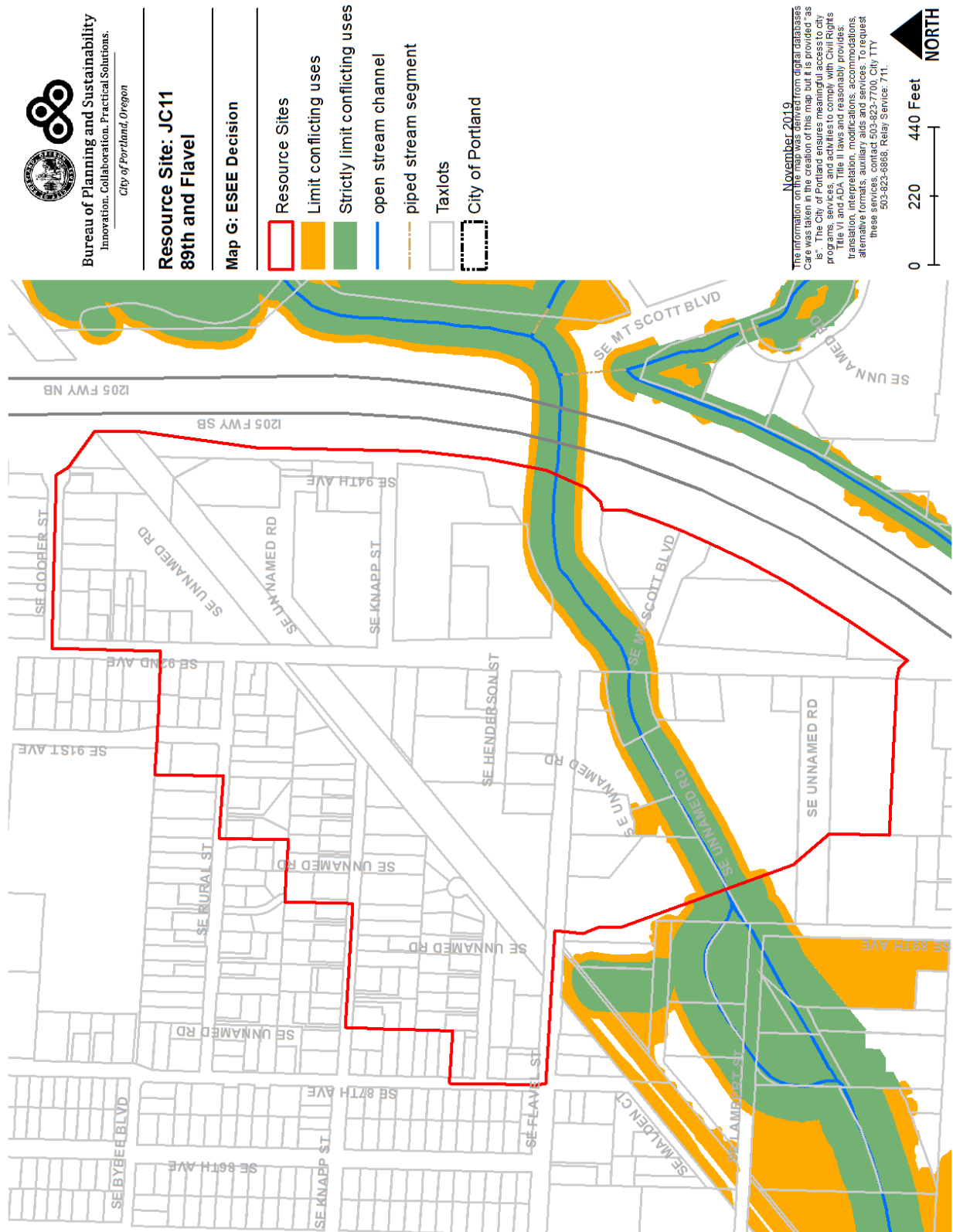






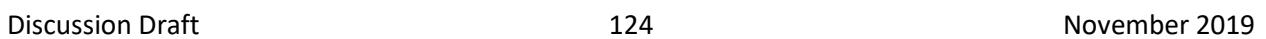








**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resource Site No.:** 14



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site		JC12
		Study Area
<b>Stream (Miles)</b>		1.5
<b>Wetlands (acres)</b>		13.2
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>		53.9
Forest (acres)		12.8
Woodland (acres)		11.3
Shrubland (acres)		8.9
Herbaceous (acres)		20.9
<b>Flood Area*</b>		37.4
Vegetated (acres)		29.1
Non-vegetated (acres)		8.3
<b>Steep Slopes (acres)**</b>		38.3
<b>Impervious Surface (acres)</b>		25.1
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.		
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.		

This resource site is developed with industrial uses. Johnson Creek and a tributary to Johnson Creek flow through the site. When the industrial development occurred, a setback of 50 to 100 feet was left undeveloped around the streams. There are multiple wetlands on the site as well and development is generally setback 10 to 30 feet from the wetlands. The wetlands are also within the flood area.

As a result of development, wetland mitigation occurred that improved the vegetation by removing invasive species and adding native plants. The riparian area around Johnson Creek remains largely vegetated with invasive species and few large trees.

There is a wetland and flood area located along the eastern portion of the resource site that is hydrologically connected to the Foster Floodplain restoration. The wetland and flood area provide flow and flood control for Johnson Creek and properties up and down stream.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC12</b>				
<b>Resource Site (acres) = 128.293853</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	35.2	17.4	10.3	62.9
percent total inventory site area	27.4%	13.6%	8.0%	49.1%
<b>Wildlife Habitat*</b>				
acres	0.0	30.9	0.0	30.9
percent total inventory site area	0.0%	24.1%	0.0%	24.1%
<b>Special Habitat Areas**</b>				
acres				3.6
percent total inventory site area				2.8%
<b>Combined Total<sup>+</sup></b>				
acres	35.3	17.9	9.7	62.9
percent total inventory site area	27.5%	14.0%	7.6%	49.1%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC12 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site employment uses are allowed outright or conditionally in the EG2 base zones. Commercial uses are allowed in the CE base zone. Residential uses are allowed in the R10 base zone. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC12, with the following additional information that clarifies the analysis.

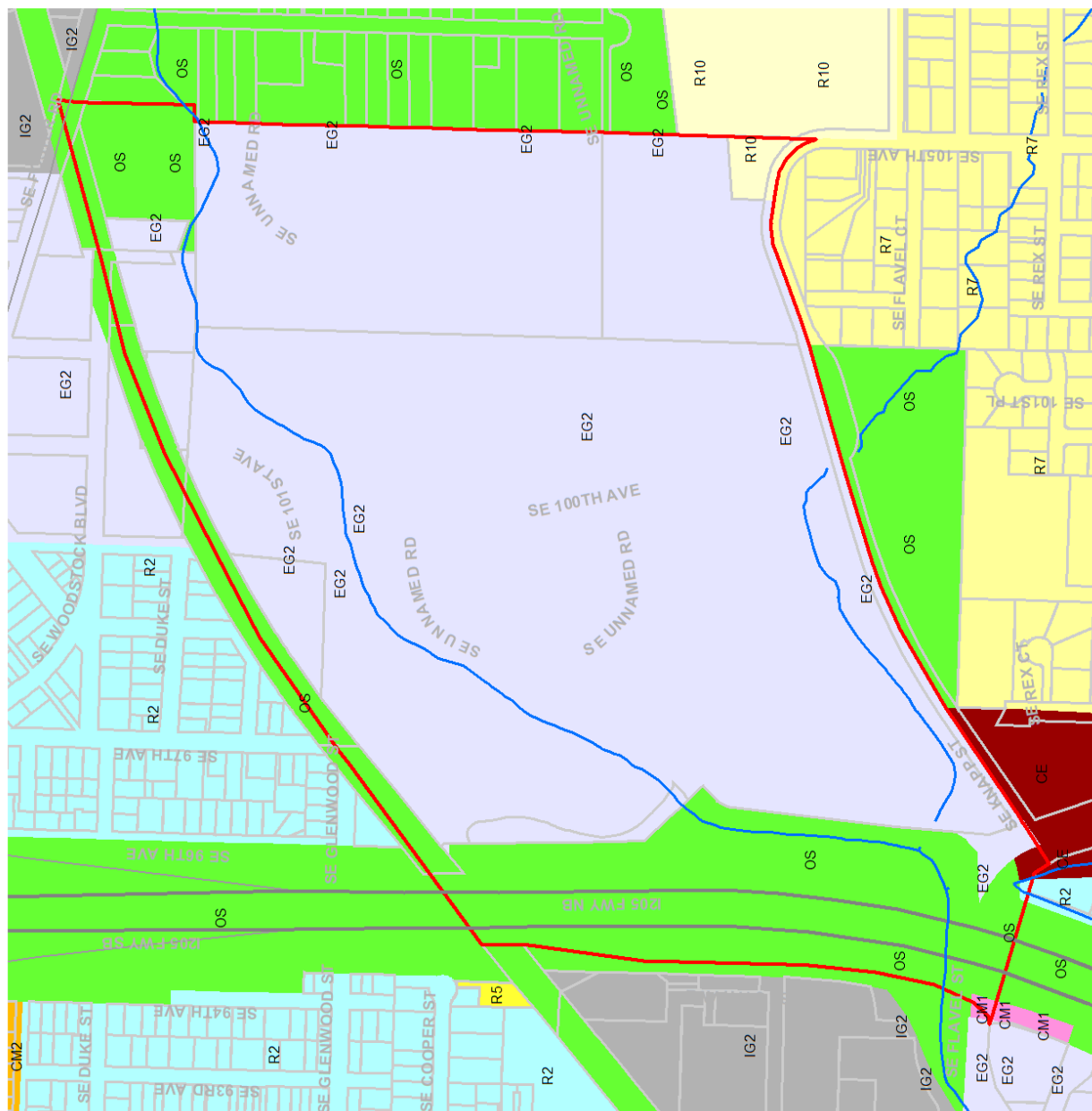
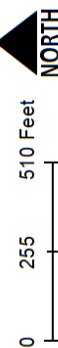
The site is zoned for prime industrial uses and contributes to meeting Portland's job growth needs in the future. The general ESEE recommendations would result in a 7-acre increase in overlay zoning on the industrial lands, outside of the I-205 right-of-way. This increase consists primarily of narrow expansion of the overlay zones along the edges of the property. Some of these areas are paved and used for parking, loading or storage. Continued use of developed areas should be allowed fully. However, new or expanded development that encroaches further into the areas of high or medium ranked significant resources should be limited and strictly limited within the vegetated flood area, wetlands and streams.

#### ESEE Decisions

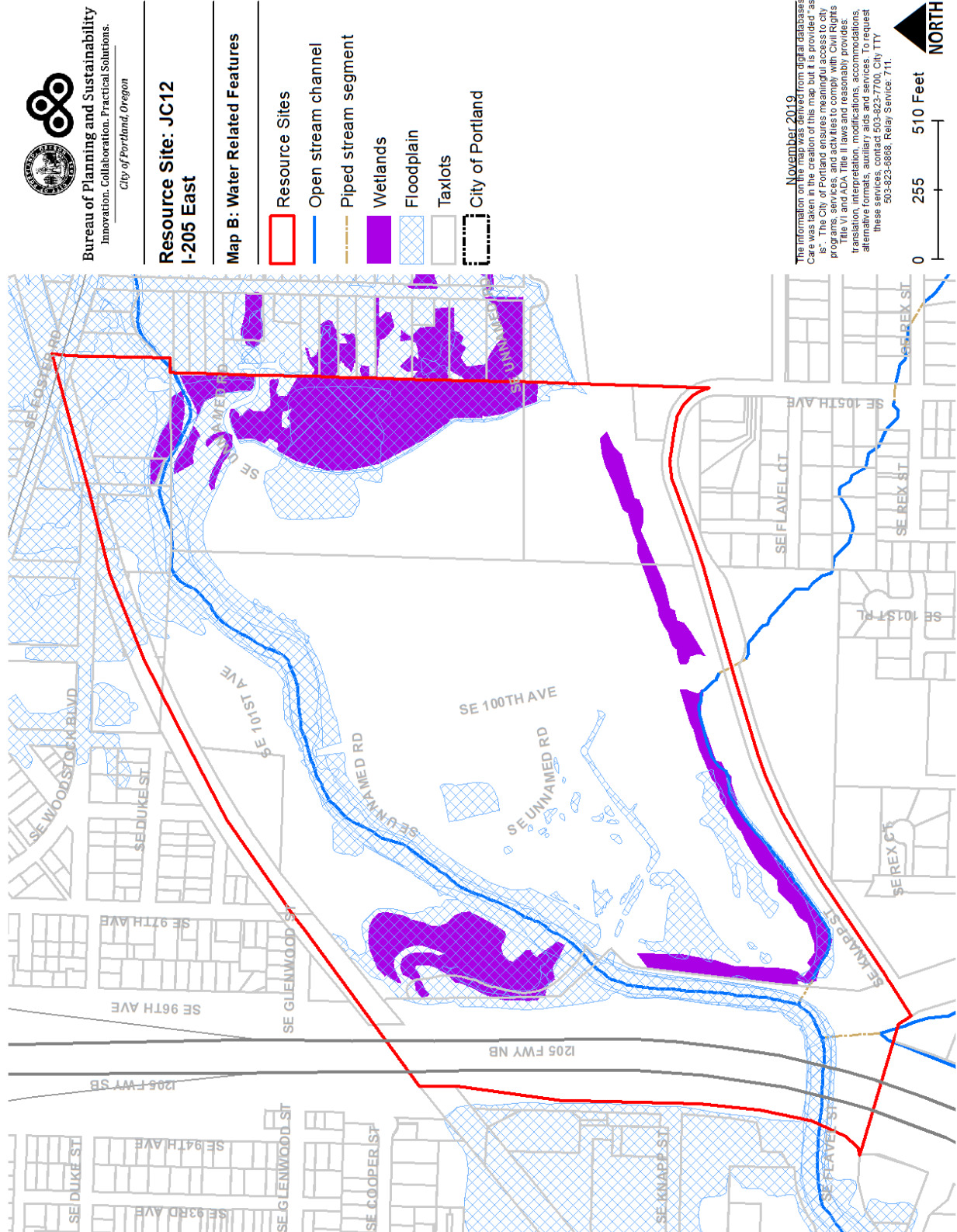
Based on the General ESEE and resource site-specific ESEE, the ESEE decisions for Resources Site 14 are:

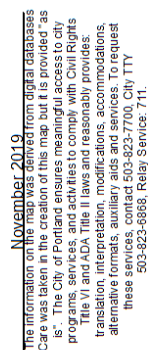
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within land between 50 and 75 feet of stream top-of-bank, 30 and 55 feet of wetland.
4. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
5. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 75 feet from stream top-of-bank and areas of forest or woodland vegetation contiguous to but more than 55 feet from wetlands.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

Table C: ESEE Decision for Resource Site JC12	
ESEE Decision	Acres
Strictly Limit	36.7
Limit	15.5
Allow	76.2

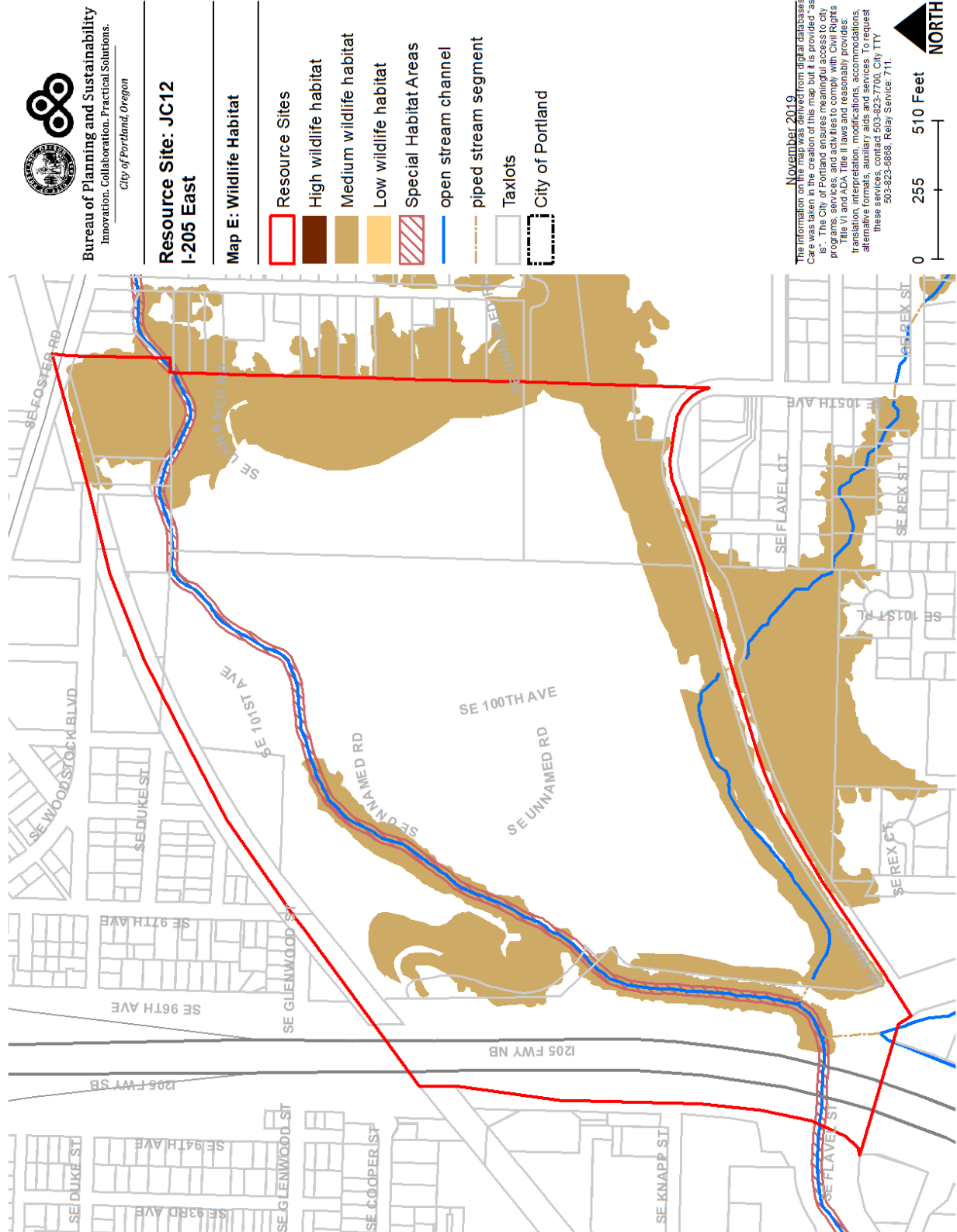


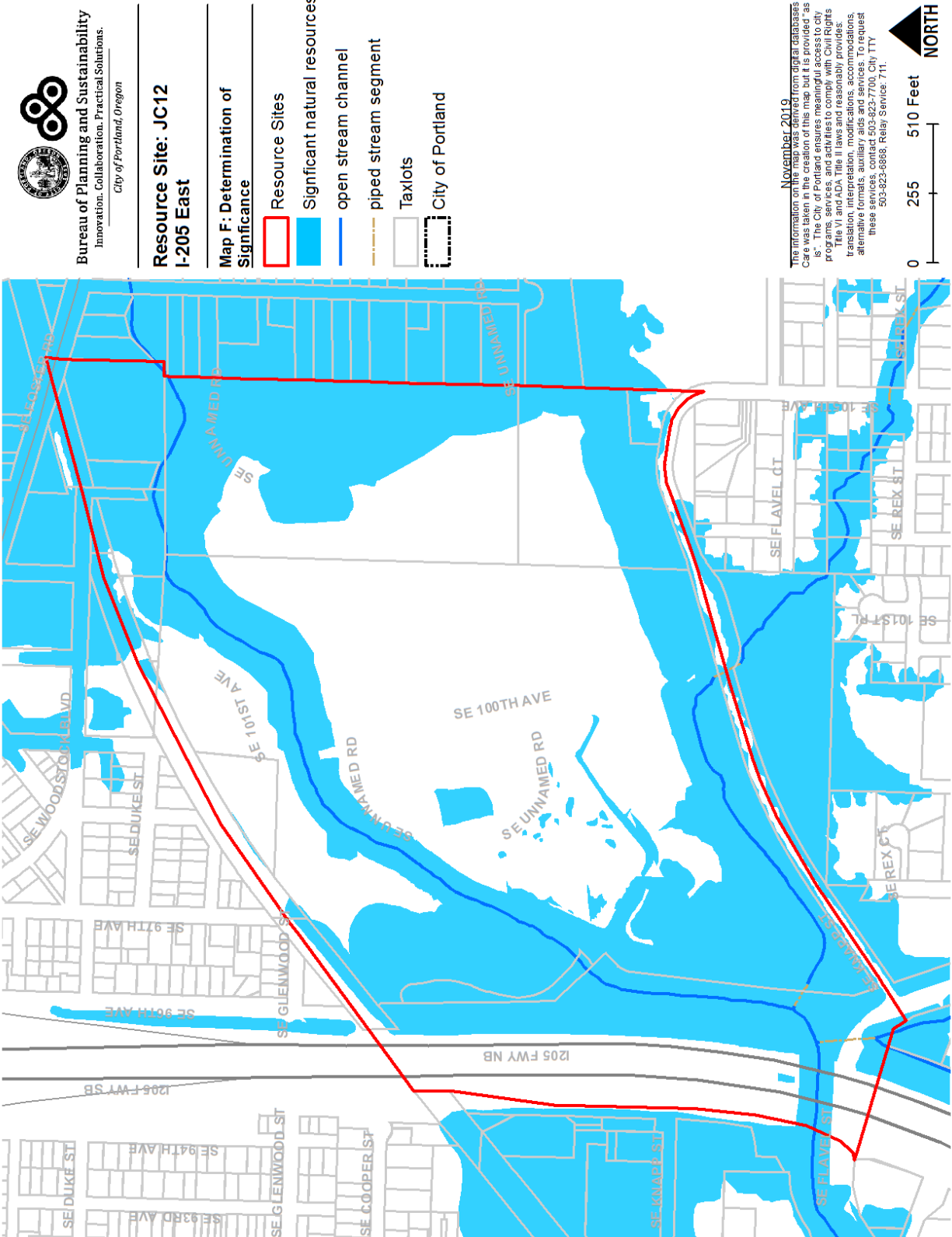




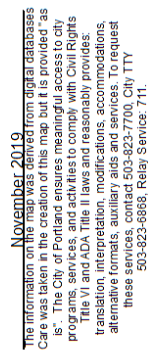








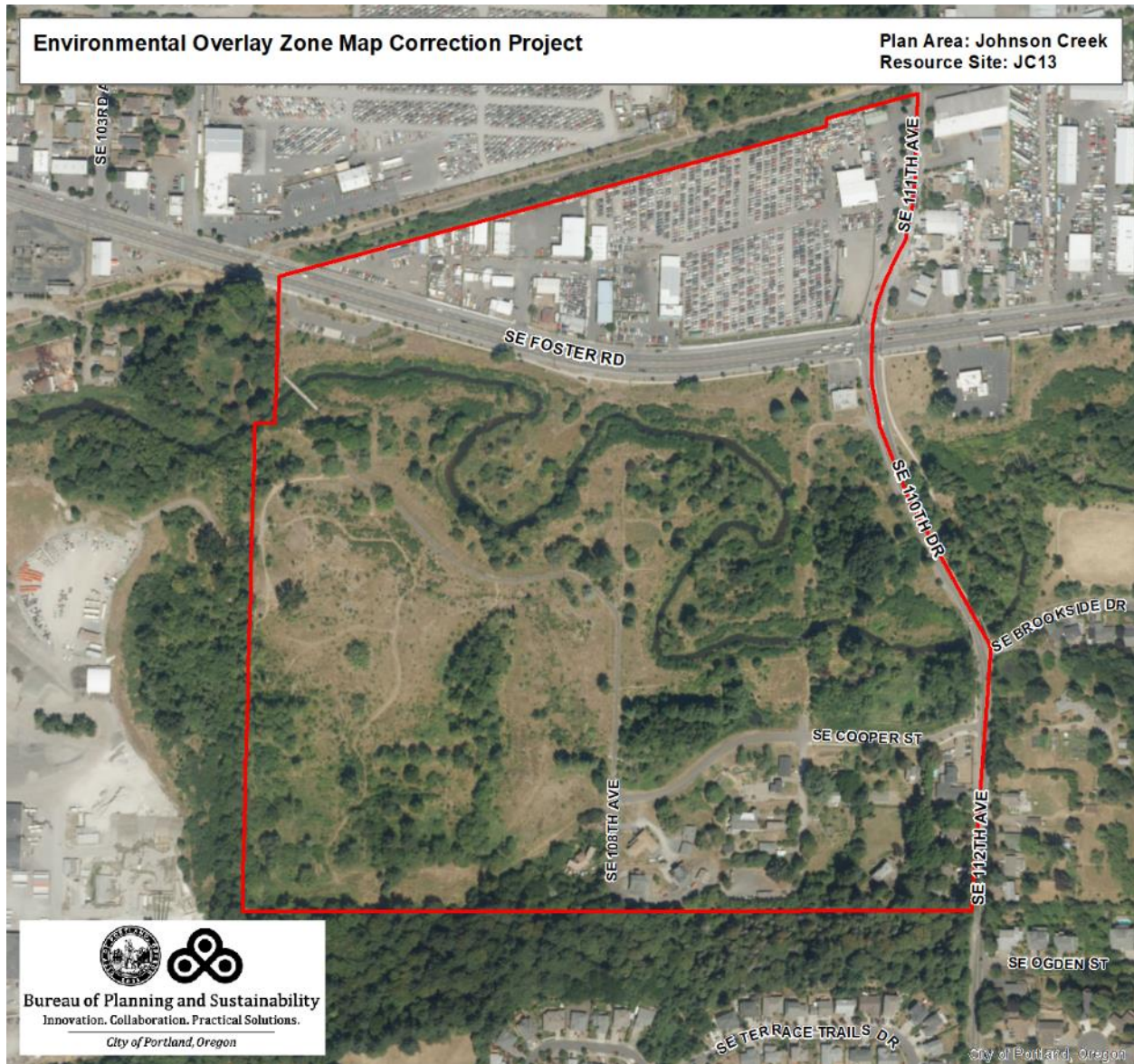






**Resource Site No.: JC13    Resource Site Name: Foster Floodplain**

**Previous Plan:** Johnson Creek Basin Protection Plan    **Previous Resource Site No.:** 15



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC13	
	Study Area
<b>Stream (Miles)</b>	1.2
<b>Wetlands (acres)</b>	7.8
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	55.0
Forest (acres)	3.5
Woodland (acres)	27.0
Shrubland (acres)	0.2
Herbaceous (acres)	24.3
<b>Flood Area*</b>	62.3
Vegetated (acres)	46.2
Non-vegetated (acres)	16.1
<b>Steep Slopes (acres)**</b>	14.7
<b>Impervious Surface (acres)</b>	13.4
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

*[DESCRIPTION OF FOSTER FLOODPLAIN TO BE INCLUDED IN NEXT DRAFT]*

<b>Table B: Quality of Natural Resource Functions in Resource Site JC13</b>				
<b>Resource Site (acres) = 79.688197</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	33.9	19.1	18.4	71.4
percent total inventory site area	42.6%	23.9%	23.1%	89.6%
<b>Wildlife Habitat*</b>				
acres	0.0	14.3	0.0	14.3
percent total inventory site area	0.0%	18.0%	0.0%	18.0%
<b>Special Habitat Areas**</b>				
acres				3.2
percent total inventory site area				4.0%
<b>Combined Total<sup>+</sup></b>				
acres	34.0	21.3	16.5	71.7
percent total inventory site area	42.7%	26.7%	20.7%	90.0%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC13 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 and R7 base zones. Industrial uses are allowed in the IG2 base zone. Employment uses are allowed in the EG2 base zone. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC1, with the following additional information that clarifies the analysis.

The Foster Floodplain restoration project improved flood control functions for Johnson Creek and properties both up and down stream. The land that was restored is zoned Open Space and should be retained in natural conditions and new development should be strictly limited. Human access to the restoration should be limited to maintain the wildlife habitat functions.

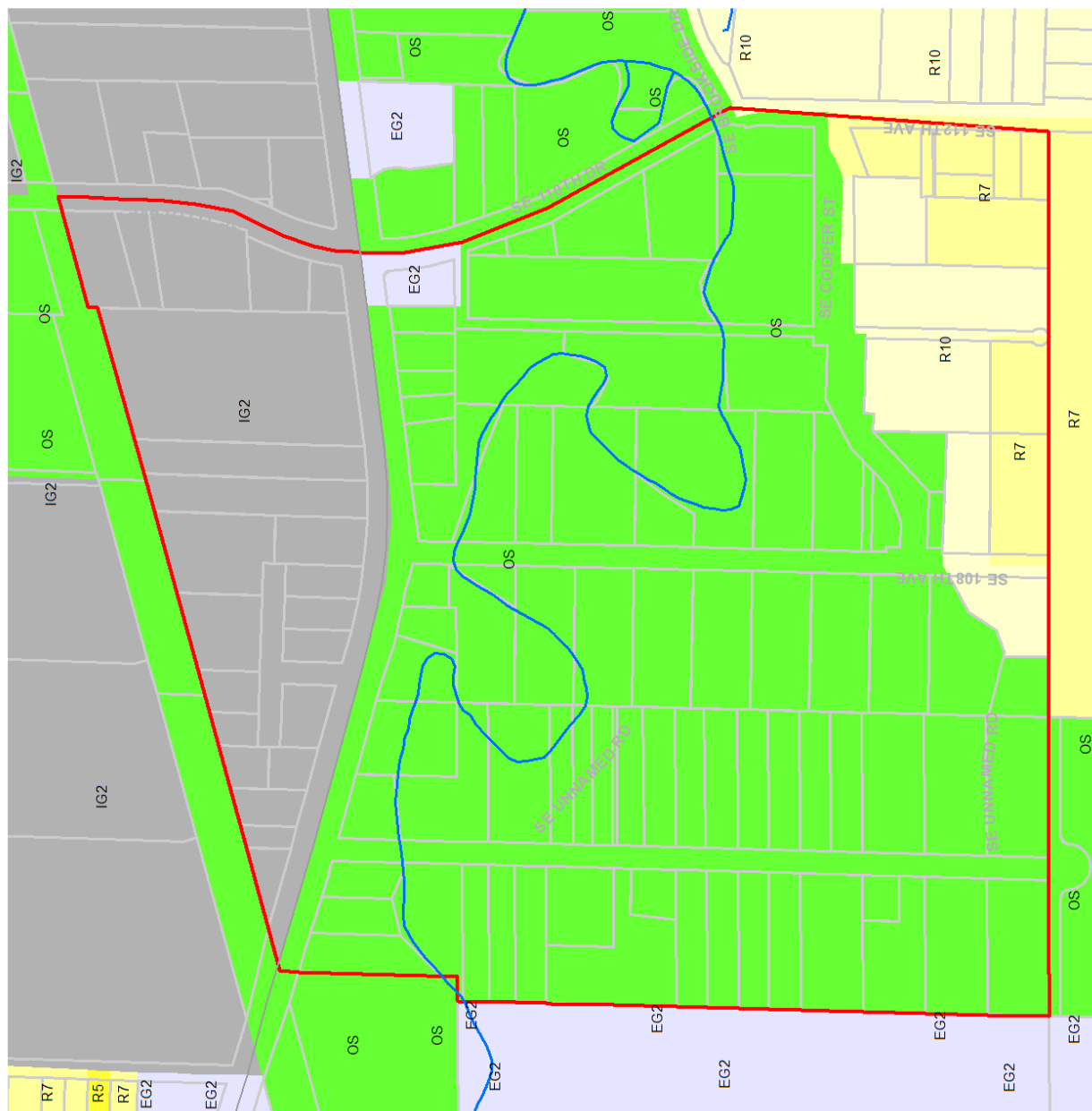
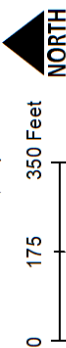
The industrial development north of SE Foster Road is also largely within the flood area. The structures and impervious surface limit the flood capacity and infiltration functions of the land and increase the flood risk to the property as well as properties around the development. New or expanded development in the flood area should be limited.

### ESEE Decisions

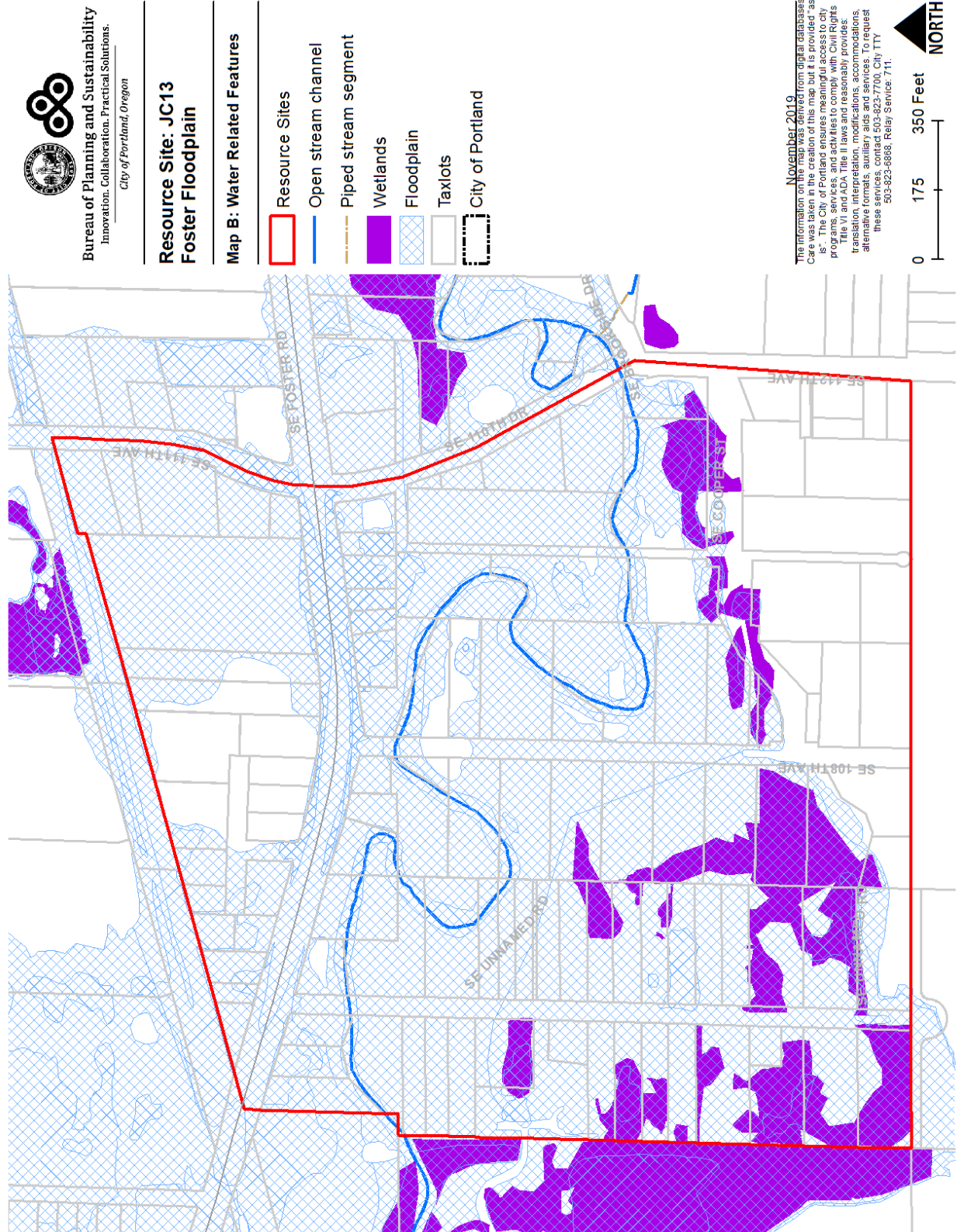
Based on the General ESEE and resource site-specific ESEE, the ESEE decisions for Resource Site JC13 are:

1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within land between 50 and 75 feet of stream top-of-bank and between 30 and 55 feet of wetland.
4. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
5. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 75 feet from stream top-of-bank, and areas of forest or woodland vegetation contiguous to but more than 55 feet from wetlands.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

Table C: ESEE Decision for Resource Site JC13	
ESEE Decision	Acres
Strictly Limit	25.7
Limit	18.6
Allow	35.4

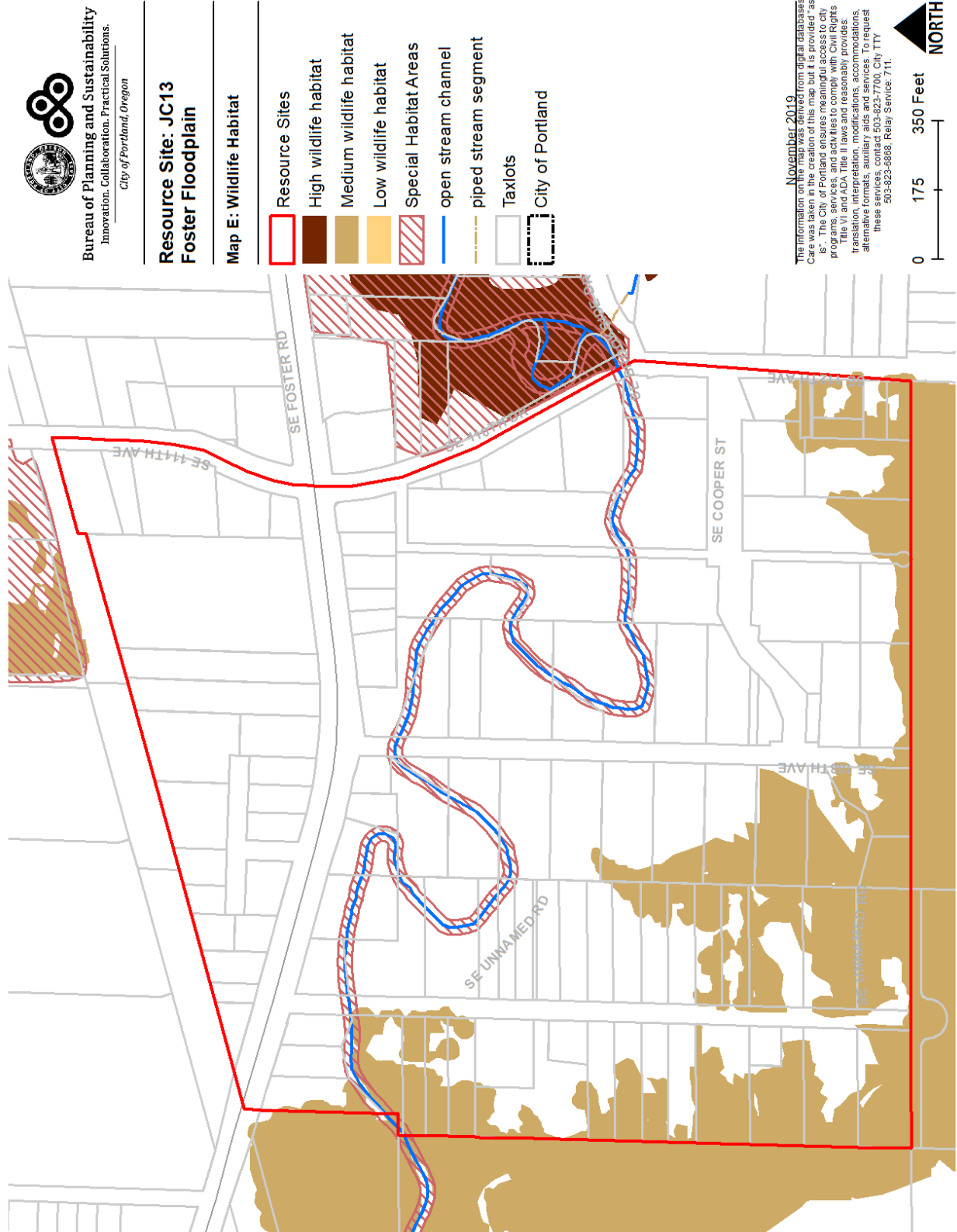


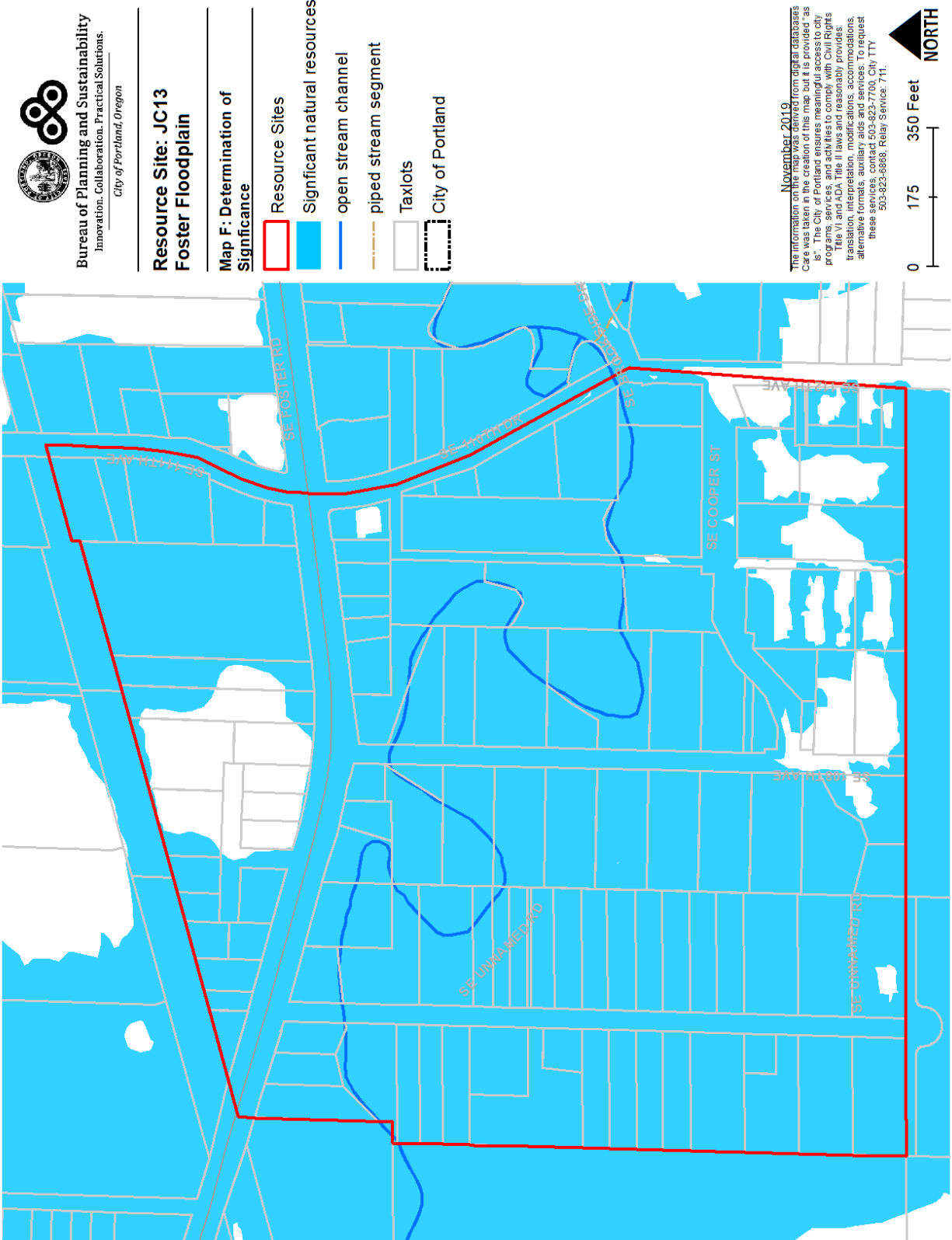












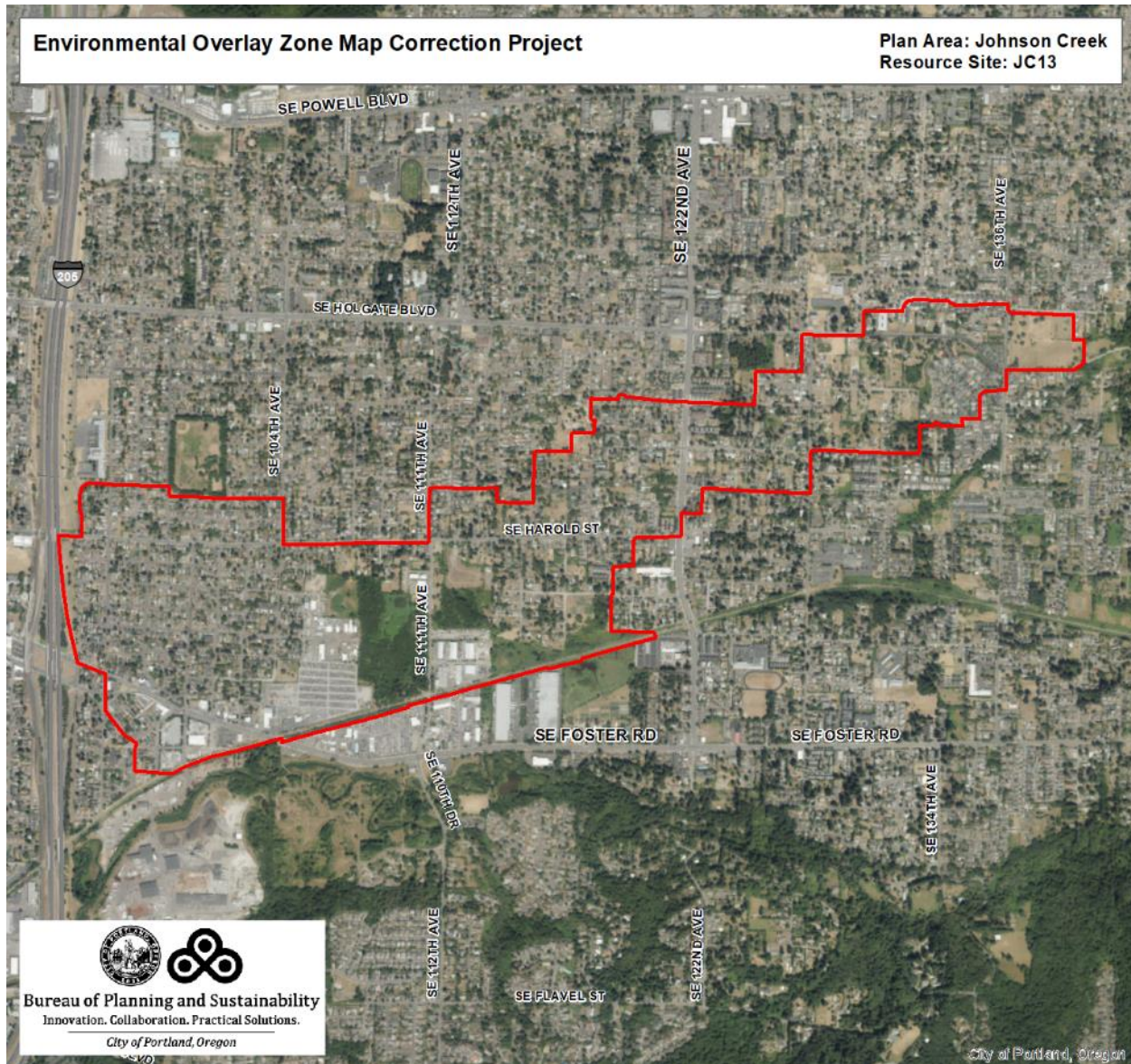






**Resource Site No.: JC14    Resource Site Name: Lents Floodplain**

**Previous Plan: East Buttes, Terraces & Wetlands Plan    Previous Resource Site No.: 16**



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC14	
	Study Area
<b>Stream (Miles)</b>	0.8
<b>Wetlands (acres)</b>	28.4
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	113.5
Forest (acres)	3.8
Woodland (acres)	31.1
Shrubland (acres)	23.9
Herbaceous (acres)	54.6
<b>Flood Area*</b>	249.0
Vegetated (acres)	70.5
Non-vegetated (acres)	178.5
<b>Steep Slopes (acres)**</b>	19.0
<b>Impervious Surface (acres)</b>	156.9
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

This site includes Beggar's Tick Marsh and the Lents Floodplain. The Flood area extends through a large area of residential development and also impacts some commercial and industrial development. The structures and impervious surfaces reduce the flood capacity and infiltration functions of the flood area. Areas of vegetation and trees provide some flow and flood control as well as infiltration.

Beggar's Tick is a 20-acre marsh surrounded by residential and industrial development. The littoral is a dense growth of blackberry, willow, and hawthorn. About 20% of the inundated area consists of emergent cattail, spike-rush, sedge, and spirea. The marsh provides resting area and food for a large diversity of wintering waterfowl, as well as habitat for reptile, amphibian, and aquatic mammal (muskrats, beavers) species. More than one hundred ducks were counted during a January visit to the site. The surrounding vegetation provides food, cover, nest, and perching habitat for passerine, raptor, pheasant, and small mammal species. This high-quality natural area serves as an island refuge for diverse wildlife species which formally occupied the surrounding urban region. The diversity and number of birds observed illustrate the importance of the marsh as a habitat for wintering species.

Wetland of this size within the urban area are rare and provide important habitat for many songbird, waterfowl, mammal and herptile species. The diversity of the scrub/shrub and emergent wetland promotes greater wildlife species diversity.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC14</b>				
<b>Resource Site (acres) = 509.809009</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	37.4	45.2	186.7	269.3
percent total inventory site area	7.3%	8.9%	36.6%	52.8%
<b>Wildlife Habitat*</b>				
acres	0.0	28.4	1.5	29.9
percent total inventory site area	0.0%	5.6%	0.3%	5.9%
<b>Special Habitat Areas**</b>				
acres				39.1
percent total inventory site area				7.7%
<b>Combined Total<sup>+</sup></b>				
acres	42.3	41.3	187.2	270.8
percent total inventory site area	8.3%	8.1%	36.7%	53.1%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC14 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status plant and fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10, R7, R5, R3, R2.5, R2, R1 and RMP base zones. Industrial uses are allowed in the IG1 and IG2 base zones. Employment uses are allowed in the EG1 and EG2 base zone. Commercial uses are allowed in the CM1, CM2 and CM3 base zones. Open Space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC1, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Beggar's Tick Marsh, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

The residential, commercial and industrial development is located in the flood area. The structures and impervious surface limit the flood capacity and infiltration functions of the land and increase the flood risk to the property as well as properties up and down stream. New or expanded development in the flood area should be *limited*.

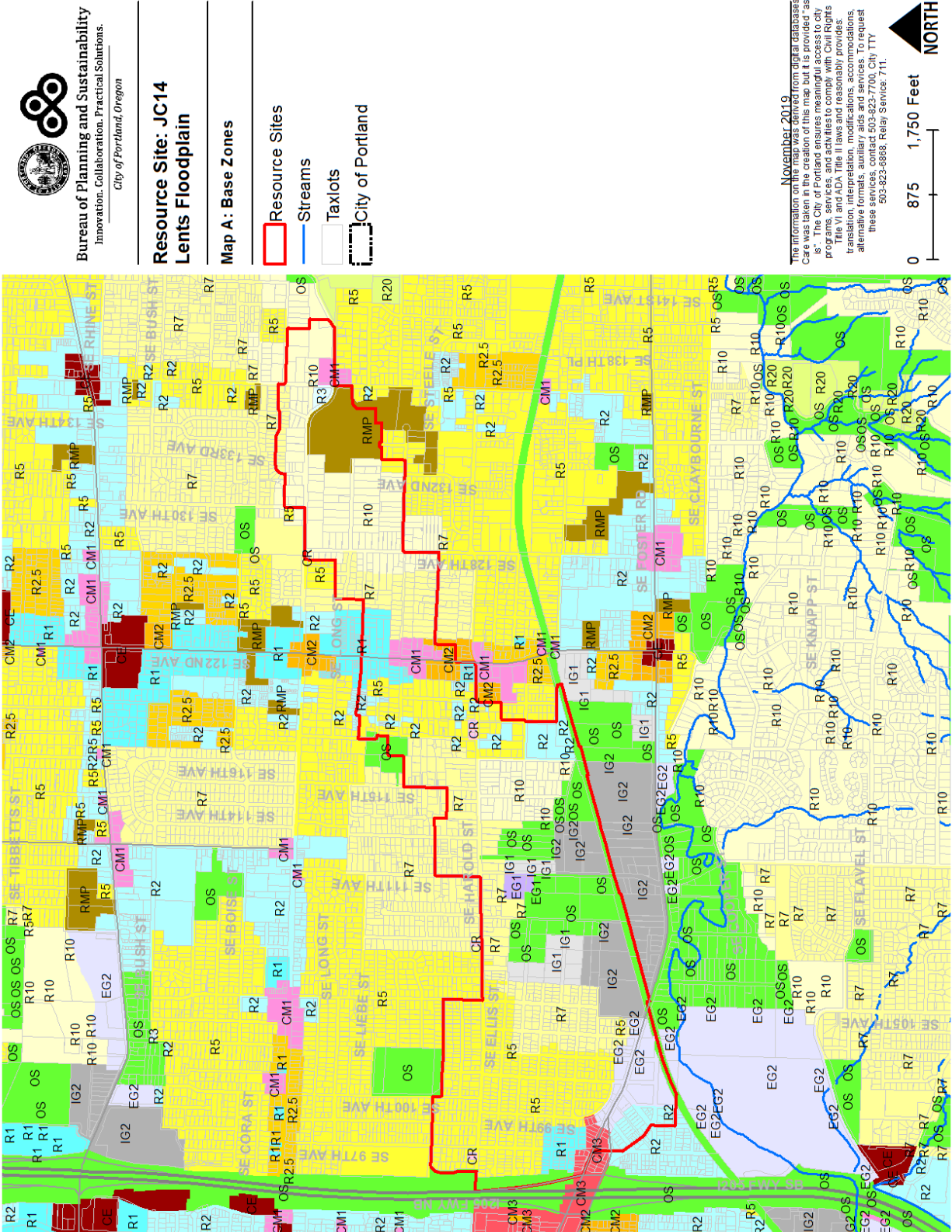
### ESEE Decisions

Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resources Site JC14 are:

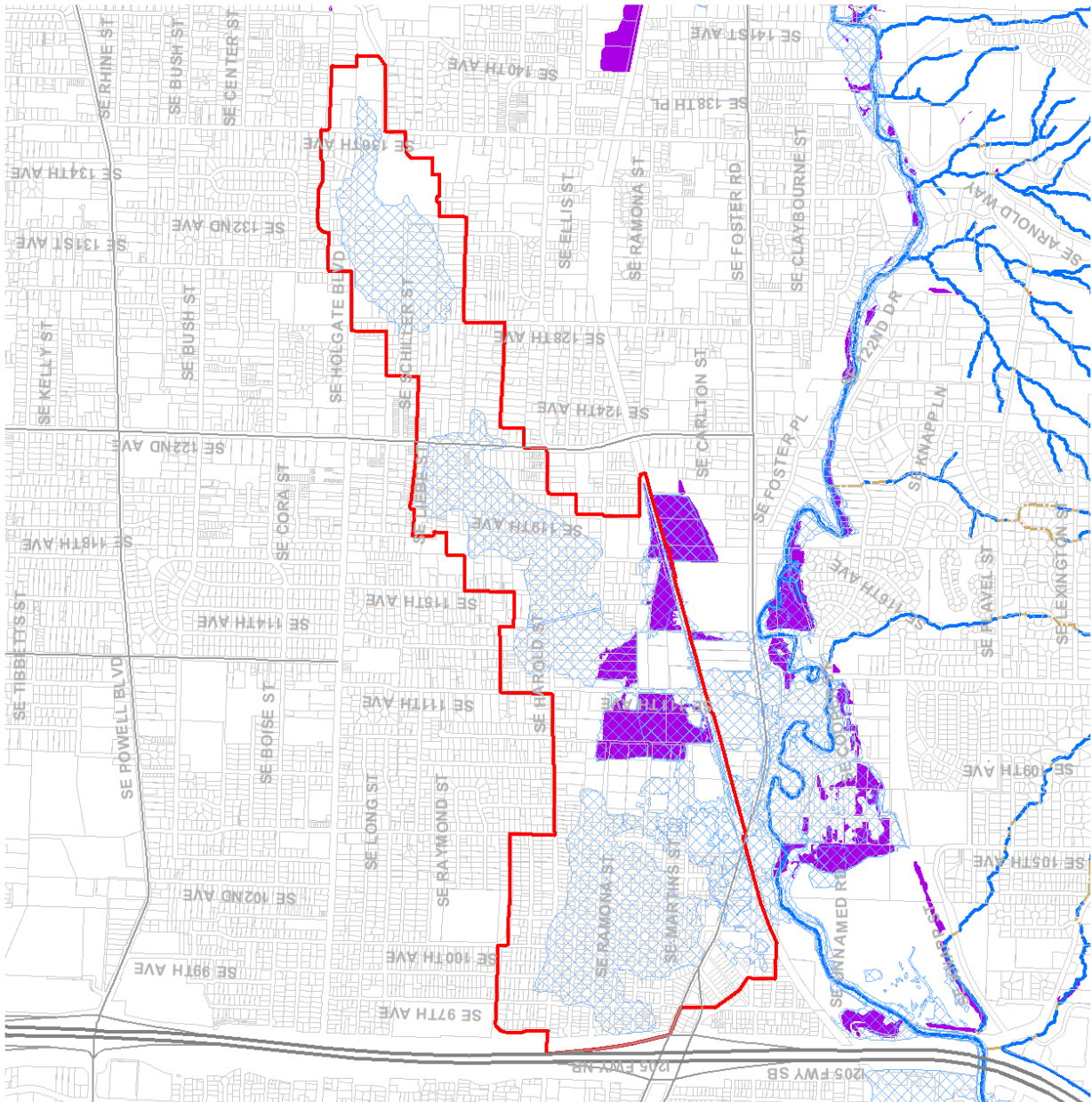
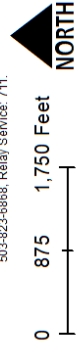
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank and wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within land within 75 feet of stream top-of-bank or wetlands.
4. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
5. *Allow* conflicting uses within all other areas containing significant natural resources.

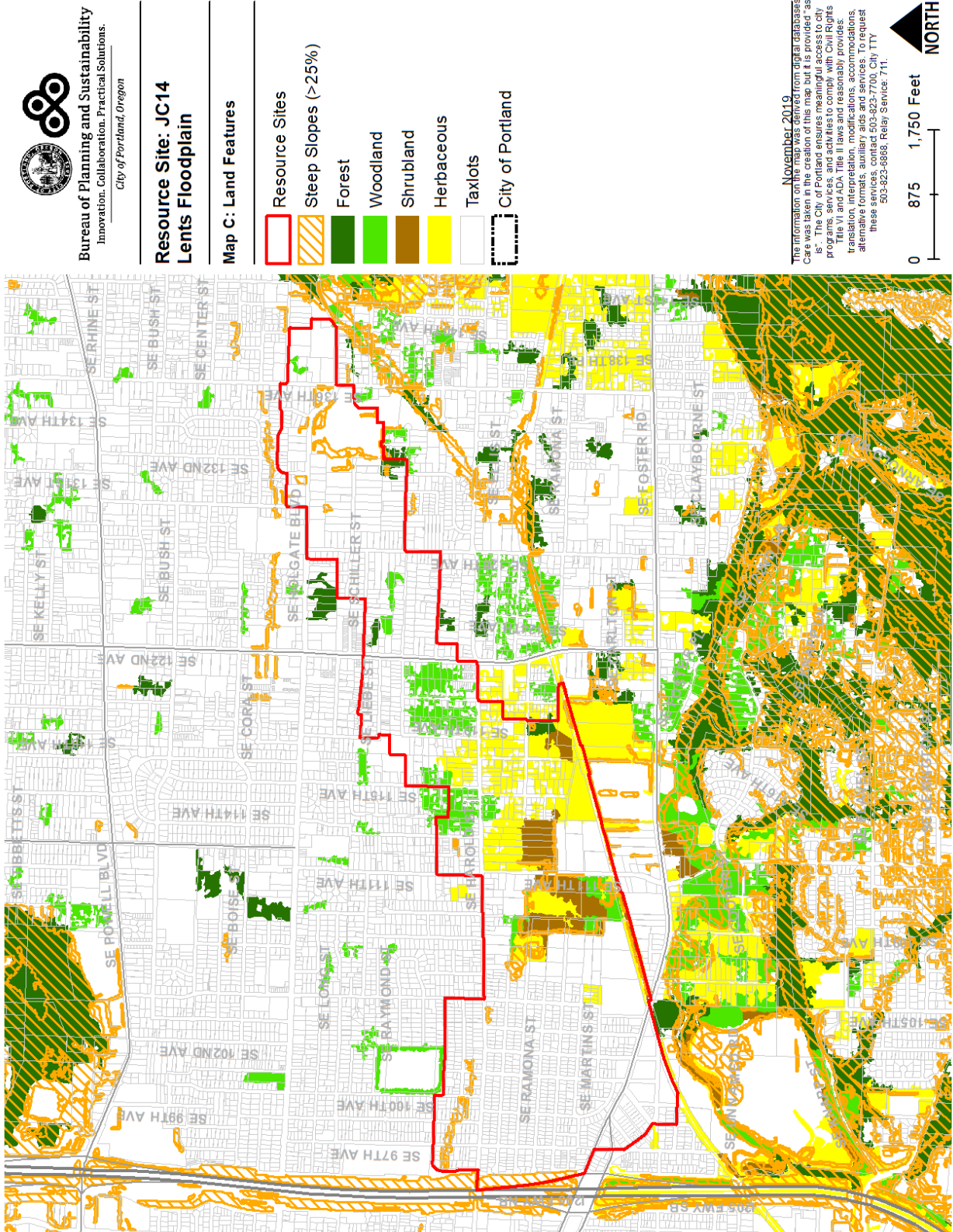
Table C: ESEE Decision for Resource Site JC14	
ESEE Decision	Acres
Strictly Limit	28.4
Limit	19.1
Allow	462.3

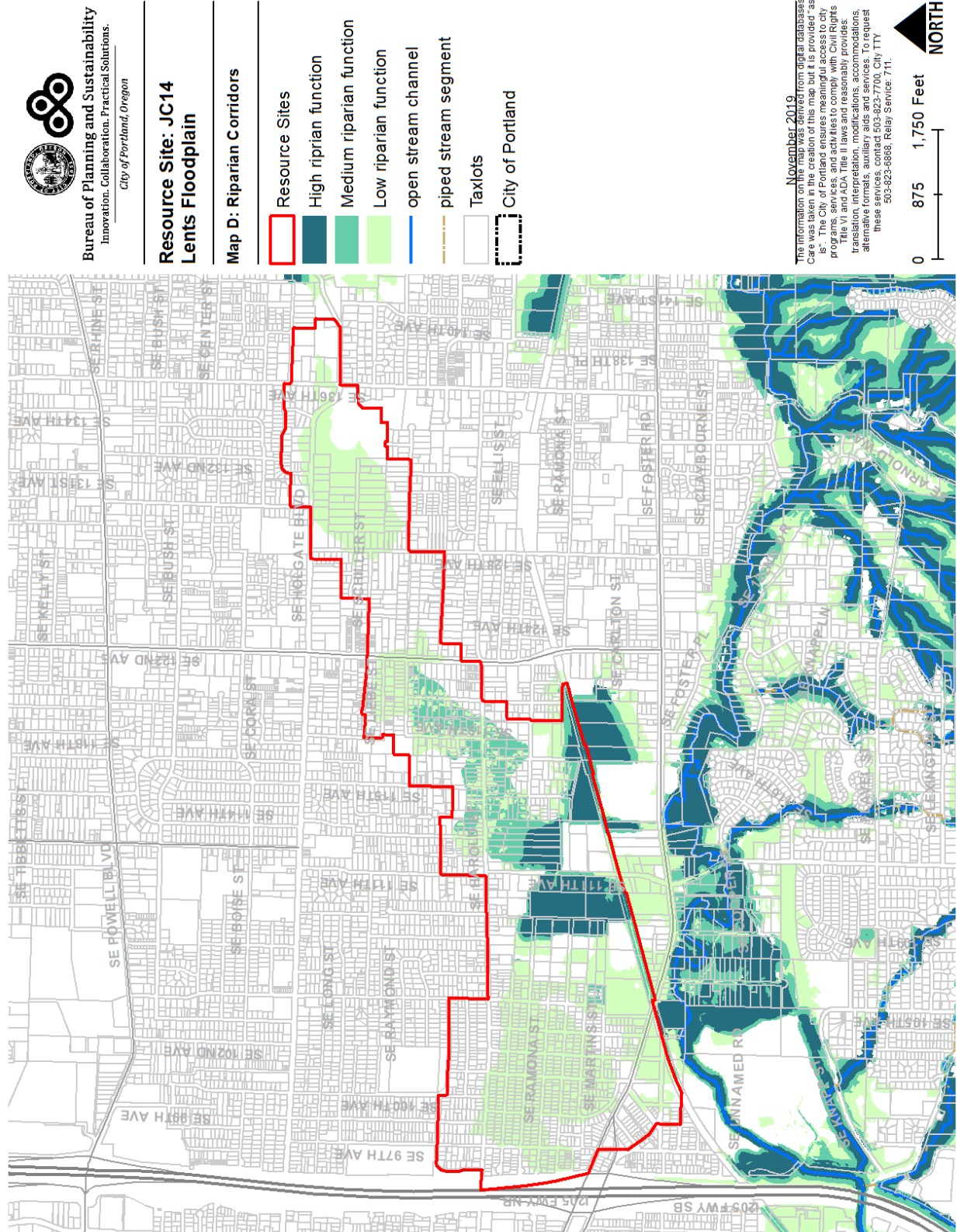




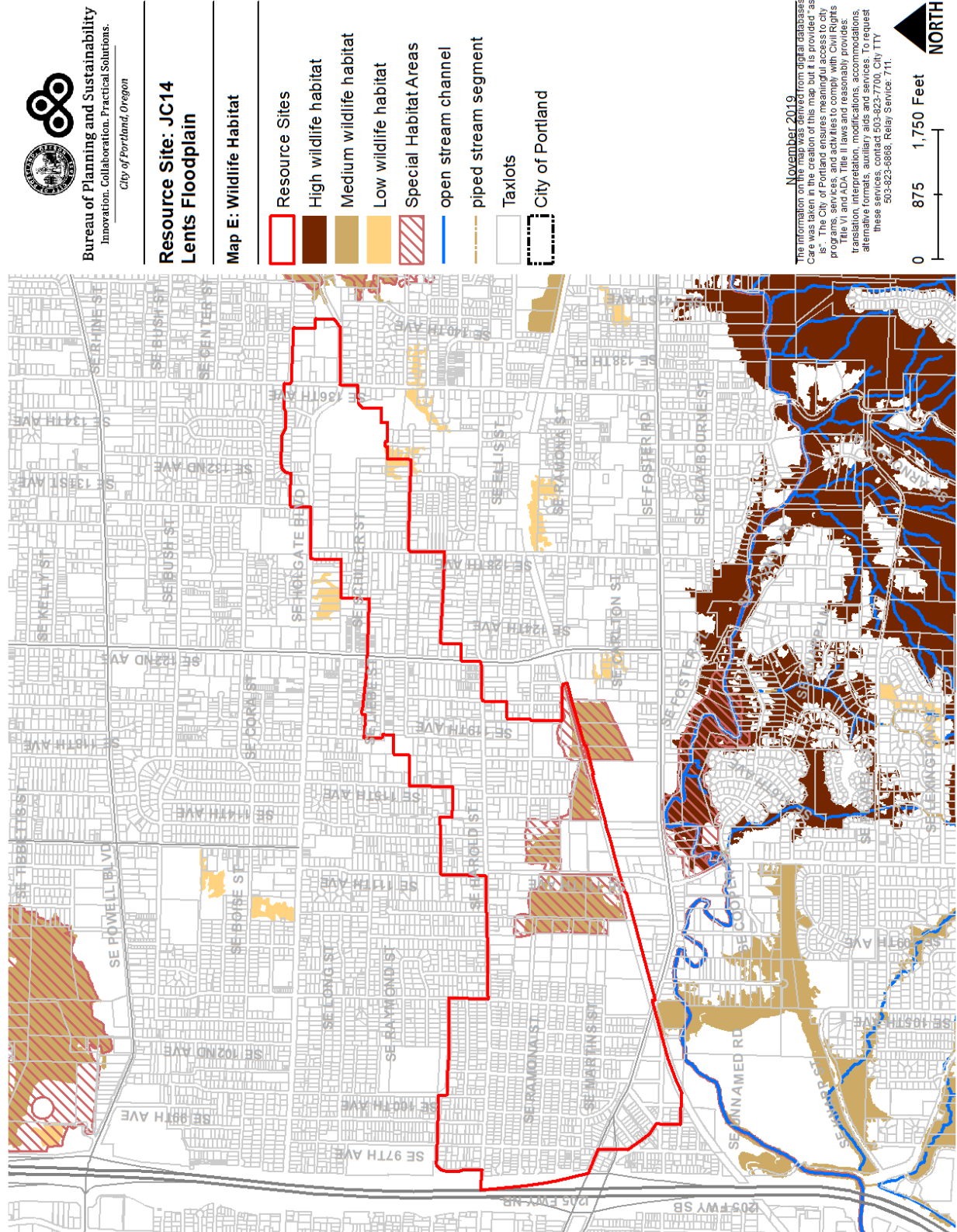


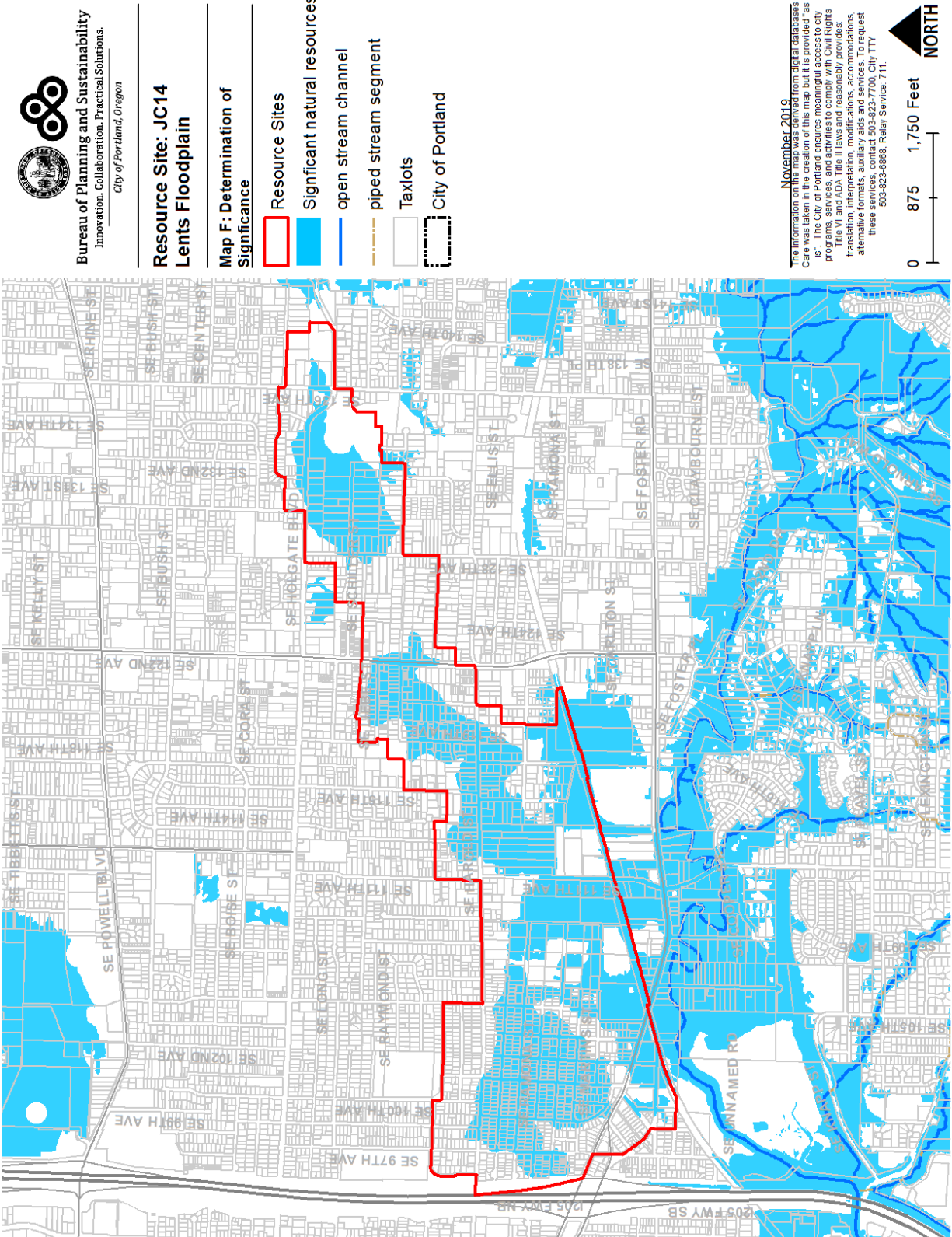


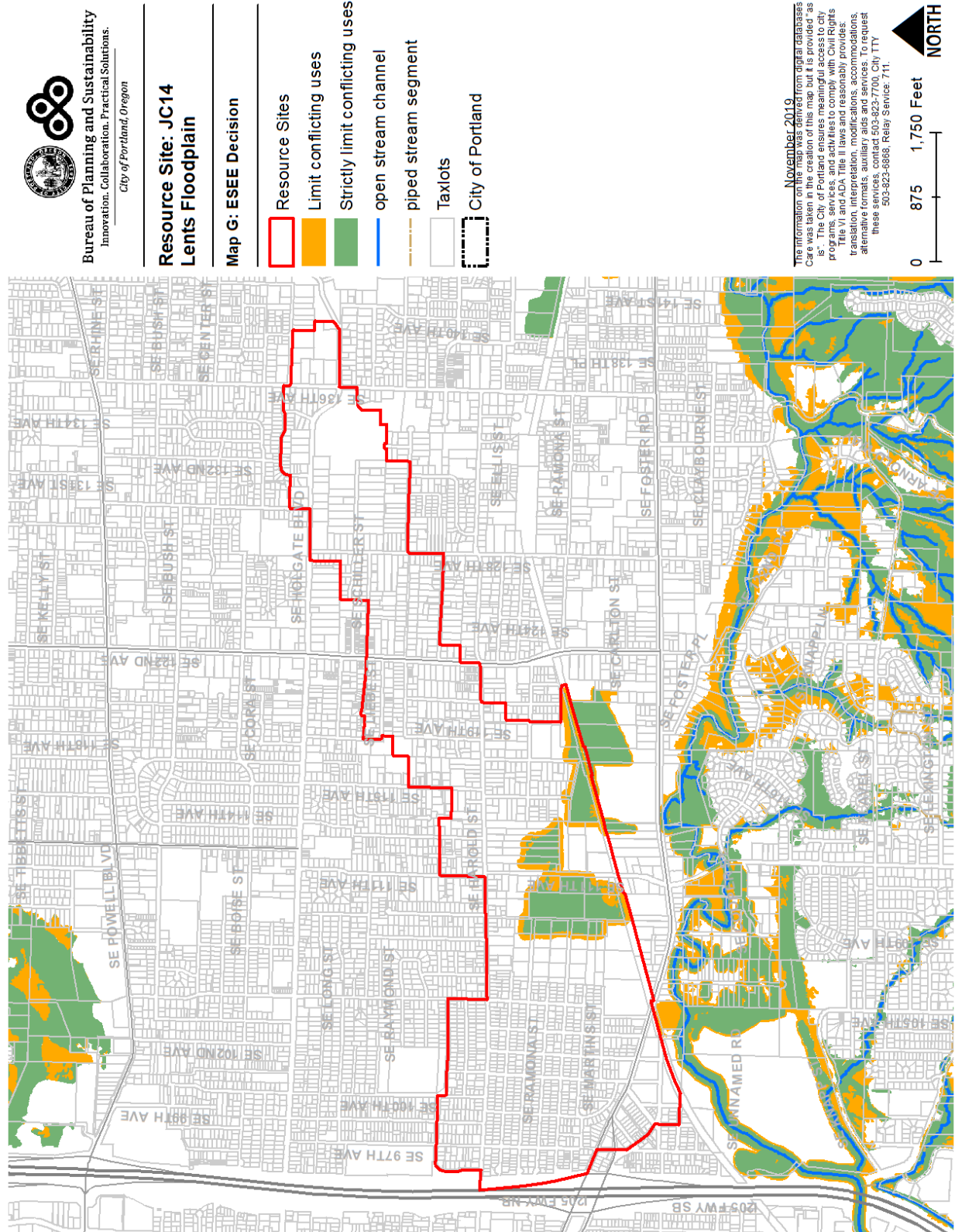








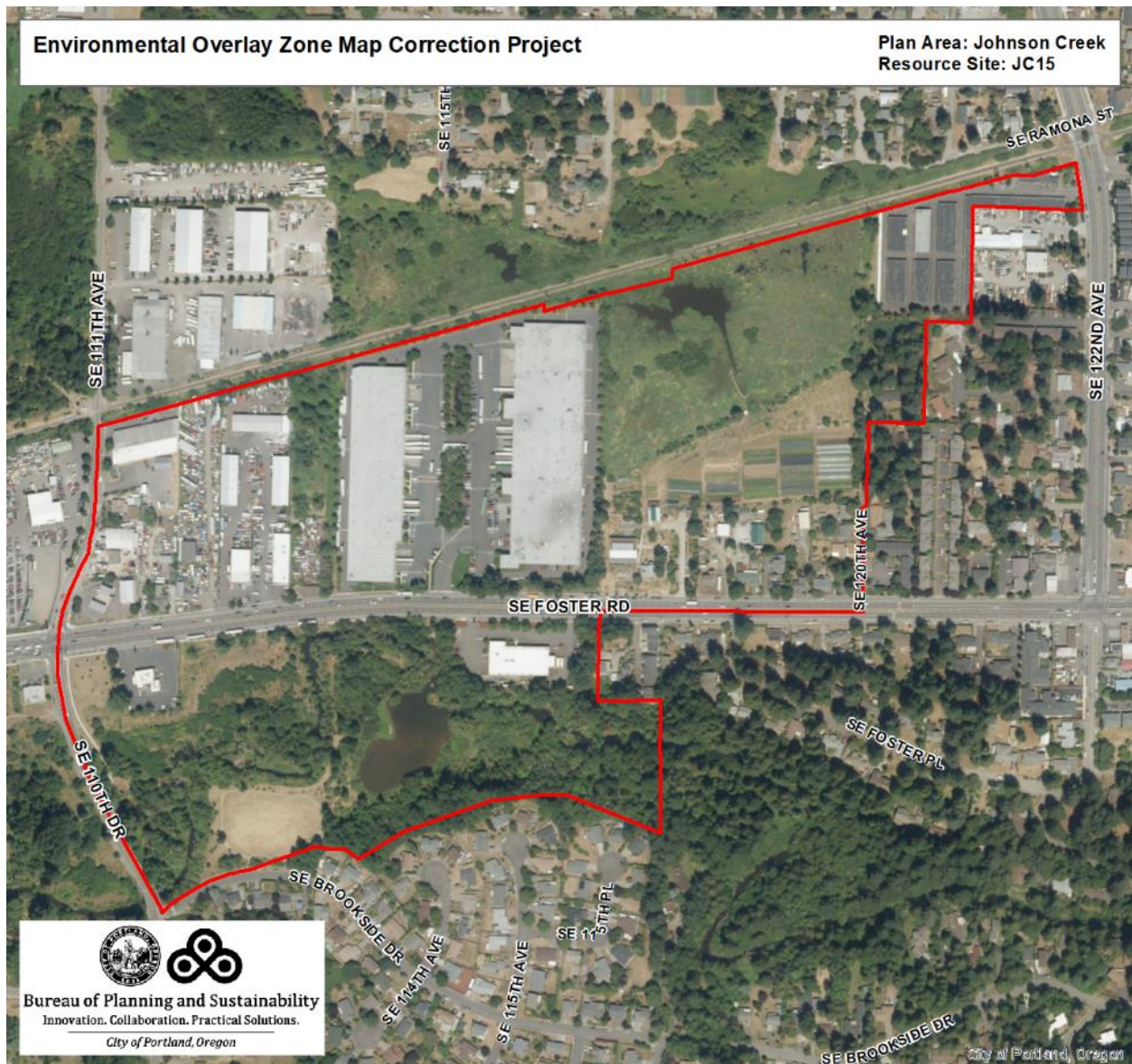






**Resource Site No.: JC15    Resource Site Name: Brookside**

**Previous Plan:** Johnson Creek Basin Protection Plan    **Previous Resource Site No.:** 17



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC15	
	Study Area
<b>Stream (Miles)</b>	1.0
<b>Wetlands (acres)</b>	19.6
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	44.0
Forest (acres)	3.7
Woodland (acres)	15.8
Shrubland (acres)	3.2
Herbaceous (acres)	21.3
<b>Flood Area*</b>	34.4
Vegetated (acres)	25.9
Non-vegetated (acres)	8.5
<b>Steep Slopes (acres)**</b>	11.9
<b>Impervious Surface (acres)</b>	15.9
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

There are multiple wetlands in this site. The northern wetland and meadow is dominated by reed canary grass, blackberry, and willow. The southern wetland includes trees and is associated with the Johnson Creek. Large expanses of reed canary grass provide habitat for birds and small mammals. Adjacent forests bordering on the east provide perch sites for raptors who feed on small mammals. This site provides an important function of providing flood storage during peak flooding.

The combination of wetland, open grassland, deciduous trees, and adjacent coniferous forest is uncommon within the Johnson Creek Basin. This range of habitat type supports a diversity of species. The curvilinear character of the creek and gradual grades result in a floodway that extends over two-thirds of the site.

The open space north of SE Foster Road acts as a wildlife corridor, allowing the potential for wildlife recharge from Johnson Creek to Beggar's Tick Marsh, a significant natural resource fully protected by Multnomah County.

Much of the site is in the 100- year flood plain. Development in the flood area, including buildings and paving, reduce flood capacity and infiltration and increases the risk of flood within the site as well as up and down stream.

Adjacent residential development has provided pedestrian access easements to an open space strip that borders the creek property. This allows the opportunity for viewing wildlife and suggests use of the area by children and domestic animals.

Land bordering SE Foster Road is zoned commercial and industrial and is presently generally a mix of this and low-density residential uses. A drive-in theater is located on the northern side of SE Foster Road, south of the Springwater line.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC15</b>				
<b>Resource Site (acres) = 78.978741</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	29.9	8.0	12.8	50.6
percent total inventory site area	37.8%	10.1%	16.1%	64.1%
<b>Wildlife Habitat*</b>				
acres	17.4	9.5	0.1	27.0
percent total inventory site area	22.1%	12.0%	0.1%	34.1%
<b>Special Habitat Areas**</b>				
acres				30.3
percent total inventory site area				38.4%
<b>Combined Total*</b>				
acres	32.8	6.2	11.8	50.7
percent total inventory site area	41.5%	7.8%	15.0%	64.2%
* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water. ** Special Habitat Areas rank high for wildlife habitat. +Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC15 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 and R2 base zones. Industrial uses area allowed in the IG1 and IG2 base zones. Employment uses area allowed in the EG2 base zone. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC15, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

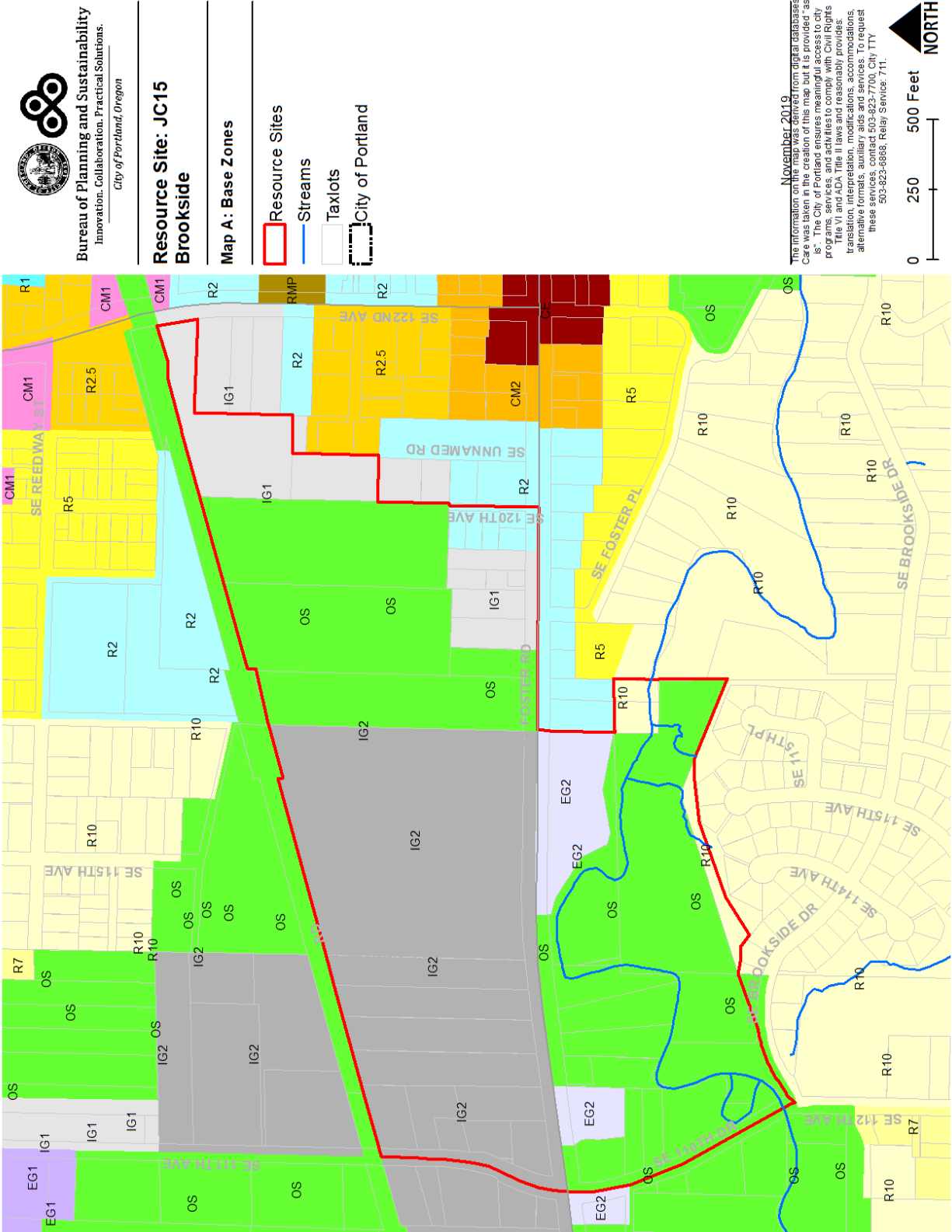
The residential, industrial and employment development is located in the flood area. The structures and impervious surface limit the flood capacity and infiltration functions of the land and increase the flood risk to the property as well as properties up and down stream. New or expanded development in the flood area should be *limited*.

### ESEE Decisions

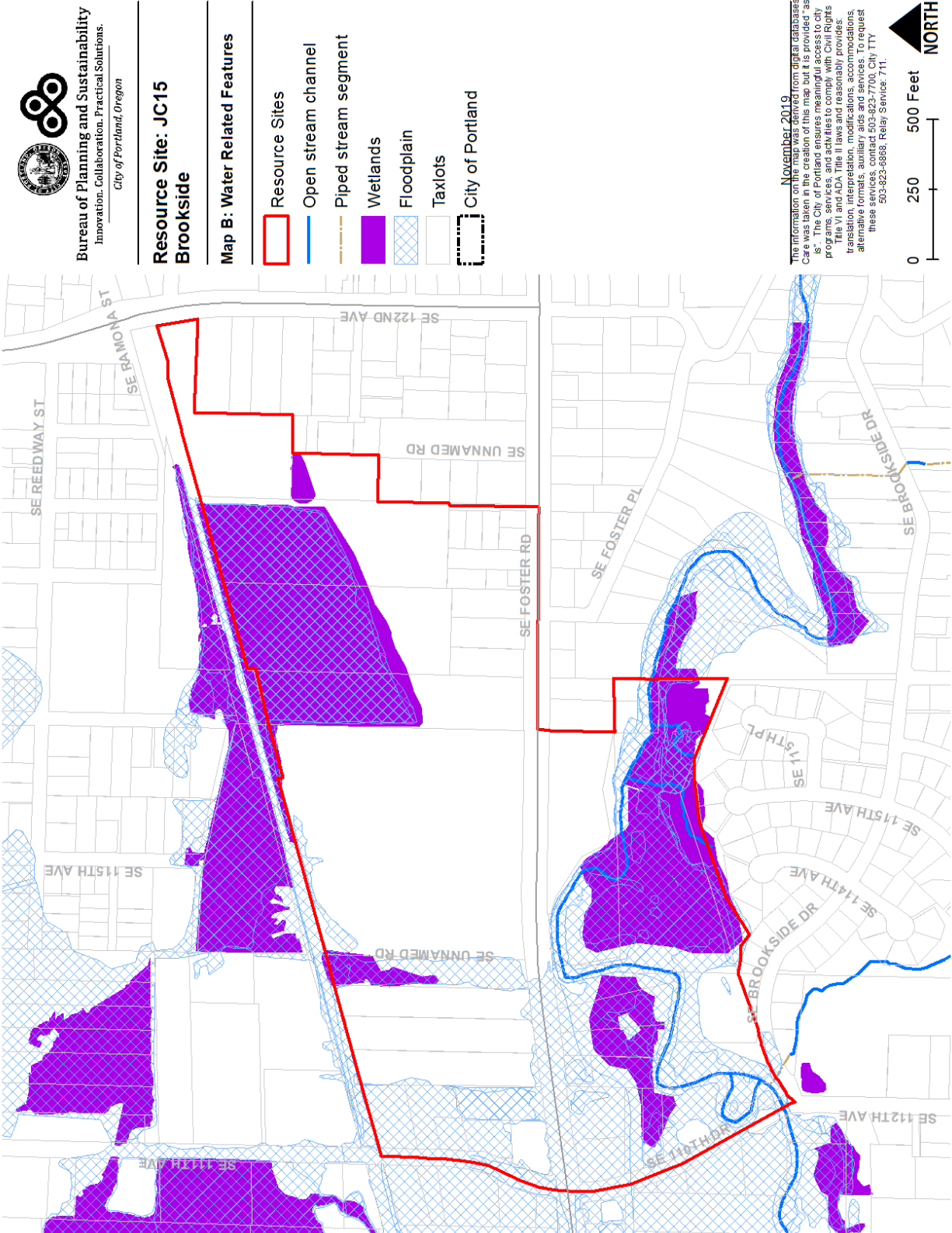
Based on the ESEE and general recommendations (Volume 2) resource site-specific ESEE, the ESEE decisions for Resources Site JC15 are:

1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within land between 50 and 75 feet of stream top-of-bank or between 30 and 55 feet of wetland.
4. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 75 feet from stream top-of-bank, and areas of forest or woodland vegetation contiguous to but more than 55 feet from wetlands.
5. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

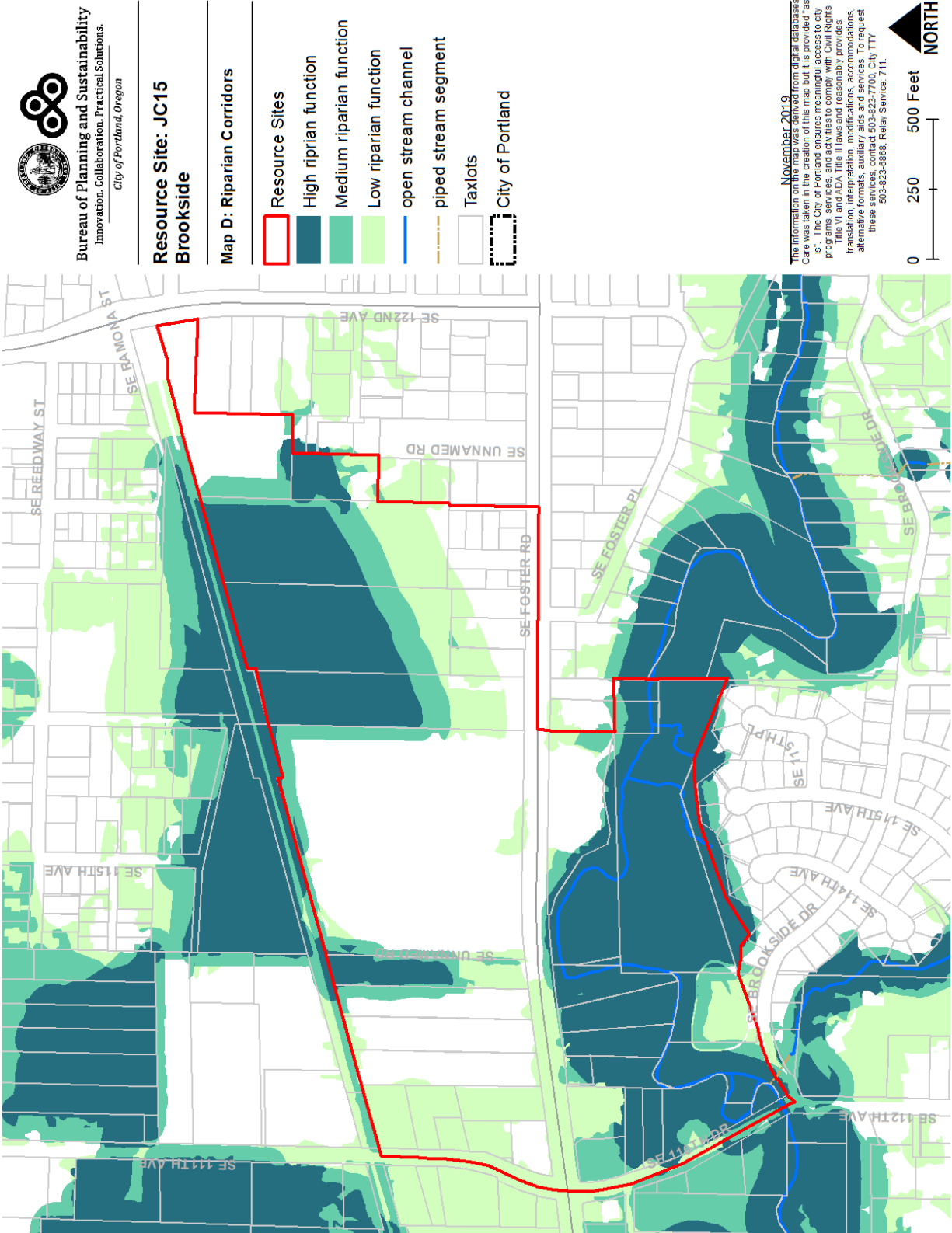
Table C: ESEE Decision for Resource Site JC15	
ESEE Decision	Acres
Strictly Limit	29.7
Limit	5.2
Allow	44.1

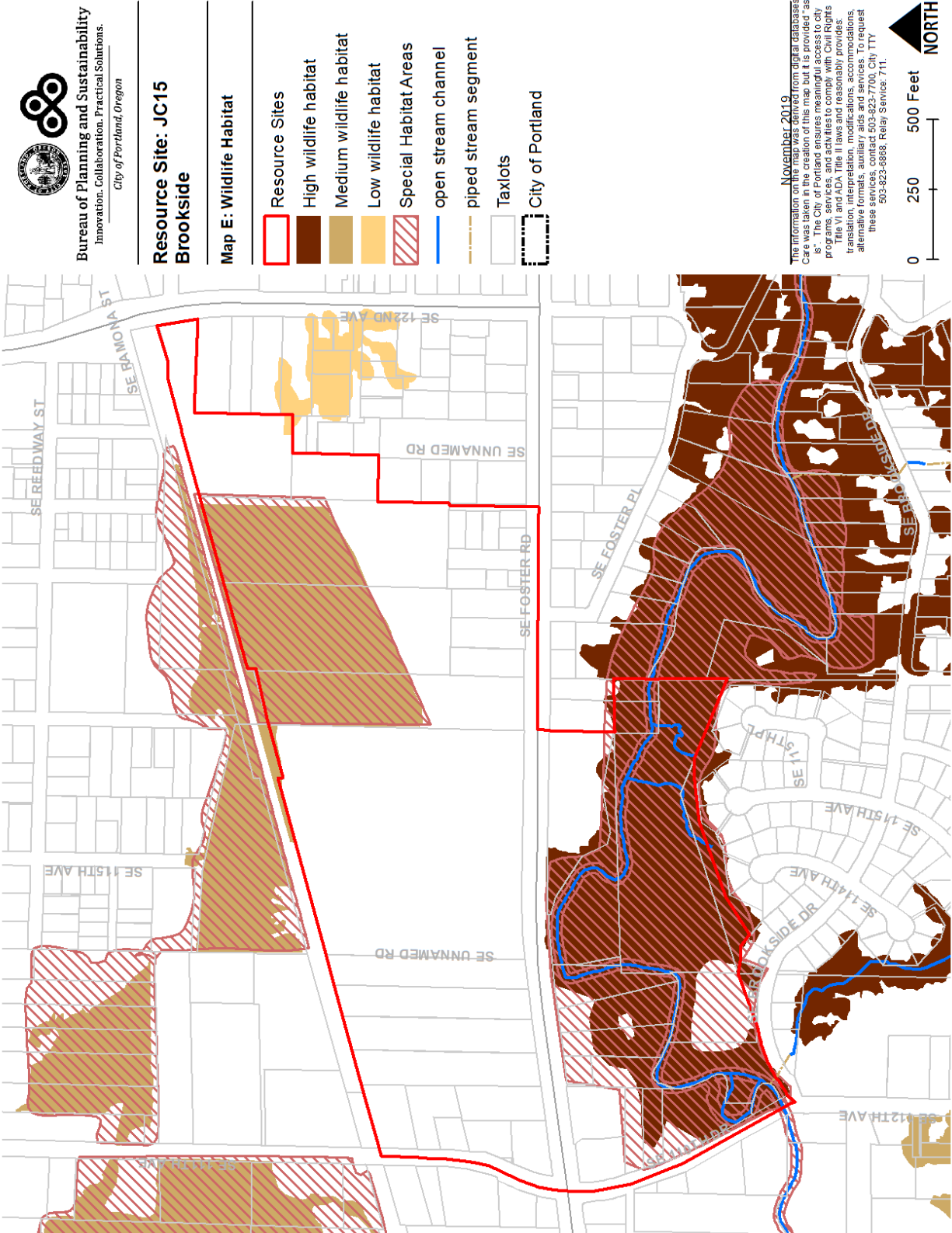


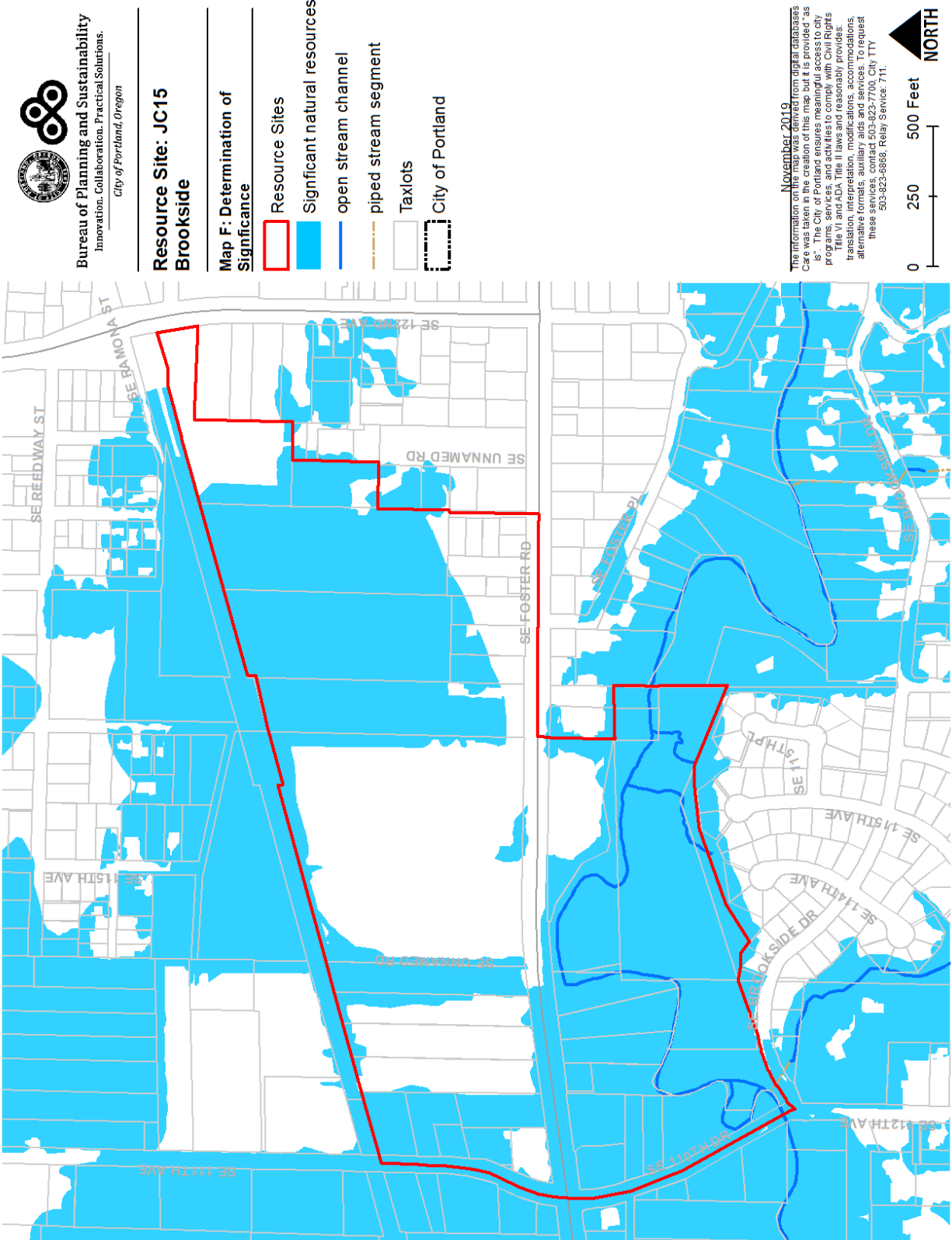




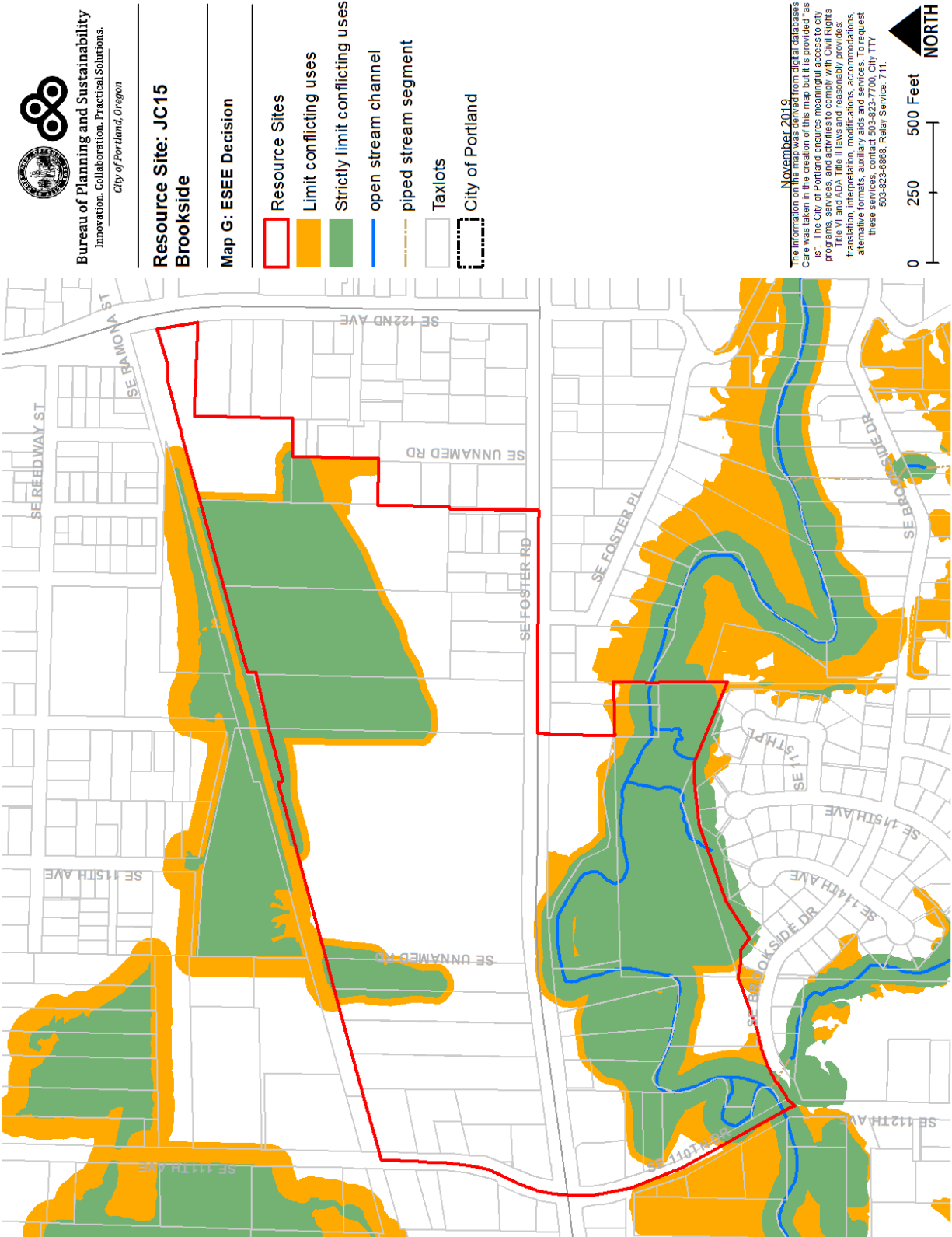














**Resource Site No.:** JC16 **Resource Site Name:** Leach Botanical Garden  
**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resources Site No.:** 18



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC16	
	Study Area
<b>Stream (Miles)</b>	2.4
<b>Wetlands (acres)</b>	3.7
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	43.1
Forest (acres)	29.3
Woodland (acres)	12.5
Shrubland (acres)	0.0
Herbaceous (acres)	1.3
<b>Flood Area*</b>	11.7
Vegetated (acres)	11.7
Non-vegetated (acres)	0.1
<b>Steep Slopes (acres)**</b>	21.3
<b>Impervious Surface (acres)</b>	7.9
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

Johnson Creek, Creekside wetlands and riparian forests are found in the site. The dominant vegetation is a mixed forest of Douglas fir, cedar, alder, cottonwood, maple, willow, and various ornamental trees, as well as lawns and gardens. Several tributary streams enter Johnson Creek on the south side coming down from the Cedar Creek Watershed in the Boring Lava Domes providing wildlife connectivity. Just to the west, a broad flood area bordered by forested slopes occurs at a large s-curve in Johnson Creek.

From SE 117th Avenue east, Johnson Creek follows the base of the north slope of Mt. Scott. The canyon walls rise 70 feet from the creek channel with 20% slopes. Due to the steepness of the canyon walls, the flood way is confined to a narrow strip that is generally 100 feet wide, with the 100-year flood plain somewhat less. An exception to this is the broad—up to 300 foot-wide—flood area where the creek makes an s-curve in the vicinity of SE 117th.

Interspersion of this area is high, being near large forested areas such as Powell Butte to the north of the creek, the Boring Lava Hills the south, and the developed and undeveloped parks of Leach's Botanical Garden and B dee Park (SE 142nd Avenue and SE Cooper Street). This juxtaposition of the creek channel with large forested natural areas and parks provides not only an important source of water to animals that use the larger forested areas, but also serves as a corridor providing cover and food for movements and dispersals between the areas.

Leach Botanical Garden, straddles Johnson Creek and is located in this site area at 6704 SE 122nd Avenue. It is a historic and environmental education resource and designated as a "scenic resource" by the City. It has a Rank I status on the City of Portland's Historic Inventory and is eligible for the National Register. The colonial revival-styled home was built in 1933 by John and Lilla Leach. Mrs. Leach was a

nationally known botanist with particular interest in native plants and Mr. Leach was a local pharmacist and civic leader. The property is owned by the City of Portland and operated by a non-profit organization. Environmental education programs are offered, and the creek and garden are used as outdoor classrooms.

This site includes half-acre-plus sized lots that are occupied with homes constructed in the 1950's. The oversized lot sizes have allowed for the natural growth of Douglas Fir and Western Red Cedar trees to remain. The forest canopy is intact and the surrounding low density residential provides a quiet setting that is conducive to wildlife. Natural understory areas have been replaced with lawns and landscape plants.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC16</b>				
<b>Resource Site (acres) = 54.216513</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	20.3	8.2	12.5	41.1
percent total inventory site area	37.5%	15.2%	23.1%	75.7%
<b>Wildlife Habitat*</b>				
acres	41.0	0.0	0.0	41.0
percent total inventory site area	75.5%	0.0%	0.0%	75.5%
<b>Special Habitat Areas**</b>				
acres				14.3
percent total inventory site area				26.4%
<b>Combined Total<sup>+</sup></b>				
acres	41.1	0.4	1.0	42.4
percent total inventory site area	75.8%	0.7%	1.8%	78.3%
* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water. ** Special Habitat Areas rank high for wildlife habitat. +Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC16 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 3, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10, R5 and R2 base zones base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC16, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

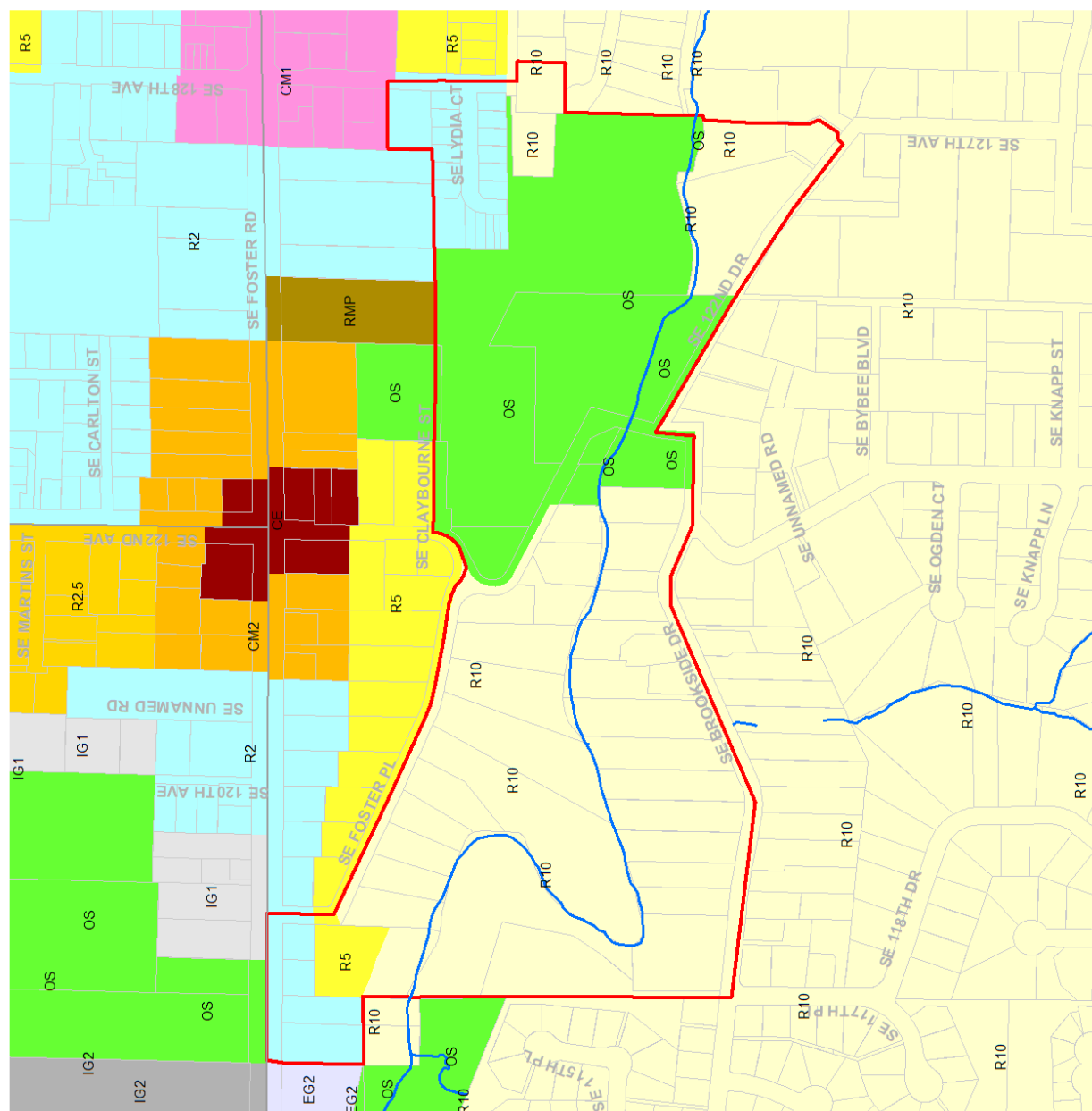
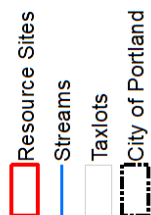
The steep slopes are susceptible to erosion and landslide. Clustering of new development away from the steep slopes and maintaining existing trees and vegetation would reduce the risks. New or expanded development in areas of steep slopes should be *limited*.

#### ESEE Decisions

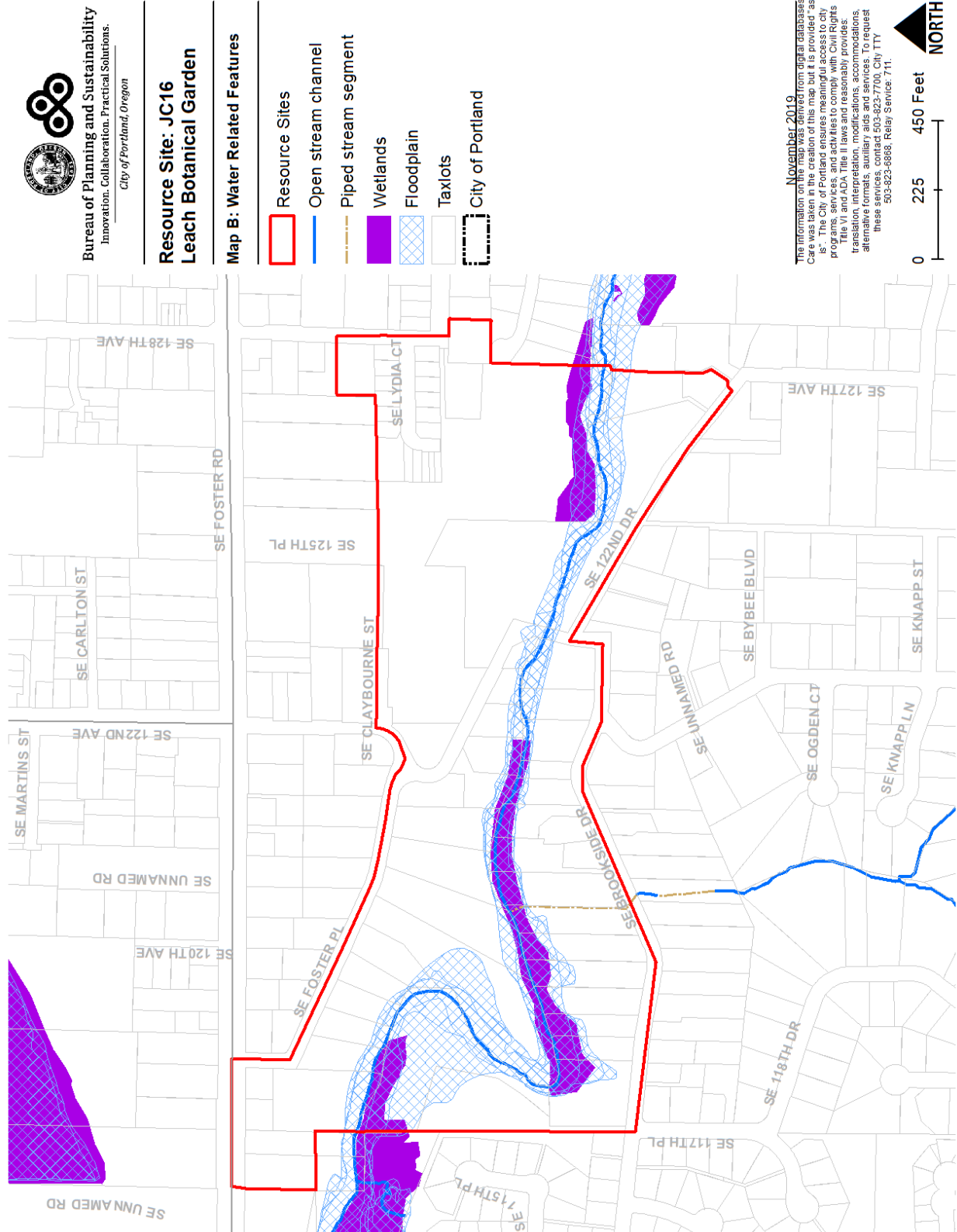
Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resource Site JC16 are:

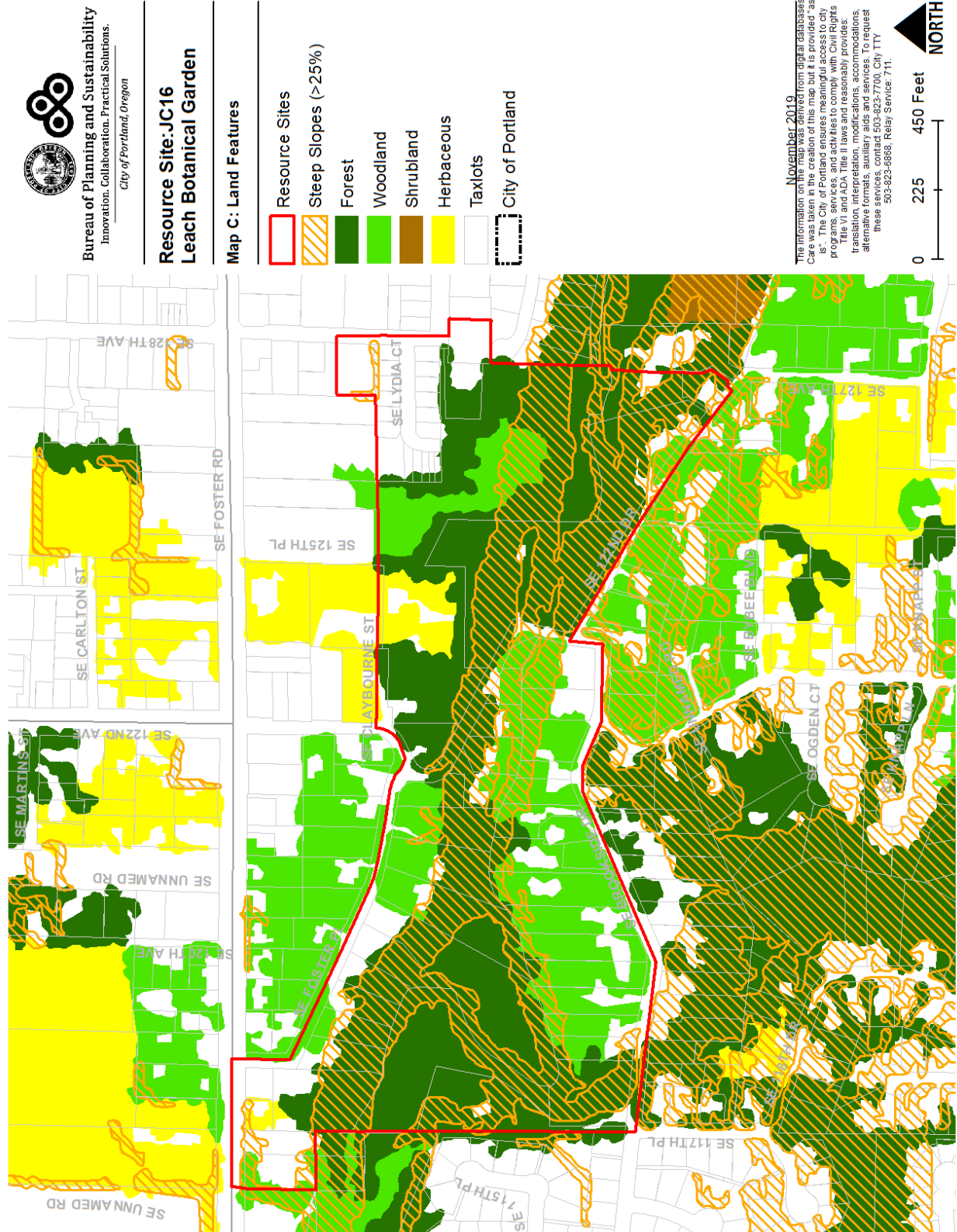
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within land between 50 and 75 feet of stream top-of-bank and 30 and 55 feet of wetlands,
4. *Limit* conflicting uses within areas of forest or woodland vegetation located on steep slopes.
5. *Limit* conflicting uses within areas of areas of forest vegetation not on steep slopes if the forest vegetation is contiguous to but more than 75 feet from stream top-of-bank extending or contiguous to but more than 55 feet of wetlands and extending to 200 feet from streams or wetlands.
6. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
7. *Allow* conflicting uses within all other areas containing significant natural resources.

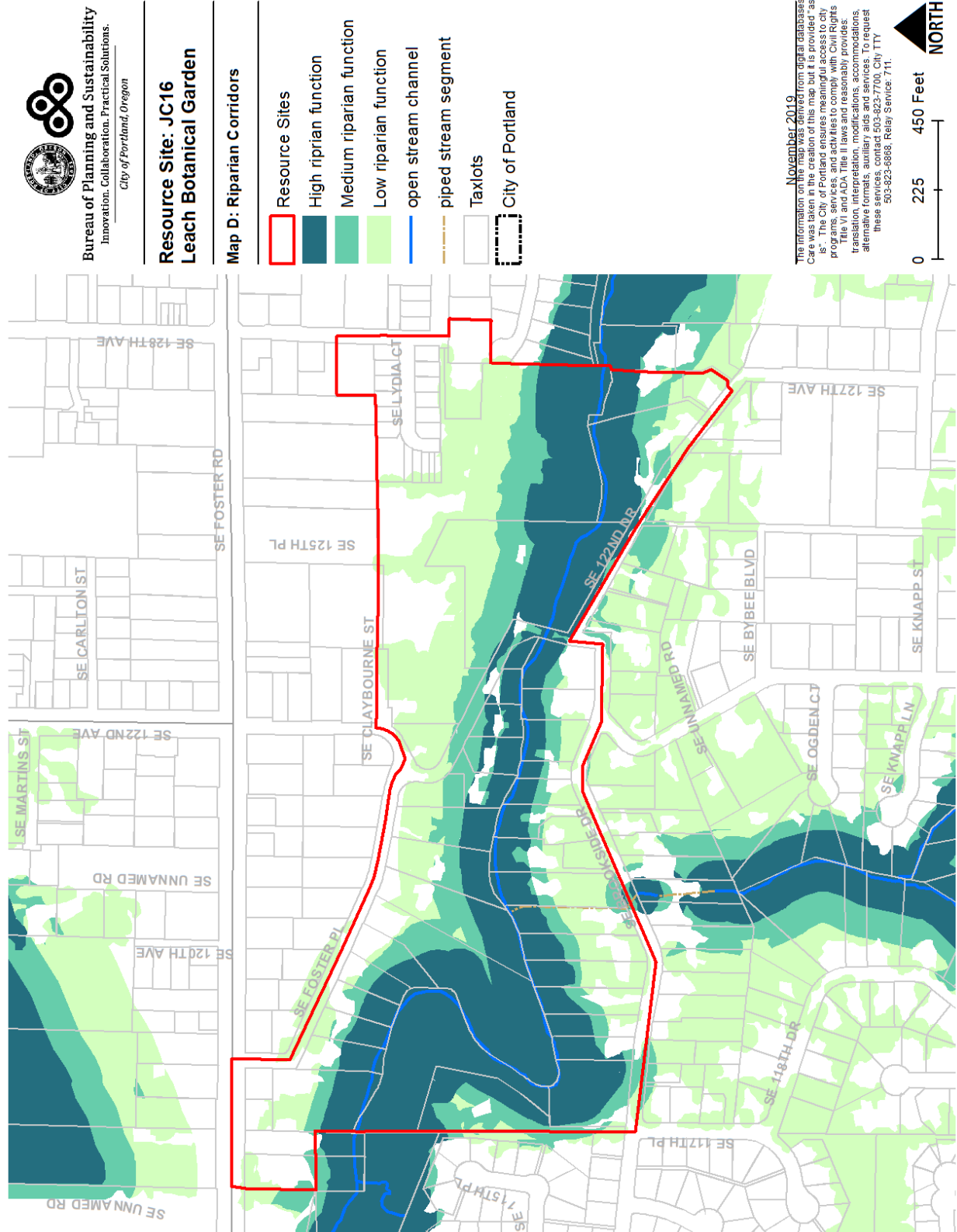
Table C: ESEE Decision for Resource Site JC16	
ESEE Decision	Acres
Strictly Limit	13.0
Limit	16.0
Allow	25.2

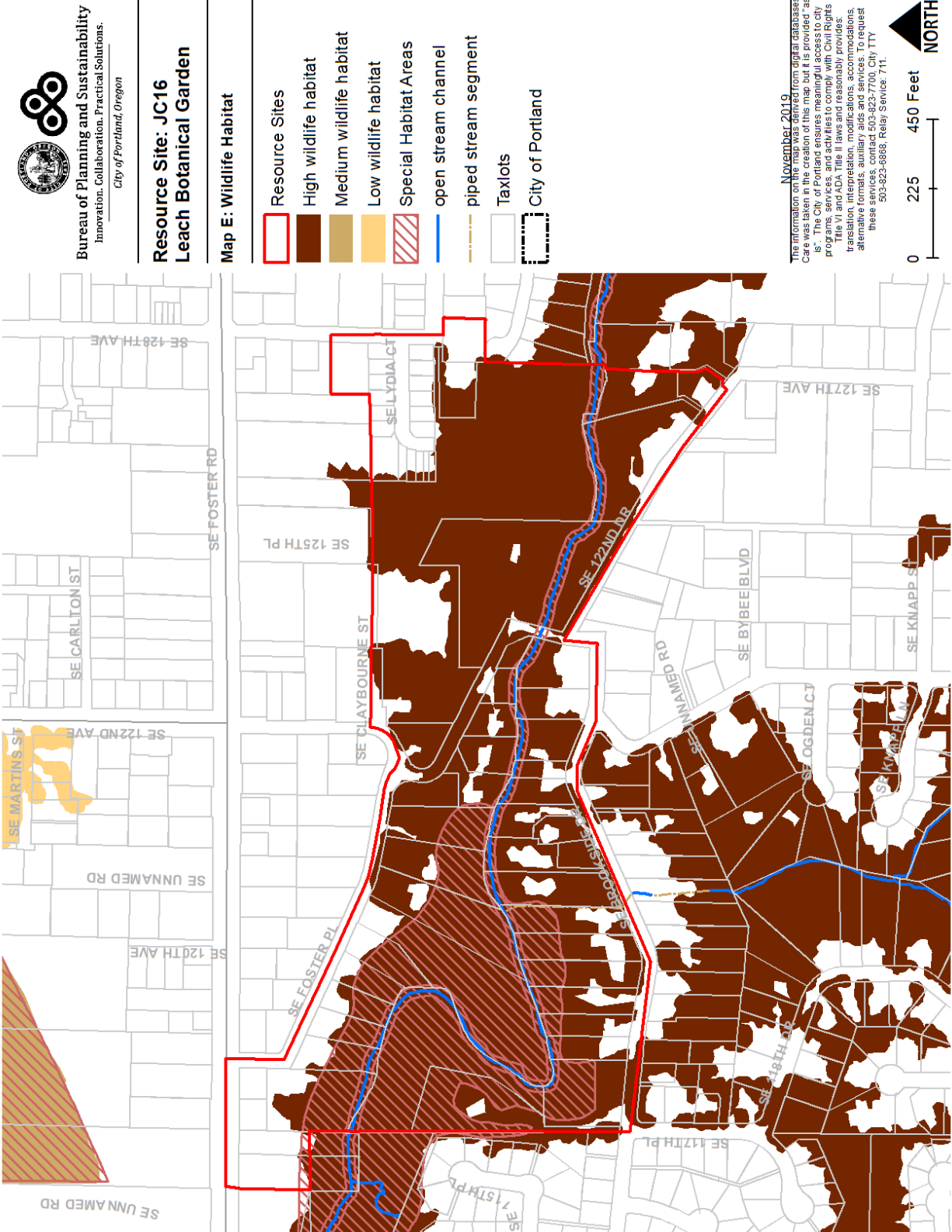


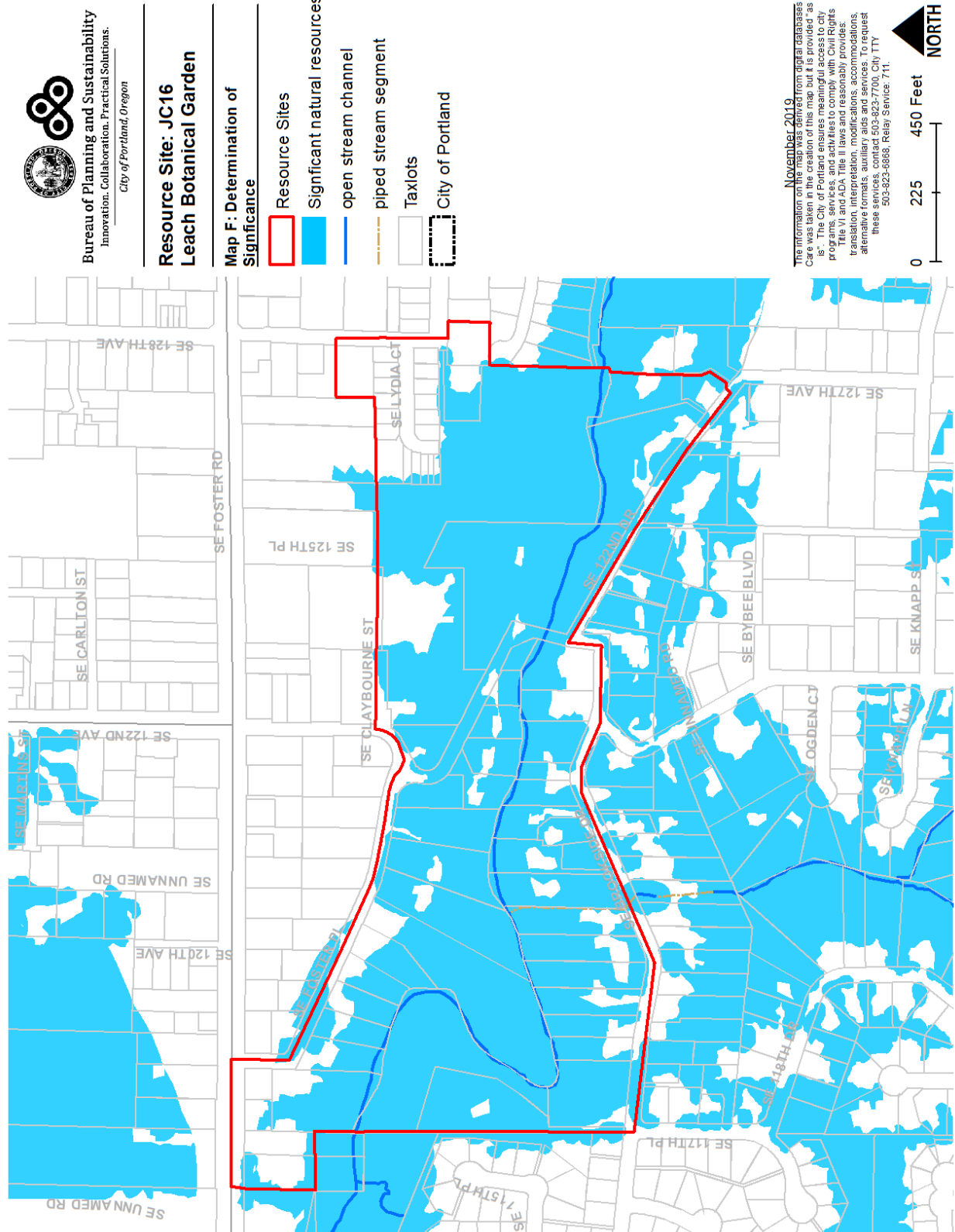












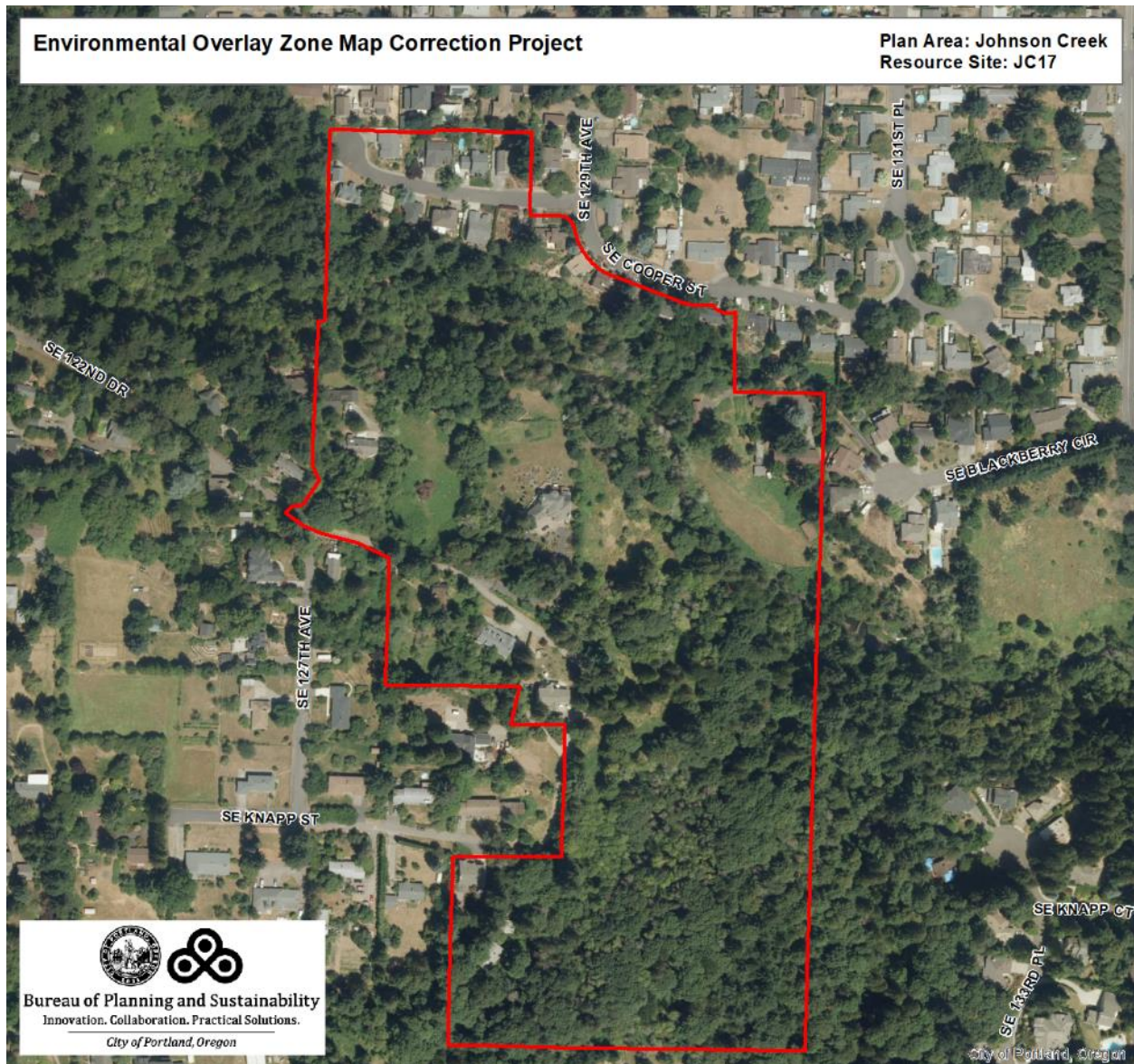






**Resource Site No.: JC17 Resource Site Name: Wahoo Creek Natural Area**

**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resource Site No.:** 19



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC17	
	Study Area
<b>Stream (Miles)</b>	0.4
<b>Wetlands (acres)</b>	1.0
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	27.2
Forest (acres)	21.3
Woodland (acres)	2.0
Shrubland (acres)	1.5
Herbaceous (acres)	2.3
<b>Flood Area*</b>	5.6
Vegetated (acres)	5.5
Non-vegetated (acres)	0.0
<b>Steep Slopes (acres)**</b>	19.5
<b>Impervious Surface (acres)</b>	1.7
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

The site is a mix of developed and undeveloped single-family residential land, surrounded by similar uses. Areas which have not been subdivided are largely open fields or are forested.

The creek and canyon character are the same as the site to the west (Site 16). There are 20%-sloped canyon walls that rise 70 feet above the creek. Sixty percent of the 34-acre site has a mixed, deciduous/coniferous forest cover, 30% is open pastureland, and about ten percent is developed with homes. There are no roads through this site to cut-off or disrupt animal access to the creek. Steep slopes may impede animal access to the creek in some areas.

This mid-section of the Johnson Creek canyon has relatively high quality due to the combinations of habitats that are adjacent to one another, including riparian strip, open grassland, upland, and mixed forest. No roads and the few homes (five or so) provide a relatively, quiet, natural area with cover and food, and where wildlife can move freely.

Interspersion of this area is high, lying near large forested areas such as Powell Butte to the north of the creek, the Lava Boring Hills to the south and the developed and undeveloped parks of Leach Botanical Garden and Bunde Park (SE 142nd and Cooper). A forested tributary to Johnson Creek provides good connectivity to the adjoining Lave Domes habitats.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC17</b>				
<b>Resource Site (acres) = 31.952518</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	14.9	6.9	4.7	26.5
percent total inventory site area	46.7%	21.5%	14.8%	83.1%
<b>Wildlife Habitat*</b>				
acres	22.1	0.0	0.0	22.1
percent total inventory site area	69.1%	0.0%	0.0%	69.1%
<b>Special Habitat Areas**</b>				
acres				1.1
percent total inventory site area				3.3%
<b>Combined Total<sup>+</sup></b>				
acres	23.1	1.4	2.0	26.5
percent total inventory site area	72.4%	4.5%	6.1%	83.1%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC17 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 base zone. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC17, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

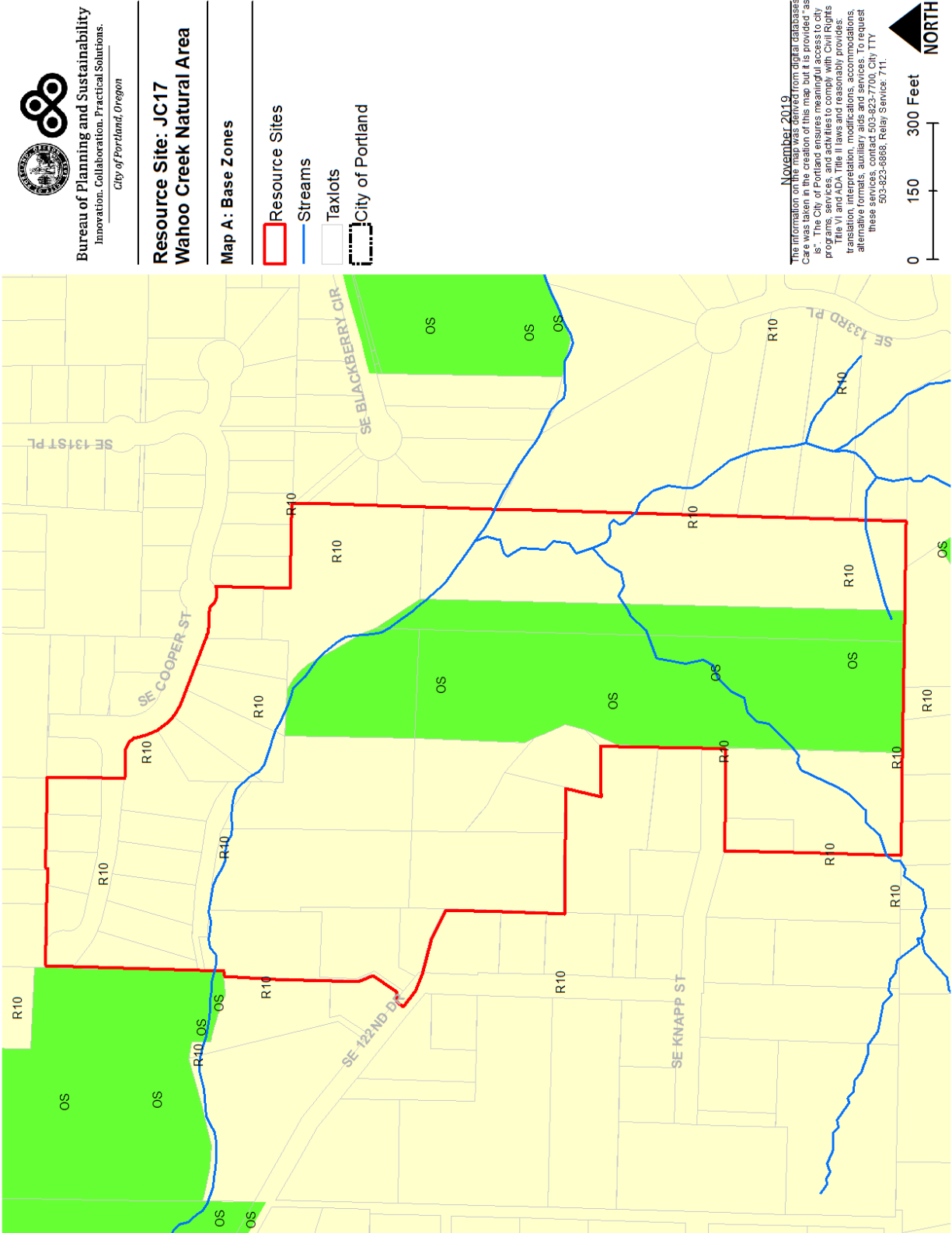
The steep slopes are susceptible to erosion and landslide. Clustering of new development away from the steep slopes and maintaining existing trees and vegetation would reduce the risks. New or expanded development in areas of steep slopes should be *limited*.

#### ESEE Decisions

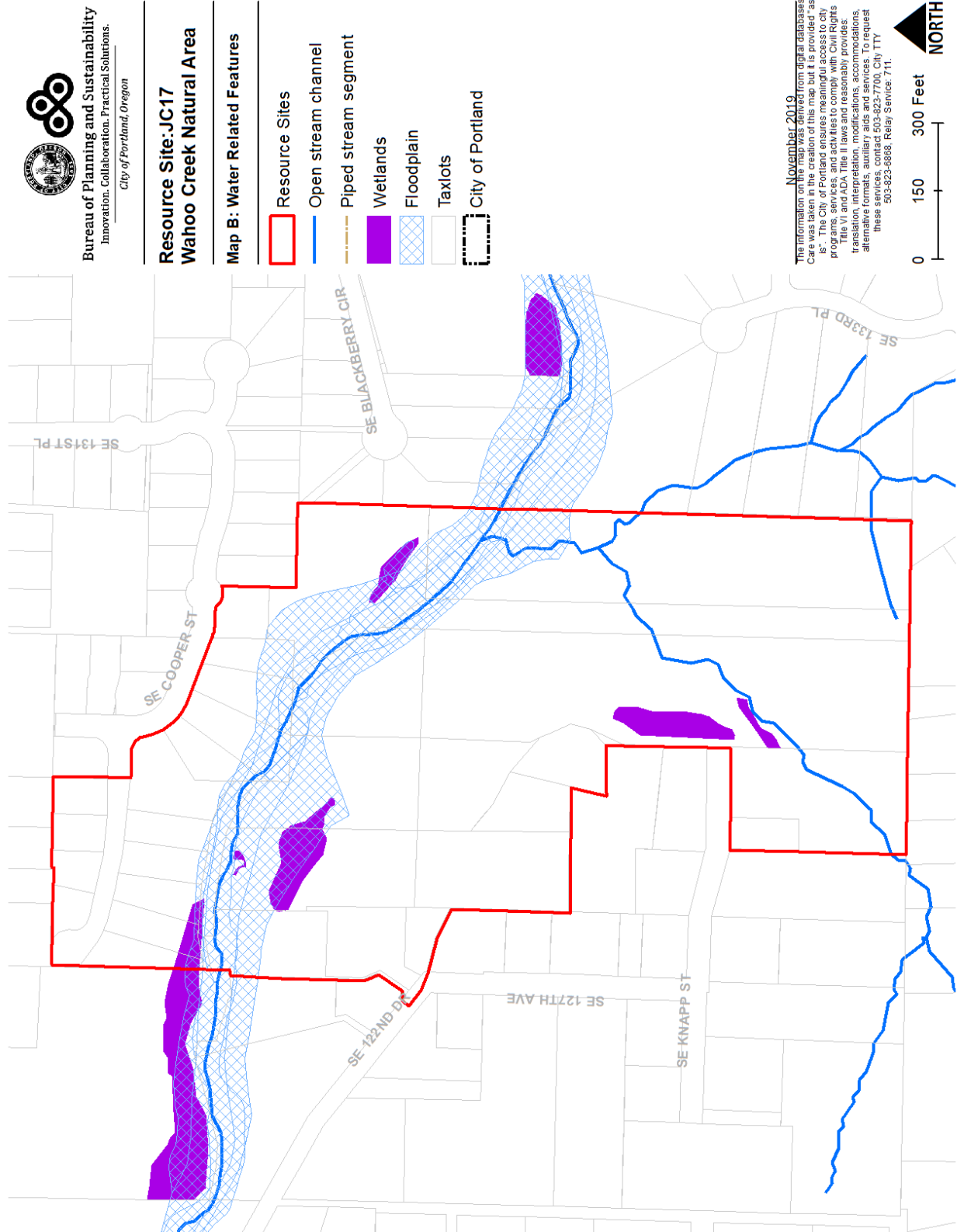
Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resources Site JC17 are:

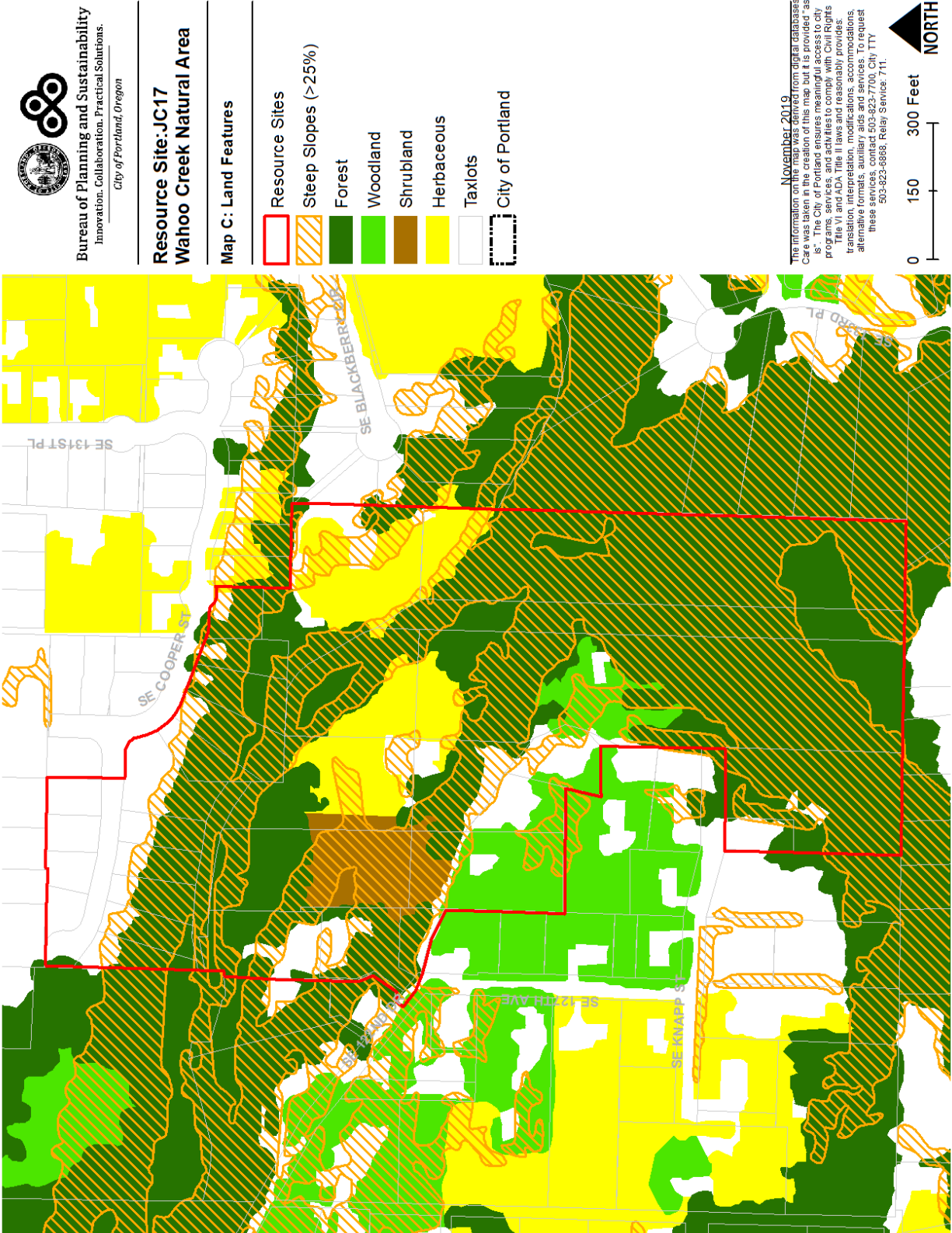
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank and land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within areas of forest or woodland vegetation contiguous to but more than 40 feet from stream top-of-bank and areas of forest or woodland vegetation contiguous to but more than 30 feet from wetlands,
4. *Limit* conflicting uses within areas of forest or woodland vegetation located on steep slopes.
5. *Limit* conflicting uses areas of shrubland or herbaceous vegetation within public parks, and vegetation contiguous to public parks.
6. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
7. *Allow* conflicting uses within all other areas containing significant natural resources.

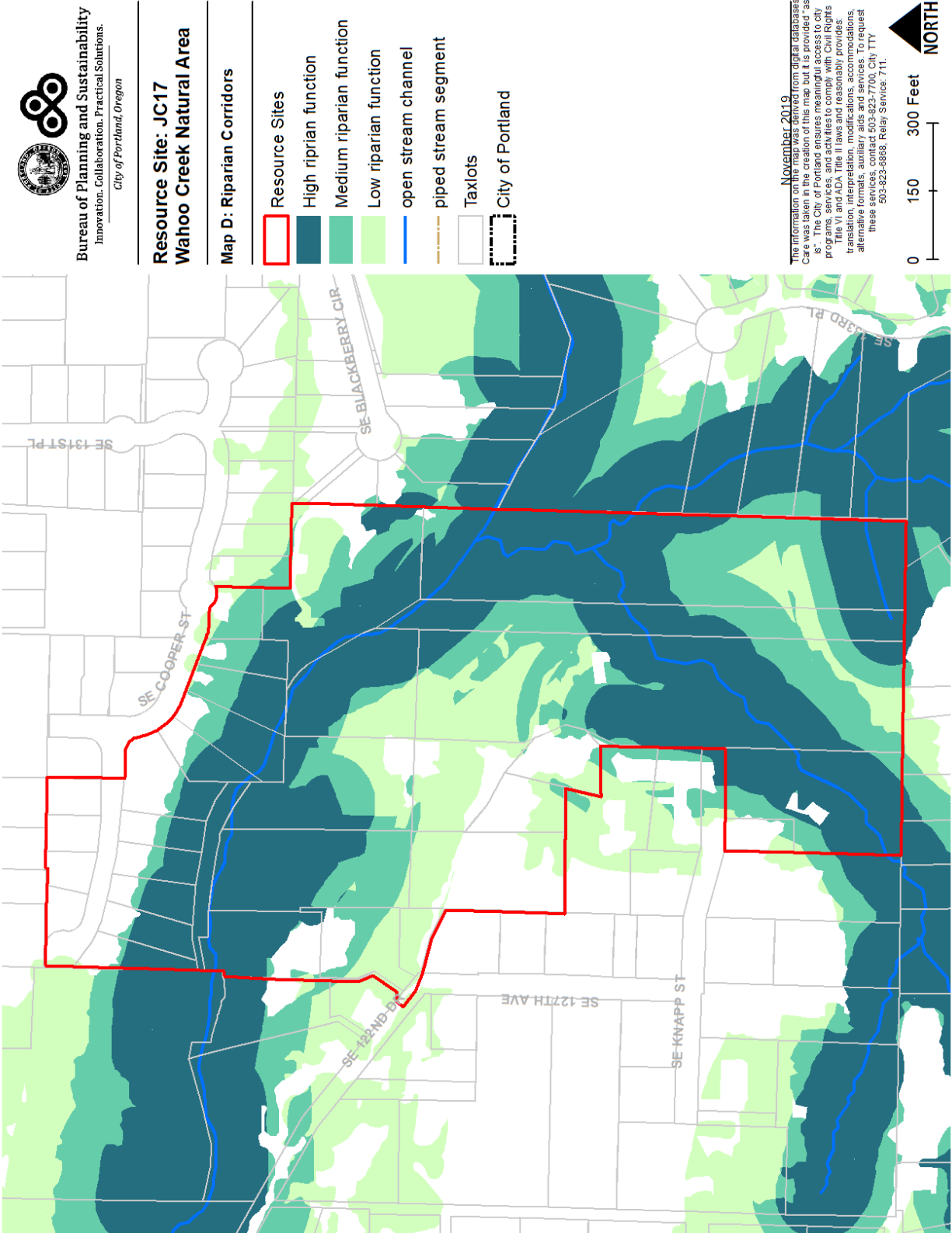
Table C: ESEE Decision for Resource Site JC17	
ESEE Decision	Acres
Strictly Limit	8.6
Limit	17.3
Allow	6.1

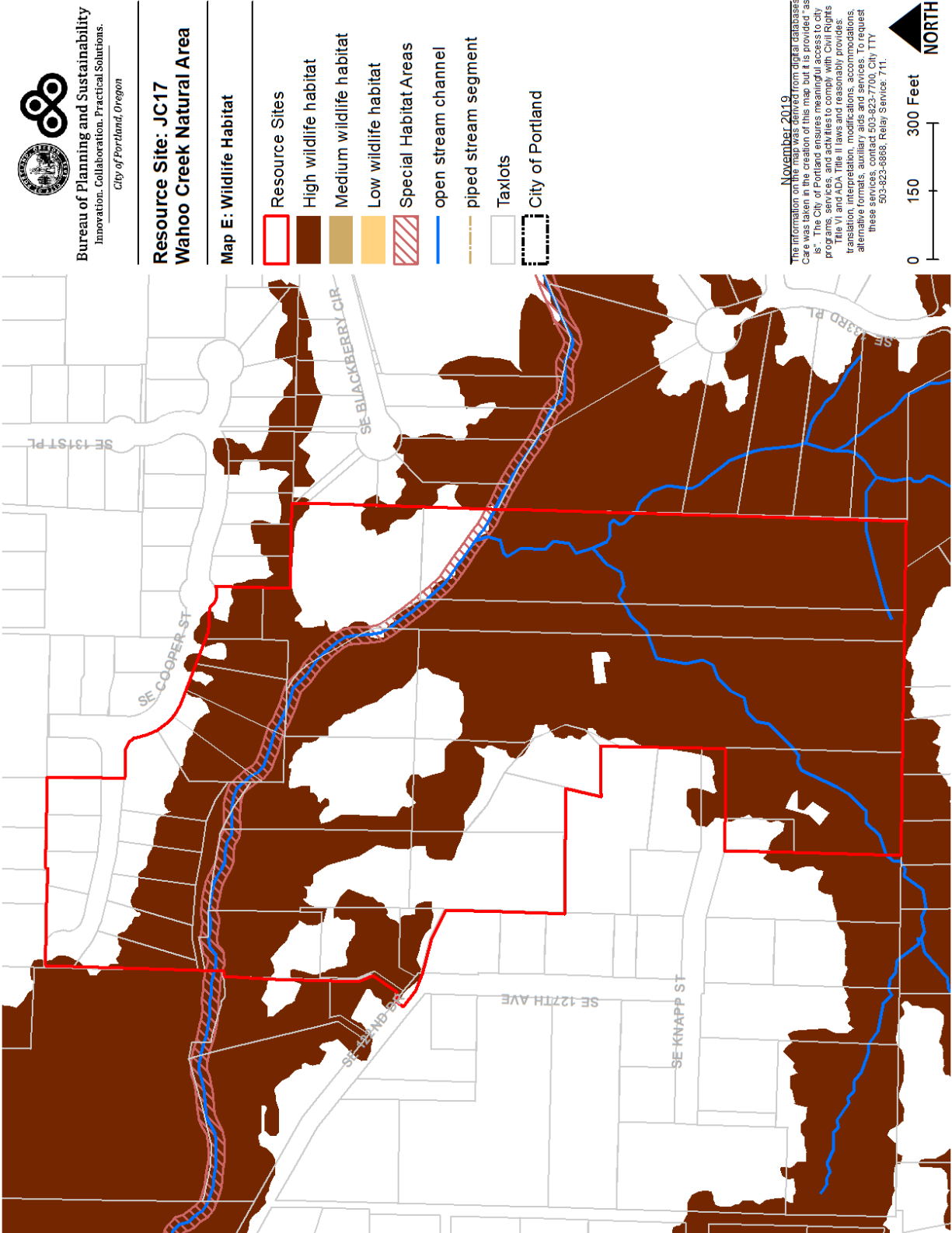


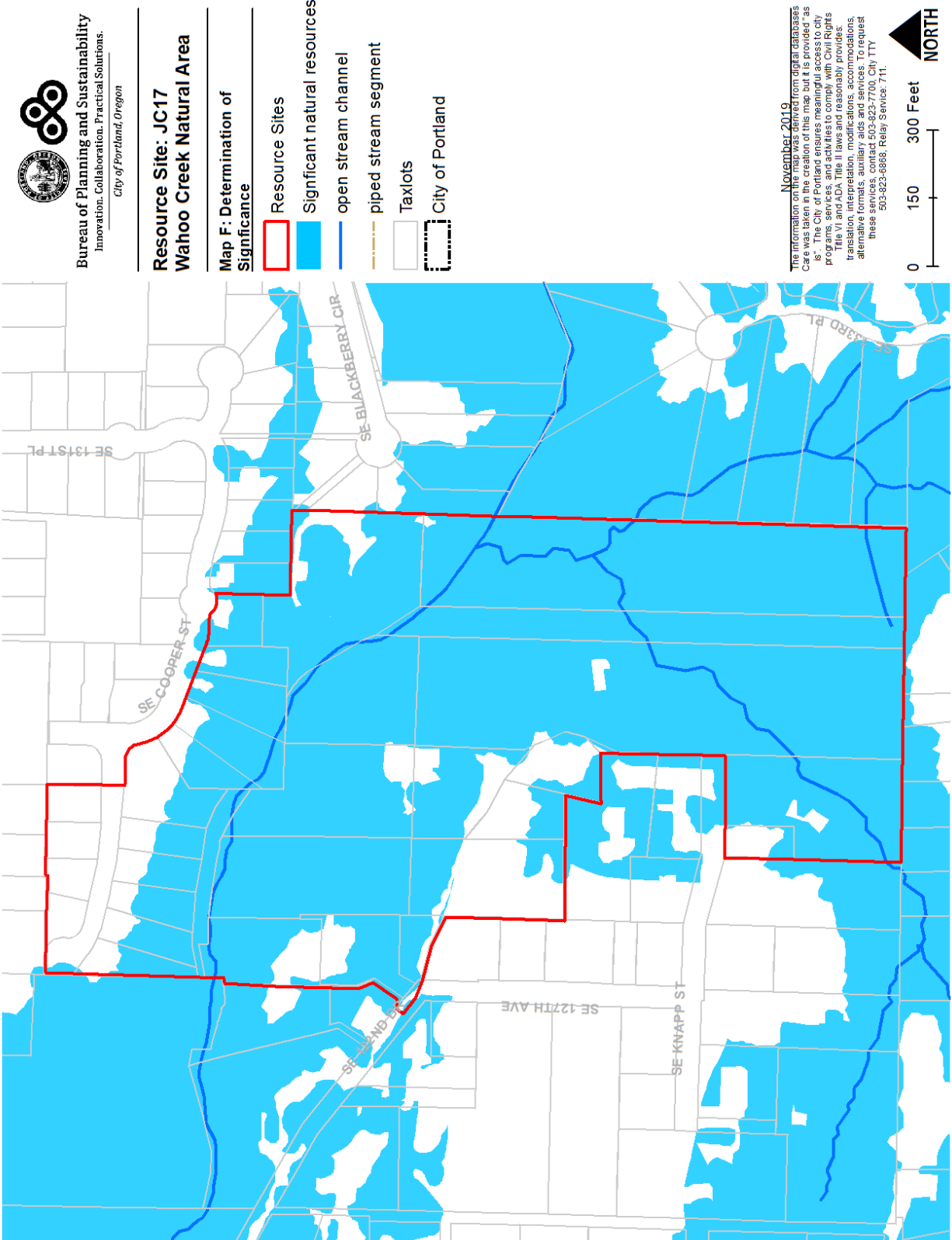


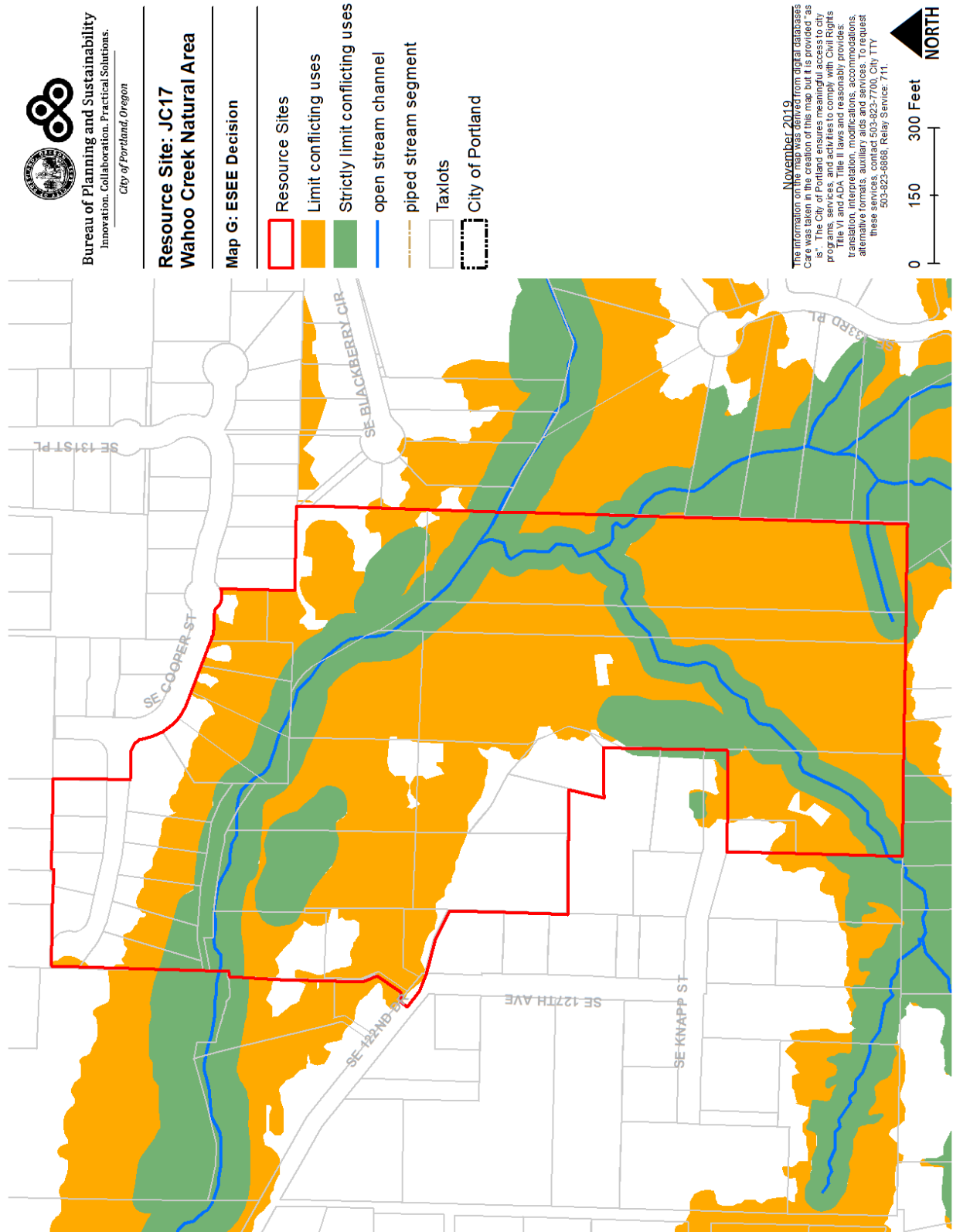






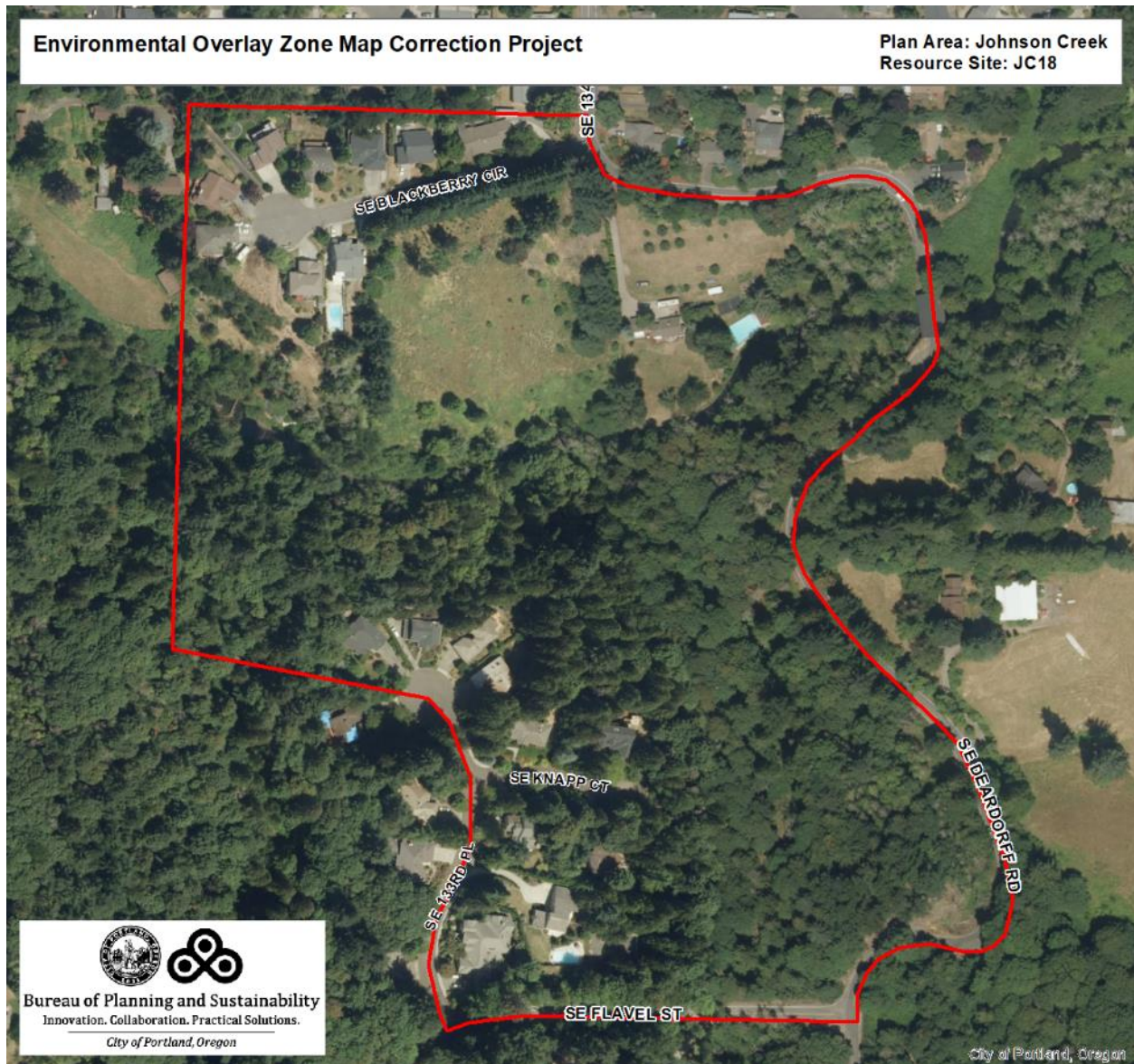








**Resource Site No.:** JC18 **Resource Site Name:** Deardorff Creek Natural Area  
**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resource Site No.:** 20



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC18	
	Study Area
<b>Stream (Miles)</b>	0.4
<b>Wetlands (acres)</b>	0.7
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	25.6
Forest (acres)	19.7
Woodland (acres)	0.5
Shrubland (acres)	0.0
Herbaceous (acres)	5.4
<b>Flood Area*</b>	5.2
Vegetated (acres)	5.1
Non-vegetated (acres)	0.1
<b>Steep Slopes (acres)**</b>	18.4
<b>Impervious Surface (acres)</b>	4.4
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

Most of this site is undeveloped, with single family subdivisions to the north and south. The creek bisects the site in an east-west direction.

Most of the site is forested with a mixed deciduous/coniferous forest. On the south side of the creek there is an intermittent stream that runs through an undeveloped parcel that is parallel and west of Deardorff Rd. The grades are relatively steep on the both sides of the creek, ranging from 10 to 20% and up to 35% along tributaries.

The Johnson Creek channel is riprapped. Dominant vegetation influencing the channel is a mixed forest of Douglas-fir, cedar, alder, cottonwood, maple, willow, and various ornamental trees, as well as lawns and gardens. The creek is well-shaded throughout this stretch with some pools, providing habitat for fish and other aquatic species. Interspersion of this area is high, lying near large forested areas such as Powell Butte to the north of the creek, the Lava Boring Hills to the south and the developed and undeveloped parks of Leach Botanical Garden and Bunde Park (SE 142nd and Cooper).

This juxtaposition of the creek channel with large forested natural areas and parks provides not only a potential important source of water to animals that use the larger forested areas, but also acts as a corridor providing cover and food, and movements and dispersal between sites. A forested tributary to the south provides high quality habitat and connectivity to Boring Lava Domes habitats.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC18</b>				
<b>Resource Site (acres) = 30.57599</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	14.3	6.1	5.0	25.4
percent total inventory site area	46.7%	20.0%	16.4%	83.1%
<b>Wildlife Habitat*</b>				
acres	19.9	0.0	0.0	19.9
percent total inventory site area	65.0%	0.0%	0.0%	65.0%
<b>Special Habitat Areas**</b>				
acres				1.1
percent total inventory site area				3.6%
<b>Combined Total<sup>+</sup></b>				
acres	20.5	1.4	3.5	25.4
percent total inventory site area	67.0%	4.6%	11.4%	83.1%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC18 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC18, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

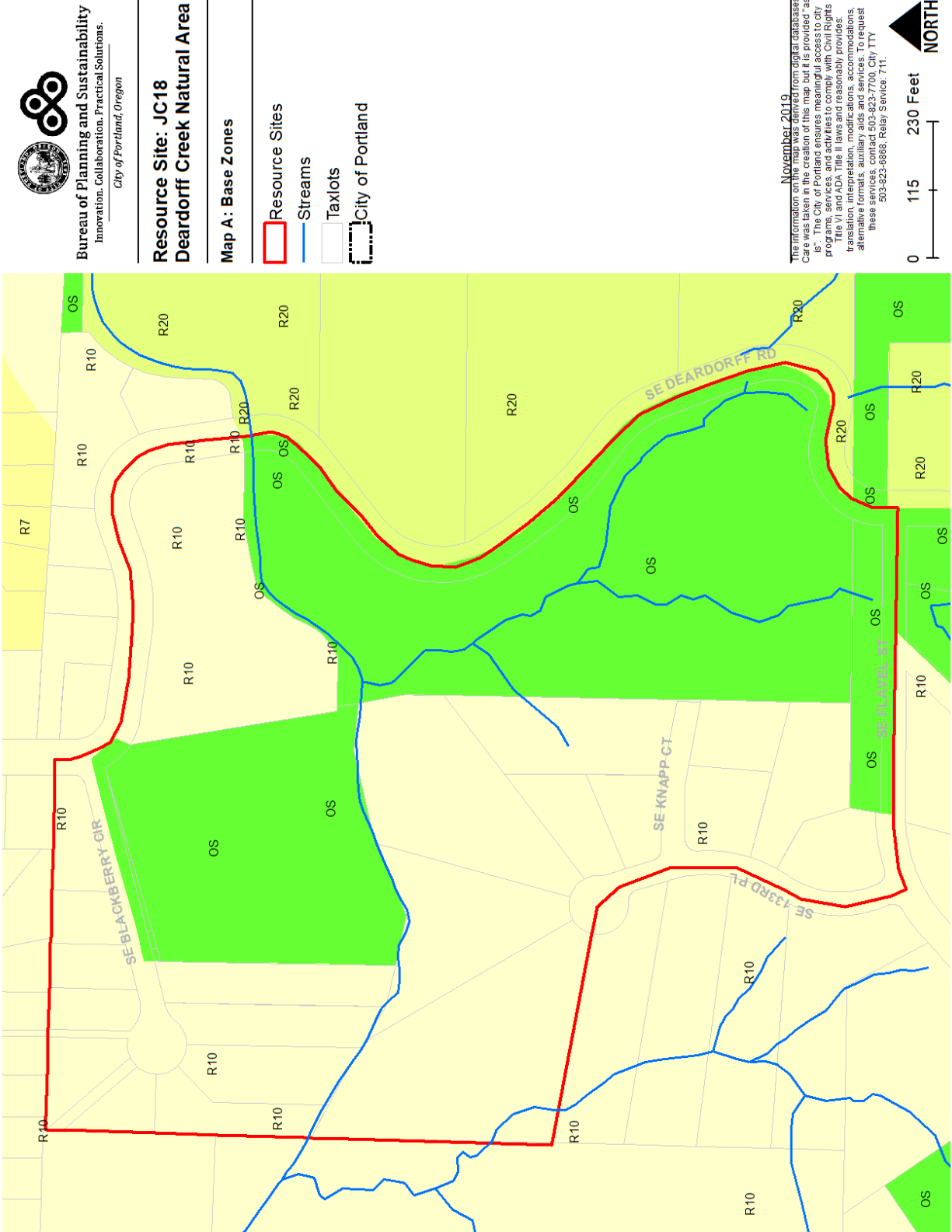
There is little development within the flood area. The impervious nature of the flood area maintains the flood capacity and infiltration functions. Development should be clustered outside of the flood area and the trees and vegetation should be maintained.

### ESEE Decisions

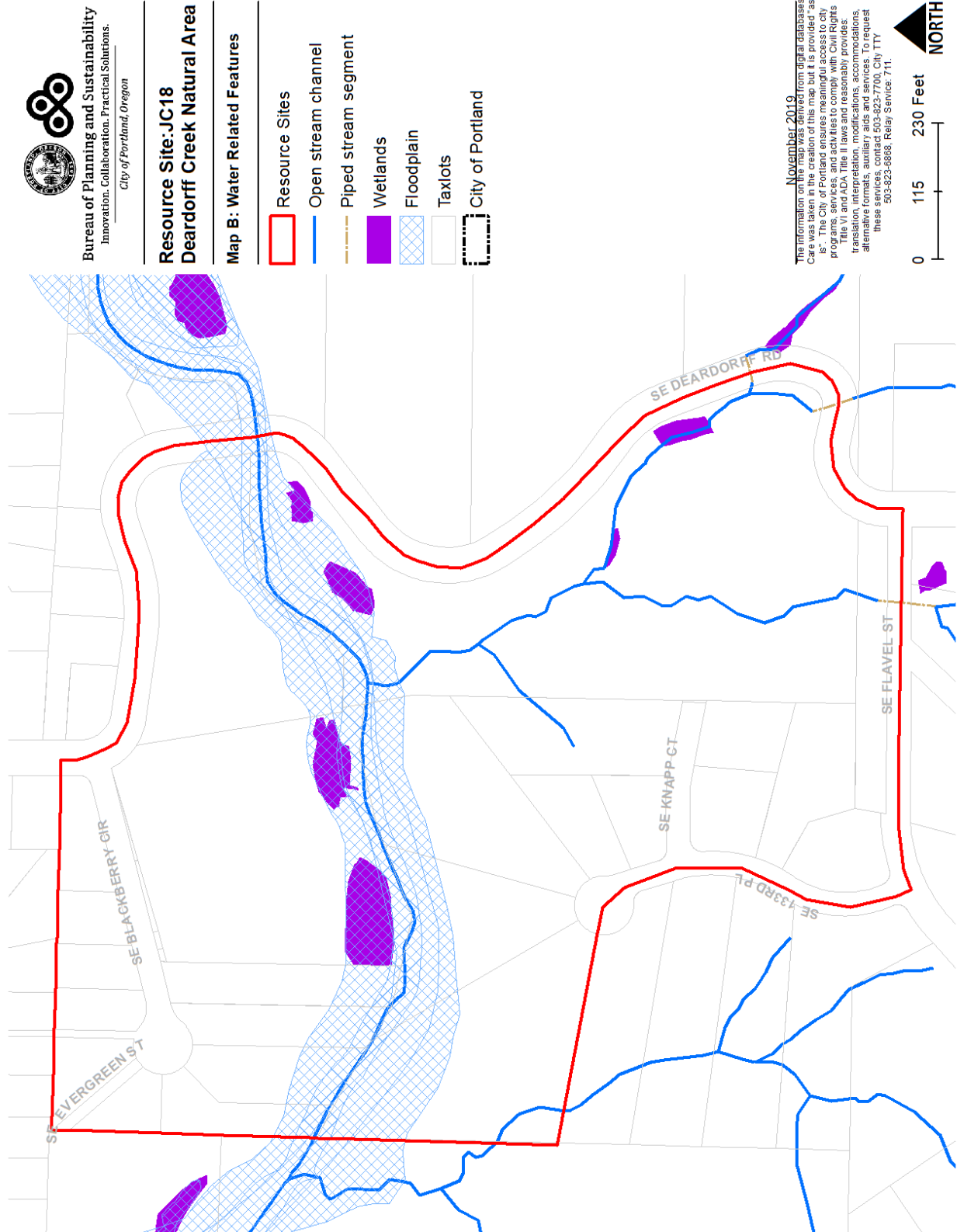
Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resources Site JC18 are:

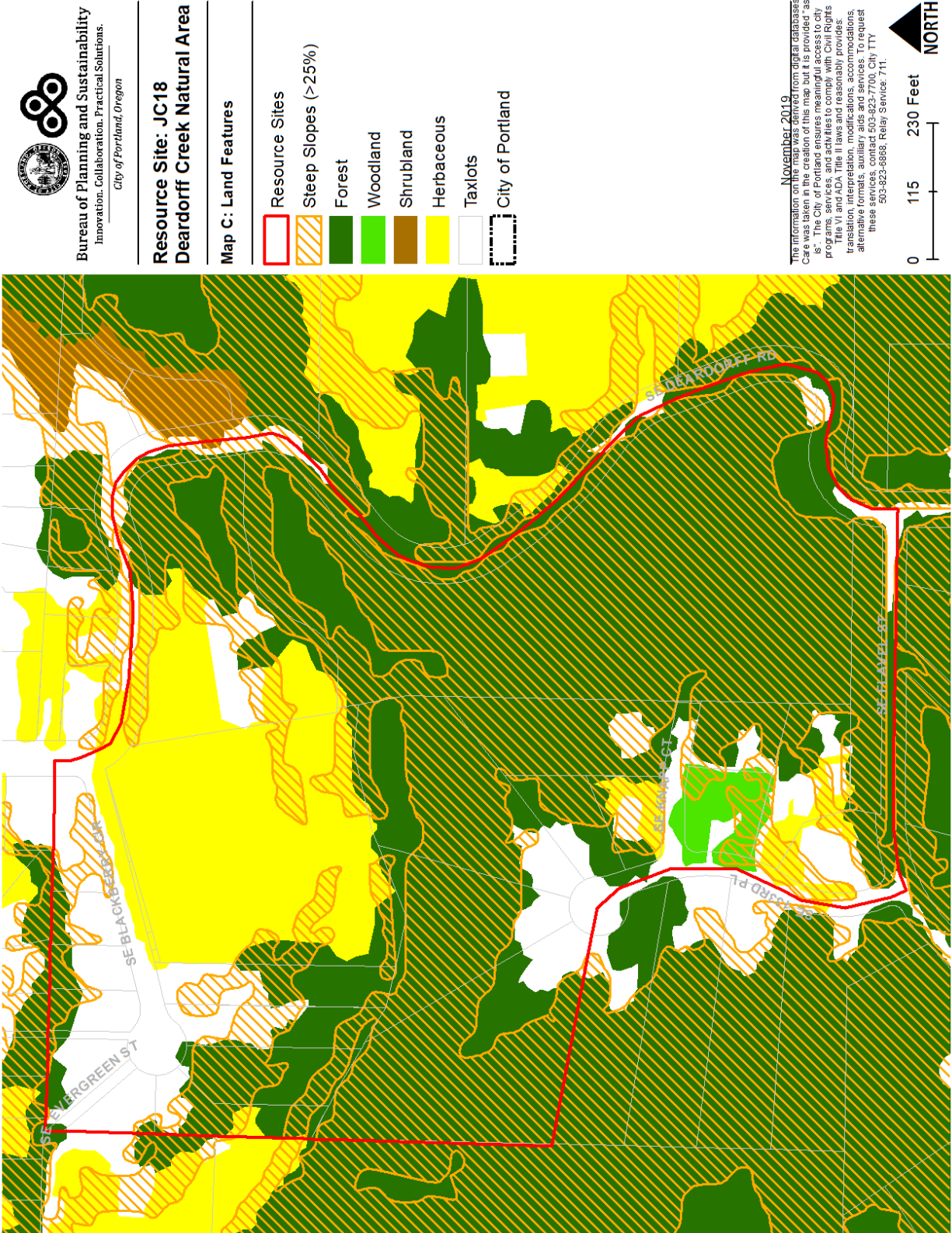
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands
2. *Strictly limit* conflicting uses within areas of forest or woodland vegetation within public parks.
3. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
4. Outside public parks, *limit* conflicting uses within areas of forest or woodland vegetation contiguous to but more than 50 feet from stream top-of-bank and contiguous to but more than 30 feet from wetlands; and forest or woodland vegetation on steep slopes.
5. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

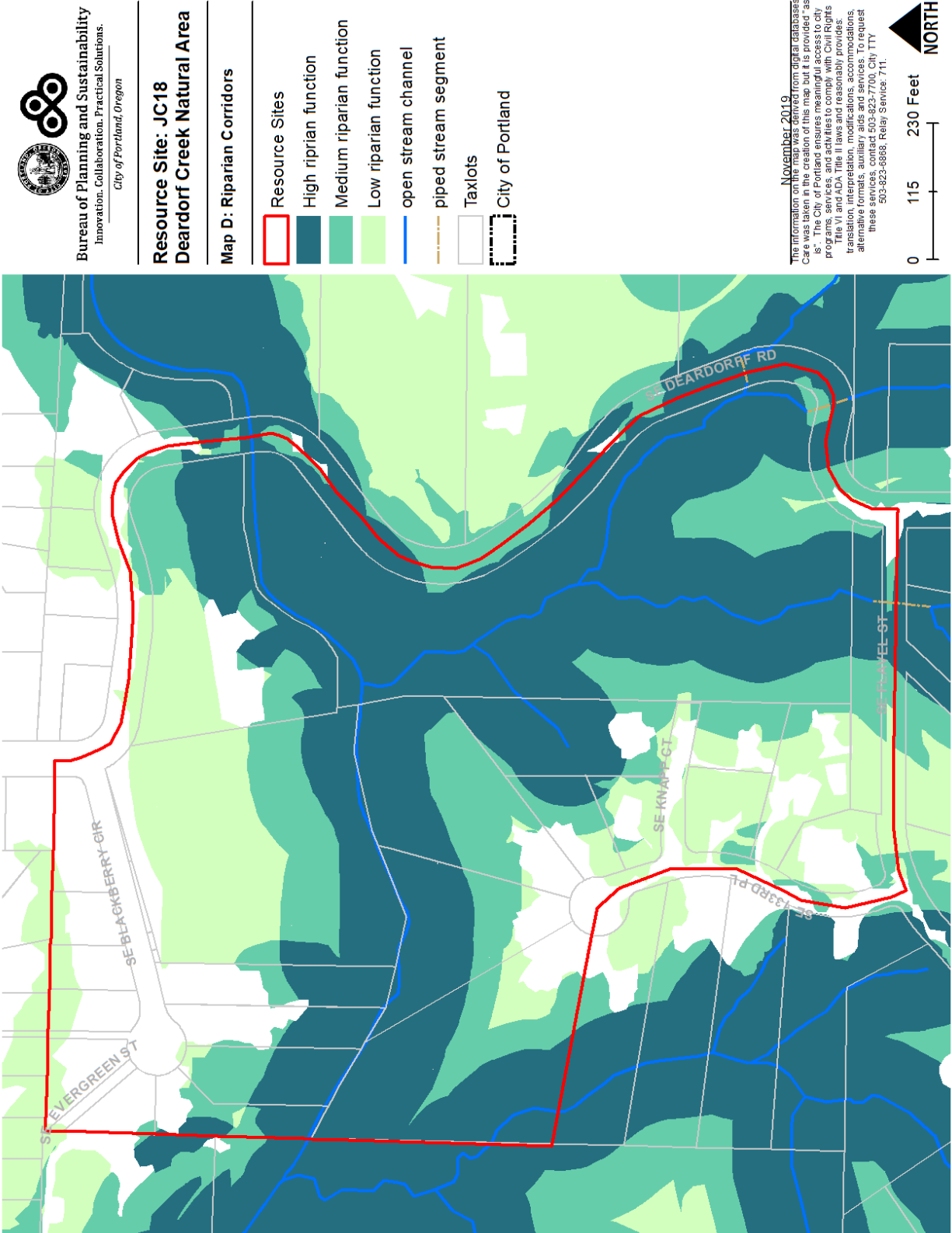
Table C: ESEE Decision for Resource Site JC18	
ESEE Decision	Acres
Strictly Limit	13.4
Limit	7.4
Allow	9.7

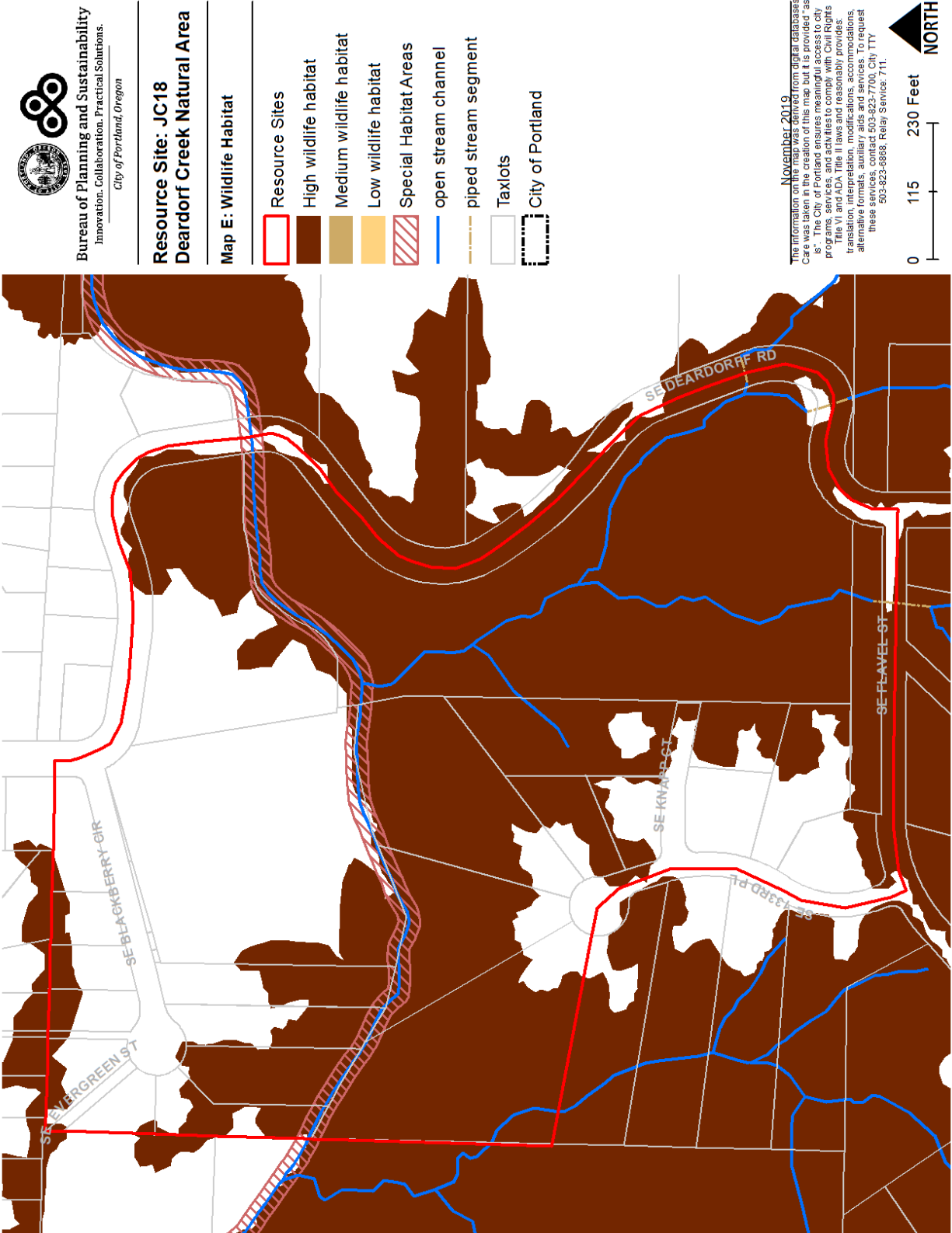


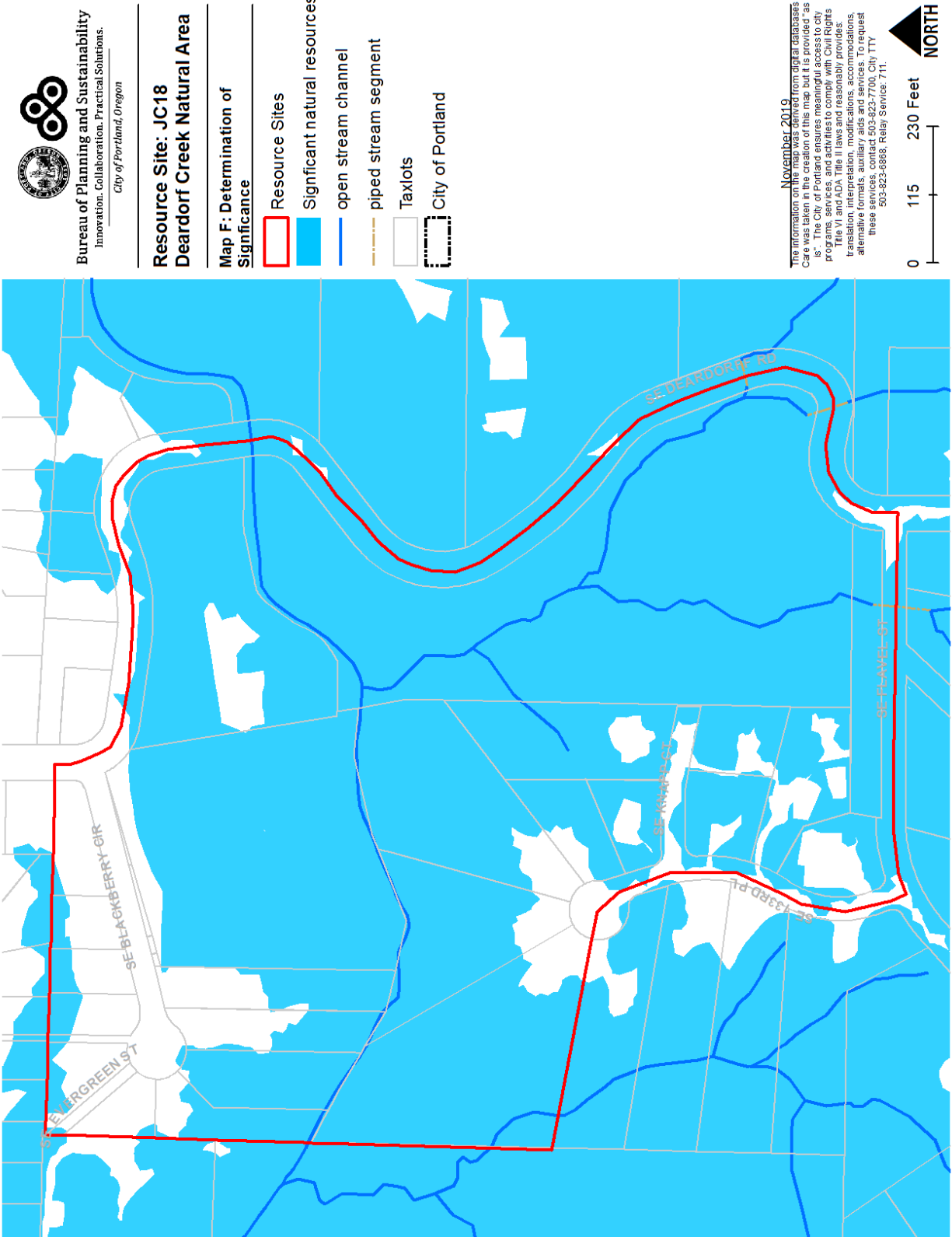


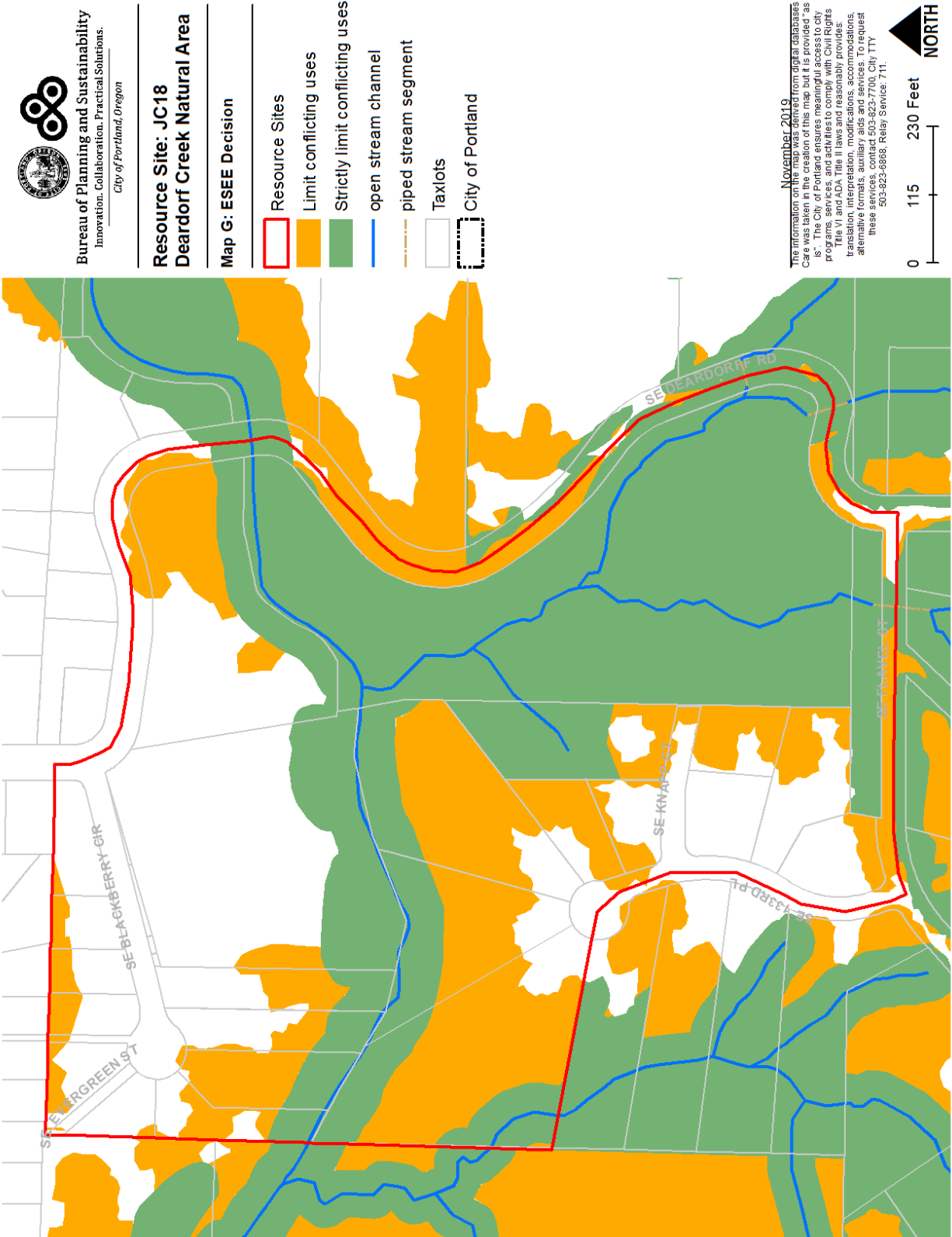






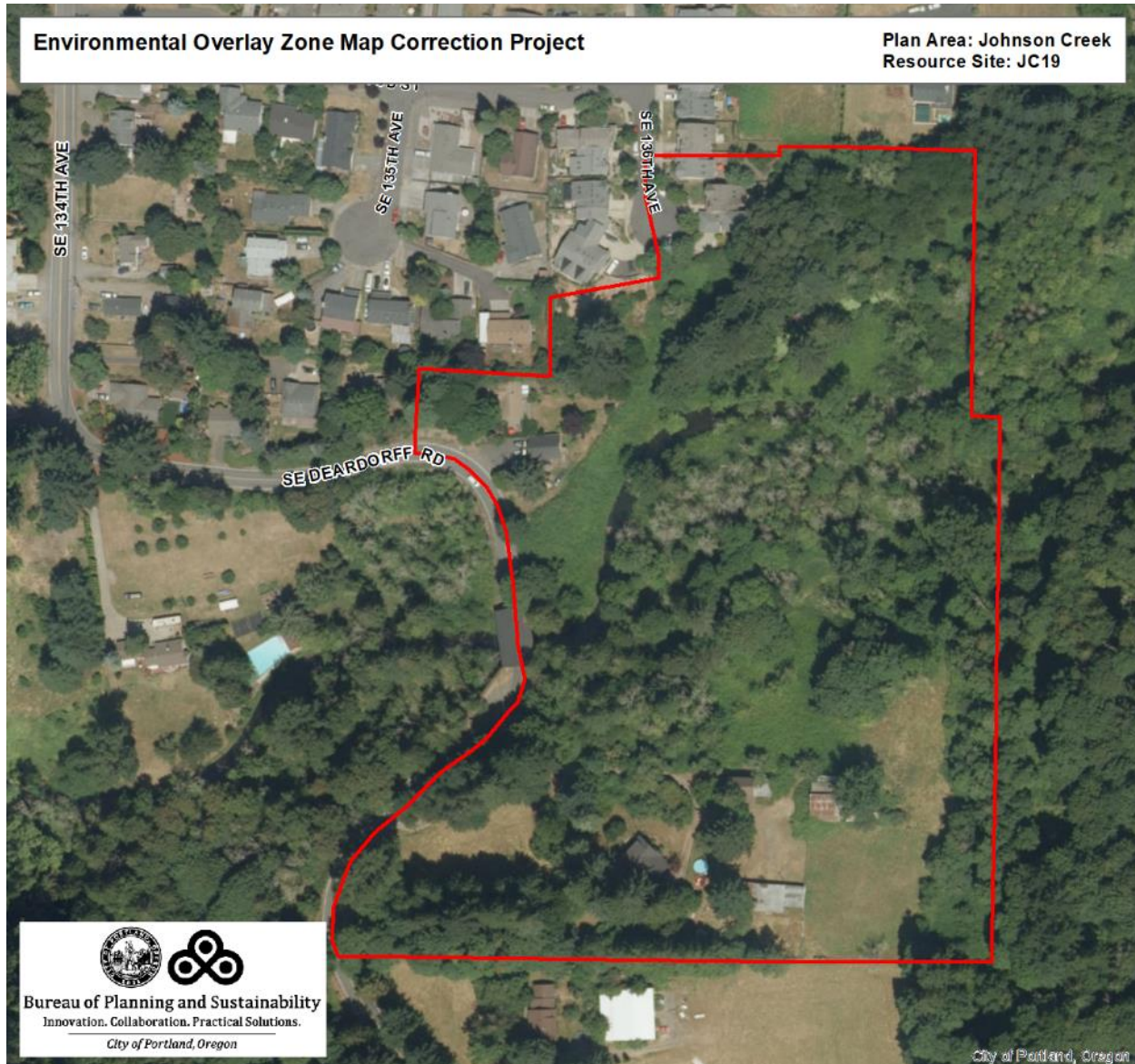








**Resource Site No.:** JC19    **Resource Site Name:** David Douglas Holding  
**Previous Plan:** Johnson Creek Basin Protection Plan    **Previous Resource Site No.:** 21



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC19	
	Study Area
<b>Stream (Miles)</b>	2.3
<b>Wetlands (acres)</b>	0.3
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	11.8
Forest (acres)	7.9
Woodland (acres)	0.0
Shrubland (acres)	1.0
Herbaceous (acres)	2.9
<b>Flood Area*</b>	3.5
Vegetated (acres)	3.5
Non-vegetated (acres)	0.0
<b>Steep Slopes (acres)**</b>	7.8
<b>Impervious Surface (acres)</b>	1.0
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

This 13-acre site is made up of large parcels used partially for agricultural uses. Half of the site is in a natural condition with second growth mixed deciduous/ coniferous forest; the rest is open field and pastureland located on the flatter, upland areas away from the creek. The flood area broadens out to a width of 400 feet at the east end of the site.

The channel is rip-rapped. The dominant vegetation influencing the channel are a mixed forest of Douglas-fir, cedar, alder, cottonwood, maple, willow, and various ornamental trees, as well as lawns and gardens. The creek is shaded throughout this site and has some pools, providing relatively good habitat for fish and other aquatic species. Interspersion of this area is high, lying near the large forested areas of Powell Butte to the north of the creek, the Lava Boring Domes to the south and the developed and undeveloped parks of Leach Botanical Garden and Bunde Park (SE 142nd Avenue and SE Cooper Street).

This juxtaposition of the creek channel with large forested natural areas and parks provides not only a potential important source of water to animals that use the larger forested areas but also acts as a corridor providing cover and food, and for movements and dispersals between areas.

The canyon begins to open up allowing a broad flood area within this stretch of the creek, and adjacent agricultural uses are present. These agricultural uses decrease the habitat quality through chemical runoff, clearing of vegetation, and sedimentation.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC19</b>				
<b>Resource Site (acres) = 12.979902</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	5.8	2.3	3.7	11.8
percent total inventory site area	44.7%	17.8%	28.4%	90.8%
<b>Wildlife Habitat*</b>				
acres	7.7	0.0	0.0	7.7
percent total inventory site area	59.5%	0.0%	0.0%	59.5%
<b>Special Habitat Areas**</b>				
acres				0.6
percent total inventory site area				4.7%
<b>Combined Total<sup>+</sup></b>				
acres	8.3	0.6	2.9	11.8
percent total inventory site area	63.9%	4.4%	22.5%	90.8%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC19 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; rare fish species; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## Resource Site Specific ESEE

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R20, R10 and R7 base zones. Open Space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC19, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

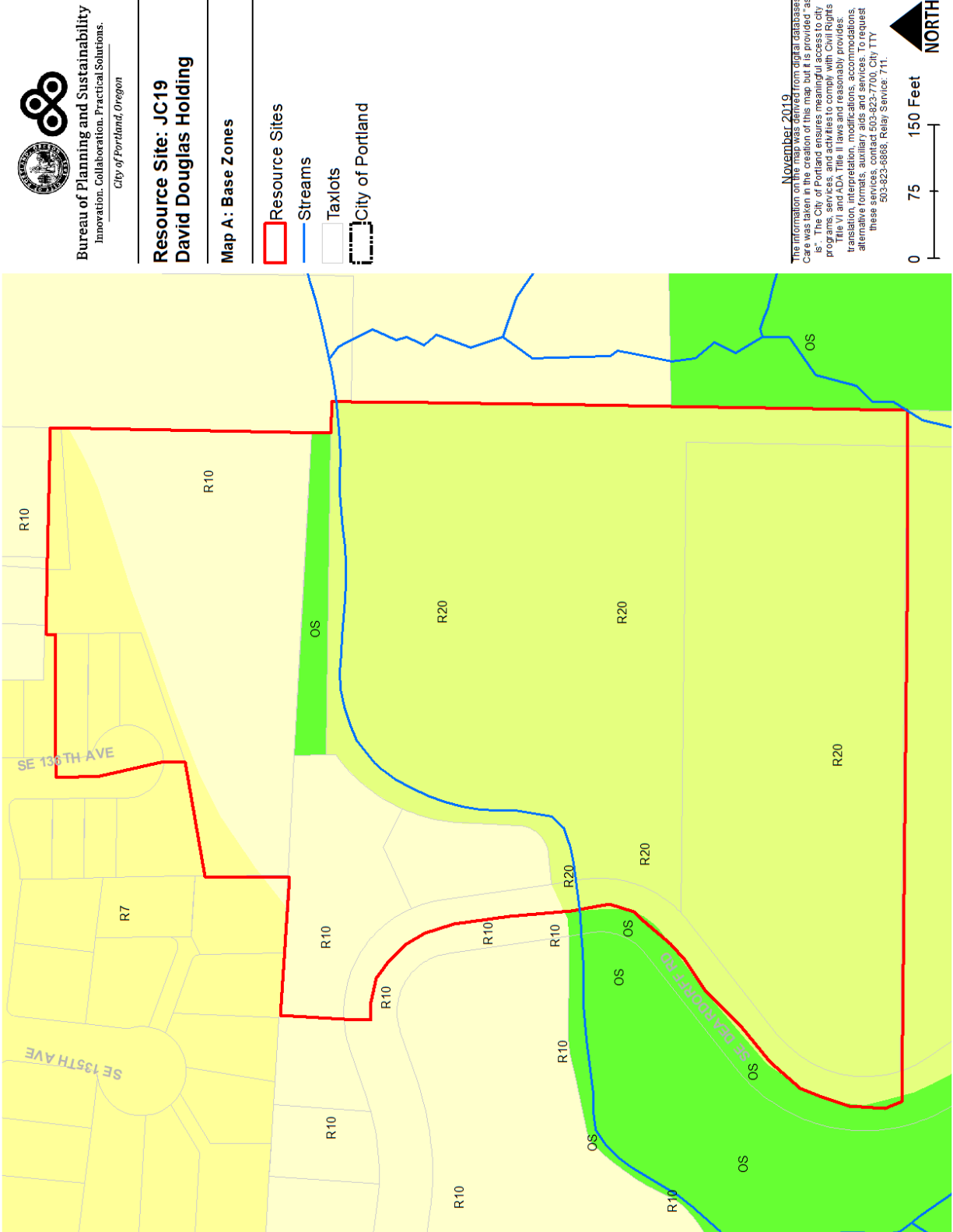
There is little development within the flood area. The impervious nature of the flood area maintains the flood capacity and infiltration functions. Development should be clustered outside of the flood area and the trees and vegetation should be maintained.

### ESEE Decisions

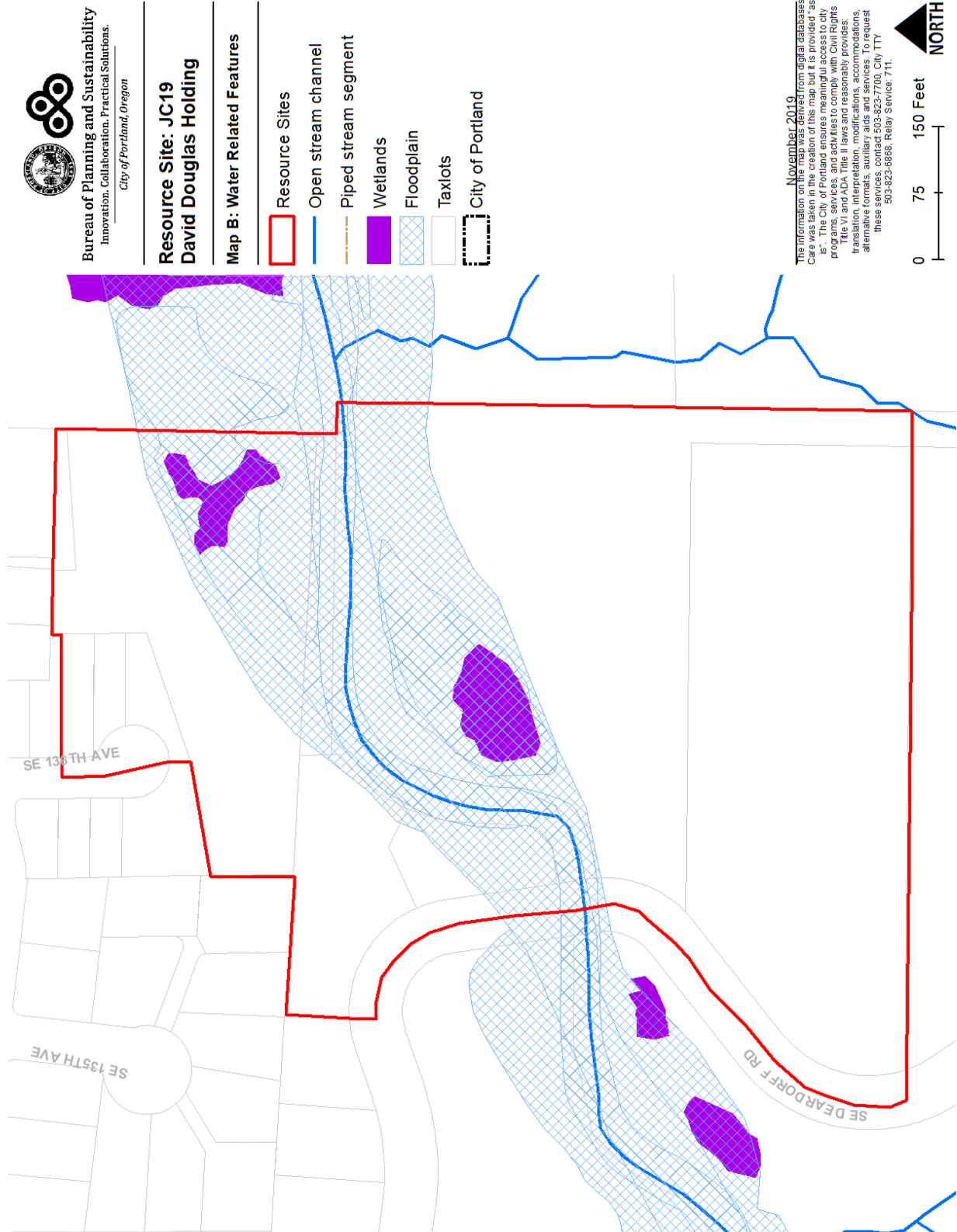
Based on the General ESEE and resource site-specific ESEE, the ESEE decisions for Resources Site JC19 are:

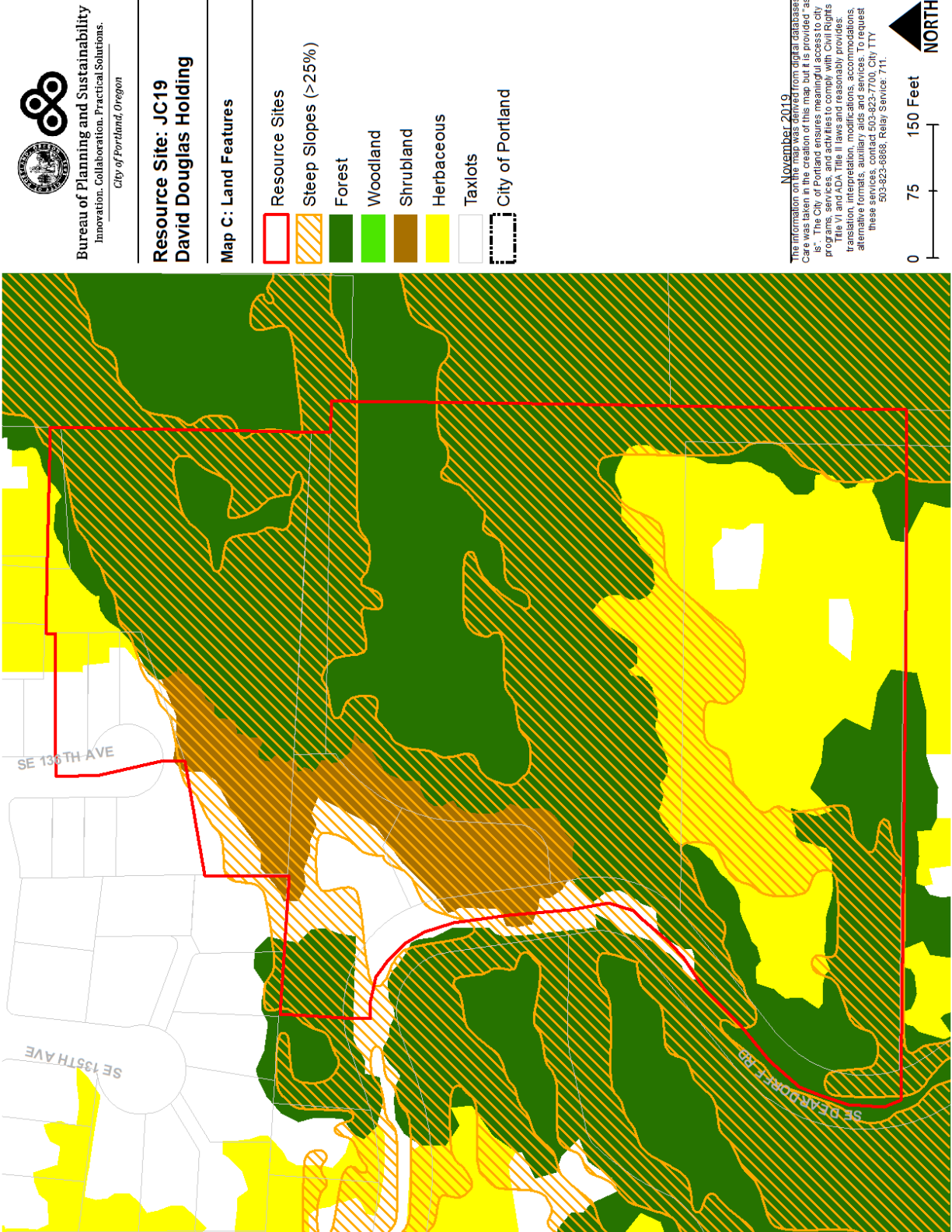
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank, land within 30 feet of wetlands and vegetation within the flood area.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within areas of forest or woodland vegetation located on steep slopes.
4. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
5. *Limit* conflicting uses within areas of forest vegetation that are contiguous to but outside of vegetated flood areas.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

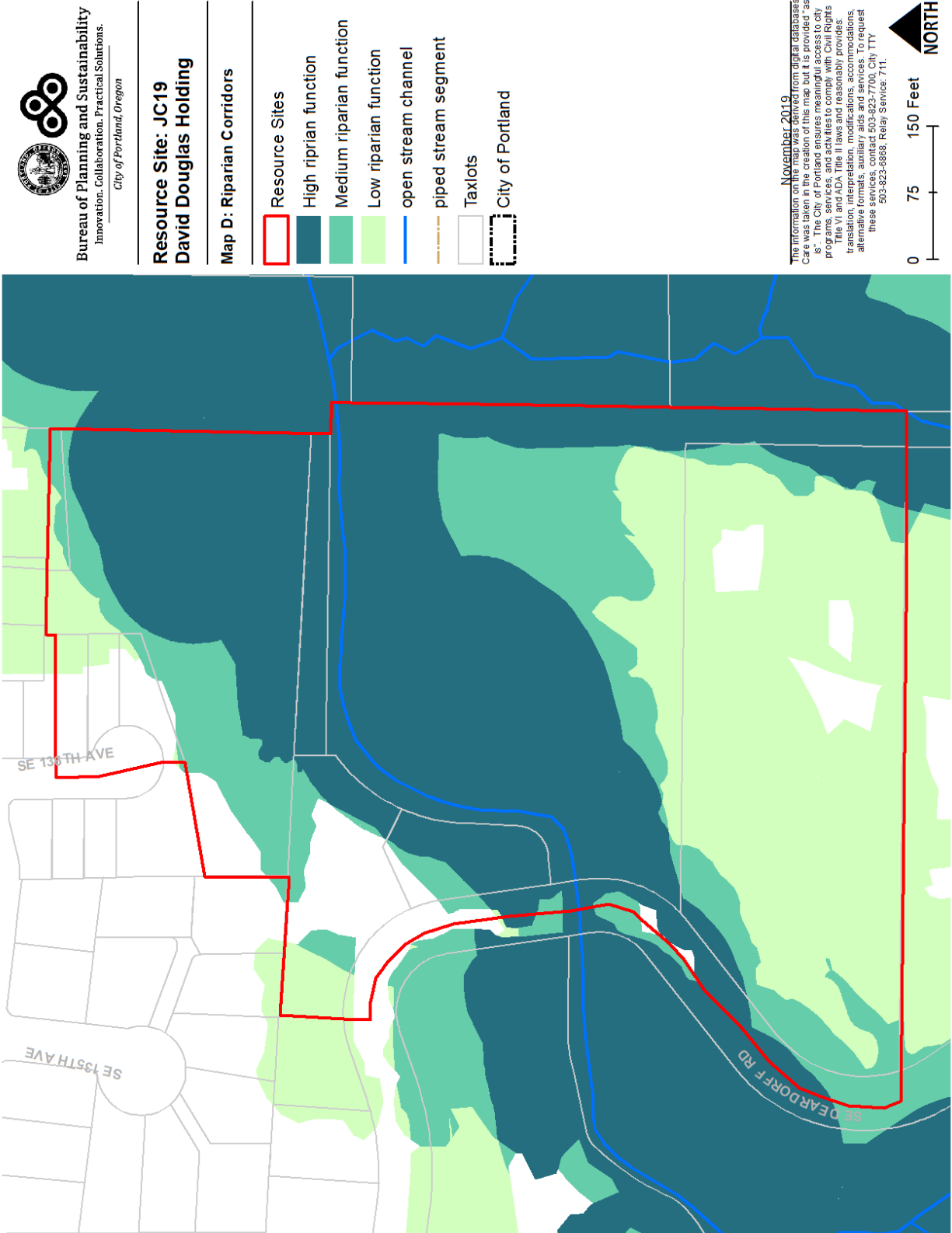
Table C: ESEE Decision for Resource Site JC19	
ESEE Decision	Acres
Strictly Limit	3.9
Limit	4.4
Allow	4.7

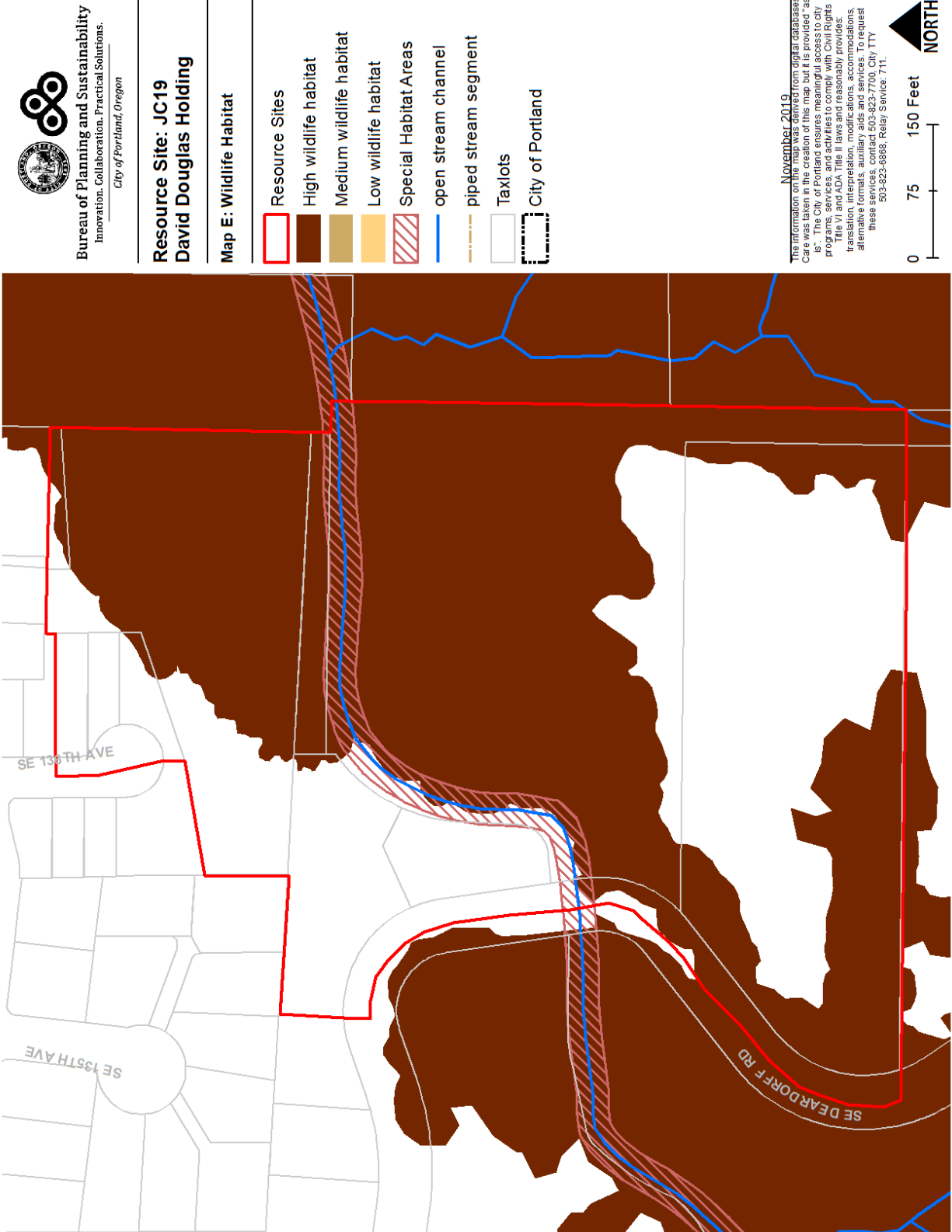


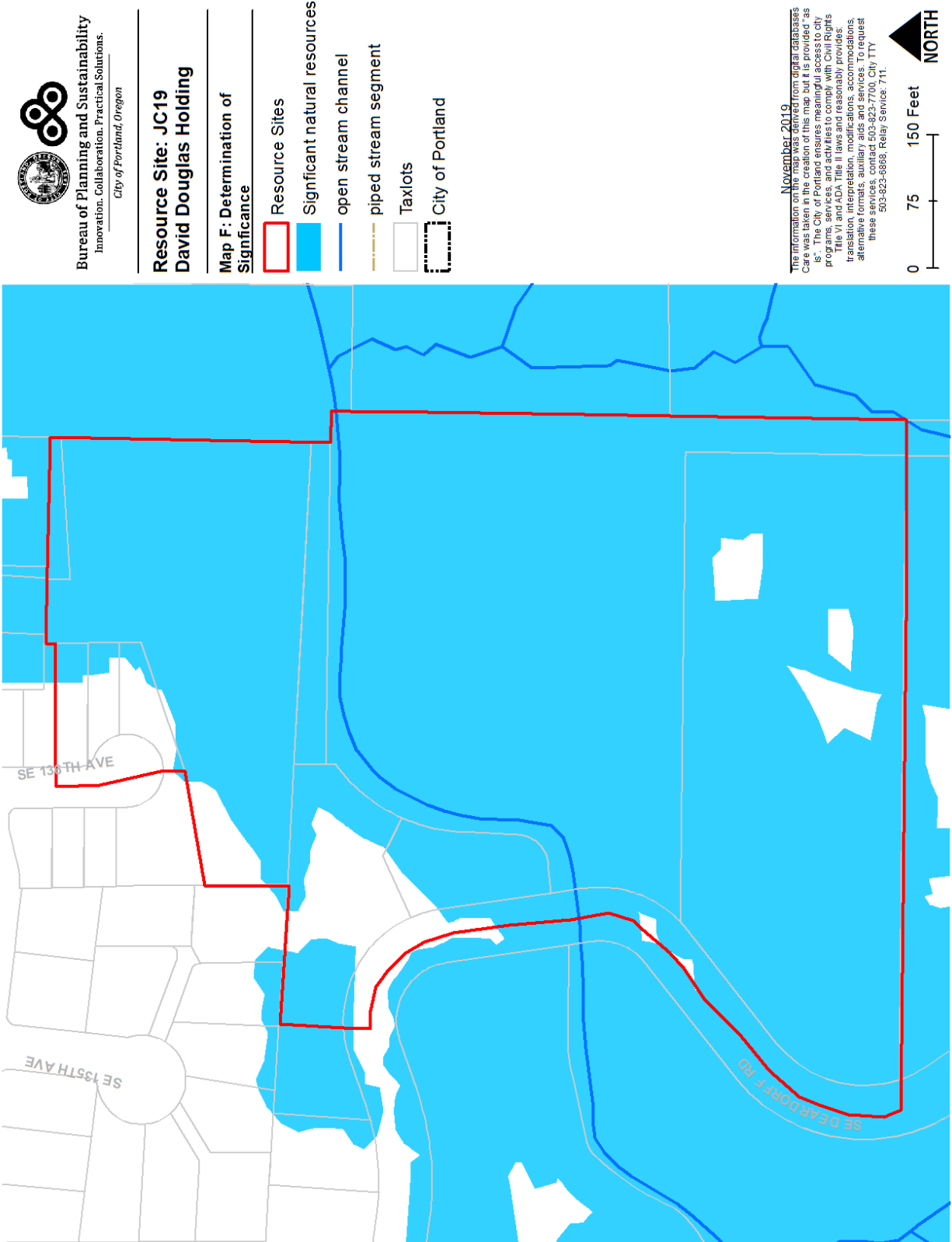


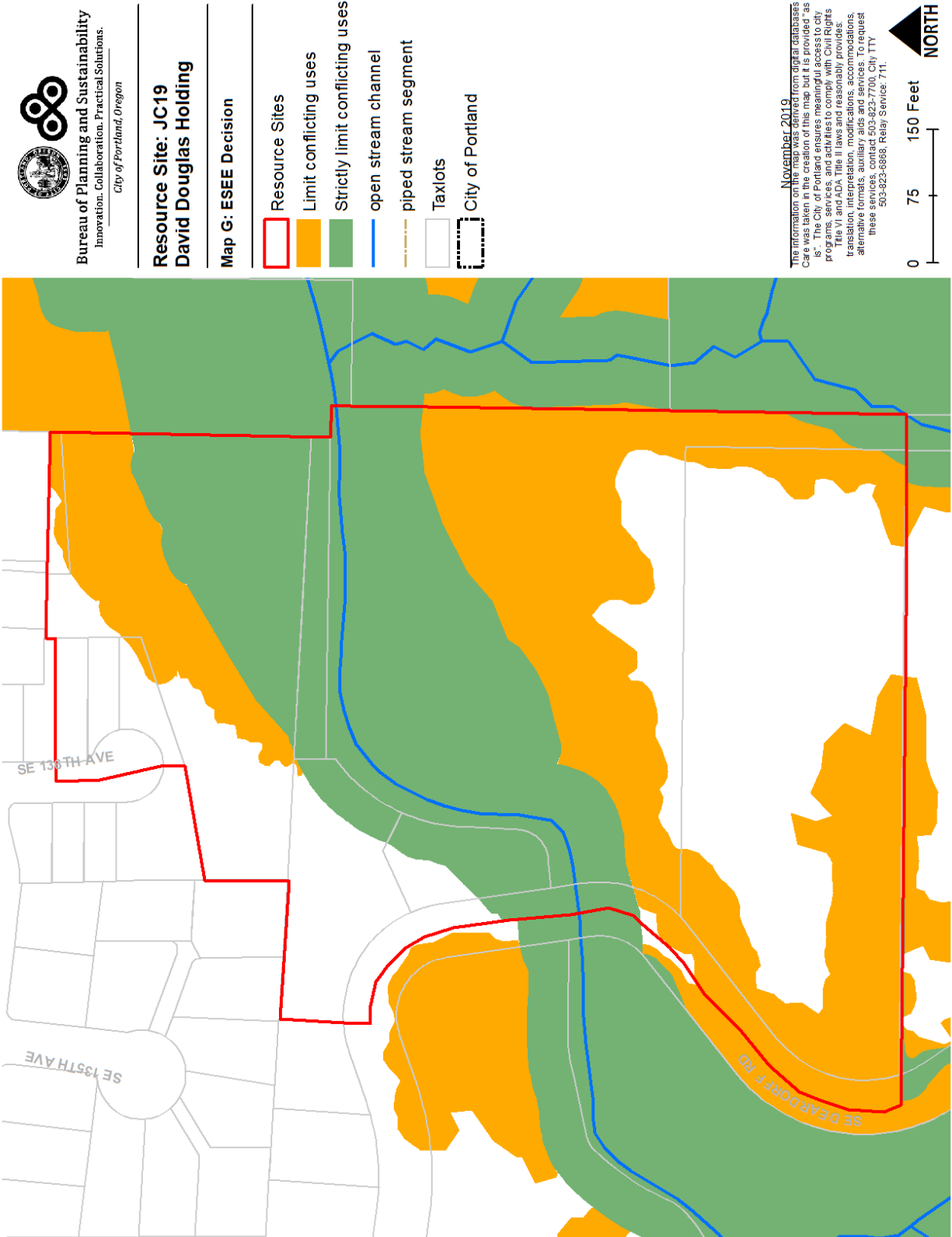






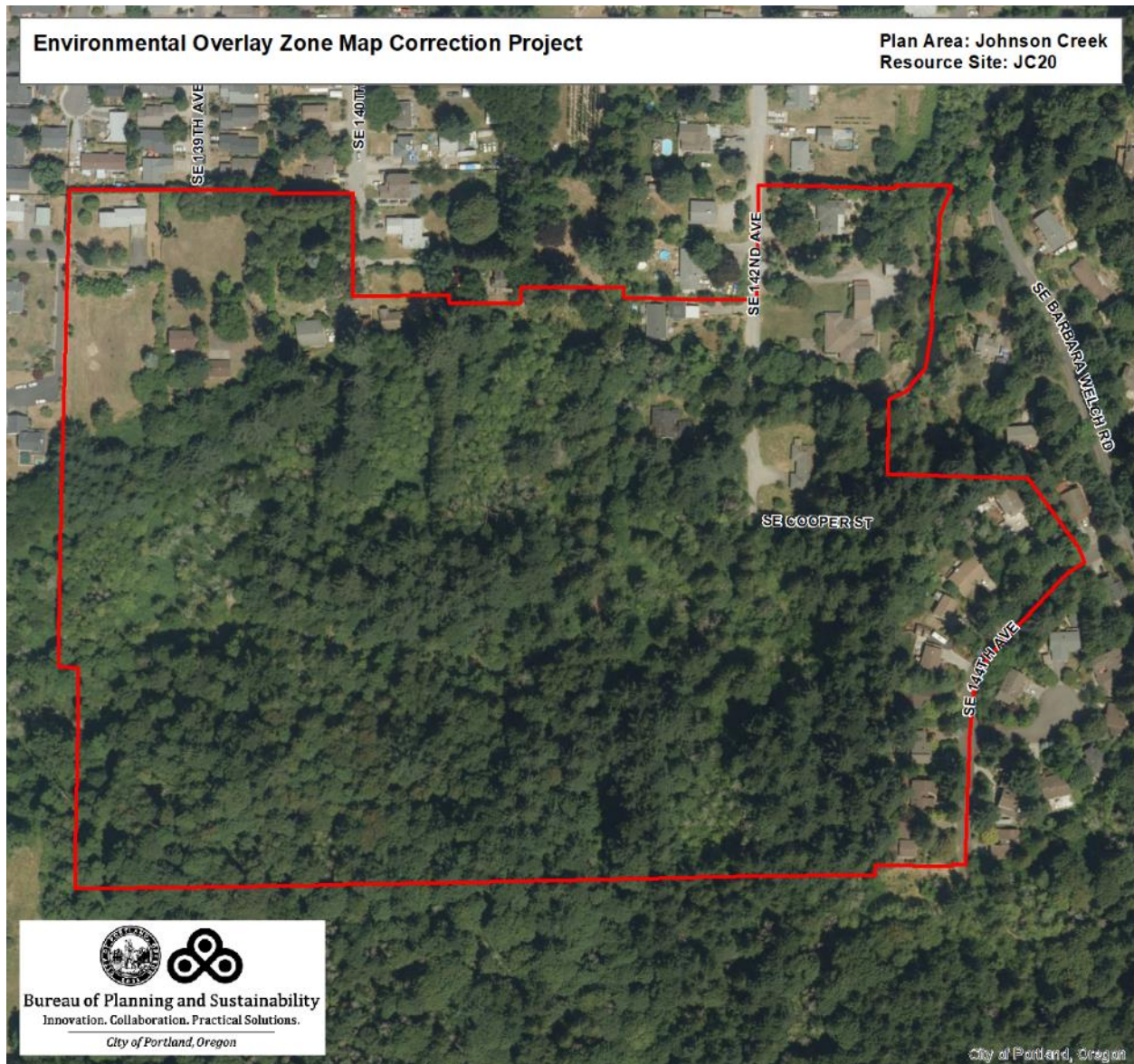








**Resource Site No.:** JC20 **Resource Site Name:** Buttes Natural Area North  
**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resource Site No.:** 22



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site		JC20
		Study Area
<b>Stream (Miles)</b>		4.5
<b>Wetlands (acres)</b>		1.4
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>		35.7
Forest (acres)		31.7
Woodland (acres)		0.5
Shrubland (acres)		0.0
Herbaceous (acres)		3.6
<b>Flood Area*</b>		12.8
Vegetated (acres)		12.4
Non-vegetated (acres)		0.3
<b>Steep Slopes (acres)**</b>		20.2
<b>Impervious Surface (acres)</b>		2.3
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.		
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.		

This site is mostly undeveloped and a remnant of what much of the Johnson Creek riparian corridor looked like prior to alterations and removal of forested vegetation. Structural diversity is high, characterized by a Western Red Cedar and Douglas Fir overstory and a well-developed native shrub and herbaceous layer understory. Plant species diversity is high and primarily comprised of native plants.

Eastridge Subdivision's Tract C is on a north facing slope above the creek. It is an undeveloped 1.5-acre site that is a part of the Boring Lava Hills and surrounding undeveloped forested area. It has similar vegetative cover and habitat attributes as Bunde Park. Two tributary streams cross the southern portion of the site, draining small basins within the Lava Domes.

Bunde Park is one of the few areas of primarily-native riparian vegetation left intact within the Johnson Creek basin. Bunde Park has been chosen as a model site to demonstrate the structure and species diversity of a primarily-native riparian forest. This is a high quality habitat site.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC20</b>				
<b>Resource Site (acres) = 39.561306</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	23.7	6.0	4.8	34.4
percent total inventory site area	60.0%	15.1%	12.0%	87.0%
<b>Wildlife Habitat*</b>				
acres	31.4	0.0	0.0	31.4
percent total inventory site area	79.4%	0.0%	0.0%	79.4%
<b>Special Habitat Areas**</b>				
acres				1.7
percent total inventory site area				4.2%
<b>Combined Total<sup>+</sup></b>				
acres	31.4	0.5	2.5	34.4
percent total inventory site area	79.4%	1.4%	6.3%	87.0%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC20 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; rare fish species; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 and R5 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC20, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

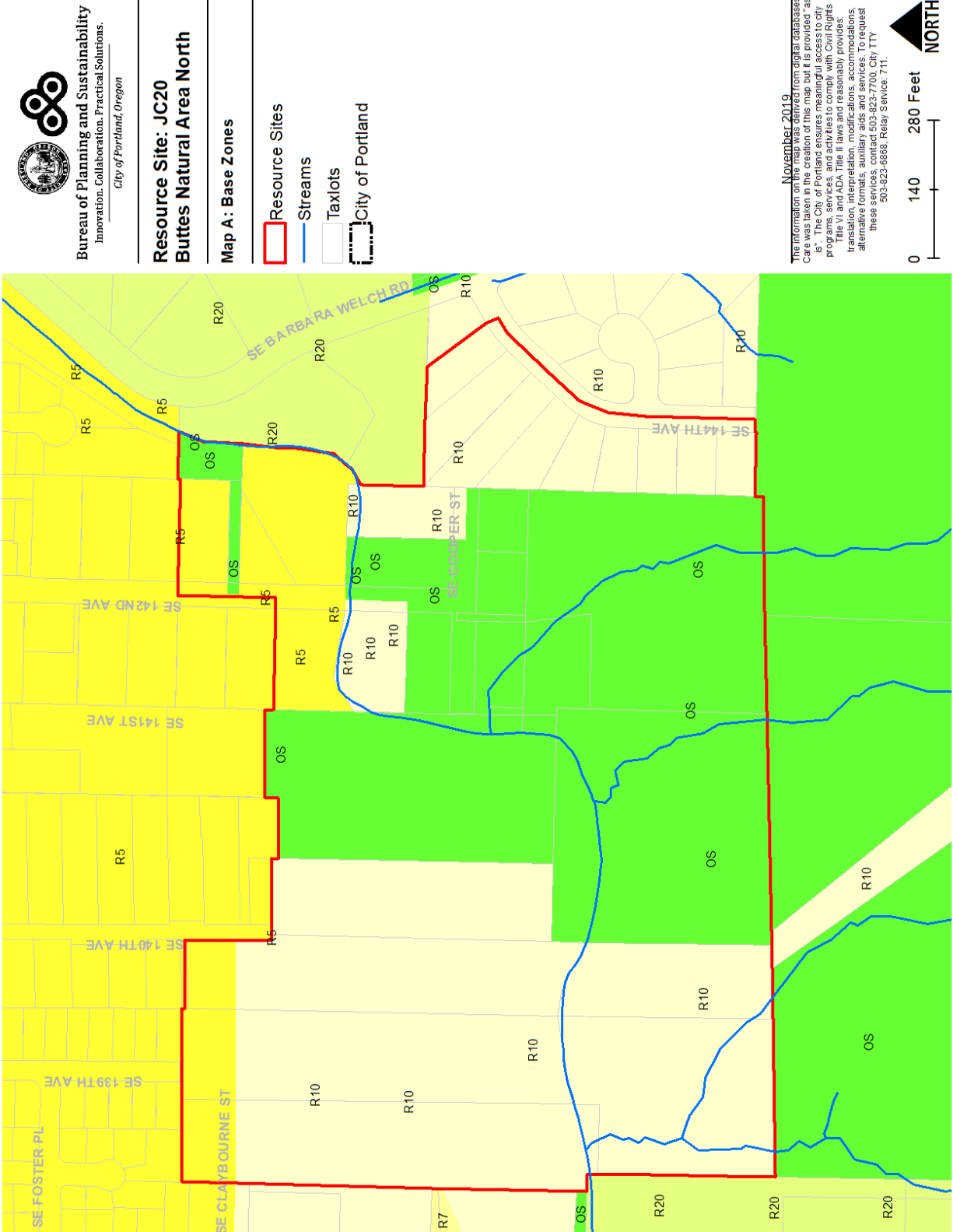
There is little development within the flood area. The impervious nature of the flood area maintains the flood capacity and infiltration functions. Development should be clustered outside of the flood area and the trees and vegetation should be maintained.

### ESEE Decisions

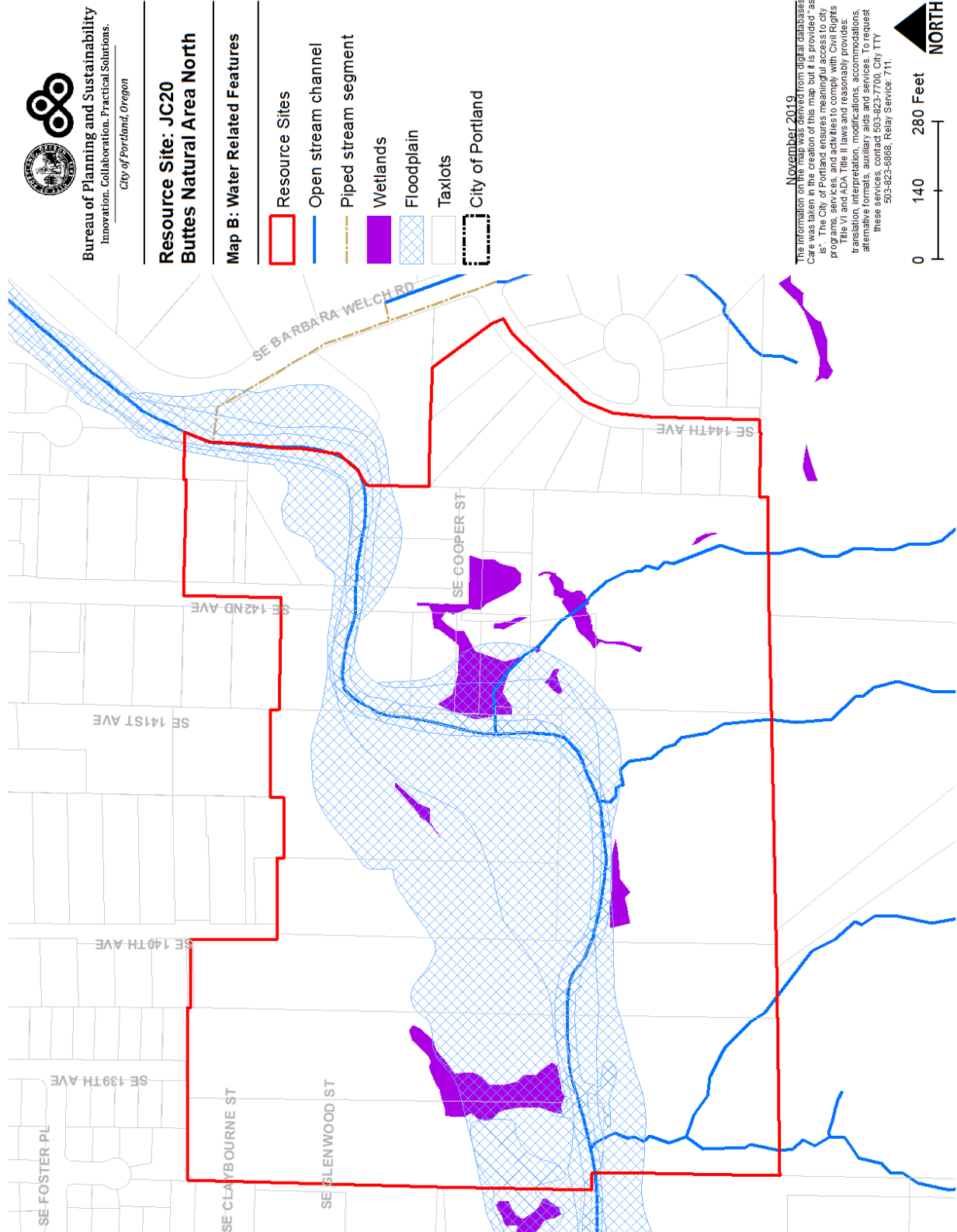
Based on the General ESEE and resource site-specific ESEE, the ESEE decisions for Resource Site JC20 are:

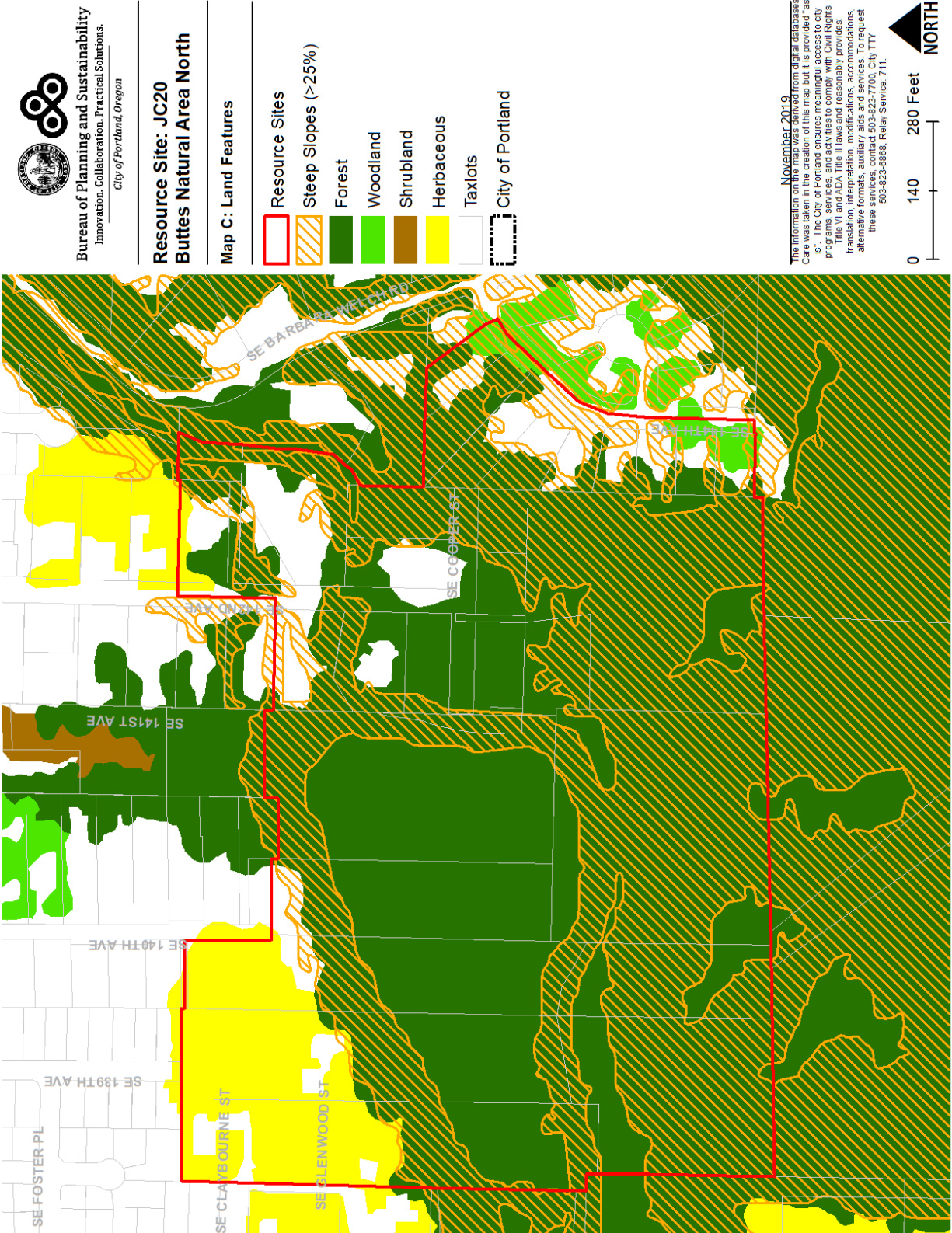
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank, land within 30 feet of wetlands and vegetation within the flood area.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within areas of forest or woodland vegetation located on steep slopes.
4. *Limit* conflicting uses within areas of forest vegetation that are contiguous to but outside of vegetated flood areas.
5. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

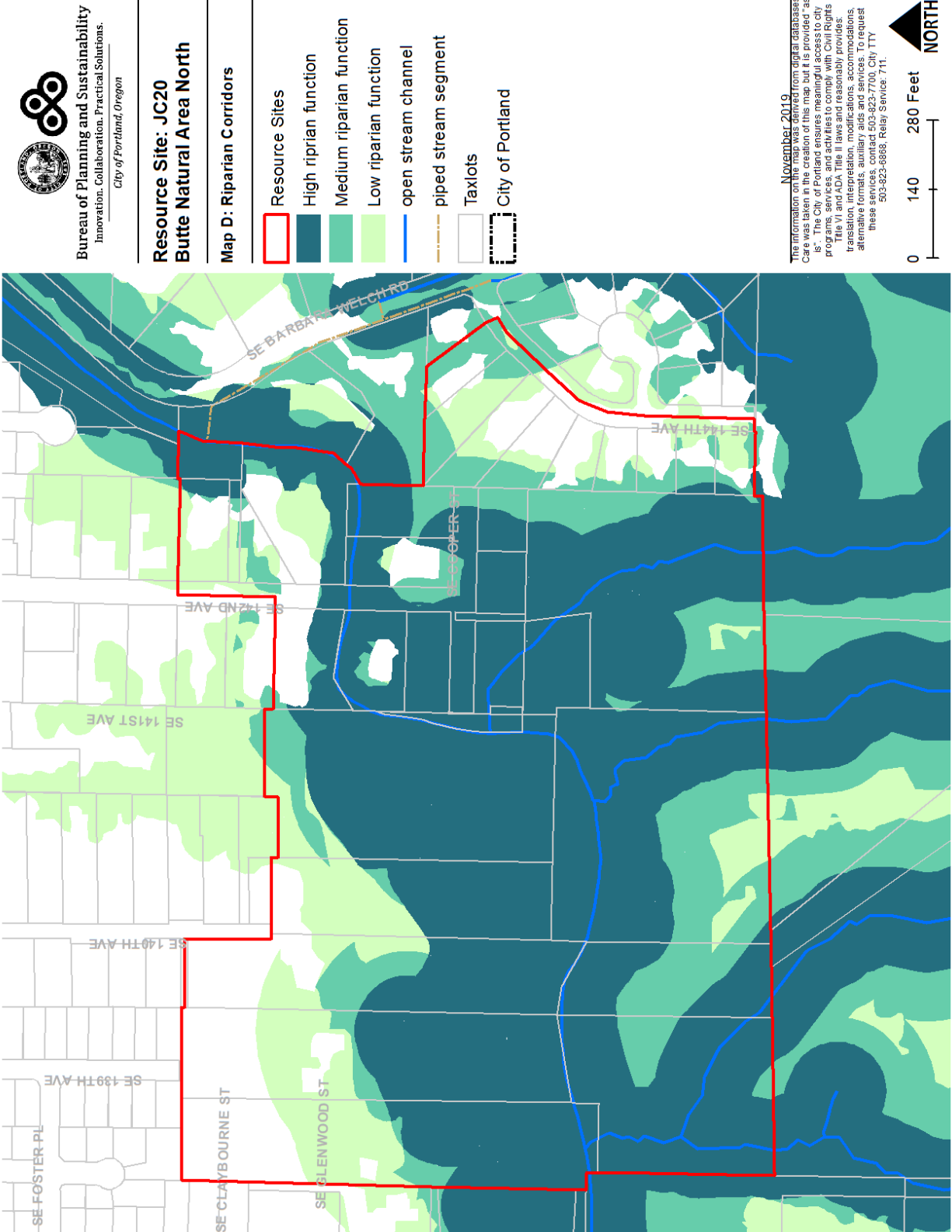
Table C: ESEE Decision for Resource Site JC20	
ESEE Decision	Acres
Strictly Limit	18.4
Limit	13.6
Allow	7.5

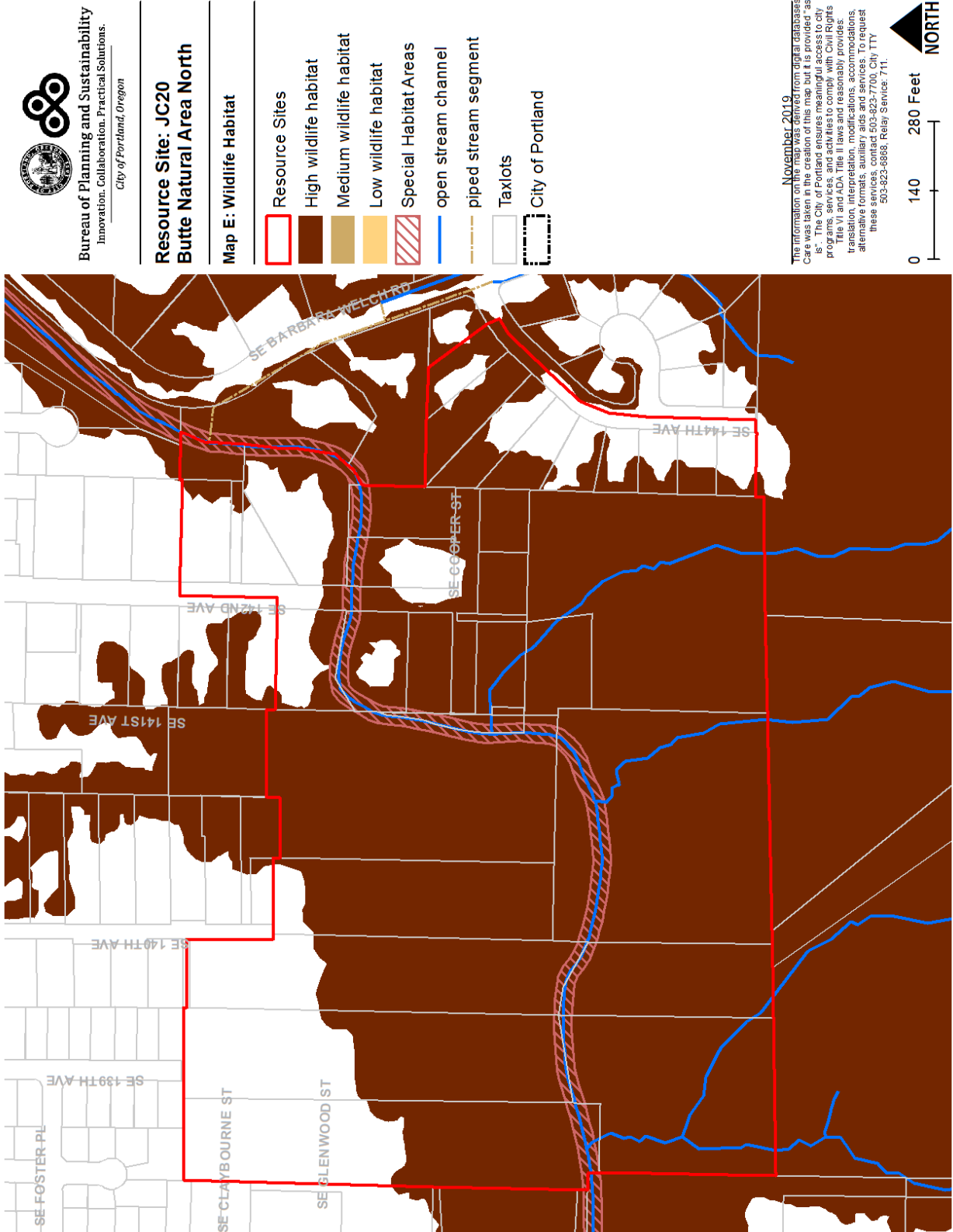


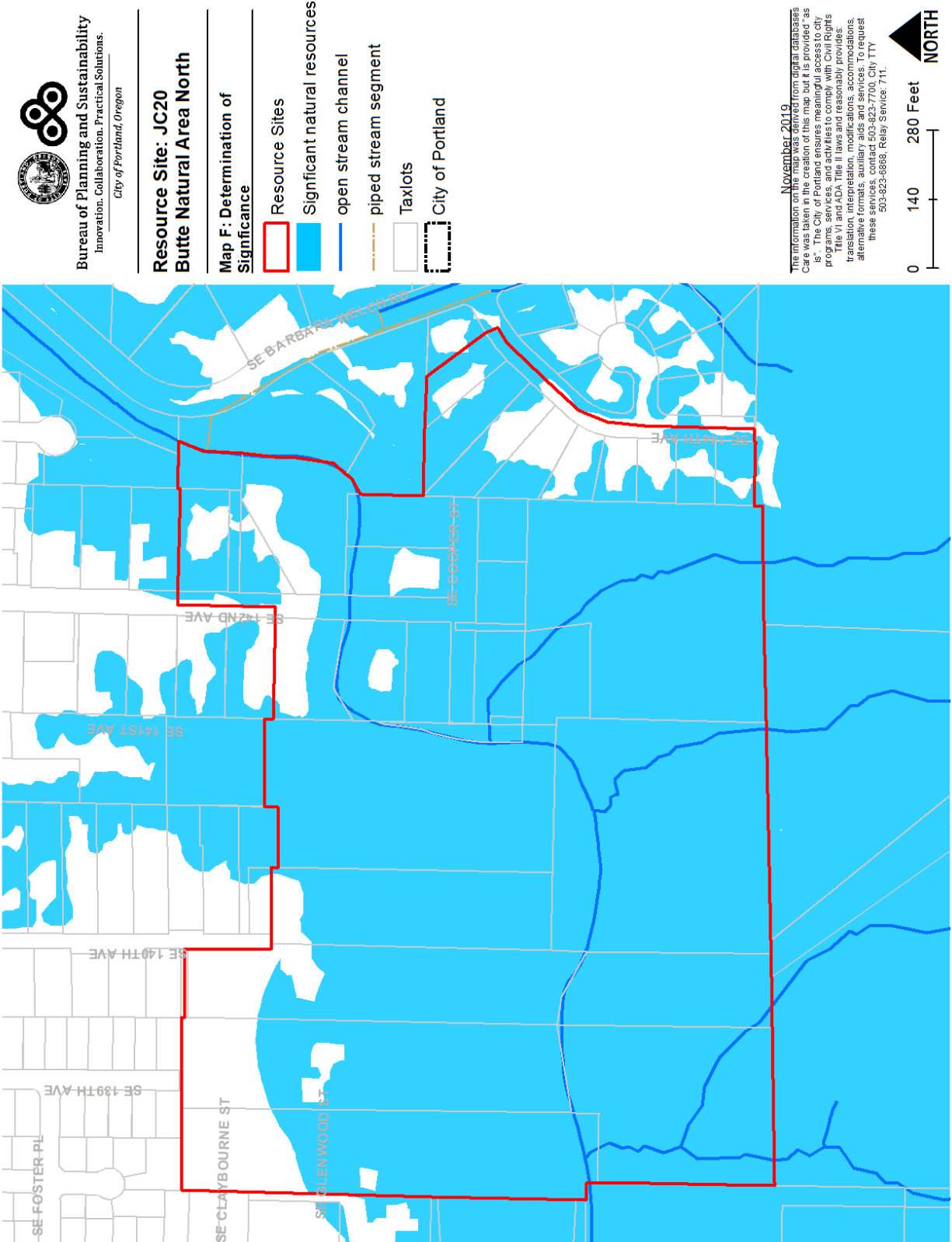








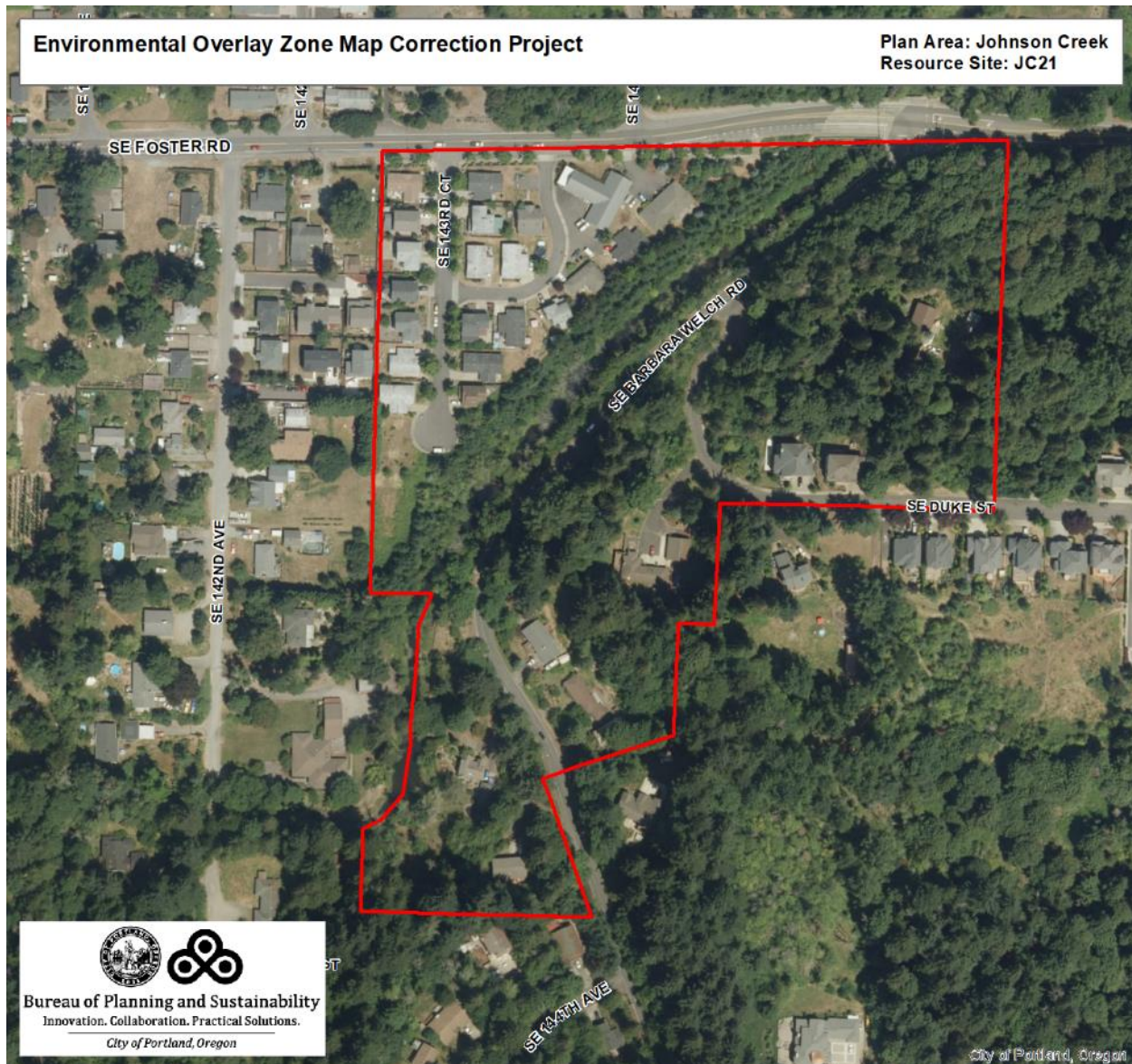








**Resource Site No.:** JC21    **Resource Site Name:** Lower Barbara Welch  
**Previous Plan:** Johnson Creek Basin Protection Plan    **Previous Resource Site No.:** 23



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC21	
	Study Area
<b>Stream (Miles)</b>	0.2
<b>Wetlands (acres)</b>	0.0
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	11.8
Forest (acres)	10.4
Woodland (acres)	0.0
Shrubland (acres)	0.0
Herbaceous (acres)	1.4
<b>Flood Area*</b>	2.8
Vegetated (acres)	2.5
Non-vegetated (acres)	0.3
<b>Steep Slopes (acres)**</b>	11.8
<b>Impervious Surface (acres)</b>	5.1
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

This stretch of Johnson Creek has been filled and altered within the past twenty years. The banks are steep, high, and vegetated with young alder, willow, bigleaf maple, and Himalayan blackberry. The floodway is narrow and well-shaded at this point. There are roads and buildings immediately adjacent both sides of the creek. Runoff and erosion are potential problems.

The floodway is uniformly about 70-feet wide through this site, with a narrow 100-year flood plain (0' to 120' wide) on each side of the creek. The riparian strip and tree covered area corresponds to the floodway, and are also only about 70 feet wide. The once-gradual slopes are now filled, and drop at a 1 : 1 slope 30 feet to the creek channel. This site has a geologic hazard rating of moderate-severe, severe, and extremely severe, with a major portion of the site classified as severe. West of the creek the grades smooth out where filling has occurred. To the east of Barbara Welch Road, the grades continue at a 1:1 slope. The southeast portion of this site is part of what is suspected to be an ancient, inactive, deep-rooted large landslide area.

Resource value in this portion of the creek is limited, due to adjacent land uses which have negatively modified the creek habitat by removing vegetation and creating steep banks. Interspersion with other areas is high, proximity to Powell Butte and Bunde Park. This section of the creek functions with the rest of Johnson Creek as a travel corridor for wildlife up and down the creek as well as a connector to the adjacent upland sites.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC21</b>				
<b>Resource Site (acres) = 18.467714</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	4.7	4.3	3.5	12.5
percent total inventory site area	25.7%	23.0%	19.2%	67.9%
<b>Wildlife Habitat*</b>				
acres	10.4	0.0	0.0	10.4
percent total inventory site area	56.5%	0.0%	0.0%	56.5%
<b>Special Habitat Areas**</b>				
acres				1.0
percent total inventory site area				5.4%
<b>Combined Total<sup>+</sup></b>				
acres	10.8	1.3	0.5	12.5
percent total inventory site area	58.2%	7.0%	2.7%	67.9%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC21 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R20, R10 and R5 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC21, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

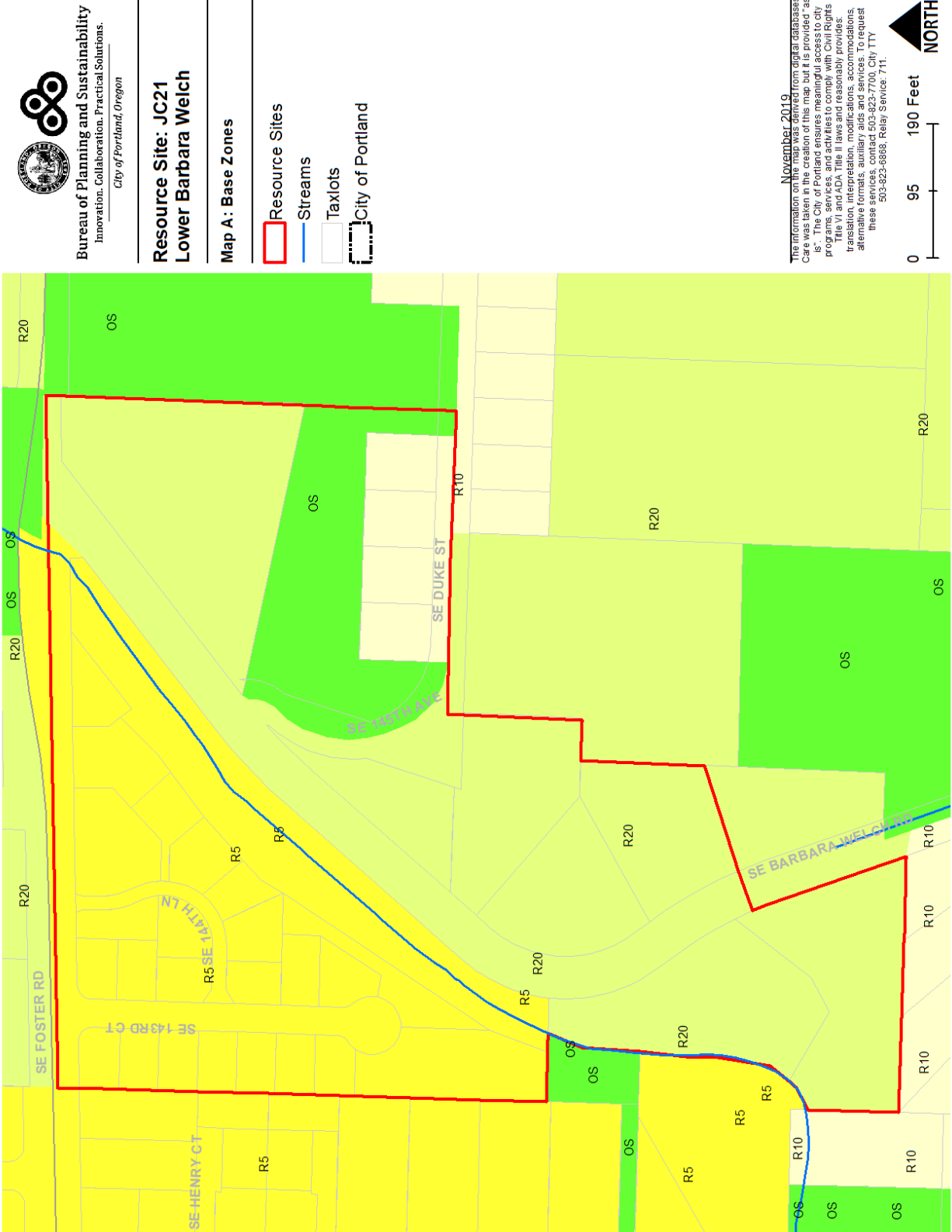
There is development located in the flood area. The structures and impervious surface limit the flood capacity and infiltration functions of the land and increase the flood risk to the property as well as properties up and down stream. New or expanded development in the flood area should be *limited*.

#### ESEE Decisions

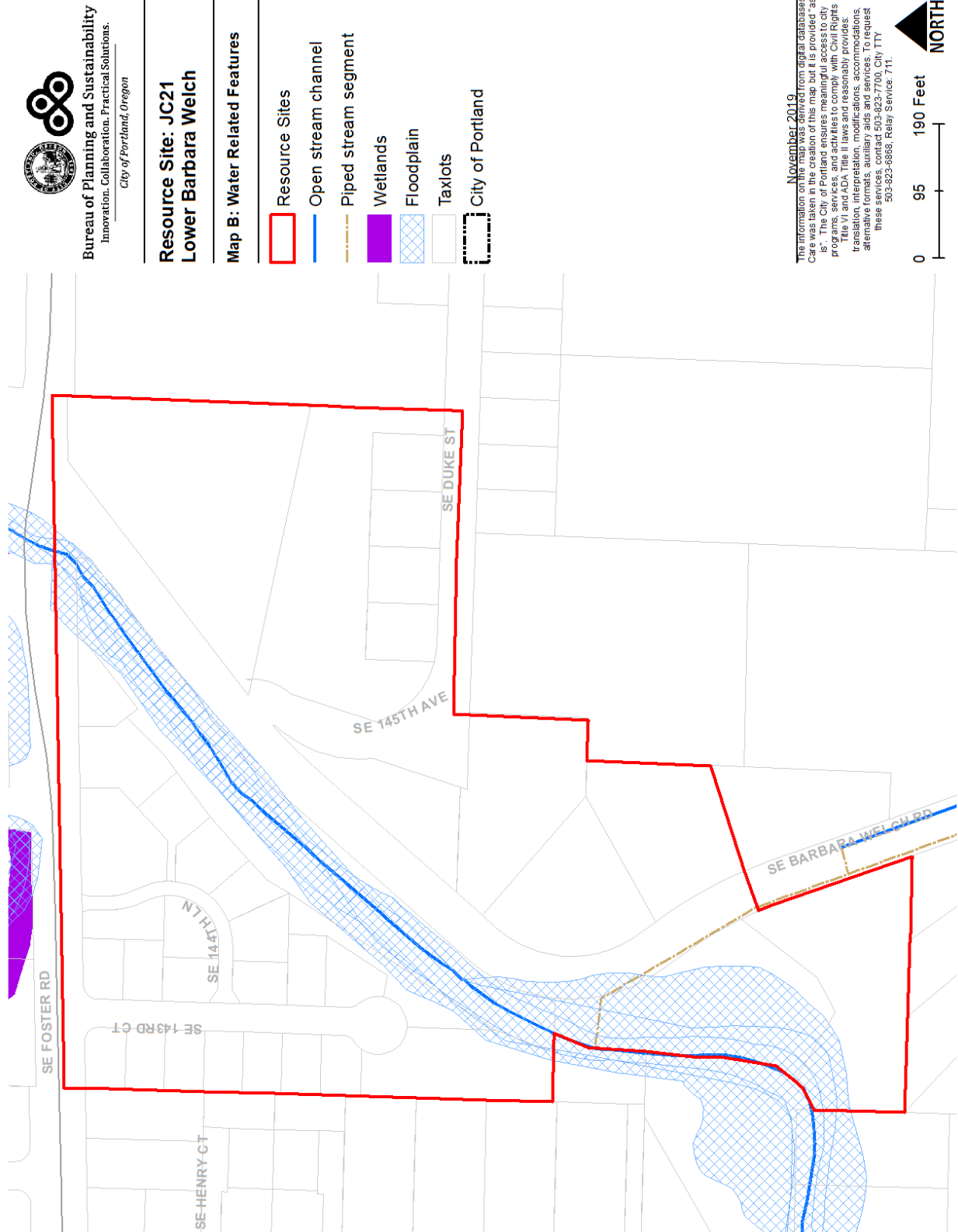
Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resources Site JC21 are:

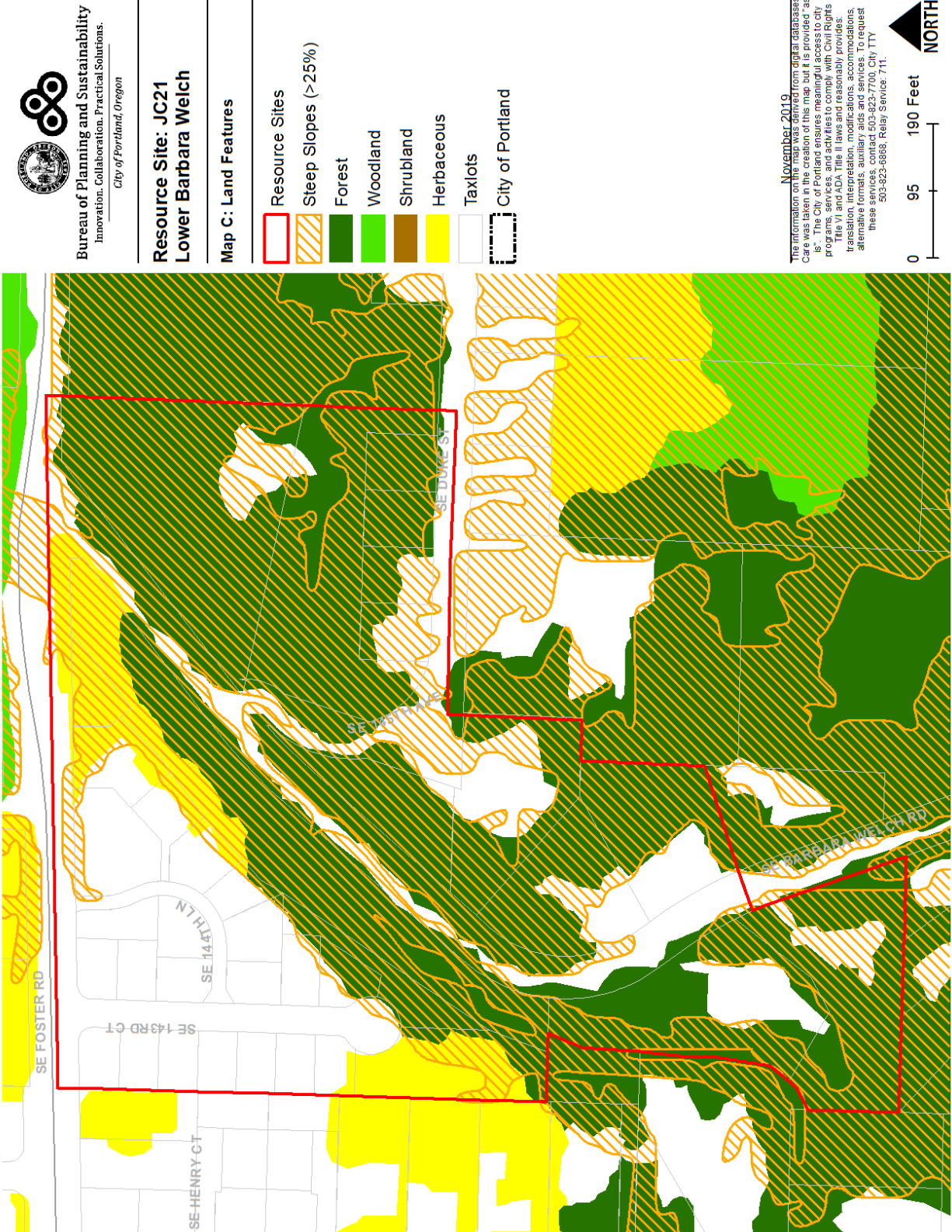
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank, land within 30 feet of wetlands and the vegetated flood area within 170 feet of stream top-of-bank.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within land between 50 and 75 feet of stream top-of-bank and 30 and 55 feet of wetland,
4. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 75 feet from stream top-of-bank, and areas of forest or woodland vegetation contiguous to but more than 55 feet from wetlands.
5. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

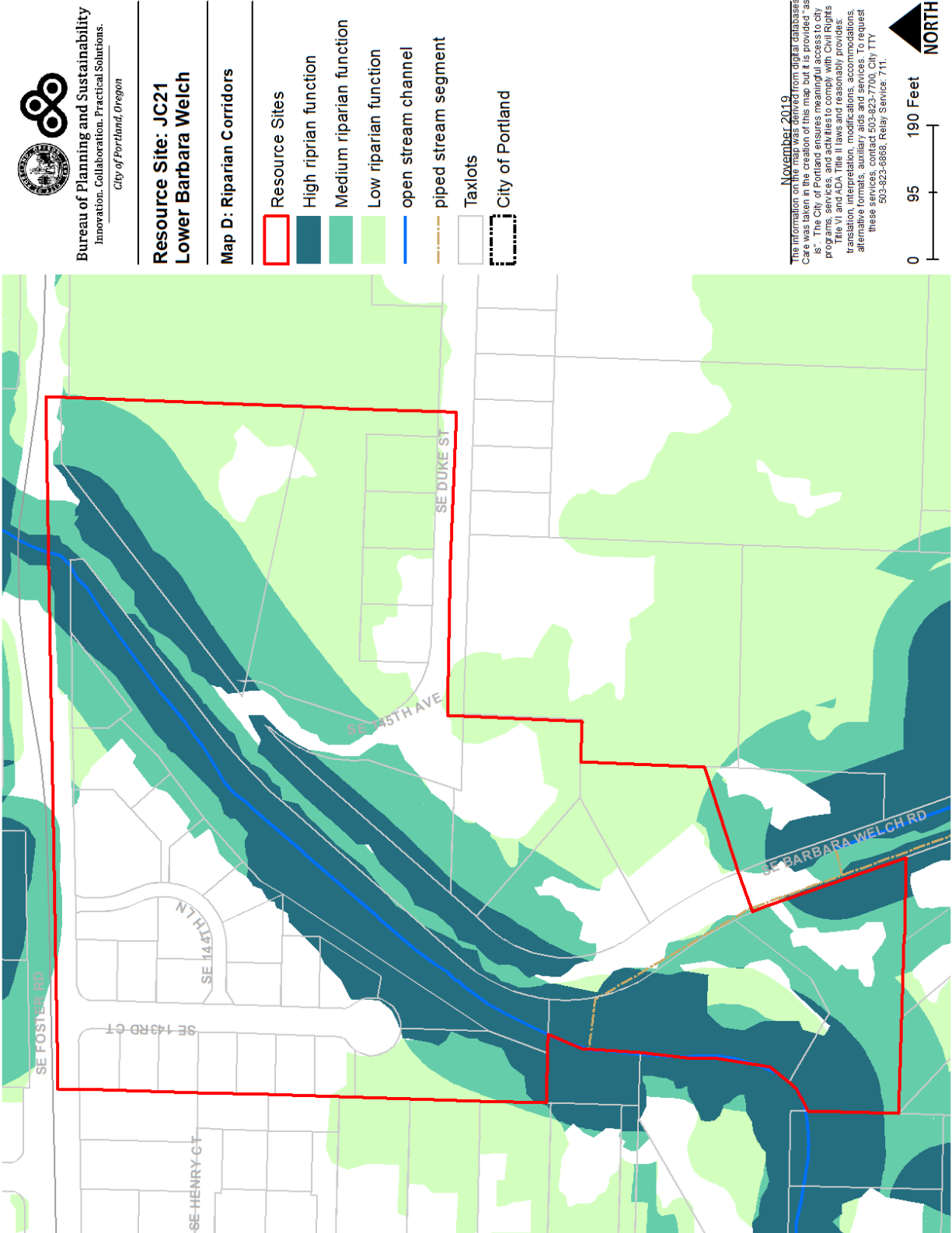
Table C: ESEE Decision for Resource Site JC21	
ESEE Decision	Acres
Strictly Limit	3.6
Limit	8.5
Allow	6.4

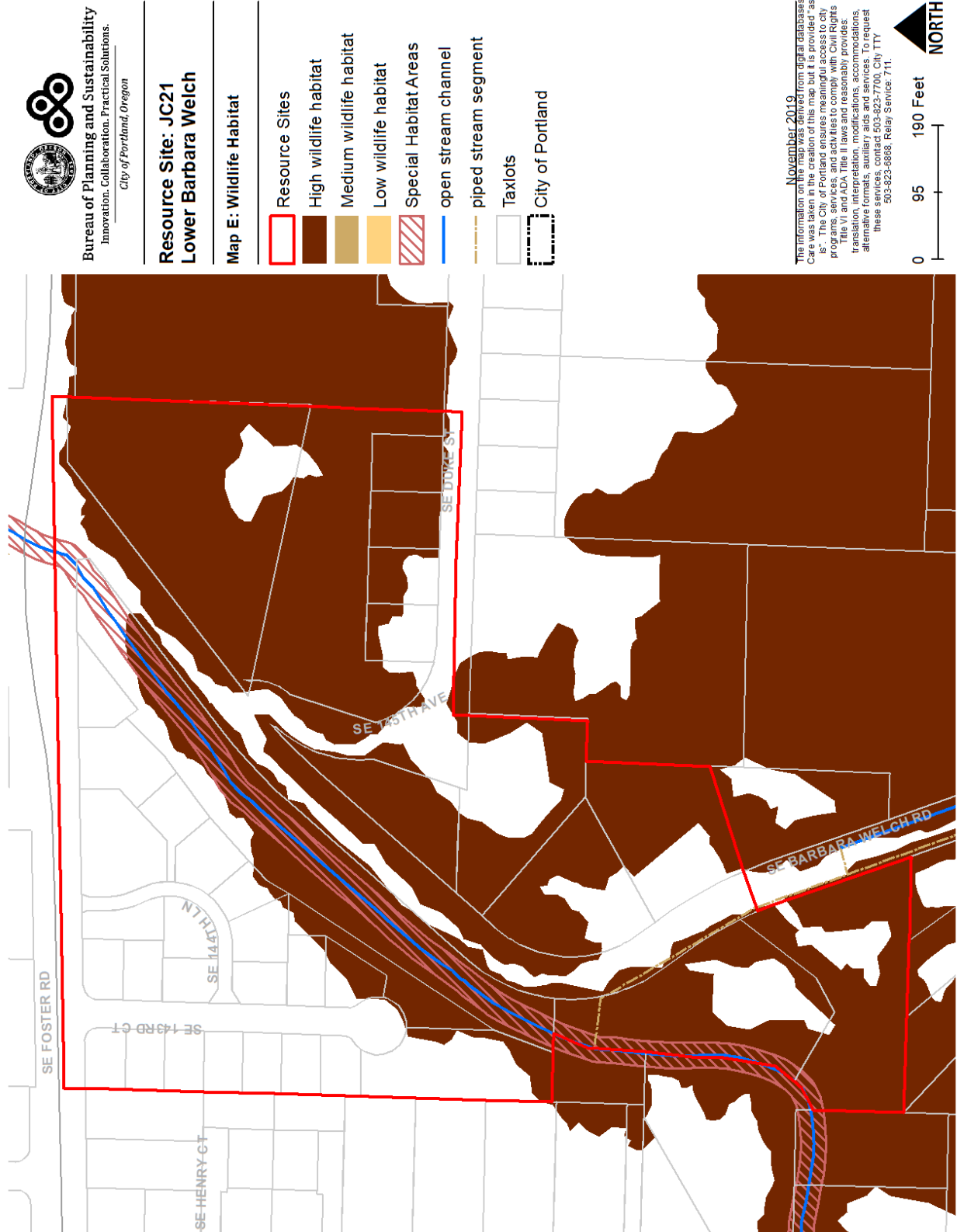


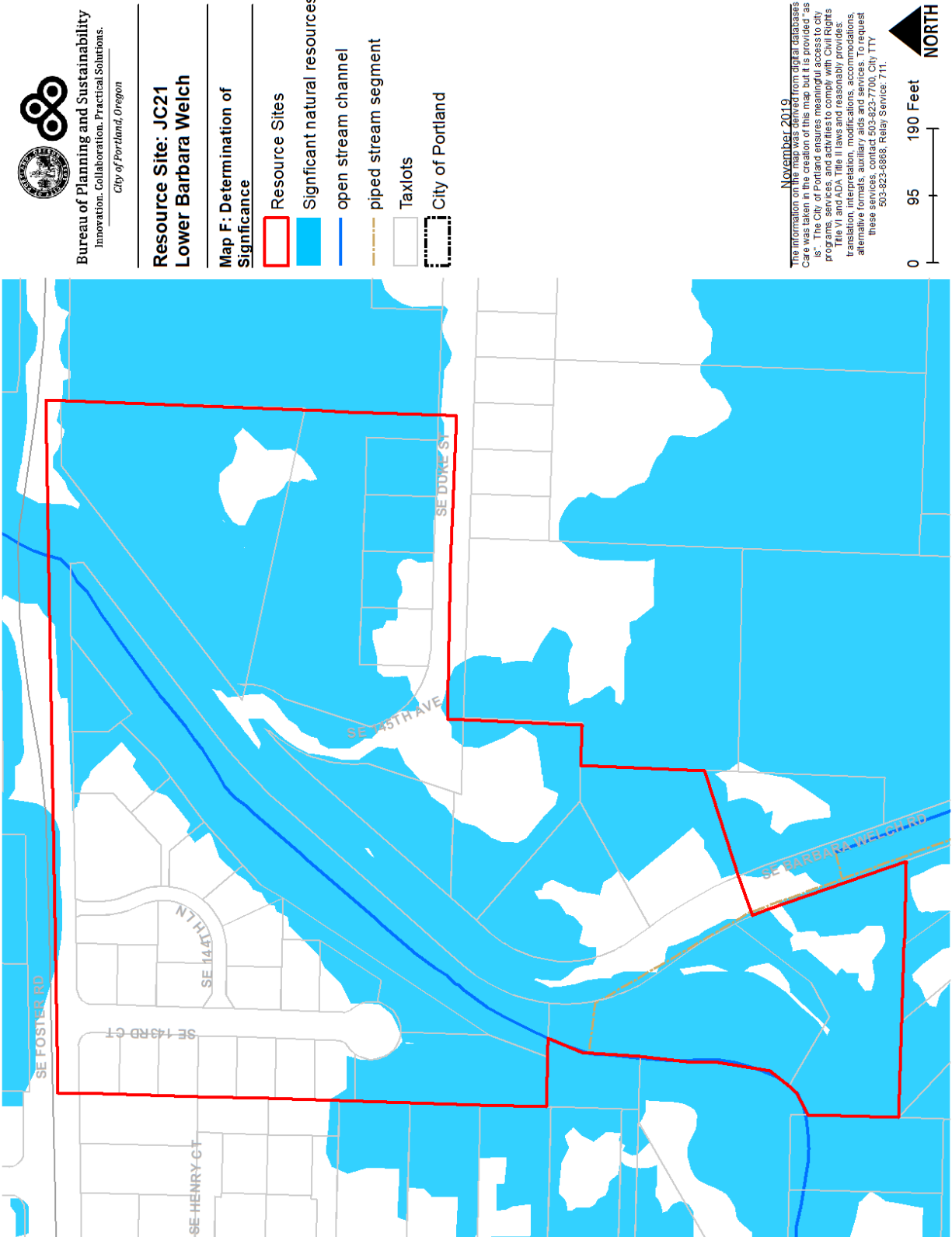


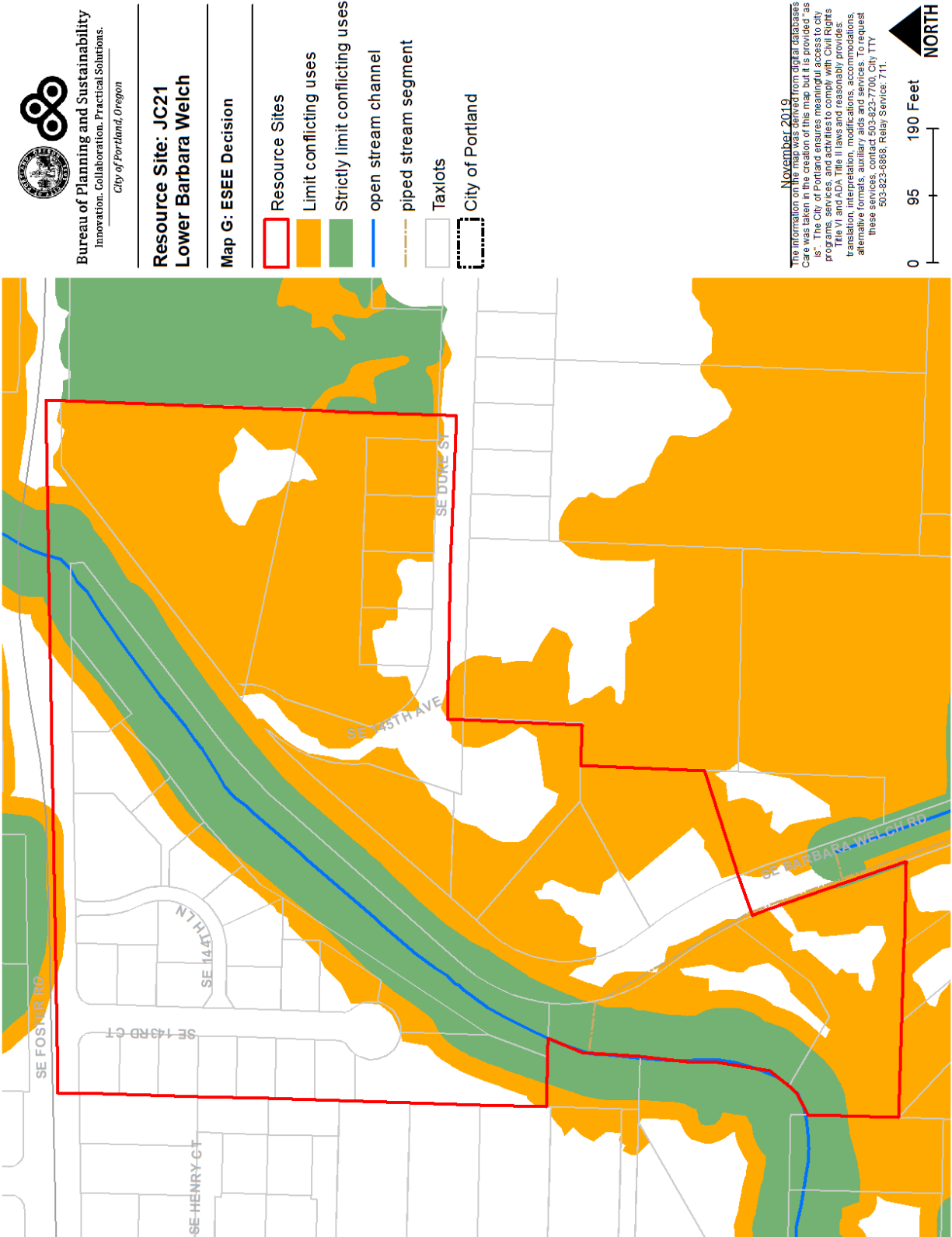






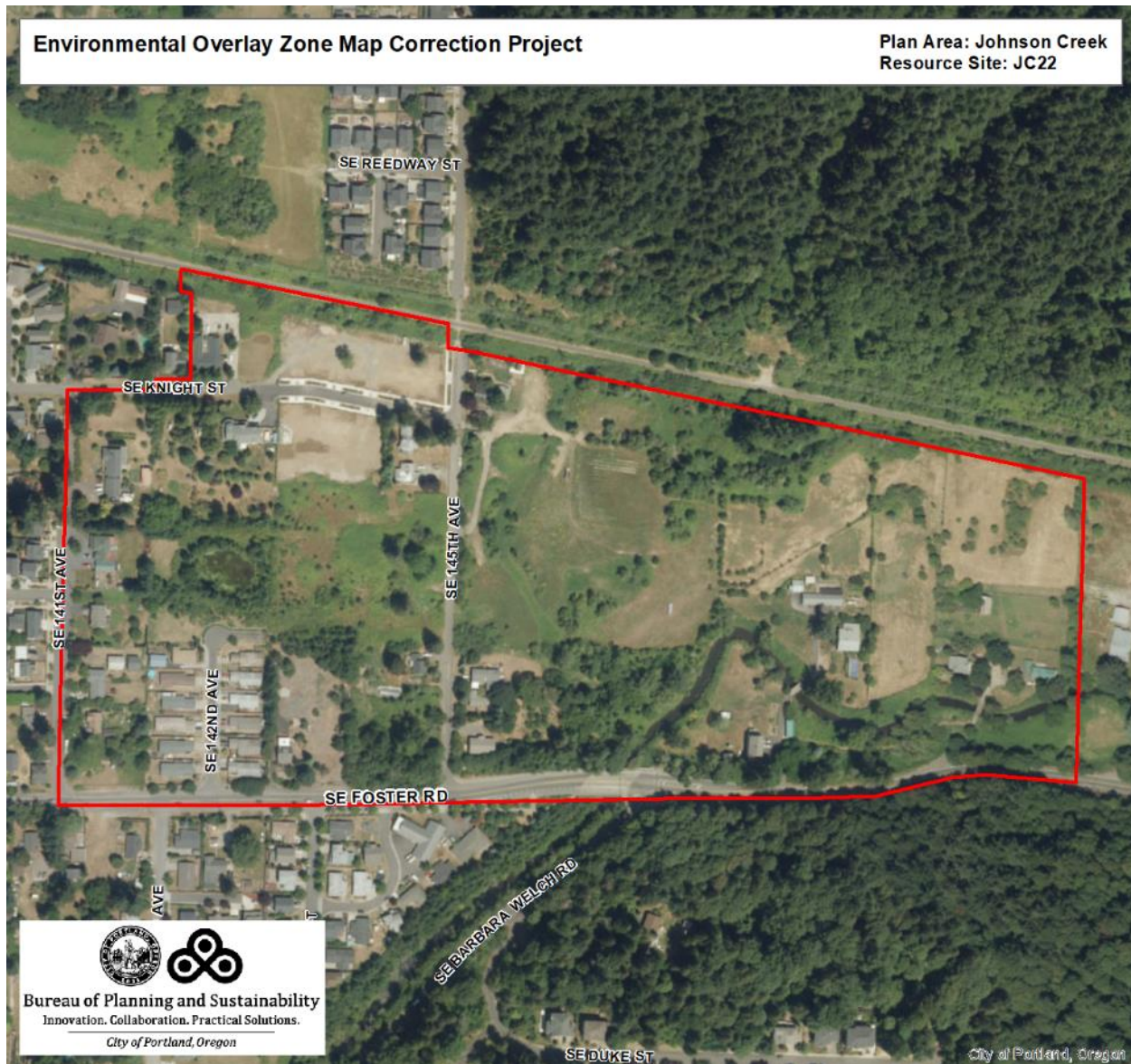








**Resource Site No.:** JC22 **Resource Site Name:** Powell Butte Floodplain West  
**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resource Site No.:** 24



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC22	
	Study Area
<b>Stream (Miles)</b>	0.6
<b>Wetlands (acres)</b>	20.1
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	40.9
Forest (acres)	2.5
Woodland (acres)	4.3
Shrubland (acres)	1.9
Herbaceous (acres)	32.1
<b>Flood Area*</b>	29.6
Vegetated (acres)	27.6
Non-vegetated (acres)	2.0
<b>Steep Slopes (acres)**</b>	4.8
<b>Impervious Surface (acres)</b>	7.2
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

This area is a mosaic of low-density residential consisting of small farms, pasture land, and forests with seasonally saturated soils with some ponding. Most of the site contains wetlands and is within the flood area. Patches of young-to-medium-aged forests, primarily Douglas-Fir, Western Red Cedar, and shrubs (small blackberry patches) provide potential food, cover, perch, and nest sites for passerines, woodpeckers, raptors, small mammals, and reptiles. Some properties along this stretch have manicured lawns to the edge of the creek channel, which is a 1:1 sloped, riprapped channel. This treatment of the creek and creek edge limits wildlife access to and use of the creek. The site is juxtaposed with Powell Butte, the Boring Lava Domes, and Johnson Creek channel providing a diversity of habitat types.

The riparian strip in this area is generally, 50-feet wide. Native vegetation in the remaining area has been replaced with lawns. SE Foster Road, bordering to the south, is the where the forested canyon area located on the north face of Boring Lava Domes ends and where the low-lying, flood area of Johnson Creek located south of Powell Butte begins. In this area the creek floodway widens to 250 feet, and the 100-year flood plain extends over the whole site except for 10-50-foot wide band of along Foster Road. On the northern edge of the site adjacent the Springwater Line there is a 2-acre stand of deciduous trees.

Trees provide some habitat for bird and mammal species, but do not have as high of value for wildlife as the stretches of Johnson Creek directly to the east. The eastern stretches have more structural and species diversity and age class diversity, presence of a few snags, and water thermo-regulation through shade.

Despite the low density of development human use of this area is high with a mixture of roads, houses, fences, power lines, railroad tracks, and drainage ditches. Bridges serving properties fronting on SE Foster Road cross the creek. The Springwater Line (site of the recreation trail) is immediately north.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC22</b>				
<b>Resource Site (acres) = 47.779471</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	28.7	9.0	5.0	42.8
percent total inventory site area	60.0%	18.9%	10.5%	89.5%
<b>Wildlife Habitat*</b>				
acres	0.0	18.6	0.0	18.6
percent total inventory site area	0.0%	38.8%	0.0%	38.9%
<b>Special Habitat Areas**</b>				
acres				1.1
percent total inventory site area				2.4%
<b>Combined Total*</b>				
acres	28.7	9.0	5.0	42.8
percent total inventory site area	60.0%	18.9%	10.5%	89.5%
* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water. ** Special Habitat Areas rank high for wildlife habitat. +Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC22 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R20 and R5 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC22, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

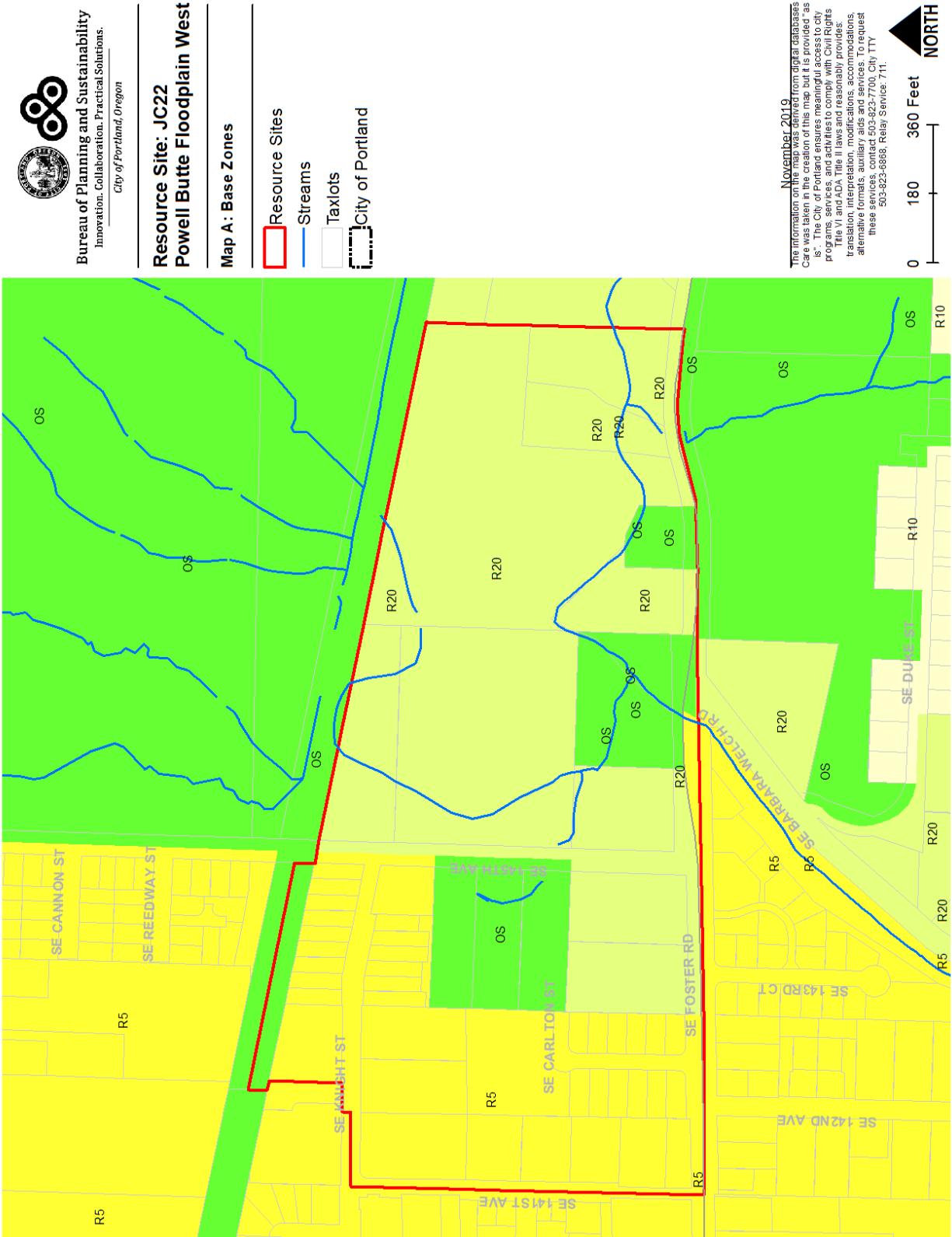
There is residential development located in the flood area. The structures and impervious surface limit the flood capacity and infiltration functions of the land and increase the flood risk to the property as well as properties up and down stream. New or expanded development in the flood area should be *limited*.

### ESEE Decisions

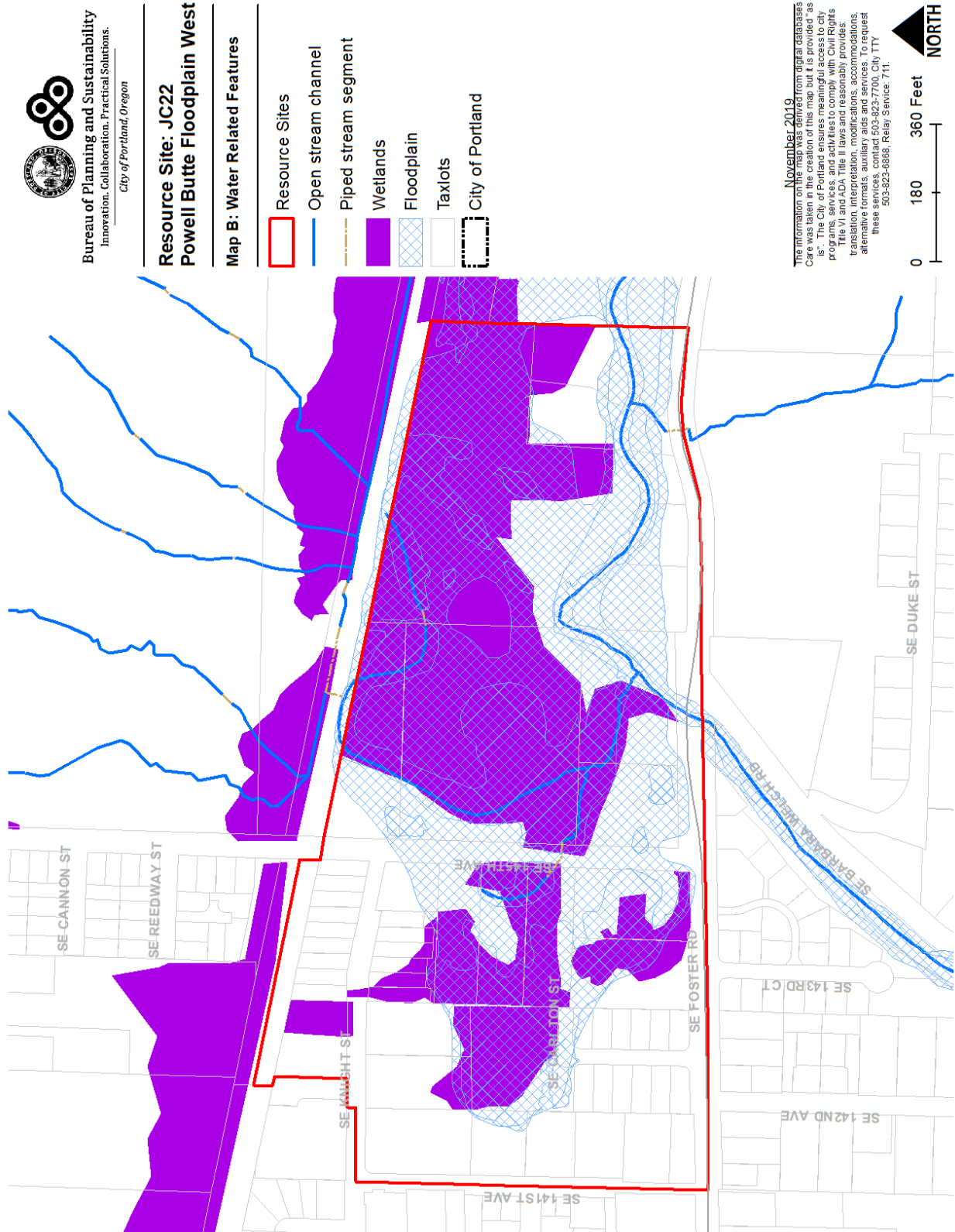
Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resource Site JC22 are:

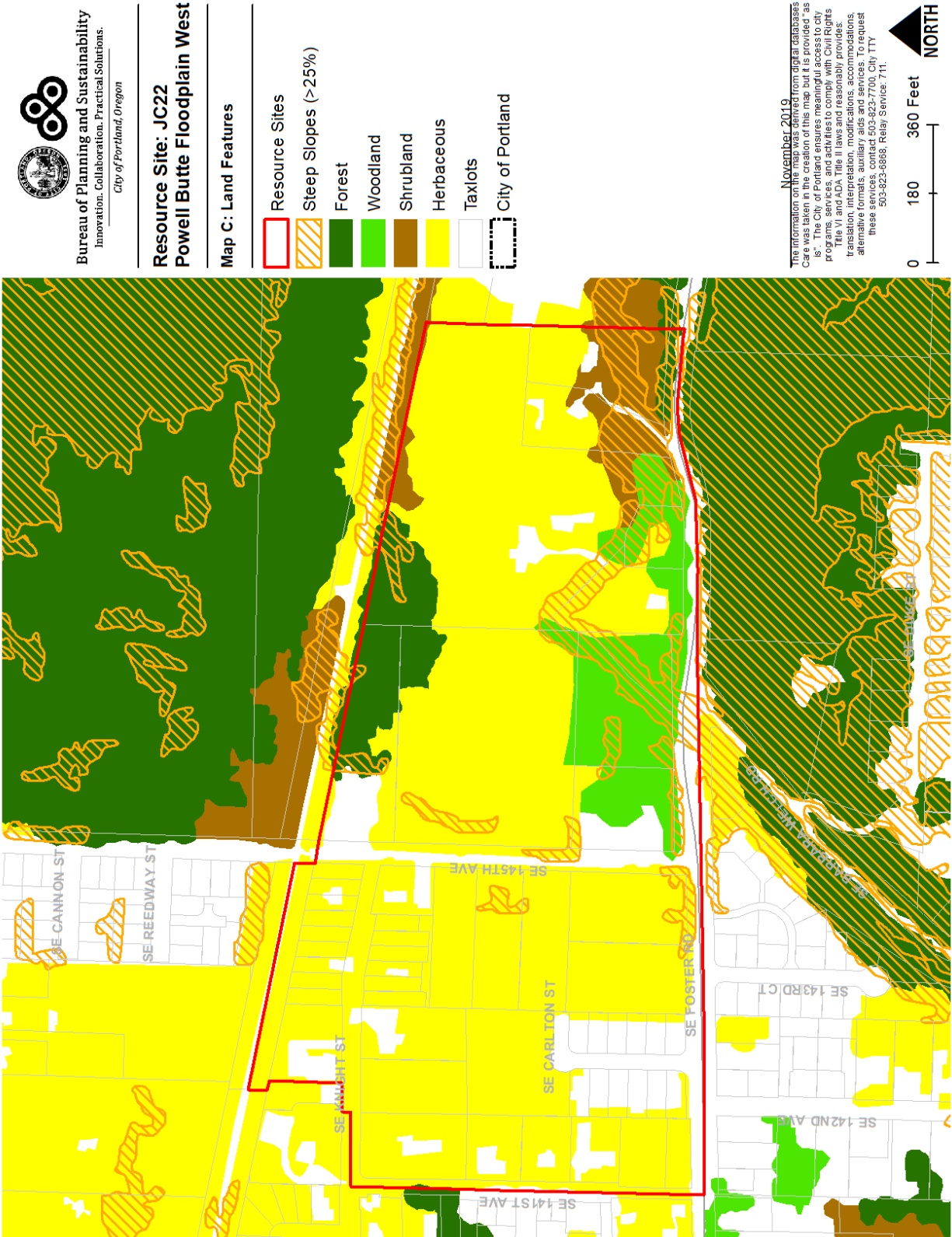
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank, land within 30 feet of wetlands and the vegetated flood area within 170 feet of stream top-of-bank.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within land between 40 and 65 feet of stream top-of-bank and between 30 and 55 feet of wetland.
4. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 65 feet from stream top-of-bank, and areas of forest or woodland vegetation contiguous to but more than 55 feet from wetlands.
5. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

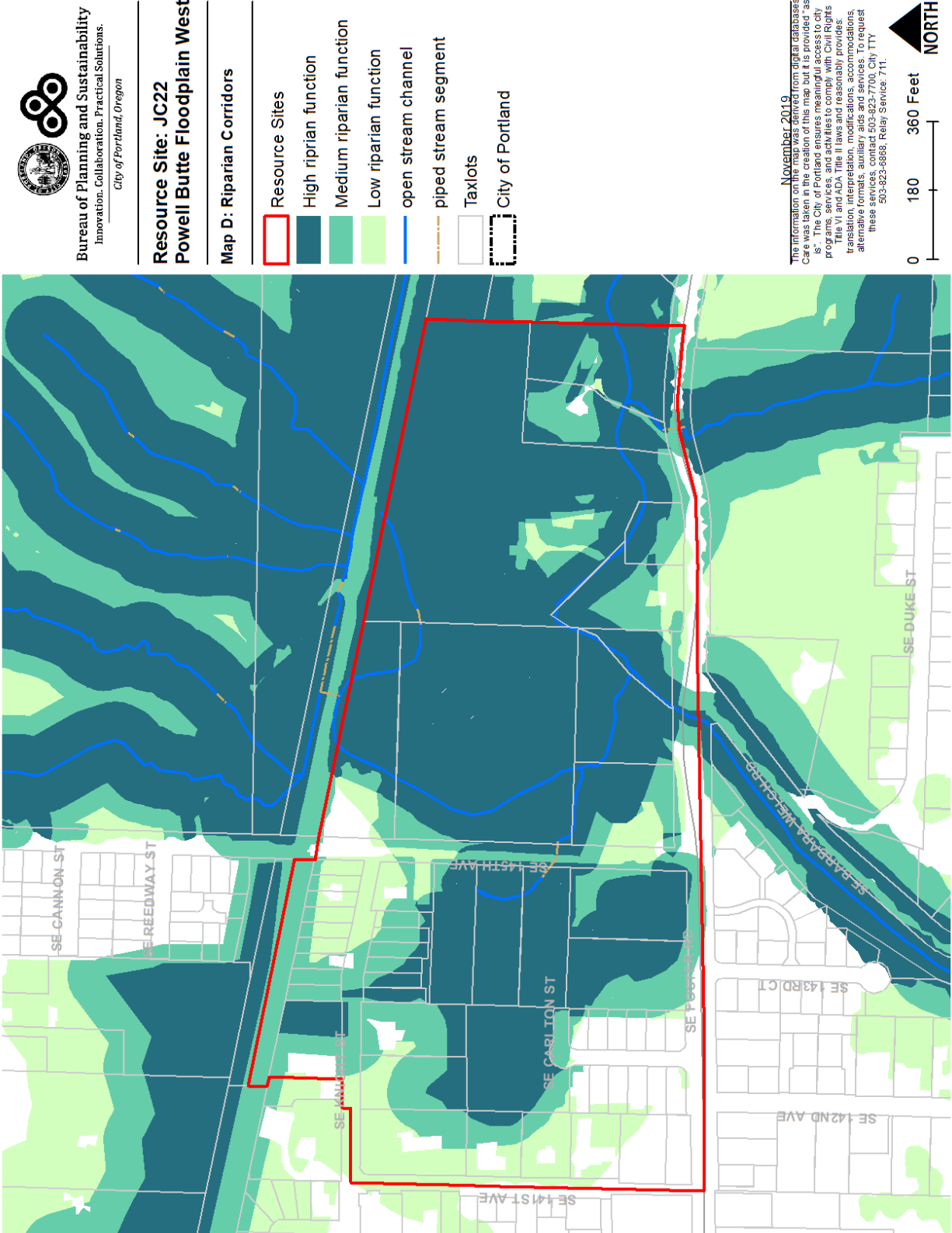
Table C: ESEE Decision for Resource Site JC22	
ESEE Decision	Acres
Strictly Limit	28.8
Limit	6.0
Allow	13.0

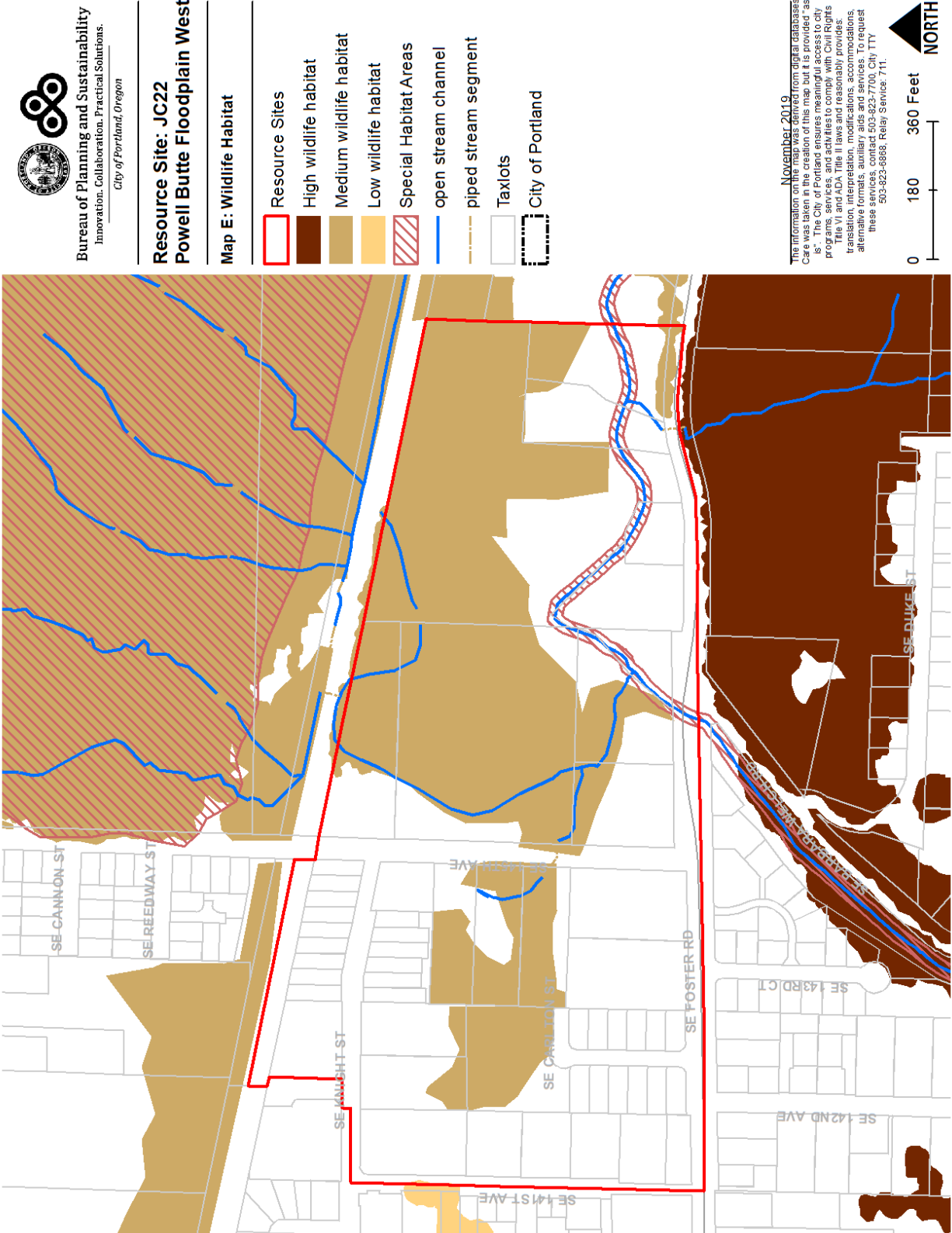




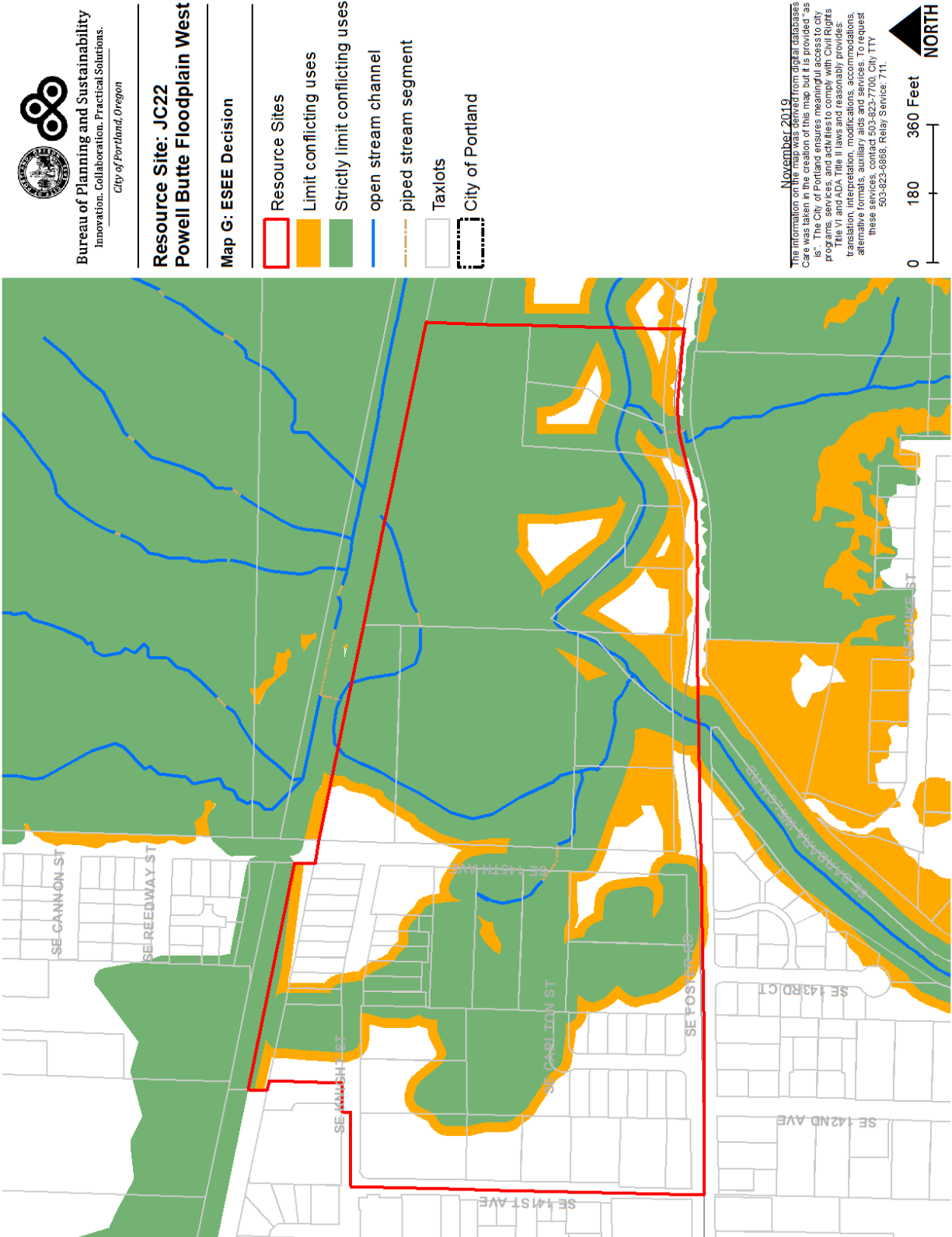














**Resource Site No.: JC23    Resource Site Name: Powell Butte**

**Previous Plan:** Johnson Creek Basin Protection Plan    **Previous Resource Site No.:** 29



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC23	
	Study Area
<b>Stream (Miles)</b>	2.2
<b>Wetlands (acres)</b>	34.4
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	701.9
Forest (acres)	329.3
Woodland (acres)	36.1
Shrubland (acres)	76.4
Herbaceous (acres)	260.1
<b>Flood Area*</b>	0.9
Vegetated (acres)	0.9
Non-vegetated (acres)	0.0
<b>Steep Slopes (acres)**</b>	329.1
<b>Impervious Surface (acres)</b>	42.0
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

This site is a major butte surrounded by residential development at its base to the north, west, and south, but with relatively non-intensive residential development on the east side. This is one of the more unique uplands in southeast Portland. This butte consists of primarily two major habitat types: an open grassland and a mid-serial stage forest. There are multiple streams that flow down the southern, western and eastern slopes.

The forest consists of mature deciduous trees (maple, alder) and 40-60-year-old conifers (Douglas fir). Snags are common and there is some downed dead wood from windthrow. The grassland is an abandoned, ungrazed and unharvested pasture with some invading hawthorn trees. There is a vernal pond within this grassland.

Powell Butte provides very important wildlife habitat within Johnson Creek and the Portland metropolitan area. There are very few upland meadows left in the metropolitan area. The large size and combination of upland meadow, forest, and adjacency to Johnson Creek is rare and provides habitat for a large diversity of bird, large and small mammal, and reptile species. Powell Butte is designated a Special Habitat for migratory birds and grassland-associated species.

This combination of forest and grassland provides potential for good quality habitat. The forest provides foraging, perching, roosting, and nesting habitat for hawks, falcons, owls, and bats. The grassland provides nesting habitat for birds such as meadowlarks and sparrows. The grass sod and thatch provide high quality habitat for small mammal production. The grassland/forest ecotone provides a valuable edge effect to wildlife, potentially supporting greater densities than other habitat types.

Forested wetland situated along Johnson Creek corridor and at the base of Powell Butte provides excellent connectivity as well as nesting forage and cover habitat for birds, amphibians and small mammals.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC23</b>				
<b>Resource Site (acres) = 800.66641</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	146.5	151.3	289.9	587.8
percent total inventory site area	18.3%	18.9%	36.2%	73.4%
<b>Wildlife Habitat*</b>				
acres	0.0	348.7	10.1	358.9
percent total inventory site area	0.0%	43.6%	1.3%	44.8%
<b>Special Habitat Areas**</b>				
acres				636.8
percent total inventory site area				79.5%
<b>Combined Total*</b>				
acres	661.4	19.2	14.9	695.5
percent total inventory site area	82.6%	2.4%	1.9%	86.9%
* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water. ** Special Habitat Areas rank high for wildlife habitat. +Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC23 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support migratory birds and grassland-associated species.

## Resource Site Specific ESEE

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R20, R10, R7, R5, R2 and RMP base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC23, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

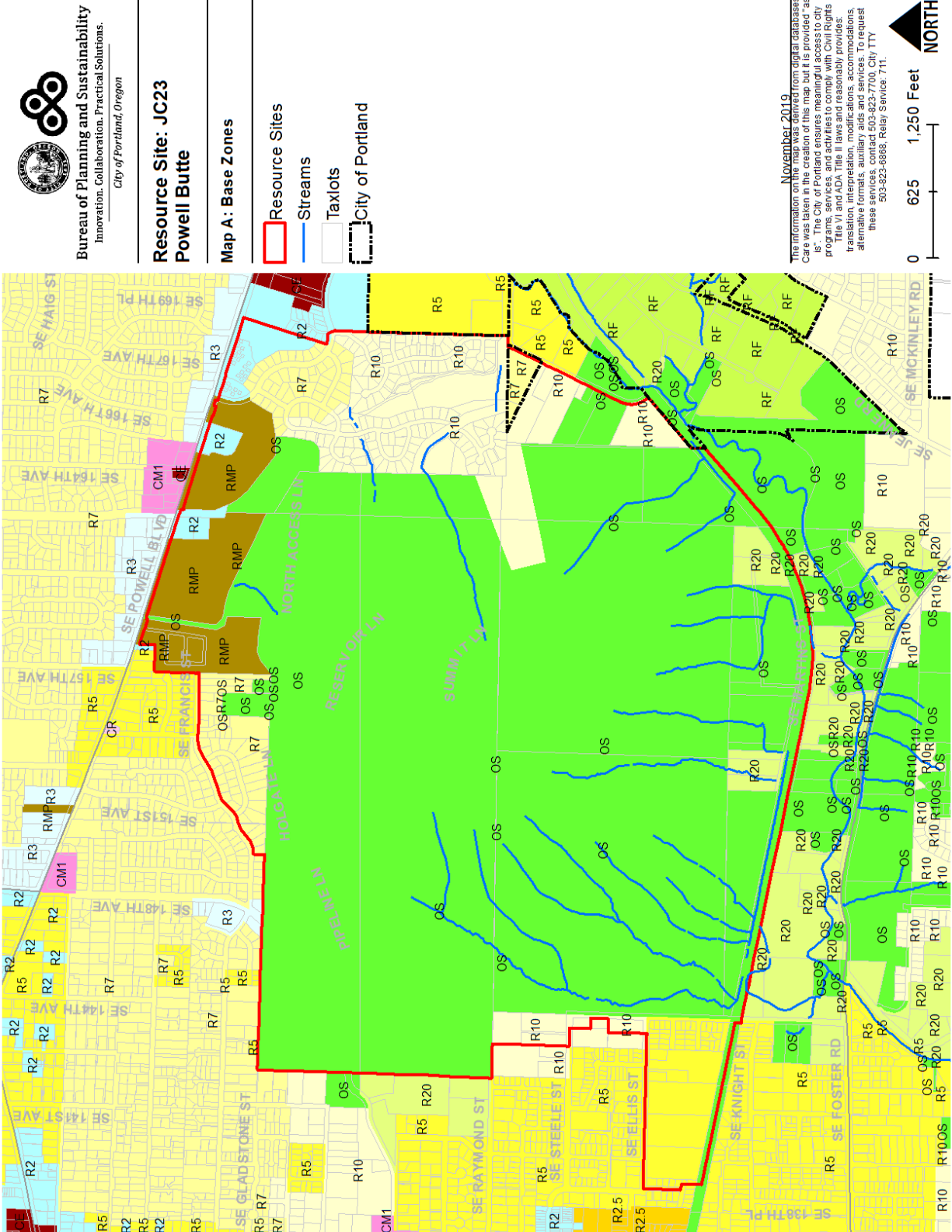
Additional or intensified recreational impacts, include new trails, should be *limited* to maintain the natural resource functions.

### ESEE Decisions

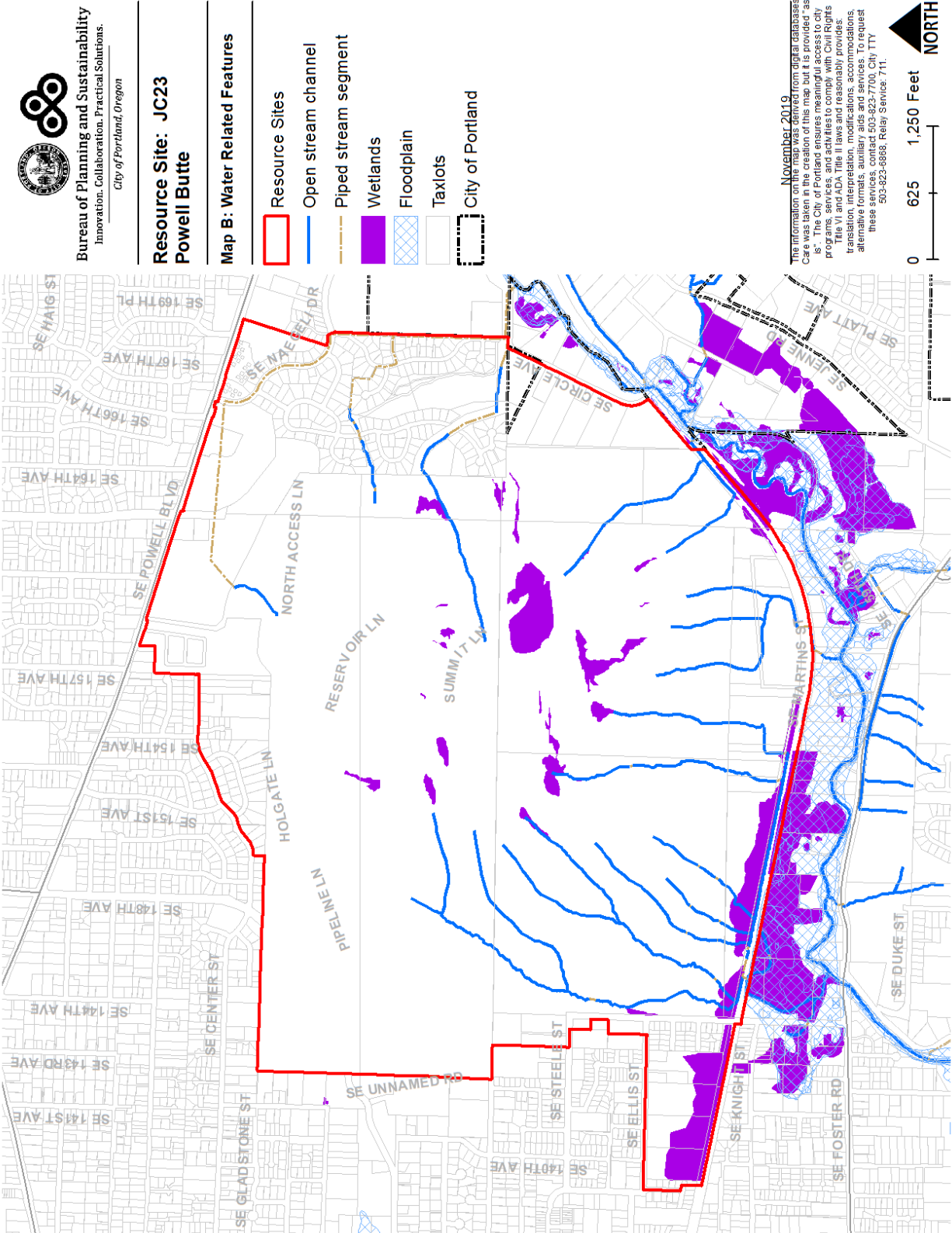
Based on the General ESEE and resource site-specific ESEE, the ESEE decisions for Resource Site JC23 are:

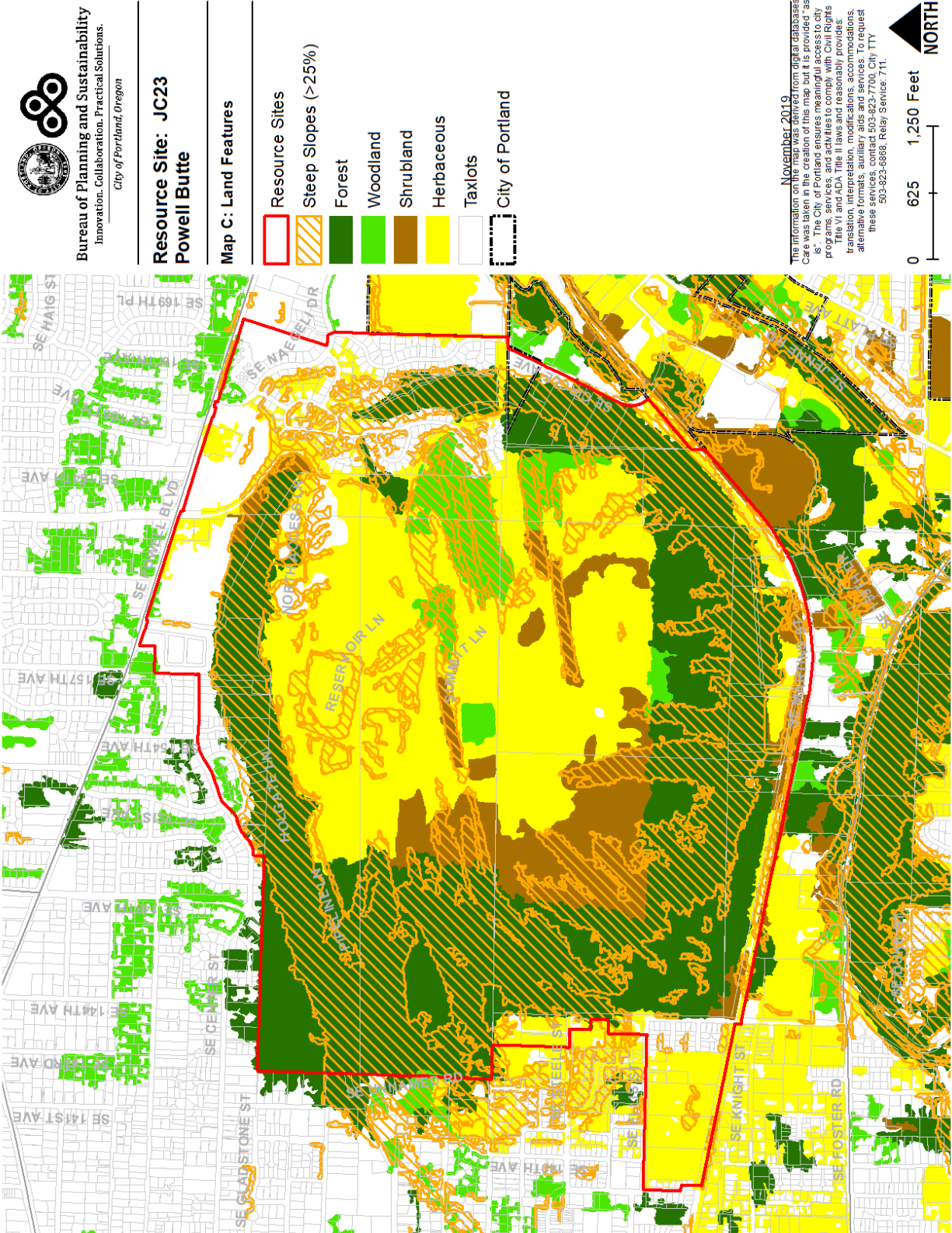
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank and land within 30 feet of wetlands.
2. Within Powell Butte Nature Park, *strictly limit* conflicting uses within areas of forest vegetation on steep and non-steep slopes.
3. Within Powell Butte Nature Park, *limit* conflicting uses within areas of woodland, shrubland or herbaceous vegetation.
4. Outside Powell Butte Nature Park, *limit* conflicting uses within areas of forest vegetation on steep and non-steep slopes that are contiguous to but more than 50 feet from stream top-of-bank and within areas of forest vegetation that are contiguous to but more than 30 feet from wetlands.
5. *Allow* conflicting uses within all other areas containing significant natural resources.

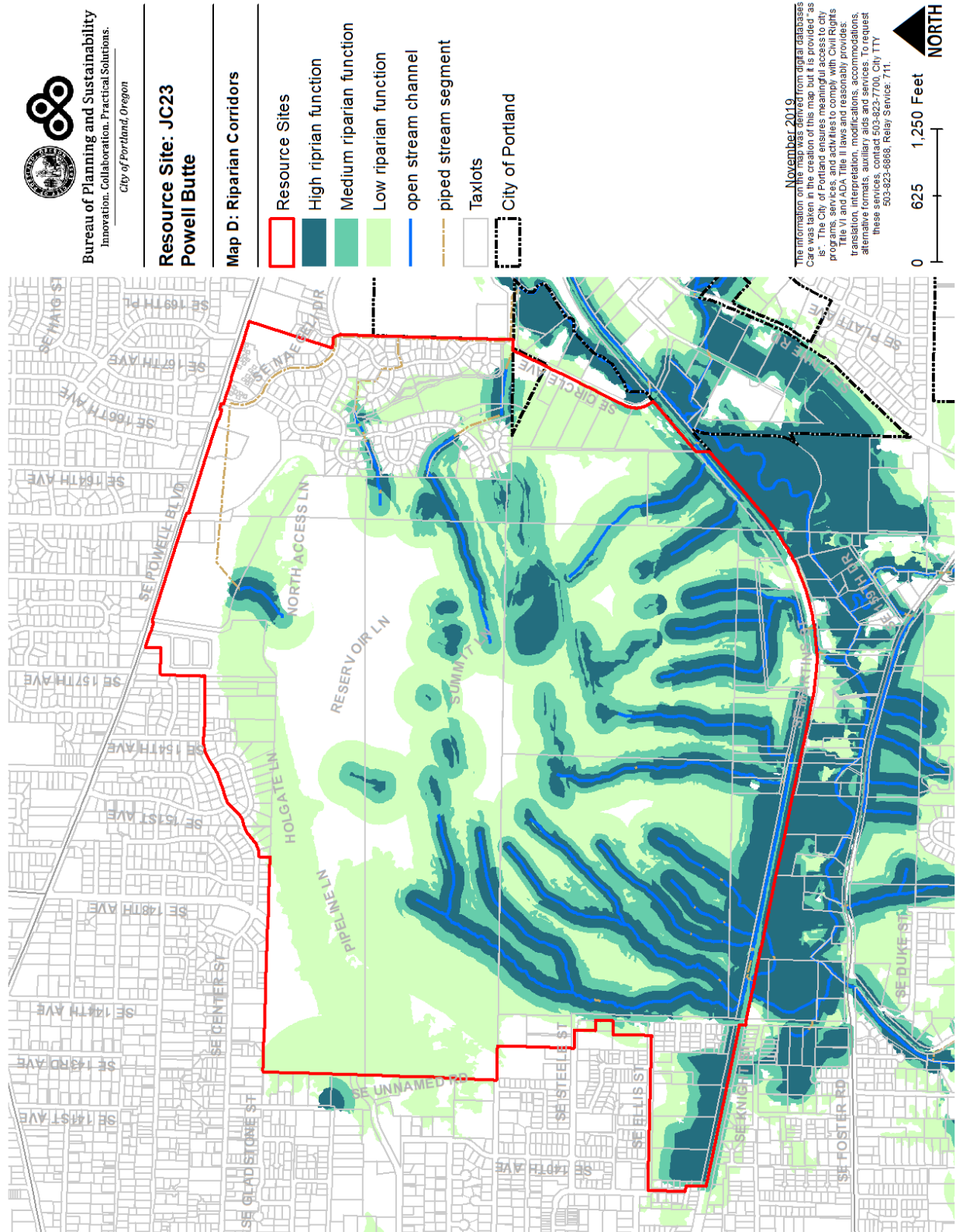
Table C: ESEE Decision for Resource Site JC23	
ESEE Decision	Acres
Strictly Limit	361.8
Limit	306.5
Allow	132.3



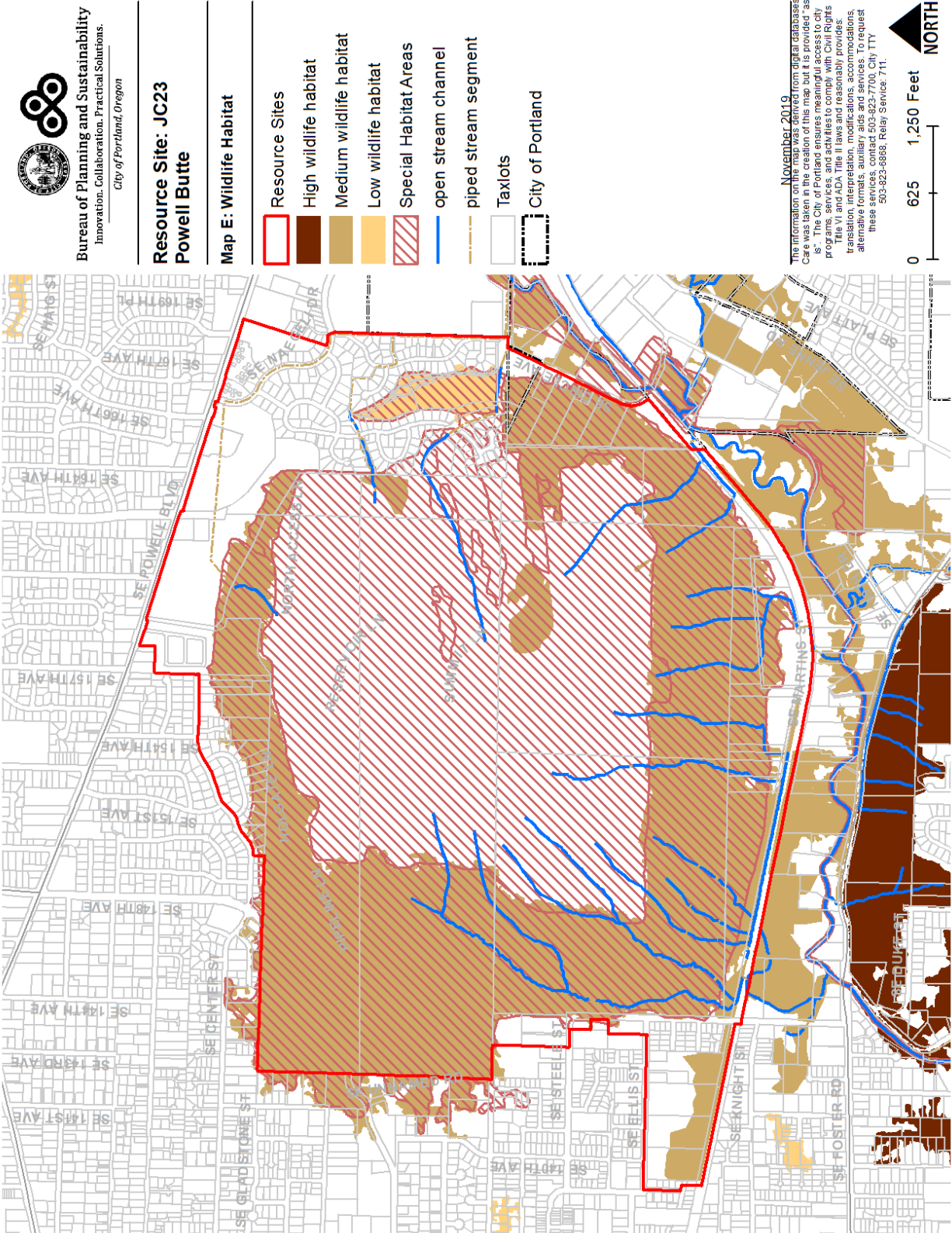


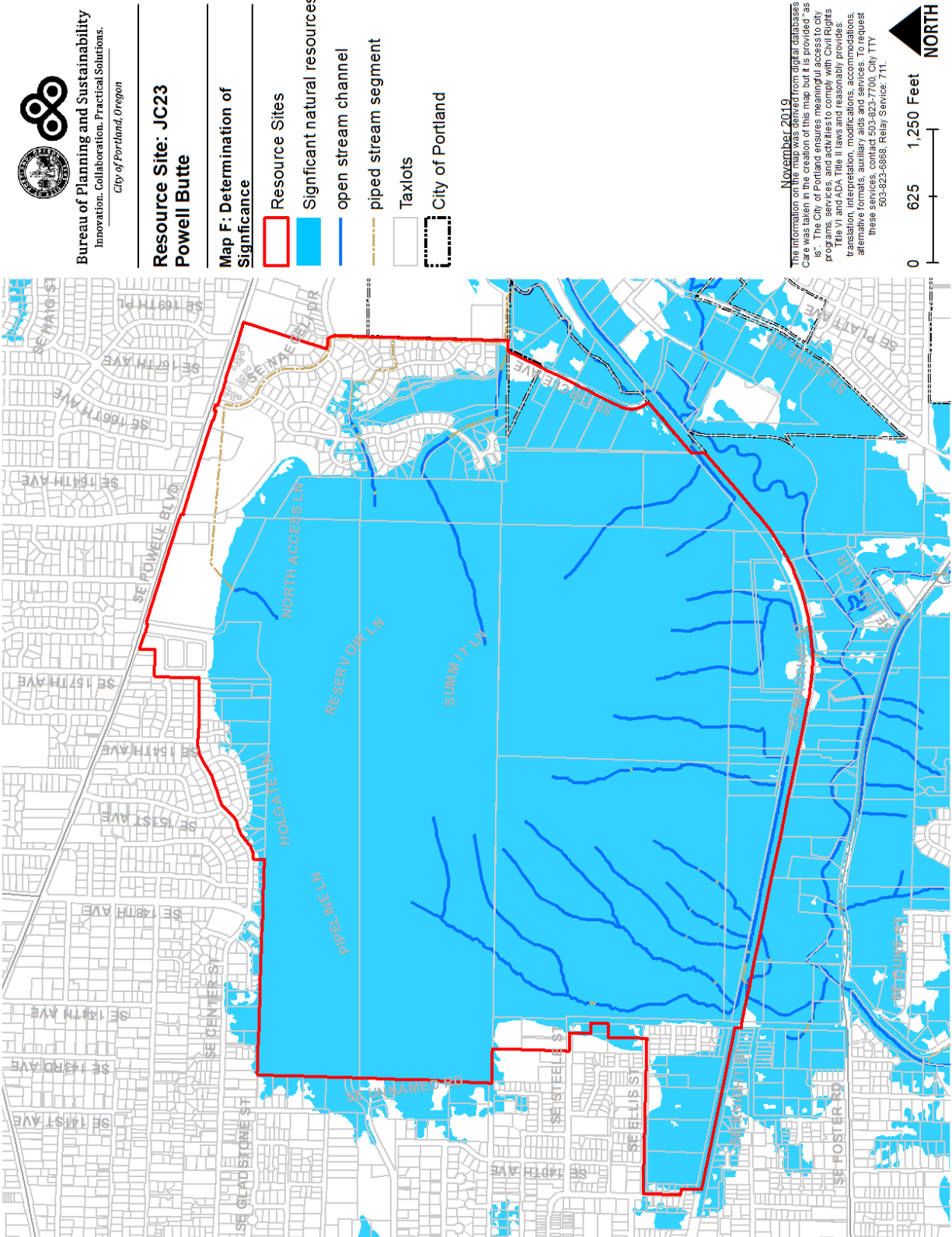


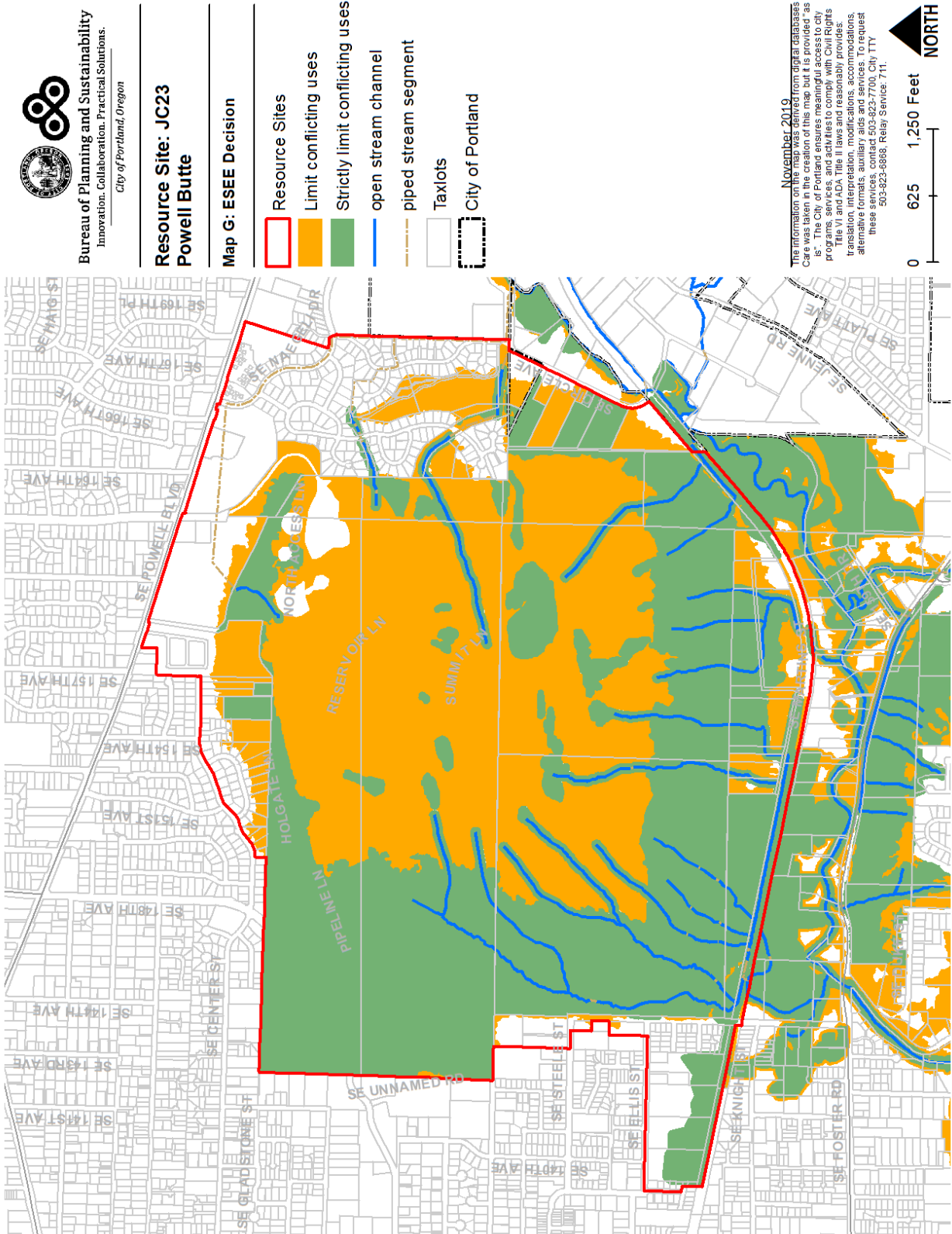














**Resource Site No.:** JC24 **Resource Site Name:** Mid Powell Butte Floodplain  
**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resource Site No.:** 25



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC24	
	Study Area
<b>Stream (Miles)</b>	0.7
<b>Wetlands (acres)</b>	7.9
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	22.2
Forest (acres)	14.4
Woodland (acres)	4.1
Shrubland (acres)	2.5
Herbaceous (acres)	1.3
<b>Flood Area*</b>	26.5
Vegetated (acres)	18.8
Non-vegetated (acres)	7.7
<b>Steep Slopes (acres)**</b>	6.0
<b>Impervious Surface (acres)</b>	3.9
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

Nearly the entire site is within the flood area. There is a large wetland that extends from the west on to the site and multiple smaller wetlands throughout. There is some residential development within the flood area that limits flood capacity and reduces infiltration, which increases flood risks.

There are large cultivated grazed pastures to the west of Johnson Creek and on the southeast side of Powell Butte. The cultivated and grazed riparian zone provides poor habitat for wildlife and little sediment and erosion control for the bank. The pasture is extensively grazed by livestock. However, there are willows and blackberry overhang the stream and providing cover, shade and sources of food and structure. Portions of the creek within this stretch are well shaded, keeping the water temperature cooler and better habitat for fish and aquatic species.

With the exception of two stands of trees in the northwest and north-central portions of the site, significant resources are confined to the creek corridor.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC24</b>				
<b>Resource Site (acres) = 31.837933</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	21.9	3.8	5.0	30.7
percent total inventory site area	68.9%	11.9%	15.7%	96.5%
<b>Wildlife Habitat*</b>				
acres	0.0	20.1	0.0	20.1
percent total inventory site area	0.0%	63.1%	0.0%	63.2%
<b>Special Habitat Areas**</b>				
acres				2.0
percent total inventory site area				6.3%
<b>Combined Total<sup>+</sup></b>				
acres	21.9	3.8	5.0	30.7
percent total inventory site area	68.9%	12.0%	15.6%	96.5%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC24 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R20 base zones. Open space uses area allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC24, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

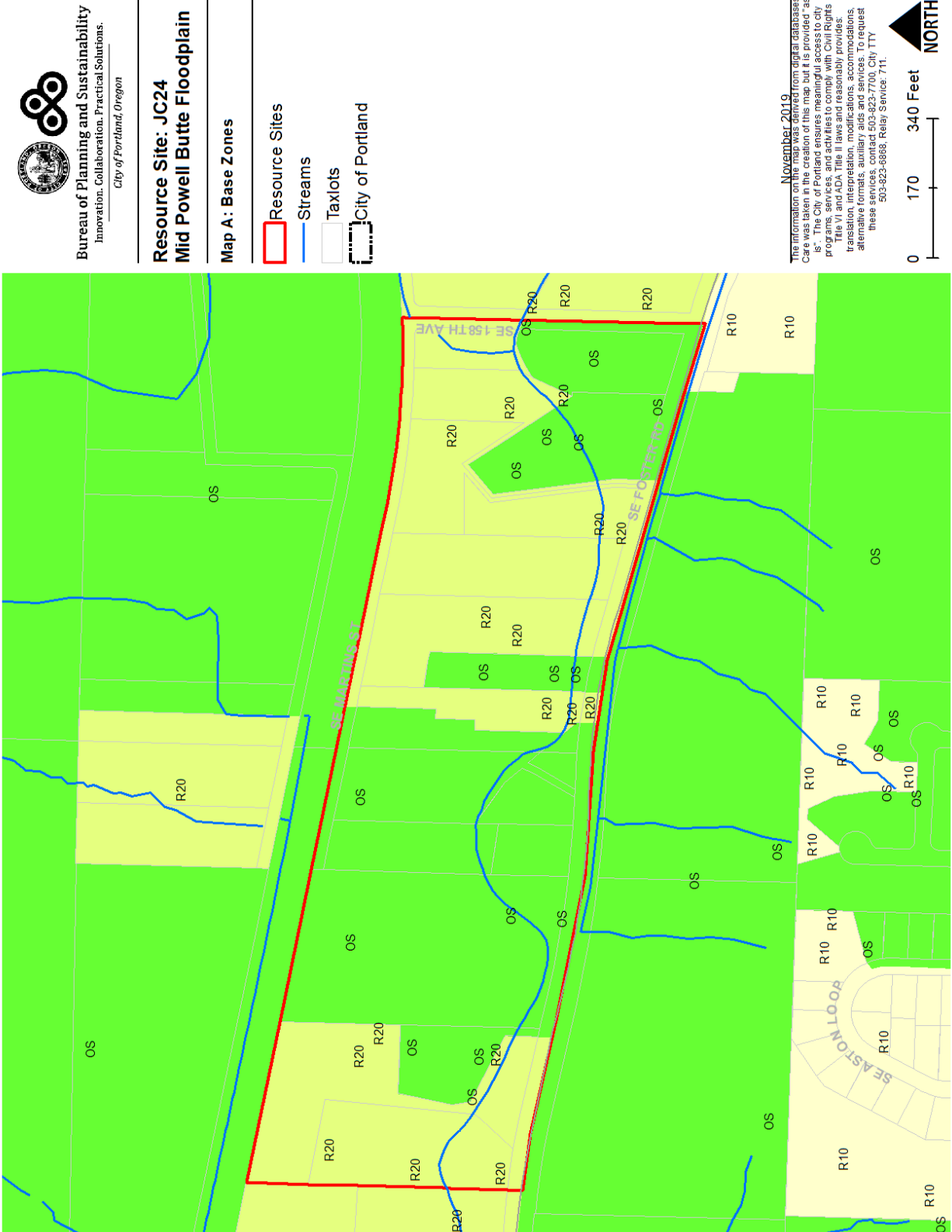
There is residential development located in the flood area. The structures and impervious surface limit the flood capacity and infiltration functions of the land and increase the flood risk to the property as well as properties up and down stream. New or expanded development in the flood area should be *limited*.

#### ESEE Decisions

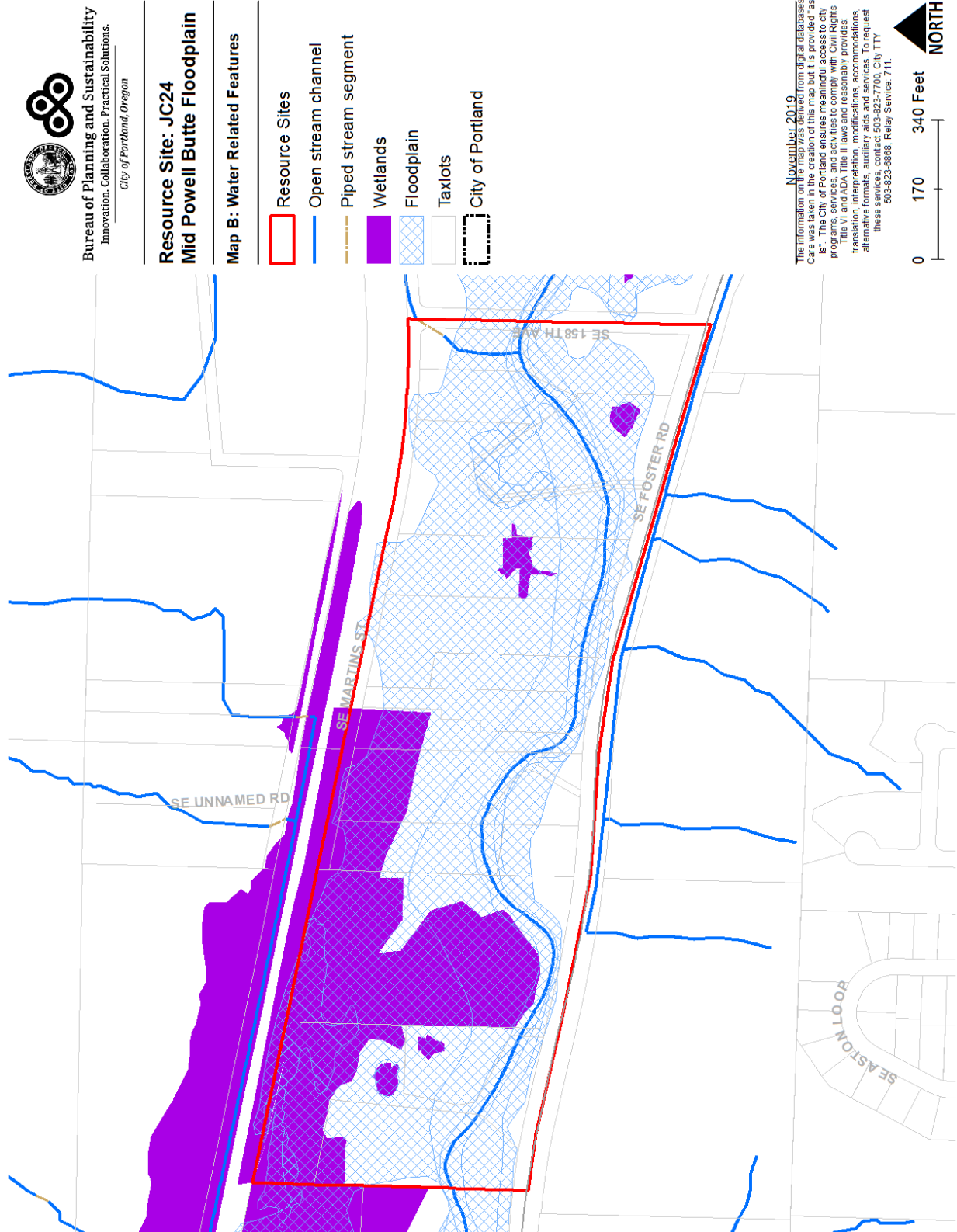
Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resources Site JC24 are:

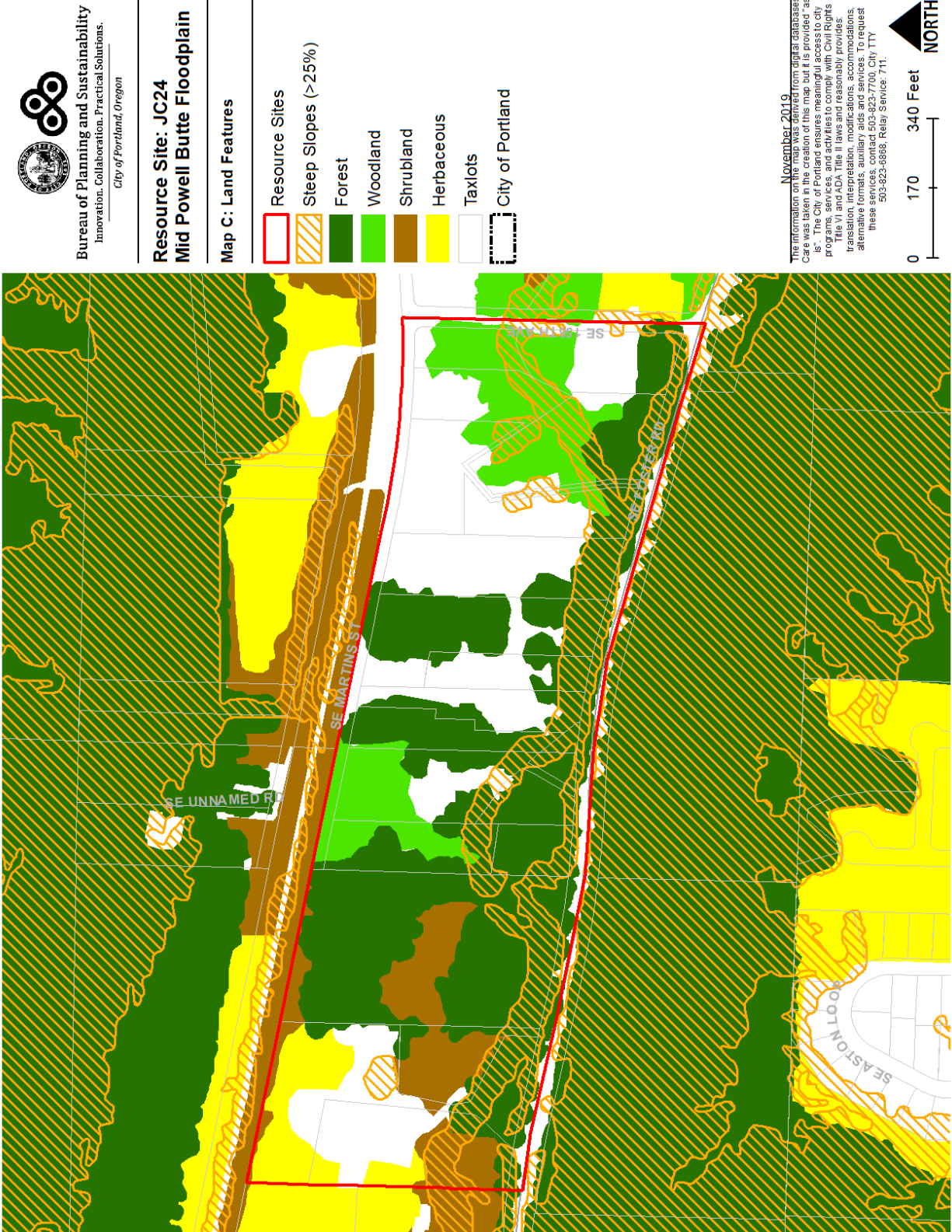
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank, land within 30 feet of wetlands.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within land between 40 and 65 feet of stream top-of-bank and between 30 and 55 feet of wetland.
4. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 65 feet from stream top-of-bank, and areas of forest or woodland vegetation contiguous to but more than 55 feet from wetlands.
5. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

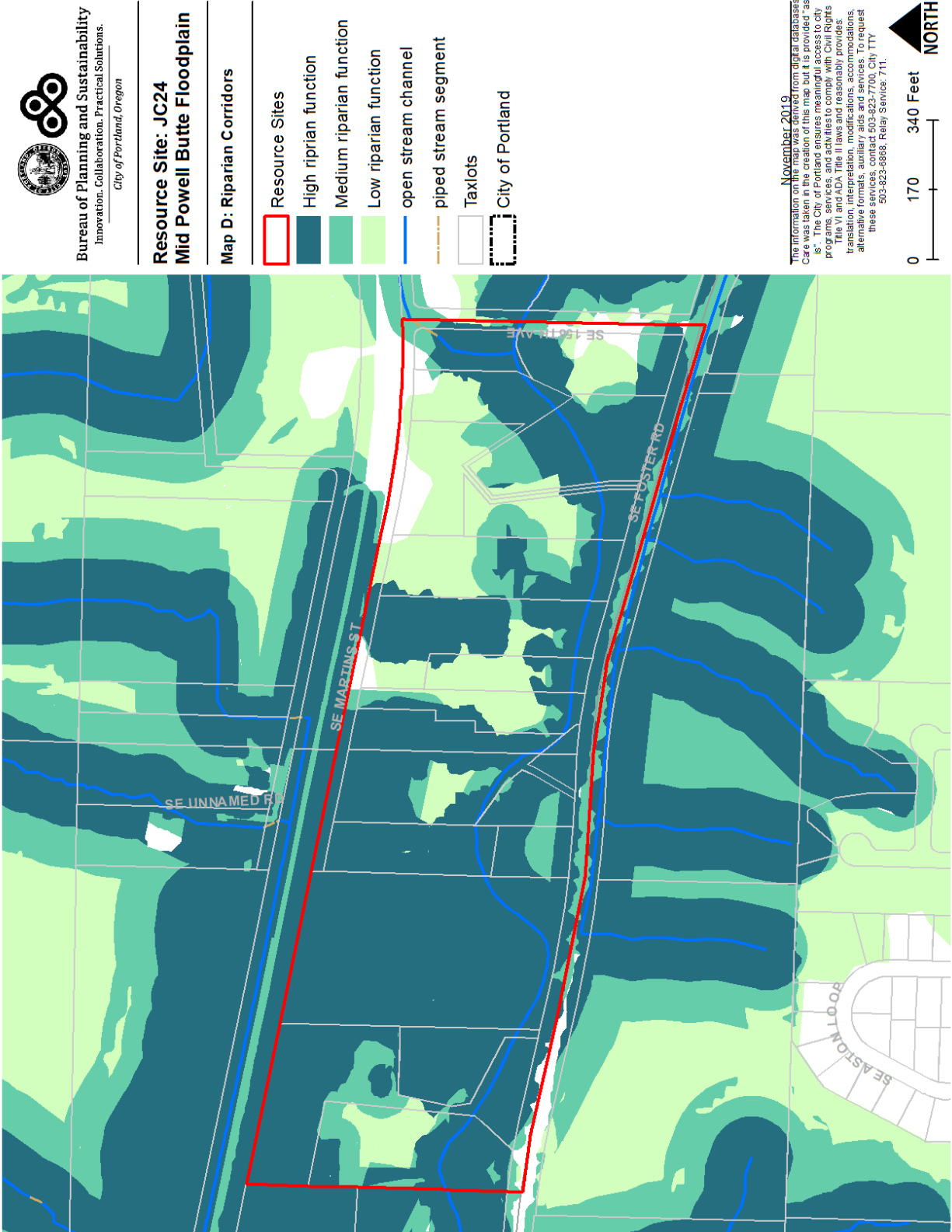
Table C: ESEE Decision for Resource Site JC24	
ESEE Decision	Acres
Strictly Limit	17.3
Limit	7.4
Allow	7.2

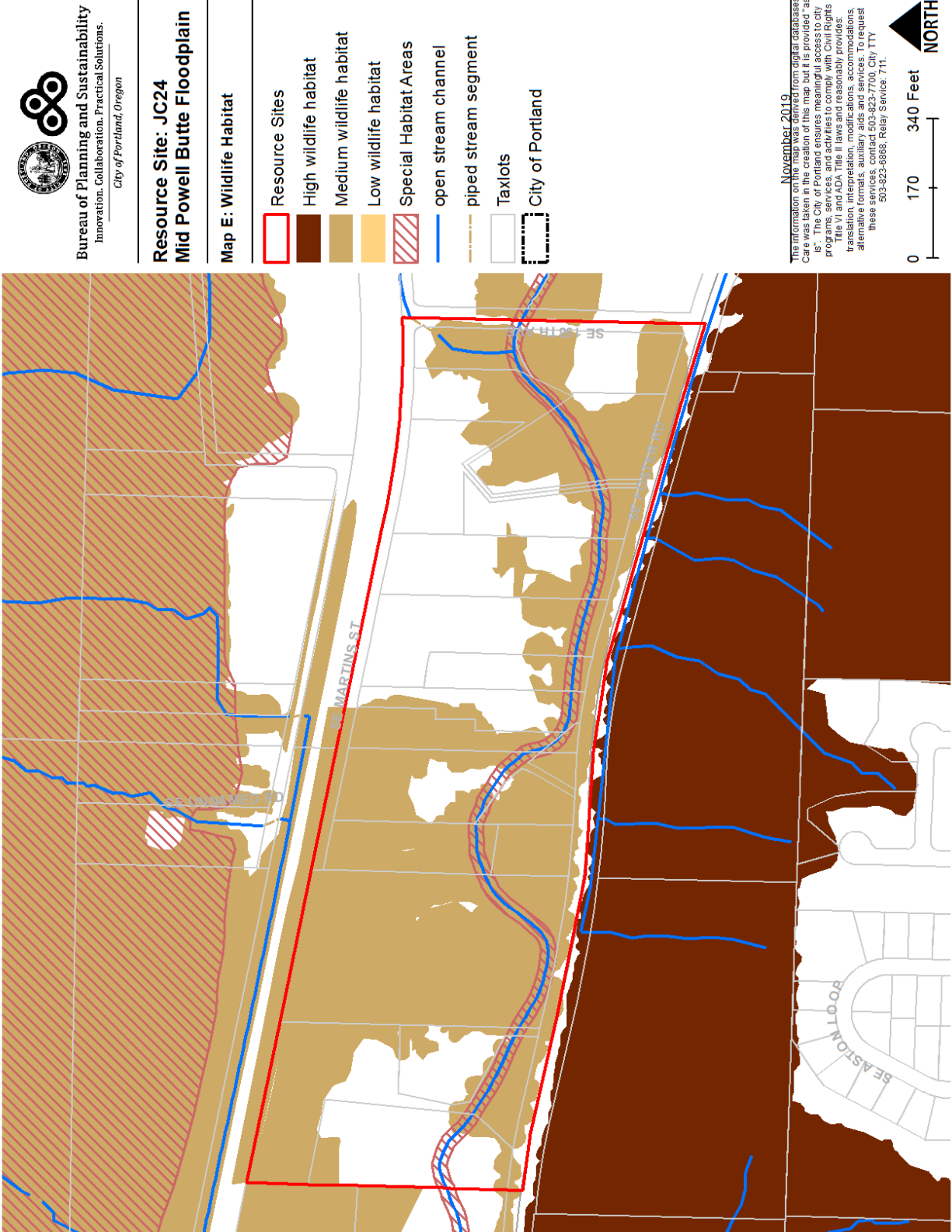


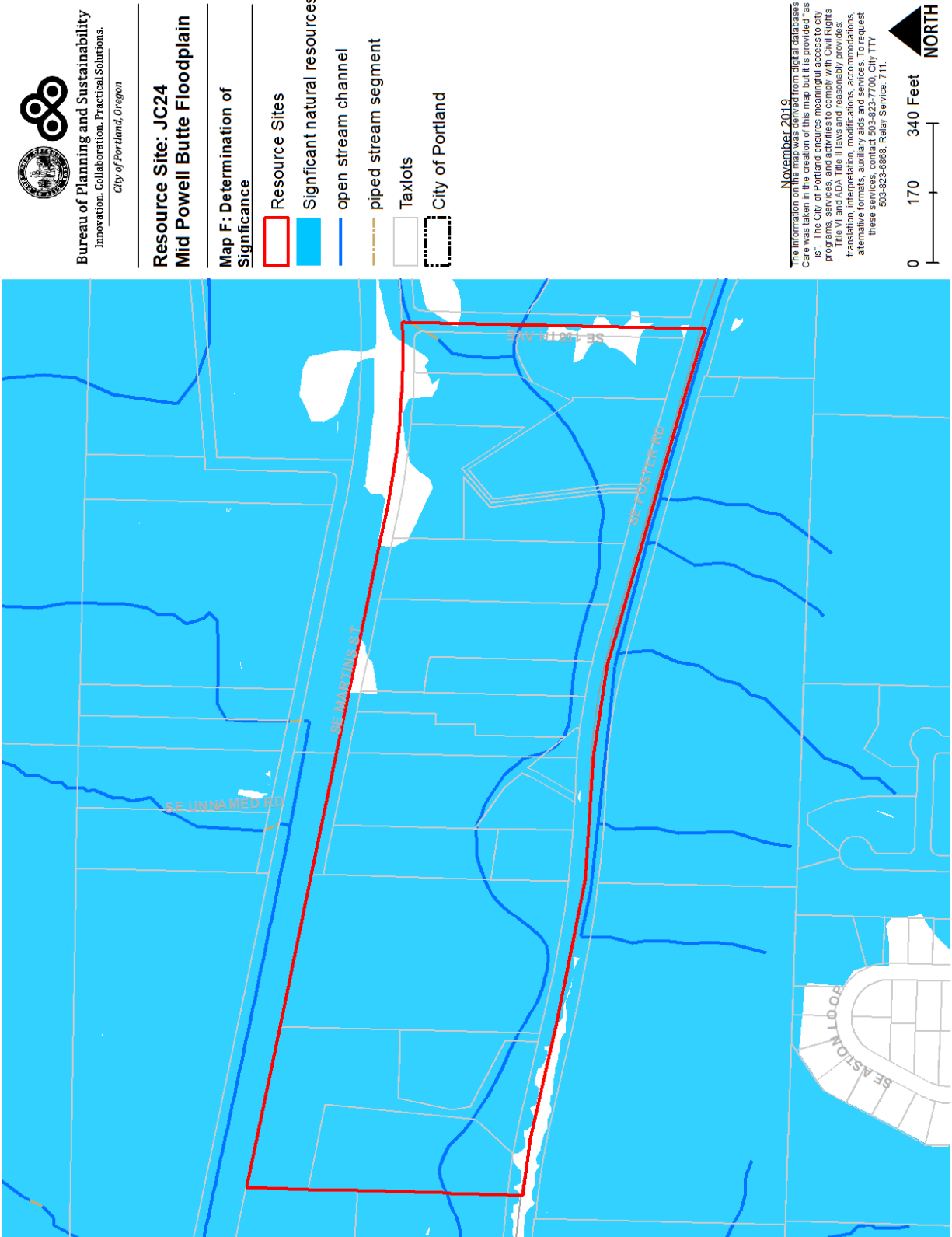


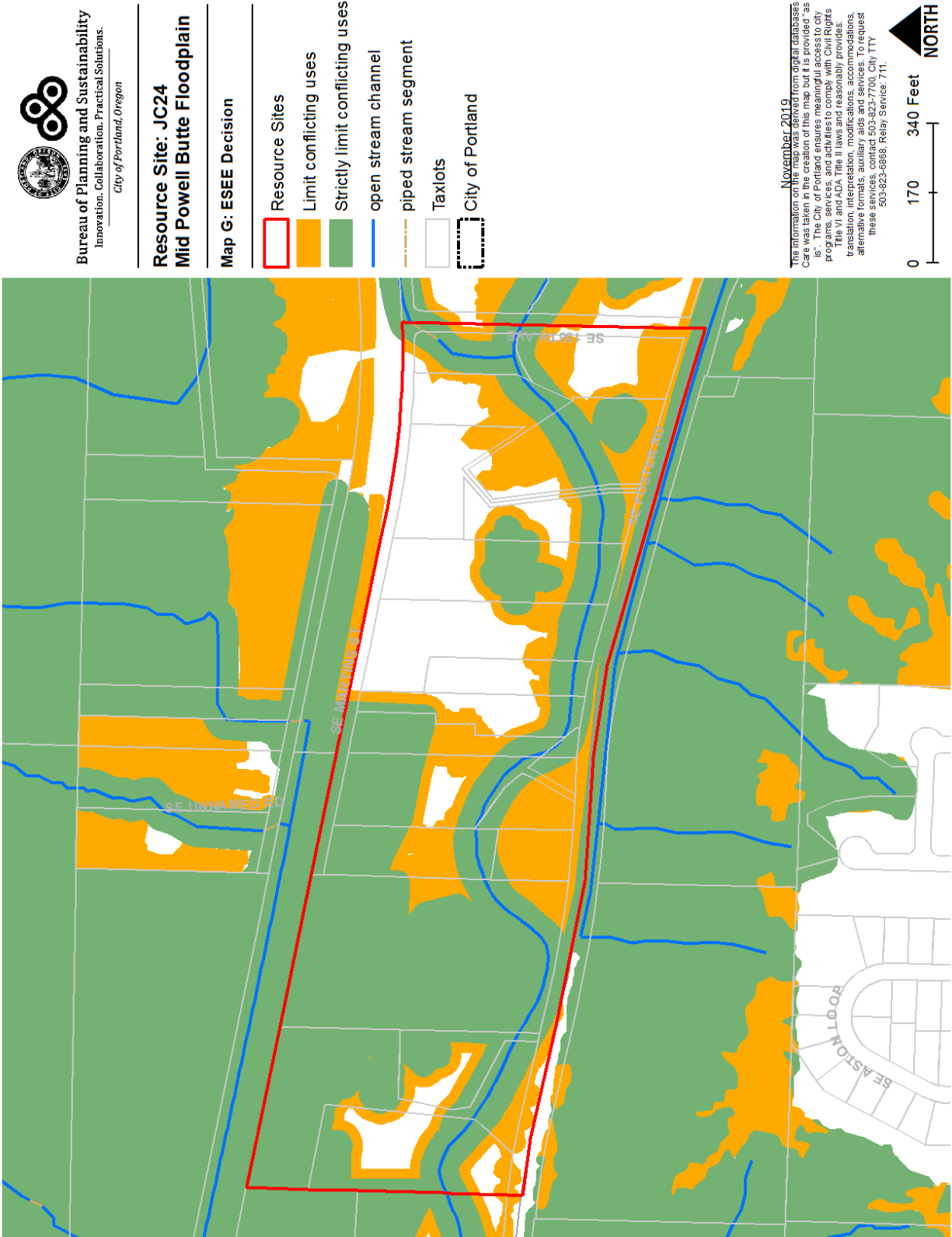














**Resource Site No.:** JC25 **Resource Site Name:** Powell Butte Floodplain East  
**Previous Plan:** Johnson Creek Basin Protection Plan **Previous Resource Site No.:** 26



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC25	
	Study Area
<b>Stream (Miles)</b>	7.4
<b>Wetlands (acres)</b>	23.4
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	53.9
Forest (acres)	24.6
Woodland (acres)	4.1
Shrubland (acres)	18.3
Herbaceous (acres)	6.9
<b>Flood Area*</b>	35.3
Vegetated (acres)	32.5
Non-vegetated (acres)	2.7
<b>Steep Slopes (acres)**</b>	13.7
<b>Impervious Surface (acres)</b>	3.8
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

[DESCRIPTION TO BE ADDED IN NEXT DRAFT]

<b>Table B: Quality of Natural Resource Functions in Resource Site JC25</b>				
<b>Resource Site (acres) = 66.816883</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	47.5	7.6	3.5	58.6
percent total inventory site area	71.0%	11.4%	5.2%	87.7%
<b>Wildlife Habitat*</b>				
acres	0.0	41.7	0.0	41.7
percent total inventory site area	0.0%	62.4%	0.0%	62.4%
<b>Special Habitat Areas**</b>				
acres				10.6
percent total inventory site area				15.8%
<b>Combined Total<sup>+</sup></b>				
acres	47.5	8.4	2.8	58.6
percent total inventory site area	71.0%	12.5%	4.1%	87.7%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC25 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish species.

## Resource Site Specific ESEE

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R20 and R10 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC25, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

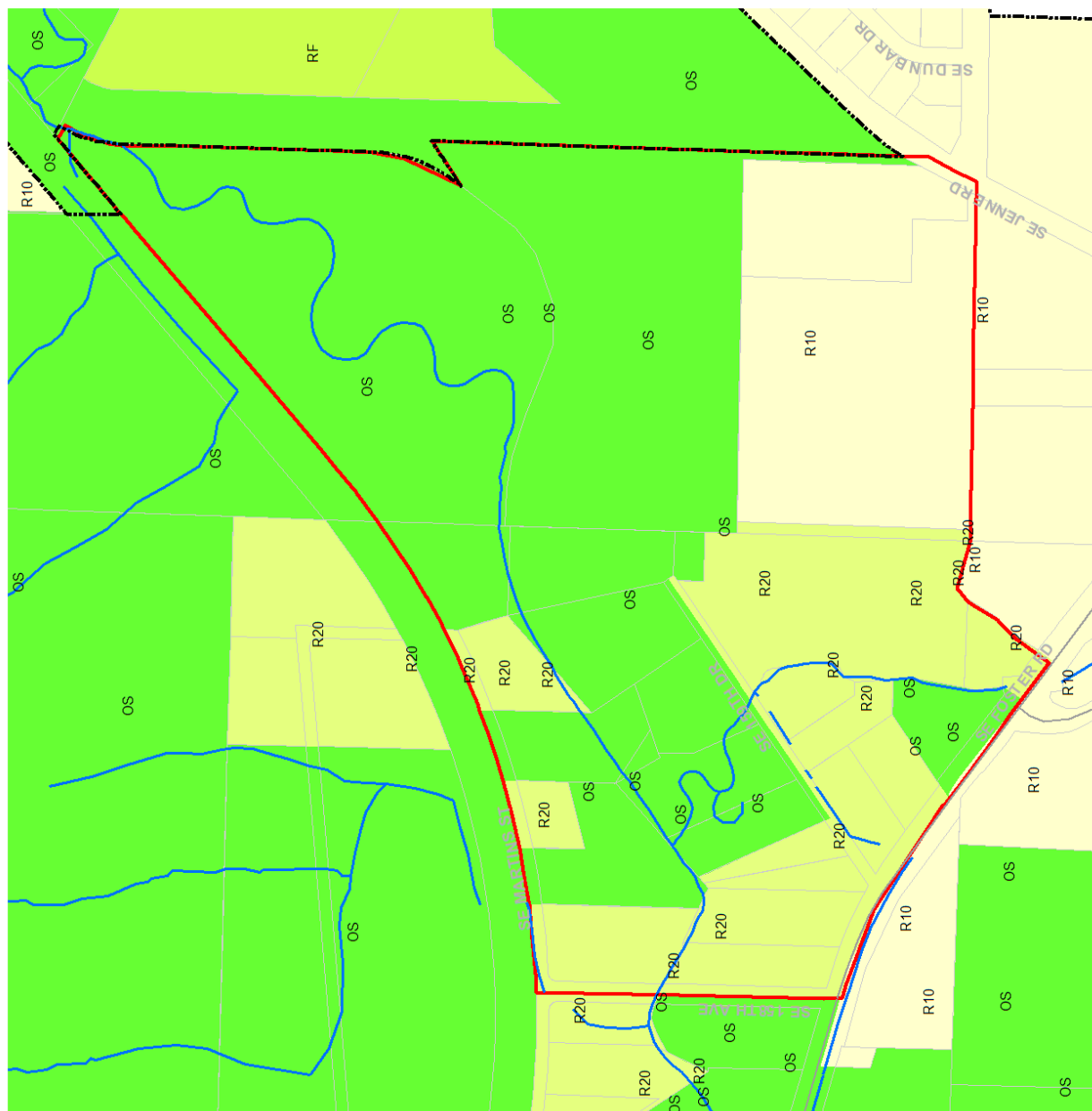
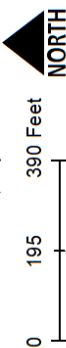
New or expanded development in the flood area should be *limited*. The structures and impervious surface limit the flood capacity and infiltration functions of the land and increase the flood risk to the property as well as properties up and down stream.

#### ESEE Decisions

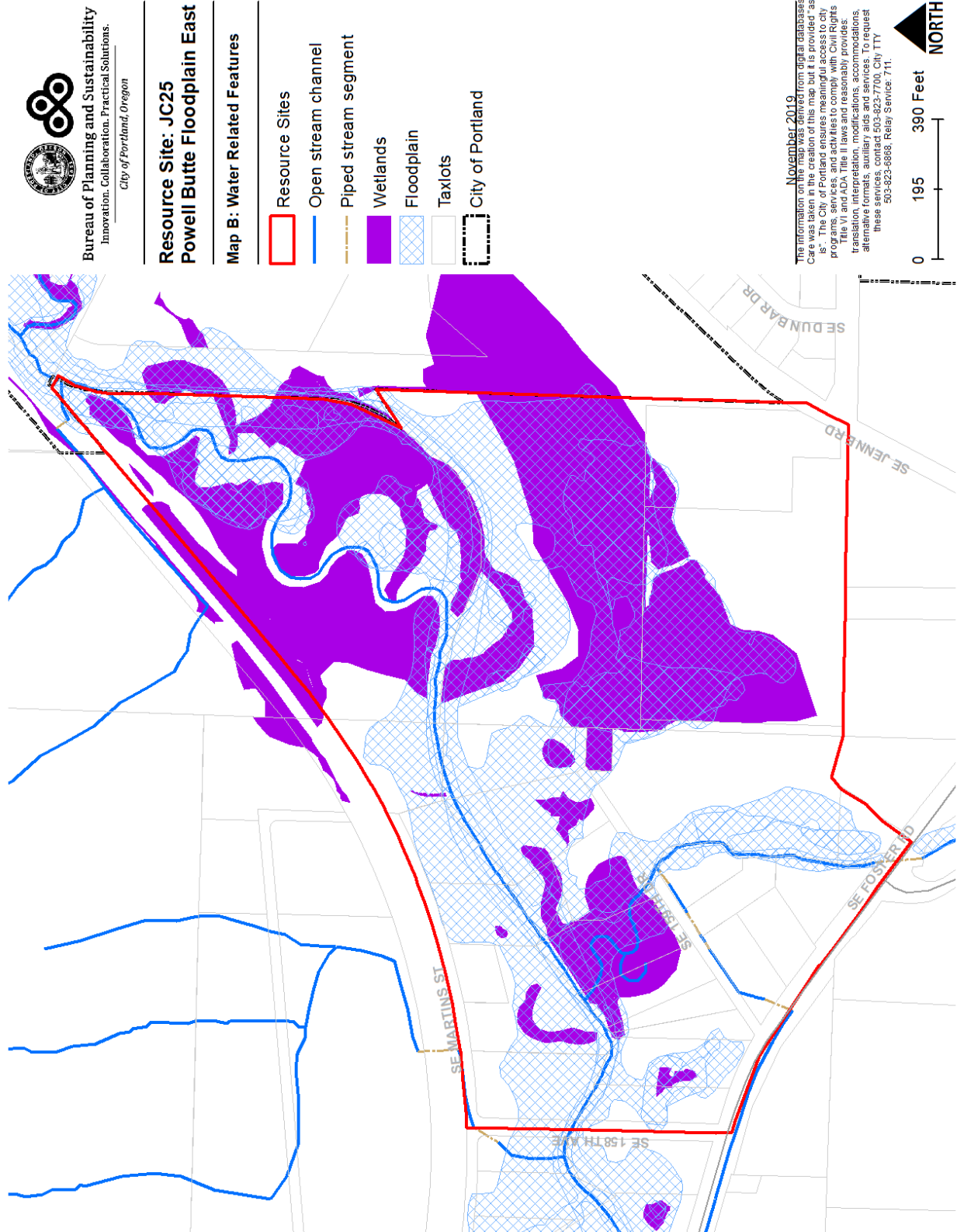
Based on the ESEE general recommendations (Volume 2) and resource site-specific ESEE, the ESEE decisions for Resources Site JC25 are:

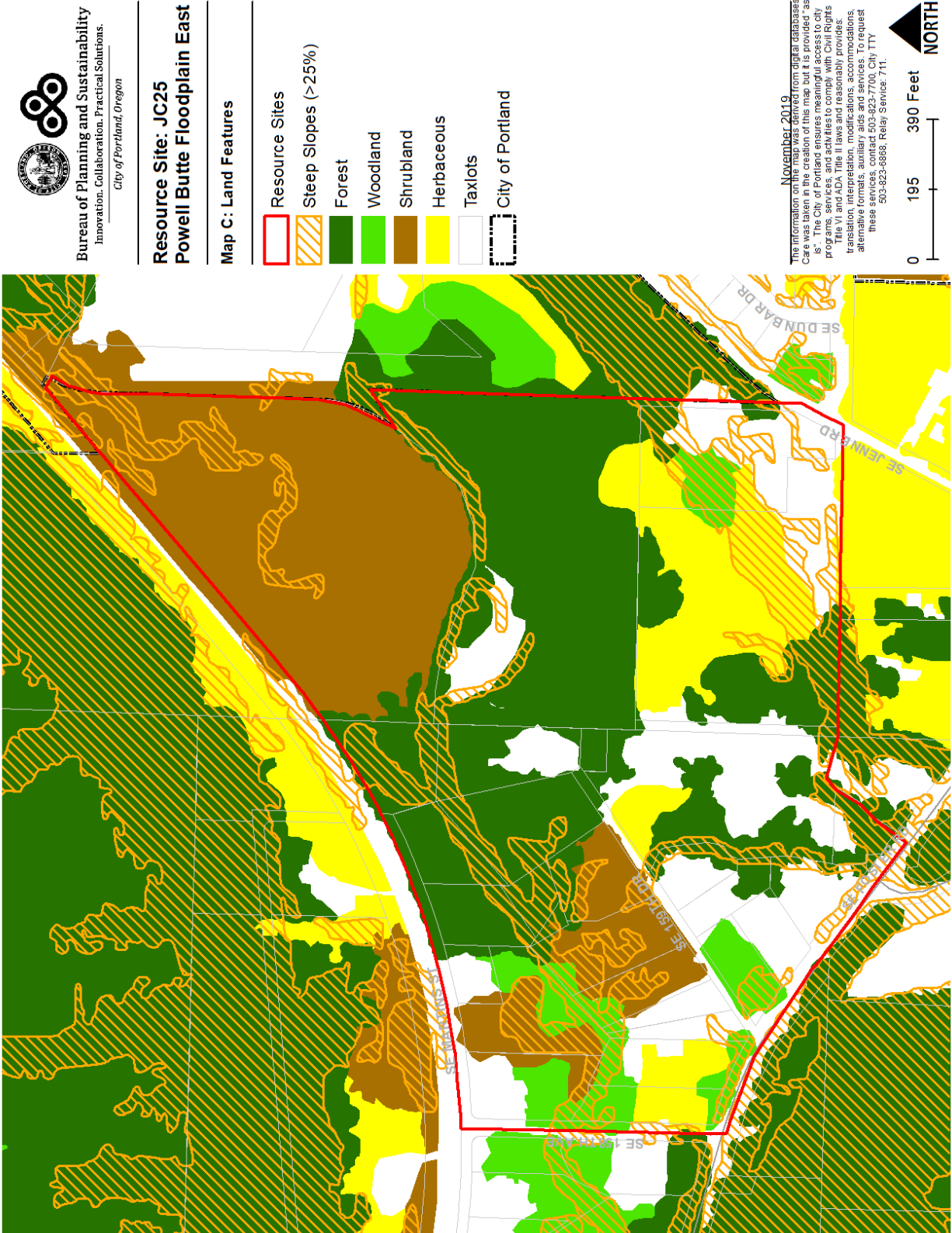
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank, land within 30 feet of wetlands and the vegetated flood area within 170 feet of stream top-of-bank.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within land between 50 and 75 feet of stream top-of-bank and 30 and 55 feet of wetland.
4. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 75 feet from stream top-of-bank, and areas of forest or woodland vegetation contiguous to but more than 55 feet from wetlands.
5. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
6. *Allow* conflicting uses within all other areas containing significant natural resources.

Table C: ESEE Decision for Resource Site JC25	
ESEE Decision	Acres
Strictly Limit	41.3
Limit	13.9
Allow	11.6

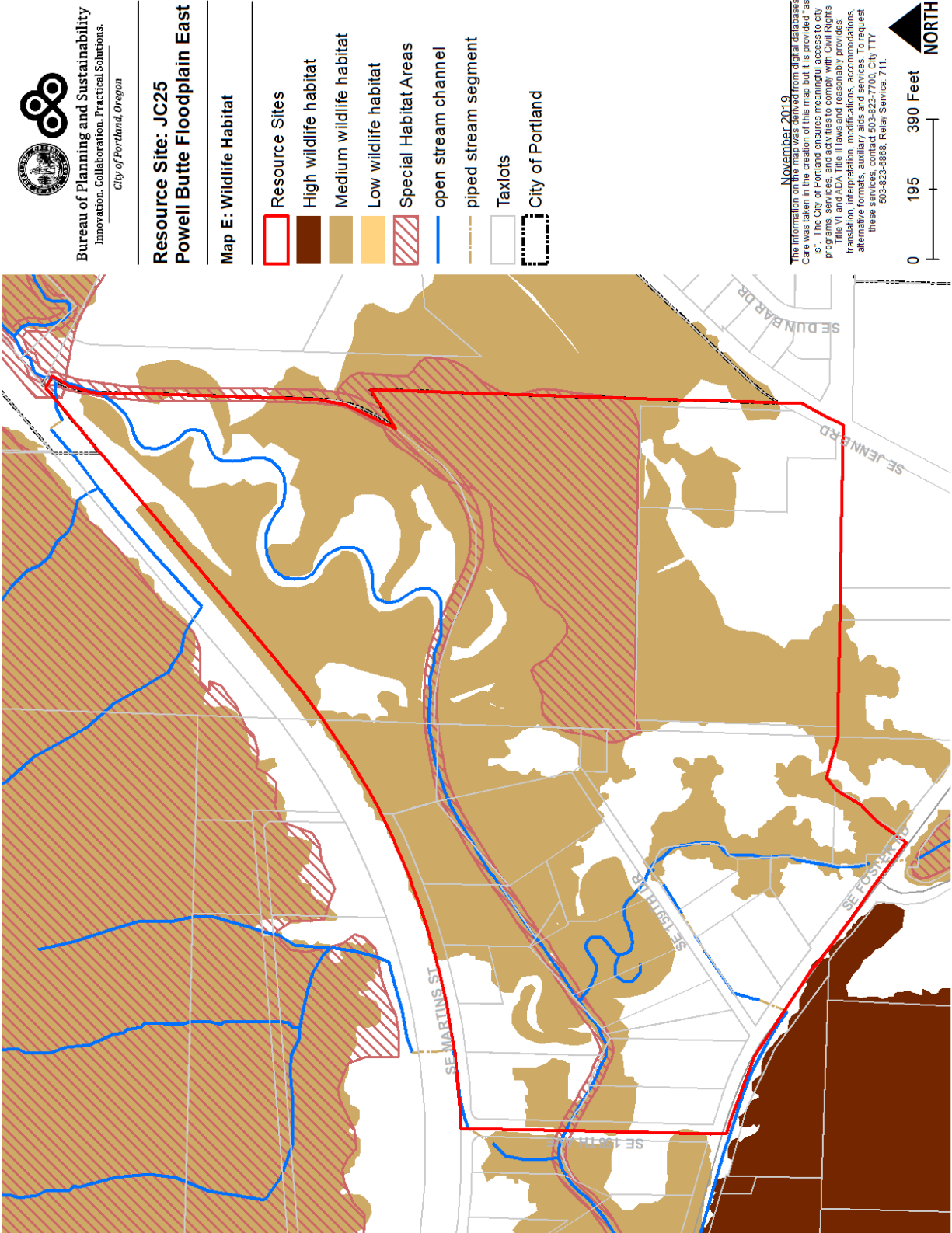














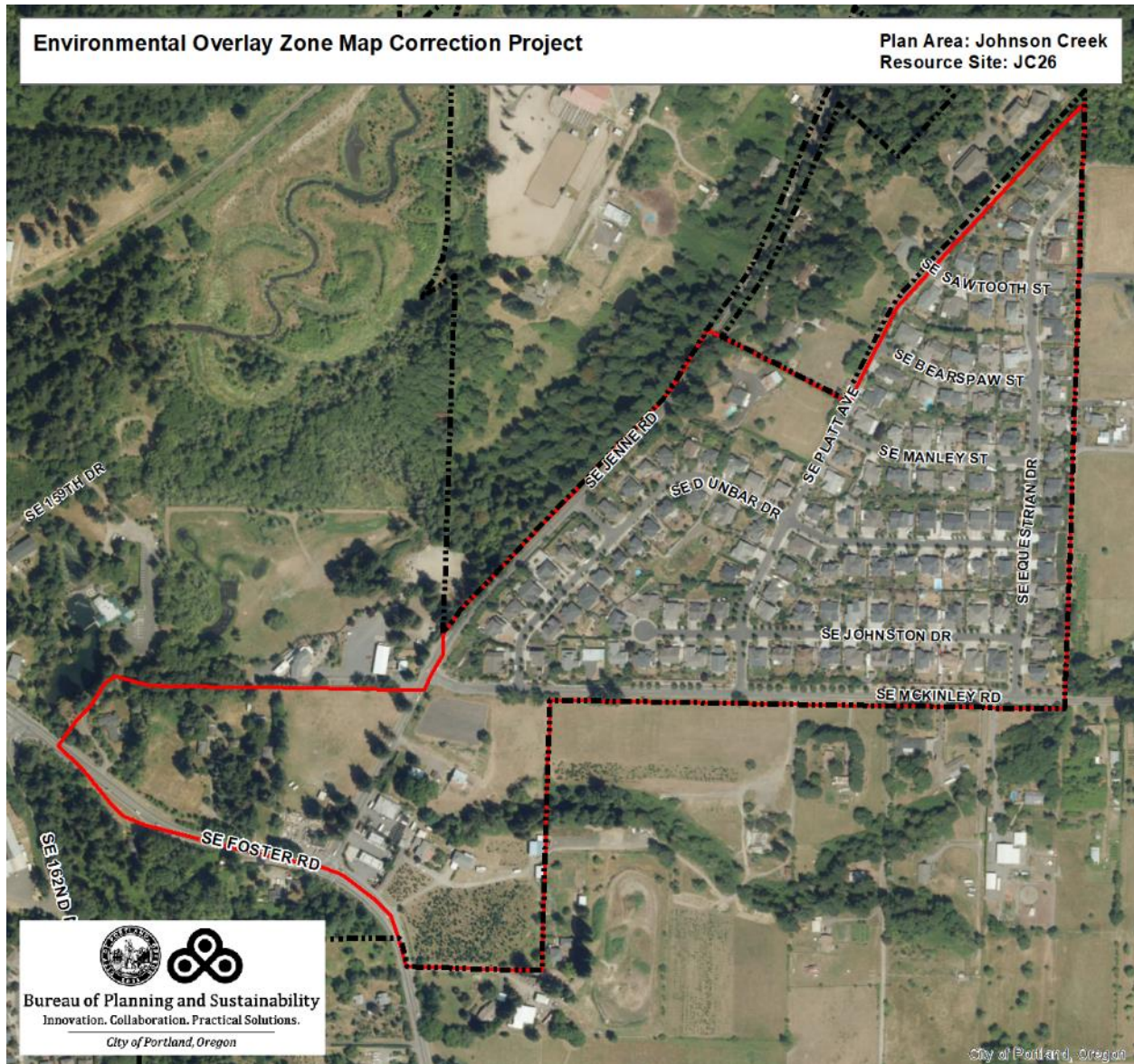






**Resource Site No.: JC26    Resource Site Name: Jenne & McKinley**

**Previous Plan: Johnson Creek Basin Protection Plan    Previous Resource Site No.: 27**



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC26	
	Study Area
<b>Stream (Miles)</b>	1.0
<b>Wetlands (acres)</b>	0.0
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	37.3
Forest (acres)	4.7
Woodland (acres)	0.4
Shrubland (acres)	4.3
Herbaceous (acres)	27.9
<b>Flood Area*</b>	0.0
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
<b>Steep Slopes (acres)**</b>	9.1
<b>Impervious Surface (acres)</b>	24.0
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

The majority of this site has been developed with single-dwelling residential uses. There is a small section of stream in the lower portion of the site, which goes into a pipe. There is a thin area of riparian trees and vegetation along the stream. The flood area is contained within the stream. The southern portion of the site is historic agricultural uses with open pasture and some tree canopy.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC26</b>				
<b>Resource Site (acres) = 69.567282</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	0.9	2.2	11.1	14.1
percent total inventory site area	1.3%	3.1%	15.9%	20.3%
<b>Wildlife Habitat*</b>				
acres	0.0	2.0	0.0	2.0
percent total inventory site area	0.0%	2.8%	0.0%	2.8%
<b>Special Habitat Areas**</b>				
acres				0.0
percent total inventory site area				0.0%
<b>Combined Total<sup>+</sup></b>				
acres	0.9	3.3	10.0	14.2
percent total inventory site area	1.3%	4.7%	14.4%	20.4%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC26 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; and reduction of noise, light and vibration.

## **Resource Site Specific ESEE**

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 base zones. Commercial uses are allowed in the CE base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC26, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining the flow moderation, water quality and flood control functions of the stream, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

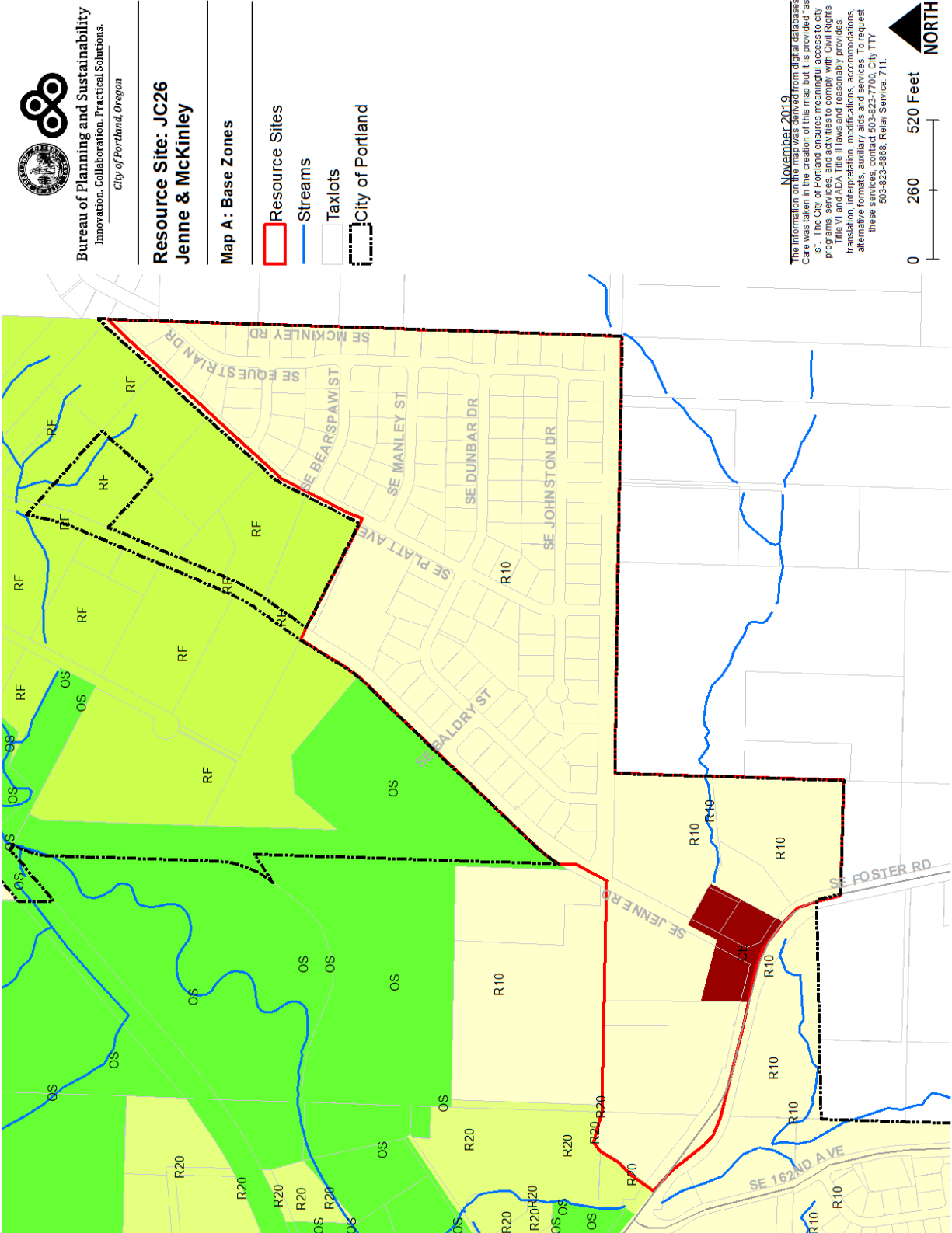
Clustering of new residential development away from significant natural resources would reduce the impacts on the functions. New or expanded commercial or industrial development should meet a minimum setback from the stream.

#### ESEE Decisions

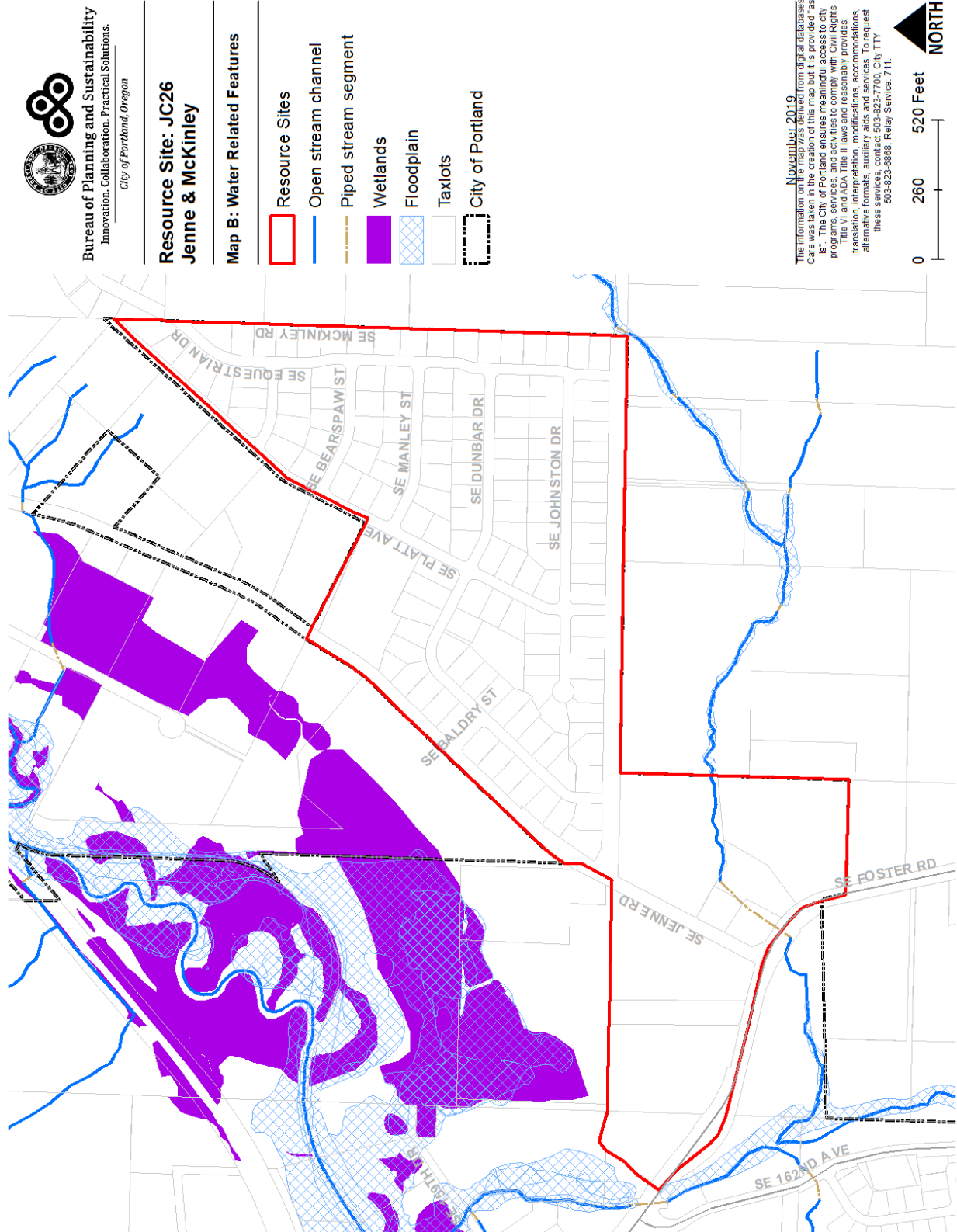
Based on the General ESEE and resource site-specific ESEE, the ESEE decisions for Resource Site JC26 are:

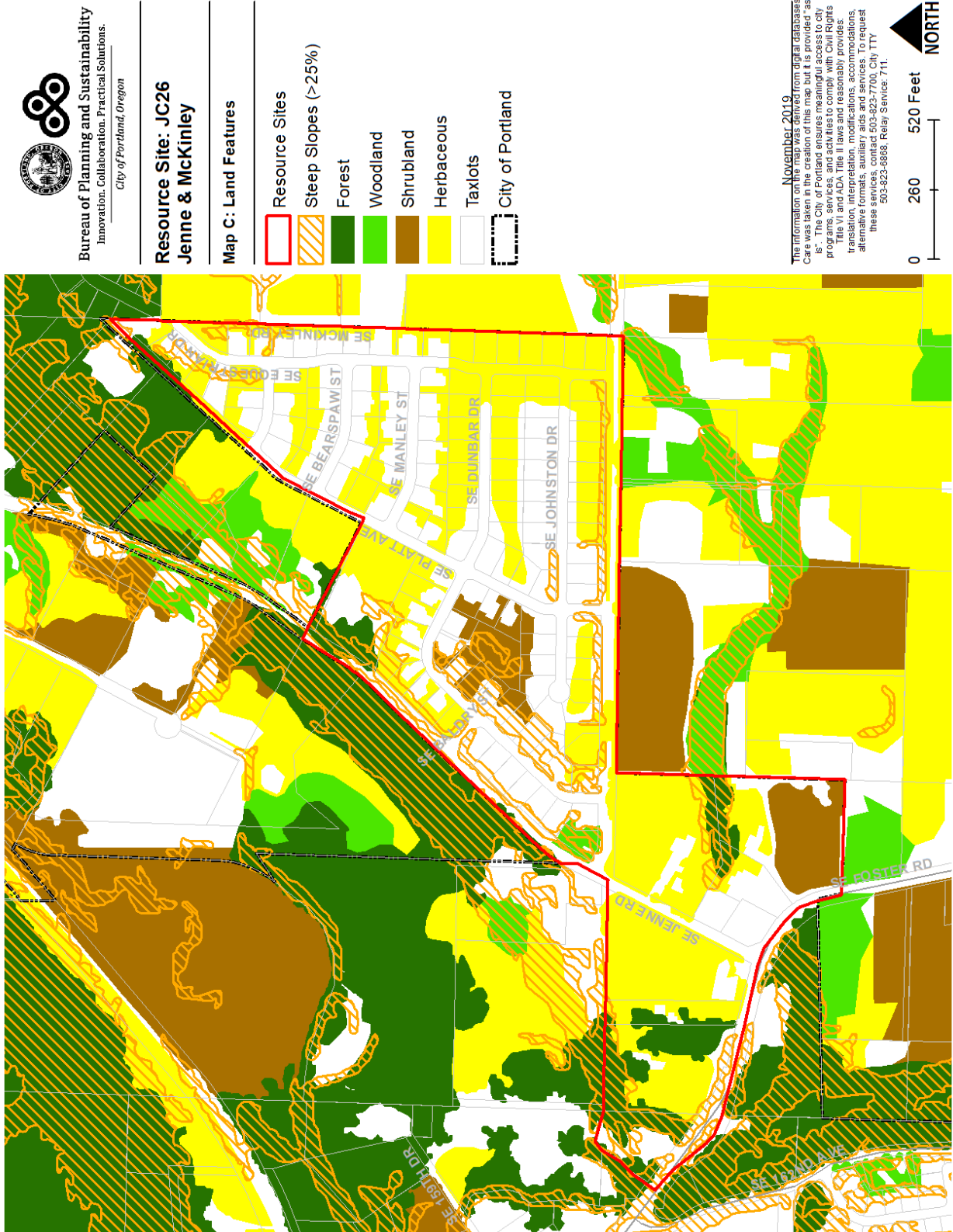
1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank, wetlands, land within 50 feet of stream top-of-bank, land within 30 feet of wetlands and the vegetated flood area within 170 feet of stream top-of-bank.
2. *Limit* conflicting uses within land between 50 and 75 feet of stream top-of-bank and between 30 and 55 feet of wetland.
3. *Limit* conflicting uses within areas of forest or woodland vegetation on steep and non-steep slopes contiguous to but more than 75 feet from stream top-of-bank, and areas of forest or woodland vegetation contiguous to but more than 55 feet from wetlands.
4. *Allow* conflicting uses within all other areas containing significant natural resources.

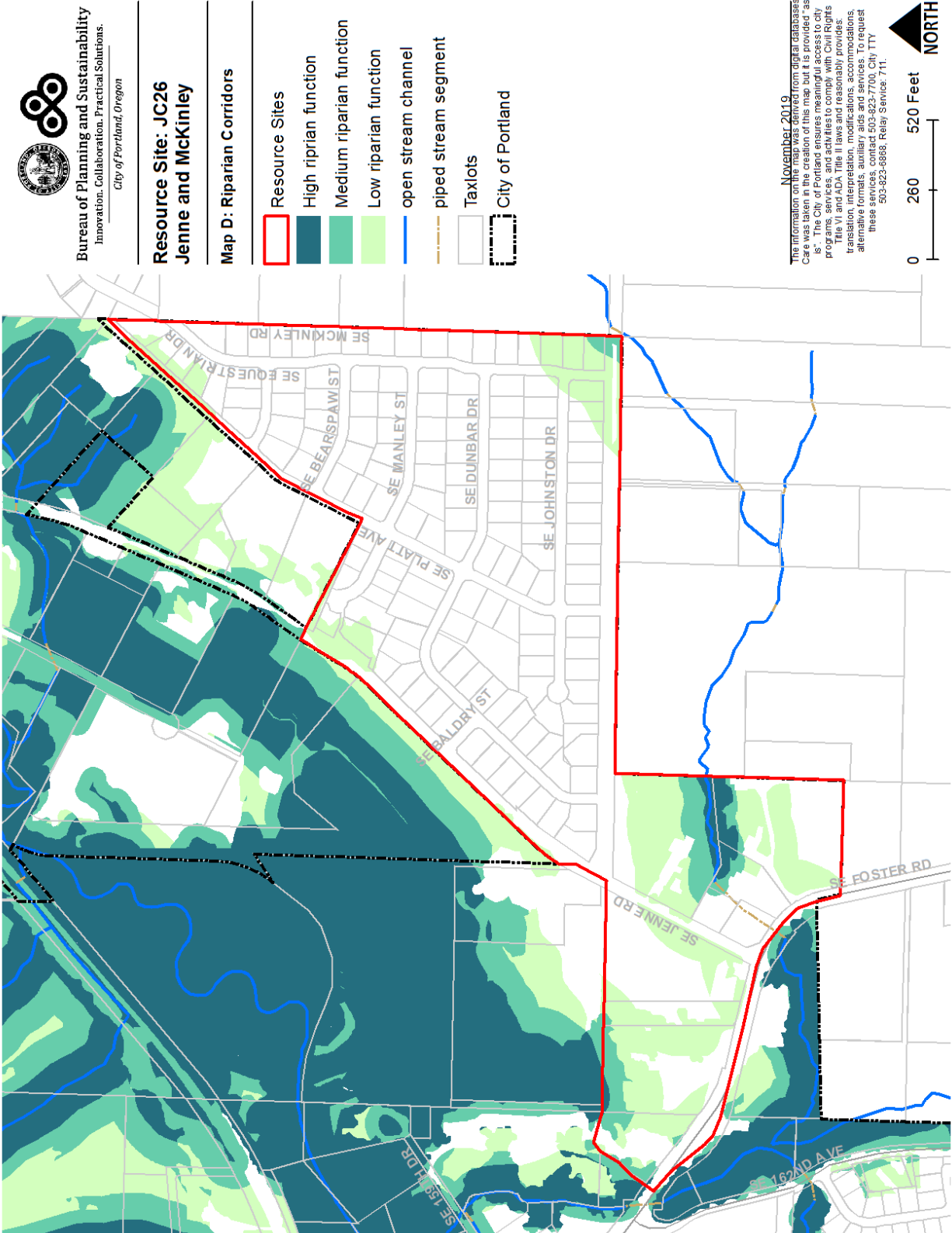
Table C: ESEE Decision for Resource Site JC26	
ESEE Decision	Acres
Strictly Limit	1.1
Limit	1.1
Allow	67.4

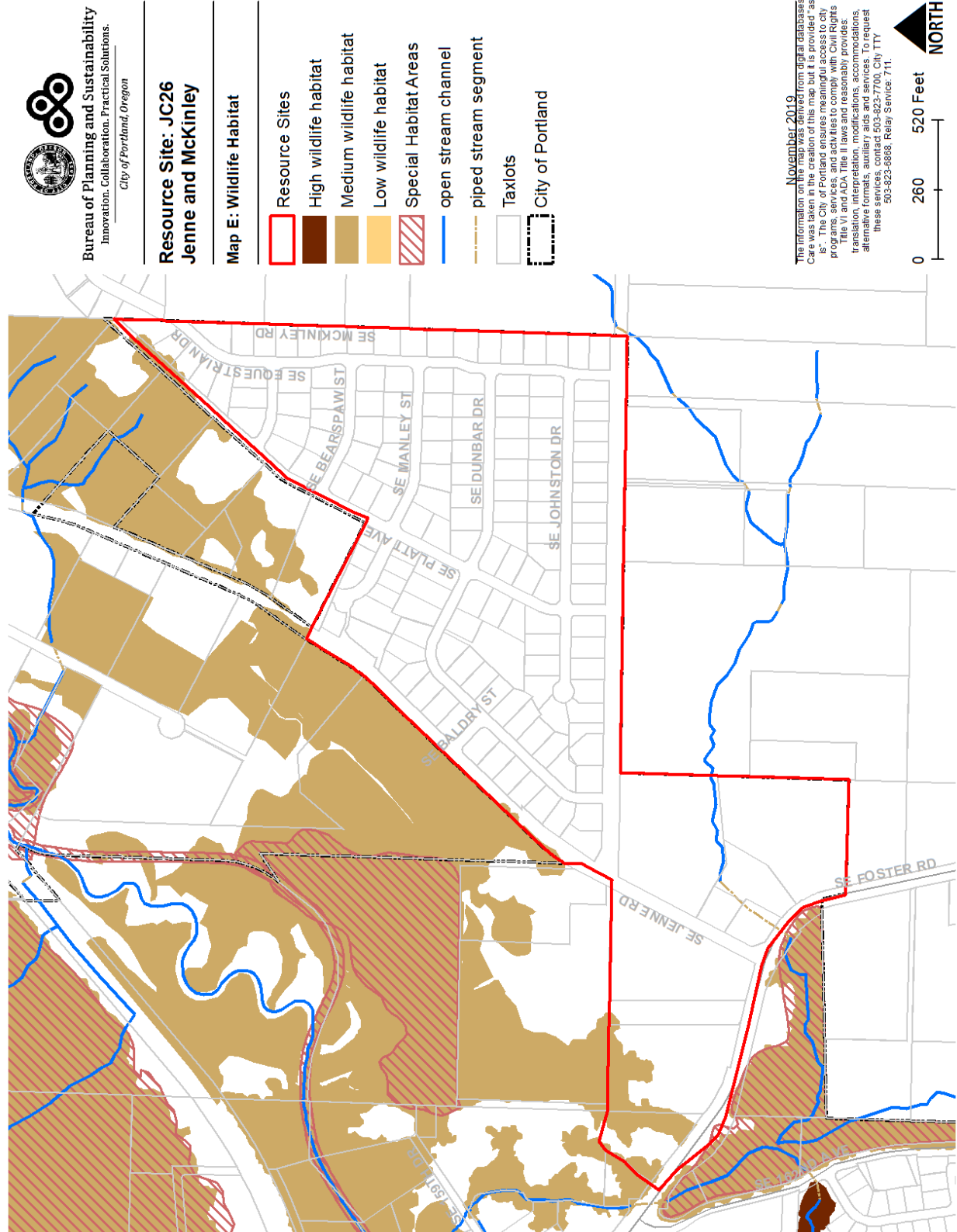


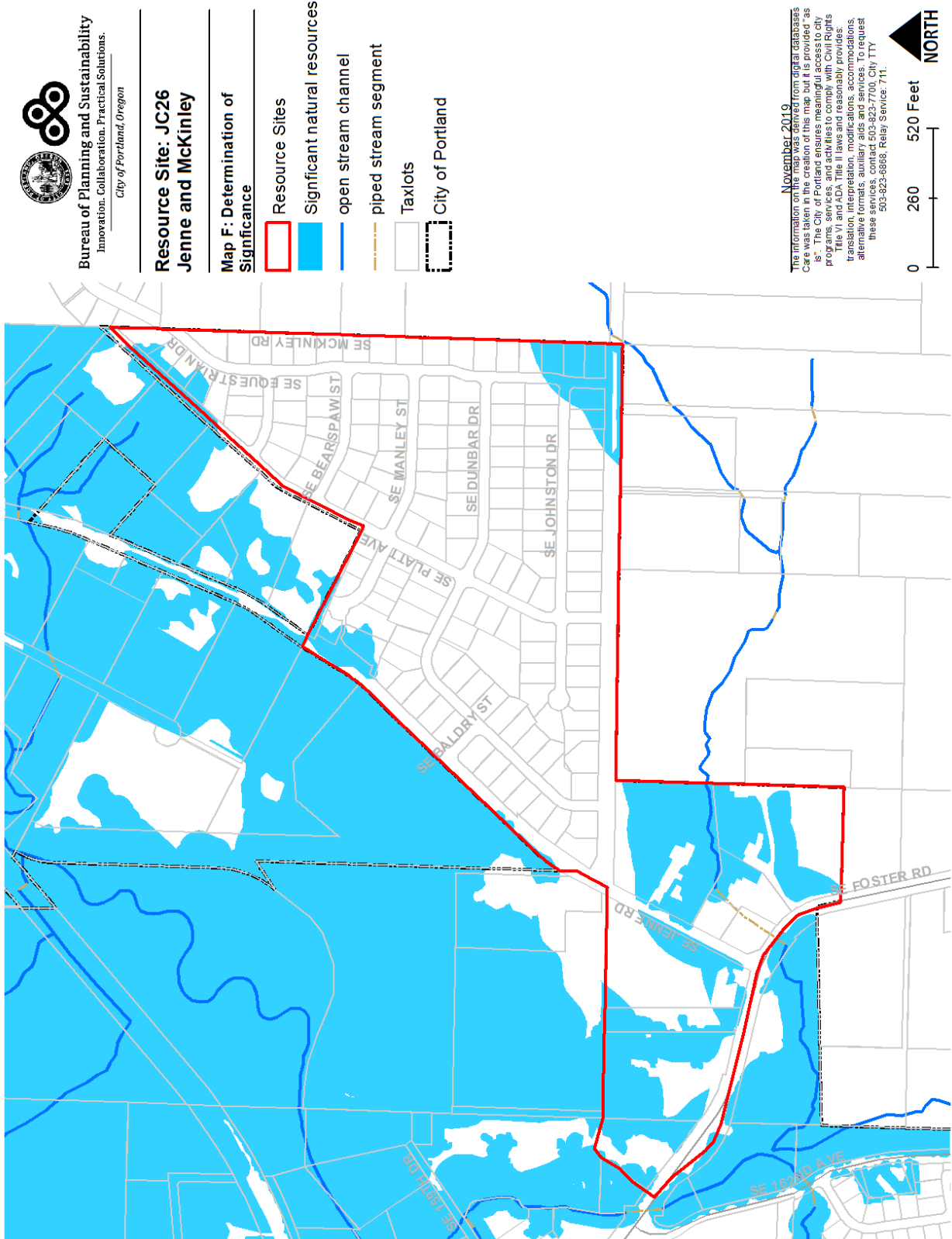




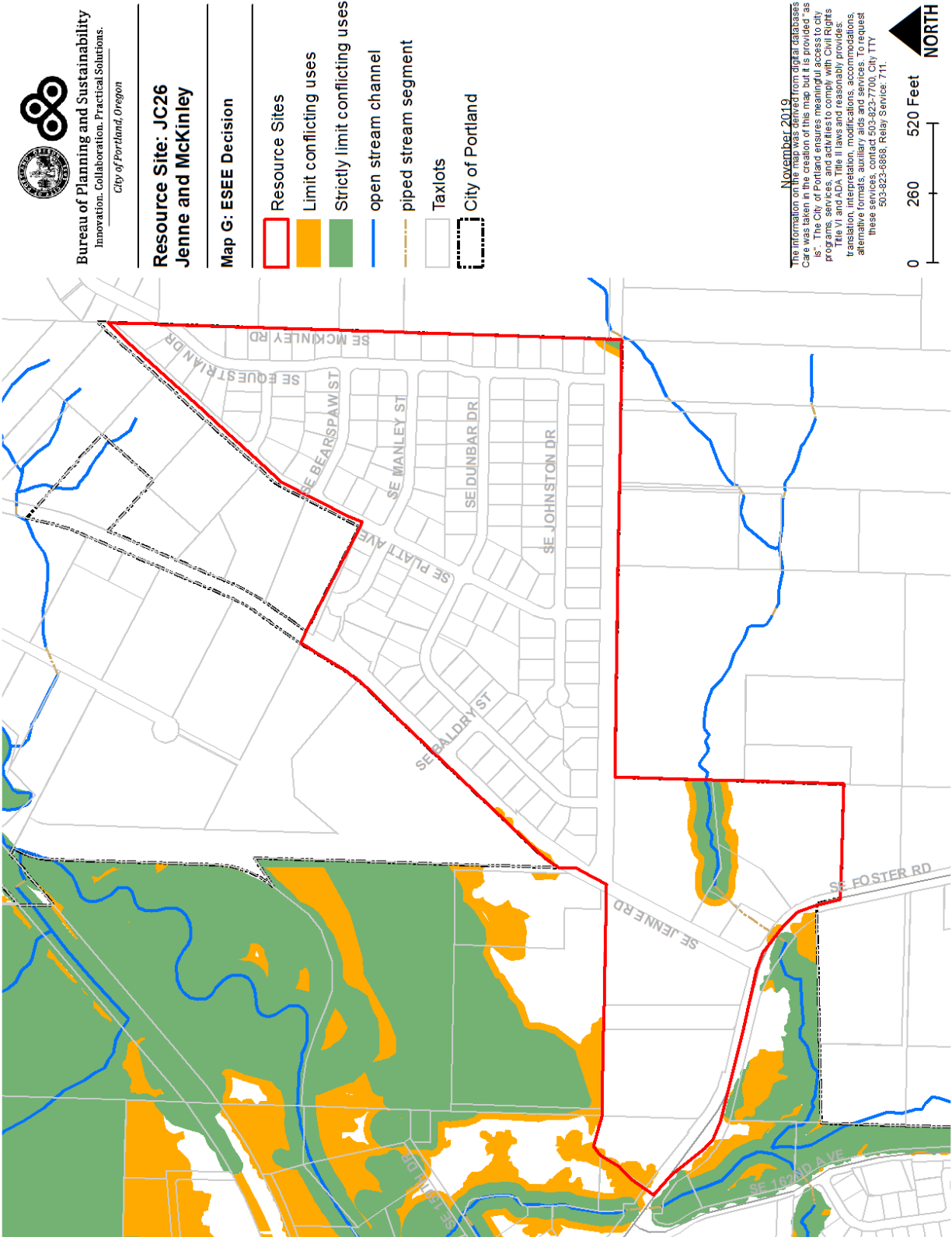






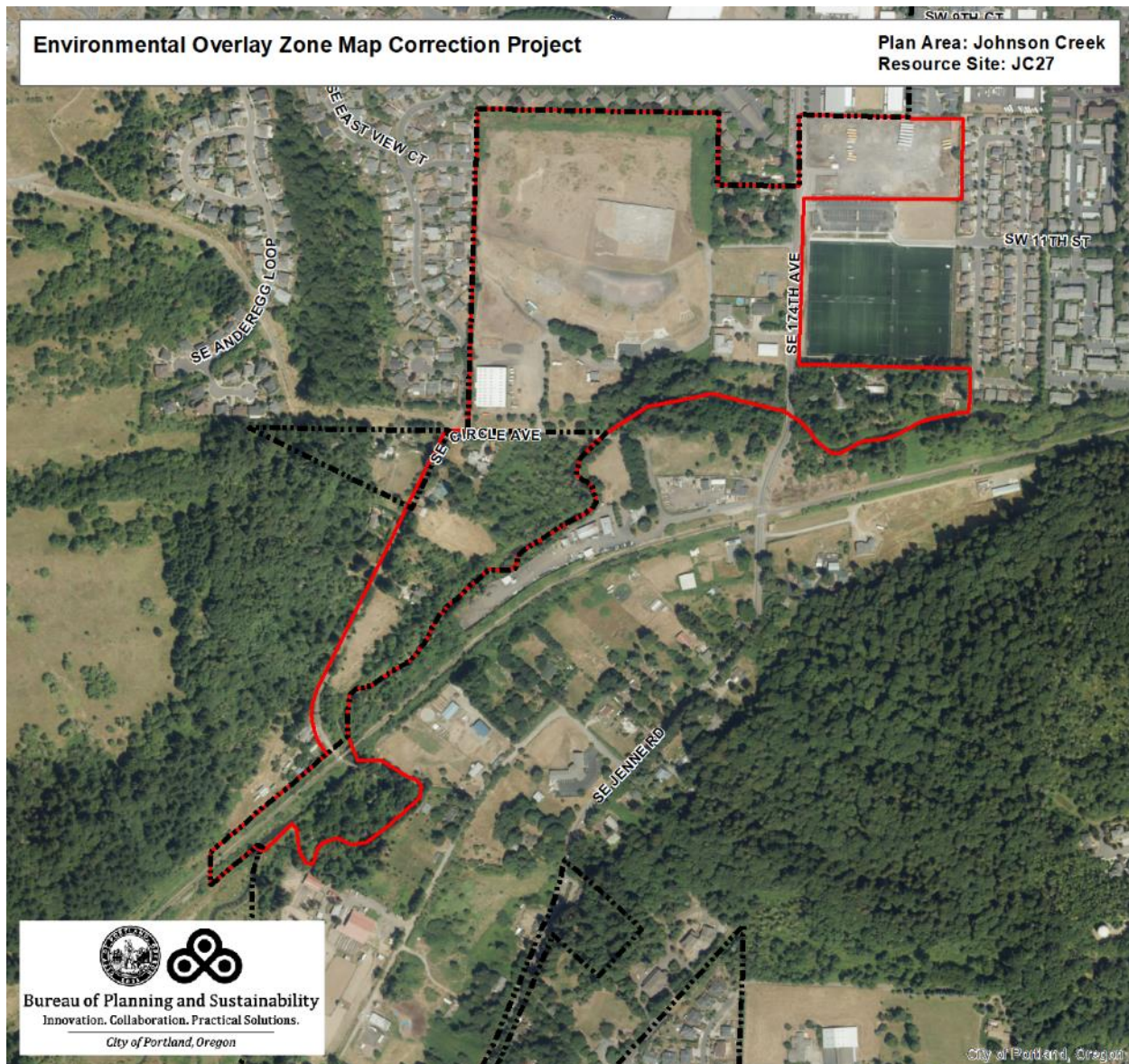








**Resource Site No.:** JC27    **Resource Site Name:** Far East Johnson Creek  
**Previous Plan:** Multnomah County Urban Land    **Previous Resource Site No.:** 28



## Natural Resources Inventory

Table A: Quantity of Natural Resource Features in Resource Site JC27	
	Study Area
<b>Stream (Miles)</b>	0.4
<b>Wetlands (acres)</b>	2.3
<b>Vegetated Areas &gt;= 1/2 acre (acres)</b>	45.9
Forest (acres)	12.2
Woodland (acres)	7.0
Shrubland (acres)	0.9
Herbaceous (acres)	25.6
<b>Flood Area*</b>	9.5
Vegetated (acres)	9.2
Non-vegetated (acres)	0.2
<b>Steep Slopes (acres)**</b>	11.5
<b>Impervious Surface (acres)</b>	5.1
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are area with a slope greater than 25%.	

Set on the narrow valley floor between Powell Butte and Jenne Butte, this site is located near river mile 12 of Johnson Creek. This site includes remnant creek oxbows providing breeding habitat to sensitive amphibians and a rare forested wetland.

The site's forest exhibits characteristics common to the Willamette River Valley and upland habitats. Douglas fir, western red cedar, snowberry and sword fern characterize the forest plant community. The forest is composed of 40- to 100-year old second growth in a mid-seral, conifer topping hardwood stage of succession. When shade-tolerant plants such as cedars begin to establish themselves as they have here, the forest is in the understory re-initiation stage. The riparian community along Johnson Creek and the remnant oxbow includes red alder, Oregon ash, and Sitka and Pacific willows. Forest vegetation at this site covers approximately eight acres.

Two wetland plant communities occur at this site. A locally rare cedar/skunk cabbage wetland, approximately 1,000 square feet in size, is located within the forest north of Johnson Creek and near 174th Avenue. This forested wetland receives water from a spring along the eastern boundary of Tax Lot 75; it drains to Johnson Creek. Other wetland species include pacific willow, red-osier dogwood, salmonberry and water parsley. The Oregon Natural Heritage Program (ONHP) considers this community a priority plant community.

Another wetland community occurs along the remnant oxbow in the western part of the site Sitka willow and reed canary grass characterize this emergent and scrub-shrub community. The invasive canary grass has choked out many of the native sedges and rushes, and only a few native emergent plants remain. Nevertheless, the wetland continues to provide important functional values, including flood storage and breeding/rearing habitat for amphibians.

In addition to reed canarygrass, several other non-native pest species are present at this site. Himalayan blackberry, English ivy, European hawthorn, yellow iris and vinca major have begun to establish themselves and compete with the native flora. Removal of these species combined with new tree plantings along the more exposed banks of Johnson Creek will be an important element of future management and enhancement programs.

The Johnson Creek riparian corridor, which at this site includes several off-channel wetlands, provides important forage, cover and nesting habitat for a variety of bird, mammal, amphibian and fish species. The mosaic of aquatic and terrestrial habitats at this site supports a variety of plants and animals common to both environments. The Johnson Creek riparian corridor at this site provides sheltered migratory routes for fish, birds, amphibians and mammals. Its proximity to the high-quality forest habitats at Powell and Jenne Buttes also make the site an attractive corridor between streamside and upland habitats.

Remnant populations of Lower Columbia River chinook and coho salmon, Lower Columbia River steelhead and sea-run cutthroat trout are present in this reach of Johnson Creek. Based on the critical habitat proposed by the National Marine Fisheries Service, it appears that a significant portion of this site will be considered critical habitat for Lower Columbia River steelhead and Lower Columbia River chinook (see March 9, 1998 and February 5, 1999 Federal Registers). Though the fish community in Johnson Creek is numerically dominated by redbelly darters, reticulate sculpin and speckled dace, the presence of limited salmonid populations is an indication that the Johnson Creek ecosystem remains healthy, if only marginally so.

The primary limiting factor for fish in Johnson Creek is summertime water temperature, particularly temperatures greater than 70° F. This site provides two important features that help to reduce summer water temperatures. Riparian trees that help to shade the creek border a significant part of this reach of Johnson Creek. Nearly the entire south bank of the creek is wooded, and in certain areas (e.g., east of the Circle Avenue bridge) full canopy closure occurs over the creek. The site's forested, scrub-shrub, and emergent wetlands, which discharge into Johnson Creek, also help to cool summer water temperatures.

Red-legged frog and Pacific tree frog are sensitive amphibians that rely on the moist, wooded areas of the site with their cool water of good quality. The remnant oxbow of Johnson Creek provides breeding and rearing habitat for red-legged frog, a federal species of concern and state sensitive species. The large pond on Lot 25 provides sufficient hydrology and vegetative cover to serve as breeding habitat for the red-legged frogs. Both red-legged frogs and Pacific tree frogs are terrestrial and forage in forests near water. Local residents report that red-legged frogs travel between aquatic and terrestrial habitats around the site, including frequent crossings of Circle Avenue. These crossings occur at two locations: one near the western part of the site where the frogs move between the creek and a nearby wetlands, the other to the east where movement appears to be to and from Powell Butte

Several beneficial reptiles also use the site, including western fence lizard and garter snakes (forest and edge areas) and turtles (ponds). While the main channel of Johnson Creek is generally devoid of downed

logs and woody debris, these habitat features are more common in and around the site's wetlands where most of the amphibians and reptiles reside.

The riparian forest at the site provides primary habitat for several cavity nesters. Tree cavities formed through decay or by woodpeckers provide nesting and resting areas for raccoon, squirrels, bats, woodpeckers, wood ducks and other bird species. Twigs, leaves and bark are used for nest building and insulation. The shrub layer is important feeding and nesting area for warblers, grosbeaks and other birds. The ground cover-grasses and forbs--provide habitat for thrushes, towhees, voles, mice and other ground foragers. Herons and kingfishers feed along Johnson Creek, using the trees along the creek as perch sites. Forest hawks, such as the sharpshinned hawk, are likely to forage within the site. Waterfowl use the creek, wetlands and aquatic vegetation at the site. Considering the urbanized nature of much of the surrounding area, these resources are critical for both resident and migratory wildlife.

This site is located along the Johnson Creek lowlands, wedged between Powell Butte and Jenne Butte. The buttes are volcanic in origin, formed several hundred thousand years ago when a group of shield and cinder cone volcanoes--the "Lava Domes"--erupted across the lower Willamette Valley. These now dormant volcanoes are composed mainly of high-alumina basalts, but locally contain ash, cinders and other materials. The basalts are similar to those of Mount Hood and other Cascade Mountains; therefore, the Lava Domes are believed to be tied to the uplift of the Cascade Range.

Johnson Creek and its long history of flooding have influenced soil formation at this site. The southern quarter of the site is in the 100-year flood area of Johnson Creek, and perennial flooding is common, as indicated by the presence of Wapato soils. Urban development has served to decrease stream capacity and increase runoff, and consequently the flood area has increased in size. Larger flood events generally occur from December through February, with 85 percent of the stream's runoff occurring between November and March.

The predominant soil type within the site is Multnomah silt loam. This generally moist soil forms on gravelly river terrace deposits. River and lake deposits of the Pliocene provide the parent material for this very deep and well-drained soil. The soil's erosion hazard is slight due to moderate permeability and slow runoff. However, high potential for seepage creates severe limitations for sanitary facilities.

The southwest corner of the site has poorly drained Wapato silt loams, a hydric soil associated with wetlands, formed from recent alluvium. It is subject to a seasonal high water table and overflow from Johnson Creek. The wetness, high clay content and potential for flooding create severe building site and sanitary facility limitations.

This is a relatively flat site. The western portion brushes the slopes of Powell Butte and has a low slope hazard rating. Earthquake hazard rating is also low, with Johnson Creek identified as an area of minor concern.

<b>Table B: Quality of Natural Resource Functions in Resource Site JC27</b>				
<b>Resource Site (acres) = 63.23358</b>				
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Total</b>
<b>Riparian Corridors*</b>				
acres	13.9	4.0	6.2	24.1
percent total inventory site area	22.0%	6.4%	9.8%	38.2%
<b>Wildlife Habitat*</b>				
acres	0.0	14.0	0.0	14.0
percent total inventory site area	0.0%	22.2%	0.0%	22.2%
<b>Special Habitat Areas**</b>				
acres				14.6
percent total inventory site area				23.1%
<b>Combined Total<sup>+</sup></b>				
acres	16.7	4.8	4.5	26.0
percent total inventory site area	26.4%	7.6%	7.1%	41.0%
<p>* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat include open water.</p> <p>** Special Habitat Areas rank high for wildlife habitat.</p> <p>+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.</p>				

## Determination of Significance

Natural resource features mapped in the resource site that provide functions identified in the Natural Resources Inventory are determined to be significant (Map F). Within resource site JC27 the following significant features and functions are present:

Significant Natural Resource Features: open stream; wetlands; flood area; forest vegetation within 300 feet of waterbodies; woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies; developed land within 50 feet of waterbodies; forest patches and associated and contiguous woodland patches two acres in size or larger; and Special Habitat Areas.

Significant Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Significant Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status plant and fish species.

## Resource Site Specific ESEE

The General ESEE analysis, Volume 2, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

### Conflicting Uses

The common impact of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; add impervious surface; modifying streams and flood area; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R7 and R5 base zones. Employment uses are allowed in the EG2 base zone. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

### ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 2 is confirmed for resource site JC27, with the following additional information that clarifies the analysis.

*Strictly limiting or limiting* conflicting uses generally would retain the riparian corridor and wildlife habitat functions of the significant natural resource features including maintaining habitat for at risk species, maintaining the flow moderation, water quality and flood control functions of Johnson Creek and wetlands, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of high or medium ranked natural resources should be required.

New or expanded development in the flood area should be *limited*. Structures and impervious surface limit the flood capacity and infiltration functions of the land and increase the flood risk to the property as well as properties up and down stream.

Clustering of new development away from significant natural resources would reduce the impacts on the functions. New or expanded commercial or industrial development should meet a minimum setback from Johnson Creek and wetlands.

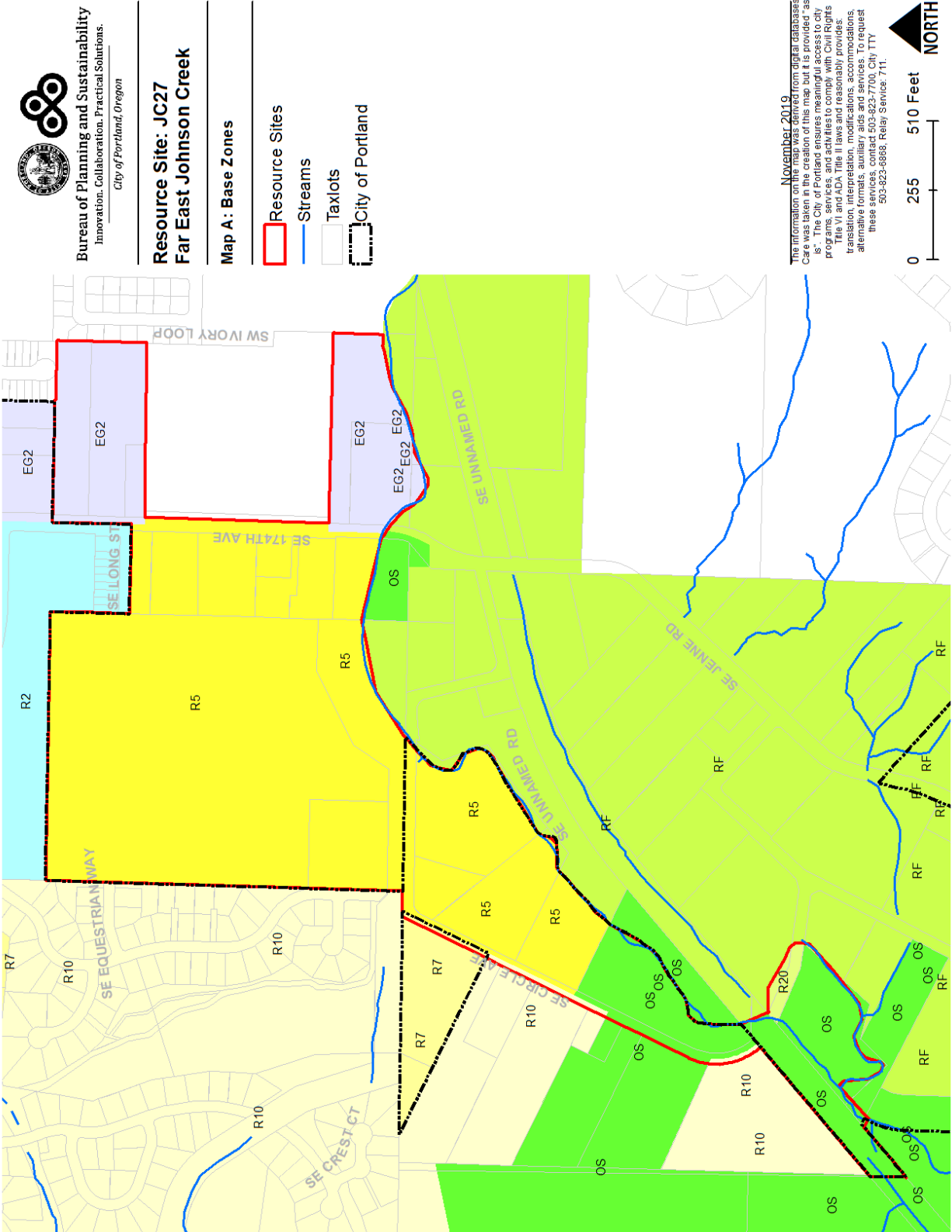


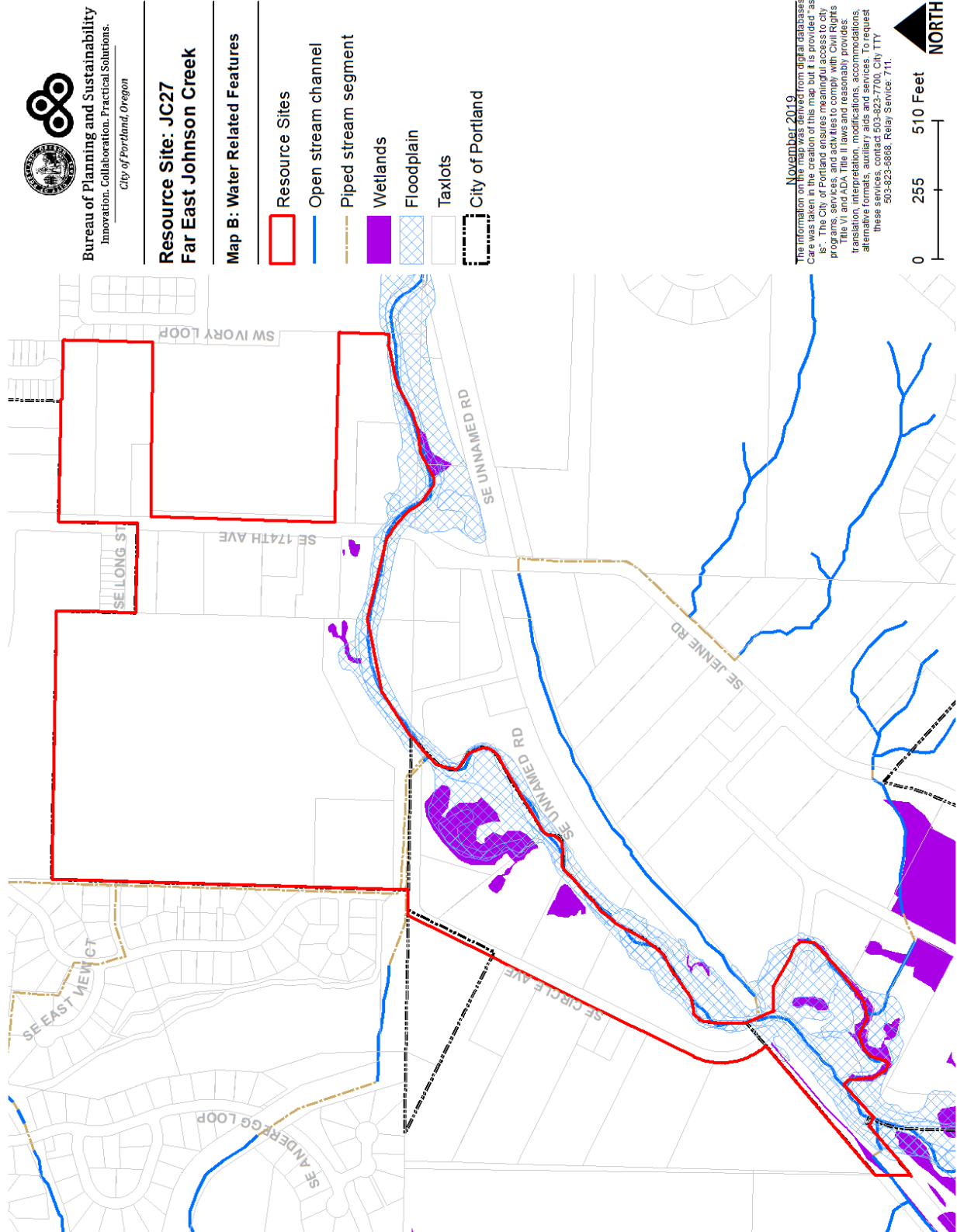
### ESEE Decisions

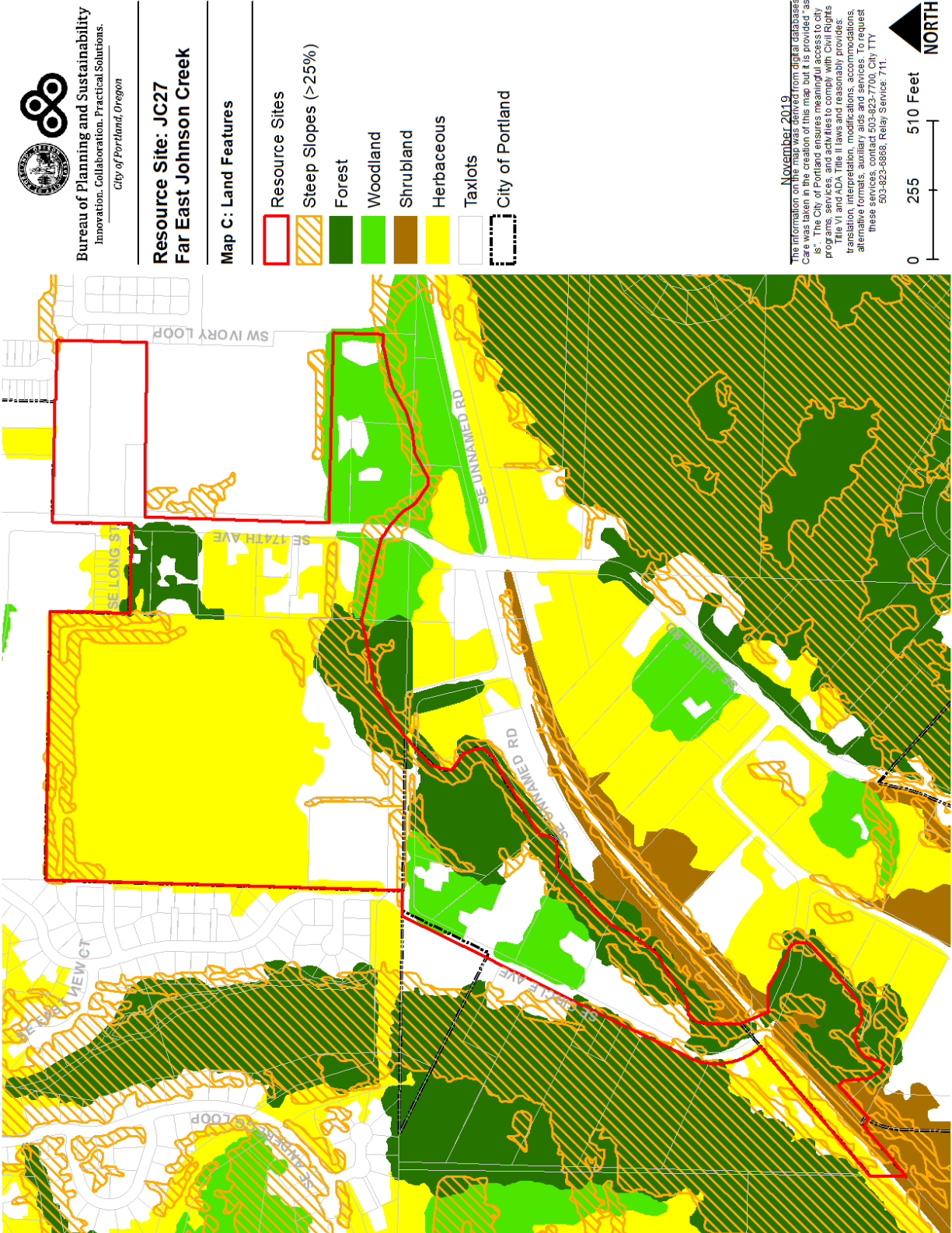
Based on the General ESEE and resource site-specific ESEE, the ESEE decisions for Resources Site JC27 are:

1. *Strictly limit* conflicting uses within stream channels from top-of-bank to top-of-bank and land within 50 feet of top-of-bank and wetlands and land within 30 feet of wetlands, and vegetated areas of the floodplain.
2. *Strictly limit* conflicting uses within flood area, vegetated or developed, located between stream ordinary high water mark and 170 feet measured horizontally from the ordinary high water mark.
3. *Limit* conflicting uses within flood area, vegetated or developed, located more than 170 feet measured horizontally from the ordinary high water mark.
4. *Limit* conflicting uses on forest and woodland vegetation on steep and non-steep slopes that is contiguous to the vegetated flood plain, contiguous to streams but greater than 50 feet from the top-of-bank, or contiguous to wetlands but greater than 30 feet from wetlands.
5. *Allow* conflicting uses within all other areas containing significant natural resources.

Table C: ESEE Decision for Resource Site JC27	
ESEE Decision	Acres
Strictly Limit	11.3
Limit	2.4
Allow	49.6





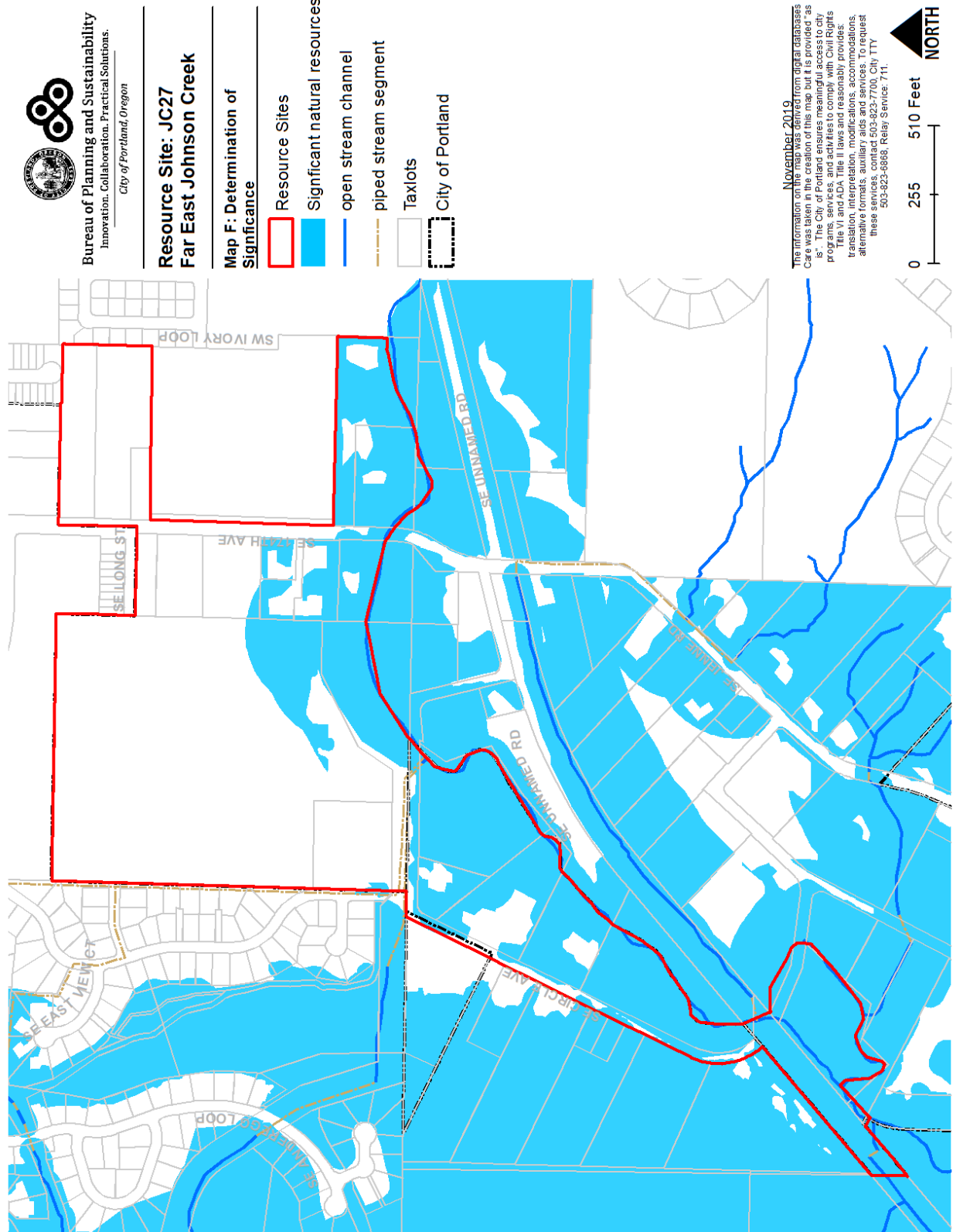


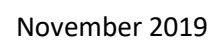














# **The *Environmental Overlay Zone Map Correction Project* plan documents:**

## **Volume 1 – Project Report, Summary of Results and Implementation**

The purpose of the Project Report is to document the overall project approach and methodology, summarize public engagement, provide an at-a-glance summary of the results by resource site, and present the updated zoning code maps and refinements to zoning code chapter 33.430, Environmental Zones.

## **Volume 2 – General Economic, Social, Environmental and Energy Analysis**

The General ESEE evaluates the tradeoffs between protecting natural resources and other city goals for economic development, housing, public health, etc. The General ESEE provides an overall recommendation regarding which natural resource features should be protected. The General ESEE recommendations are then affirmed, clarified or modified for each resource site based on resource site-specific circumstances. The resource site-specific ESEEs are presented in Volume 3, Part A-H.

## **Volume 3 – Resource Site Inventory and ESEE Decisions**

For each of the geographies listed below, each document presents an inventory of natural resource features and functions, a site-specific Economic, Social, Environmental and Energy Analysis (ESEE), and the ESEE decisions regarding which natural resource should be protected for each resource site.

**Part A1 – Forest Park and Northwest District, Resource Sites 1 – 20**

**Part A2 – Forest Park and Northwest District, Resource Sites 21 – 41**

**Part B – Skyline West**

**Part C – Tryon Creek and Southwest Hills East**

**Part D – Fanno Creek**

**Part E – East Buttes and Terraces**

**Part F – Johnson Creek**

**Part G – Boring Lava Domes**

## **Volume 4 – Appendices**

Appendices include the Regulatory Context; 2012 NRI Project Report; stream, vegetation and wetland mapping protocols; and the at-risk species list.