

INVENTORY SITE CS6: Little Four Corners

Summary Information

Watershed: Columbia Slough

Neighborhood: Parkrose

USGS quadrangle and quarter section maps: 1N2E14, 1N2E15, 1N2E22, 1N2E23 and 1N2E24

River Mile: 13.7-14.6 (beginning at the Interstate 205 Bridge over the Columbia Slough and extending to NE 122nd Avenue)

Site Size: 522 acres

Previous Inventories: Inventory and Analysis of Wetlands, Water Bodies and Wildlife Habitat Areas for the Columbia Corridor: Industrial/Environmental Mapping Project (City of Portland January 1989)

Zoning: General Industrial 2 (IG2)
General Employment (EG2)
Aircraft Landing height overlay (h)
Airport Noise overlay (x)
Environmental Conservation overlay (c)
Environmental Protection overlay (p)
Scenic overlay (s)

Existing Land Use: industrial; commercial

General Description: This site includes part of the Middle Slough and Whitaker Slough, which join at an area know as Little Four Corners. To the east of Little Four Corners is Prison Pond, which is the most upstream section of Whitaker Slough. There are a couple secondary drainageways in the site and two remnant wetlands – Mays Lake and Ainsworth Wetland.

Resource Features: open water stream/drainageway channels; herbaceous, scrub-shrub and forested wetlands; vegetated flood area; bottomland hard wood forest

Functional Values: 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; wildlife habitat; habitat connectivity/ movement corridor

Special Habitat Area(s):

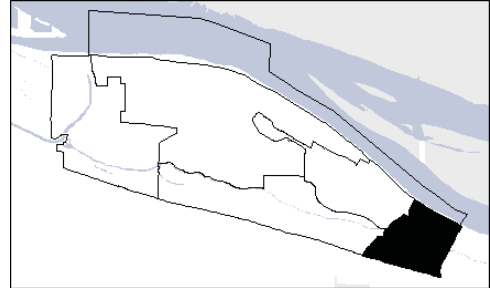
- CS16.D: *Little Four Corners* – bottomland hardwood forest (B); migratory stopover habitat (M); wildlife connectivity corridor (C); resources or structure that provides unique habitat function in natural or built environment (U).

Special Status Species:

- *Birds:* willow flycatchers, belted kingfishers, great blue herons, common merganser
- *Reptiles:* Western painted turtle
- *Mammals:* American beaver, northern river otter

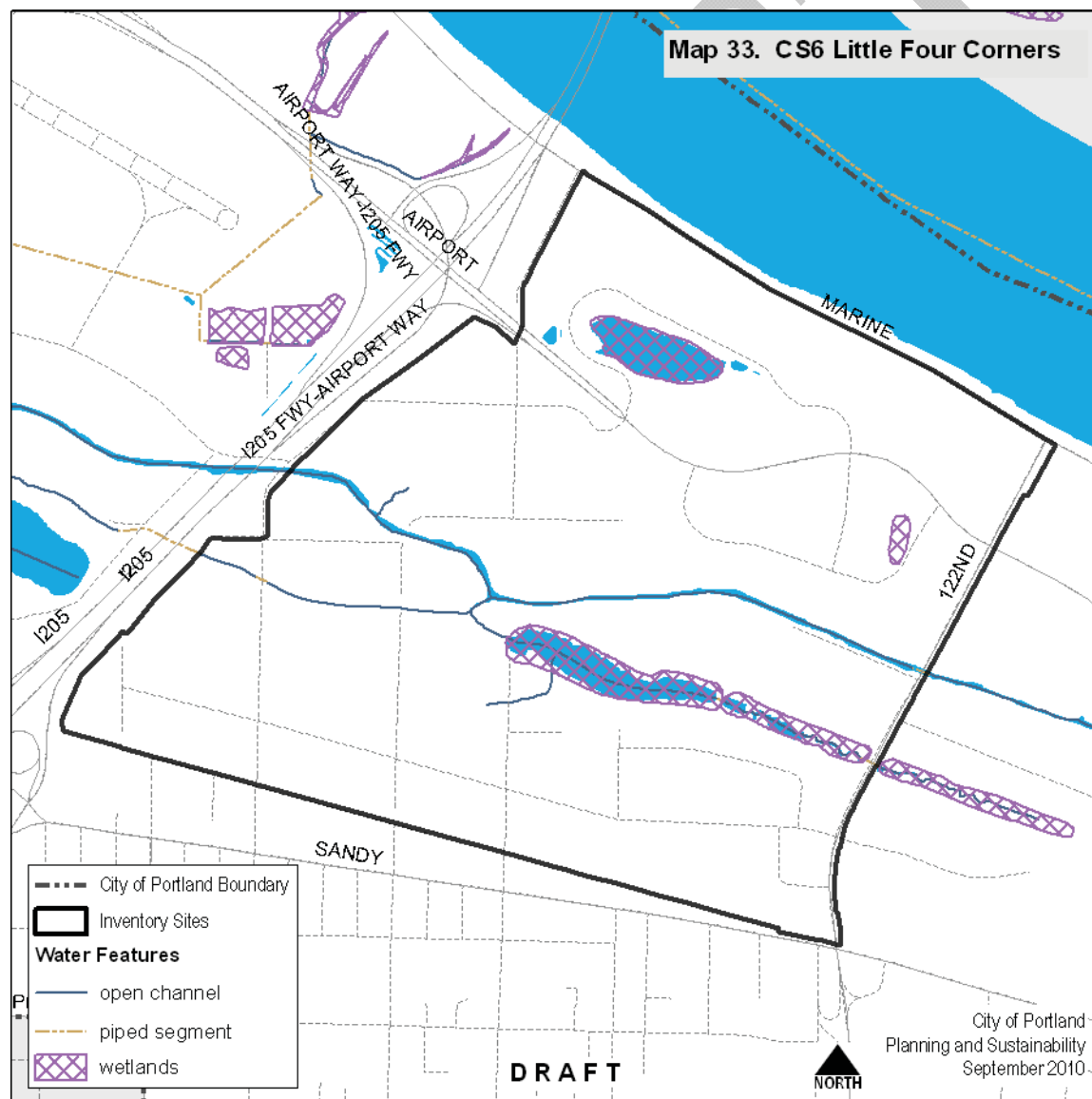
Natural Hazards: flood area

Contamination: Yes



Site Description

Little Four Corners is the informal name given to the area where the Middle Columbia Slough, Whitaker Slough and Prison Pond join (Map 33). This inventory site is 522 acres in size and includes industrial land uses around the Columbia Slough; and commercial land. There are approximately 298 acres of impervious area, including 8.1 miles of roads, located the site. The western boundary of the site is Interstate 205; the southern boundary is Columbia Boulevard; the eastern boundary is NE 122nd Avenue; and the northern boundary is the Marine Drive. Site CS6 Map 1 shows an aerial view of the Little Four Corners inventory site.



A roughly 1-mile long section of the Columbia Slough main arm extends from the Interstate 205 Bridge to NE 122nd Avenue. The site contains two small secondary drainageways totaling 1,140 linear feet and 3 wetlands totaling 21 acres. The 39-acre flood area includes 13 acres of open water, 16 acres of vegetated flood area and 9 acres of non-vegetated flood area (CS6 Map 2). The Multnomah County Drainage District (MCDD) maintains the levees and water levels in the Columbia Slough to provide flood protection and stormwater conveyance. The management of the Columbia Slough waterways riparian reduces flooding and affects the riparian functions. The inventory models have been adjusted to reflect a lesser level of function than assigned to more active flood areas in the rest of the City.

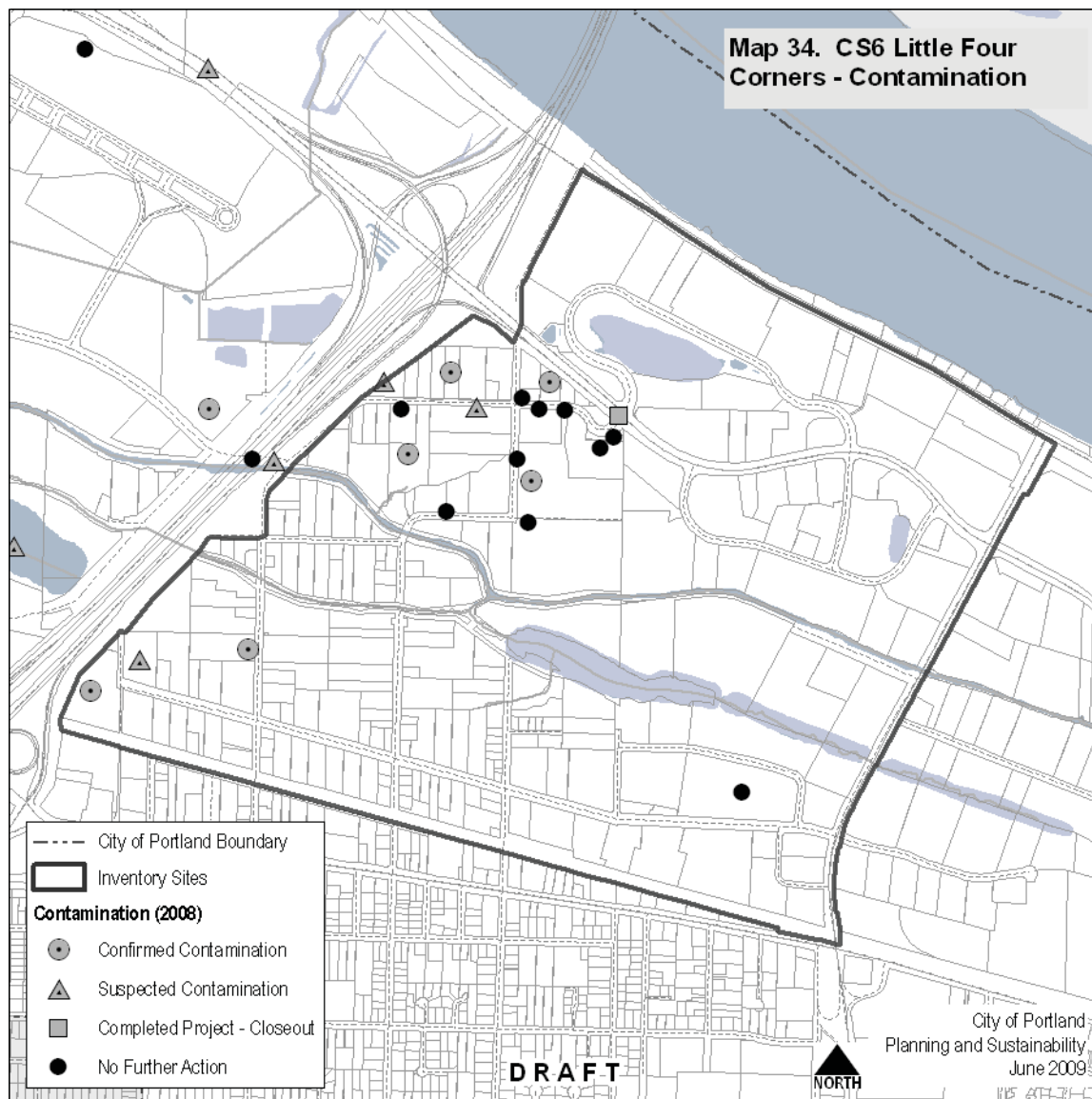
Vegetated areas at least ½ acre include approximately 26 acres of forest or dense tree canopy, 27 acres of woodland, 9 acres of shrubland and 56 acres of herbaceous cover.

The City of Portland Bureau of Environmental Services (BES) has conducted revegetation projects throughout the site. There are currently three active and four completed sites, and one prospective revegetation site. Much of the revegetation has occurred in riparian areas around the Columbia Slough and Prison Pond; some revegetation has also occurred around Mays Lake.

Table 28: Summary of Natural Resource Features in CS6: Little Four Corners

	Study Area (521 acres)
Stream/Drainageway (miles)	2.2
Wetlands (acres)	21
Flood Area (acres)*	39
Vegetated (acres)	16
Non-vegetated (acres)	9
Open Water** (acres)	13
Vegetated Areas >= ½ acre (acres)[†]	116
Forest (acres)	26
Woodland (acres)	27
Shrubland (acres)	9
Herbaceous (acres)	56
Impervious Surfaces (acres)	298
* The flood area includes the FEMA 100-year floodplain plus the adjusted 1996 flood inundation area. ** Open Water includes portions of the WHAT within the site. † The vegetation classifications are applied in accordance with the National Vegetation Classification System specifications developed by The Nature Conservancy. The data within the primary study area and within 300 feet of all open water bodies in Portland is draft and is currently being updated based 2006 aerial photography.	

The Oregon Department of Environmental Quality (DEQ) has identified confirmed and suspected contaminated areas within the site (Map 24). Soil, groundwater and surface water within the site contain contamination resulting from past and current activities including underground tanks, surface runoff from parking areas, draining of drums, lumber yard, equipment repair/maintenance, auto salvage and a VOC discharge. Types of pollutants found in the site included benzene, acetone, carbon disulfide, methyl ethyl ketone, vinyl chloride, diesel, PCB, lead, cadmium and chromium. Potential environmental and health risks are primarily due to groundwater migration because of the City of Portland's South Shore Wellfield, which is a back-up drinking water source for Portland. For more information regarding contamination, visit the DEQ website at <http://www.deq.state.or.us/lq/ecsi/ecsi.htm>.



Natural Resource Description

The natural resources are described for sub areas of the inventory site (Map 35).



Middle Columbia Slough

The site contains approximately one mile of the Middle Slough. The portion of the Middle Slough within the site is characterized by a low gradient channel and extensive macrophyte growth that impacts flow and water quality. The riparian area adjacent to the Middle Slough is generally two to three trees in width. These areas are generally bottomland hardwood forest comprised of black cottonwood and red alder. Other native vegetation species present include Douglas-fir, western red cedar, snowberry, red-flowering currant, red-osier dogwood, Indian plum, Oregon grape, Nootka and swamp rose, and vine maple. Invasive plant species found throughout in the riparian area include Himalayan blackberry, Japanese knotweed and reed canary grass.

The width of the Middle Slough waterway in this site is 30 to 50 feet and the average channel depth is six to eight feet. The Middle Slough is water quality limited for multiple parameters including bacteria, temperature, dissolved oxygen and biochemical oxygen demand (BOD), eutrophication (phosphorus, chlorophyll a, pH), heavy metals and total suspended solids. In general, the Middle Slough has better water quality than the Upper and Lower Slough. Water temperatures are generally cooler in the Middle Slough, due in large part to cool groundwater inputs.



Paddlers on Middle Columbia Slough

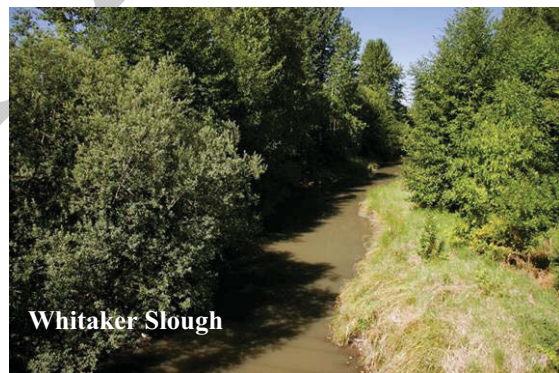
The Middle Slough provides habitat for numerous fish and wildlife species including Willow Flycatchers, belted kingfishers, great blue herons, common merganser, river otter, nutria and beaver are some of the wildlife species that routinely use this riparian area.

Habitat in the Middle Slough is affected by nearby development. Industrial development, including buildings, loading areas and parking lots, encroach into the riparian area fragmenting habitat and reducing shade potential from riparian vegetation. Cornfoot Road, north of the Middle Slough between NE 47th Avenue and Alderwood Road, is in close proximity (between 25 and 100 feet) of the waterway and impacts riparian vegetation, wildlife habitat and water quality.

The Middle Slough in this area is part of the Special Habitat Area CS16:D South Arm Complex – Little Four Corners because it is an active groundwater upwelling area with visible springs; is surrounded by a bottomland hardwood forest; and provides a wildlife habitat connectivity corridor.

Whitaker Slough

Whitaker Slough is a southern arm of the Middle Columbia Slough. Approximately one half mile of the Whitaker Slough channel extending from I-205 to Little Four Corners is located in this inventory site. Whitaker Slough has significant areas of groundwater upwelling. The cool groundwater helps to moderate summer water temperatures. Cool water is a basic requirement for many aquatic species.



Whitaker Slough

A narrow strip of riparian vegetation, two to three trees deep, surrounds Whitaker Slough. At Little Four Corners, where the main arm Middle Slough and Whitaker Slough join, the riparian area is wider with a closed tree canopy. The dominant tree species in the riparian area include black cottonwood and red alder along with a heavily mixed understory of planted native trees and shrubs. Species present include: Douglas-fir, western red cedar, snowberry, red-flowering currant, red-osier dogwood, Indian plum, Oregon grape, Nootka and swamp rose, and vine maple. Invasive plant species found in the riparian area include Himalayan blackberry, Japanese knotweed and reed canary grass. Leaf litter is the primary ground cover component with some grass, palmate coltsfoot, shining geranium, creeping buttercup, and ivy. The established tree canopy and overhanging shrubs shade the waterway in many places, reducing in-stream water temperatures during the summer and creating a localized microclimate affect that is beneficial for many wildlife species. The surrounding land uses are primarily industrial and commercial and are located in close proximity to the waterway.

Wildlife using Whitaker Slough and the riparian area include beaver, nutria, coyote, great blue heron, great horned owl, goldfinch, black cap chickadee, Oregon junco, robin, violet-green swallow, Cooper's hawk and American wigeon.

Whitaker Slough has been designated Special Habitat Area CS16:D South Arm Complex – Little Four Corners because it is an active groundwater upwelling areas with visible springs; is surrounded by a bottomland hardwood forest; and provides a wildlife habitat connectivity corridor.

Prison Pond

Prison Pond is a 14-acre open water wetland in the upstream portion of Whitaker Slough. The wetland pond is created by a water control structure at the terminus of NE 112th Avenue. Prison Pond features includes groundwater upwelling and visible springs. The riparian area is comprised of a cottonwood gallery forest with large dogwood thickets as well as Doug fir, Western red cedar, grand fir, black hawthorn and red elderberry. Understory is snowberry, Oregon grape, and sword fern with Himalayan blackberry, English ivy, butterfly bush, English laurel, and bird cherry present. There are several large Oregon white oaks near the Little Four Corners area. Near NE 112nd Avenue there is less standing water and more herbaceous vegetation; riparian areas are primarily shrubland vegetation with a high presence of invasive species.



A secondary drainageway crosses NE 112th Avenue and discharges into Prison Pond. The vegetation surrounding the channel is primarily black cottonwood with little understory other than Himalayan blackberry.

Birds observed at Prison Pond include: hooded merganser, starling, song sparrow, Anna's hummingbird, house finch, black-capped chickadee, downy woodpecker, and red tail hawk.

Yard debris dumping has occurred at the terminus of NE 112th Avenue and behind the prison. The pond is also impacted by the proximity of existing buildings, loading yards, parking lots and driveways.

Prison Pond is part of the Special Habitat Area CS16:D South Arm Complex – Little Four Corners because it is an active groundwater upwelling areas with visible springs; is surrounded by a bottomland hardwood forest; and provides a wildlife habitat connectivity corridor.

Mays Lake

Mays Lake is a six-acre pond located north of NE Airport Way and by NE Glen Widing Drive. There is a water quality facility east of the pond and a drainage ditch connecting the facility to Mays Lake. The pond is surrounded by woodland vegetation consisting of black cottonwood trees ranging from 6-18 inch diameter and an understory shrubs of red osier dogwood and snowberry, with the dogwoods mostly occurring in the shallowly graded east and west ends of the pond and the snowberry mostly resident along its northern bank. Himalayan blackberry is also a strong constituent in the understory of the woodland area as well as along the southwestern bank of the pond near its outfall. There are several large English walnut trees at the westernmost end of the woodland. Two weedy vines, Japanese honeysuckle and wild clematis, are also present in limited quantities. Herbaceous ground cover is patchy consisting primarily of cleavers, ivy, and reed canary grass.



The woodland provides cover, food and water for songbirds, amphibians and mammals. The site has potential for osprey roosting, perching, feeding and nesting due to its proximity to the Columbia River. Wildlife observed in spring 2009 at Mays Lake include: tree frog, scrub jay, stellar jay, bushtit, starling, robin, red-wing blackbird, Canada goose, ring-necked duck, Oregon junco, blackcapped chickadee, and song sparrow.

Ainsworth Wetland

Located along NE Ainsworth Circle, south of NE Airport Way, is a one-acre wetland and surrounding riparian vegetation. Historically this area was an oak savannah grassland. In past inventories the area was discussed as providing habitat for cavity nesting birds including great horned owl, American kestrels and northern flickers.

Currently, the small natural resource area is surrounded by parking lots, roads and buildings. The wetland vegetation is comprised of black cottonwood, Oregon ash and Pacific willow, with an understory of tall Oregon grape, swamp rose, Pacific ninebark, Himalayan blackberry, reed canary grass and poison hemlock. Some large snags are also present.



To the north of the wetland is a stand of large black cottonwood and Oregon ash trees with little understory. A potential wetland is located in the middle of the tree canopy; it is identified by the presence of cattail. The grassy field is maintained turf grass with a perimeter walking trail.

Birds observed in spring 2009 at the wetland and forested areas include: red-winged blackbird, brown creeper, American goldfinch, house finch, northern flicker, European starling, song sparrow, and Anna's hummingbird.

Natural Resource Evaluation

The natural resources located within this site have been evaluated for relative riparian and wildlife habitat quality. Relative quality is presented in the form of relative functional value ranks for riparian corridors, wildlife habitat, and riparian/wildlife habitat value combined (Table #). The relative ranks are produced using GIS models and information on Special Habitat Areas. The model criteria are not sensitive to the species of vegetation present or whether vegetation is native or non-native. However, the model criteria do assign different riparian functional values to cultivated, heavily manicured and managed landscapes and semi-natural and natural vegetation. The approach used to generate the relative ranks is summarized in the introduction to the inventory sites. Additional detail is provided in the Methodology Overview section of this report and the *Natural Resource Inventory Update: Riparian Corridors and Wildlife Habitat* (City of Portland, 2008).

All of the ranked resource areas provide at least some important riparian and habitat value, recognizing that current condition and function levels may vary considerably. The relative ranks can inform planning programs, design of development or redevelopment projects, mitigation and restoration activities.

Riparian Areas

The site contains portions of the Middle Columbia Slough, Whitaker Slough, vegetated and non-vegetated flood area, riparian forest with associated shrub and groundcover, as well as other types of vegetation that contribute to the riparian functions as detailed in the natural resource description. These landscape features provide the following riparian functions:

- Microclimate and shade
- Stream flow moderation and water storage
- Bank stability, and sediment, pollution and nutrient control
- Large wood and channel dynamics
- Organic inputs, food web and nutrient cycling
- Riparian wildlife movement corridor

High relative functional ranks are assigned to the main and southern arm Columbia Slough, secondary drainageways and wetlands and portions of the riparian forest and woodland vegetation. Riparian forests and areas of dense tree canopy receive a high or medium relative ranks depending on proximity to open water. Medium and low relative ranks are generally assigned to lower structure riparian vegetation located proximate to the drainageways and wetlands. Other areas are assigned a high, medium or low relative rank depending on the proximity and extent of vegetation relative to the water body (CS6 Map 4).

Wildlife Habitat

A wildlife habitat patch is, for purposes of the inventory model, defined as forest and/or wetland areas, 2 acres in size or greater, plus adjacent woodland vegetation (note Special Habitat Areas may be smaller and may contain different types of vegetation or other resource features).

The site contains vegetated forested patches, wetlands and corridors that provide wildlife habitat and connectivity between habitat patches. Forested areas and wetlands provide nesting, breeding and foraging habitats for a diverse range of bird and mammal species, as well as amphibians, reptiles, and invertebrate species.

Based on the wildlife habitat model criteria, a medium relative rank is assigned to forested areas along the Columbia Slough and Whitaker Slough and to wetlands and associated forest vegetation, reflecting patch size, interior area and proximity to water and other patches.

Special Habitat Areas (SHA) descriptions

SHAs contain unique features and provide critical wildlife habitat as described in the Natural Resources Description section above. SHAs receive a high relative rank for wildlife habitat. The SHA ranking

supersedes lower rankings generated by the GIS model. Therefore, all SHAs within the site rank high for wildlife habitat (CS6 Map 5).

The Little Four Corners area, which includes the confluence of the Middle Columbia Slough and Whitaker Slough, is designated a SHA because it is surrounded by bottomland hardwood forest, is a wildlife habitat connectivity corridor and is a significant area of groundwater upwelling. Little Four Corners meets the following SHA criteria: bottomland hardwood forest (B); migratory stopover habitat (M); wildlife connectivity corridor (C); resources or structure that provides unique habitat function in natural or built environment (U).

Combined Relative Riparian/Wildlife Habitat Ranking

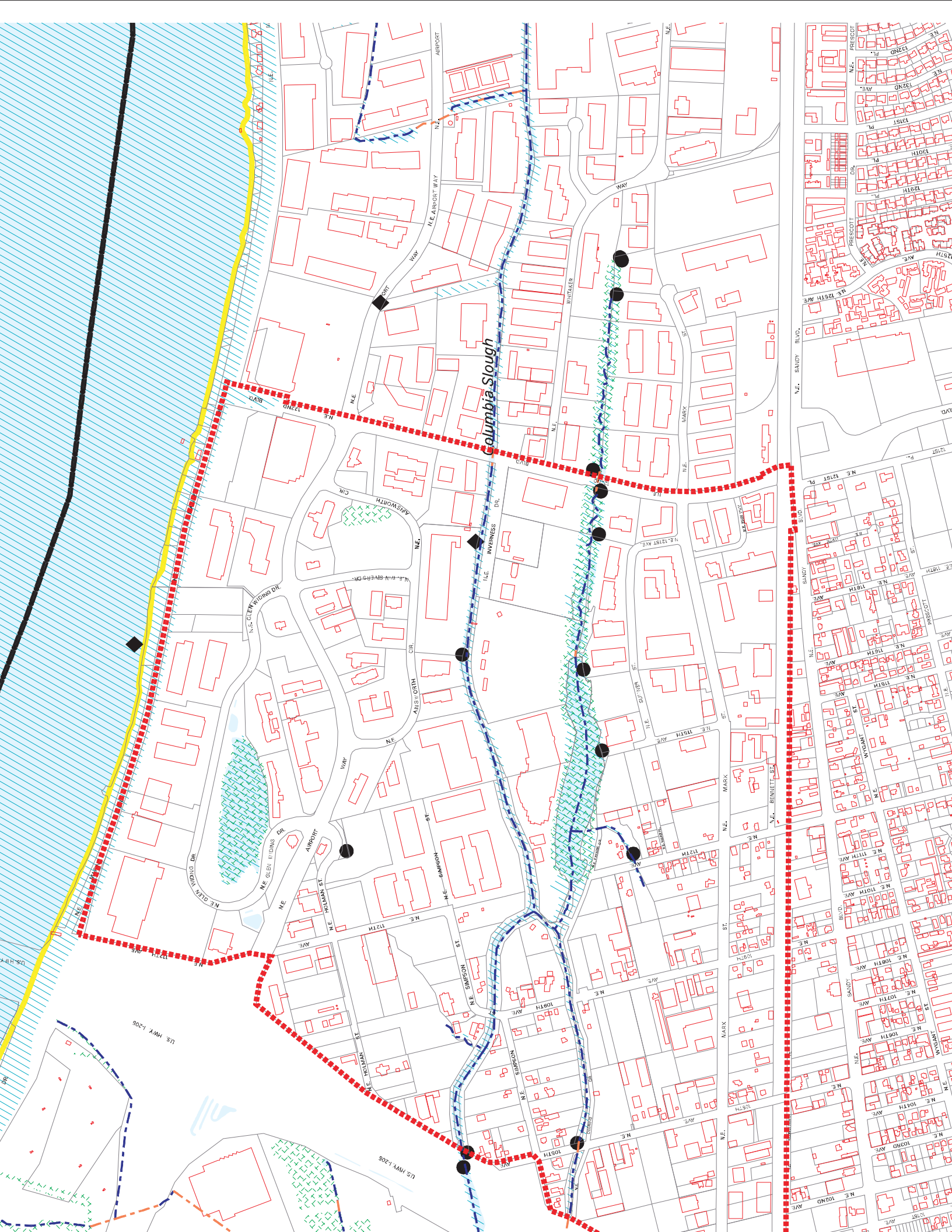
Where areas that are mapped as riparian corridors and wildlife habitat overlap, and their relative ranks differ, the combined relative rank will be the higher of the two ranks. For example, an area that ranks medium for riparian function and low for wildlife habitat will receive a medium combined relative rank (CS6 Map 6).

Table 29: Summary of Ranked Resources in CS6: Little Four Corners

Total Inventory Site = 522 acres				
	High	Medium	Low	Total
Riparian Resources**				
acres	57	20	14	91
percent total inventory site area	11	4	3	18
Wildlife Habitat				
Wildlife Habitat**				
acres	0	51	0	51
percent total inventory site area	0	10	0	10
Special Habitat Areas**				
acres	43			
percent total inventory site area	8			
Wildlife Habitat - adjusted by Special Habitat Areas ***				
acres	43	12	0	55
percent total inventory site area	8	2	0	10
Combined Total*				
acres	59	19	13	91
percent total inventory site area	11	4	3	18
** High-ranked riparian resources, Special Habitat Areas, and wildlife habitat includes the Willamette River *** 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.				



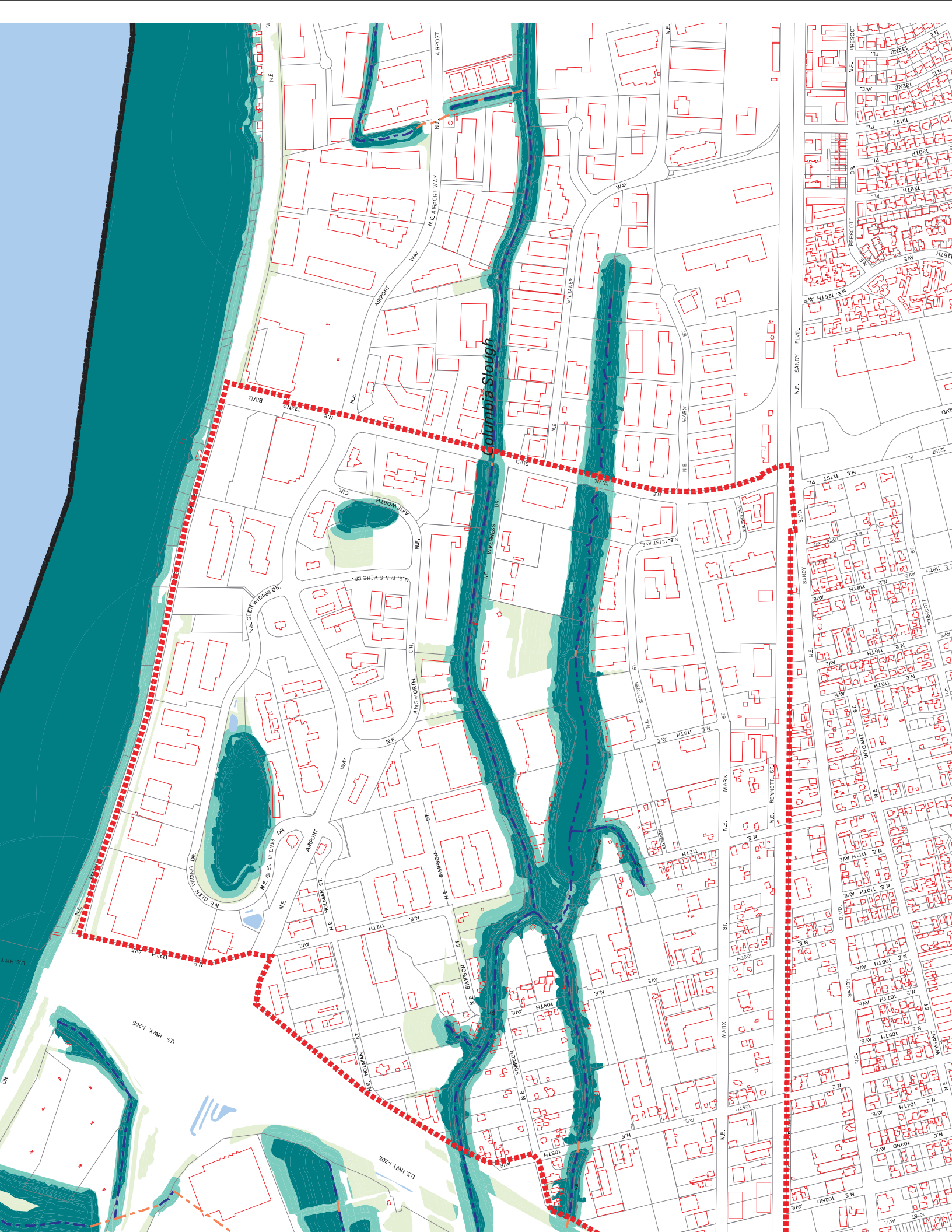
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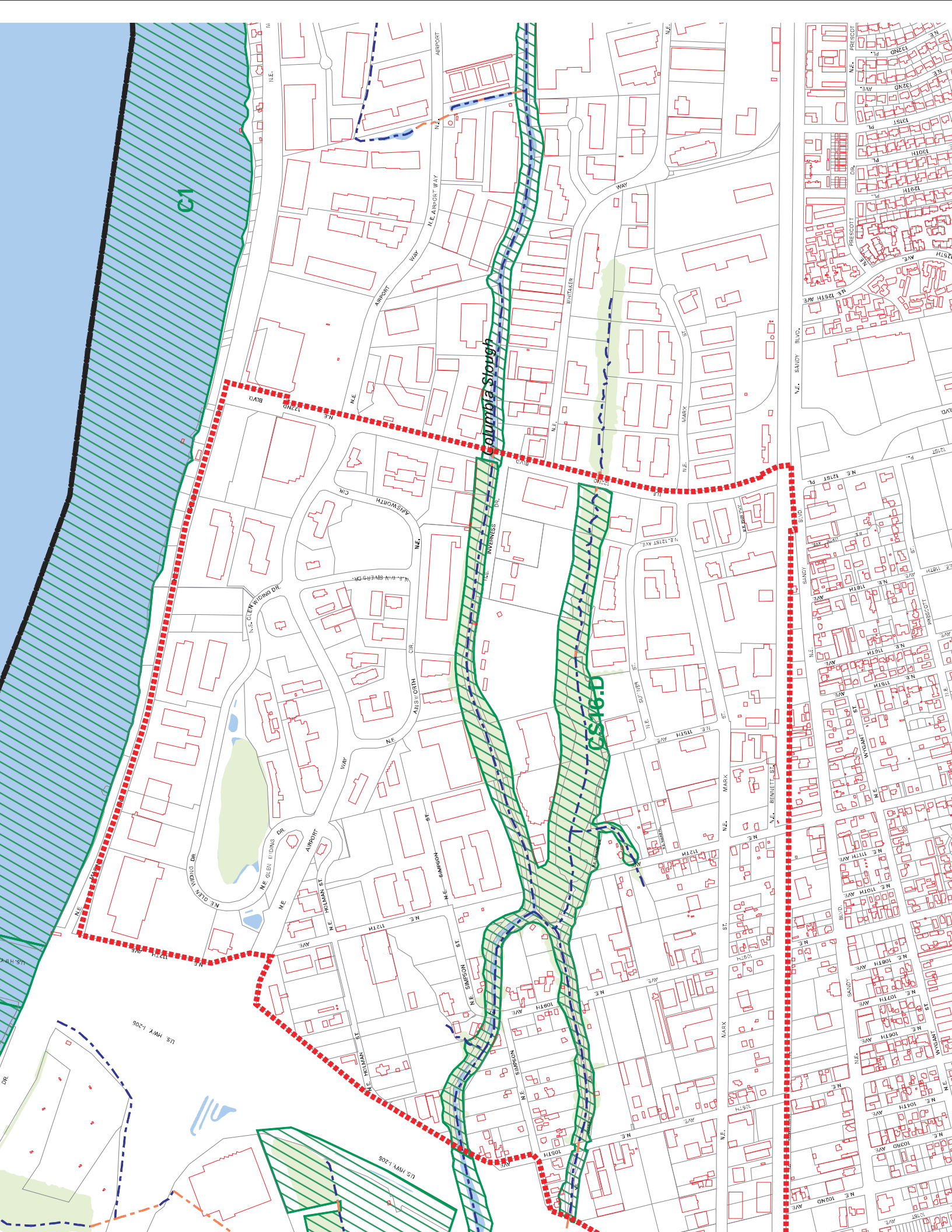
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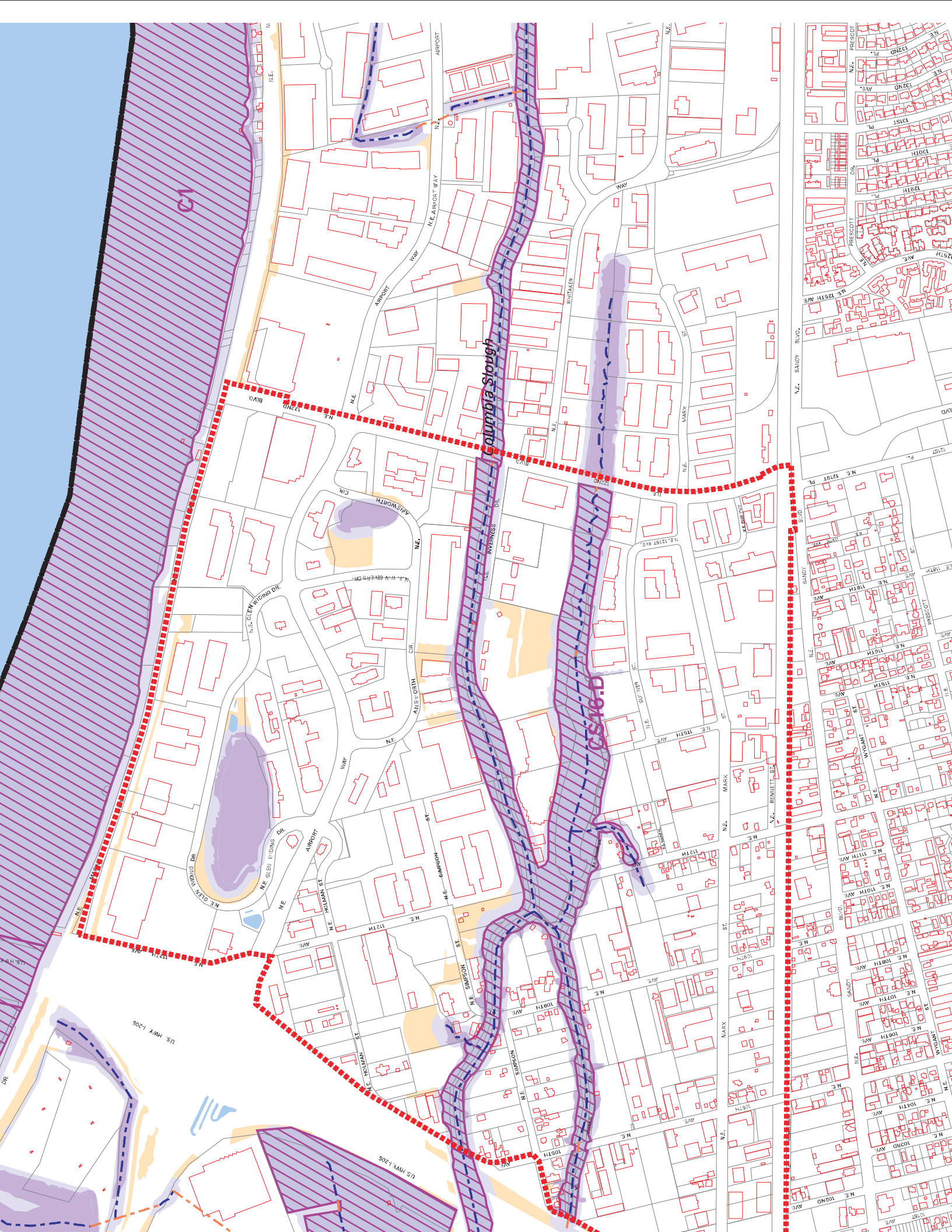
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Natural Resource Inventory Update Project

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