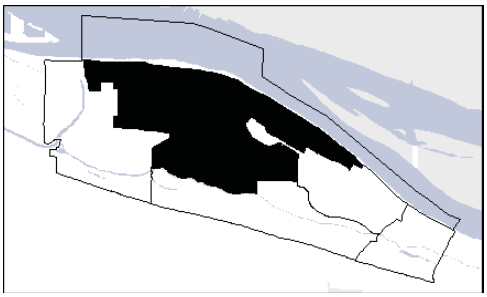
INVENTORY SITE CS2: Portland International Airport



Summary Information

Watershed: Columbia Slough

Neighborhood: Sunderland

USGS quadrangle and quarter section maps: 1N1E01, 1N1E12, 1N2E05, 1N2E06, 1N2E07, 1N2E08, 1N2E09, 1N2E17 and 1N2E18

Site Size: 2,322 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)
Aircraft Landing height overlay (h)
Airport Noise overlay (x)
Environmental Conservation overlay (c)
Scenic Overlay (s)

Existing Land Use: industrial

General Description: This site is the Portland International Airport and Air National Guard. The land is managed intensively to reduce safety risks, which includes maintaining the vegetation at an appropriate height and modifying habitat to reduce wildlife attractants. The site contains a portion of McBride Slough, remnant wetlands, two water features, one known as Keyhole Drainage and a secondary drainageway that provides stormwater conveyance for Oregon Air National Guard, and upland grassland that provides habitat for *at risk* species (e.g. Streaked Horned Lark) and migratory birds.

Resource Features: open water stream/drainageway channels; riparian scrub-shrub vegetation; herbaceous wetlands; large grasslands

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

Special Habitat Area(s):

- *CS24: Airport Upland Grassland* - area vital to *at risk* species (S); habitat supporting grassland-associated species (G); migratory stopover habitat (M); and wildlife connectivity corridor (C)

Special Status Species:

- *Birds*: American kestrel, bald eagle, common yellowthroat, dunlin, great blue heron, loggerhead shrike, long-billed curlew, merlin, Northern harrier, peregrine falcon, purple martin, short-eared owl, streaked horned lark, Swainson's hawk, Thayer's gull, Western meadowlark, great blue heron.

Natural Hazards: flood area

Contamination: Yes

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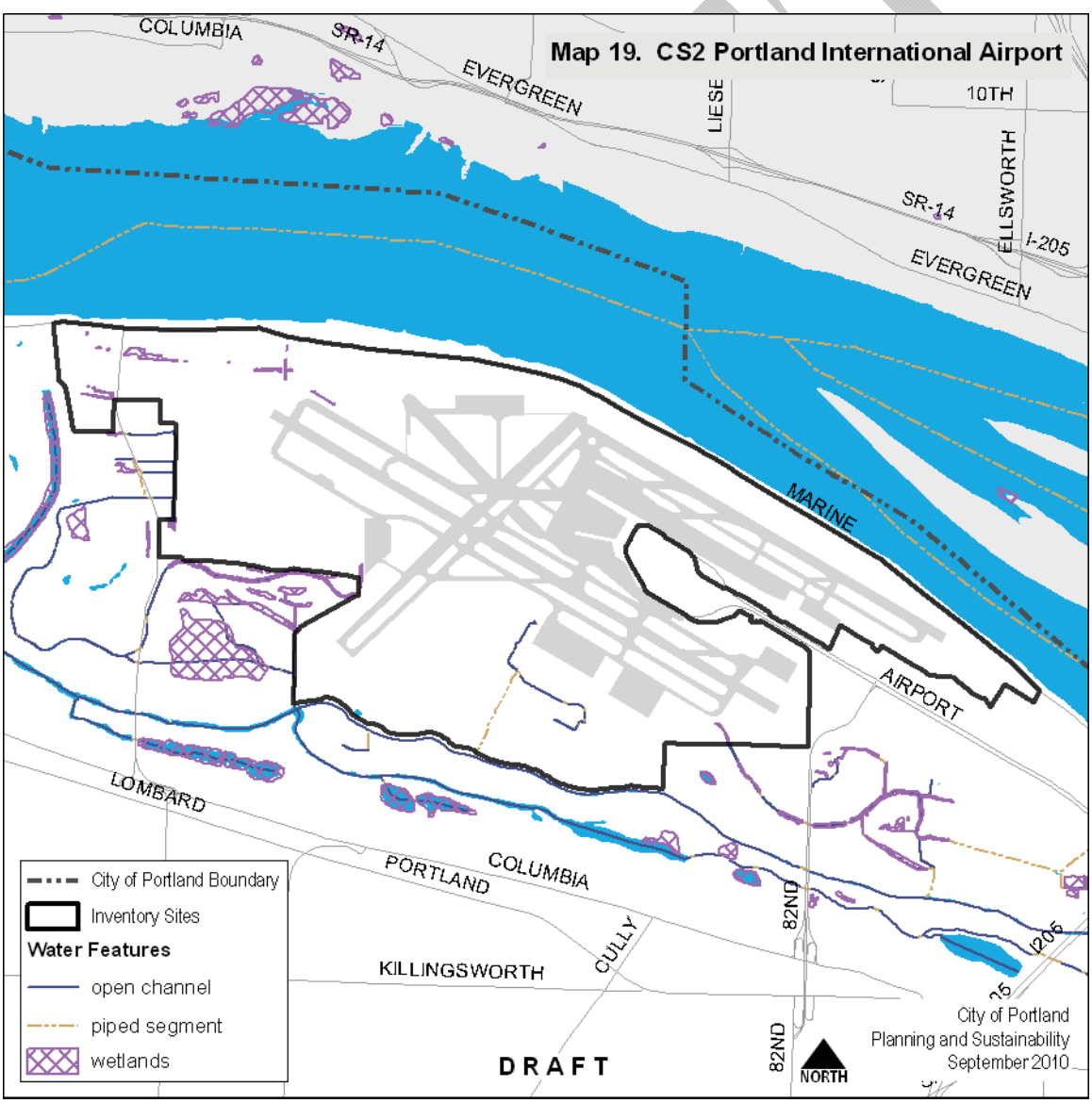
Site Description

The Portland International Airport inventory site is 2,322 acres in size and includes industrial land uses the Portland International Airport and the Oregon Air National Guard (ORANG). Approximately 1,006 acres of impervious area, including 19.2 miles of roads, are located within the site. The boundaries of this inventory site generally correspond with the airport airfield (Map 19). Site CS2 Map 1 shows an aerial view of the inventory site.



The site contains 1.2 miles of secondary drainageways and 5 acres of wetland (CS2 Map 2). The 188-acre flood area includes <1 acres of open water, 64 acres of vegetated flood area and 124 acre of non-vegetated flood area (CS2 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 <1 acres of forest or dense tree canopy, 8 acres of woodland and 1,074 acres of herbaceous cover (CS2 Map 3).

Table 16: Summary of Natural Resource Features in CS2: Portland International Airport

	Study Area (2,322 acres)
Stream/Drainageway (miles)	1.3
Wetlands (acres)	5
Flood Area (acres)*	188
Vegetated (acres)	64
Non-vegetated (acres)	124
Open Water** (acres)	<1
Vegetated Areas >= ½ acre (acres)+	1,082
Forest (acres)	<1
Woodland (acres)	8
Shrubland (acres)	0
Herbaceous (acres)	1,074
Impervious Surfaces (acres)	1,006

* The flood area includes the FEMA 100-year floodplain plus the adjusted 1996 flood inundation area.
** Open Water includes portions of the secondary drainageways 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 20). Soil, groundwater and surface water with the site contain contamination resulting from past and current activities such as a historic landfill, fuel spills on the tarmac, jet fuel use, bunker fuel spill, fire-fighting training, and underground fuel storage. Types of pollutant found in the site include total petroleum hydrocarbons, benzene, benzo(b)fluoranthene, naphthalene, polyaromatic hydrocarbons, benzo(a)pyrene, ethylebenze, toluene, TPH, xylenes, arsenic, cadmium, chromium, and lead. Potential environmental and health risks include exposure to soil and particulates, skin contact and vapor inhalation. Contaminated sediments in drainageways and ditches and contaminated surface water may pose a threat to wildlife in the site. For more information regarding contamination, visit the DEQ website at http://www.deq.state.or.us/lq/ecsi/ecsi.htm.

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Map 20. CS2 Portland International Airport - Contamination
Inventory Sites
Contamination (2008)
Confirmed Contamination
Suspected Contamination
Completed Project - Closeout
No Further Action
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Planning and Sustainability
June 2009

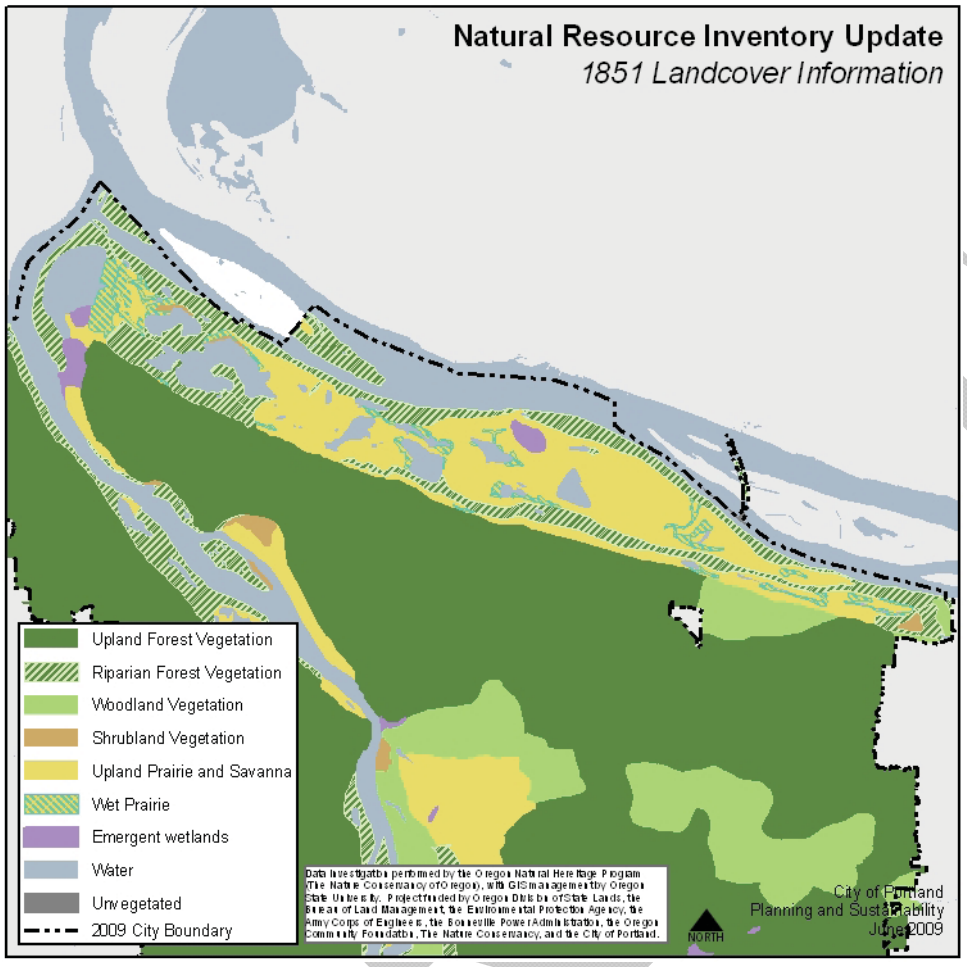
Natural Resource Description

The natural resources are described for sub areas of the inventory site (see Map 21).

Upland Grassland

Site CS2 includes approximately 2,000 acres of relatively flat, contiguous, open area; roughly 1,000 acres of which consists of low herbaceous vegetation or sparsely vegetated areas directly surrounding the Portland International Airport (PDX). Although the vegetation communities within this inventory site are not representative of a native grassland or prairie, the combination of the size of the open area, vegetation type, sandy fill and management activities causes the site to mimic some characteristics of a native grassland or prairie. Until roughly 150 years ago upland prairie and savannah habitats covered much of the Columbia Slough watershed (Map 22). Today, native grassland and prairie habitats

throughout the region have been reduced to less than one percent of their historic extent and are now defined as an imperiled habitat (Metro, 2009).



Map 22. 1851 Landcover Information

While inventory site CS2 does not contain native grassland or prairie vegetation, the herbaceous and sparsely vegetated areas within the site, combined with geographic location along the Columbia River and the Pacific Flyway (a critical route for migratory birds), provide upland habitat that supports a suite of grassland-associated wildlife. Over 100 species of birds, including grassland specialists, occur in this site annually. Some of these species, such as savannah sparrows and European starlings, occur in great numbers in the inventory site; while other species, such as streaked horned larks and peregrine falcon occur in smaller numbers. Rare species that occur annually on migration include long-billed curlew and loggerhead shrike.

Management of this upland grassland area is a major determining factor in the habitat type. All of the land in inventory site CS2 is currently managed by the Port of Portland to minimize hazards that increase risk to safe aircraft operations. Intensive vegetation management is one tool used by the Port to reduce habitat that attracts *high risk* species[1]. Wildlife, particularly some avian species, can be a significant hazard to safe aircraft operations. PDX wildlife staffs monitor and record observations of both high risk

[1] The Port of Portland identifies "high risk" species, which are those wildlife species that pose a high risk for collision with aircrafts. The City of Portland identifies "at risk" species, which are those fish and wildlife species experiencing significant population declines in the region (see also Special Habitat Area criteria).

and low risk wildlife species; however the focus of data collection is on high risk species. High risk species include six species of gulls, Canada and cackling geese, red-tailed hawk, osprey, barn owl, great-horned owl, mallard, European starling and American crow. The high risk group also includes several City of Portland Special Status Species: short-eared owl, northern harrier, American kestrel, peregrine falcon (also an *at risk* species), great blue heron, and Thayer's gull (Appendix D: Special Status Species in Portland). Coyotes forage in the grasslands and are also a high risk species.

PDX currently employs comprehensive strategies to actively manage all wildlife that pose a risk to safe aircraft operations. Coyote exclusion fencing has been installed around the airfield perimeter fencing which greatly reduces the occurrence of coyotes on the airfield. Other management activities include bird hazing using vehicles, horns, sirens, lasers, paintballs, and pyrotechnics; physically removing nests; performing nest intervention; and habitat modification including reducing surface area ponding and performing vegetation management. Large scale applications of rodenticide and insecticide are implemented annually on the airfield to reduce the prey base that attracts hazardous wildlife. PDX Landscaping Standards are also applied to the built environment.

The cumulative effect of all the grassy and sparsely vegetated areas, and absence of vertical structures, creates a contiguous 1,200-acre flat grassland-like habitat adjacent to the Columbia River that attracts a high diversity and concentration of migratory and grassland-associated wildlife species. However, there is some differentiation between different locations as discussed below:

- 33rd Fields
- SW Quad
- Deicing Field and Fuel Farm
- Airfield

All of the locations are part of one Special Habitat Area, CS24: Airport Upland Grasslands, because the habitats meet the criteria for migratory stopover (M), grassland-associated species use (G) and a connectivity corridor with the Columbia River (C). Some locations also meet the criterion for being vital for *at risk* species (S).

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33rd Fields

Located west of NE 33rd Avenue is a 53-acre field comprised primarily of weedy herbaceous and shrubby vegetation, including Himalayan blackberry. There six wetlands, all less than ½-acre in size, located in the field. The field and wetlands are utilized by numerous wildlife species including: western meadow lark, great blue heron, American Kestrel, and Golden-crowned Sparrow.


33rd Fields

The Port has employed different treatments to 33rd Field intended to reduce the site's attractiveness for migrating geese, which pose a high risk to aircraft safety. Currently, sediment fencing is installed at regular intervals to break up the landscape and deter geese from circling or landing in the field. The treatment has been successful at reducing geese use.

SW Quad

Between Elrod Slough and the south runway is an area known as the Southwest Quadrant (SW Quad). The SW Quad is a roughly 150-acre open field that is sparsely vegetated with grasses and weedy vegetation located over the filled area. Historically the area contained wetlands that attracted many high risk species. In 1995 and 2004, the Port filled the wetlands, mitigated for the impacts on Government Island and at Vanport Wetlands, and brought in additional fill to help drain the fields. In addition, an extensive drain field of perforated pipe was installed to help drain the fields, prevent surface ponding and the re-establishment of wetlands on the site. Currently, due to its high risk location immediately adjacent to the approach path for Runway 10R, the field is mowed and disced annually, or as necessary, to prevent dense grass and herbaceous cover from becoming established. This maintenance regime is intended as a deterrent to flocks of Canada geese, a high risk species for bird strikes at the airport. The sparse grassy vegetation, sandy fill and management activities create upland habitat that supports a suite of species, including *at risk* species. Streaked horned lark utilize the site for breeding and wintering. In 2008 courtship activities of two males and a female streaked horned lark were observed in SW Quad (Port of Portland AIRMAN data, 2008). In 2009, three breeding territories of streaked horned larks were documented in the SW Quad and at least one pair successfully raised young (Oregon State University, 2009). SW Quad meets the Special Habitat Area criterion (S) area vital to an *at risk* species.


SW Quad


Streaked Horned Lark

Other *at risk* species that utilize SW Quad include: peregrine falcon and Western meadow lark. Migratory species such as American pipit, Western kingbird, and lapland longspur also use the site.

Deicing Field and Fuel Farm
These two fields, totaling 65 acres, are located outside the Runway Protection Zone at the west end of the South Runway. Herbaceous vegetation on these undeveloped properties is mowed once or twice a year. Invasive weeds such as thistle, teasel and Himalayan blackberry are common. Targeted weed species are sprayed as needed.


Western King Bird
Courtesy of Don Baccus

These areas provide habitat for generalist species such as moles, voles, and other small mammals. Predators such as coyotes and raptors use them extensively for hunting grounds. A population of Western meadowlarks, a City of Portland *at risk* species, occurs year round in the area (Appendix D: Special Status Species in Portland). Other *at risk* species that use these locations include: Peregrine falcon, purple martin and Swainson's hawk. Special status species that are not *at risk,* include Northern harrier, short-eared owl, and common yellowthroat. Non-special status birds that use the upland grassland habitat include savannah sparrow, lazuli bunting, barn swallow, cliff swallow, Western kingbird, and red-winged blackbird.

Airfield
The airfield Includes land located entirely within the airport perimeter fence and Runway Protection Zones. The airfield includes large grassy areas at the ends and outer edges of the three runways. The airfield is vegetated with non-native grasses and regularly managed to meet Federal Aviation Administration (FAA) requirements for wildlife management and vertical restrictions. The undeveloped areas inside the airport perimeter fence and Runway Protection Zone are seeded with a grass mix that is dominated by non-native fescue. Invasive weeds such as thistle, teasel and Himalayan blackberry are common. Targeted weed species are sprayed as needed. The airfield is mowed regularly to maintain the grass height between 6-10 inches as per FAA regulations.


Airfield (Cross Wind Runway looking north)

Numerous insect-eating bird species, mice, moles, and voles use these areas for foraging, and raptors use them for hunting grounds. High risk species found in the airfield include six species of gulls, Canada geese, red-tailed hawk, osprey, barn owl, great-horned owl, mallard, great blue heron, European starling and American crow. Some City of Portland special status species that do not pose a high risk to aviation safety and occur on the airfield include short-eared owl, northern harrier, American kestrel and Vaux's swift. Some *at risk* species that do not pose a high risk to aviation safety and occur on the airfield include streaked horned lark, Western meadowlark, peregrine falcon, merlin, and purple martin. A wintering flock of approximately 25 horned larks has been documented in this area; the flock included streaked horned larks, an Endangered Species Act candidate species. There is one documented sighting of recently fledged dependent juvenile streaked horned lark on the north side of the airfield in June 2008. Western meadowlarks, another City of Portland at risk species, are present throughout the year. Winter and migrant flocks are regularly observed and range from 3 to 40 birds. They are also present in the breeding season and successful breeding by meadowlarks was confirmed on the west end of the airfield in June and July 2007 (Port of Portland, AIRMAN data).

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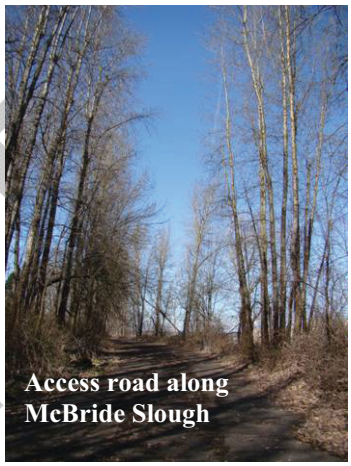
Coyotes forage in the grasslands and also pose a risk to aircraft. Rodent populations are robust in the grassy areas. The predominant species is gray-tailed vole; other species include vagrant shrew, deer mouse, and Townsend's vole. Because these small mammals provide a prey base for coyotes and many of the high risk avian species listed above, they present an indirect risk to aircraft safety.

McBride Slough

Within the site is a roughly 250 linear foot segment of McBride Slough, a secondary drainageway. The portion of McBride Slough within this inventory site is inside the perimeter fence of the airport airfield. McBride Slough is remnant of historical drainageways that likely reformed each year following seasonal flooding from the Columbia River. The multiple remaining arms of the drainageway still provide stormwater conveyance to the Columbia Slough. The Multnomah County Drainage District (MCDD) actively maintains McBride Slough for flow storage and conveyance by mowing the bank, removing woody debris from the water and periodic dredging. The channels of McBride Slough are deeply incised, with steep banks.



Access road along McBride Slough

The riparian area around much of McBride Slough is dominated by grasses and Himalayan blackberry with some areas of willow and red-osier dogwood. The routine bank mowing reduces structural diversity of vegetation and wildlife habitat. Between mowing events the riparian vegetation provides habitat for Tree Swallow, Common Yellowthroat, Golden-crowned Sparrow and other migratory songbirds.

Other Secondary Drainageways

There are two water features located at the Oregon Air National Guard base. The western water feature is called Keyhole Drainage and the eastern is informally known as the ORANG Stormwater Conveyance Ditch. These drainageways perform the some of the functions of historic channels that reformed each year with seasonal Columbia River flooding.

The historic secondary drainageways have been modified over time for agricultural purposes and development. During development of airfield infrastructure the Keyhole Drainage and ORANGE Conveyance Ditch, were reconfigured to their current alignment. Both drainageways are hydrologically connected and part of a bioremediation treatment system that is operated in accordance with National Pollution Discharge Elimination System permits. The drainageways flow into water quality treatment ponds before being piped to the Columbia Slough.

Riparian vegetation associated with these drainageways primarily consists of Himalayan blackberry, grasses and some sedges and rushes. The width of the vegetated riparian area ranges from roughly 10 to 40 feet. Waterfowl and coyotes currently use the drainageways and riparian vegetation. Both waterfowl and coyotes pose a risk to aviation safety. Yellow-headed blackbirds and red-winged blackbirds also use the riparian habitats.

The Army Corps of Engineers and Department of State Lands have determined that the drainageways do not meet the criteria as jurisdictional wetlands because the drainageways are part of a stormwater system.

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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 secondary drainageways and vegetated riparian areas 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 secondary drainageways, including McBride Slough, and wetlands. 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 around open water such as Keyhole Drainage and ORANG Stormwater Conveyance Ditch. Other areas are assigned a high, medium or low relative rank depending on the proximity and extent of vegetation relative to the water body (CS2 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 forested areas and wetlands that provide wildlife habitat and connectivity between habitat patches. The forested areas provides nesting, breeding and foraging habitats for a diverse range of bird and mammal species, as well as amphibians, reptiles, and invertebrate species.

Special Habitat Areas (SHA) descriptions

There is one Special Habitat Area (SHA), with two subareas in the inventory site. CS24.A and B: Upland Grassland meets four SHA criteria: area critical to sensitive species (S); upland meadow important to grassland-associated species (G); migratory stopover habitat (M); and wildlife connectivity corridor (C). The SHA ranking supersedes lower rankings generated by the GIS model. Therefore, all SHAs within the site rank high for wildlife habitat (CS2 Map 5).

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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 (CS2 Map 6).

Table 17: Summary of Ranked Resources in CS2: Portland International Airport

Total Inventory Site = 2,322 acres

	High	Medium	Low	Total
Riparian Resources*				
acres	7	53	107	166
percent total inventory site area	<1	2	5	7
Wildlife Habitat				
Wildlife Habitat*				
acres	0	3	0	3
percent total inventory site area	0	<1	0	<1
Special Habitat Areas*				
acres	803			
percent total inventory site area	35			
Wildlife Habitat - adjusted by Special Habitat Areas **				
acres	803	<1	0	803
percent total inventory site area	35	<1	0	35
Combined Total***				
acres	804	25	33	862
percent total inventory site area	35	1	1	37

* High-ranked riparian resources, Special Habitat Areas, and wildlife habitat includes the Columbia 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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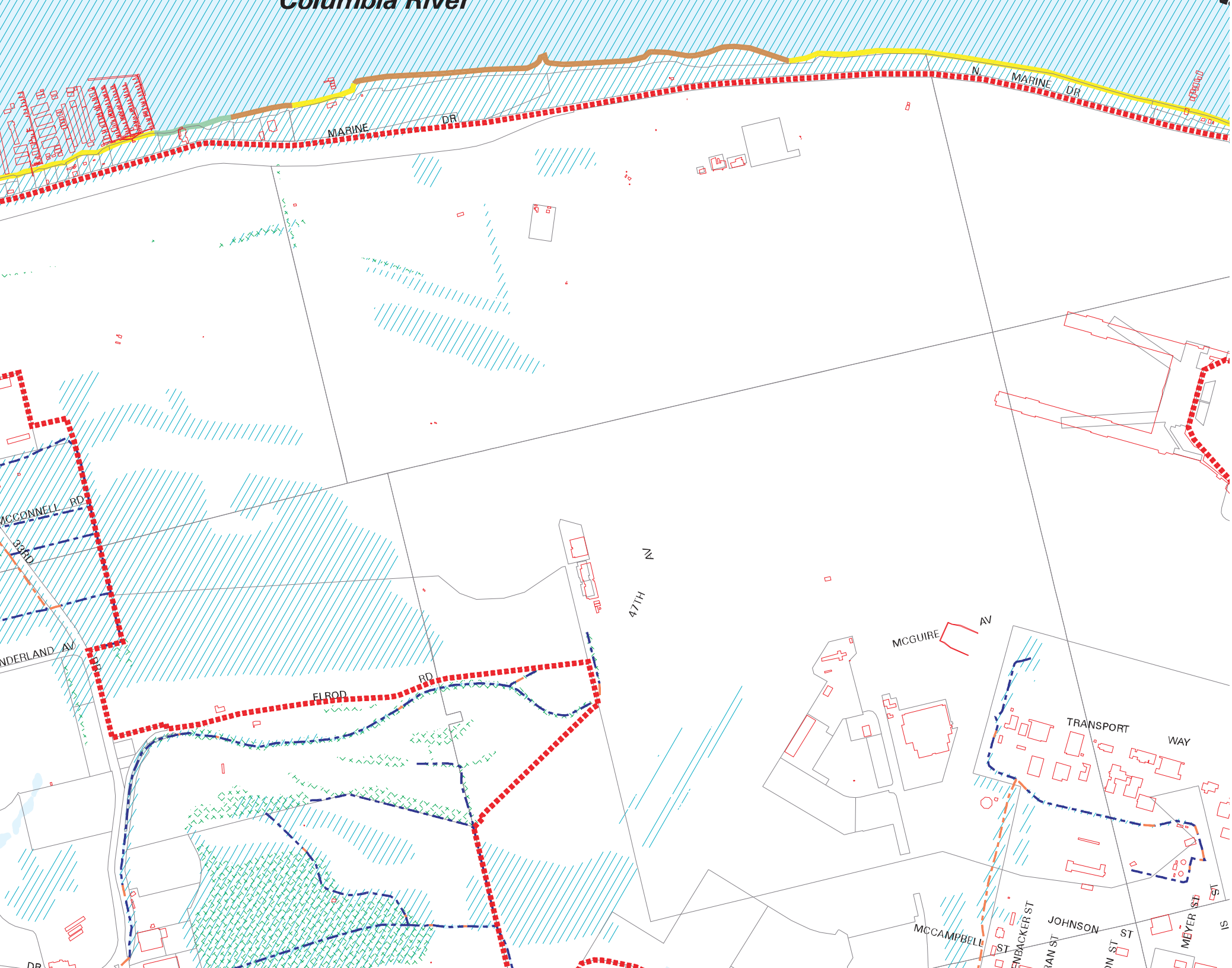
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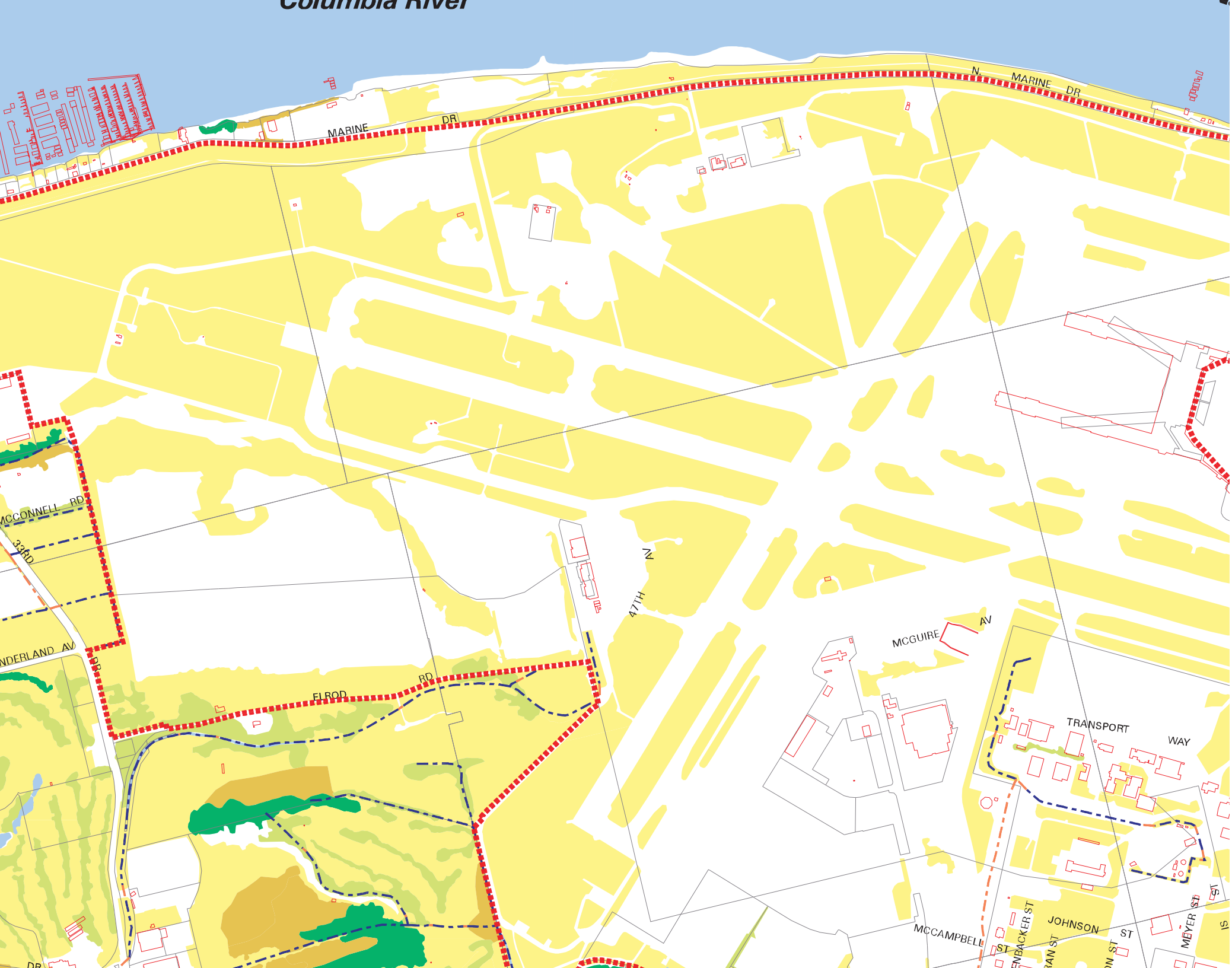
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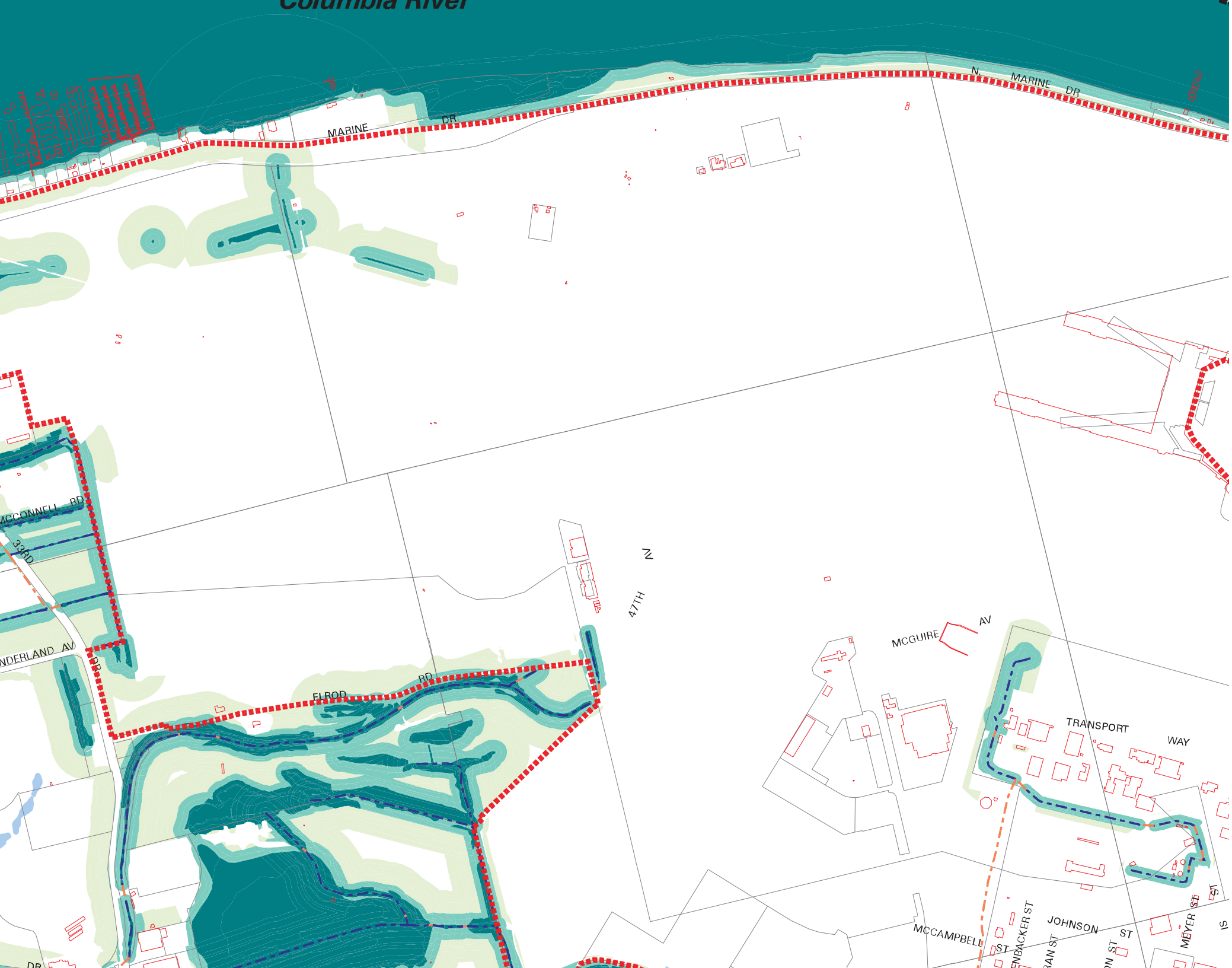
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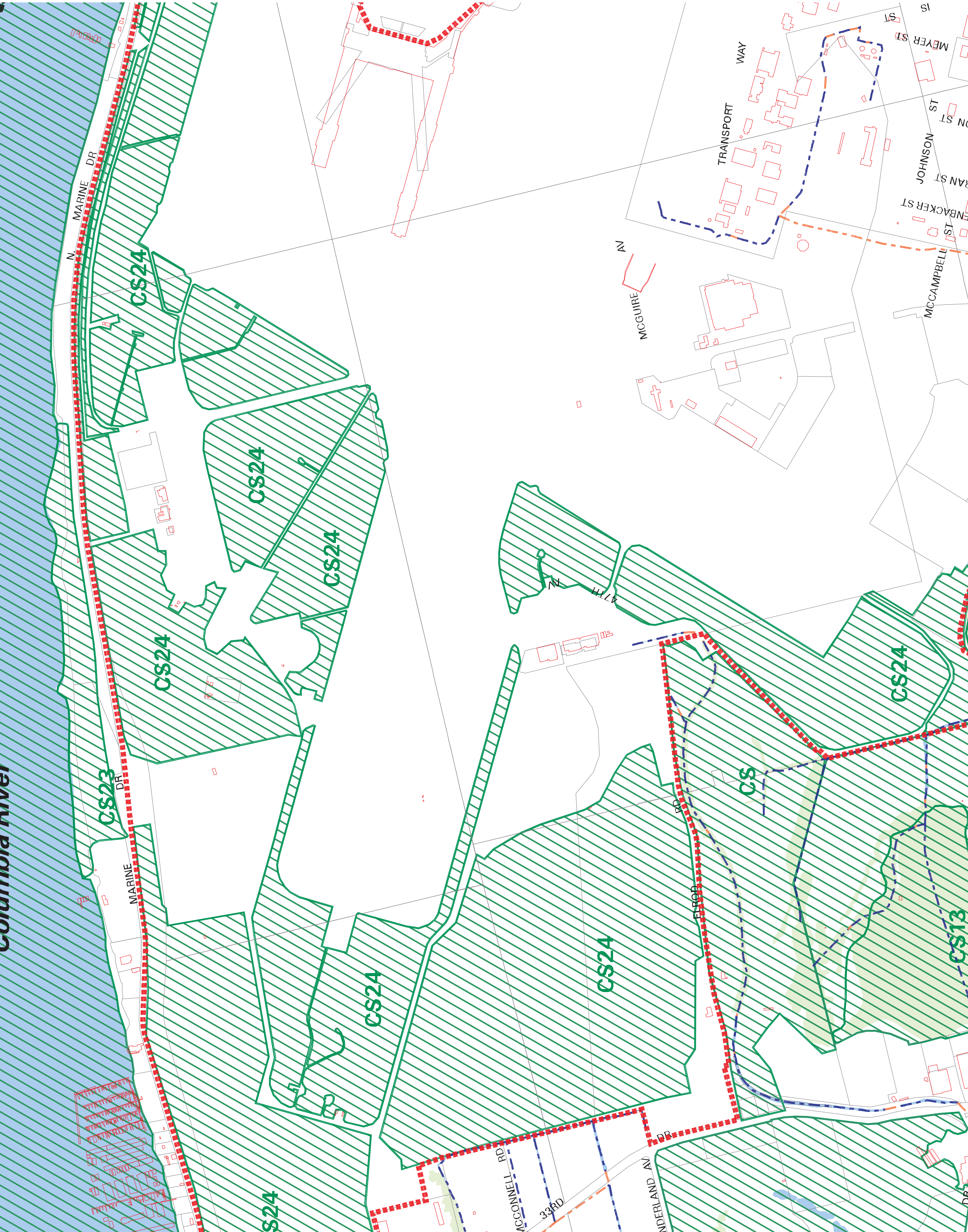
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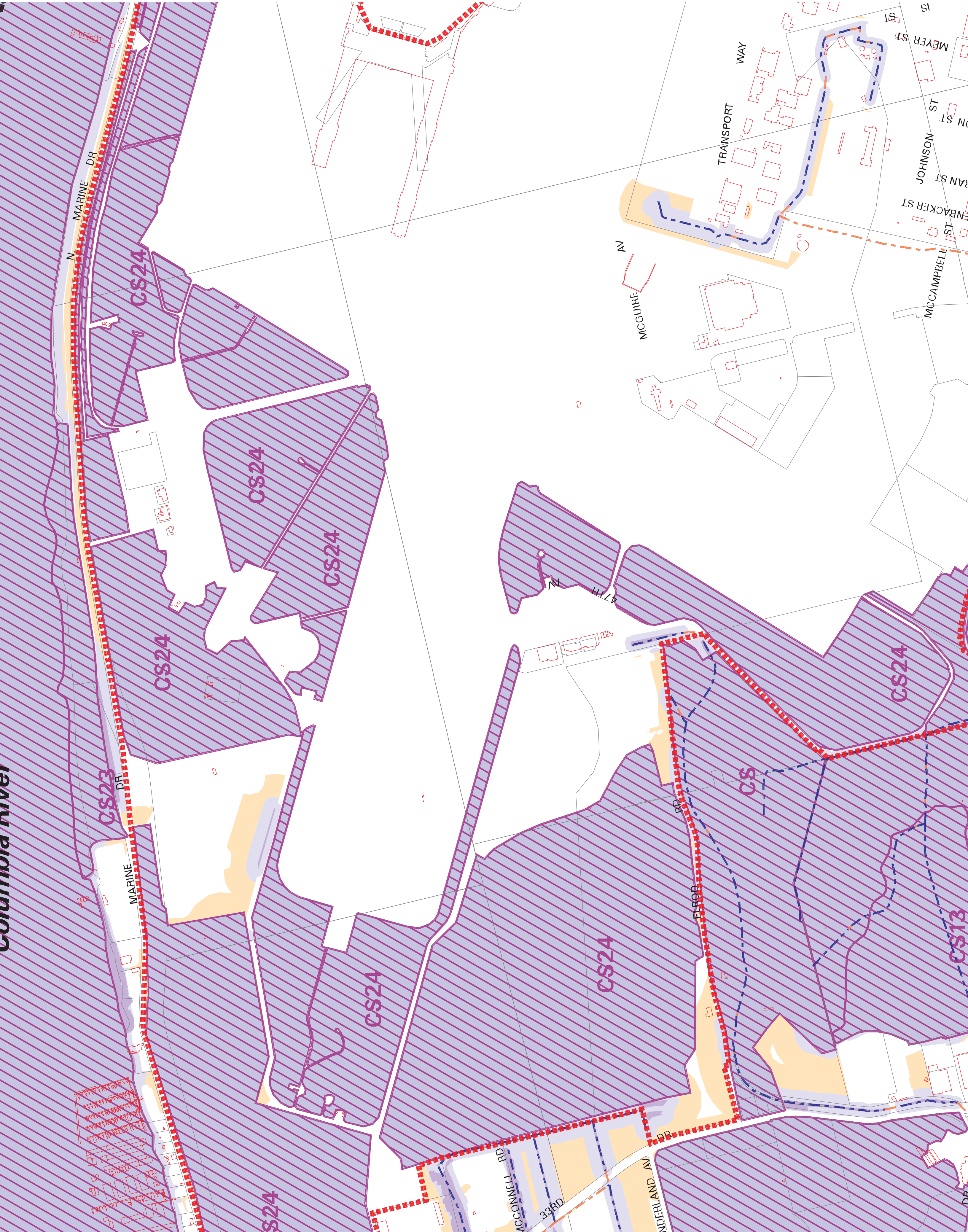
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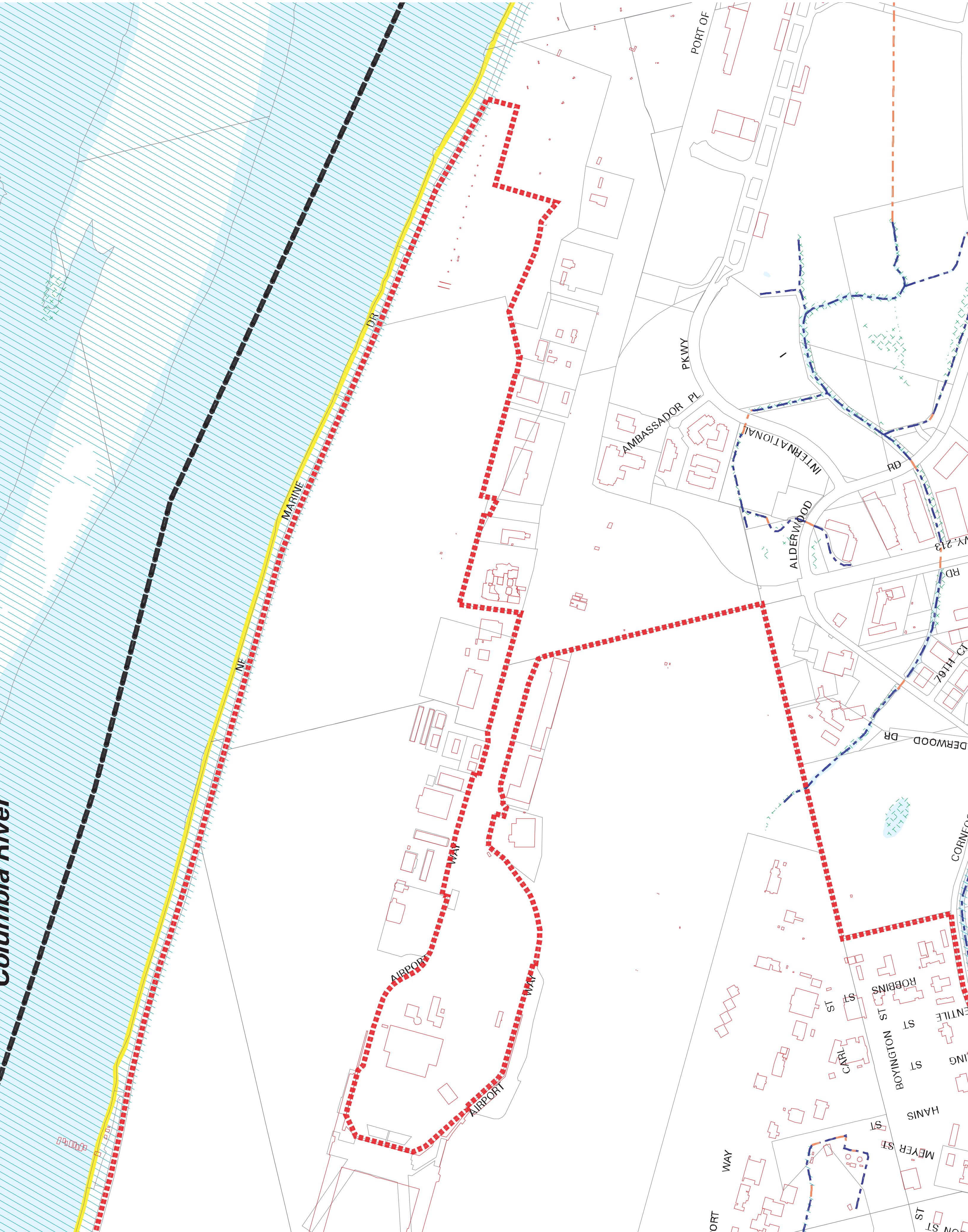
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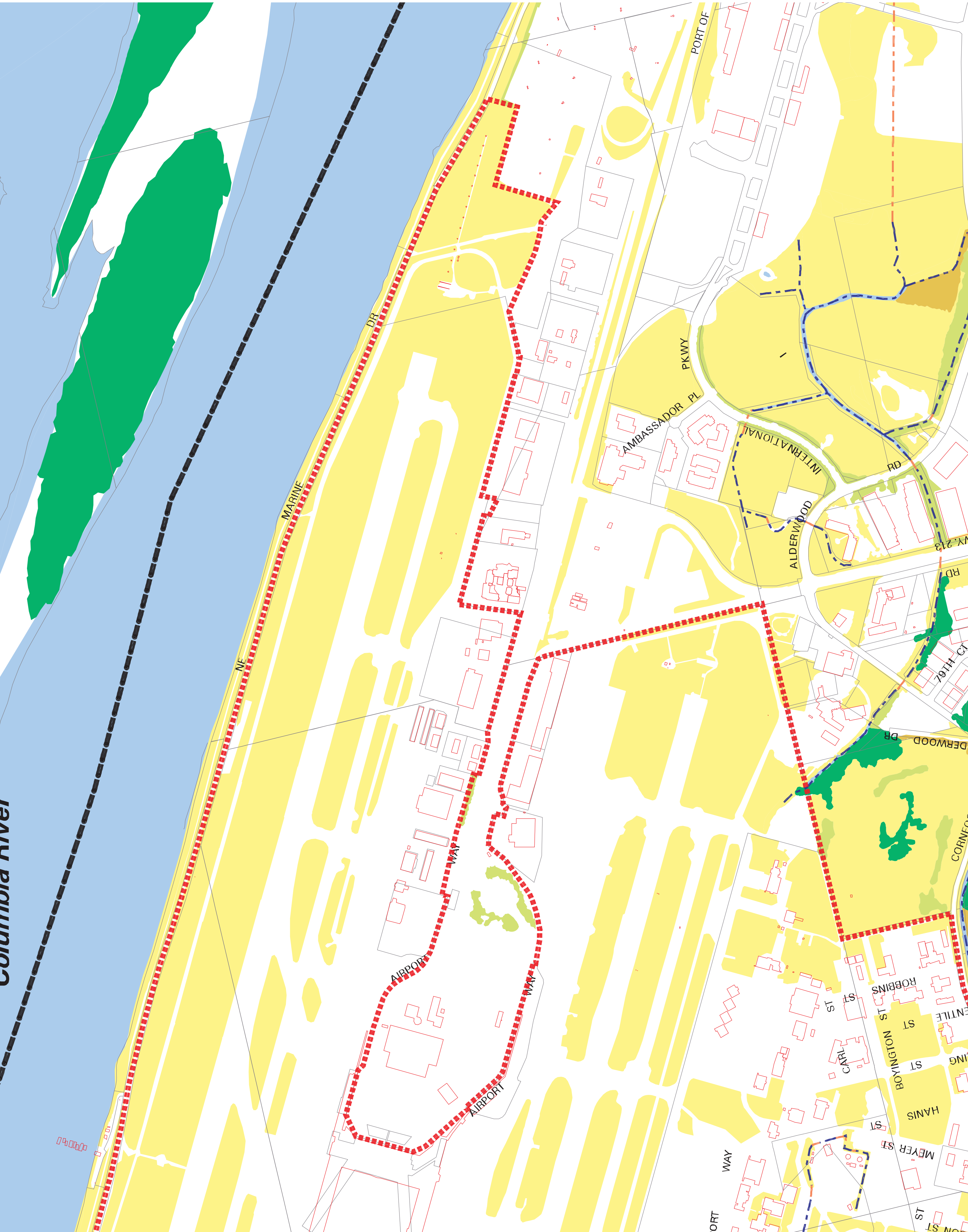

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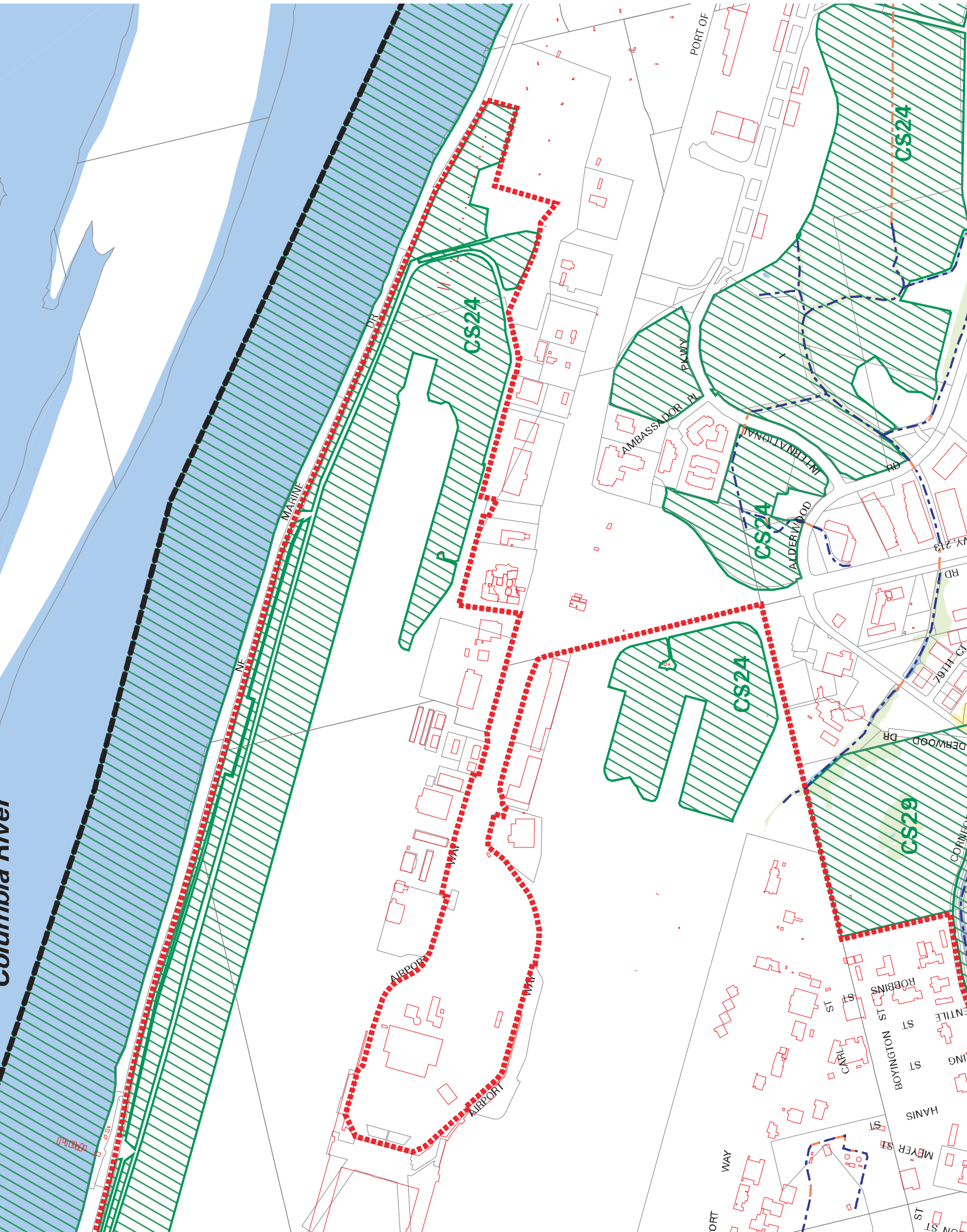
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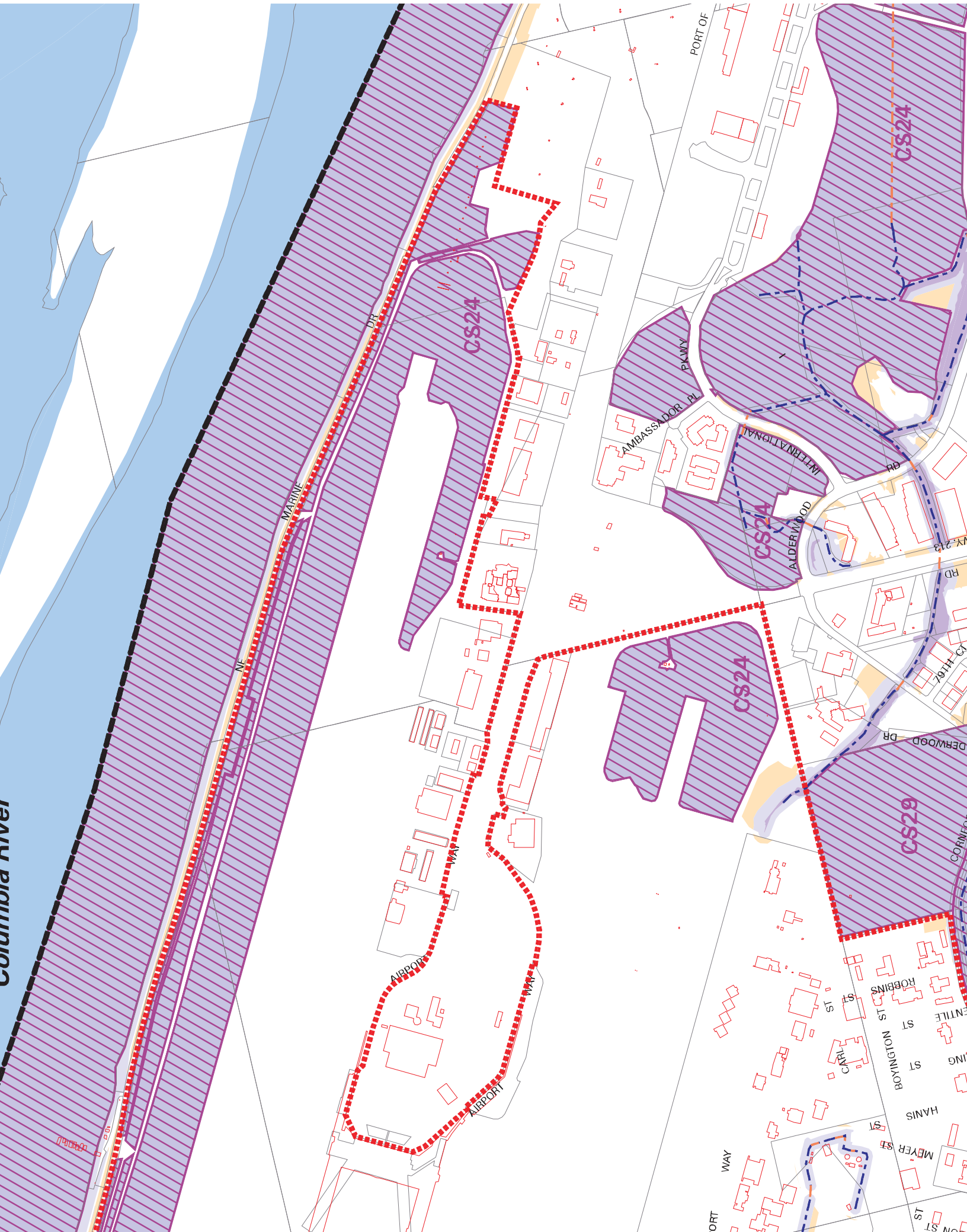
BOYINGTON ST
MEYER ST
HANIS ST
WAY

DRAFT


Columbia River
CS24
CS24
CS24
CS24
CS26
MARINE DR
NE
AIRPORT WAY
AIRPORT WAY
PORT OF
AMBASSADOR PL
PKWY
INTERNATIONAL
RD
ALDERWOOD
DR
ROBBINS
ST
BOYINGTON
ST
HANIS
ST
MEYER ST
WAY

DRAFT