Powerlines and pollinators

In Greater Forest Park, Portland

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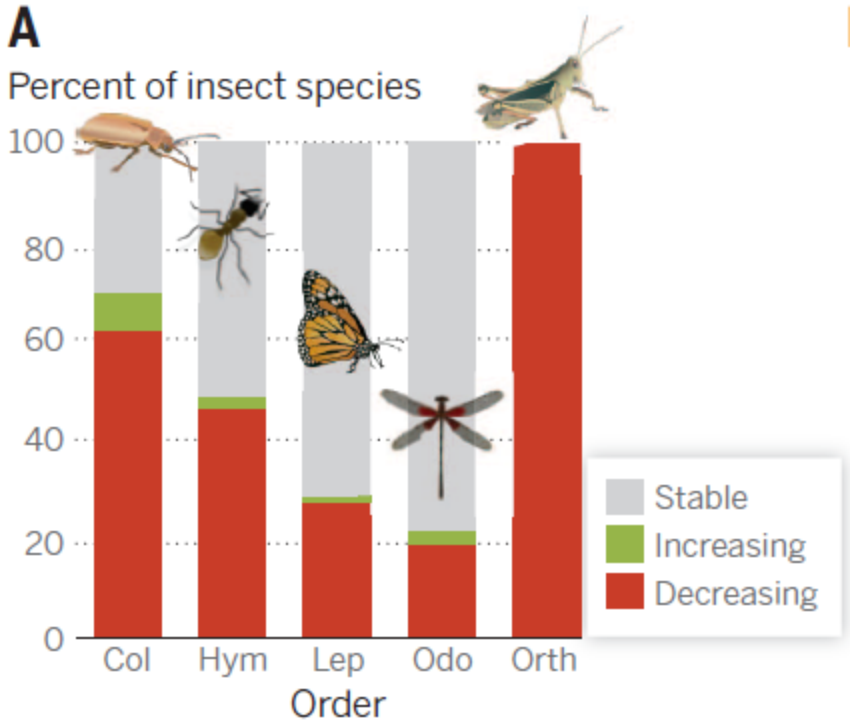
(she/her)

Metro Mission

Metro Parks and Nature protects water quality, fish and wildlife habitat, and creates opportunities to enjoy nature close to home through a connected system of parks, trails and natural areas.

Globally, Pollinators in Decline

- Dramatic insect declines
- Some orders more vulnerable
- Loss of ecosystem services of insects
  - Decomposition
  - Nutrient transfer
  - Food web function
  - Pollination



Of all insects with IUCN-documented population trends, ~40% are declining

Dirzo et al 2014 Science

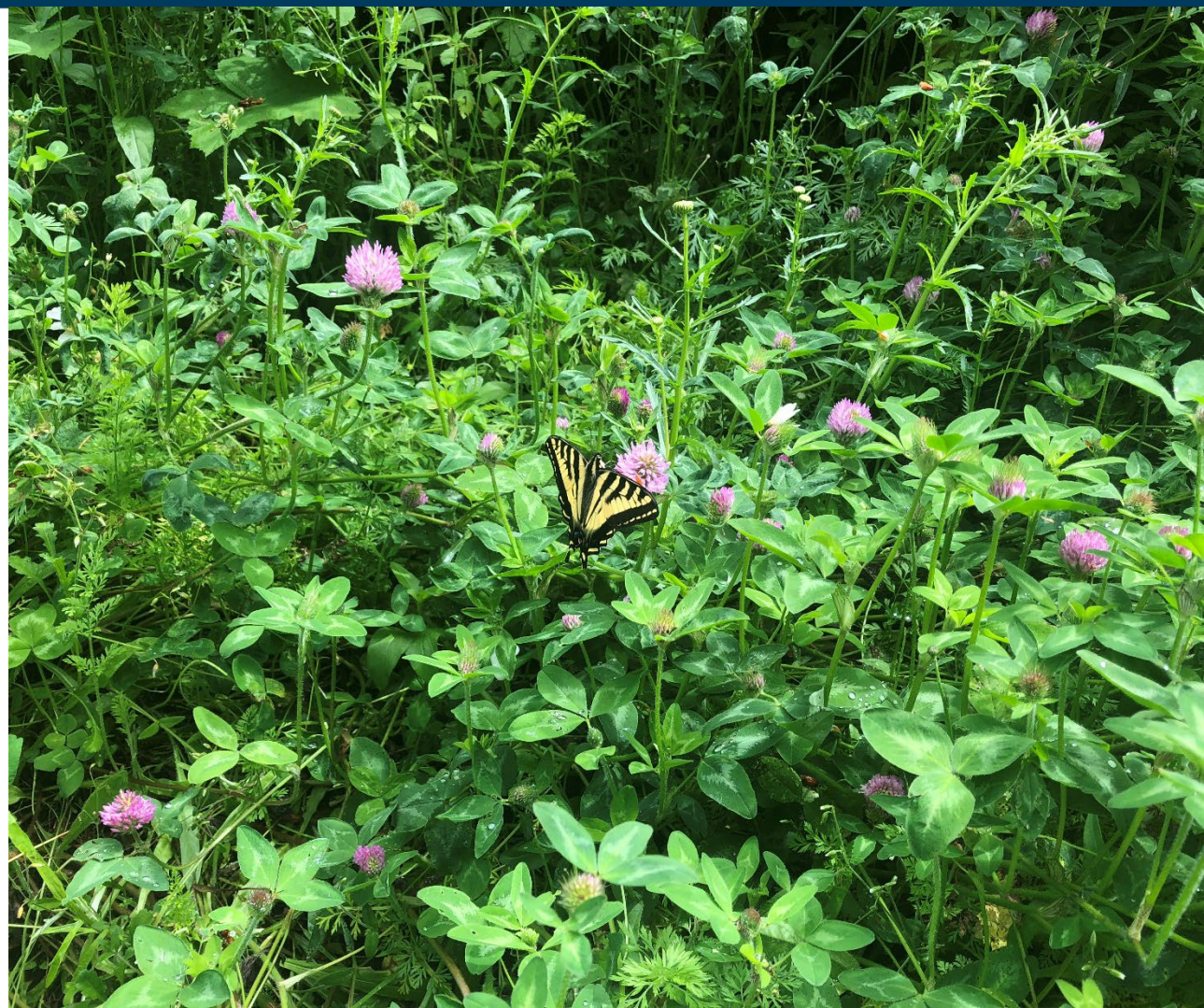
Reasons for insect decline

Global threats to insect diversity are many.

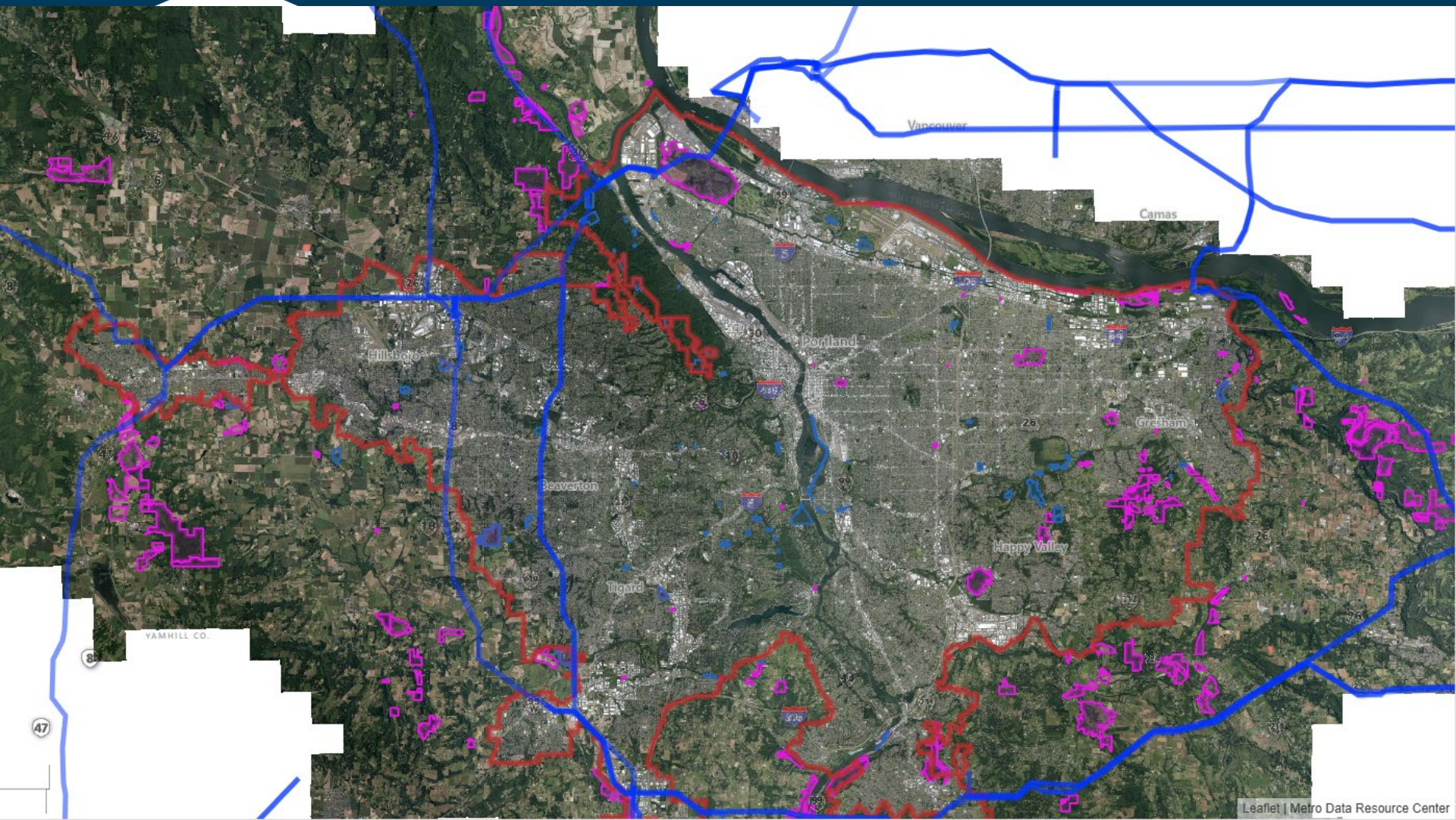
Death by a thousand cuts…

- Global climate change
- Land use change
- Introduced species
- Pollution and pesticides

Wagner et al. 2021 PNAS



Powerlines as habitat and connectors



Presentation contents

Four Powerline Projects

- Westside Powerline in Forest Park, City of Portland
- Burlington Creek Forest, Metro
- Willamette Narrows, Metro
- North Multnomah Channel Marsh Headwaters, Metro

Design Elements

Powerline management

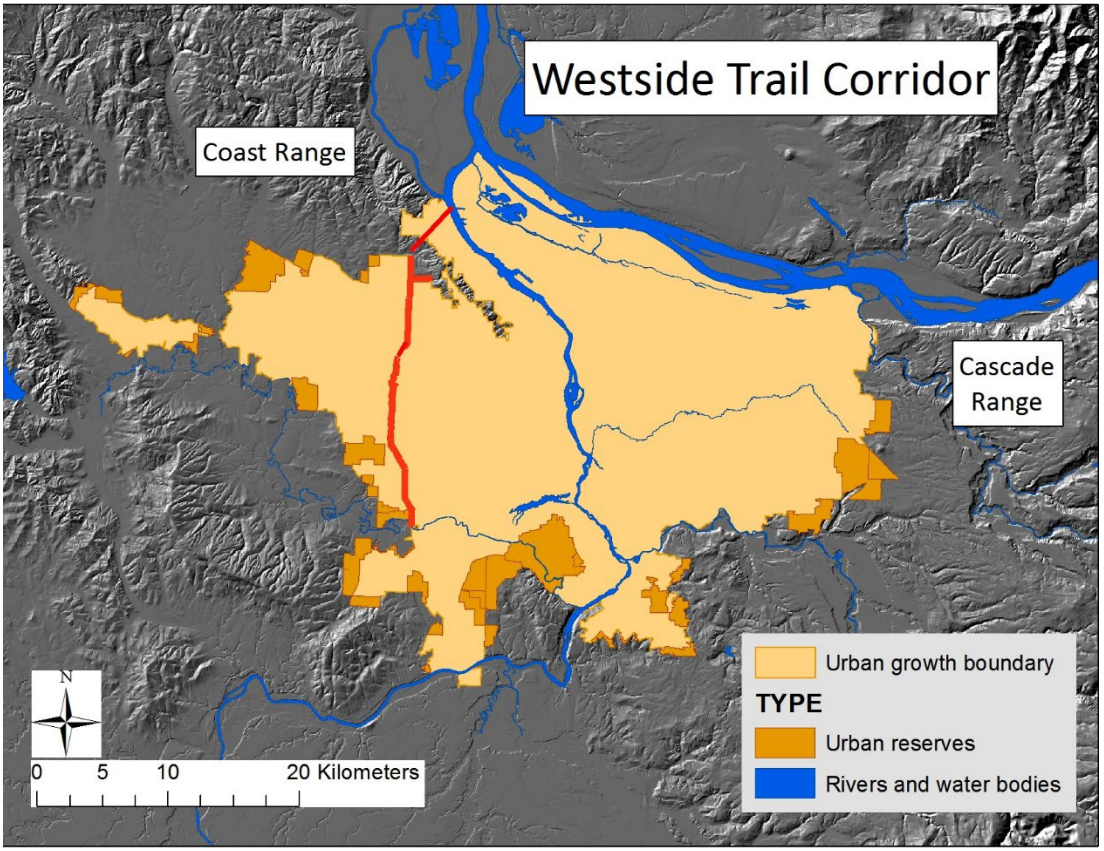
- Differences between PGE and BPA

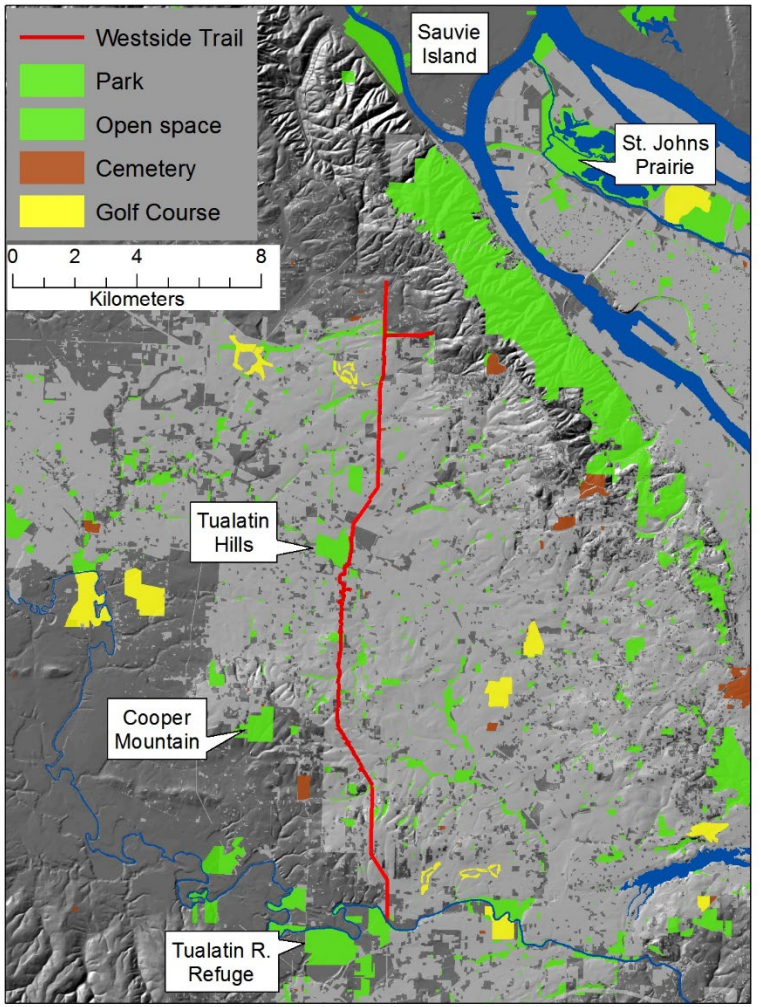
Lessons Learned

Next directions

Connection through the UGB: Westside Trail and Powerline

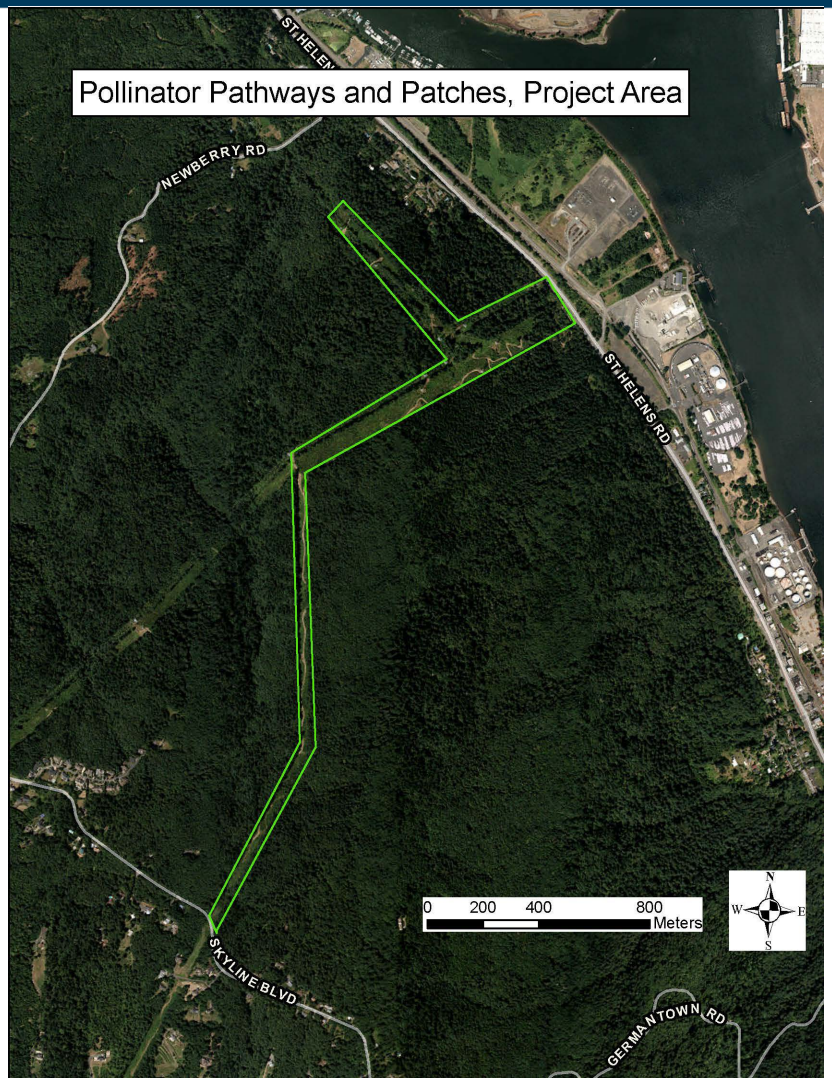
Project grew out of the Westside Trail Master Plan (2014) to integrate habitat into trail design and construction



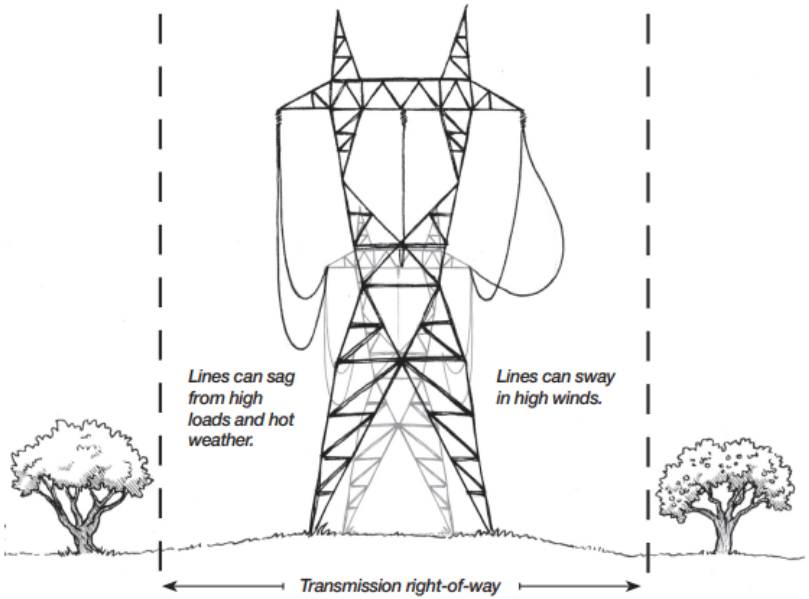


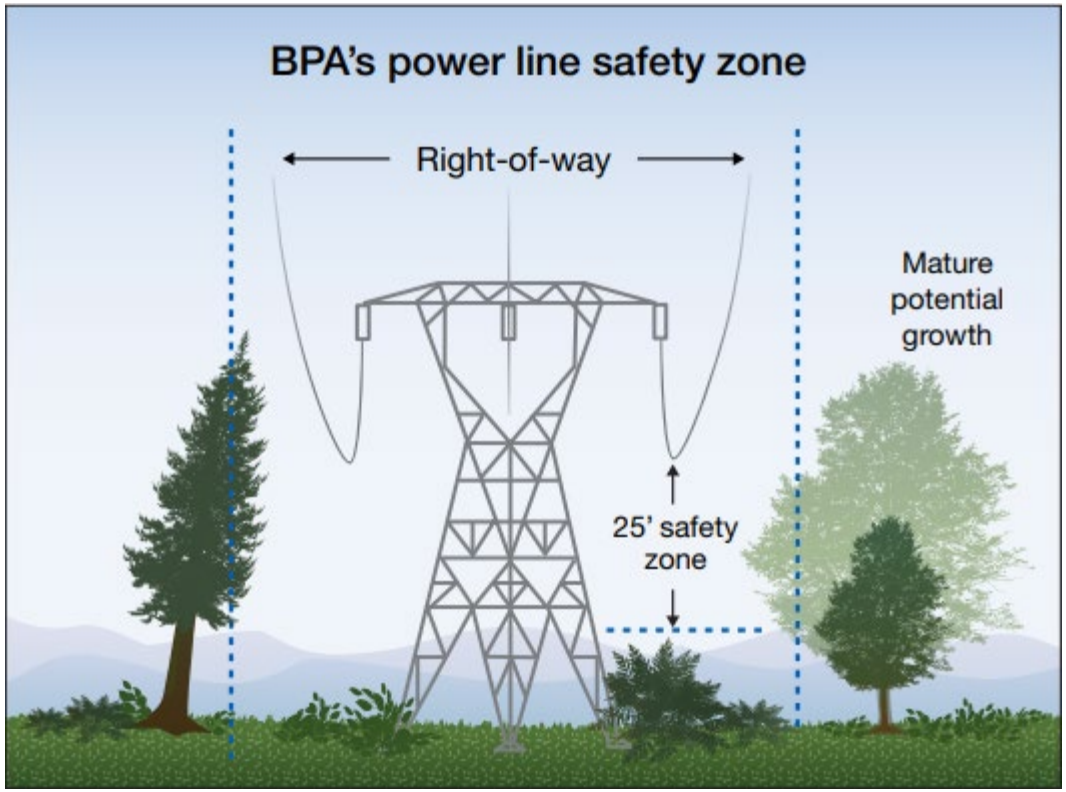
Westside Trail demonstration project

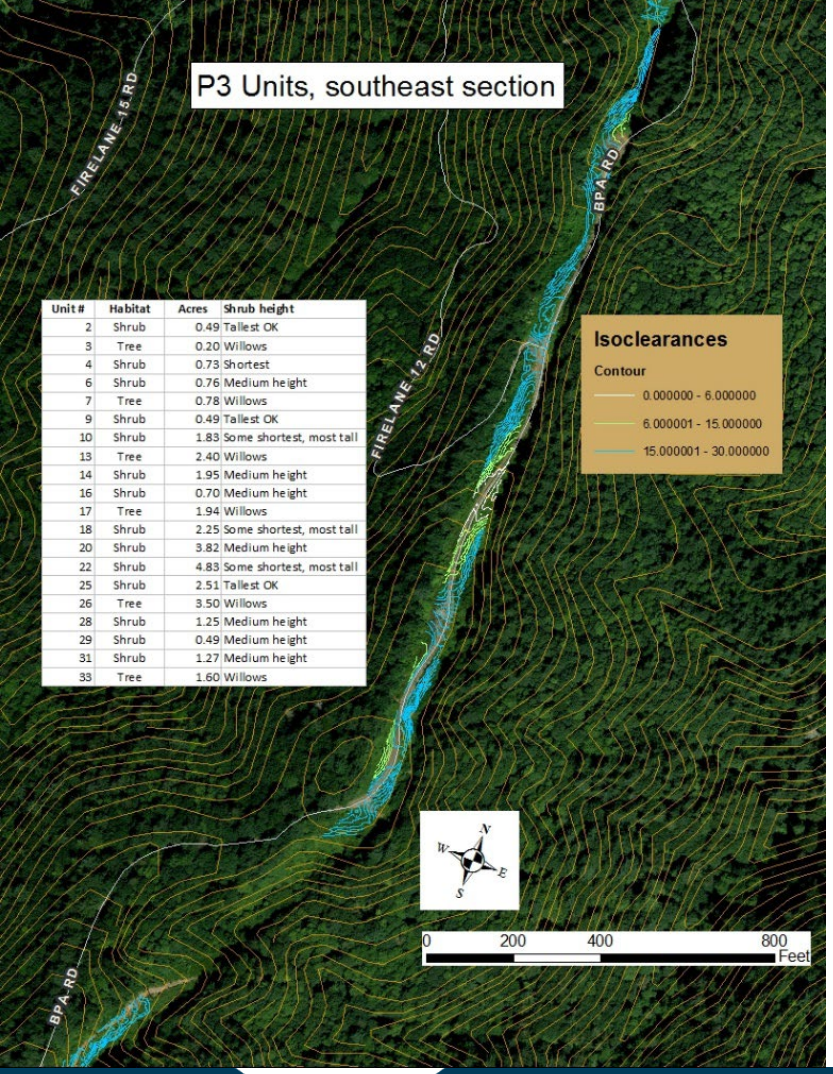
- Partnership between Metro, Portland Parks and Recreation, BPA and Xerces Society
- Total project area 67 acres
- Scotch broom (2017), blackberry (2017 and 2018) removed in BPA ROW



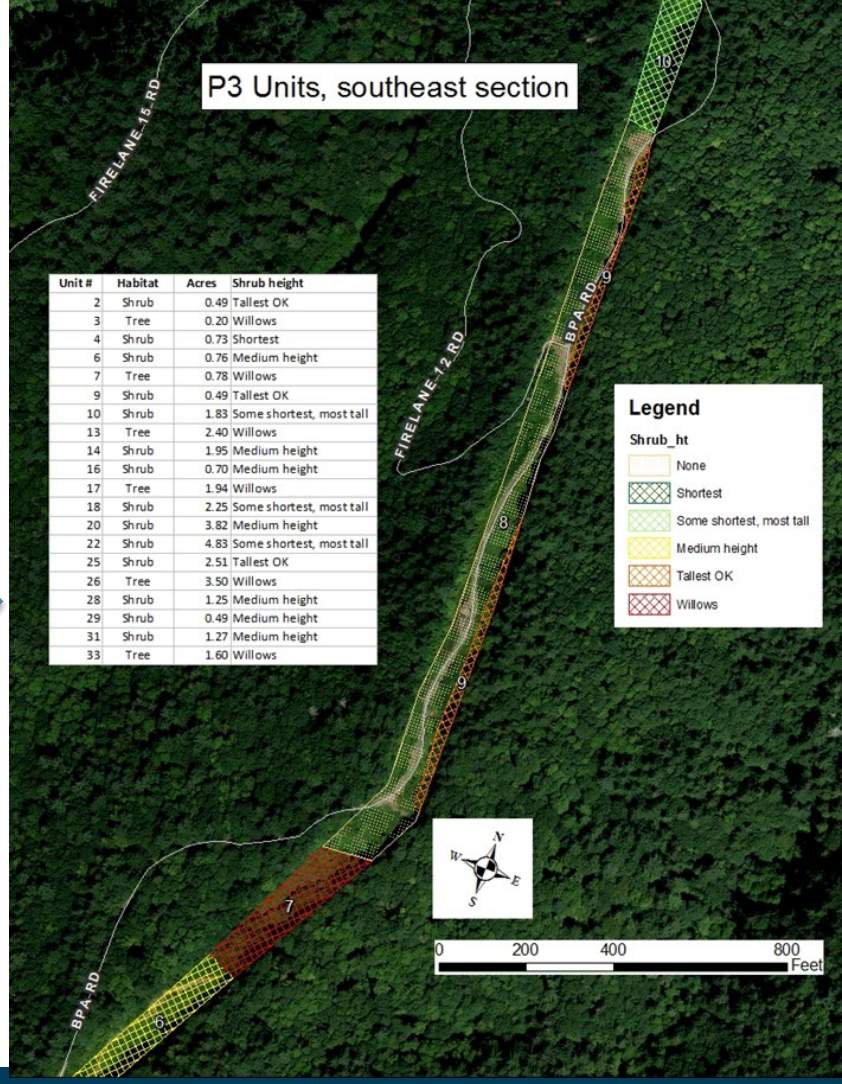
Vegetation clearance







Unit #	Habitat	Acres	Shrub height
2	Shrub	0.49	Tallest OK
3	Tree	0.20	Willows
4	Shrub	0.73	Shortest
6	Shrub	0.76	Medium height
7	Tree	0.78	Willows
9	Shrub	0.49	Tallest OK
10	Shrub	1.83	Some shortest, most tall
13	Tree	2.40	Willows
14	Shrub	1.95	Medium height
16	Shrub	0.70	Medium height
17	Tree	1.94	Willows
18	Shrub	2.25	Some shortest, most tall
20	Shrub	3.82	Medium height
22	Shrub	4.83	Some shortest, most tall
25	Shrub	2.51	Tallest OK
26	Tree	3.50	Willows
28	Shrub	1.25	Medium height
29	Shrub	0.49	Medium height
31	Shrub	1.27	Medium height
33	Tree	1.60	Willows



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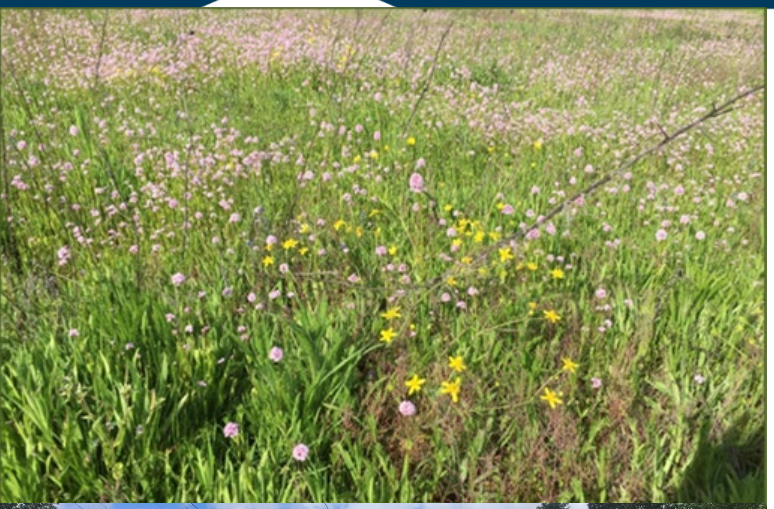
ISO clearance and vegetation heights

Westside trail demo - low wires



Low growing grasses and perennials

- Grassy areas around poles
- Pollen and nectar sources
- Larval host plants (butterflies)

Connectivity

- Grassy travel lanes
- Tough wildflowers, grasses, sedges

Westside trail demo - low wires

“Showcase” areas with prairie species

- Large enough for good anchor sites
- Public access – interpretive signage
- Variety of wildflowers including showy wildflowers-milkweed, balsamroot

Westside trail demo - high wires

Shrub and Forest Connectors

- Seed and mast producing shrubs
- Willow in canyons (early season flowers)

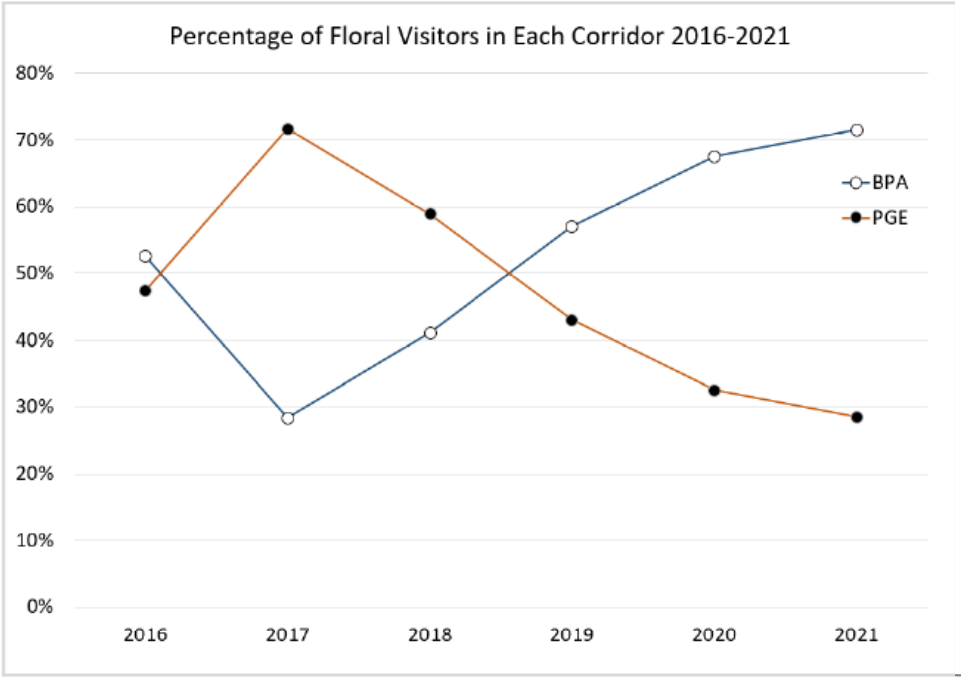
Westside trail demo

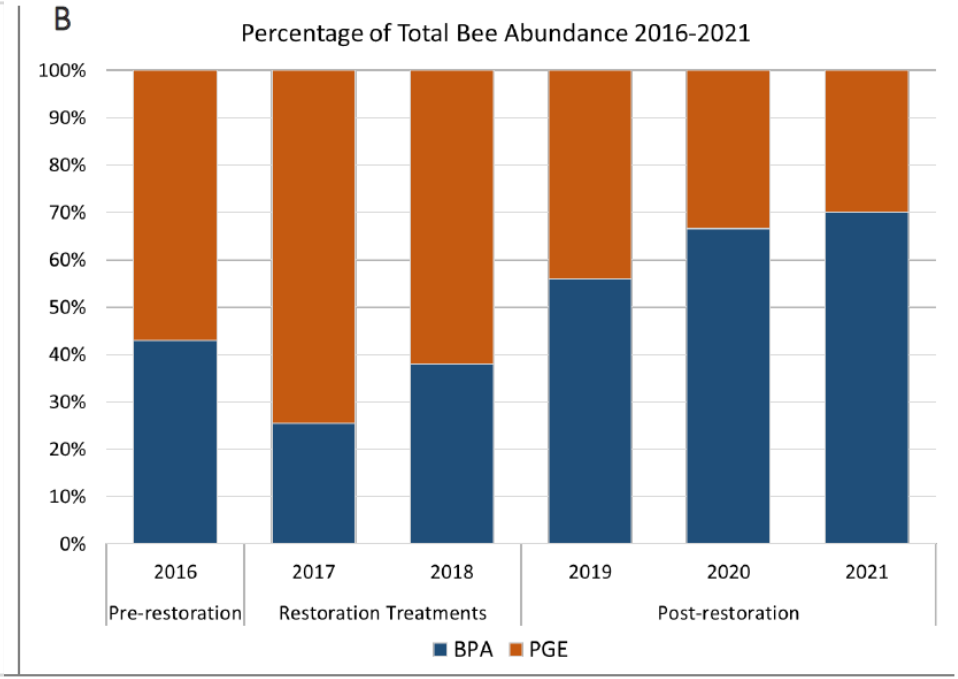
Full season bloom time

Forbs (wildflowers)			Bloom time					
Species	February	March	April	May	June	July	August	September
Cardamine nuttallii								
Dodecatheon hendersonii								
Lithophragma parviflorum								
Dicentra formosa								
Plectritis congesta								
Dodecatheon pulchellum								
Microsteris gracilis								
Allium acuminatum								
Asclepias speciosa								
Clarkia amoena								
Sidalcea campestris								
Synthyris reniformis								
Cynoglossum grande								
Viola adunca								
Iris tenax								
Collinsia grandiflora								
Camassia leichtlinii								
Camassia quamash								
Dichelostema congestum								
Hydrophyllum tenuipes								
Sisyrinchium idahoense								
Prunella vulgaris								
Brodiaea coronaria								
Ranunculus orthorhyncus								
Lomatium (various)								
Mimulus guttatus								
Ranunculus occidentalis								
Viola praemorsa								
Sedum spathulifollium								
Potentilla gracilis								
Geum macrophyllum								
Madia gracilis								
Eriophyllum lanatum								
Solidago elongata								
Solidago lepida								

Xerces Society Study

Goal: To examine the effects of pollinator restoration efforts on butterfly and bee abundance and richness

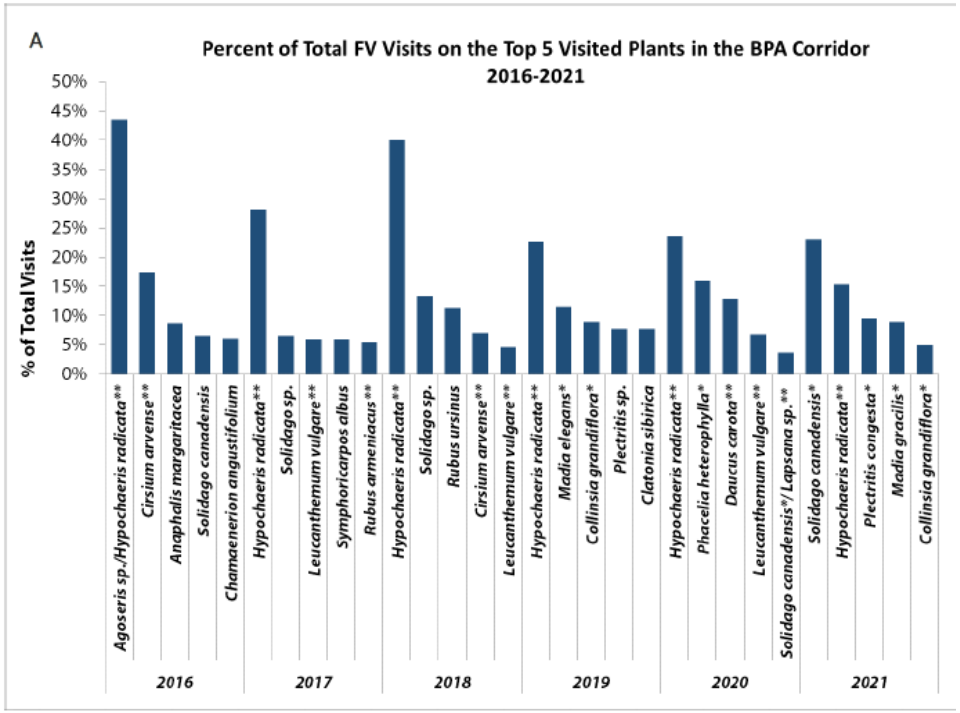


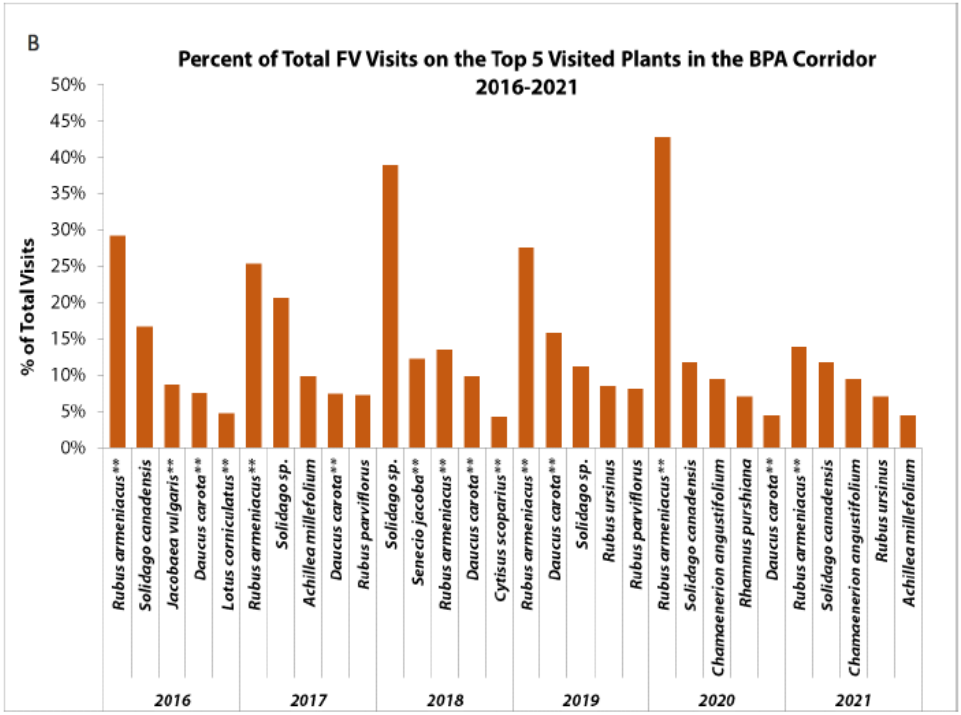


Comparison of FVA between corridors as a proportion of the total for each year

Percentage of total bee abundance on BPA and PGE transects

Xerces Society Study





BPA (A) and PGE (B) percent of total floral visitors on the top 5 visited floral resources per corridor from 2016-2021. *native plants seeded, **non-native plants

Xerces Society Study

Proportion of native plants being used by floral visitors increasing post-restoration in BPA corridor

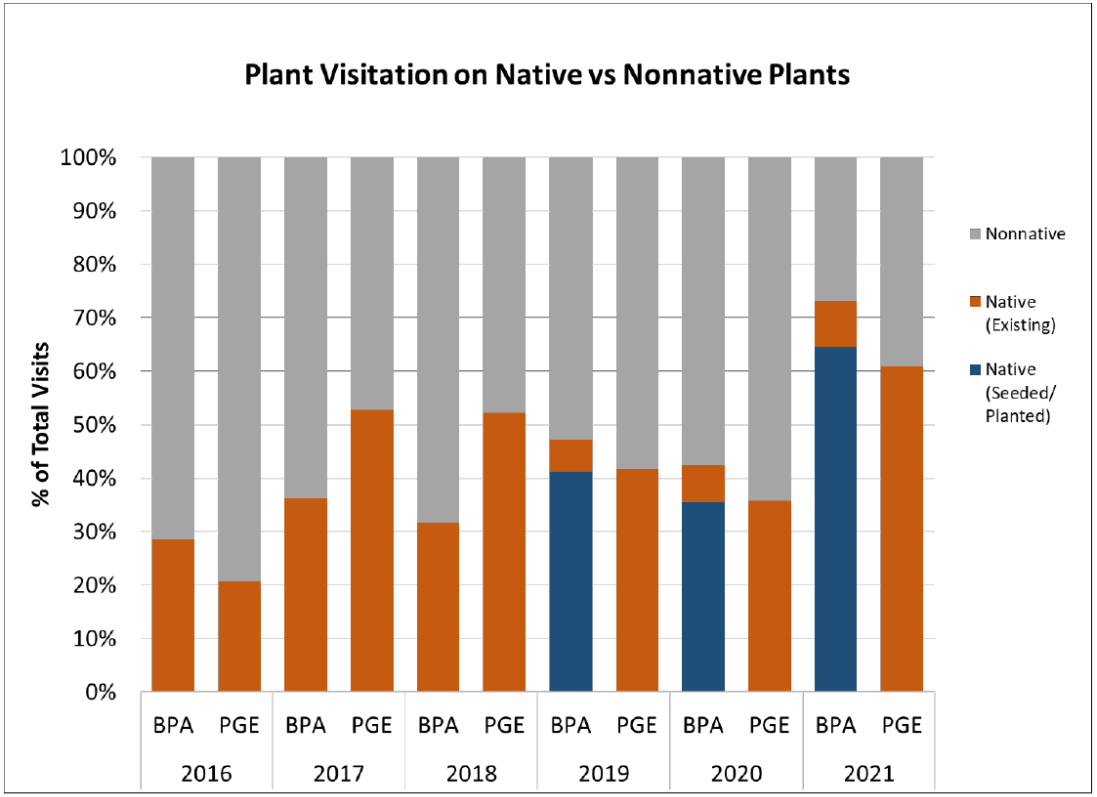


Figure 16: Percent of total FV visitors on native (seeded and other) versus nonnative plants in the BPA and PGE corridors. NOTE: Some of the native (seeded/planted) species were also present before restoration.

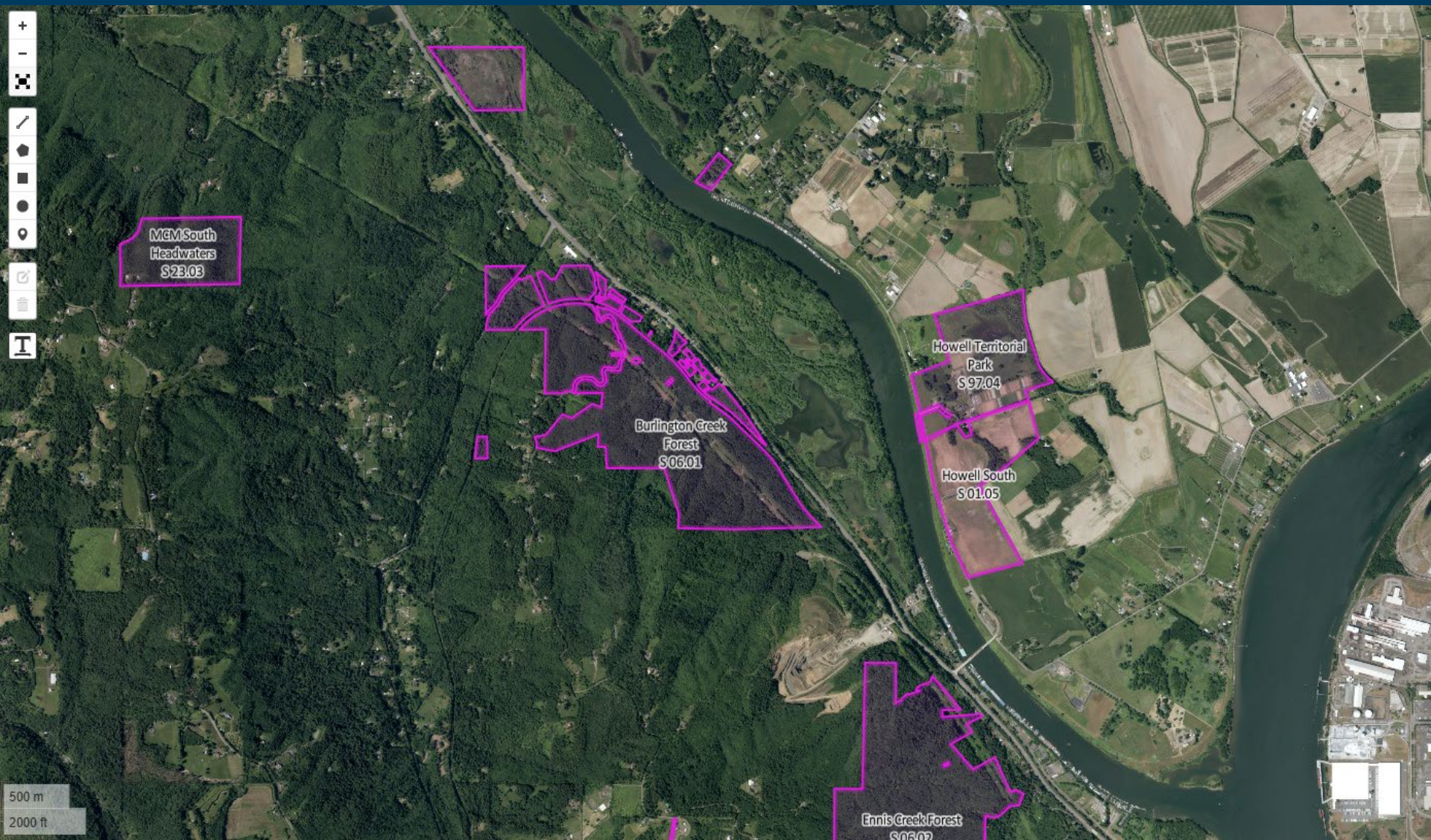
- Portland Parks and Rec conducting maintenance long-term on pilot
- BPA mows roads and under towers which can be the disturbance needed for prairie plants
- Less maintenance after restoration?
- Potential to reseed to augment floral resources

Maintenance

- BMPs for road improvement and access projects
- BMPs for spray work where native shrubs already occur
- Planting natives, particularly grasses and forbs as fire resistance tool

Coordination on BMPs for other powerlines

Burlington Creek Forest



- PGE and BPA powerlines run parallel
- Total of 18 acres, 1.4 (BPA) and 1.6 (PGE) miles of ROW in natural area
- Preconstruction vegetation survey to identify native plants and weed patches (Mosaic Ecology LLC)
  - 156 species observed in ROWs
  - Dominant natives--salal and Western sword fern
  - Dominant invasive weeds--Himalayan blackberry and reed canary grass

Project Elements and Timeline

- Early seral shrubs instead of prairie plants
- BPA conducting site prep on their ROW (Fall 2023, spring and Fall 2024)
- Stagger to treat blackberry, invasive grasses and ivy in PGE ROW (Spring 2024)
- Grasses and Forbs seeding in Fall 2024
- BPA road project to improve access roads in ROW (Fall 2025?)
- Planting winter 2026 or 2027

Project Elements and Timeline

Both utilities

- Three-year maintenance cycle, trees and tall shrubs
- Other department projects: tower replacement, road projects

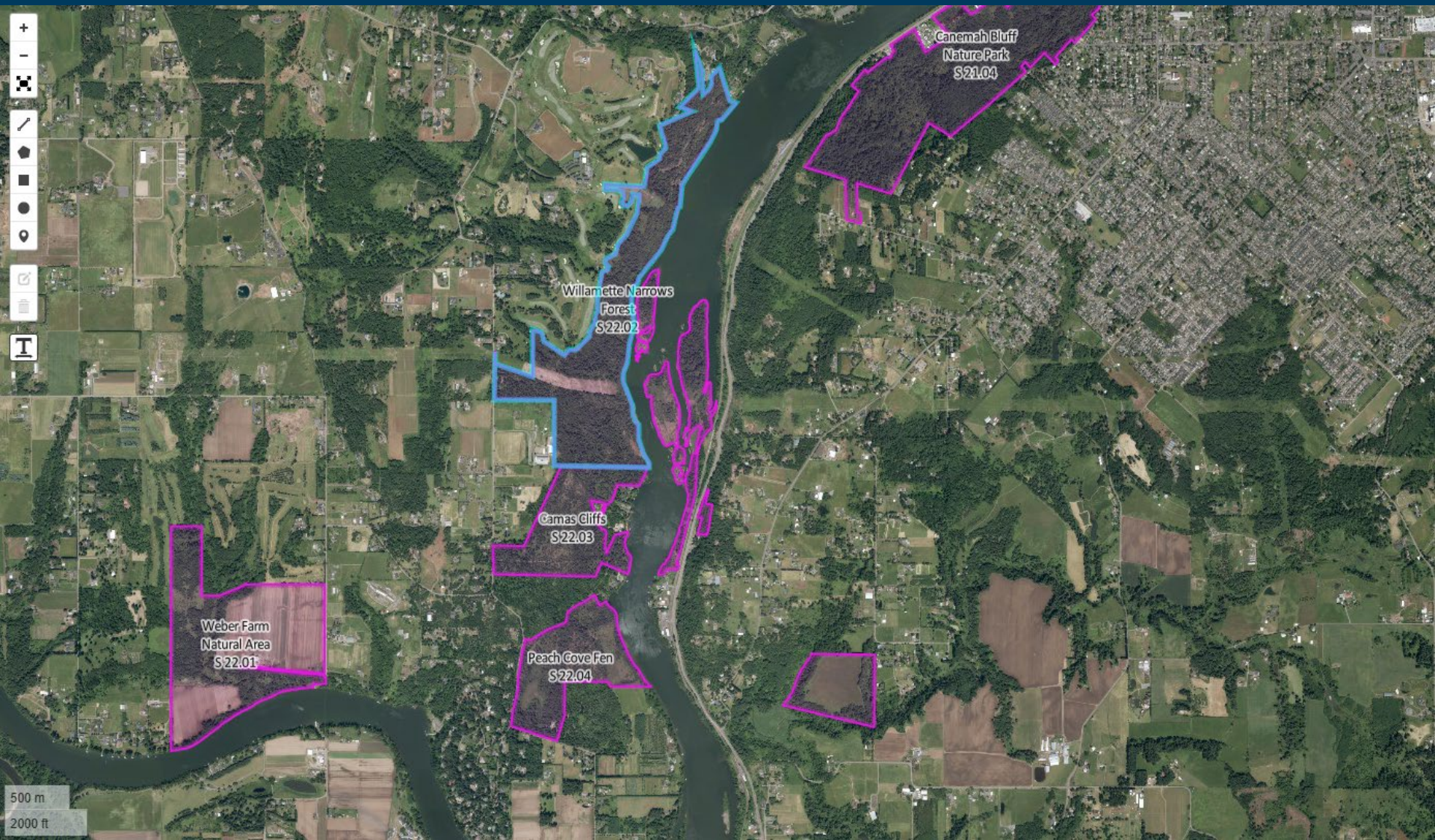
	BPA	PGE
Invasive weeds	Fewer weeds • 242 hrs/acre to site prep	Larger areas with weeds • 390 hrs/acre to site prep
Internal Support	Powerline work group, quarterly meetings	Line manager
Project Contributions	Site prep-248 hrs	Purchasing plants?
Access roads	Access and road maintenance	Less road maintenance

PGE vs BPA

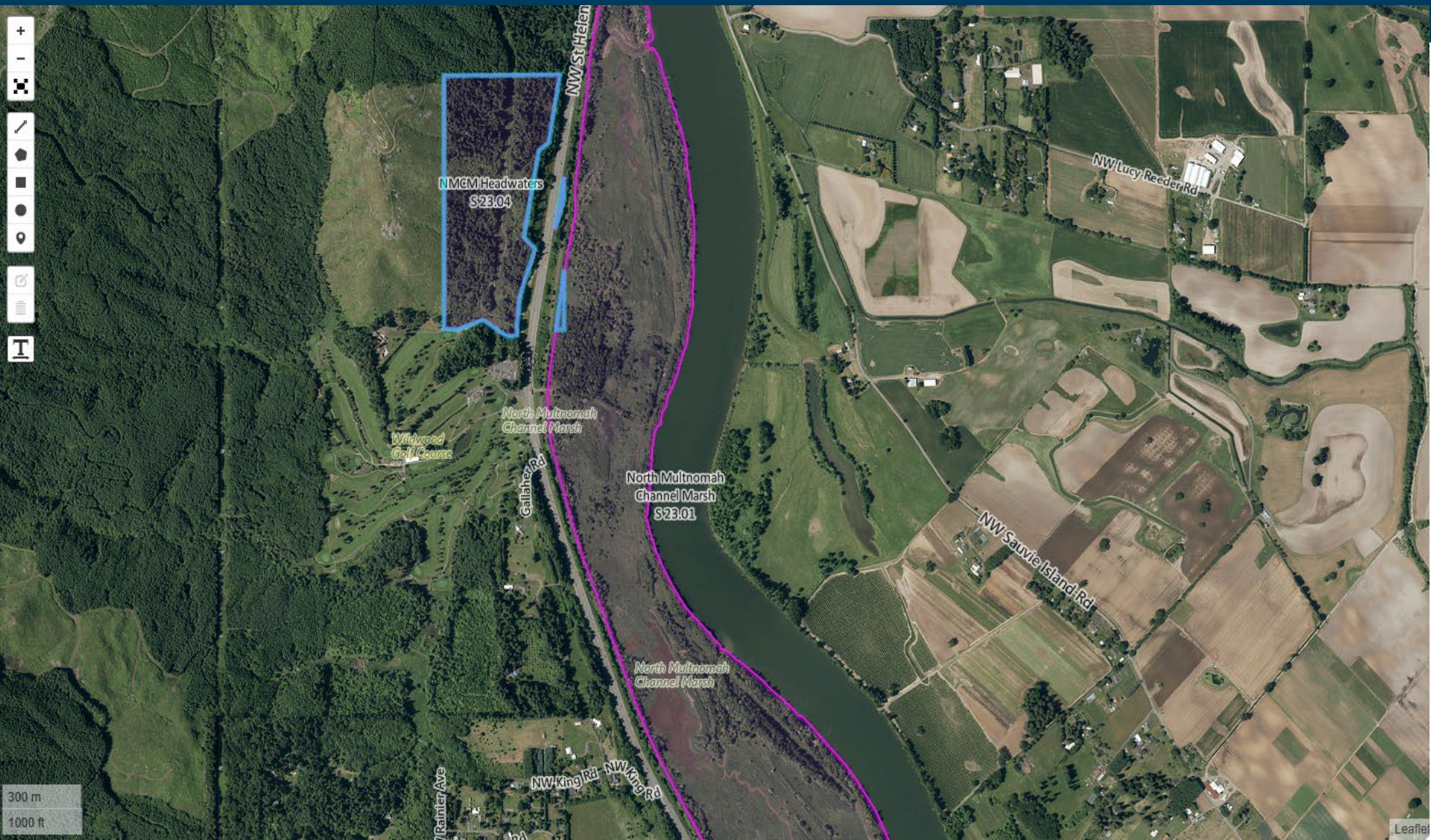
Lessons learned

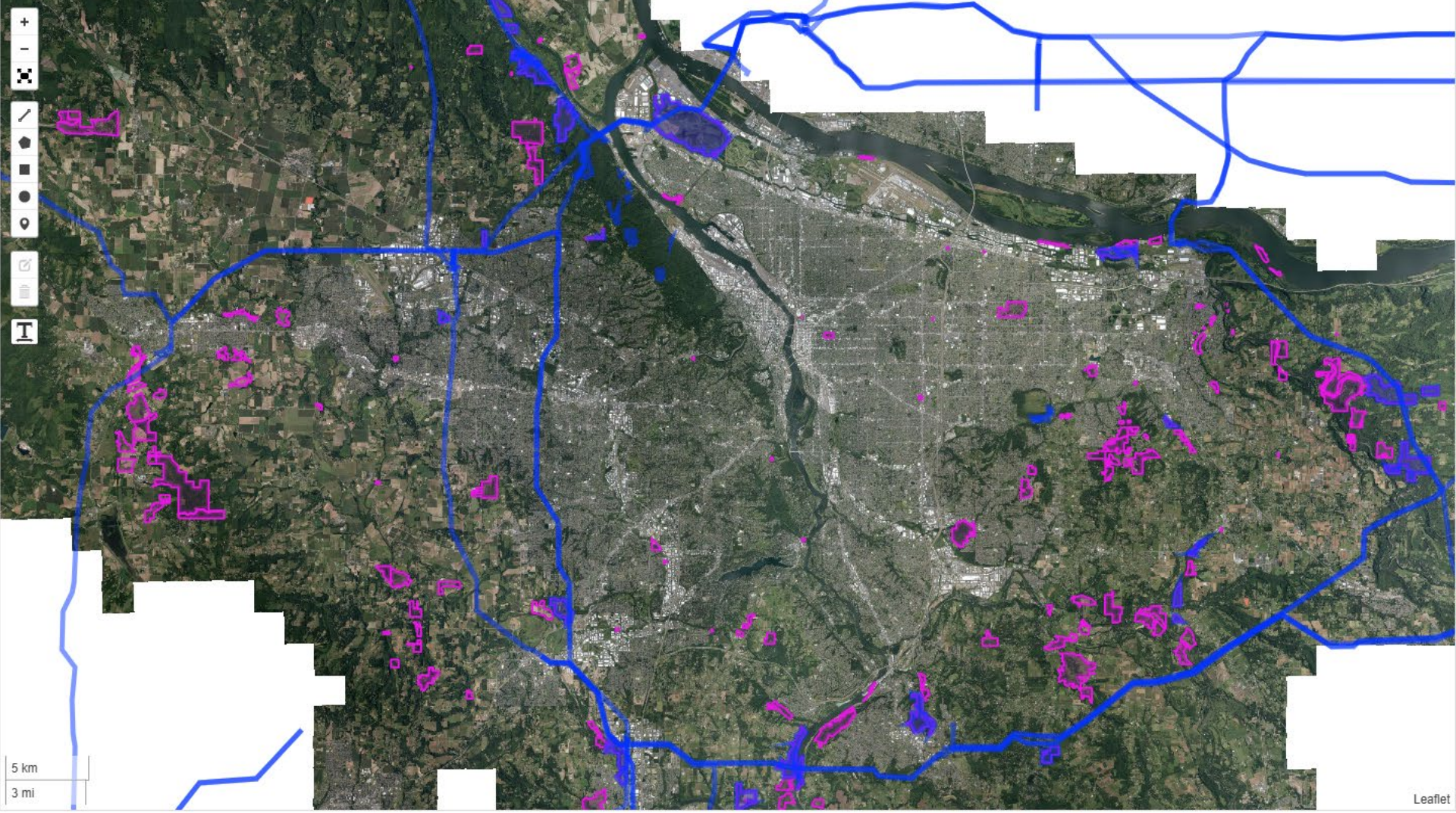
- More project coordination, but also more resources, with multiple partners
- Working in areas under PPR, BPA and PGE jurisdiction required flexibility
- Valuable to have monitoring to determine benefits
- Stagger site prep to provide continuous pollinator resources
- Brush management (invasive species reduction) with the overarching goal of fire preparedness actions

Willamette Narrows



North Multnomah Channel Marsh Headwaters





Next directions- other Metro projects

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Metro

Arts and events
Garbage and recycling
Land and transportation
Oregon Zoo
Parks and nature

oregonmetro.gov