

Off-Site
Downtown Oregon City

Area 1
North Riverfront

Area 2
South Riverfront

Area 3
PGE Dam and Mill E

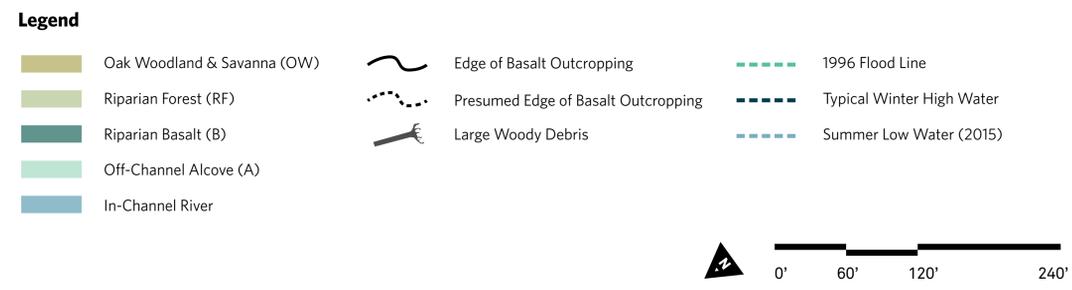
Area 4
Canemah



Assumptions
 - Off-Channel Alcove, Riparian Basalt, and Riparian Forest are priority conservation targets for habitat restoration on the site.
 - Baseline habitat conditions and restoration concept designs provided by Stillwater Sciences.
 - Further resolution of habitat restoration strategies to be coordinated with Metro.

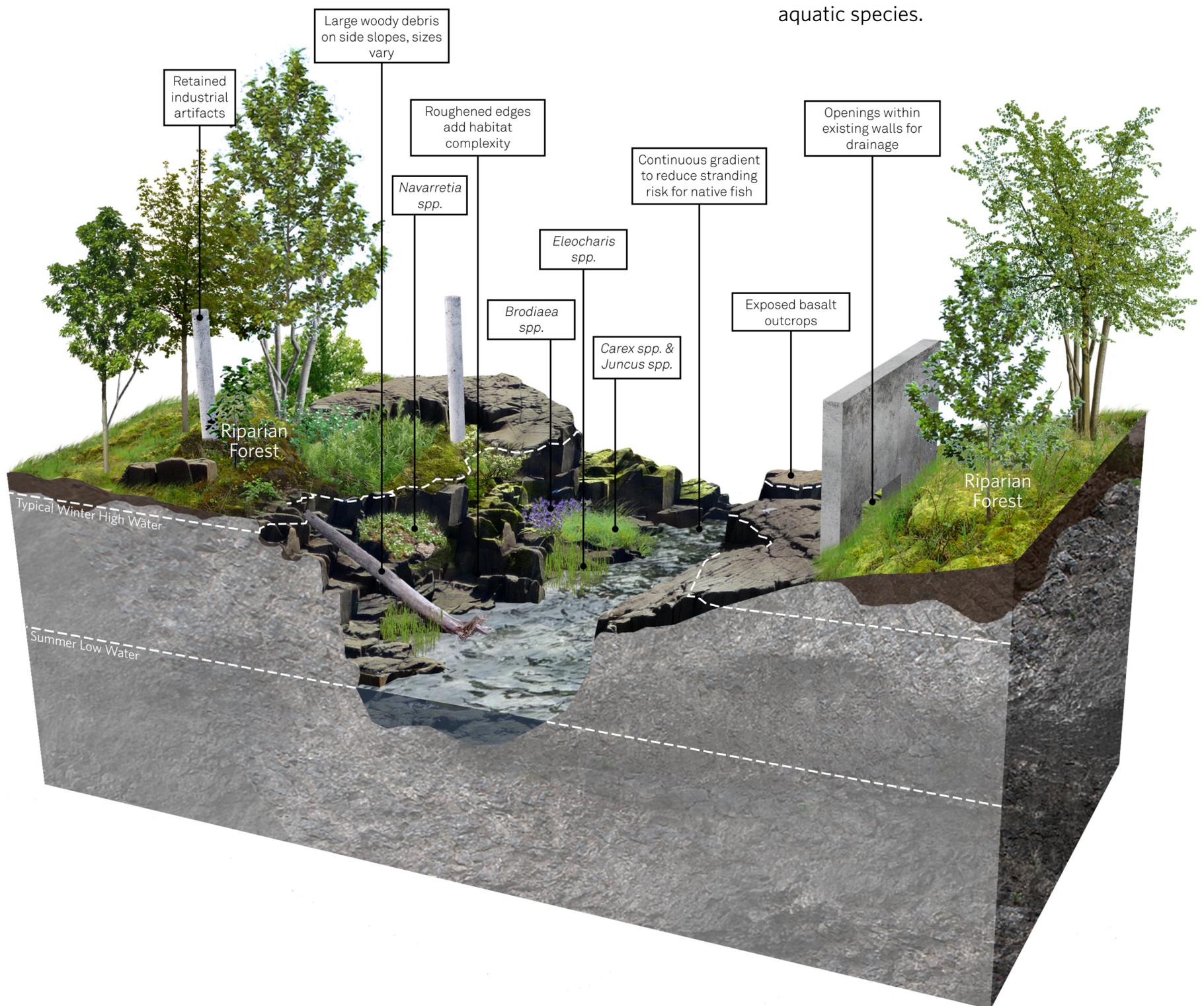
Proposed Habitat Restoration Areas

Restoring habitat at the project site provides an opportunity to conserve sensitive habitats and species and connect people with regional and local conservation priorities. Conservation science provides a context to help make decisions about restoration priorities and investments. Through a focus on science we also create a unique destination where visitors can experience and appreciate Oregon's natural treasures in the context of a special historic setting.



Off-Channel Alcove

Highly diverse and dynamic in nature, off-channel alcove habitat on the Willamette River serves as an uncommon and important resource for native fish, wildlife and plant species. Alcove habitat historically existed in greater abundance along the site shoreline. Much of the former off-channel habitat has been filled in and covered by infrastructure. Restoration of alcove habitat serves as a key opportunity for enhancing off-channel areas for native fish (i.e. Chinook salmon, steelhead, and Pacific lamprey) as well as other aquatic species.



Reference Areas

Lower mainstem Willamette River, Elk Rock Island and Willamette Narrows.

Target Plant Species

Emergent native wetland vegetation including sedges (*Carex spp.*, *Cyperus spp.*), spikerush (*Eleocharis spp.*), rushes (*Juncus spp.*), Douglas spirea (*Spiraea douglasii*), and ferns (*Polypodium spp.*, *Polystichum spp.*).

Invasive species such as water primrose (*Ludwigia hexapetala*), purple loosestrife (*Lythrum salicaria*), yellow flag iris (*Iris pseudacorus*), and knotweed (*Fallopia spp.*) should be removed to allow space for native vegetation.

Target Wildlife

Juvenile Chinook salmon, steelhead, and coho salmon. Pacific lamprey ammocoetes. Shorebirds including spotted sandpiper, belted kingfishers and great blue herons. Western painted turtles, river otter, beaver and bats.

Soil Requirements

In planted areas, depositional alluvial soils. Otherwise not applicable.

Sun Requirements

Full sun or riparian shade. Avoid or remove cultural cover.

Hydrologic Requirements

Low-energy environment for both vegetation growth and rest areas for migrating anadromous species.

Sensitivity to Human Access

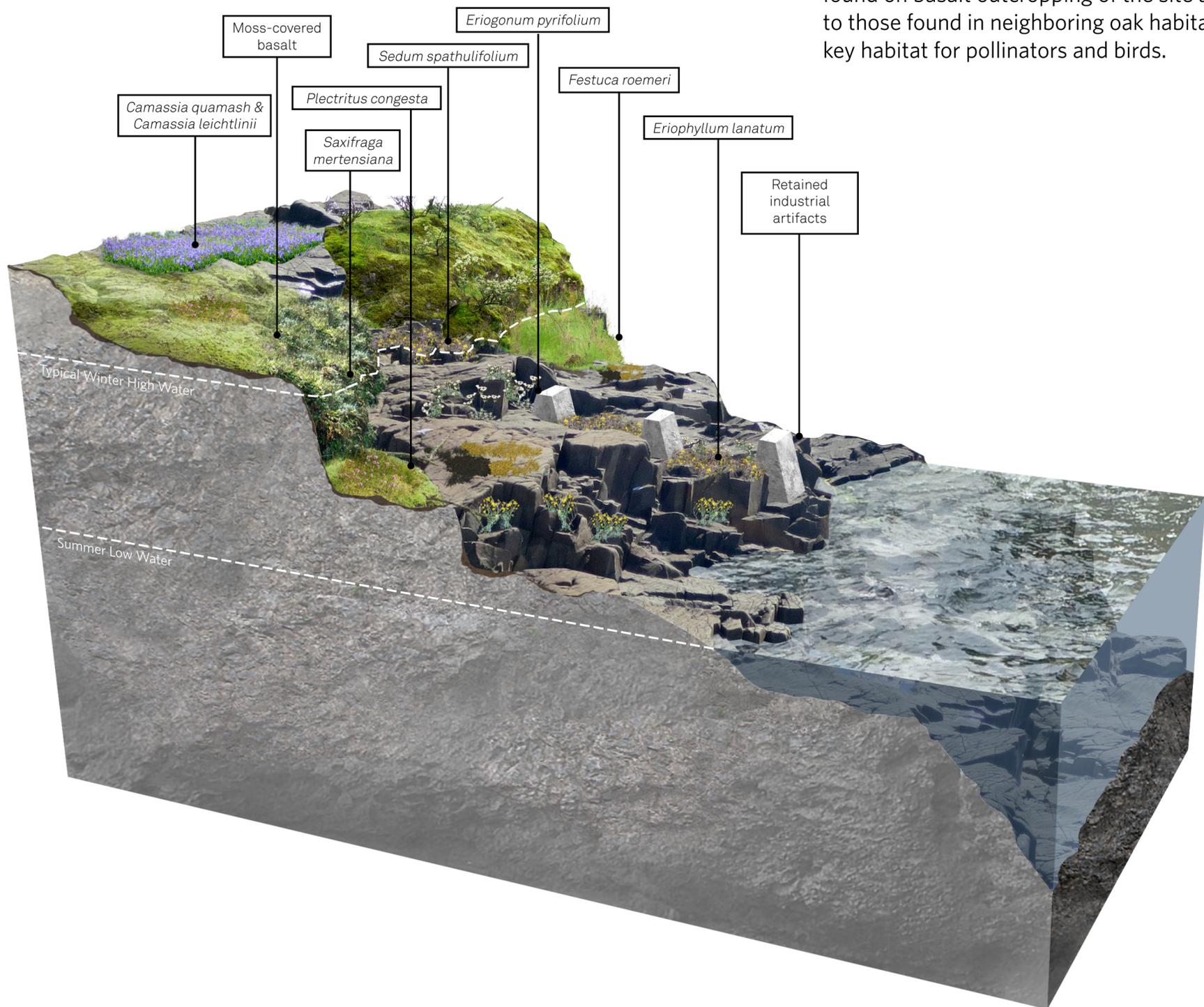
Off channel alcove areas are moderately sensitive to disturbance.

Human Interest

Important for interpretation of life cycle and migration patterns of native fish.

Riparian Basalt

The basalt outcrops and rocky substrate along the shoreline contribute to the mosaic of rocky habitats located to the north and south of the project site in and along the Willamette River. The outcrops are a relic of the Bretz or Missoula Floods, and exposures along this part of the Willamette River provide important habitat for both mesic and xeric species more common in the Columbia River Gorge. Shallow depressions that hold water on the basalt also provide unique wetland habitat. The vegetation assemblages found on basalt outcropping of the site are similar to those found in neighboring oak habitat and is key habitat for pollinators and birds.



Reference Areas

Willamette Falls existing communities, Canemah Bluff, Camassia preserve, Elk Rock Island and Willamette Narrows Area

Target Plant Species

Common camas (*Camassia quamash*), Great camas (*Camassia leichtlinii*), Roemer's fescue (*Festuca idahoensis*), white rock larkspur (*Delphinium leucophaeum*), Richardson's penstemon (*Penstemon richardsonii*), Oregon sunshine (*Eriophyllum lanatum*), mock orange (*Philadelphus lewisii*), goat's beard (*Aruncus dioicus*), oceanspray (*Holodiscus discolor*), streambank arnica (*Arnica amplexicaulis*) and sedum species.

Target Wildlife

Anna's hummingbird, spotted sandpiper, northern red-legged frog, pacific chorus frog and Oregon fairy shrimp.

Soil Requirements

Exposed basalt bedrock. Limited areas of soil and shallow depressions to hold water are necessary.

Sun Requirements

Full sun required.

Hydrologic Requirements

Periodic inundation tolerated and/or mists of falls necessary.

Sensitivity to Human Access

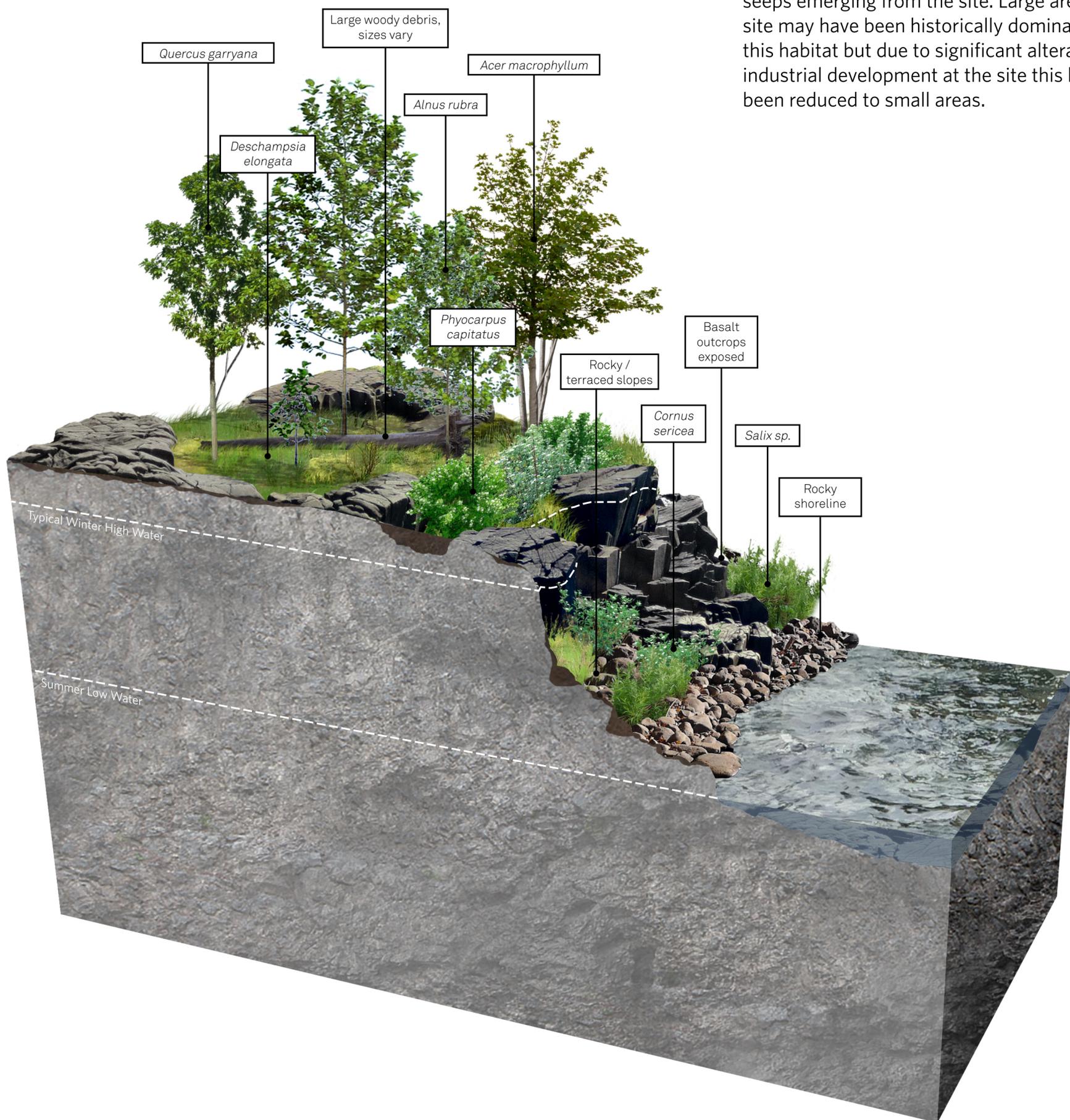
Basalt is very resilient. Herbaceous plant species that grow in these areas are highly sensitive to disturbance. Consider limiting access to basalt surface for education and restoration purposes.

Human Interest

Rare and endangered species specialized to dwell upon exposed, shallow soil basalt. Pollinator species and bloom time of wildflowers.

Riparian Forest

Riparian forest plant community areas are associated with alluvial soil and springs and seeps emerging from the site. Large areas of the site may have been historically dominated by this habitat but due to significant alterations and industrial development at the site this habitat has been reduced to small areas.



Reference Areas

Riparian areas along the lower mainstem Willamette River, Willamette Park in West Linn, Elk Rock Island and Willamette Narrows Area. Restored areas along the south bank waterfront in downtown Portland can serve as a reference for restoration of this plant community.

Target Plant Species

Pacific willow (*Salix lasiandra* var. *lasiandra*), Sitka willow (*Salix sitchensis* var. *sitchensis*), and Scouler's willow (*Salix scouleriana*), Pacific ninebark (*Physocarpus capitatus*), red-osier dogwood (*Cornus sericea*), Red alder (*Alnus rubra*), Oregon white oak (*Quercus garryana*), and Oregon ash (*Fraxinus latifolia*). Various sedges, rushes and ferns. Removal of invasive weeds including Himalayan blackberry (*Rubus armeniacus*), Reed canary grass (*Phalaris arundinacea*), Knotweed (*Fallopia japonica*) and English ivy (*Hedera helix*).

Target Wildlife

Osprey, bald eagles, wood ducks, yellow warbler, Wilson's warbler and cedar waxwings. Western painted and pond turtles, beaver, river otter and bat species.

Soil Requirements

Alluvial floodplains, with thin poorly developed and coarse soils. Existing vegetation is growing through coarse and rocky areas at the base of basalt outcroppings.

Sun Requirements

Sun, shade, and dappled sun.

Hydrologic Requirements

Permanently saturated soils or seasonal rise in water table tolerated. Frequent flooding may occur.

Sensitivity to Human Access

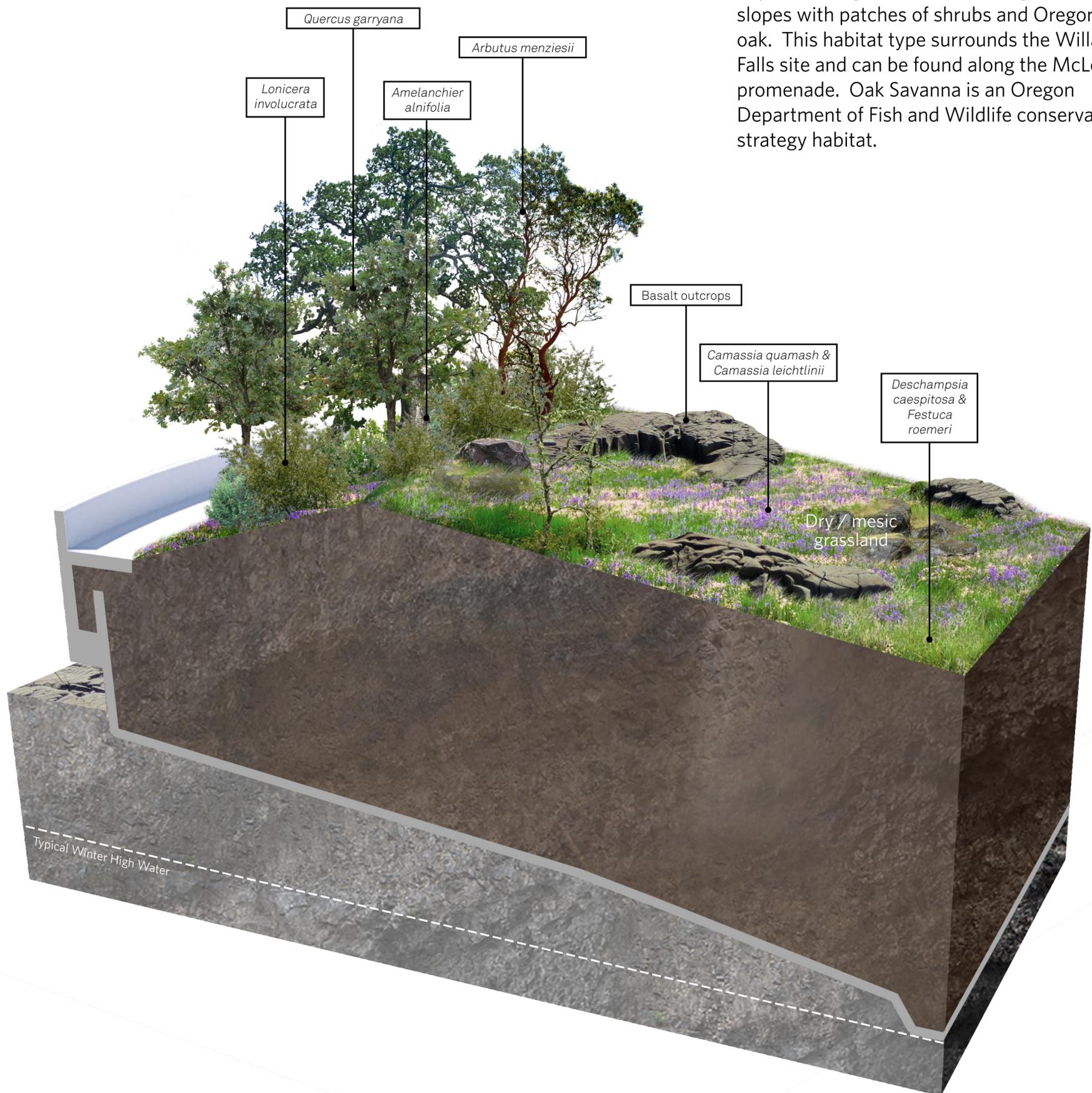
Resilient once native vegetation is established. Avoid compaction of or erosion of soils due to use.

Human Interest

Restoring native vegetation in riparian areas will provide lush vegetated areas to portions of the highly developed site and increase wildlife watching opportunities.

Oak Woodland & Savanna

Dry to mesic grasslands occurring on hilltops and slopes with patches of shrubs and Oregon white oak. This habitat type surrounds the Willamette Falls site and can be found along the McLoughlin promenade. Oak Savanna is an Oregon Department of Fish and Wildlife conservation strategy habitat.



Reference Areas

Canemah Bluff, Camassia preserve, Elk Rock Island and Willamette Narrows Area.

Target Plant Species

Oregon white oak (*Quercus garryana*), tufted hair grass (*Deschampsia caespitosa*), Roemer's fescue (*Festuca roemerii*), camas (*Camassia quamash* & *Camassia leichtlinii*) and other native herbaceous and grass species similar to those that exist in riparian basalt habitats.

Oak savanna is primarily composed of 30 to 70% cover of Oregon white oak. The understory includes native herbaceous and grass species for 30–60% relative cover with some small scattered, woody shrub plantings (<10% cover) to replicate natural conditions of an oak woodland.

Target Wildlife

American peregrine falcon, long-legged myotis (bat), slender-billed/white-breasted nuthatch, black-throated gray warblers, downy woodpecker, black tail bumble bee.

Soil Requirements

Shallow to bedrock soils. Steep slopes or upper slope.

Sun Requirements

Full sun.

Hydrologic Requirements

Disconnected from riparian zones and adapted to drought conditions. Wet winters, characterized by a dry summer

Sensitivity to Human Access

Fragile and subject to degradation. Limit foot traffic to avoid impacts.

Human Interest

Fall color and bloom time of wildflowers. Open grown Oregon white oak trees and birding.