Trans-PLANTS: Giving and Receiving Landscapes
Emilia Hurd

trans-PLANTS seizes the opportunity to address chronic challenges of High Park, within a larger strategy to revegetate, soften, and improve the overall condition of the Toronto waterfront edge.

By identifying receiving sites for trans-plants, and by dedicating a large part of the park to the growth and propagation of plant material - giving sites - trans-PLANTS re-organizes High Park and the western waterfront, to the benefit of both.

Phragmites australis, or the common read, is a perennial grass found throughout coastal and interior wetlands, riparian corridors, roadside ditches and other disturbed areas within the Great Lakes basin. In High Park and along the Toronto waterfront, phragmites is abundant and restoration efforts have tried many measures to control its spread. trans-PLANTS capitalizes upon the abundance, quick growth, and resilience of phragmites to build landscapes in High Park, the western waterfront, and beyond. This is achieved through the re-constitution of phragmites in three forms (bundles, mulch, and mats), each offering a unique new role in the landscape.

trans-PLANTS uses the language of port infrastructure, re-envisioning typologies such as docks, slipways, channels, and boardwalks. These forms enable the exchange of vegetation between Grenadier pond and receiving sites throughout High Park, the western waterfront and beyond.

The design of trans-PLANTS is achieved through a phased approach that begins by reconnecting High Park and to the waterfront via new hydrological connections between Grenadier Pond, Spring Creek, and Lake Ontario. The park is established as an as an exchange hub, taking in flows, and converting them to facilitate the propagation of native and locally adapted plants. The construction of phragmites-based marsh mats are then trans-planted [to] priority sites within High Park, to sites [throughout] High Park and the western waterfront, and to sites reaching [beyond].

trans-PLANTS

giving and receiving landscapes

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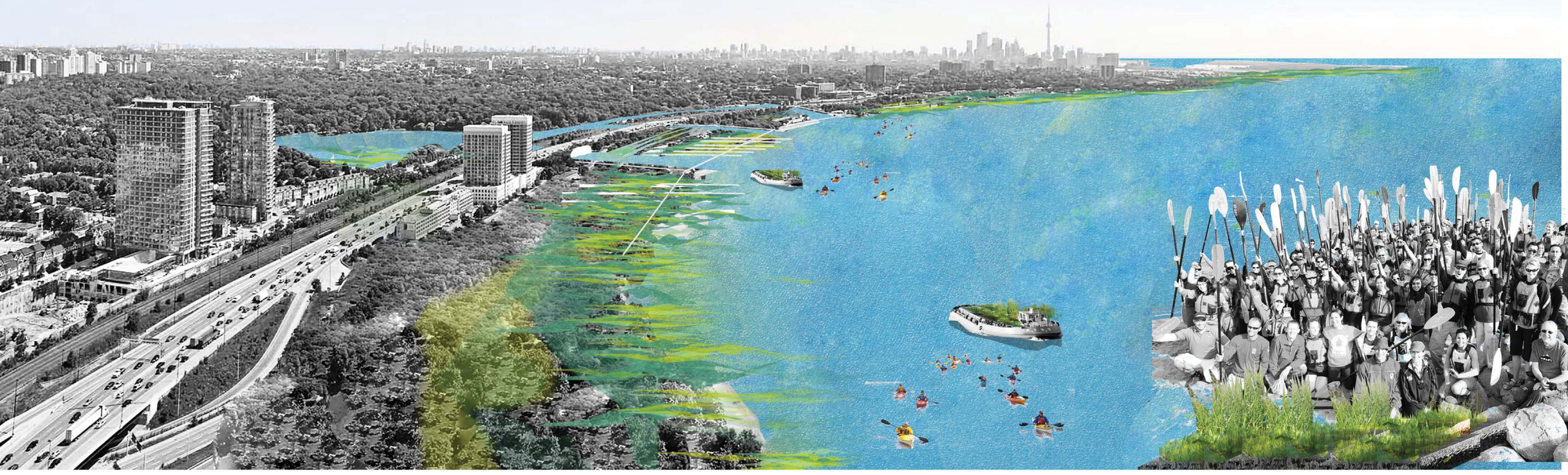
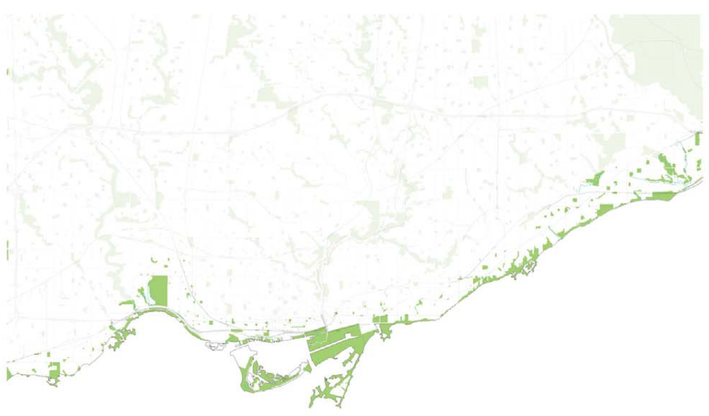


REGIONAL CONTEXT

High Park is well loved and well used. And it looks it. Heck, at 161ha, it's the largest urban park in Toronto, and it's got the history, following, and legacy to match. Historically an extensive freshwater marsh created by the outflow of two creeks, Spring and Wendigo, today, High Park was crossed by roads, rail, and pipes, disconnecting it from the water.



greenspace

circulation

Phragmites australis - Opportunity

Phragmites australis, or the common reed, is aperennial grass found throughout coastal and interior wetlands, riparian corridors, roadside ditches and other disturbed areas within the Great Lakes basin. In High Park and along the Toronto waterfront, phragmites is abundant and restoration efforts have tried amny measures to control its spread.

A variety of native phragmites grow through the region as well, however, these species grow more slowly and are far less aggressive than their exotic counterparts. Phragmites' vigorous root system and rhizomatous growth allow for extensive underground dispersal. At maturity, phragmites plants can produce up to 2,000 seeds annually, which are wind and water dispersed to establish new stands. Phragmites' vigorous vegetative and reproductive growth allow it to form dense monocultures that can reach up to 3 metres in height, effectively crowding and shading out other wetland and shoreline species. In many cases, phragmites has been intentionally introduced as both a phytoremediator and a bioremediator, as well as a shoreline stabilizer in restoration projects. Its' growth is often facilitated by human disturbances, including increased salinity due to salt applied to roads and other harsh environments.

trans-PLANTS capitalizes upon the abundance, quick growth, and resilience of phragmites to build landscapes in High Park, the western waterfront, and beyond.

phragmites

FORM

bundles

mulch

mats

ROLE

Bundles are tranaported to shores needing protection against erosion. These are also used to prepare receiving sites for vegetation in later phases. These bundles slow water movement, trap sediment and providing a growing medium for establishing plants. Made of dried phragmites, over time, these bundles will biodegrade.

Mulch is used throughout High Park, the western waterfront, and the greenhouse and terraced garden operations to protect soil and plants. This mulch can also be used in the compost process.

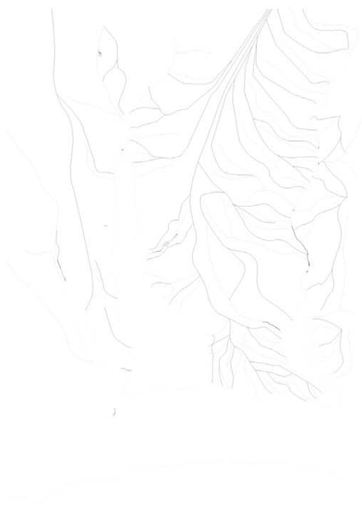
Aquatic seeds and rootstocks propagated in the aquatic nursery are transplanted outside and planted on thatch phragmites mats. These mats float from the docks in Grenadier Pond before being taken to receiving sites.

HIGH PARK & WATERFRONT
Existing Conditions

topography

hydrology

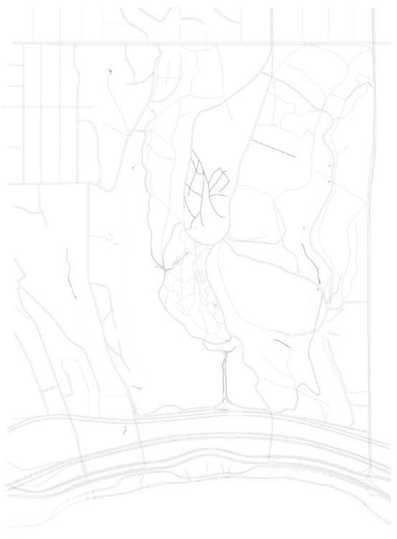
ridges & valleys



ridges

valleys

circulation



program - giving sites

maintenance - receiving sites

weeding
seeding
debris removal
planting

EMILIA HURD

1. Channels
2. Slipways - loading
3. Docks
4. Spring Creek Boardwalk

GIVING SITES

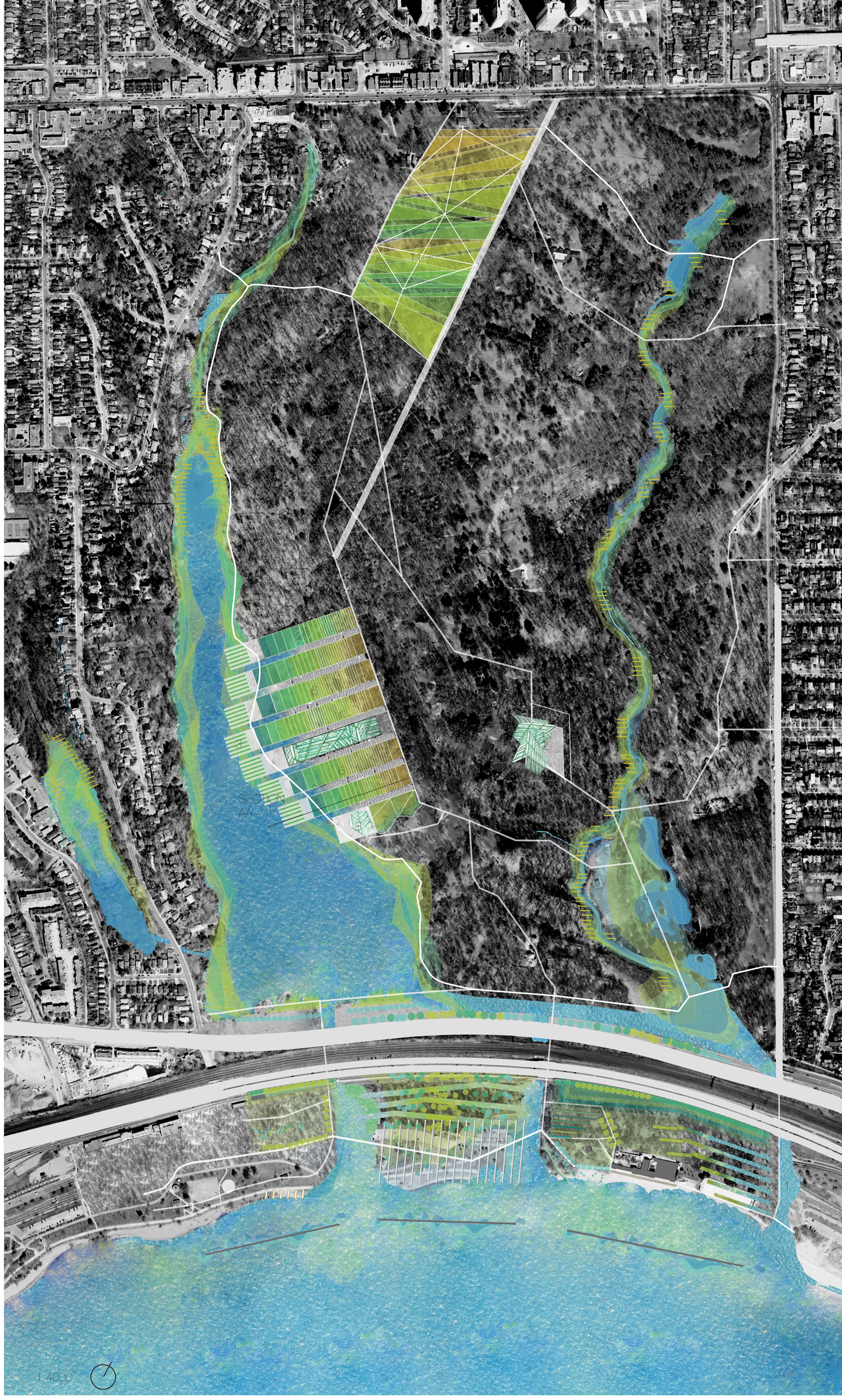
5. Terraced Greenhouse and Aquatic Nursery
6. Terraced Nursery Gardens
7. Pollinator Garden
8. Grenadier Pond Boat House

RECEIVING SITES

9. Spring Creek Receiving Sites
10. Sensory Gardens
11. Upland Prairie

GIVING & RECEIVING

12. Public Greenhouse and Nursery
13. High Park Forest School and Nature Complex

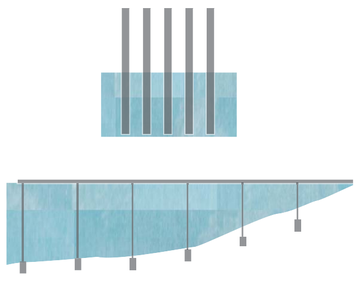


form

trans-PLANTS uses the language of port infrastructure, reinvisioning typologies such as docks, slipways, channels, and boardwalks. These forms enable the exchange of vegetation between Grenadier pond and receiving sites throughout High Park, the western waterfront and beyond.

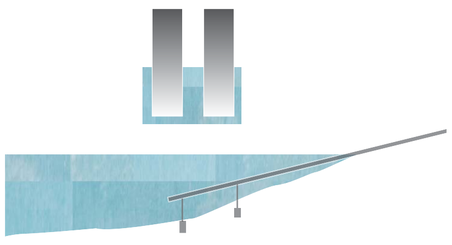
docks

Docks enable access to open water, and provide a structure for the floating marsh mats during the growing season. Docks also allow boats, both recreational and utilitarian, to moor safely along the waterfront and the shores of Grenadier Pond.



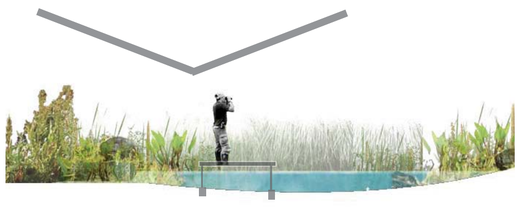
slipways

Slipways mediate the terrestrial and aquatic environments using an inclined, low friction surface. Slips are used as both a means of transporting plants to boats from the terraced gardens, and as gradually sloped receiving sites that accomodate a variety of thermal and hydrologic environments, and provide shelter for planted mats.



boardwalks

Boardwalks allow pedestrians to walk through marsh and shoreline habitats, without disturbing the vegeation, and without getting wet.



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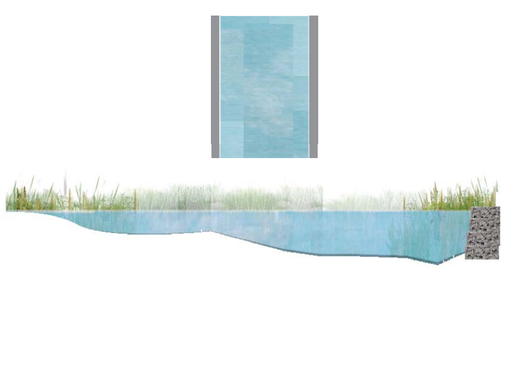


PHASE 1 - reconnect & restrict

This phase includes the following:

- Restricting vehicle access to High Park
- Establishing new hydrologic connections between
- Grenadier Pond, Spring Creek, and Lake Ontario via existing and new underpass structures
- Re-routing of Lakeshore Boulevard traffic onto the Queensway
- Raising of the Queensway to height of Gardiner and CN rail corridor
- Establishing new path network through High Park, connecting to the waterfront, prioritizing routes that follow ridges, to reduce disturbance to creek banks and waterways

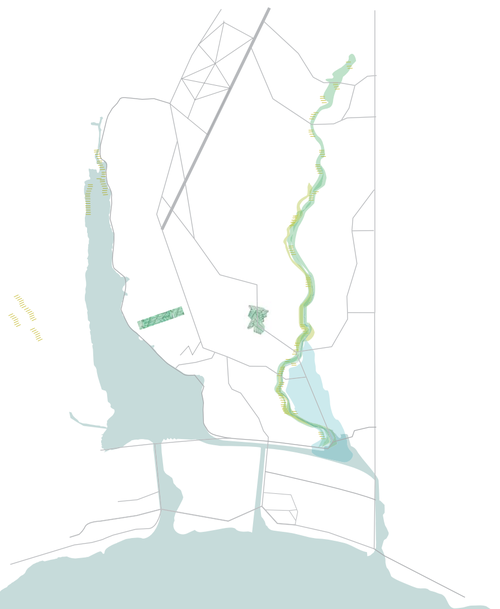
1-2 years...

PHASE 2 - trans-plants **TO**

This phase establishes High Park as an exchange hub, taking in flows, and converting them to facilitate the propagation of native and locally adapted plants. Longer-growing woody shrubs and trees are propagated in the greenhouse and transplanted outside for use in future phases, and to create microclimates for the growth of other species.
Locally collected seeds of native wetland plants, and remediating species are germinated in the aquatic nursery. These plants are then brought to mature outdoors on floating Phragmites australis thatch mats.

These marsh mats are then trans-planted TO preliminary sites within High Park specifically at 1) inflows of polluted stormwater, 2) sites of intensive runoff.

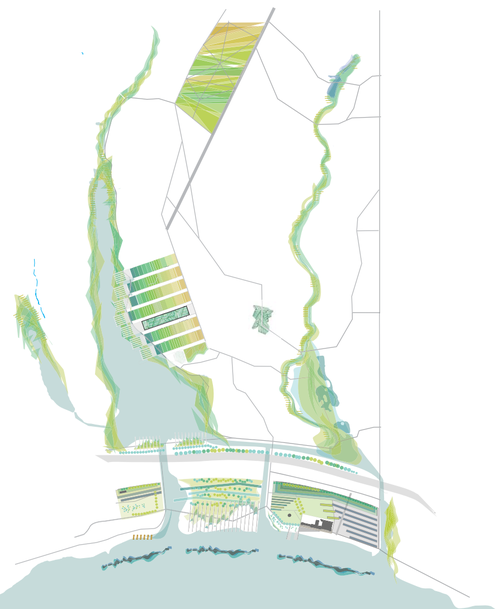
3-10 years...



PHASE 3 - trans-plants **THROUGHOUT**

This phase transplants aquatic and terrestrial plants grown in the greenhouses, and extensive terraced plantations THROUGHOUT the High Park and waterfront section. Sites identified and prepared in phase 1 are planted, as vegetation is transported by boat to receiving sites.

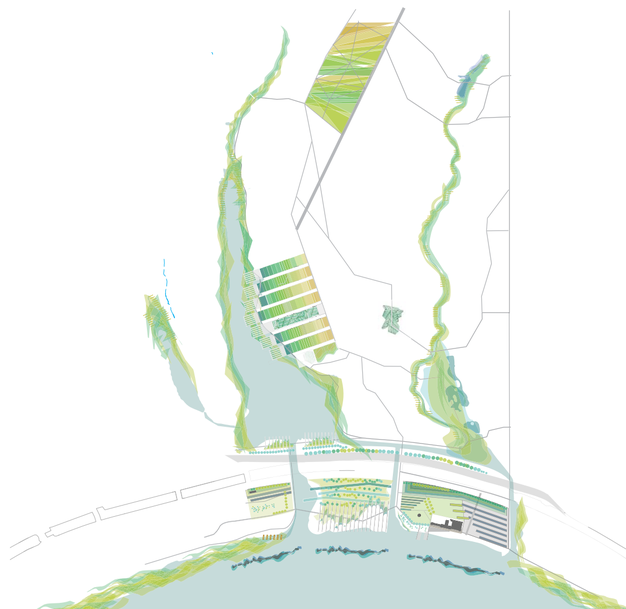
11-15 years...



PHASE 4 - trans-plants **BEYOND**

In this phase, plants propagated in High Park are deployed BEYOND the western waterfront, and High Park. This includes: 1) plants that are grown in the nursery and sold to visitors, to be planted in gardens around Toronto, 2) plants deployed and integrated into ongoing shoreline restoration efforts, 3) locally adapted plants used in waterfront designs throughout Toronto, 4) education and community that are cultivated on-site, and who's impacts reach BEYOND.

16-25 years...etc



ANNUAL CYCLING - BUILDING LANDSCAPES

An annual cycle of seasonal activities and programs is integral to the success of this project. From harvesting, to germinating seeds in the greenhouse, to the deployment of vegetation to receiving sites throughout High Park, the western waterfront and beyond, the coordination of experts, staff and volunteers is necessary. This project sees the emergence of several new festivities and events throughout the year, that draw visitors to the park to contribute. These include Phrag Fest, the Great Shoreline Trans-Plant and varous phragmites related programs and workshops.

This cycle exists within the linear phasing that sees the incremental revegetation of the Toronto waterfront.

Late August - "Phrag Fest"

volunteers try their hands at phragmites removal, learning from staff proper techniqes and use of tools; volunteers use boats from boathouse and travel around Grenadier Pond and waterfront cutting down phragmites; prizes for largest quanities! best bundles!

Fall -Seed and Rootstock Collection

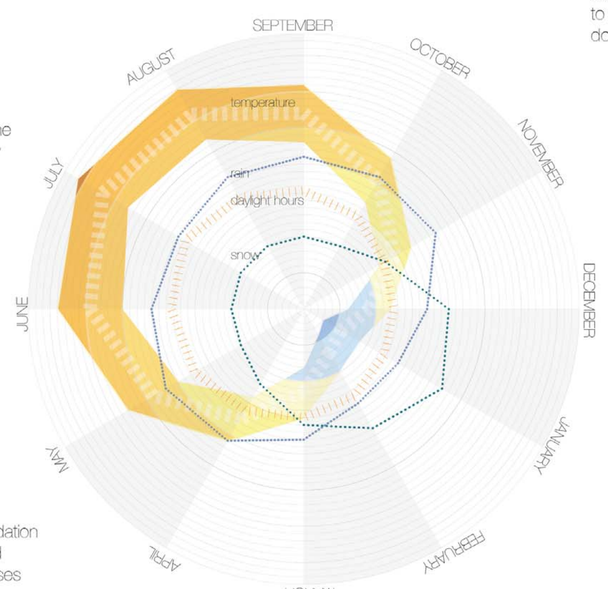
staff and volunteers collect thousands of seeds and rootstocks from regional wetlands, shores and uplands

ongoing phragmites harvesting by staff

aquatic seeds, rootstocks cleaned and refrigerated to stimulate natural winter dormancy

Summer - "Great Shoreline Trans-Plant"

volunteers help staff load, deliver and transplant vegetation grown in High Park to sites throughout the Toronto waterfront as part of restoration efforts; may coincide with harvest of phragmites



Winter - Thatching & Bundling 101

dried phragmites assembled into thatch mats, bound in bundles, or cut into mulch

May 6th - "High Park Day"

volunteers help transplant vegetation throughout High Park, contributing to the establishment of new planted areas, or sites of restoration

terrestrial seeds and rootstocks planted in terraced greenhouse at same elevation as eventual outdoor terraced planting

Spring

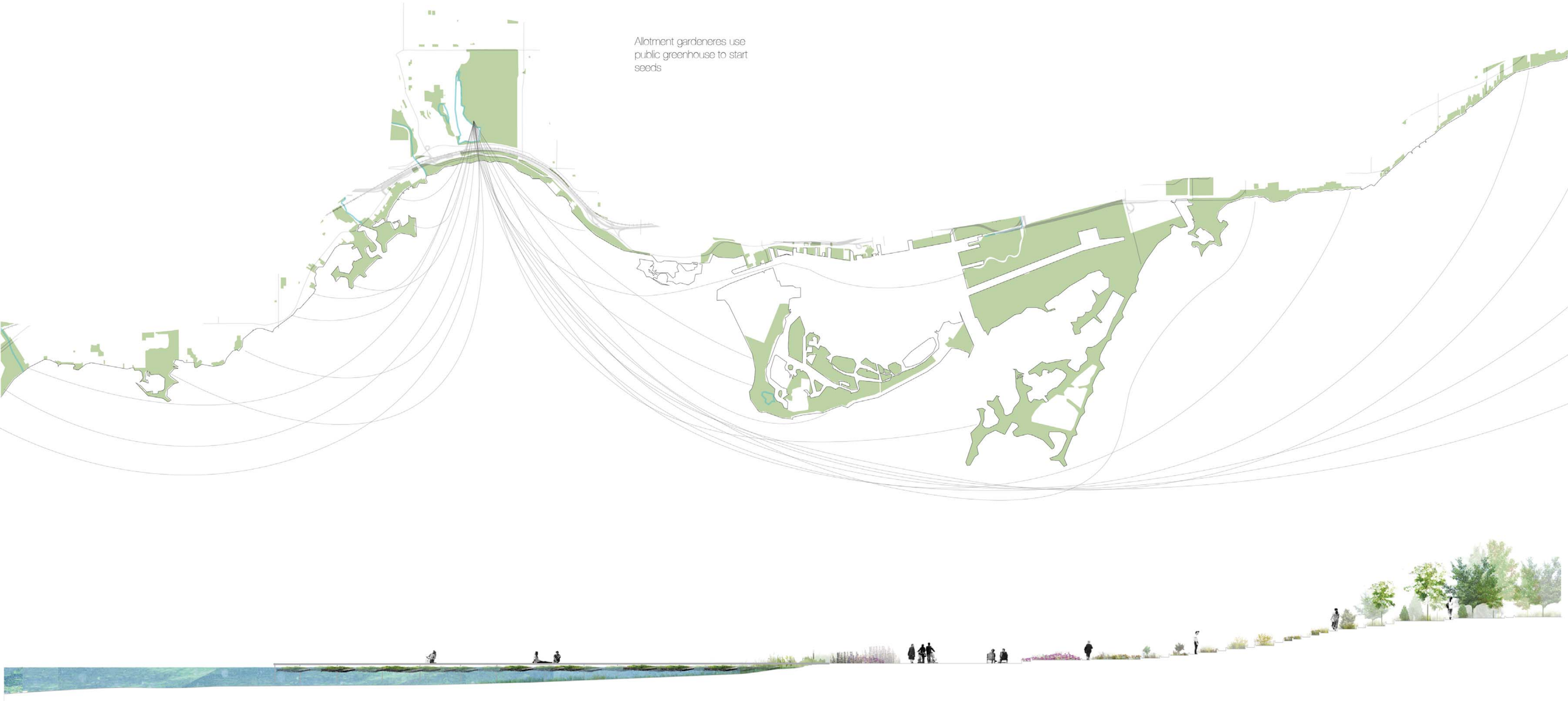
High Park Forest School and the Ontario Foundation for Visually Impaired Children offer curricular and extracurricular programming for kids in the Senses Prairie, Herb Garden and Pollinator Garden

seedlings, and rootstocks planted in thatch mats, and anchored to the Grenadier Pond dock

Volunteers learn the art of thatch, and make use of an abundant and ubiquitous local resource

aquatic and marsh species started in shallow trays in greenouse

Allotment gardeneres use public greenhouse to start seeds



1:125

Section AA - The Terraced Gardens and the marsh docks.

EMERGENT/RIPARIAN		WET MEADOW		PRAIRIE		WOODLAND	
Blue vervain. *Verbena hastata.*	Water Plantain. *Alisma Triviale.*	Heath wood rush. *Luzula multiflora.*	Witch hazel *Hamamelis virginiana.*	Wild rye. *Eylmus canadensis.*	Prairie smoke. *Geum triforum.*	American beech. *Fagus grandifolia.*	Red oak. *Quercus rubra.*
Broadleaf cattail. *Verbena hastata.*	Broad leaved arrowhead. *Sagitaria latifolia.*	Great blue lobelia. *Lobelia siphilitica.*	Cardinal flower. *Lobelia cardinalis.*	Little bluestem. *Schizachyrium scoparium.*	Indian grass. *Sorghastrum nutans.*	White birch. *Betula papyrifera.*	Red maple. *Acer rubrum.*
Blue-flag iris. *Iris versicolor.*	Swamp milkweed. *Asclepias incarnata.*	New England aster. *Aster novae-angliae.*	Common elderberry. *Sambucus canadensis*	Ninebark. *Physocarpus opulifolius.*	Black-eyed susan. *Rudbeckia hirta.*	Black cherry. *Prunus serotina.*	Eastern white pine. *Pinus strobus.*
Spotted joe pye weed. *Eutrochium maculatum.*	Water willow. *Justicia americana.*	Red elderberry. *Sambucus racemosa.*	Red osier dogwood. *Cornus sericea.*	Panic grass. *Panicum virgatum.*	Staghorn sumac. *Rhus typhina.*	Panic grass. *Panicum virgatum.*	Yellow birch. *Betula alleghaniensis.*

Harvesting phragmites.

Seed and rootstock collection.

Planting phragmites mats with emergent aquatic vegetation.

EMILIA HURD

SECTION CC

SECTION BB

1. Sunnyside Marina
2. Channels
3. Terraced Gardens
4. Planted Highway Screen
5. Reed Gardens
6. Modified Gabion Breakwaters
7. Marsh Receiving Sites - no public access
8. Boardwalk/Wildlife Viewing
9. Cafe
10. Sunnyside Restaurant
11. Sunnyside Plaza
12. Public Deck
13. Public Boardwalk/Waterfront Trail
14. Planted slipways

1:1500

Planting becomes a public spectacle, as the loaded barge enters Lake Ontario from Grenadier Pond. Volunteers paddle to the site and help plant vegetation at designated sites.

1:250 Section BB - The Sunnyside Plaza gives people an opportunity to experience the Lake Ontario shoreline diversity, through gently sloping channels that fill with water and offer a multitude of microhabitats for vegetation.

1:250 Section CC - Gabion walls act as a strata and protection for planted marsh vegetation at receiving sites.

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