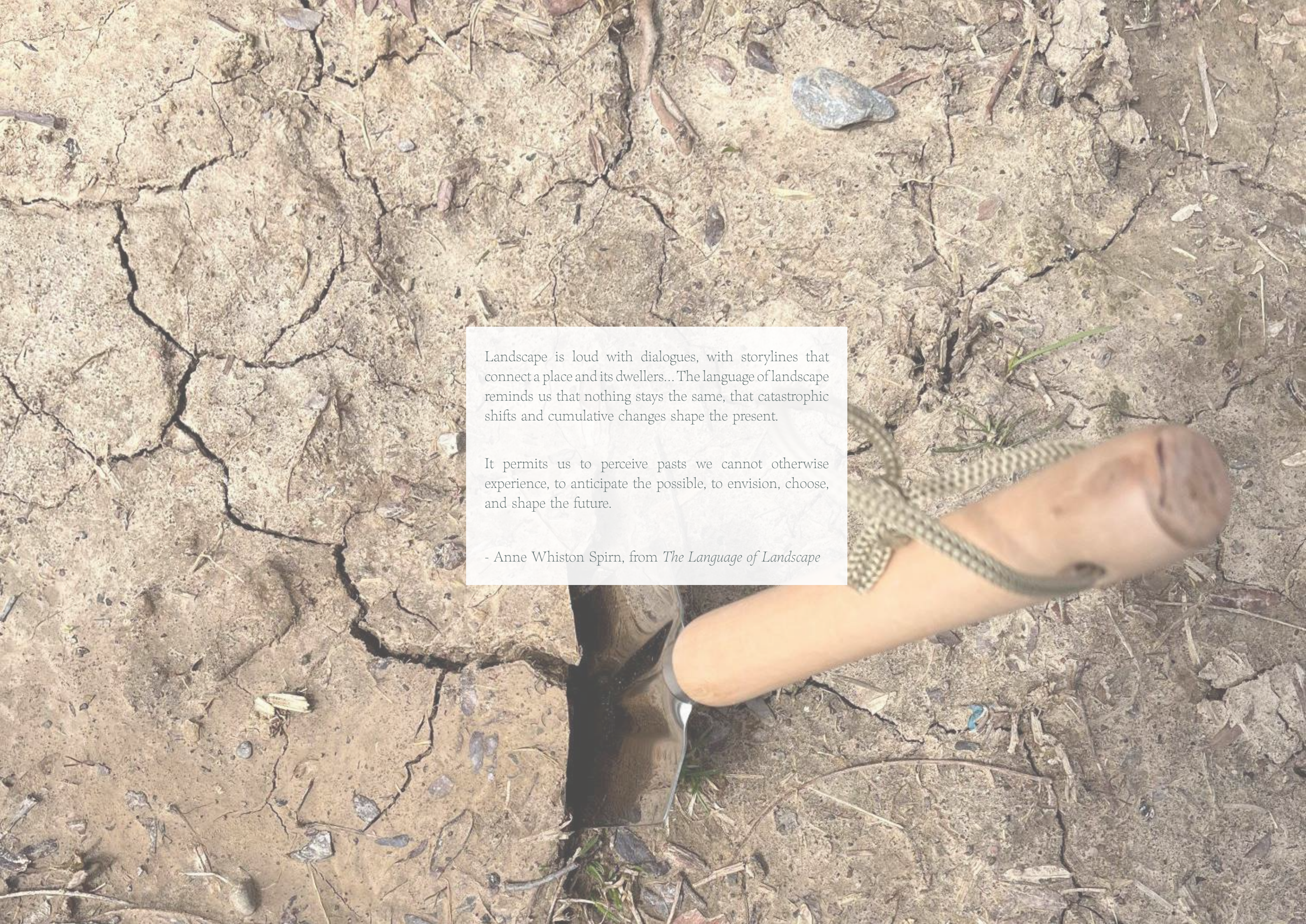




***Opaque Ground:***  
*Reimagining Human-Soil*  
*Relations in the Lower*  
*Don Sub-watershed*

Rebecca K. Martin



Landscape is loud with dialogues, with storylines that connect a place and its dwellers... The language of landscape reminds us that nothing stays the same, that catastrophic shifts and cumulative changes shape the present.

It permits us to perceive pasts we cannot otherwise experience, to anticipate the possible, to envision, choose, and shape the future.

- Anne Whiston Spirn, from *The Language of Landscape*

# EXECUTIVE SUMMARY

Opaque Ground: Re-imagining Human-Soil Relations in the Lower Don Valley Sub-watershed

*Design Thesis - University of Toronto*

*Advisor: Alissa North | Coordinator: Elise Shelley*

*Site: Lower Don Valley Subwatershed*

Urban soil holds the residue of human activity while supporting visible and invisible non-human worlds. It is vital for regulating water cycles, storing carbon, and sustaining life, yet is often undervalued. In the face of biodiversity and climate crises, increased soil literacy is essential for designing resilient cities that work effectively with natural systems.

Using Toronto's Lower Don River Sub-watershed as a case study, this project asks:

- How can landscape architects work with urban soils as unique cultural landscapes whose character is made legible through plant life?
- How can we work with urban soil without dumping it as a waste material and replacing it with healthy soils extracted from elsewhere?
- How can we see, appreciate, and support the soil in our cities as it is, not as it might be without us?

This project proposes an urban soil survey, and a series of experimental gardens designed to communicate soil survey findings along a 10-kilometer trail in Toronto's Lower Don Valley Sub-watershed. Each garden begins with a simple rule: no new soil can be added. Instead, plants become intermediaries that convey below-ground conditions. These gardens are intended to be inter-species collaborations with varying degrees of human intervention. In each garden, installation methods are low impact, prioritizing on-site materials and passive interventions.

Though sites would be selected after the survey is complete, five potential sites with different land-use and geologic histories have been identified to explore different garden strategies:

## **Site 1: Yonge and Eglinton**

On this dense, mix-used site, ruderal species that can withstand harsh urban conditions will be planted to reframe their aesthetic interest.

## **Site 2: Todmorden Mills**

On this formerly industrial wildflower preserve, a rammed earth wall will be placed to frame restoration work already underway.

## **Site 3: Don Riverbank**

A river's-edge clearing where invasive species are removed, but no new plants are introduced.

## **Site 4: Distillery District**

On this site, a circular clearing will be split by a sunken path: one half will be planted with species tolerant of dense urban environments, clay-heavy soil, and a high-water table; the other half will be left bare for natural succession.

## **Site 5: Keating Channel Precinct**

A former industrial area and car lot built on fill material. On this site, a 40m circle will be cleared for plants to arrive on their own. The edges will be maintained for legibility, but otherwise, successional processes will be allowed to occur uninterrupted.

All soil tells a story about the passage of time and the accumulation of processes. If we dispose of our "used" soils, then we lose valuable lessons about how our processes impact the ground and how the ground, in turn, impacts us. These gardens operate as living laboratories where the story of soil is told through plants. Over time, the gardens are designed to grow in complexity, offering adaptive, site-specific approaches to planting that foreground sensitivity to the soil as it is, not as it might be without us.



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# 01

## INTRODUCTION

*Every politically engaged person should have a garden.*

- Camille T. Dungy

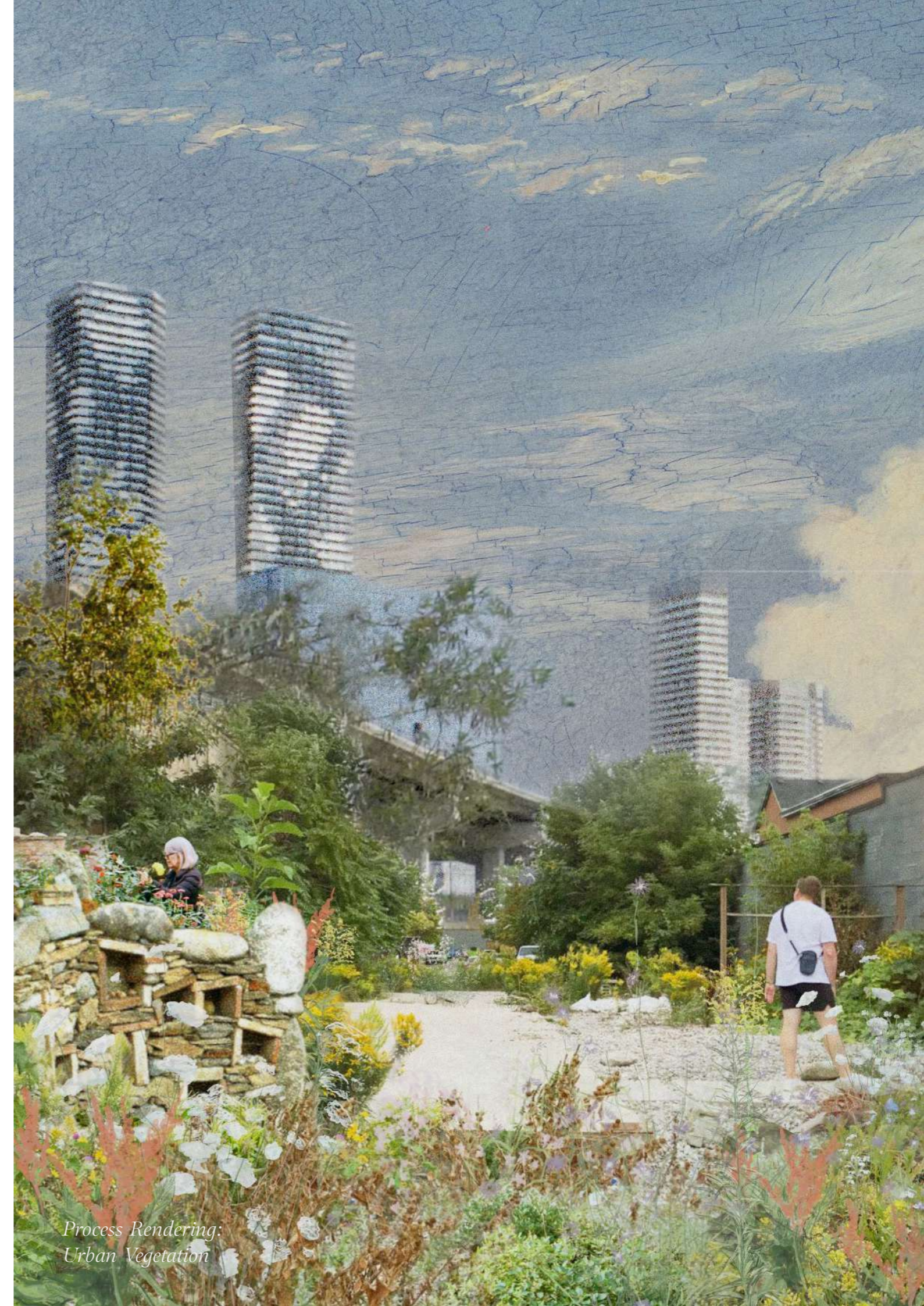


*How can landscape architects work with urban soils as unique cultural landscapes whose character is made legible through plant life?*

Urban soils reflect life in cities. Though often considered opaque, obscure, or degraded beyond value, they are complex systems that hold the residual impact of human activity over time. Soils are critical for regulating water cycles, storing carbon, and sustaining life, yet they are often undervalued.

To build and maintain healthy urban soils, we must first build soil literacy. This design project proposes

the implementation of an urban soil survey in the Lower Don, similar to the New York City Soil Survey, conducted by the USDA-NRCS Kellogg Soil Survey Laboratory, which mapped anthropogenic and natural soils across New York City (Urban Soils Institute 2025). Upon completion of the survey, detailed information about the Lower Don's soils will be made available to the public. Survey findings would also be communicated through a series of experimental gardens along a 10-kilometre trail in the Lower Don River Sub-watershed, with planting approaches that respond to specific soil conditions.



*Process Rendering:  
Urban Vegetation*

Each garden begins with a simple rule: no new soil can be added. Instead, plants become intermediaries that convey below-ground conditions. These gardens are intended to be inter-species collaborations with varying degrees of human intervention, ranging from fully planned and maintained gardens to those where successional processes are allowed to occur over time, with only the edges being maintained. In each garden, installation methods are low impact, prioritizing on-site materials and passive interventions.

Though sites would be selected after the survey is complete, five potential sites with different land-use and geologic histories have been identified to explore different garden strategies:



#### Site 1: Yonge and Eglinton

A dense mixed-use area and one of Toronto's Central Business Districts. On this site, ruderal species that can withstand harsh urban conditions will be planted in a manner that reframes their aesthetic interest.

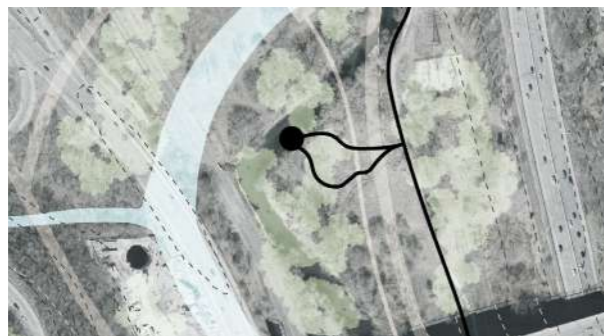


#### Site 2: Todmorden Mills

A wildflower preserve on a former industrial site. On this site, a rammed earth wall will be placed to frame restoration work already underway by the Todmorden Mills Wildflower Preserve Stewardship Team.

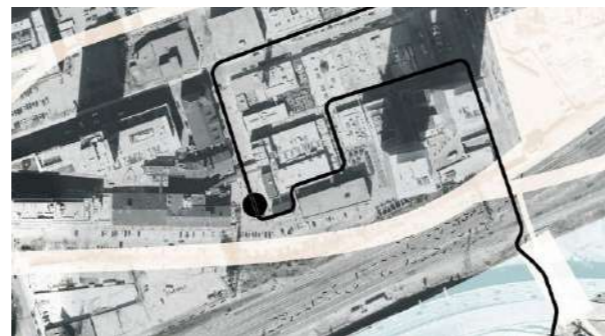


This project draws on the work of scholars and practitioners across disciplines, including anthropologists, artists, urban gardeners, environmental historians such as Jennifer Bonnell, sociologists, natural scientists, and ethnobotanists such as Mary Siisip Geniusz. I was fortunate enough to visit Dr. Janna Holmstedt and Jenny Salmson of the Humus Economicus art and research collaborative in Stockholm, Sweden, whose transdisciplinary work seeks to change the perception of soil in our cultural imagination. It is also indebted to the work of scholars and practitioners of landscape architecture, such as James Urban, Peter Del Tredici, Seth Denizen, Ann Whiston Spirn, Rosetta Elkin, and my thesis advisor, Alissa North.



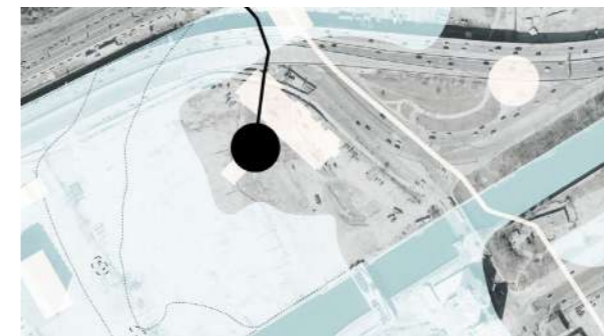
**Site 3: Don Riverbank**

A river's-edge clearing where invasive species are removed, but no new plants are introduced.



**Site 4: Distillery District**

A mixed-use heritage district near the downtown core. A circular clearing will be split by a sunken path, one half planted with ruderal species and the other left bare for natural succession to occur.



**Site 5: Keating Channel Precinct**

A former industrial area and car lot built on fill material. On this site, a 40m circle will be cleared for plants to arrive on their own. The edges will be maintained for legibility, but otherwise, successional processes will be allowed to occur uninterrupted.

## 02

# THE STORY OF SOIL FORMATION AT A LAUNDROMAT

*“Developing an art of noticing soils in cities means learning to pay attention in a world where what one is looking for has been carefully hidden away by asphalt and concrete”*

-Germain Meulemans, “Reclaiming Freak Soils: From Conquering to Journeying with Urban Soils”

*“The opaque is not the obscure, though it is possible for it to be so and be accepted as such. It is that which cannot be reduced...”*

- Eduard Glissant, “On Opacity”

This project begins with a story about time, repetition, and soil building.

There is a laundromat in the Lower Don Valley that I know well. Every day, Thuy, whose daughter owns the business, mops the floor and throws soapy water out the back door where it splashes against the building’s brick wall. Over time, the mortar has visibly dissolved, and the asphalt below has formed a thin mineral substrate layer. One year, lichens

and mosses appeared. Soon, other plants arrived with roguish common names like prostrate knotweed (*Polygonum aviculare*) and shaggy soldier (*Galinsoga quadriradiata*) (Del Tredici 2010, 150). Mortar from brick is rich in calcium and well-suited to lithophytes that evolved to grow in rock crevices (Jung and Eyster 2025). Below our level of perception, roots and microorganisms have changed the site’s character into a dynamic system that is full of life: soil.





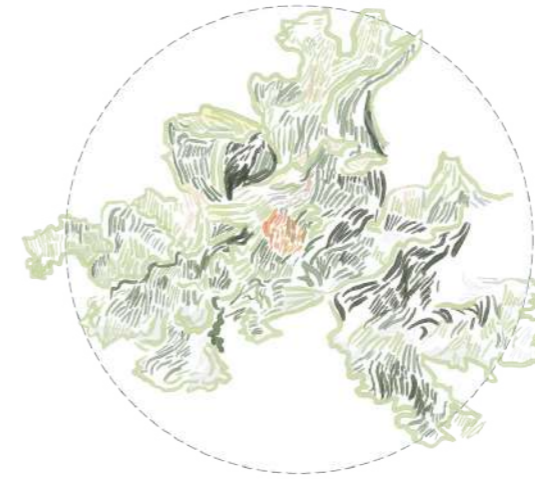
## **Mosses and Lichens**

### *Non-vascular pioneers*

Lichens and algae do not have roots and require only sunlight and water.

These species use acid to make a surface more friable. Once lichens are established, mosses use rhizoids to root themselves to the site. When

the dead moss decomposes, it provides a soil base for vascular and flowering plants (Bowman and Jung 2023; Jung and Eyster 2025).



## **Common Mallow**

### *Malva neglecta*

Common Mallow is a low-growing, spreading plant with a deep taproot. Seeds can germinate on bare ground and can survive being buried for many years. A medicinal tea can be made from the leaf or root (Del Tredici 2010, 240).



## **Shaggy Soldier**

### *Galinsoga quadriradiata*

Shaggy Soldier is a member of the daisy family. It is a ruderal annual with a very short life cycle that germinates on disturbed soil and can colonize bare ground.

This plant is edible, and its extracts can be used to treat wounds (Del Tredici 2010, 150).





0-0.2 M  
ASPHALT

0.2-4 M  
FILL,  
SAND,  
SILT, CLAY,  
LOOSE

### **Pedology & Pedogenesis**

The branch of science concerned with the formation, nature, ecology, and classification of soil (i.e. soil science) is called Pedology. Pedogenesis refers more specifically to the processes through which soil originates and develops as a natural body, including its vertical structure within the landscape and the interpretation of its properties for use and management (Baumler, Oliver, and Stockmann 2023, 7).

The pedologist Hans Jenny (1941) defined soil as a function of climate, living organisms, relief or topography, parent material, and time. He was among the first scientists to recognize humans as biotic agents impacting soil generation. In the Anthropocene, human influence on soil formation is so pronounced it is often treated as a distinct process called anthropogenesis (Baumler, Oliver, and Stockmann 2023, 8).

### **Anthropogenesis**

Whether we are aware of it or not, humans are soil-forming creatures and the soils we create are cultural landscapes. In “Reclaiming Freak Soils: From Conquering to Journeying with Urban Soils,” the anthropologist Germain Meulemans documents soil-building practices of urban gardeners along Paris’s Petite Ceinture, who plant in the post-industrial ground. She writes that

“socialities, skills, and soils grow together in the permanent process of their making and remaking” (23). The systems and daily practices that serve humans are often repurposed by other species who find niches in our altered environment. Whether intentional or not, the soils around us are continually being made and remade by human action.

### **The Challenge of Classification**

Despite its ubiquity, soil is difficult to classify and define precisely. As Seth Denizen notes, GIS mapping systems tend to privilege surface overlays, obscuring the variability and relationships between soil strata and their depths (2023, 582). Moreover, the disciplinary lens through which we study soil shapes how we understand and value it. These differing perspectives have produced “different epistemologies for knowing the soil,” resulting in vastly different definitions and classification systems depending on who is studying it and for what purpose (Denizen 2023, 580). Within the World Reference Base of Soil, urban soils as *Technosols*, or soils shaped by human activity, often containing materials not found in non-anthropogenic environments (Nugent and Allison 2021, 3).

Acknowledging the complex nature of these systems, soil scientists such as Andie Nugent and Steven D. Allison, have called for an



interdisciplinary approach to studying urban soil, drawing on work from both natural and social scientists who can articulate the cultural and political dimension of these human-modified systems (2021, 4). Landscape Architects, who work with soil as a medium for design in complex urban spaces, are uniquely positioned as practitioners who can integrate the natural, cultural, and political aspects of soil in a coherent, legible manner.

### **Life Under the Urban Surface**

As surfaces are sealed and landscapes altered, urban soils become increasingly illegible. Owing to their heterogeneity and unpredictability, soil maps often collapse these environments into generic categories such as “fill”

or “urban land,” obscuring their complexity (Denizen 2023, 583). Construction processes typically remove topsoil and replace it with structural subbase layers that are sealed off from typical material flows. Over time, cracks and weathering allow water and oxygen to infiltrate, gradually altering the character of subsurface conditions (Kimihiro and Masayuki 2015, 135). Though there is minimal biodiversity under sealed soil layers, some microscopic species, particularly bacteria, can still live in these challenging environments (Pereira, O’Riordan, and Stevens 2021, 1455). This microbial environment, in turn, impacts the kinds of plants that can emerge, visible to us above ground. Everywhere, even under asphalt, there is life in soil.

## TIME SCALES OF SOIL FORMATION

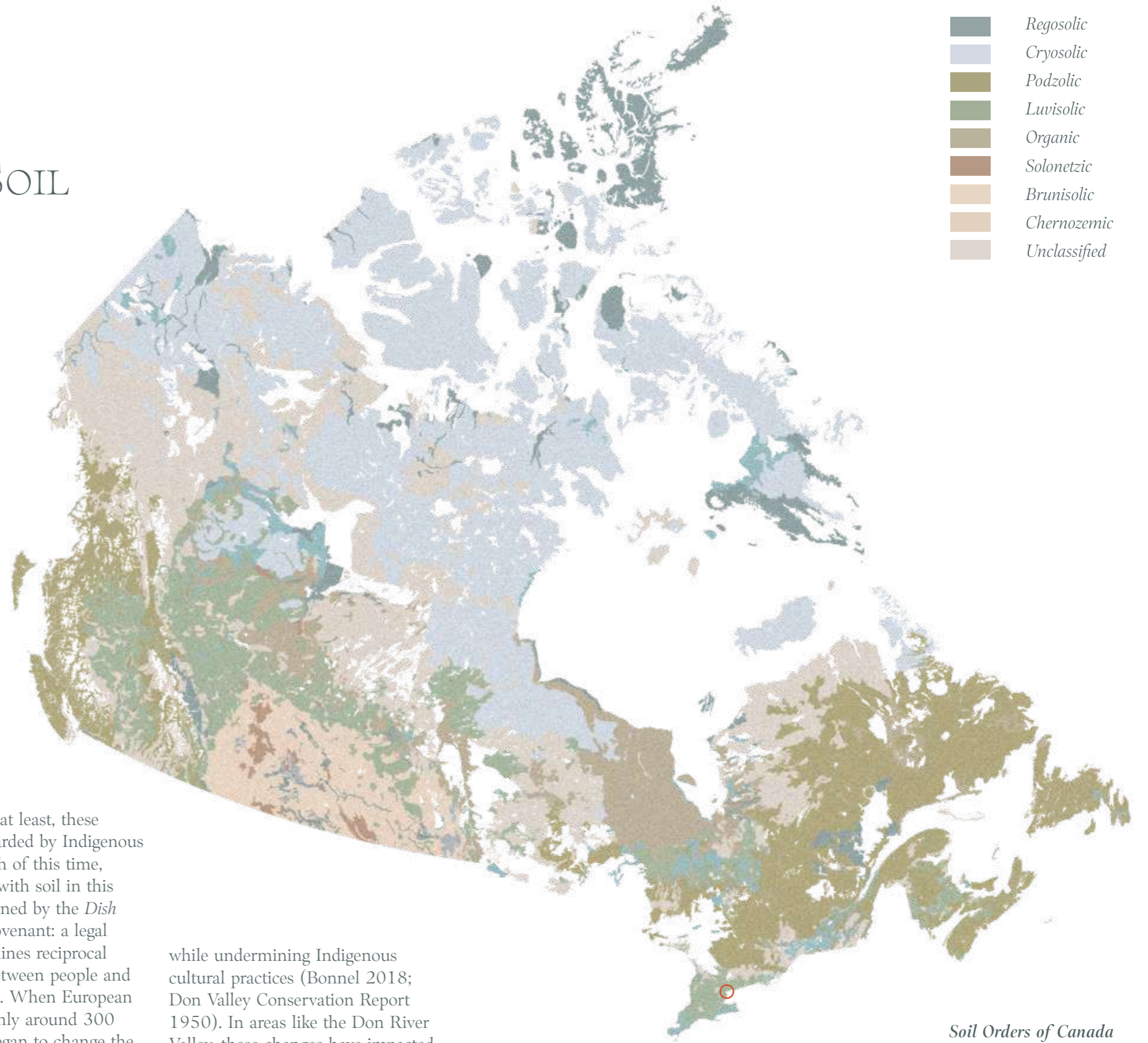
Toronto's topsoil is classified as luvisolic, a type of forest soil that reflects the mixed wood plains that once characterized this region (The Canadian System of Soil Classification 1998). The city's strata has been shaped over millennia and reflects movements across geologic time.

Millions of years ago, this land was located close to the equator and covered with warm, shallow seas that hosted a multitude of species, including mineral-forming plankton (Eyles 2002). These early sea creatures sunk to the ocean floor and, eventually, combined with clay, lime, and other materials to become the shale and limestone bedrock that underlies most of Toronto today (Eyles 2002).

The layers that have accumulated since then reflect the formation and movement of glaciers during the earth's many ice ages, as well as the movement of glacial meltwater. The shoreline of what is now Lake Ontario grew and shrank while boreal forests emerged and, as the climate warmed, were replaced by a mixed wood plains ecozone (Glenny 1913).

Since the last ice at least, these forests were stewarded by Indigenous peoples. For much of this time, human relations with soil in this region were governed by the *Dish with One Spoon* covenant: a legal tradition that outlines reciprocal responsibilities between people and land (Loft 2022). When European settlers arrived, only around 300 years ago, they began to change the character of the soil again, rapidly, by clearing most of the existing forest for agriculture and pushing out the region's first inhabitants

while undermining Indigenous cultural practices (Bonnell 2018; Don Valley Conservation Report 1950). In areas like the Don River Valley, these changes have impacted the soil's ability to retain water, resulting in altered river hydrology, increased erosion, and higher pH levels (Martin 1988).



### Soil Orders of Canada

Toronto's soils are classified as Luvisolic, a type of soil dominant in forested landscapes underlain by loamy tills.

## Toronto's Soil Timeline

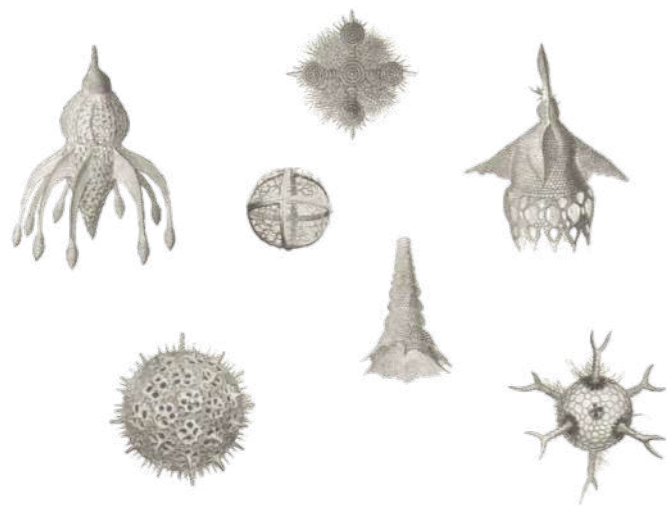
540-360 million years ago

2.5 million to 13,000 years ago

10,000 BCE - 1787 CE

1787 - Present

### Fossilized Radiolarians



The paleozoic bedrock under Toronto's soil was formed during the Cambrian and Ordovician eras. During this time, the land mass that is now Southern Ontario was situated near the equator and covered by shallow, warm, tropical seas with abundant biodiversity (Eyles 2002, 118).

Toronto's bedrock formations consist mainly of shale interbedded with calcareous siltstone and limestone. These sedimentary rocks were formed over millennia through the accumulation of mineral and organic particles. Most limestone, for instance, consists of the deposited remains of calcium-forming plankton, coral, shellfish, and other sea creatures that build skeletons or shells from calcium carbonate (Freeman 2008, 26).

### Glacially Deposited Rock Glacial Erratic

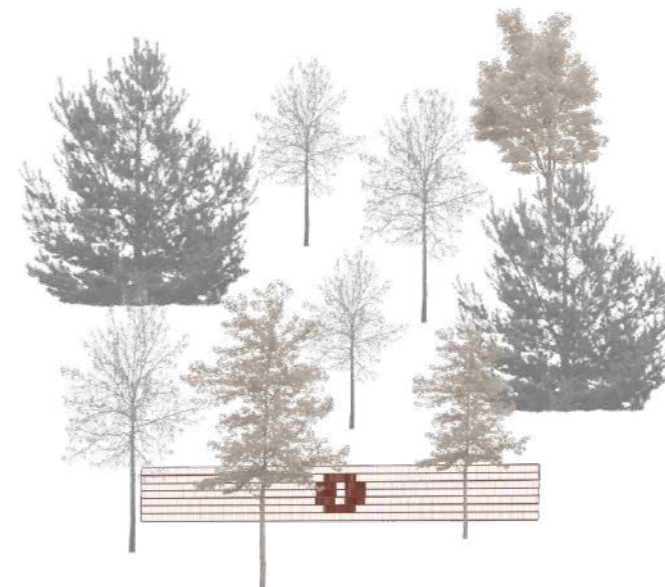


During the last ice age, snow and ice that accumulated across what is now Northern Canada began to move south, gouging features such as lake basins along the way (Eyles 2002, 198).

During the Illonian Glaciation, 135,000 years ago, ancient shale was torn up and deposited in Southern Ontario, forming the York Till deposit. Later, around 80,000 years ago, during the Wisconsin Glaciation, sand, gravel and boulders were carried southward (Eyles 2002, 198).

As the climate warmed, glacial melt water created rivers that carried silt and sand while carving the land. This resulted in the formation of luvisolic soils, which developed from the pulverization of calcium- and magnesium-rich parent materials (Soils of Canada, 2023).

### Mixedwood Plains Governed by the Dish with One Spoon Wampum Covenant



12,000 years ago, after the last ice age, the Toronto region was largely forested and the land was stewarded by Indigenous peoples. As temperatures warmed and the ice retreated, boreal forests gave way to mixed wood plains forests (Loft, 2022). These changes were supported by the formation of luvisolic soil, which is dominant in forested landscapes (Soils of Canada, 2023).

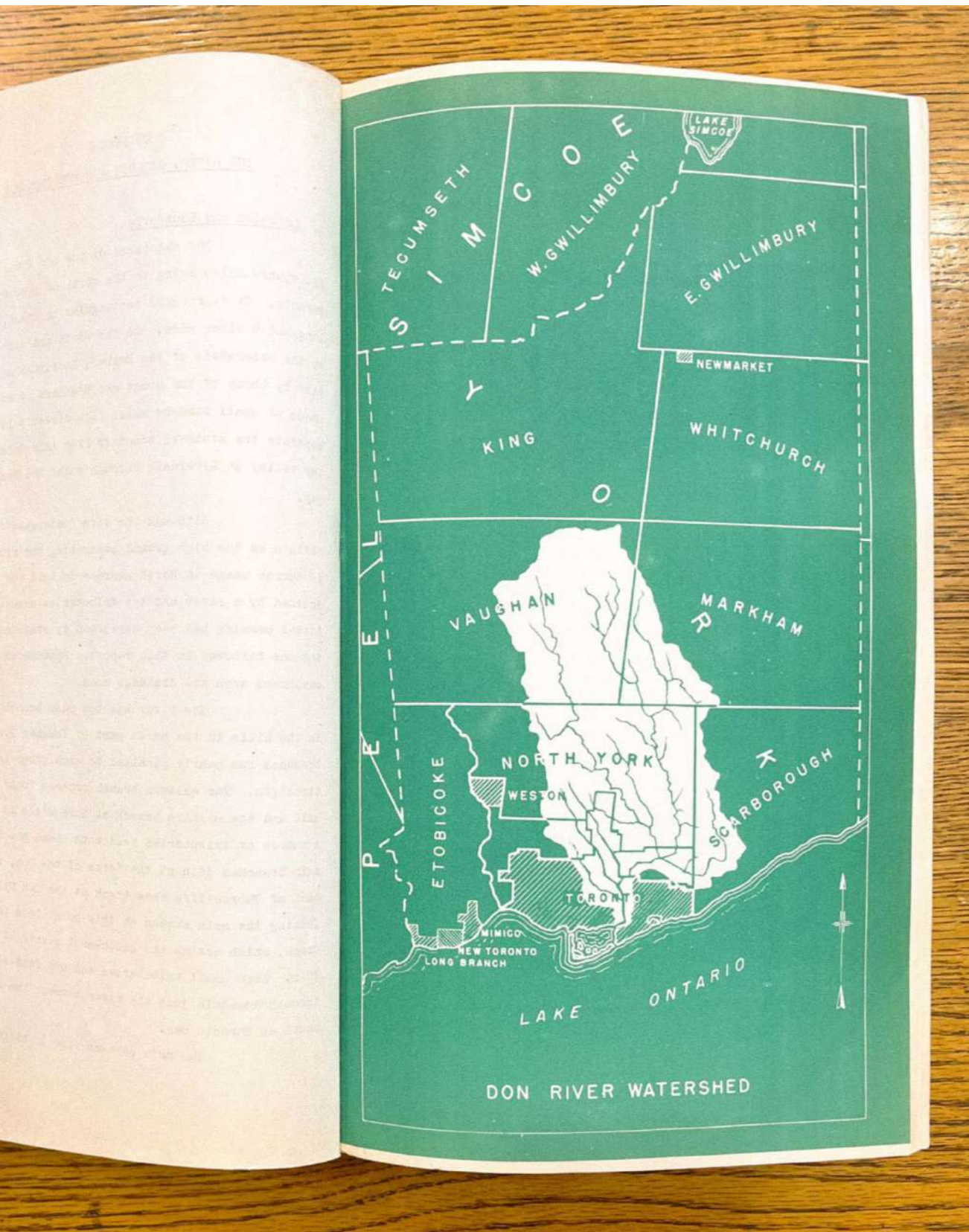
Between 1200-1600 AD the Wendat Peoples had permanent agricultural settlements on this land. Before the 1600s, Haudenosaunee and Anishinaabe communities used the area for seasonal fishing. By the 1700s the Mississaugas had permanent settlements along Lake Ontario. Throughout this time, the area was governed by the Dish with One Spoon Wampum Covenant (Loft, 2022).

### Early Settler Agriculture



In 1787 the first iteration of the Toronto Purchase was signed between the Mississauga Nation and the British: a fraught agreement rife with inconsistencies (Freeman 2010, 38). Over the course of the next 200 years, Indigenous peoples were pushed out of their traditional territories and the land was offered to British loyalists, officials, and military officers through land grants (Smith, 2025).

The luvisolic soil of the mixed wood plains ecozone proved to be rich agricultural soil that facilitated the rapid growth of Toronto and was altered in the process (Bonnell 2014, 20).



*Don River Watershed*  
 "Don Valley Conservation Report, 1950."  
 Collections U of T.

*The removal of trees in the 19th century impacted the flow of water throughout the Don River Watershed.*

*Soil Profile of the Don River Watershed*  
 "Don Valley Conservation Report, 1950."  
 Collections U of T.



- A1  
**6" Humus Bearing Horizon**  
 Dark brown, friable, loam
- A2  
**4-5" Horizon of Leaching**  
 Grey, Powdery loam
- B  
**29" Horizon of Accumulation**  
 Compact, structured, reddish-brown and brown clay loam
- C  
**Parent Material**  
 Compact clay, till deposit, some stones and boulders, shale and limestone

The removal of Toronto's forests in the 19th and 20th century changed the character of the soil and the relationship between the land and the river. Without roots, soil is exposed to erosion through surface runoff, which in turn increases the sediment yield in water courses. The reduced ability for soil to retain and slow water has changed the river's hydrology with higher peak flows of a shorter duration (Martin, 1988).



*“As vegetative cover is removed soils are exposed to the erosive forces of surface runoff... The clay soils of the Peel Plain, which is the major physiographic region in the Toronto area, contribute fine particled sediment to the water courses which tend to remain in suspension or, when settled, clog interstitial spaces in gravel and rubble substrates. Among other effects, eggs laid in gravel spawning beds would eventually be suffocated by a blanket of silt.”*

- Deborah Martin-Downs, *Don River Biological Inventory: Past, Present, and Future Evaluation - Technical Report #16*

*“Soil wash and small rills have deposited a mass of sediment at the bottom of a mild slope”*

*(Don Valley Conservation Report, 1950)*



*“A spring freshet running over grass does not cut into the soil”*

*(Don Valley Conservation Report, 1950)*



# 04

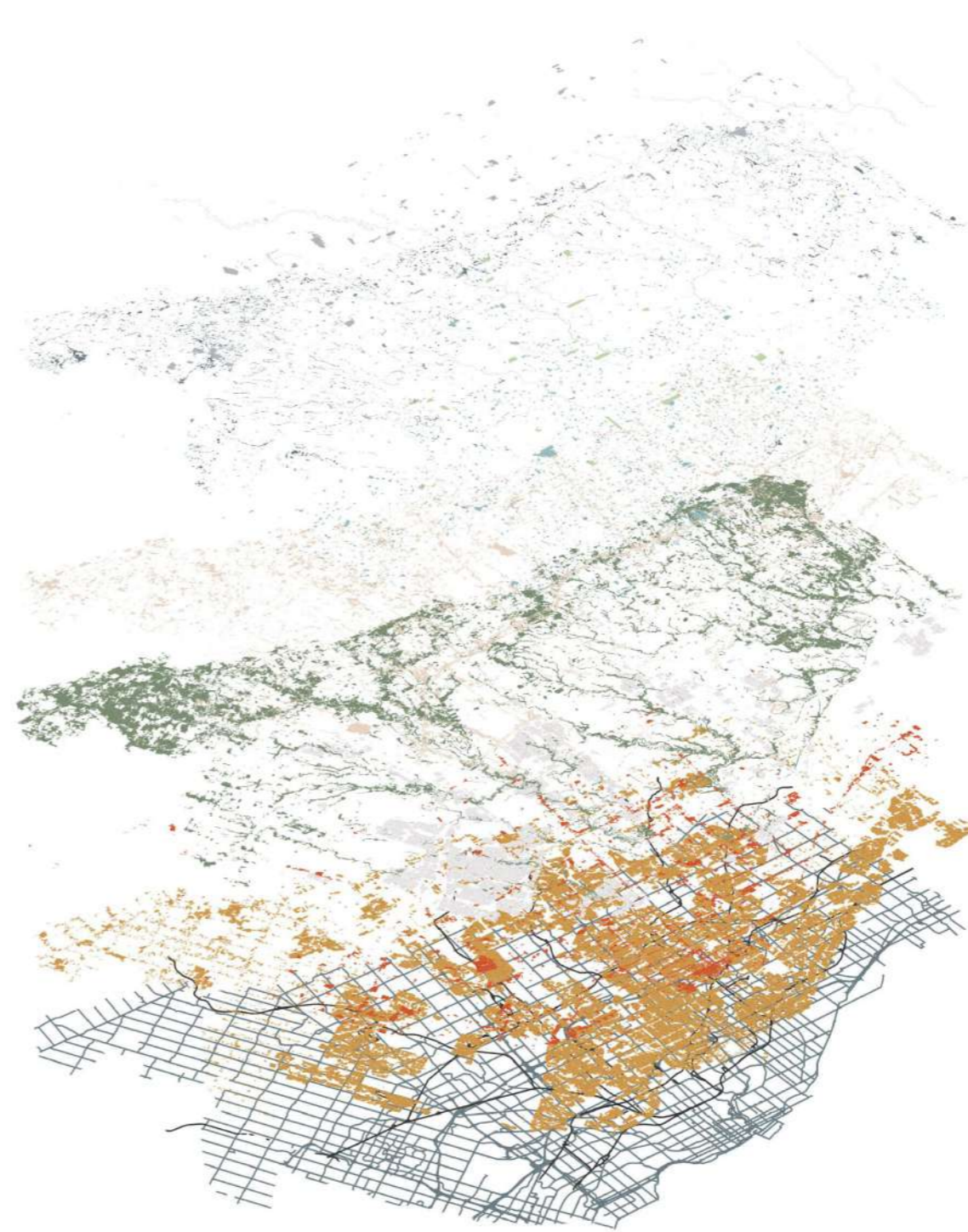
## SOIL AS A CULTURAL LANDSCAPE

*It matters what we use to think other matters with; it matters what stories we tell to tell other stories with; it matters what knots knot knots, what thoughts think thoughts, what descriptions describe descriptions, what ties tie ties. It matters what stories make worlds, what worlds make stories.*

- Donna Harraway, quoted in *Thinking with Soils* by Juan Francisco Salazar, Céline Granjou, Anna Krzywoszynska, Manuel Tironi, and Matthew Kearnes

Soil is a finite resource. Naturally occurring soils take centuries to form through complex biotic and abiotic interactions. How we use our land continues to impact soil character and the life it can support. In Canada, only about 7% of land is suitable for agriculture, and we have been expanding into much of this (Hein and Poulin 2023). The high volume of construction in Toronto, combined with lax regulatory oversight has created a black market

for soil dumping in the Greenbelt, with over 75 large-scale dump sites identified by the citizen-led Ontario Soil Regulation Task Force (Welsh 2014; Smee 2018). This soil, which holds the residue of urban use, is often discarded on existing topsoil, impacting ecologies and the health of residents (McIntosh and Syed 2021). Conversely, topsoil is harvested and brought into cities where it is appropriated to support plant life here.



- contemporary land uses impacting soil
- vacant land
  - riverine
  - wetland
  - open space
  - institutional
  - meadows
  - forest
  - industrial
  - commercial
  - residential
  - train tracks
  - roads

*known soil dumping sites  
identified by the Ontario  
Soil Regulating Task Force*

*Arrows trace the  
movement of soil into the  
city from agricultural lands  
and out of the city to  
known soil dumping sites*

*Agriculture within  
TRCA jurisdiction;  
urban landscapes  
often bring in topsoil  
from former  
agricultural sites*

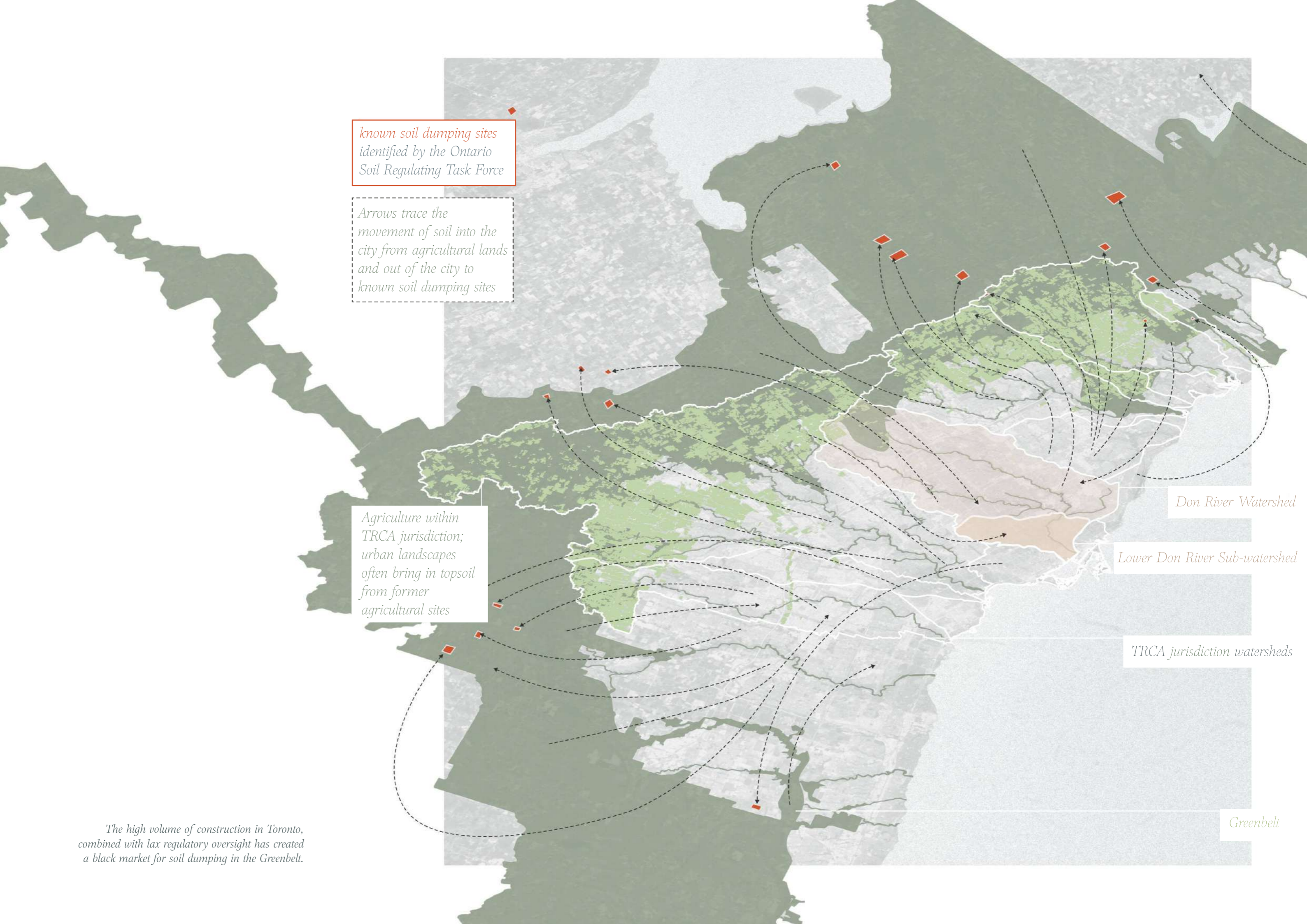
*Don River Watershed*

*Lower Don River Sub-watershed*

*TRCA jurisdiction watersheds*

*Greenbelt*

*The high volume of construction in Toronto,  
combined with lax regulatory oversight has created  
a black market for soil dumping in the Greenbelt.*



59%

1-10  
billion

250 L

60%

24  
billion

Percentage of all species that are estimated to live in soil, making it the Earth's most biodiverse habitat. 90% of fungi, 86% of plants and 40% of bacteria live in soil (Richter et. al 2011, 2079).

Number of organisms in a single teaspoon of soil. The weight of organisms in the top 10 centimetres of soil across a single acre can weigh as much as 2 tonnes, the same weight as a great white rhino (Sothe 2022).

Amount of water that a single cubic meter of soil can retain in the right conditions.

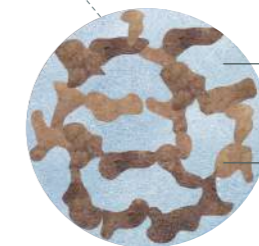
Percent of soil organic matter that comes from carbon. Globally, the first 2m of soil holds approximately 2,400 gigatons, three times the amount of carbon in the atmosphere. Soil in Canada holds 20.4% of global soil carbon (Agriculture and Agri-Food 2024).

Tonnes of fertile soil lost every year through intensive farming alone. The FAO estimates that 33% of the planet's land is severely degraded. This could rise to 90% by 2050 if nothing changes (FAO 2024).



### Rhizosphere

The rhizosphere is a layer of approximately 3mm around a plant's roots, particularly the tip, inhabited by a diverse ecosystem of microorganisms. Plants release proteins and sugars (root exudates) that feed these organisms who, in turn, provide synergistic services to the plant.



### Healthy Soil Structure

Air and water circulate through pores

Sand, silt, and clay are assembled into larger particles called aggregates

The soils that we disrupt are full of life. Soil is the earth's most biodiverse habitat and is home to 59% of all known species (Anthony, Bender and van der Heijden 2023). A single tablespoon of healthy soil can contain 1-10 billion organisms—more than the number of humans on Earth (Lawlor et al. 2000; Gans, Wolinsky, and Dunbar 2005). Soil health is integral to food production, the carbon cycle,

and hydrological systems (Sothe et al. 2022). Yet, the FAO estimates that 33% of the world's soils are currently degraded. By 2050, if nothing changes, this number will reach 90% (Food and Agriculture Organization of the United Nations, 2018). Whether or not we perceive it, there is a reciprocal relationship between above and below-ground worlds.

As the anthropologists Mike Anusas and Tim Ingold have written, many industrialized cities such as Toronto have aspired “toward a logic of form that reduces our ability to perceive the depth and scope of our material involvement with the world around us” (2013, 58). Within this context, dynamic systems become opaque, and we do not see ourselves as participants.

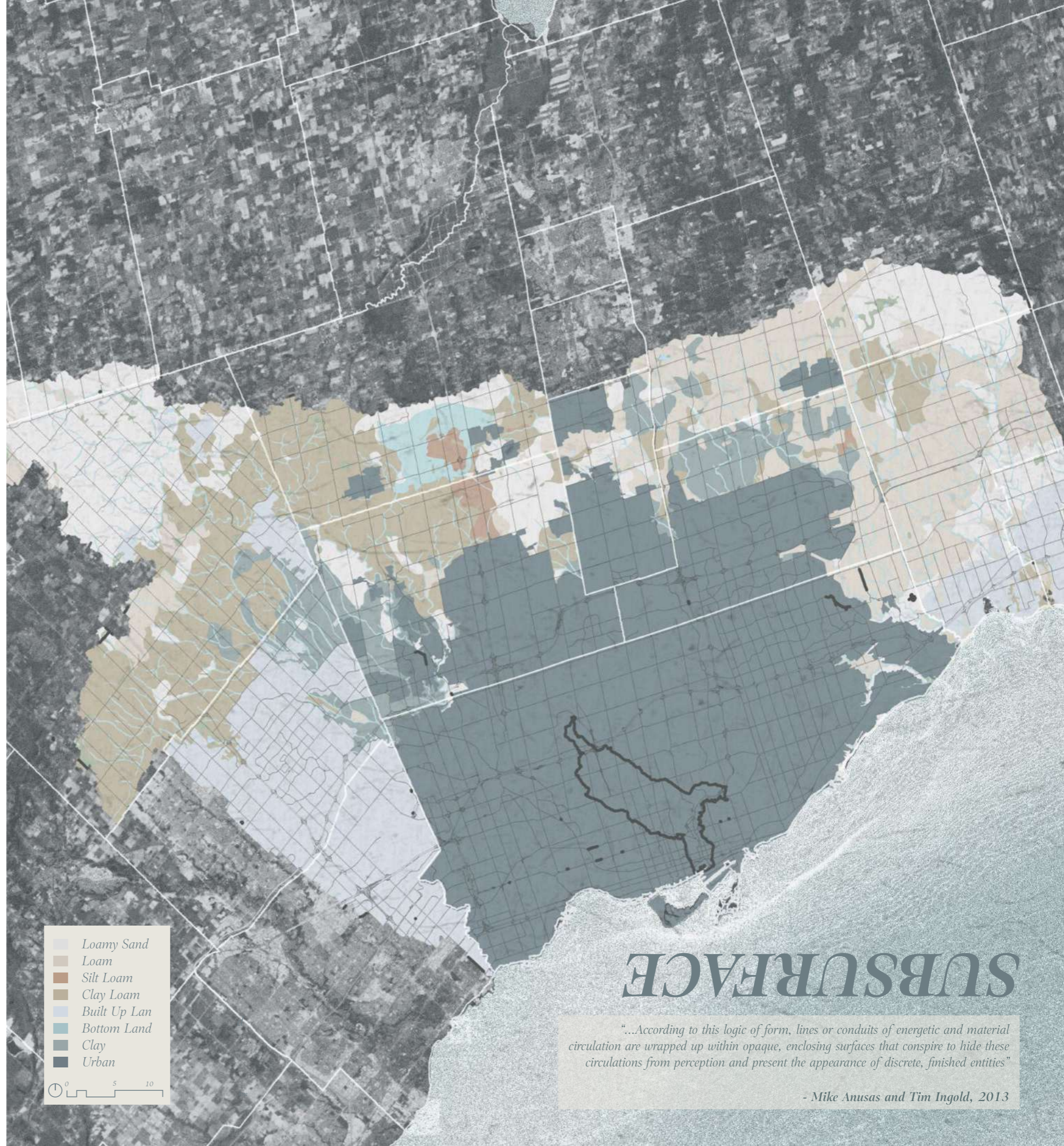


# SURFACE

*“...mainstream practices of design in western industrialized societies aspire toward a logic of form that reduces our ability to perceive the depth and scope of our material involvement with the world around us...”*

This is illustrated in many soil surveys that classify city soils as Urban, Built Area, or SUITMA (Soils of Urban, Industrial, Transport, Mining/Military Areas) (Gerasimova and Konyshkov 2023). Urban land uses are heterogeneous and subject to rapid change. This makes their soils difficult to characterize (Denizen 2023). Their infinite diversity means that it is simpler to define them simply as an altered form of something that was once “natural,” particularly in surveys designed for agriculture in which urban soils were deemed irrelevant (Denizen 2023).

Yet, we do want plants in cities, and there are many species that grow here between impermeable surfaces. For plant life to thrive in cities without depleting resources elsewhere, we need to understand the soil that exists here, with all the complex accumulations of human history and use that characterize urban environments.



# 05

## DESIGN PROPOSAL

This thesis responds to these challenges by proposing an urban soil survey and a series of experimental gardens, designed to communicate the character of the below-ground world through collaborations with plant life across the Lower Don Watershed. Upon survey completion, sites would be selected to represent different geological and land-use histories. The five selected sites are connected by a 10 km trail that follows the path of water to Lake Ontario.

These sites emphasize different relationships between soil, water, plants, and humans, though these are just a few of many potential options; soil is interesting everywhere.

On each site, a different experimental garden type will respond to available soil information and existing plant life. Each garden must work with the existing ground. Though no new soil may be added, soil can be changed through plantings and amendments such as compost. These gardens are intended to be inter-species collaborations with varying degrees of human intervention. The work rendered here represents schematic possibilities in response to specific conditions.

*These photographs, taken at each of the five garden sites in the Lower Don Valley Sub-watershed, illustrate the variable nature of soil in urban environments.*



In conducting research for this project, I walked to each site on this envisioned route and documented the sites, the path between them, and took a small soil sample from each location. For each sample, I analyzed the sand, silt, and clay content. As many of these sites are highly disturbed, the character of the soil can vary substantially within even a few meters. These samples are not intended to be scientific data points but fragments that illustrate the qualitative characteristics of the ground across each site and the variability between them.



Soil conditions have also been documented using publicly available geotechnical borehole data from the Government of Ontario. On each site, a potential approach to planting and species selection has been proposed, drawn from observations of existing plants that are already thriving in each area.



# URBAN SOIL TRAIL: SURFACE



## Toronto Surface Conditions

-  Parks and Tree Cover
-  Impervious Surfaces



**YONGE & EGLINTON**  
*Land Use: Central Business District*  
*Historic Land Use: Farm*



**TODMORDEN MILLS**  
*Land Use: Meadow*  
*Historic Land Use: Papermill, Prisoner of War Camp, Forest*



**DON RIVER BANK**  
*Land Use: River Valley*  
*Adjacent to Don Valley Parkway*

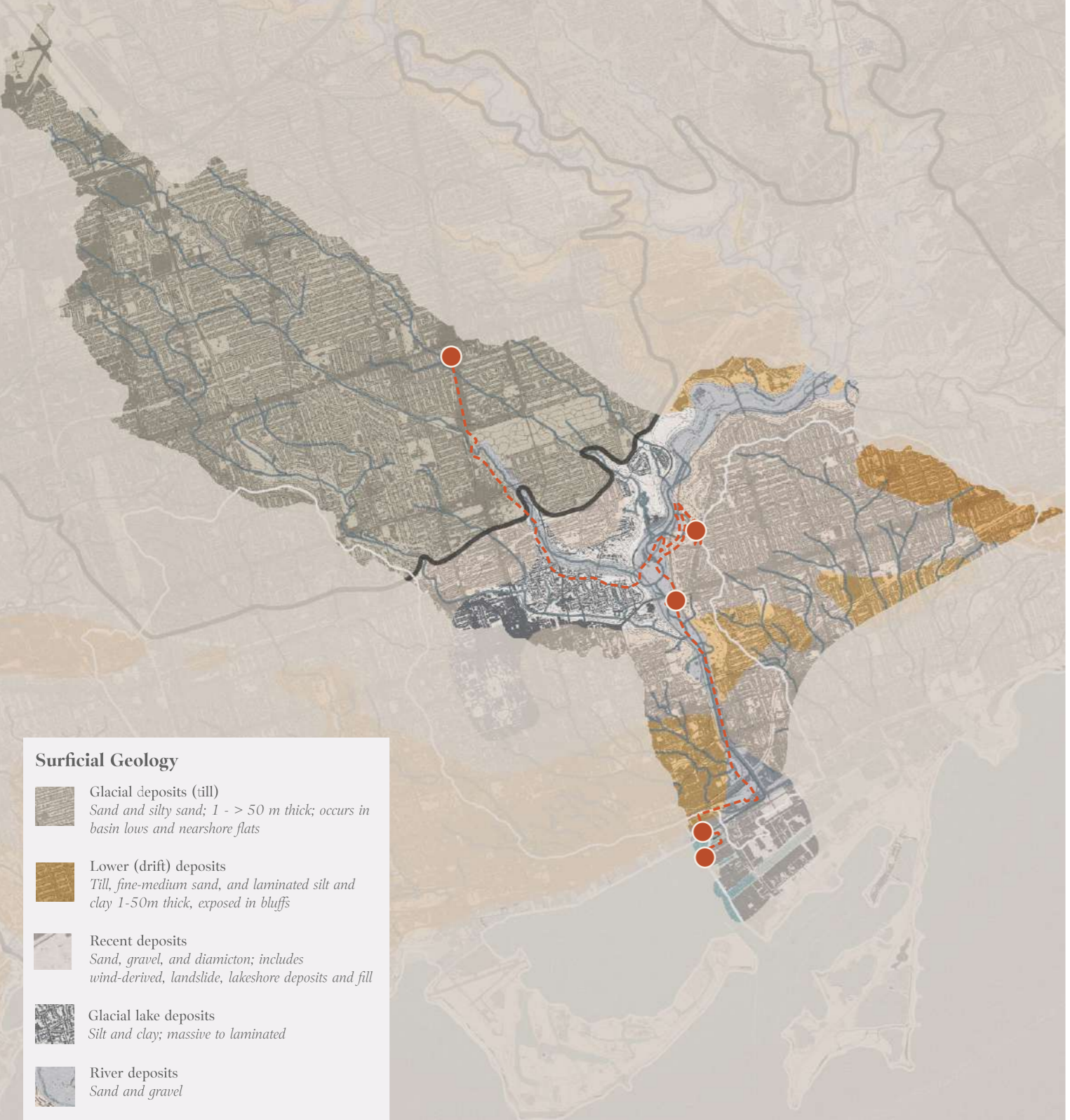


**DISTILLERY DISTRICT**  
*Land Use: Mixed-use Commercial*  
*Historic Land Use: Industrial, Forest*



**KEATING CHANNEL**  
*Land Use: Industrial*  
*Historic Land Use: Marsh*

# URBAN SOIL TRAIL: SUBSURFACE



**Surficial Geology**

-  Glacial deposits (till)  
Sand and silty sand; 1 - > 50 m thick; occurs in basin lows and nearshore flats
-  Lower (drift) deposits  
Till, fine-medium sand, and laminated silt and clay 1-50m thick, exposed in bluffs
-  Recent deposits  
Sand, gravel, and diamicton; includes wind-derived, landslide, lakeshore deposits and fill
-  Glacial lake deposits  
Silt and clay; massive to laminated
-  River deposits  
Sand and gravel

**Intersecting Features**

-  Buried Creeks
-  Glacial Lake Iroquois Shoreline



**YONGE & EGLINTON**  
*Surficial Geology: Glacial deposits (till)*  
*Historic Land Use: Farm*



**TODMORDEN MILLS**  
*Surficial Geology: Glacial Lake Deposits*  
*Historic Land Use: Papermill, prisoner of war camp, forest*



**DON RIVER BANK**  
*Surficial Geology: Riverine*



**DISTILLERY DISTRICT**  
*Surficial Geology: Lower (drift) deposits*  
*Historic Land Use: Industrial, forest*



**KEATING CHANNEL**  
*Surficial Geology: Recent deposits*  
*Historic Land Use: Marsh, industrial*

# SITE I: YONGE AND EGLINTON

## SURFICIAL GEOLOGY:

Glacial deposits (Newmarket / Northern / Bowmanville Till); sandy silt till; 3% stone content, stratified interbeds, 1-50m thick

## LAND USE:

Mixed-Use Commercial



The walk begins at Yonge and Eglinton, a former forest that is now one of Toronto's central business districts. Toronto's 1937 rebellion began here, and this is a soil history too. Rebels, many of whom were farmers, were aggrieved by the practice of allocating land to the Anglican church (Kilbourn 2008; Dunham 1963, 121); a practice which was also a tool of colonization (Kern 2025). This land was often let to sit fallow and seeds of "weedy" meadow

species migrated to nearby farms (Kilbourn 2008). Today the site is almost entirely hardscaped, though there is soil visible in in planters and at the edges of construction areas, as shown in the adjacent image. What remains of the surficial geology, below fill and impermeable surfaces is sandy silt derived from glacial deposits (Ontario 2019).



### Site of Montgomery's Tavern

*In 1837 William Lyon Mackenzie led a rebellion against the British colonial government from this site. One of the significant grievances leading to the rebellion was the allocation of 7% of land to the Anglican Church by the British Government. Used as a tool of colonization, this land often sat fallow, aggravating nearby farmers who complained that weeds spread to their properties.*

Soil Sample

1968 Borehole

1967 Borehole

Garden Site 1

2025 Contours

### Removing the Forest, Reshaping the Land

*Yonge and Eglinton was annexed to the city of Toronto in 1912, along with North Toronto. The forest cover in this area had been felled for agriculture in the early 1800s. Even still, maps from 1909 show that in the early 20th century, some tree cover, particularly around ravines, remained. In the past century, the land has been dramatically reshaped.*

Urban Soil Trail

1909 Contours

Remaining Forest Cover in 1909

Path of Yellow Creek, 1909

Edge of Clergy Reserve Site

# BOREHOLES



0 ~ 3.7 m  
till, silt, clay,  
brown, hard,  
medium  
grained

3.7 ~ 4.5 m  
silt, grey,  
dense

7.6 ~ 9.3 m  
sand, clay,  
brown, dense,  
medium  
grained

9.3 ~ 10.5  
m clay, sand,  
brown, stiff

10.5 ~ 16.9  
m sand, silt,  
gravel, brown,  
dense

1961



0 ~ 1.5 m  
fill, clay, silt,  
sand, compact

1.5 ~ 3 m  
till, silt, clay,  
compact

3 ~ 6.1 m  
silt, clay, sand,  
brown, dense

6.1 ~ 8.8 m  
clay, silt, grey,  
stiff

8.8 ~ 15.2  
m sand, silt,  
gravel, brown,  
dense

1971

Midtown Toronto  
April 2025



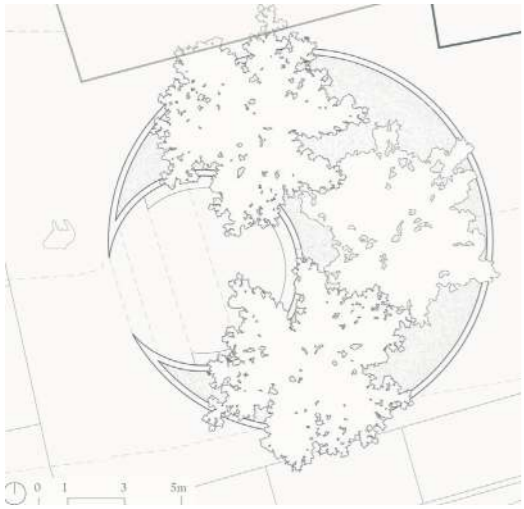
Midtown Toronto  
April 2025



SITE

# GARDEN I

## *Planting with Ruderal Species*

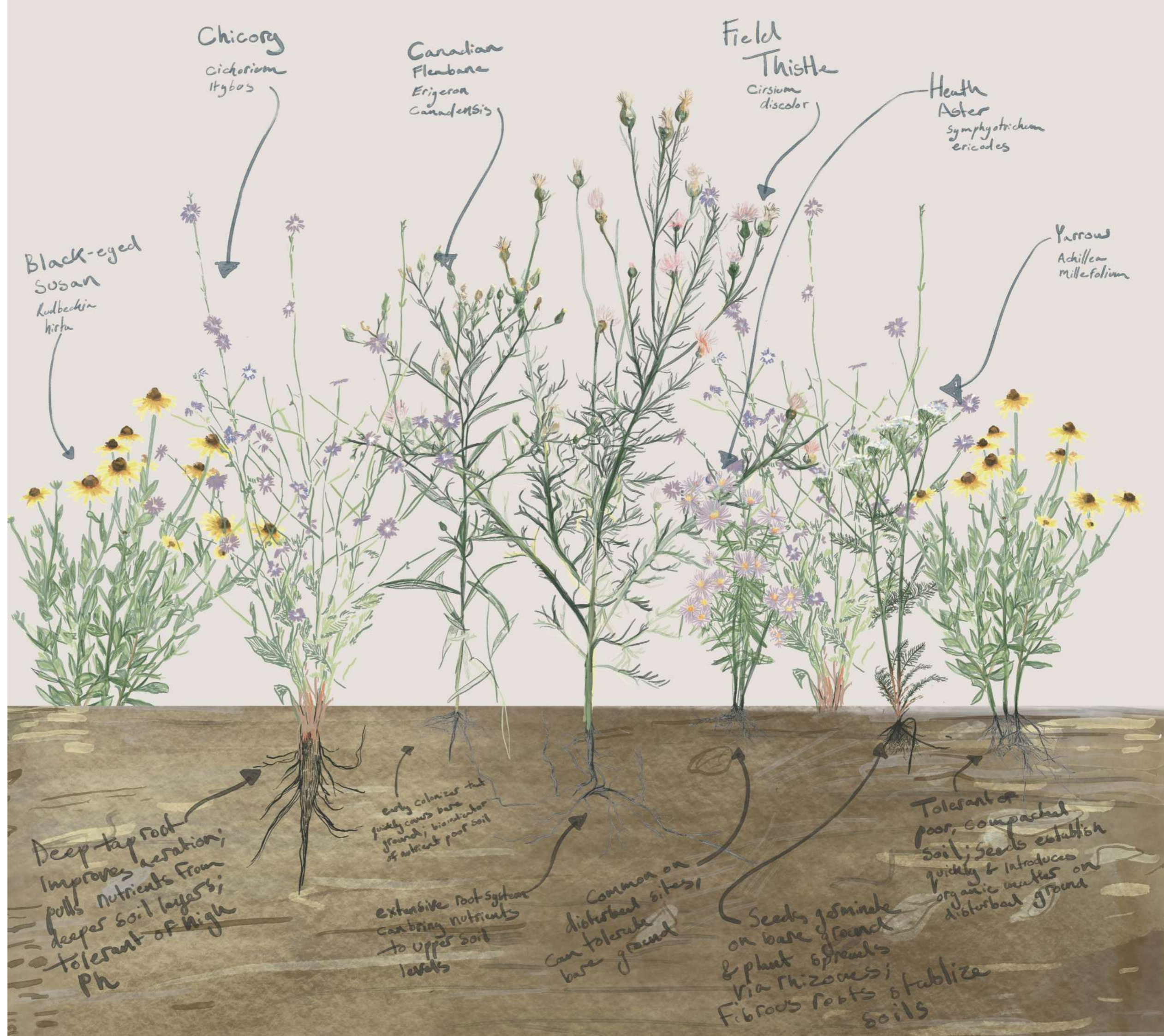


This site would host a garden with a planting plan that emphasizes ruderal native species that are often considered weedy. These plants would be planted to deliberately emphasize aesthetic interest, inverting assumptions about which plants can be considered beautiful. Soil would be amended with compost and more competitive species would be paired back when required. This site is a harsh condition for plants and the ruderal species selected are those that can withstand poor soil and a high volume of foot traffic. In this garden, the plants that can survive here are celebrated.



# GARDEN STRATEGY:

Planting of hardy native species found nearby, adapted to disturbed and sandy soils. Regular cutting back of more aggressive species.



# PLANT LIST | *Planting of Rudder and “Weedy” Meadow Species*

LATIN NAME	COMMON NAME	WATER	SOIL	SUN	HEIGHT	BLOOM	HABITAT	SPACING
<i>Herbaceous Dicots</i>								
<i>Acalypha rhomboidea</i>	Common Three-seeded Mercury	Moderate	Rich, well-drained soil; tolerant of disturbance	Partial shade to full sun	30–80 cm	Jun - Oct	Forest edges, disturbed soil, fields	20-30 cm OC
<i>Achillea millefolium</i>	Yarrow	Low to moderate; drought-tolerant	Well-drained, poor to average soils	Full sun	30–90 cm	Jun – Sept	Grasslands, roadsides, disturbed sites	30–45 cm OC
<i>Cirsium discolor</i>	Field Thistle	Moderate	Well-drained, often dry soils	Full sun	90–180 cm	Jul - Sept	Prairies, meadows, open woods	60 cm OC
<i>Erigeron canadensis</i>	Canadian Fleabane	Low to moderate	Poor, disturbed, compacted soils	Full sun to partial shade	50–150 cm	Jun - Oct	Fields, urban lots, roadsides, disturbed sites	15–30 cm OC
<i>Fragaria virginiana</i>	Wild Strawberry	Moderate	Well-drained, sandy or loamy soil	Full sun to partial shade	10–20 cm	May - Jun	Meadows, woodland edges, open fields	20–30 cm OC
<i>Hypericum kalmianum</i>	Kalm’s St. John’s Wort	Moderate; tolerates wet to dry soils	Well-drained, sandy or rocky soils	Full sun to partial shade	60–90 cm	Jul - Aug	Compact, mounding shrub	60–90 cm OC
<i>Monarda fistulosa</i>	Wild Bergamot / Bee Balm	Moderate	Well-drained, loamy or sandy soils	Full sun to partial shade	60–120 cm	Jul - Sept	Meadows, forest edges, prairies	45–60 cm OC
<i>Rudbeckia hirta</i>	Black-eyed Susan	Moderate; drought-tolerant	Well-drained, sandy or loamy soils	Full sun	30–100 cm	Jun - Oct	Prairies, meadows, roadsides	30–45 cm OC
<i>Schizachyrium scoparium</i>	Little Bluestem	Low	Well-drained, sandy or rocky soils	Full sun	60–120 cm	Aug - Oct	Prairies, savannas, dry open fields	45–60 cm OC
<i>Trees and Shrubs</i>								
<i>Rhus typhina</i>	Staghorn Sumac	Low to moderate; drought-tolerant	Prefers well-drained soils; tolerates poor, rocky, or disturbed soils	Full sun to partial shade	300-600 cm	Jun - Jul	Edges of forests, roadsides, and fields	150-300 cm OC



## SITE II: TODMORDEN MILLS

**SURFICIAL GEOLOGY:** Glacial lake deposits; Sand and silty sand;  
1->50m thick; occurs in basin lows and nearshore flats

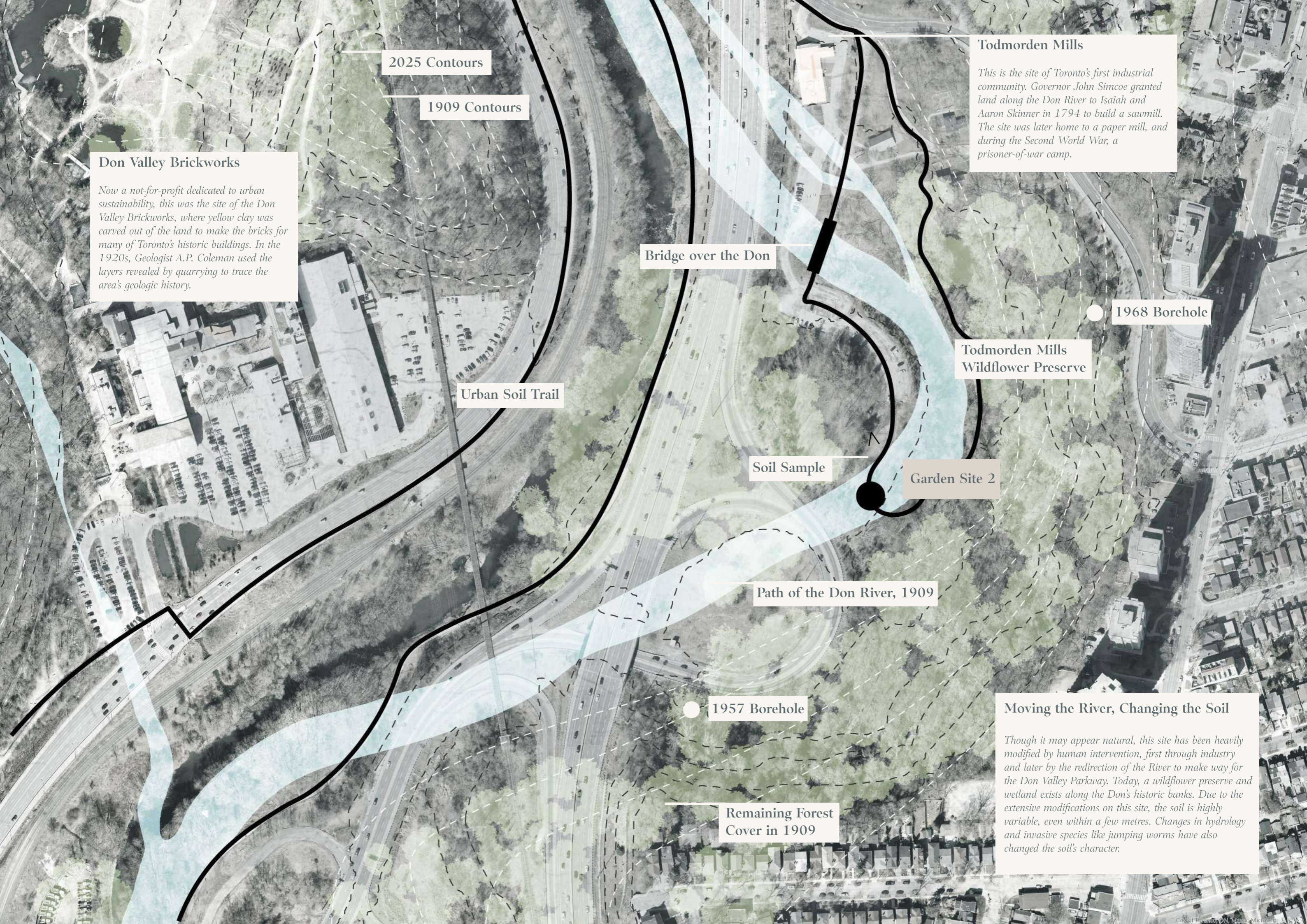
**LAND USE:** Wildflower Preserve, forest, successional forest, wetland, heritage site



The walk continues through Mount Pleasant Cemetery, along Yellow Creek, past the Brickworks, to Todmorden Mills, Toronto's first industrial hub. This site was a distillery, a paper mill, and a prisoner of war camp (Bonnell

2014). The Don River used to curve on this site, before the construction of the Don Valley Parkway (Sauriol 1981). The former bend is still visible as a wetland and wildflower preserve.





2025 Contours

1909 Contours

**Don Valley Brickworks**

Now a not-for-profit dedicated to urban sustainability, this was the site of the Don Valley Brickworks, where yellow clay was carved out of the land to make the bricks for many of Toronto's historic buildings. In the 1920s, Geologist A.P. Coleman used the layers revealed by quarrying to trace the area's geologic history.

**Todmorden Mills**

This is the site of Toronto's first industrial community. Governor John Simcoe granted land along the Don River to Isaiah and Aaron Skinner in 1794 to build a sawmill. The site was later home to a paper mill, and during the Second World War, a prisoner-of-war camp.

Bridge over the Don

1968 Borehole

Todmorden Mills Wildflower Preserve

Urban Soil Trail

Soil Sample

Garden Site 2

Path of the Don River, 1909

1957 Borehole

Remaining Forest Cover in 1909

**Moving the River, Changing the Soil**

Though it may appear natural, this site has been heavily modified by human intervention, first through industry and later by the redirection of the River to make way for the Don Valley Parkway. Today, a wildflower preserve and wetland exists along the Don's historic banks. Due to the extensive modifications on this site, the soil is highly variable, even within a few metres. Changes in hydrology and invasive species like jumping worms have also changed the soil's character.

# BOREHOLES



0 ~ 1.5 m  
sand, silt,  
brown,  
medium  
grained

1.5 ~ 10.8  
m silt, sand,  
gravel, clay,  
brown,  
medium  
grained

10.8 ~ 11.3  
m silt, brown,  
hard

9.3 ~ 10.5  
m clay, sand,  
brown, stiff

11.3 ~ 19.2  
m clay, silt,  
sand, gravel,  
grey, hard

1957



0 ~ 2.4 m  
fill, sand, clay,  
silt, brown,  
compact

2.4 ~ 5.5 m  
fill, silt,  
brown, com-  
pact

5.5 ~ 6.4 m  
fill, sand,  
gravel, brown,  
compact,  
medium  
grained

6.4 ~ 9.3 m  
fill, silt, wood  
fragments,  
brown,  
compact

9.3 ~ 9.4 m  
silt, grey

9.4 ~ 10.4  
m till, sand,  
silt, brown,  
compact,  
medium  
grained

10.4 ~ 15.8  
m till, silt,  
sand, clay,  
brown, com-  
pact, medium  
grained

1961

Todmorden Mills,  
April 2025



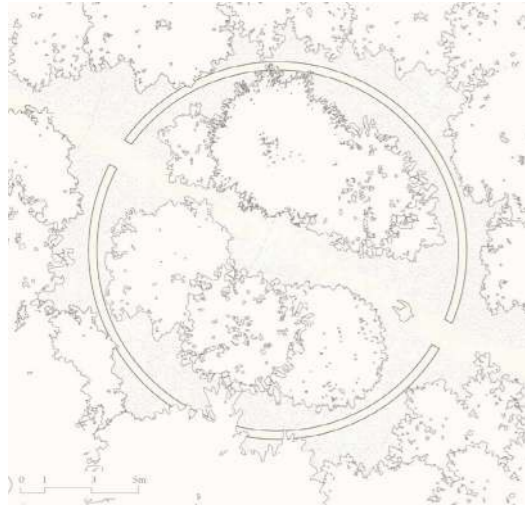
Todmorden Mills  
Wetlands, former  
path of the Don  
River, April  
2025



SITE

## GARDEN II

### *Planting & Removing*



The soil on this site is varied. Though it may look like a “natural” condition, there are many patches of fill and industrial residue interspersed with sandy glacial lake deposits. Here, rammed earth walls would be placed on a patch of land where the Don River used to flow. These walls would frame the work already being done by the Todmorden Mills Wildflower Preserve, where volunteers plant native species and remove invasives.



# GARDEN STRATEGY:

Planting of native species and removal of invasives by Todmorden Mills Wildflower Preserve Team; installation of rammed earth walls to frame restoration efforts in dialogue with site history.



# PLANT LIST | *Planting of Native Species and Removal of Invasives*

LATIN NAME	COMMON NAME	WATER	SOIL	SUN	HEIGHT	BLOOM	HABITAT	SPACING
<i>Herbaceous Dicots</i>								
<i>Ageratina altissima</i>	White Snakeroot	Medium to wet conditions	Humus-rich, well-drained	Partial shade; tolerates full sun	90-150 cm	Aug - Oct	Woodlands and thickets	45-60 cm OC
<i>Caltha palustris</i>	Marsh Marigold	Wet to waterlogged conditions	Humus-rich, muddy soils	Full sun to partial shade	20-60 cm	Apr - Jun	Marshes, swamps, wet meadows, and stream margins	30-45 cm OC
<i>Geranium maculatum</i>	Wild Geranium	Medium; tolerates moist to slightly dry conditions	Rich, well-drained, humusy soils; adaptable to various soils	Partial shade; can tolerate full sun	45-60 cm	Apr - May	Woodlands, thickets, and shaded roadside areas	30-45 cm OC
<i>Hydrophyllum virginianum</i>	Virginia Waterleaf	Moist to wet conditions	Humus-rich	Partial to full shade	30-60 cm	May - Jun	Moist deciduous forests, thickets, and marshy	30-45 cm OC
<i>Matteuccia struthiopteris</i>	Ostrich Fern	Moist conditions	Humus-rich, well-drained soils	Partial to full shade	90-150 cm	non-flowering	Moist woodlands, floodplains, and along streams	60-90 cm OC
<i>Podophyllum peltatum</i>	Mayapple	Moist	Humus-rich, well-drained	Partial to full shade	30-45 cm	Apr - May	Deciduous woodlands	30-45 cm OC
<i>Sanguinaria canadensis</i>	Bloodroot	Moist	Humus-rich, well-drained	Partial to full shade	15-30 cm	Mar - May	Deciduous woodlands	15-30 cm OC
<i>Symplocarpus foetidus</i>	Eastern Skunk Cabbage	Wet to waterlogged conditions	Muddy, humus-rich, acidic	Partial to full shade	30-60 cm	Feb - Apr	Wetlands, swamps, and along streams	45-60 cm OC
<i>Trees and Shrubs</i>								
<i>Cephalanthus occidentalis</i>	Buttonbush	Moist to wet; can tolerate standing water and flooding	rich, humusy soils; adaptable to various soils	Full sun to partial shade	150-360 cm	Jun - Aug	Wetlands, swamps, floodplains, and along stream or pond margins	120-360 cm OC
<i>Sambucus racemosa</i>	Red-Berried Elder	Moist Conditions	well-drained, loamy soils	Full sun to partial shade	300-600 cm	Apr - Jun	Forest edges, clearings, and along trails	150-300 cm OC



# SITE III: BANKS OF THE DON RIVER

**SURFICIAL GEOLOGY:** Sand and Gravel River deposits

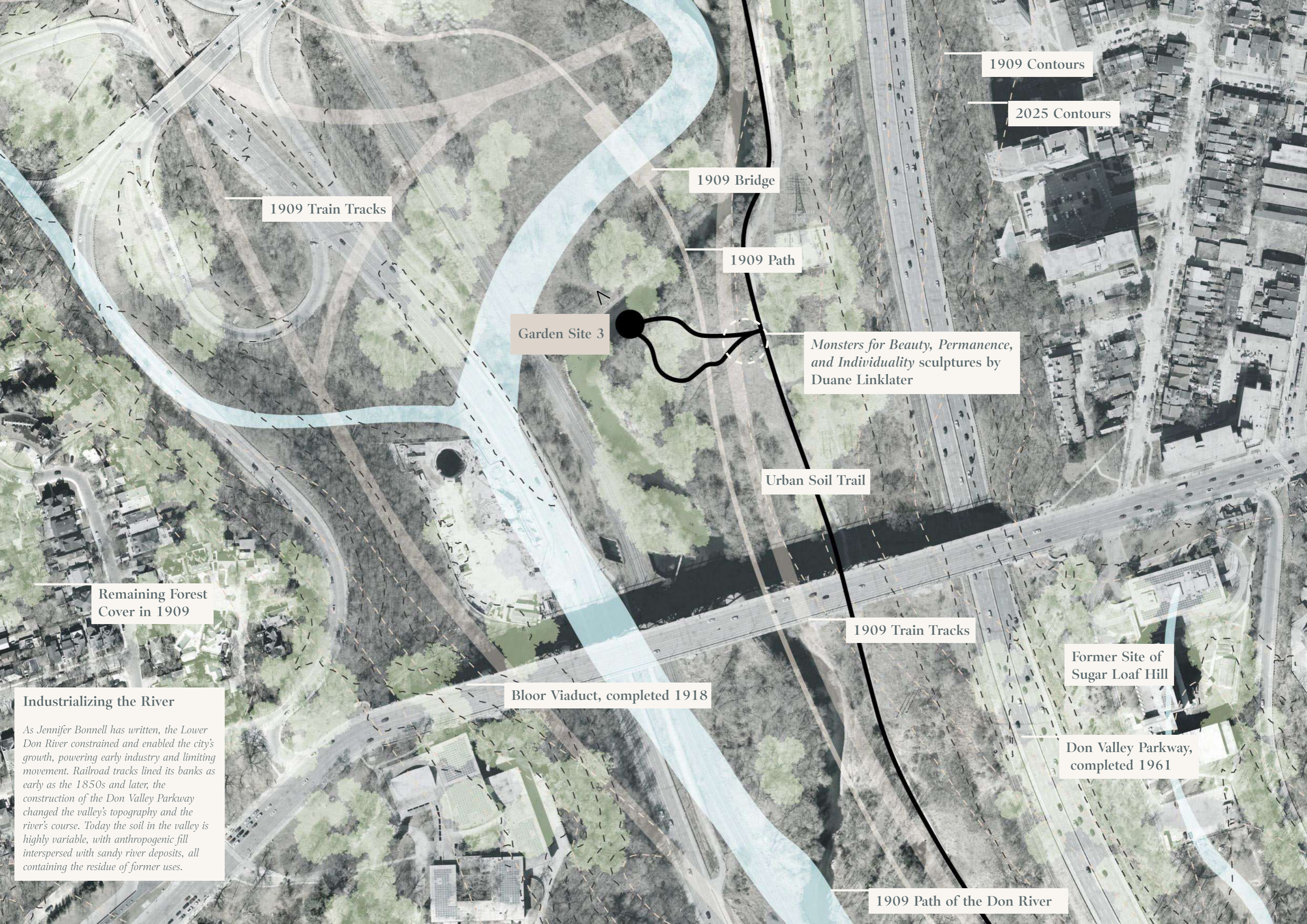
**LAND USE:** River, meadow, successional forest



The walk continues to the river's edge. The soil along the Don has been deposited by moving water over thousands of years. The construction of the Viaduct in 1913 and the Don Valley Parkway in

1960 both altered the river valley and its soils, though as late as the 1940s, the sandy shores of this site were popular for swimming (Barbour 2021).





1909 Contours

2025 Contours

1909 Bridge

1909 Path

Garden Site 3

*Monsters for Beauty, Permanence, and Individuality* sculptures by Duane Linklater

Urban Soil Trail

1909 Train Tracks

Bloor Viaduct, completed 1918

Former Site of Sugar Loaf Hill

Don Valley Parkway, completed 1961

1909 Path of the Don River

Remaining Forest Cover in 1909

**Industrializing the River**  
*As Jennifer Bonnell has written, the Lower Don River constrained and enabled the city's growth, powering early industry and limiting movement. Railroad tracks lined its banks as early as the 1850s and later, the construction of the Don Valley Parkway changed the valley's topography and the river's course. Today the soil in the valley is highly variable, with anthropogenic fill interspersed with sandy river deposits, all containing the residue of former uses.*

# BOREHOLES



0-10.4m silt, sand, organic, grey



0 ~ 0.6 m sand, silt, brown, loose

0.6 ~ 2.1 m sand, brown, loose

2.1 ~ 4 m sand, organic material, brown, medium grained

4 ~ 6.1 m sand, gravel, grey, loose, fine to medium grained

7.6 ~ 9.1 m sand, gravel

9.1 ~ 12.6 m bedrock, shale, limestone

10-4 ~ 11.3 m till, silt, sand, grey, dense

11.3 ~ 11.8 m bedrock, shale, grey

**1965a**

**1965b**

Pottery Road Bridge, April 2025



Sand at the Don River, North of the Danforth Bridge, April 2025



SITE

# GARDEN III

## *Removing Agressive Species*



A lookout over the water here would draw attention to riverbank vegetation and its soils. On this site, no new species would be planted, but the land would be stewarded with invasive species removed on an ongoing basis.



# GARDEN STRATEGY:

Removal of aggressive or invasive plants along river. No planting of other species; installation of clay viewing platform.



# PLANT LIST | *Existing & Anticipated No New Plantings, Invasives Removed*

LATIN NAME	COMMON NAME	WATER	SOIL	SUN	HEIGHT	BLOOM	HABITAT	SPACING
<i>Aquatic Plants</i>								
<i>Typha latifolia</i>	Broadleaf Cattail	High; thrives in wetlands	Muddy, rich, wet soils	Full sun	150-250 cm	Jun – Aug	Marshes, ponds, riverbanks	60-120 OC
<i>Herbaceous Dicots</i>								
<i>Caltha palustris</i>	Marsh Marigold	High; thrives in standing water	Prefers rich, wet soil	Full sun to partial shade	30-60 cm	Apr – Jun	Marshes, wetlands, stream edges	30-60 OC
<i>Helianthus tuberosus</i>	Jerusalem Artichoke	Well-drained, rich soil	Full sun	Full sun	150-300 cm	Aug – Oct	Meadows, roadsides	60-90 OC
<i>Impatiens capensis</i>	Common Jewelweed	High; prefers wet, shady areas	Rich, moist soils	Partial shade to full shade	60-150 cm	Jun – Oct	Wetlands, along streams, shaded riverbanks	30-60 OC
<i>Vernonia missurica</i>	Missouri Ironweed	Moderate to high	Moist to wet, well-drained soil	Full sun	120-180 cm	Jul – Sept	Prairies, wetlands, riverbanks	60-90 OC
<i>Vitis riparia</i>	Riverbank Grape	Moderate to high	Prefers well-drained, rich soils but adapts to sandy, loamy, rocky soils	Full sun to partial shade	900-1500 cm (as a vine)	May – Jun	Riverbanks, forests, roadsides, disturbed areas	200-500 OC (spreads widely)
<i>Trees and Shrubs</i>								
<i>Cornus sericea</i>	Red Osier Dogwood	Medium to high; thrives in moist to wet conditions	Tolerates clay, loam, and sandy; prefers moist, well-drained	Full sun to partial shade	150-400 cm	May – Jun	Wetlands, riparian zones, forest edges	100-250 OC
<i>Juglans cinerea</i>	Butternut	Moderate	Well-drained, rich soil	Full sun	1200-1800 cm	Apr – May	Moist forests, riverbanks	900-1500 OC
<i>Ribes americanum</i>	American Black Currant	Moderate	Grows in a range of soils: loam, clay-loam, silty, slightly sandy.	Partial shade to full shade	100–150 cm	Apr - May	Moist woods, streambanks, open wetlands, edges of wet meadows.	100-150 OC



# SITE IV: DISTILLERY DISTRICT

**SURFICIAL GEOLOGY:** Lower Drift Deposits; Till, fine-medium sand, and laminated silt and clay 1-50m thick, exposed in bluffs.

**LAND USE:** Former Industrial; Mixed-use Commercial and Residential Heritage Site.



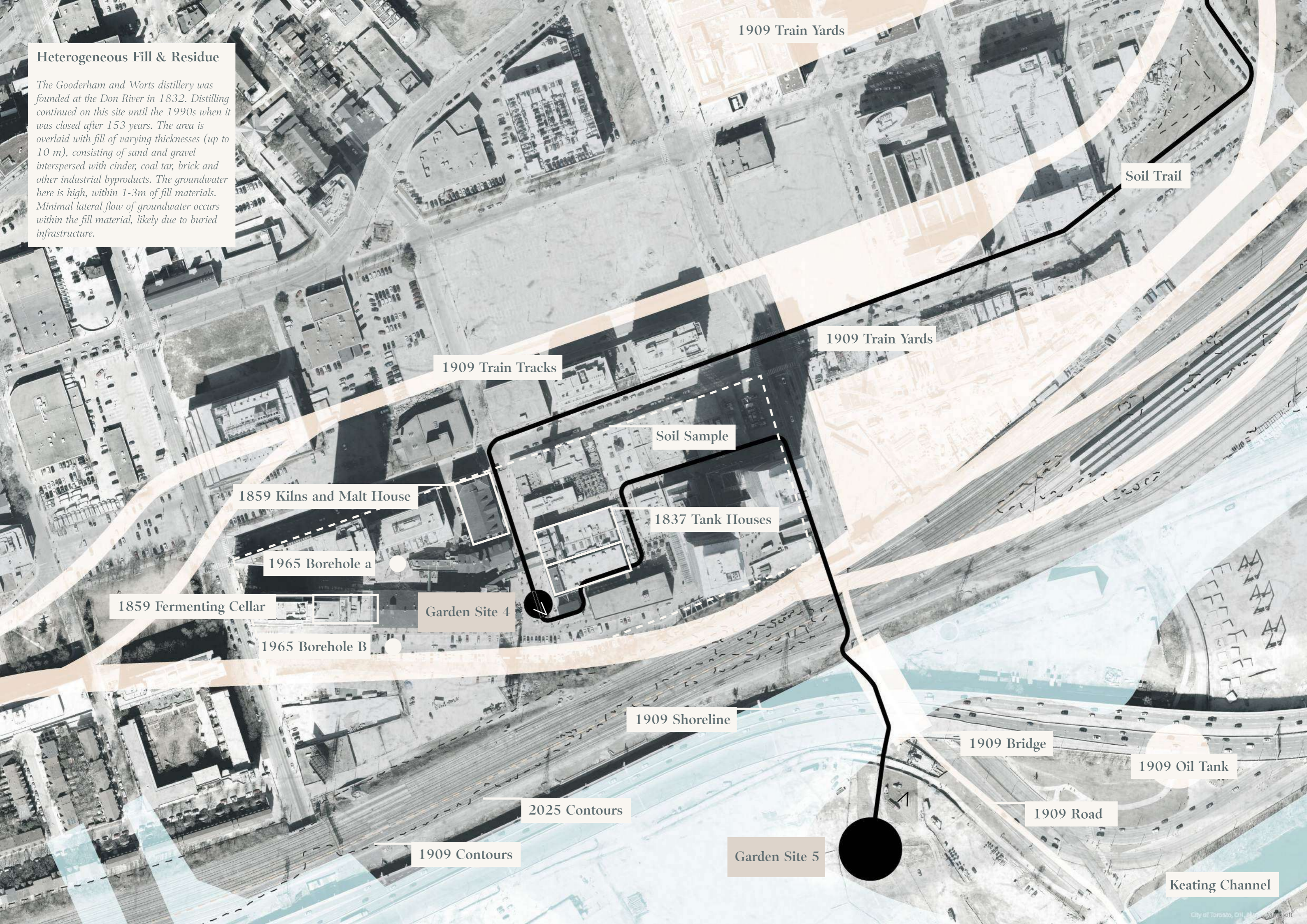
The trail continues onward, along the Don River, to the Distillery District: another former industrial area. Much of the land here is fill over top of clay soils deposited from

glacial meltwater. The combination of pollutants, heavy foot traffic, and a high water table has made it difficult to grow trees here.

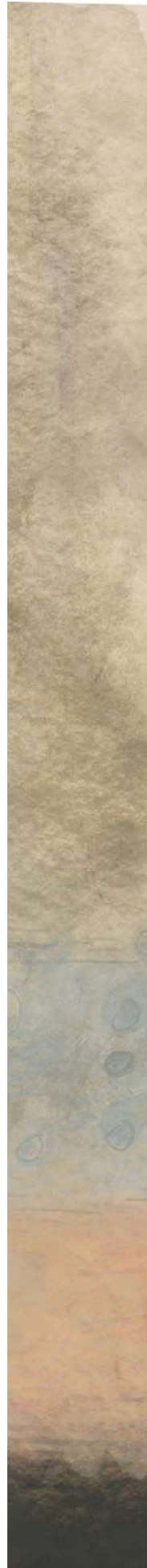


### Heterogeneous Fill & Residue

The Gooderham and Worts distillery was founded at the Don River in 1832. Distilling continued on this site until the 1990s when it was closed after 153 years. The area is overlaid with fill of varying thicknesses (up to 10 m), consisting of sand and gravel interspersed with cinder, coal tar, brick and other industrial byproducts. The groundwater here is high, within 1-3m of fill materials. Minimal lateral flow of groundwater occurs within the fill material, likely due to buried infrastructure.



BOREHOLES



0 ~ 7 m  
fill, sand, silt,  
clay, stiff



0 ~ 3.7 m  
fill, sand,  
dense

3.7 ~ 6.7 m  
stones

6.7 ~ 9.9 m  
till, clay, grey,  
dense

7 ~ 9.1 m  
stones

9.1 ~ 10.7  
m shale, red,  
soft

10.7 ~ 11.6  
m bedrock,  
shale

1965a

1965b

Distillery District,  
April, 2025

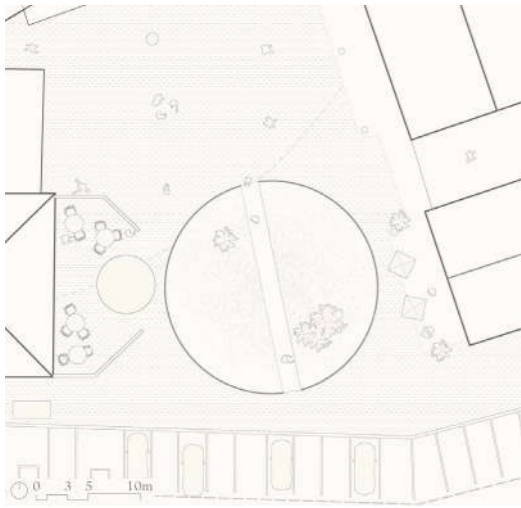


Distillery District,  
April, 2025

SITE

## GARDEN IV

### *Planting & Letting Plants Arrive*



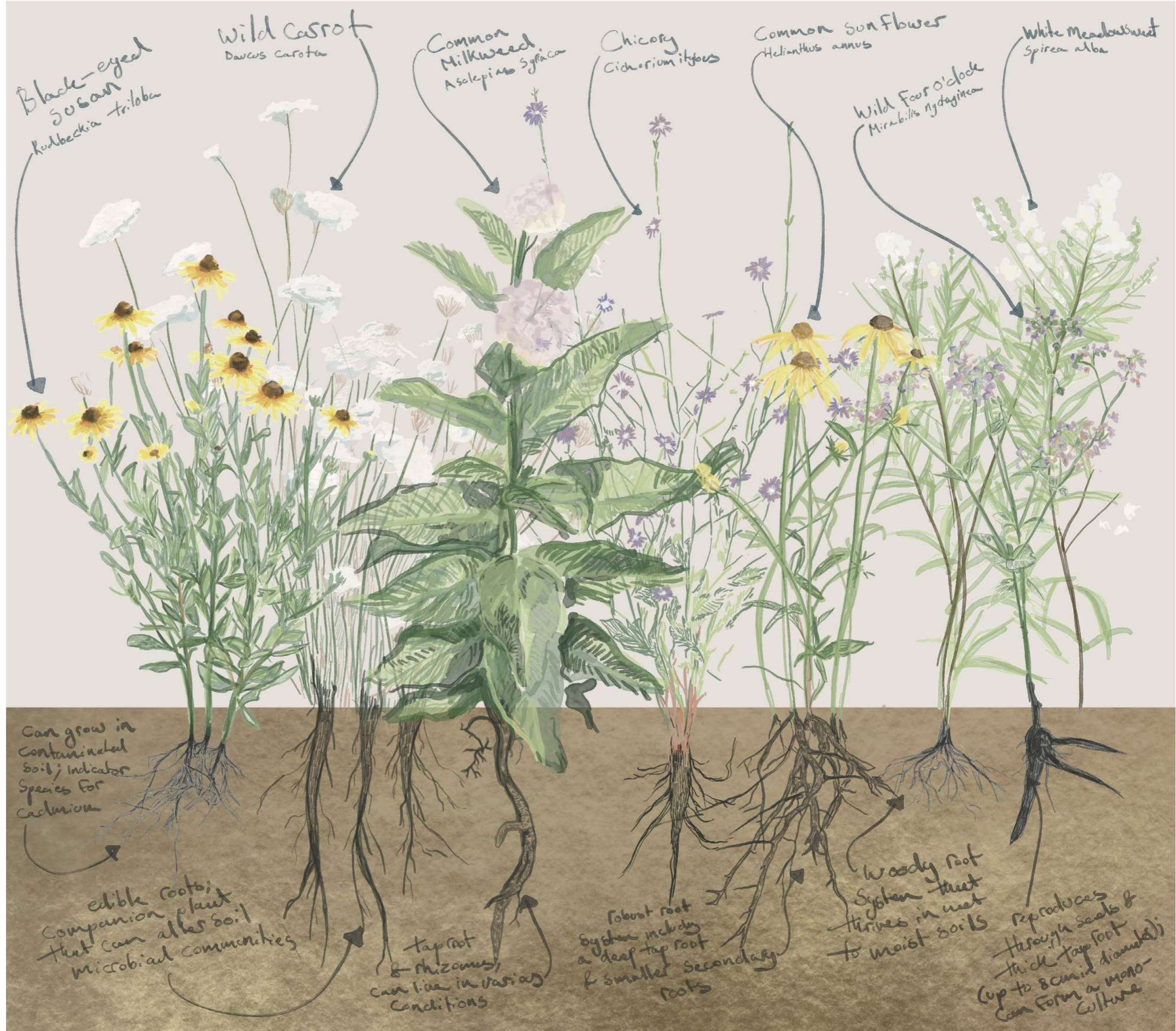
On this site, a large circle would be cleared with a sunken path through the middle. Half of the garden would follow a planting scheme with successional plants adapted to grow in disturbed soils with high clay and water content. The other half would be amended and left to see which plants arrive on their own and what form they take.



# GARDEN STRATEGY:

Half of the garden is planted with ruderal species that can tolerate industrial byproducts and a high water table.

Aggressive species are paired back when required. Half of the garden is left to allow for natural succession.



# PLANT LIST | *Half Planted with Species Pollution Tollerant Species; Half of Ground Left Bare for Plants to Arrive Freely*

LATIN NAME	COMMON NAME	WATER	SOIL	SUN	HEIGHT	BLOOM	HABITAT	SPACING
<i>Herbaceous Dicots</i>								
<i>Asclepias syriaca</i>	Common Milkweed	Moderate	Well-drained, tolerates poor soils	Full sun	50–150 cm	Jun - Aug	Fields, roadsides, meadows	45–60 cm OC
<i>Cichorium itybus</i>	Chicory	Low to moderate	Well-drained, prefers alkaline soils	Full sun	30–100 cm	Jun - Oct	Roadsides, fields, disturbed areas	30–45 cm OC
<i>Daucus carota</i>	Queen Anne's Lace / Wild Carrot	Full sun	Well-drained, sandy or loamy soil	Full sun to partial shade	30-120 cm	May - Sept	Disturbed areas, amongst grass, especially by the sea and on limestone	30–60 cm OC
<i>Helianthus annuus</i>	Common Sunflower	Moderate (drought-tolerant once established)	Well-drained, fertile soil, tolerates poor soils	Full sun	100–300 cm	Jul – Oct	Fields, roadsides, disturbed areas	30–60 cm OC
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	Low to moderate	Well-drained, tolerates poor soils	Full sun	15-30 cm	May - Sept	Grasslands, roadsides, disturbed areas	30 cm OC
<i>Mirabilis nyctaginea</i>	Wild Four o'Clock	Low to moderate (drought-tolerant)	Well-drained, sandy or rocky soils	Full sun to partial shade	50–100 cm	Jun - Sept	Prairies, dry open areas	30–60 cm OC
<i>Oenothera biennis</i>	Common Evening Primrose	Low to moderate (drought-tolerant)	Well-drained, sandy or loamy soils	Full sun	50–150 cm	Jun - Sept	Meadows, roadsides, disturbed areas	30–60 cm OC
<i>Rudbeckia triloba</i>	Black-eyed Susan	Moderate (drought-tolerant)	Well-drained, sandy or loamy soils	Full sun	30–100 cm	Jun – Oct	Meadows, prairies, roadsides	30–45 cm OC
<i>Spiraea alba</i>	White Meadowsweet	Moderate to high	Prefers moist, acidic, well-drained soils	Full sun to partial shade	60–200 cm	June – Sept	Wet meadows, stream banks, open woodlands	100–150 cm OC
<i>Viburnum opulus var. opulus</i>	Common Guelder-Rose	Moderate to high (prefers moist soils)	Well-drained, rich, loamy soils; tolerates clay	Full sun to partial shade	400-500 m	May – Jun	Woodlands, wetlands, hedgerows	200–400 cm OC



DETOUR  
ENDS

PRIVATE PROPERTY  
NO TRESPASSING

# SITE V: KEATING CHANNEL

**SURFICIAL GEOLOGY:** Recent Deposits; Sand, gravel, and diamicton; 1-3m thick; includes wind-derived, landslide, slope, groundwater sapping, lakeshore deposits and fill

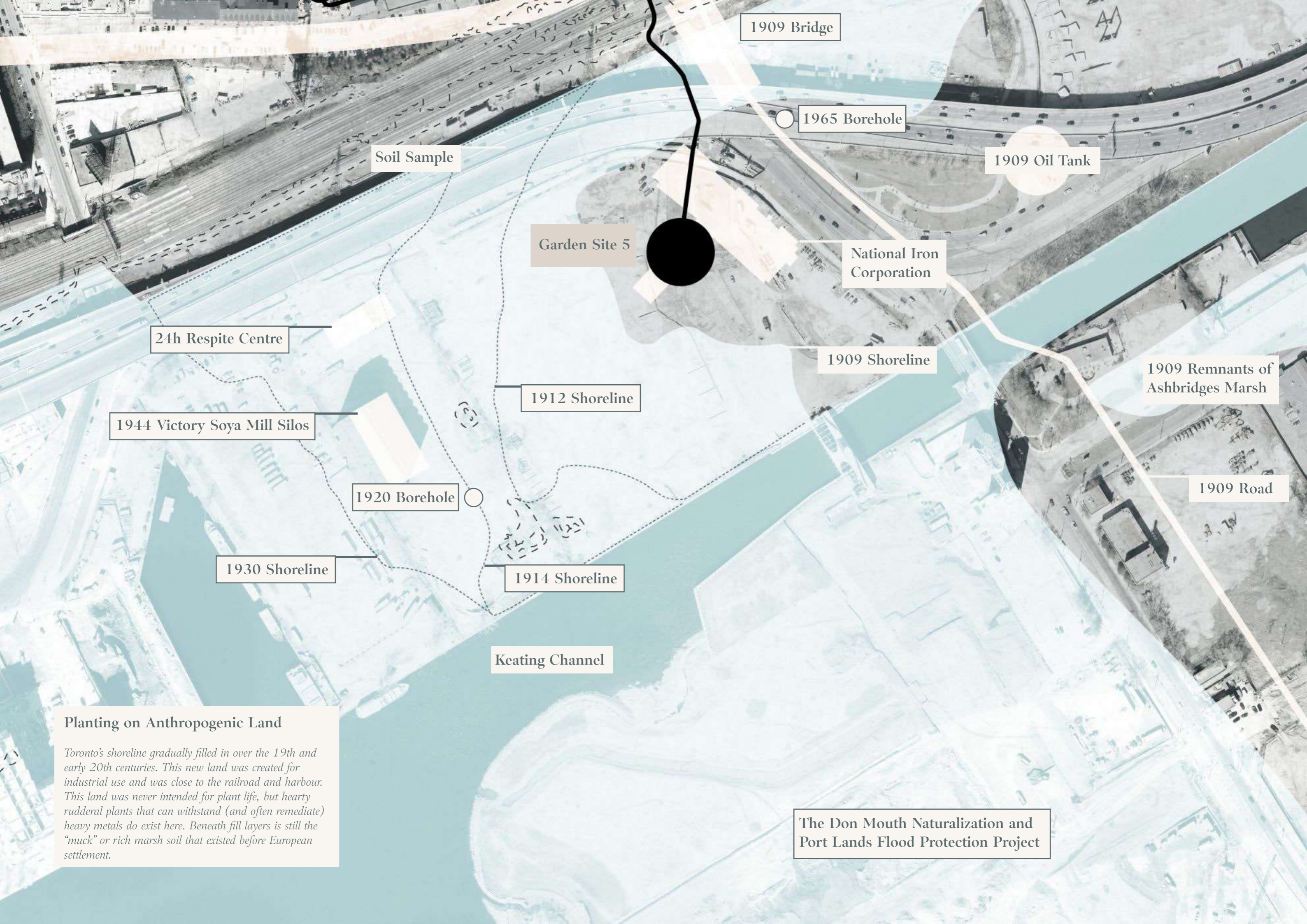
**LAND USE:** Industrial



The trail ends at the Cherry Street Yard, just north of the Keating Channel. This land, which was once marsh, was filled in the 19th century for industrial use. The ground here was never intended

for plant life, but plants do grow. Most of the species here are tolerant of heavy metals and other pollutants. Many are potential phytoremediators.





1909 Bridge

1965 Borehole

1909 Oil Tank

Soil Sample

Garden Site 5

National Iron Corporation

1909 Shoreline

1909 Remnants of Ashbridges Marsh

24h Respite Centre

1912 Shoreline

1909 Road

1944 Victory Soya Mill Silos

1920 Borehole

1930 Shoreline

1914 Shoreline

Keating Channel

### Planting on Anthropogenic Land

Toronto's shoreline gradually filled in over the 19th and early 20th centuries. This new land was created for industrial use and was close to the railroad and harbour. This land was never intended for plant life, but hearty ruderal plants that can withstand (and often remediate) heavy metals do exist here. Beneath fill layers is still the "muck" or rich marsh soil that existed before European settlement.

The Don Mouth Naturalization and Port Lands Flood Protection Project

BOREHOLES



0 ~ 0.8 m  
water-bearing

0.8 ~ 4.8 m  
muck

4.8 ~ 9.8 m  
sand

9.8 ~ 14.6 m  
bedrock, shale

1920



0 ~ 2.4 m  
fill, loose

2.4 ~ 10.4 m  
sand, grey,  
loose, medium  
grained

10.4 ~ 11.6 m  
till, grey,  
dense

11.6 ~ 14.6 m  
bedrock,  
shale, grey

1951

Victory Soya  
Mills Silos  
Keating Channel  
Precinct, April,  
2025



Gardiner  
Expressway,  
Keating Channel  
Precinct, April,  
2025



SITE

# GARDEN V

## *Letting Plants Arrive*

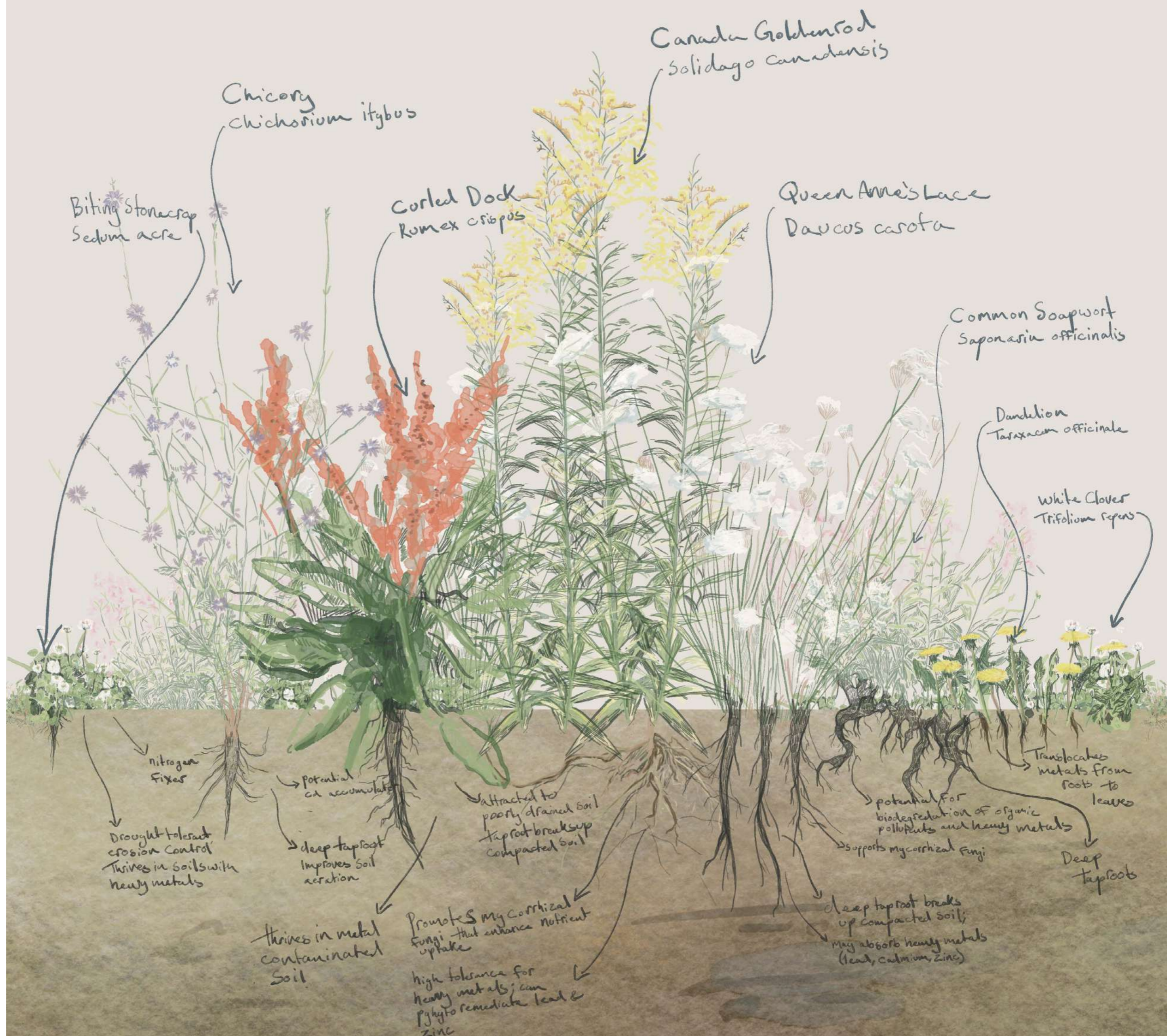


On this site, a large circle would be cleared and amended. In this experimental garden, all plants would arrive on their own though the edges would be maintained in a circle formation. The maintenance of this simple shape is intended to ensure that visitors understand that they are visiting a wild garden and not simply an overgrown lot. In this garden, soil will be built through successional processes.



# GARDEN STRATEGY:

Soil building within a designated circle through addition of ammendments. No planting; plants to arrive on their own.



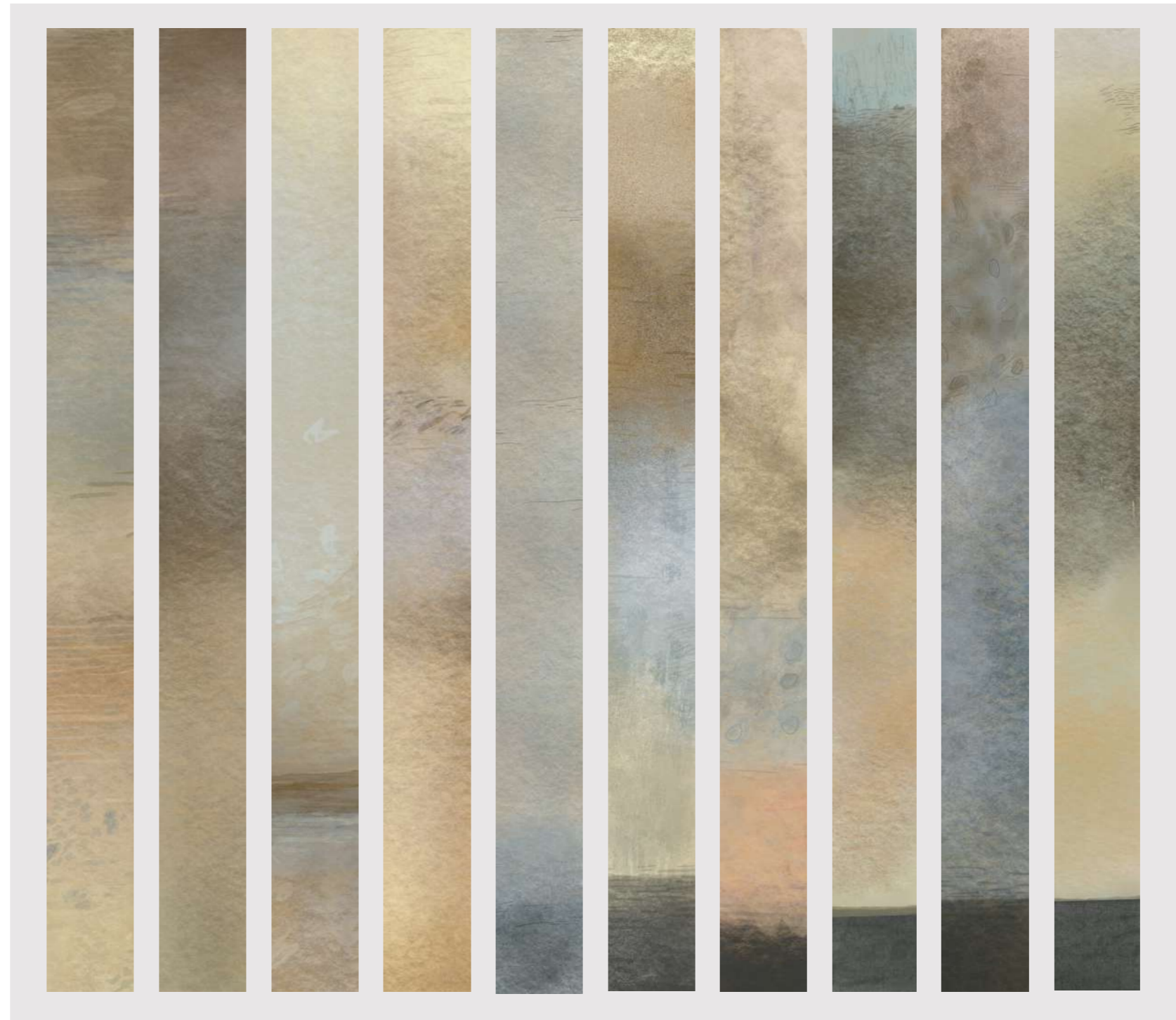
# PLANT LIST | *Circle of Ground Amended and Left Bare for Plants to Arrive Freely*

LATIN NAME	COMMON NAME	WATER	SOIL	SUN	HEIGHT	BLOOM	HABITAT	SPACING
<i>Herbaceous Dicots</i>								
<i>Cichorium itybus</i>	Chicory	Low to moderate	Well-drained, prefers alkaline soils.	Full sun	30–100 cm	Jun - Oct	Roadsides, fields, disturbed areas	30–45 cm OC
<i>Daucus carota</i>	Queen Anne's Lace / Wild Carrot	Moderate, drought-tolerant	Well-drained, sandy or loamy soils.	Full sun to partial shade	30-120 cm	May - Sept	Disturbed areas, amongst grass, especially by the sea and on limestone	30–60 cm OC
<i>Erigeron annuus</i>	Annual Fleabane	Low to Moderate	Very adaptable; poor, sandy, gravelly soil	Full sun to partial shade	30-100 cm	May - Oct	Roadsides, abandoned lots, disturbed urban soils, railway embankments, gravelly or rocky ground.	20-30 cm OC
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	Low to moderate	Well-drained, tolerates poor soils	Full sun	15-30cm	May - Sept	Grasslands, roadsides, disturbed areas	30 cm OC
<i>Saponaria officinalis</i>	Common Soapwort	Moderate	Well-drained, loamy soil	Full sun to partial shade	30–90 cm	Jun - Sept	Roadsides, riverbanks, disturbed areas	30 cm OC
<i>Sedum acre</i>	Biting Stonecrop	Low	Well-drained, sandy or rocky soils	Full sun	5–10 cm	Jun – Aug	Rocky areas, dry grasslands	15–20 cm OC
<i>Solidago canadensis</i>	Canada Goldenrod	Moderate	Well-drained, tolerates poor soils	Full sun	50–200 cm	Aug - Oct	Fields, meadows, roadsides	45–60 cm OC
<i>Taraxacum officinale</i>	Dandelion	Low	Tolerates poor soils, prefers well-drained	Full sun to partial shade	10–30 cm	Apr – Oct	Lawns, meadows, disturbed areas	15–30 cm OC
<i>Trifolium repens</i>	White Clover	Moderate	Well-drained, tolerates poor soils	Full sun	10–30 cm	May – Oct	Lawns, fields, meadows	15–30 cm OC
<i>Rumex crispus</i>	Curled Dock	Moderate	Moist, rich soils	Full sun to partial shade	50–120 cm	Jun – Sept	Wetlands, fields, disturbed areas	30–45 cm OC

06

## CONCLUSION

Urban soil is often treated as a waste product devoid of value because of human impact. All soil, however, tells a story about the passage of time and the accumulation of processes. In cities, it holds the residue of human impact while still supporting a myriad of invisible and visible non-human worlds. If we dispose of our “used” soils, then we lose valuable lessons about how our processes impact the ground and how the ground in turn, impacts us. Through design, observation, long-term processes, and increased soil literacy we can break this extractive cycle and improve the quality of life in our cities.



*Yonge & Eglinton*

*Yonge & Eglinton*

*Todmorden Mills*

*Todmorden Mills*

*Don River Bank*

*Don River Bank*

*Distillery District*

*Distillery District*

*Keating Channel*

*Keating Channel*

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