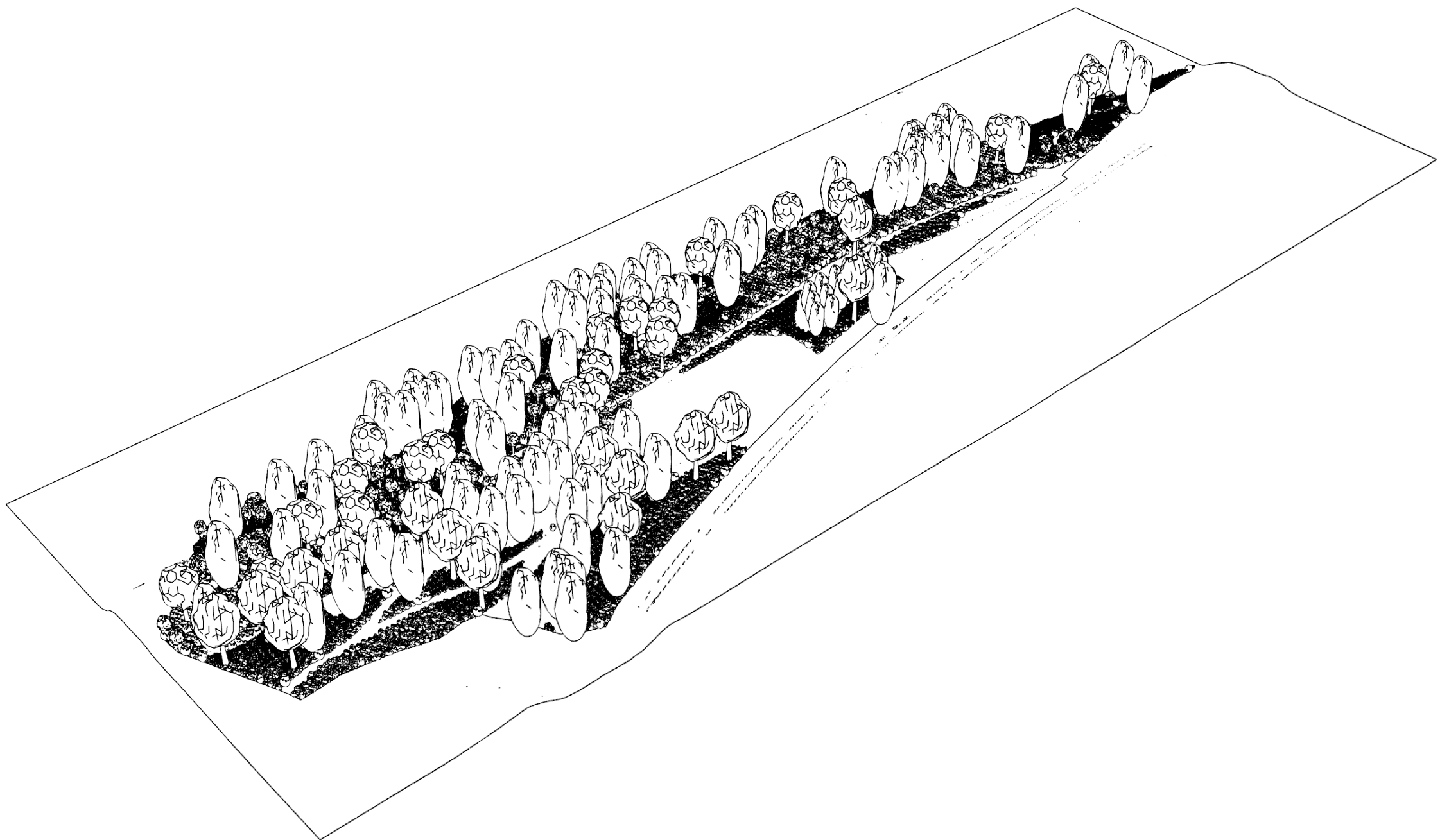


# EDIBLE ECOLOGIES

AN INTEGRATED AGROFORESTRY SYSTEM FOR THE UNIVERSITY OF OREGON'S RIVERFRONT



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# ABSTRACT

Contemporary landscapes are increasingly expected to address multiple, often competing challenges, including climate change, biodiversity loss, food insecurity, and the demand for accessible public space. Yet conventional planning processes frequently treat vegetation as a secondary design element, resulting in landscapes that struggle to adapt to changing ecological conditions over time. This project proposes a planting-first master planning strategy for the University of Oregon’s riverfront property through the use of parametric design tools and ecological systems thinking. Rather than treating vegetation as a final aesthetic layer applied after architectural and infrastructural decisions have been made, this project positions plants and their habitat needs as the primary organizing framework from which programming, restoration, research, and social spaces emerge. The result is a native plant food forest that operates simultaneously as productive landscape, ecological restoration strategy, outdoor classroom, and community commons.

Located at the intersection of the Willamette River Natural Area and the Urban Farm Riverside

Expansion, the proposal draws from principles of food forestry, restoration ecology, Indigenous land stewardship, and participatory landscape design to imagine a campus landscape that is both ecologically resilient and socially productive. Using parametric planting methodologies, species are placed according to their preferred microclimatic conditions. These planting logics generate the broader spatial organization of the site, creating a landscape plan that can evolve dynamically over time as environmental conditions shift, and new data becomes available through research and monitoring.

Ultimately, this project argues that parametric ecological planning can create adaptive landscape plans capable of responding to climate change, biodiversity loss, and evolving community needs. By allowing plants to lead the design process, the project reframes landscape architecture as a collaborative practice between human and ecological systems, proposing a new model rooted in stewardship and long-term environmental resilience.

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To my parents for stoking my passion for living life outside,

And to Pilar, for inspiring me to chase a dream...

Thank you.

RISING URBAN FOOD INSECURITY

Food is a universal connector. Everybody needs to eat. According to the 2020 Census, 80% of the United States population lives in urban areas<sup>1</sup>. In contrast, a mere 15% of US food supply is produced in and around those urban centers<sup>2</sup>, leaving Americans heavily dependent on a national and global system of food delivery and distribution. This system has many advantages. For American urban dwellers, seasonal produce is largely a thing of the past. If you want grapes in March, or strawberries in September, you can generally find them at your local supermarket. On a broader scale, crop failures in one region are no longer quite so catastrophic for rich countries, as they can shop the global market and shift suppliers when necessary. But with year-round availability, we also experience a loss of regionally specific diversity in produce<sup>3</sup>, and an over-reliance on centralized systems of production and distribution. So what happens when the global supply chain goes down? What happens to the poorest among us when the price of food is intrinsically tied to the skyrocketing price of fuel?

The catastrophic events of 2020 stopped the global supply chain in its tracks and cast a harsh light on the fragile nature of our industrial food system.

U.S. grocery supply chains operate on just-in-time logistics systems that prioritize efficiency and rapid turnover, resulting in minimal on-site inventory and high dependence on continuous distribution flows<sup>4</sup>.

Since 2020 US food insecurity has been steadily increasing, driven by a staggering 23.6% surge in food prices between 2020 and 2024<sup>5</sup>, outpacing inflation and putting a significant dent in household budgets. US food insecurity rose from 10.5% in 2020 to 13.7% in 2024 with roughly 1 in 7 people lacking consistent access to adequate food<sup>6</sup>. Prices continue to rise in 2026, and the whole industrial system teeters on the brink of another collapse as oil prices soar and petroleum-based fertilizer shortages loom in the background.

Estimates based on global calorie availability suggest that current agricultural production could support a population significantly larger than today, often framed as enough to feed on the order of 9-10 billion people<sup>7</sup>. The USDA estimates between 30-40% of US food supply is wasted annually<sup>8</sup>. The problem therefore is not with production, but with distribution and access.

1 IN 7 AMERICANS ARE FOOD INSECURE



80% OF AMERICANS LIVE IN URBAN AREAS



ONLY 15% OF OUR FOOD IS PRODUCED IN AND AROUND URBAN AREAS



THE AVERAGE VEGETABLE TRAVELS 1,500-2,000 MILES FROM FARM TO TABLE



30-40% OF US FOOD SUPPLY IS WASTED ANNUALLY

<sup>1</sup> US Census Bureau, “Nation’s Urban and Rural Populations Shift Following 2020 Census.”  
<sup>2</sup> Payen et al., “How Much Food Can We Grow in Urban Areas?”  
<sup>3</sup> Knez et al., “Causes and Conditions for Reduced Cultivation and Consumption of Underutilized Crops”; Harris et al., “Fruit and Vegetable Biodiversity for Nutritionally Diverse Diets.”  
<sup>4</sup> Zhang et al., “Compound Shocks to Agri-Food Supply Chain Transport and Trade in the United States.”  
<sup>5</sup> “U.S. Food Prices Rose by 23.6 Percent from 2020 to 2024 | Economic Research Service.”  
<sup>6</sup> Welsh, The Last U.S. Hunger Data; Rabbitt et al., Household Food Security in the United States in 2024.  
<sup>7</sup> K.C. et al., “When Too Much Isn’t Enough.”  
<sup>8</sup> “Food Waste FAQs | USDA.”





# FOOD FORESTS FOR FOOD SOVEREIGNTY

Our globalized food system is based on methods that evolved from the Neolithic cultivation of grains<sup>9</sup>. Farmers create the proper conditions for their chosen crops to grow by eliminating competition through annual tilling, fertilization and pest management. Over time, advances in plant breeding and labor-saving technologies have built the incredibly productive, but heavily mechanized and chemically reliant system we have today.

The transition from gathering to agriculture was a slow one<sup>10</sup>, and many cultures developed parallel systems, based on nomadic foraging practices, but rooted in the cultivation of perennial crops like fruit and nut trees. The term agroforestry was formally coined by Canadian forester John Bene in 1973<sup>11</sup>, but systems of polyculture cultivation, and forest gardening have existed for millennia<sup>12</sup>. From the tropical fruits of the Amazon rainforest<sup>13</sup> and the walnut-fruit forests of Kyrgyzstan<sup>14</sup>, to the towering chestnut forests that once dominated the eastern United States<sup>15</sup>, these food forests have fed populations around the world in a sustainable and resilient way for centuries.

These food forests offer an alternative to

conventional agriculture by mimicking the structure and ecology of natural forest ecosystems. Unlike monoculture systems which rely on intensive tillage and chemical inputs, food forests function as long term perennial systems that build soil, conserve water, and create habitat for pollinators and wildlife.

Cities around the world are increasingly demonstrating that the integration of edible plants into public parks and urban tree canopies can contribute to local food security. Urban food forestry systems have been shown to increase access to fresh produce, support community resilience, and provide multifunctional ecosystem services<sup>16</sup>. Empirical studies in cities such as Syracuse, New York further demonstrate that urban fruit and nut trees can produce measurable quantities of food within the public landscape<sup>17</sup>.

Despite this, many cities continue to discourage the planting of edible trees and plants, citing concerns around maintenance and liability. Urban foraging is often treated as out of place within formal planning frameworks, and is frequently constrained by regulations governing access and harvesting<sup>18</sup>. As a

result, edible landscapes are often underutilized or actively excluded from urban forestry strategies, despite their potential to contribute to food systems<sup>19</sup>. Fallen fruit becomes waste, and practices such as foraging can be reframed as trespassing.

But these challenges are not inherent to edible landscapes. All landscapes require maintenance and many of those needs, like leaf clean-up, mowing, seasonal mulching, and tree pruning, can be anticipated and built into the fabric of our urban lives.

What if we reframe those problems as design opportunities? The mess of fruit drop can be anticipated, harvested, redistributed, or composted as part of a closed loop system, feeding the very trees that produce it. “Maintenance” becomes an opportunity for community engagement. “Liability” can be reframed as “responsibility”—the responsibility we have to each other as members of a community, and to care for the place we live, just as it cares for and supports us. What if urban landscapes were not just aesthetic or ecological infrastructure, but productive systems designed to actively feed the communities they serve?

<sup>9</sup> Pringle, “The Slow Birth of Agriculture.”

<sup>10</sup> Scott, *Against the Grain*.

<sup>11</sup> Bene et al., *Trees, Food and People*.

<sup>12</sup> Jacke and Toensmeier, *Edible Forest Gardens*.

<sup>13</sup> Levis et al., “Persistent Effects of Pre-Columbian Plant Domestication on Amazonian Forest Composition.”

<sup>14</sup> Beer et al., “Vegetation History of the Walnut Forests in Kyrgyzstan (Central Asia).”

<sup>15</sup> Freinkel, *American Chestnut*.

<sup>16</sup> Clark and Nicholas, “Introducing Urban Food Forestry”; Park et al., “Urban Food Systems That Involve Trees in Northern America and Europe.”

<sup>17</sup> Bunge, “Urban Foraging for Food Security and Food Sovereignty: Quantifying Edible Forest Yield in Syracuse, New York Using Five Common Fruit and Nut Producing Street Trees

<sup>18</sup> McLain et al., “Gathering ‘Wild’ Food in the City.”



# 02 CENTERING LOCAL FOOD SYSTEMS

## KALAPUYA AGROFORESTRY

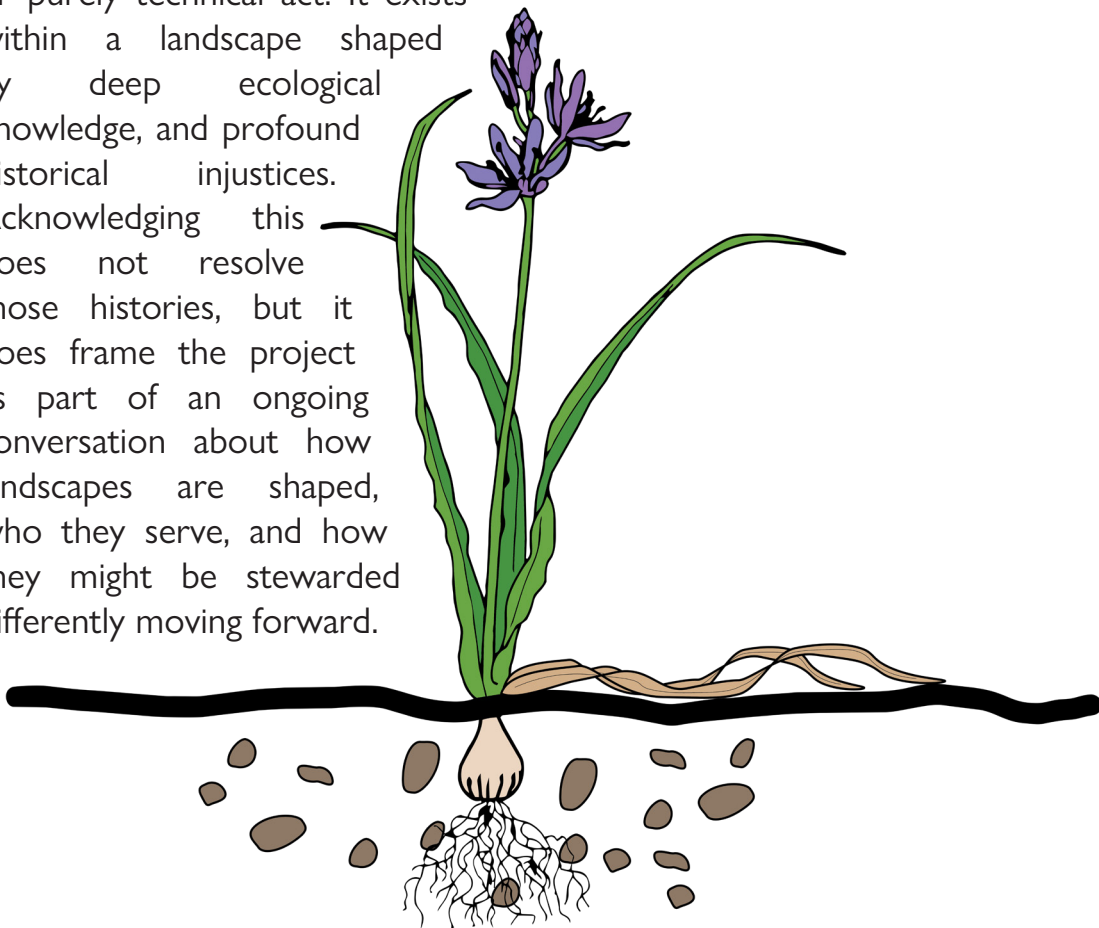
For thousands of years the Kalapuya tribes of the Willamette Valley built their lives around seasons of harvest and stewardship. What might appear today as “natural” ecosystems were, in many cases, carefully maintained cultural landscapes, designed over generations to support biodiversity, food production, and social life. The practice of seasonal burning allowed plants like camas and oaks to thrive in vast savannas<sup>20</sup>. Selective harvesting and replanting of other favored edibles shaped those plants alongside the people who relied on them, building reciprocal relationships of mutual benefit for both plants and people.

Colonization violently disrupted these systems<sup>21</sup>. The suppression of cultural burning, the removal of Kalapuya people from their lands, and the imposition of Euro-American agricultural practices fundamentally altered the ecology of the Willamette Valley. Many of the plant communities that once sustained Indigenous food systems have been diminished, displaced, or erased entirely.

However the plants remain, and the people who harvest them are not gone. Their descendants are members of the Confederated Tribes of the Grand Ronde, and the Confederated Tribes of the Siletz Indians<sup>22</sup>. Attempts to build a more resilient food system should acknowledge the specific histories, ecologies, and cultural practices that have shaped this landscape over millennia.

This project is not an attempt to recreate Kalapuya food systems or cultural landscapes, nor could it adequately encompass the depth, complexity, and generations of knowledge they embody. Such knowledge emerges from long-standing relationships between people, place, culture, and ecology that extend far beyond the scope of this work. Instead, this project draws inspiration from a set of broadly shared principles to inform the design of a contemporary food-producing landscape within an urban context.

In this context, the design of a contemporary food forest cannot be understood as a neutral, or purely technical act. It exists within a landscape shaped by deep ecological knowledge, and profound historical injustices. Acknowledging this does not resolve those histories, but it does frame the project as part of an ongoing conversation about how landscapes are shaped, who they serve, and how they might be stewarded differently moving forward.



## CONTEMPORARY HARVESTING



<sup>20</sup> Boyd, “Strategies of Indian Burning in the Willamette Valley.”

<sup>21</sup> Lewis, Tribal Histories of the Willamette Valley.

<sup>22</sup> Lewis, Tribal Histories of the Willamette Valley.



# THE OREGON EXPERIMENT & THE URBAN FARM

If it is local systems that will save us, then we must look for opportunities within our own communities when considering site selection. As a member of the student body at the University of Oregon (home of the Ducks), this means examining food systems on campus. Located in Eugene, Oregon, UO has a long history of student activism and involvement related to food security and student driven participatory design.

In the 1970’s campus wide dissatisfaction led the University to abandon the top-down, closed-door master planning of previous eras of development and hire the consultation services of Christopher Alexander, chief architect of the Berkley Center for Environmental Structure<sup>23</sup>. Together with students and administrators, Alexander outlined a new vision for campus planning, one based on broad democratic participation, placing design decision making in the hands of the users. This participatory design process became known as the Oregon Experiment.

Though much of the democratic process

envisioned by the Experiment has devolved in the years since it’s initial implementation, the concept of user-group driven designs, guided by the help of architect-facilitators endures within the University’s planning process, as do some of the projects that resulted<sup>24</sup>.

One of those projects was the UO Urban Farm. Founded in 1975 by Landscape Architecture Professor Richard Britz and his students, and subsequently developed by Anne Bettman, the farm was proof of concept for his Edible City project, which examined ways to retrofit existing city blocks into self-sufficient planned communities<sup>25</sup>.

What started as a small group of students and professors growing food on vacant land has developed over the years into a full blown research garden and outdoor classroom offering year-round hands-on classes with local farming experts on how to grow food in a wide variety of ways, from market-garden style raised-bed agriculture, to mushroom cultivation, orchard care, and bee-keeping.



<sup>23</sup>“The Oregon Experiment after Twenty Years.”  
<sup>24</sup>“Alexander Visits The Oregon Experiment.”  
<sup>25</sup> Britz, *The Edible City Resource Manual*.  
Images courtesy of the Urban Farm and Urban Farm Students





<https://news.uoregon.edu/content/employees-can-help-students-facing-food-insecurity>

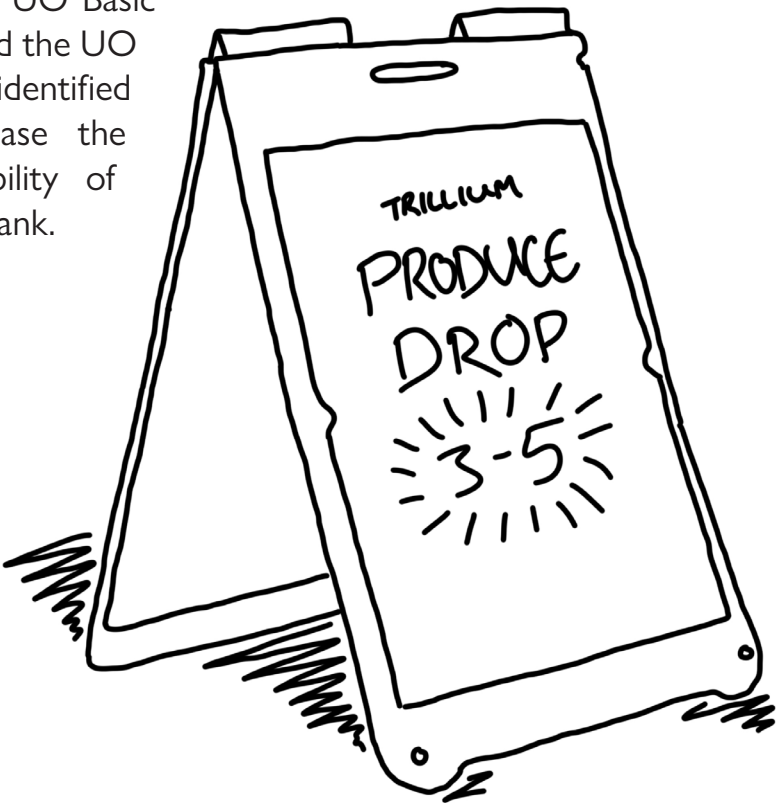
## DUCKS FEEDING DUCKS

The United States Department of Agriculture defines food security as “access to and ready availability of enough nutritionally adequate and safe food for an active, healthy life, and... the assured ability to acquire food in socially acceptable ways.”<sup>26</sup> The UO Food Security Task Force defines food security as “reliable access to healthy, nutritious, culturally appropriate food.”<sup>27</sup> The 2021-2023 report on Undergraduate Food Security by the UO Student Wellbeing and Success Initiative found “rates of food insecurity among UO undergraduates were 21.8% in 2021 and 34% in 2022, double and nearly triple the national rate.”<sup>28</sup>

*This project proposes a campus food forest designed to help bridge that accessibility gap and strengthen the resilience of our local food systems.*

The UO Urban Farm has been a central part of solving campus food insecurity for decades supporting students through both direct provisioning and education. Unlike many other campus farms around the country, which sell their

produce to campus dining halls, or through local CSAs, the UO Urban Farm gives produce directly to the students who take part in the class<sup>29</sup>. In addition, excess produce is donated to the campus food bank year-round, resulting in hundreds of pounds of food that goes directly into students’ hands. Recent conversations between administration, the UO Basic Needs Program and the UO Urban Farm have identified a need to increase the capacity and visibility of the campus food bank.



<sup>26</sup> “O365\_SL-Office of Assessment & Research (OAR) - 2023\_food\_security.Html - All Documents.”  
<sup>27</sup> “O365\_SL-Office of Assessment & Research (OAR) - 2023\_food\_security.Html - All Documents.”  
<sup>28</sup> “O365\_SL-Office of Assessment & Research (OAR) - 2023\_food\_security.Html - All Documents.”  
<sup>29</sup> “History of the Urban Farm – The Urban Farm.”



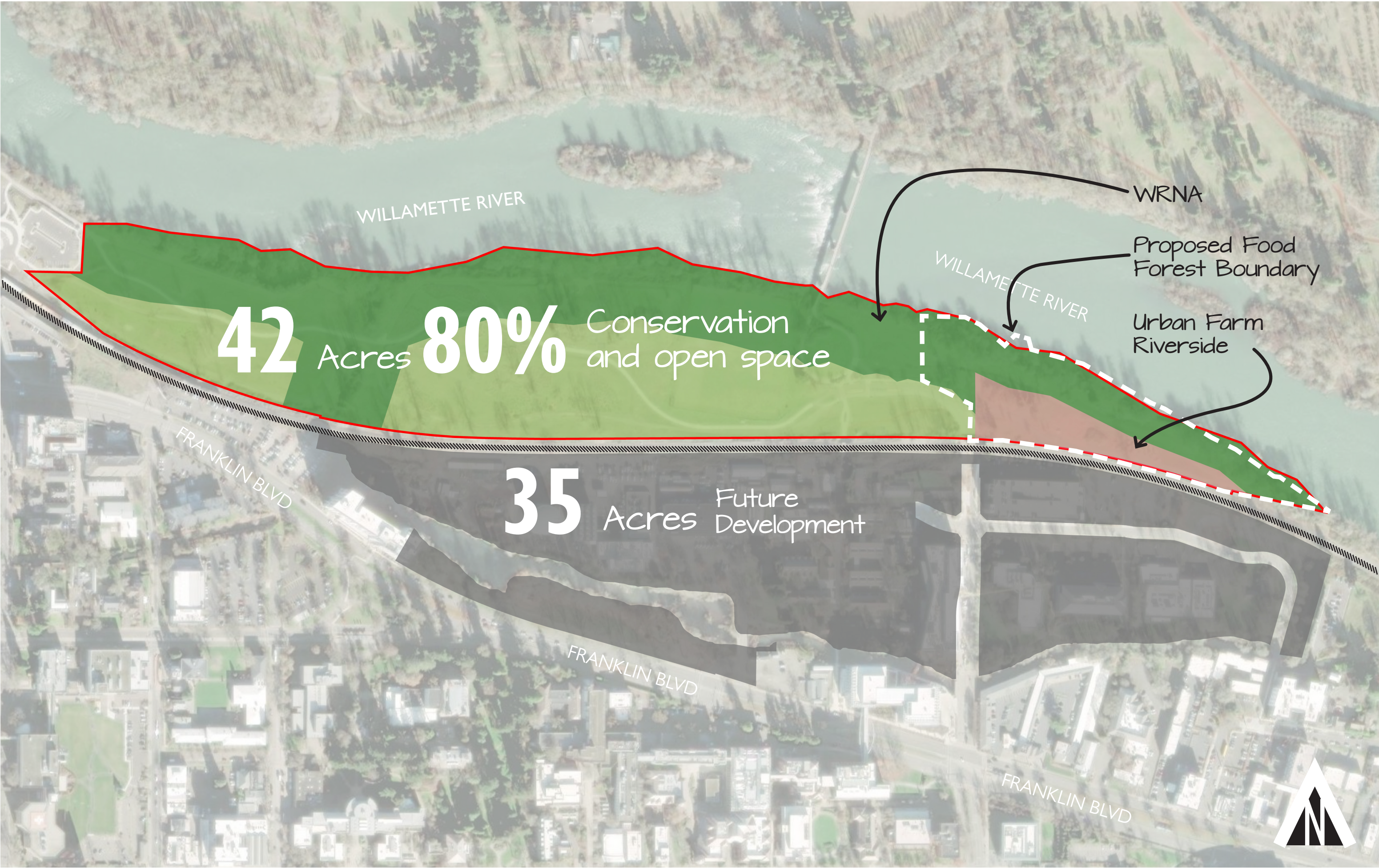
# NORTH CAMPUS & THE URBAN FARM RIVERSIDE

This project is situated within the 77 acres of property owned and operated by the University of Oregon between the south bank of the Willamette River and Franklin Boulevard, commonly referred to as “North Campus”. The Union Pacific Railroad runs from east to west, dividing the property, and the University has chosen to dedicate the majority of the 42 acres of land between the track and the river to conservation, riparian restoration, and open space activities, concentrating plans for building development in the area south of the tracks.

Development in the North Campus is ongoing, with the most recent addition the form of the Phil and Penny Knight Campus for Accelerating Scientific Impact, a 184,000-square-foot, multistory bioengineering and applied science research facility. This project displaced nearly half the Urban Farm’s original outdoor classroom space and severely

altered the visual, auditory, and experiential qualities of the farm.

In response to student outcry at these impacts, the University designated approximately 1.9 acres of land between the Willamette River Natural Area (WRNA) and the railroad tracks for the expansion of its Urban Farm program and outdoor classroom, today referred to as the Urban Farm Riverside. As of 2026, the Urban Farm Riverside is proceeding slowly from vision to reality, navigating a range of campus planning and funding milestones on its way to implementation. This project aims to connect the new Urban Farm Riverside site to the WRNA in a way that seamlessly integrates conservation goals with food production and long term stewardship.







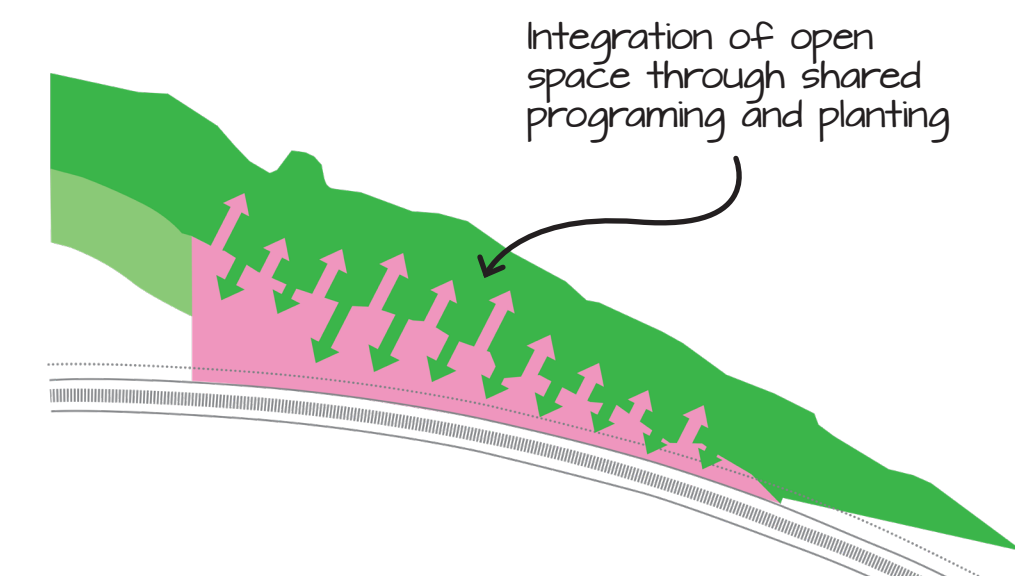
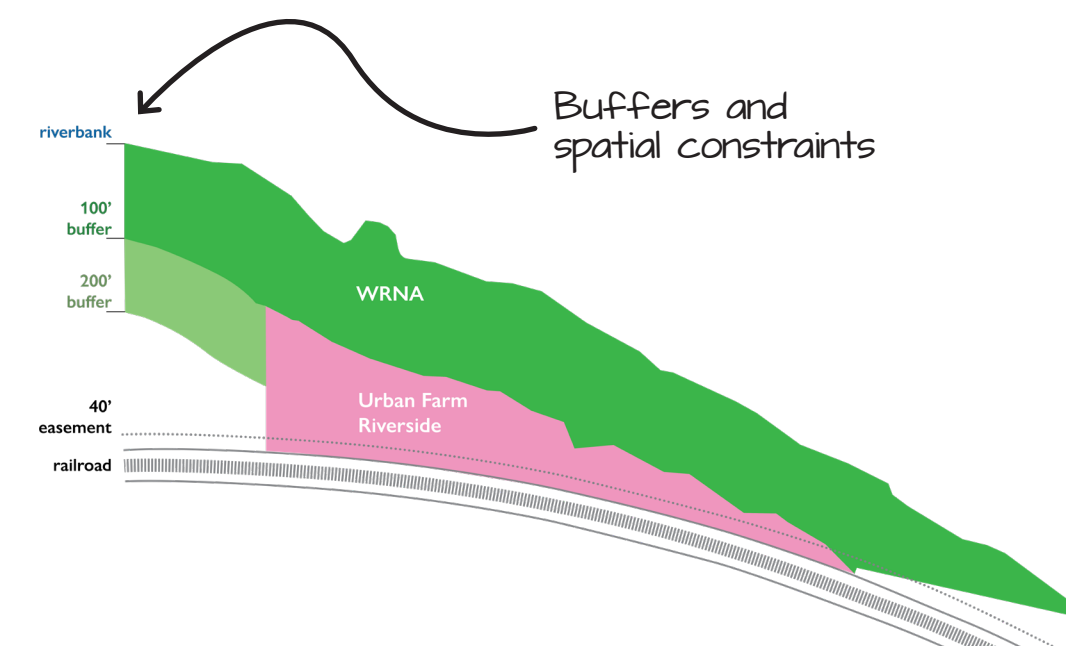
## WRNA x URBAN FARM

The new “Urban Farm Riverside” is located on University property between the Willamette River Natural Area (WRNA) to the north, and the Union Pacific Railroad tracks to the south. The North Campus Conditional Use and Willamette Greenway Permit (2018) established the WRNA by extending the protected natural area along the river to 200 feet from the top of the bank, setting aside approximately 24 acres to protect and restore the river’s natural vegetation.

In 2024, a multidisciplinary summer design studio sponsored by the Fuller Initiative for Productive Landscapes created a masterplan for the Urban Farm Riverside site. Following in the footsteps of Christopher Alexander’s Oregon Experiment, ten students, under the guidance of College of Design Professors Ignacio Lopez-Buson and Mary Polites, developed a vision for the space that was user led participant designed, and community-focused. This

project seeks to build on those designs in a way that enhances both the WRNA and the Urban Farm Riverside, by connecting them through planting.

The proximity of the new Urban Farm Riverside site to the Willamette River Natural Area (WRNA) presents a unique opportunity to combine ecological restoration and food production. While the WRNA already provides important ecological functions such as habitat, storm water management, and riparian buffering, it remains disconnected from the University community as a whole. By transforming a section of the WRNA into a native plant food forest, we can extend food production into the WRNA, integrate restoration projects with Urban Farm classes, expand student led research opportunities, broaden awareness of culturally significant food plants, and reintroduce regionally specific diversity to the crops tended by Urban Farm students.





# 03 PROJECT FRAMEWORK

## A MULTI LAYERED APPROACH

Addressing food insecurity through urban agroforestry requires more than a single disciplinary approach. Food systems are ecological, cultural, spatial, and technological all at once, and any meaningful intervention must operate across these overlapping domains.

This project is therefore structured around four interconnected components: urban farming, ecological restoration, Indigenous knowledge, and computational design. Each provides a distinct lens, but through their integration the project takes shape.

**Urban Farming** provides the foundation for understanding how food can be produced, distributed, and accessed within the constraints of the city. Unlike rural agriculture, urban systems must operate within fragmented spaces, competing land uses, and diverse community needs. Productivity alone is not enough. Accessibility, visibility, and cultural relevance are equally important.

In this project, urban farming informs the spatial organization of the food forest, the integration of harvest and distribution systems, and the relationship between the site and existing food infrastructure, including the Urban Farm Riverside and campus food pantry networks. The goal is not simply to grow food, but to make it legible and accessible as part of everyday life.

**Ecological Restoration** grounds the project in the specific environmental conditions of the Willamette River Natural Area. Rather than

imposing an abstract planting scheme, this component emphasizes working with existing site dynamics: soil conditions, hydrology, successional patterns, and native plant communities. The food forest is not a departure from the site's ecology, but an extension of it. Native edible species are selected to align with strategy habitat goals, supporting biodiversity, while also producing food. In this way, restoration and production are not treated as opposing goals, but as mutually reinforcing processes.

**Indigenous Knowledge** provides a critical foundation for understanding this landscape as a cultural as well as ecological system. The Willamette Valley, as the ancestral home of the Kalapuya people, has been shaped by long-standing practices of stewardship and adaptive management.

This framework informs not only what is planted, but how the landscape is managed over time. Principals of reciprocity, seasonal awareness, and long-term care challenge extractive models of production, and instead emphasize relationships between people and place.

At the same time, it is important to recognize that Indigenous knowledge is not a monolith, nor is it universally accessible. This project engages only with knowledge that has been openly shared through public scholarship, ecological restoration practices, and ongoing conversations around cultural burning and land stewardship.

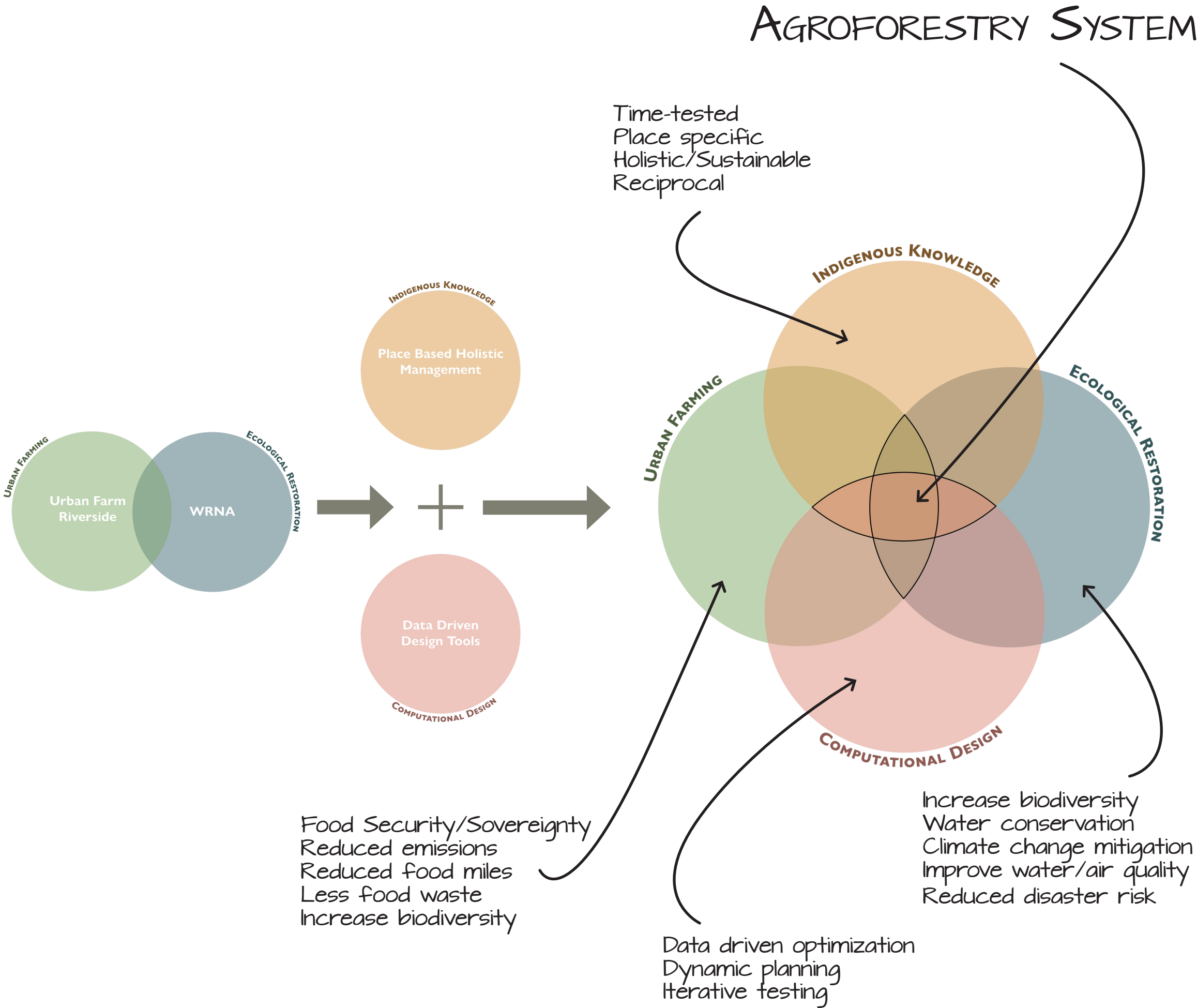
It does not attempt to replicate or appropriate specific cultural practices, but instead learns from broadly shared principles that have been offered

for wider understanding.

Indigenous knowledge is not a static reference, but an ongoing influence that shapes design decisions and management strategies, particularly the reintroduction of fire as a tool for landscape maintenance. The aim is to emphasize respect, responsibility, and the understanding that knowledge sharing is relational, requiring continued learning and accountability over time.

**Computational Design** allows this project to operate at a level of complexity that would be difficult to manage through traditional methods alone. Agroforestry systems involve dynamic interactions between species, spacing, growth rates, and environmental conditions over time. Parametric tools allow these relationships to be modeled, tested, and adapted.

In this project, computational design is used to generate planting patterns, simulate growth and succession, and support adaptive management strategies. It also opens the door for future integration with monitoring systems, such as digital twins, that can track plant growth and health in real time, and inform ongoing stewardship.





04 SITE CONTEXT

HISTORIC VEGETATION

Prior to Euro-American settlement in the mid 19th century, the Willamette River occupied a much broader and more fluid landscape. Instead of being confined to a single channel, it spread across a wide floodplain, with riparian corridors extending for miles. Flooding was a regular, generative force, moving water across the valley floor, depositing sediments and gravels, continually reshaping the land.

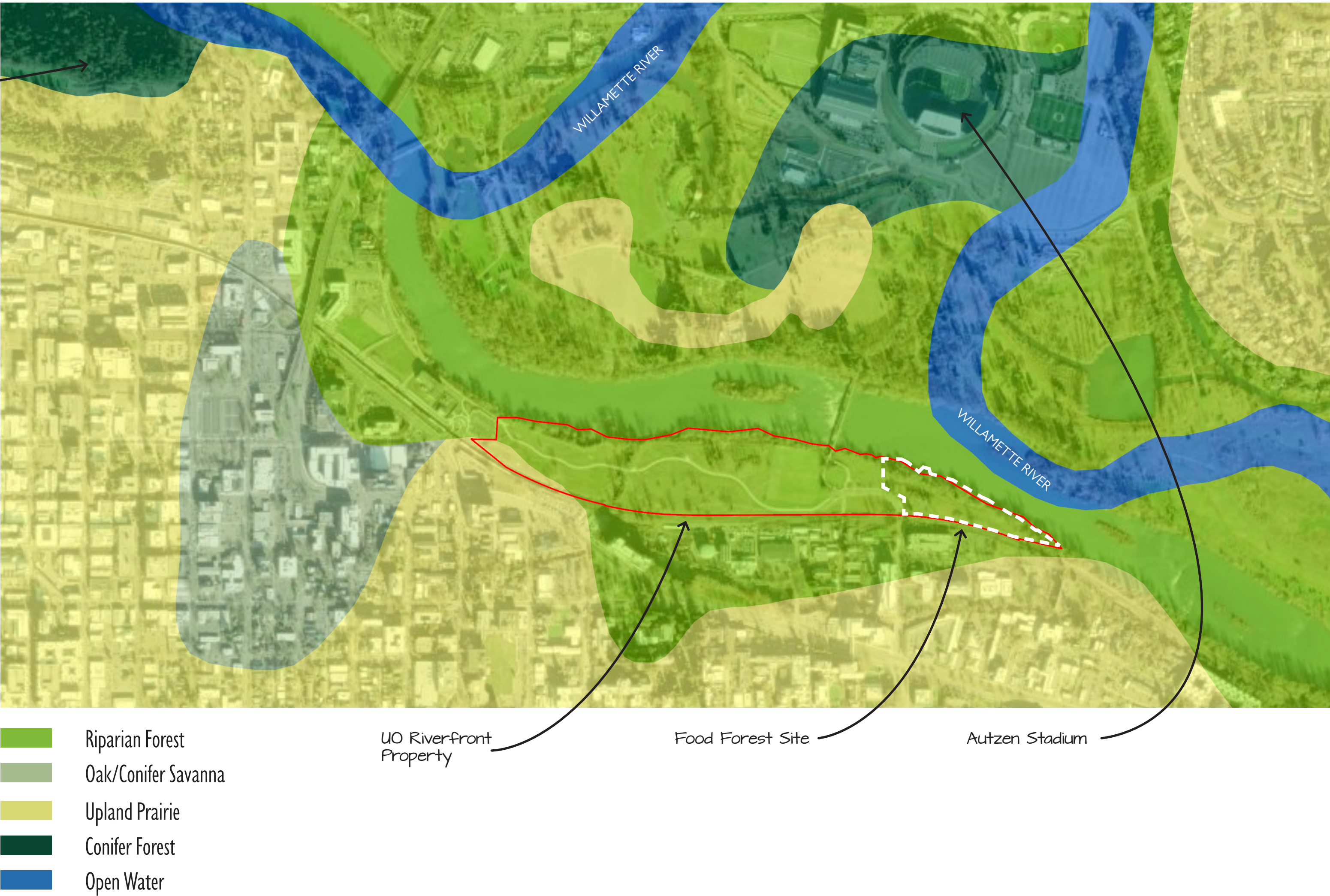
The river functioned as a braided system of channels, side sloughs, and backwaters, woven together by large woody debris. The shifting mosaic created a wide variety of diverse habitat for both plants and animals.

For the Kalapuyan people, who called the river the Whilamut, the dynamics of this system were deeply embedded in everyday life. It sustained communities with food, and anchored cultural practices and relationships to the land that developed over many generations.

In the 1850s, the General Land Office (GLO)

was commissioned by the federal government to survey and documenting broad plant communities and notable landscape features across the western United States. At this time the landscape had not yet been significantly altered by more intensive Euro-American land uses like dams, roads, and urban development<sup>30</sup>.

In this stretch of the Willamette River, the GLO notes describe a riparian forest nearly a mile wide, covering much of what is now the Willamette River Natural Area (WRNA). The river itself followed a very different path than it does today, occupying a channel farther north and sweeping wide around the area where Autzen Stadium now sits. Surrounding this riparian corridor, upland prairie dominated the landscape, punctuated by widely spaced oak trees. Small pockets of conifer forest persisted in a few areas, including the north-facing slopes of Skinner Butte. The data from the GLO survey has been largely digitized and incorporated into the historic vegetation map available from the Oregon GEOHub Geospatial Repository.



<sup>30</sup> Alverson and Christy, “Historical Vegetation of the Willamette Valley, Oregon, circa 1850.”



# AERIAL SITE HISTORY

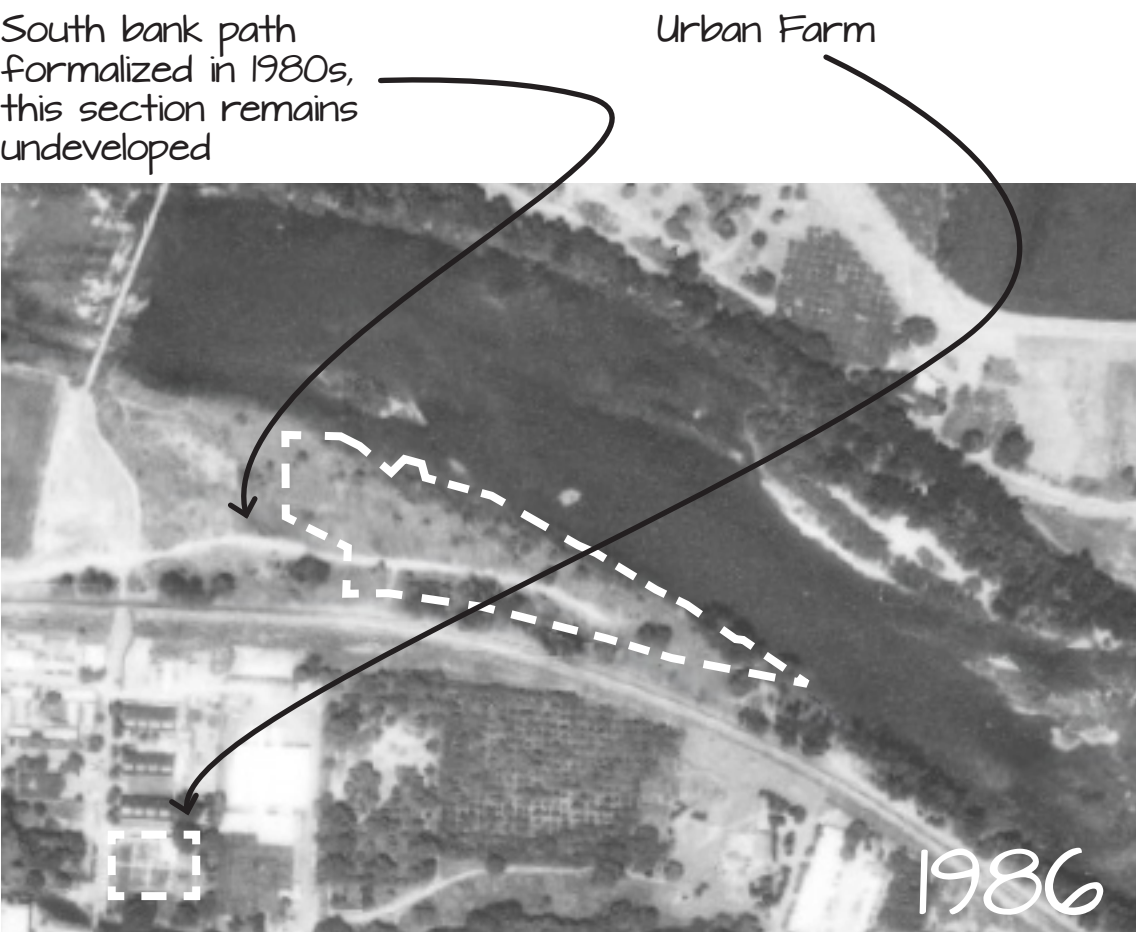
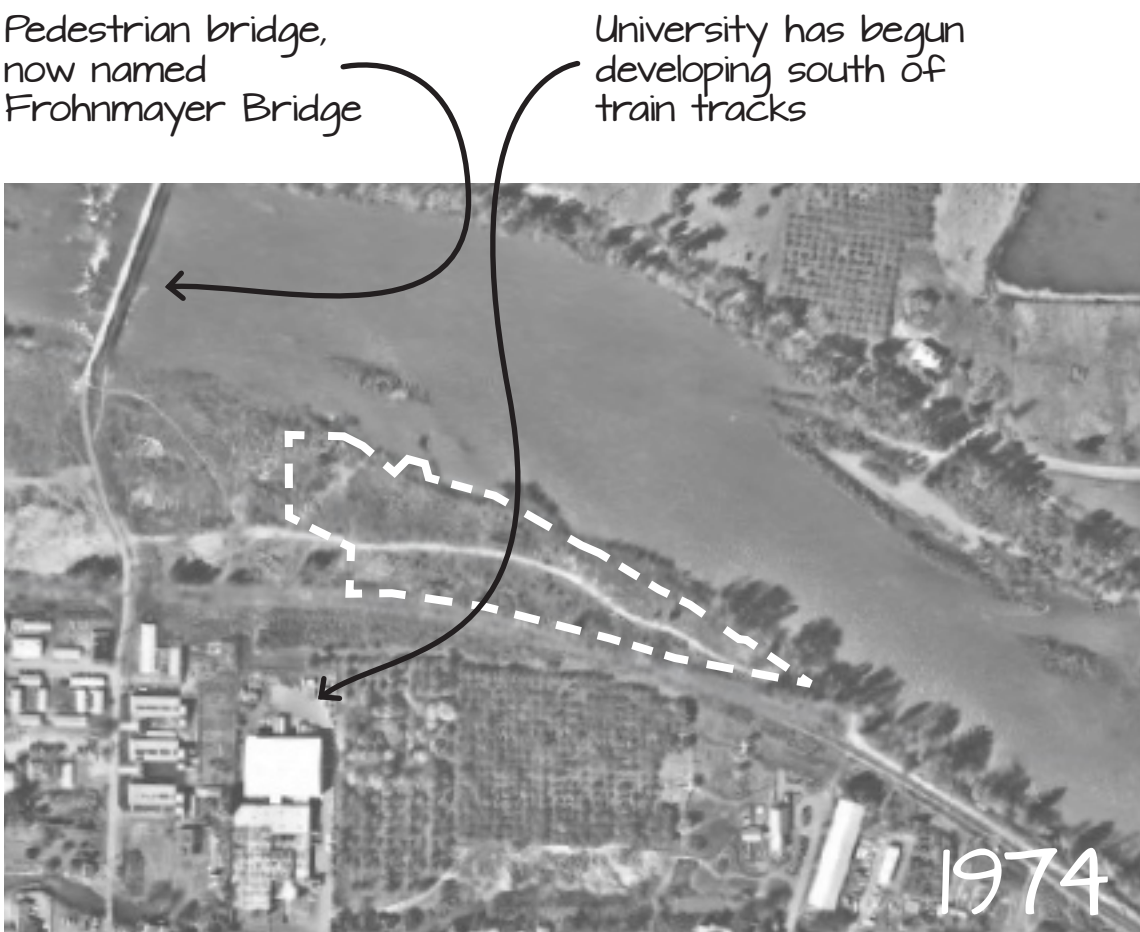
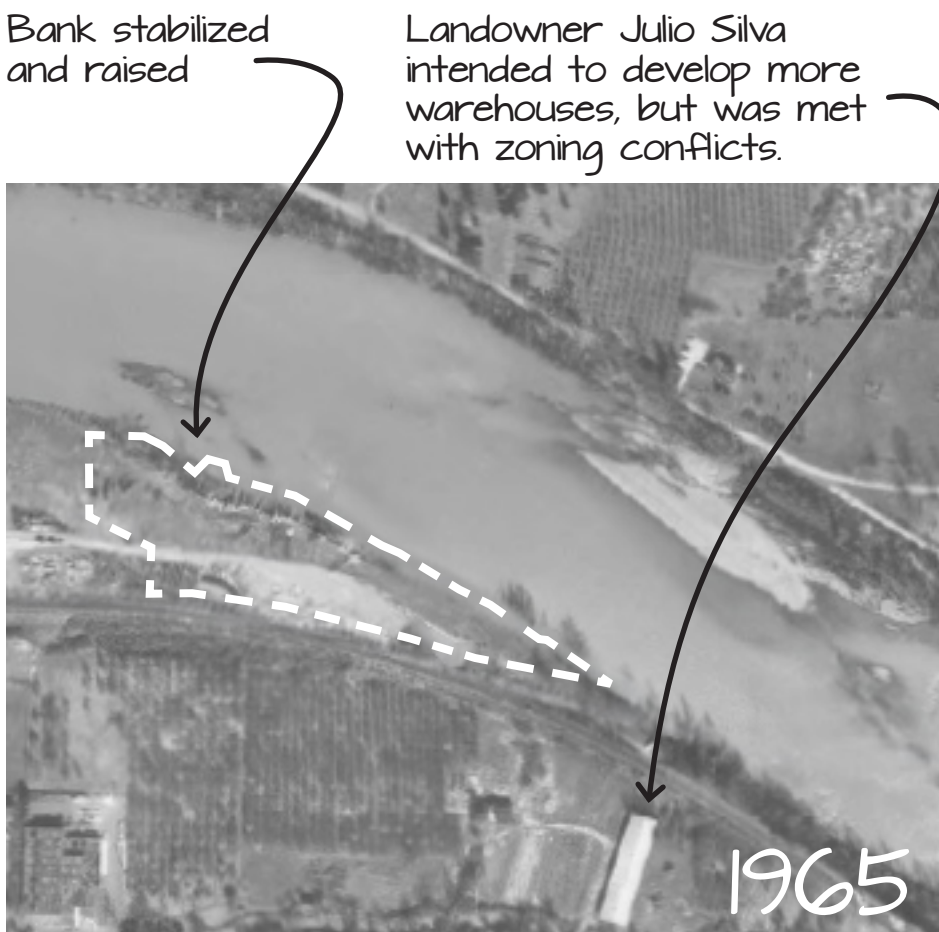
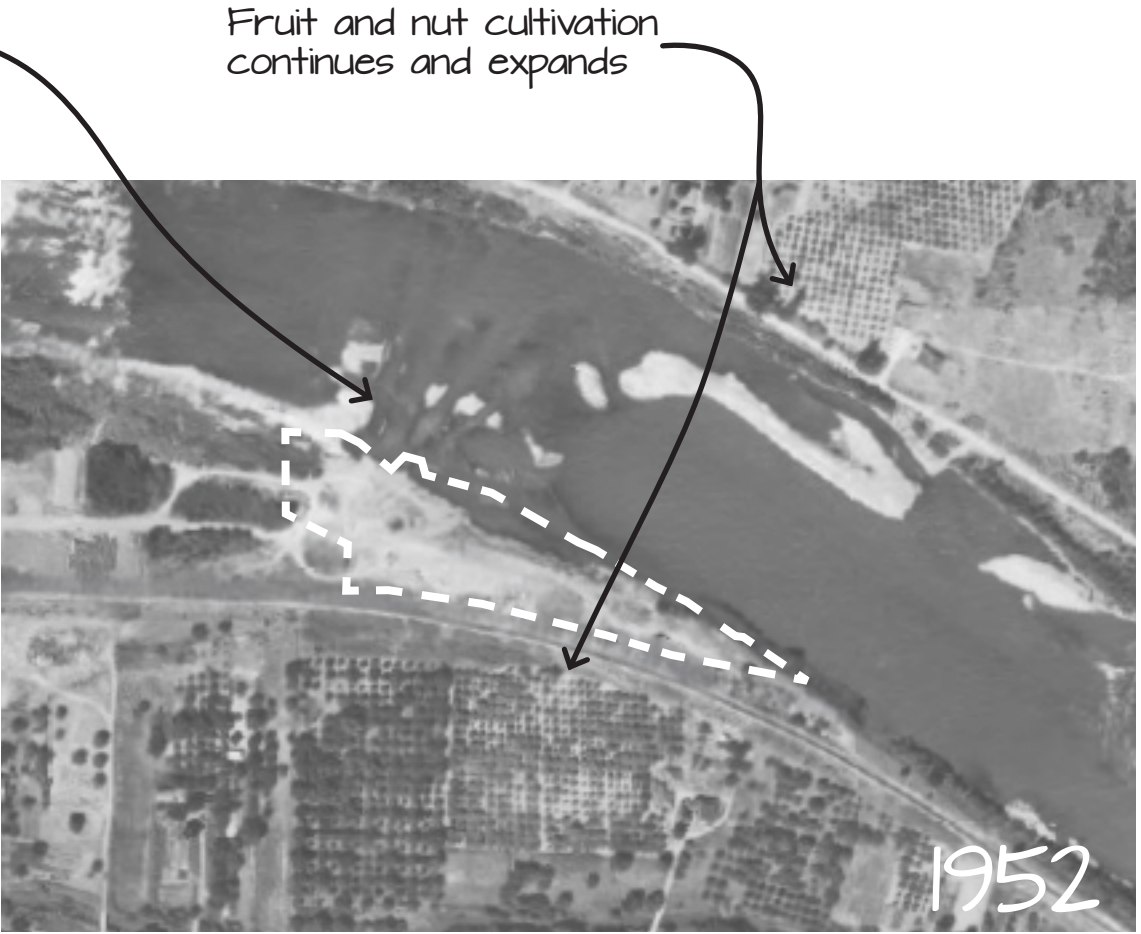
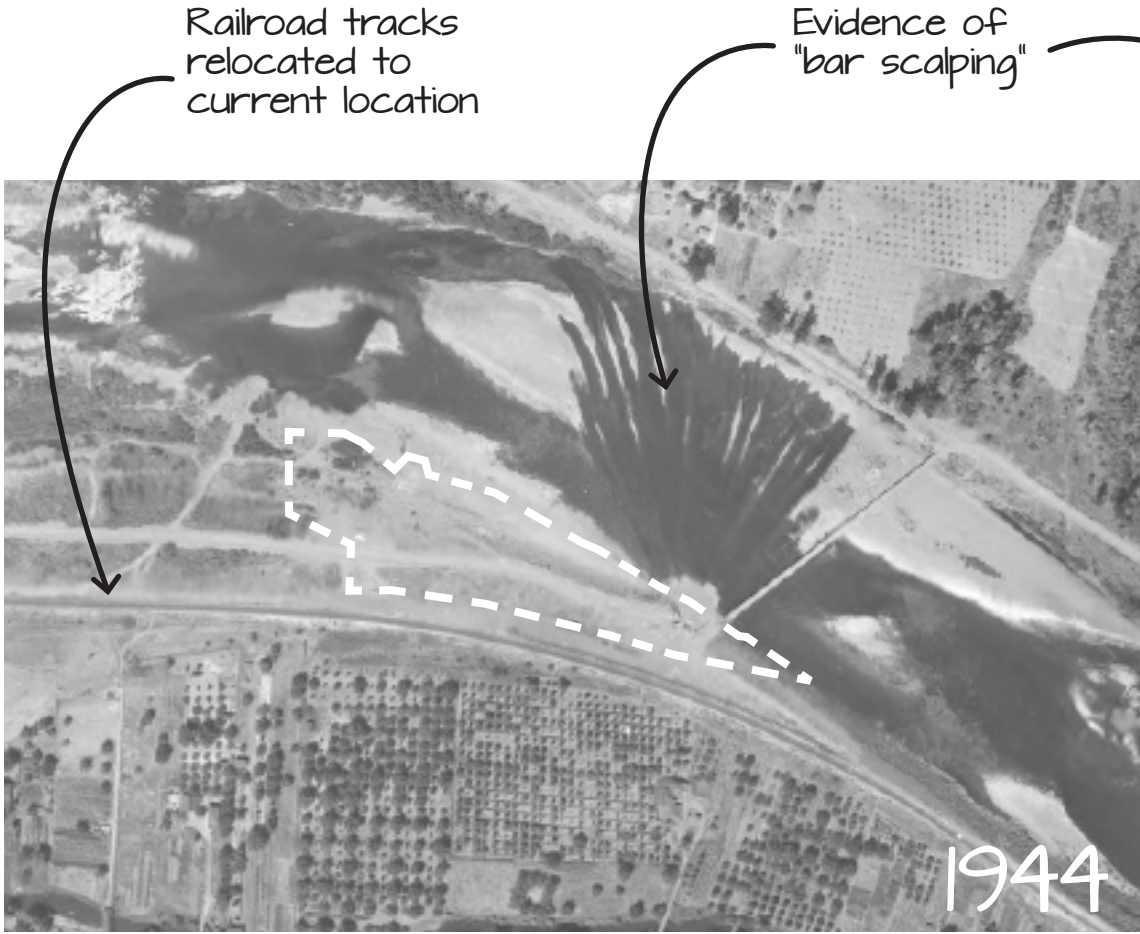
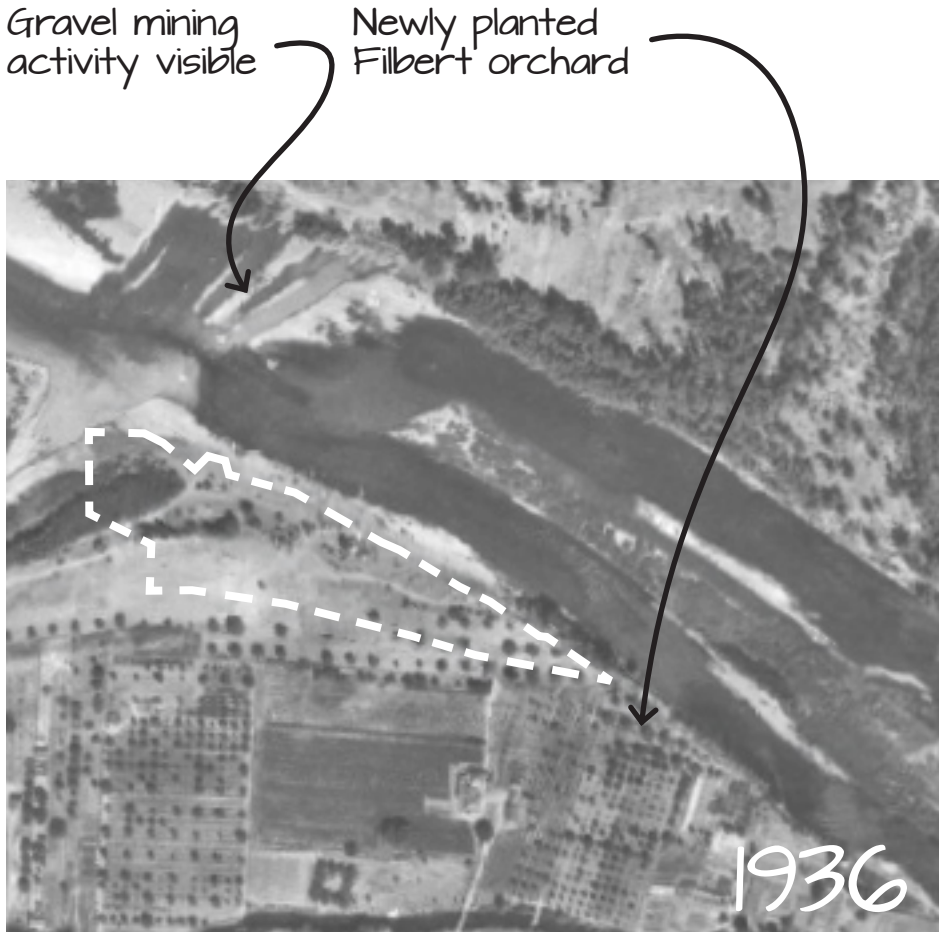
In 1849, Eugene Skinner filed a land claim near Skinner Butte. The Kalapuya people had been significantly impacted by diseases introduced by prior Euro-American contact, and between 1851 and 1855 those who remained were forcibly removed from their ancestral homelands by treaty and sent to reservations<sup>31</sup>.

The City of Eugene was incorporated in 1862, and the University of Oregon opened its doors in 1879. Two major flood events, the first in 1861, and the second in 1890 drastically altered the course of the river. In 1900 the Eugene Sand & Gravel Company began mining operations along the banks of the Willamette in the area our site now occupies<sup>32</sup>.

The University of Oregon Knight Library maintains an extensive collection of aerial photography covering the transformation of the Willamette Valley and much of Oregon and Washington from 1929 onward. The earliest photograph of the site is the 1939 image to the right, in which we can see evidence of ongoing aggregate mining operations. Also visible in these photos are some of the extensive Filbert (hazelnut) orchards that once lined the flood plain of the Willamette, thriving in the rich alluvial soils deposited by the river.

The Oregon and California railroad first reached Eugene in 1871 and initially ran parallel to Franklin Boulevard, but it was relocated in 1940, and appears in the 1944 photograph to the right. From the 1940s to the 1960s the orchards visible in these photos were owned by local car dealership owner Julio Silva, who intended to convert the property to warehousing, but was met with zoning restrictions from the city of Eugene. The University purchased the property from Silva in 1964, along with several adjacent properties<sup>33</sup>. In 1968, the University purchased much of the riverfront property north of the track from Eugene Sand & Gravel Company, which had been relocating its operations to the confluence of the McKenzie<sup>34</sup>.

Between 1965 and 1970, construction debris was used to fill in old quarry pits and armor the south bank of the Willamette, creating a wide and level upper terrace with a steep transition to the river's edge.<sup>35</sup> The University began development of its new North Campus, although the Filbert orchards remained largely undisturbed until the late 1980s.



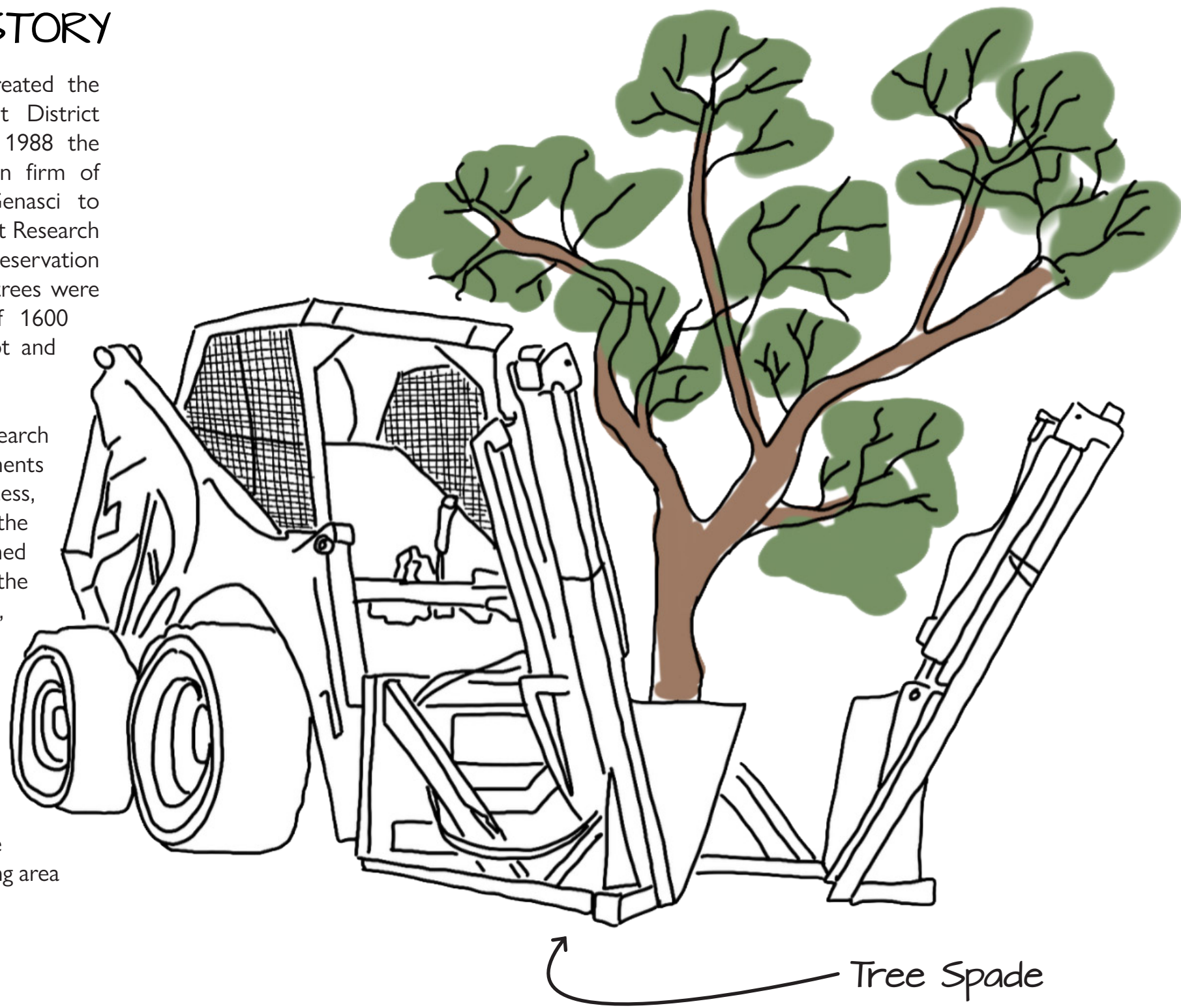
<sup>31</sup> Campus Planning and Facilities Management, Willamette River Natural Area Landscape Management Plan.  
<sup>32</sup> Campus Planning and Facilities Management, Willamette River Natural Area Landscape Management Plan.  
<sup>33</sup> Campus Planning and Facilities Management, Landscape Resource Survey: Riverfront Research Park.  
<sup>34</sup> Campus Planning and Facilities Management, Willamette River Natural Area Landscape Management Plan.  
<sup>35</sup> Campus Planning and Facilities Management, Willamette River Natural Area Landscape Management Plan.



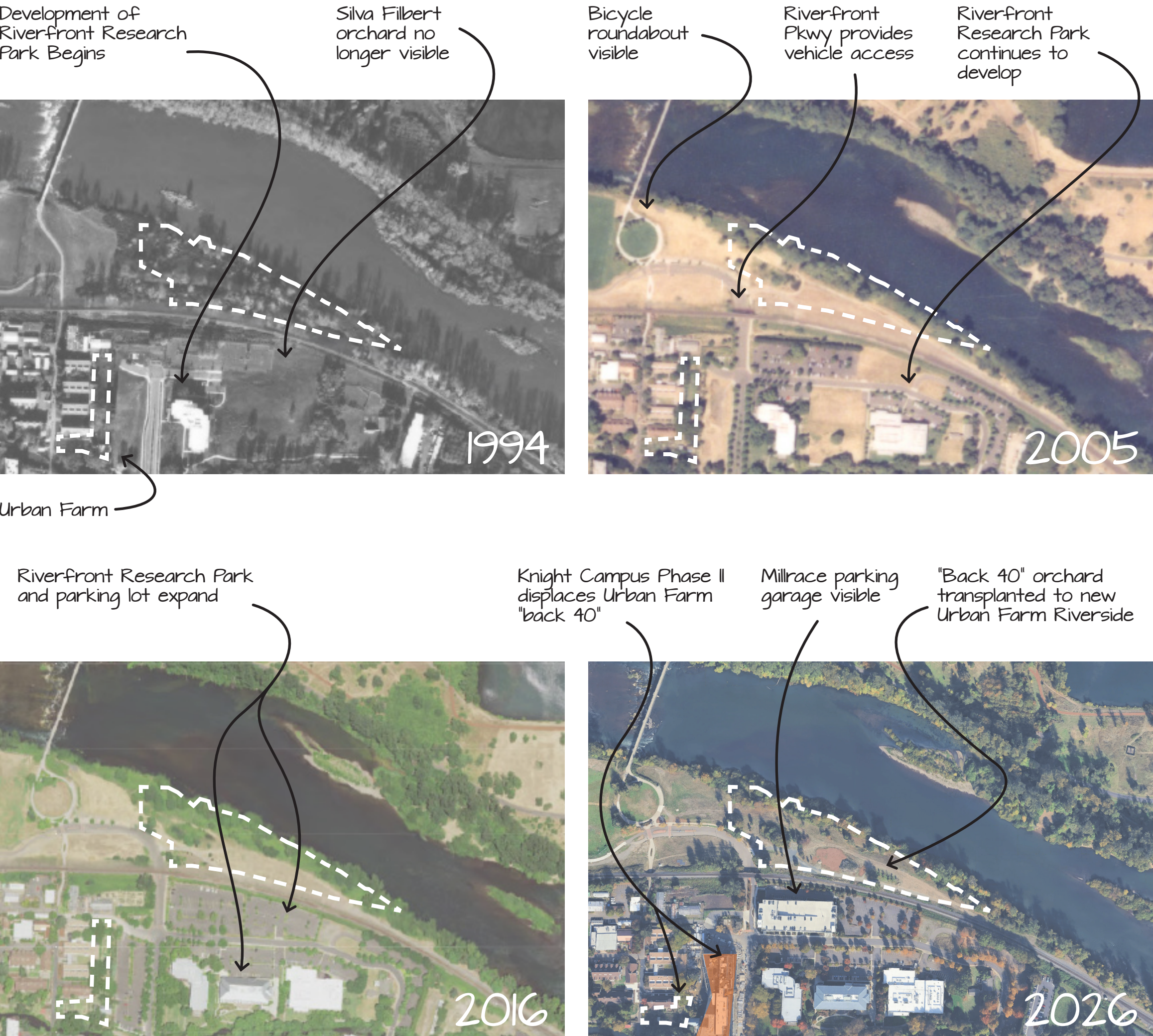
# AERIAL SITE HISTORY

In 1985 the Eugene City Council created the Riverfront Park Special Development District in the north campus area<sup>36</sup>, and in 1988 the University contracted with the design firm of architecture professor Donald B. Genasci to produce a masterplan for the Riverfront Research Park. Originally the plan included the preservation of the historic Silva orchard, but the trees were removed during the construction of 1600 Millrace Drive, cited as being unkempt and unsalvageable<sup>37</sup>.

Development of the Riverfront Research Park has continued with improvements to both pedestrian and vehicle access, but the Urban Farm Riverside and the proposed Food Forest site remained largely untouched until 2018 with the establishment of the WRNA. In 2022, the Urban Farm Riverside site was allocated at the eastern end of the WRNA, between the 100-foot riparian setback and the tracks. 14 historic fruit trees from the Urban Farm's "back 40" were relocated to the riverside site in 2023, as the beloved orchard was bulldozed to make space for a construction materials staging area for the new Knight Campus Phase 2.



<sup>36</sup> Campus Planning and Facilities Management, Willamette River Natural Area Landscape Management Plan.  
<sup>37</sup> Campus Planning and Facilities Management, Landscape Resource Survey: Riverfront Research Park.





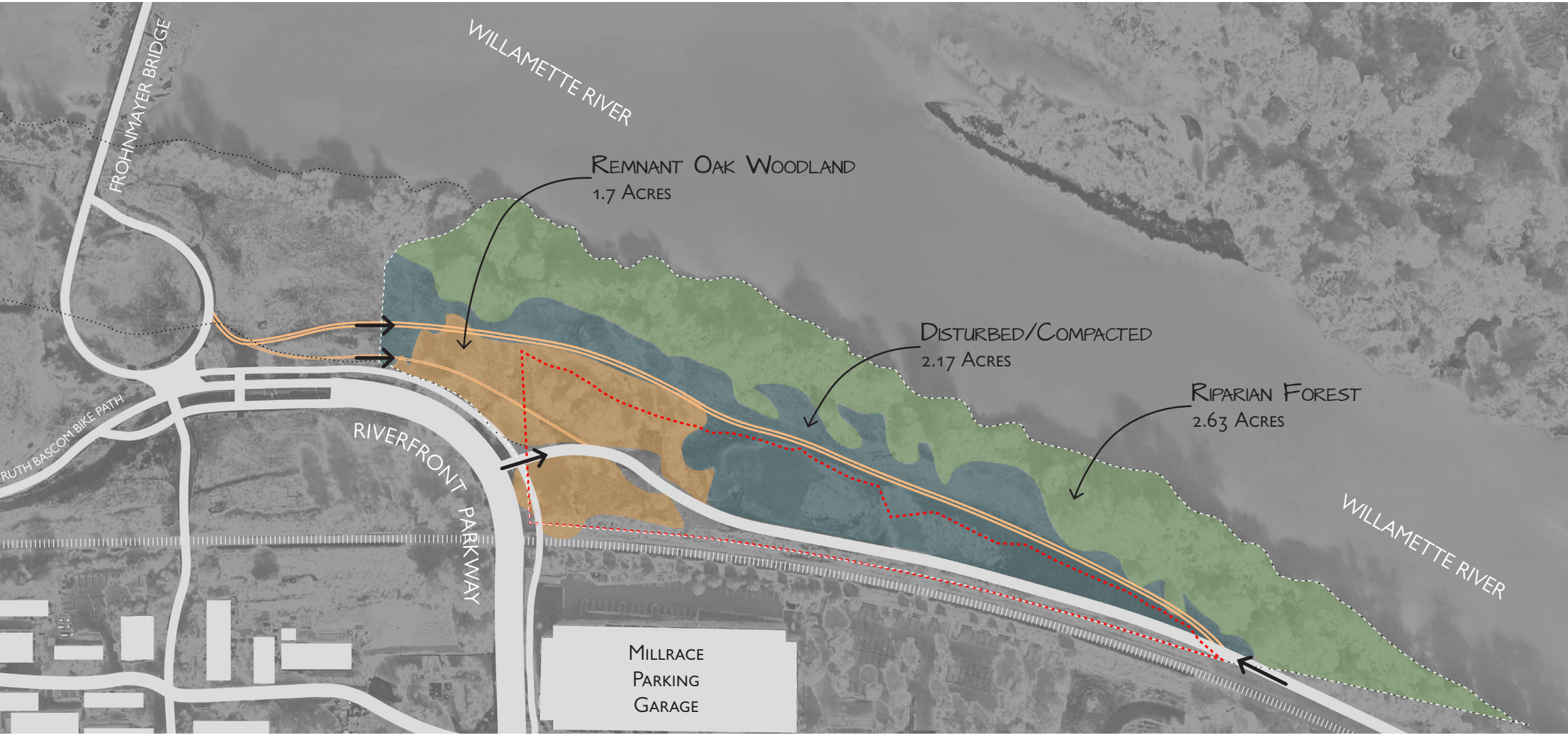
# EXISTING CONDITIONS

Extensive work has been done throughout the WRNA to identify specific plants as well as broader vegetation communities. This map of existing cover types found on site was created through a mix of field observations and aerial photography interpretation, as well as consultation of the WRNA Landscape Management Plan. Vegetation surveys conducted since 2012 have documented more than 200 plant species within the broader riverfront area, with roughly 70 identified as native. Despite this level of diversity, no state or federally listed threatened or endangered species have been recorded on site<sup>38</sup>.

More than 130 non-native plant species have been documented within the WRNA, though many are not considered invasive or immediate threats to ecological function<sup>39</sup>. Regional guidance from the Native Plant Society of Oregon was considered in the creation of the WRNA Landscape Management Plan to identify a subset of species as high and medium-priority concerns for management. Not all of these species are currently present on our site, but nearby populations suggest a strong potential for future invasion.



Invasive nutria are highly destructive to riverbanks and new vegetation

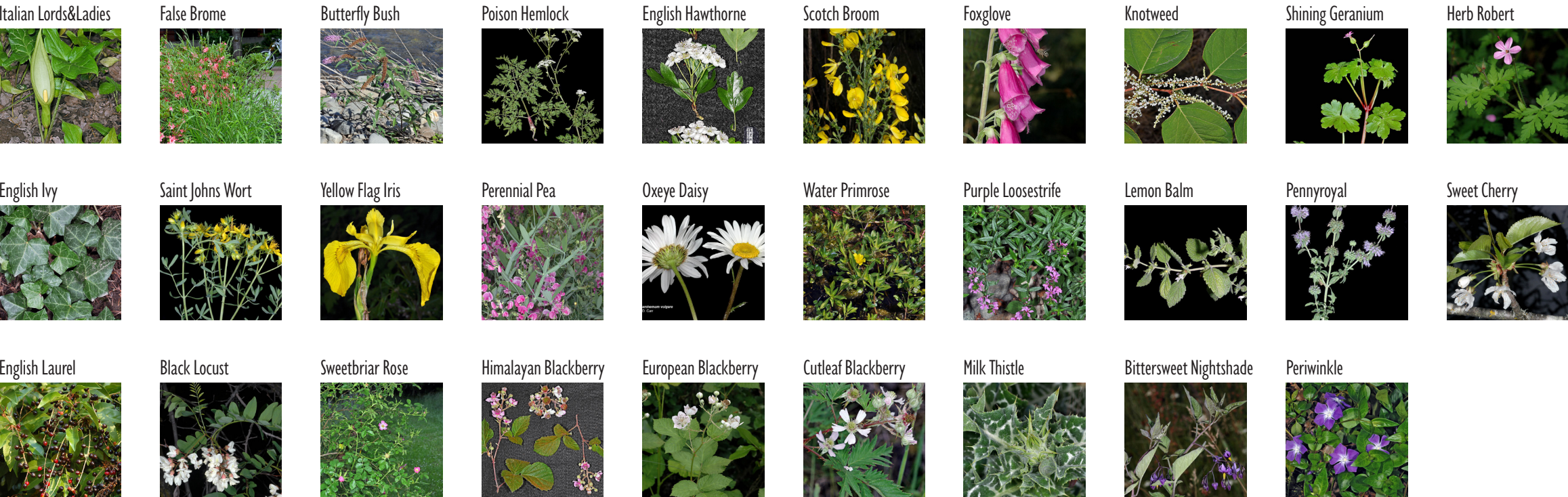


## University of Oregon Riverside Food Forest

### EXISTING VEGETATION CONDITIONS

- Riparian Forest
- Disturbed/Invasive Grassland
- Mixed Woodland and Oaks
- WRNA Boundary
- Urban Farm Riverside Boundary
- Site Entrances
- Informal Road/Path

### HIGH PRIORITY INVASIVES FOUND ON OR NEAR THE SITE



<sup>38</sup> Campus Planning and Facilities Management, Willamette River Natural Area Landscape Management Plan.

<sup>39</sup> Campus Planning and Facilities Management, Willamette River Natural Area Landscape Management Plan.



Beavers are one of the many native species that have been spotted in the WRNA

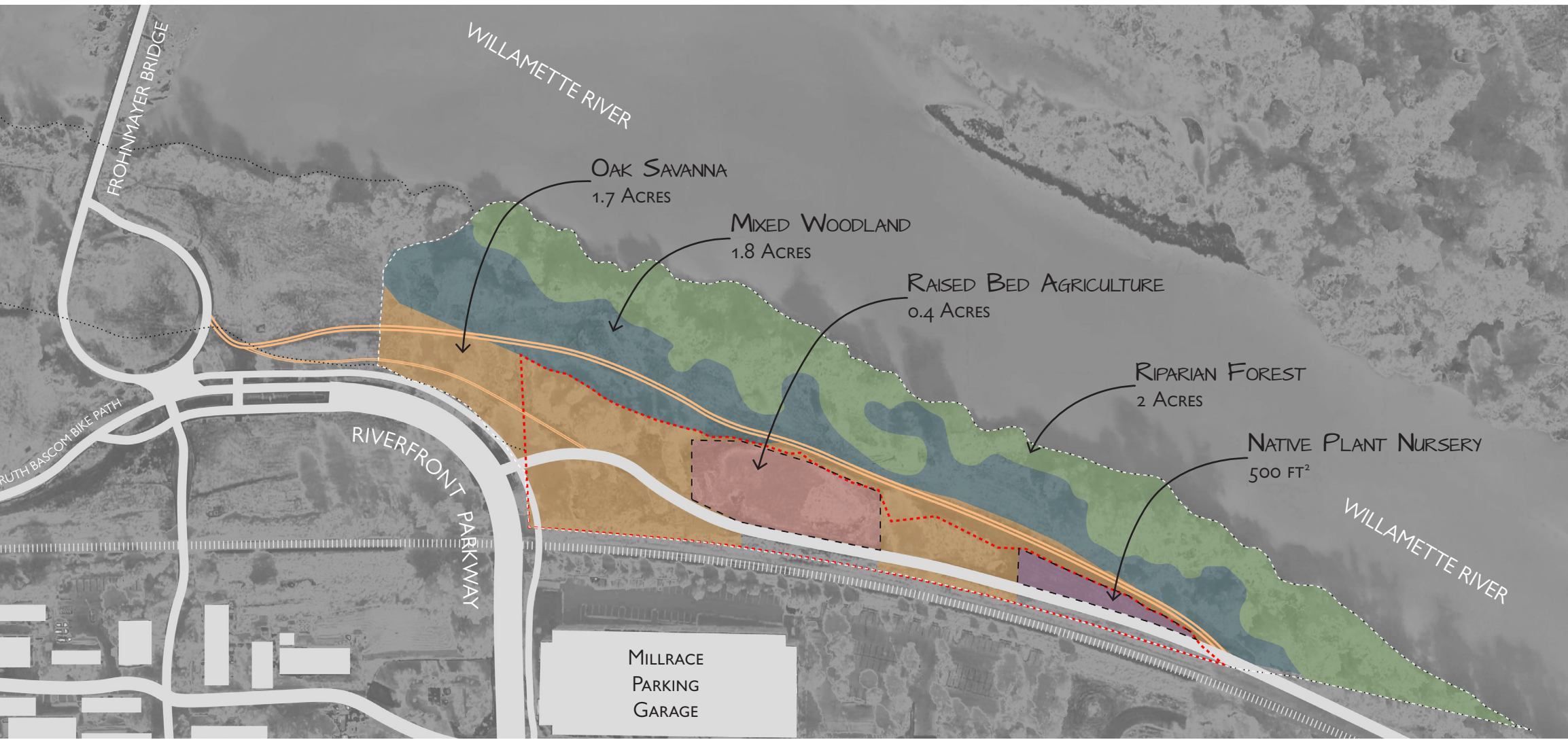


# STRATEGY HABITATS

The WRNA Landscape Management Plan also identifies the desired future conditions based on “target habitats” or sets of vegetation communities that have been chosen for priority conservation and restoration within the site. Target habitats found within our food forest site include riparian forest, upper-terrace mixed woodland, and grassland (a mix of upland and wetland prairie and oak savanna)<sup>40</sup>.

These target habitats were used as the basis for determining the layout and character of our food forest. The plants found within these target vegetation communities include many native edibles that allow the food production goals of the Urban Farm to intertwine with the restoration goals of the WRNA.

Initial pallet planning



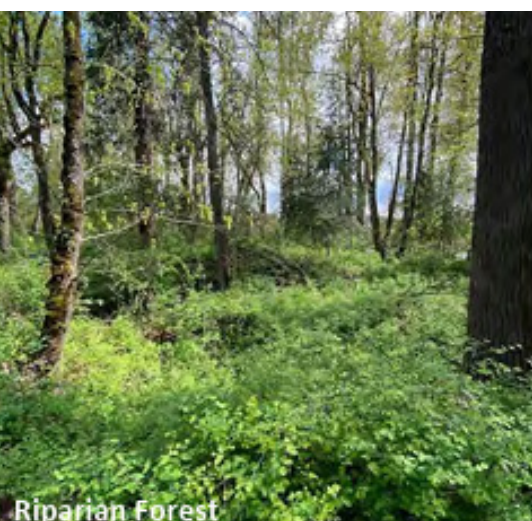
## University of Oregon Riverside Food Forest

### PROPOSED VEGETATION CONDITIONS

- |                                    |                                           |
|------------------------------------|-------------------------------------------|
| <div></div> Riparian Forest        | <div></div> Native Plant Nursery          |
| <div></div> Mixed Woodland         | <div></div> Informal Road/Path            |
| <div></div> Oak Savanna            | <div></div> WRNA Boundary                 |
| <div></div> Raised Bed Agriculture | <div></div> Urban Farm Riverside Boundary |

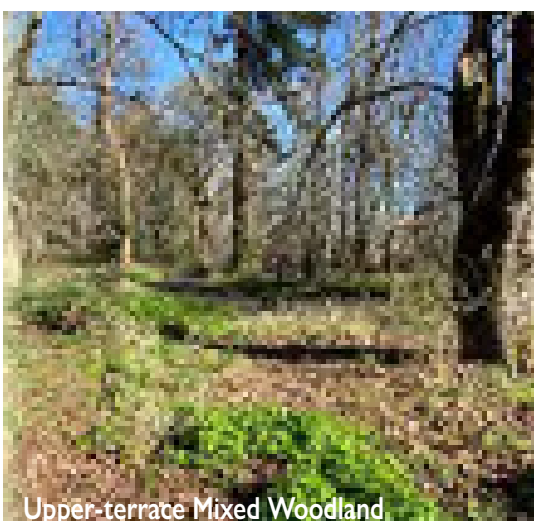


### REFERENCE PHOTOS OF TARGET HABITATS



Riparian Forest

- Osoberry
- Oregon grape
- Miner's lettuce
- Woodsorrel
- Wapato



Upper-terrace Mixed Woodland

- Pacific crabapple
- Serviceberry
- Hazelnut
- Klamath plum
- Salmonberry



Mixed Woodland/Oak Savanna

- Bigleaf maple
- Elderberry
- Yampah
- Wild strawberry
- Tigertail



Grassland with Oaks

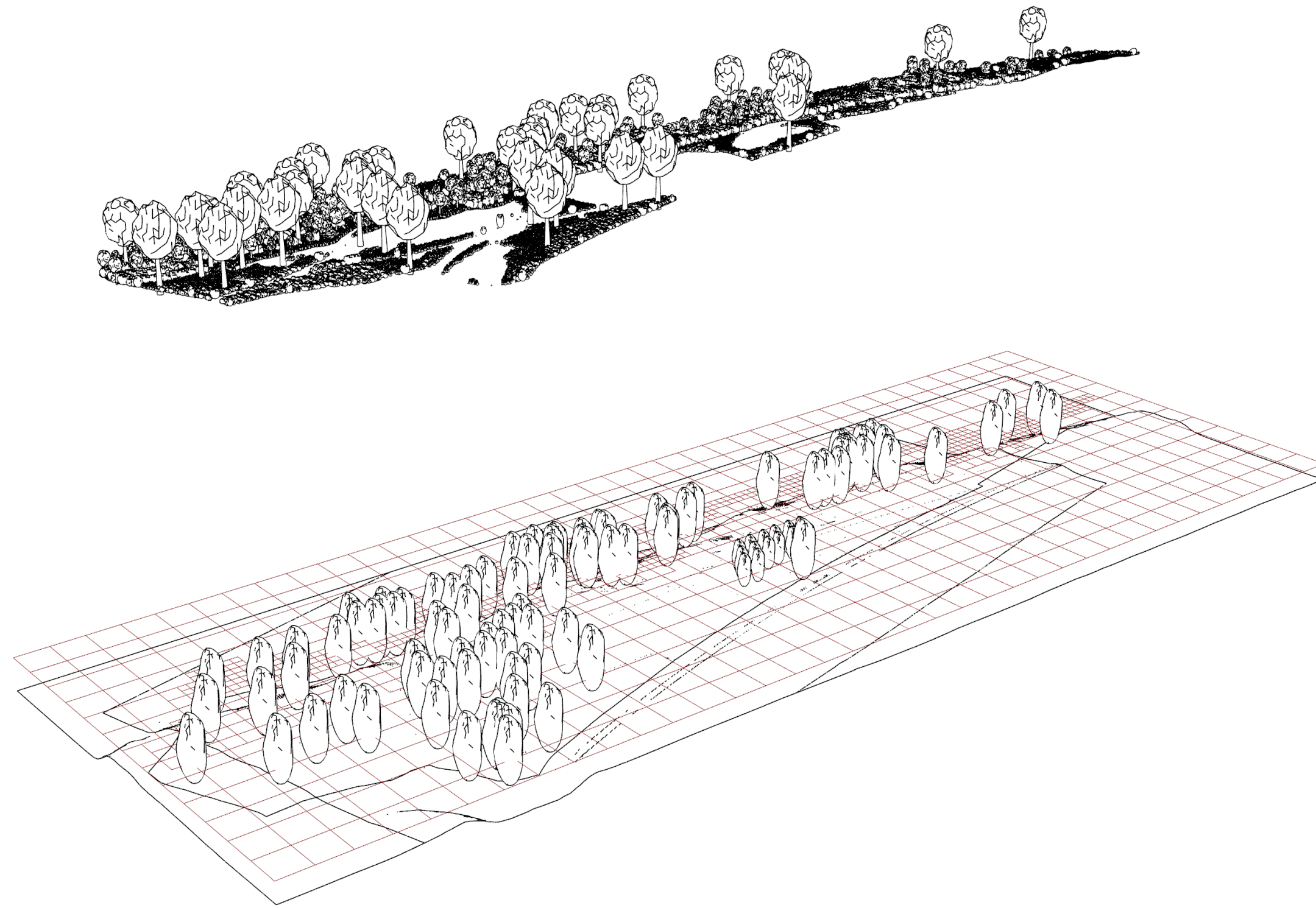
- Oregon white oak
- Camas
- Ookow
- Tarweed
- Hooker's onion

photos by Jeff Kruger

<sup>40</sup> Campus Planning and Facilities Management, Willamette River Natural Area Landscape Management Plan.



## 05 COMPUTATIONAL DESIGN



### DESIGN INTENT

The focus of our design is to create a logical and accessible planting layout that blends seamlessly into the larger WRNA restoration project while creating opportunities for students and classes to engage with culturally significant foods that are integral to the story of the Willamette River Valley.

Major considerations that impact this design are the conventional restoration work, invasive removal, and tree planting that are already underway on the western side of the WRNA, moving east toward our site and the talks currently underway to initiate phase one of the student driven masterplan for the Urban Farm Riverside site, created by the 2024 Fuller Design Studio. Phase one of this project includes building a fence to contain the area of the site where the Urban Farm's signature style of raised bed agriculture will take place.



# GRID THEORY & ACHIEVING TARGET CANOPY COVER

The three target habitats present in our site create the base layer for our food forest, determining canopy density, and desired plant community. These target habitats represent not a return to the historical vegetation conditions of this area pre Euro-American colonization, but a targeted effort to increase the availability and accessibility of certain threatened habitats that are key to the preservation of threatened and endangered species throughout the Willamette Valley.

**Grid Theory** – The grid is one of the oldest architectural tools for spatial organization. Grids are employed at every scale throughout the world of design to control the position of elements and rationalize systems. In traditional orchards, the grid is a fundamental spatial framework that controls light interception, yield, and harvest quality, as well as allowing space for precise irrigation and mechanization. In seed orchards grids are used to precisely control the spacing of genetic clones to optimize random mating and increase genetic diversity<sup>41</sup>.

Grids have historically functioned as both explicit and implicit tools of colonialism, imposed onto landscapes to divide, control, and simplify complex ecological and cultural systems into legible units of ownership and extraction. Yet the grid itself is not inherently oppressive; in this project, it serves as a flexible framework of points, meant to nurture complexity rather than erase it.

In spatially patterned restoration, desired species are introduced in strategically distributed clusters across a site to serve as seed sources, allowing them to gradually colonize surrounding untreated areas in subsequent years<sup>42</sup>. Several methods of spatially patterned restoration are discussed in the available academic literature, including applied nucleation (tree islands), slot seeding, and strip

seeding<sup>43</sup>. Studies suggest that in flat areas, the cost of planting tree islands may be 1.5-1.7 times greater than the cost of planting a similar area in strips. The grid creates the efficiency of strip planting while also giving us precise control over plant spacing across the site.

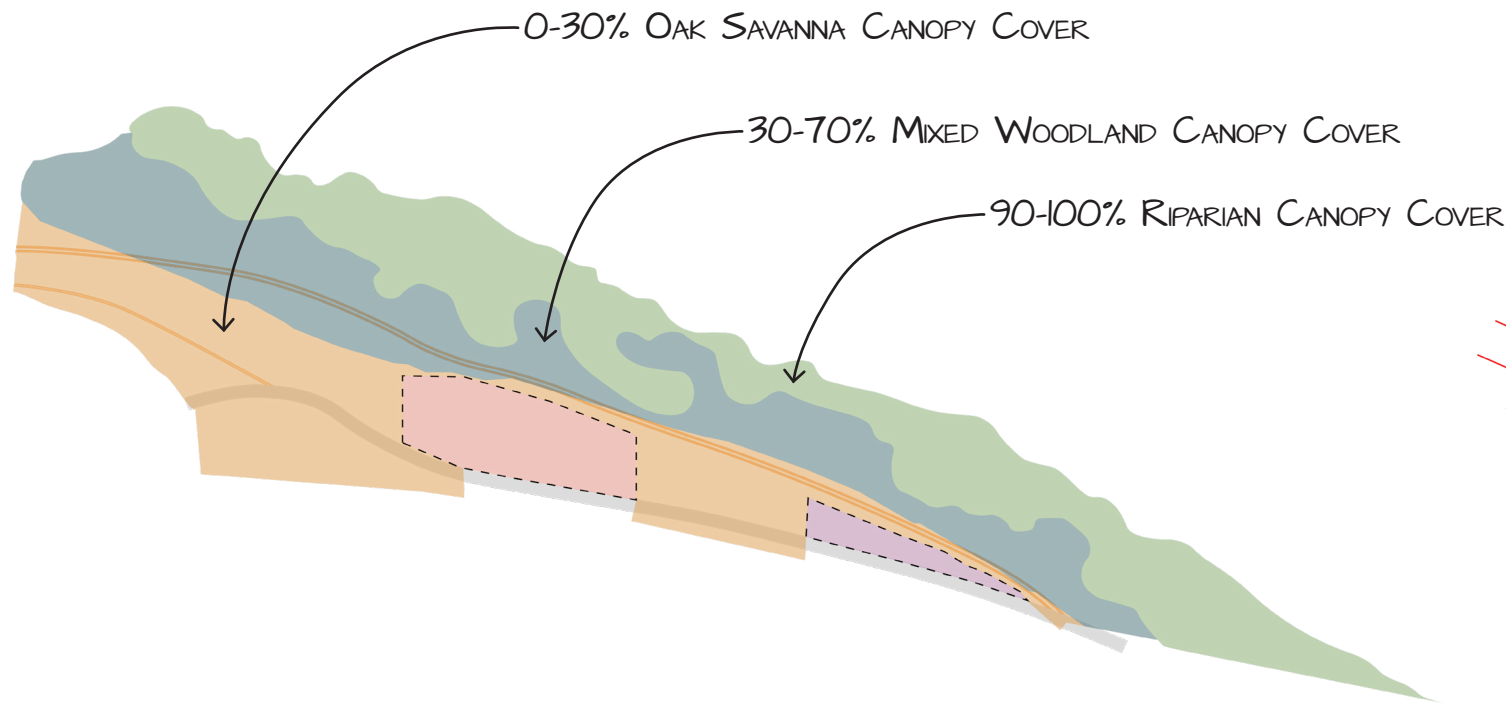
The site has been built up, creating a steep transition at the northern edge, but the majority of planting will take place on the wide, flat area of the upper terrace, where the spatial organization of the grid allows for easy layout, establishment and maintenance, as the WRNA intends to use mowing to control invasive intrusions in the more open areas of the oak savanna and grassland habitats.

Each strategy habitat is defined by a target canopy density: 0–30% for oak savanna, 30–70% for mixed woodland, and 90–100% for riparian forest. To operationalize these targets spatially, a uniform 40-foot by 40-foot grid is overlaid across the site. Grid intersections are treated as potential tree planting locations, with this base spacing corresponding to the desired canopy density range for oak savanna conditions.

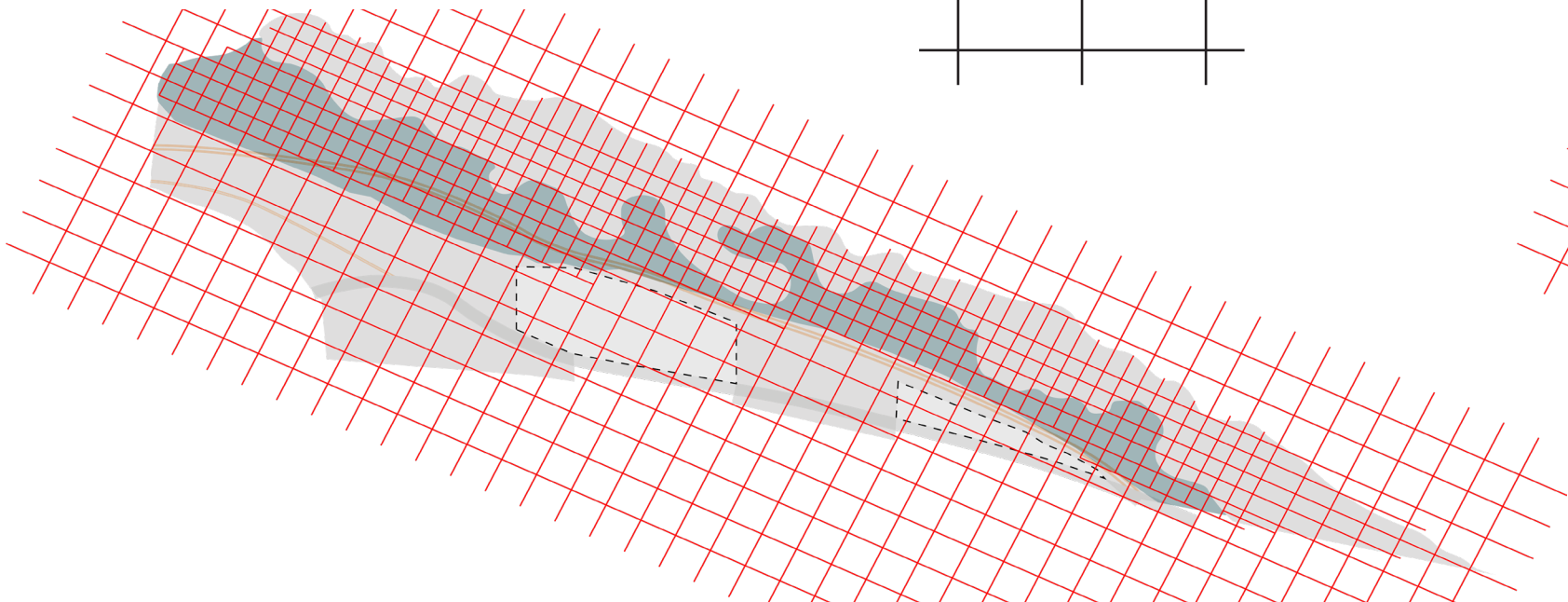
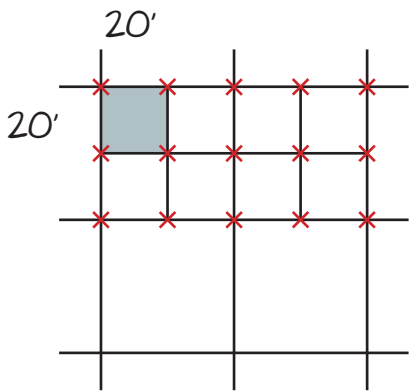
For habitats requiring higher canopy cover, the grid is progressively subdivided. The mixed woodland condition is generated by subdividing the base grid into 20-foot by 20-foot intervals, increasing planting density to achieve the target 30–70% canopy range. Similarly, the riparian forest condition is produced through a further subdivision to a 10-foot by 10-foot grid, corresponding to near-continuous canopy coverage.

The resulting grid intersections are then converted into point features representing candidate planting locations.

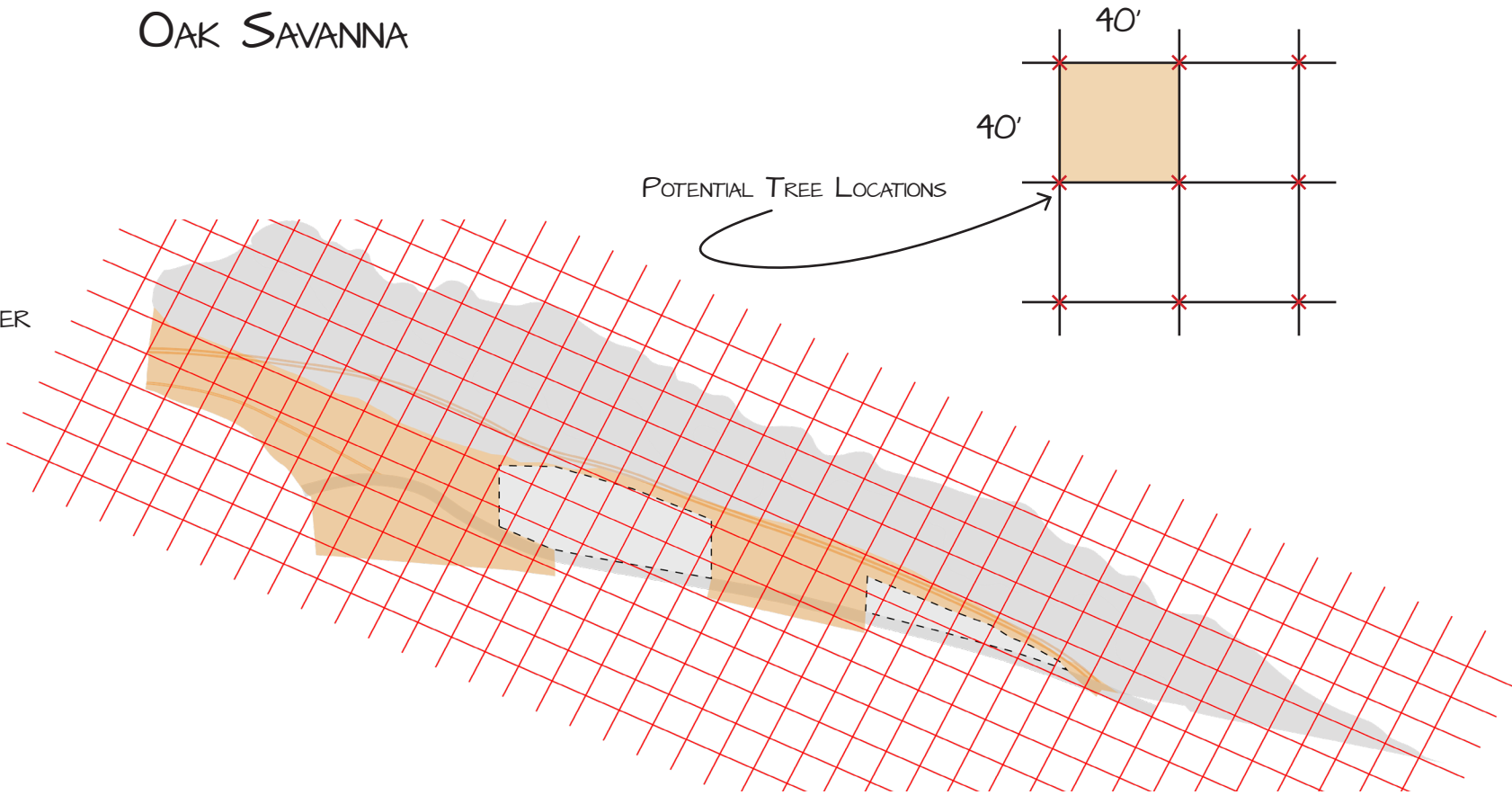
## TARGET CANOPY COVER BY STRATEGY HABITAT



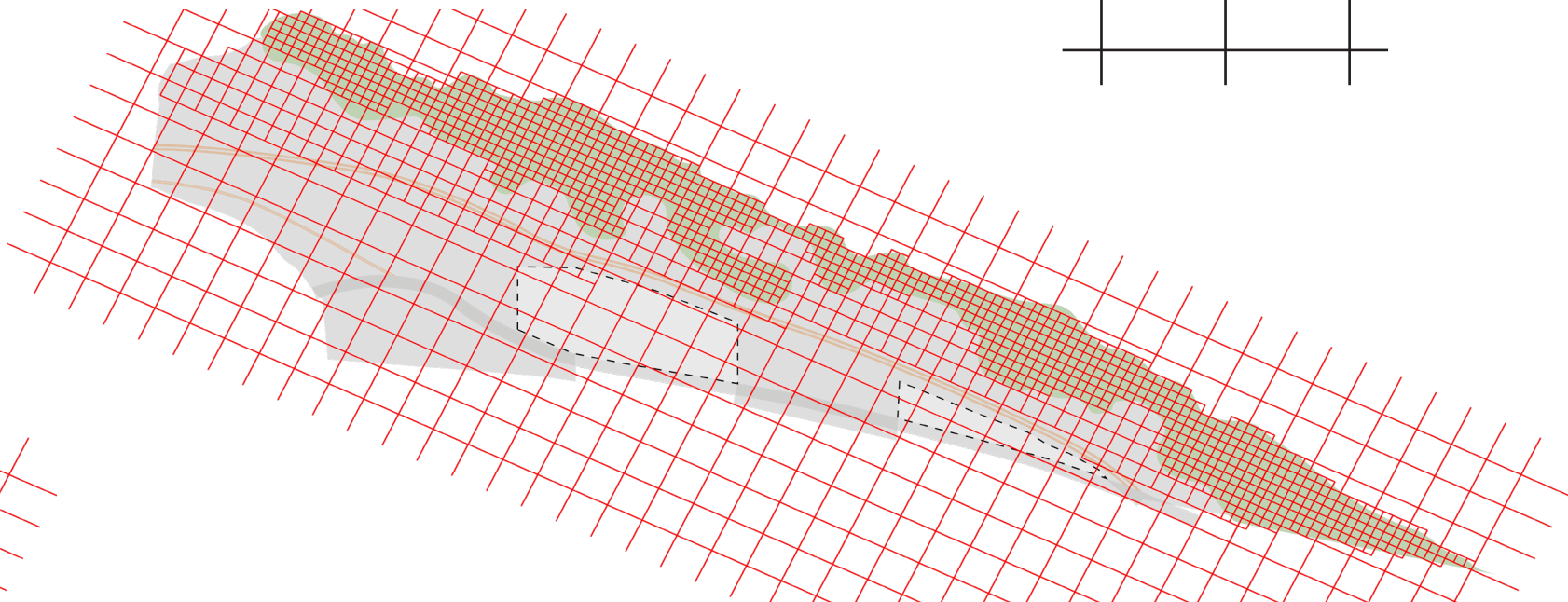
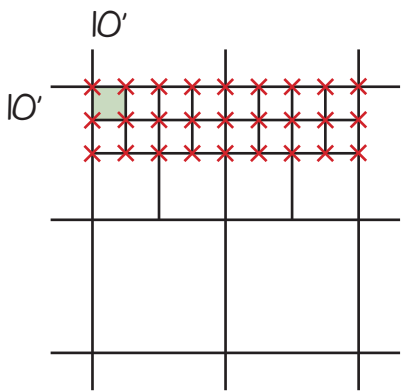
### MIXED WOODLAND



## OAK SAVANNA



### RIPARIAN FOREST





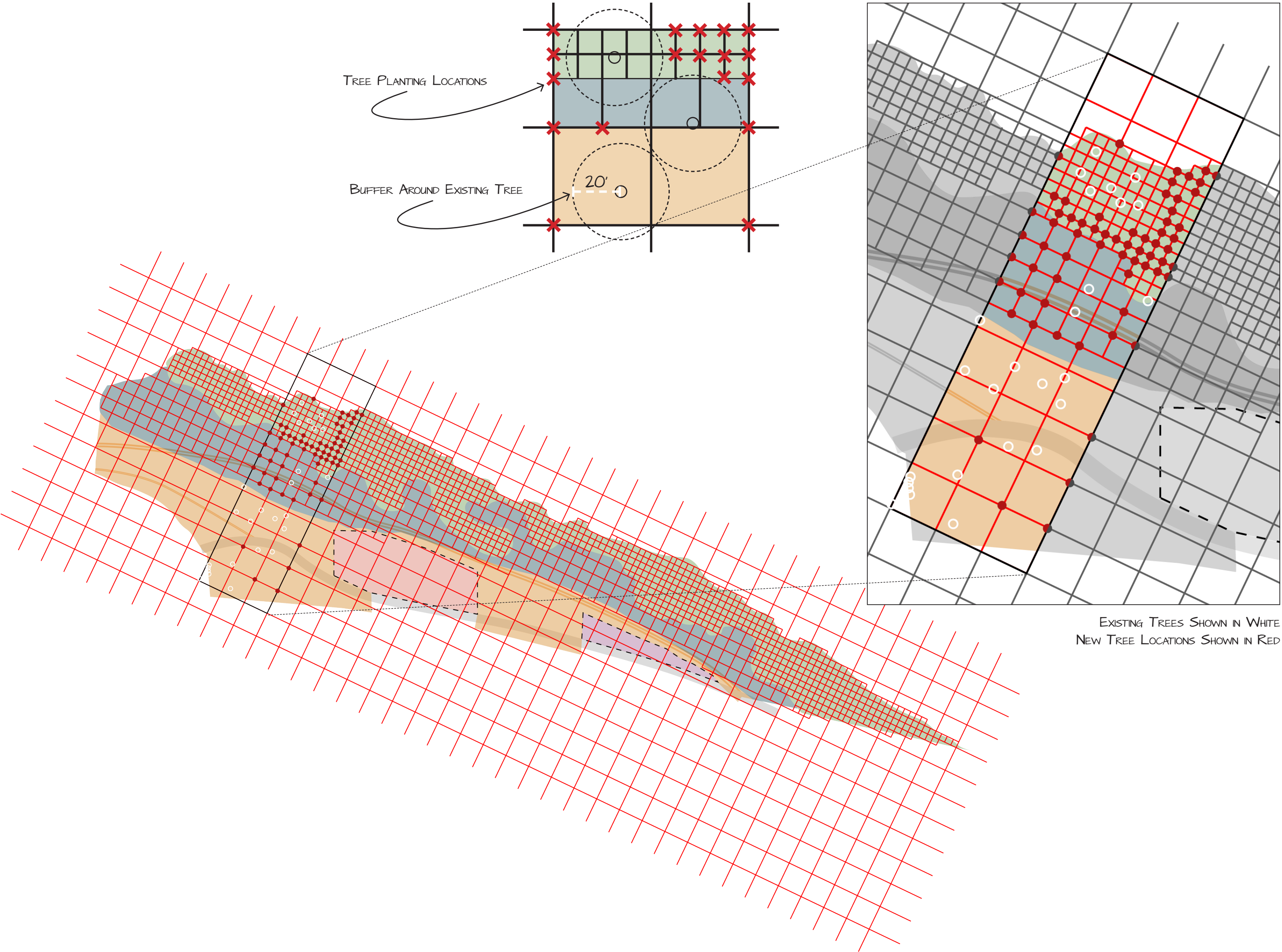
# EXISTING TREES

These points are subsequently filtered to exclude any that fall within 20 feet of existing trees, establishing a conservative baseline buffer intended to protect the ecological function and long-term health of mature canopy trees. While root zones and canopy spread vary significantly between species and individuals, the 20-foot threshold operates as a generalized minimum distance derived from typical mature crown radii and critical root zone protection practices. By enforcing this buffer, the design respects the root zones and crown spread of mature trees, which often extend well beyond what is visible above ground. This distance helps prevent overcrowding that can lead to stress, reduced growth, or increased susceptibility to pests and disease while also minimizing disturbance to established root systems during installation.

Beyond mitigating competition, this filtering process also supports the long-term structural integrity and ecological function of the landscape. Existing trees often anchor microclimates by casting shade, moderating soil moisture, and fostering specific understory conditions. Preserving space around them allows these microhabitats to persist and reduces the likelihood that new plantings will disrupt established ecological relationships. Within the 10x10-foot and 40x40-foot grids, the 20-

foot exclusion radius also functions to introduce variation and porosity into an otherwise regular spatial framework. Rather than producing a rigid field of evenly spaced planting points, the interaction between the fixed grid and the exclusion buffers generates irregular openings, and clusters shaped by the existing ecological structures. In this way, the design is not simply inserting new elements into the landscape but negotiating with the existing ecology.

Finally, this step contributes to the adaptability and resilience of the overall planting strategy. By systematically removing points that would create conflicts, the resulting layout becomes more legible and maintainable over time. It allows each plant to occupy a niche where it has a higher likelihood of thriving, while also leaving room for future growth and succession. As conditions shift through canopy expansion, climate variability, or management interventions, this initial spacing strategy provides a flexible framework that can accommodate change without requiring complete redesign. The grid therefore operates less as a rigid geometric imposition and more as an adaptable organizational scaffold capable of responding to ecological complexity over time.



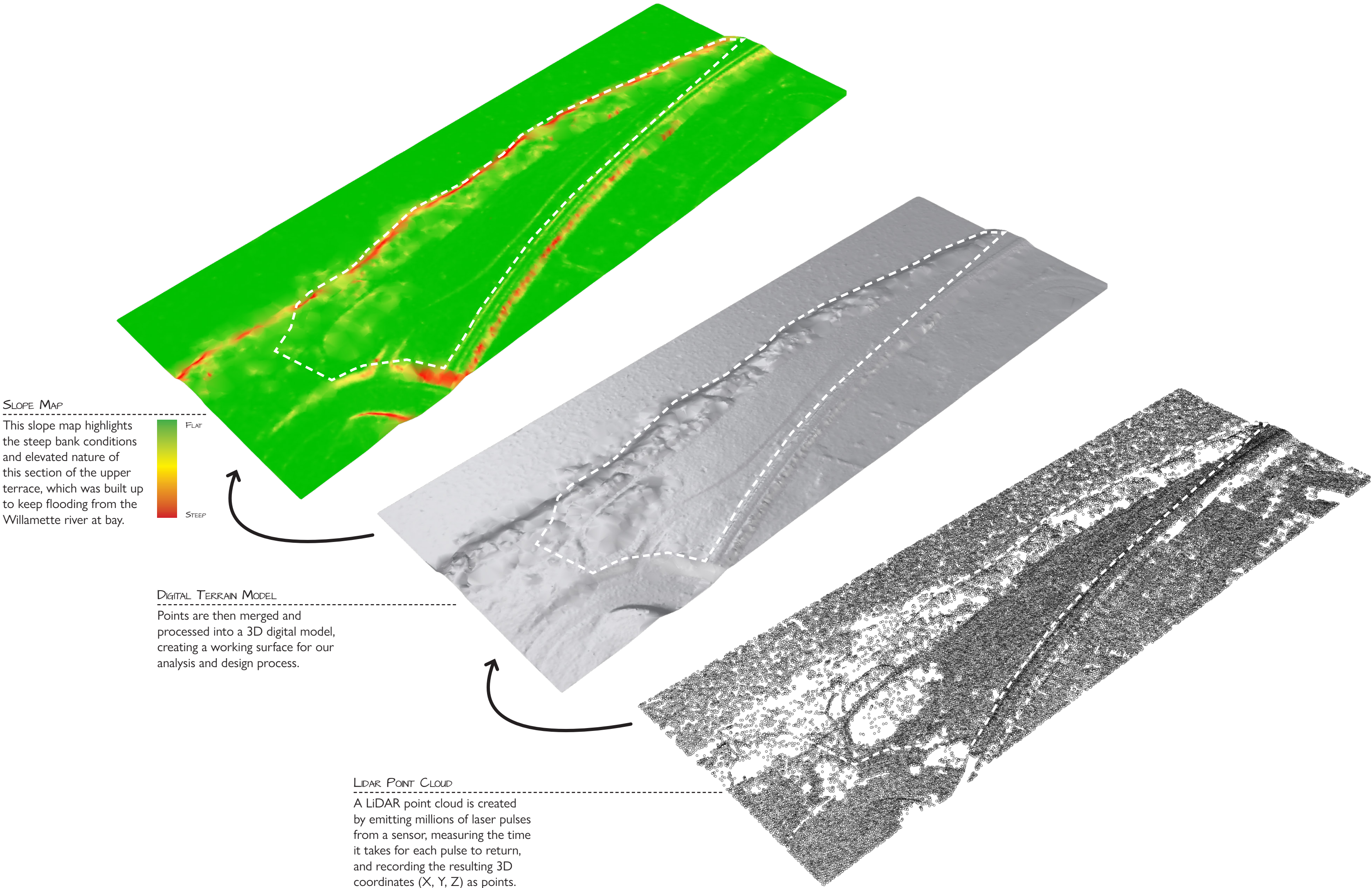
<sup>41</sup> Chaloupková and Lstibůrek, “Spatial Optimization of Genetic Thinning in Seed Orchards.”  
<sup>42</sup> Shaw et al., “The Use of Spatially Patterned Methods for Vegetation Restoration and Management across Systems.”  
<sup>43</sup> Holl et al., “A Call for Practical Spatially Patterned Forest Restoration Methods.”  
<sup>44</sup> Holl et al., “A Call for Practical Spatially Patterned Forest Restoration Methods.”



# TOPOGRAPHY

A digital terrain model of the site was developed using LiDAR-derived elevation data obtained from the National Oceanic and Atmospheric Administration Data Access Viewer. This model was used to analyze slope, aspect, and elevation changes across the site, with particular attention to steep bank conditions and areas of limited accessibility. These topographic features informed both planting feasibility and anticipated water movement patterns.

Open grassland conditions on site will eventually be maintained by mowing, so those areas must be located on terrain accessible to the riding mowers used by WRNA staff. Additionally, because this is a food forest, where students and community members will be foraging and tending to the plants, it is important to concentrate edible plants in areas that are flatter and more easily accessible, while steep bank areas can be reserved for broader groupings of plants targeted at more traditional restoration.

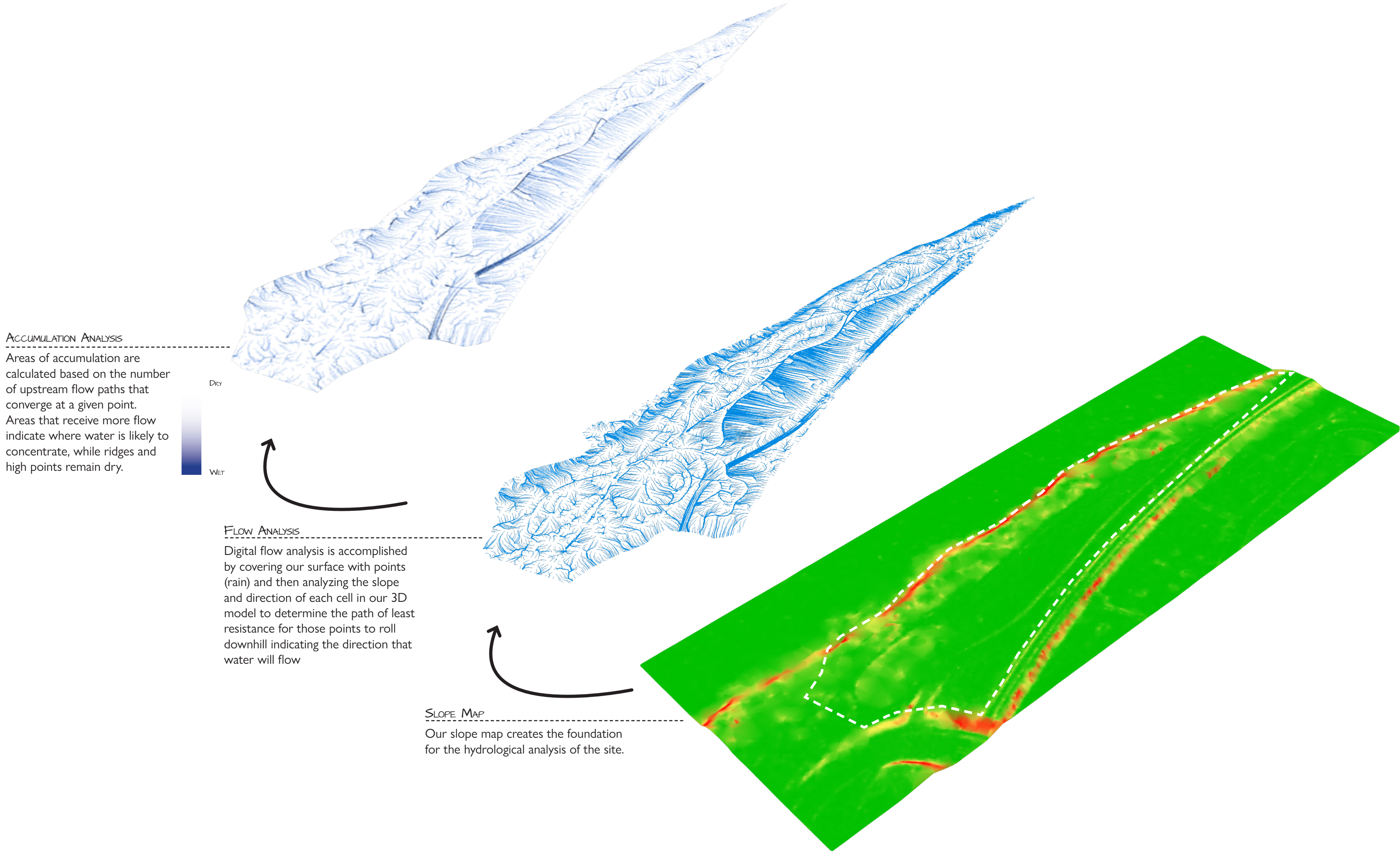




# HYDROLOGY

Hydrological conditions were interpreted through the digital elevation model, using slope and flow accumulation patterns to identify likely drainage pathways, areas of seasonal saturation, and potential zones of water retention. Particular attention was given to the relationship between topography and riparian conditions, especially along incised or steep bank edges where runoff and erosion may be concentrated

Areas of concentrated accumulation indicate where to place moisture loving plants while areas of low accumulation show where to place more drought tolerant species that prefer to dry out between rainfalls.

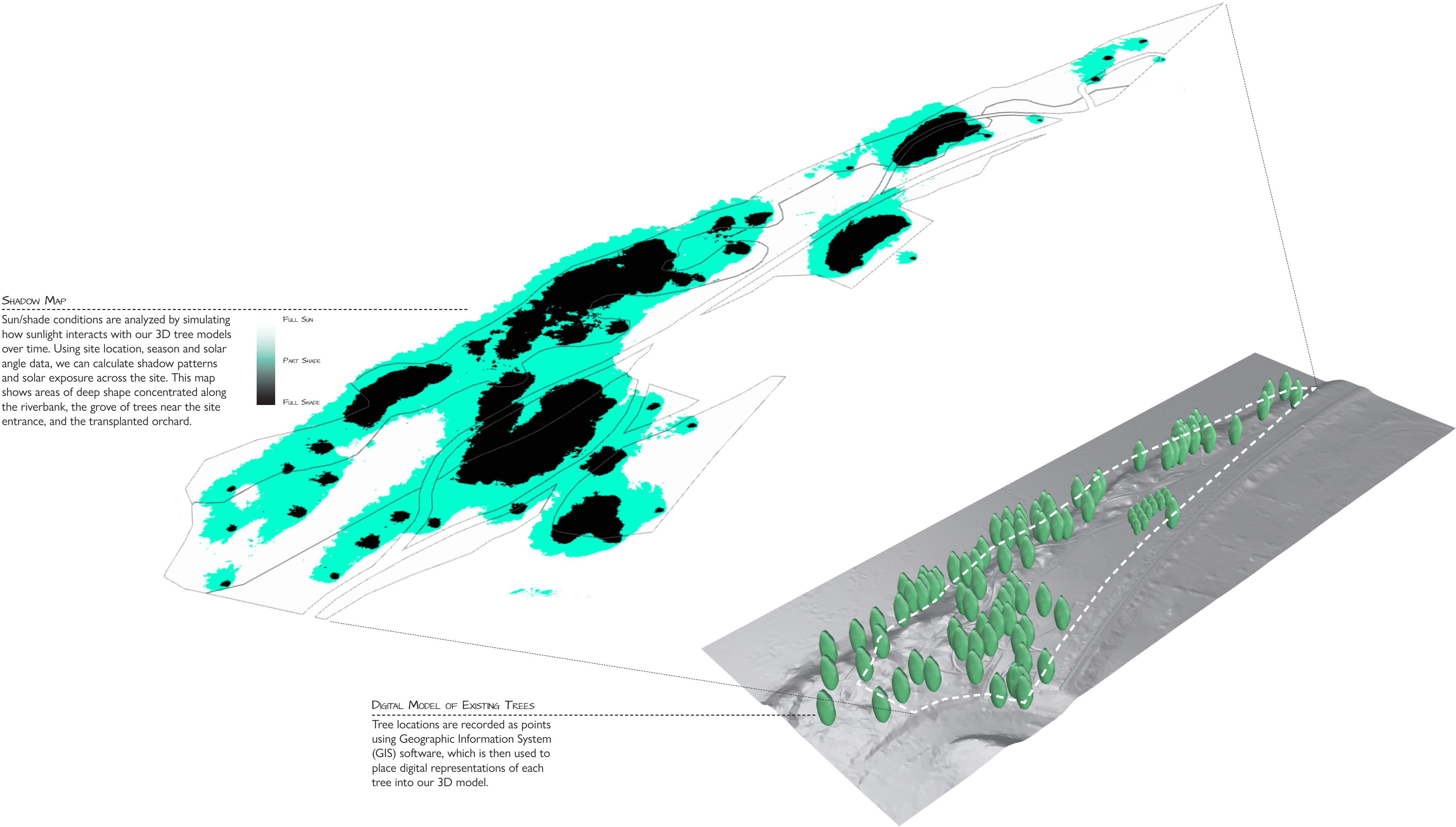




# SUN/SHADE

Sun and shade conditions were modeled using the digital elevation model in combination with existing tree canopy data. Tree location data was provided by Jeff Krueger, landscape architect and instructor for the UO, who assisted with the planning and creation of the WRNA. This data was verified and supplemented through on-site field observation and incorporated into the model to assess seasonal light availability. This analysis helped identify areas of full sun, partial shade, and dense canopy cover, informing species selection and planting strategy.

Light availability is extremely important in determining what plants will thrive in a given area. Current conditions show large areas of full sun in the center of the site and along the southern edge, perfect for oaks and the grassland species associated with them, as well as for the Urban Farm's vegetable patch. In the middle band of the site, where woodland conditions are desired, tree canopy will need to be increased to create the shadier microclimate favored by woodland shrubs and forbs. From the map we can also identify large gaps in the riparian canopy along the northern edge of the site, where fast growing plants like willows can quickly fill in the holes and improve habitat quality along the river's edge for shade loving understory plants.



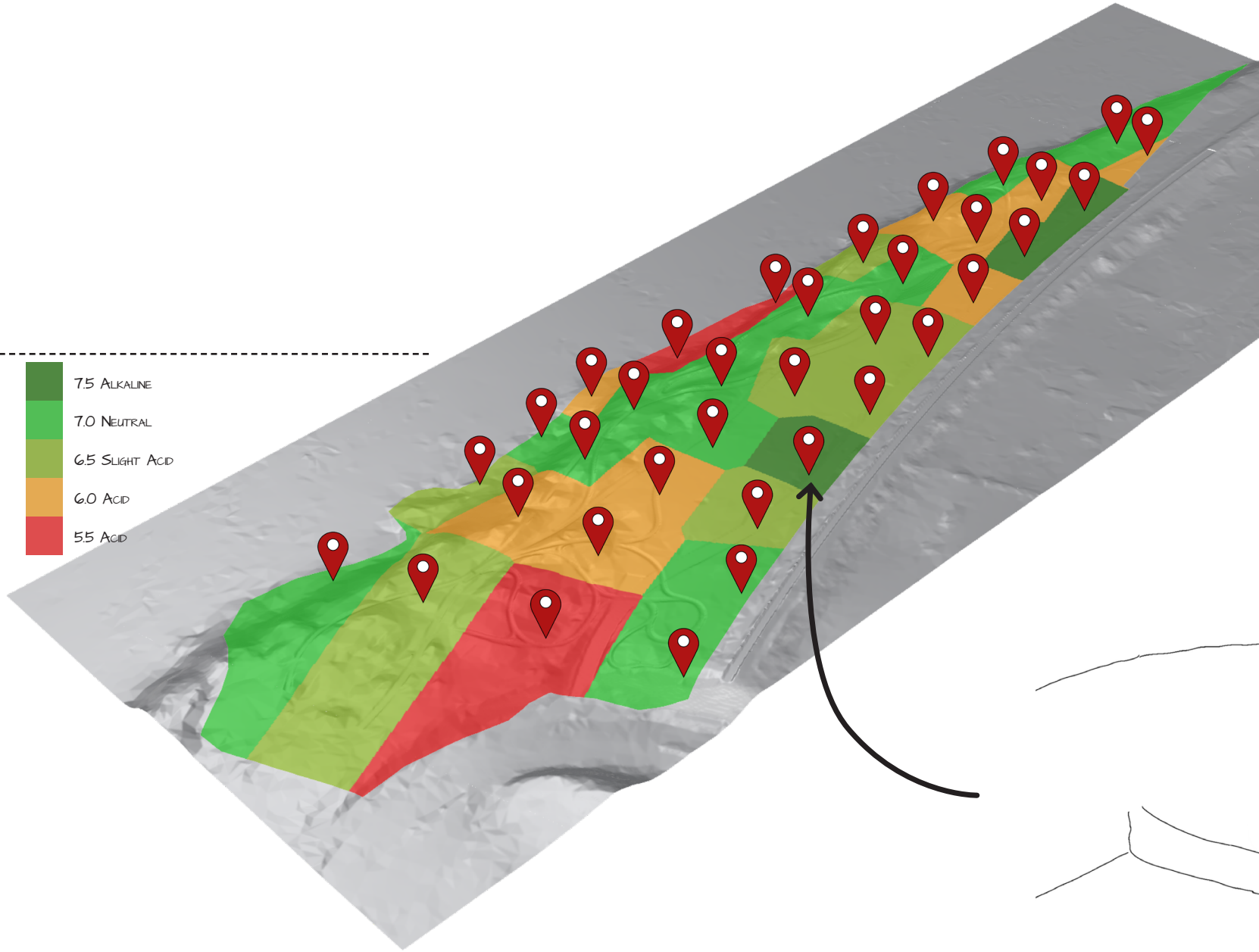
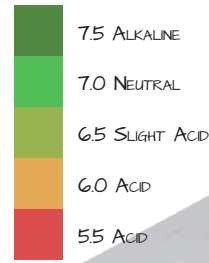


# SOIL ANALYSIS

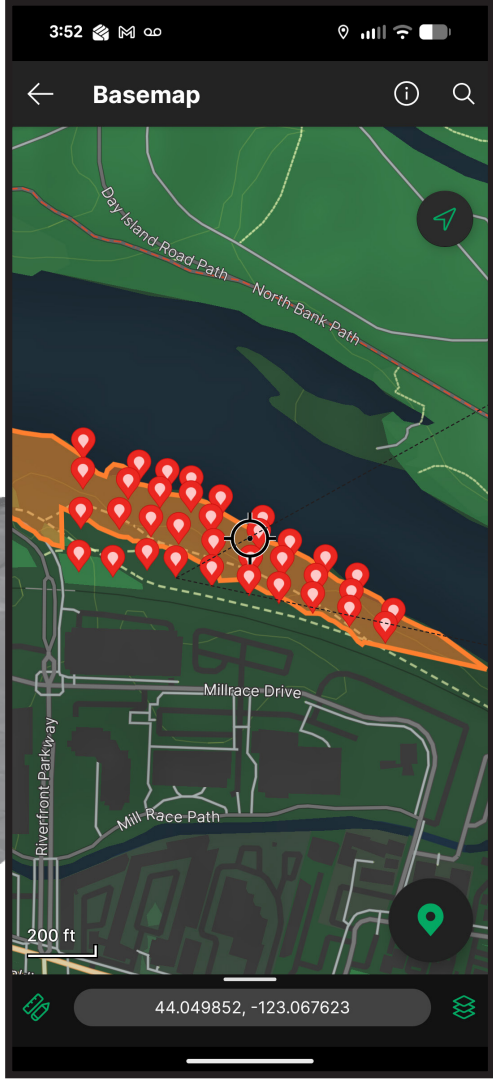
Soil composition and pH were assessed through field sampling across 35 locations distributed in a loose grid pattern throughout the site. Samples were collected at a depth of at least six inches, following guidelines from the Oregon State University Extension Service for tree planting<sup>45</sup>. Due to physical constraints—including dense blackberry growth and steep terrain—some areas were not directly sampled. In these cases, spatial interpolation methods, including closest point analysis, were used to extrapolate soil conditions and generate a continuous soil pH map of the site.

PH MAP

This map was created by analyzing the proximity of each point in the model to each of the sample locations, generating these broader zones



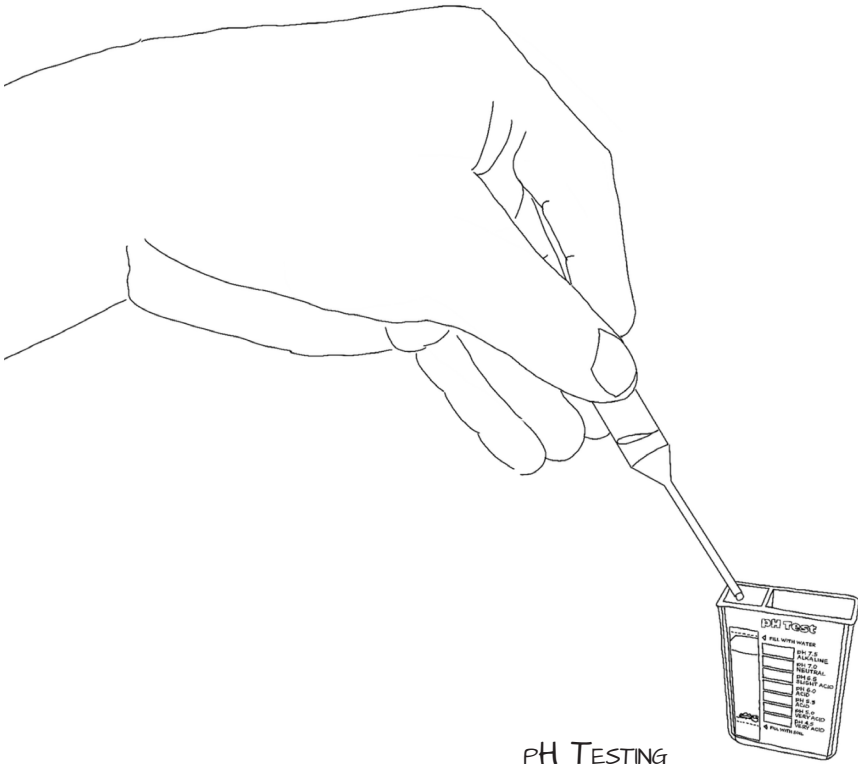
GPS MAP OF SAMPLE LOCATIONS



COLLECTED SAMPLES



PH TESTING



<sup>45</sup> Fery, "A Guide to Collecting Soil Samples for Farms and Gardens."

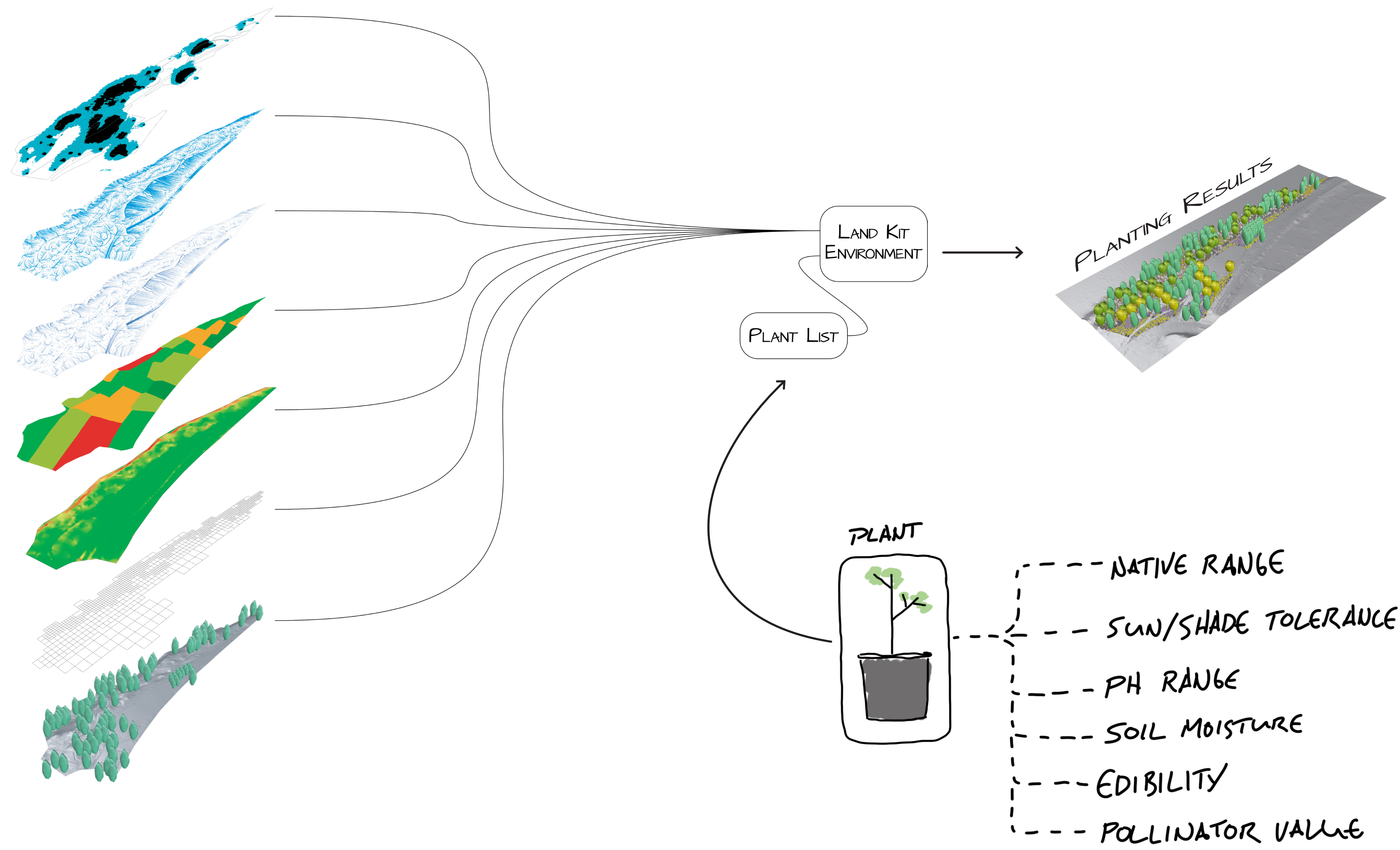


# STACKING LAYERS

Every landscape architect and landscape architecture student is familiar with these sorts of layered site analysis diagrams. They stem from the work of Ian McHarg, whose 1969 book *Design with Nature* revolutionized design thinking in both ecology and landscape architecture through the use of map overlays. By mapping individual components and site processes and the overlaying them, we begin to notice the spatial patterns and hierarchies they create.

Computational design tools take this process to another level. By embedding overlapping layers of site analysis within a digital model, we can identify highly specific microclimatic conditions across the landscape.

Through the use of parametric planting tools in LandKit—a multifunctional plugin designed for use with Grasshopper and Rhino—the planting grid can be layered onto site analysis data to align each species with its most suitable ecological niche. The parametric structure of the model allows planting locations to shift dynamically in response to updated site analysis data as it becomes available, including shifting sun and shade patterns as canopy cover develops, as well as evolving hydrological and competitive relationships. As a result, the planting plan functions not as a fixed layout, but as an adaptive system that can be iteratively updated over time to reflect both projected growth and observed site conditions.



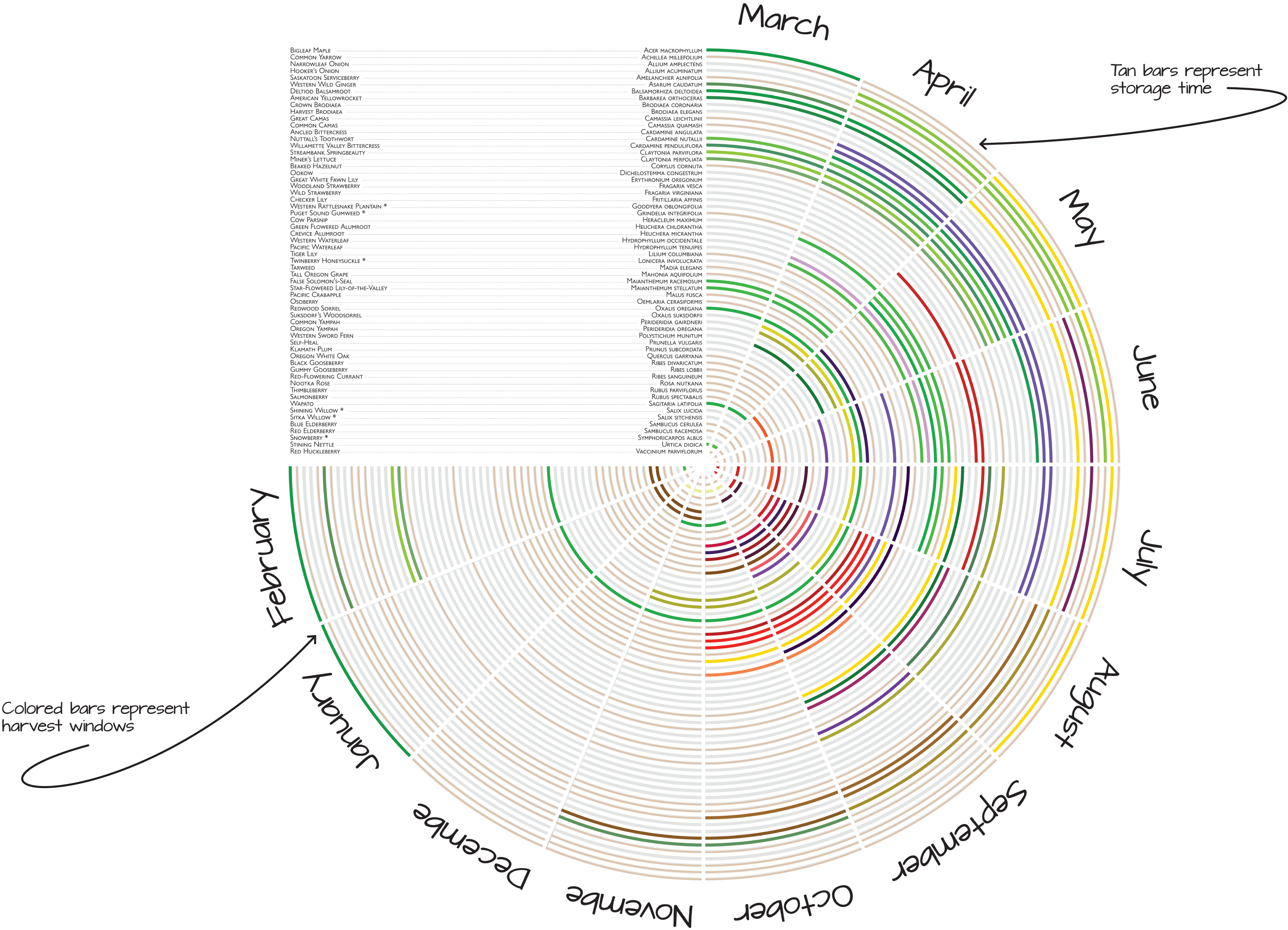


# PLANT PALETTE

Extensive work has been done by many individuals to assemble the database of native plants that are approved for planting within the WRNA as part of the ongoing restoration effort. In particular, Bruce Newhouse, a longtime member of the Native Plant Society of Oregon, has provided an extensive list of plants specifically native to the southern Willamette Valley<sup>46</sup>. It is from this list that plant selections for this project were compiled, by cross-referencing the list with widely available information on edibility and cultural significance.

The list is by no means complete, and is intended to be used as a starting point from which this food forest project can grow. The parametric approach to creating this planting plan makes it simple to add or subtract plants as necessary, with the layout automatically shifting in response.

The calendar to the right incorporates the idea of the seasonal round followed by the Kalapuya, and the seasonal bloom calendars used by landscape architects and designers to create seasonal harvest and storage calendar for each plant in the palette.



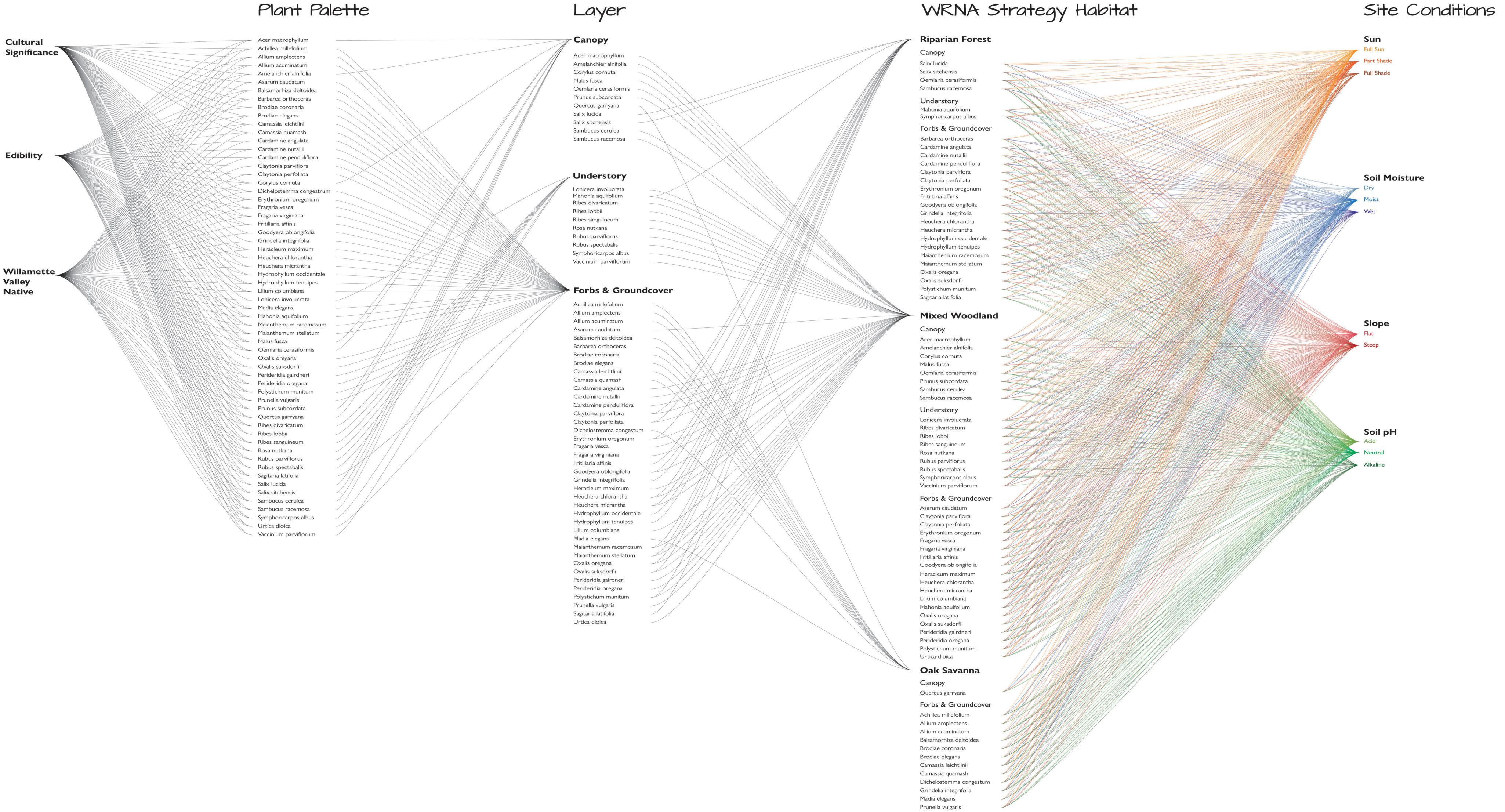
<sup>46</sup> Bruce Newhouse, "Southern Willamette Valley Native Plant Database."



# PARAMETRIC PLANTING

Every plant has a preferred set of environmental conditions in which it is most likely to thrive. These conditions (light, soil pH, moisture, etc.) become input parameters for the planting design, ensuring that each species is matched to conditions that suit its needs. When considering plant layout the “adage of right plant, right place” should be used as a guiding principle that matches the plant’s natural needs to the specific conditions on site. This ensures plants thrive with minimal, if any human input once established, creating healthier, more resilient, and sustainable landscapes.

This diagram walks us through the creation of the planting plan. First, it identifies the plants that meet the three primary criteria. These species are then organized into canopy, understory, and groundcover layers and filterd to correspond with the three strategy habitats. Finally the plant list is overlapped with the environmental datasets and planting rules established in the analysis to place each species in the microclimate where it is most likely to thrive, generating a planting design that responds directly to site conditions.





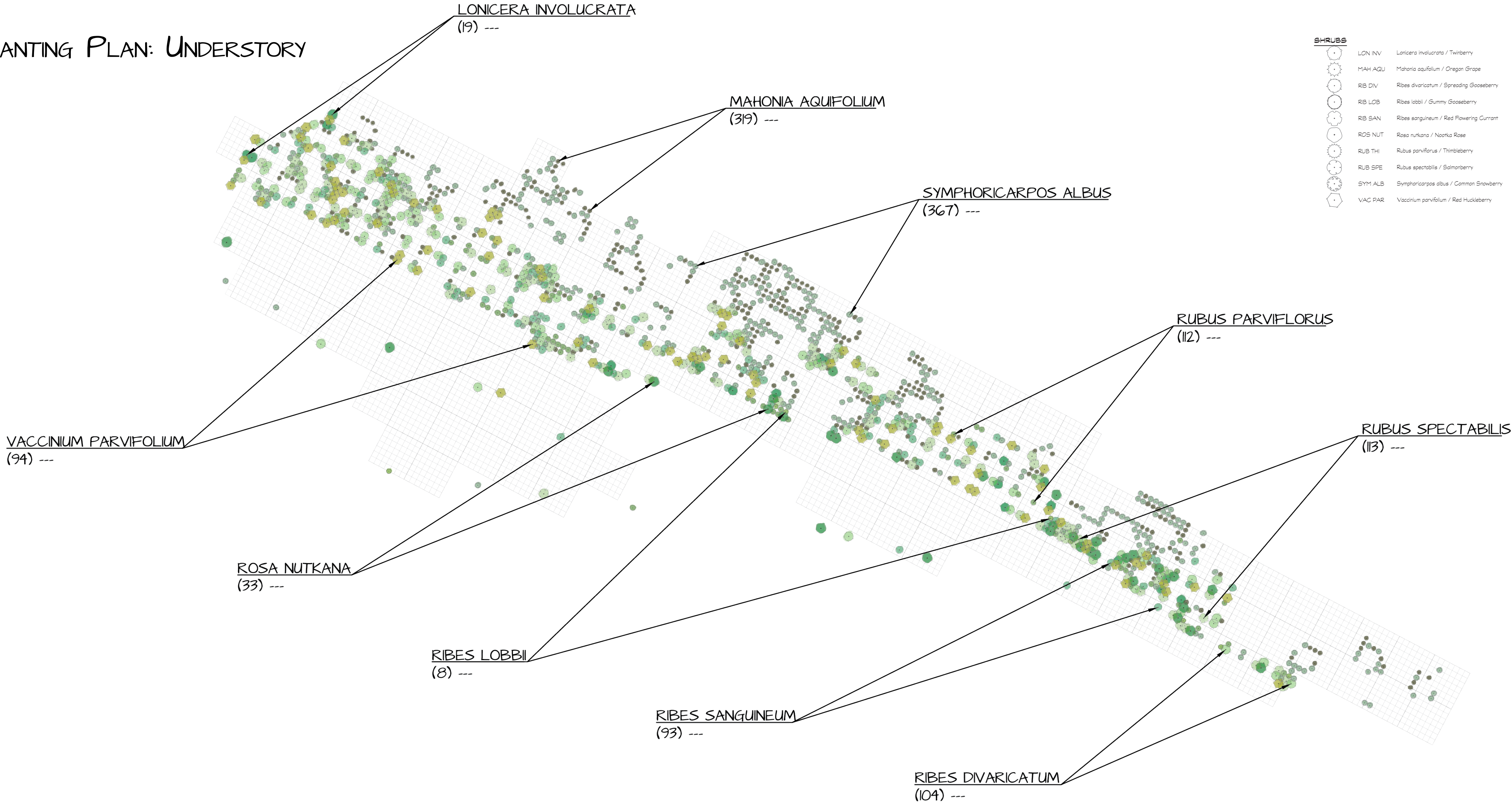
PLANTING PLAN: CANOPY



| PLANT SCHEDULE |         |                                      |     |         |
|----------------|---------|--------------------------------------|-----|---------|
| SYMBOL         | CODE    | BOTANICAL / COMMON NAME              | QTY | REMARKS |
| TREES          |         |                                      |     |         |
|                | ACE MAC | Acer macrophyllum / Big Leaf Maple   | 23  |         |
|                | AME SER | Amelanchier alnifolia / Serviceberry | 19  |         |
|                | COR WES | Corylus cornuta / Beaked Hazelnut    | 34  |         |
|                | MAL PAC | Malus fusca / Western Crabapple      | 3   |         |
|                | OEM CER | Oemleria cerasiformis / Osoberry     | 12  |         |
|                | PRU PA2 | Prunus subcordata / Pacific Plum     | 28  |         |
|                | QUE GAR | Quercus garryana / Oregon White Oak  | 16  |         |
|                | SAL LUC | Salix lucida / Pacific Willow        | 13  |         |
|                | SAL SIT | Salix sitchensis / Sitka Willow      | 12  |         |
|                | SAM CAE | Sambucus cerulea / Blue Elderberry   | 29  |         |
|                | SAM RED | Sambucus racemosa / Red Elderberry   | 5   |         |

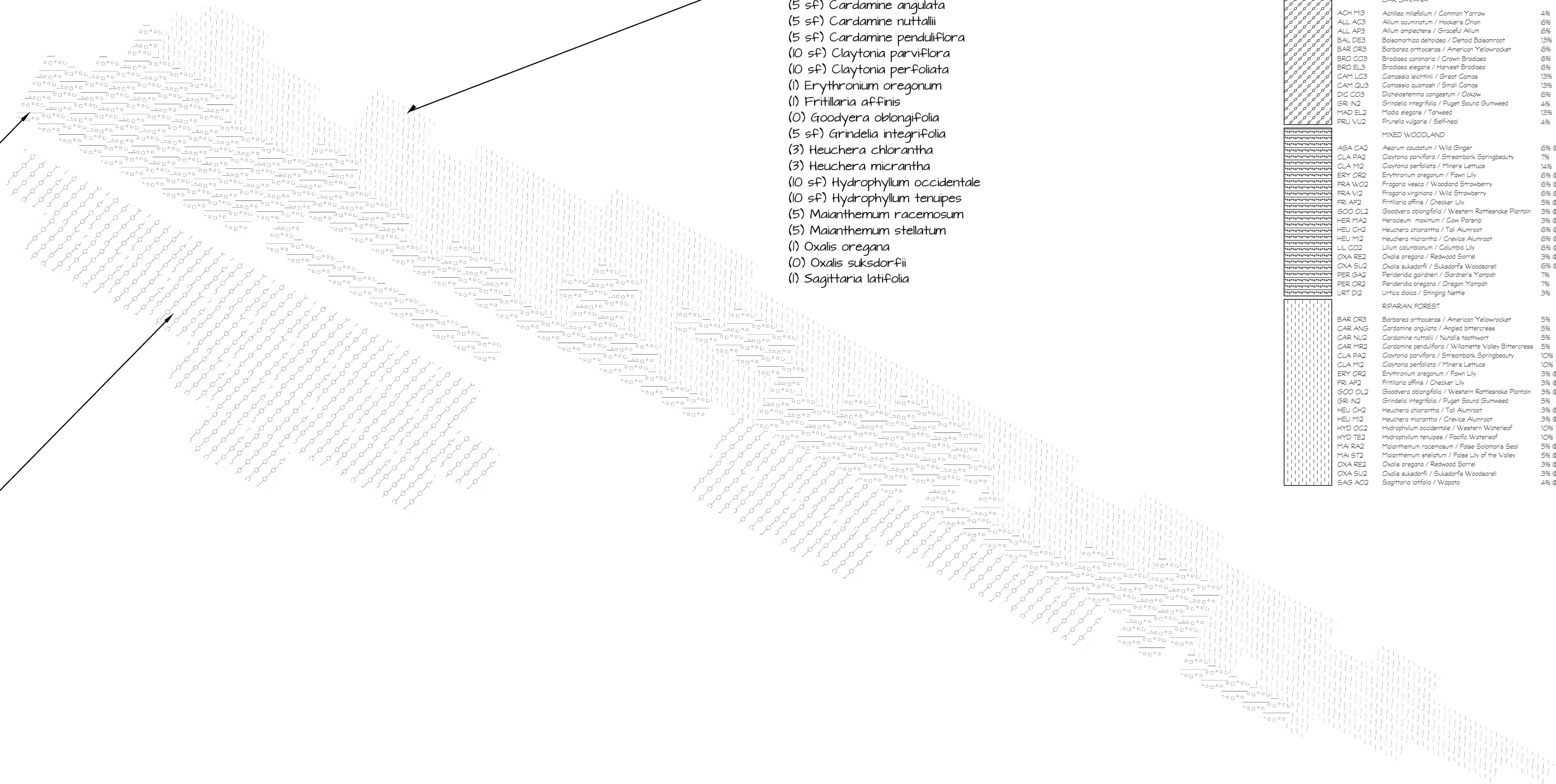


PLANTING PLAN: UNDERSTORY





PLANTING PLAN: FORBS & GROUNDCOVERS



MIXED WOODLAND (418 sf)

- (26) Asarum caudatum
- (29 sf) Claytonia parviflora
- (59 sf) Claytonia perfoliata
- (7) Erythronium oregonum
- (7) Fragaria vesca
- (7) Fragaria virginiana
- (22) Fritillaria affinis
- (1) Goodyera oblongifolia
- (13) Heracleum maximum
- (27) Heuchera chlorantha
- (27) Heuchera micrantha
- (27) Lilium columbianum
- (3) Oxalis oregana
- (3) Oxalis suksdorfii
- (29 sf) Perideridia gairdneri
- (29 sf) Perideridia oregana
- (13 sf) Urtica dioica

OAK SAVANA (1,671 sf)

- (67 sf) Achillea millefolium
- (100 sf) Allium acuminatum
- (100 sf) Allium amplexans
- (217 sf) Balsamorhiza deltoidea
- (100 sf) Barbarea orthoceras
- (100 sf) Brodiaea coronaria
- (100 sf) Brodiaea elegans
- (217 sf) Camassia leichtlinii
- (217 sf) Camassia quamash
- (100 sf) Dichelostemma congestum
- (67 sf) Grindelia integrifolia
- (217 sf) Madia elegans
- (67 sf) Prunella vulgaris

RIPARIAN FOREST (104 sf)

- (5 sf) Barbarea orthoceras
- (5 sf) Cardamine angulata
- (5 sf) Cardamine nuttallii
- (5 sf) Cardamine penduliflora
- (10 sf) Claytonia parviflora
- (10 sf) Claytonia perfoliata
- (1) Erythronium oregonum
- (1) Fritillaria affinis
- (0) Goodyera oblongifolia
- (5 sf) Grindelia integrifolia
- (3) Heuchera chlorantha
- (3) Heuchera micrantha
- (10 sf) Hydrophyllum occidentale
- (10 sf) Hydrophyllum tenuipes
- (5) Maianthemum racemosum
- (5) Maianthemum stellatum
- (1) Oxalis oregana
- (0) Oxalis suksdorfii
- (1) Sagittaria latifolia

| SYMBOL        | CODE     | BOTANICAL / COMMON NAME                                | SPACING       | QTY       | REMARKS |
|---------------|----------|--------------------------------------------------------|---------------|-----------|---------|
| GROUND COVERS |          |                                                        |               |           |         |
|               | ACH M3   | Achillea millefolium / Common Yarrow                   | 4%            | 2,874 sf  |         |
|               | ALL AC3  | Allium acuminatum / Hooker's Onion                     | 6%            | 4,311 sf  |         |
|               | ALL AP3  | Allium amplexans / Graceful Allium                     | 6%            | 4,311 sf  |         |
|               | BAL DE3  | Balsamorhiza deltoidea / Deltaid Balsamroot            | 13%           | 9,341 sf  |         |
|               | BAR OR3  | Barbarea orthoceras / American Yellowrocket            | 6%            | 4,311 sf  |         |
|               | BRO CO3  | Brodiaea coronaria / Crown Brodiaea                    | 6%            | 4,311 sf  |         |
|               | BRO EL3  | Brodiaea elegans / Harvest Brodiaea                    | 6%            | 4,311 sf  |         |
|               | CAM LC3  | Camassia leichtlinii / Great Camas                     | 13%           | 9,341 sf  |         |
|               | CAM QU3  | Camassia quamash / Small Camas                         | 13%           | 9,341 sf  |         |
|               | DIC CO3  | Dichelostemma congestum / Oakow                        | 6%            | 4,311 sf  |         |
|               | GR IN2   | Grindelia integrifolia / Puget Sound Gumweed           | 4%            | 2,874 sf  |         |
|               | MAD EL2  | Madia elegans / Tarweed                                | 13%           | 9,341 sf  |         |
|               | PRU VU2  | Prunella vulgaris / Self-heal                          | 4%            | 2,874 sf  |         |
|               |          | MIXED WOODLAND                                         |               | 70,224 sf |         |
|               | ASA CA2  | Asarum caudatum / Wild Ginger                          | 6% @ 12' o.c. | 4,368     |         |
|               | CLA PA2  | Claytonia parviflora / Streambank Springbeauty         | 7%            | 4,916 sf  |         |
|               | CLA MI2  | Claytonia perfoliata / Miner's Lettuce                 | 14%           | 9,831 sf  |         |
|               | ERY OR2  | Erythronium oregonum / Fawn Lily                       | 6% @ 24' o.c. | 1,176     |         |
|               | FRA VIO2 | Fragaria vesca / Woodland Strawberry                   | 6% @ 24' o.c. | 1,176     |         |
|               | FRA VI2  | Fragaria virginiana / Wild Strawberry                  | 6% @ 24' o.c. | 1,176     |         |
|               | FRI AF2  | Fritillaria affinis / Checker Lily                     | 5% @ 12' o.c. | 3,696     |         |
|               | GOO OL2  | Goodyera oblongifolia / Western Rattlesnake Plantain   | 3% @ 48' o.c. | 168       |         |
|               | HER MA2  | Heracleum maximum / Cow Parsnip                        | 3% @ 12' o.c. | 2,184     |         |
|               | HEU CH2  | Heuchera chlorantha / Tall Alumroot                    | 6% @ 12' o.c. | 4,536     |         |
|               | HEU MI2  | Heuchera micrantha / Crevice Alumroot                  | 6% @ 12' o.c. | 4,536     |         |
|               | LIL CO2  | Lilium columbianum / Columbia Lily                     | 6% @ 12' o.c. | 4,536     |         |
|               | OXA RE2  | Oxalis oregana / Redwood Sorrel                        | 3% @ 24' o.c. | 504       |         |
|               | OXA SU2  | Oxalis suksdorfii / Suksdorf's Woodsorell              | 6% @ 36' o.c. | 504       |         |
|               | PER GA2  | Perideridia gairdneri / Gardner's Yampah               | 7%            | 4,916 sf  |         |
|               | PER OR2  | Perideridia oregana / Oregon Yampah                    | 7%            | 4,916 sf  |         |
|               | URT DI2  | Urtica dioica / Stinging Nettle                        | 3%            | 2,107 sf  |         |
|               |          | RIPARIAN FOREST                                        |               | 84,448 sf |         |
|               | BAR OR3  | Barbarea orthoceras / American Yellowrocket            | 5%            | 4,222 sf  |         |
|               | CAR ANG  | Cardamine angulata / Angled bittercress                | 5%            | 4,222 sf  |         |
|               | CAR NU2  | Cardamine nuttallii / Nuttall's toothwort              | 5%            | 4,222 sf  |         |
|               | CAR MI2  | Cardamine penduliflora / Willamette Valley Bittercress | 5%            | 4,222 sf  |         |
|               | CLA PA2  | Claytonia parviflora / Streambank Springbeauty         | 10%           | 8,445 sf  |         |
|               | CLA MI2  | Claytonia perfoliata / Miner's Lettuce                 | 10%           | 8,445 sf  |         |
|               | ERY OR2  | Erythronium oregonum / Fawn Lily                       | 3% @ 24' o.c. | 812       |         |
|               | FRI AF2  | Fritillaria affinis / Checker Lily                     | 3% @ 24' o.c. | 812       |         |
|               | GOO OL2  | Goodyera oblongifolia / Western Rattlesnake Plantain   | 3% @ 48' o.c. | 168       |         |
|               | GR IN2   | Grindelia integrifolia / Puget Sound Gumweed           | 5%            | 4,222 sf  |         |
|               | HEU CH2  | Heuchera chlorantha / Tall Alumroot                    | 3% @ 12' o.c. | 2,436     |         |
|               | HEU MI2  | Heuchera micrantha / Crevice Alumroot                  | 3% @ 12' o.c. | 2,436     |         |
|               | HYD OC2  | Hydrophyllum occidentale / Western Waterleaf           | 10%           | 8,445 sf  |         |
|               | HYD TE2  | Hydrophyllum tenuipes / Pacific Waterleaf              | 10%           | 8,445 sf  |         |
|               | MAI RA2  | Maianthemum racemosum / False Solomon's Seal           | 5% @ 12' o.c. | 4,060     |         |
|               | MAI ST2  | Maianthemum stellatum / False Lily of the Valley       | 5% @ 12' o.c. | 4,060     |         |
|               | OXA RE2  | Oxalis oregana / Redwood Sorrel                        | 3% @ 24' o.c. | 812       |         |
|               | OXA SU2  | Oxalis suksdorfii / Suksdorf's Woodsorell              | 3% @ 36' o.c. | 812       |         |
|               | SAG AO2  | Sagittaria latifolia / Wapato                          | 4% @ 24' o.c. | 812       |         |



## PARAMETRIC PLANTING

Rather than treating planting as a final aesthetic layer applied after the “real” design work is complete, this project positions plants as the primary drivers of spatial organization and landscape form.

In this framework, plant placement becomes a generative act. The distribution of canopy trees establishes future shade patterns, which subsequently shape the viable habitat for understory shrubs, herbaceous species, fungi, and groundcovers. Hydrological conditions influence the placement of moisture-loving species, while drought-tolerant communities organize themselves throughout exposed areas and across the upland terrace. Harvesting pathways, gathering spaces, and circulation routes are then woven through these emergent ecological communities. The resulting masterplan is therefore not simply decorated with vegetation, but fundamentally produced through the relationships between plants, climate, soil, water, and time.

This represents a significant departure from conventional architectural and landscape workflows, where planting is often relegated to the final stages of design and treated primarily as ornamentation or visual softening. In many contemporary developments, spatial form is determined first through buildings, paving, and infrastructure, with vegetation inserted afterward into the leftover spaces. Here, the process

is reversed. Plant communities become the foundational spatial infrastructure from which circulation, habitat, stewardship zones, and human occupation emerge. The landscape is not conceived as a static composition, but as a living system whose form evolves through ecological succession, seasonal change, and interspecies relationships over time.

Because the planting system is parametric, it also remains adaptive and responsive throughout the design process. As conditions shift, through canopy growth, erosion, climate variation, or revised management goals, planting arrangements can be recalculated and redistributed automatically according to updated ecological parameters. This allows the masterplan to behave less like a fixed blueprint and more like a dynamic ecological framework capable of evolving alongside the living systems it supports.



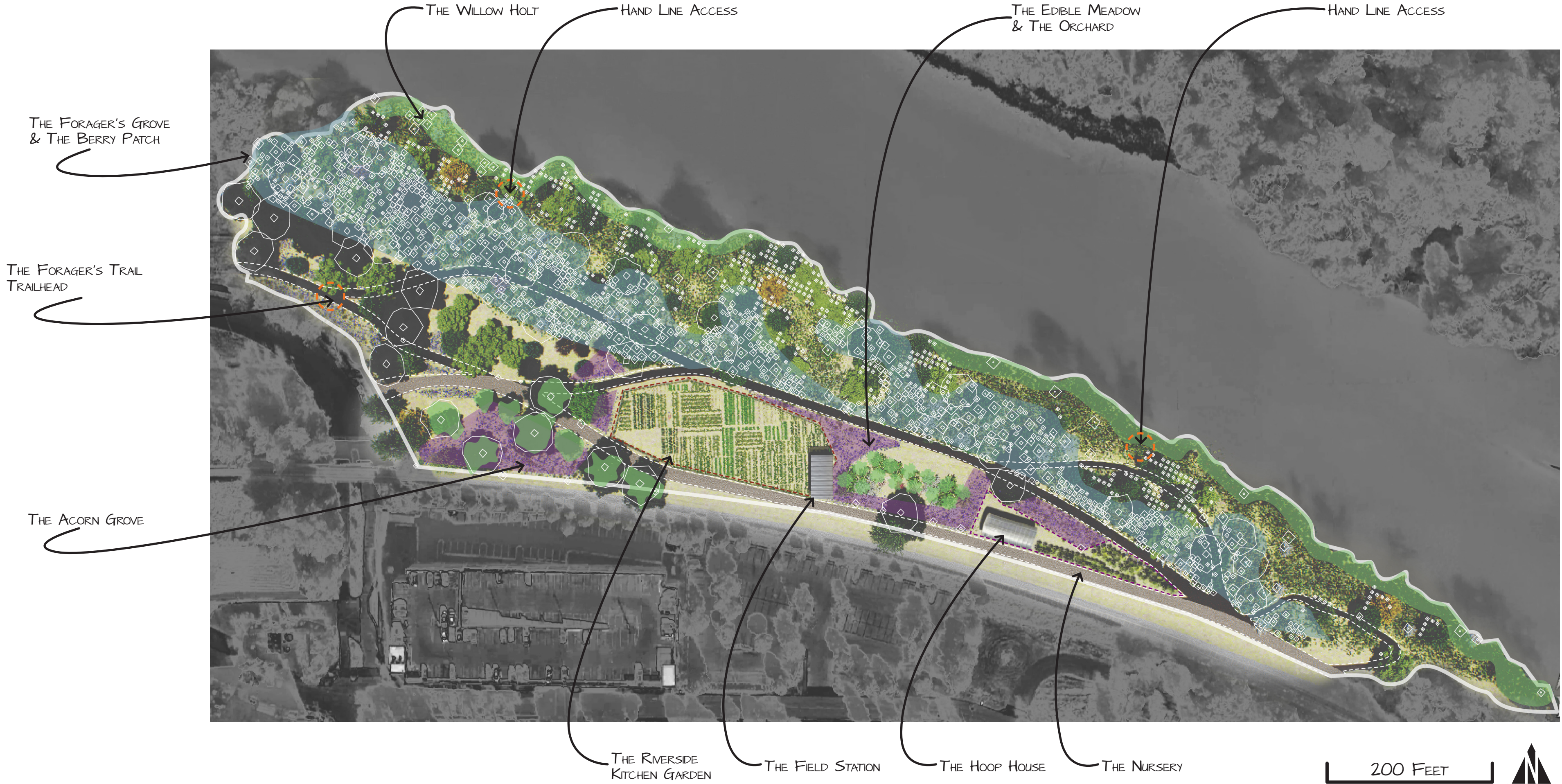


# MASTERPLAN

After examining the results of the parametric planting process, major spatial patterns and ecological zones begin to emerge, suggesting how the rest of the site might be organized in response to these underlying environmental conditions. Rather than imposing a fixed masterplan onto the landscape, the arrangement of program elements grows directly from the microclimates, hydrology, soil conditions, slope, and solar exposure identified through the analysis.

This plan for the Riverside Food Forest is an organized mosaic of productive landscapes designed to support food access, habitat restoration, and hands-on learning. Together, these spaces form a gradient from highly cultivated systems near the site core to more ecologically complex and self-sustaining plant communities along the river's edge. Areas with high solar exposure, easy access, and well-drained soils become ideal locations for intensive cultivation spaces such as the Riverside Kitchen Garden and Nursery, where frequent maintenance and harvesting are required. In contrast, wetter and less accessible areas identified through flow accumulation and slope analysis support species adapted to riparian conditions, informing the placement of the Willow Holt and portions of the Forager's Grove.

The Acorn Grove occupies higher and drier ground suited to Oregon White Oak communities, while the Edible Meadow emerges in open areas with strong sunlight and lower canopy competition, supporting camas and other meadow species. Berry-producing shrubs and semi-managed woodland species cluster along ecotones where shade, moisture, and edge conditions overlap.

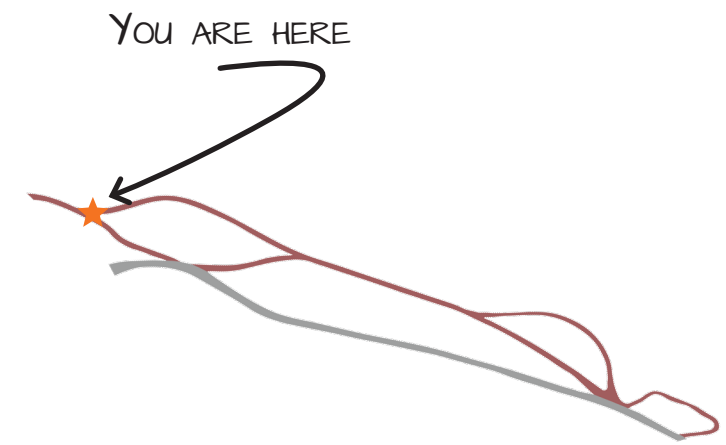




# THE FORAGER'S TRAIL

The Forager's Trail, beginning at the west entrance, serves as both circulation and narrative spine. As visitors move along the trail, they encounter a sequence of edible landscapes that shift between cultivated and wild, encouraging exploration, seasonal awareness, and informal harvesting. The trail reinforces the farm's role not only as a site of production, but as a living system shaped by interaction, care, and time.

Together, these spaces position the Riverside Food Forest as a hybrid landscape—simultaneously a working farm, a restoration site, and a place of learning—where ecological function and human use are intentionally intertwined.

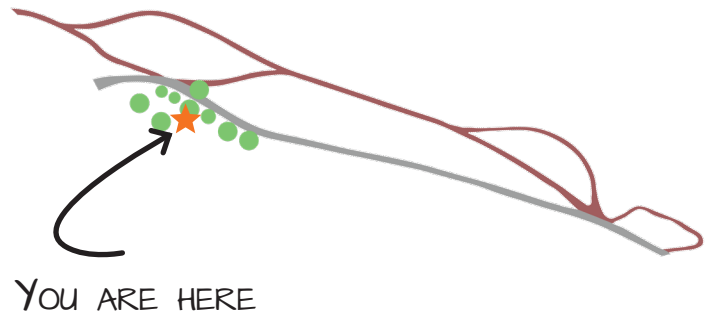




# THE ACORN GROVE

At the western entrance, the Acorn Grove establishes a strong ecological and cultural threshold to the site within the Oak Savanna zone. Building on the presence of existing oaks, the grove is expanded through additional plantings to increase canopy continuity, improve habitat structure, and support long-term acorn production. The understory is managed to facilitate harvest and access, while also incorporating complementary native species that enhance biodiversity and soil health.

Beyond its ecological function, the Acorn Grove re-centers oak-based food systems as a viable and resilient source of nutrition. Acorns are reintroduced here as a productive crop, highlighting their potential as a climate-adapted, perennial food source. Positioned at the entrance, the grove signals a shift in values: from extractive land use toward systems rooted in stewardship, cultural memory, and long-term abundance.

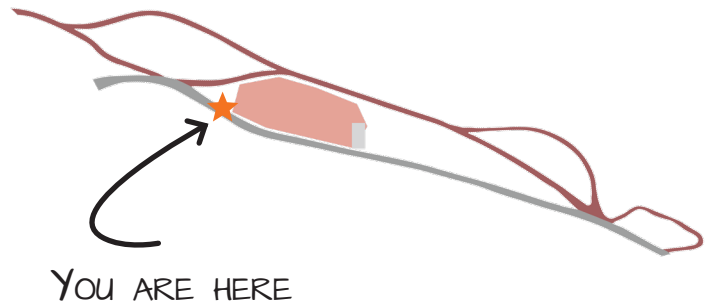




# THE KITCHEN GARDEN

At the heart of the site, the Riverside Kitchen Garden and Field Station serve as the primary hub of activity. The Urban Farm’s signature raised beds form the core of the site creating a foundation for annual food production that is supplemented by our adjacent food forest.

This area includes a Field Station that provides space for tool storage, workshops, and daily gathering, acting as the operations hub and for classes and research related to the riverside expansion. This area reflects the working core of the new farm—structured, accessible, and highly productive.





# THE EDIBLE MEADOW & THE ORCHARD

Adjacent to this core, the Edible Meadow & the Orchard intermingles native prairie systems of the Oak Savanna with the transplanted orchard, with a focus on camas, tarweed, and native root crops like brodiaea and alliums. This section is both part of the farm and open to the public, offering options for both foraging and more familiar fruit harvesting. The meadow is managed through periodic mowing, reseeding, and replanting of smaller bulbs during harvest, and the many flowering species support a wide range of pollinators, both native and introduced, while weaving together the cultivated farm landscape with the food forest.

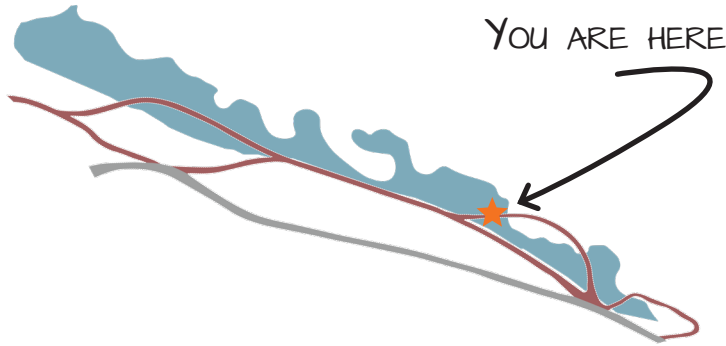




# THE FORAGER'S GROVE & THE BERRY PATCH

Moving outward, the landscape transitions into perennial and semi-wild systems. The Forager's Grove forms a layered food forest of fruit and nut trees, understory shrubs, and herbaceous species spread throughout the Mixed Woodland Zone. Designed for low-input productivity, this area emphasizes long-term yields, habitat value, and seasonal foraging opportunities.

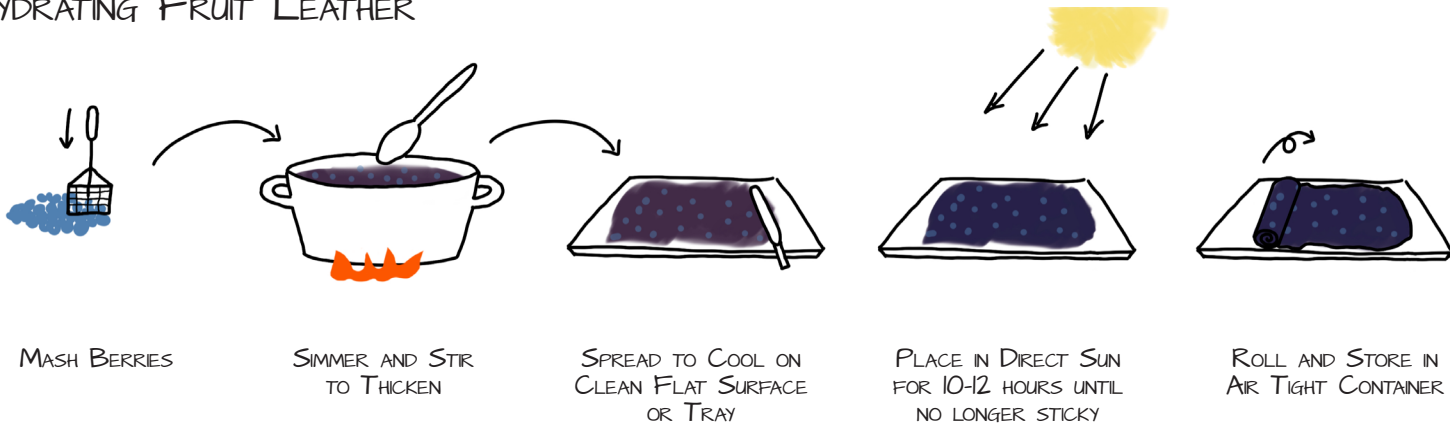
Within and between these layers, the Berry Patch is woven throughout the grove rather than confined to a single area. Cane fruits and berry-producing shrubs are distributed across the understory, increasing accessibility and encouraging exploration while also mimicking more natural patterns of plant association. This dispersed arrangement extends harvest windows, supports pollinators and wildlife, and reinforces the grove's identity as a space for informal foraging rather than centralized production. Together, these systems blur the boundary between cultivation and ecology, offering a productive landscape that is both functional and immersive.



## CANNING JAM



## DEHYDRATING FRUIT LEATHER

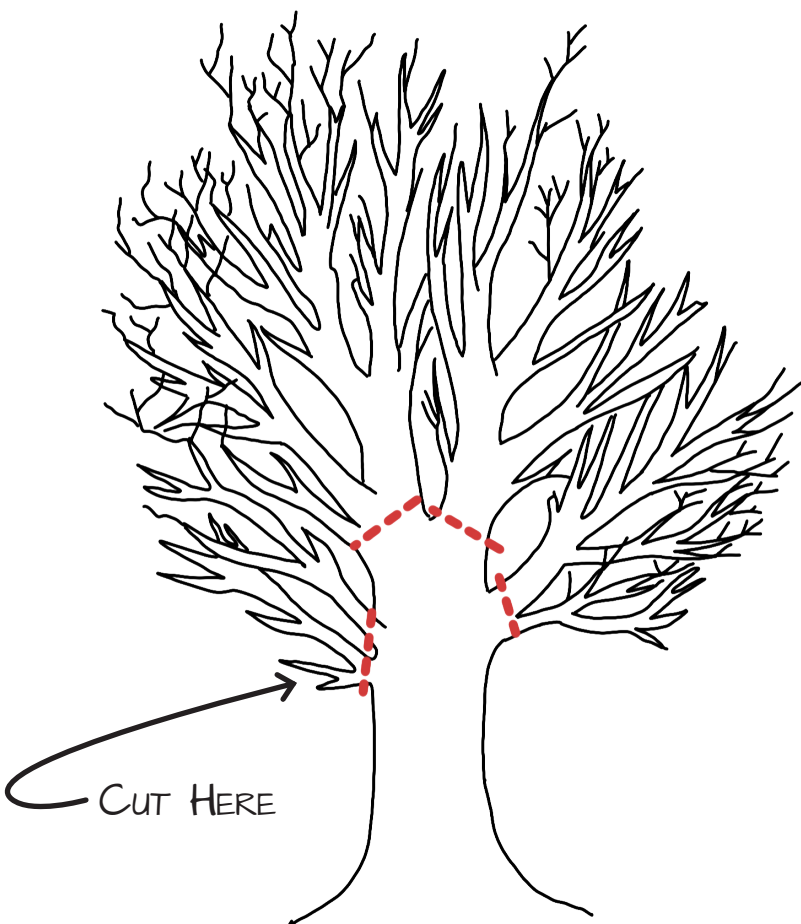
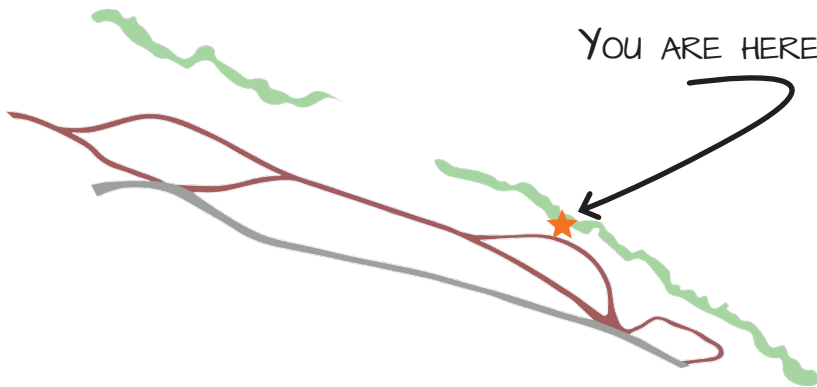




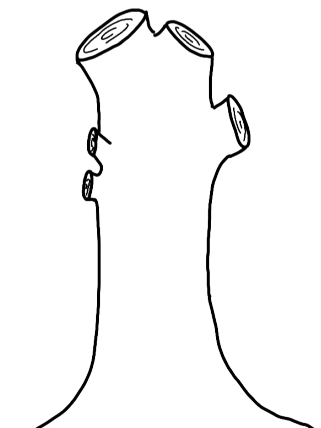
# THE WILLOW HOLT

Along the steep riverbank of the Riparian Forest zone, the Willow Holt establishes a dense, moisture-loving grove that stabilizes the riverbank, provides habitat, and supplies material for weaving and craft. The matrix of willow, Oregon grape, and snowberry fills holes in the existing canopy, rapidly developing an interwoven root network that stabilizes soils, reduces erosion, and moderates seasonal fluctuations in water flow. Their flexible stems and dense canopy slow runoff, capture sediment, and create a sheltered microclimate that supports a diversity of riparian species.

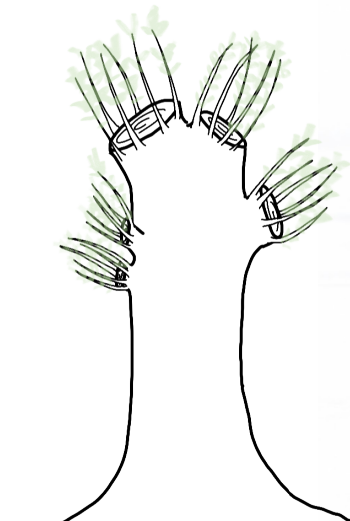
Beyond stabilization, the Willow Holt contributes to habitat complexity along the river's edge, providing cover, nesting material, and forage for birds, insects, and small mammals. The grove is also managed as a renewable material resource: willows are periodically pollarded to produce straight, pliable stems used for weaving, staking, and small-scale construction. In this way, the Willow Holt demonstrates how restoration, craft, and long-term care can be integrated within a working landscape.



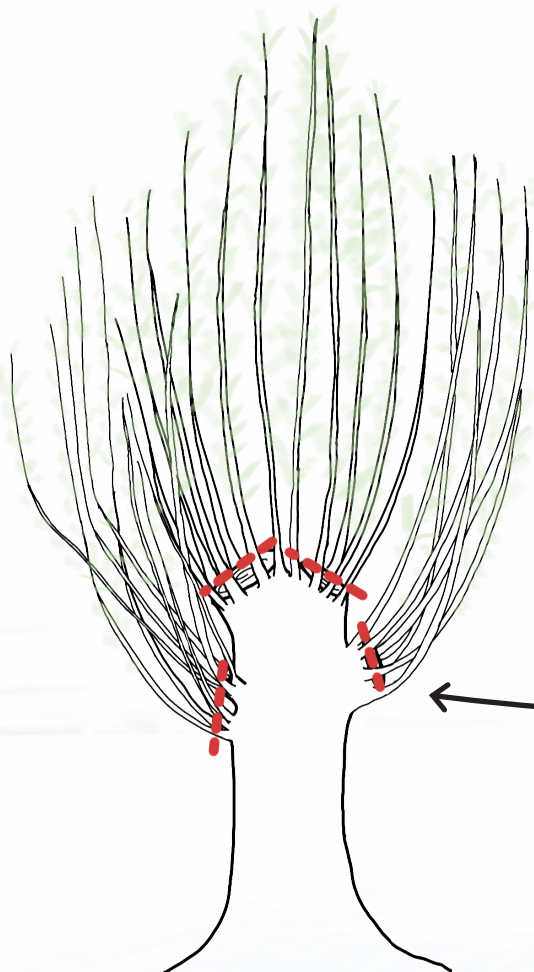
NATURAL TREE FORM



POLLARDED STUMP

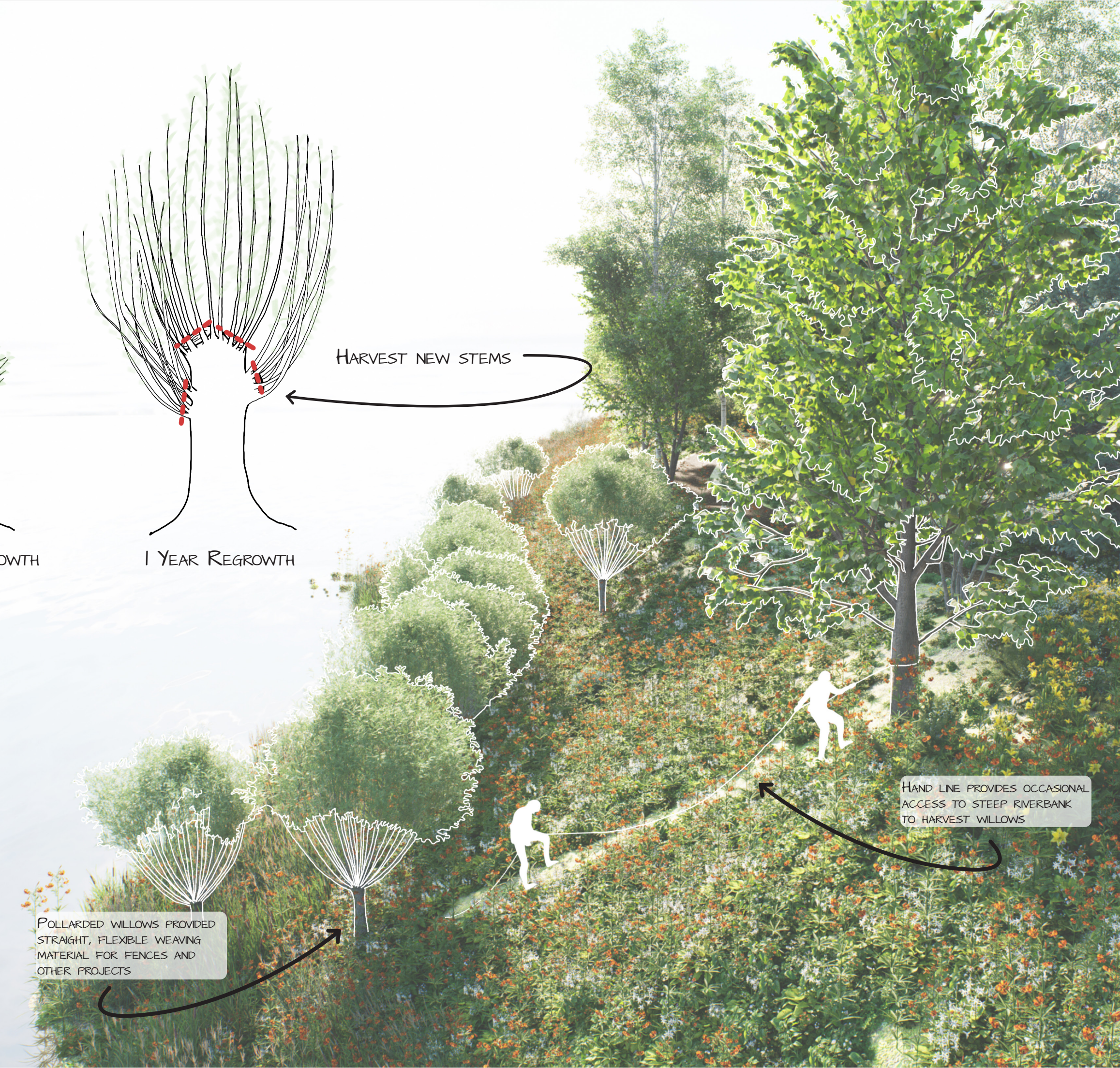


4-6 WEEKS REGROWTH



1 YEAR REGROWTH

HARVEST NEW STEMS



POLLARDED WILLOWS PROVIDED STRAIGHT, FLEXIBLE WEAVING MATERIAL FOR FENCES AND OTHER PROJECTS

HAND LINE PROVIDES OCCASIONAL ACCESS TO STEEP RIVERBANK TO HARVEST WILLOWS



# THE NURSERY

On the eastern end of the site, the Nursery supports the long-term resilience of the site and the broader restoration landscape. A combination of outdoor propagation space and a hoop house allows for the cultivation of native plants used across the farm and within the WRNA. The nursery functions as both infrastructure and classroom, where students engage directly in plant propagation, seed saving, and seasonal cycles of growth.





# 06 ESTIMATING YIELDS

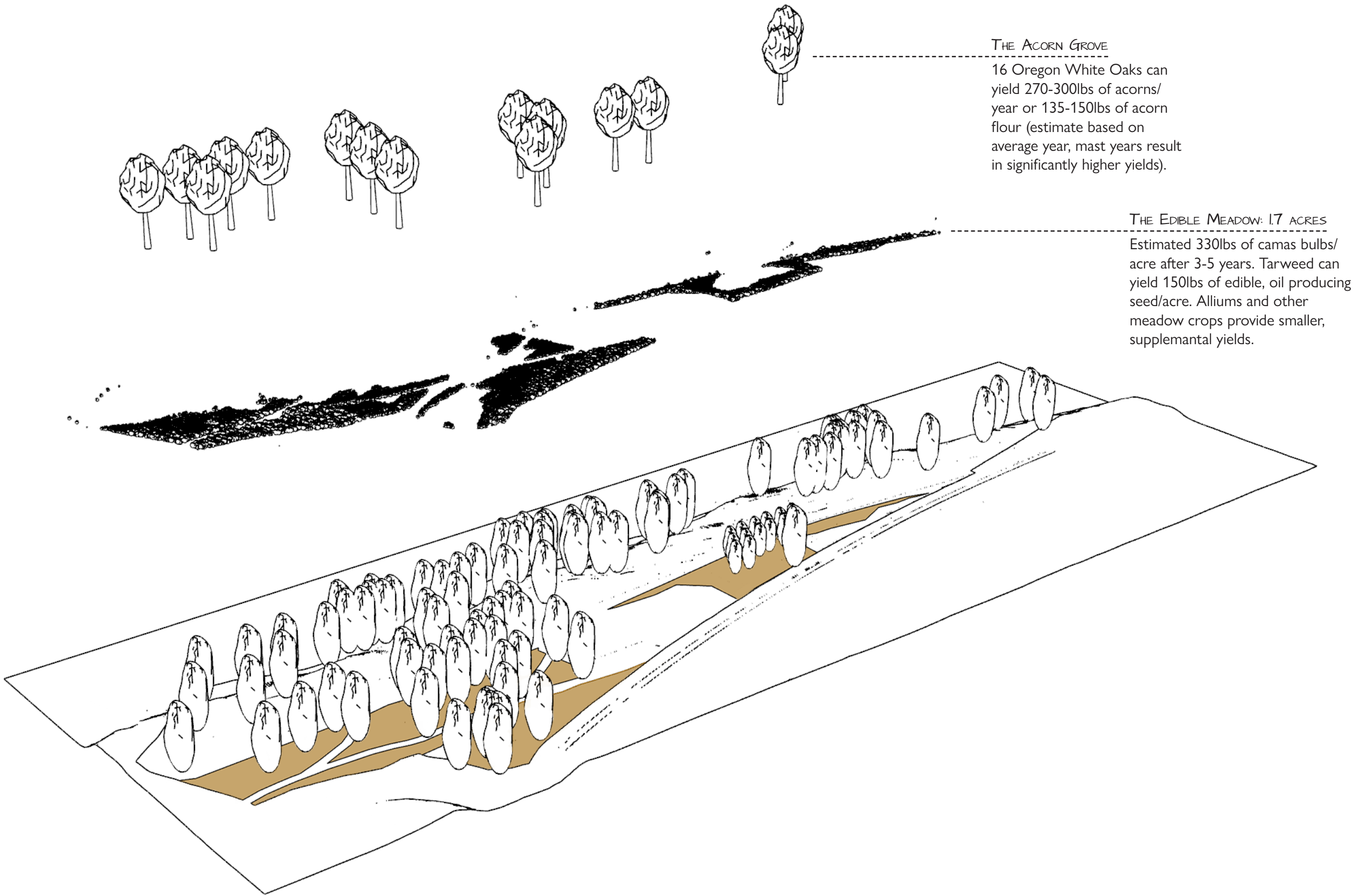
## OAK SAVANNA

From the planting plan we can estimate potential yields across the major zones.

Sixteen Oregon white oaks (*Quercus garryana*) form the backbone of this zone, with some clustered in the Acorn Grove and some spread out across the oak savanna strategy habitat, with estimated annual yields of 270–300 pounds of acorns, equivalent to approximately 135–150 pounds of acorn flour in an average year. During mast years, yields increase significantly, reinforcing the grove’s role as a long-term, abundance-oriented system rather than a consistently uniform one. These cycles of boom and variability are embraced as part of the ecological rhythm of oak systems.

Surrounding the grove, the Edible Meadow expands productivity into the herbaceous layer of the oak savanna, across approximately 1.7 acres. Camas (*Camassia sp.*), a culturally significant geophyte, is projected to yield ~330 pounds of bulbs per acre after an establishment period of 3–5 years. Complementing this, tarweed (*Madia elegans*) contributes an estimated 150 pounds of oil-rich seed per acre, while native alliums and other meadow species provide smaller, supplemental harvests throughout the growing season.

Together, these systems emphasize staple crop production over time, rather than short-term yield maximization. The oak savanna demonstrates how low-input landscapes can produce meaningful quantities of nutrient-dense food while maintaining habitat value, supporting pollinators, and restoring a regionally appropriate ecological structure.



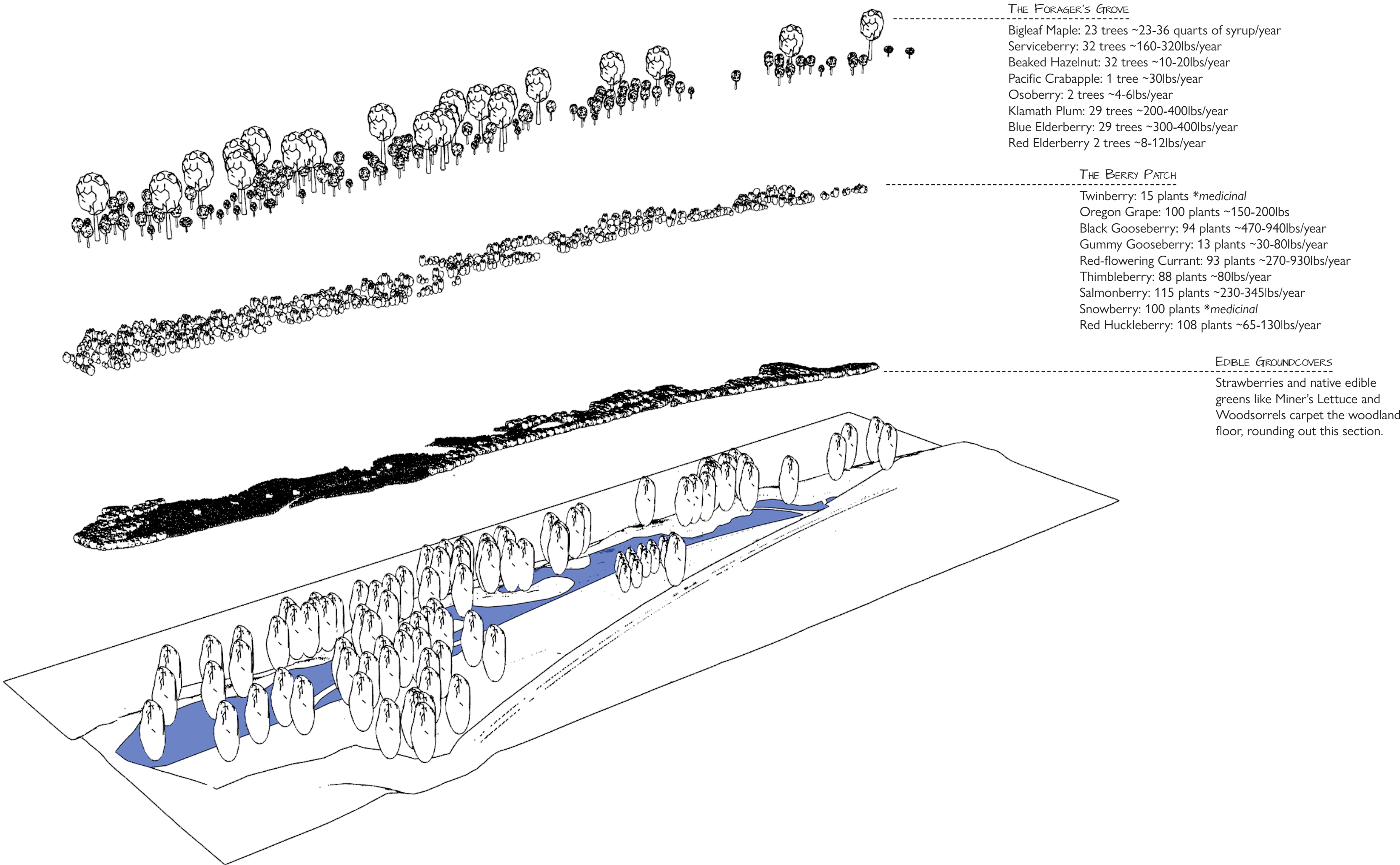


# Mixed Woodland

Within the mixed woodland, the trees of the Forager’s Grove provide the structural and productive foundation. Bigleaf maples (*Acer macrophyllum*) can be tapped for syrup production and contribute 23–36 quarts of syrup annually across 23 trees, while fruiting species such as serviceberry, Klamath plum (*Prunus subcordata*), and blue elderberry (*Sambucus cerulea*) offer substantial seasonal harvests (between 660-1120 lbs. of fruit annually) to be shared by both human and non-human visitors to the site. Smaller contributions from Pacific crabapple (*Malus fusca*), osoberry (*Oemlaria cerasiformis*), and red elderberry (*Sambucus racemosa*) diversify production and extend harvest windows. Beaked hazelnut (*Corylus cornuta*) adds a modest but valuable nut crop, reinforcing the system’s long-term perennial yield.

Interwoven throughout this canopy, the Berry Patch distributes shrub-level production across the understory rather than concentrating it in a single location. This dispersed strategy increases accessibility and ecological integration while generating significant yields from black gooseberry (*Ribes divaricatum*), red-flowering currant (*Ribes sanguineum*), salmonberry (*Rubus spectabalis*), and Oregon grape (*Mahonia aquifolium*). Additional species, such as thimbleberry (*Rubus parviflorus*) and red huckleberry (*Vaccinium parviflorum*), contribute smaller but meaningful harvests, while plants like twinberry (*Lonicera involucrata*) and snowberry (*Symphoricarpos albus*) provide medicinal and ecological value.

At the ground layer, edible species such as strawberries (*Fragaria sp.*), miner’s lettuce (*Claytonia sp.*), and wood sorrel (*Oxalis sp.*) form a living carpet that rounds out the system with seasonal greens and small fruits. Rather than maximizing any single crop, the mixed woodland emphasizes diversity, redundancy, and seasonal continuity, creating a resilient system that produces across multiple niches while also supporting pollinators, and wildlife.





# RIPARIAN FOREST

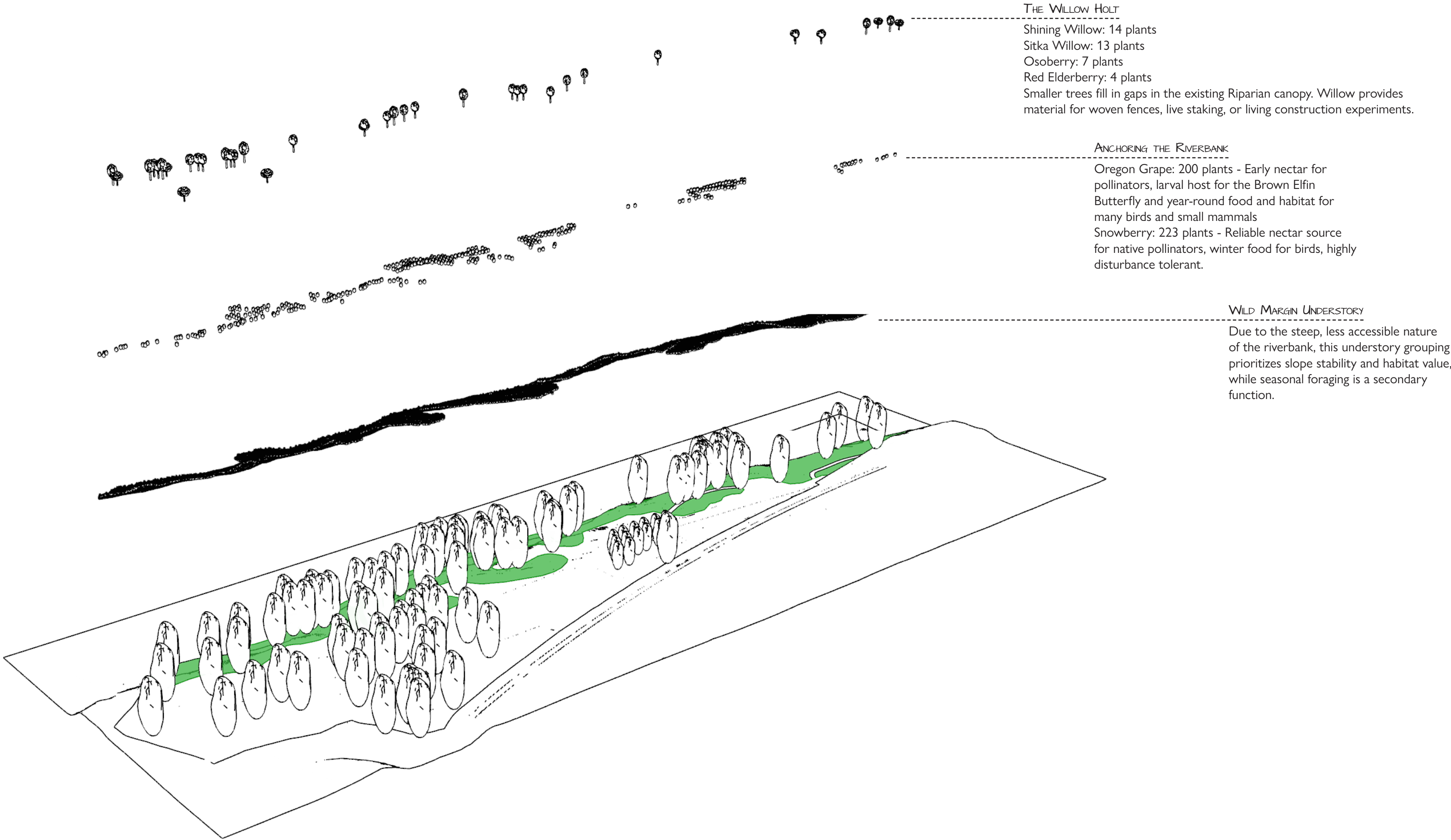
The riparian forest zone prioritizes slope stabilization, habitat function, and long-term ecological resilience, providing more modest and opportunistic yields. Due to the steep and less accessible nature of the riverbank, this area is designed as a working edge where production is secondary to restoration and protection.

New plantings of shining willow (*Salix lucida*) and Sitka willow (*Salix sitchensis*) fill gaps in the existing riparian canopy, stabilizing soils and reducing erosion. These willows are managed through periodic pollarding, producing a renewable supply of flexible stems for woven fencing, live staking, and experimental living construction. Additional plantings, including osoberry and red elderberry, contribute small seasonal yields while increasing habitat complexity.

A band of “anchoring” shrubs reinforces bank stability and ecological function. Oregon grape provides early-season nectar for pollinators, serves as a larval host for the Brown Elfin butterfly, and offers year-round forage for wildlife. Snowberry further supports pollinators and birds while demonstrating high tolerance to disturbance.

Within the Wild Margin Understory, plantings are selected primarily for their ability to hold soil, cycle nutrients, and support biodiversity. While some seasonal foraging is possible, yield in this zone is intentionally limited, reflecting its primary role as a stabilizing and habitat-rich edge condition.

Overall, the riparian forest reframes productivity beyond food, emphasizing ecosystem services, material yield, and long-term stewardship as essential outputs of the landscape.





07 BUDGET & PHASED PLANTING

| Latin Name            | Common Name           | Count | Acres | Size/Type | Seeding rate lbs/acre | Cost(per plant/lbs | Nursery            | Cost        | TOTAL        |
|-----------------------|-----------------------|-------|-------|-----------|-----------------------|--------------------|--------------------|-------------|--------------|
| Acer macrophyllum     | Big Leaf Maple        | 23    |       | 3 Gallon  |                       | \$7.50             | Beaverlake Nursery | \$172.50    | \$352,593.58 |
| Amelanchier alnifolia | Serviceberry          | 32    |       | 2 Gallon  |                       | \$5.25             | Beaverlake Nursery | \$168.00    |              |
| Corylus cornuta       | Pestnut               | 21    |       | 3 Gallon  |                       | \$10.00            | Beaverlake Nursery | \$210.00    | \$1,245.60   |
| Malus fusca           | Spice Apple           |       |       | 3 Gallon  |                       | \$7.50             | Beaverlake Nursery | \$7.50      |              |
| Oemleria cerasifera   | Japanese Quince       |       |       | 3 Gallon  |                       | \$7.25             | Beaverlake Nursery | \$65.25     | \$22,914.25  |
| Prunella virginiana   | Blackberry            |       |       | 3 Gallon  |                       | \$5.50             | Beaverlake Nursery | \$159.50    |              |
| Quercus laevis        | Live Oak              |       |       | 3 Gallon  |                       | \$18.00            | Beaverlake Nursery | \$288.00    | \$2,845.43   |
| Salix lucida          | Shining Willow        |       |       | 3 Gallon  |                       | \$2.75             | Beaverlake Nursery | \$38.50     |              |
| Salix sitchensis      | Sitka Willow          |       |       | 3 Gallon  |                       | \$2.75             | Beaverlake Nursery | \$35.75     | \$2,845.43   |
| Sambucus racemosa     | Blue Elderberry       |       |       | 3 Gallon  |                       | \$2.90             | Beaverlake Nursery | \$84.10     |              |
| Spiraea alba          | Red Elderberry        |       |       | 3 Gallon  |                       | \$2.75             | Beaverlake Nursery | \$16.50     | \$2,845.43   |
| Twinberry             | Twinberry             |       |       | 3 Gallon  |                       | \$2.75             | Beaverlake Nursery | \$41.25     |              |
| Tall Oregon Grape     | Tall Oregon Grape     |       |       | 3 Gallon  |                       | \$2.75             | Beaverlake Nursery | \$825.00    | \$2,845.43   |
| Sword Fern            | Sword Fern            |       |       | 5" Plant  |                       | \$1.50             | Beaverlake Nursery | \$19,419.00 |              |
| Coastal Geranium      | Coastal Geranium      |       |       | 3 Gallon  |                       | \$3.75             | Beaverlake Nursery | \$371.25    | \$2,845.43   |
| Golden Pheasant       | Golden Pheasant       |       |       | 3 Gallon  |                       | \$3.75             | Beaverlake Nursery | \$48.75     |              |
| Golden Pheasant       | Golden Pheasant       |       |       | 3 Gallon  |                       | \$2.75             | Beaverlake Nursery | \$255.75    | \$2,845.43   |
| Golden Pheasant       | Golden Pheasant       |       |       | 3 Gallon  |                       | \$2.75             | Beaverlake Nursery | \$101.75    |              |
| Golden Pheasant       | Golden Pheasant       |       |       | 3 Gallon  |                       | \$2.75             | Beaverlake Nursery | \$242.00    | \$2,845.43   |
| Golden Pheasant       | Golden Pheasant       |       |       | 3 Gallon  |                       | \$2.75             | Beaverlake Nursery | \$316.25    |              |
| Golden Pheasant       | Golden Pheasant       |       |       | 3 Gallon  |                       | \$2.75             | Beaverlake Nursery | \$888.25    | \$2,845.43   |
| Golden Pheasant       | Golden Pheasant       |       |       | 3 Gallon  |                       | \$3.75             | Beaverlake Nursery | \$405.00    |              |
| Achillea millefolium  | Common Yarrow         |       |       | 1.7 Seed  | 0.25                  | \$45.00            |                    | \$19.13     | \$2,845.43   |
| Allium                | Narrowleafed Onion    |       |       | 1.7 Seed  | 0.5                   | \$150.00           |                    | \$127.50    |              |
| Hooker's              | Hooker's              |       |       | 1.7 Seed  | 0.5                   | \$120.00           |                    | \$102.00    | \$2,845.43   |
| Balsamorhiza          | Balsamorhiza          |       |       | 1.7 Seed  | 1                     | \$200.00           |                    | \$340.00    |              |
| American Yellow       | American Yellow       |       |       | 1.7 Seed  | 0.5                   | \$40.00            |                    | \$34.00     | \$2,845.43   |
| Harvest Moon          | Harvest Moon          |       |       | Corms     |                       | \$0.90             |                    | \$907.20    |              |
| Elegant               | Elegant               |       |       | Corms     |                       | \$0.90             |                    | \$899.10    | \$2,845.43   |
| Great Camassia        | Great Camassia        |       |       | 1.7 Seed  | 1                     | \$80.00            |                    | \$136.00    |              |
| Common                | Common                |       |       | 1.7 Seed  | 1                     | \$60.00            |                    | \$102.00    | \$2,845.43   |
| Ookow                 | Ookow                 |       |       | 1.7 Seed  | 0.5                   | \$120.00           |                    | \$102.00    |              |
| Puget Sol             | Puget Sol             |       |       | 1.7 Seed  | 0.25                  | \$40.00            |                    | \$17.00     | \$2,845.43   |
| Tarweed               | Tarweed               |       |       | 1.7 Seed  | 1                     | \$20.00            |                    | \$34.00     |              |
| Dead Nett             | Dead Nett             |       |       | 1.7 Seed  | 0.25                  | \$60.00            |                    | \$25.50     | \$2,845.43   |
| Wild Ginge            | Wild Ginge            |       |       | 3.5"      |                       | \$2.00             | Beaverlake Nursery | \$11,294.00 |              |
| Narrow-lea            | Narrow-lea            |       |       | 1.8 Seed  | 0.5                   | \$60.00            |                    | \$54.00     | \$2,845.43   |
| Miner's Lettu         | Miner's Lettu         |       |       | 1.8 Seed  | 1                     | \$40.00            |                    | \$72.00     |              |
| Great White F         | Great White F         |       |       | Bulb      |                       | \$3.00             |                    | \$38,931.00 | \$2,845.43   |
| Wild Strawberry       | Wild Strawberry       |       |       | 3.5"      |                       | \$1.00             | Beaverlake Nursery | \$878.00    |              |
| Wild Strawberry       | Wild Strawberry       |       |       | 3.5"      |                       | \$1.00             | Beaverlake Nursery | \$1,229.00  | \$2,845.43   |
| Checker Lily          | Checker Lily          |       |       | Bulb      |                       | \$4.00             |                    | \$16,800.00 |              |
| Western Rattlesn      | Western Rattlesn      |       |       | 3.5"      |                       | \$5.95             | Sparrowhawk Plants | \$68,359.55 | \$2,845.43   |
| Cow Parsn             | Cow Parsn             |       |       | 3.5"      |                       | \$12.00            | Doak Creek Nursery | \$15,348.00 |              |
| Green-flowered All    | Green-flowered All    |       |       | 3.5"      |                       | \$12.00            | Doak Creek Nursery | \$48,936.00 | \$2,845.43   |
| Crevice Allumroot     | Crevice Allumroot     |       |       | 3.5"      |                       | \$12.00            | Doak Creek Nursery | \$51,852.00 |              |
| Tiger Lily            | Tiger Lily            |       |       | 3.5"      |                       | \$6.00             | Doak Creek Nursery | \$5,322.00  | \$2,845.43   |
| Redwood Sorrel        | Redwood Sorrel        |       |       | 3.5"      |                       | \$1.75             | Beaverlake Nursery | \$15,333.50 |              |
| Suksdorf's Woodsorrel | Suksdorf's Woodsorrel |       |       | 3.5"      |                       | \$1.75             |                    | \$7,294.00  | \$2,845.43   |
| Gairdner's Yampah     | Gairdner's Yampah     |       |       | 1.8 Seed  | 0.5                   | \$120.00           |                    | \$108.00    |              |
| Oregon Yampah         | Oregon Yampah         |       |       | 1.8 Seed  | 0.5                   | \$120.00           |                    | \$108.00    |              |

COST ESTIMATING

Extensive scouring of local and regional specialty nurseries turned up prices and estimates for most of the plants on our list. However, availability was patchy at best, and many nurseries keep their plant catalogs and wholesale pricing tightly under wraps. The resulting sky-high plant material cost estimate is largely the fault of a few rare outliers that are simply not in regular production and would require extra leg work on the part of the nurseries to track down and grow out.

Because of this and other factors related to educational opportunities and hands-on involvement in place making, we are proposing an alternative method made possible by the overlap of the WRNA and the Urban Farm Riverside.



# The Nursery and Cost Savings

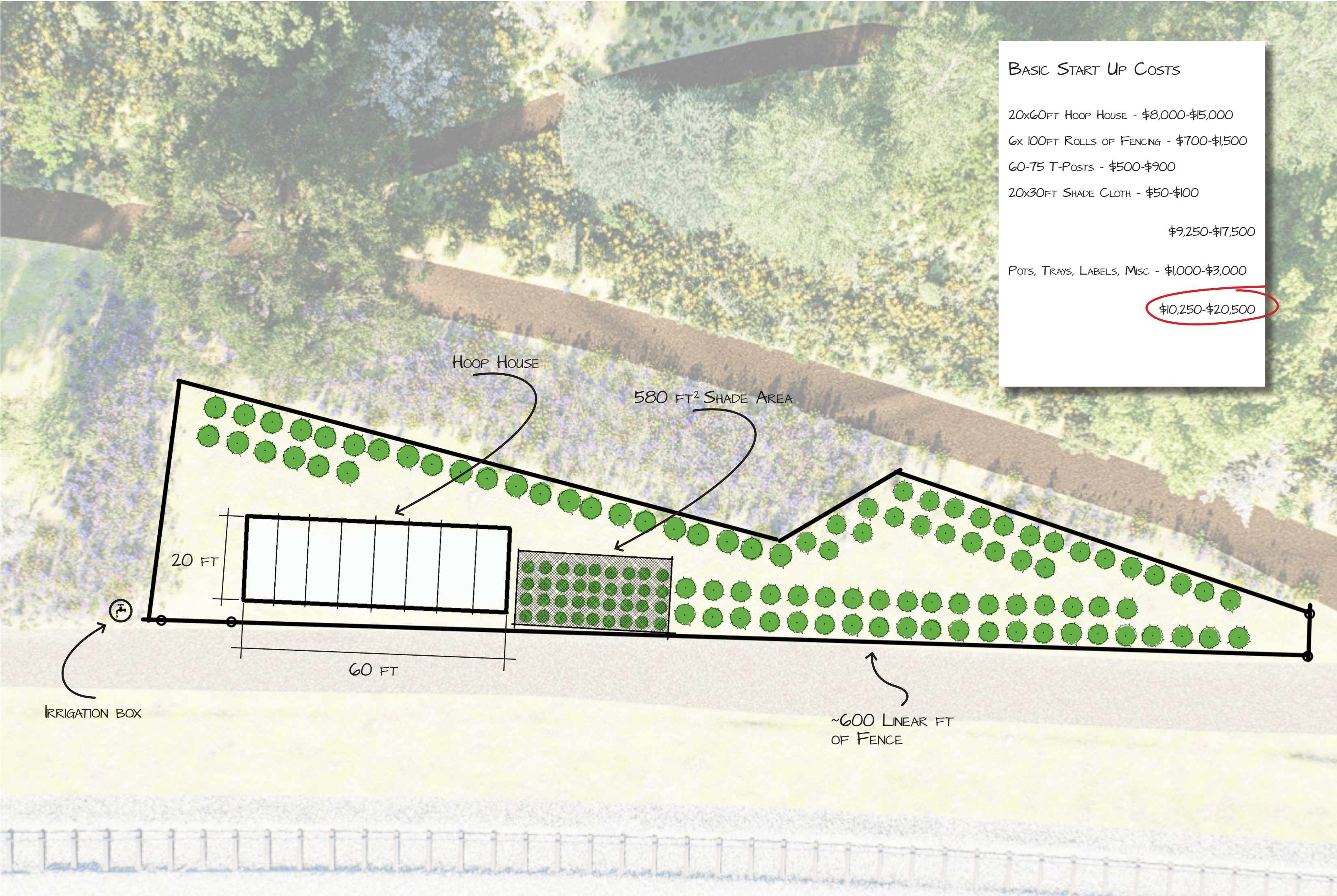
The Nursery reduces long-term restoration costs by shifting plant production from commercial suppliers to an on-site, student-managed propagation system. As seen in the previous cost estimate, native plants are often expensive and difficult to obtain at the scale required for restoration projects, with costs ranging widely from \$1 to nearly \$18 per herbaceous plant and significantly more for some shrubs and trees. By propagating plants on-site from locally collected seed, many species can be produced for a fraction of that cost, reducing expenses primarily to things already present at the Urban Farm – soil media, containers, irrigation, and labor. Once established, the nursery has the potential to produce thousands of plants annually, saving tens of thousands of dollars over the lifespan of the project while increasing control over species selection, timing, and plant quality.

Rather than attempting a full build-out at once, the nursery supports a phased implementation strategy for the food forest. Early production can focus on species from the list of understory and groundcover plants such as camas, tarweed, alliums, yarrow, berries, and riparian shrubs that quickly stabilize soil, improve habitat, and establish ecological structure. To start small, seeds can be collected by students from the WRNA and

surrounding areas. These early plantings help create favorable microclimatic conditions by improving soil health, moisture retention, and canopy cover. After establishing the introduction of slower-growing and more specialized species in later phases, including Oregon white oaks and complex understory communities.

This incremental approach reduces upfront installation costs while allowing the planting strategy to adapt over time in response to ecological feedback, available labor, and changing site conditions. Plants grown on-site are also better adapted to local climate conditions and planting schedules, increasing survival rates and reducing replacement and maintenance costs associated with transplant shock or poorly timed installation<sup>47</sup>.

Beyond direct financial savings, the nursery functions as a long-term educational and stewardship infrastructure. Integrated into the Urban Farm classes, it provides hands-on experience in propagation, restoration ecology, and land management while offsetting operational labor costs through student participation. Over time, the nursery evolves alongside the landscape it supports, becoming a living framework for community stewardship and ecological learning.



<sup>47</sup> Leimu and Fischer, “A Meta-Analysis of Local Adaptation in Plants.”



08 ADAPTIVE MANAGEMENT

BRINGING BACK FIRE

Adaptive management is about building frameworks that allow us to respond to change by evaluating the data we have, forming new hypotheses, and updating our practices through experimentation.

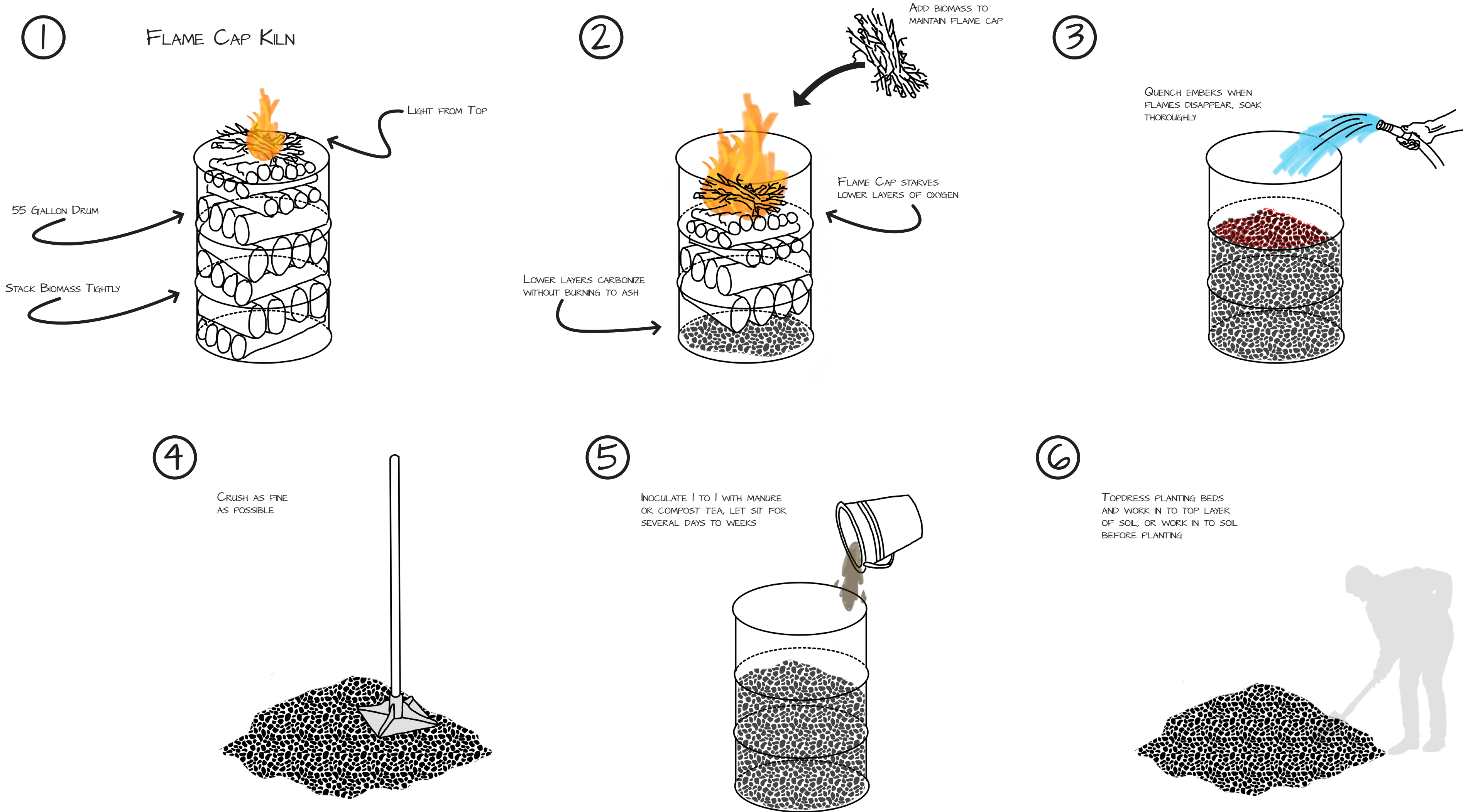
The tribes of the Willamette Valley used fire as a tool for landscape management, setting controlled, low-intensity, seasonal fires that burned through the savannas, clearing debris and woody plant encroachment, boosting acorn and hazelnut production, stimulating plant growth, and fertilizing the soil with ash.

While the inclusion of a plan for controlled burning in the WRNA is outside the scope of this project, adaptive site management presents an opportunity to reintroduce both regular disturbance and some of the benefits of fire back to the landscape.

The WRNA plans to use regular targeted mowing to control the continued incursion of invasives in the less densely planted oak savanna. Cuttings from this mowing can be composted in place to return nutrients to the soil, or gathered and composted at the farm to support the production potting soil for the Nursery and other projects.

Trees that are targeted for removal can be left in place to decompose over time, or converted into bio-char, which can be spread across the site reintroducing fire to the landscape in a targeted and controlled fashion.

Bio-char is an organic soil amendment that improves soil structure, moisture retention, nutrient uptake, and creates habitat for beneficial soil microbes. It is formed by burning wood and other biomass in a low oxygen environment.







## RESPONDING TO CHANGE

The value of a parameter-based planning and planting system lies in the constantly changing and dynamic nature of landscapes. Over time, invasive species or aging trees nearing the end of their lifespan may need to be removed, soil conditions will evolve through the accumulation of compost, mulch, and leaf litter, and patterns of sun and shade will shift as the canopy matures. Rather than treating the landscape as a fixed composition, the system is designed to respond to these ongoing ecological changes.

New information gathered through student research, field observations, or on-site environmental sensors, can be integrated back into the model to generate updated spatial layouts and planting schemes. In this way, the design functions less as a static master plan and more as an adaptive ecological framework capable of evolving alongside the landscape itself.



# CONCLUSION

The Urban Farm Riverside site represents the confluence of many overlapping, intersecting and opposing interests on the University of Oregon’s campus. It was born out of student protest and outrage over top-down planning structures that seek to prioritize spectacle and recruitment over the lived experiences of students, faculty, and the broader community. Yet this same institution was once a proving ground for more democratic and participatory design approaches, the kind that produce meaningful places through shared authorship and hands on engagement.

With this site we have the opportunity to return to those roots. Not by discarding planning, but by rebalancing it by pairing thoughtful design with the act of making. Over time, students, faculty, and practitioners have developed numerous visions for the future of the site, each rigorous and well-considered. This project is one among them: another lens, another proposal, another step in

the ongoing conversation.

But it’s time to put down the pencils and step away from the screens. The drawings can only take us so far. As the students of the Oregon Experiment demonstrated, the opportunity to engage with the physical side of design, bringing the classroom outside the walls of the University, builds better, more interesting designers and spaces. The Urban Farm has shown us the way from the very beginning: you make the plan, and then you go out there and build it, learning, adjusting, and responding as conditions change.

We don’t need to resolve every detail before we begin. What matters is the willingness to engage, adapt, and take responsibility for shaping the landscape over time. In that sense, the future of the site will not be determined by a single plan, but by the people who continue to show up, put their hands in the soil, and carry the work forward.

