


Grown to Survive:

How the New Burke Museum Project is Using Forestry Science to Change the way we Grow and Specify Plants in Landscape Architecture Projects




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Oxbow Farm & Conservation Center

GGN

Oxbow Farm & Conservation Center

We are a non profit organization located on 230 acres of forest and floodplain in the Snoqualmie River Valley, approximately 25 miles east of Seattle

Oxbow's Mission:

To inspire people to eat healthy, sustainably, grown food and to steward our natural resources for future generations.

Ecological farming

Environmental Education

Habitat restoration

Native plant production

Research to practice

Public engagement

Native Plant Nursery Mission:

Increase the availability and use of native plants throughout the region

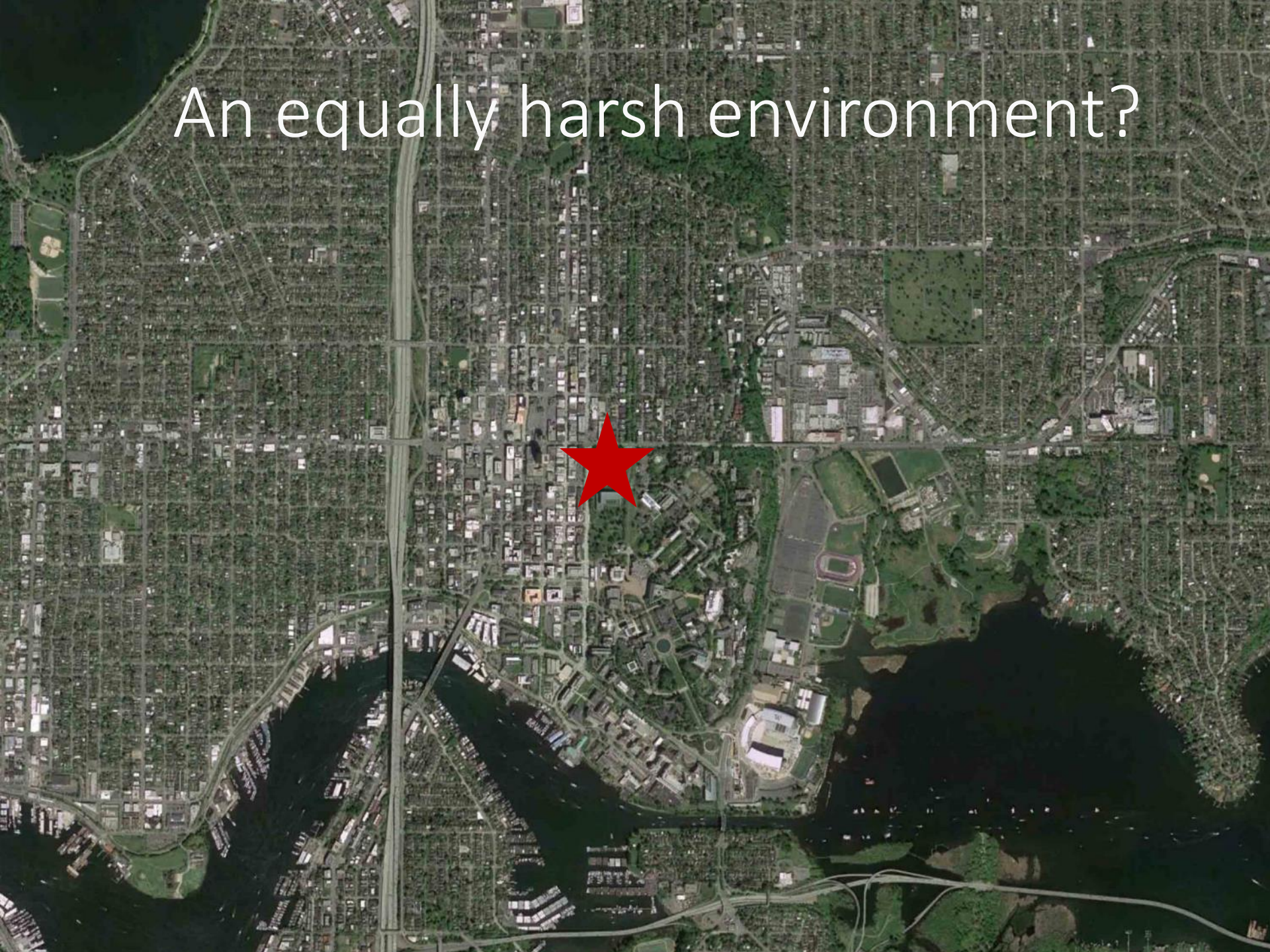
Production of ecologically important species

Applied research aimed at practical solutions

Educational services, technical expertise

Restoration/Reforestation Planting

An equally harsh environment?



Washington State's Oldest Museum

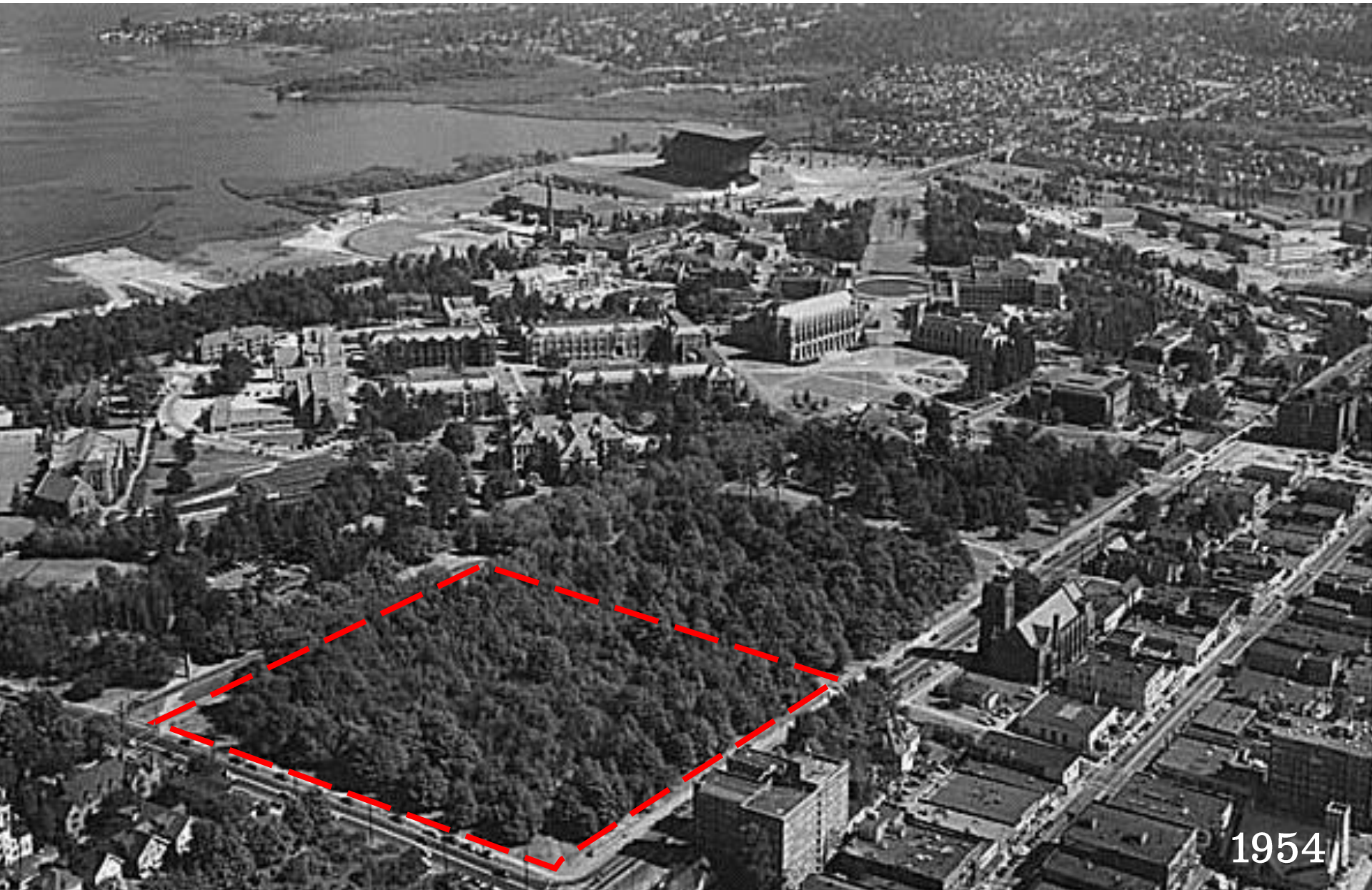
1885 Founded by Young Naturalists Society

The Burke is responsible for the state collections of natural and cultural objects. As a teaching institution, the Burke is a relied-upon resource for research around the globe. The collection has grown to over 16 million objects.

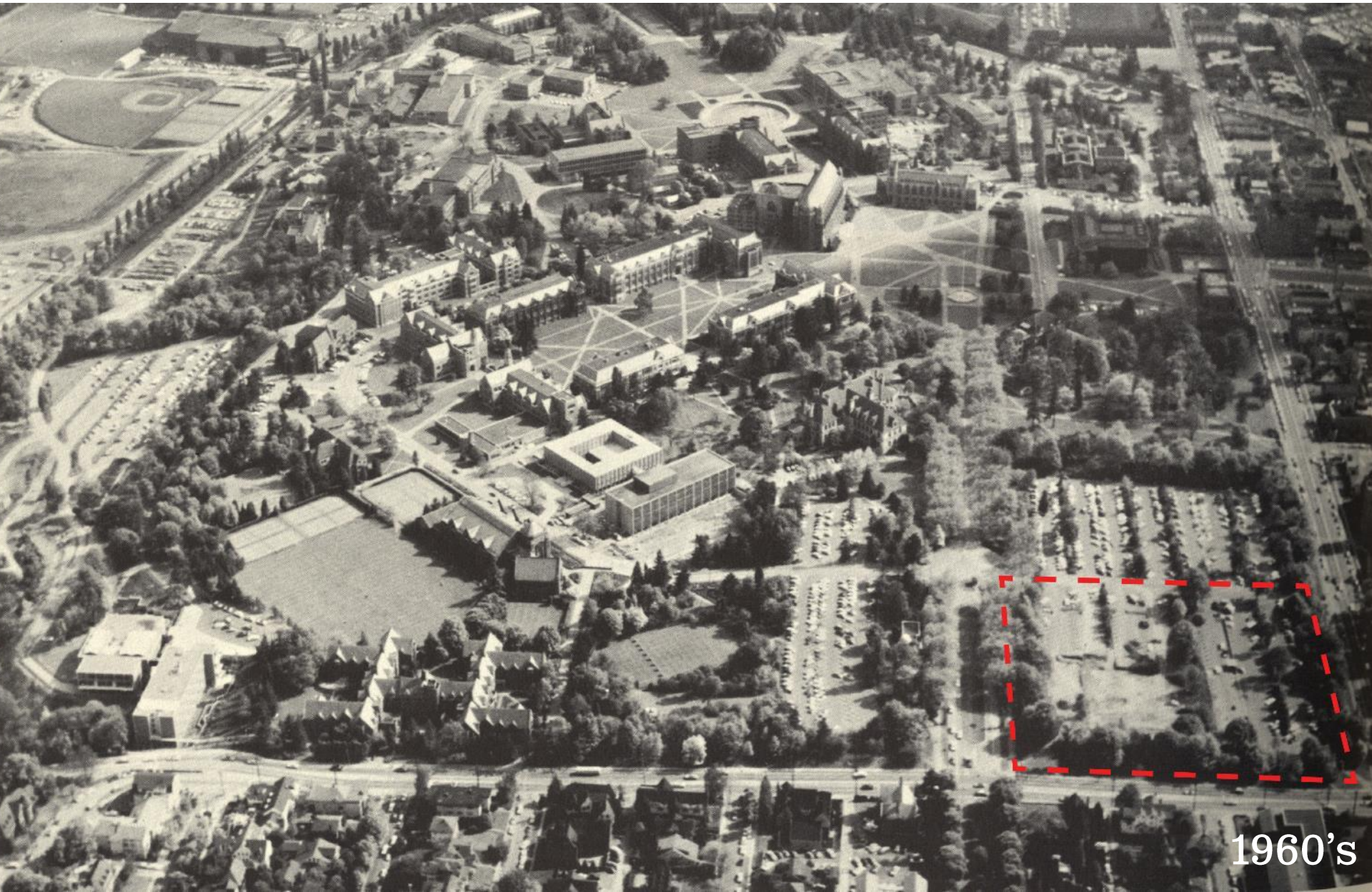
The New Burke removes barriers between visitors and experiencing the objects themselves. For too long the collections have been hidden away in storage. The new museum opens up the collection, gives visitors access to the breadth of the collection and to the innovative research going on behind the scenes.

Land Platted in 1856

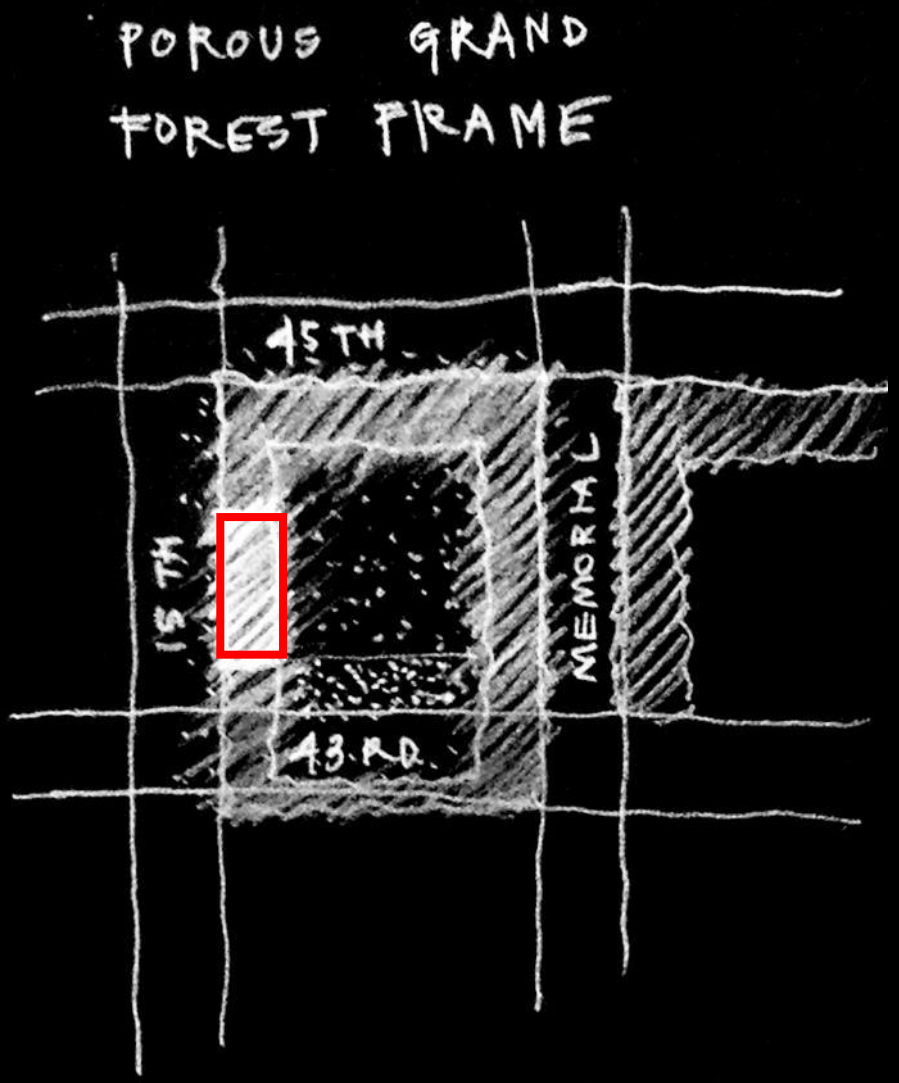
Historically treed corner of campus



Urban Development

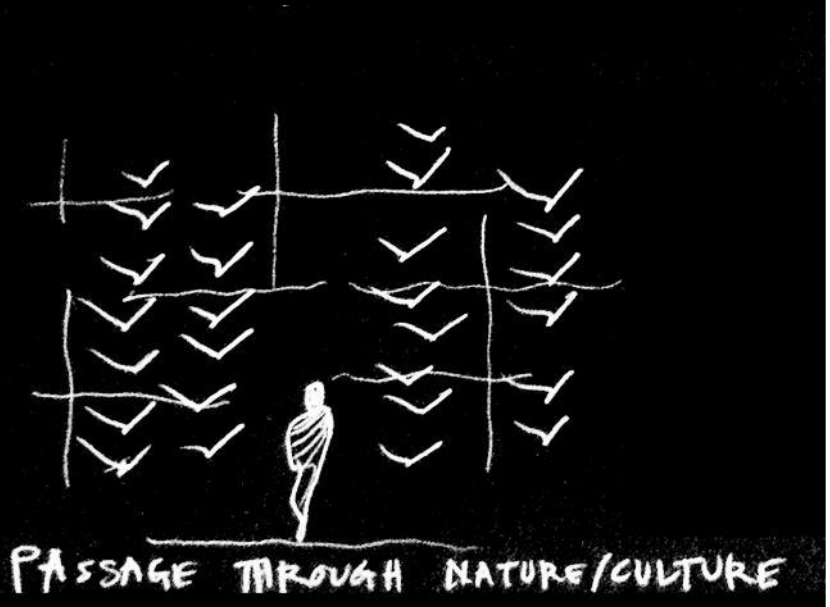


Urban Building in Forest Frame



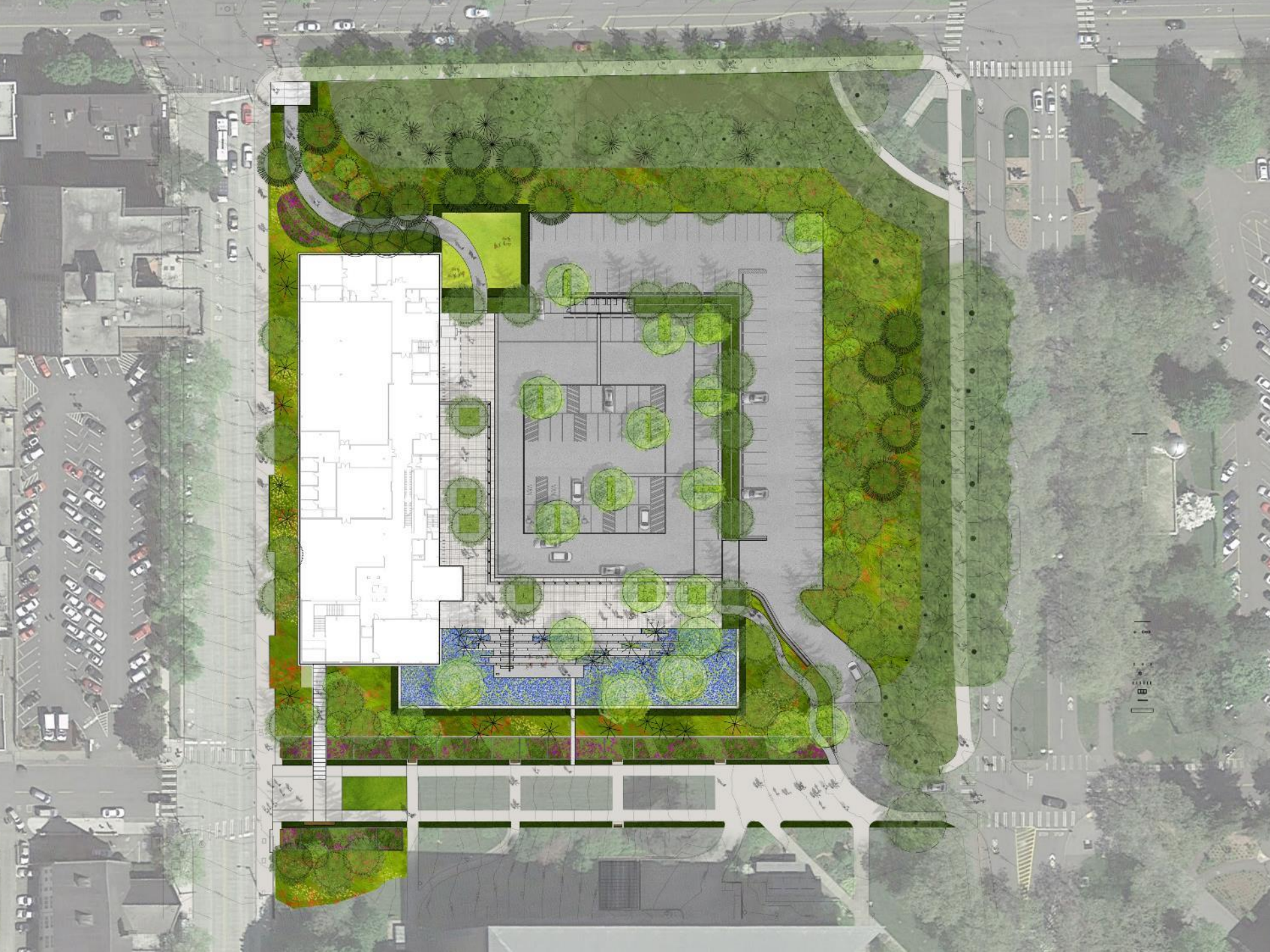

Dave Wenning

indoor
experience



outdoor
experience

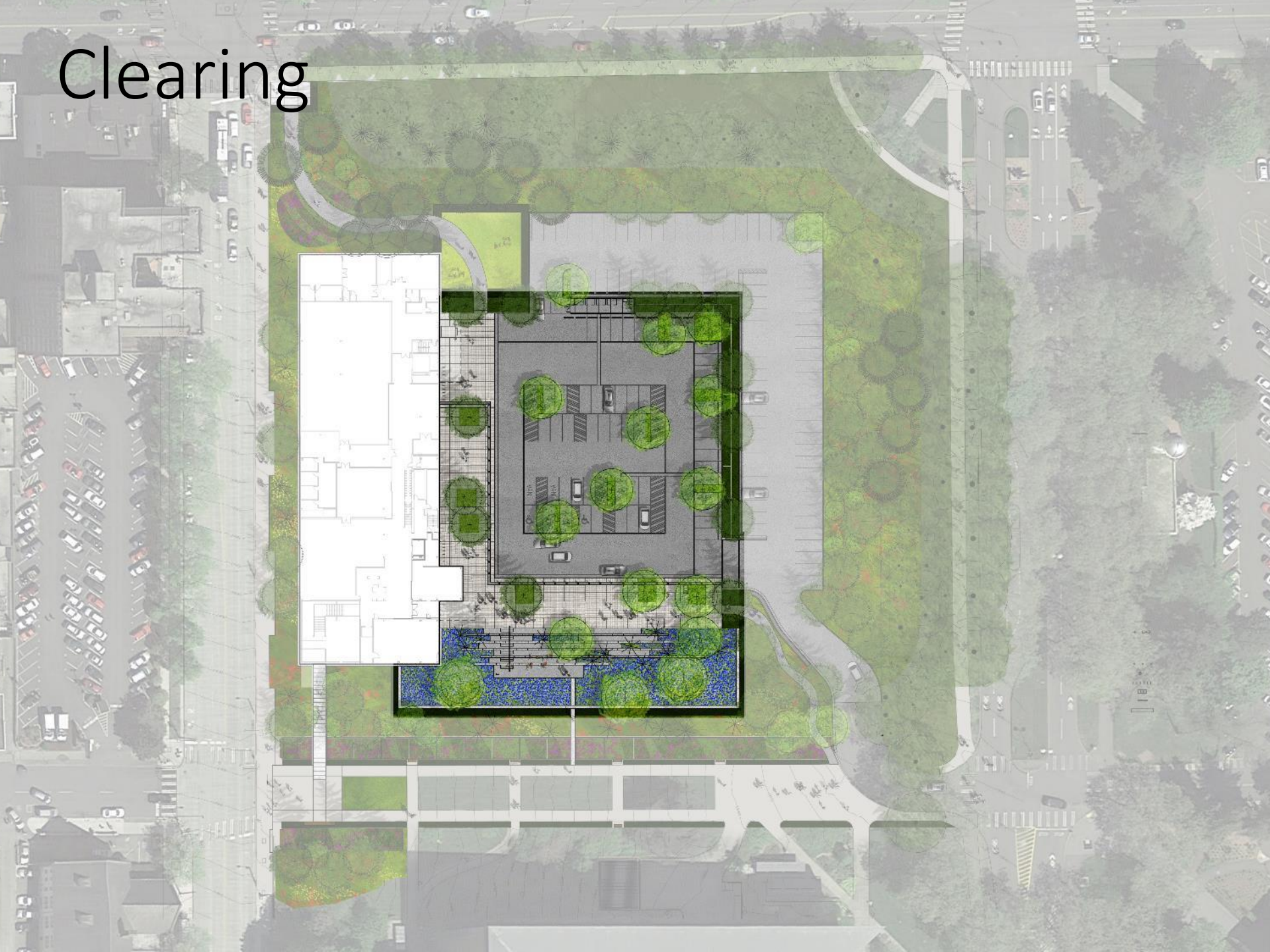

EXHIBITS
LOBBY
RETAIL
CAFE'
ADMISSIONS DESK
COURTYARD ENTRY
LOWER LOBBY
BURKE ROOM
15TH AVE ENTRY



Existing Forest Frame

New Forest Frame

Clearing

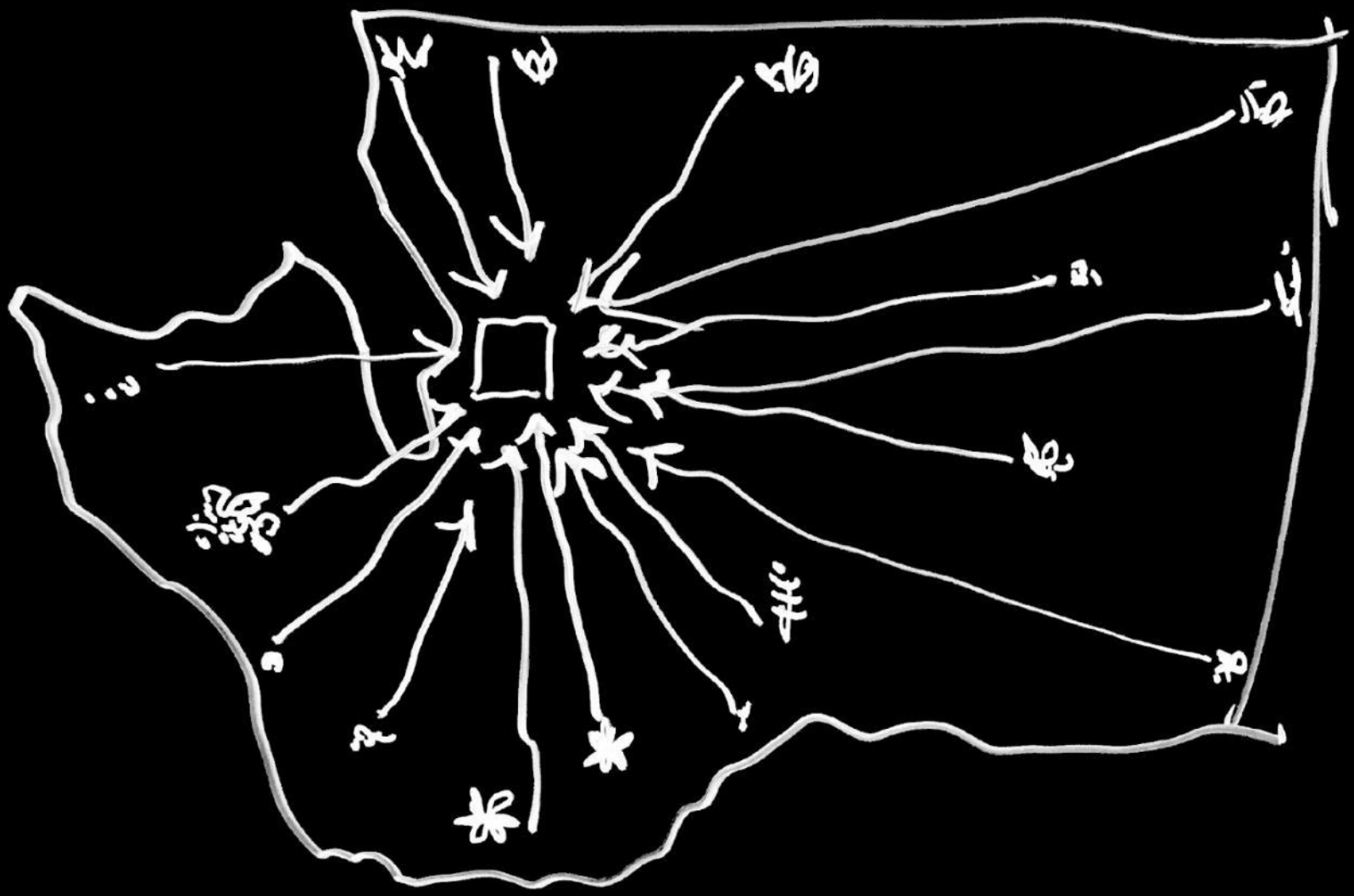


Burke Yard as Clearing


TRENCH DRAIN, SEE CIVIL
PERFORATED PIPE DISTRIBUTION MANIFOLD, SEE CIVIL
FLAT, DRAINAGE LAYER, SEE CIVIL
PLANTING SOIL
DISCHARGE TO STORM DRAIN, SEE CIVIL

Oxbow as Connection to Larger Landscape

State Museum with WA Genetic Heritage



Solutions from Restoration & Reforestation can be applied in Urban Projects as well

- Genetic Diversity in plant material
- Locally sourced genetics
- Roots grown for survival

Genetic diversity means resilience

Growing from seed = more diversity

Seed collected from multiple plants and locations = more diversity

Diversity means hedging your bets!

- Select for diversity throughout the growing process

Regionally appropriate seed

- Local plants have genes that allow them to best survive in local conditions

We collect our own seed (and cutting or division materials) where we can

Open coniferous forest

http://crosscut.com/2015/07/drought-comes-to-snoqualmie-valley-farms/

Lady fern (*Athyrium felix-femina*)

False lily-of-the-valley
(*Maianthemum dilatatum*)

Salal (*Gaulthera shallon*)

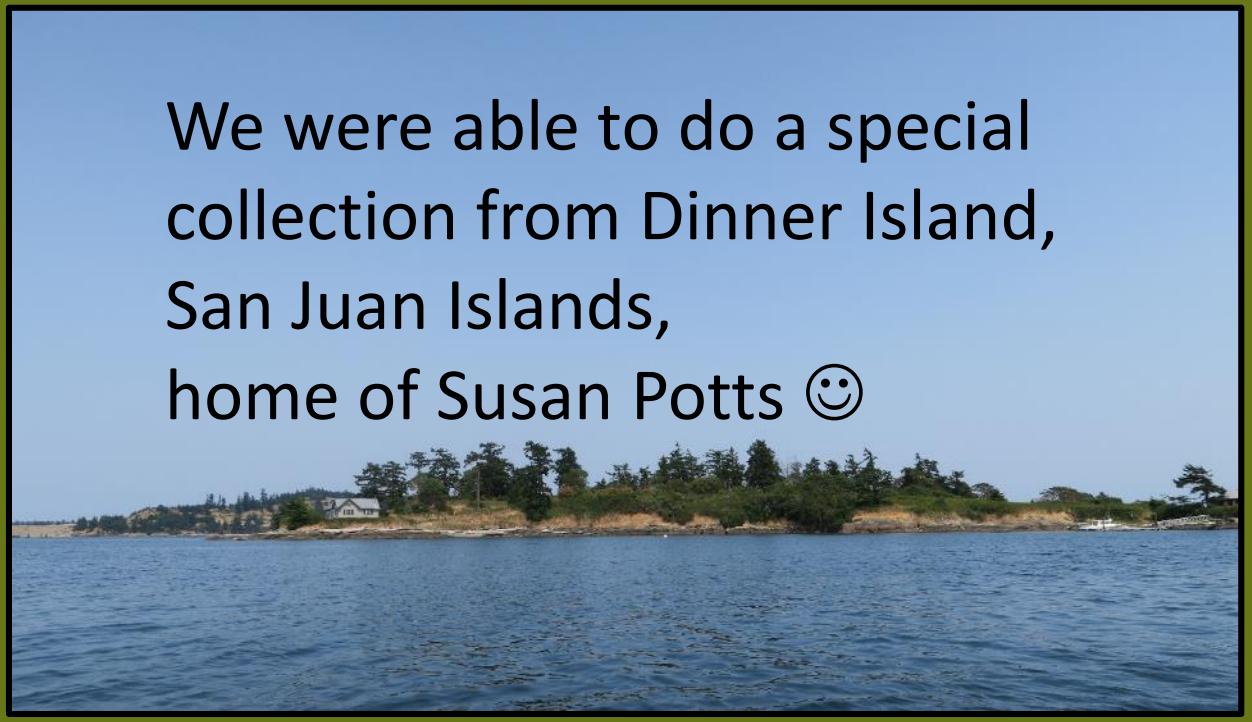
Fringecup
(*Tellima grandiflora)*

Low Oregon grape (*Berberis nervosa*)

Sword fern (*Polystichum munitum*)

Puget Sound Camas Prairie

We were able to do a special collection from Dinner Island, San Juan Islands,
home of Susan Potts ☺



Chocolate lily
(*Fritillaria affinis*)

Large camas
(*Camassia leichtlinii*)

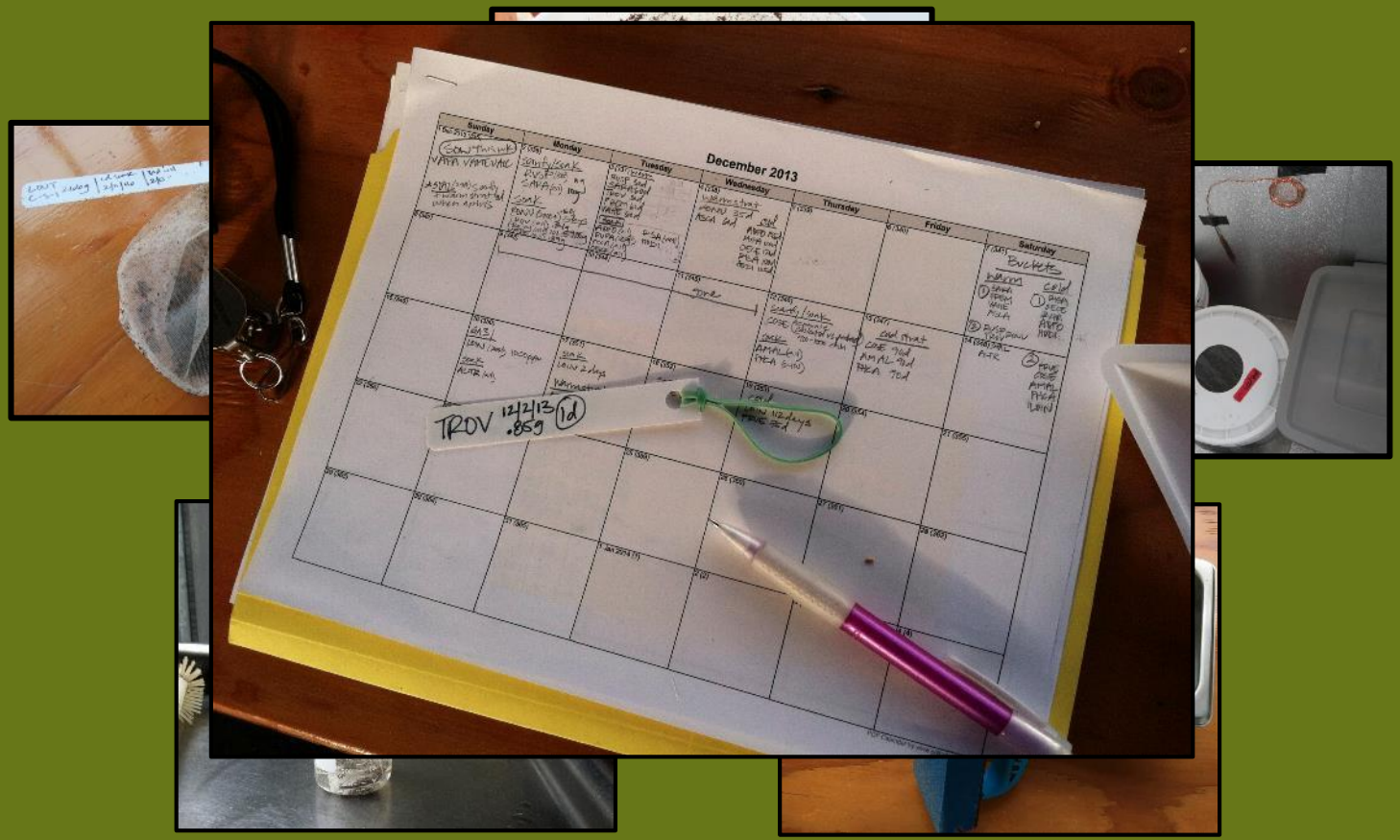
Coast gumweed (*Grindelia integrifolia*)

Death camas (*Toxicoscordion venenosum)*

Broadleaf stonecrop (*Sedum spathulifolium*)

Challenges in growing from seed

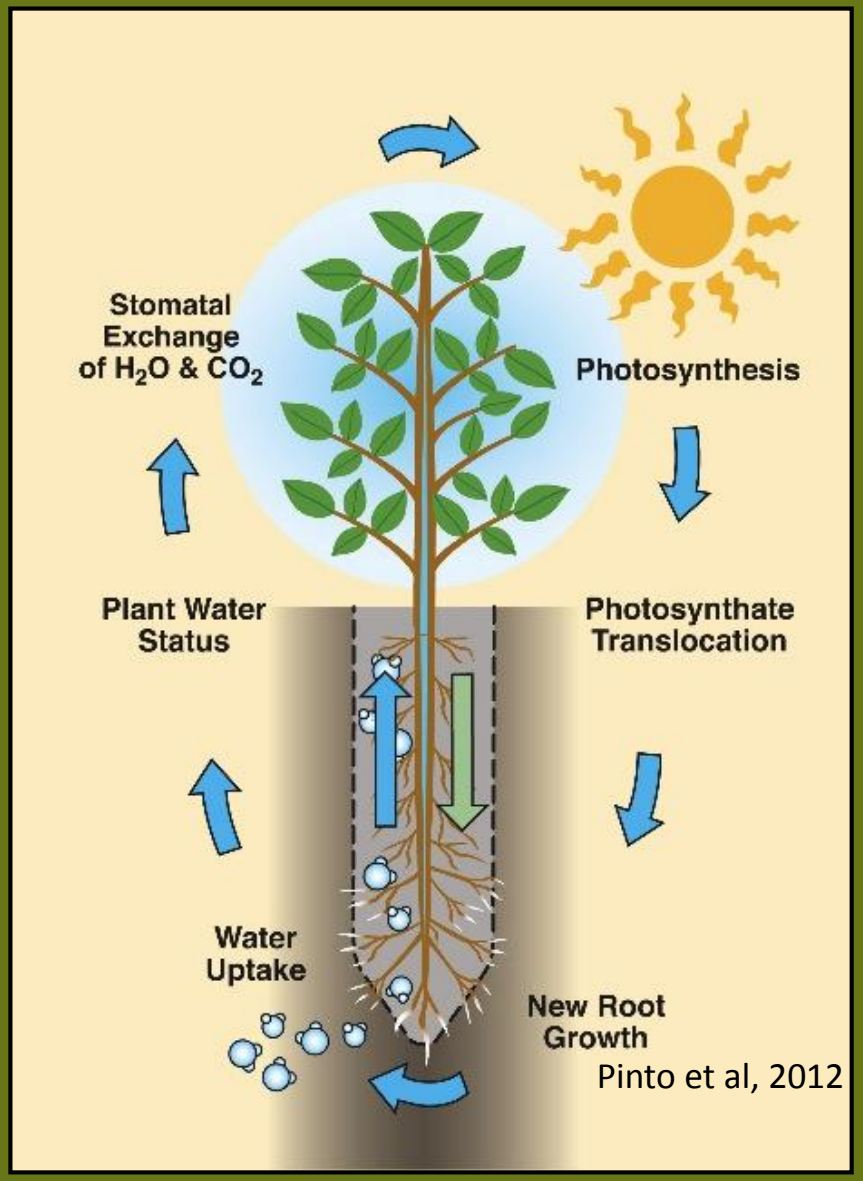
- Obtaining seed
- Seed dormancy



Growing plants with roots in mind

Seedling Establishment
- Occurs when seedlings are fully coupled to site hydrological cycle

Root access to soil water!
- Initiates positive feedback loop



Ideal roots

- Long and straight
- Many fine roots/root tips

- Elongated containers
- Open bottoms = air pruning
- Plants establish at planting site faster

The unique situation of a nursery working with landscape architects

- Challenges around timelines and changing design
- Opportunity to work together on plant specifications and difficult to find species

Some examples of timelines:

Common Camas (*Camassia quamash*)

Seed collected summer 2015

Sown Fall 2015

Bulbs continue to grow each year

4 years!

To be delivered fall 2019, hopefully ready to flower!

Evergreen huckleberry (*Vaccinium ovatum*)

Sown
Fall 2016

Oct 2017

Oct 2018

To be delivered
Fall 2019

3 years

Wild ginger (*Asarum caudatum*)

Sown
Fall 2015

Oct 2016

Ready for
installation Oct 2017

2 years

Contract growing is helpful/ideal for nurseries/growers

- Size
- Container
- Aesthetic qualities
- Timeline

Contract growing and reforestation techniques are helpful/ideal for landscape architects

Size – it's the size of the roots that matter

4" pot

7ci tube

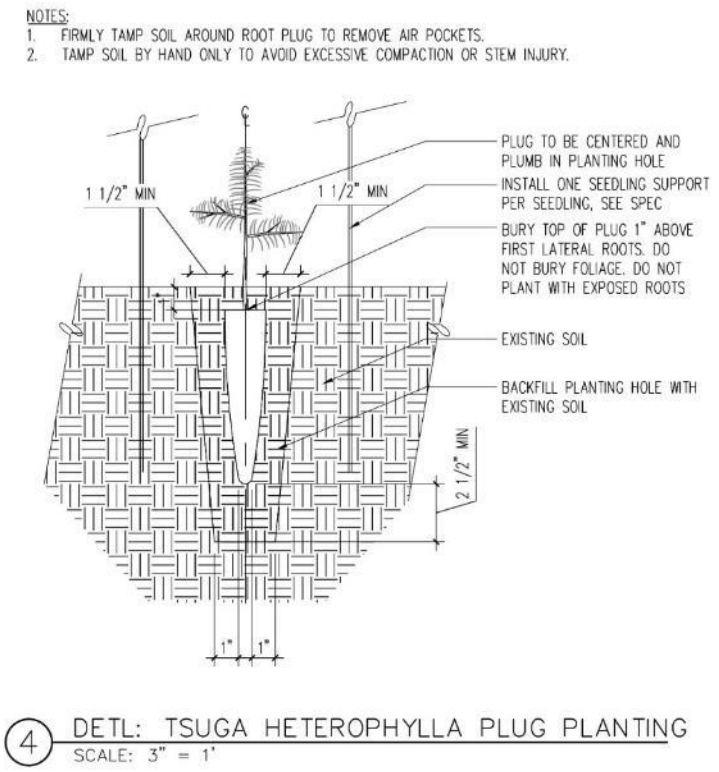
Size – adapting drawings/specs/expectations for new sizes

The Container Tree Nursery Manual

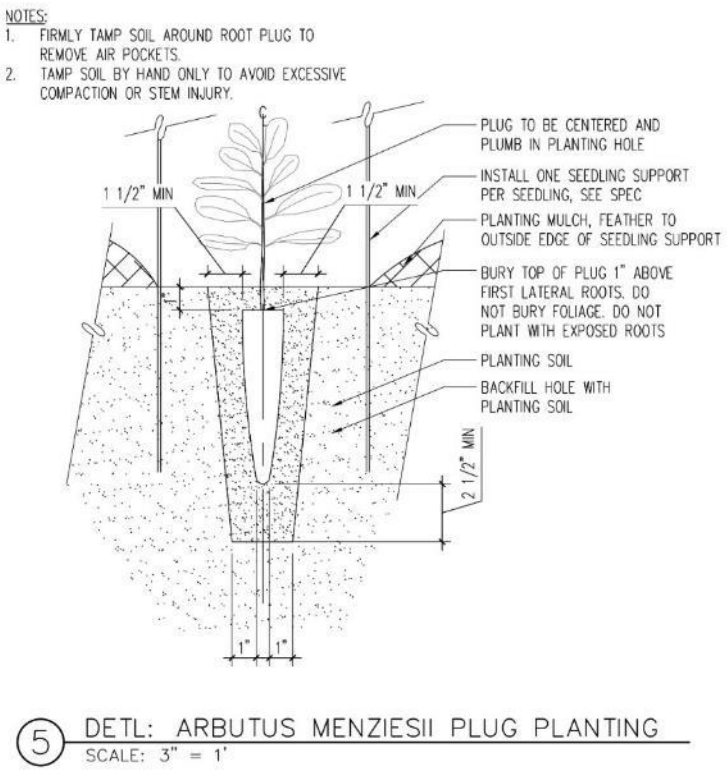
Volume Seven

American Standard for Nursery Stock

published by AmericanHort



4 DETL: TSUGA HETEROPHYLLA PLUG PLANTING
SCALE: 3" = 1'



5 DETL: ARBUTUS MENZIESII PLUG PLANTING
SCALE: 3" = 1'

Container

- Elongated containers
- Open bottoms = air pruning
- Plants establish at planting site faster
- Containers are made from higher quality plastic. Collected after install and returned to grower

- Standard containers
- Closed bottoms = often root bound
- Low-quality plastic taken to landfill after install

Timeline - bid plants earlier in project

Seed collected

Year 1

Bulbs continue to grow each year

Years 2 & 3

Fall planted, spring bloom

Year 4

Construction Sequencing – Incorporate Grower recommendations

Recommendations for Spring vs Fall 2019 Planting from Oxbow

Spring blooming bulbs: I very strongly recommend planting these in the fall. Transplanting them in spring, during their active growing period, would likely greatly reduce their survival, at the very least would cause them to lose out on a season of active growth. If we can hold them in the nursery for the 2019 growing season, they will be four years old when installed in the fall, and giving a better chance that a high percentage will bloom the following spring. Fall planting is standard practice for spring blooming bulbs.

Quick-growing perennials: I recommend that these plants are also installed fall of 2019. Their ideal cycle in the nursery is that they are started in spring from seed, and are ready for outplanting in the fall. In order to have them ready in the spring 2019, they would need to be grown the year before (2018) held over in the nursery until spring 2019 planting. Since this planting sounds like it will be in late spring/early summer 2019, the plants at this point will likely be quite root bound, which could also cause stunted/unattractive above-ground appearance. Bottom line is that you can have a higher quality plant in fall or a lower quality plant in spring.

Plants that we can have ready in spring or fall: there are a large number of the species that we can more easily have ready at any time of year (as long as we have enough notice) because they are slower growing and much less likely to become root bound, or are species that will do OK being sown in the fall and are able to grow over the winter and be ready the next spring.

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