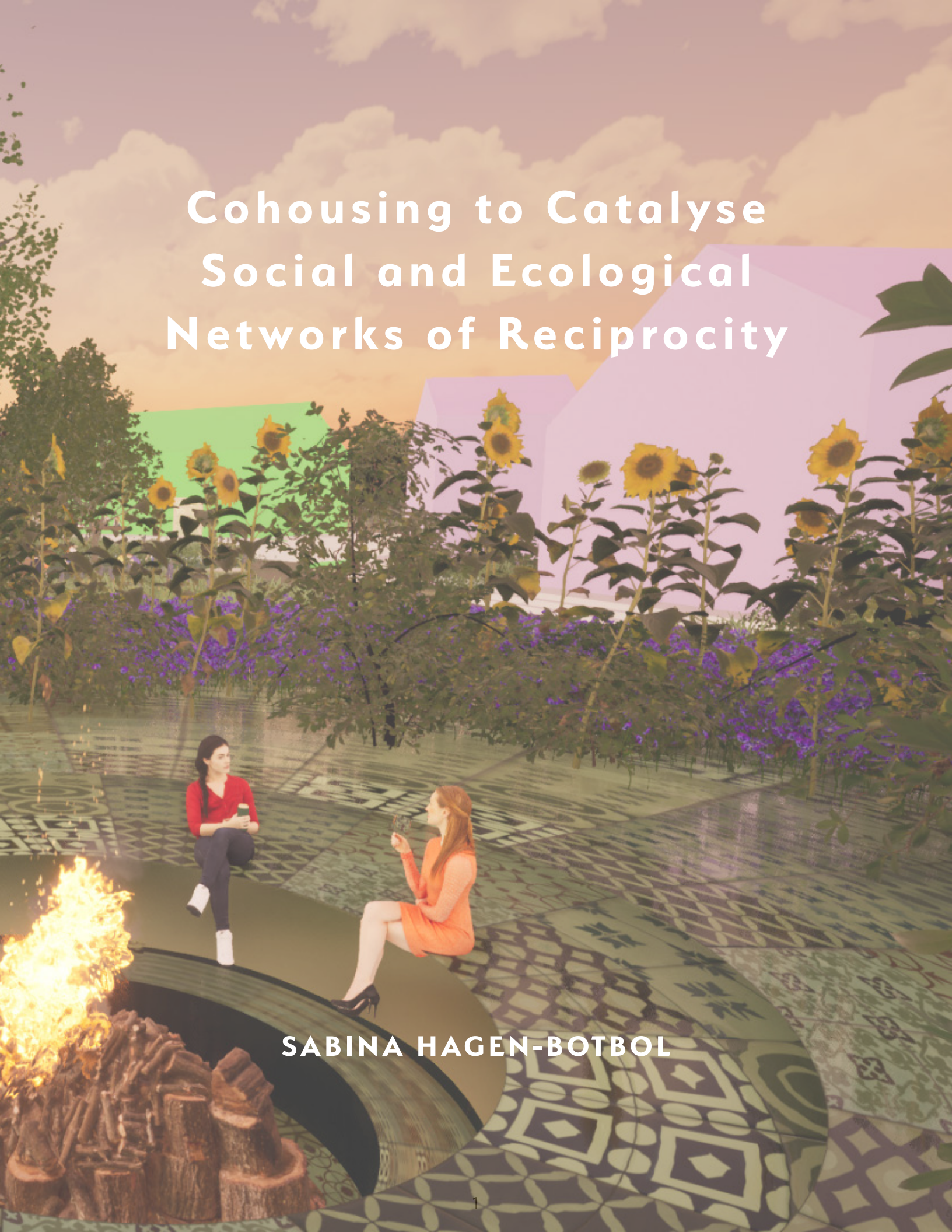


Cohousing to Catalyse Social and Ecological Networks of Reciprocity

SABINA HAGEN-BOTBOL

ACKNOWLEDGEMENTS

Thank you Rob Ribe for suggesting the topic of cohousing knowing that it was a strong foundational concept for my interests in community design and habitat restoration. Rob's extensive career and diverse expertise has been invaluable in developing those elements of this project. Thank you to Mark Eicheid for helping me to thoughtfully navigate and develop the foundational concepts of this work. Thank you to Harper Keeler for guidance and insight for farming with reciprocity. Thank you to Michael Fifield for sharing his expertise in cohousing and community design. Thank you to Jean Denis for welcoming me to her farmland where this project is based. Thank you to Leslie Ryan and Skeeter Duke for meeting with me and sharing their knowledge. Thank you to my friends, classmates, professors, and family who have participated in and supported this project extensively. If I can share even a drop of all these inspiring insights through this work, I know it will be something wonderful.

BACKGROUND

My clinic work has been to develop a cohousing framework and schematic design intended to catalyze social and ecological networks of reciprocity. Cohousing is an alternative form of housing that enables social support.

This project aims to design a site to promote living with a deeper sense of community by integrating social and ecological relationships for enhanced quality of life.

SUMMARY

COHOUSING DEFINITION

"A housing form that combines individual dwellings with substantial common facilities and activities aimed at everyday living" (Larsen, 2019)

A "multifamily housing with enhanced community facilities and amenities [that] include a place to break bread together, the availability of shared tools and household items, smaller private kitchens oriented toward common spaces, and remote parking that invites interaction with others" (Durrett et. al., 2021, p. 1)

COHOUSING HISTORY

The cohousing concept originated in Denmark in 1963.

McCamant et al. mention the ancient beginnings of the cohousing concept that "reestablishes many of the advantages of traditional villages within the context of late twentieth-century life." (McCamant et. al., 1994, p. 9)

Cohousing is a recent advent that seeks to reintroduce the communal lifeways to individual centered capitalist culture which isolates rather than empowers.

Cohousing is now popular globally with about 200 completed projects in the US alone. (Durrett et. al., 2021, p. 1)

COMMUNITY

Community benefits of mutual support are often lost in highly individualistic societies.

A functional community serves to meet basic needs but does not go beyond that.

A conscious community meets basic needs as a functional community does and, in addition, actively recognizes personal expression, growth, and fulfillment of all involved. (Shaffer, C., and Anundsen, p.11)

Cohousing is designed to facilitate community. By including the intention for conscious community with the vision and project goals. This provides a foundation to build relationships of reciprocity, giving and receiving.

SOCIAL AND ECOLOGICAL RECIPROCITY

While the concept of cohousing primarily aims to strengthen mutual support between human communities, there has not been a focus on integration with nonhuman ecosystems. Extending reciprocity to nonhuman ecosystems and landscape itself is an opportunity that has been largely overlooked in existing cohousing projects.

Cultures that acknowledge animacy of the land and operate through gift giving economies exist in indigenous cultures throughout the world today and characterized cultures of our ancestors across the globe pre-Bronze age (Gimbutas, M., 2005, p.7376).

SOCIAL AND ECOLOGICAL RECIPROCITY: CHINA

While most mainstream cultures have eliminated these lifeways through violent systems of domination over thousands of years, ecological city theory and practice in China demonstrates ancient practices that have been retained in some capacity to this day.

In China, humankind is thought of more traditionally as "from nature but beyond nature". This standpoint recognizes both our unity with nature and a conscious ability to integrate natural patterns and processes into human activities (Chen, X., and Wu, J., 2009).

From these foundations, systematic principles, such as the "waste-product circulation principle" that presents closed loop system approaches, and "peach blossom spring," that invites us to attune with nature to work with it, have been developed to maintain harmonious relationships with humans and their environment (Wang et al., 1997 and Wong, K., 2006).

Right: Peach Blossom Spring by Ou Haonian

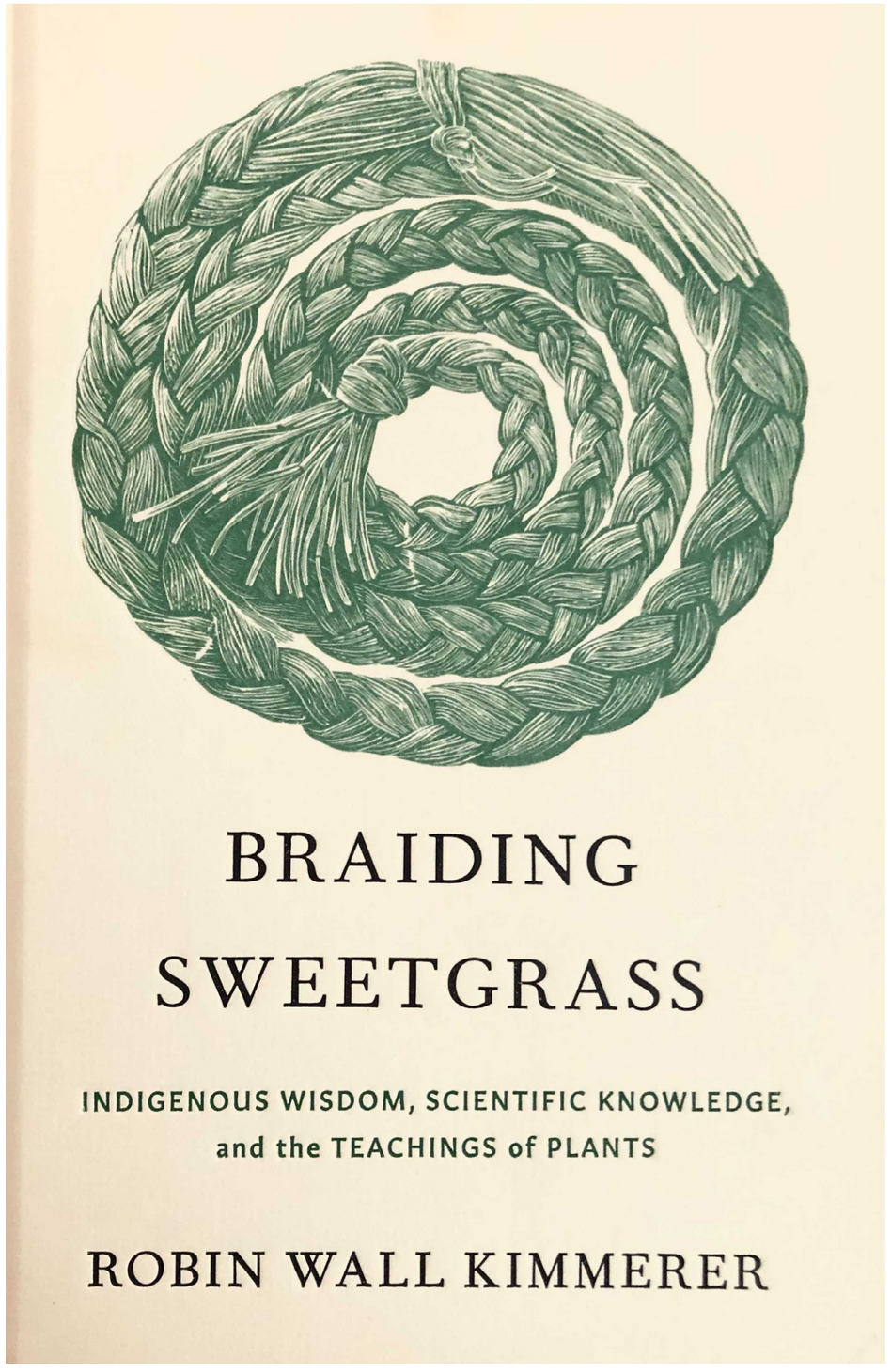
SOCIAL AND ECOLOGICAL RECIPROCITY: BRAIDING SWEETGRASS

In her book, Braiding Sweetgrass, Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants, Robin Wall Kimmerer offers direction for living a life of ecological reciprocity.

Kimmerer explains that extraction and monoculture society lacks ecological humility, takes without giving back, relies on infinite growth that cannot last on a finite planet, treats people and the land as commodities and sees private land as a bundle of rights.

Kimmerer tells us that, "society tricks us into believing that belongings will fulfill our hunger, when it is belonging, we crave," (Kimmerer, 2013, p. 300)

Rather than continuing this way, we can live by the honorable harvest through which we only take what is given, use it well, have gratitude for the gift, and reciprocate the gift (Kimmerer, 2013, p. 178).



SOCIAL AND ECOLOLOGICAL RECIPROCITY: COHOUSING INTENTIONS

These ideas can strengthen cohousing. Concepts of commonwealth manifest in community space, activities, and food.

Gratitude and responsibility are tied to relationships within the community and with interconnection to the surrounding communities and landscape.

Established concepts of Danish cohousing reintroduce communal living to western culture. Additional principles such as the gift economy and peach blossom spring should be integrated into cohousing to facilitate social and ecological reciprocity.

I seek to do so by creating a framework that can be applied in any cohousing project and applying it as a pilot design process in Fall Creek, Oregon.

Cohousing to Catalyze Social and Ecological Networks of Reciprocity: Framwork & Pilot Design in Fall Creek, Oregon

GOALS

A cohousing framework will be developed to intentionally fill gaps in existing cohousing projects in terms of design that incorporates relationships of reciprocity with productive landscapes, closed loop systems, habitat restoration, and reciprocity with the surrounding community.

This framework will be developed in parallel with the design development of a cohousing community in Fall Creek Oregon. This effort is an opportunity to integrate relationships of reciprocity while leaving space and agency for future residents to codesign a community that supports community needs, wellbeing, and fulfillment.

RESIDENTS

Through the course of this project, I have collaborated with potential residents who are my close likeminded friends.

Accounting for ourselves, close friends, and family, as well as children, we estimated a cohousing community of 25 people, for which 12 units would be sufficient.

This project is designed with the needs and input of this group, with the freedom of creating a conceptual project.

Together our mission statement is:

"Living in harmony with each other and the land."

DESIGN GOALS

Design goals I aimed for include:

1. *Creating a customizable design framework that supports reciprocity in cohousing. This model will be largely based on existing cohousing frameworks but will incorporate a more intentional landscape analysis and design process that creates connection to the landscape, site, and context, surrounding communities, productive landscapes, closed loop systems, and habitat restoration.*

2. *This framework aims to be customizable for the design and implementation of a rural cohousing community that can adjust to the needs and values of the residents over time. This process would proceed via community workshops beyond this project. These would be based on existing cohousing workshop models that take the needs and values of all residents into account.*

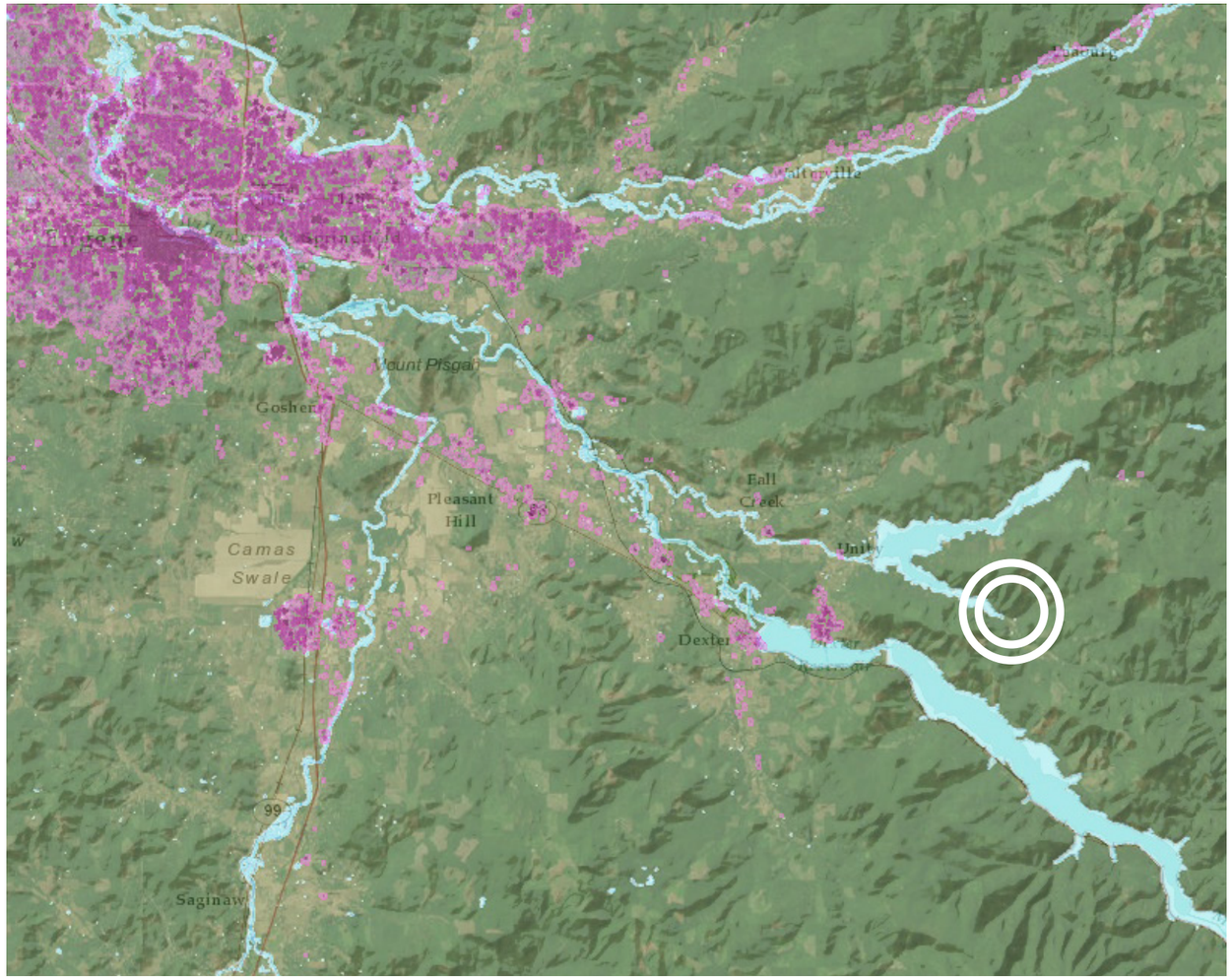
The conceptual design for this project will be created for a small rural farm site located in Fall Creek, Oregon, a 40-minute drive Southeast of Eugene. To introduce the site, we will go through existing structures and land uses. Some of these would be retained in my cohousing design. Additional information about the site will setup a review of the cohousing program and new land uses and infrastructure.

CONTEXT MAP

The conceptual design for this project will be created for a small rural farm site located in Fall Creek, Oregon, a 40-minute drive Southeast of Eugene.

POPULATION

You can see how rural the site is from the reltive population density of the area indicated in pink. This site is far more rural than typical cohousing community locations.




FALL CREEK LAKE
PENINSULA RD
FALL CREEK SITE
To introduce the site, we will go through existing structures and land uses. Some of these would be retained in my cohousing design. Additional information about the site will setup a review of the cohousing program and new land uses and infrastructure.
HORN BUTTE RD
WINBERRY CREEK
0’
60’
120’
240’
360’

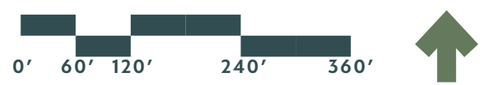
EXISTING STRUCTURES:

Existing structures on the site that can be incorporated into the cohousing project are:

Home to function as common building

12,000 ft^2 green house

Barn: for farming equipment

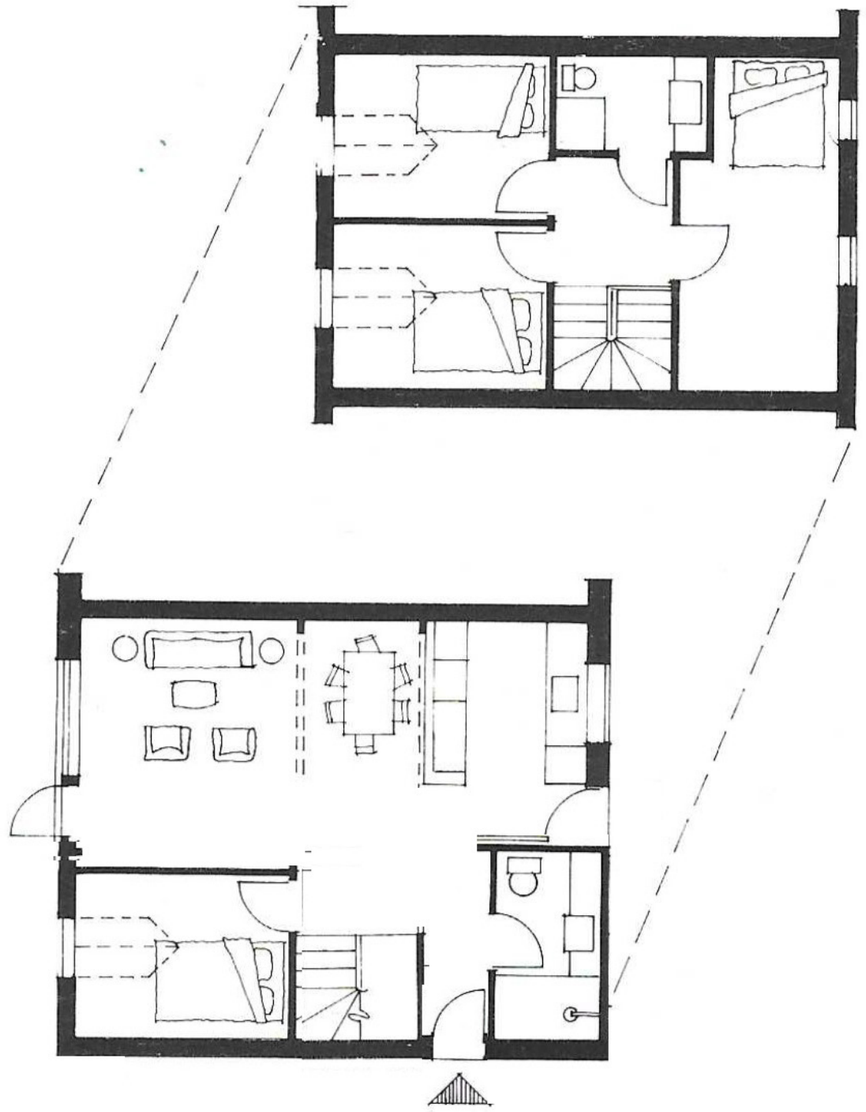


EXISTING HOME

Here is the existing three-bedroom home to be renovated as the common house.

EXISTING HOME

Here is a simple floor plan of the existing home showing the common room and kitchen on the north side, and a potential kid's room on the South side. On the second floor are two additional rooms that could be used as guest rooms or as a common office space. This home is approximately 3000 square feet.



EXISTING HOME

The existing kitchen will be enlarged to cook meals for all residents with larger fridges than those of individual family units that will be described later. It will be remodeled to facilitate regular community meals.

EXISTING HOME

Here is an image of one of the upstairs bedrooms with a porch and skylight, that could serve as the children's education room.

EXISTING BARN

The existing barn is located at the center of the site, surrounded by agricultural field space.

A recent image of the barn is shown here. It has been sitting unused for years and needs to be assessed for rehabilitation viability and use.

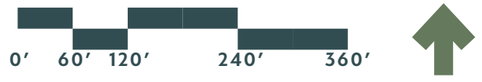
EXISTING GREENHOUSE:

South of the barn is the greenhouse. Here you can see Jean eating lunch in front of it. At 12,000 square feet, the greenhouse provides enough space to supply up to 9 people with produce each year via vertical farming. The greenhouse was constructed using glass that has mostly shattered in years of disuse. The glass could be cheaply replaced with clear, durable plexiglass.

FALL CREEK SITE

EXISTING LAND USES:

Existing land uses and features at the site include a 122-year-old orchard and two fields, and surrounding forest. Nelson Creek with water rights and a pump system flows through the site, under Peninsula Road, and into Winberry Creek. A secondary creek, Nelson Creek's remnant channel, flows into Nelson creek from the South and creates a small pond at the center of the site.



ORCHARD

The orchard is located north of the common house. This is a view of the orchard from the main house upstairs porch.

Tree varieties over 100 years old, that may be heirloom, include several apple varieties: King, Golden Delicious, and Northern Spy as well as some pear trees.

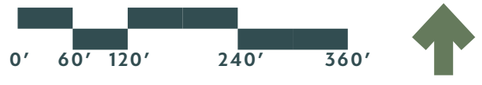
Jean was able to plant more trees here in 1989 including plums, cherries, and mulberry trees. Pruning has been maintained for upkeep.

NELSON CREEK

EXISTING LAND USES:

Nelson Creek is a perennial fish bearing stream, emphasized here by a dashed line. You can also see the remnant channel south of the creek. The current stream path was likely diverted, leveed and straightened by a previous owner.

Nelson Creek flows into Wineberry Creek, just outside the property line, that feeds directly into Fall Creek reservoir.



NELSON CREEK

This image shows Nelson creek flowing into the culvert to pass under Peninsula Road.

IRRIGATION

EXISTING LAND USES:

Jean has water rights to Nelson Creek for agricultural use. This diagram shows how water from Nelson Creek is pumped into the front field for irrigation.

The largest agricultural field on the site is located on the west side and has been farmed more intensively in recent years.

0′ 60′ 120′ 240′ 360′

FRONT FIELD & PUMP

This top image shows a south facing view of the front field and the bottom image is myself with the irrigation pump.

BACK FIELD

At the east side of the site is a smaller field surrounded by forest.

This is a view entering the back field from near the barn during a site visit in early spring.

SURROUNDING FOREST

Here you can see a couple of images of Jean in the surrounding forest. The top image shows fir trees she planted 30 years ago, and the bottom image shows forest at the northern border near the recent clearcut.

HISTORICAL IMAGES

June 1994

July 2000

July 2005

July 2011

August 2012

June 2014

June 2017

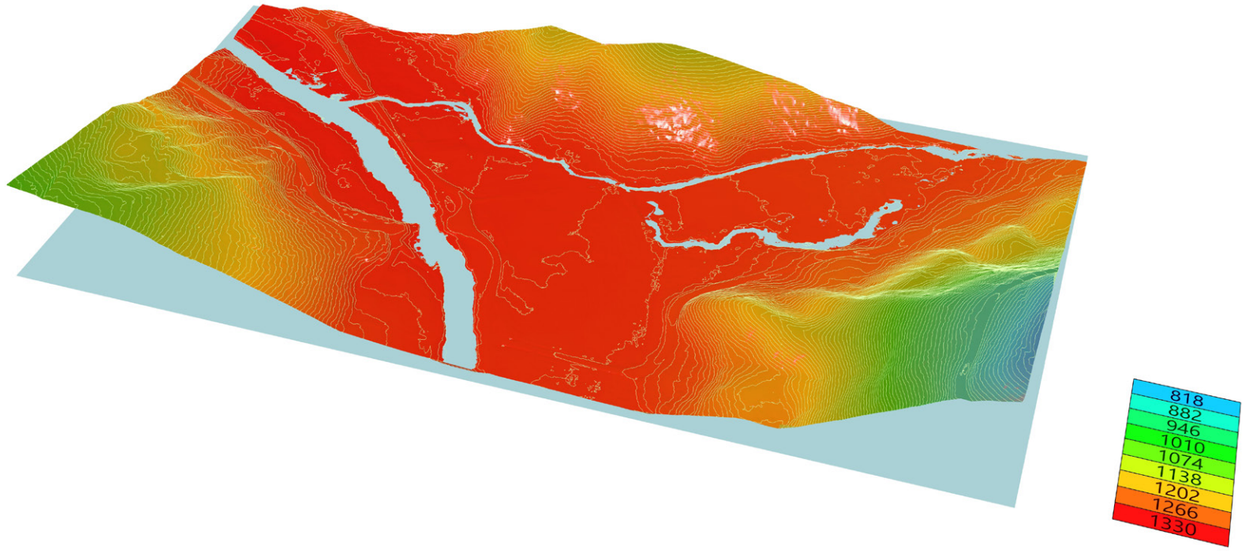
July 2021

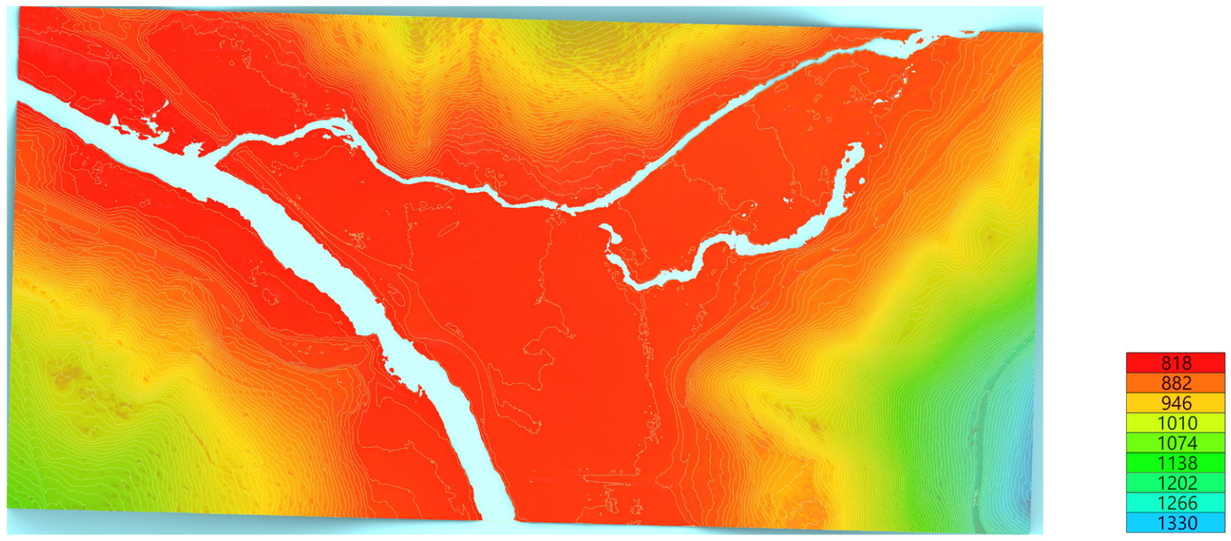
These Historical images show land use and suggest management of the site during summers from the mid 90's to 2021 when there was a significant clear-cut to the Northwest. You can see intensive farming occurred on the Eastern field in the mid 90's, then both fields were either fallow or cover cropped until 2011 and 2012. Then both fields were fallow until 2017 after which the front field was planted but the back field has only been mowed.

ELEVATION

Here you can see a couple of images of Jean in the surrounding forest. The top • Here are general elevation trends of the site, lower elevations shown in red at the floodplain.

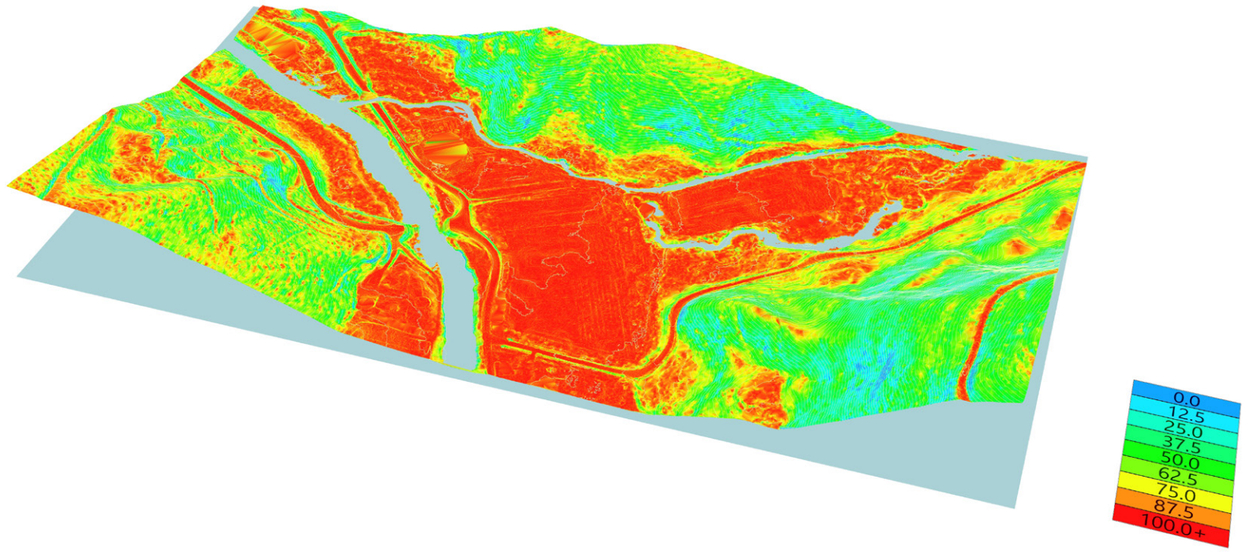
We see here that the site is located at the convergence of two valleys.

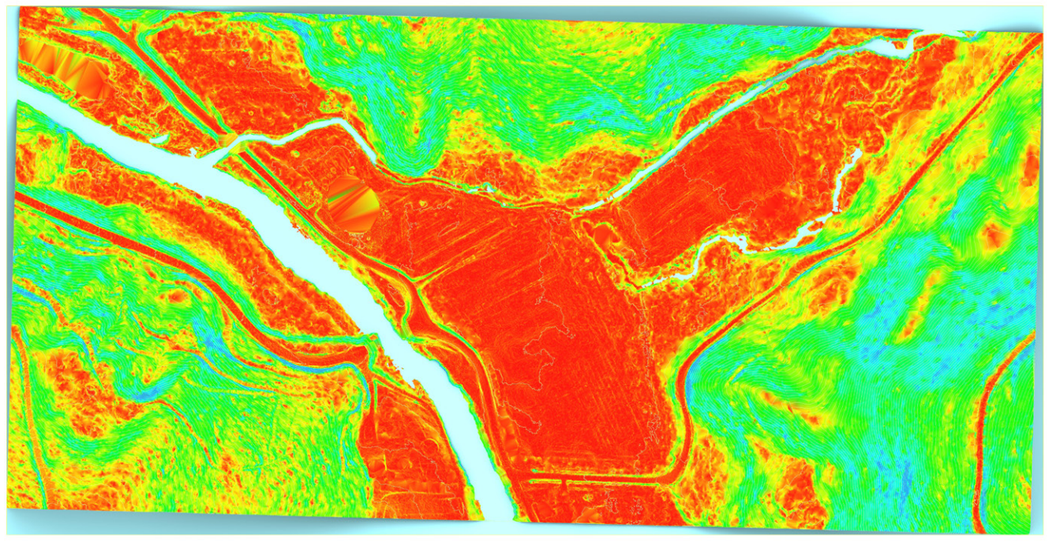




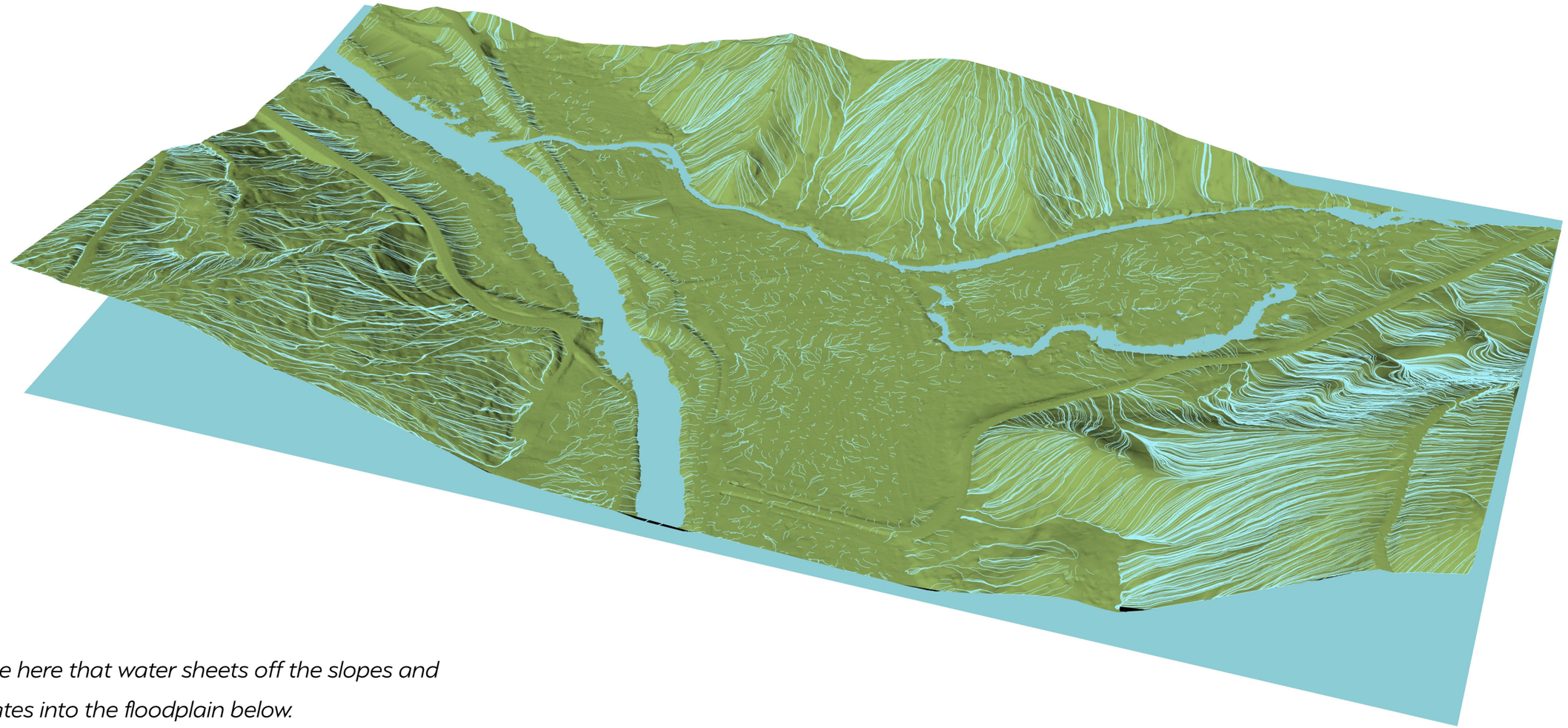
SLOPE

The slope of the site is represented here. You can see a majority of the site is relatively flat in red, with steep slopes cradling the site.





HYDROLOGY



We see here that water sheets off the slopes and saturates into the floodplain below.

USDA SOILS

Soil in wooded regions of the site can support habitat restoration. The primary focus of soil on the site is agricultural soil in the historic floodplain. This region consists of two variations of silty clay loam, which are prime farmland soils for Oregon.

A1: Abiqua silty clay loam
- 0-21 in silty clay loam
- 21-38 in silty clay
- 38-60 in gravely clay loam

78: McAlpin silty clay loam
- 0-14 in silty clay loam
- 14-60 in silty clay

PROGRAM

We will now go through my design program with intended design elements.

Land Uses will include:

- *Self-sustaining intensive farming in existing fields. [.44 acre per person. .44*25= 11 acres.]*
- *Vertical farming in repaired existing greenhouse [9 people sustained, .44*16= 7 acres]*
- *Earth worm composting*
- *Native plant nursery for habitat restoration*

PROGRAM

Livestock for the project will include:

- *A mobile chicken coop for eggs. [(Eggs, Meat?, Manure) 300 eggs/person/ year*25=7500eggs/250= 30 chickens (mobile coop) * .01 acre = .3 acres]*

- *Goats with a mobile shelter for blackberry management, habitat restoration, crop management, and manure. [(Cheese, Manure, Grazing): 50'sq per goat (Shelters, warmth, and protection) 10 goats (mobile shelter): 500' sq]*

- *There will be ten beehives for honey production. Hives will be located near orchards, crops, and flowering cover crops.*

PROGRAM: HOME UNITS

Additional housing elements on the site will be 12 small home units for residents. Here is my chosen floor plan of 2 bedroom and three bedroom units.

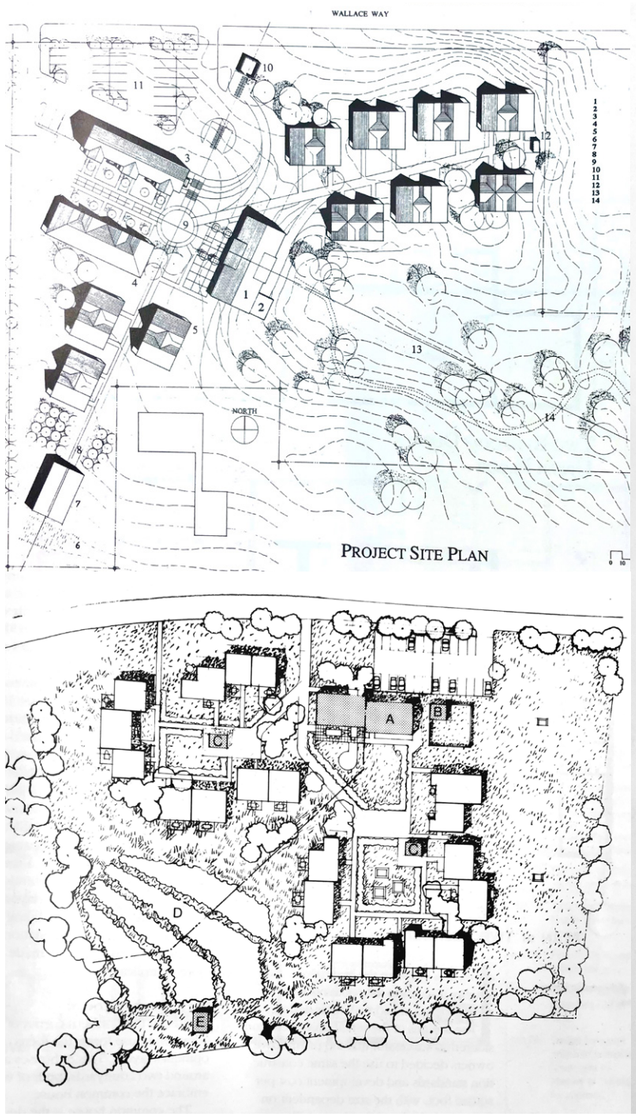
12 home units

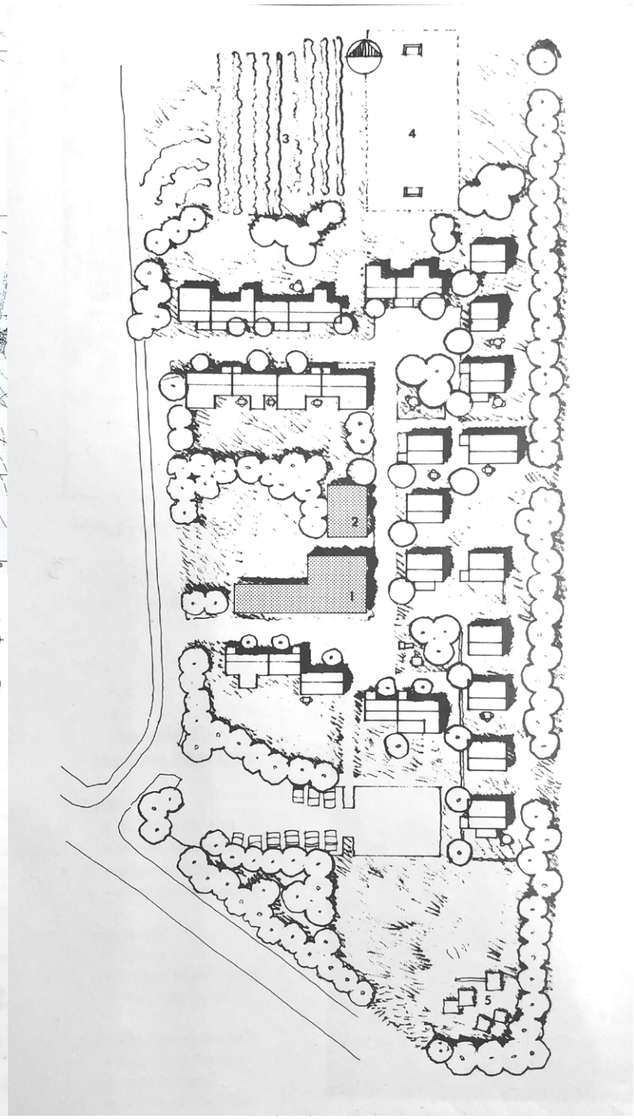
6 three bedroom homes

- *1,200' sq*
- *Footprint: 20' by 30'*

6 two bedroom homes

- *600' sq*
- *Footprint: 20' by 15'*





PRIMARY CASE STUDIES

This project aims to develop a cohousing community in Fall Creek Oregon. It also proposes a framework to incorporate social and ecological reciprocity into any cohousing project. Understanding the variation in co-housing approaches, with varying scales, densities, budget, and urbanism will be a vital foundation for this framework.

The following case studies were selected by Katheryn McCamant and Charles Durrett to illustrate the diversity of cohousing communities, in Denmark where the concept first developed, and later projects that arose in the US (McCamant and Durrett, 1994, p. 6). This diverse selection are useful examples to structure the cohousing framework since they demonstrate a wide scope of elements such as the amount of open space, how densely arranged the units are, and how urban each site plan is composed.

Drejerbanken

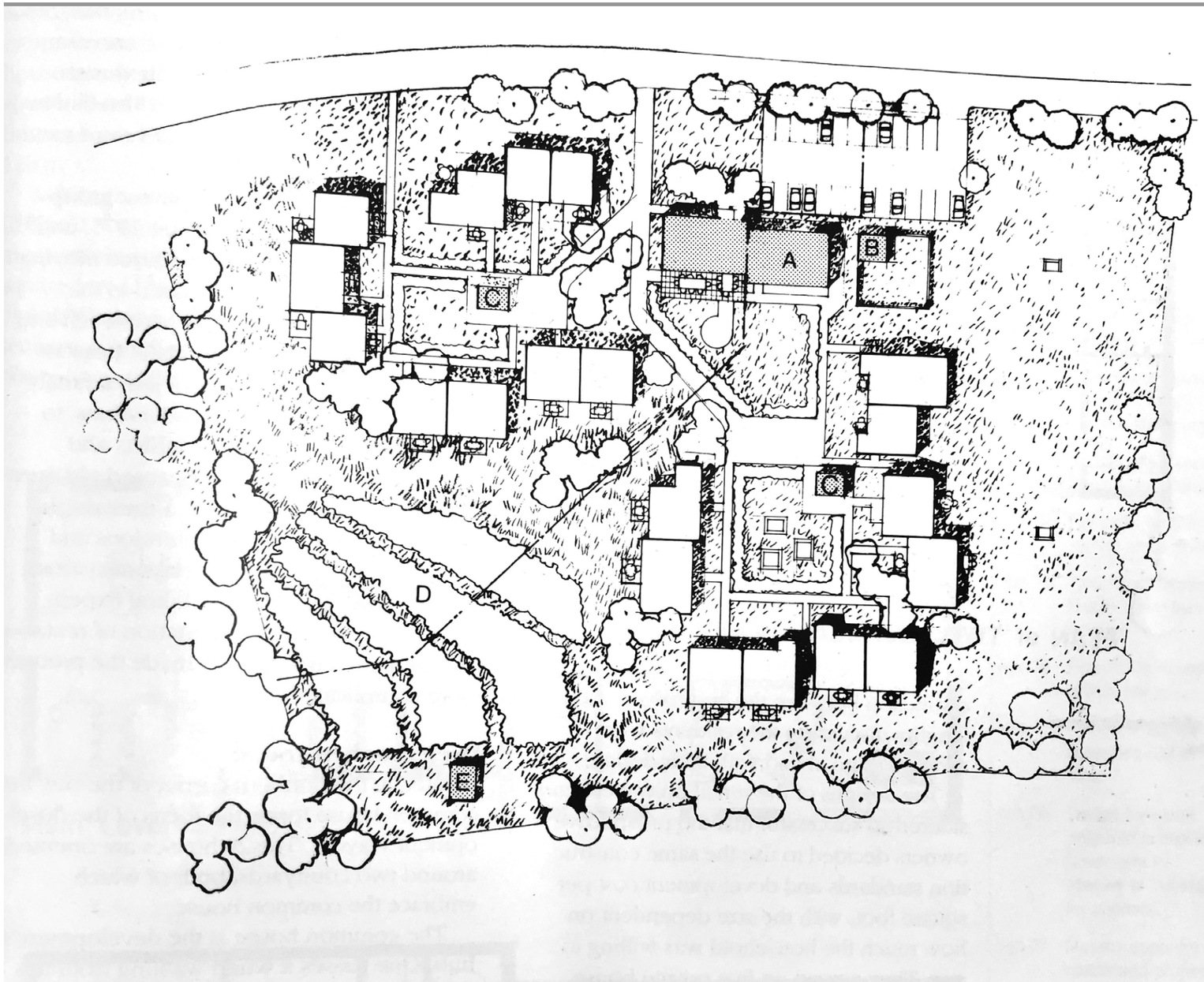
Skalbjerg, Denmark

1978 completion
Half Owners, Half Renters
20 Units
Architect: Arkitektgruppen
Tenure: private and rental
Common house: 5,100 sq ft

The site design for Drejerbanken, shown here, has two-unit clusters, each with their own courtyard, and a central courtyard between the two where the community building and parking are located. This clustering is a spatial arrangement to consider for this project since it provides a scale of outdoor community space, from private, to community cluster, to central community space by the common building. This provides a sense of privacy while creating opportunity for connection. The clustering of homes also leaves ample open space for productive landscapes and habitat.

The combined private and rental tenure for this project was designed for residents with varying incomes (McCamant and Durrett, 1994, p. 110).

Keeping varying investment options in mind is beneficial to consider based on the income of potential residents. This was not developed for my conceptual design.



SUN & WIND

Beder, Denmark

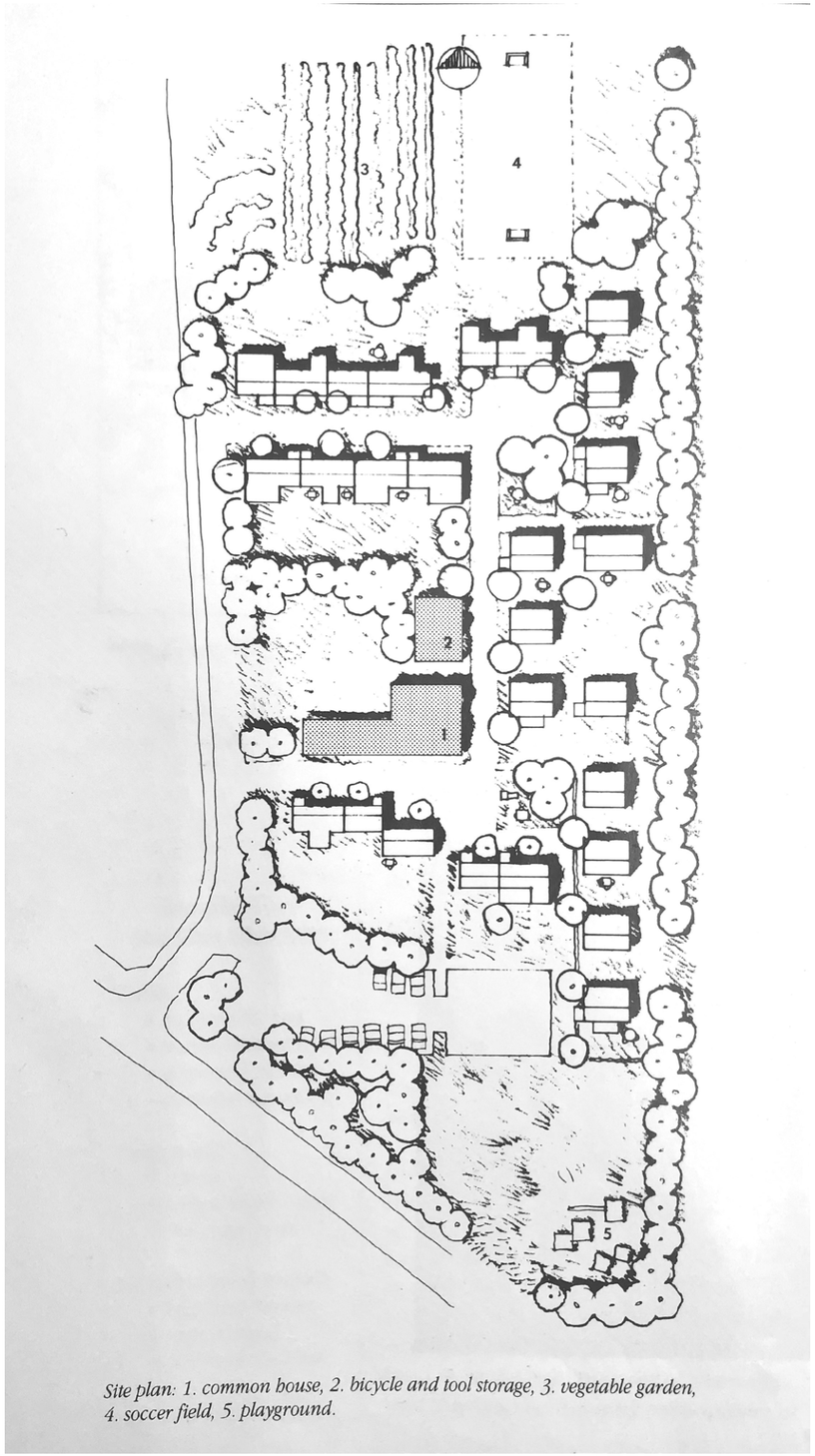
1980 completion
30 Units
Architect: Arkitektgruppen Regnbuen
Tenure: private
Common house: 5,920 sq ft

This project gets 30 percent of total community energy requirements from on-site solar power, 10 percent from wind (from windmill on windy hill 1.5 miles away), and the remaining 60 percent from an incinerator, central gas furnace, and electricity from the local power company (McCamant and Durrett, 1994, p. 49).

The units have a relatively strong South-facing orientation to maximizes photo voltaic sun exposure as well as passive heating.

Incorporating alternative energy production and passive heating and cooling in the Fall Creek site design would be invaluable to reduce the carbon footprint of the community and save money in the long term.

The common house and bike and tool shed are located centrally with open gathering space to support interaction. The garden and playing field are located away from the common house which is a missed opportunity to centralize common outdoor space.



Site plan: 1. common house, 2. bicycle and tool storage, 3. vegetable garden, 4. soccer field, 5. playground.

Winslow

Bainbridge Island, WA

1992 completion
30 Units
Architect: Edward Weinstein Associates
Tenure: stock cooperative
Common house: 5,000 sq ft

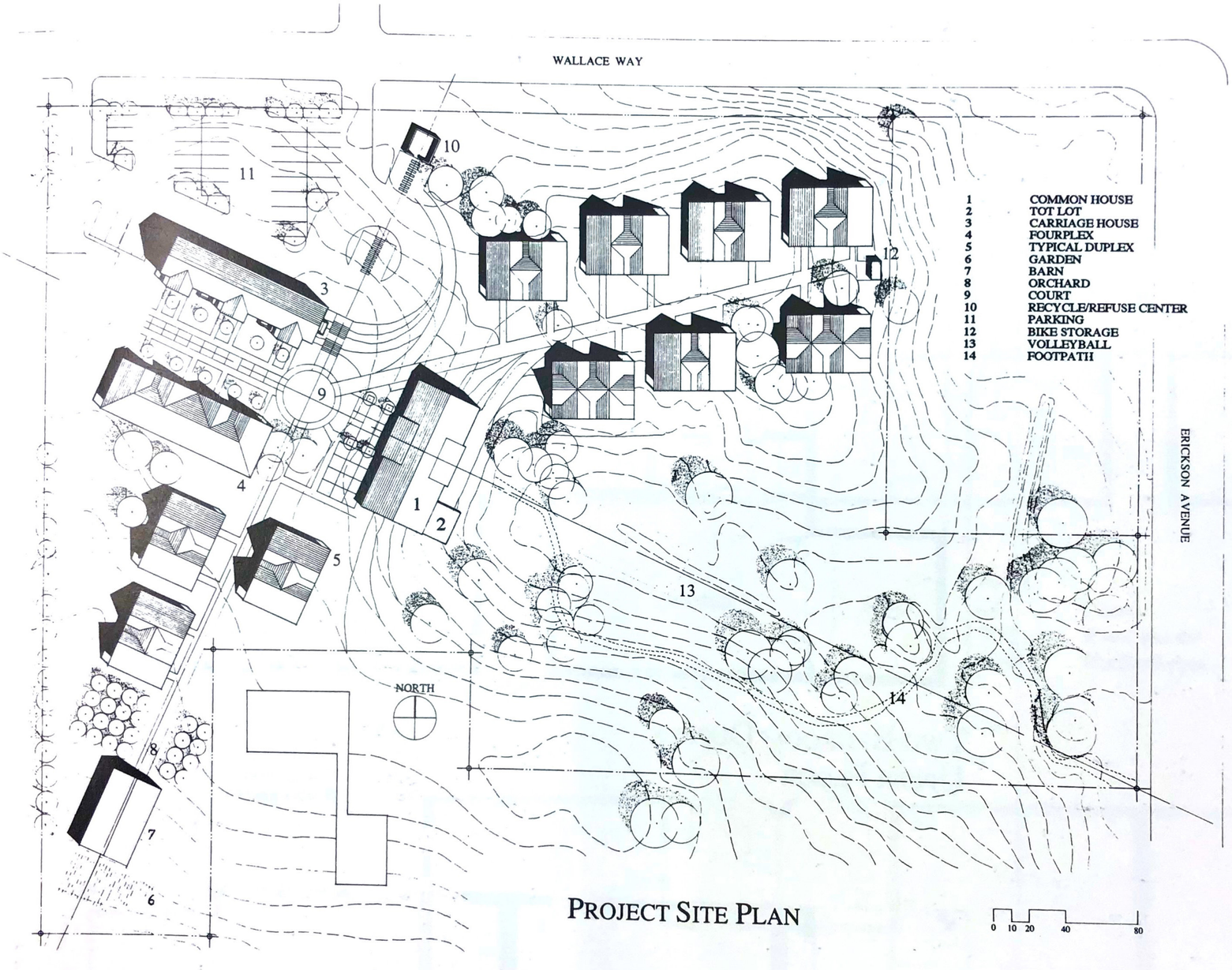
The Winslow cohousing project was developed by residents themselves, rather than an outside developer.

A noteworthy factor in the success of this approach is that many other the members were housing professionals, such as architects, attorneys, builders, carpenters.

The design of Winslow cohousing is a valuable president since it has a strong balance of open space and living space, which is rare given that most cohousing projects are urban. The site design supports community with close proximity of the units with some space for privacy, and maintains ample open space, beneficial for multispecies habitat.

As in the previous two examples, the community garden is located at the very periphery of the site instead of a more central location that could encourage community engagement and accessibility.

(McCamant and Durrett, 1994, pp. 229-231)



PROJECT SITE PLAN

Circular Villages

Neolithic period (c. 5500 to 2750 BCE)

Inspiration can also be drawn from ancient cultures that created circular villages, referred to as nested arrangements. In the Neolithic period (c. 5500 to 2750 BCE) Eurasia's first urbanites developed in Mesopotamia, the Indus valley, Ukraine and China. Some of these circular cities had populations of up to 15,000 - some say up to 45,000 though many of them were smaller villages. This culture lasted over 2,800 years peacefully and without warfare. These egalitarian societies nested arrangements promoted community. Graeber, & Wengrow, D. (2021)

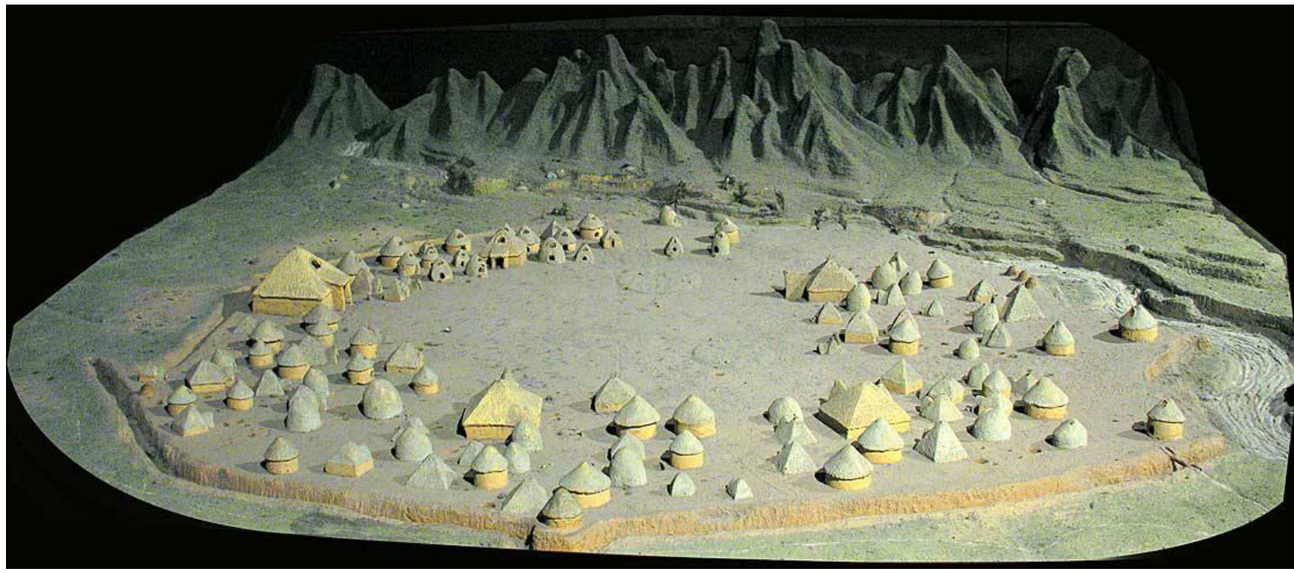
Image: (Gaydarska et. al.)

Circular Villages

Neolithic period (c. 5500 to 2750 BCE)

Houses form neat circular patterns like tree rings with concentric spaces between them

- *Innermost ring: large open space at the center of the settlement*
- *Close study: constant deviation from the norm*
- *Individual households that opt to cluster in groups of 3-10 families*
- *Ditches or pits mark boundary*
- *Groups radiate out from the center and each has at least one assebly house.*



KEY LESSONS

- Provide a smooth transition from private to public space,
- The community building should be centrally located with surrounding community space, to promote community activities, like children's play, gardening, cooking and sharing meals. The central location provides accessibility and a sense of community while promoting safety and support through high visibility.
- Keep homes relatively close together to promote interaction and mutual support and maximize habitat and open space,
- Integrate and localized connections with surrounding human and nonhuman communities through practices like gardening.
- Consider solar exposure for passive heating and cooling as well as photo voltaic power generation.

DESIGN EXPLORATION PRIORITIES

FOR COHOUSING DESIGN

Safety from flooding

Solar exposure

Access to Common house

Strong common space

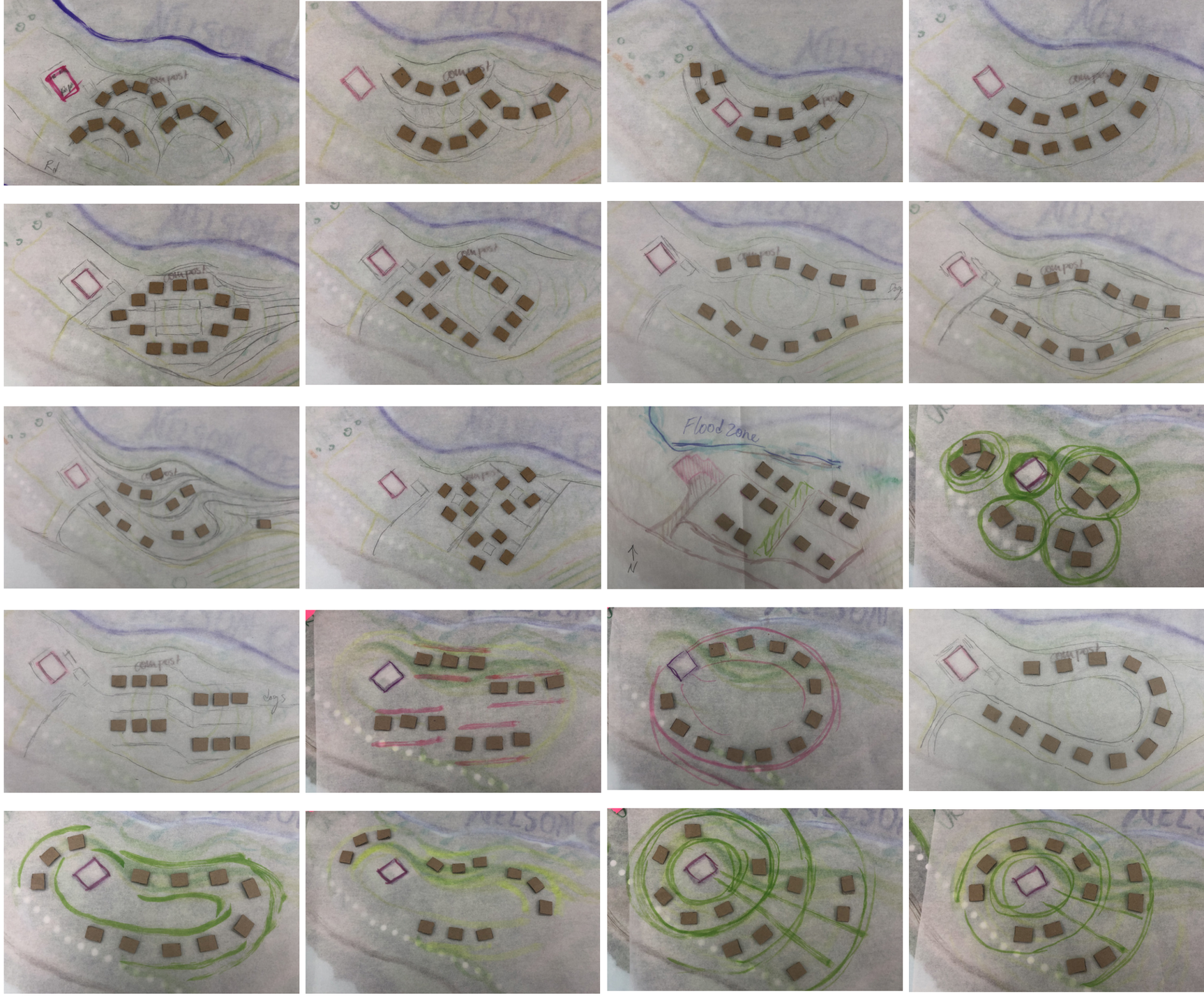
Range of interest access

- *Space for dogs*
- *Space for kids: visible and protected*
- *ADA accessibility*

Connection to orchard, farm, and creek

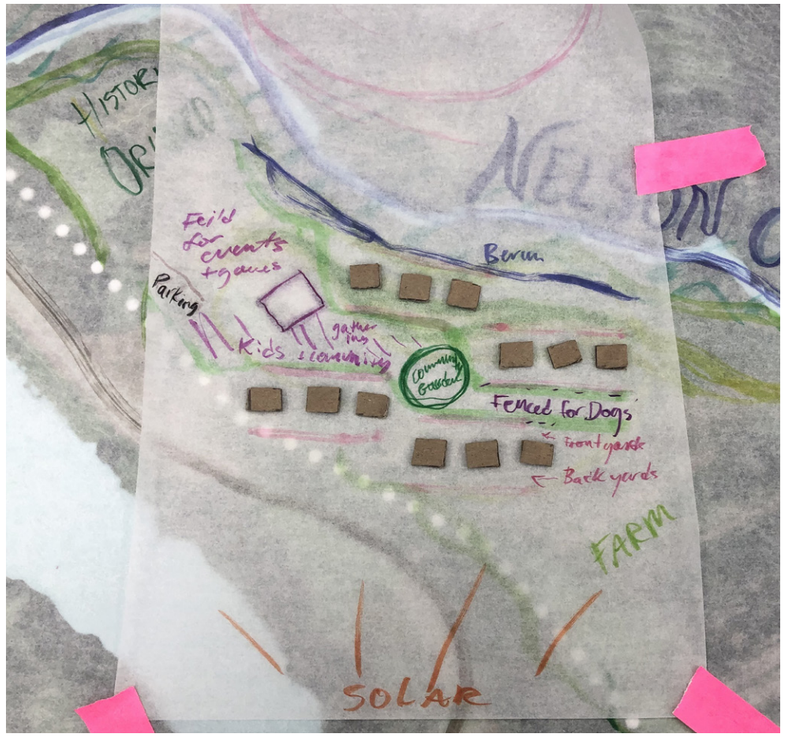
Accessible space for program elements

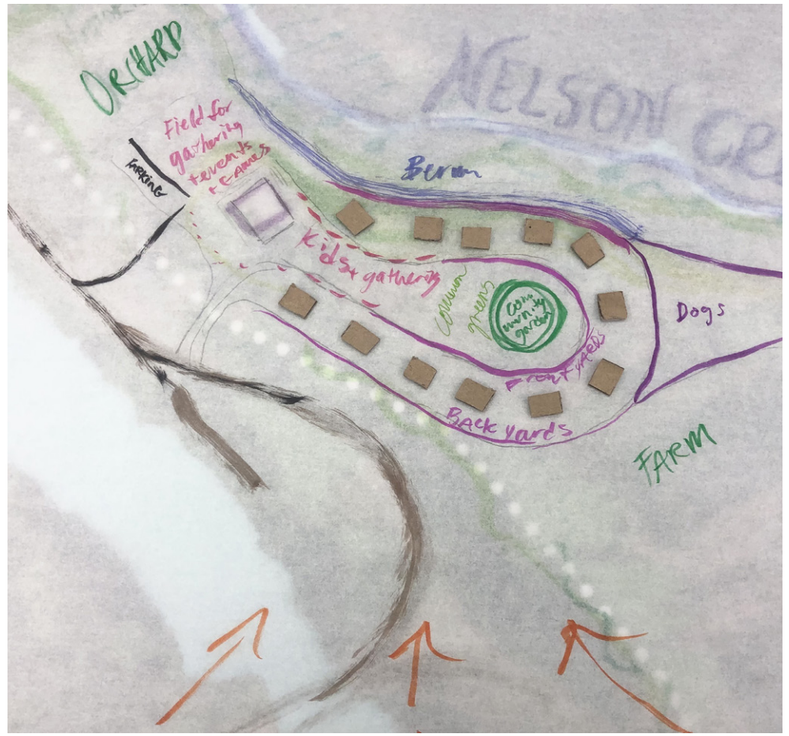
COHOUSING ITERATIONS

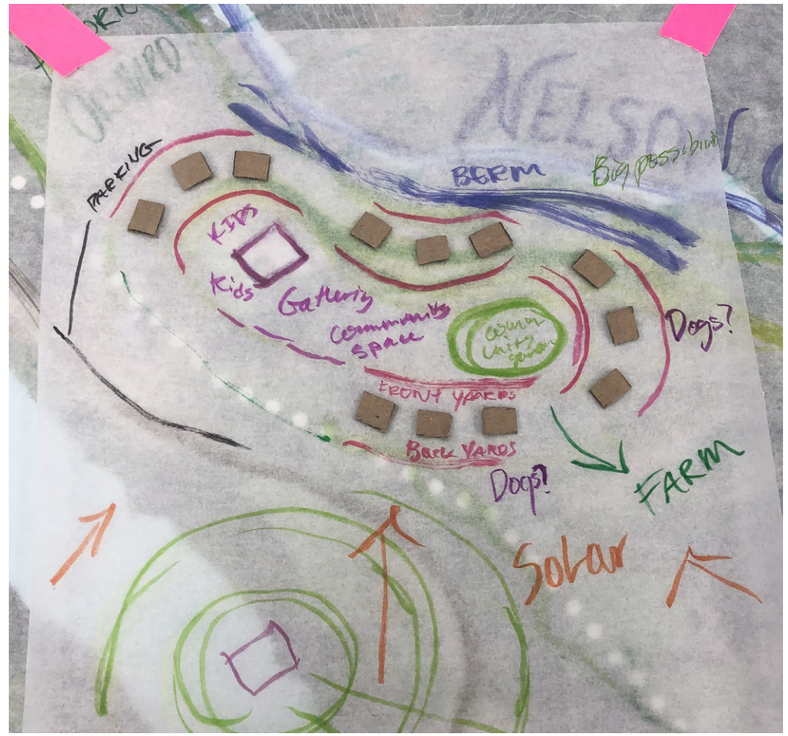


Based on these priorities, 20 potential unit arrangements were created.

SELECTION PROCESS







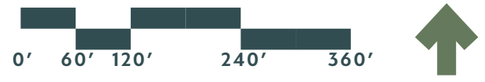
FINAL COHOUSING DESIGN OPTIONS

FINAL SELECTION DEVELOPMENT

FALL CREEK SITE

Restoration opportunity:

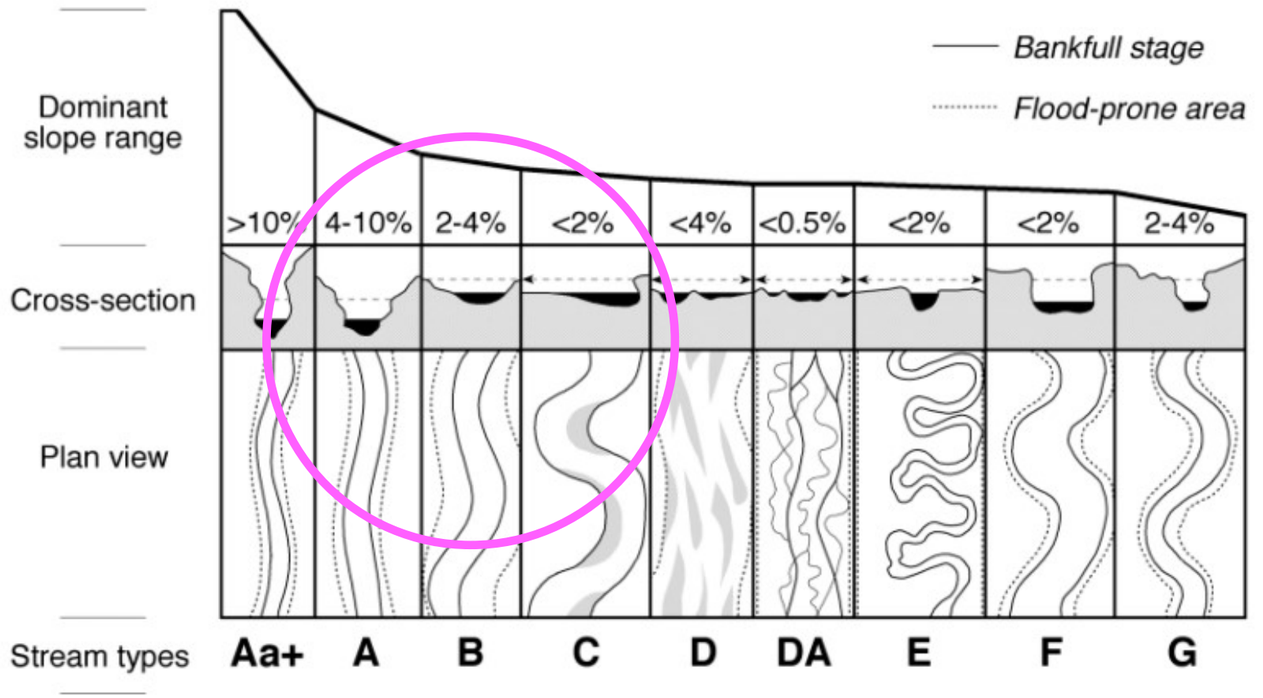
Restoration design of the highly incised Nelson Creek, that flows through farm property in Fall Creek, OR.

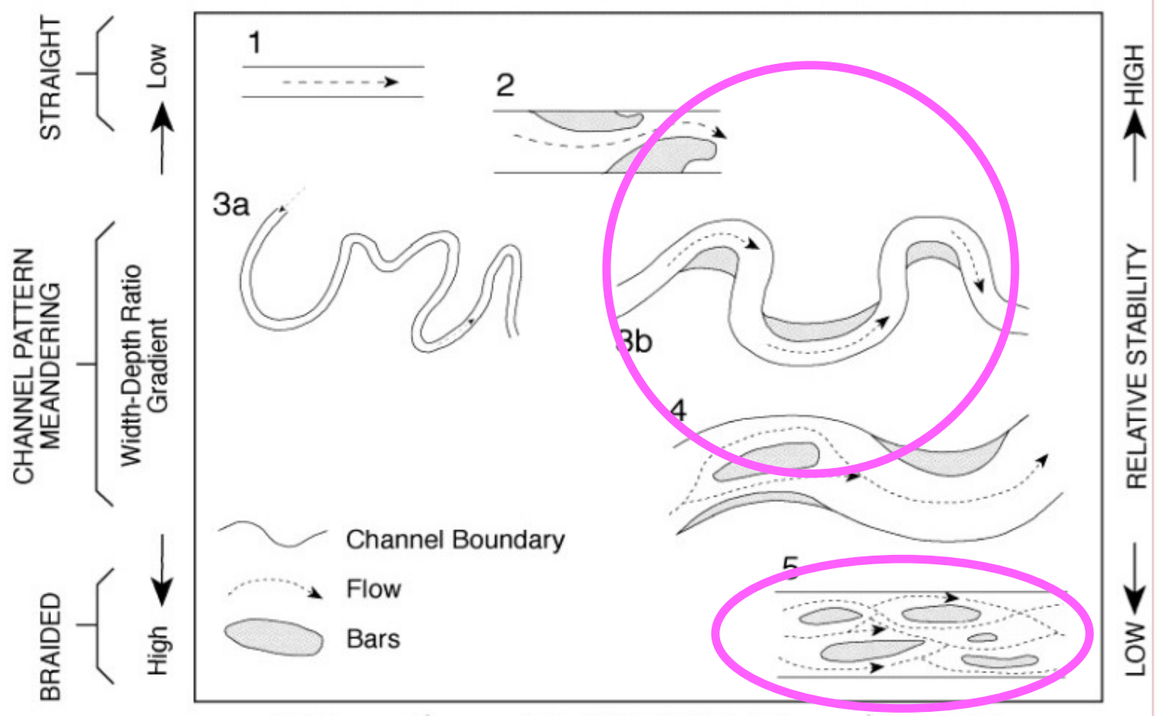


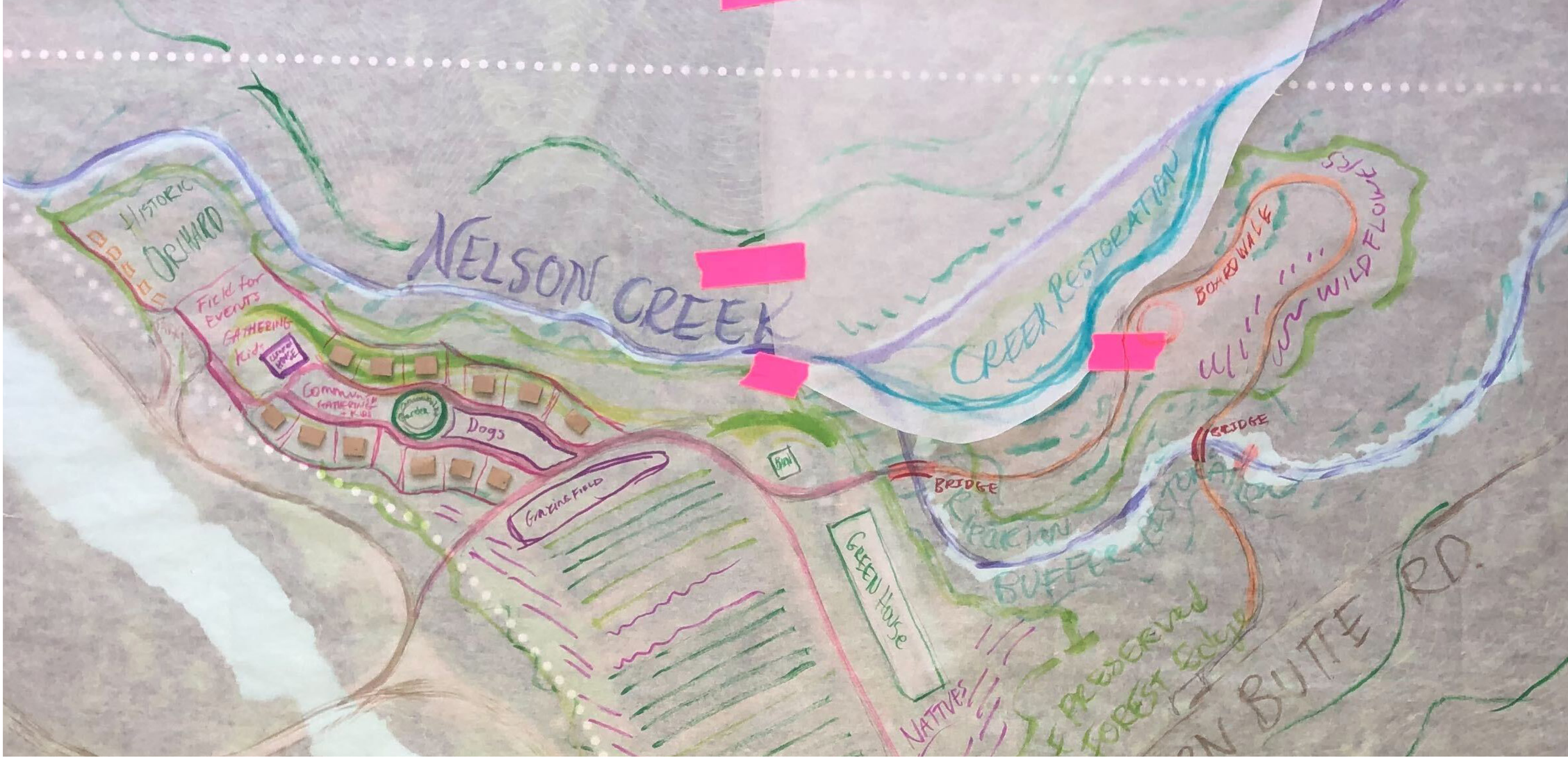
RETURN CHANNEL TO FLOODPLAIN

For restoration of Nelson Creek, stream type B from (circled right) was selected. The site has a 2 percent slope which supports this gently meandering stream type and the riverbed is deep enough for some level of flood control, but shallow enough to reconnect the creek to the floodplain.

To achieve these elements the restoration process would be to use log jam induced bifurcation to divert the channel from the confined toe-slope channel back into the historic floodplain. Regrading of the site would protect agriculture downstream from flooding. Substrate would be added to the old channel to support the diversion process and large woody debris could be added to the site to encourage a new stream path. At this point, the shallow flows would create an anastomosed channel (see 5 circled below). Over time, with the velocity of the 2 percent slope, a meandering channel would form (see 3b circled to the right).






HISTORIC
ORCHARD
Field for Events
GATHERING
Kids
Community Garden
Dogs
GRAZING FIELD
NELSON CREEK
BRIDGE
GREEN HOUSE
NATIVES
CREEK RESTORATION
BOARDWALK
WILDFLOWERS
BRIDGE
BUFFER
PRESERVED
& FOREST EDGE
BUTTE RD.

SITE DESIGN

FINAL DESIGN

COHOUSING

CENTRAL GATHERING SPACE

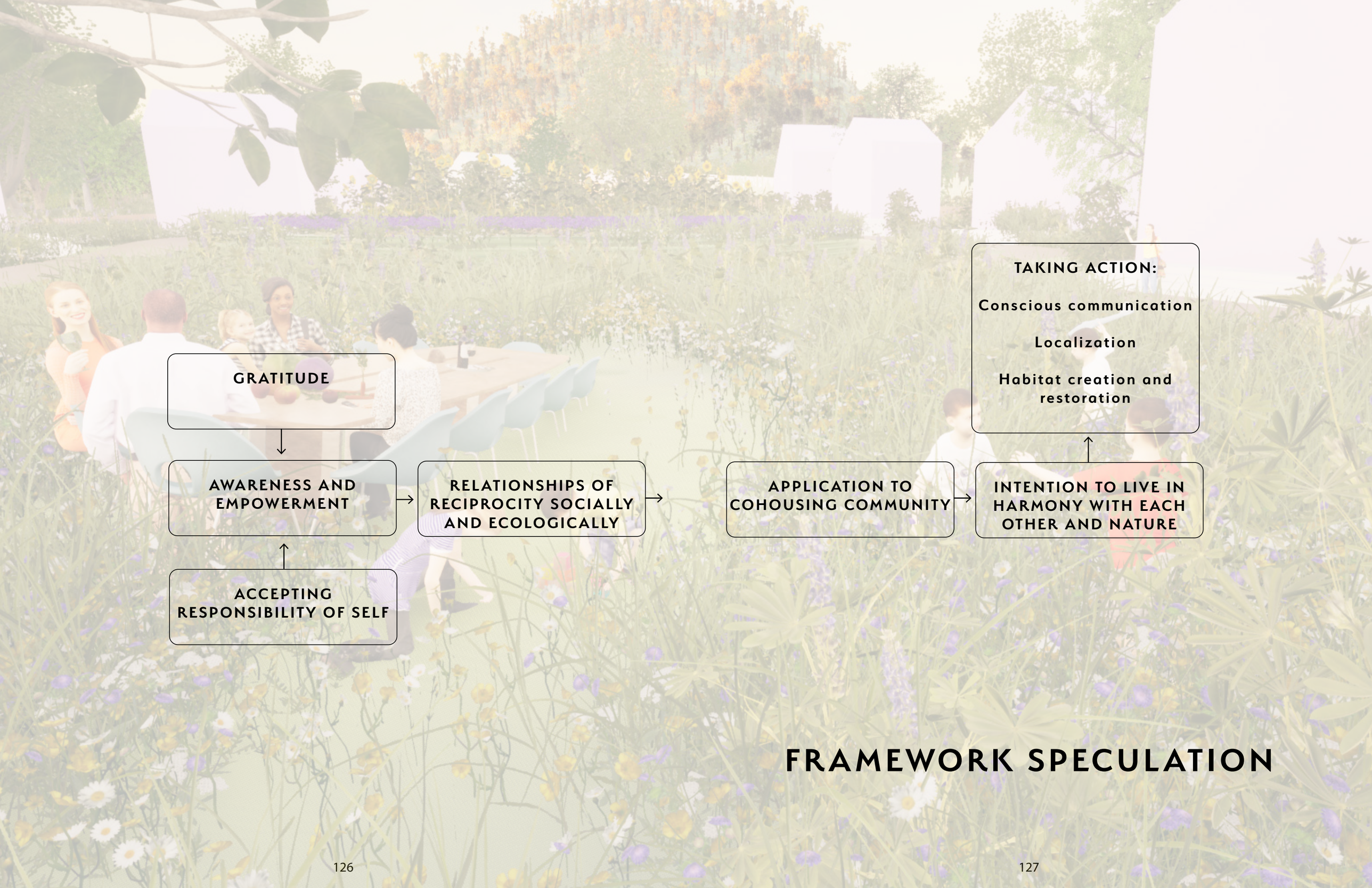
WITH COMMUNITY GARDEN & FIRE PIT

COMMUNITY DOG FEILD

AND GRAZING NATIVE SPECIES RESTORATION

COMMUNITY FARM

RESTORED CREEK



FRAMEWORK SPECULATION

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