A New Type of Farm

Digital Sketchbook

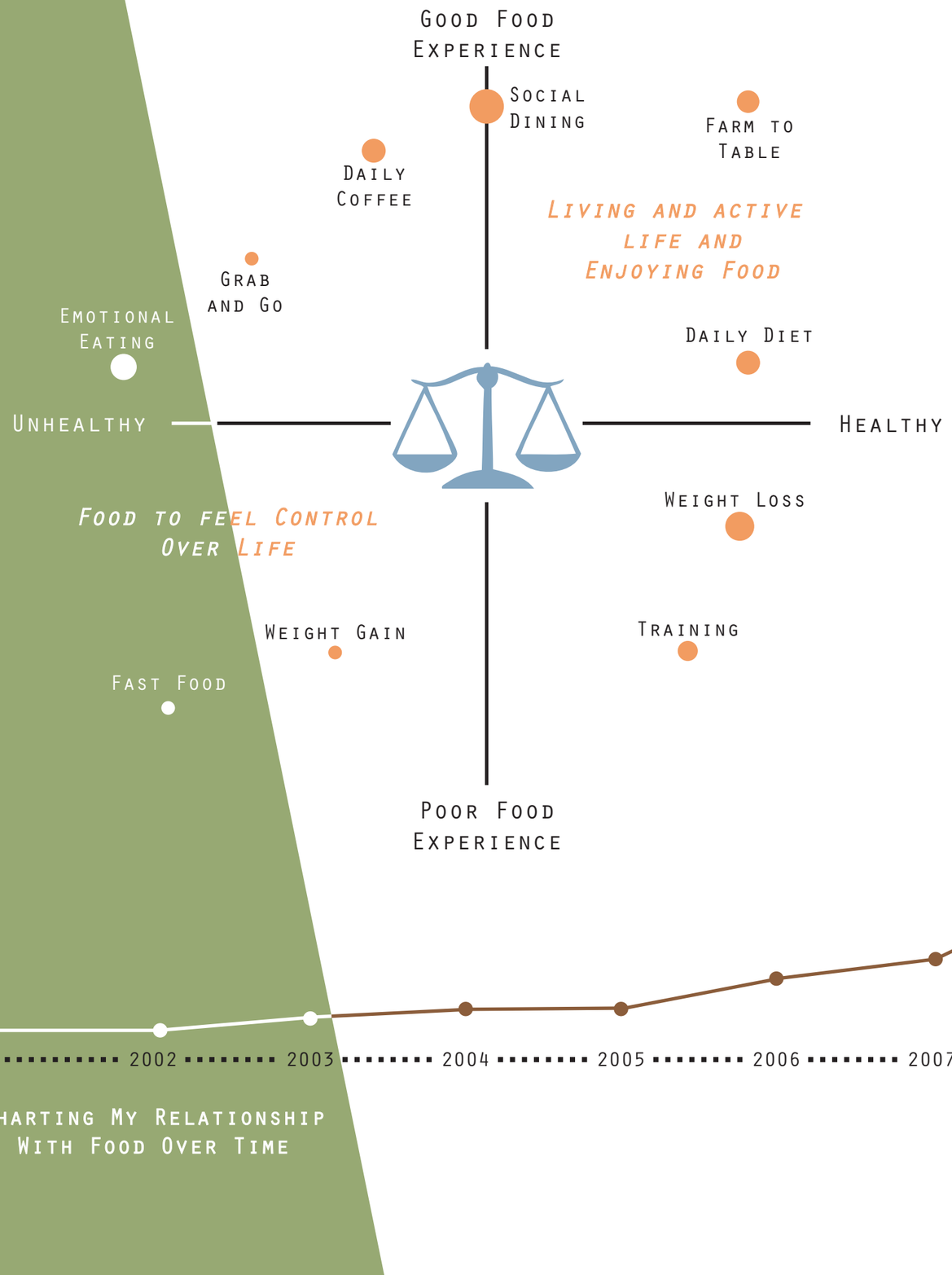
Flocktown Farm

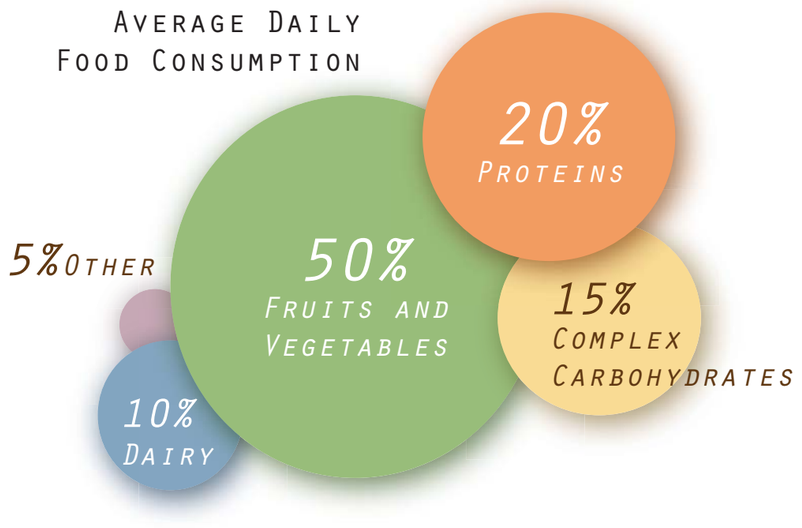
Schooleys Mountain, Long Valley, New Jersey

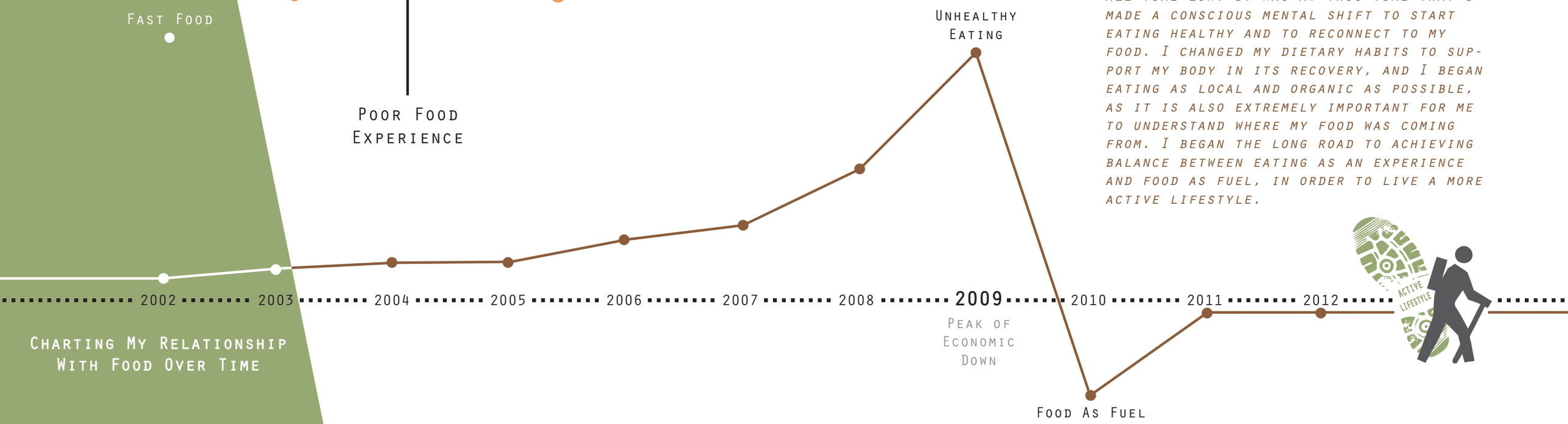
Arch 6170-6171 | Advanced Studio

Patricia Kasch

Food: A Consumer's Relationship







A Conscious Mental Shift:

In 2009, the state of my health hit an all time low. It was at this time that I made a conscious mental shift to start eating healthy and to reconnect to my food. I changed my dietary habits to support my body in its recovery, and I began eating as local and organic as possible, as it is also extremely important for me to understand where my food was coming from. I began the long road to achieving balance between eating as an experience and food as fuel, in order to live a more active lifestyle.

Oatmeal
Cereal
Potatoes
Quinoa
Greek Yogurt

Tilapia
Salmon
Chicken
Pork
Eggs

Spinach
Beets
Arugula
Carrots
Broccoli
Kale
Brussel Sprouts
Green Beans
Squash

Peaches
Strawberries
Bananas
Apples

Agave Nectar
Honey

Milk
Probiotics
Coffee
Wine
Beer

4 miles
To Denver

1-3/4 Mile
1-1/2 Mile
1-1/4 Mile
1 Mile
3/4 Mile
1/2 Mile
1/4 Mile

WHOLE FOODS MARKET

COLORADO FRESH MARKETS

Cherry Creek Farmer's Market

Seasonal

KING Soopers

NATURAL GROCERS

WHOLE FOODS MARKET

Grocery Shop

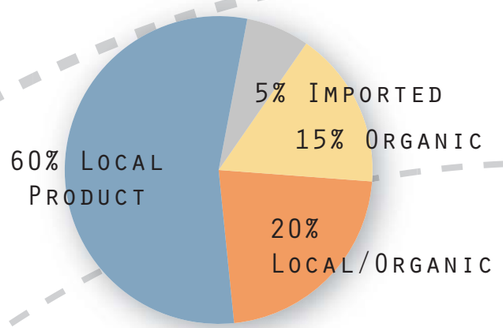
Grocery Shop

Su	M	T	W	TH	F	S

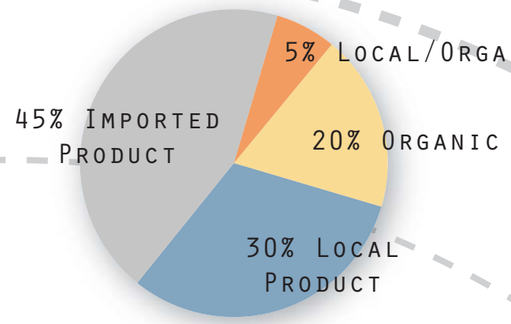
Dine In-Cook
5 Days/Week

Dine Out
2 Days

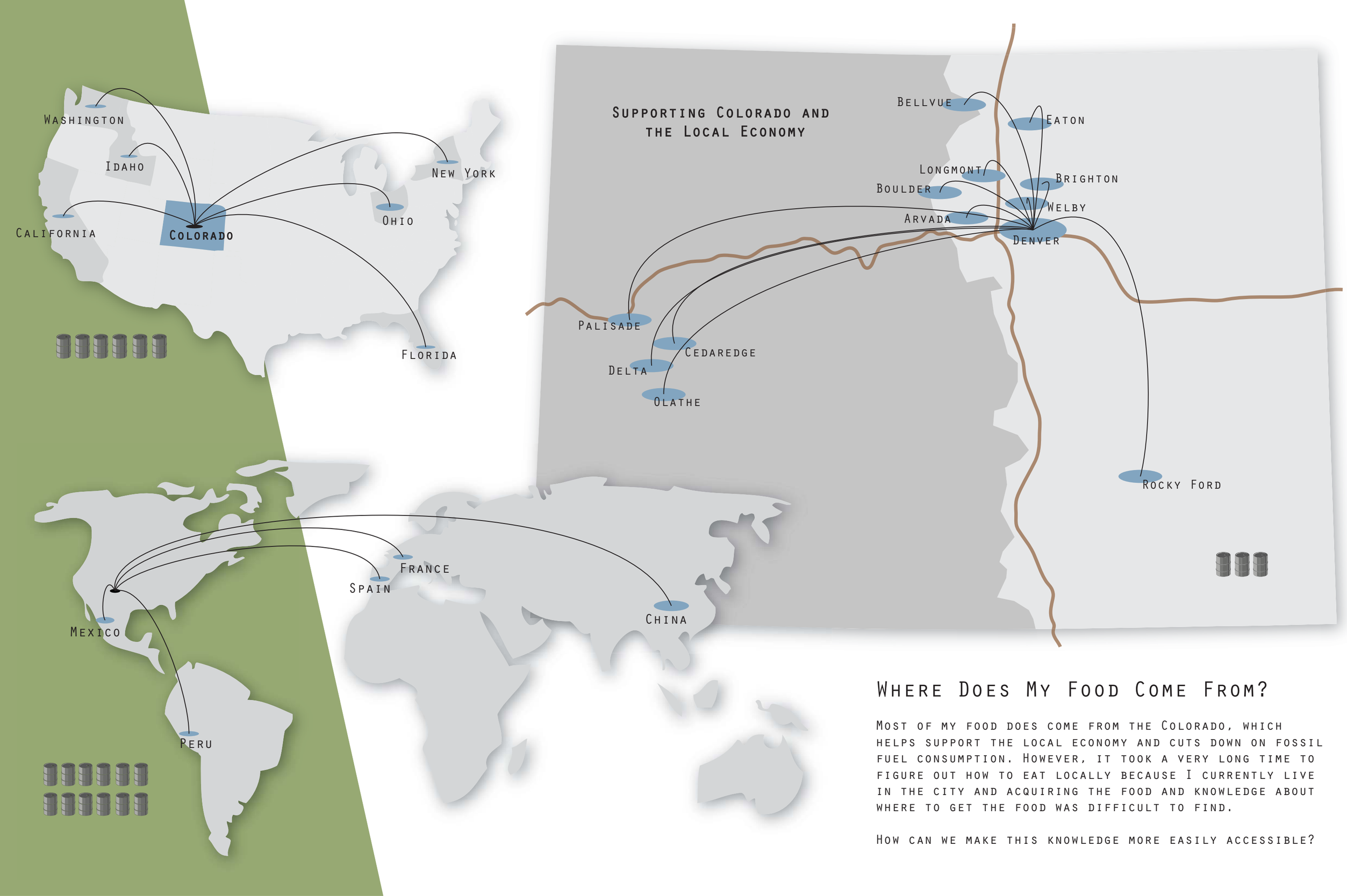
Seasonal Changes - Food Habits



Growing Season
May-October



Off Season
November-April



Where Does My Food Come From?

Most of my food does come from the Colorado, which helps support the local economy and cuts down on fossil fuel consumption. However, it took a very long time to figure out how to eat locally because I currently live in the city and acquiring the food and knowledge about where to get the food was difficult to find.

How can we make this knowledge more easily accessible?

The Industrial Farm

Growing/Raising → Harvest → Factory Processing → Transport Nationally → National Consumers

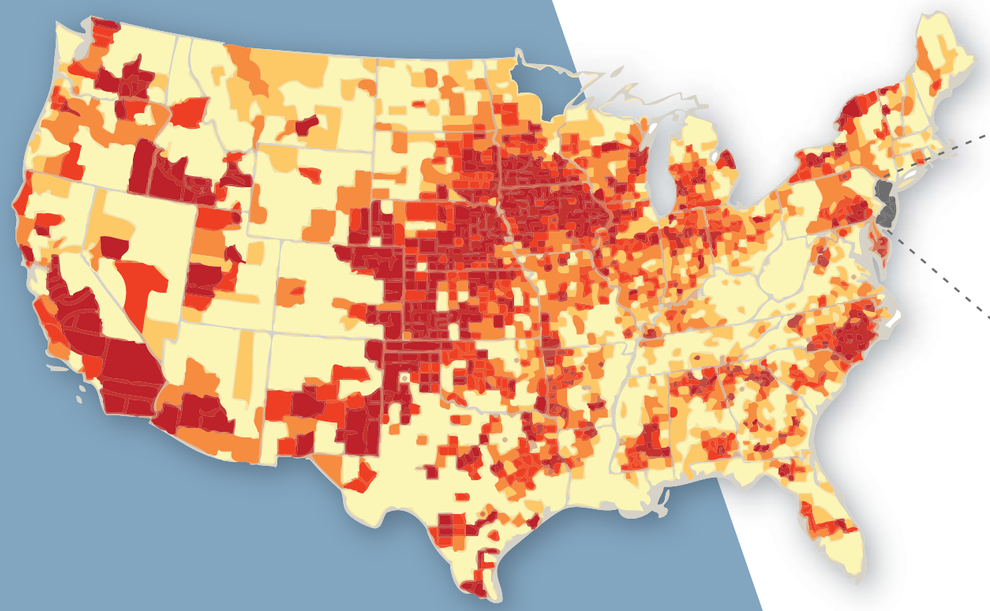
Monocultures · Soil Erosion · Disease · Pollution · Specialized

Unethical Treatment · Animals Only · Mass Production · GMO's · Disconnect · Fillers · Landfill

Crops Only · Massive · Waste · Pesticides · $$$$ · Hormones

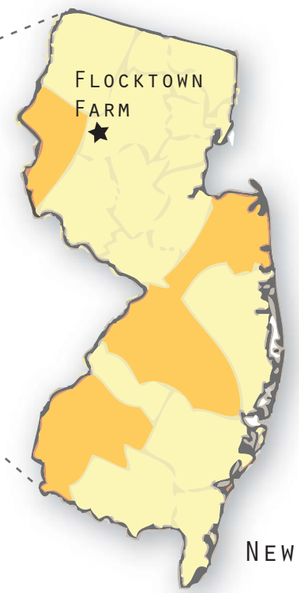
Antibiotics

Less Industrial Farming = More Small Farm Opportunities



Extreme · Severe · High · Moderate · None

United States
Industrial Farm Densities



New Jersey

Logical Approach

Small Farms
Supporting Local Economies

Small

Healthy

Back to The Land

Education

Farm to Table

Rotational Grazing

Proud

Reconnect

Diverse

Agritourism

Happy

Plants and Animals

Versitile

Organic

Agribusiness

Crop Rotation

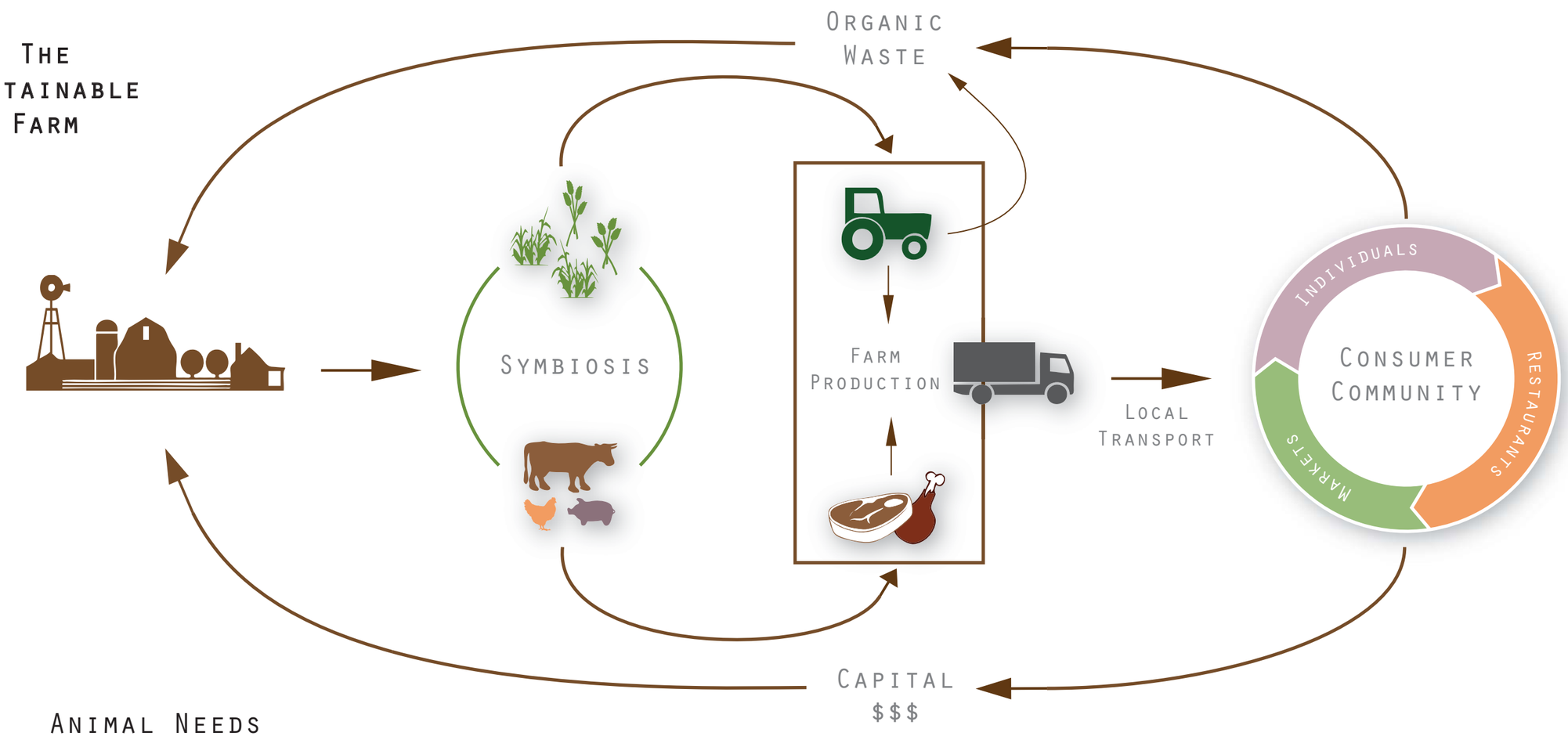
Local

Economy

Pollution Reduction

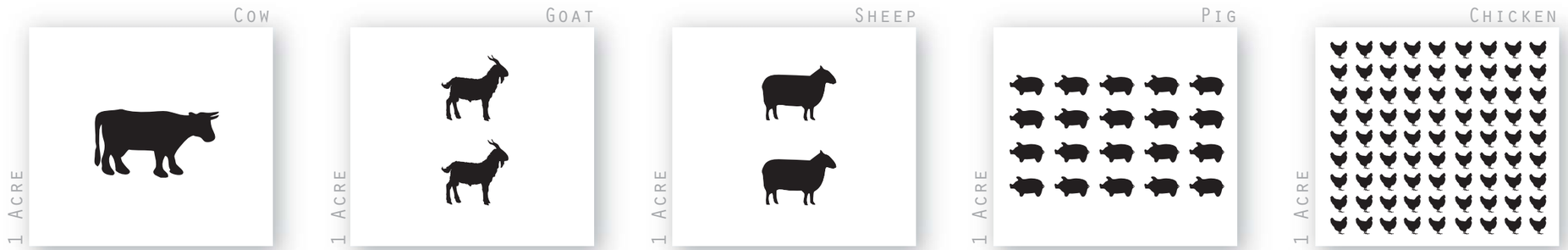
Recycle

The Sustainable Farm



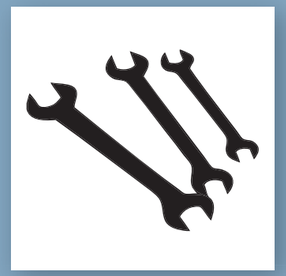
Animal Needs

Daily Amounts



	Cow	Goat	Sheep	Pig	Chicken
Grazing :	1-1.5 acres/cow	0.5 acre/goat	0.5 acre/sheep	20 pigs/acre	80-100 chicken/acre
Shelter:	100 sq.ft./cow	100 sq.ft./goat	100 sq.ft./sheep	80 sq.ft./pig	65 sq.ft./chicken
Food:	2-3% body weight	2-3 lbs feed/goat	2-3% body weight	4-6 lbs feed/100 lbs	2-3% body weight
Water:	8-15 gallons/cow	1-2 gallons/goat	1-3 gallons/sheep	1-6 gallons/pig	1 gallon/10 chickens
Waste:	60-65 lbs/cow	5 lbs/goat	5 lbs/sheep	10-14 lbs/pig	0.25 lbs/chicken

The Off-Season

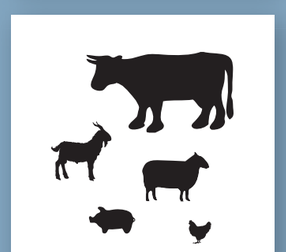


Maintenance

Equipment, machinery, infrastructure, Water Supply Systems

Crop Care

Greenhouse Crop Production, Field Preparation for the coming season, desiding what crops to invest in for the next growing season



Animal Care

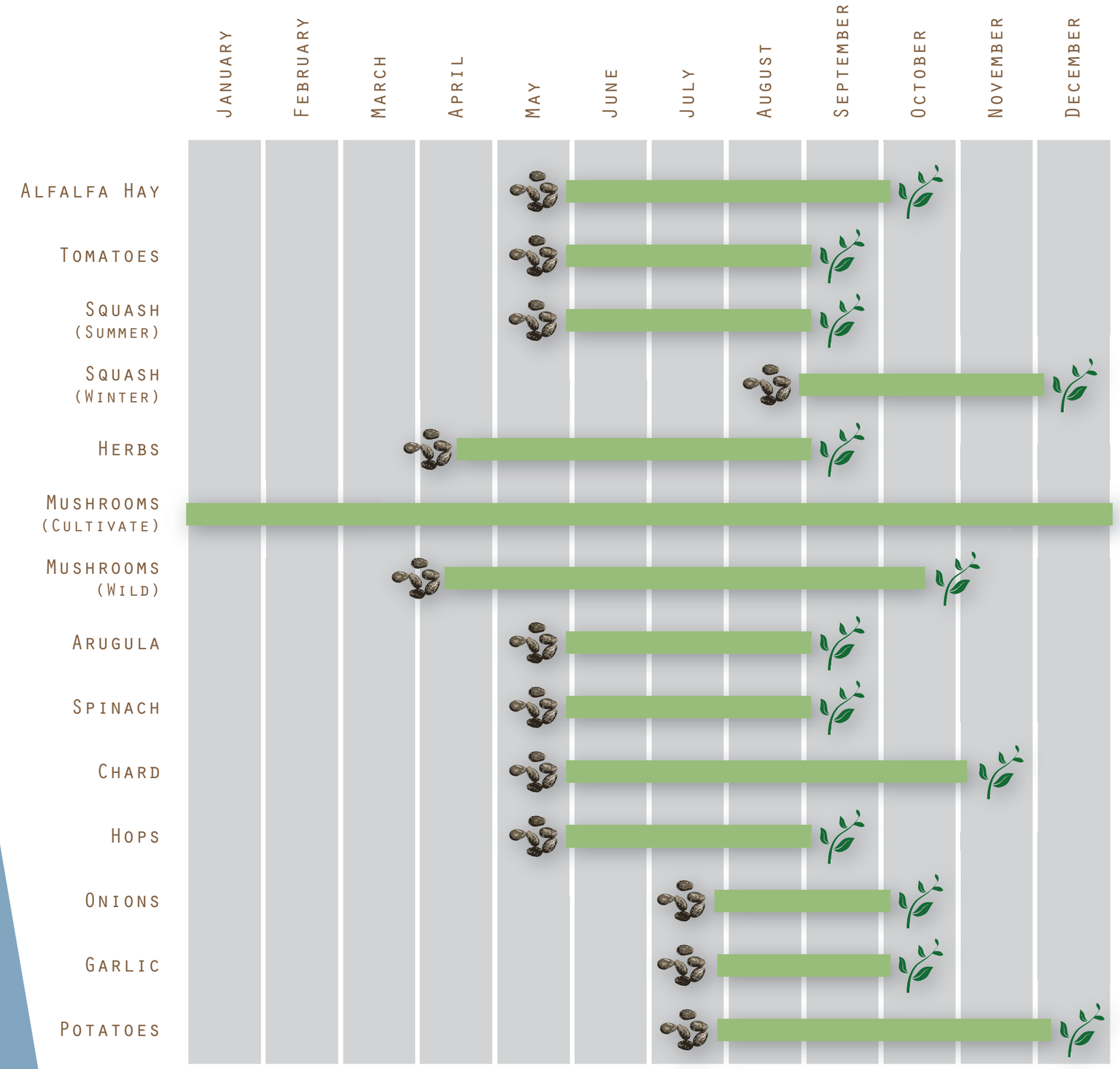
Sending animals to slaughter, health check-ups and other needs, preparation for the birthing season

Marketing

Attending conferences, Farm Shows, Adjust Marketing Plan, Community Volunteering and Benefits, Attend Auctions

Business Management

Converse with product representatives, buy seeds, accounting, buy new equipment, attend to farm staff needs, hire new workers, education, business profit analysis



Growing Seasons - New Jersey

Symbiotic Relationships

"Interaction between two different organisms living in close physical association, typically to the advantage of both."

Chickens and Ducks:

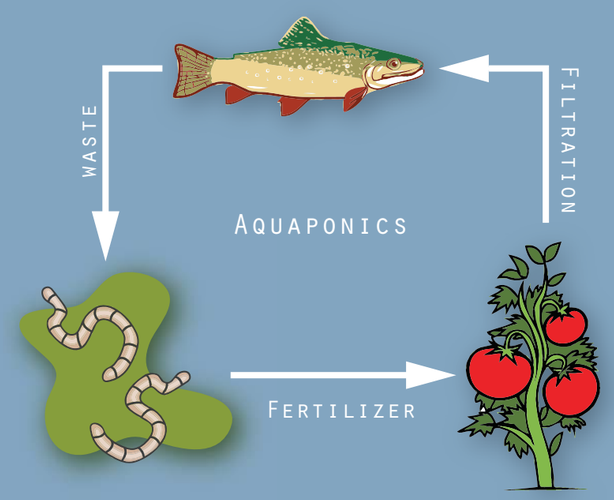
Used for pest control, and in rotational grazing. Duckes are especially helpful in pest control near water.

Between Plants:

Prunings from trees and shrubs to be used as mulch for crop beds

Crop Rotation:

Helps to maintain nutrient rich soil

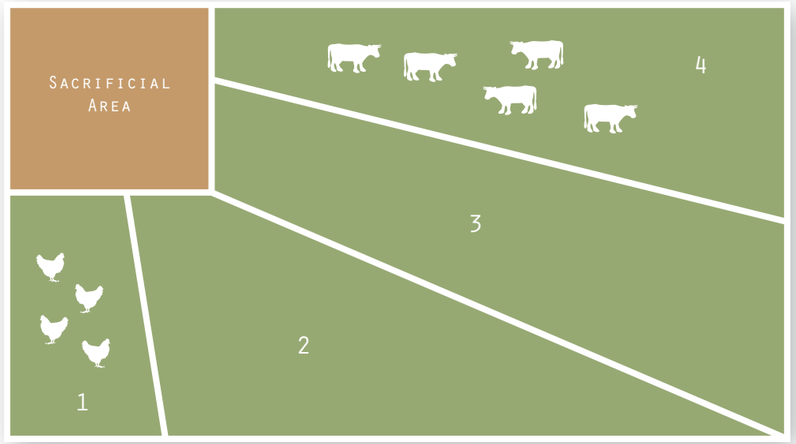


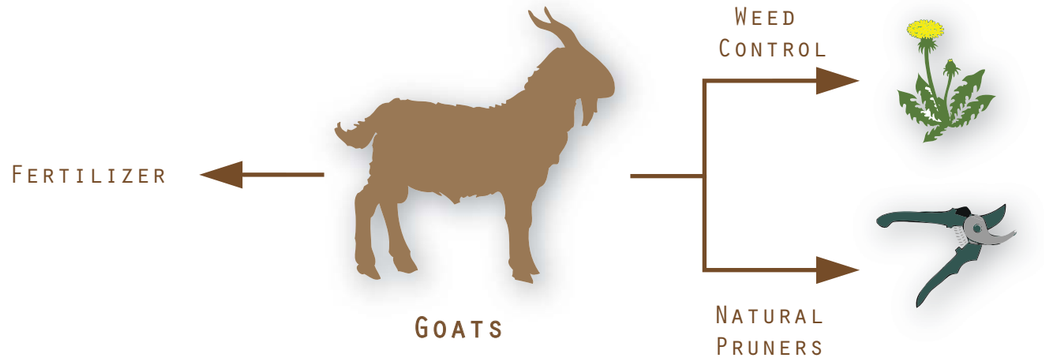
Aquaponic Farming can be advantageous not only because of the cyclical nature, but also because of the flexibility in size/scale and farm types (i.e. indoor, outdoor, or both)

Rotational Grazing:

Grazing livestock such as cattle are moved systematically from pasture to pasture daily where they act as natural "mowers" for the land. Their droppings act as fertilizer in return.

> Three days after the cattle have been in one pasture, chickens are introduced to that same pasture where they eat the larvae and microbes from the cattle's droppings and produce their own fertilizer as well. their claws help to integrate the fertilizer into the soil.





Goats are natural grazers as well, however, they are not a good choice for rotational grazing since they rip the plants out of the ground rather cutting it like cattle. But...

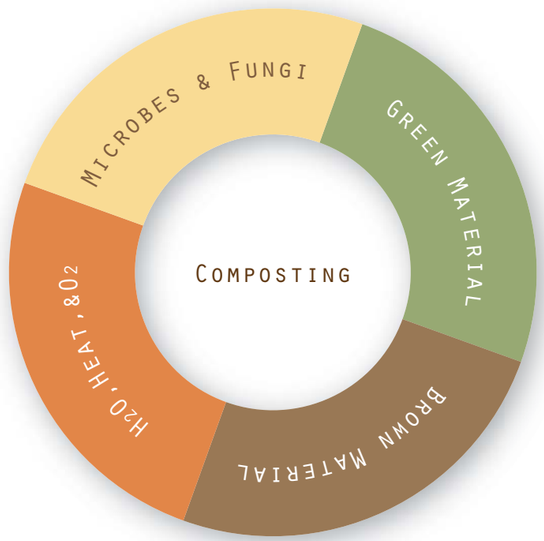
Goats can be used alternatively for weed control as well as maintaining and pruning back bushes and shrubs.

Composting is where many opportunities can arise:

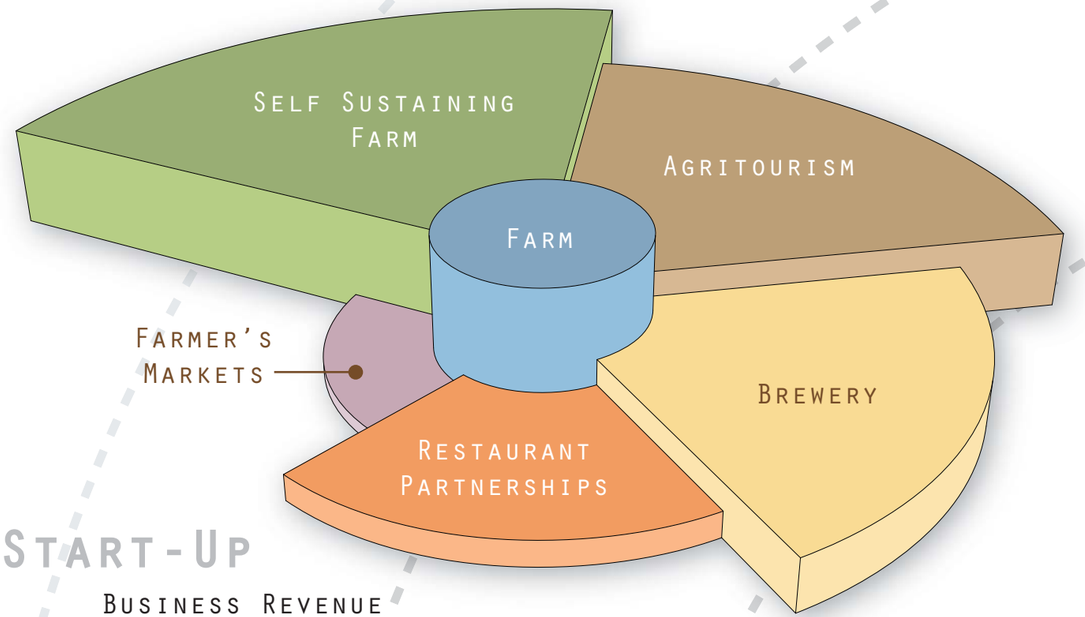
Brown Material*(Carbon)* = leaves, mash waste from brewery, pruning clippings

Green Material*(Nitrogen)* = Manure, Plant Matter, food scraps

Microbes & Fungi = Microbes from the water from aquaponics, mushroom growing, Worms

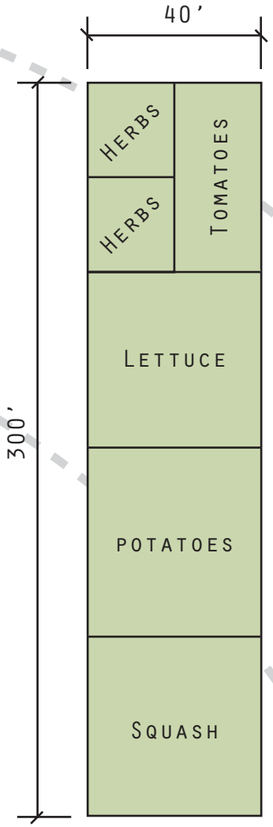


Flocktown Farms:
Flexible Business Strategy



Start-Up

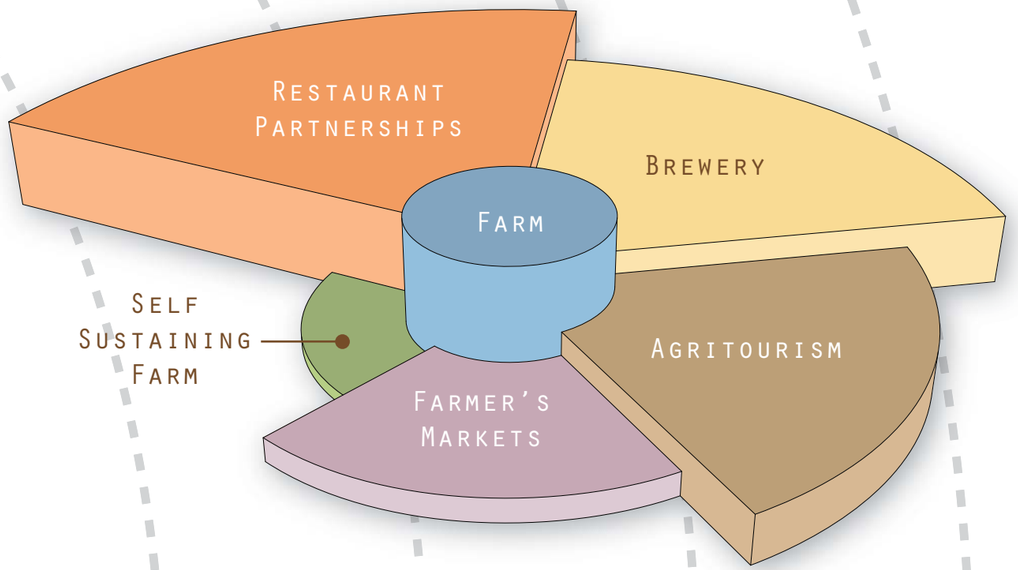
Business Revenue Distribution Heirarchy
(first 5 years)



12,000 sq.ft.

Minimum Space Needed for produce Production - 100-150 Seat Restaurant

Flocktown Farms:
Flexible Business Strategy



Expansion

Business Revenue
Distribution Heirarchy
(After 15 Acre Expansion)
By 2020

Flocktown Farm
Hopatcong
Roxbury Township
Morristown
Chester Township
Bedminster
Bernards
Bridgewater
Newark
New York

5 miles
10 miles
15 miles
20 miles
25 miles
30 miles
35 miles
40 miles

Flocktown Farms:
Programming Framework

Projected Facility Square Footages

Indoor Dining/Flex Space	2,000 sqft	Seats 100 people @ 15sqft/person +30% other structure
Outdoor Event Space	1,000 sqft	Seats 50 people @ 15sqft/person +30% other structure
Indoor Commercial Kitchen	2,000 sqft	
Outdoor Kitchen	800 sqft	
Administration	720 sqft	6 offices @ 100sqft each + 20% circulation
Classrooms	1,600 sqft	800sqft per classroom each (20'x40')
Shop Space	600 sqft	
Restroom Facilities	500 sqft	250sqft each men's and women's
Micro-brewery	5,000 sqft	
Aquaponic/Greenhouse Facility	10,000 sqft	
Storage for large farm equipment	5,000 sqft	
Livestock housing	9,300 sqft	
Mechanical/Storage/Utilities/ Waste Management Structures	3,000 sqft	
Mobile self contained guest cabins	4,500 sqft	15 @ 300sqft
Program Manager/Farm Head house	1,200 sqft	
On-site Staff Cabins	2,000 sqft	4 @ 500sqft
Facility Circulation	20% of total	
Parking	43,560 sqft (min) - 1 Acre	150 spaces + 25' Drive Lane

Estimated Flows

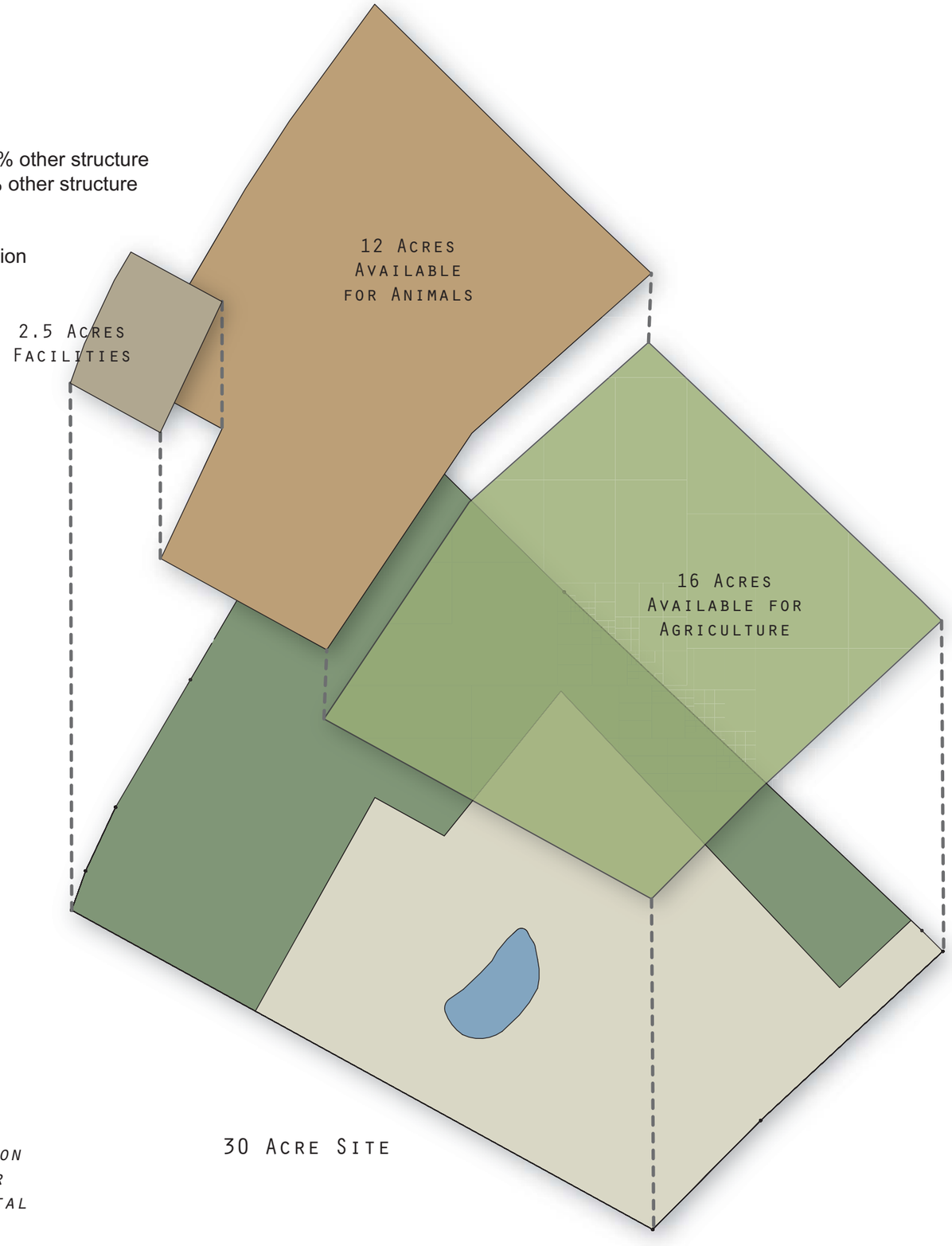
20-30 people
Full-time
Off-site Staff

People Per Day
50 - 100

Cabin Visitors
30 people (max)

4-10 people
Full-time
On-site Staff

Approximately 400sqft per 1 person produces enough food for 1 year
Between 1,600sqft - 4,000sqft total

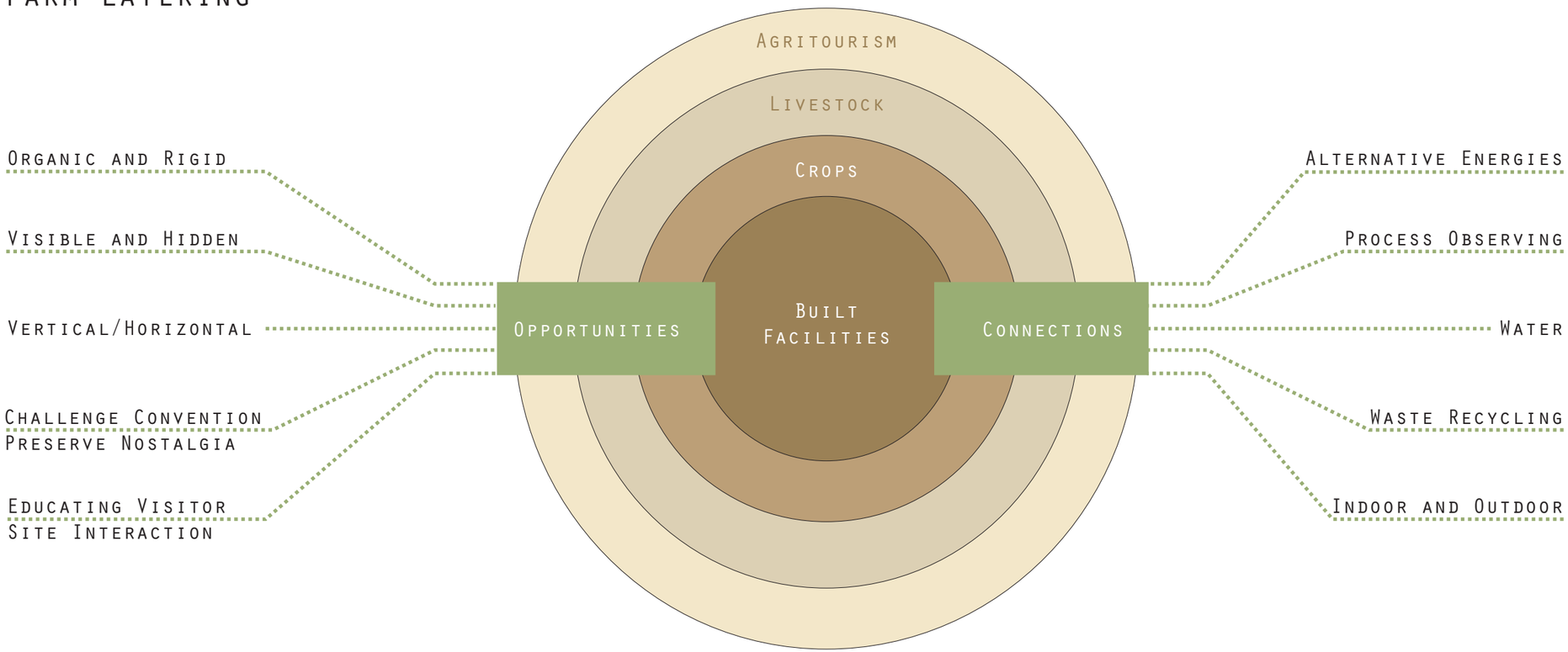


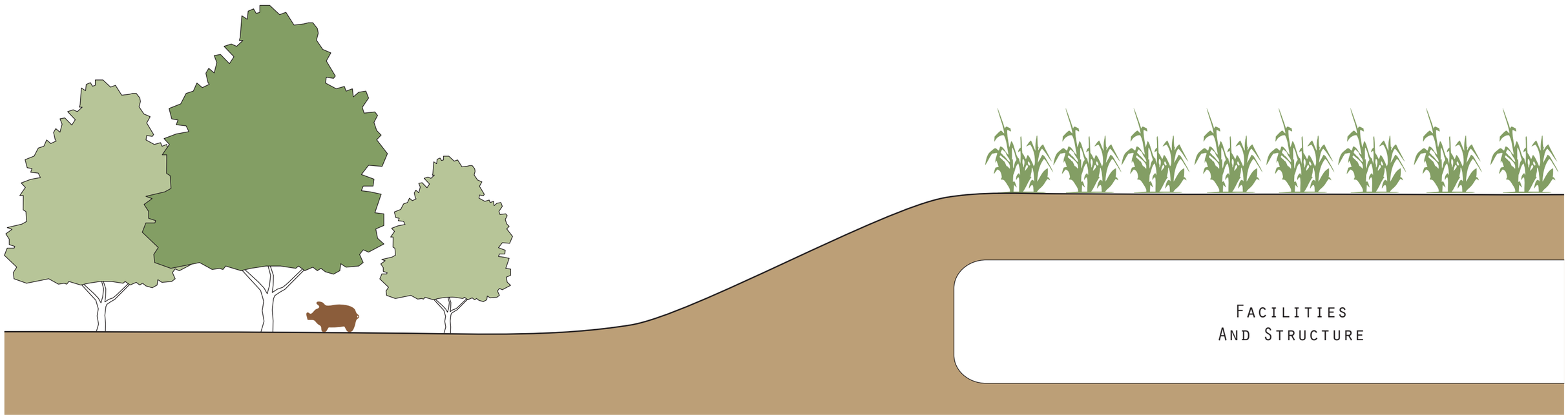
30 Acre Site

Primary Facilities Breakdown	Space Plan Elements	Potential Needs	Opportunities/ Constraints
Agritourism Facility	Indoor Dining/Flex Space Indoor Commercial Kitchen Outdoor Event Space Outdoor Kitchen Administration and Classrooms Shop Space Restroom Facilities Circulation Staorage and Mechanical	Access To Main Road Access to Water/Well Alternative Energy (Solar, Wind, Water) Space Plan Flexibility	Functional Adjacencies to Brewery, Greenhouse, Aquaponics Can Be Grouped or Separate Conflict with Animal Proximity Potential Entry Sequence
Mobile Self-Contained Guest Cabins	Full bathroom 40sq.ft. Living Space 36sq.ft. min Sleeping Space 36sq.ft. min	Access to Water/Well Waste System Energy Systems Back-Up Energy Heating elements Cooling Elements - Passive	Mobilility: Changing configuration/location over time Self Sustaining - Support the farm elements? What Does it Mean to be "Mobile" ... Why?
Micro Brewery	Office(s): 100 - 130 sqft each Bathrooms (public): 50 sqft each Bathrooms (private): 50 sqft each Mechanical Equipment Storage Taste/Tap Room: 500 sqft Milling Machine Room Mash Tuns (same room as kettle) Kettles (same room as mash tuns) Fermentation Tanks Distribution tanks Packaging/Production Room Refrigerated storage Loading/shipping dock	access to Plants needed for brewing (Hope, Barley, Wheat) Access to water source Access To main road Production for Flocktown Farms (Primary) Production for Associated Restaurants (Secondary) Production for Individual on-site growler fill (Tertiary)	Synergies between kitchen and tap/taste room Synergy with farm system (spent grains as feed, compost, and growing medium) Synergy with Kitchen (dried spent grain in baking) possible adjacencies to growing fields for hops and such Conflict over time with potential 15 acre expansion (enough square footage to meet production demands?)

Primary Facilities Breakdown	Space Plan Elements	Potential Needs	Opportunities/ Constraints
Greenhouses	12,000sqft (600'x 20') Growing Space can sustain 100 seat restaurant 1 year 10'-12' wide (standard modules) length is flexible Minimum height = 7 feet Avg. Plant Bed Width: 2'- 4' Circulation - 3' wide walking isles Storage (equipment, fertilizer, etc.) Mechanical Preparation Area (Work benches, Seating, etc.)	Location - Maximize Sunlight (full eastern exposure in mornings, can have shade mid-day, or south/southwest) Air circulation/Ventilation Environmental controls Irrigation Systems Energy Systems (Solar, Wind, Water)	Attached or Detached Innovative Materiality (instead of glass/plastic/fiberglass) Synergies with Aquaponic Facility Conflict with Aquaponic Facility (Tanks need shade)
Aquaponics Facility	Grow Beds - 40"x 48"x 14" Modules Tank Minimums for "plate size" fish 8" Deep and 50 Gallons 200 Gallons (40 edible fish annually) Exterior - 40"W x 48"L x 32"T Fish Tank/Grow Bed Ratio = 1:1 (volume) Control Systems (pumps, aeration, plumbing, filtration) Circulation - 3' wide walking isles Storage and Mechanical	Accrees to Water for Irrigation Drainage Air circulation/Ventilation Environmental controls Irrigation Systems Energy Systems (Solar, Wind, Water)	Indoor and/or Outdoor (outdoor = shaded) Water Synergies with Farm Irrigation Structural Synergies with Greenhouses Functional Adjacencies to Kitchens Functional Adjacencies to On Site Pond and Well Conflict with Greenhouse (Tanks need Shade)
Livestock Housing	5 cows @ 100sqft/cow = 500sqft 20 Pigs @ 80sqft/pig = 1,600sqft 80 Chicks @ 60sqft/Chicken = 4,800sqft 10 Sheep/Lamb @ 80sqft/Sheep = 800sqft 20% total area for circulation, storage, calving space	Access To water Waste collection and disposal Access to pasture	Synergies between pigs and wooded area Location Conflict to Kitchens and event spaces Rotational Grazing for Fertilizer Synergies between animal food products and kitchen

Farm Layering





Opportunity Exploration:
Mobile Cabins - A Movable Farm Layer

Tracks

Cabins moved independently for Visitor

Wheels

Cabins moved by Visitors

Progression

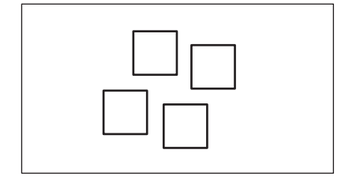
Visitors move from Cabin to Cabin

Precedents

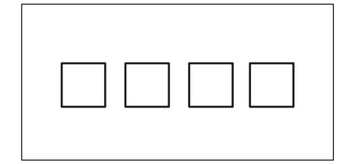
Moving Master Plan
by Jagnefalt Milton

Tumbleweeds
by Jay Schafer

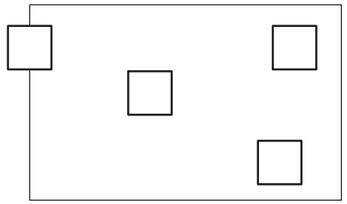
Cabin Configurations



Clustered



Linear



Open

Experiencing the Farm

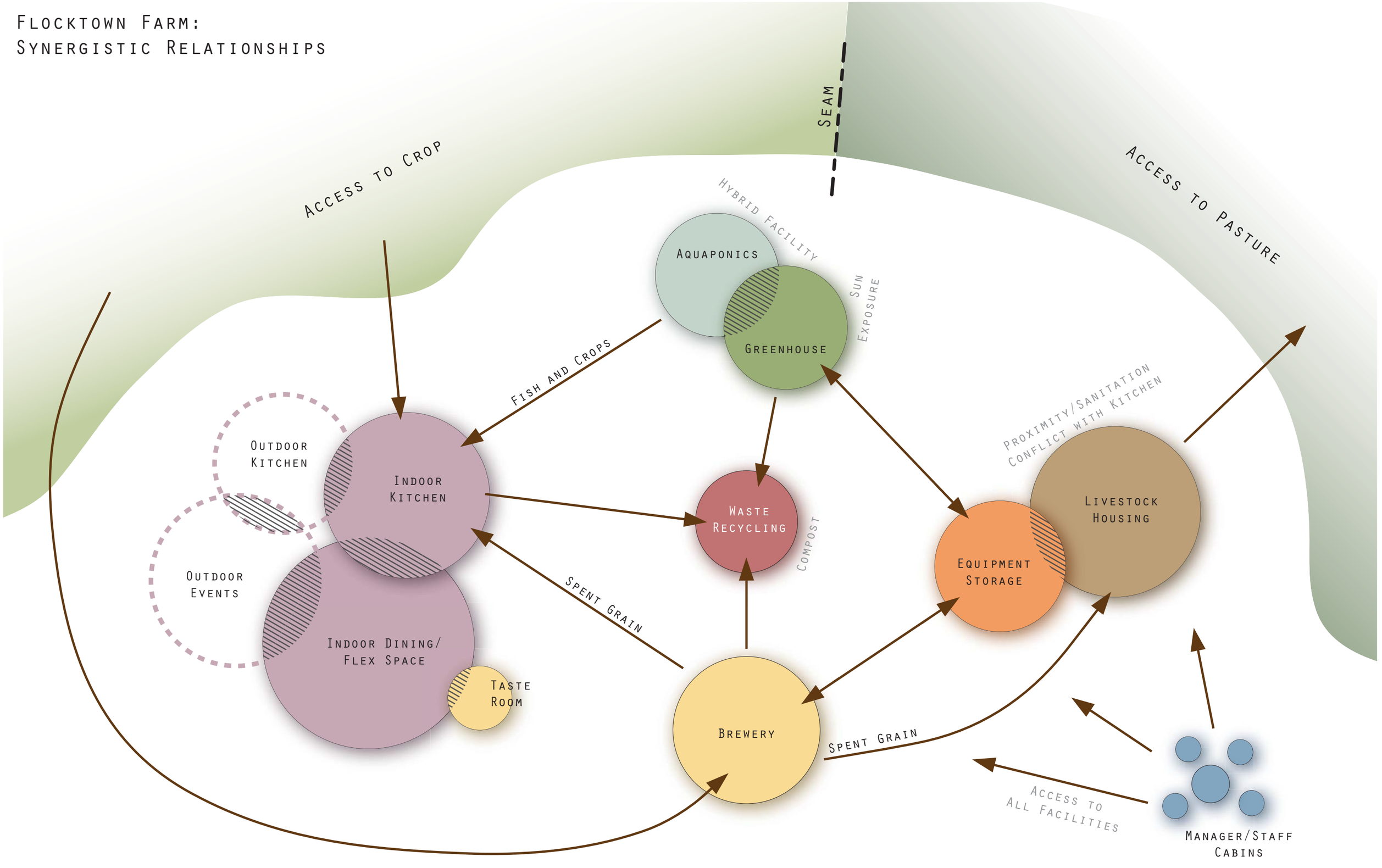
Straight

Winding

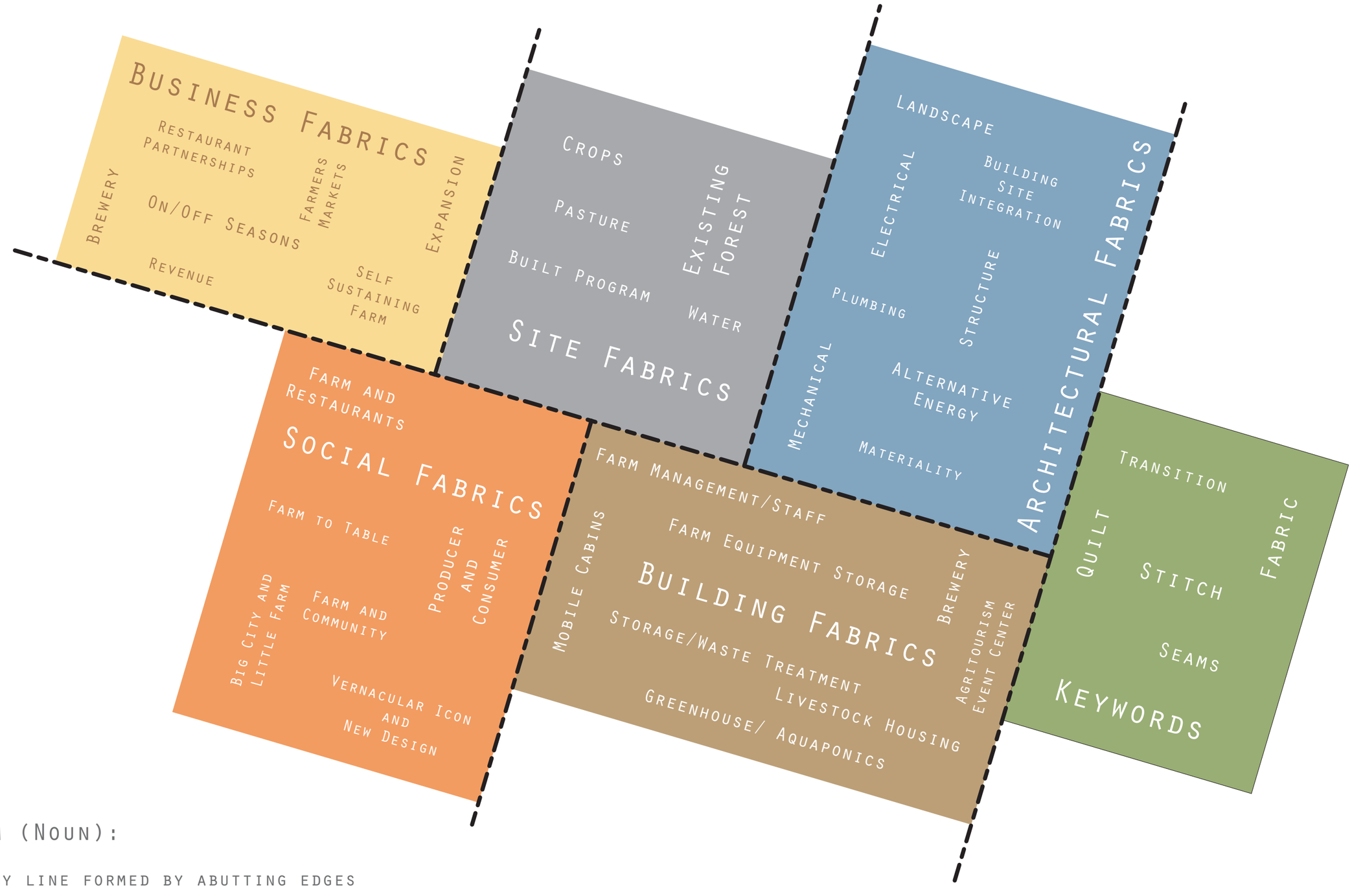
Circular

Separated

Flocktown Farm:
Synergistic Relationships



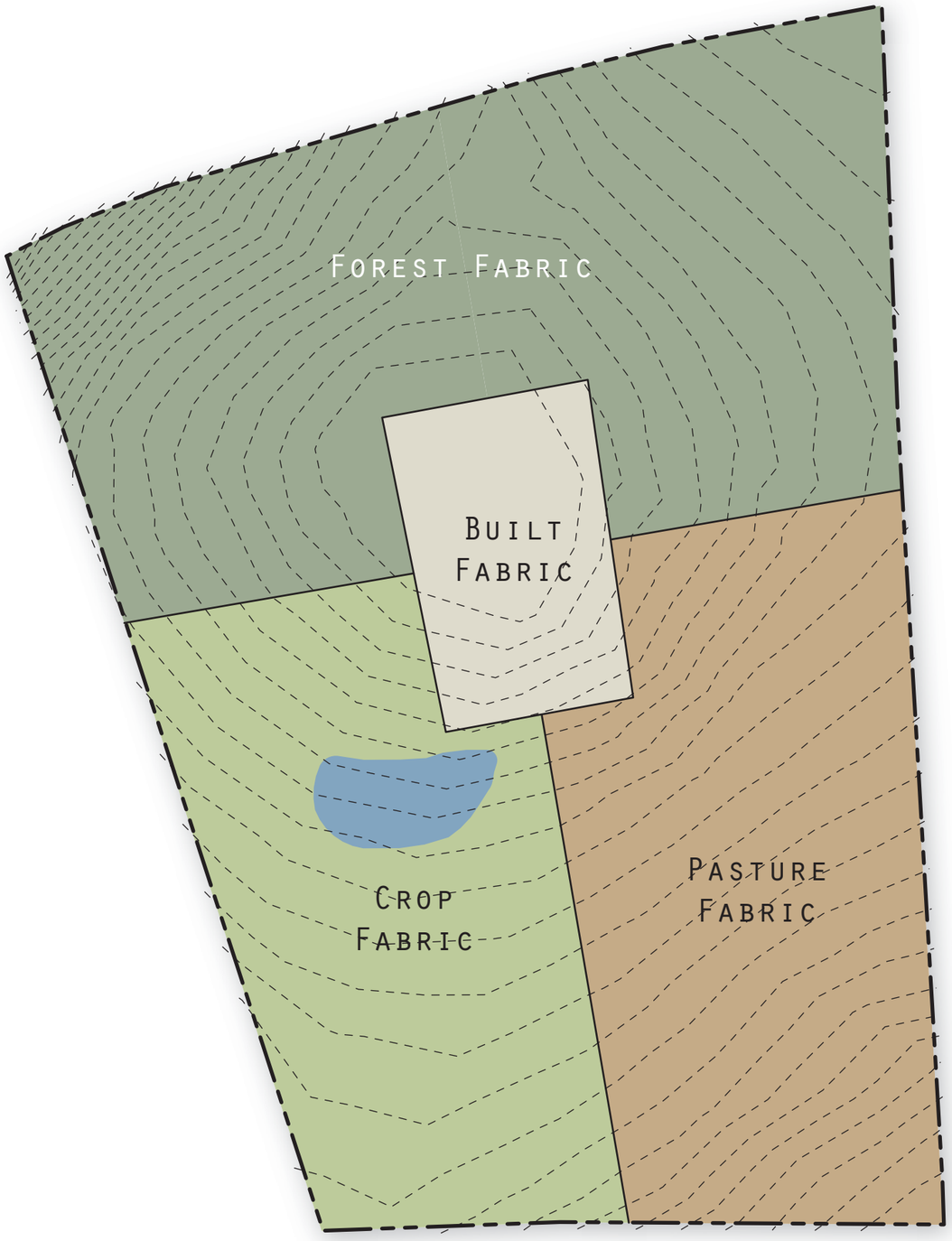
Flocktown Farm:
Engineering Diagram

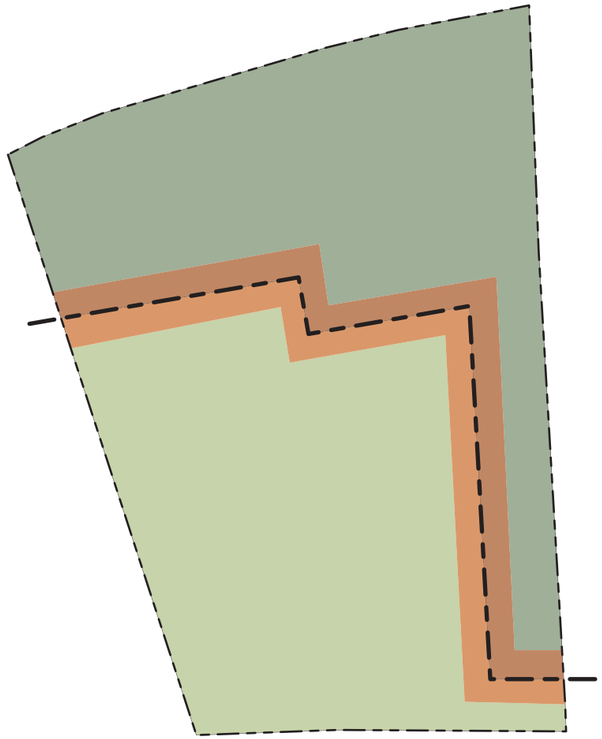


Seam (Noun):

1. Any line formed by abutting edges
2. A line where two pieces of fabric are sewn together

Flocktown Farm:
Site Fabrics

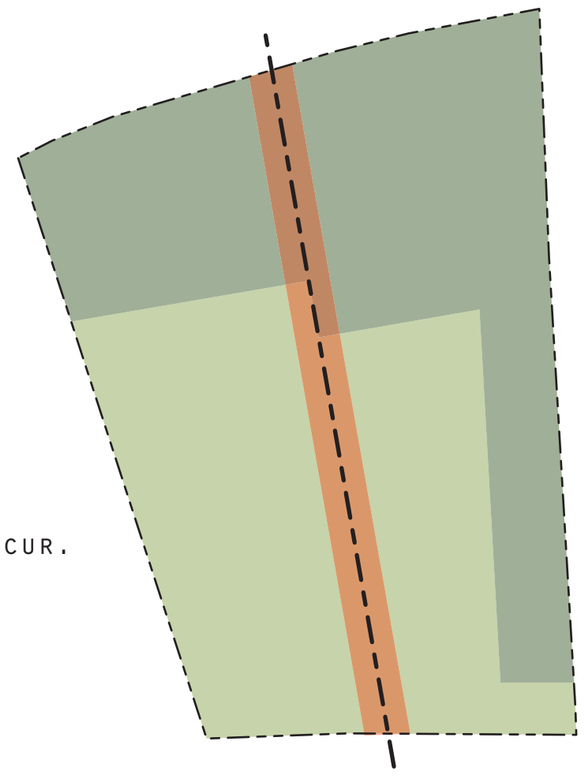




Seam 1: Dense forest and Open Land

The existing forest line already starts to push into the livestock fabric as it creates a natural buffer to the east.

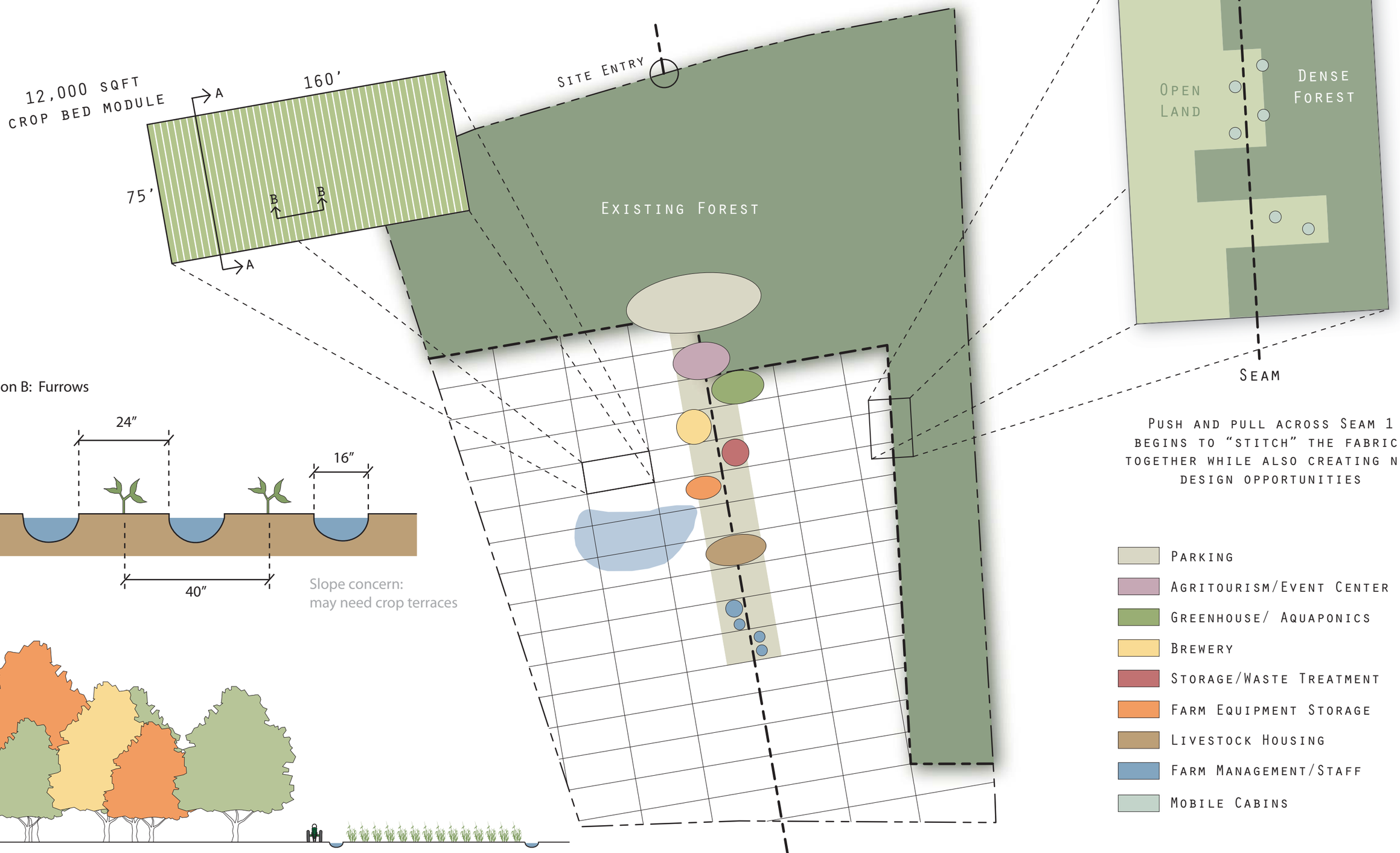
Potential design opportunities arise as this seam is broken down. Mobile cabin placement?



Seam 2: Crop and Pasture Fabrics

"Stitching" across this seam between the crops and pasture areas will allow the needed symbiotic relationships to occur.

Flocktown Farm:
Site Organization



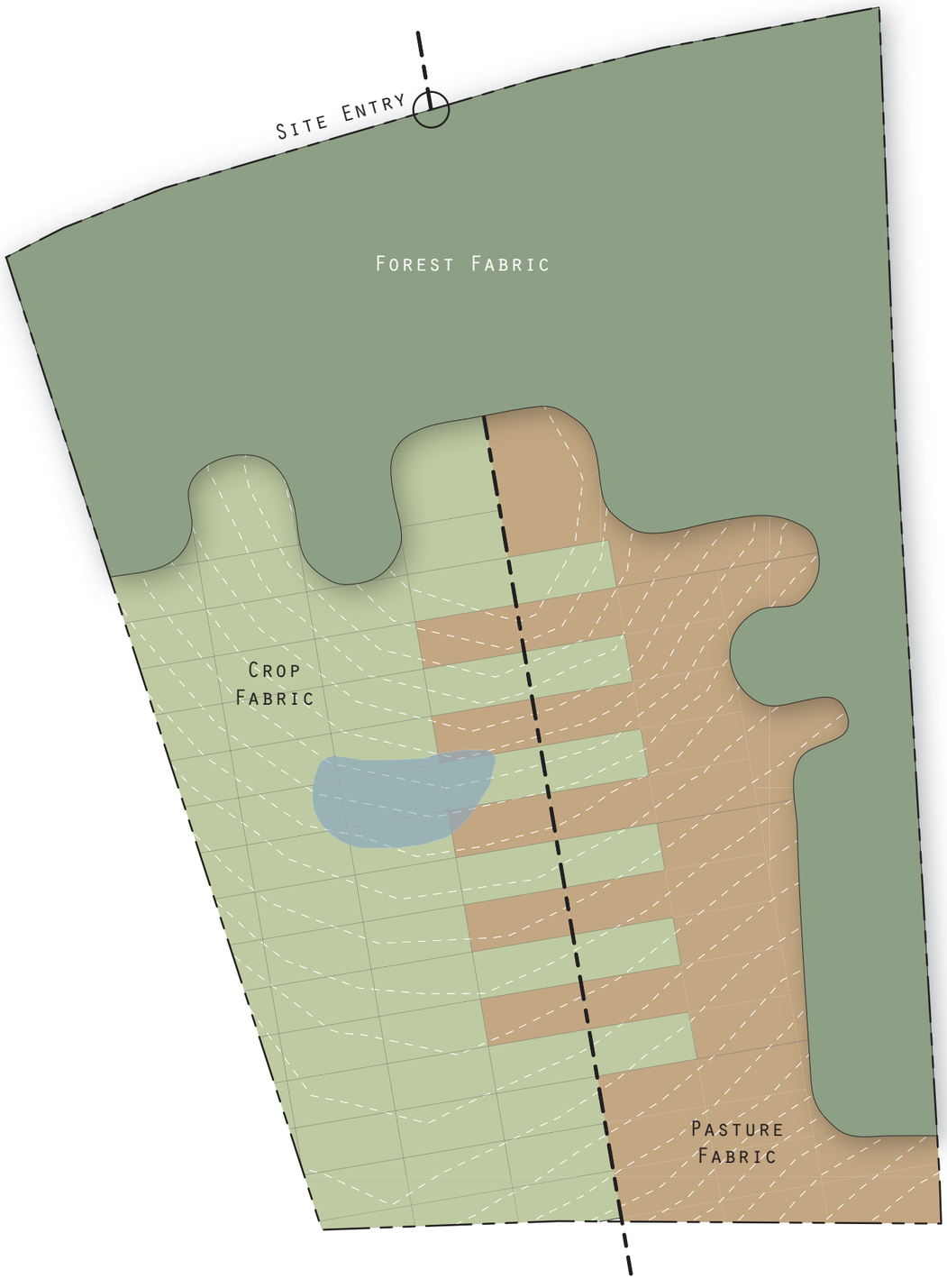
Push and pull across Seam 1 begins to "stitch" the fabrics together while also creating new design opportunities

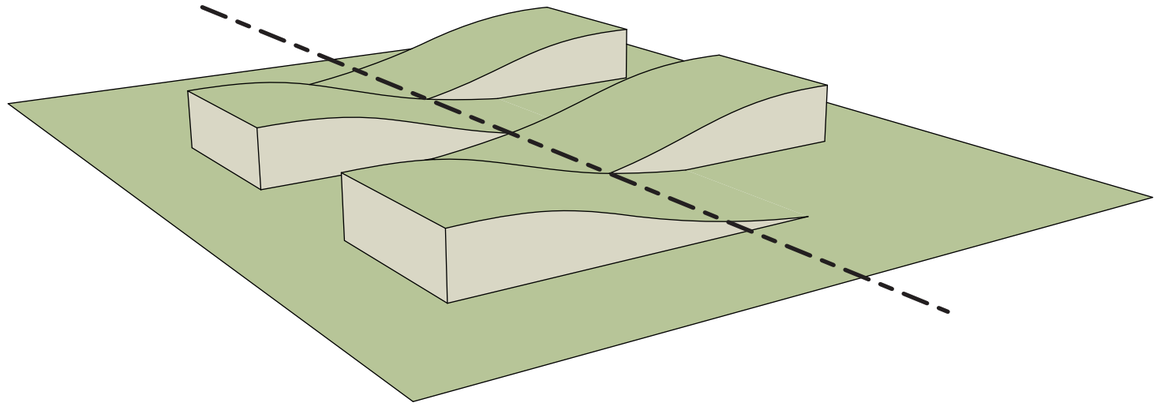
Section B: Furrows

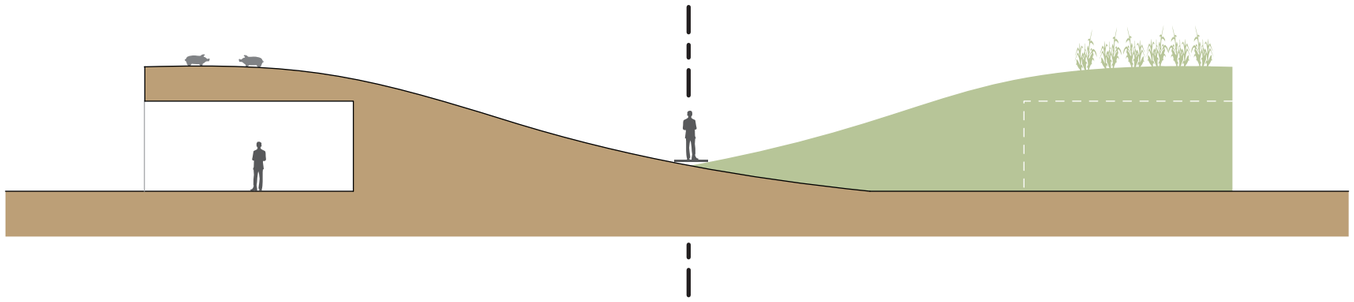
Slope concern:
may need crop terraces

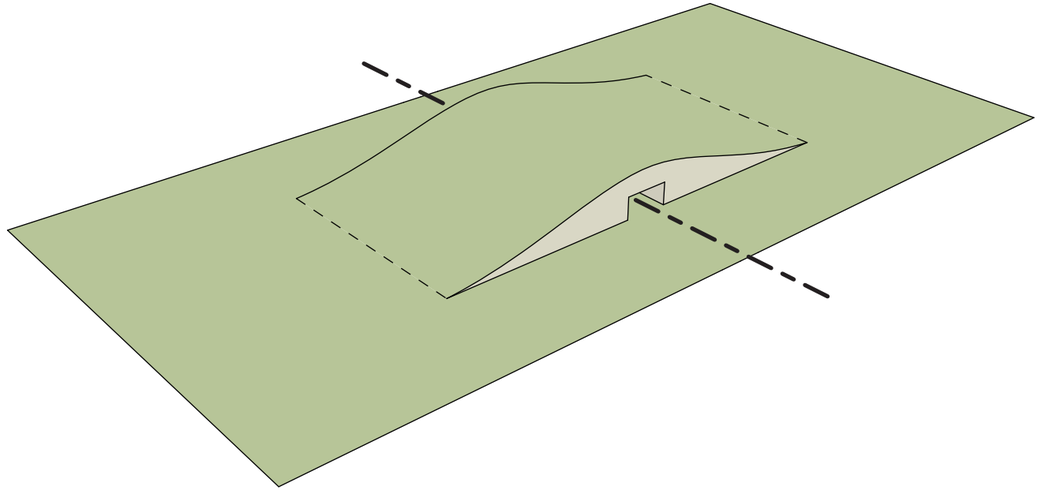
Section A: Cross Section - 75' Crop Bed

Flocktown Farm:
Potential Strategy









Concept Exploration 1: The Nature of a Seam

If the site is divided into various "fabrics", it is essential to investigate and understand what opportunities and issues that come with stitching them together along the "seams".

Keywords...

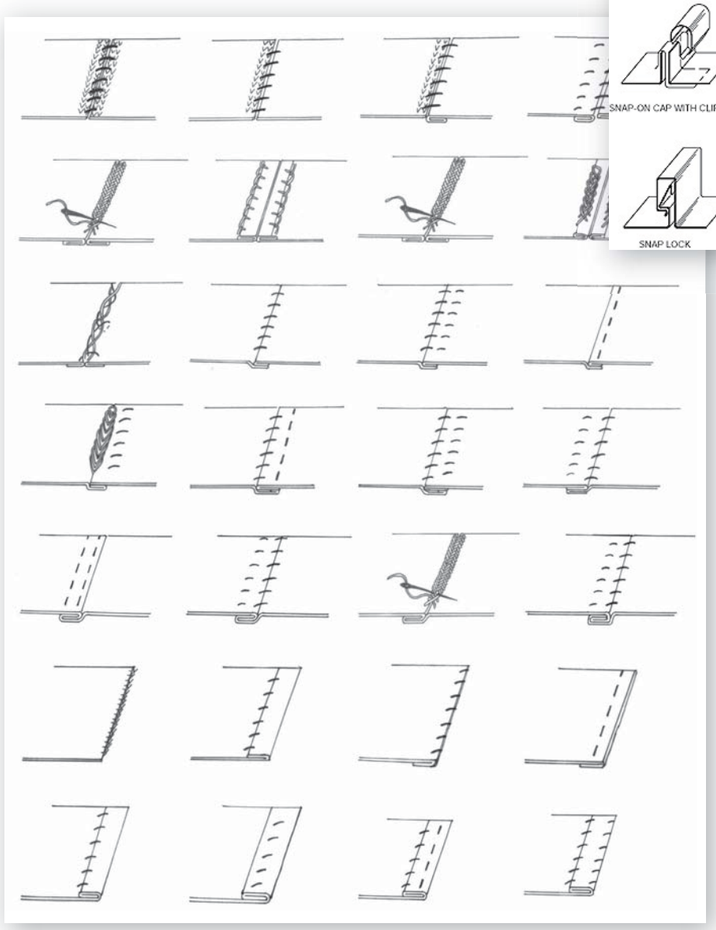
Interlock

Overlap

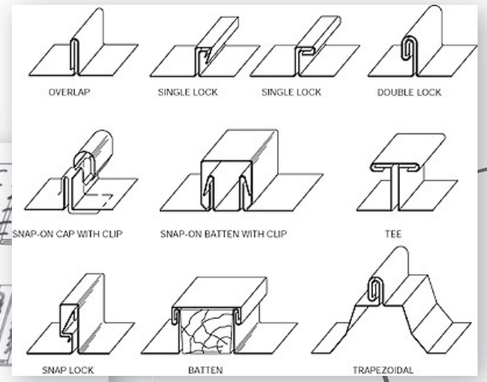
Stitch

Fold

Structure



Types of Seams



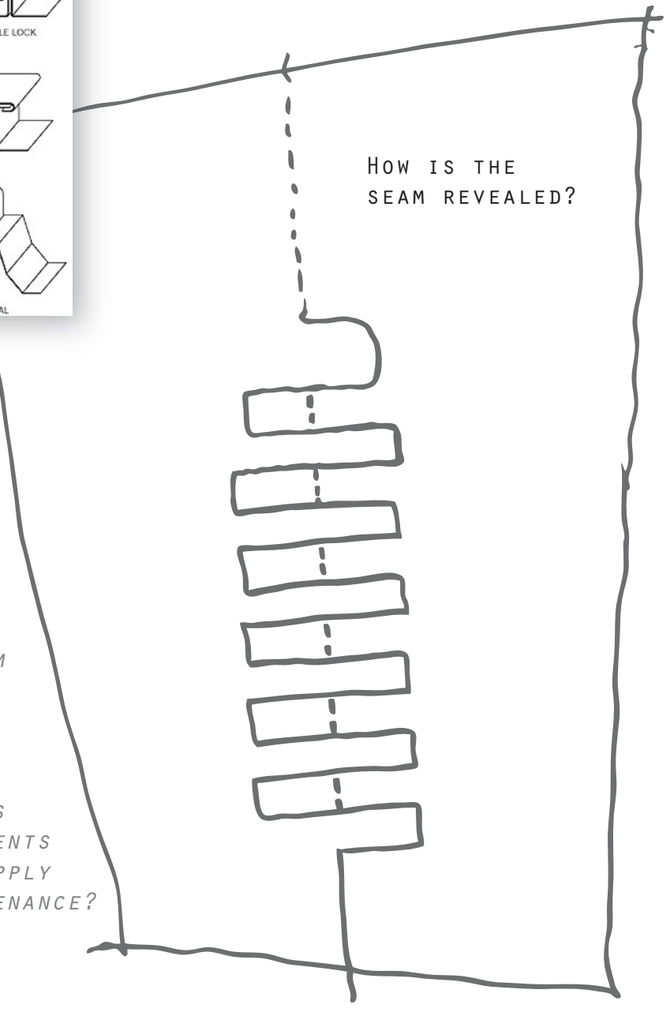
Seams in Construction

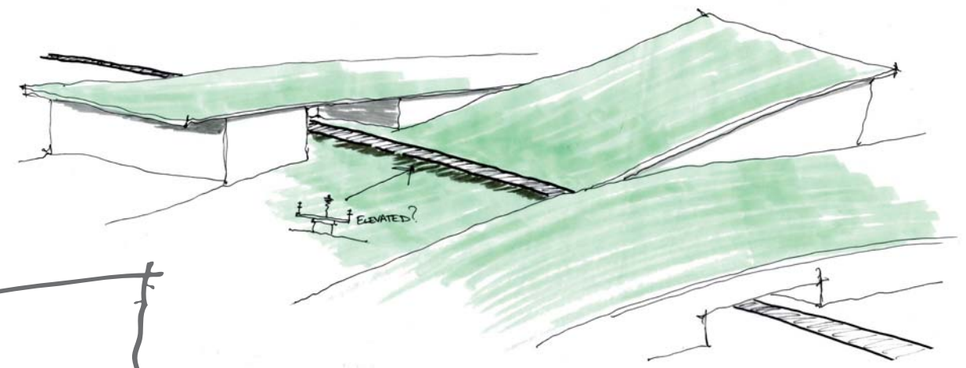
Questions:

How does the seam bleed out at the bottom?

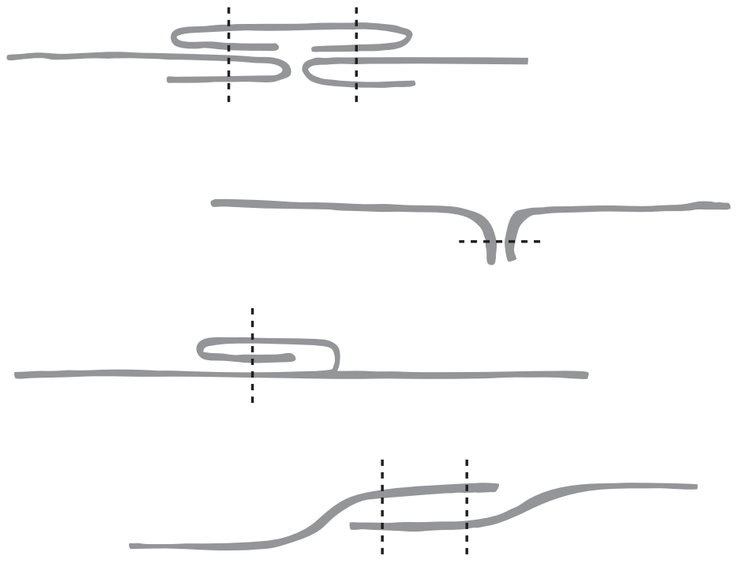
How do you access the program elements in regards to supply intake and maintenance?

How is the seam revealed?

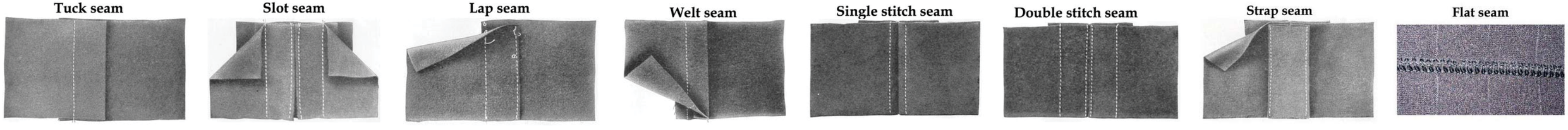




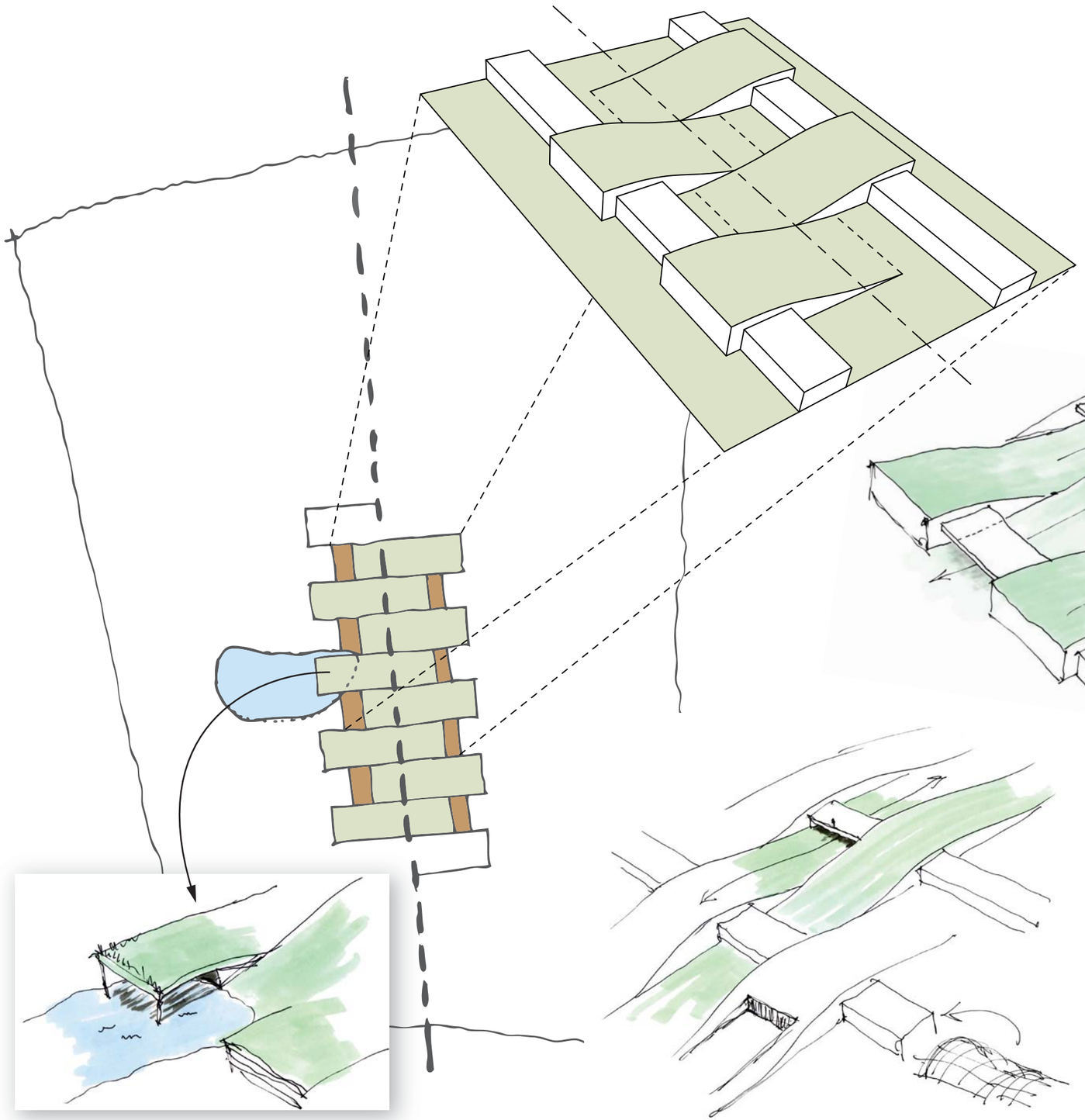
Centralized Visitor Circulation

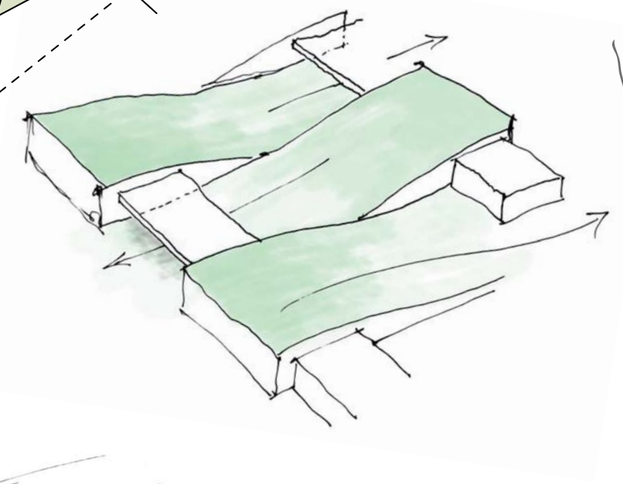


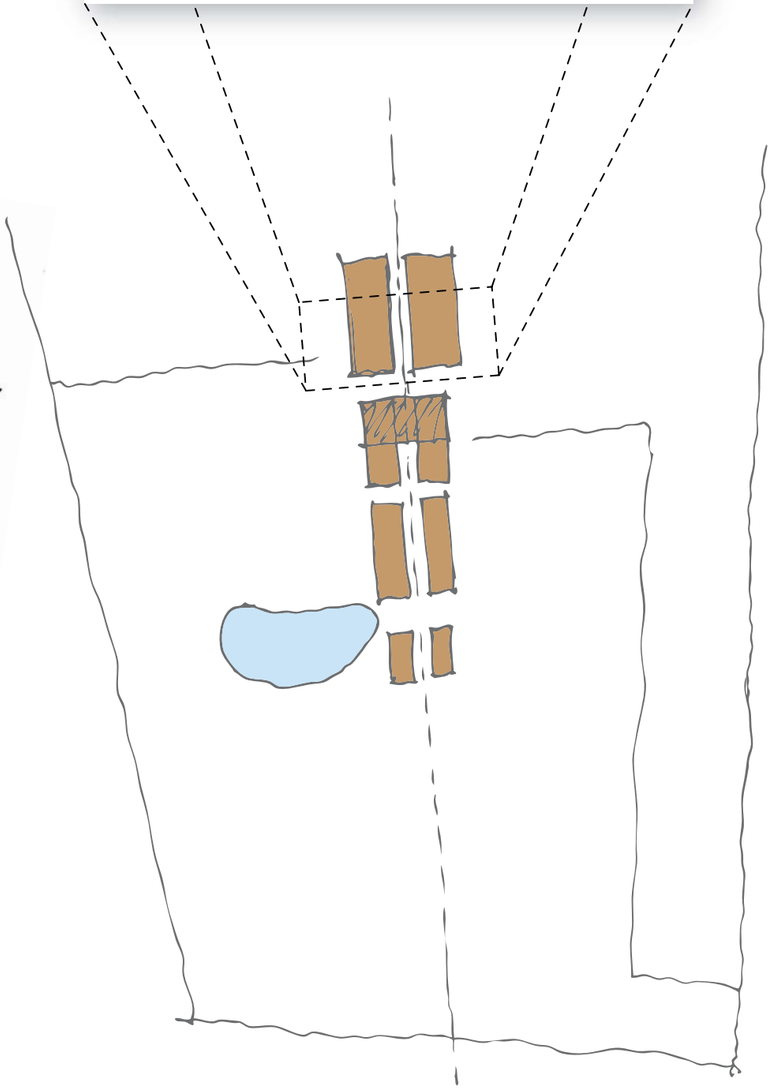
A section investigation of some of the types of seams illustrated begin to reveal potential architectural opportunities within vertical space.



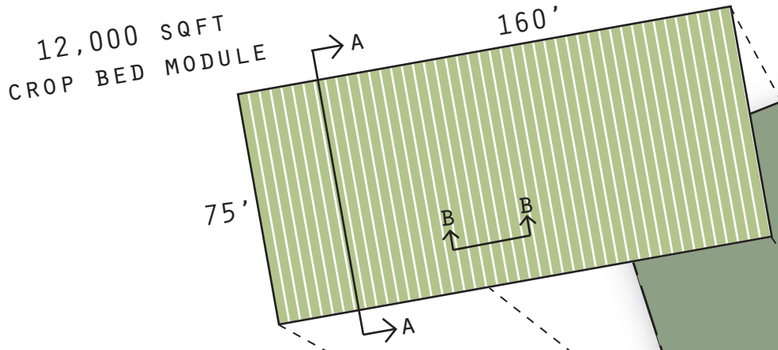
Concept Exploration 1:
Massing Opportunities

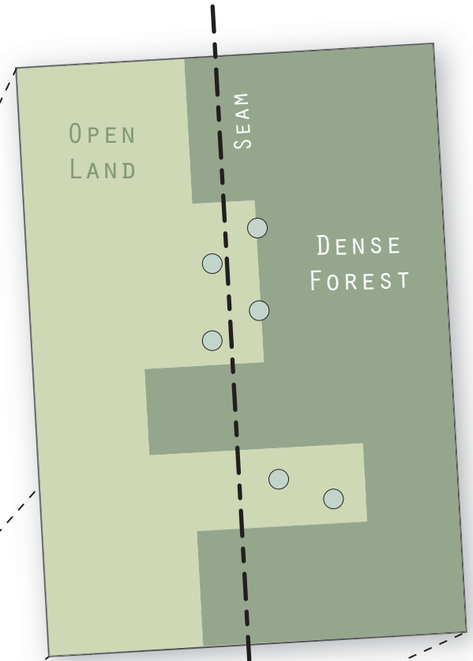






Concept Exploration 1:
Site Organization



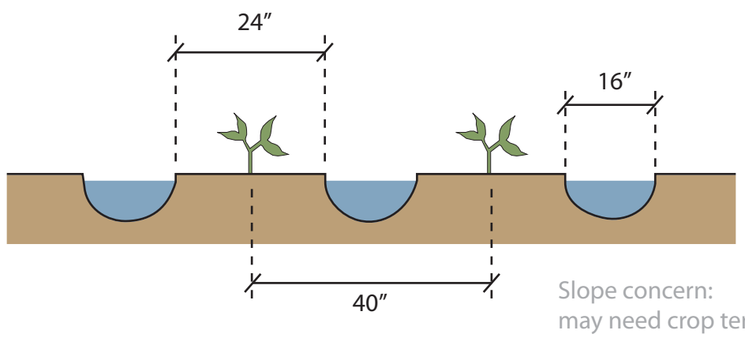


Mobile Cabins

Push and pull across Seam 1 begins to "stitch" the fabrics together while also creating new design opportunities

- Parking
- Agritourism/Event Center
- Greenhouse/ Aquaponics
- Brewery
- Storage/Waste Treatment
- Farm Equipment Storage
- Livestock Housing
- Farm Management/Staff
- Mobile Cabins

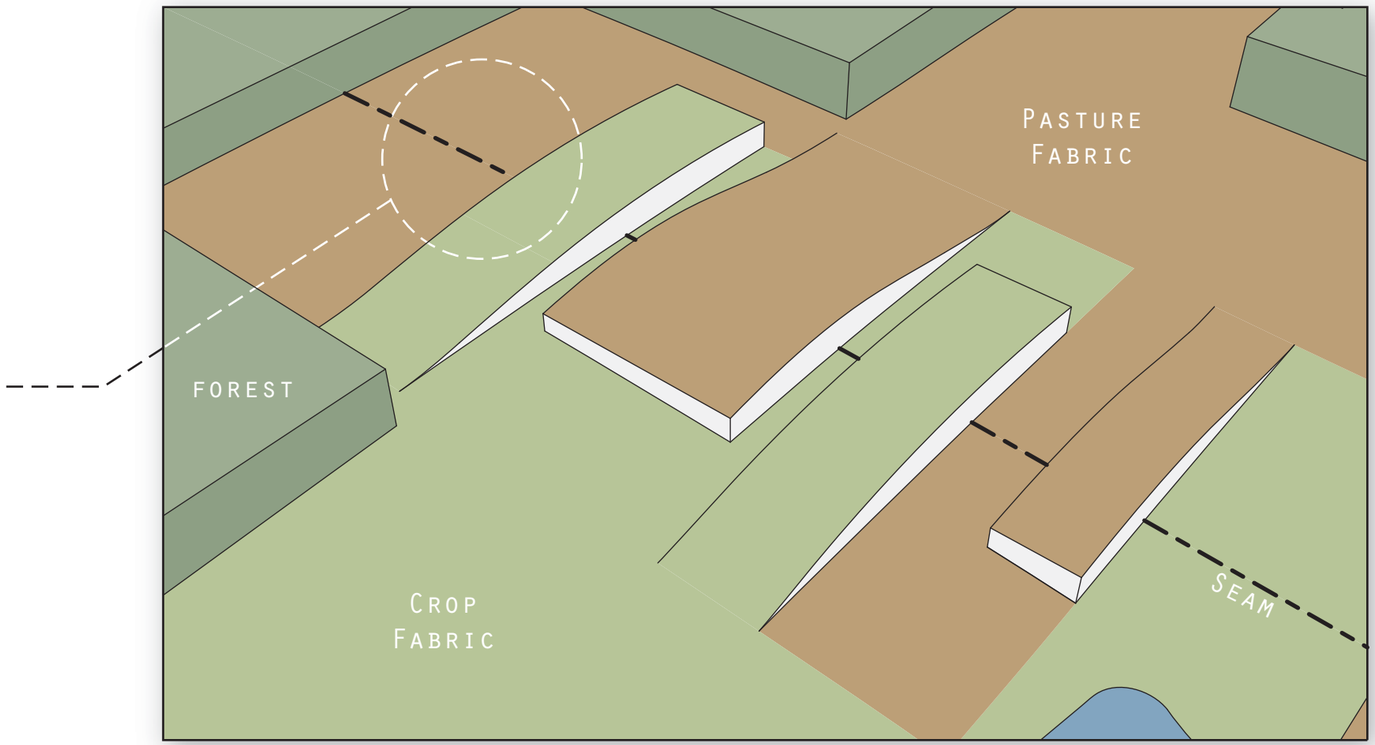
Section B: Furrows

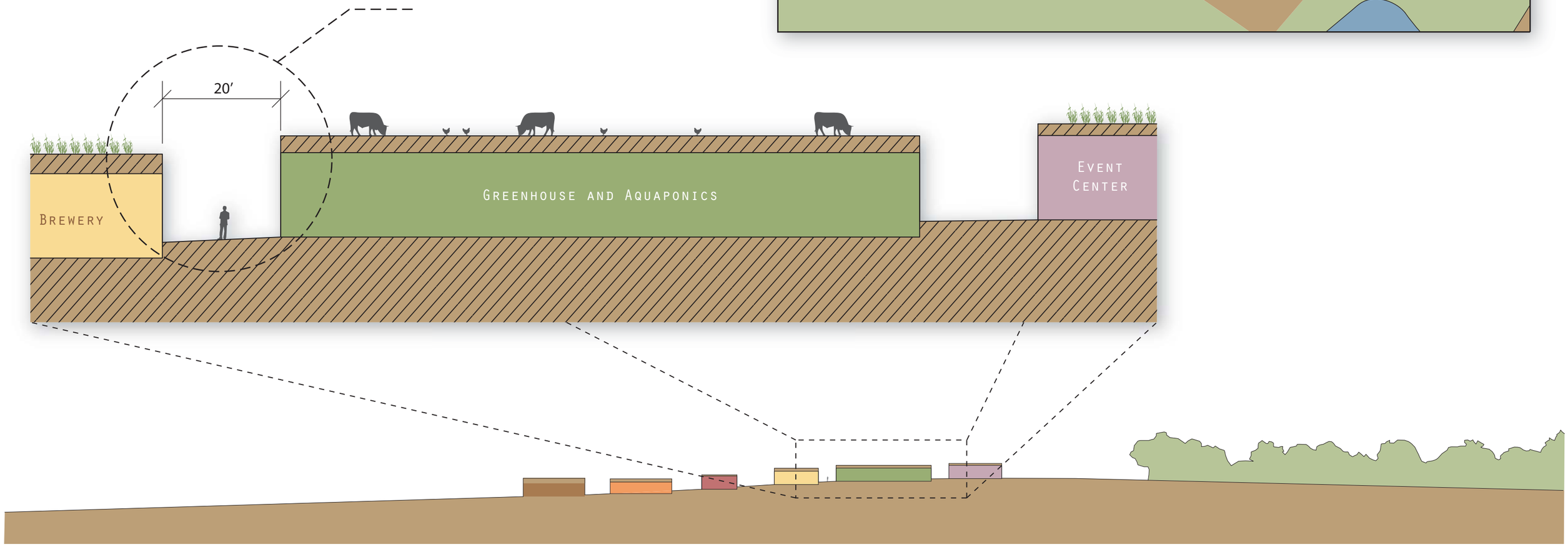


Slope concern:
may need crop terraces

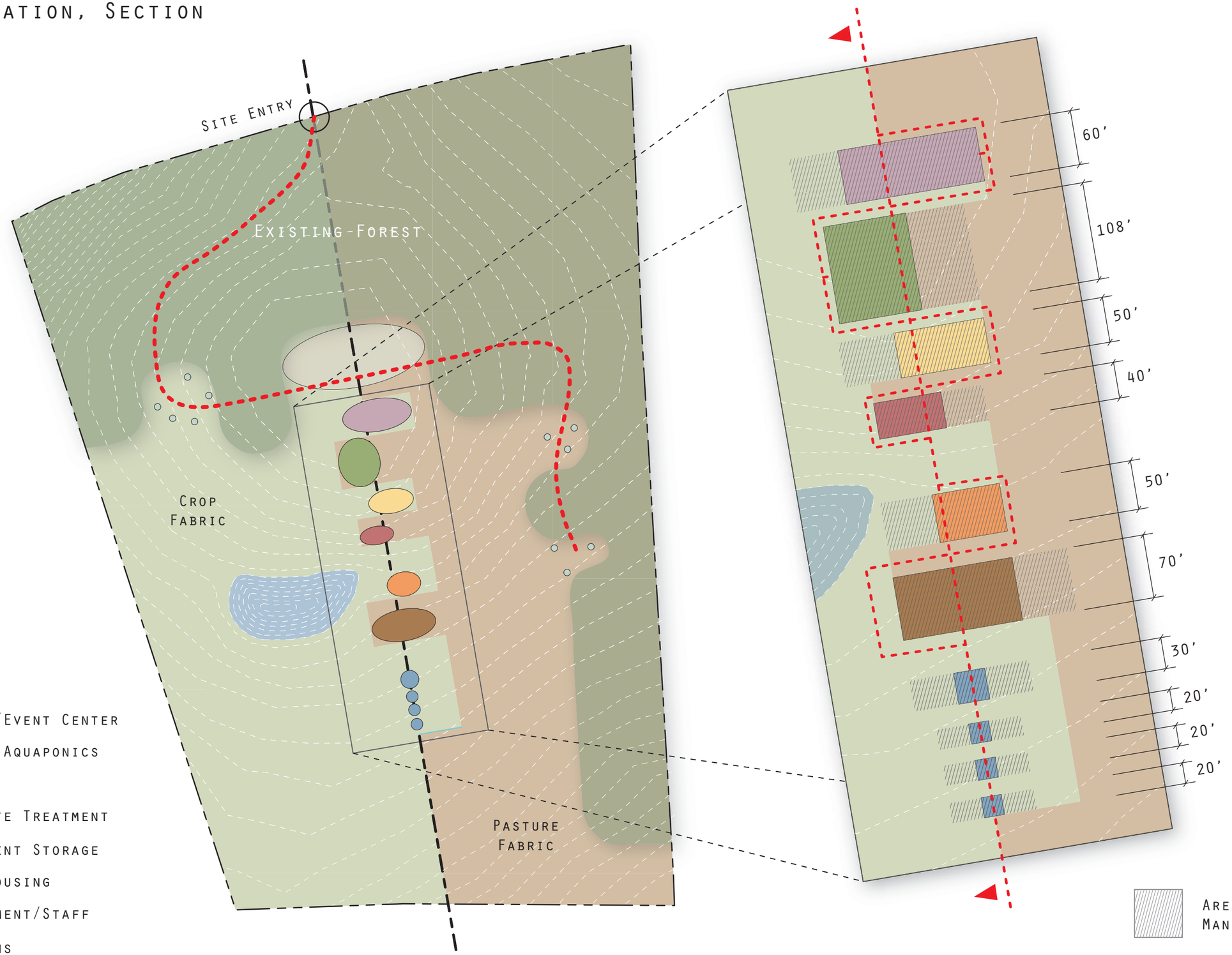
Section A: Cross Section - 75' Crop Bed

Concept Exploration 2:
Scale, Circulation, Section

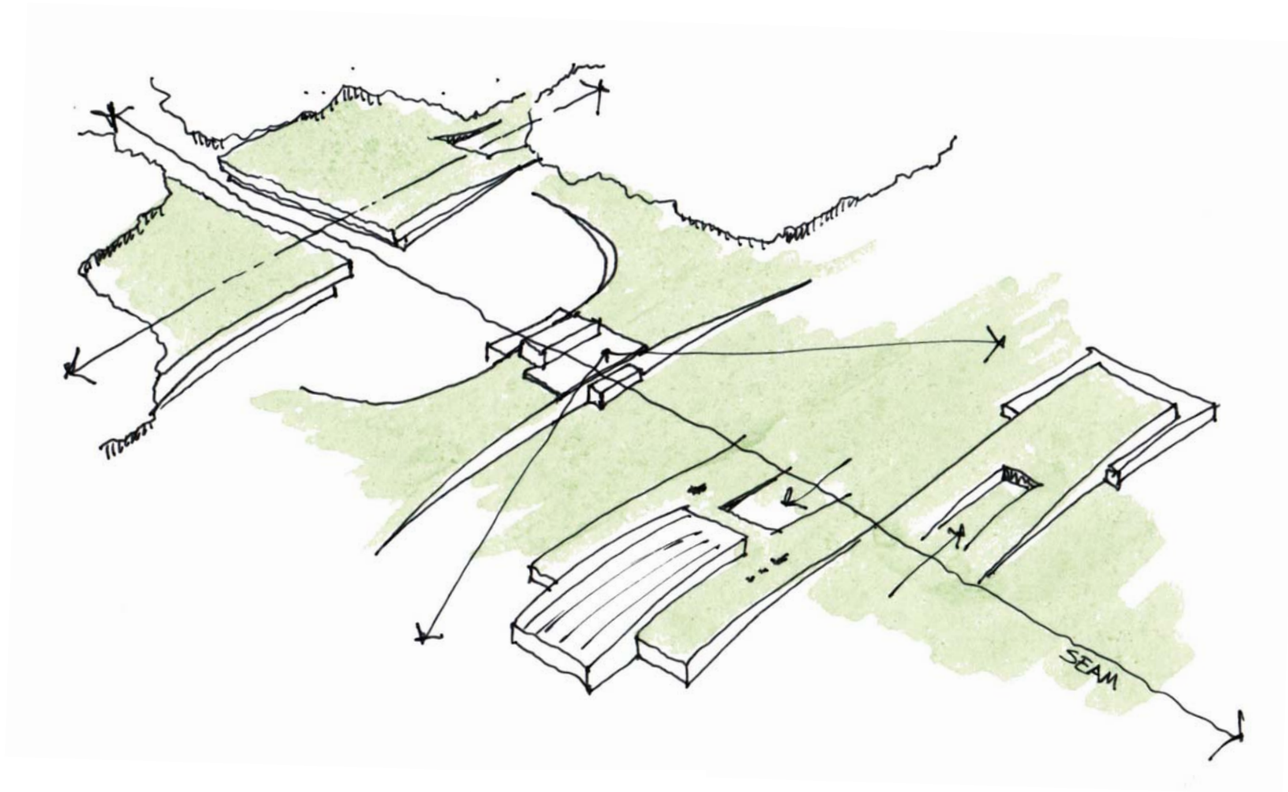


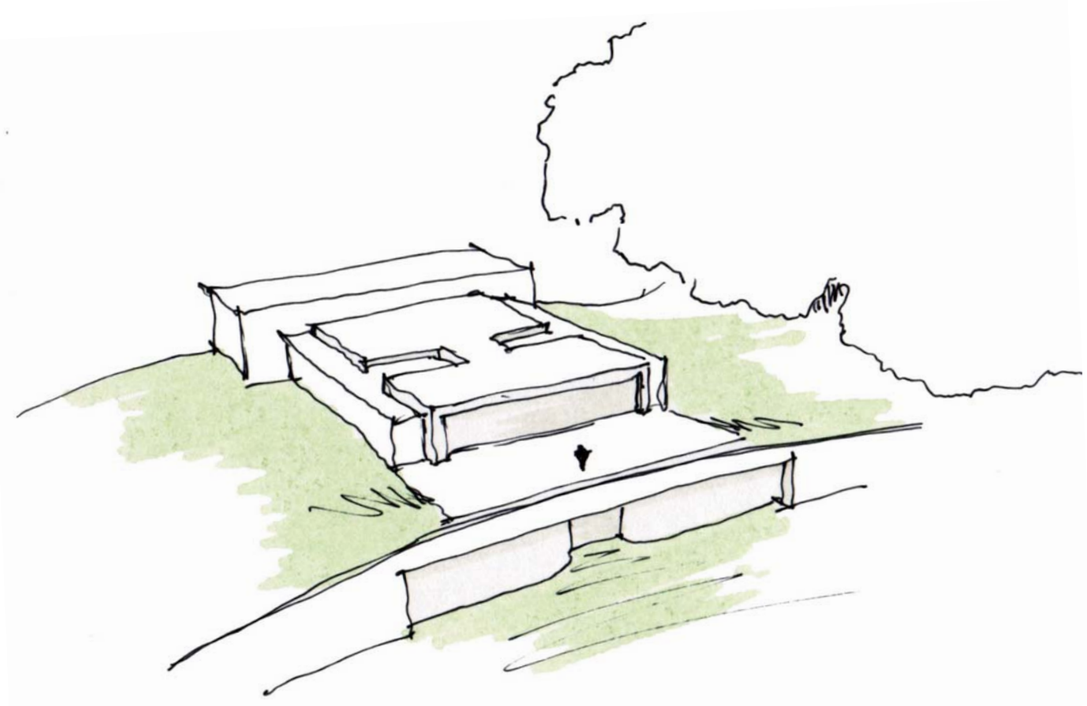


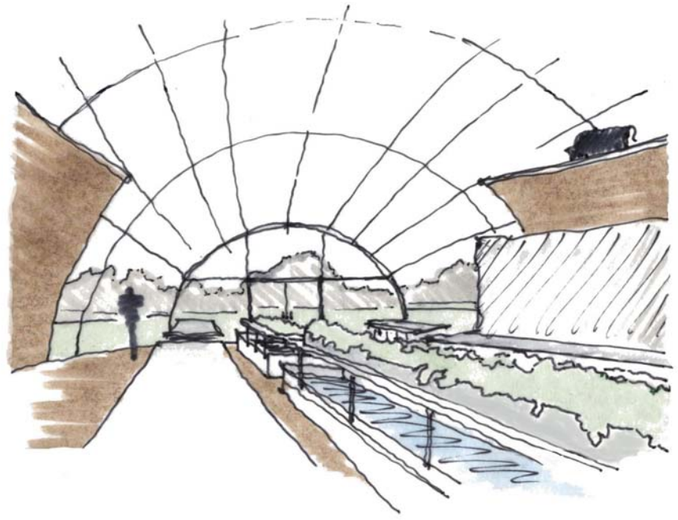
Concept Exploration 2:
Scale, Circulation, Section

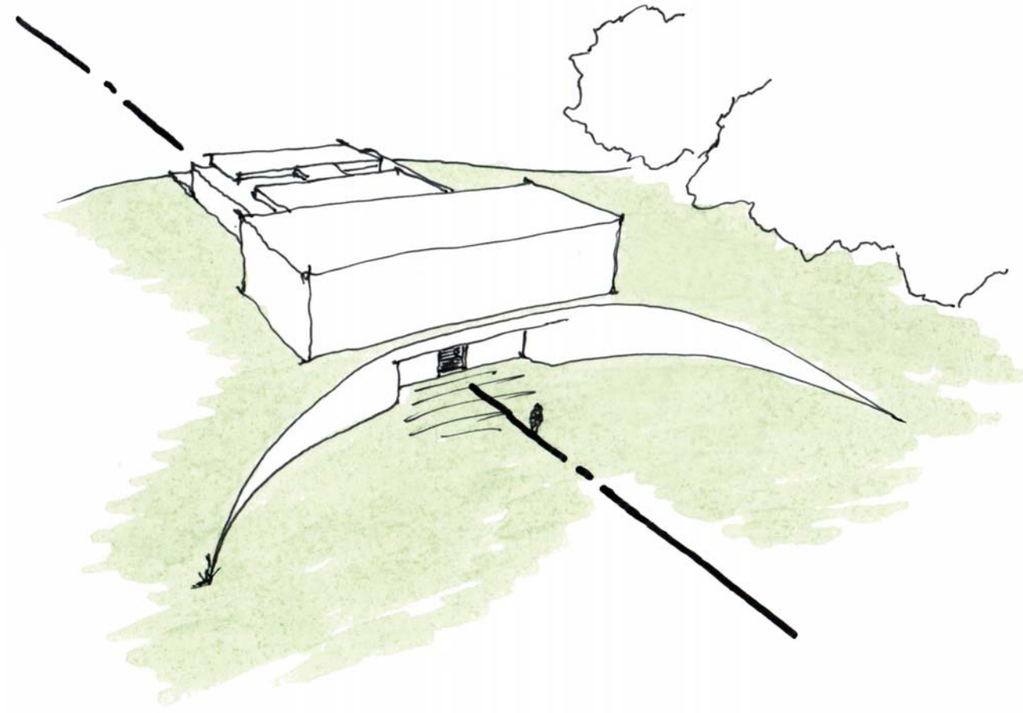


Flocktown Farms:
Investigating Built Form



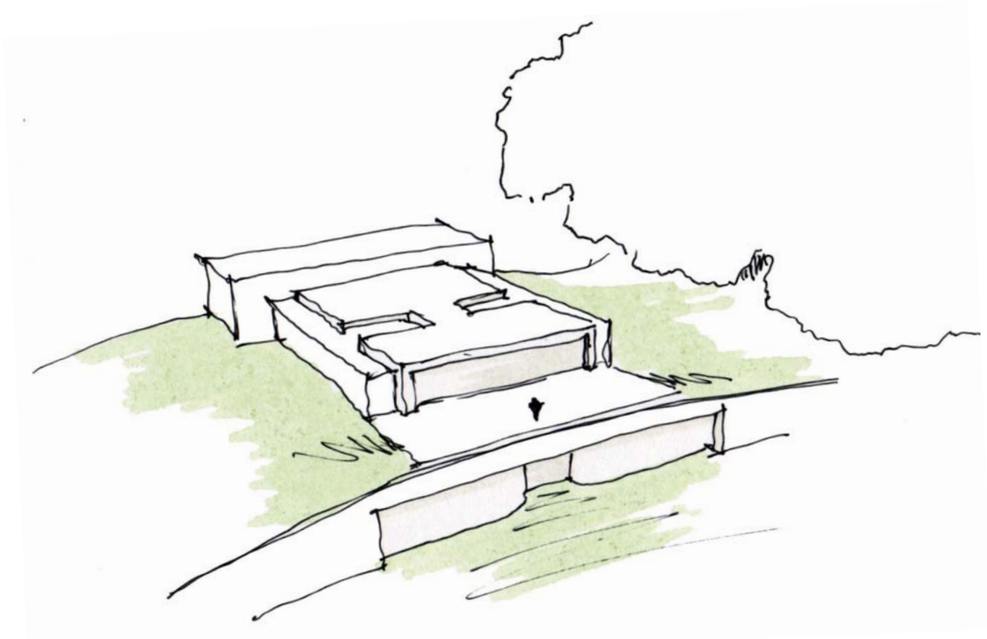


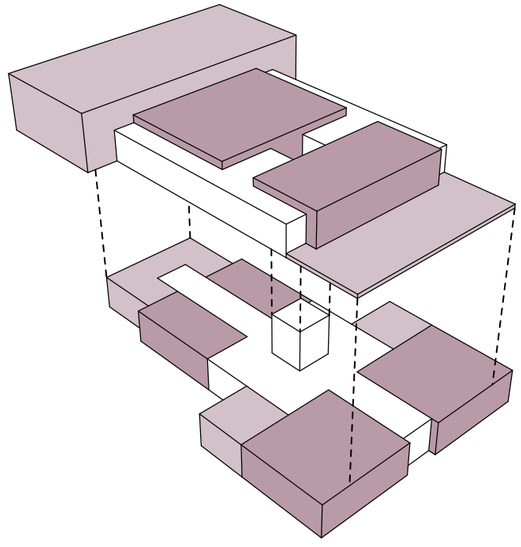


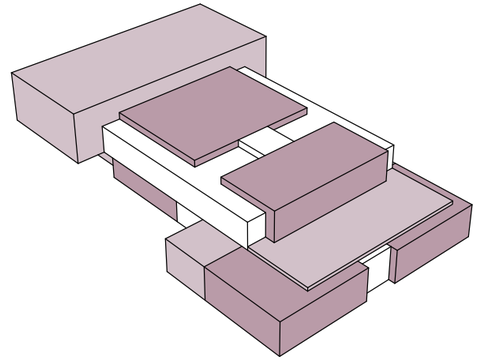


Agritourism Center
Farm To Table Restaurant

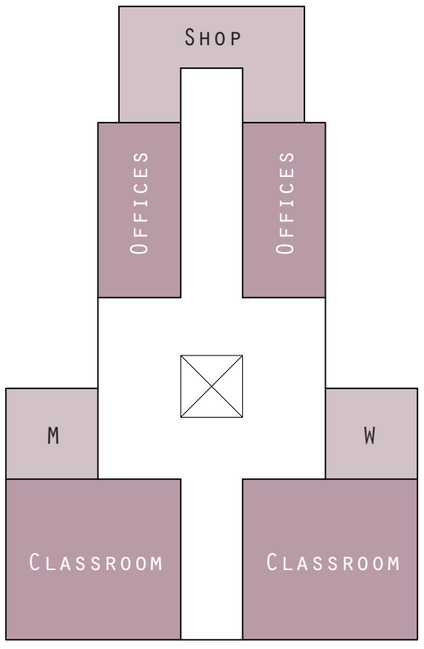
Flocktown Farms:
Investigating Built Form

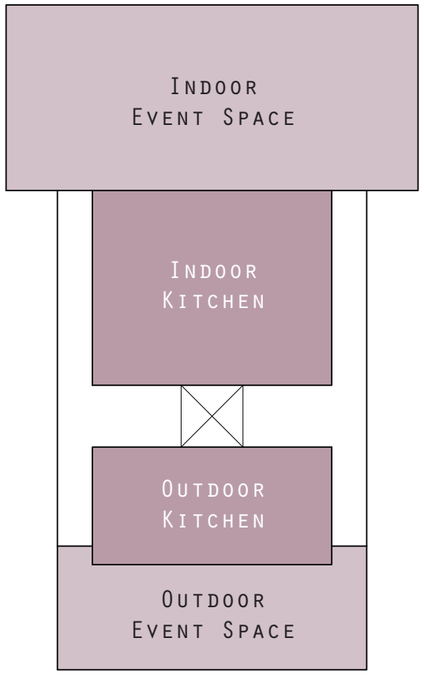


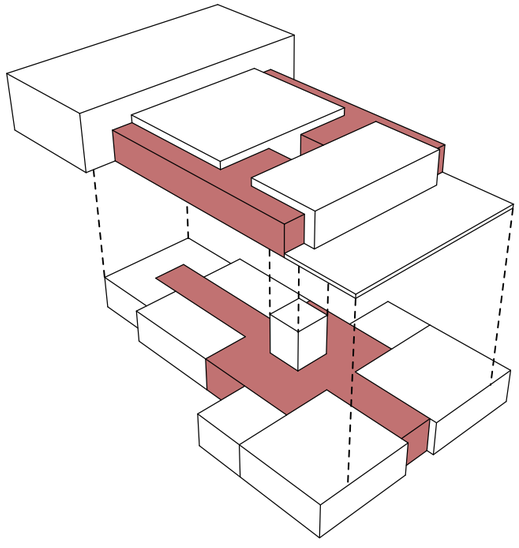


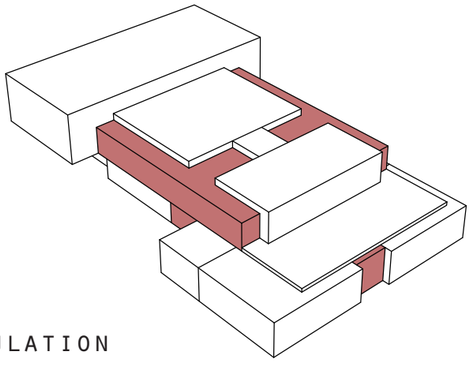


Stacked







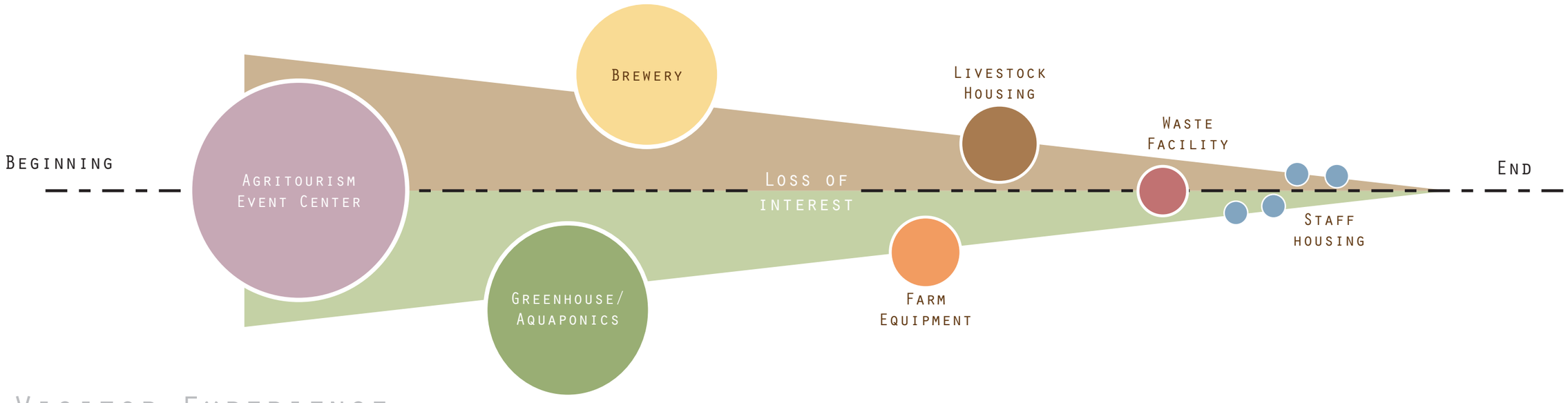


Circulation

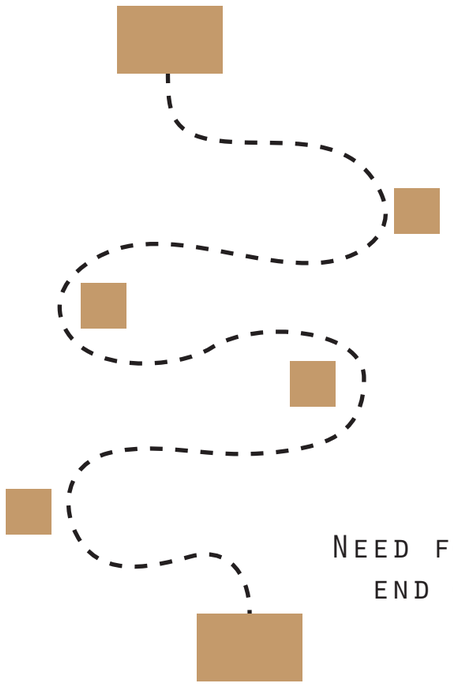
Flocktown Farms:
Macro Program Sequence

Midterm Program Sequence

Diameter = Level of Visitor nterest



Visitor Experience



Need for an end cap

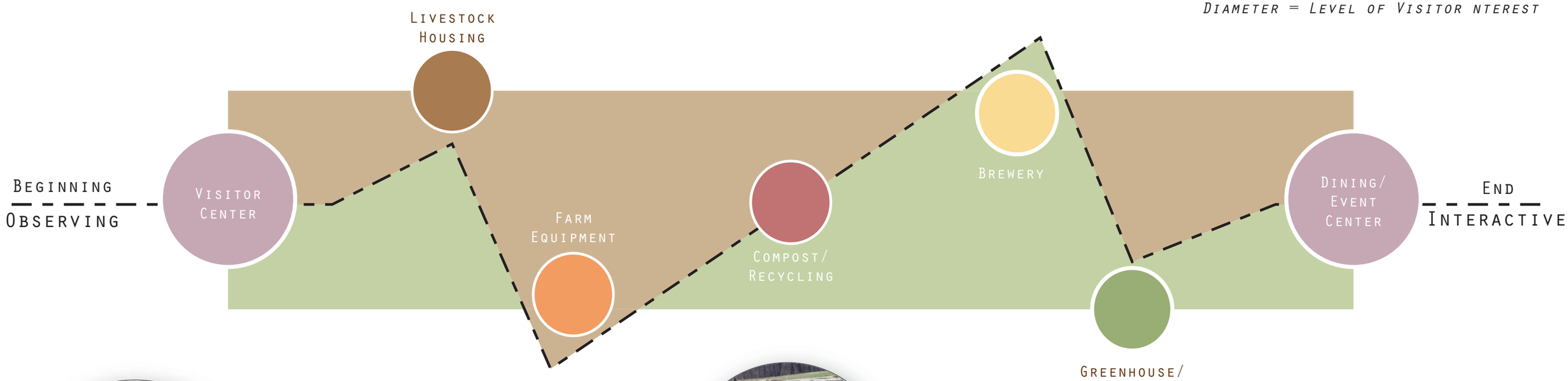
How do you draw the visitor down through the site?

1. Immersion:
   - Telling the "story of the farm"
2. Capture Curiosity
   - Views - Hidden and Revealed
3. Engaging/Tangible
   - Observing and Hands-On
4. Social Interaction
   - Farm to Table Dinner

Flocktown Farms:
Macro Program Sequence

Adjusted Program Sequence

Diameter = Level of Visitor nterest



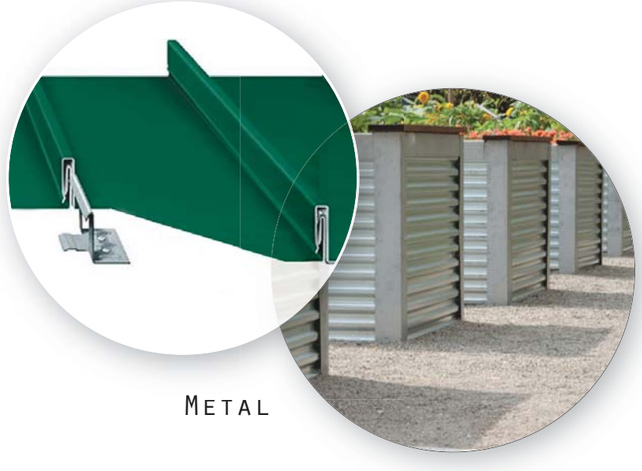
"The Farm"

What gives is its character?

Stone

Material Pallette

Wood

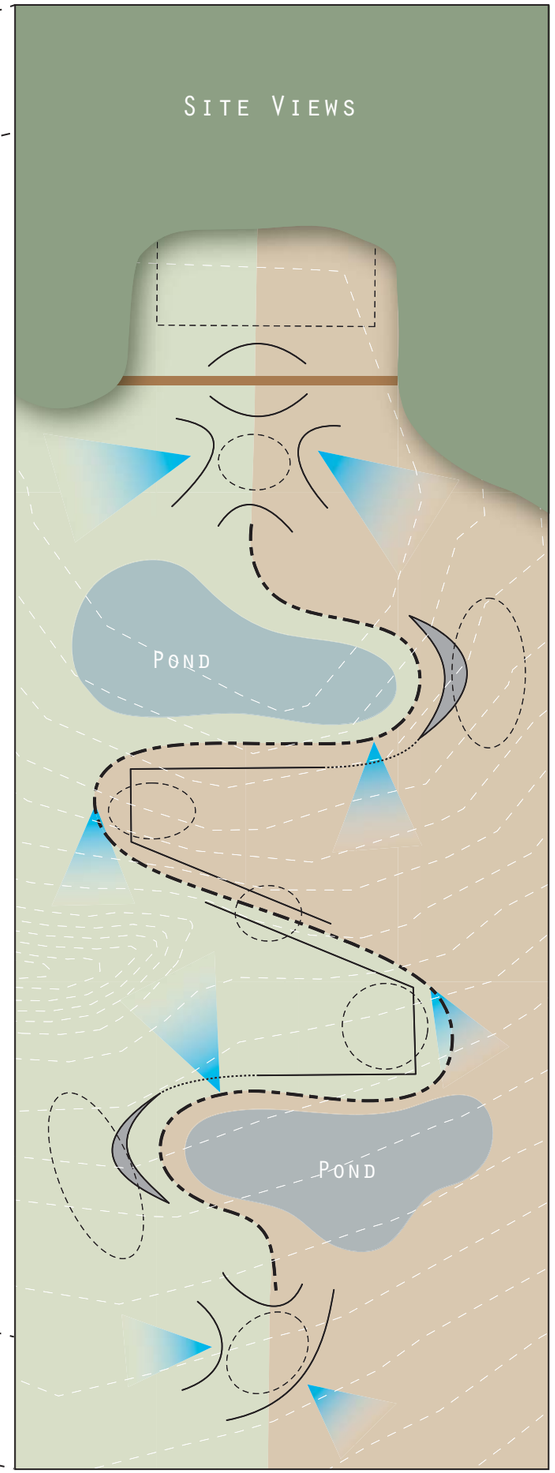


Metal

Landscape

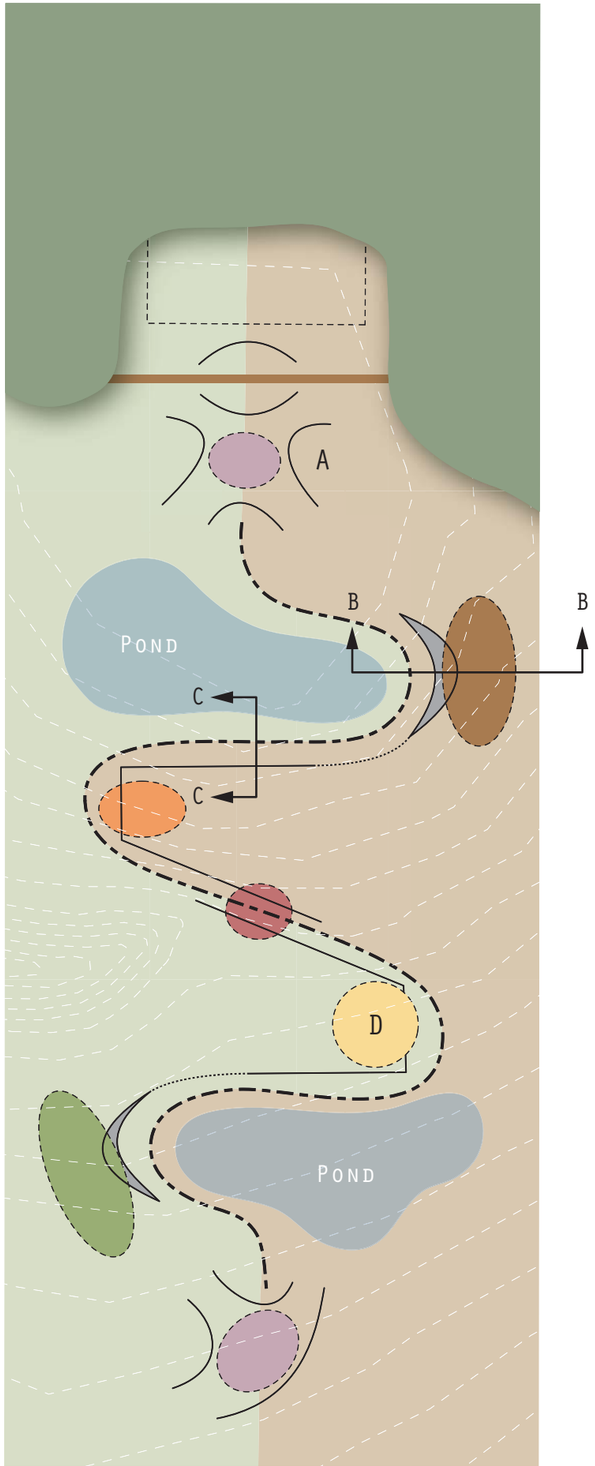
Flocktown Farms:
Macro Program Sequence

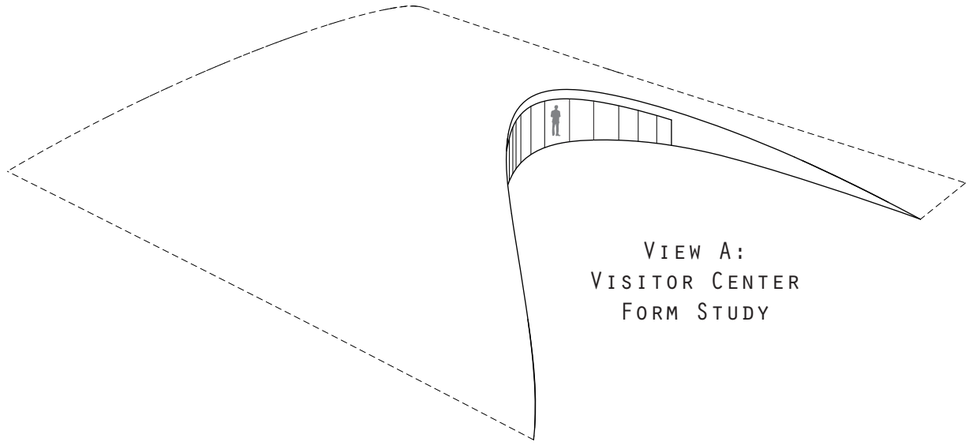
Scale: 1" = 200'



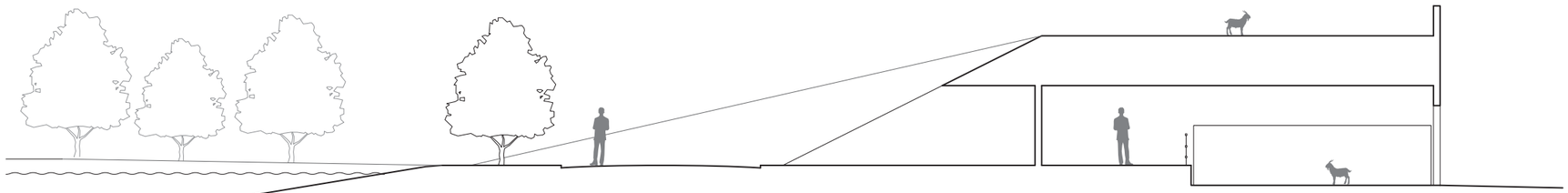
Approx. 3 City Blocks

- Parking
- Agritourism/Event Center
- Greenhouse/ Aquaponics
- Brewery
- Storage/Waste Treatment
- Farm Equipment Storage
- Livestock Housing
- Farm Management/Staff
- Mobile Cabins



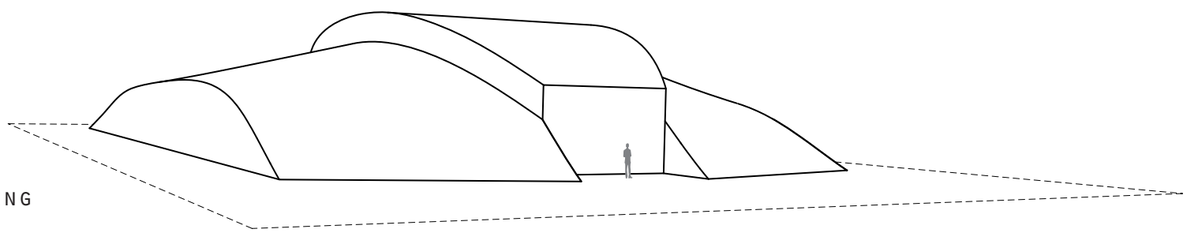


View A:
Visitor Center
Form Study



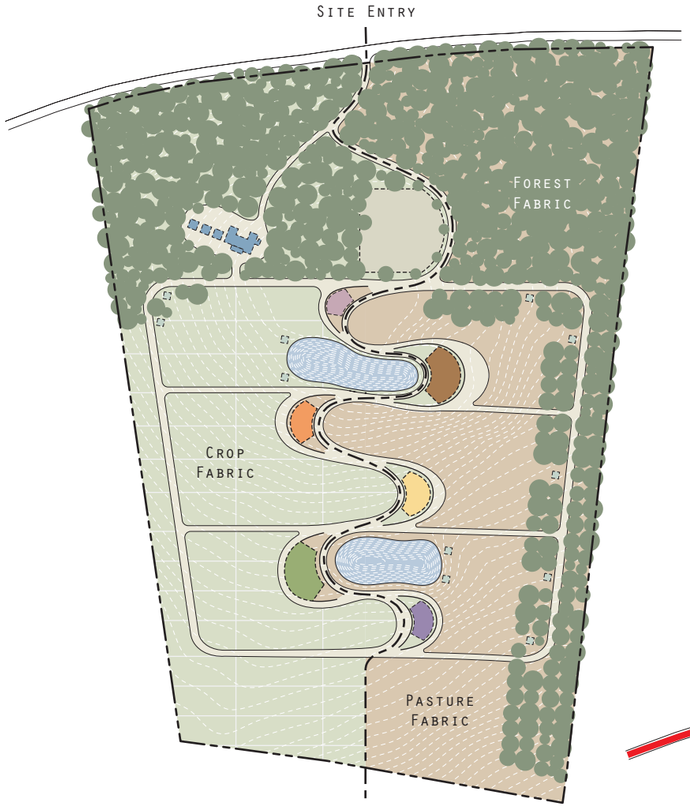
Section B

Section C



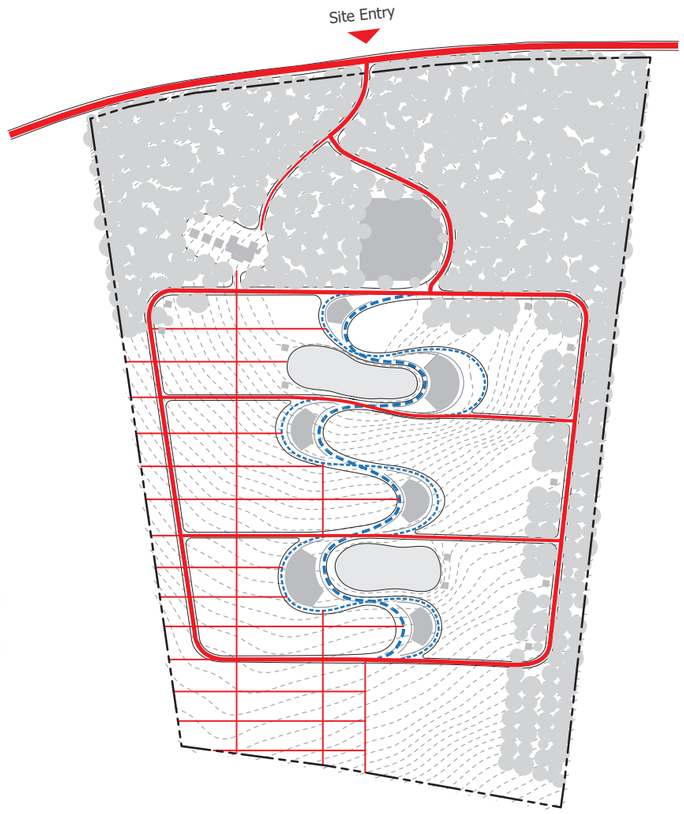
View D:
Brewery Massing

Flocktown Farms:
Master Site Strategy



Program Allocation

- Agritourism/Welcome Center
- Farm-to-Table Restaurant
- Livestock Housing
- Farm Equipment Storage
- Greenhouse/ Aquaponics
- Farm Management/Staff
- Mobile Cabins
- Parking
- Brewery

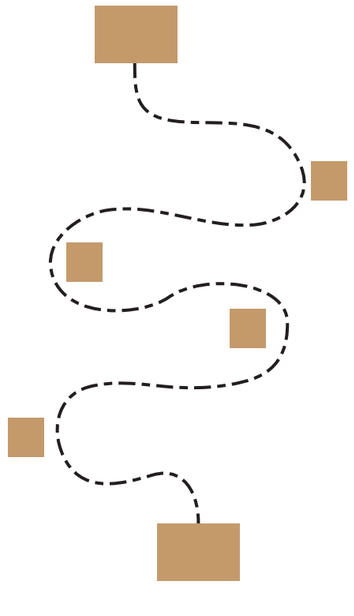


SITE CIRCULATION

- Production Circulation
- Pedestrian Circulation

SITE PLAN

Flocktown Farms:
Understanding “The Seam”

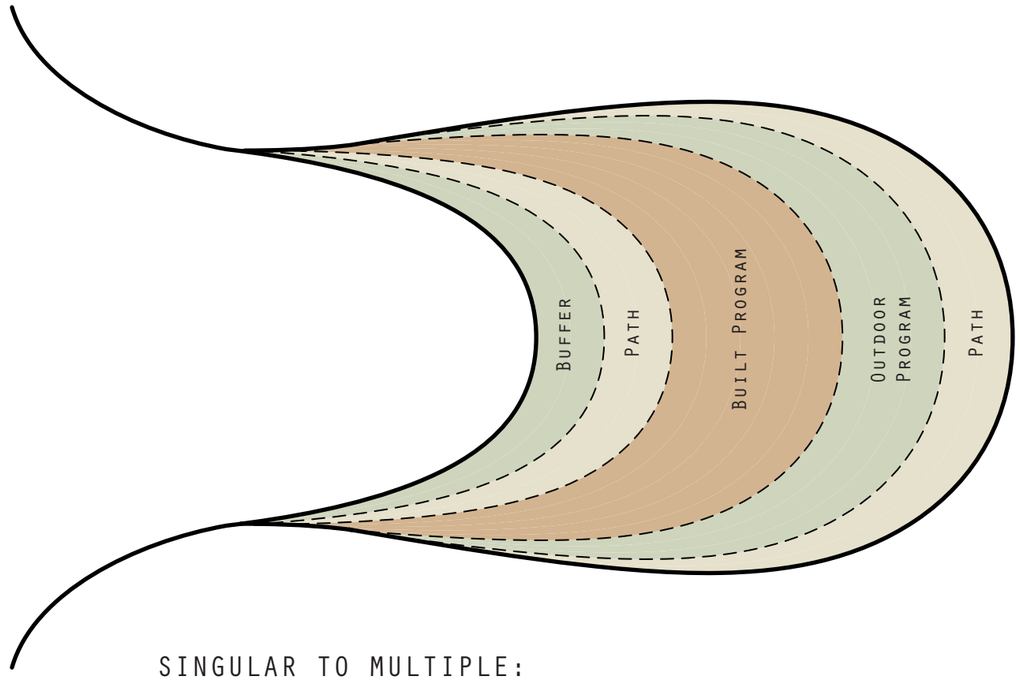


EXPERIENCING “THE SEAM”

Rather than having the seam be a line that runs through the site, it now becomes the vehicle for experiencing the farm and moving the visitors from fabric to fabric.

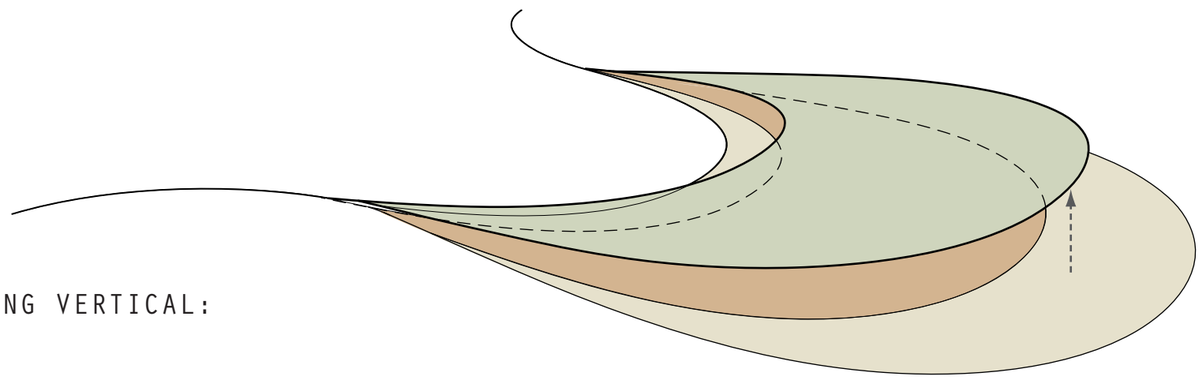
A singular path that weaves back and forth provides the movement needed. However, it is limited and offers the visitor no variety in his/hers experience of the farm.

Amplifying each of the major curves along the “seam” provides design opportunities that will provide the visitor with flexibility and variety when experiencing Flocktown Farm.



SINGULAR TO MULTIPLE:

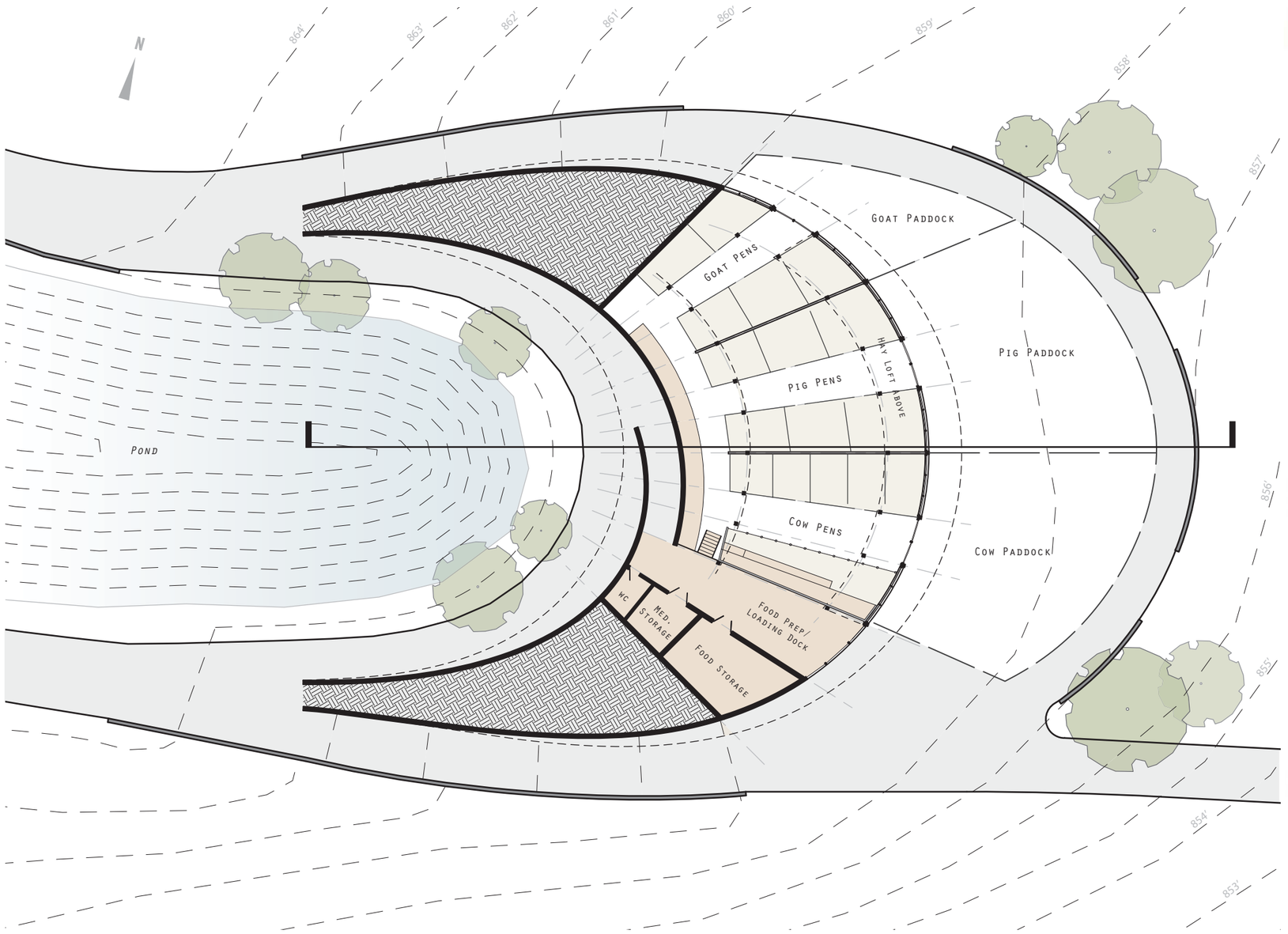
The original path is amplified, and provides a system of organization for the various program elements. Not only does it help to breakdown the micro program, but it also provides multiple ways a visitor may move through and experience the site.



MOVING VERTICAL:

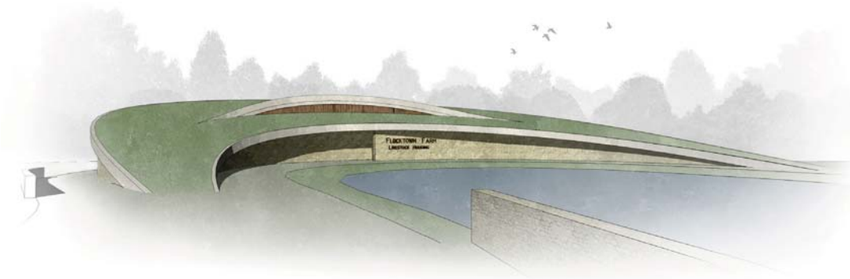
Using the multiple curve system to create three dimensional space. The structures are “lifted" out of the ground rather than extruded.

Flocktown Farms:
Prototype - Livestock Housing



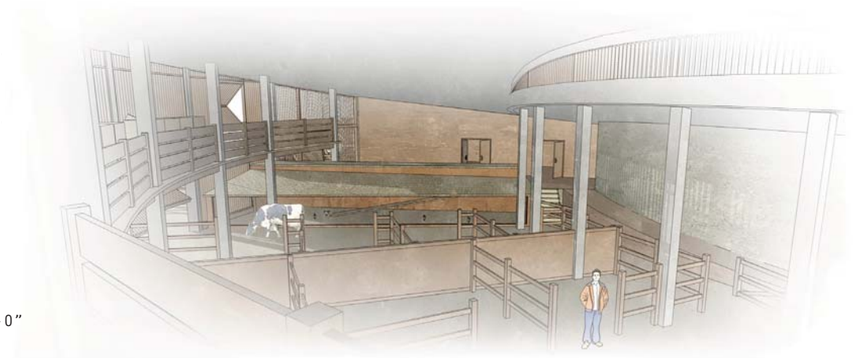
FLOOR PLAN

Scale: 1/32" = 1'-0"



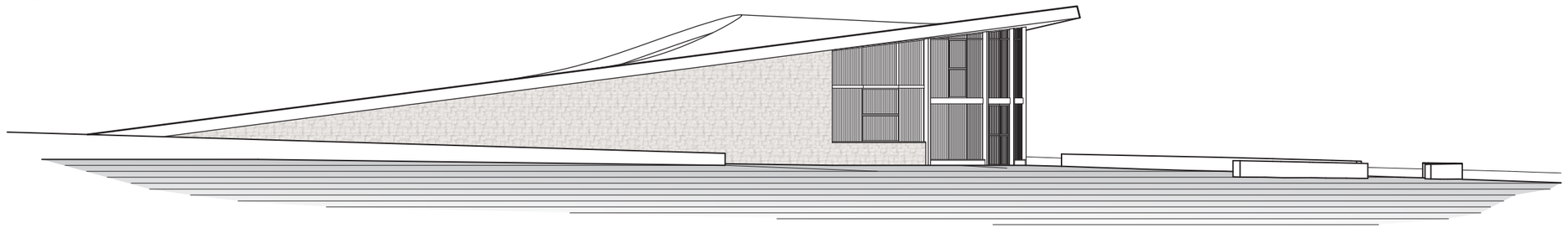
EXTERIOR VIEW - WEST APPROACH

EXTERIOR VIEW - EAST FACADE

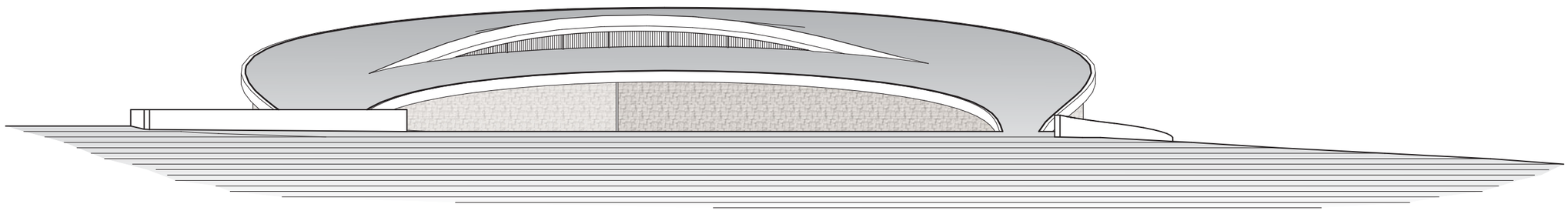


INTERIOR VIEW - FROM HAY LOFT

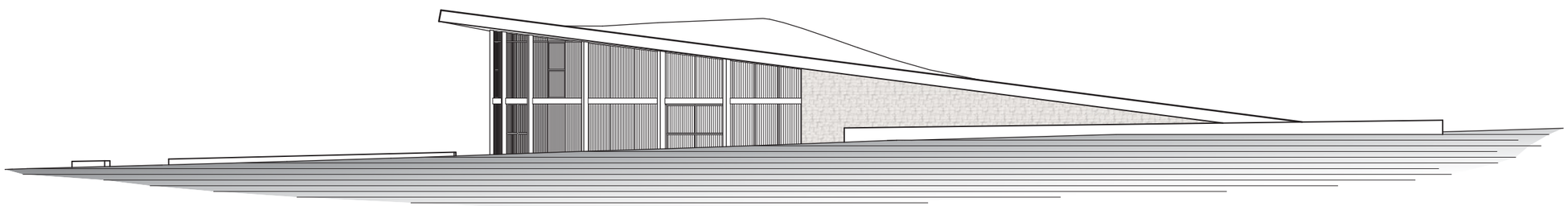
Flocktown Farms:
Prototype - Livestock Housing



SOUTH ELEVATION

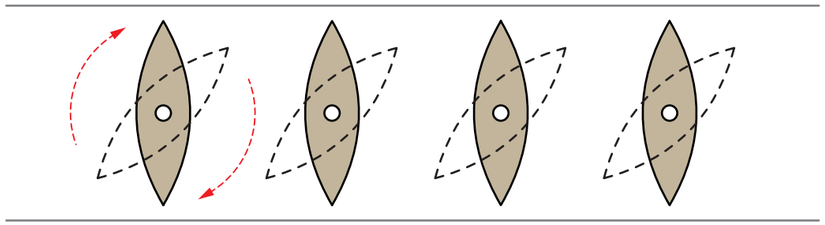


WEST ELEVATION



NORTH ELEVATION

Flocktown Farms:
Prototype - Livestock Housing



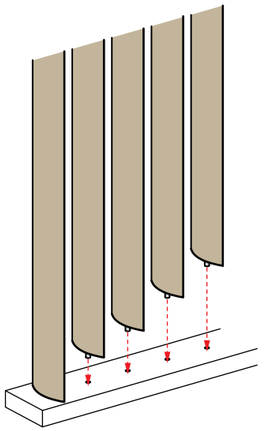
Vergola Louvre System

Louvre Dimensions: Width: 7”
Span: 12'-0”
(Max/Louvre)

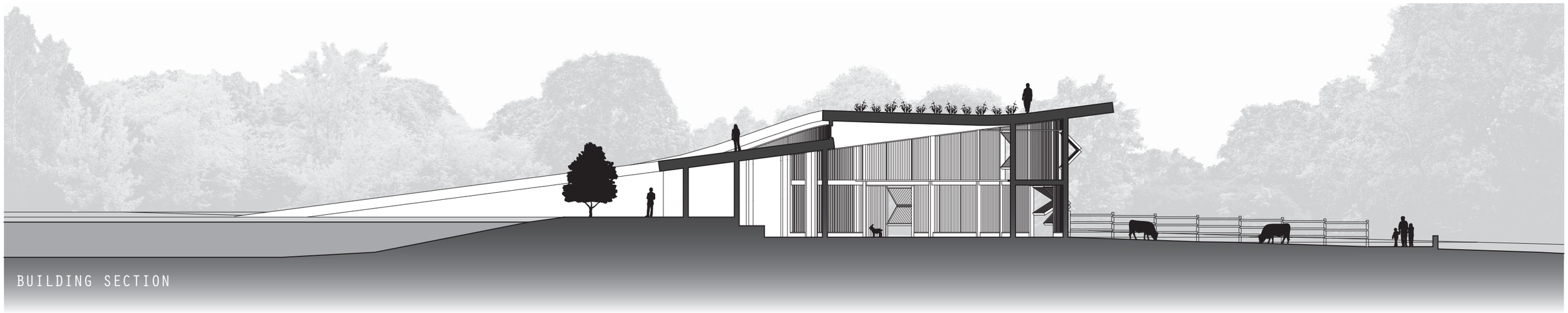
Louvre Rotations: 0° - 155°

Controls: 12V DC Motor
(operates up to 30 louvres)

EAST ELEVATION



OPERABLE EXTERIOR SKIN



BUILDING SECTION