Community Orchard Revitalization

Piper's Orchard Permaculture Plan

Faith Van De Putte

Piper's Orchard and Permaculture

Mission

To enhance Piper's Orchard historic, horticultural, educational, aesthetic and recreational value for the local community.

Shared by Friends of Piper's Orchard and Carkeek Park.

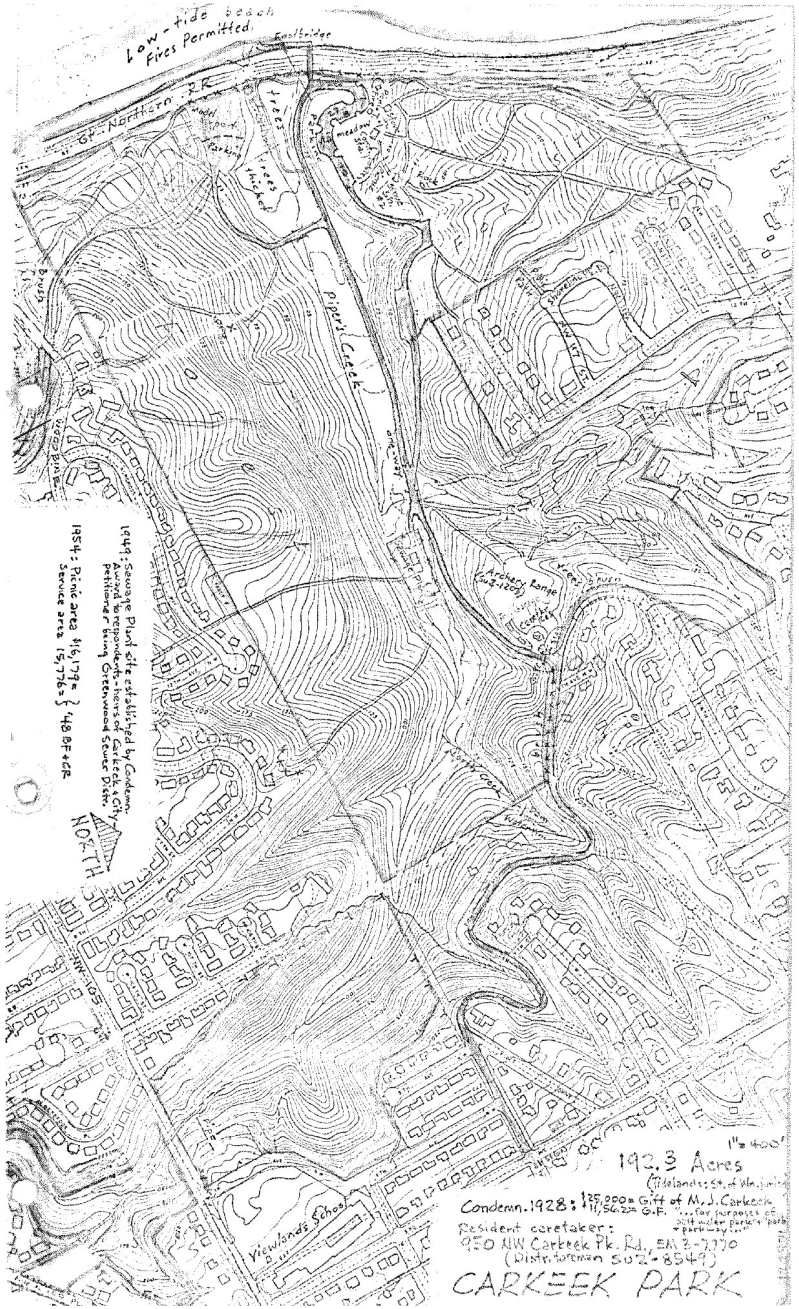
Goals

- Improve the health of the orchard
- Improve fruit quality
- Reduce maintenance costs
- Increase volunteerism
- Create education program

Why Permaculture Design

Permaculture offers a methodology and framework for designing the overlapping needs and resources of both the trees and human community using the orchard.

- Site specific observation and design
- Make the least change for the greatest effect
- Each design element performs multiple functions & each function is supported by multiple elements



Piper's History

- Formed 50,000 years ago
- Logged in the 1800s
- Piper family bought land in late 1800s
- Orchard planted
- Seattle Parks bought land in 1927
- Orchard abandoned
- Orchard rediscovered in 1981

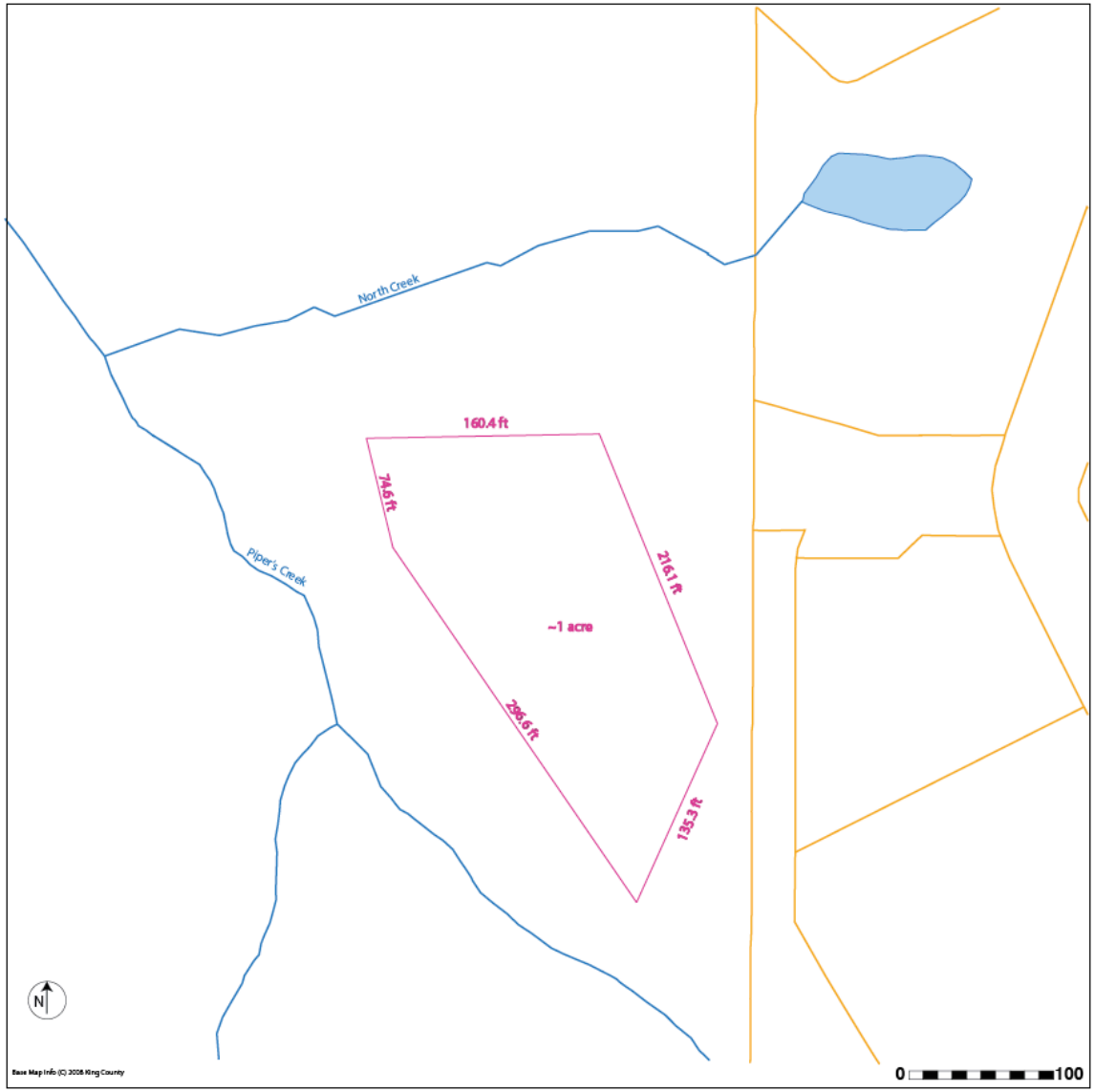
Design Process

- Sectors
- Stacking
- Guilds
- Relative Placement

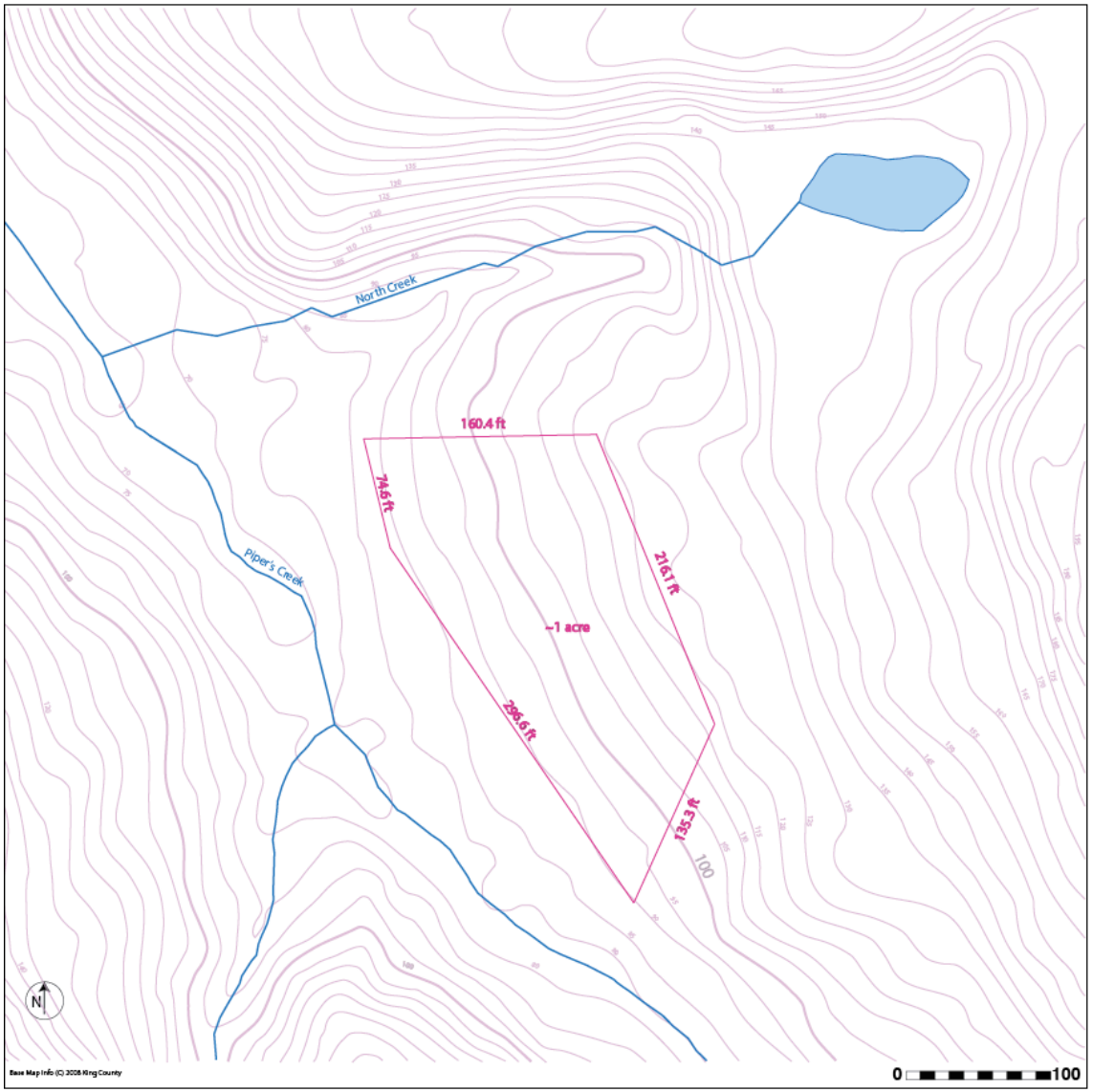
Sectors

the natural forces that impact the site

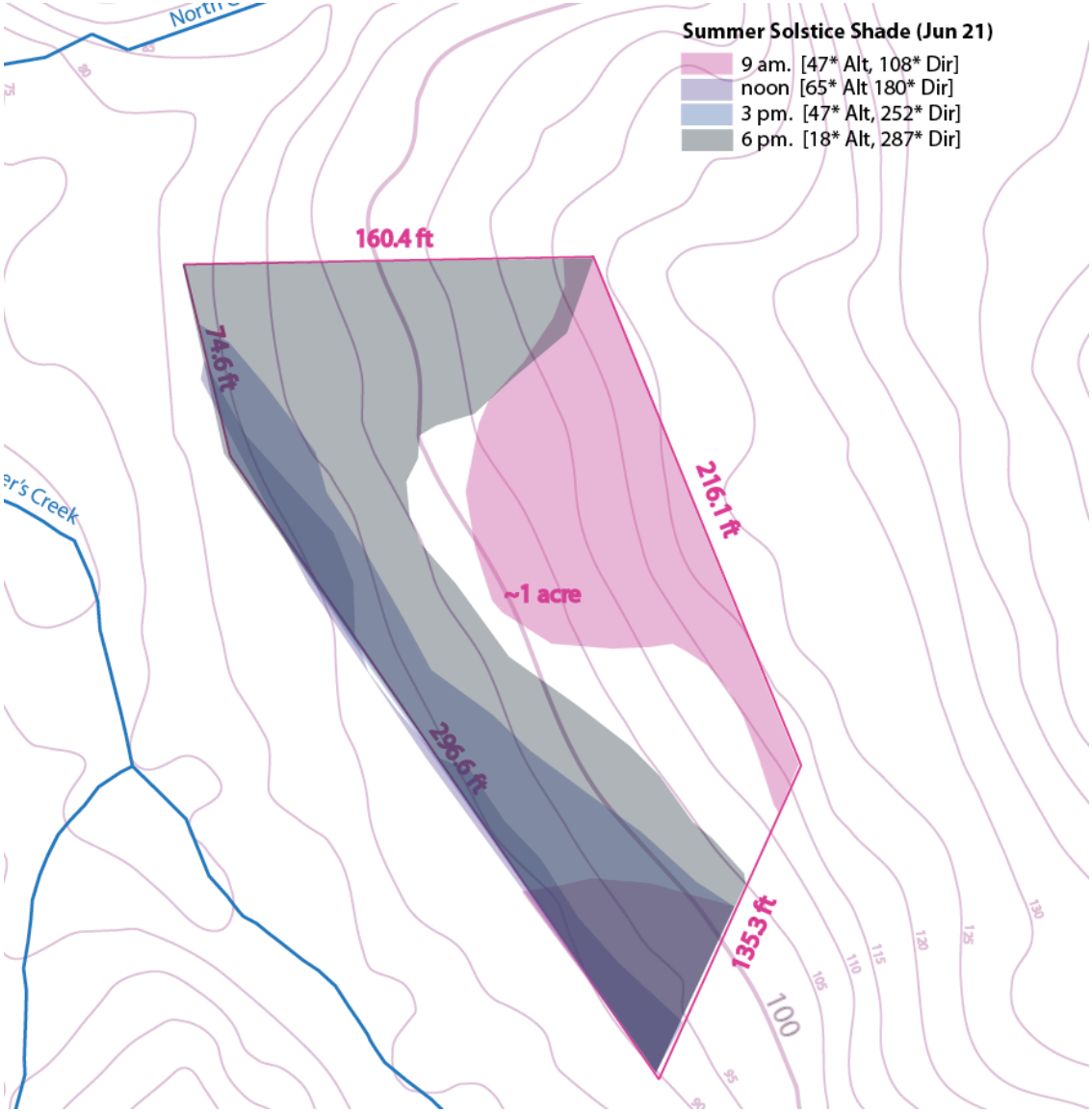
Water Access



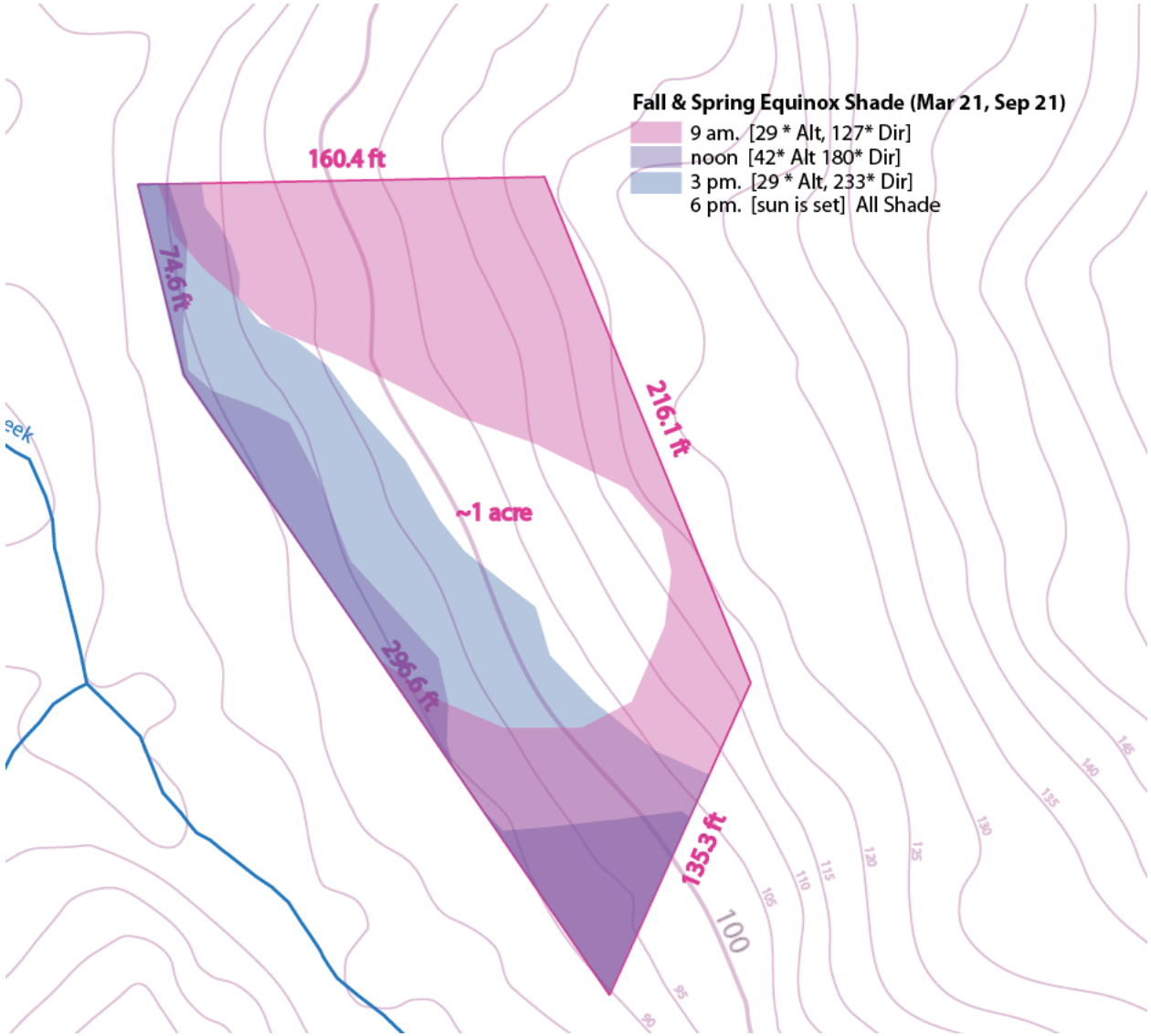
Slopes and Contours



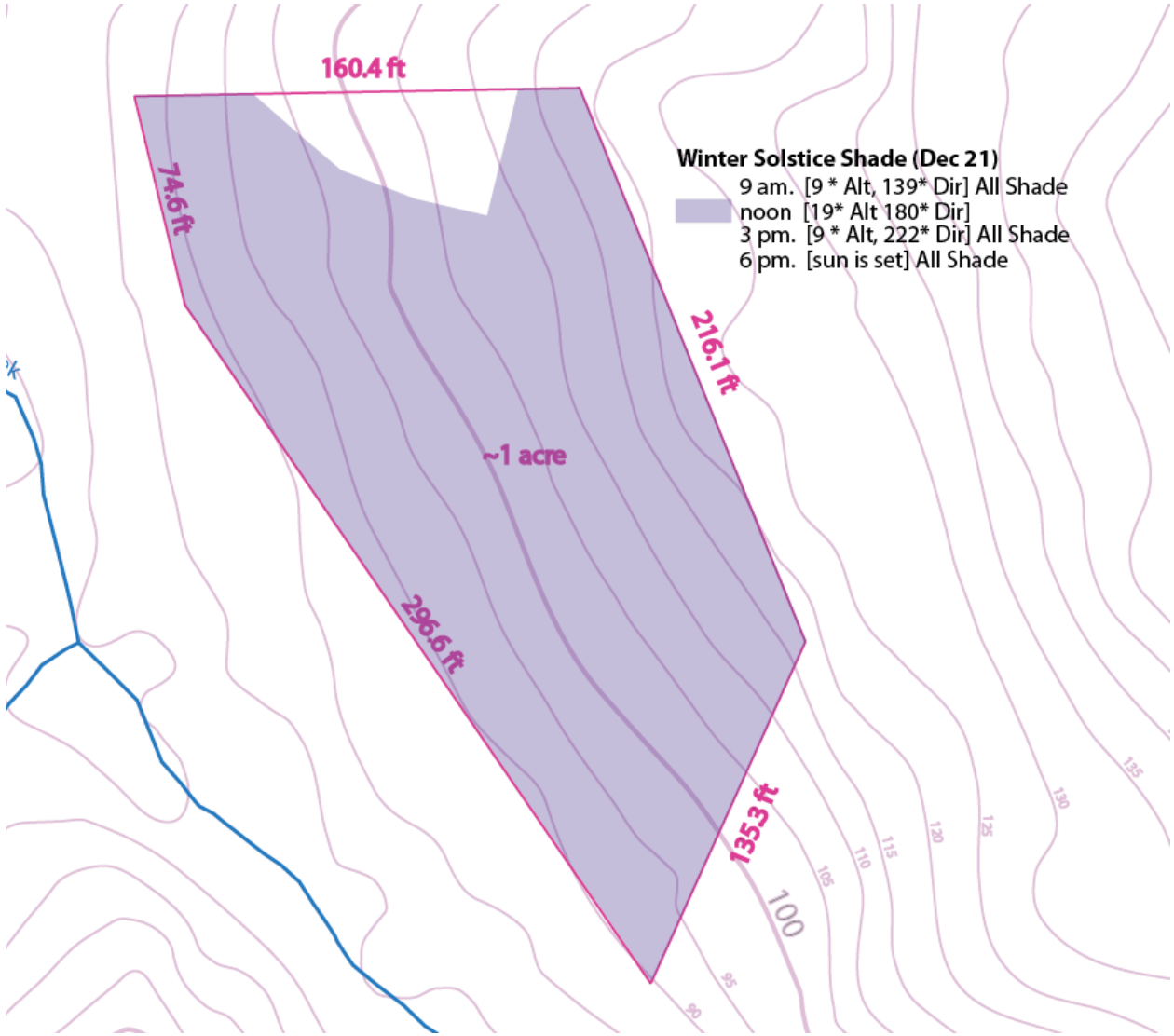
Summer – Shade Map



Fall & Spring – Shade Map



Winter - Shade



Other Influences

- Overlapping Stewardship
  - Seattle Parks Department
  - Friends of Piper's Orchard
  - Carkeek Park Advisory Council
- Park Rules and Regulations
- Opportunistic Plant Species
- Pests
- Funding

Jeff Wick

Infrastructure

Labor to care for the orchard is not adequate.

1. Orchard is a remote location and not well-enough known.
2. Communication & education is not fully developed.
3. Orchard does not attract sufficient volunteers.

Tree health & fruit quality needs improving.

1. Soil health is not fully developed.
2. Beneficial plant biodiversity is not fully developed.
3. Supplemental irrigation water is not available.
4. Beneficial animal biodiversity is not fully developed.
5. Pest control efforts have not been sufficient.

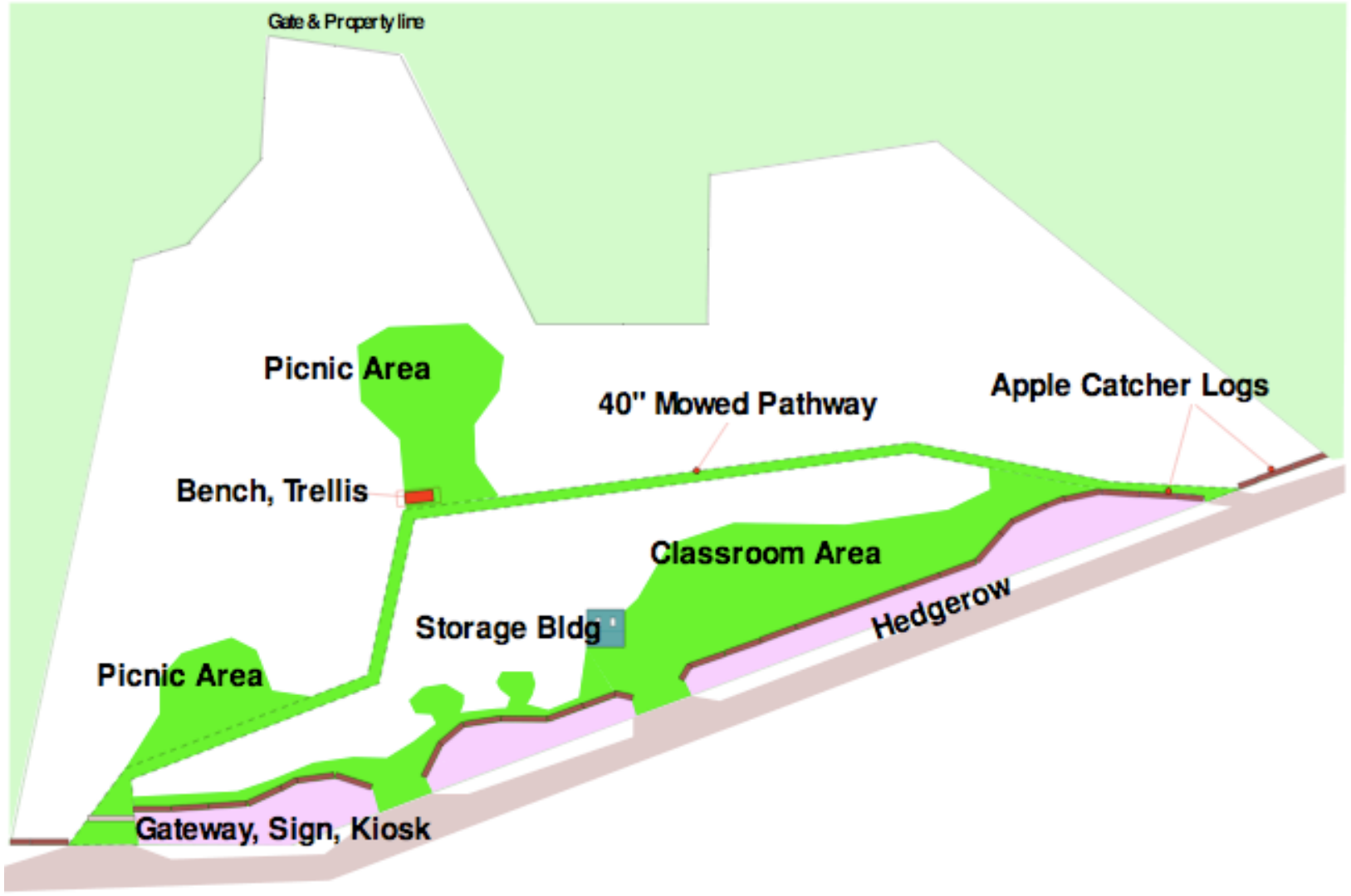
Permaculture Design Features

	Increase Volunteerism	Improve Tree Health	Improve Fruit Quality	Reduce Effort	Generate Revenue
Bench - Trellis	■				
Classroom - Workshops	■				■
Orchard sign - Gateway	■				
Info kiosk	■				
Interpretive signs - Species labels	■				
Pathway - Picnic sites	■				
Shorter Trail to ELC	■			■	
Hedgerow - Guild plantings		■	■	■	
Irrigation system		■	■	■	
Swales		■	■	■	
Storage - Tools		■	■	■	
Storage - Harvested Fruit			■	■	
Apple catcher			■	■	
Bat habitat			■	■	
Bee & wasp habitat			■	■	

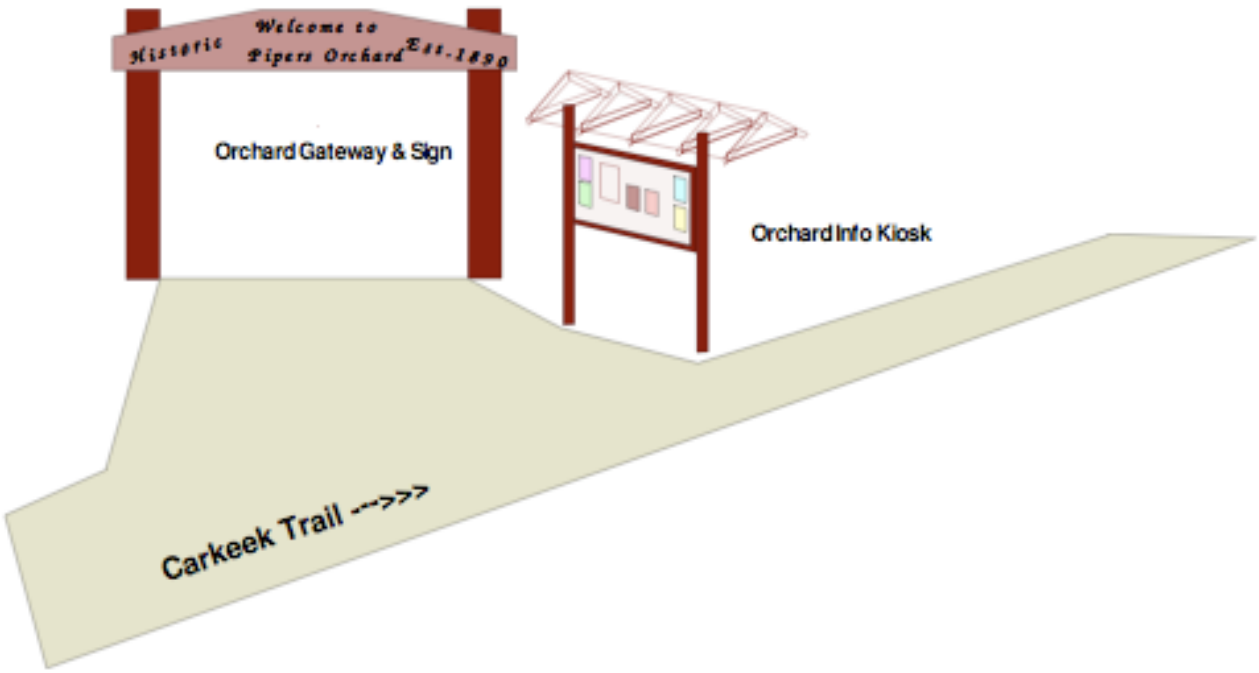
DEFERRED FOR FURTHER STUDY: Bird habitat, propagate trees & plants, chicken tractors, compost bins & chipper, cider press, cobb oven, solar panel, suntrap.

Diverse Functional Relationships

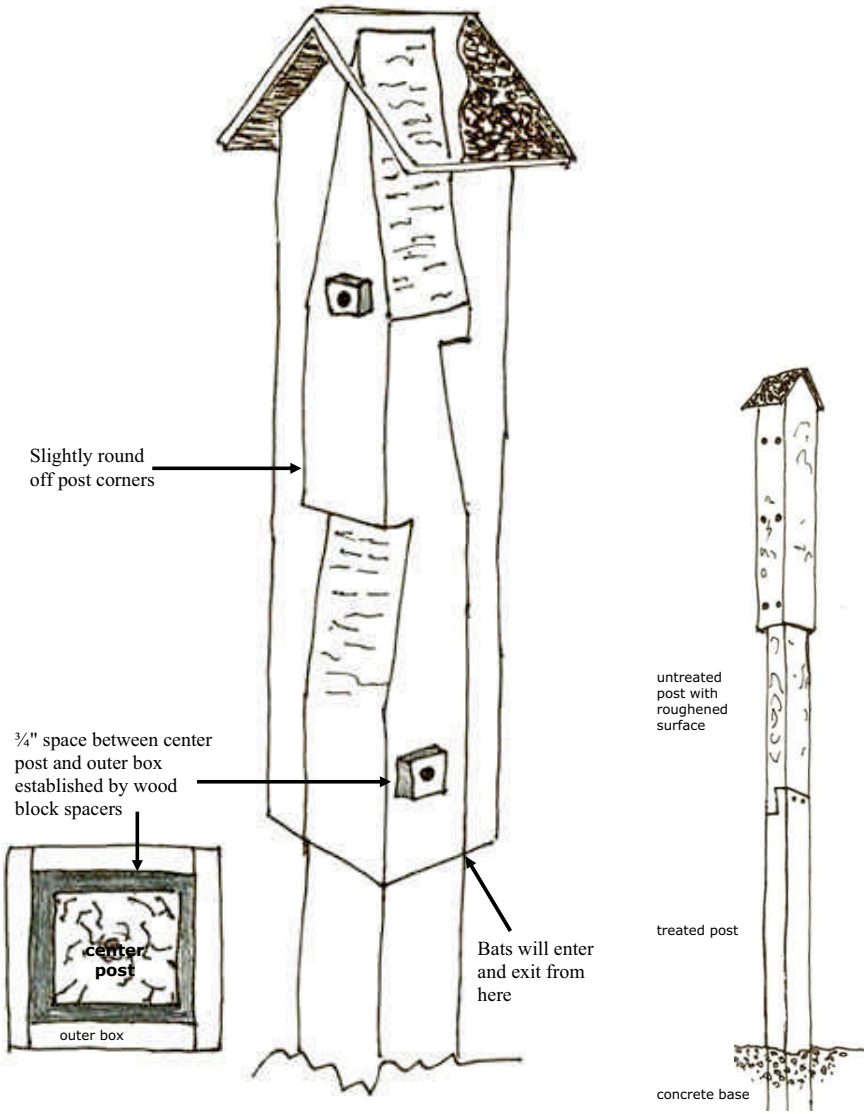
Design Feature Locations



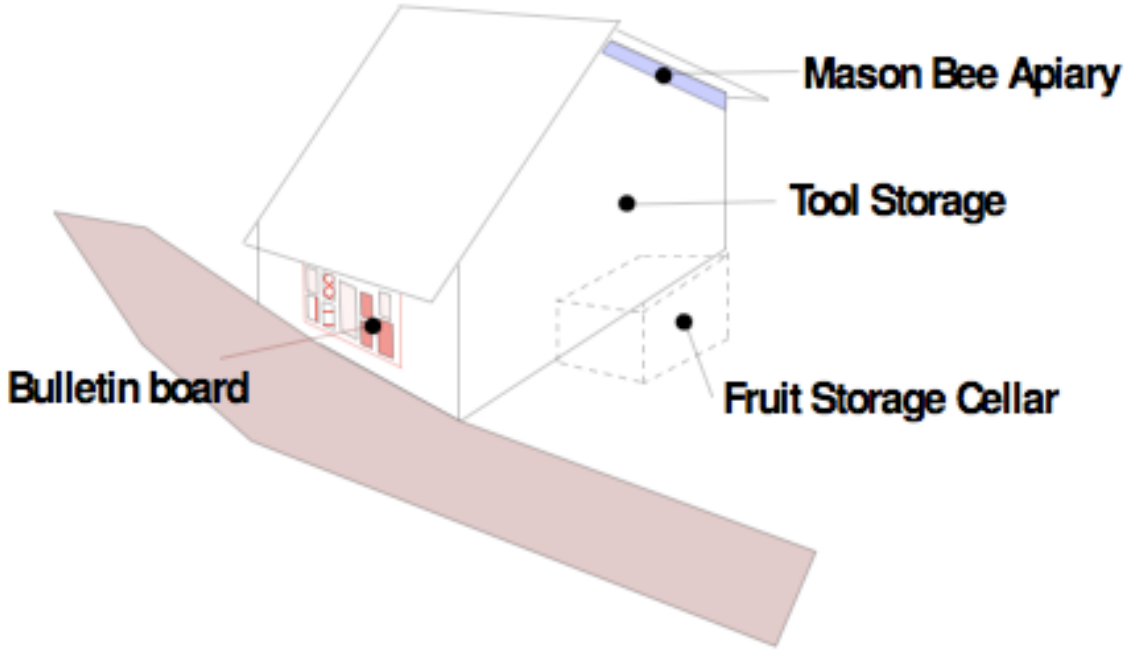
Orchard Sign Gateway & Kiosk



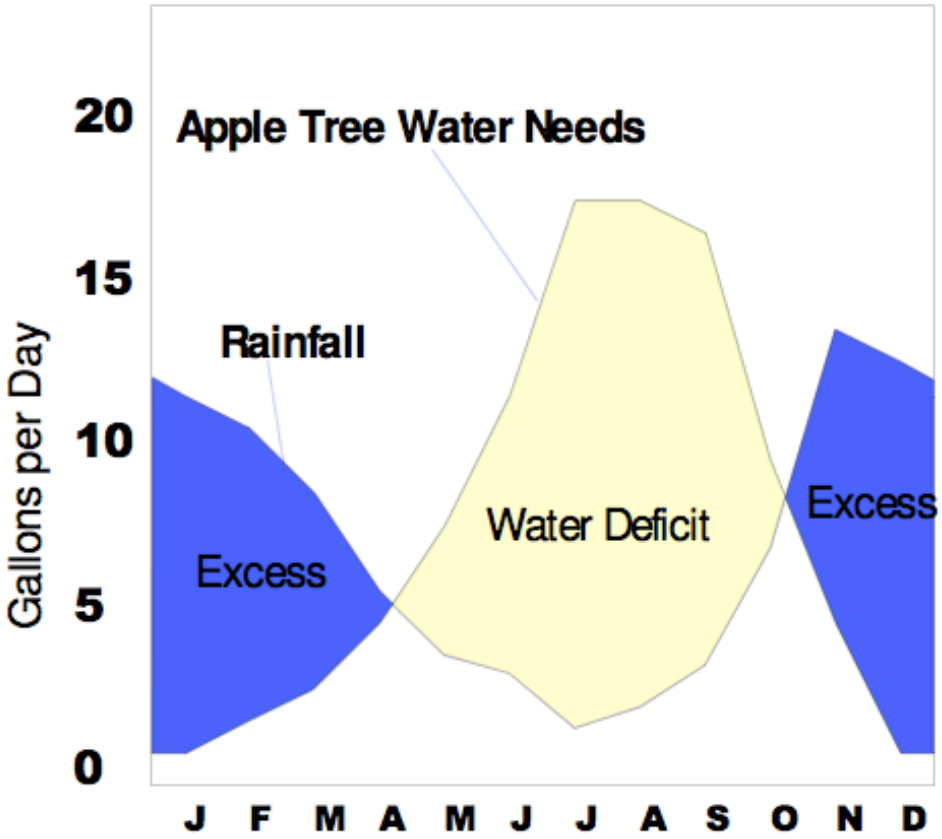
Bat House Design



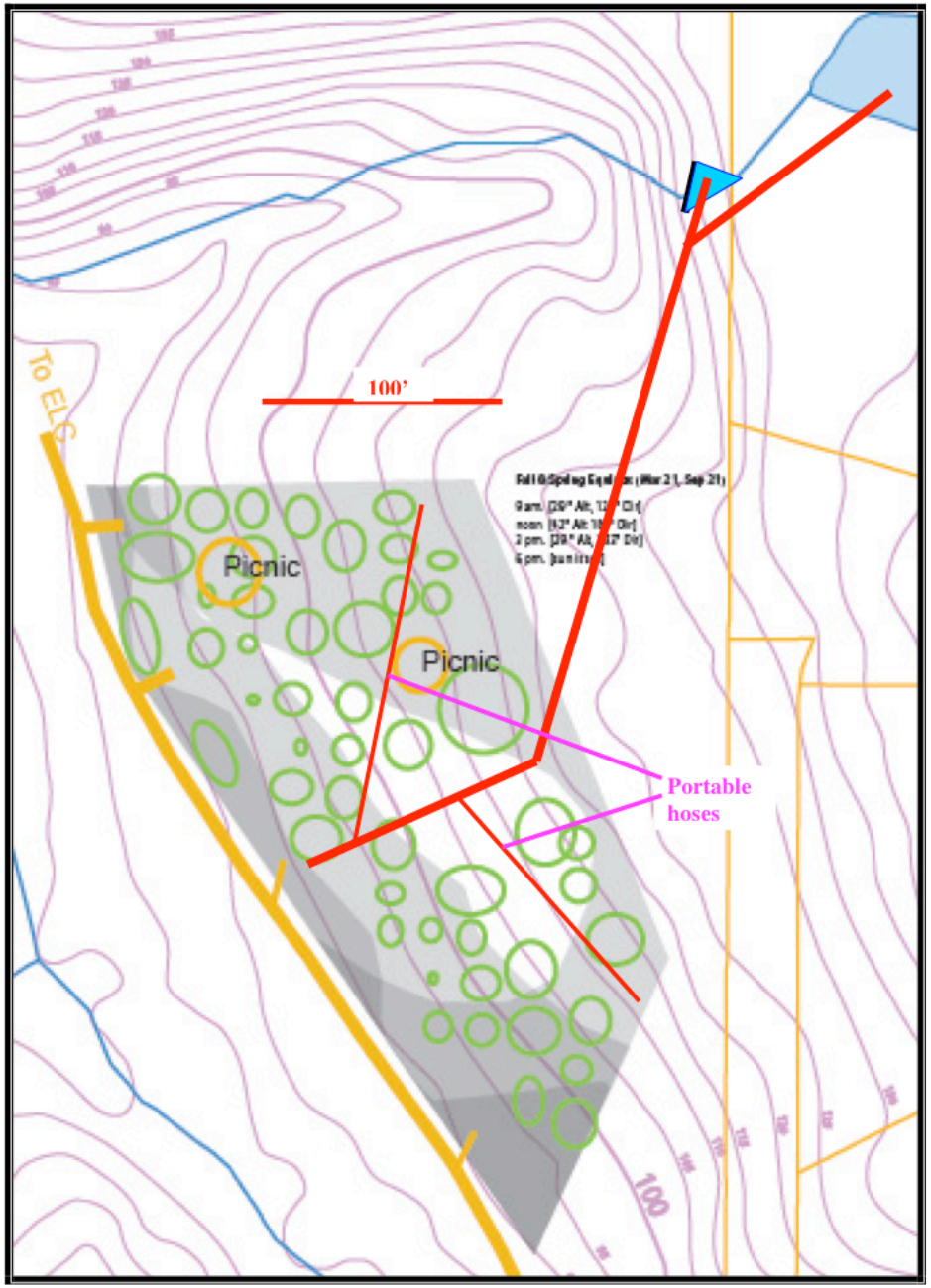
Classroom and Storage



Apple Tree Water Requirements



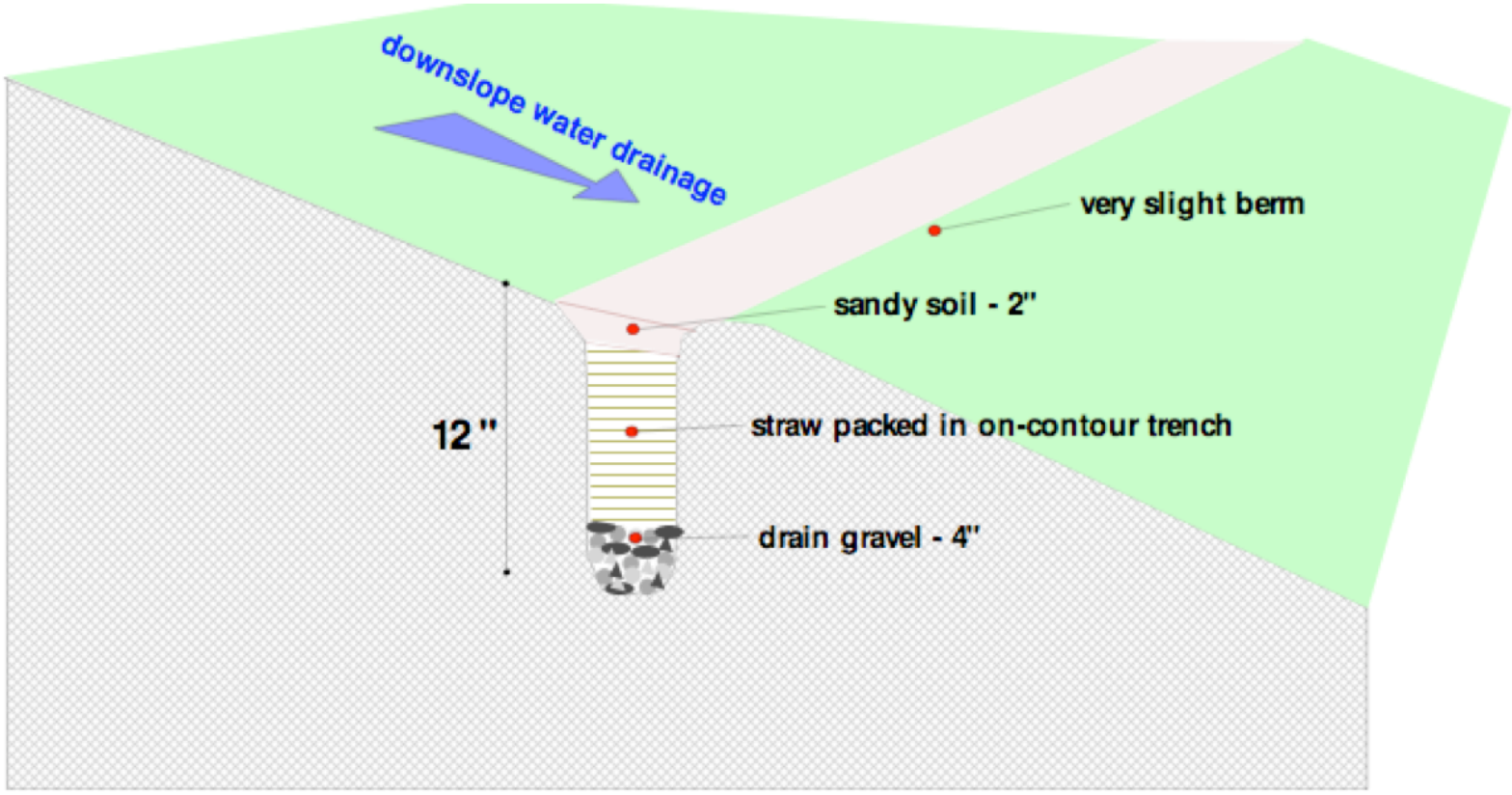
	Weekly
MAY	28 gallons
JUNE	60
JULY	113
AUGUST	110
SEPTEMBER	92
OCTOBER	20



Irrigation

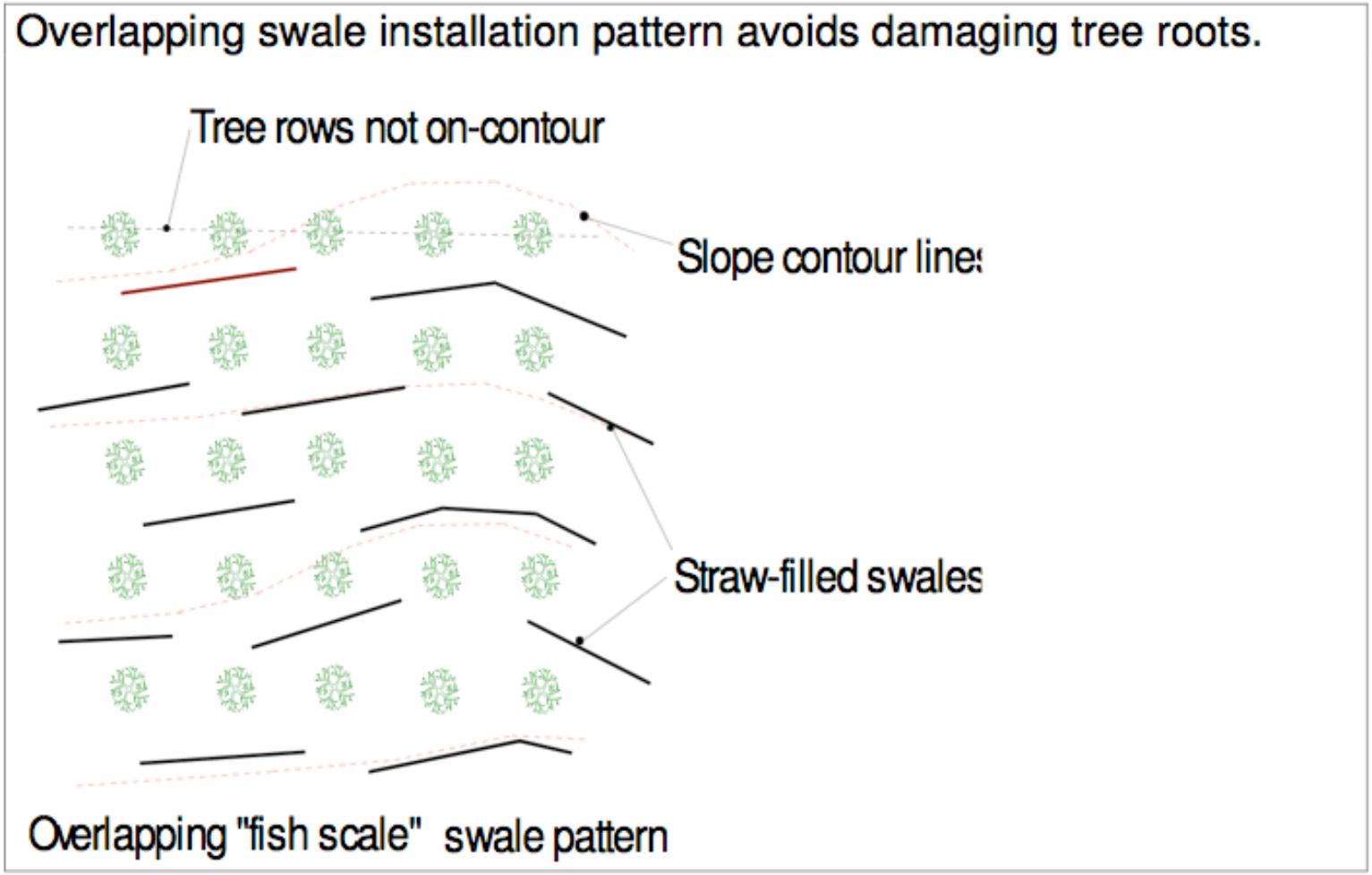
- No pump required
- Gravity Flow
- Intake at pond, or just below at stream
- Portable water lines

Straw Filled Swales



- Low profile to mowing
- Straw filled 12” depth
- ~500 linear feet of swale

Swale Layout



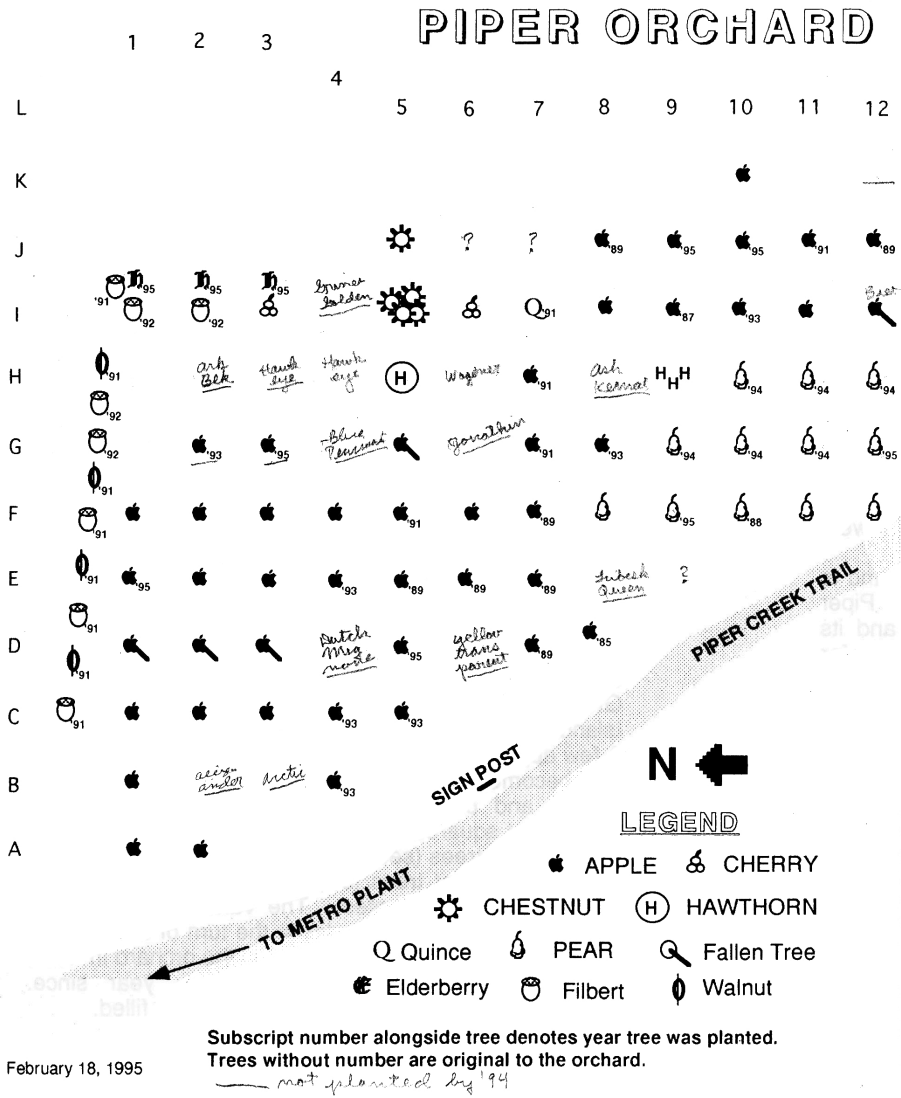
Ingela Wanerstrand

Plants, Trees, Birds and Bees

Plants and Animals

- Orchard Trees
- Orchard Floor
  - Soil
  - Meadow
  - Under The Fruit Trees
- Hedgerows
- The Orchard Edges

Tree Variety Map

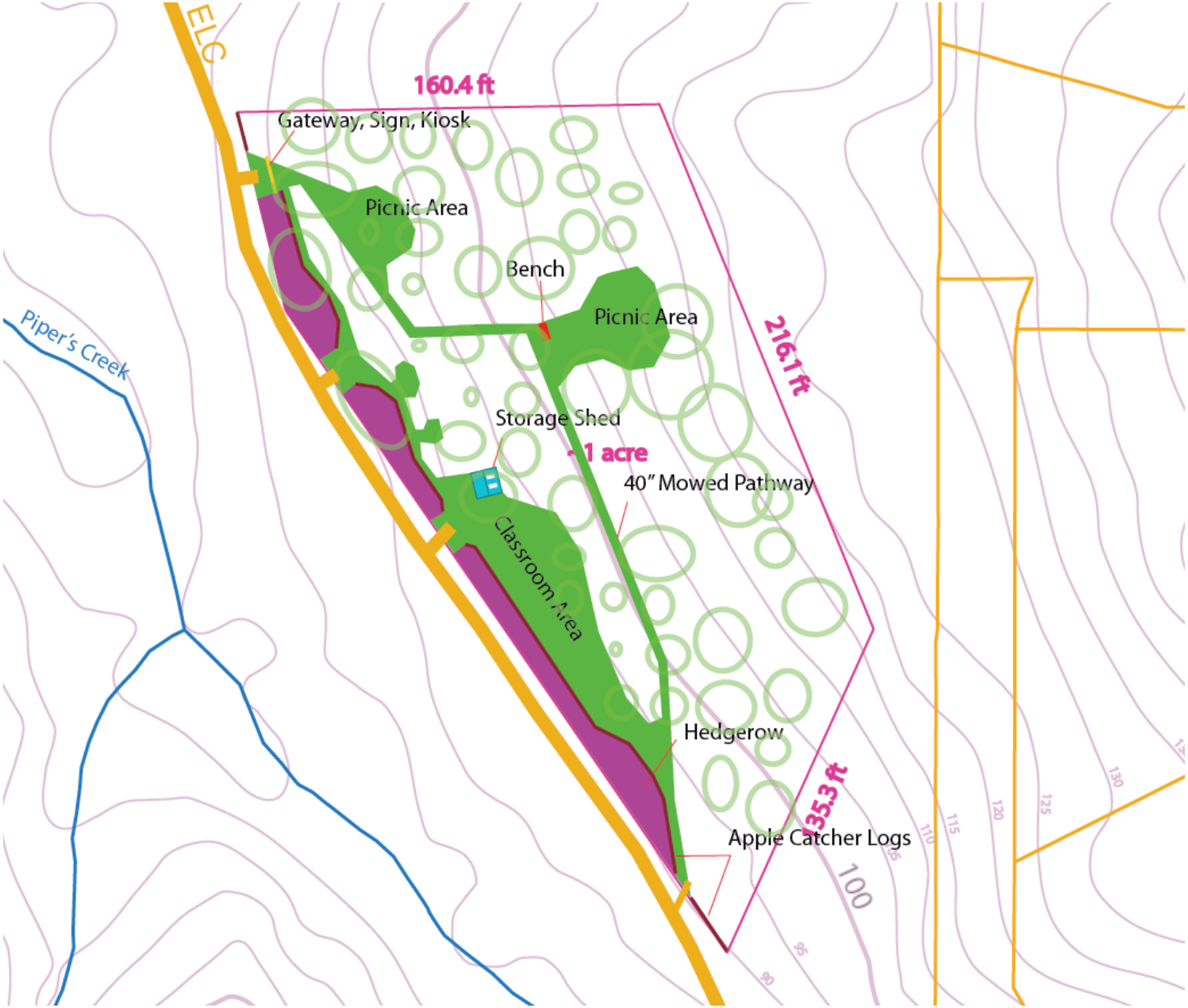


February 18, 1995

Subscript number alongside tree denotes year tree was planted.
Trees without number are original to the orchard.
— not planted by 94

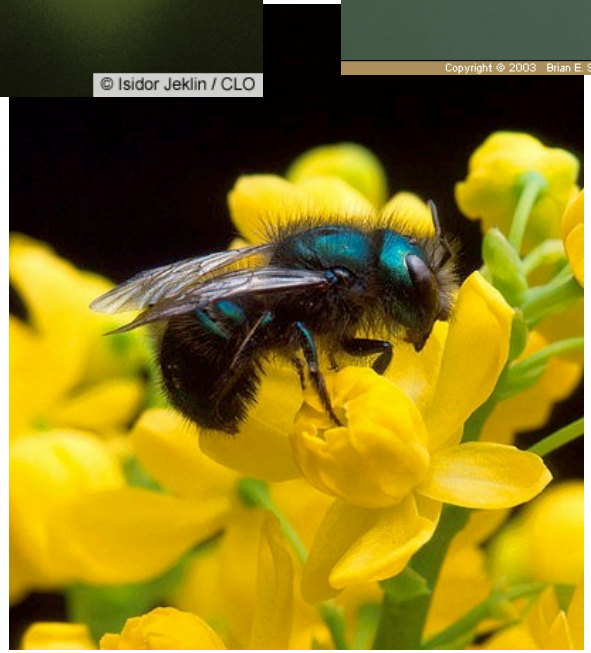
A1 Wealthy
A2 King
B1 Wealthy
B4 Golden Russett
C1 Wealthy
C2 Wealthy
C3 Wealthy
C4 Twenty Ounce
C5 Twenty Ounce
D1 Wealthy
D2 Gravenstein
D3 Dutch Mignonne
D5 Early Harvest
D7 Dolgo Crabapple
D8 King (grafts)
E1 Red Astrachan
E2 Red Astrachan
E3 Red Astrachan
E4 Dutch Mignonne
E5 Tolman Sweet
E6 Roxbury Russett
E7 Yellow Bellflower
F1 Wealthy
F2 Wealthy
F3 Wealthy
F4 Wealthy
F5 Wealthy
F6 Wealthy
F7 Wealthy
F8 Winter Bartlett (Pear)
F9 Comice (Pear)
F10 Guyot (Pear) -(graft)
F11 Guyot (Pear)
G2 Duchess of Oldenburg
G3 Belmont
G5 Rhode Island Greening
G7 Winter Banana
G8 Wagener
G9 White Doyenne (Pear)
G10 Forelle (Pear)
G11 Vermont Beauty (Pear)
G12 Seckel (Pear)
H5 HAWTHORN
H7 Yellow Newtown
H9 HAWTHORN Group
H10 Bosc (Pear)
H11 Tyson (Pear)
H12 Worden Seckel (Pear)
H13 ELDERBERRY Bush
I1 Filbert
I1a Shagbark Hickory
I2 Filbert
I2a Shagbark Hickory
I3a Shagbark Hickory
I5 CHESTNUT
I6 CHERRY
I7 Quince
I8 Gravenstein
I9 Gravenstein
I10 Gravenstein
I11 Gravenstein
I12 Bietigheimer
I13 Bietigheimer
I15 Yellow Transparent
I16 Yellow Transparent
J5 CHESTNUT
J8 Northern Spy
J9 Wolf River
J10 Rhode Island Greening
J11 Swaar
J12 Bietigheimer
J13 Marie Louise (Pear)
J13a Marie Louise (Pear)
K10 Rhode Island Greening
L14 Esopus Spitzenburg

Orchard Map Overview



Plants

Birds and Bees



JJ Jacobi

Abundance for the Orchard and Community

Creating Abundance

The quality of fruits and nuts on the site is directly affected by orchard health.

By addressing orchard health, the quality of fruit improves and it can be used in more ways.

Orchard Health

- Tree Nutrition & Maintenance
- Orchard Floor Habitat
- Insects and Birds
- Codling Moth
- Apple Maggot
- Apple Scab

Codling Moth

- Arrived in WA during 1880s
- Apples, Pears, Quince and Walnuts
- Emerges based on # of warm days
- Burrows into fruit to mature
- Birds, cardboard collars, and proper disposal
- Infected fruit can be buried, crushed, or heated

Apple Maggot

- First detected in WA – 1980
- Hawthorn, apple, pears, wild rose hips
- Damage to fruit flesh
- Apples and maggots mature together
- Maggots mostly emerge when fruit has fallen
- Infected fruit can be buried, crushed, or heated

Apple Scab

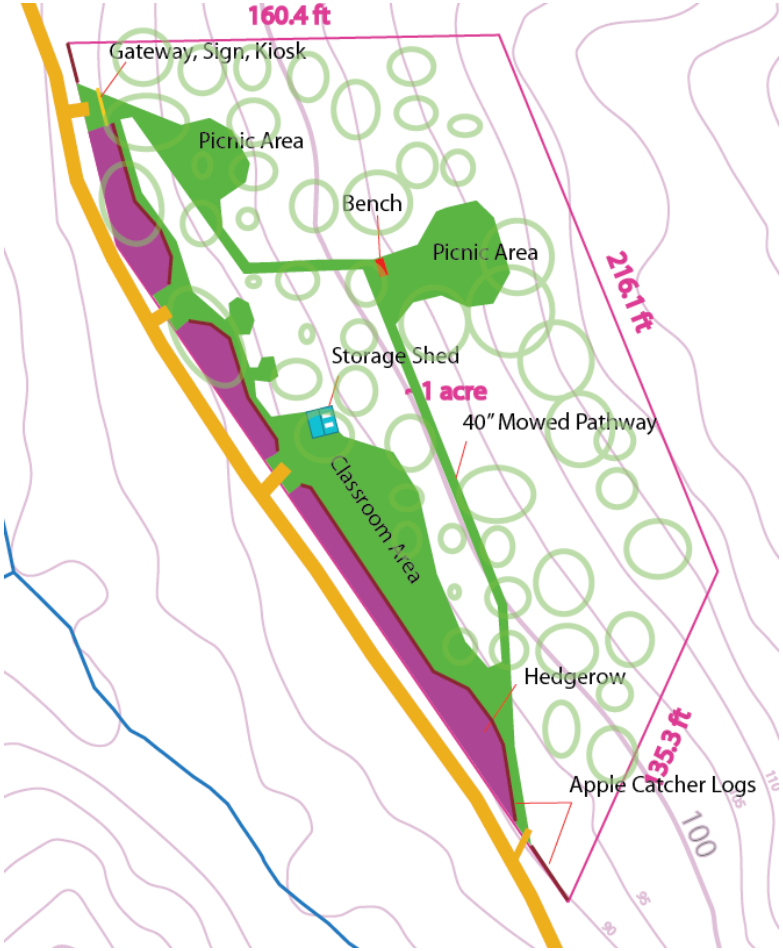
- Fungal Disease
- Affects apple and pear trees
- Disease favors wet, cool weather
- Reduces tree leaf and health
- Increases pest problems
- Survives in previous years infected leaves
- Infected leafs treated through heat

Breaking the Disease Cycle

- High frequency gathering of dropped fruits and nuts
- Careful handling of harvested fruits and nuts
- Gathering fallen leaves
- Composting safely
- Make it easy, and even fun

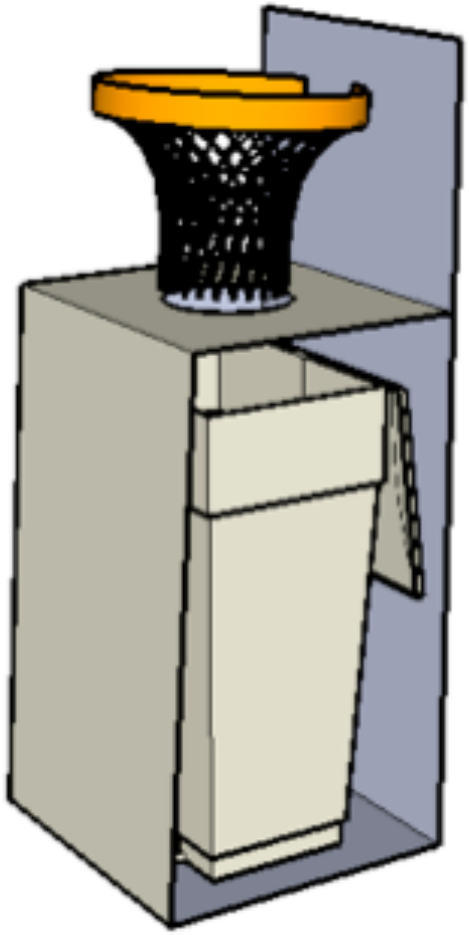
	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct
Trees	Bud	Leaf	Flower	Fruit	Fruit	Harvest	Harvest	Harvest
Maggot				Emerge	Peak emerge	Peak emerge	Emerge	
Moth					Emerge	Peak emerge	Emerge	
Scab		Spore	Spore	Spore	Spore			

Getting It Done, By Good Design



- Use the Slope!
- Log Catches
- Regular Work Parties

Getting Visitors Involved



- The problem could be the solution
- Using the fallen apples for entertainment
- Allow the frequency of visitors to help with orchard hygiene
- Using compostable materials for booties

Composting and Organic Matter

- Cedar Grove composting
- Replace lost organic material with Cedar Grove compost
- When orchard health improves, onsite composting can be explored.

A good permaculture design should strive to catch and store all the energy and materials produced on site. Reinvesting resources can build capacity in the site to capture yet more resources.

Harvesting

- Sort according to good, cider and bad grades.
- Immediately distribute good grade apples.
- Educate receivers of apples
- Press cider apples
- Cedar Grove compost bad apples

Cider Pressing

- Ideal for using diseased fruit
- Controls pests
- Produces many end products
- Reward for volunteers
- Harvest festival entertainment
- Classes

Shala Racicky

Education and Community

Objectives

- Increase awareness
- Increase volunteer base
- Strengthen community
- Meet maintenance needs
- Generate revenue

Education and Outreach Opportunities

- Classes and workshops
- Apple Exchange
- Signage
- Festivals
- Website enhancements
- Field trips

Orchard Labor Requirements

	Friends of Piper's Orchard	Park staff	Work Parties & workshops	Interest groups	Casual visitors
Supervise all aspects of orchard management	■	■			
Coordinate with Friends of Piper's Orchard	■			■	
Supervise work parties	■	■			
Coordinate workshops	■	■			
Coordinate with Parks Dept.	■			■	
Supervise orchard events	■	■			
Watering trees & guild plantings	■	■			
Mowing long grass		■			
Develop & maintain hedgerow and guild plantings	■		■		
Tree mulching	■		■		
Tree pruning	■		■		
Sucker removal	■		■	■	■
Fruit tree grafting	■		■		
Fruit collection & distribution	■		■	■	■
IPM - Trunk bands	■		■	■	
IPM - Fruit socks	■		■	■	
IPM - Sticky balls	■		■	■	
IPM - Pheromone traps	■		■	■	
Trash pickup	■	■	■	■	■

2009 Maintenance and Event Schedule

		Maintenance Need	Event
January	Early		
	Late		
February	Early		
	Late	Plant young trees	Class: Plant Selection and Maintenance. Learn maintenance techniques for young fruit trees.
March	Early		
	Late	Grafting	Class: Grafting
April	Early		Class: Introduction to Permaculture
	Late	Planting	Class: Guild Planting
May	Early		
	Late	Put footies on and thinning	Class: Pest Management
June	Early		Patterns in Nature and Design
	Late		
July	Early	Summer pruning and picnic	Class: Summer Pruning. Prune older trees for growth reduction and restoration.
	Late		Learn to construct with cobb: build a community bech in Piper's Orchard
August	Early		
	Late	Mow orchard	Cider Pressing Workshop
September	Early	Harvest Festival	Harvest Festival, hay ride
	Late		
October	Early		Class: Processing large quantities of fruit from home fruit trees
	Late	Planting shrubs for hedgerows	Class: Hedgerow Design and Planting for Wildlife & Pollinators
November	Early		
	Late	Clean-up	
December	Early	Install blue-orchard bee houses	Kids workshop: Bees & Bird Houses. Kids can build mason bee houses, nuthatch and brown creeper boxes as part of winter celebration for wildlife. [Idea: Tikes can hang pre-made boxes in the Orchard as part of the winter program . .
	Late		

	Orchard Class
	Permaculture Class
	Culinary Class
	Other workshop or festival

Bringing in Volunteers

Increasing Orchard Volunteers

More volunteers = larger, more popular and more diverse classes
More classes = more volunteers
↓

More volunteers = fewer pests
Fewer pests = healthier trees
↓

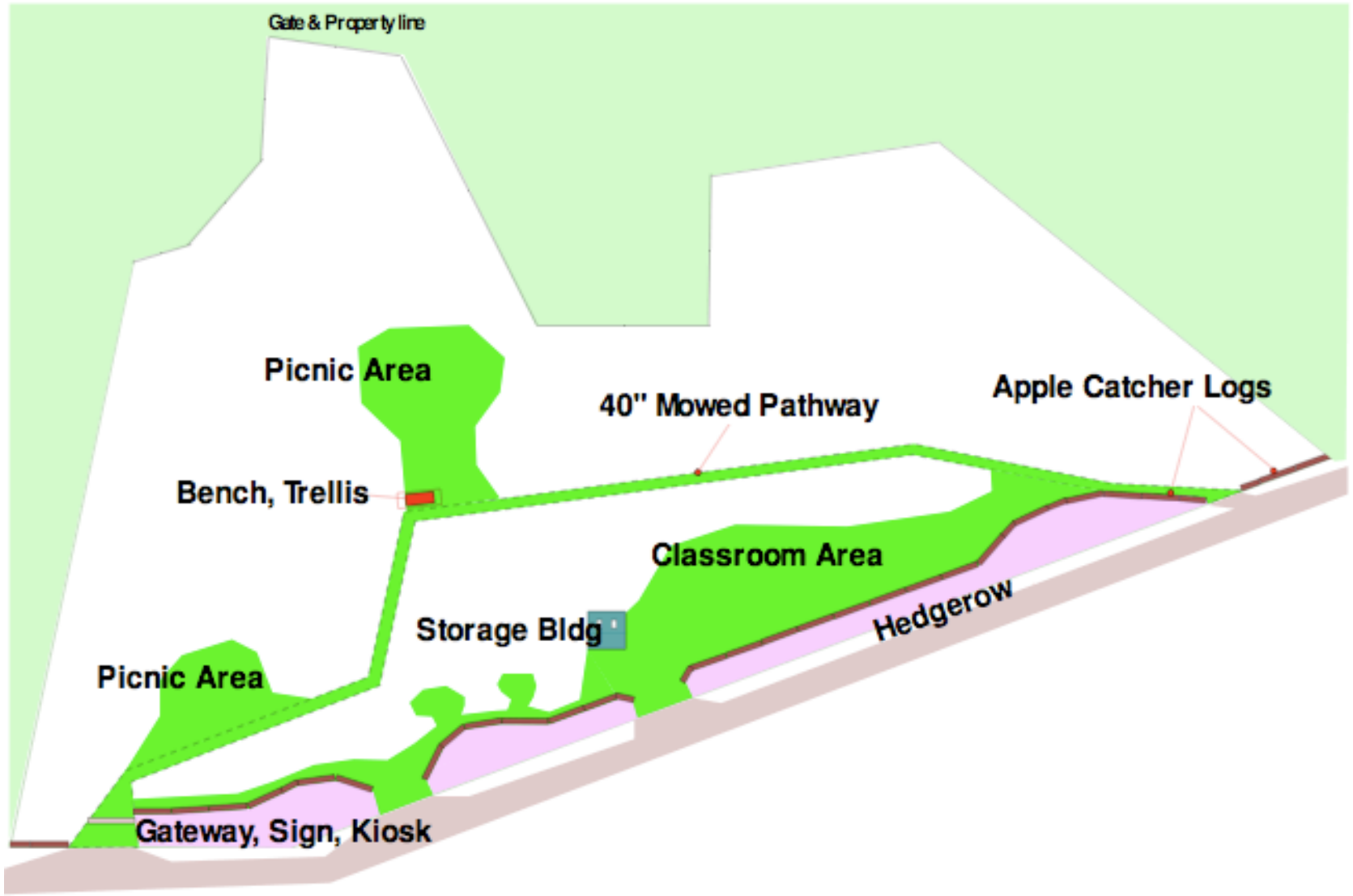
Healthier trees = healthier apples
Healthier apples = healthier people

Apple Exchange

- Phase 1: Contact Appropriate Demand Groups
- Phase 2: Delivery of Educational Component

Orchard Signage

Design Feature Locations



Harvest Festival

Education and Community Outreach

	Classes	Apple exchange	Signage	Festivals	Website	Field Trips
Increase awareness of the orchard						
Increase volunteer base						
Increase sense of community within the orchard						
Strengthen community connections						
Meet maintenance needs of the orchard						
Generate revenue						Depends on approach

	High potential for objective to be met
	Medium potential for objective to be met
	Secondary potential for objective to be met

Bob Baines

Phasing and Implementation

CORE
COMMUNITY ORCHARD REGENERATION

PIPER'S ORCHARD
·IN CARKEEK PARK·