

2012

# Roger Williams Park Edible Forest Garden

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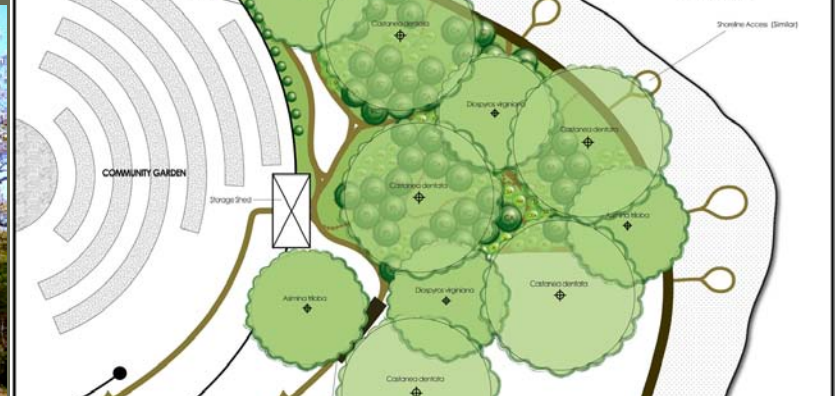
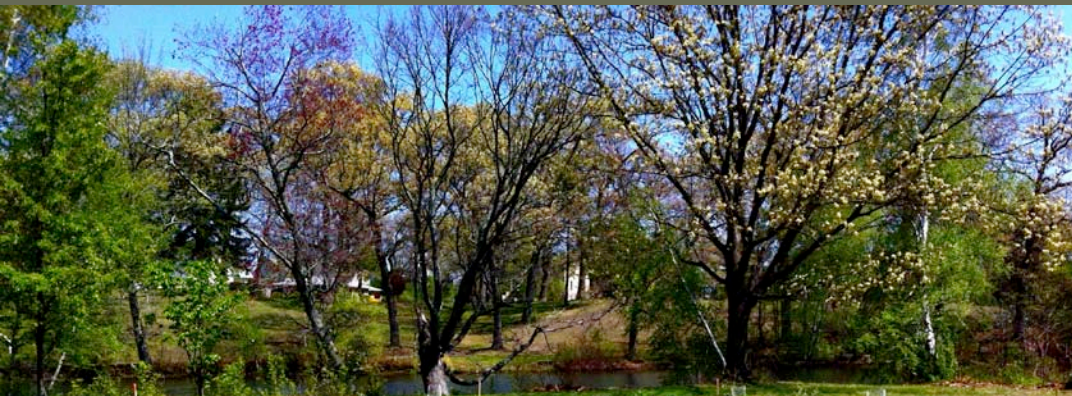
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# ROGER WILLIAMS PARK EDIBLE FOREST GARDEN



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## EVENTS & ANNOUNCEMENTS

### 2012 Winter Wellness Series

January - March 2012  
Providence, RI



### Certified Invasive Manager Recertification Training

February 29th, 2012, 9:00-noon OR 1:00-4:00pm  
Narragansett, RI

# Living Routes Permaculture Design Certificate at Sirius Eco-Village

- ❑ Spent 100+ hours over 3 weeks gaining hands-on experience in permaculture design in Summer 2011
- ❑ Spent 10+ hours in client interviews, site assessment and design sessions
- ❑ Visited permaculture gardens throughout Western MA





# The New Paradigm: Urban Food Production

- 40% of the world's arable land unproductive from soil erosion
- 1960 global population = 3 billion
- Planted grain/person (1960)=1/4 acre
- 2012 global population = 7 billion
- Planted grain/person (2012)=1/8 acre
- Global grain production has fallen short of consumption in 7 of the last 12 years



# Urban Food Production

## GLOBAL TRENDS

- Rise in global demand for sustainable agricultural products
- 20% annual growth rate of organic farms in US, France, Japan & Singapore
- 90% of food in Havana, Cuba
- 70% of produce in Beijing, China comes from urban farms



Havana, Cuba



Beijing, China



# Urban Food Production

## NATIONAL TRENDS

- 7-acre EFG recently designed for Jefferson Park, Seattle, WA
- Conversion of lawn to layered woody & herbaceous plants

Beacon Food Forest Schematic Site Plan



February 16, 2012

## Nation's largest public Food Forest takes root on Beacon Hill

After nearly three years of planning, Beacon Hill residents are breaking ground on what will be the nation's largest public food forest.

By Robert Mellinger

Sandwiched between 15th Ave. S. and the play fields at the SW edge of Jefferson Park in the Beacon Hill neighborhood of Seattle are seven acres of lonely, sloping lawn that have sat idly in the hands of Seattle Public Utilities (SPU) for the better part of a century. At least until this spring, when the land that has only ever known the whirring steel of city mowers will begin a complete transformation into seven acres of edible landscape and community park space known as the Beacon Food Forest.

The end goal is an urban oasis of public food: Visitors to the corner of 15th Ave S. and S. Dakota Street will be greeted by a literal forest — an entire acre will feature large chestnuts and walnuts in the overstory, full-sized fruit trees like big apples and mulberries in the understorey, and berry shrubs, climbing vines, herbaceous plants, and vegetables closer to the ground.

Further down the path an edible arboretum full of exotic looking persimmons, mulberries, Asian pears, and Chinese haws will surround a sheltered classroom for community workshops. Looking over the whole seven acres, you'll see playgrounds and kid space full of thornless mini edibles adjacent to community gardening plots, native plant areas, a big timber-frame gazebo and gathering space with people barbequing, a recreational field, and food as far as you can see.

The entire project will be built around the concept of permaculture — an ecological design system, philosophy, and set of ethics and principles used to create perennial, self-sustaining landscapes and settlements that build ecological knowledge and skills in communities. The concept of a food forest is a core concept of permaculture design derived from wild food ecosystems, where land often becomes forest if left to its own devices. In a food forest, everything from the tree canopy to the roots is edible or useful in some way.

"If this is successful," explains Margaret Harrison, the lead landscape architect for the Beacon Food Forest, "it is going to set such a precedent for the city of Seattle, and for the whole Northwest."

She may be understating it. There is no other project of Beacon Food Forest's scale and design on public land in the United States — a forest of food, for the people, by the people.

The idea for the Beacon Food Forest first emerged in 2009 during a group project for a permaculture design course led by Jenny Pell of Permaculture Now! From early on, the group — led by Beacon Hill gardener and sculptor Glenn Herlitzky — held casual meetings with the Beacon Hill community. These led to the formation of a steering committee called Friends of the Food Forest — a team initially composed of Herlitzky and two others from the permaculture class, Jacoqui Cramer and Daniel Johnson. In 2010, the group secured \$22,000 in Neighborhood Matching Funds from the Department of Neighborhoods.

Friends of the Food Forest undertook heroic outreach efforts to secure neighborhood support. The team mailed over 6,000 postcards in five different languages, tabled at events and fairs, and posted fliers. And Seattle residents responded. The first meeting, especially, drew permaculturalists and other intrigued parties from all around the city.

Print | Email | Tweet | Like



Harrison Design  
The completed plans for the Beacon Food Forest.



Friends of the Food Forest  
Jenny Pell (right) and Margaret Harrison speak to a meeting of Beacon Hill residents about the food forest.



Seattle Parks and Recreation  
An aerial map of Beacon Food Forest's future site and surrounding park land.



Friends of the Food Forest  
Beacon Hill residents give input on the project's design plans at a July 2011 meeting.

# Urban Food Production

## PROVIDENCE TRENDS

- 37 community gardens
- 800 community gardeners in the Providence Community Growers Network (plus 200 individual urban gardeners)
- 7 urban farms
- 6 summer Farmer's Markets in Providence 5 days per week

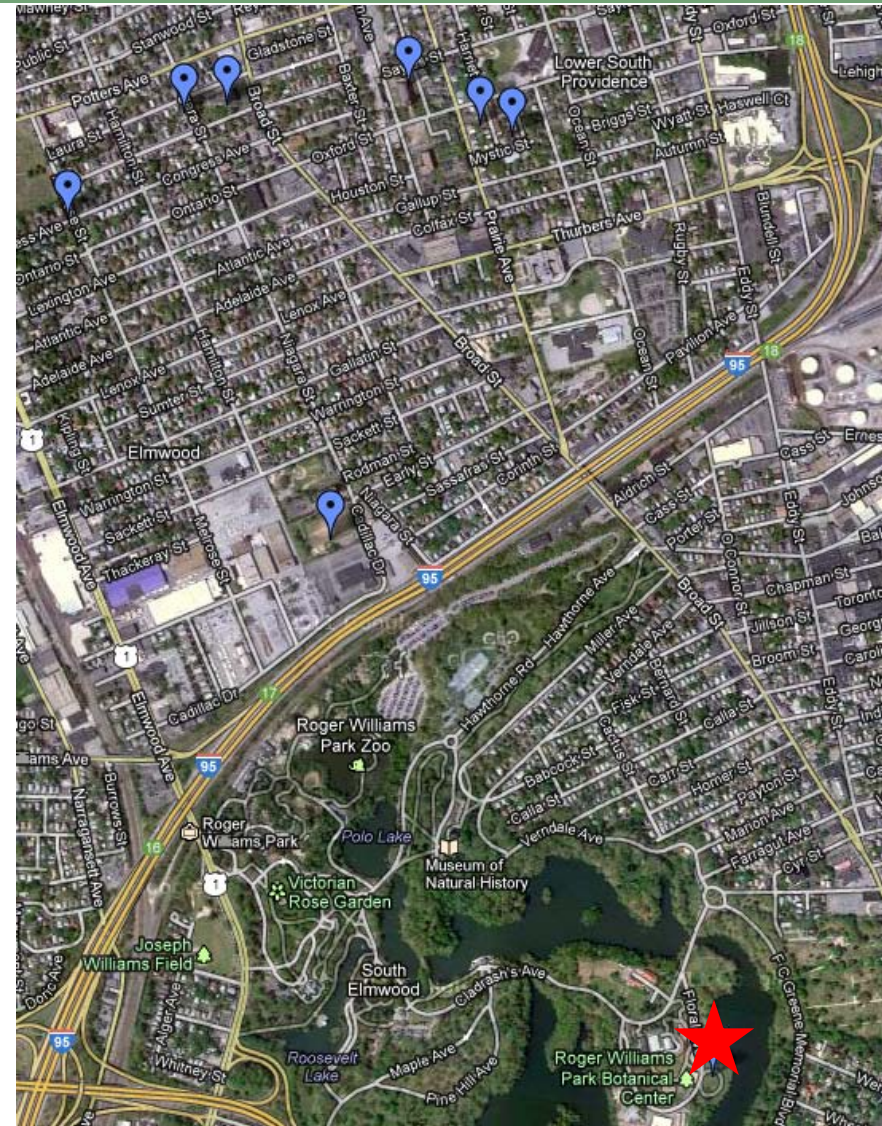




# Urban Food Production

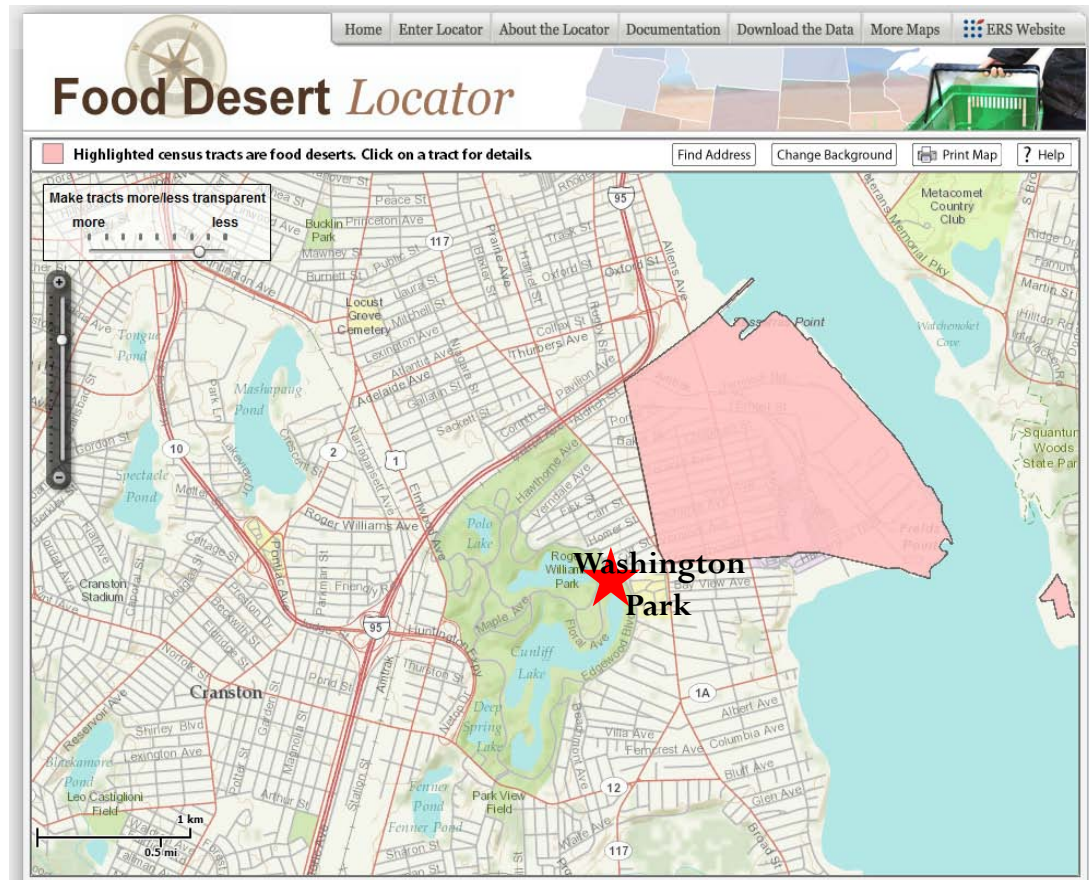
## NEIGHBORHOOD TRENDS

- 8 community gardens within the Elmwood and Lower Southside neighborhoods that border RWP



# Washington Park: A Food Desert

- FOOD DESERT:  
Low-income community without ready access to healthy and affordable food
- One mile or more from supermarket or large grocer





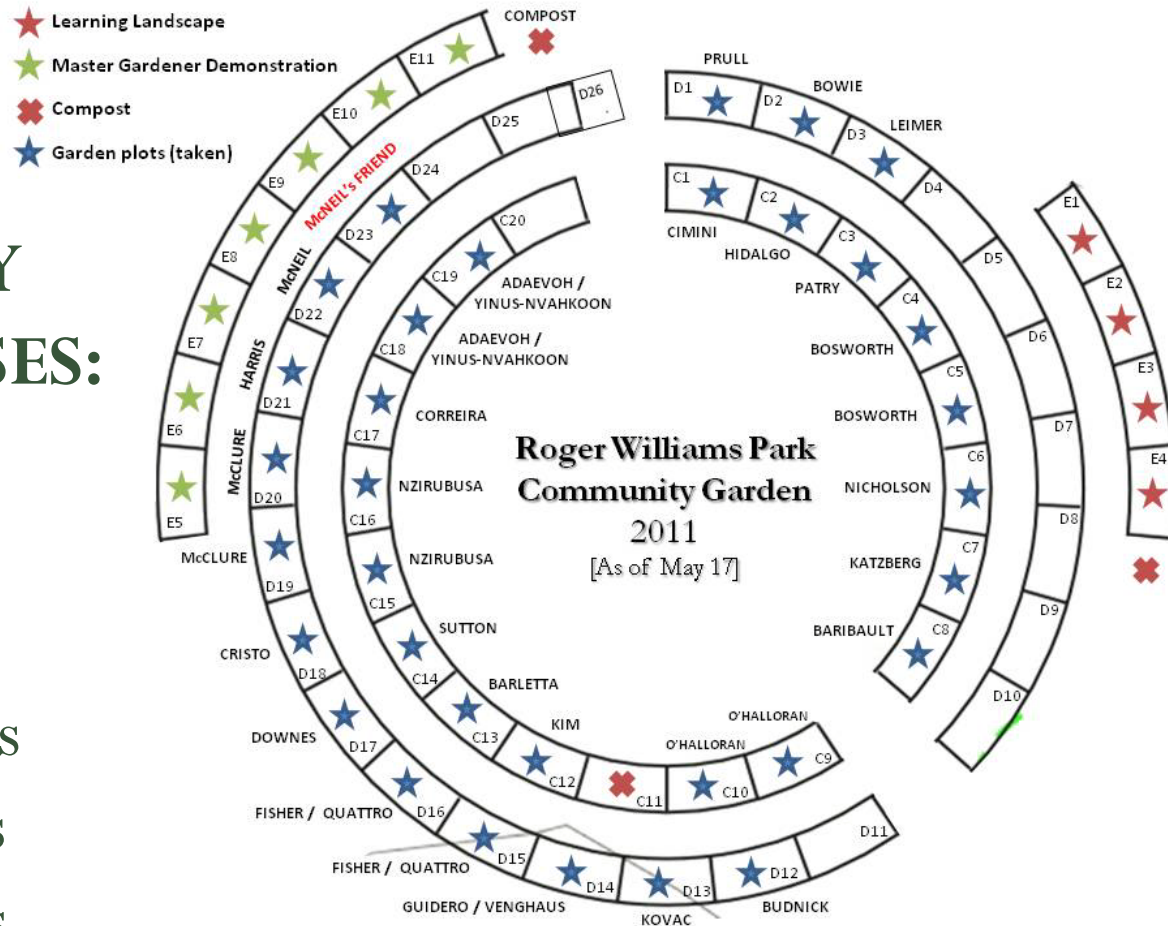
# Current RWP Urban Food Production Efforts



# Current RWP Urban Food Production Efforts

## 2011 COMMUNITY GARDEN SUCCESSES:

- 57 total plots
- 2,850 ft<sup>2</sup> of garden space including:
  - 45 gardener plots
  - 12 teaching plots
  - 4 children's plots





# Current Urban Food Growing Efforts at RWP

## Recent Developments

- Community garden expansion from 57 to 113 plots
- **Phase one of the edible forest garden**

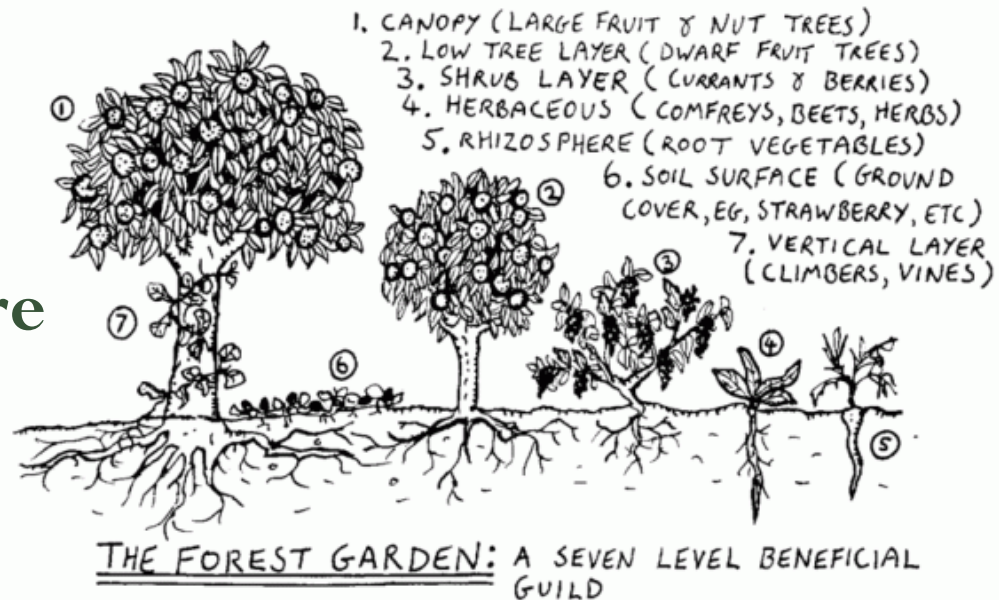
## Future Plans

- Permanent water supply
- Donate Teaching plot produce to Washington Park food pantry



# What is an Edible Forest Garden?

- Plant-based food production system modeled after a woodland ecosystem
- Incorporates fruit and nut trees, shrubs, herbs, vines and perennial vegetables that yield food for humans and wildlife
- Our best attempt to mimic the architecture and interactions of a natural forest system





# What is an Edible Forest Garden?

We can garden on a forest's edge... →



...or within it...



...Or we can do both and create a new edible forest and garden here!



# Our Collaborative Design Team...

- ❑ URI Master Gardeners
- ❑ Revive the Roots founders
- ❑ Community members
- ❑ URI Outreach Center staff





# 2011-12 EFG Design Sessions

## □ October - December 2011:

### ▣ Introduction to Permaculture

- Philosophy & Design Theory
- History & Evolution
- Ethics
- Principles
- Case Studies

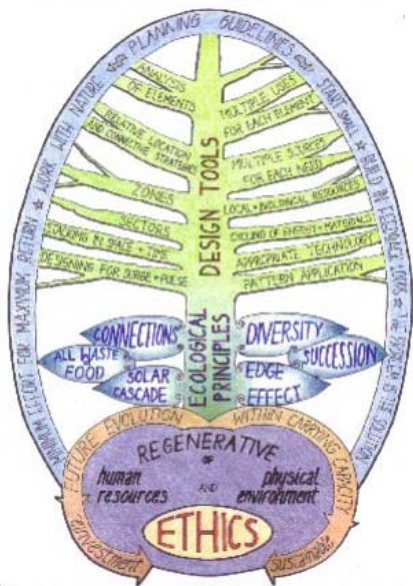
### ▣ Forest Ecology Concepts

- Ecological principles



# Permaculture as a Design Compass

- A land-use **ethic** and design technique that provides **principles** to help us meet our sustainable food system goals





# Permaculture Ethics

## PEOPLE CARE

- As designers of sustainable human habitat, we consider the needs of all humans



**EDUCATION**



**NUTRITION**



**PLAY**

# Permaculture Ethics

## EARTH CARE

- Our designs care for the natural environment to which we are a part.



**WILDLIFE**



**RESOURCE  
CONSERVATION**



**REMEDIATION**



# Permaculture Ethics

## FAIR SHARE

- We design for sustainable habitats where all individuals have access to crucial resources



**LAND**



**SEEDS**



**FERTILITY**

# The Design Process

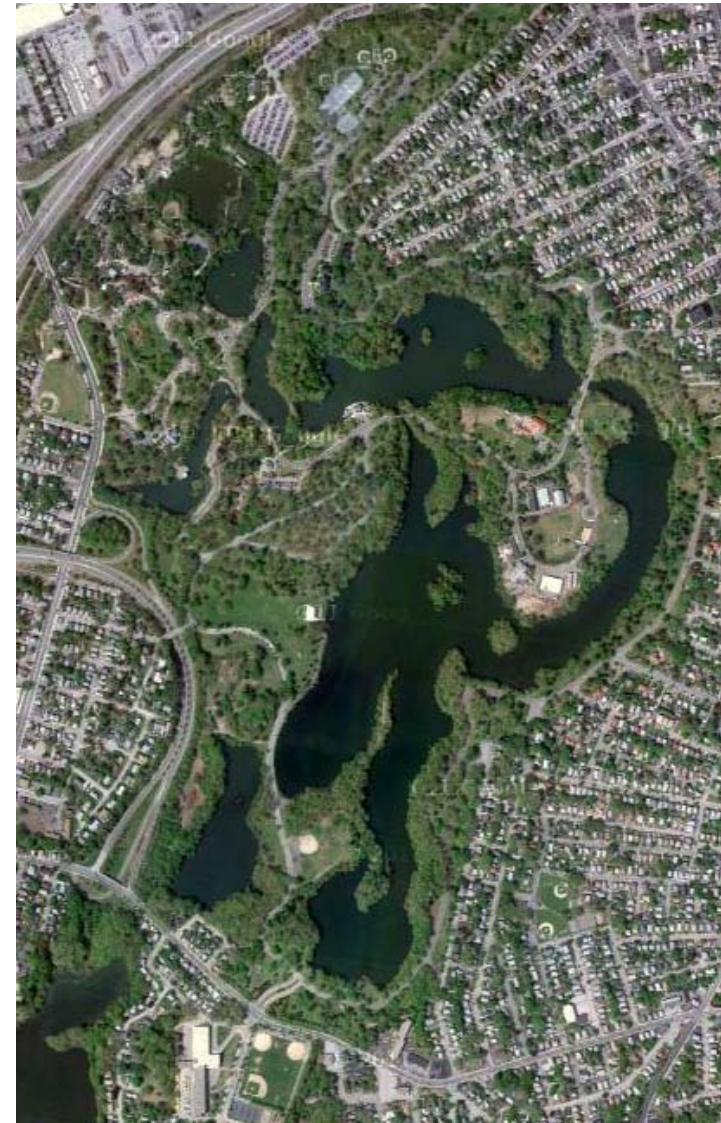
- Articulate goals
- Generate desired species list  
(usually aesthetic- or familiarity based)





# The Design Process: GOALS

- Create a diverse, highly productive addition to the forested landscape in Roger Williams Park
- Transform urban land into a highly- productive parcel that produces market-viable fruits, nuts, vegetables, fuel and fiber.



# The Design Process: GOALS

- ❑ **Design** a **system** that uses native plants to meet human and ecosystem needs
- ❑ **Establish** a stormwater buffer on Edgewood Pond
- ❑ **Supplement produce from** the community garden





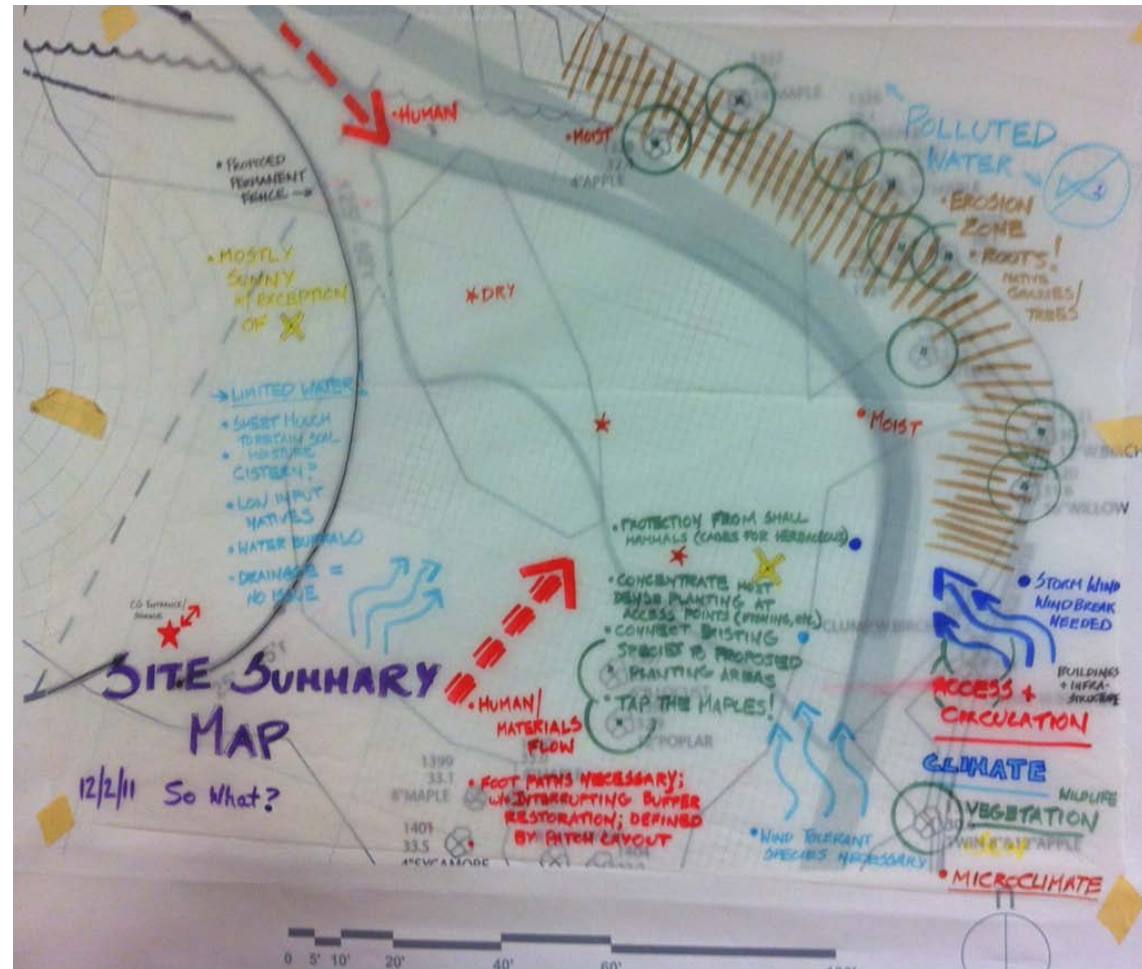
# The Design Process: GOALS

- **Serve as a living classroom for environmental education**
- **Engage neighbors and gardeners in permaculture**
- **Be a model for ecological urban landscape design and management**



# The Design Process: SITE ASSESSMENT

## □ Conduct Site Assessment





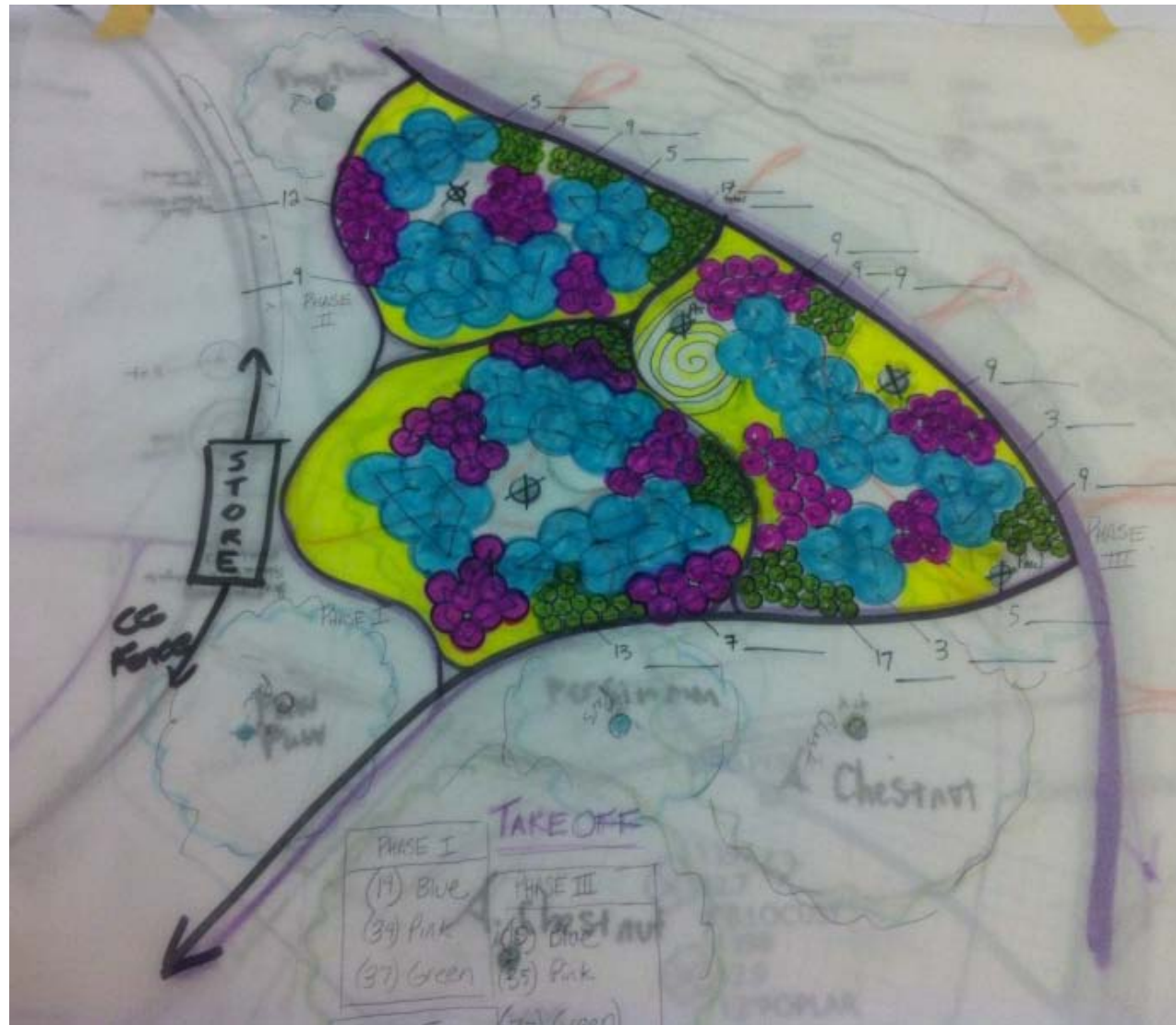
# The Design Process: Schematic

- Lay out some rough design ideas based on goals and site conditions.
- **Get it down, then get it good**



# The Design Process: DETAILED

- Lay out garden 'patches' and the general layout of plants within them





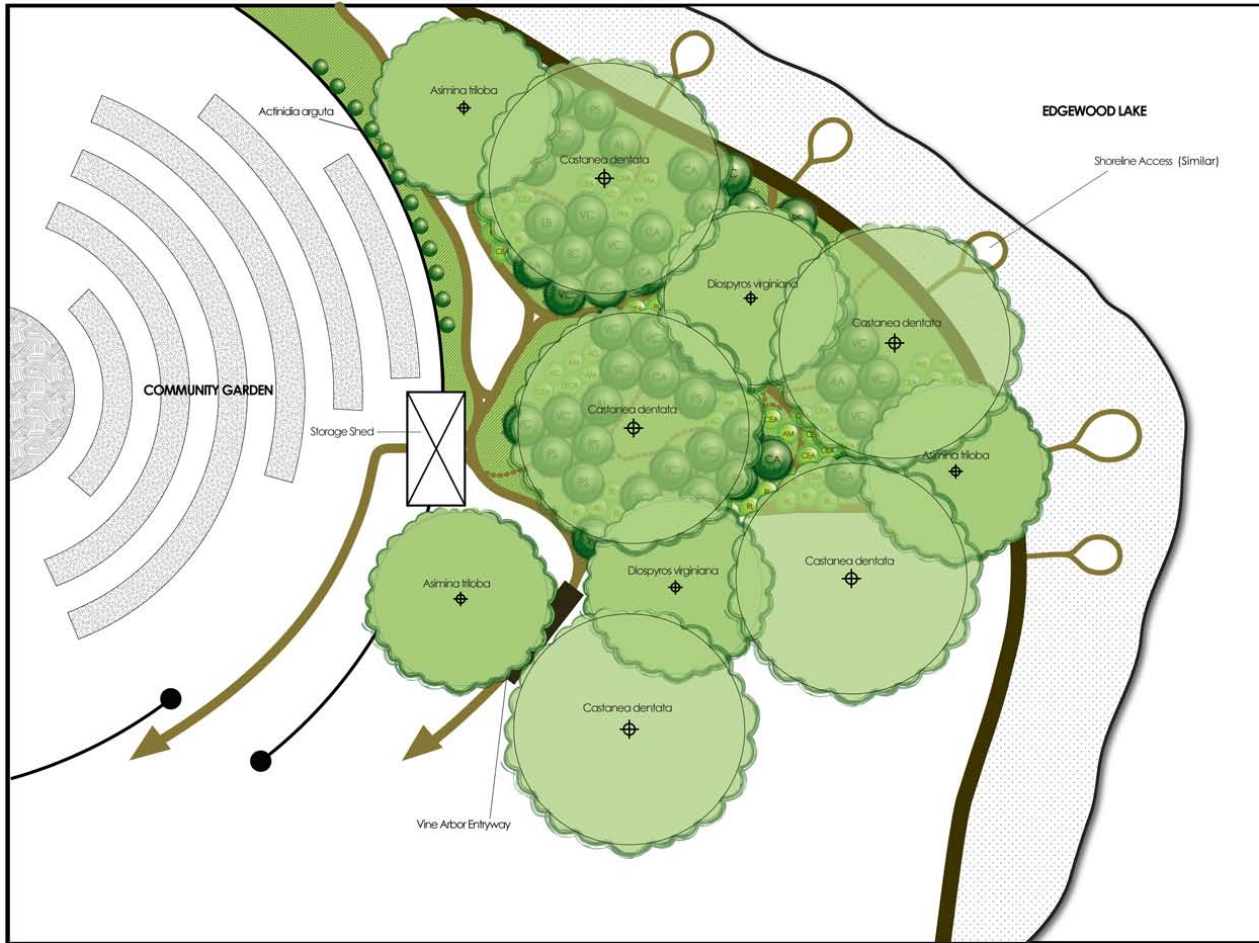
# The Design Process: PATCH

- Design and characterize the functions, conditions and architecture of the garden's patches considering site summary
- Consider succession in terms of plant growth

■ RWP: 30-year time horizon or 2042

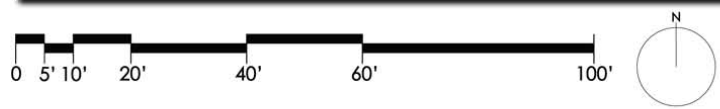


# Time Horizon: 2042



MAP KEY:

Historical Pathway	
Pedestrian Access	
Small Trees / Large Woody Shrubs	
Small Woody Shrubs / Large Herbaceous Plants	
Community Garden Fence	
Riparian Restoration Areas	
Herbaceous Planting	
Vegetables	
Pollinator Garden	

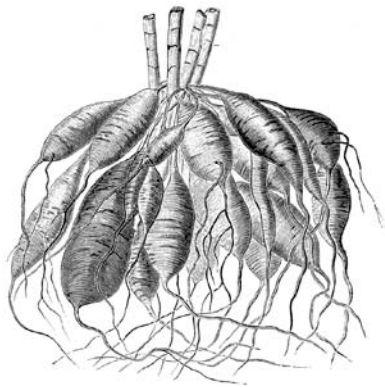




# The Design Process: PATCH

## 2017 Horizon

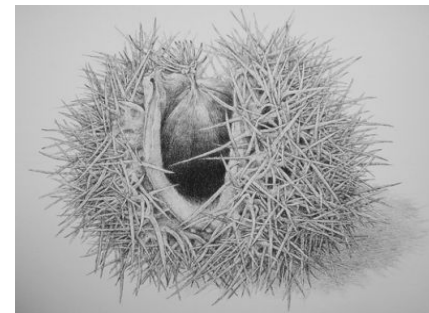
- ▣ Herbal Medicine
- ▣ Tubers
- ▣ Leafy greens
- ▣ Berries
- ▣ Some fruit



30  
years

## 2042 Horizon

- ▣ Nuts
- ▣ Mulch
- ▣ Fruit
- ▣ Berries
- ▣ Fuel



# The Design Process: SPECIES SELECTION

- Select species to perform those functions in all the conditions you have specified and create a master list

Latin Name	Common Name		Type	Mature Height	Edible Value	Med. Value	Nec tary	DA	Cop	NF	Light	Moisture
<i>Diospyros virginiana</i>	American persimmon	DV	0 - Large Tree	50'-75'	E	G	G		Y		Full Sun	Xeric, Mesic
<i>Castanea dentata</i>	American Chestnut	CD	0 - Large Tree	75'-100'+	E	S	G		Y		Full to partial sun	Mesic
<i>Asimina triloba</i>	Pawpaw	AT	0 - Small Tree	20'-35'	E	F					Full to partial sun	
<i>Actinidia arguta</i>	Hardy Kiwifruit	AA	0 - Vine	20'-100'	E	S					Full Sun	
<i>Caragana arborescens</i>	Siberian Pea Shrub	PS	1 - Large shrub	8-20'	F		G			Y	Full Sun	
<i>Corylus americana</i>	American Hazelnut	Ha	1 - Large shrub	6-12'	E	S	G				Full Sun	Mesic
<i>Amelanchier alnifolia</i>	Saskatoon	AA	1 - Large shrub	5-15'	E	G	G				Full Sun	Xeric, Mesic
<i>Lindera benzoin</i>	Spicebush	LB	1 - Large shrub	6-12'	G	G					Full sun or Full shade	
<i>Sambucus canadensis</i>	Common Elderberry	SC	1 - Large shrub	6-12'	G	E	S				Full sun to part shade	
<i>Vaccinium corymbosum</i>	Highbush blueberry	HB	1 - Large shrub	6-12'	E	E					Full Sun	Mesic
<i>Amelanchier laevis</i>	Allegheny serviceberry	SB	1 - Small Tree	29'	E	F					Full to partial sun	Xeric, Mesic
<i>Amelanchier canadensis</i>	Juneberry / Shadbush	AC	2 - Large shrub	6'	E	F					Full to partial sun	Mesic
<i>Prunus maritima</i>	Beach plum	PM	2 - Large shrub	8'	G	Y	G				Full Sun	Mesic
<i>Rubus laciniatus</i>	Oregon cut-leaf blackberry	BB	2 - Large shrub	8'	E		G				full sun to part shade	
<i>Ceanothus americanus</i>	New Jersey tea	NJT	2 - Small herbaceous	3-4'	E	E	G			Y	Full to partial sun	Mesic
<i>Aronia melanocarpa</i>	Black Chokeberry	AM	2 - Small shrub	1.5-6'	G	F	G				Full to partial sun	Mesic
<i>Rubus occidentalis</i>	Black Raspberry	BB	2 - Small shrub	3-6'	E	G	G				Full Sun	
<i>Symphytum officinale</i>	Boneset		3 - Small herbaceous	3-5'		E	G	Y			Full to partial sun	
<i>Urtica dioica</i>	Stinging nettle		3 - Small herbaceous	1-5'	E	E		Y			Full to partial sun	
<i>Asparagus oficalis</i>	Asparagus		3 - Tall herbaceous	3-5'	E	G	G				Full sun	Mesic
<i>Rheum spp.</i>	Rhubarb		3 - Tall herbaceous	3-5'	E	E					Full sun	Xeric, Mesic
<i>Fragaria virginiana</i>	Wild Strawberry		4 - Groundcover	4-12"	E	F	G	Y			Full sun	Xeric, Mesic
<i>Gaultheria procumbens</i>	Wintergreen		4 - Groundcover	2-6"	E	F		Y			Part to full shade	
<i>Solidago odora</i>	Sweet Goldenrod		4 - Small herbaceous	2-4'	G	E	S				Full to partial sun	
<i>Achillea millefolium</i>	Yarrow		4 - Small herbaceous	18-36"	None	E	S	Y			Full to partial sun	Xeric, Mesic
<i>Allium canadense</i>	Wild Garlic		4 - Small herbaceous	6-24"	G	S	G				Full to partial sun	Mesic
<i>Matteuccia struthiopteris</i>	Ostrich fern		4 - Small herbaceous	2-6'	E	None					Part to full shade	
<i>Polygonatum pubescens</i>	Hairy Solomon's seal		4 - Small herbaceous	1-3'	F	F	G				Full sun	
<i>Stellaria media</i>	Chickweed		4 - Small herbaceous	6-12"	E	E	G	Y			Full to partial sun	Mesic
<i>Vaccinium angustifolium</i>	Lowbush Blueberry		4 - Small shrub	2'	E	E					Full sun	Mesic
<i>Helianthus tuberosus</i>	Jerusalem artichoke		4 - Tall herbaceous	6'	E	S	S				Full sun	Mesic
<i>Apios americana</i>	Ground nut		4 - Vine	4'-8'	E	F	G			Y	Full sun	Xeric, Hydric
	Chinese artichoke		4 -								Full sun	

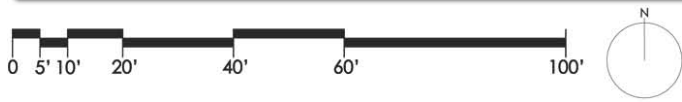
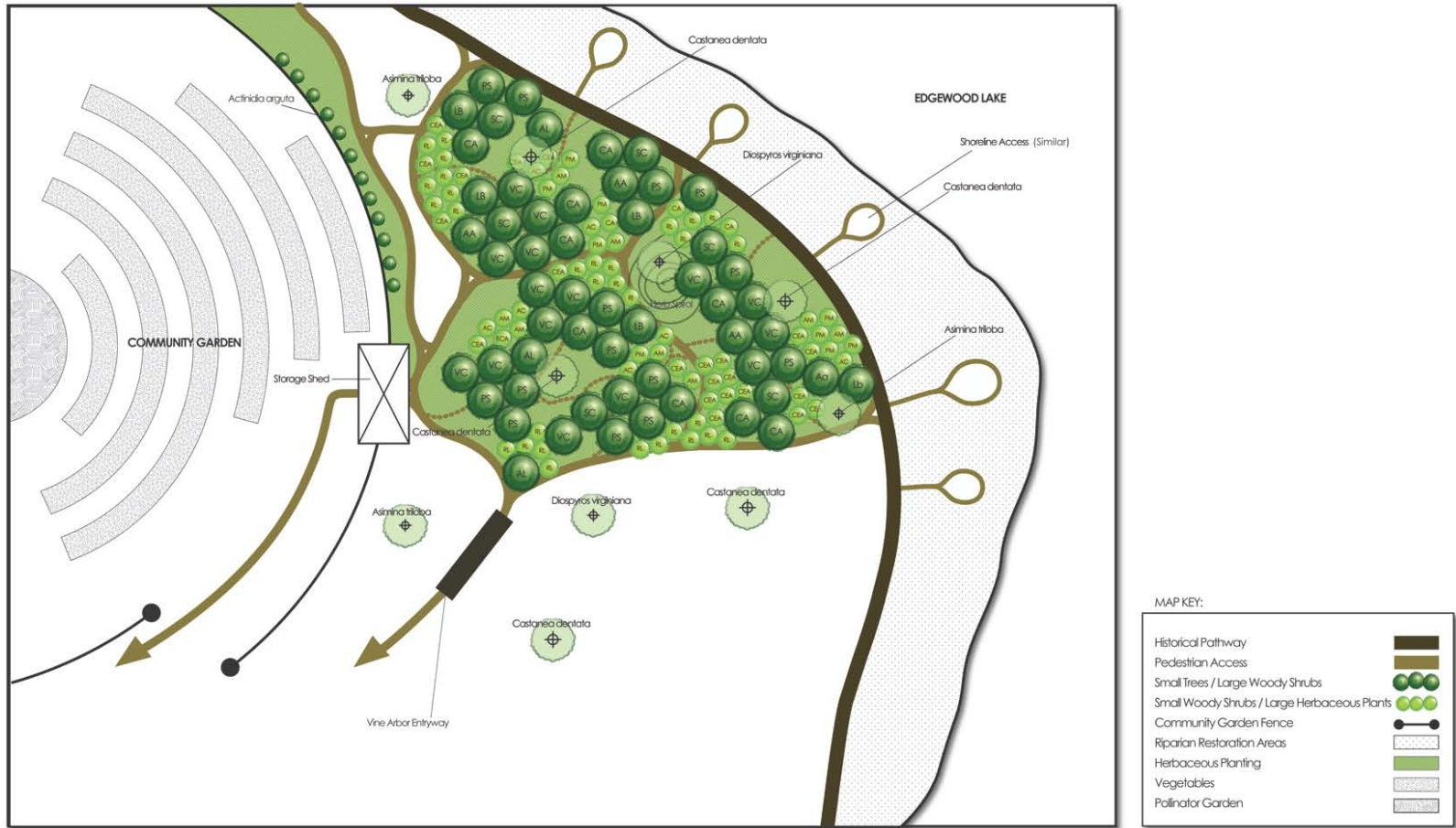


# The Design Process: PATCH

- Build polycultures for each patch using species palette based on desired function



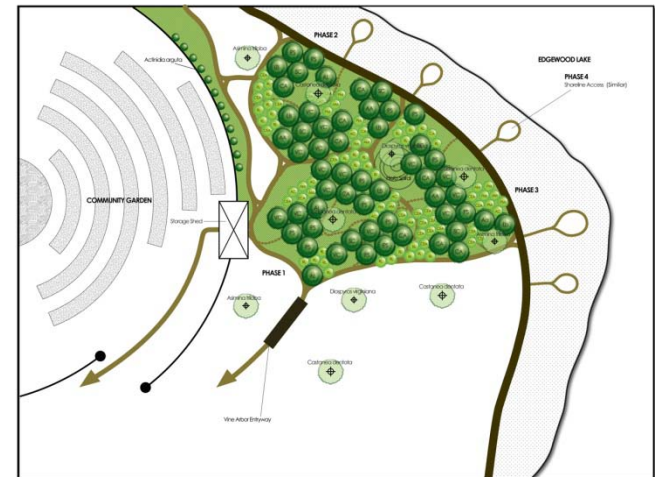
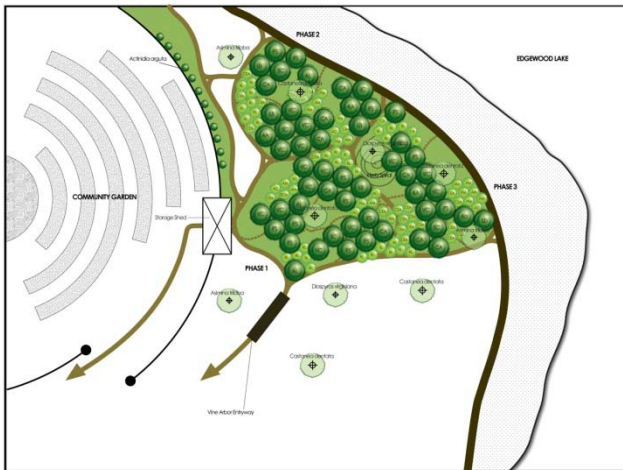
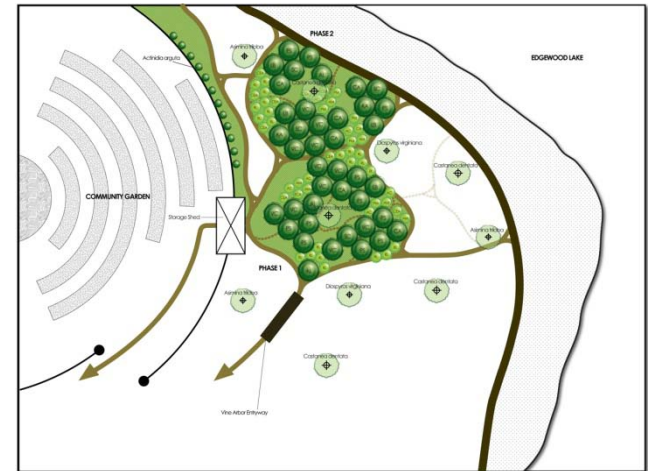
# Time Horizon: 2017





# EFG Implementation

□ Broken into 4 implementation phases



# EFG Implementation

## 2012 GARDEN BREAKING DAY

- *Saturday, April 21 from 10-1PM*
- Community gardener registration and plot prep
- Free seeds, compost and MG vegetable plant distribution
- **Edible Forest Garden site preparation**





# Ground Breaking Day 04-21-12





# Ground Breaking



**Our finished planting of phase 1**

**Yvonne with the American Chestnuts**



# Cost - Benefit Analysis



Interest Rate (i)		4.0%				RI Households	410,075
Year		Benefits	PV Benefits	Costs	PV Costs	Project Outcome	\$6,729
						Cost/Household	\$0
2012	0	\$0.00	\$0.00	\$28,483.71	\$28,483.71		
2013	1	\$2,440.86	\$2,346.98	\$16,043.00	\$15,425.96		
2014	2	\$2,440.86	\$2,256.72	\$16,043.00	\$14,832.66		
2015	3	\$2,440.86	\$2,169.92	\$16,043.00	\$14,262.17		
2016	4	\$2,440.86	\$2,086.46	\$16,043.00	\$13,713.62		
2017	5	\$2,440.86	\$2,006.21	\$16,043.00	\$13,186.18		
2018	6	\$21,224.90	\$16,774.35	\$16,043.00	\$12,679.02		
2019	7	\$21,224.90	\$16,129.18	\$16,043.00	\$12,191.36		
2020	8	\$21,224.90	\$15,508.83	\$16,043.00	\$11,722.46		
2021	9	\$21,224.90	\$14,912.34	\$16,043.00	\$11,271.60		
2022	10	\$21,224.90	\$14,338.78	\$16,043.00	\$10,838.08		
2023	11	\$24,408.64	\$15,855.39	\$16,043.00	\$10,421.23		
2024	12	\$24,408.64	\$15,245.56	\$16,043.00	\$10,020.41		
2025	13	\$24,408.64	\$14,659.20	\$16,043.00	\$9,635.01		
2026	14	\$24,408.64	\$14,095.38	\$16,043.00	\$9,264.43		
2027	15	\$24,408.64	\$13,553.25	\$16,043.00	\$8,908.11		
2028	16	\$24,408.64	\$13,031.97	\$16,043.00	\$8,565.49		
2029	17	\$24,408.64	\$12,530.74	\$16,043.00	\$8,236.05		
2030	18	\$24,408.64	\$12,048.79	\$16,043.00	\$7,919.28		
2031	19	\$24,408.64	\$11,585.38	\$16,043.00	\$7,614.69		
2032	20	\$24,408.64	\$11,139.78	\$16,043.00	\$7,321.82		
2033	21	\$24,408.64	\$10,711.33	\$16,043.00	\$7,040.21		
2034	22	\$24,408.64	\$10,299.36	\$16,043.00	\$6,769.43		
2035	23	\$24,408.64	\$9,903.23	\$16,043.00	\$6,509.07		
2036	24	\$24,408.64	\$9,522.33	\$16,043.00	\$6,258.72		
2037	25	\$24,408.64	\$9,156.09	\$16,043.00	\$6,018.00		
2038	26	\$24,408.64	\$8,803.93	\$16,043.00	\$5,786.54		
2039	27	\$24,408.64	\$8,465.32	\$16,043.00	\$5,563.98		
2040	28	\$24,408.64	\$8,139.73	\$16,043.00	\$5,349.98		
2041	29	\$24,408.64	\$7,826.66	\$16,043.00	\$5,144.21		
2042	30	\$24,408.64	\$7,525.64	\$16,043.00	\$4,946.36		
		Sum of PV (B)	<b>\$312,629</b>	Sum of PV (C)	<b>\$305,900</b>		
		<b>NPV= PV (B) - PV (C)</b>			<b>\$6,729</b>		

# Cost - Benefit Analysis: Present Value Costs

Initial costs of the project = \$28,483.71

Annual maintenance costs after year 0 = \$16,043.00

Apply a 4% discount rate raised to 29 years

Sum of present value costs = \$305,900

Cost to RI households = approximately \$0.75



# Cost - Benefit Analysis: Present Value Benefits

Initial benefits of the project for market goods = \$0

Benefits from years 1 to 5 = \$2,440.85

Benefits from years 6 to 10 = \$21,224.90

Benefits from years 11 to 30 = \$24,408.64

Apply a 4% discount rate to 29 years

Sum of present value benefits = \$312,629.00

Net Present Value =  $PV(B) - PV(C) = \$6729$





# Non-consumptive benefits considered in CBA

- Protected habitat for wildlife
- Scenic view
- Soil erosion control
- Biogeochemical cycling
- Air purification
- Bird Watching
- Carbon Sequestration
- Education



# EFG Implementation

## SUMMER 2012

- ❑ Fundraising through the Fundraising Committee
- ❑ Develop educational signs
- ❑ Phase 1 area maintenance
- ❑ Obtain plant materials for Phase 1 area

## FALL 2012

- ❑ Finish Phase 1 area
- ❑ Winterize EFG



# Roger Williams Park Edible Forest Garden





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