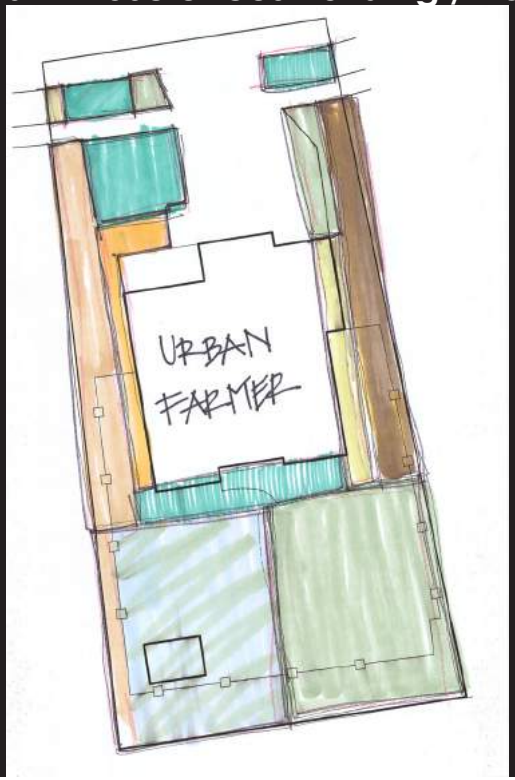
URBAN FARMER

"An edible yard that brings the pollinators home"

Maggie Crowley
December 02, 2016
MSU / Plant Biosciences Building / Room 108



Performance

69%

63%

(118%)

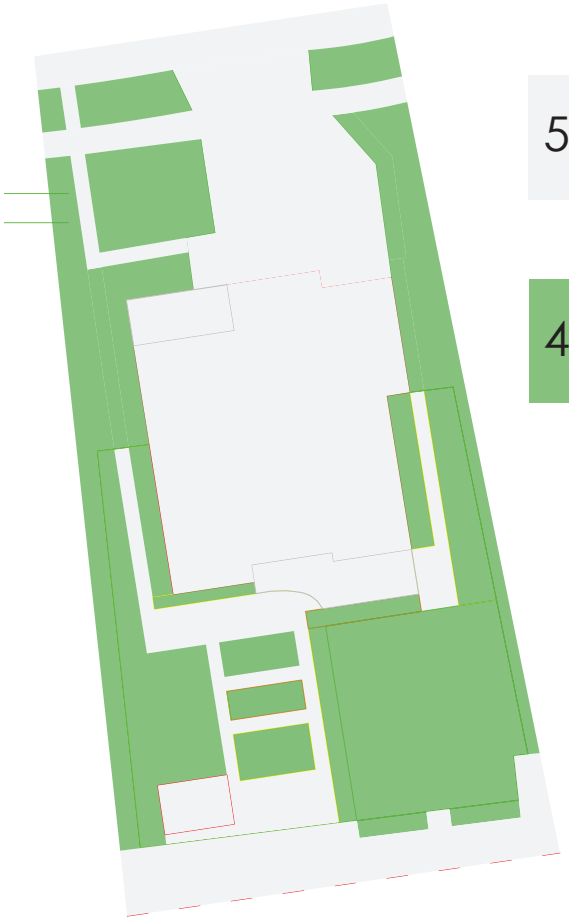
5-7 hours

40%

Schematic Plan

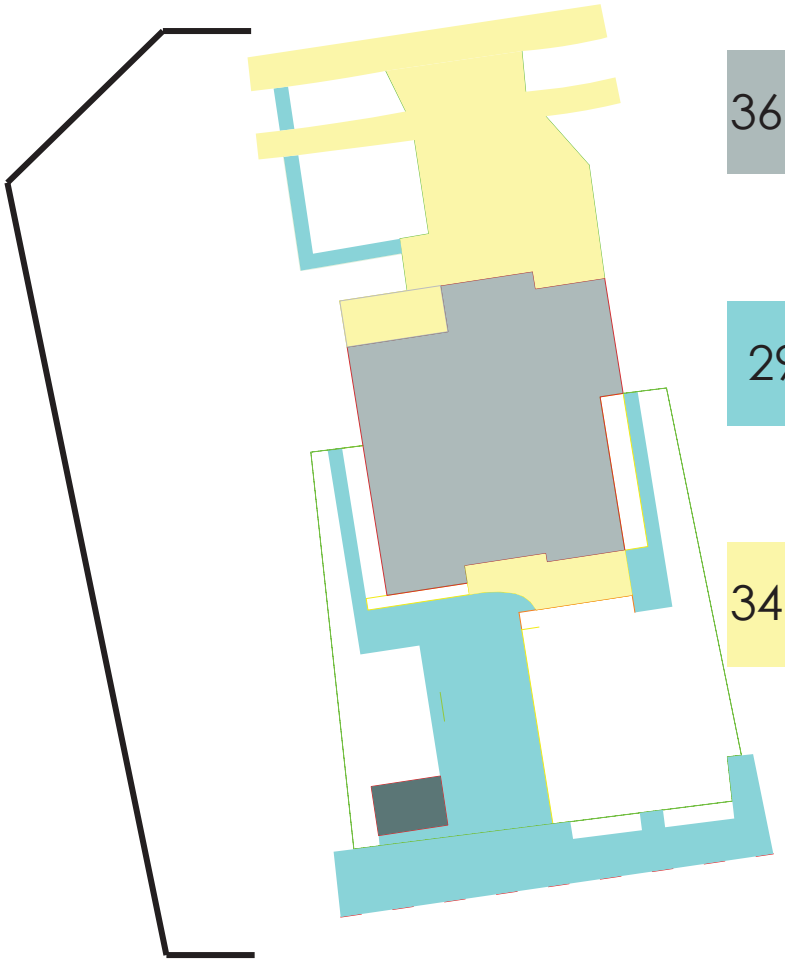
Surface Type Diagram

parcel size: 9852 square feet



56% **hardscape**

44% **vegetated**

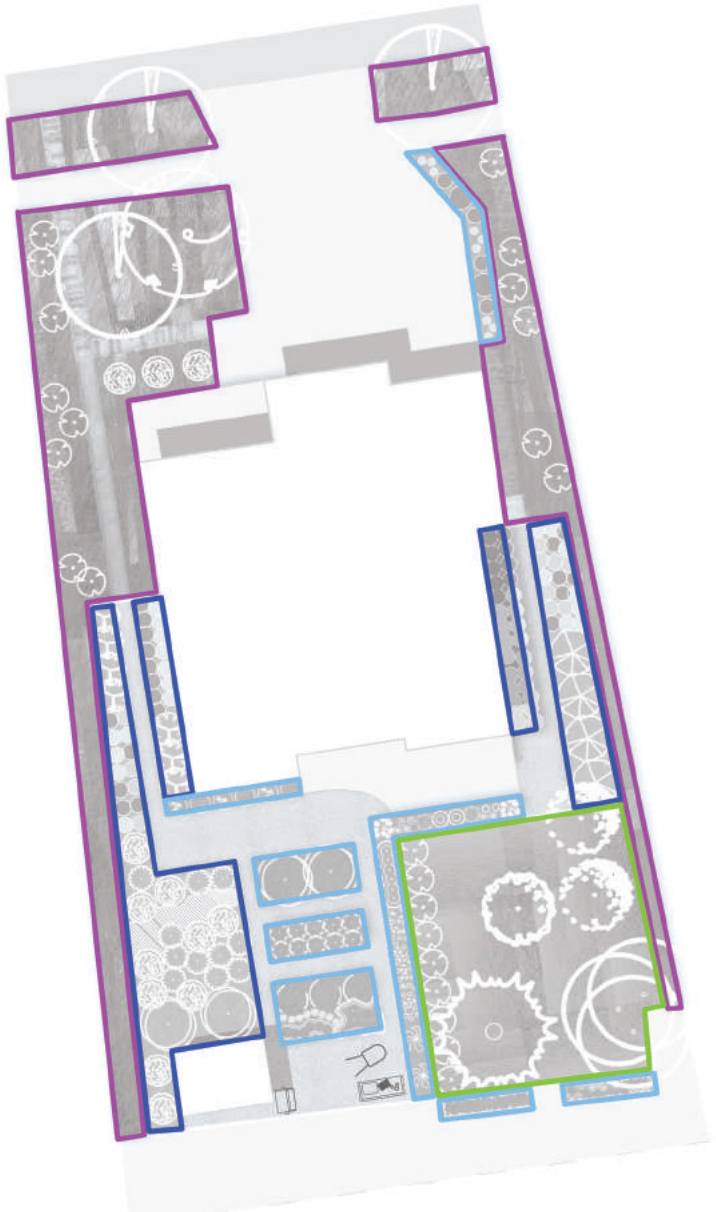


36.5% **roof**

29% **pervious hardscape**

34.5% **concrete & asphalt**

Vegetation Diagram



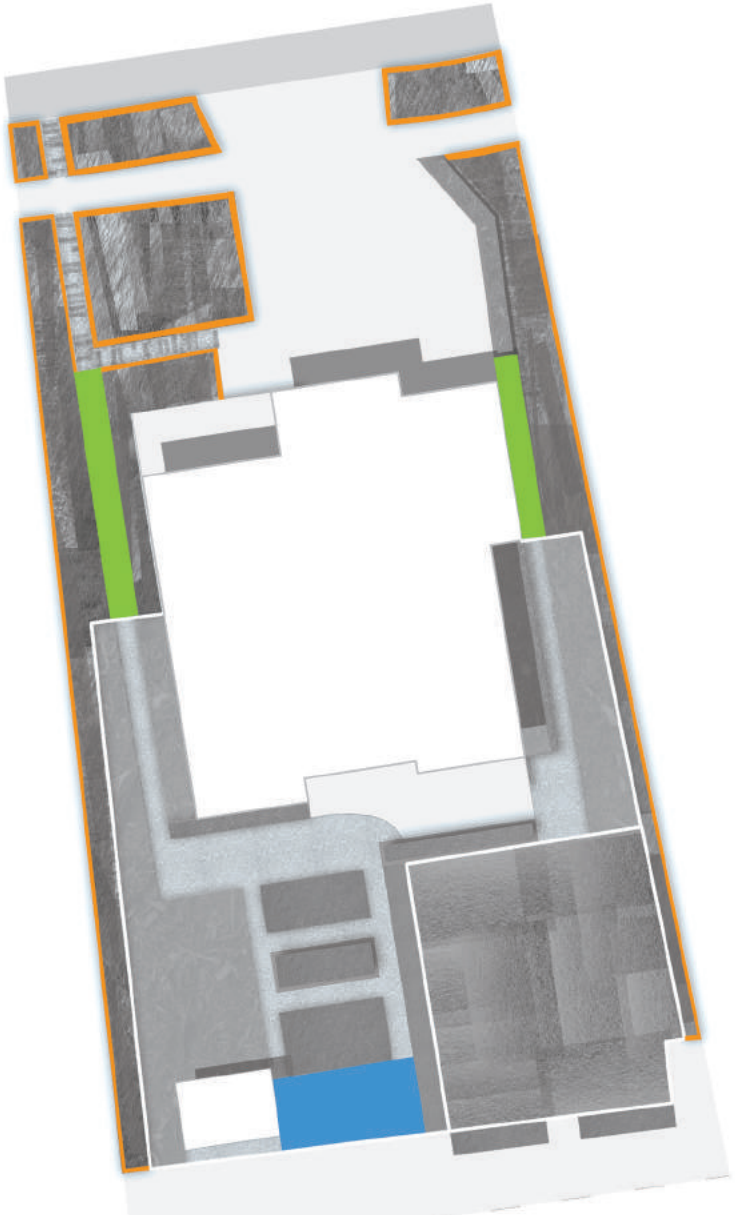
MT native grass mix

Shrub / perennial

Edible / herb

Turf

Cues to Care Diagram



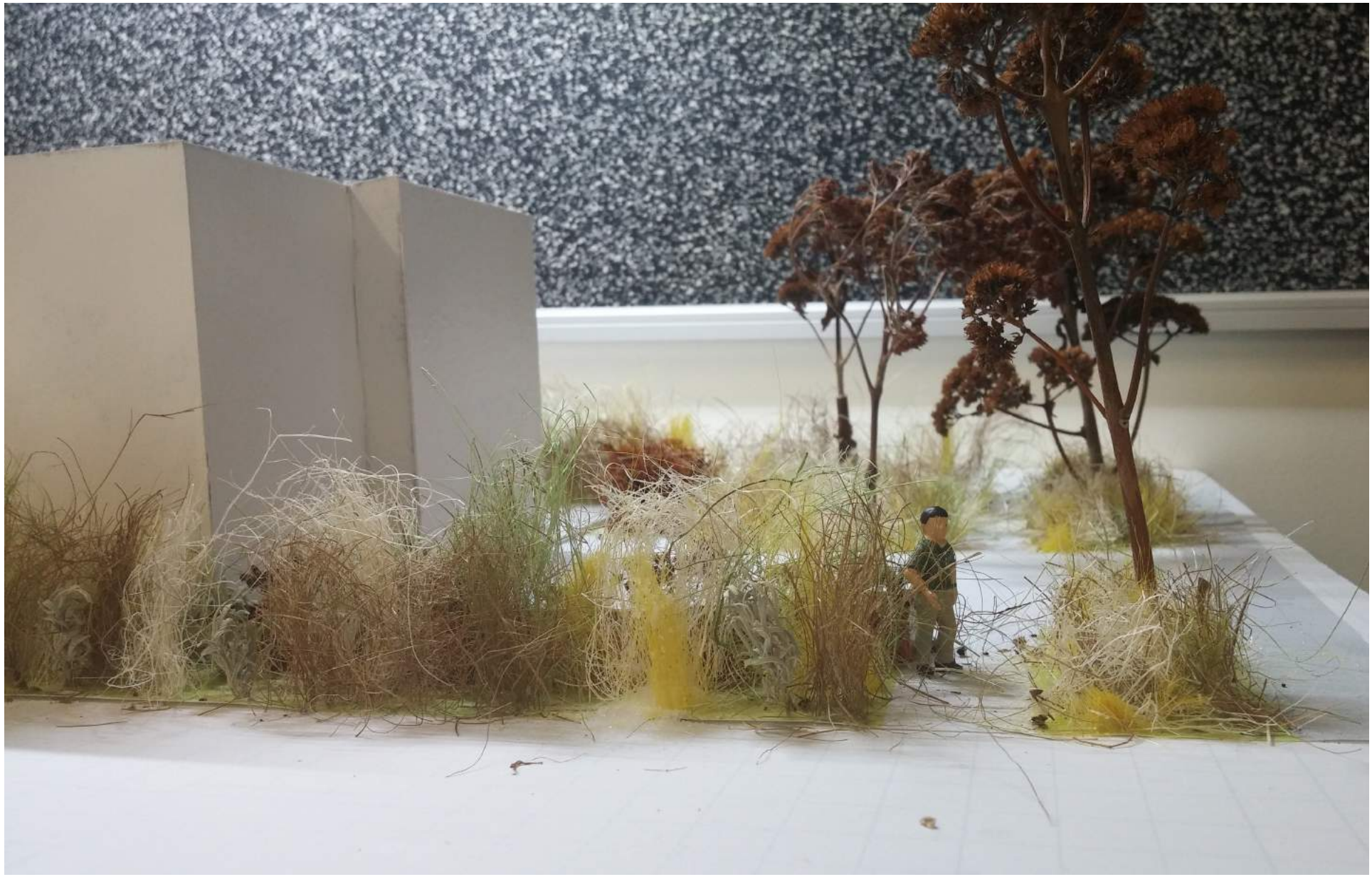
Thin mow-strip

Mow strip used as informal path

Workstation

other cues to care observed:
- fences
- mown turf
- visible, crisp edges defining borders of patches
- colorful flowers

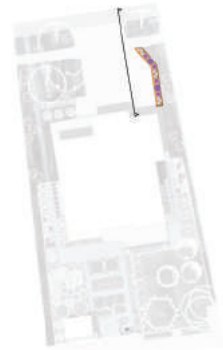
Model - front yard



Model - back yard

Model - side yards

Tea Time



N↑

Tea Time is an aesthically-pleasing, functional raised bed. Entertain your guests with a fresh cup of tea, straight from the garden. **($300-$1400)**

Catnip
(*Nepeta cataria*)

- attracts bees & butterflies
- drought tolerant
- soothing herbal tea, minty

Chamomile
(*Matricaria recutita*)

- attracts bees & butterflies
- calming herbal tea, sweet

Pale Purple Coneflower
(Echinacea angustifolia)

- attracts butterflies
- drought tolerant
- immune system - boosting tea, floral taste

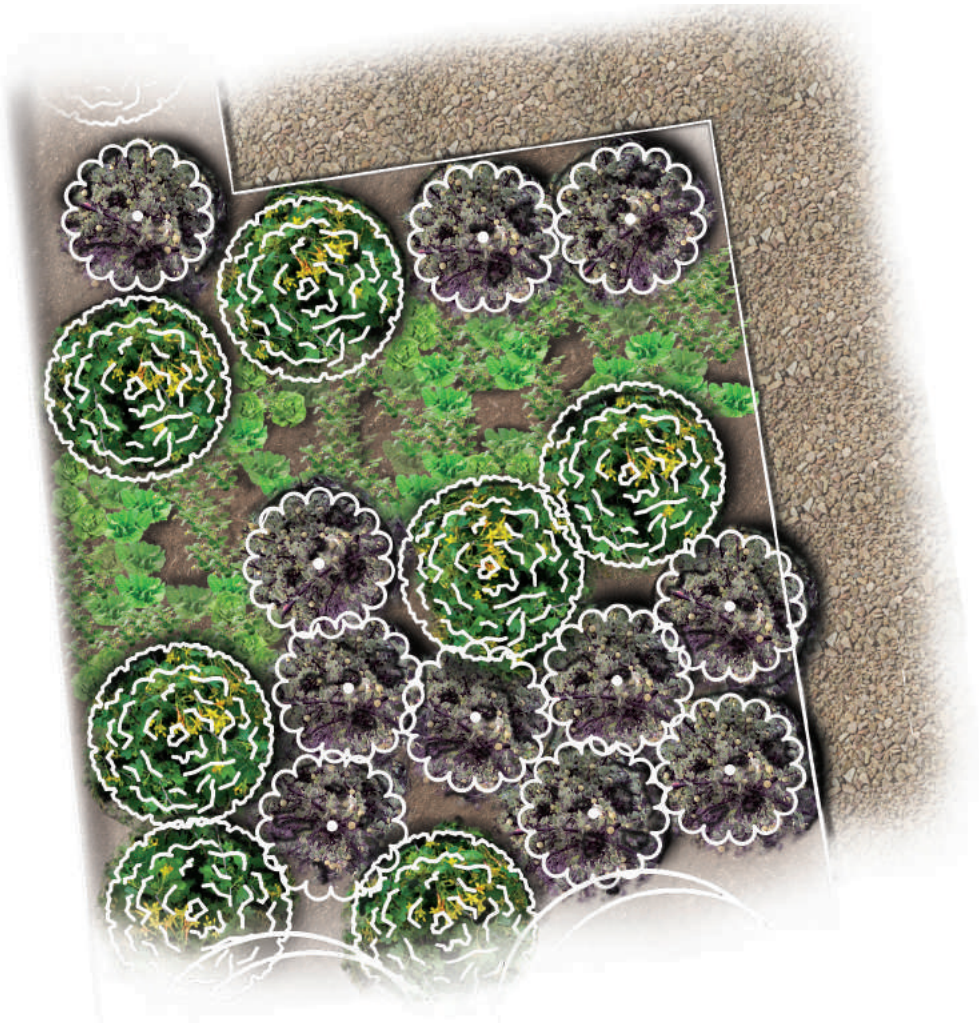
Strawberry Salad Patch

N↑

Lettuce (*Lactuca sativa*)

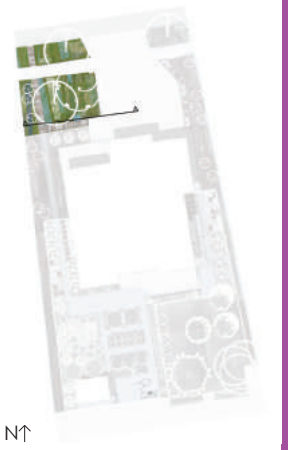
Spinach (*Spinacea oleracea)*

Strawberry (*Fragaria spp.*)



Strawberry Salad Patch is a great alternative to traditional groundcovers that gets your kids interested in homegrown foods. **($40-$100)**

Exploratory Path



N↑

Exploratory path... more than just a shortcut to the house.

($100-$300)

1. DIY path

2. Yarrow *(Achillea millefolium)*

3. Idaho Fescue *(Festuca idahoensis)*

4. Blue Grama *(Bouteloua gracilis)*

5. Lewis's Flax *(Linum lewisii)*

6. Slender Wheatgrass *(Elymus trachycaulus ssp. trachycaulus)*

7. Pale Purple Coneflower *(Echinacea angustifolia)*

8. Bluebunch Wheatgrass *(Pseudoroegneria spicata ssp. spicata)*

9. Basin Wildrye *(Leymus cinereus)*

10. Smooth Aster *(Aster laevis)*

Comparing Performance - Water

Performance	Baseline	Urban Farmer
gallons / month used	25,200	10,100
gallons / month **over** or **under** allowance	4,150	10,950
cost / month for irrigation	$122	$52

Comparing Performance - Vegetation / Soil

Performance	Baseline	Urban Farmer
total vegetated coverage = edible	0%	69%
total vegetated coverage = pollinator-friendly	19%	63%
property value increase / year	$260	$730
gallons of stormwater interception / year	600	7,800

Comparing Performance - Human Health & Well-Being

Benefit	Baseline	Urban Farmer
Restorative spaces	covered porches	view from windows covered porches raised beds
Culturally significant plants	turfgrass	MT native plants Bluebunch Wheatgrass turfgrass
Learning opportunities	none	Plug-and-plays
Human comfort zones	covered porches turf area	covered porches work area turf area edible area
Play spaces	turf area	turf area nature playground

Comparing Performance - Materials & Energy

Performance	Baseline	Urban Farmer
pounds of fertilizer applied to turf / year	**25**	**5**
hours / year spent mowing turf	**20**	**4.5**
yearly CO_2 emissions from mowing turf (lbs)	**433**	**27**

Making Urban Farmer a reality

Upfront plant costs

Maintenance

Soil

Pollinator homes

Maggie Crowley
MSU / Advanced Landscape Design / Fall 2016

Urban Farmer

"An edible yard that brings the pollinators home"

THANK YOU
QUESTIONS? / COMMENTS?

THE MINIMALIST

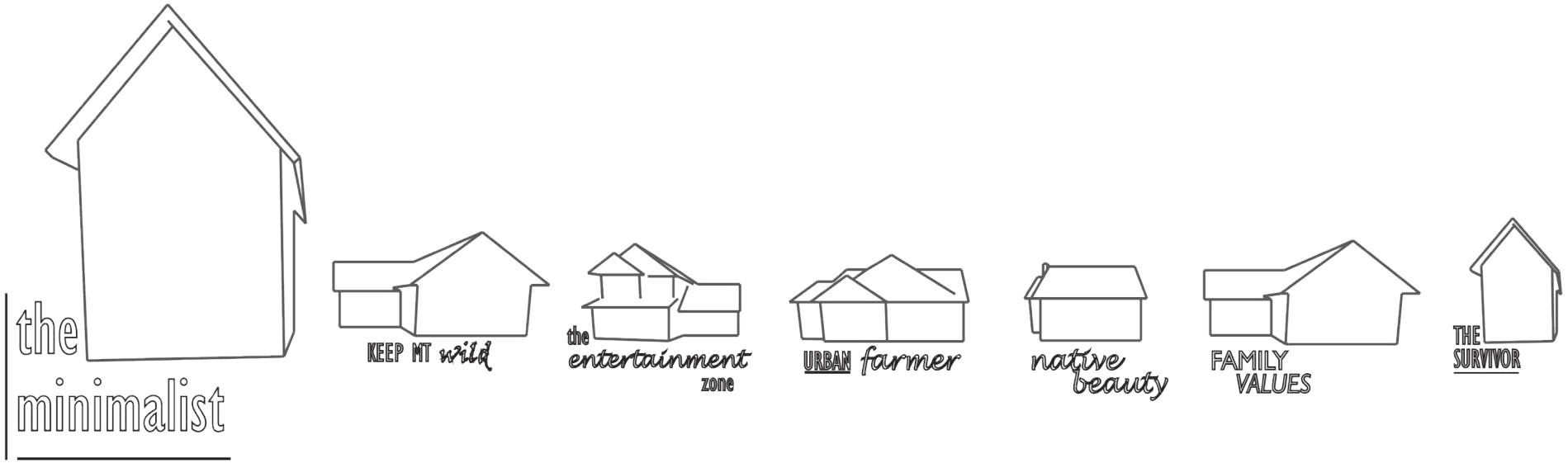
"Spend less time and money taking care of your landscape and simply enjoy it."

Haley Craven
December 2, 2016
MSU / Plant Bioscience Building / Room 108

Design Concept:

This design is based upon the rotation of seasons throughout a landscape and having seasonal interest every direction you look.

It uses curvilinear form to create the idea of the cycle through the different seasons.



PERFORMANCE

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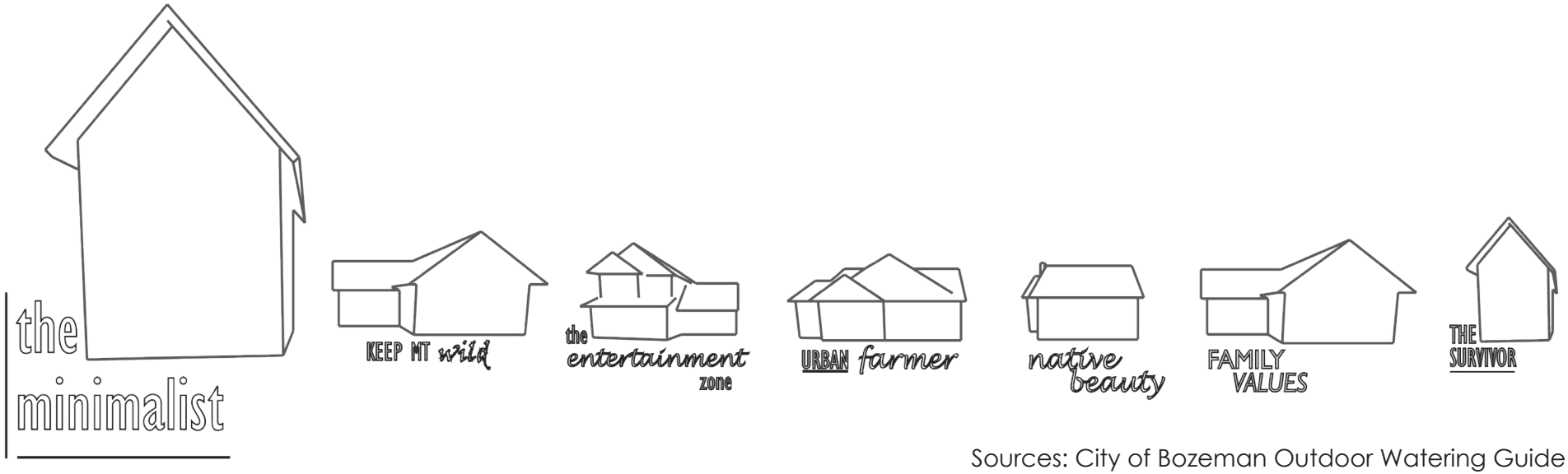
goals and benefits

- Site management through plant diversity
- Drought tolerant plant species
  -Most found in the City of Bozeman Planting and Outdoor Watering Guide
- Small but high impact on human senses



Sources: City of Bozeman Outdoor Watering Guide

EXISTING

plan view

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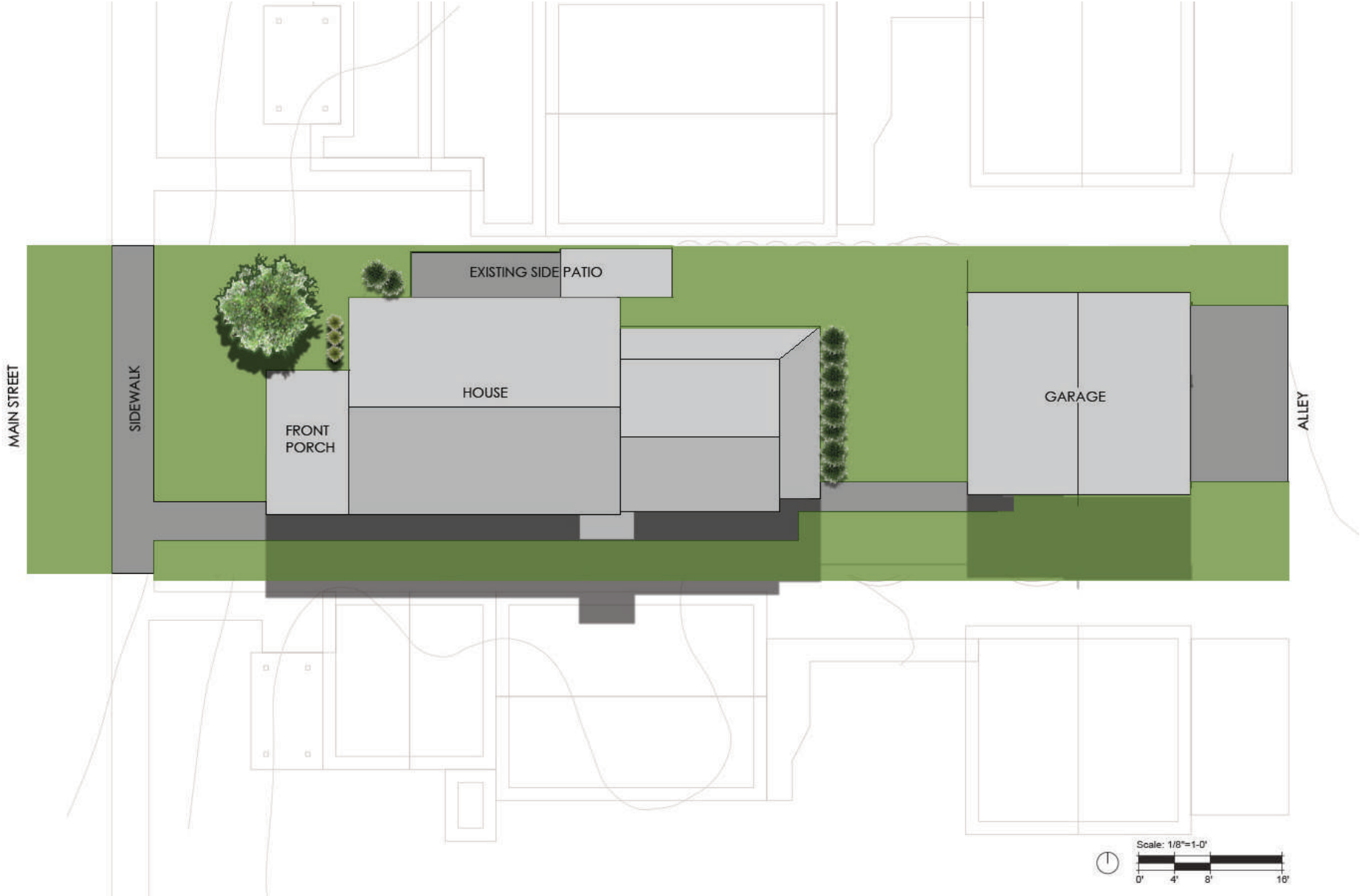
- No biodiversity
- Alley loaded
- Small setbacks



PROPOSED
plan view

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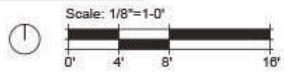
- 100% turf reduction
- Human function
- Layers of plantings



PROPOSED
schematic design

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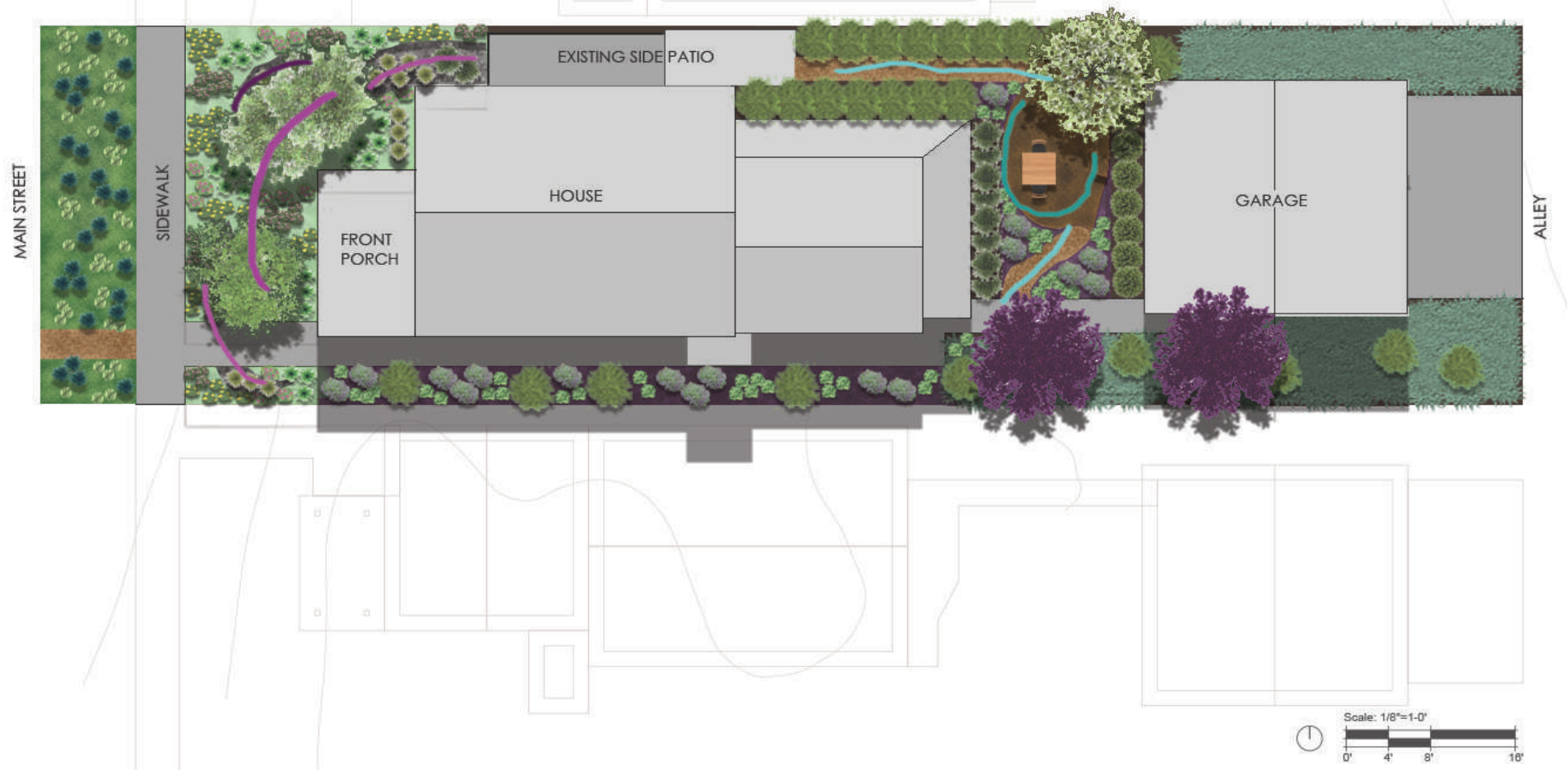
- Curvilinear design
- On ground plane, tree placements, hardscape



PROPOSED

THE MINIMALIST

design performance

BEFORE

- 46540 gallons of water used a month
  - -Over EPA Water Budget monthly allowance by 38659 gallons
- Existing tree benefits
  - -1700 gallons storm water intercepted/year
  - -470 lbs of CO2 reduction
  - -Increases property value $94.22
- 170 square feet of relaxation space in front yard/side of house

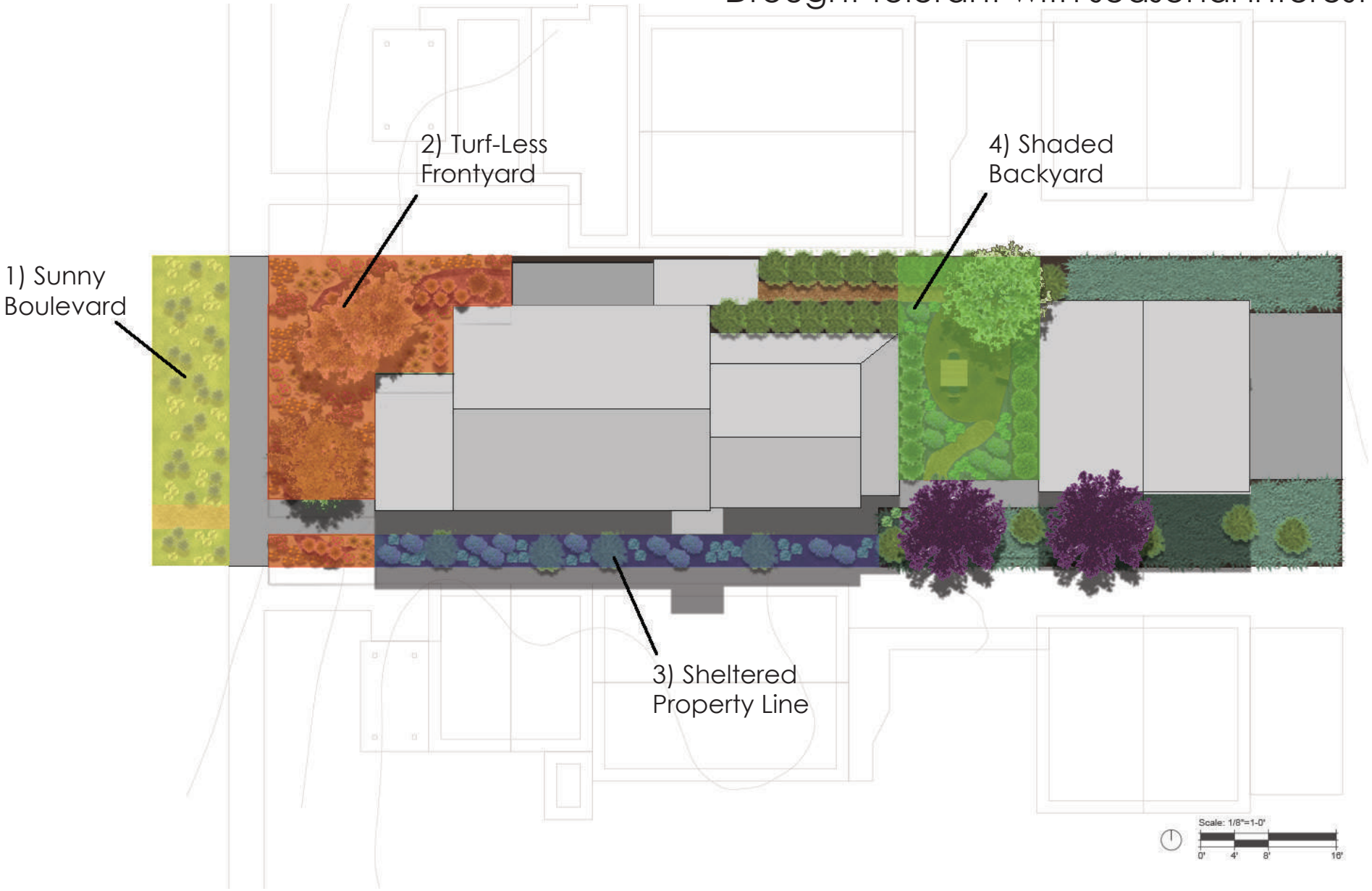
AFTER

- 1892 gallons of water used a month
  - -Under EPA Water Budget monthly allowance by 5989 gallons
- New tree benefits
  - -1900 more gallons storm water intercepted/year
  - -886 more pounds of CO2 sequestration
  - -Increases property value $258.31
- Additional 137 square feet of relaxation space in back yard

APPLICATION ideas

THE MINIMALIST

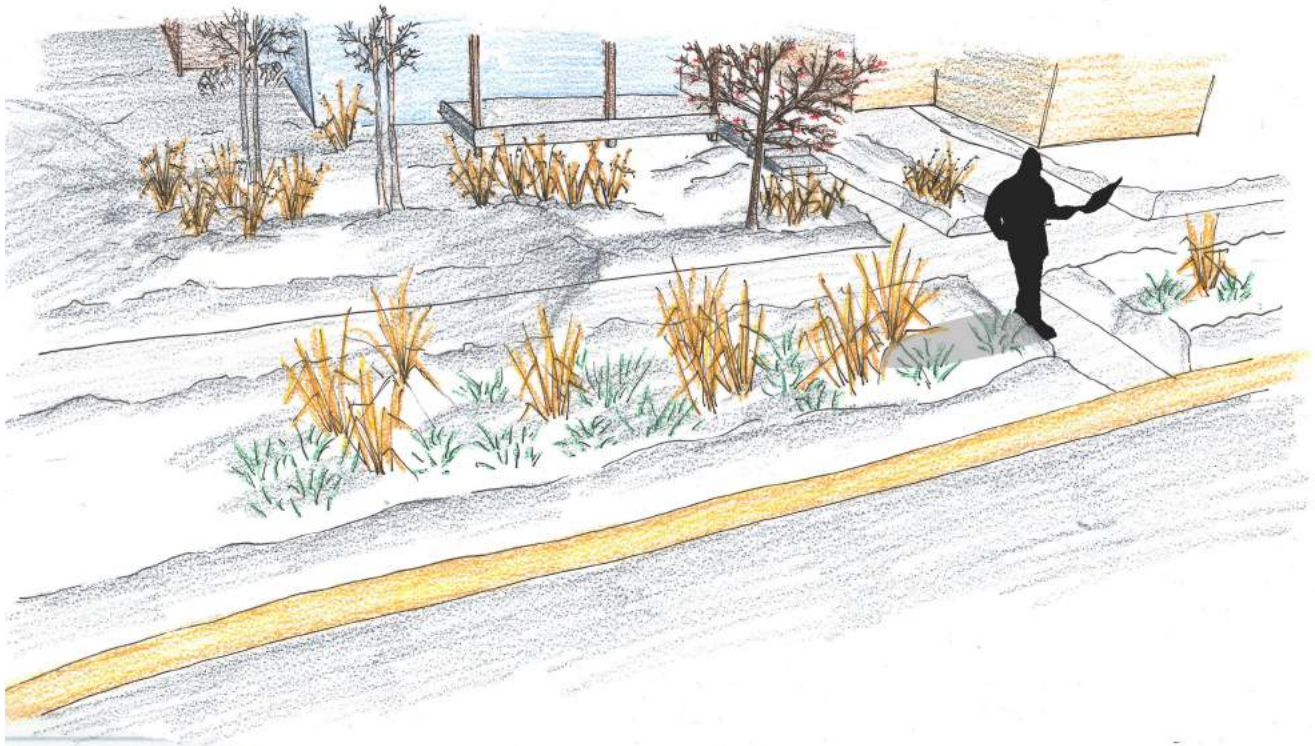
- Plug into own landscape
- Sun levels, locations, area sizes
- Drought tolerant with seasonal interest



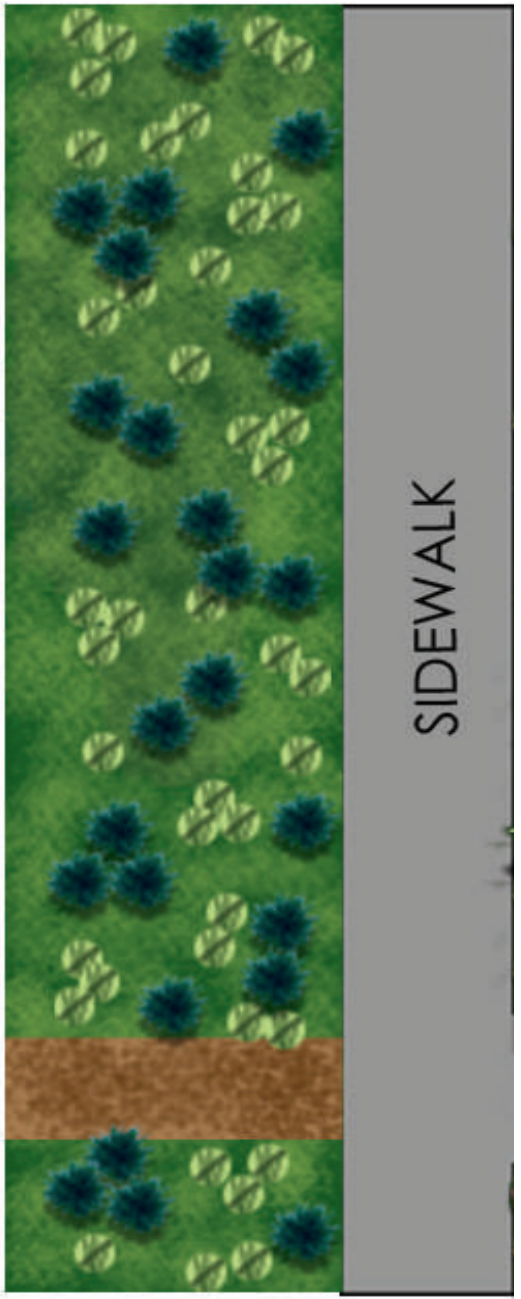
1) SUNNY boulevard

WINTER

THE MINIMALIST



- Low maintenance
- Can still shovel snow
- Still "grassy" boulevard



Plan NTS

2) TURF-LESS frontyard
SPRING

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- Continual flowering
- Creates privacy
- Plant layers
- Conventional plants in different way

Plan NTS

3) SHELTERED property line

SUMMER

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- Collaboration with neighbors
- Shade tolerant
- Low growing

Plan NTS

4) SHADY backyard

FALL

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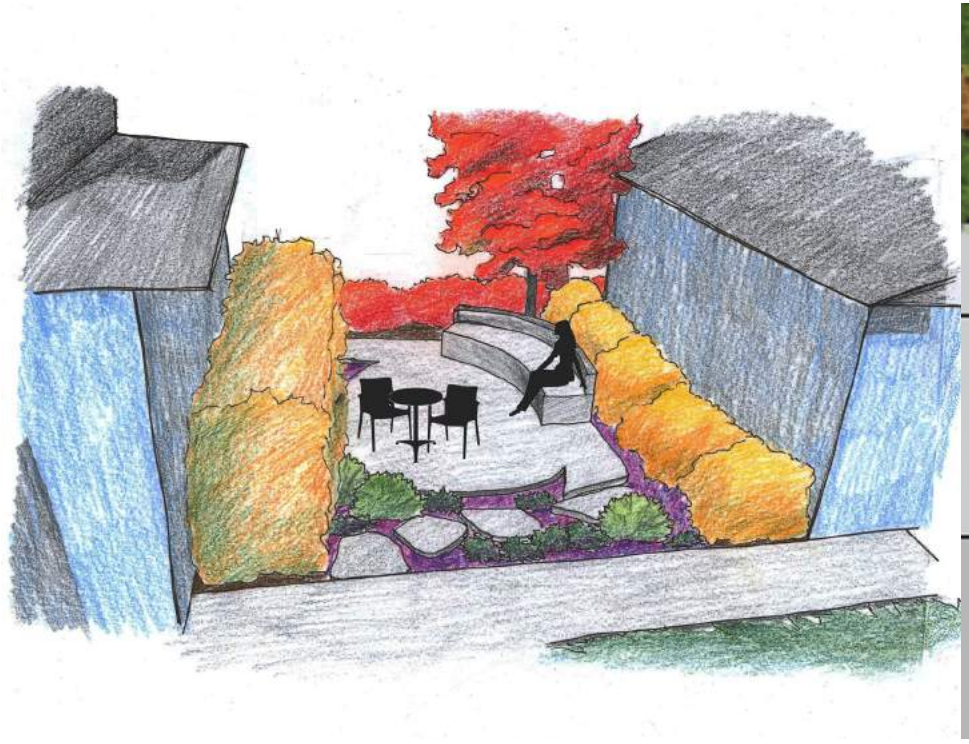
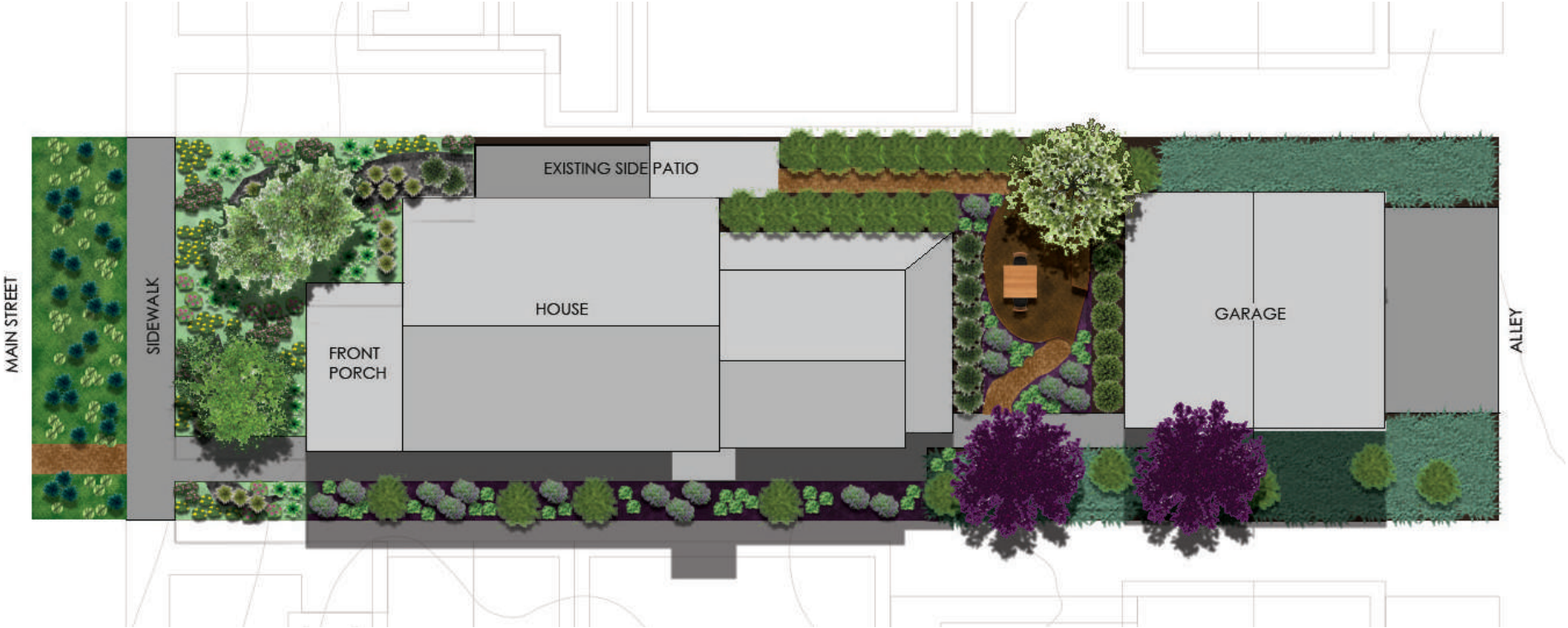
- Added privacy
- Trees help with seclusion
- Low maintenance and more usable
- Always shaded

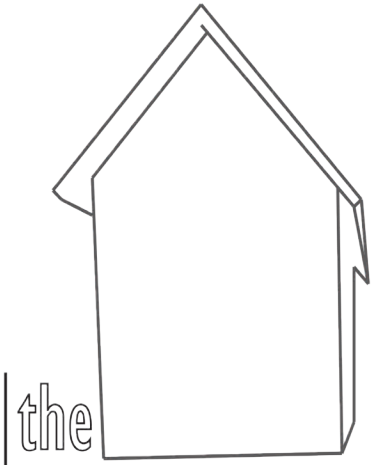


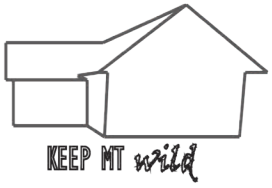
Plan NTS

THE MINIMALIST



THANK YOU!



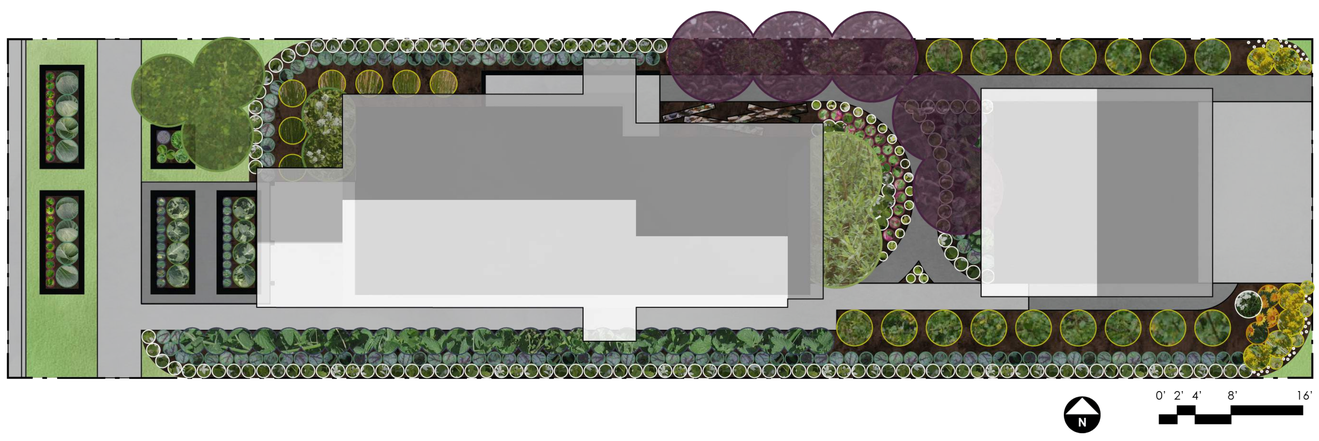


THE SURVIVOR

SUSTAINABILITY | INDEPENDENCE | CONSERVATION

Elizabeth Ritchie
HORT 432
December 02, 2016

MSU
Plant Biosciences Building
Room 108



The survivor is a design concept meant to allow the homeowner the ability to produce food and medicinal plants on their property with minimal water consumption and labor input. Native plants are prioritized over non-natives in the spirit of creating a more region-specific urban forage experience.

The homeowner should have the ability to produce their own food but not feel constrained by the need to.

Fun, exploratory elements such as a mushroom garden, or forage patio can be implemented as site conditions allow but do not directly contribute to the central themes of independence and sustainability.

PERFORMANCE TARGETS

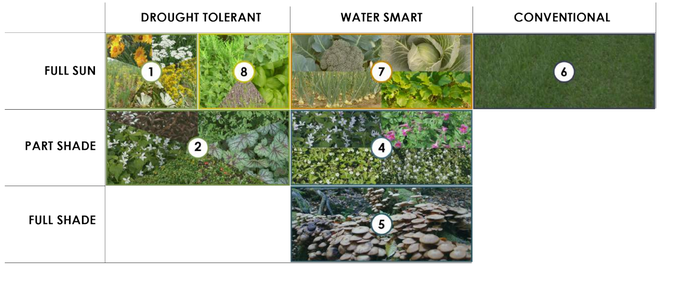
The design performance targets for this scenario were set with the central themes in mind. Water usage is kept at a minimum while pollinator friendly and edible plants were maximized to support sustainability and resource independence. Maintenance needs are minimized so that the urban food production efforts didn't take over the home-owner's life, leaving no room for other activities.

high water use reduction (81%)
high edible vegetation (84%)
6+ hours / week maint.

SITE OPPORTUNITIES

This site is generally very shaded, being a narrow parcel between two other two story houses. However, it does get a large amount of morning and evening sun at its East and West ends, respectively.

Another noteworthy charcteristic is the roof runnof, most of which is put out on the two northern downspouts of the structure. The figures below are representative of the volumes expected from a .5" rain event.



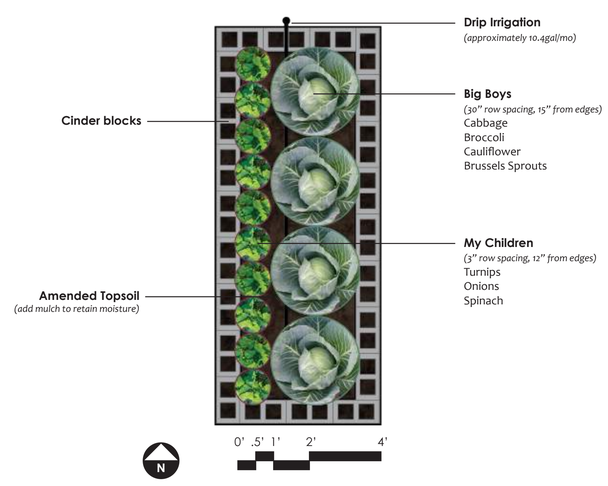
HYDROZONES

The Plant Pallet and hydrozone layout were informed by the site opportunities, specifically the amount of sun and availability of water. Some zones were created for exploratory purposes or to tie in with the surrounding aesthetic vernacular.

PLANT PALLET

	DROUGHT TOLERANT	WATER SMART	CONVENTIONAL
FULL SUN	1, 8	7	6
PART SHADE	2	4	
FULL SHADE		5	

WATER SMART VEGETABLE BOXES



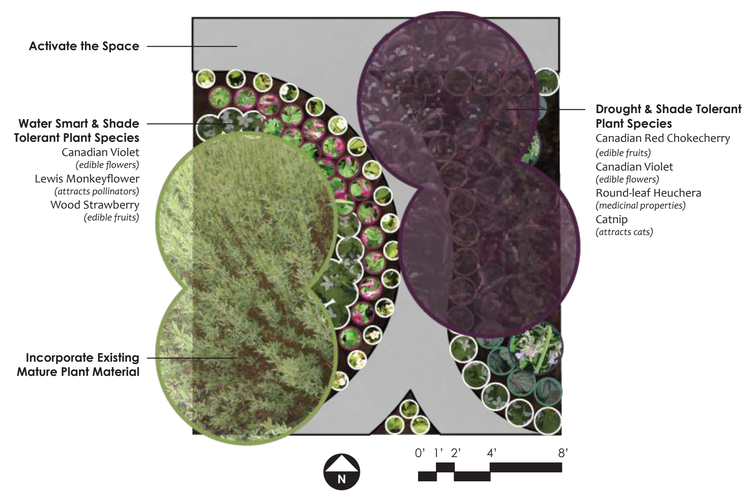
Raised or in-ground vegetable boxes are a simple and effective way to integrate vegetable production into the urban landscape while still maintaining a clean and put-together aesthetic.

This vegetable box design uses easily accessible materials and a more water-conscious and easily maintained plant pallet to keep costs to the homeowner down while still looking good.

You will need: 4'x11' of space, 44 9x18 cinder blocks, 2 yd³ of topsoil, vegetable seeds or transplants, 10' of drip irrigation line, and approximately 41.6 gallons of water per growing season.

For best sunlight penetration make sure the rows go north-south and, if you have a variety of crops, to plant smaller/shorter crops closer to the direction the sun is mostly coming from (in this case, the west).

URBAN FORAGE BACKYARD



The design of this element strives to provide a place where people can move through at their leasure and peruse some of the more easily acessable edibles.

Existing plant material was used as much as possible to reduce the extra irrigation required during establishment and the need to weed the area left for the plant to attain maturity.

Adding tree cover, even in shaded areas will help to reduce water needs of the plants below.

URBAN FORAGE SIDEYARD

These perennial bed strips along the side of the house provide some additional privacy to the homeowner as well as aesthetic cohesion with some of the other typical plantings in the area, albiet applied to a larger area.

Colorful endcaps to the strips take advantege of the more plentiful sun in addition to providing a pop of brightness.