

**sprout**  
an urban outreach enterprise

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# project title: **sprout**: an urban outreach enterprise

a prototype for a twenty-first century community outreach center and urban market

## elevator statement:

develop a flexible prototype for a community outreach center and small-scale urban “farm” to serve the needs of the 600,000+ chicago residents living in the city’s “food deserts.”

## case statement:

food deserts are an increasingly well documented phenomenon in the united states. however, they are particularly prevalent in the city of chicago. whereas 4 percent of the nations residents live in food deserts, 21.5 percent of chicago’s nearly three million residents live within their boundaries. research indicates there are three distinct “food deserts” within the city of chicago, which together comprise an area of 44 square miles. for the 609,034 residents within these deserts, access to reliable sources of fresh produce and meat is far surpassed by the availability of processed and fatty foods. likewise, these residents must travel disproportionate distances to access these reliable sources relative to those

living outside the three food deserts. furthermore, among the residents living in the chicago food desert, there are an estimated 109,000 single mothers and 64,000 households without cars. this data underscores the difficulty many face accessing healthy food.

these food deserts, characterized by high levels of racial segregation and income inequality, are indicative of systemic failures within the current american metropolitan model which have adverse effects on the health and quality of life of the residents living within such areas. limited access to healthy food is often associated with poor dietary education and physical fitness. the result is reduced quality of life for residents and ballooning medical costs for the nation as we contend with the costs of dietary illnesses associated with obesity such as and diabetes, high cholesterol and cancer. it is estimated that in 2008, health care costs related to obesity totaled \$147 billion, 9.1 percent of total health care expenditures. likewise, in 2006, each obese person cost health insurers and federal programs \$1,492, 42 percent more than “normal weight” patients.

the roseland community on the south side of chicago is indicative of the urban blight and deleterious social side effects which often coincide with urban food deserts. with a population that is 97.8 percent black, roseland suffers from disproportionate levels of crime (a total crime index of 288 compared to chicago’s 220) and unemployment (19.7% compared to chicago’s 6.3%). likewise, the 1999 per capita income of \$15,664 was well below the city average of \$20,175. such conditions have lead to the continuing decline in roseland’s population, which shrank a further 6.67 percent between 1990 and 1999. the emigration from roseland is part of a wider trend across much of south chicago which has resulted in an estimated 30,000 acres of vacant lots which have unrealized environmental, economic and residential potential.

**sprout** will attempt to address these many shortcomings inherent in socioeconomically disadvantaged neighborhoods. by combining programs for exercise, dietary education and farming, these community outreach centers will utilize some of this vacant land to provide a means of access and understanding between the community and its food source. in addition, the centers will provide an ecological understanding of our food chain and its consequences. in doing so, the community outreach center will rely on existing infrastructure such as churches and schools to raise community awareness and involvement.

project description



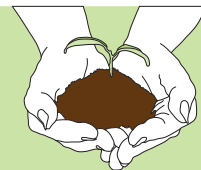
# process description:

the process of designing **sprout** begins with intensive research to further understand and define the problem of food deserts and the social and socioeconomic problems that often coincide with them. likewise, market research, such as resident interviews, is needed to successfully engage potential markets through an improved understanding of the communities social and demographic characteristics, dietary preferences and education, and recreational habits. the large area contained within chicago's food deserts, requires that criteria be established for selecting the most appropriate sites. given that large numbers of residents in food deserts are low income and many lack individual transportation, sites should be located in relatively high density residential areas with pre-existing infrastructure such as public transportation, roads and sidewalks. consideration must also be given to soft infrastructure such as gang territories and crime. the decision must be made to either use **sprout** sites as means of engaging these territories and reclaiming them for safe public use or avoiding them altogether, as any middle ground will result in unsatisfactory conditions for all stakeholders involved.

the success of sprout as a dietary, recreational and economic catalyst in under served neighborhoods is predicated upon an understanding of current high yield farming practices, dietary recommendations and best practices, dietary education, community activism and successful recreation facilities. therefore a review of diverse case studies and precedents is required. such case studies should include urban farms and programmatically complex community centers, both traditional and non, in the united states and abroad. an understanding and review of dietary guidelines is necessary as well when trying to implement community-wide changes of residents consumption habits.

to ensure success, detailed thought should be given to every level of stakeholders involved with **sprout**. stakeholders at every level should be considered and actively engaged to ensure the highest level of community participation in all programmatic aspects of the facility. codes, regulations and budgetary considerations are also critical to ensuring the bureaucratic and economic viability of the endeavor.

project description



# project goals:

improve quality of life for residents of roseland by providing access to a variety of fresh produce and protien, dietary education and recreation

serve as a catalyst for economic redevelopment of the roseland community

# guiding principles:

revitalization: depressed neighborhoods often have large areas of vacant land which can be utilized in innovative ways to generate the local economy

safety: roseland has long been associated with a culture of violence and has made state and national headlines for recent beating deaths and shootings

affordability: healthy food must not only be present, but affordable to the residents of the community

accessibility: lack of transportation and the burden of commuting often prevent people from reaching healthy foods, even if such foods are present in their community

self sufficiency: americans typically rely on large international corporations for the vast majority of their food supply, making them susceptible to outbreaks of food bourne illnesses

diversity: food deserts are characterized by high levels of racial segregation

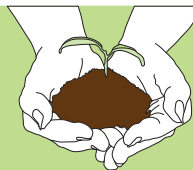
health: healthy citizens are the conerstone of society at every level: community, city, state and nation

economics: skyrocketing healthcare costs in the united states cannot continue to go unchecked

environmental stuardship: current practices in food production and distribution are highly inefficient, leading to environmental degradation

education: many americans are unaware of the adverse consequences associated with poor diet

goals and guiding principles



# stakeholders



leadership

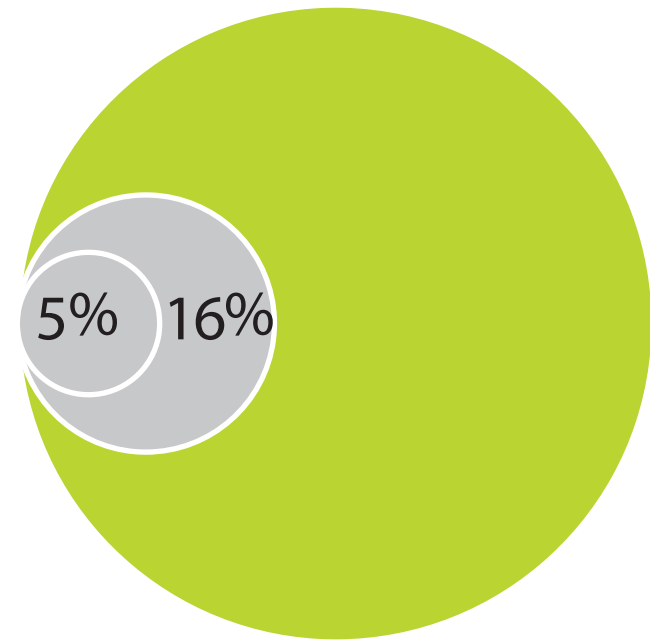
direct stakeholders

indirect stakeholders

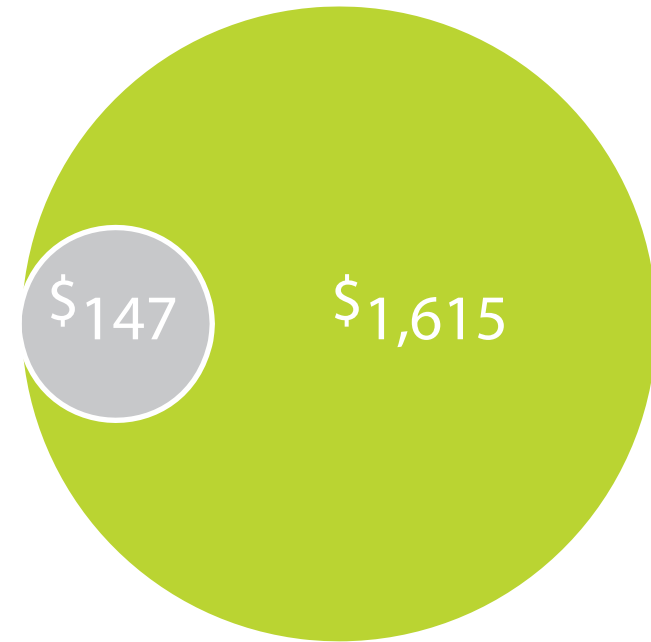
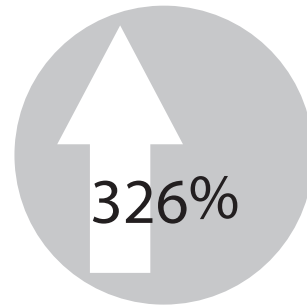
general stakeholders

# obesity in america

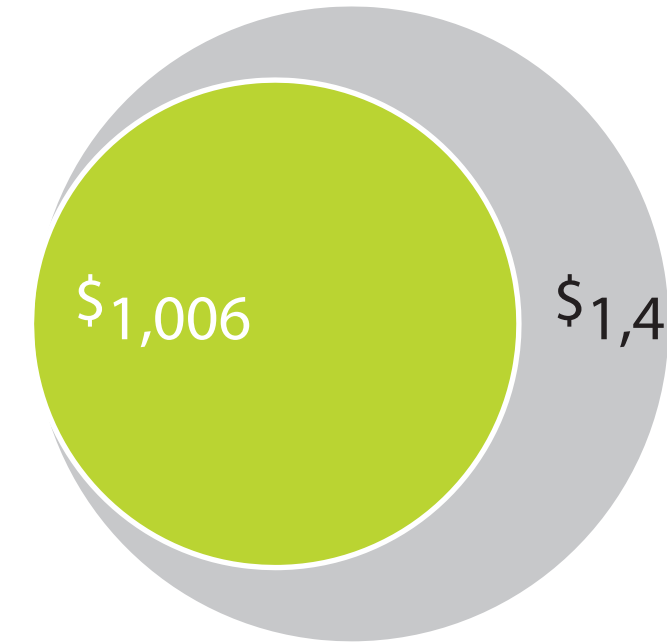
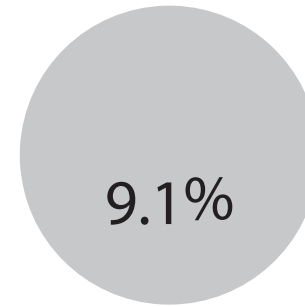
the obesity epidemic in the united states is a growing concern, with virtually every relevant statistic on the rise. furthermore, the epidemic is expected to intensify over the next decade, as the most alarming statistics pertain increased incidents of obesity among the nation's youth. in addition to quality of life concerns, the growing prevalence of obesity among the country's population is placing an unsustainable burden on national healthcare, as obese people require significantly more medical assistance compared to those of "normal weight." increased body mass index (bmi) associated with obesity has been proven to have a significant adverse effect on a wide array of health issues, including diabetes, high blood pressure, arthritis, asthma, and high cholesterol. this adverse effect dramatically increases the incidents of overall fair or poor health diagnoses among obese people compared to the rest of the population.



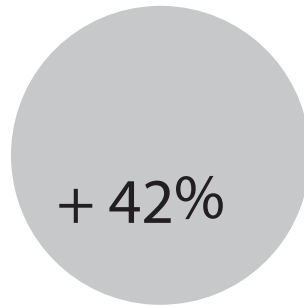
percentage of american youth who are obese, 1980 compared to 2006



obesity related health care costs relative to total national expenditure (in billions)



annual individual health care costs for obese people compared to "normal weight" people

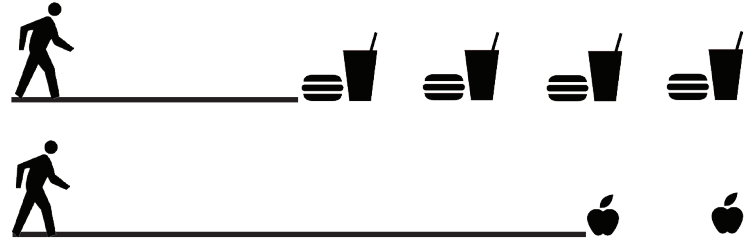


odds ratios for individuals with BMI of 40+ compared with those of "normal weight"

1	7.37	diagnosed diabetes
1	6.38	high blood pressure
1	4.41	arthritis
1	4.19	fair or poor health
1	2.72	asthma
1	1.88	high cholesterol levels

# food deserts

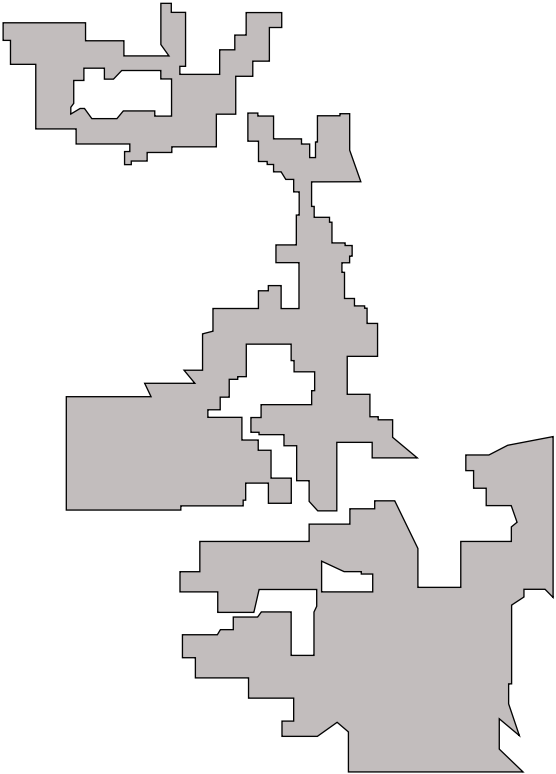
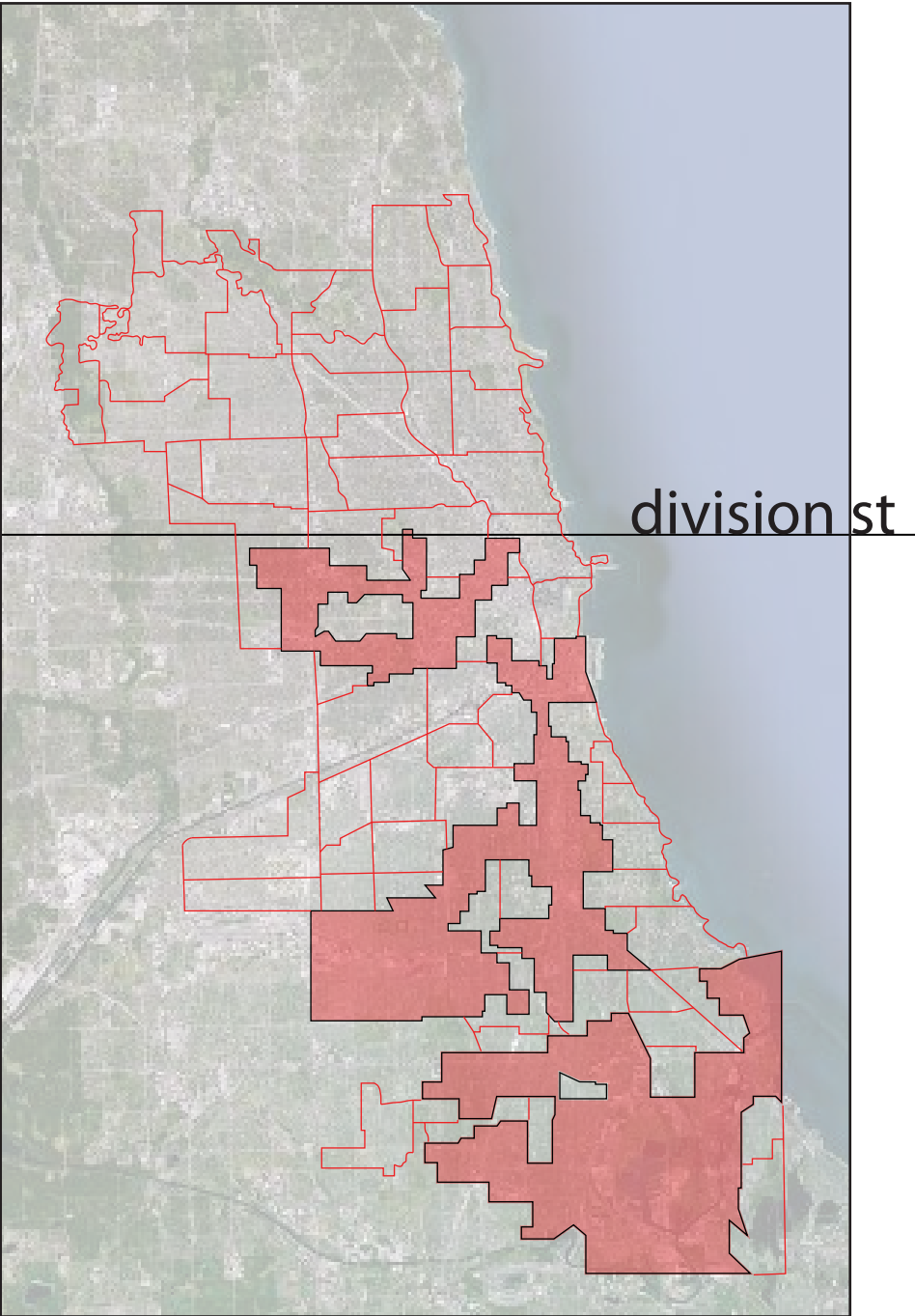
food deserts within the united states are receiving growing attention due to the increased understanding of their role as significant contributors to the country's obesity epidemic. food deserts are areas in which residents must travel disproportionate distances to reach sources of healthy produce and protein, and where such sources are vastly outnumbered by those such as fast food restaurants and convenience stores which typically sell processed foods of low nutritional and dietary quality.



# food deserts of chicago

although it is estimated that approximately 4 percent of the nations population live within food deserts, the proportion of chicago residents living within these borders is significantly higher. in the chicago metropolitan area, there are approximately 44 square miles of food deserts, located exclusively south of division street. this area contains approximately 609,034 residents, 21.5 percent of the total population of chicago. within this area there are approximately 64,000 households without cars and 109,000 single mothers.

percentage of residents living in food deserts

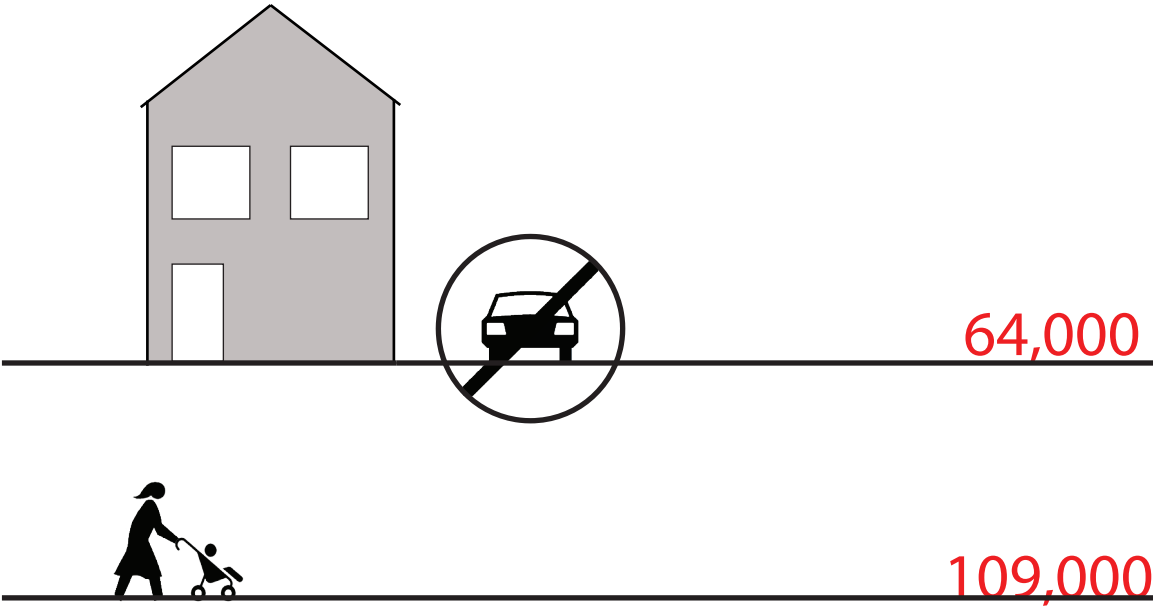


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44 miles<sup>2</sup>

&

609,034

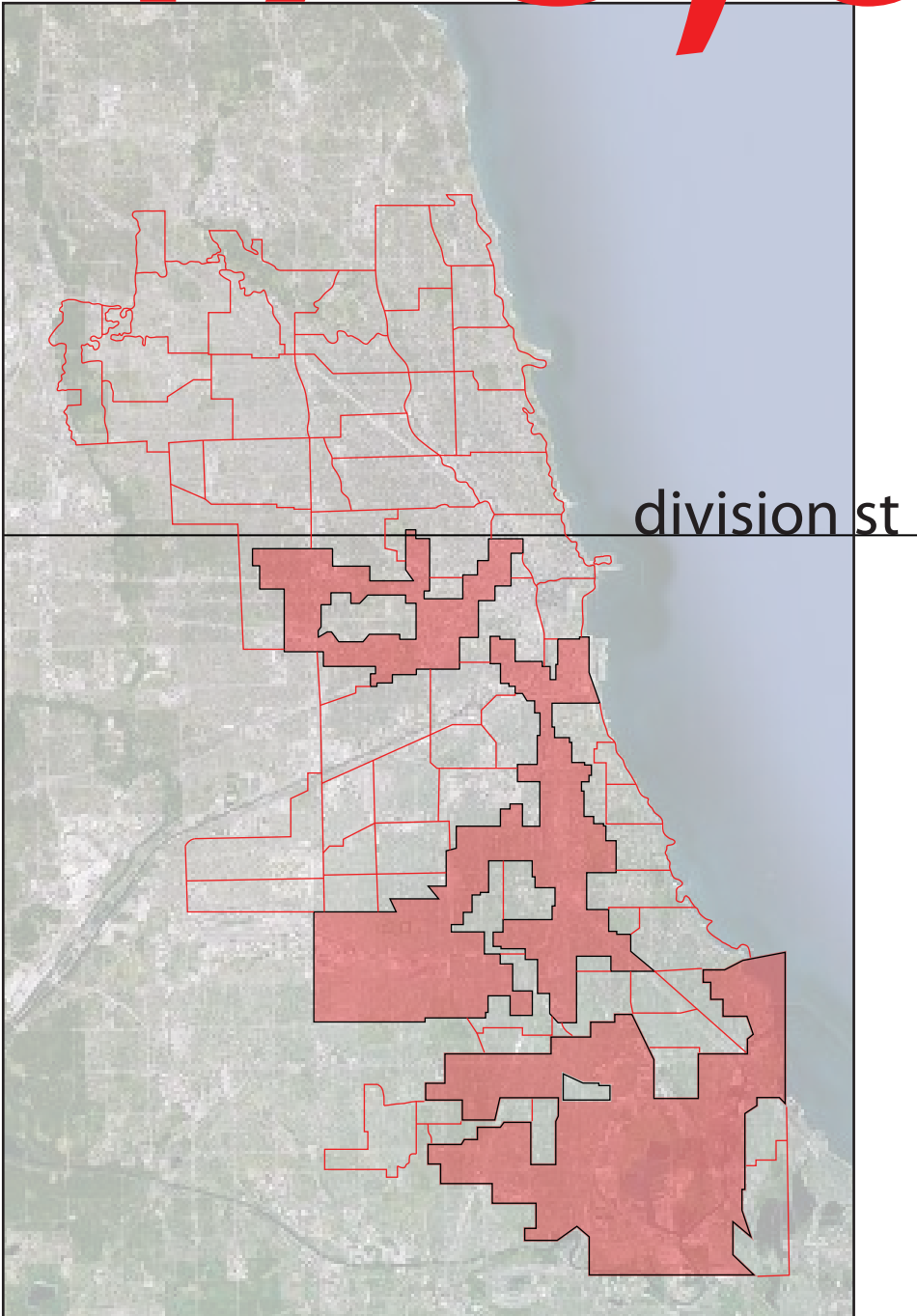




# food deserts of chicago

like urban food deserts throughout the country, those in chicago are characterized by high levels of racial segregation and income inequality. of the 609,000 residents estimated to be living in the city's food deserts, the vast majority are black, comprising approximately 478,000 of the 609,000 residents. this compares to 78,000 whites and 57,000 hispanics. furthermore, black residents living within food deserts must travel the farthest average distance to reach the nearest quality foods: .59 miles compared to .39 miles for white residents and .36 miles for hispanic residents.

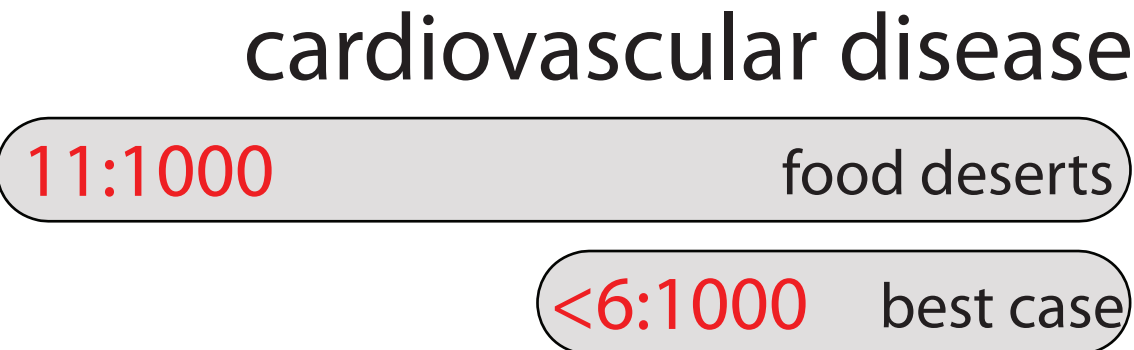
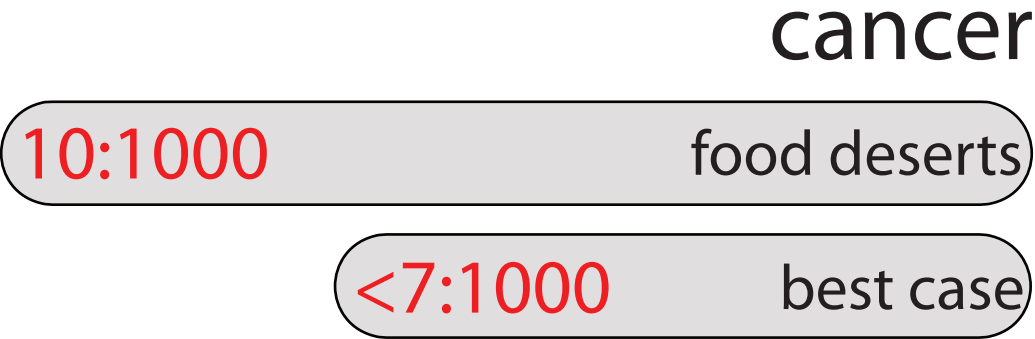
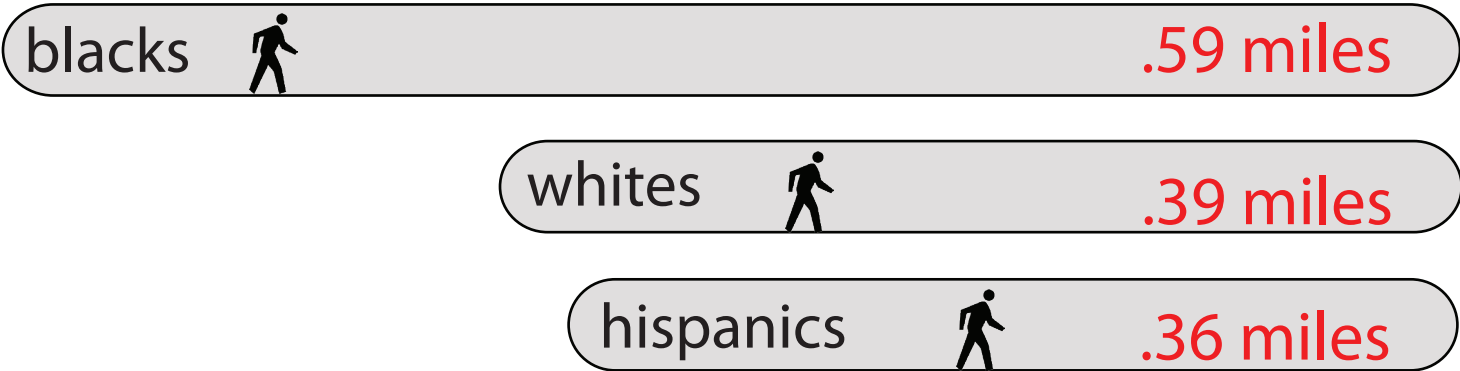
# 478,000



78,000

57,000

as significant contributors to obesity, food deserts are proven to have an adverse effect on the health of residents living within their borders. health data for the residents of chicago's food deserts reinforces that collected in national studies. for residents living in the city's food deserts the rate of cancer is 10:1000 compared to less than 7:1000 in areas with the best food supply. the disparity is even greater for cardiovascular disease, for which the rate among residents in food deserts is 11:1000 compared to less than 6:1000 in areas with the best food supply.

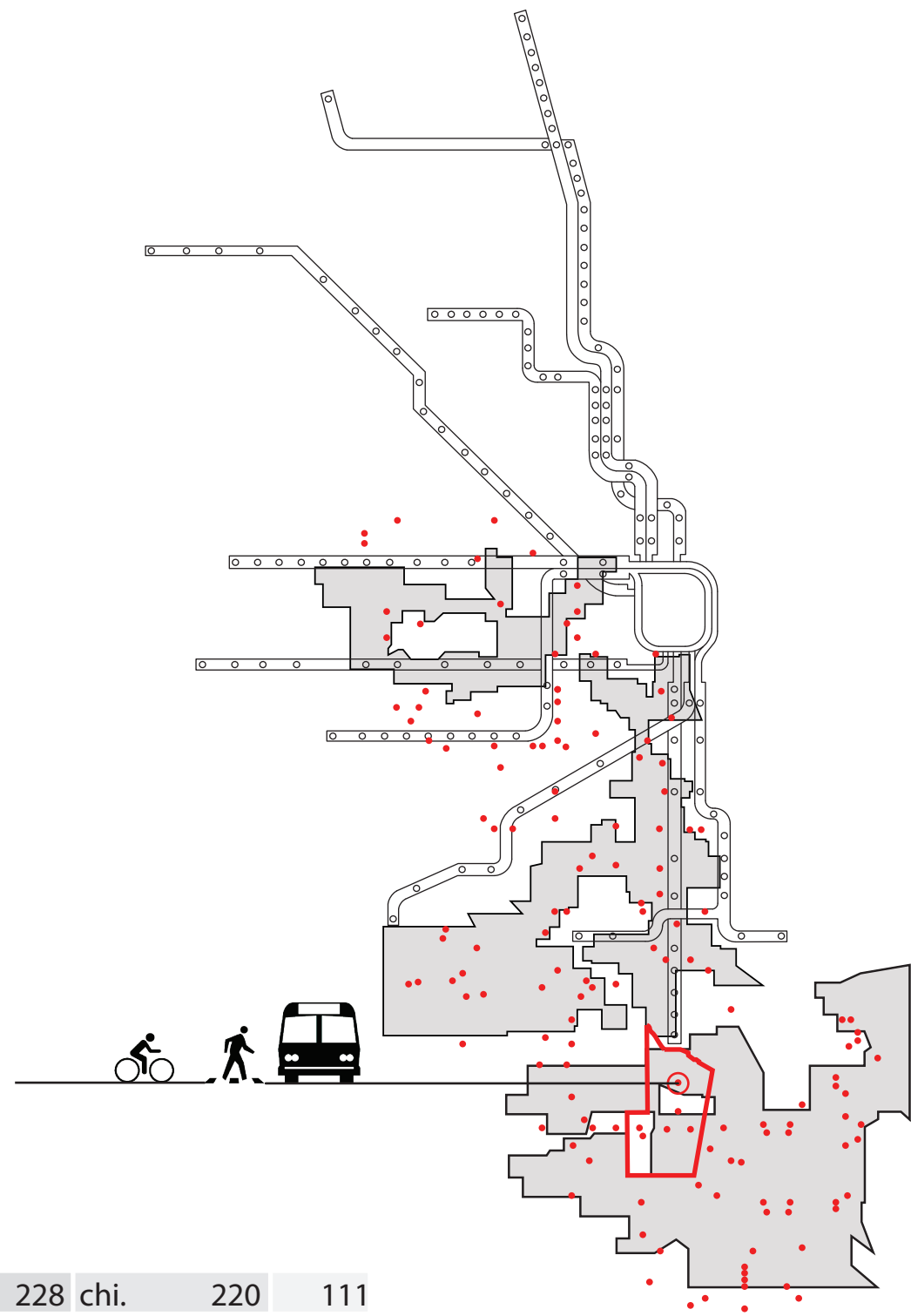


The Food Desert, 2009  
 Are You Living in a Food Desert?, 2009  
 Can America's Urban Food Deserts Bloom?, 2009  
 Diet-related disease drives up health-care costs, study shows, 2009  
 Prevalence of Obesity, Diabetes, and Obesity-Related Health Risk Factors, 2001

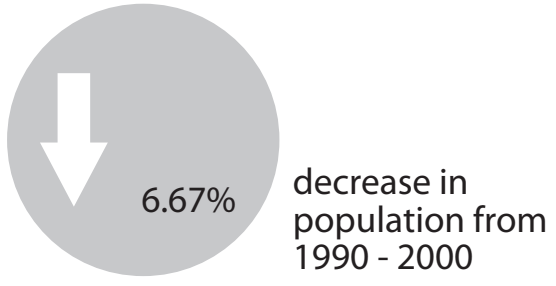
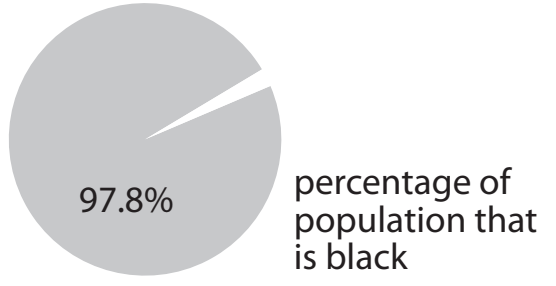


# roseland

the community of roseland, on the south side of chicago, is an under served area that is currently suffering a variety of the social challenges typical of many of the neighborhoods that comprise the city's food deserts. in addition to a decreasing population and stagnant property values, roseland has high crime and unemployment rates as well as low per capita income relative to the rest of the city.



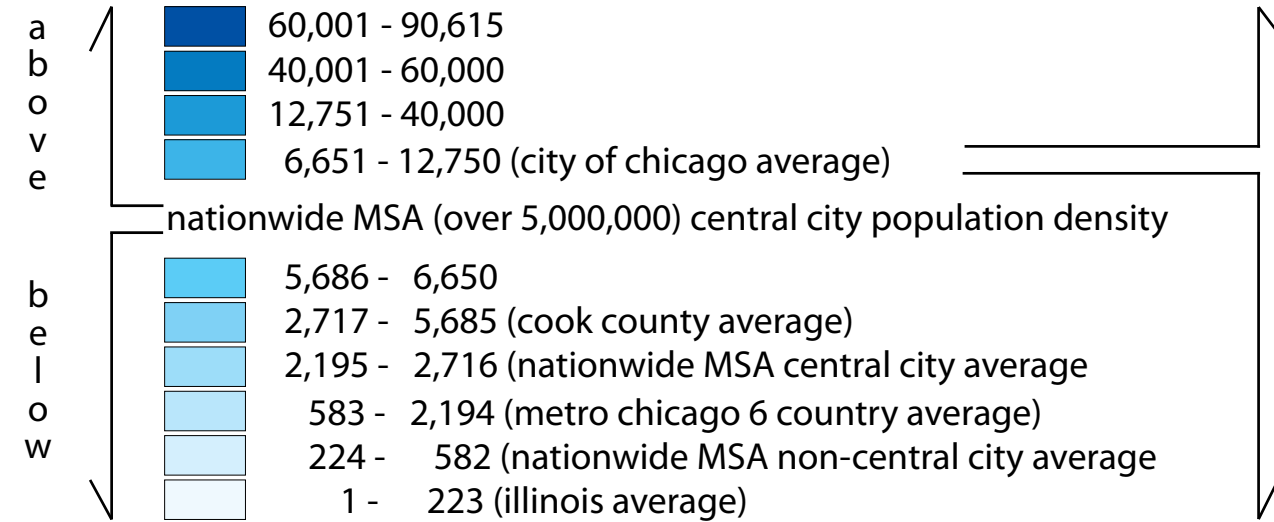
roseland  4.9 mile<sup>2</sup>



population density (1999)	chicago	12,751
	roseland	10,855
unemployment (2007)	chicago	6.3%
	roseland	19.7%
per capita income (1999)	chicago	\$20,175
	roseland	\$15,664

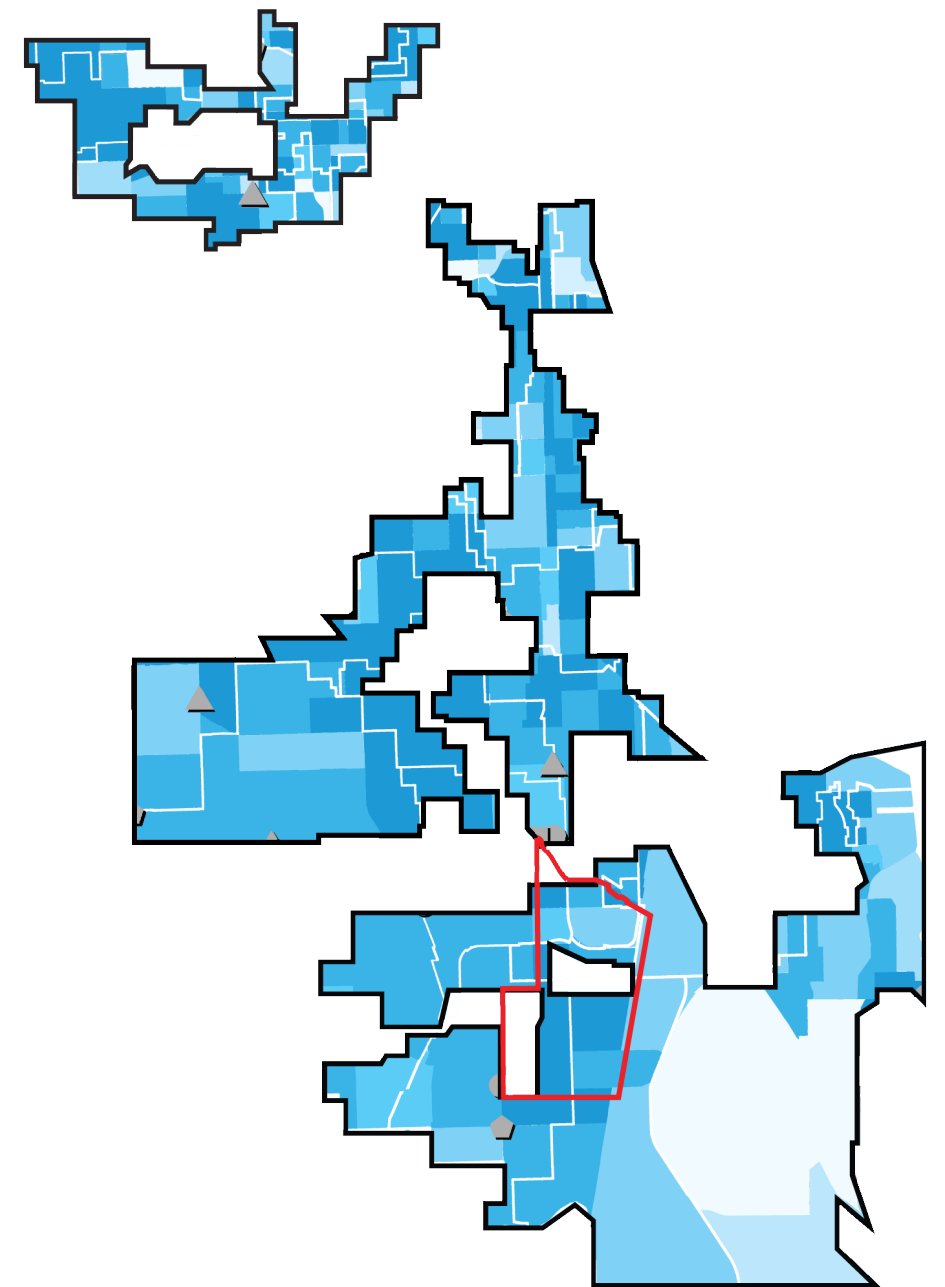
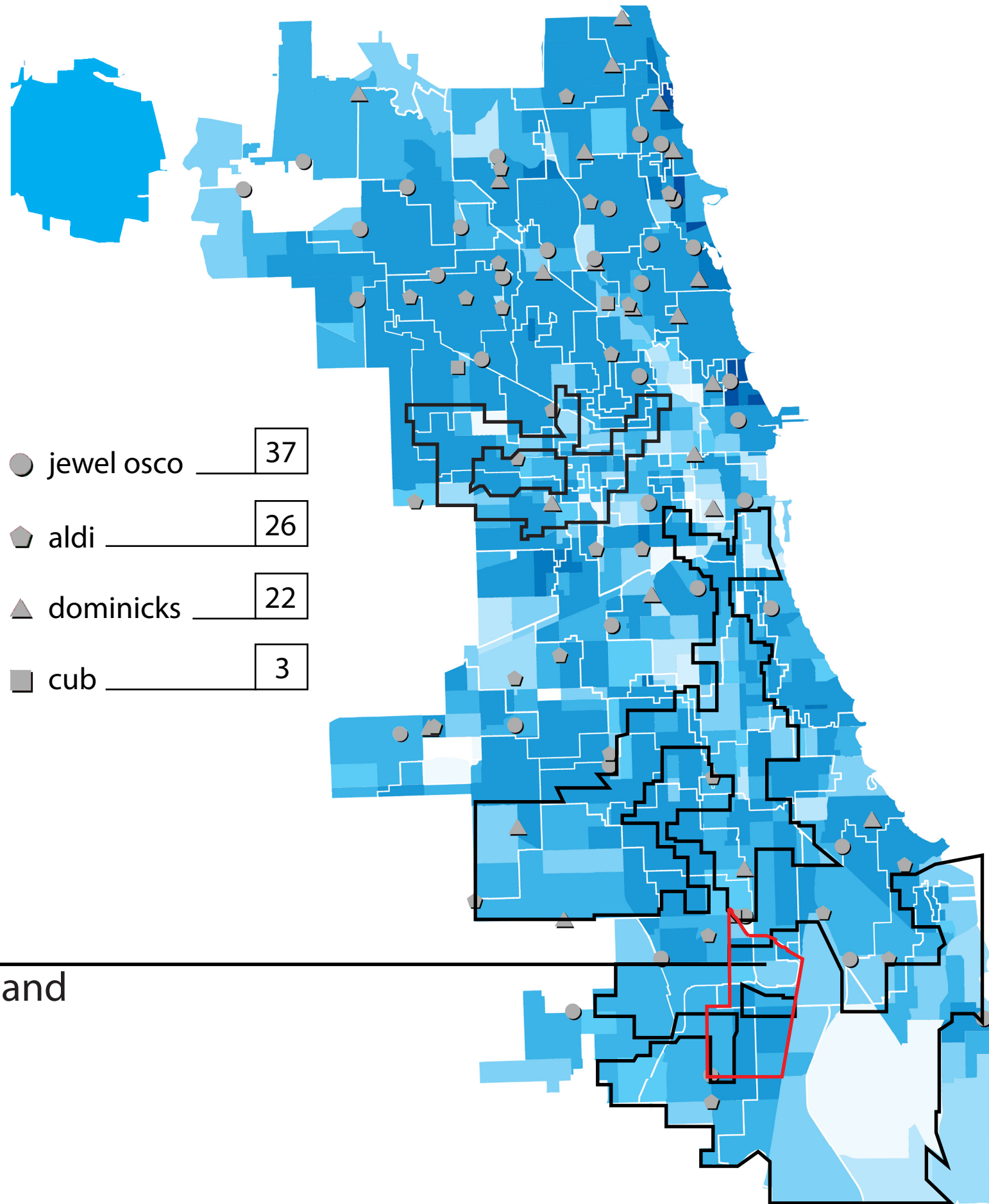
total crime index (2008)	300	roseland	288	286	254	254	253	228	chi.	220	111
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# 2000 census population density (people per mile<sup>2</sup>)



- jewel osco 37
- ◆ aldi 26
- ▲ dominicks 22
- cub 3

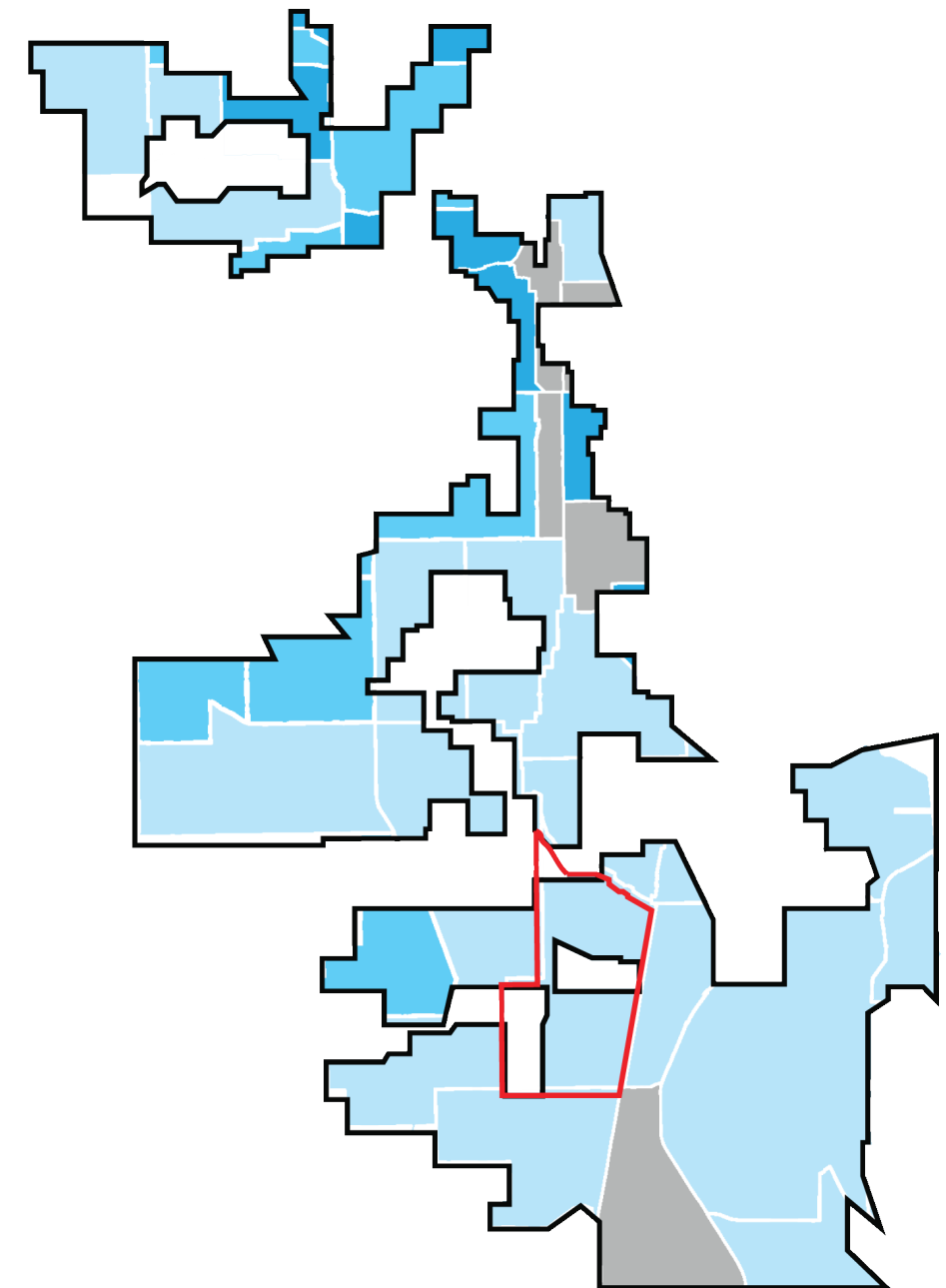
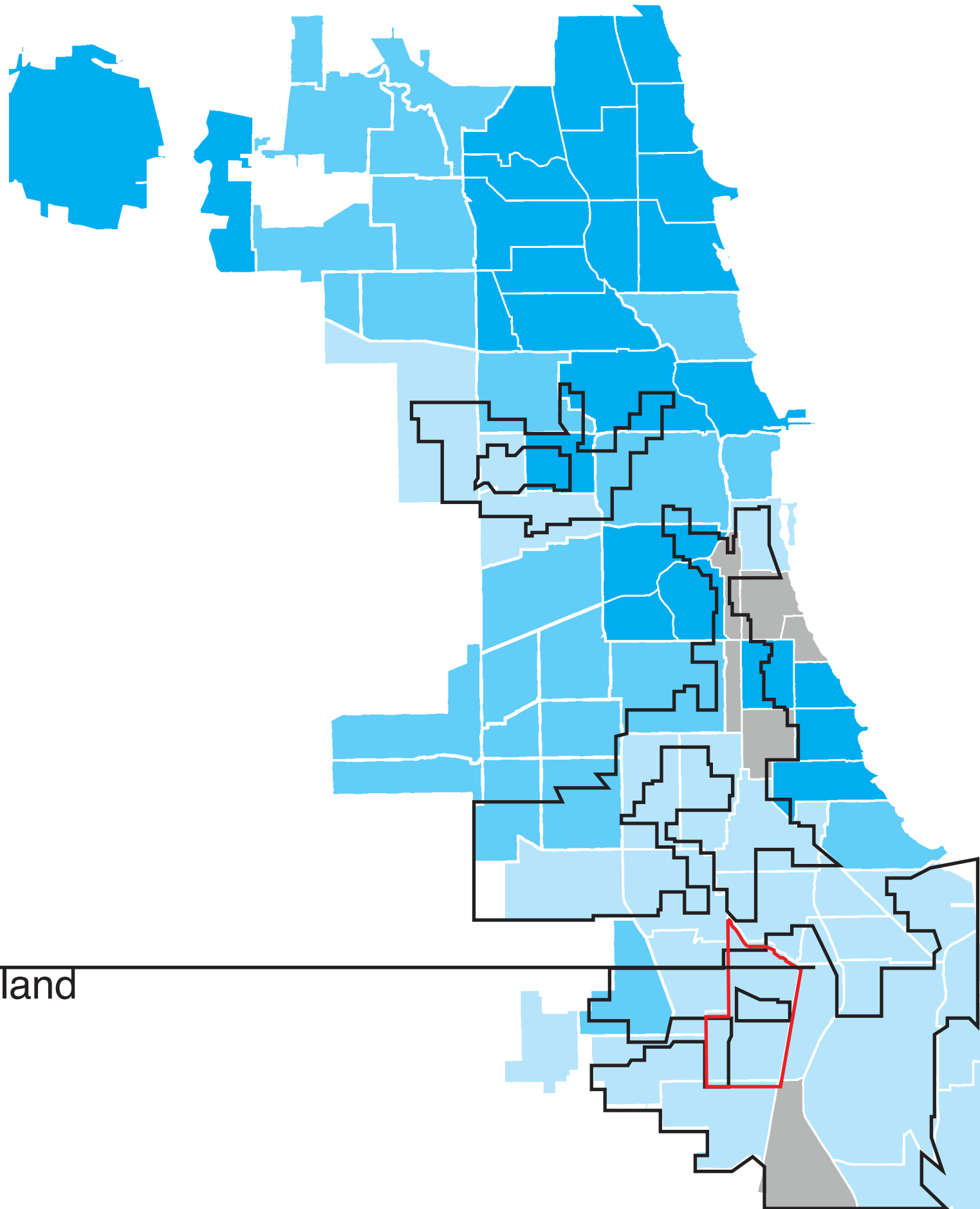
roseland



# housing trends

trend in housing sale prices: 1994 - 2004

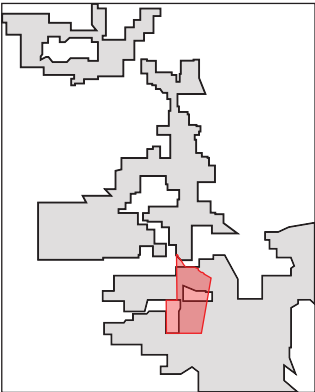
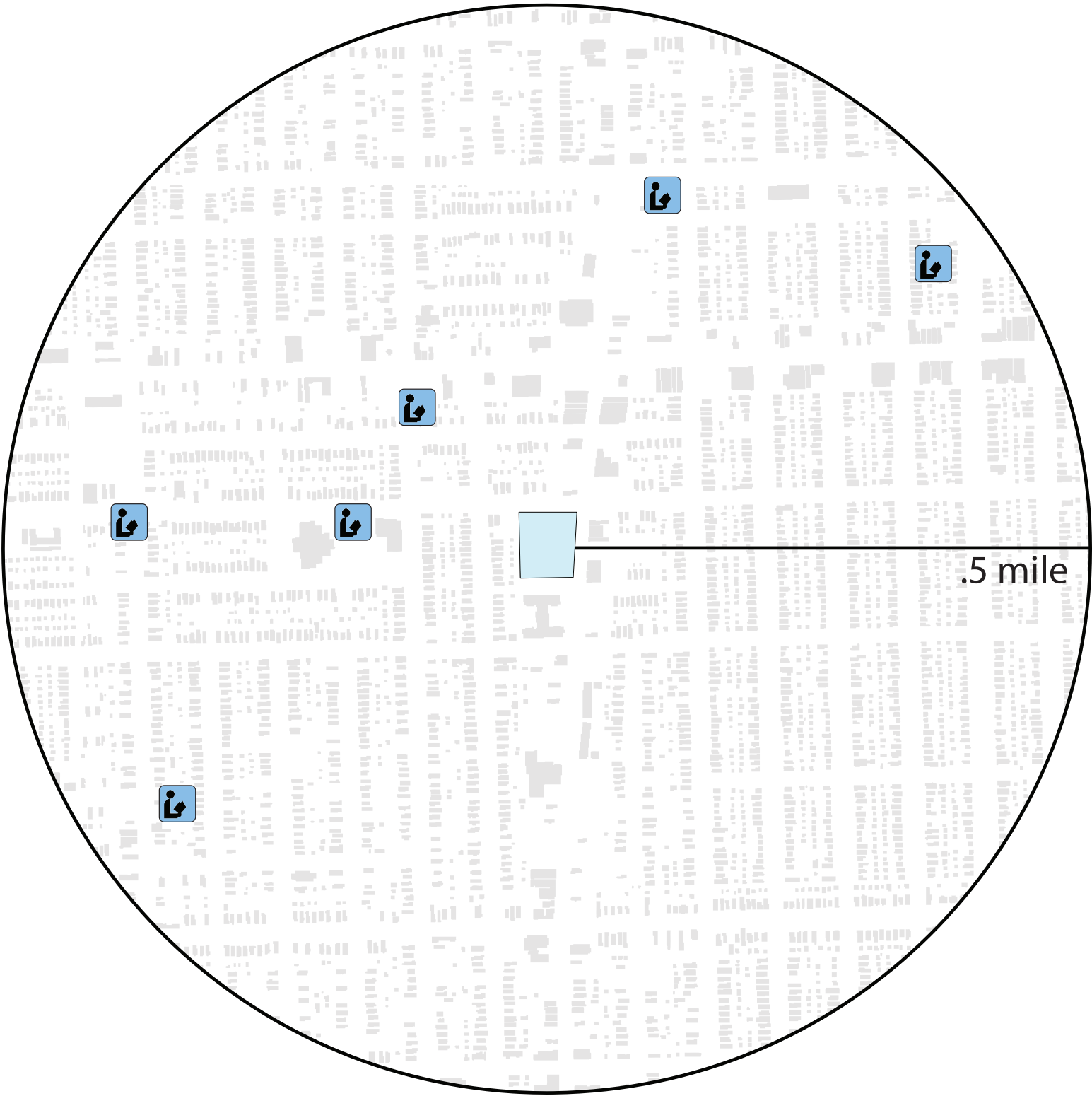
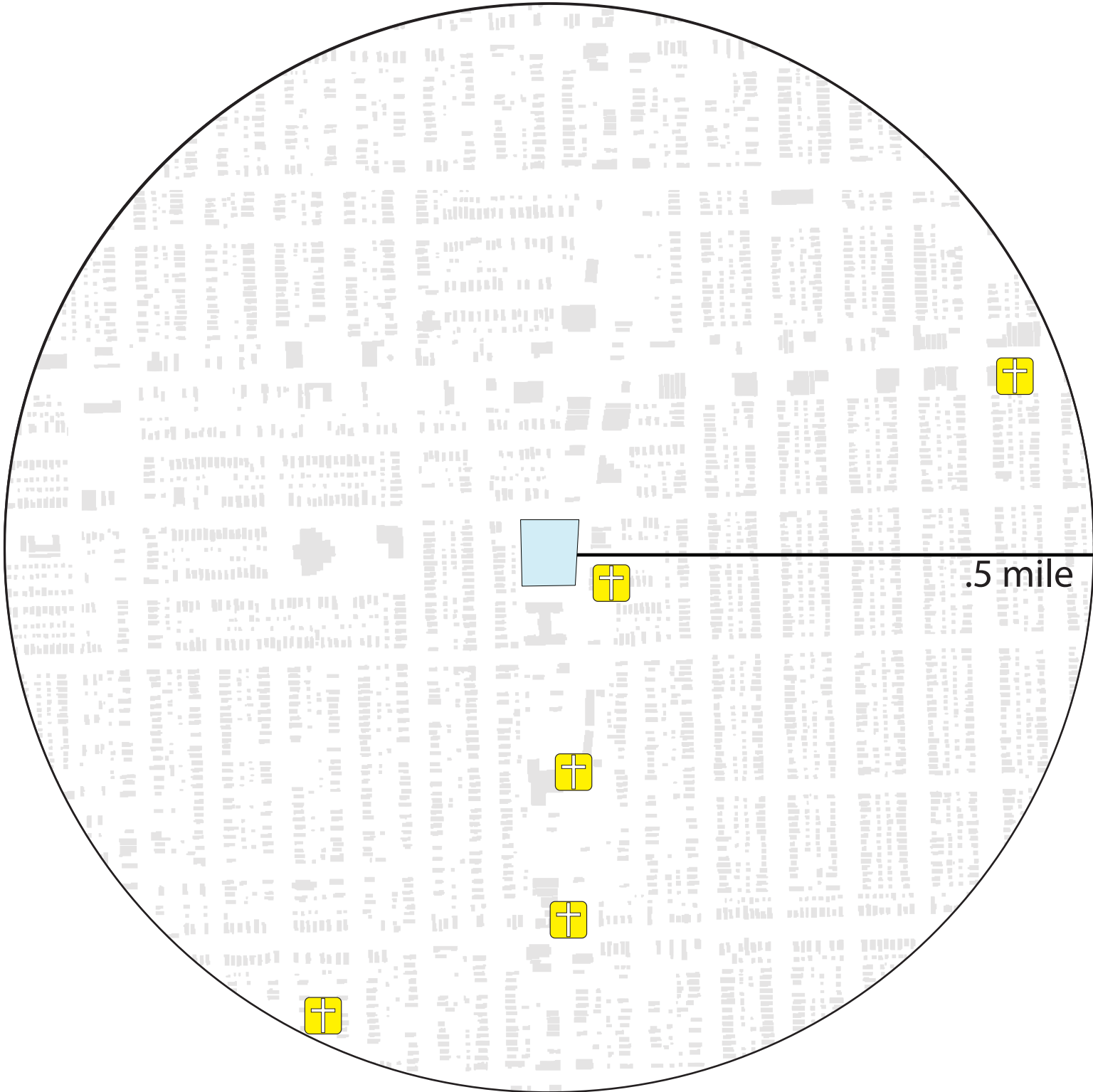
- insufficient data
- low: 1% to 6% per year
- moderate: 7% to 8% per year
- high: 9% + per year



roseland

# existing schools and churches

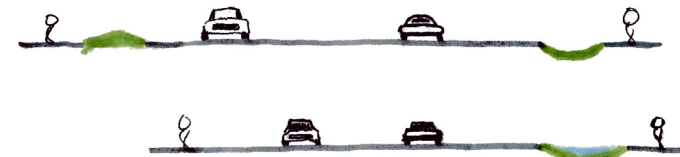
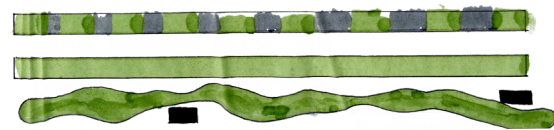
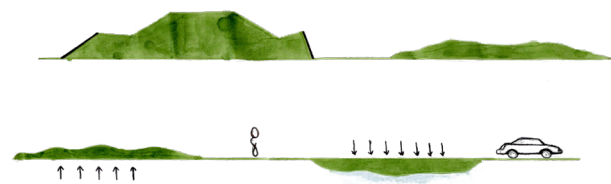
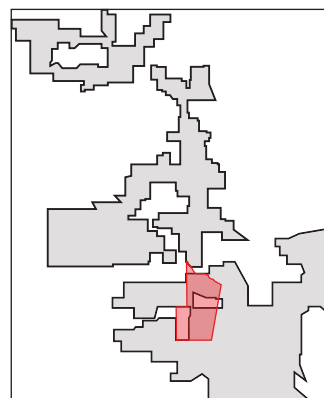
sprout will seek to engage existing social infrastructure as a foundation for creating a high level of community participation in the new urban outreach center. there are several churches and schools within a half mile radius of the site, including langston hughes elementary school, a new leed certified school on 103rd st. sprout will engage in direct interaction with these existing institutions to engender community participation in agricultural, recreational and educational aspects of the program. given the importance of dietary education, sprout will work directly with local schools to supplement any existing dietary curriculum as well as facilitate hands-on training and education of best-practice agriculture methods and dietary standards. it is anticipated that community participation will engender a sense of ownership within the community, creating strong base of volunteer workers.



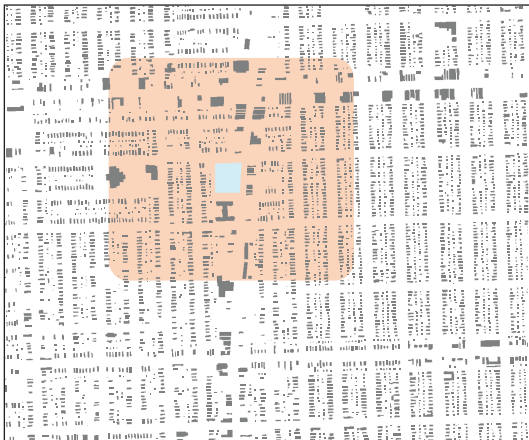
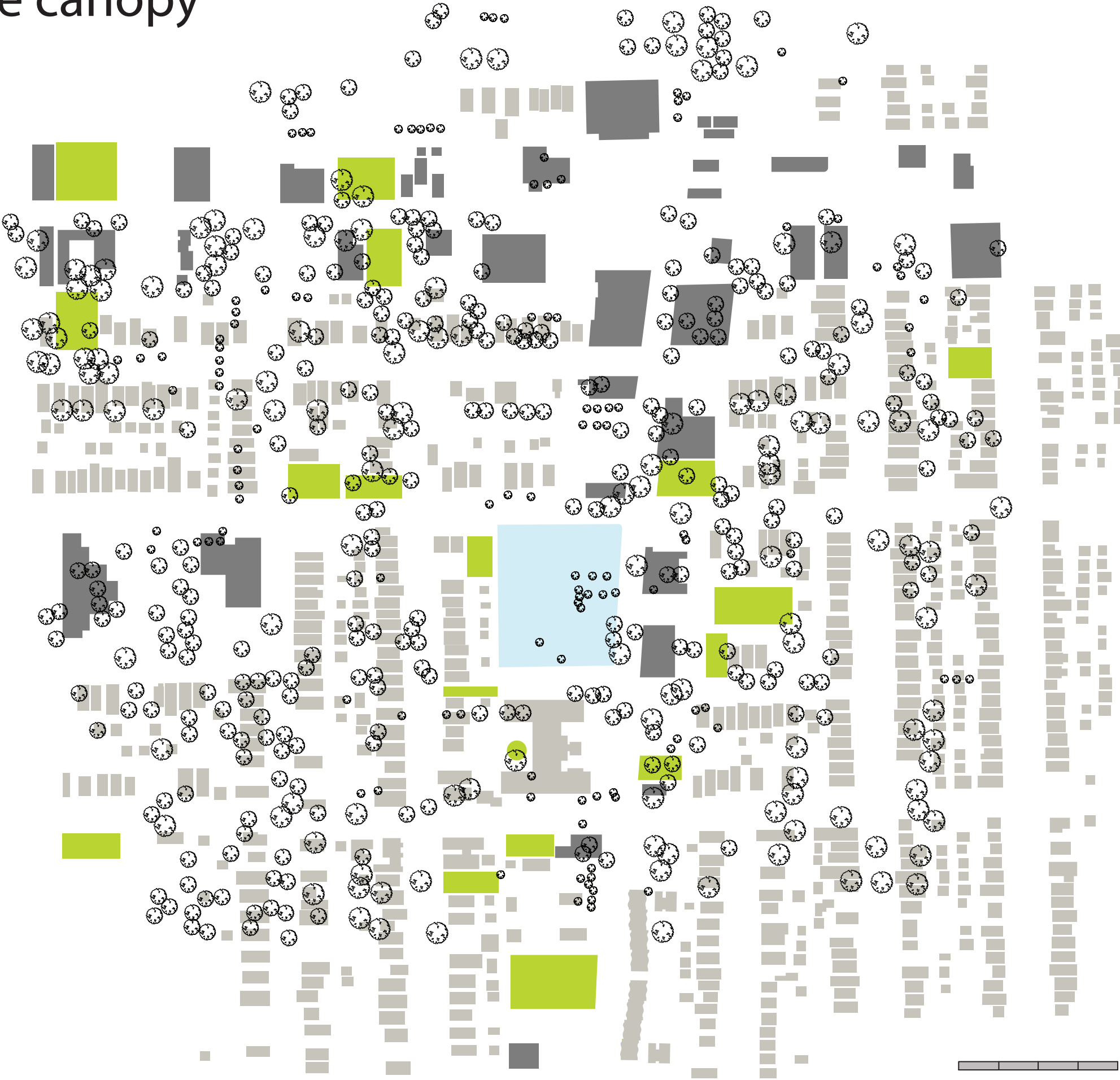


# greenways

**sprout** seeks to engage the surrounding community by serving as the locus point for a future series of greenways which run along the existing infrastructure network, through both residential and commercial sectors. these greenways feature native flora and help retain, filter and return stormwater runoff while serving as physical and visual connections linking **sprout** to the existing neighborhood and social institutions such as schools, churches and parks. in addition, the system serves as a physical connection between **sprout** and surrounding vacant lots within the community, which are among the 30,000 acres of vacant lots on the south side of chicago. the intent is to colonize these vacant lots with agriculture and native plants, increasing their agricultural, ecological and economic viability in an effort to stimulate redevelopment within the community. the low impact nature of the program allows flexibility and mobility once redevelopment begins and vacant lots are reoccupied.



# existing green spaces and tree canopy

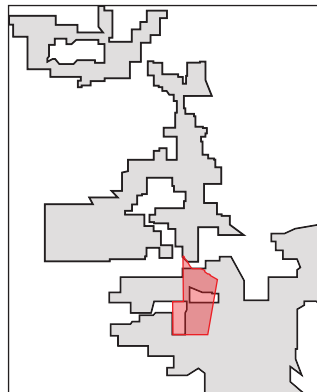


350'

# gang territories

- gangster disciples
- almight black p stones
- black disciples
- conservative vicelords
- mickey cobras
- four corner hustlers

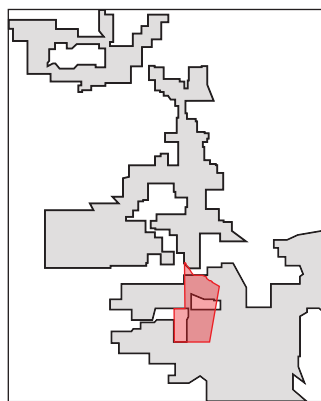
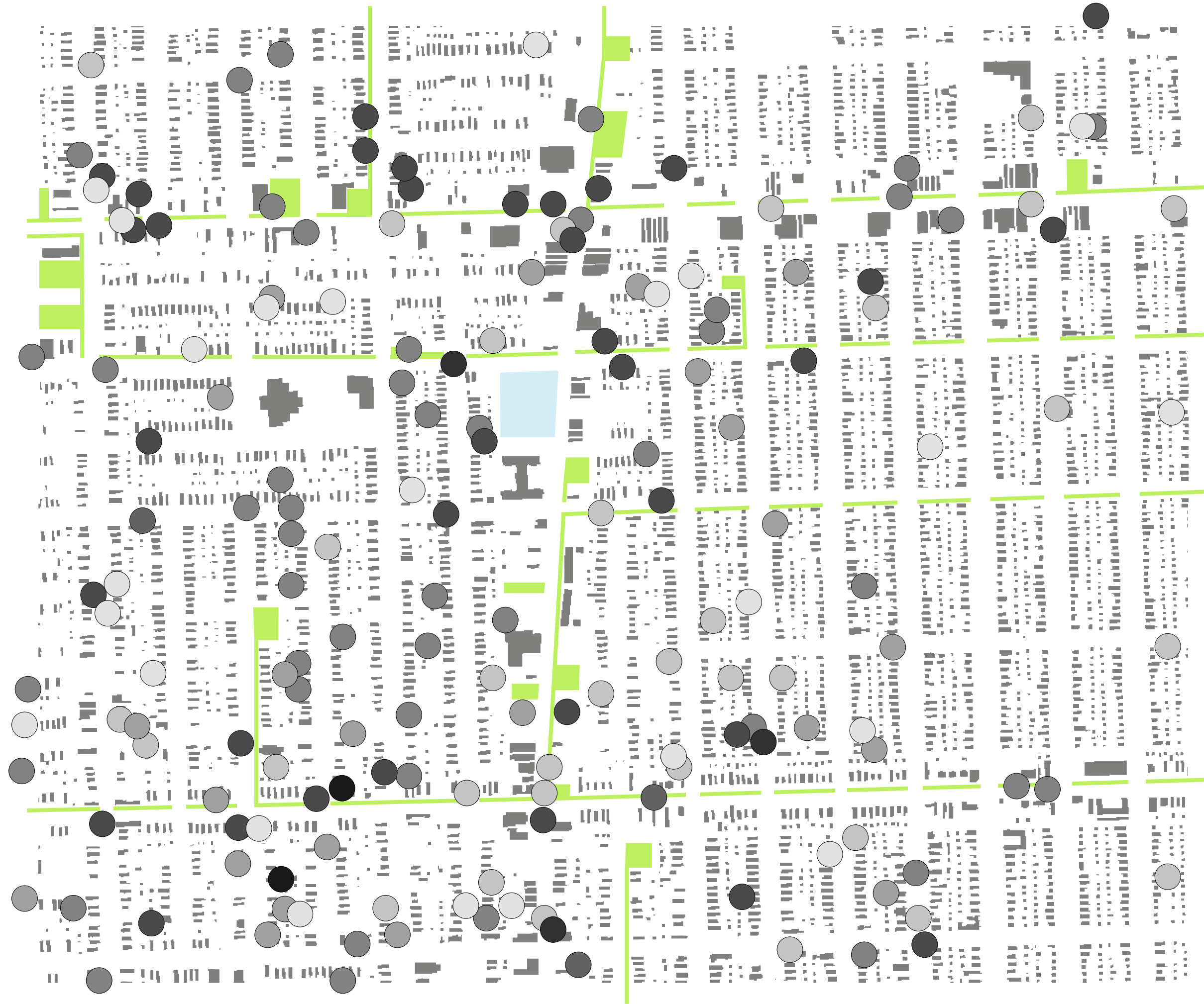
in addition to traditional hard infrastructure such as sidewalks, streets and public transportation, sight analysis included soft infrastructure such as ganglines and reported crime, and their correlation or lack thereof. although the surrounding community is home to territories claimed by six different chicago gangs, reported crimes for the 12 month period from 09.29.08 - 09.29.09 show little correlation with these territories. however, soft infrastructures such as these must still be considered in the development of the greenway system, and a decision made whether to actively engage such areas or avoid them.



# reported crimes

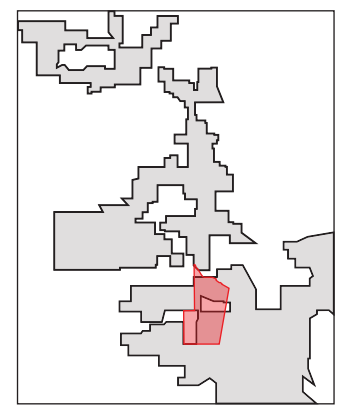
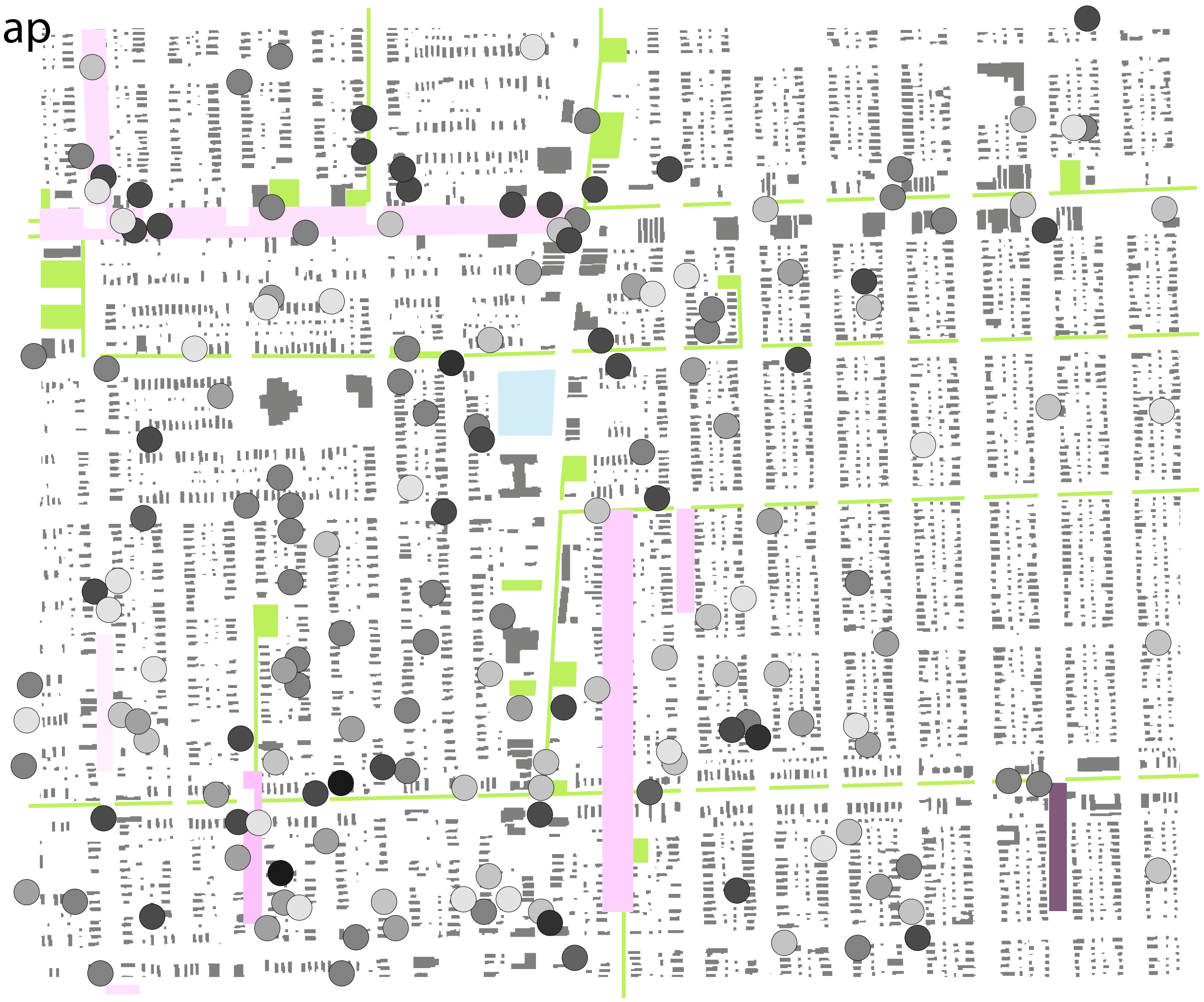
09.29.08 - 09.29.09

- vandalism
- theft
- burglary
- assault
- robbery
- other
- arrest
- shooting





# gang and crime map





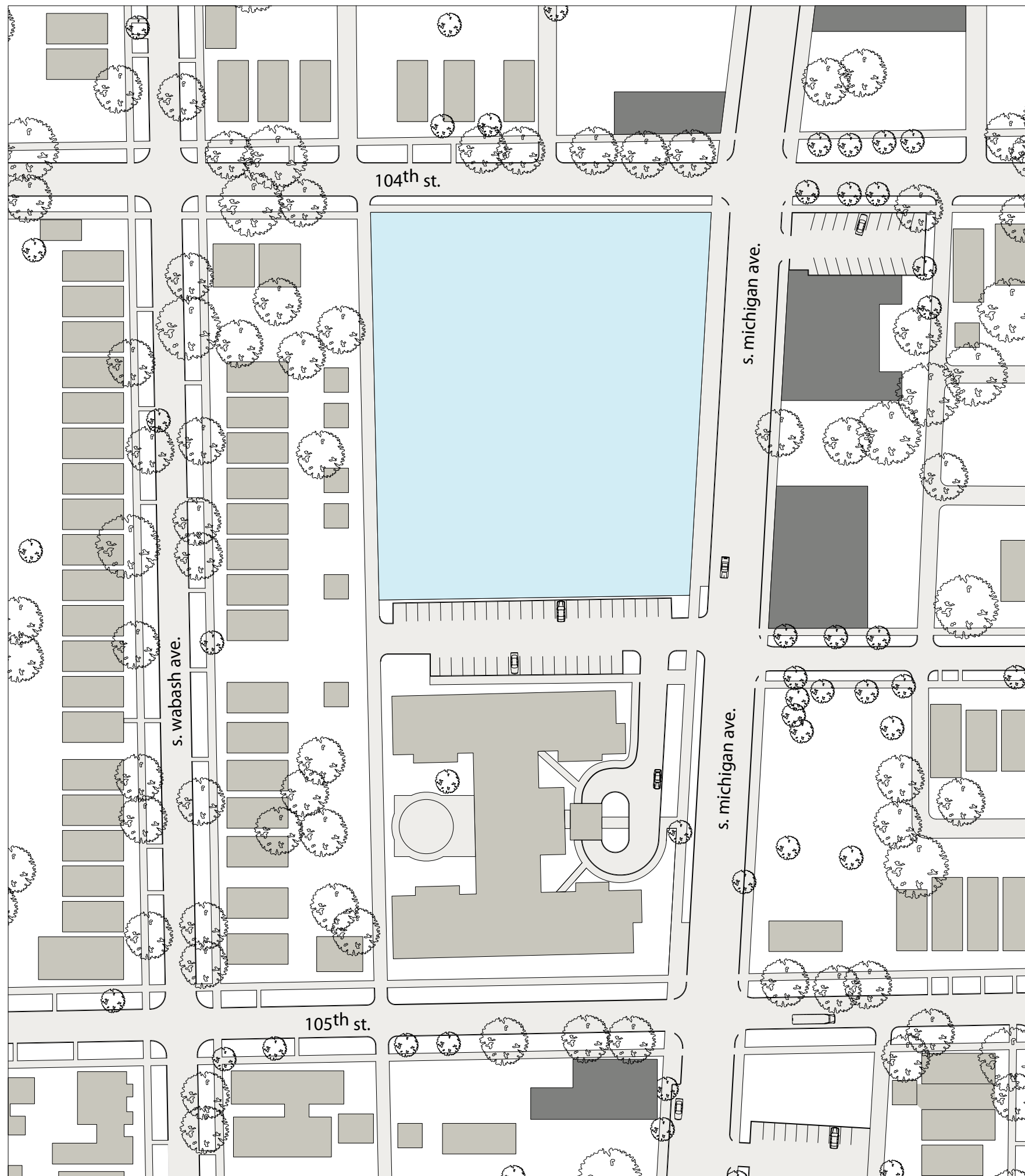
# qualitative parameters:

**sprout** is a twenty-first century community outreach center located in the south chicago community of roseland. located at the intersection of 104th st. and michigan avenue, the site is situated on a commercial corridor within a densely populated residential area. as such, it takes advantage of existing infrastrucrure such as sidewalks, roads, and public transportation. in an effort to address many of the social problems within the underserved community of roseland such as a lack of high quality fresh foods, safe recreational spaces and poor dietary education, **sprout** incorporates programmatic elements such as urban farm production, flexible recreation space, dietary education and culinary facilities. in doing so, **sprout** seeks to create a social and architectural landmark using innovative design solutions to create an architectural, site appropriate, identity for these integral social institutions. given the social conditions within roseland, paramount importance is given to issues such as accessibility, safety, vandalism and budgetary considerations. in addition to addressing the dietary and recreational needs of roseland, **sprout** will serve as an economic catalyst for the community by activating currently vacant land, eventually leading to economic redevelopment and densification of both the commercial corridors of michigan avenue and 103rd st, as well as the surrounding residential zones.



# site

the site is located on two acres of vacant land at the intersection of 104th st. and michigan ave. although michigan ave. is a commercial corridor, it is sparsely populated, with large tracts of vacant land. commercial properties consist of a hair salon, convenience store, storefront churches, and boarded up retail. to the north, south and west of the site are established residential neighborhoods, consisting largely of single family homes and mid-rise apartments. despite the dilapidated nature of much of the neighborhood, there are signs of redevelopment, including the new leed certified langston hughes elementary school on 103rd st, a new senior housing center immediately south of the site and new rowhomes on michigan ave, south of 105th st.



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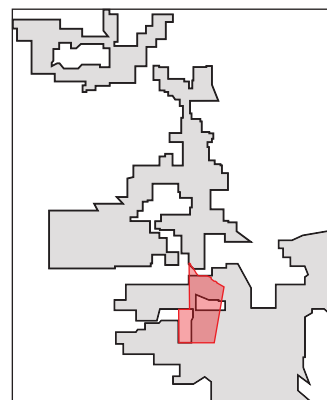
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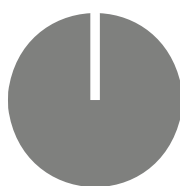
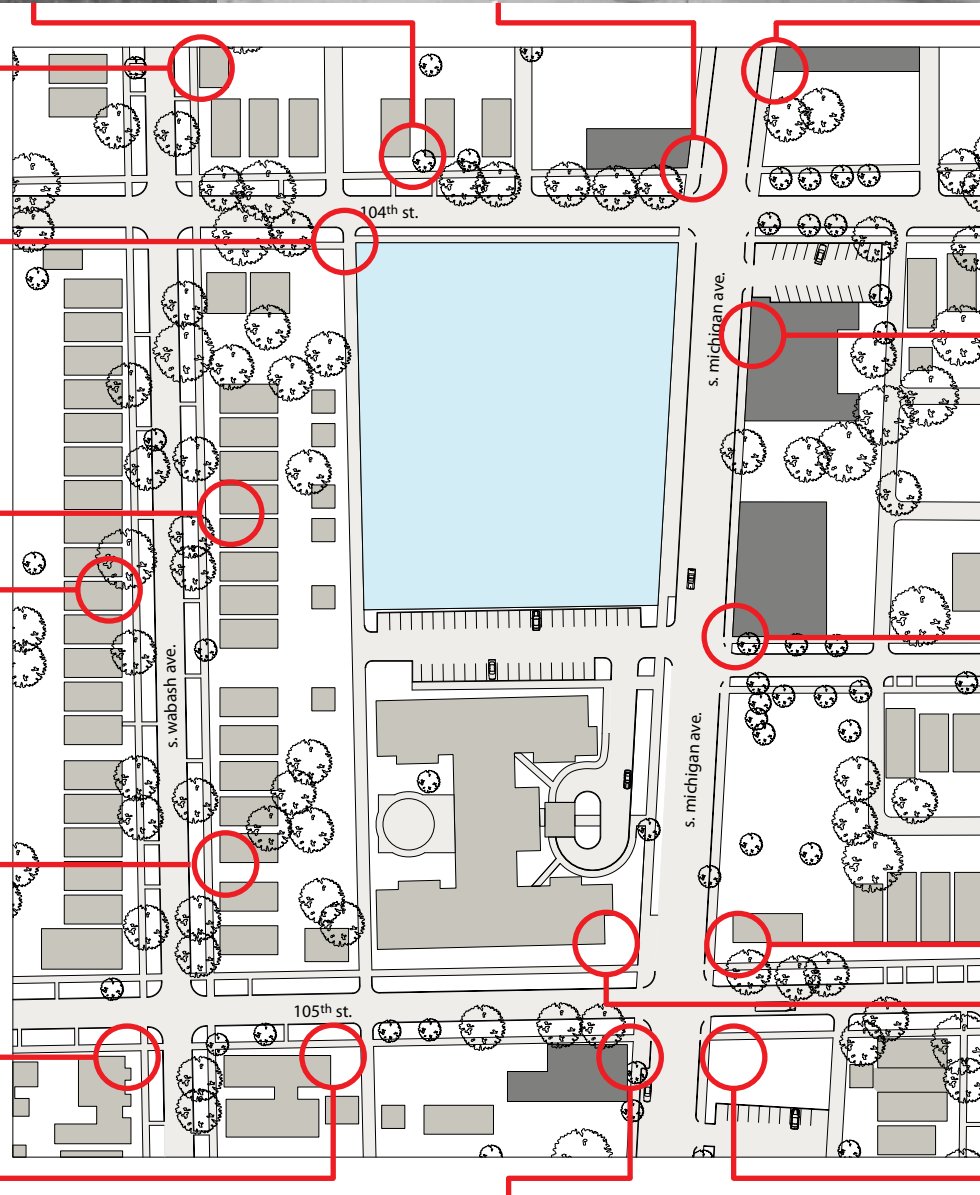
150'

75'

25'







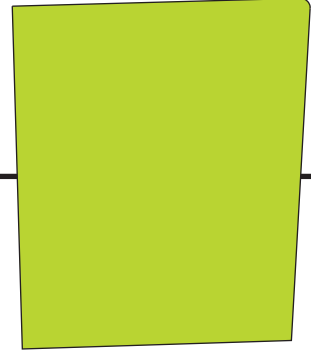
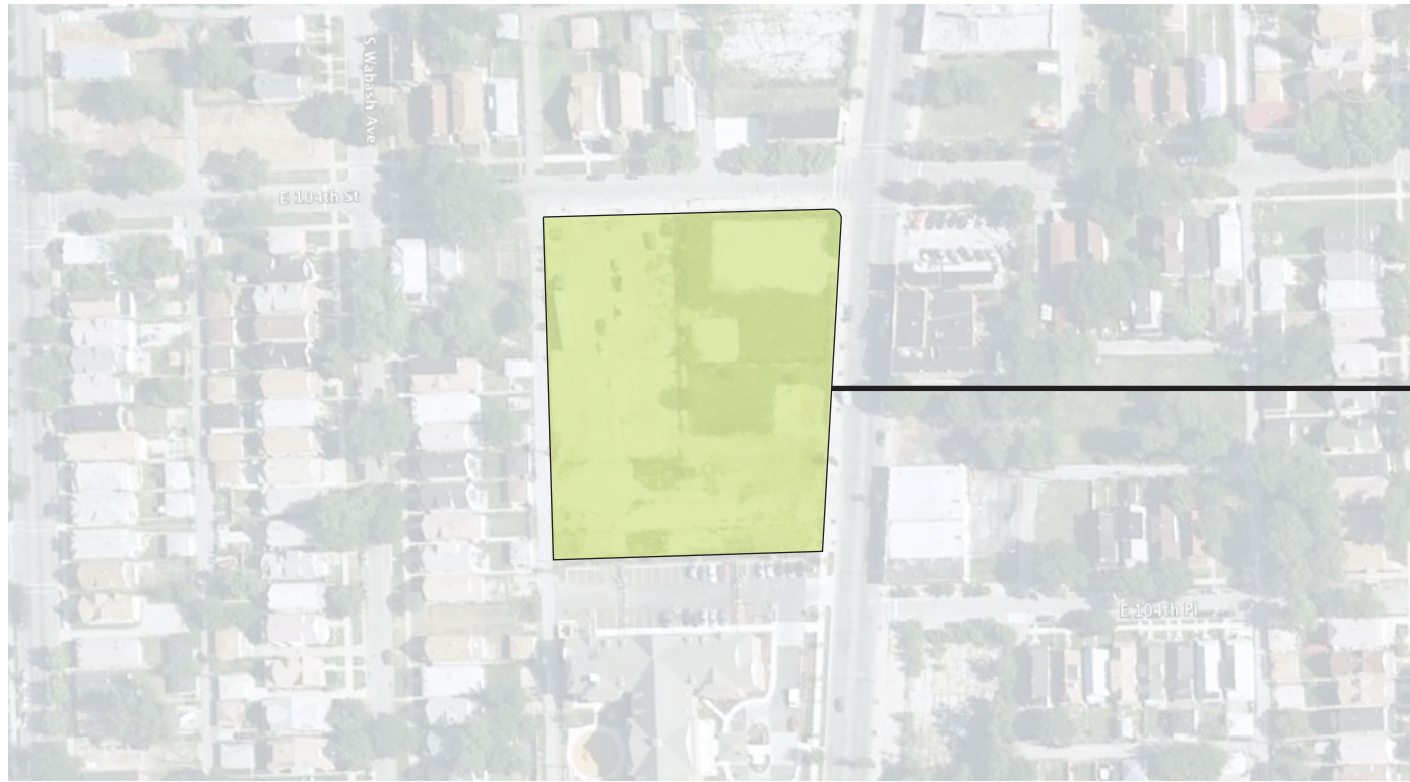




# site comparison

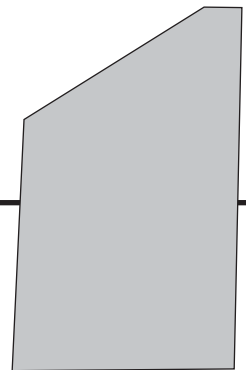
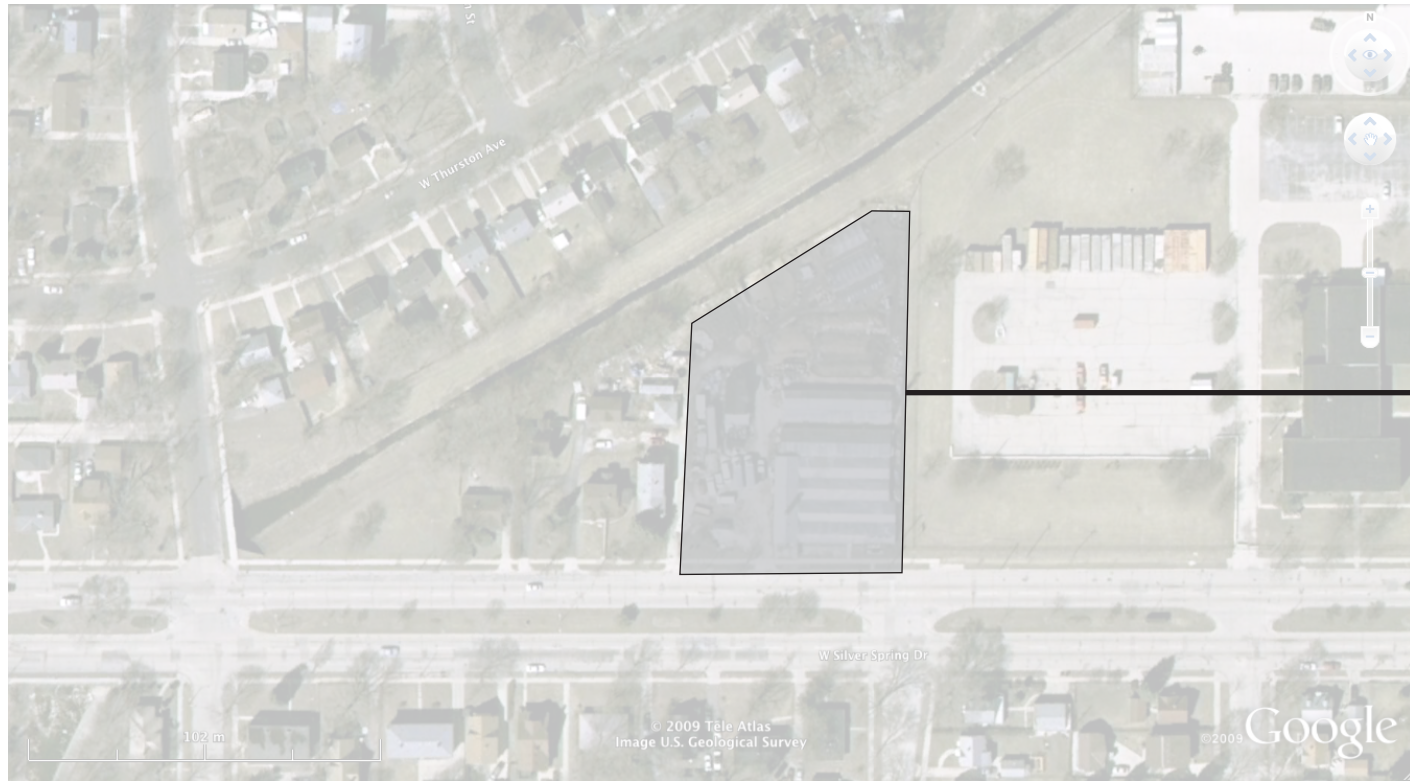
the proposed site for **sprout** is comparable in area to that of growing power, inc, the only operable farm within the city limits of milwaukee, wisconsin. growing power is an urban farm based on aquaponics: the farming of fish in conjunction with produce using a semi-closed loop system which utilizes the fertilized water from the fish tanks to dramatically increase produce production. in turn, the plants filter the water, which is then recycled back through the fish tanks. in addition to the tilapia, perch and produce grown in the farms aquaponics systems, they raise livestock such as goats, chickens, ducks and turkeys. growing power also has an apiary with 300,000 bees, more than 50 bins of red wiggler worms, used for vermiculture, and a vast composting system which diverts hundreds of tons of waste annually from local landfills. farm production such as produce, meat, eggs, honey, worm castings and compost, is sold on site as well as at various farmer's markets throughout the region. growing power has also developed a weekly home delivery system for local residents. in addition to the agricultural program, growing power, inc. has an advanced community outreach program which teaches sustainable agricultural production methods and provides hands on training, particularly to youth within the milwaukee area. giving the comparable site areas and parallel agricultural and educational programs, growing power, inc. served as the model for these programmatic elements. as such, an intensive investigation was undertaken to understand the production methods utilized by growing power, as represented in the following input-output diagrams. the investigation lead to a greater understanding of the requisite resources as well as potential site adjacencies.

s  
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t

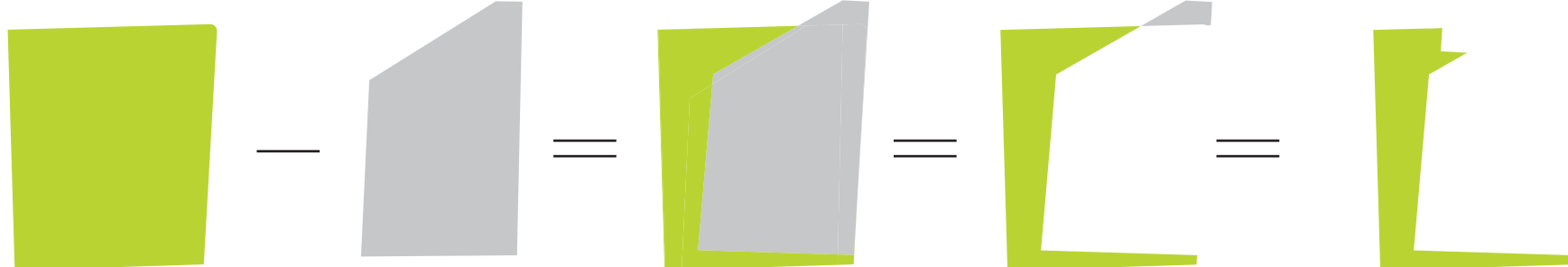


2.0 acres

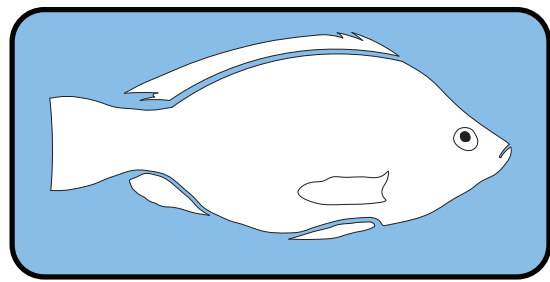
g  
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i  
n  
g  
p  
o  
w  
e  
r



1.6 acres



0.4 acres



# tilapia nilotica

## input

labor: staff, volunteer  
 construction  
 maintenance  
 harvesting  
 feeding

construction materials: wood, rubber lining, piping

food: duckweed, lettuce, worms

interior space: 1605 ft<sup>2</sup> / 10,000 fish

electricity: water maintained @ F 75° minimum

daylight

fingerlings

water: 1 gal / fish

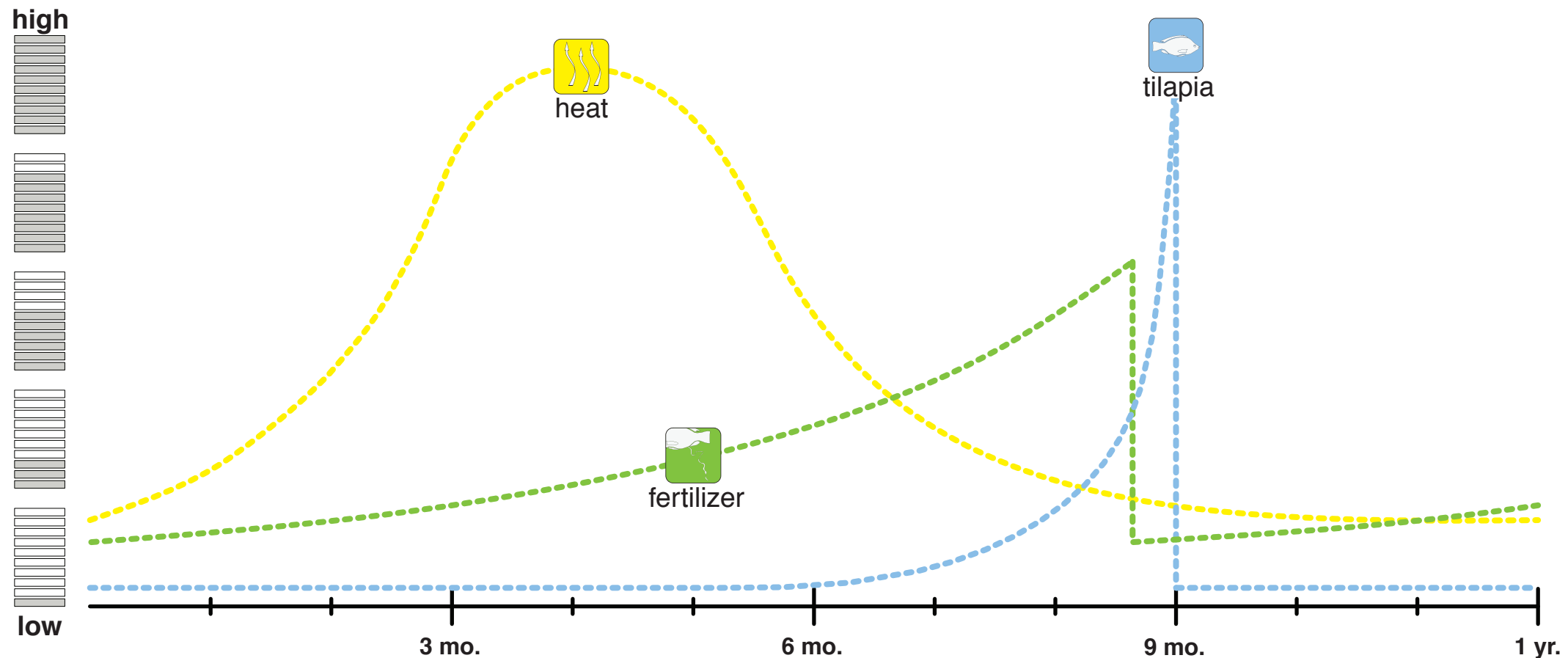
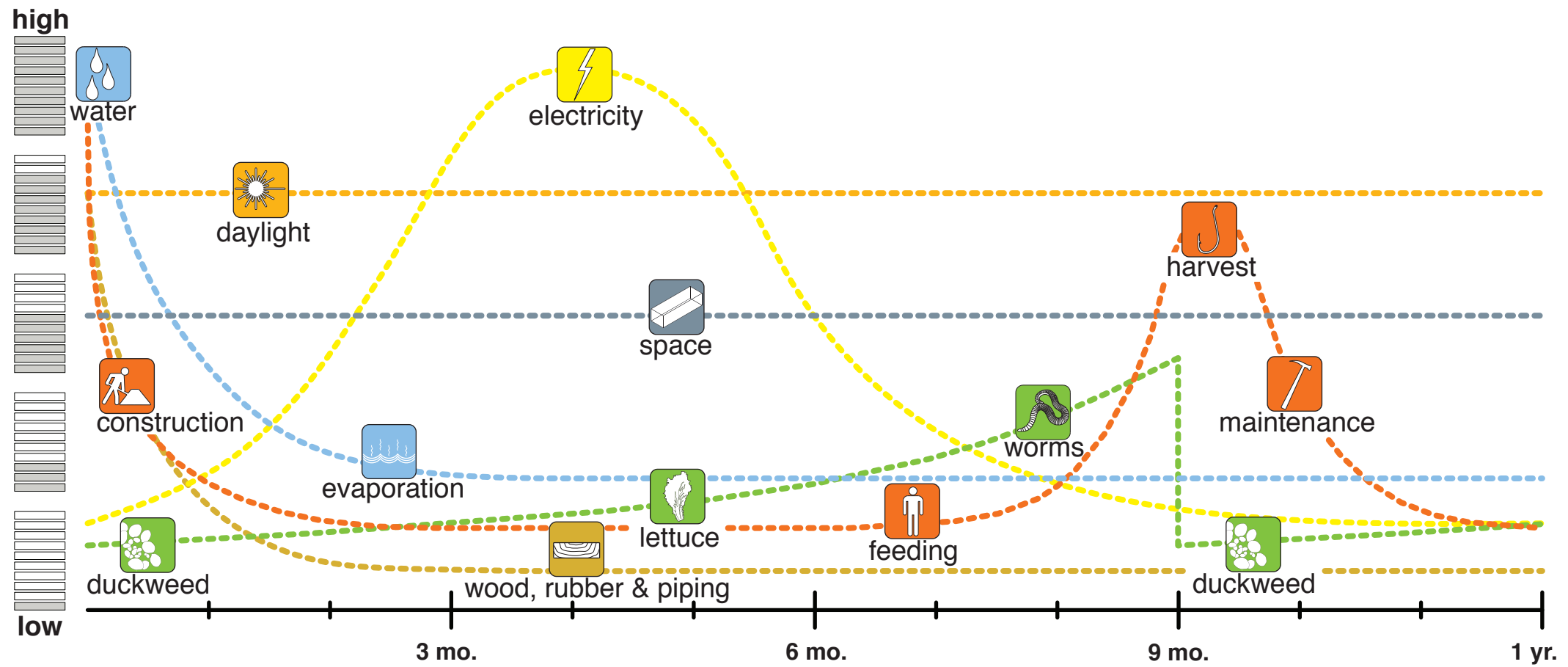
## output

meat: 60,000 @ 1.5 lb each / 9 mo. = 120,000 lbs. / yr.

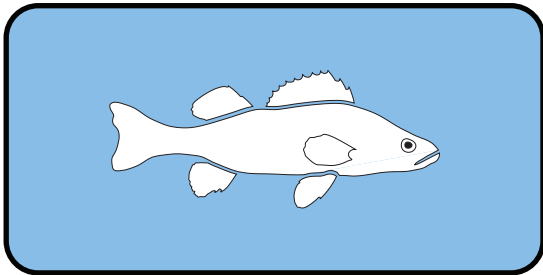
## byproducts

fertilizer

heat (transmitted from heated fishtank to surrounding air)







# perca flavescens

## input

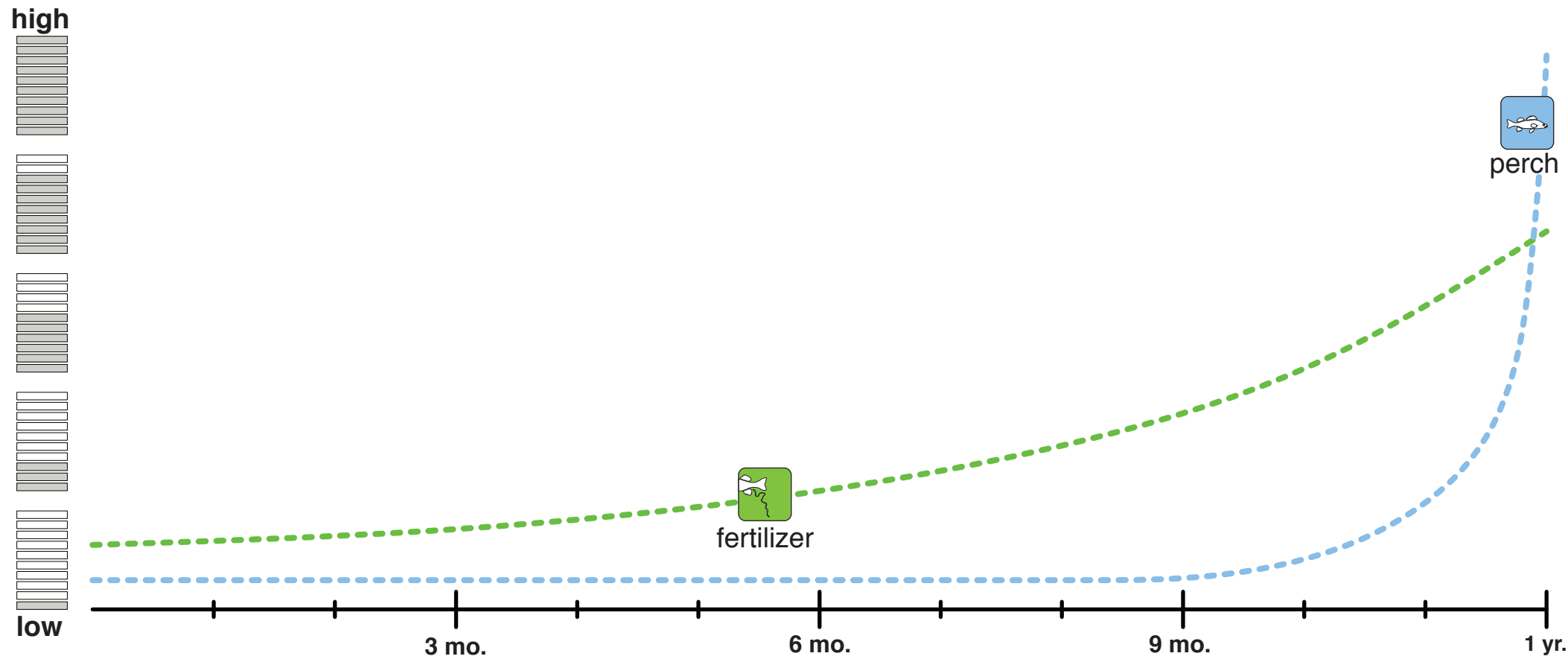
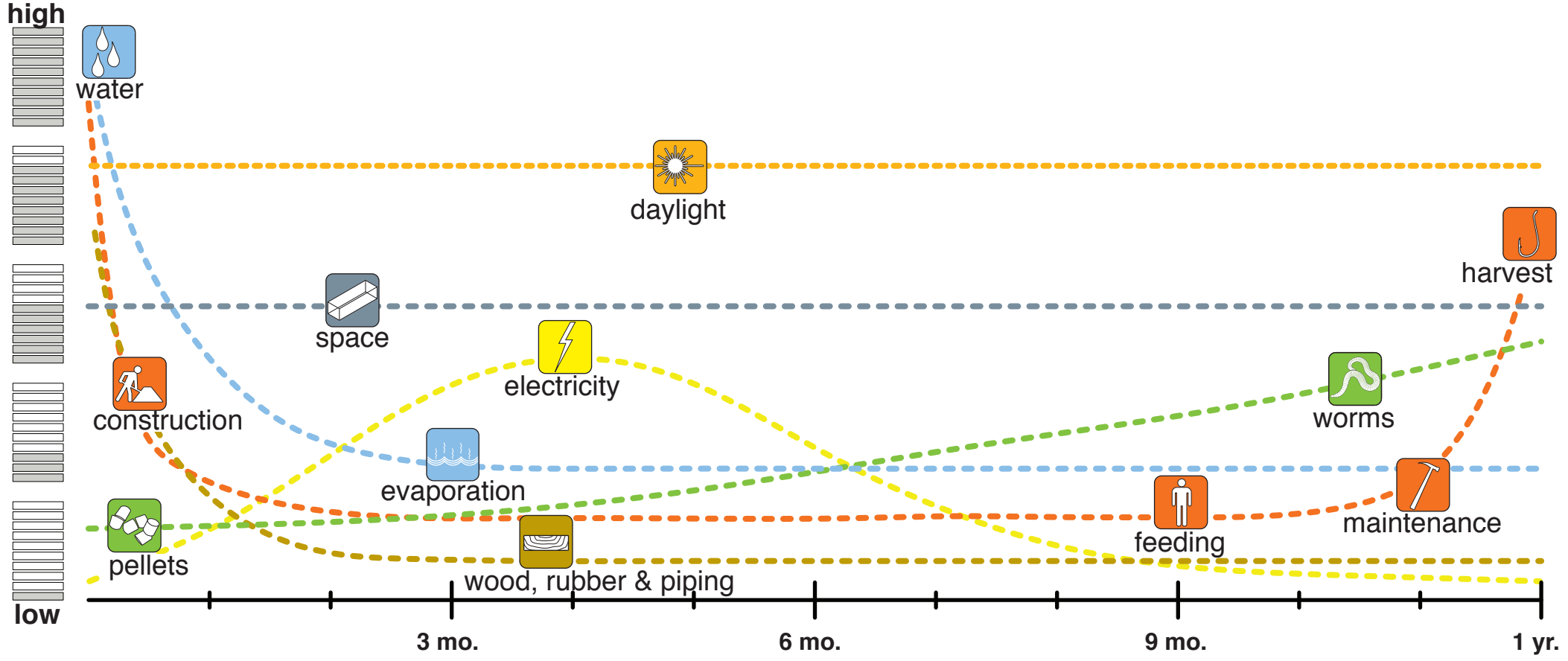
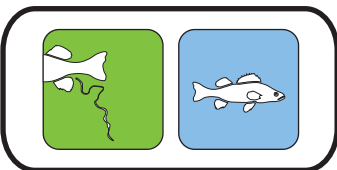
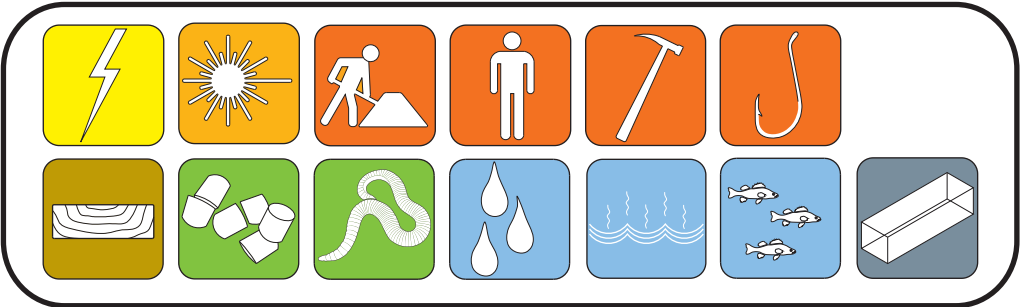
- labor: staff, volunteer
- construction
- maintenance
- harvesting
- feeding
- construction materials: wood, rubber lining
- water: 1 gal / fish
- food: commercial pellets, worms
- interior space: 1605 ft<sup>2</sup> / 10,000 fish
- daylight
- fingerlings

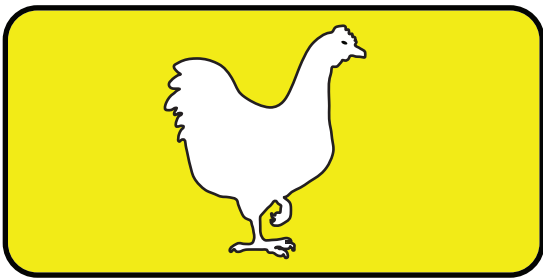
## output

meat: 50,000 @ .25 - .30 lb each / yr = 15,000 lbs. / yr.

## byproducts

fertilizer





# gallus domesticus input

labor: staff, volunteer  
construction  
maintenance  
harvesting

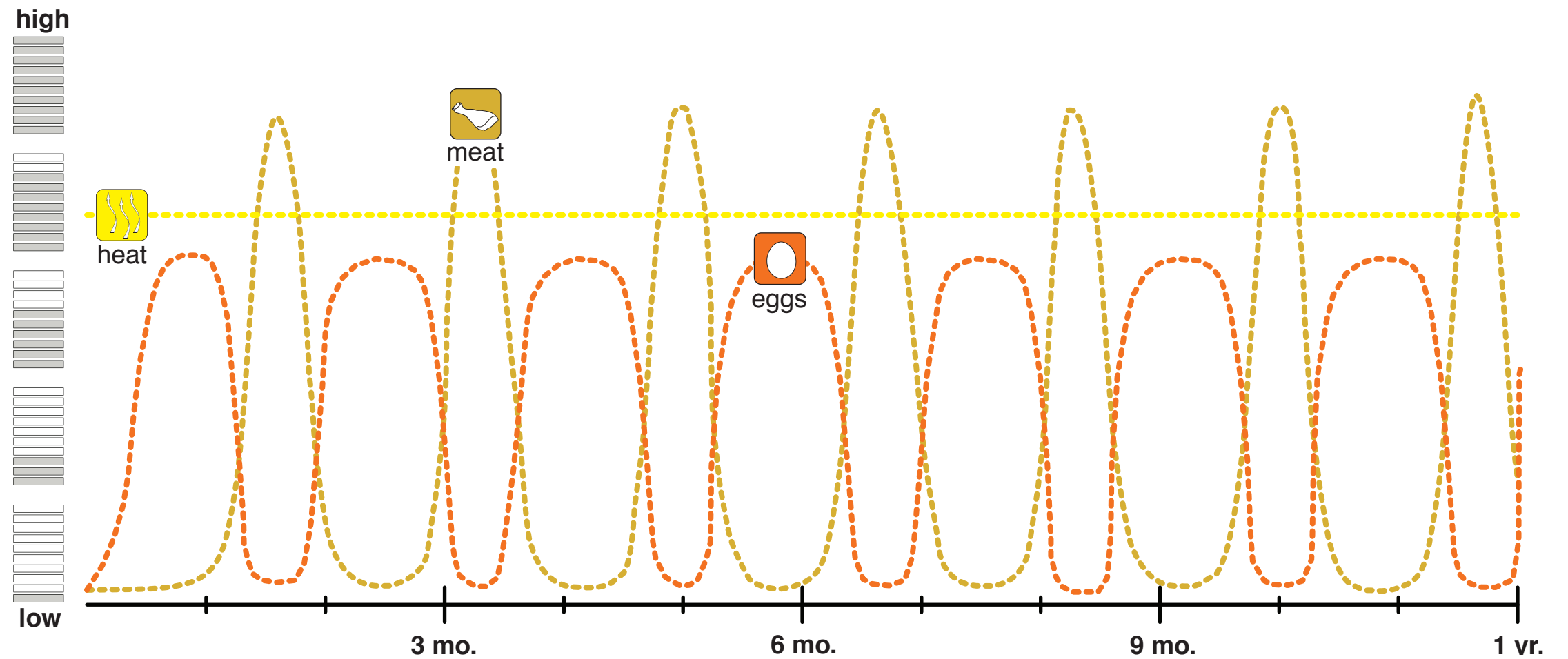
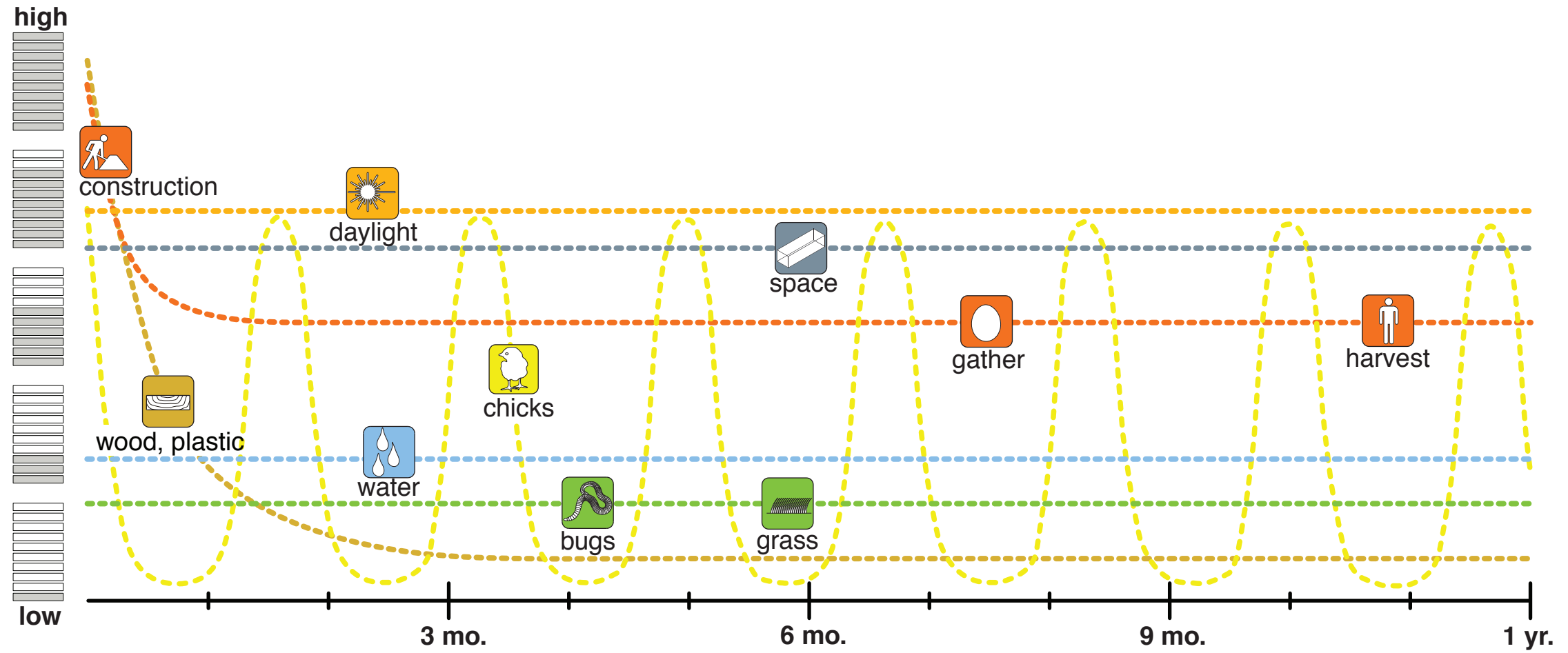
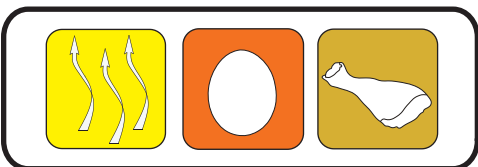
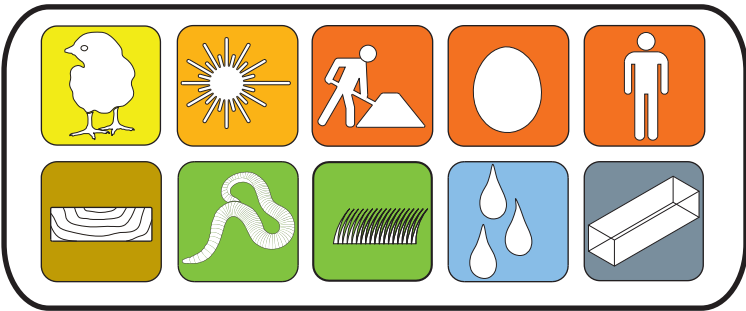
construction materials: wood, plastic  
food: bugs and fresh water  
non-conditioned sheltered space  
chicks

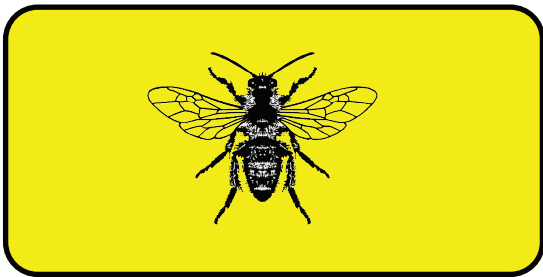
# output

meat: 2,275 @ 4 lbs / ea = 9,100 lbs / yr  
eggs: 70,800 @ .11 lbs / ea = 7,709 lbs / yr

# byproducts

heat





# apis mellifera

## input

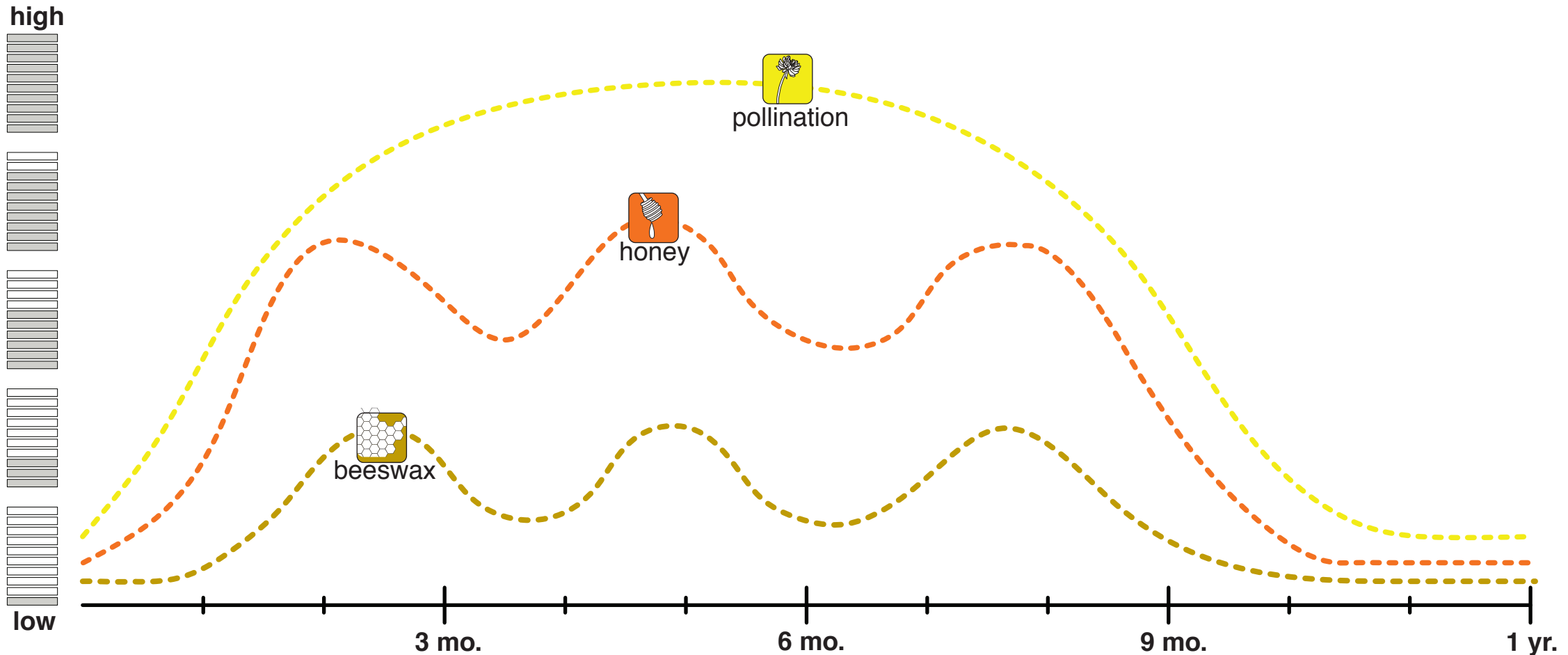
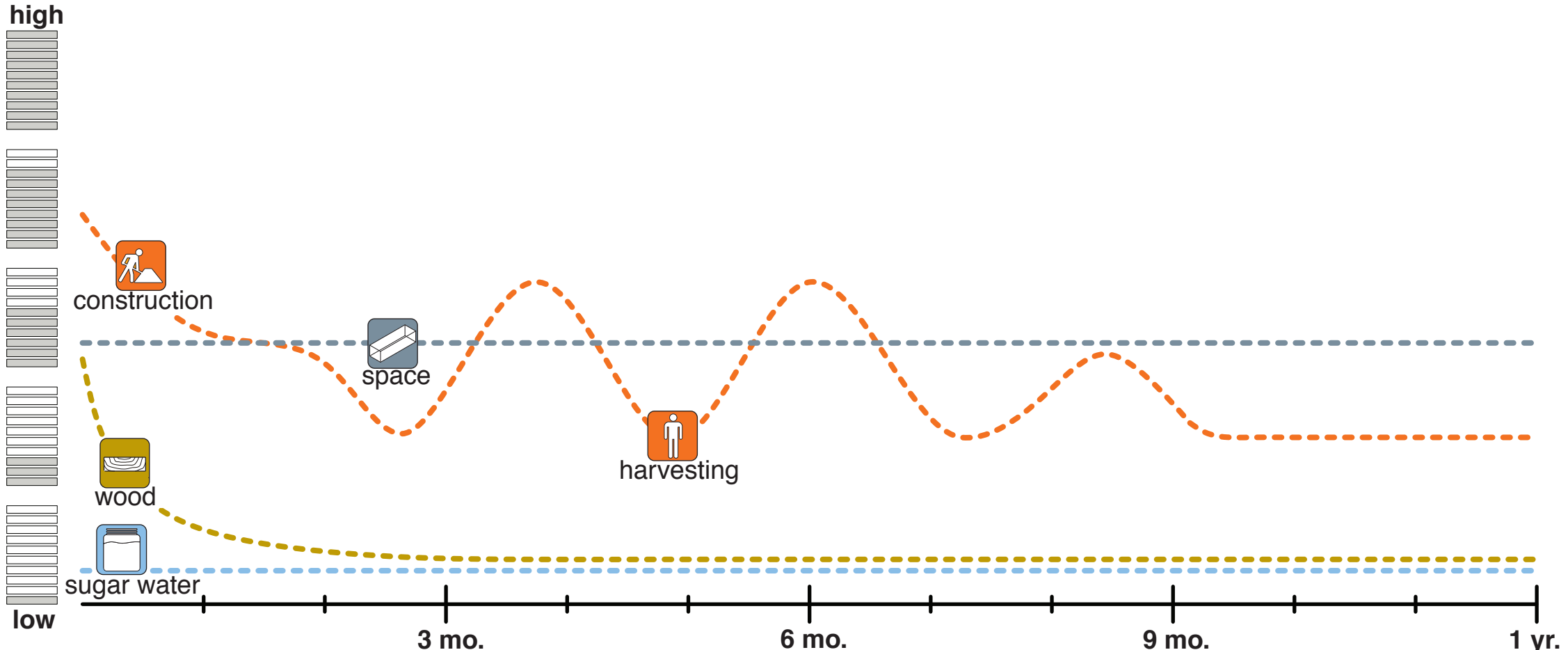
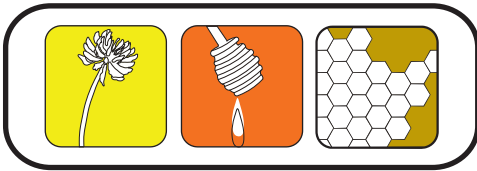
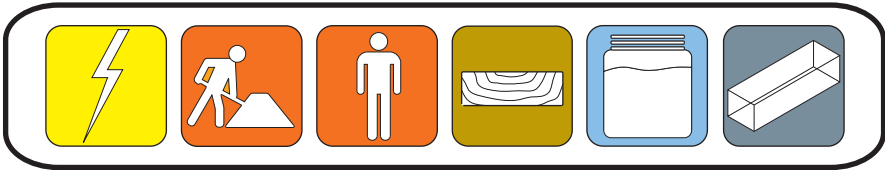
- labor: staff, volunteer
- construction
- maintenance
- harvesting
- construction materials: wood
- food: sugarwater
- exterior space
- bees

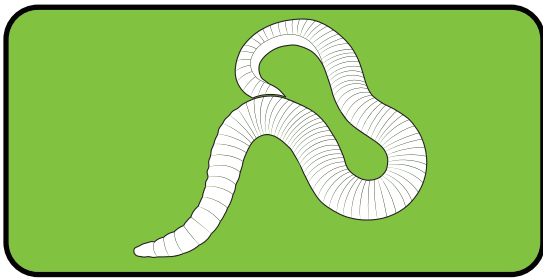
## output

- honey: 1,500 lbs / yr
- beeswax: 150 lbs / yr
- soap
- candles
- lip balm

## byproducts

pollination: value of honey bee pollination to U.S. agriculture estimated to be \$14.6 billion / yr





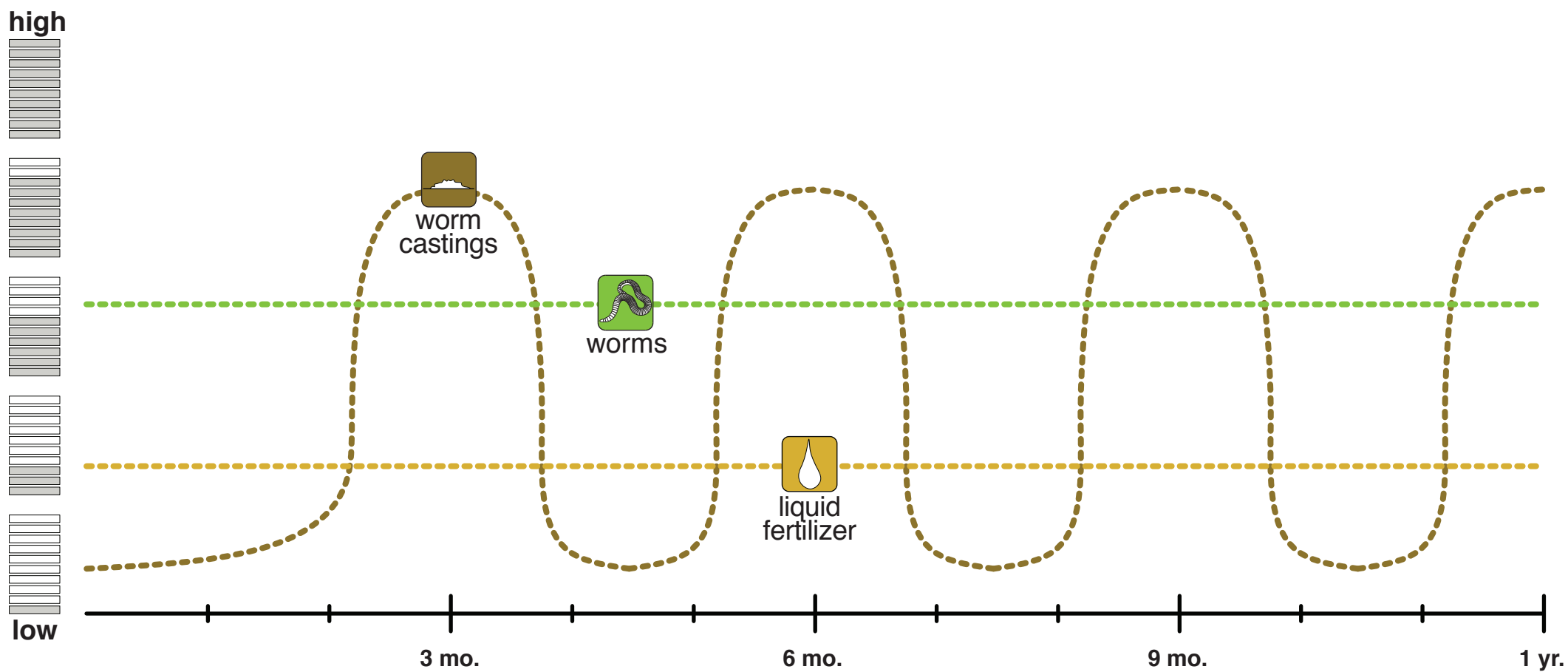
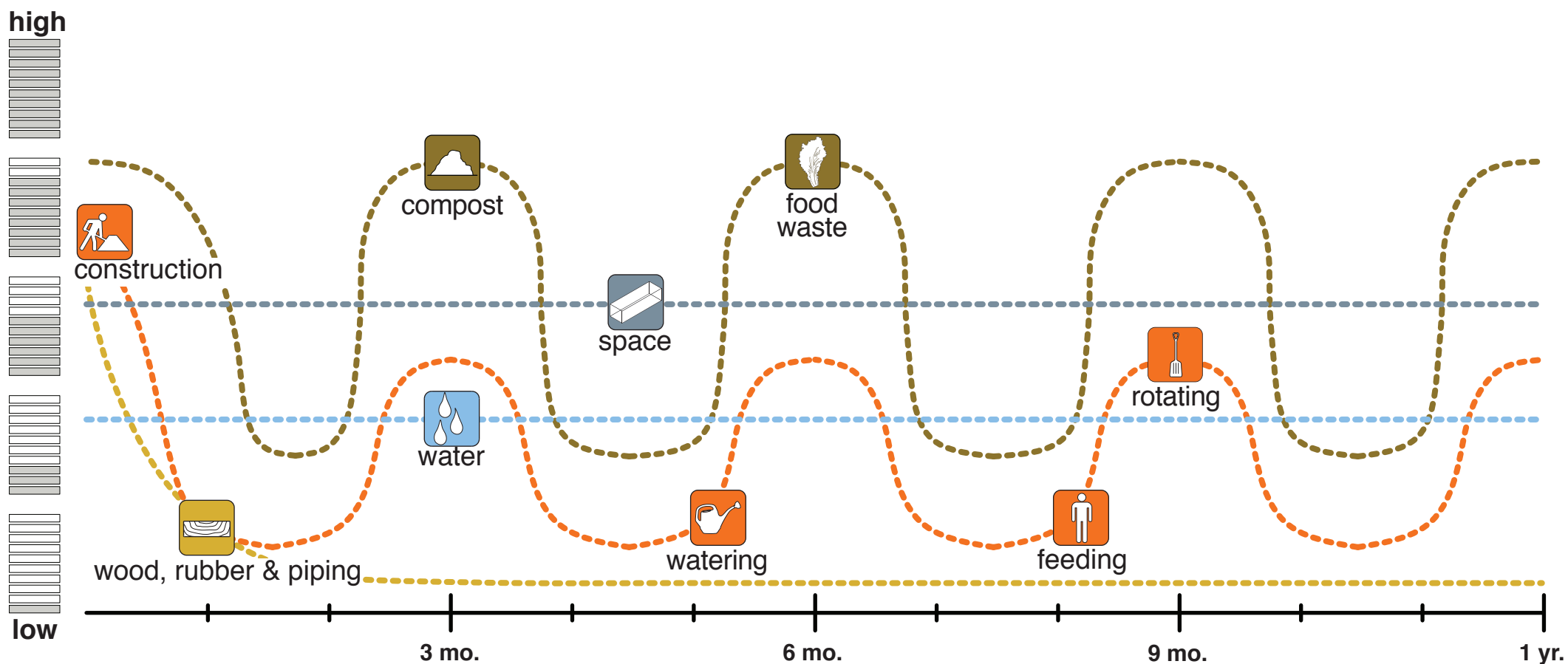
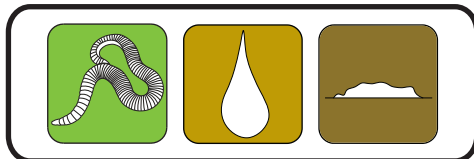
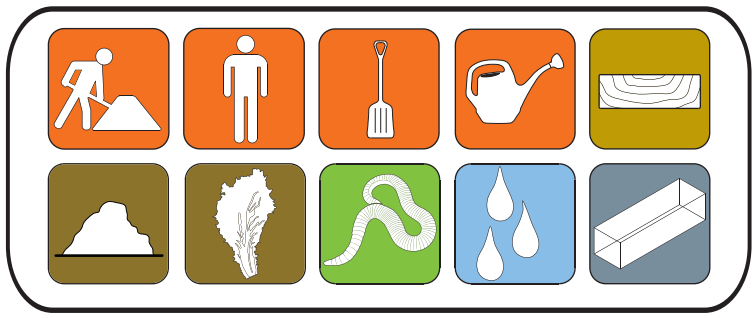
# lumbricus rubellus eisenia foetida

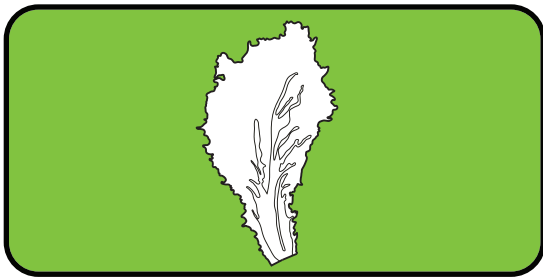
- input**
- labor: staff, volunteer
  - construction
  - feeding
  - watering
  - rotating

- construction materials: wood  
 food: compost, food waste  
 water  
 interior space  
 worms

## output

- worms
- worm castings
- liquid fertilizer





# greenhouse produce

## input

labor: staff, volunteer  
 construction  
 planting  
 watering  
 harvesting

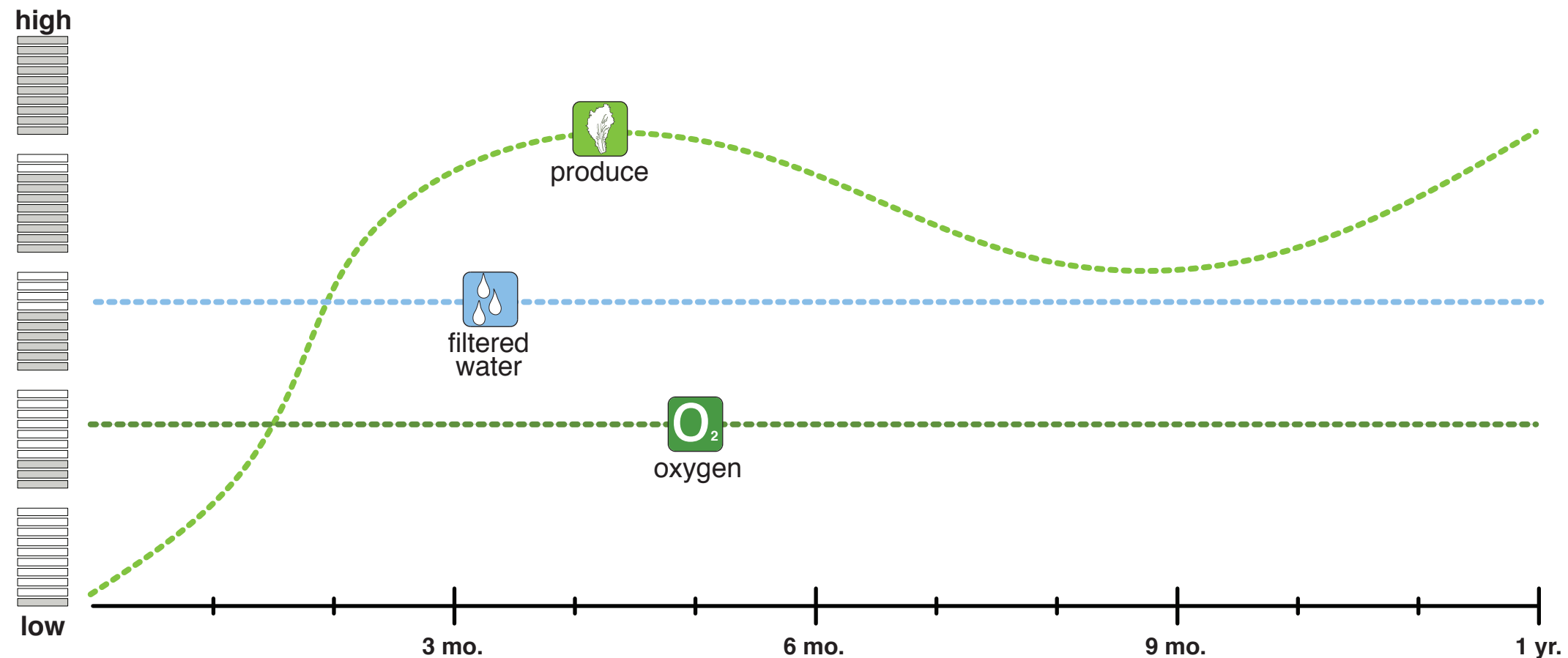
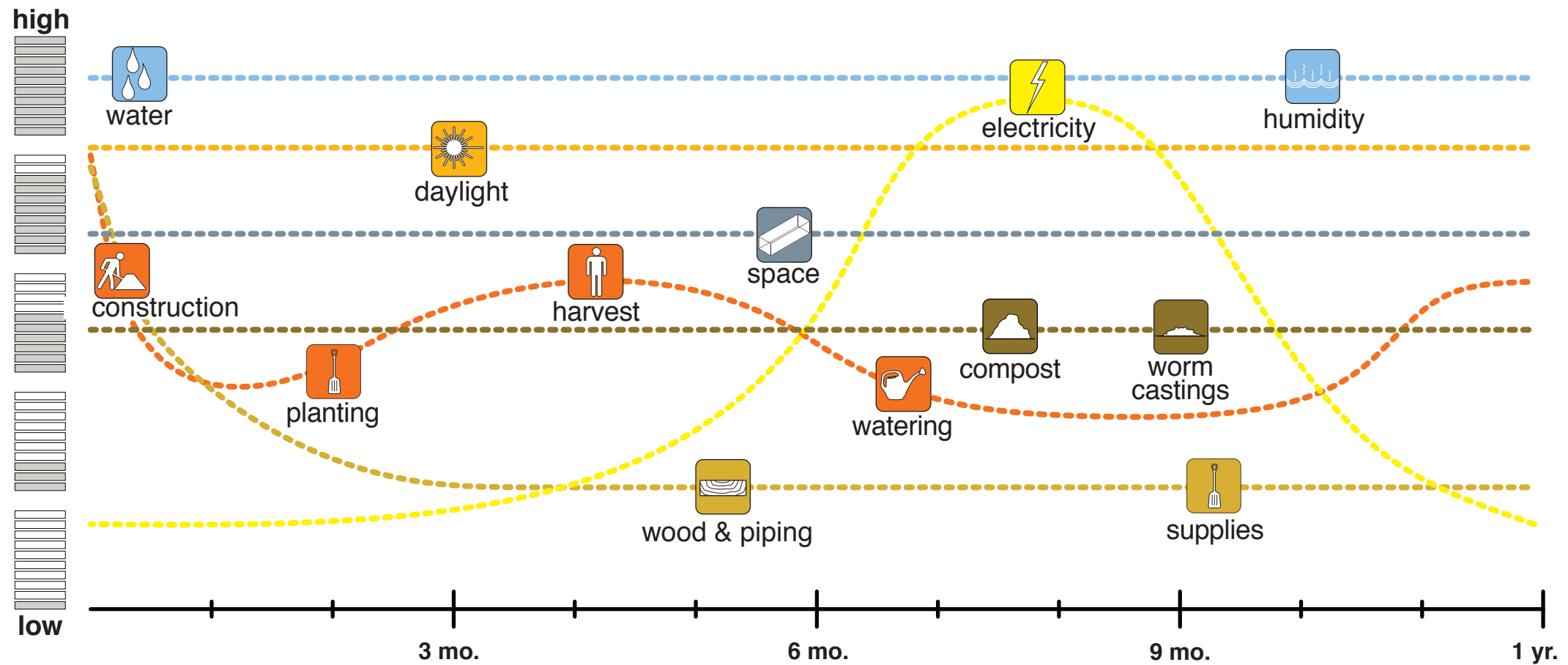
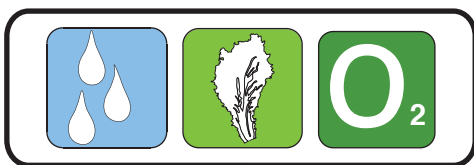
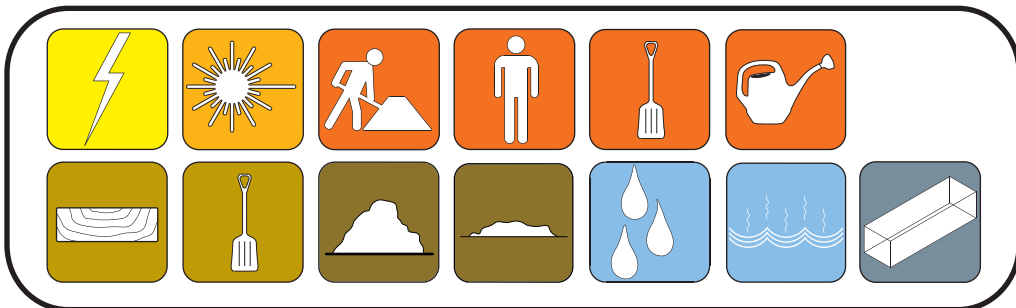
materials: wood, piping, gardening supplies  
 compost  
 worm castings  
 electricity  
 daylight  
 water  
 interior space: 12,000 sf

## output

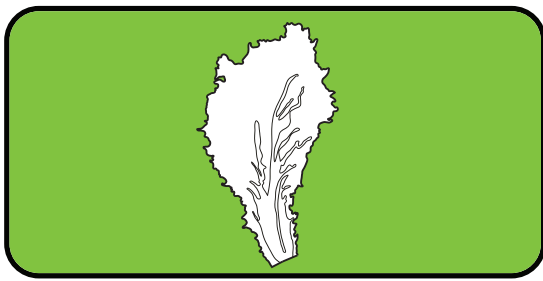
produce: 10.24 lbs / sf = 122,880 lbs / yr

## byproducts

oxygen  
 filtered water







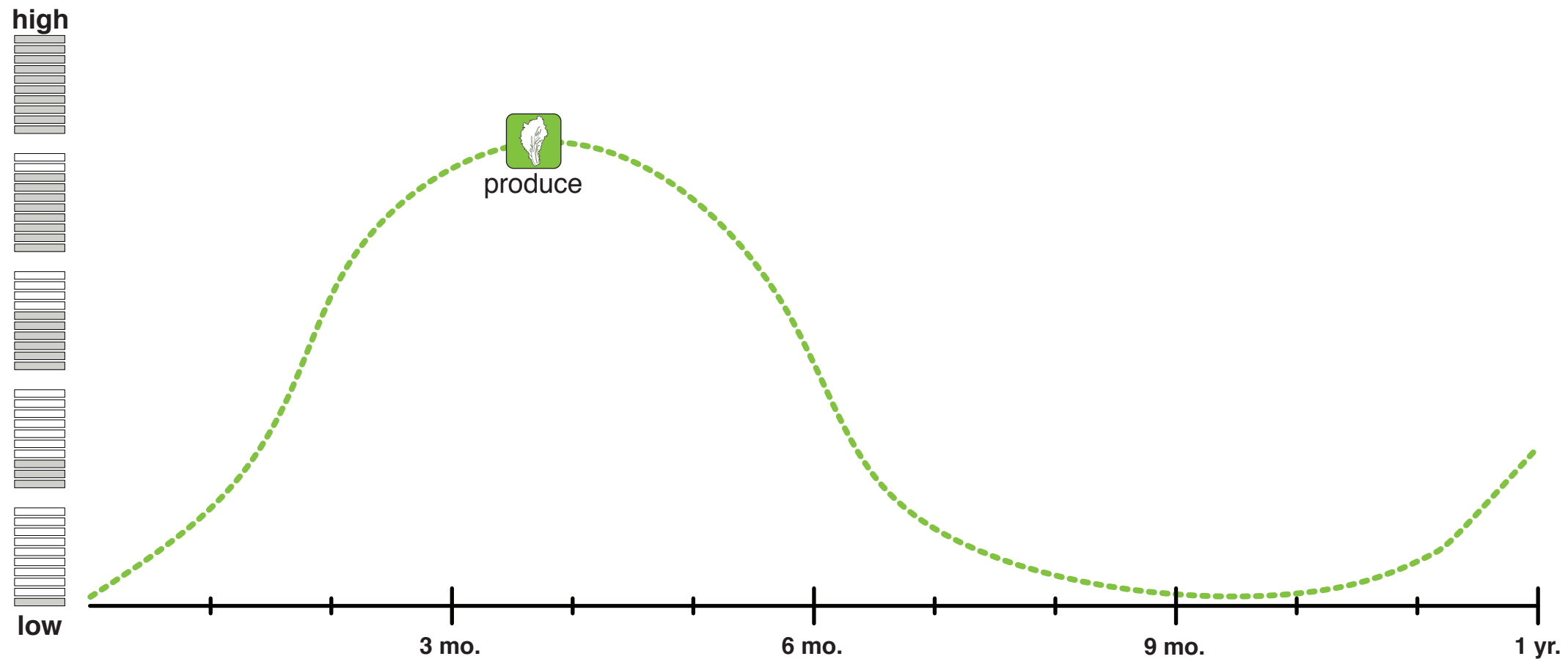
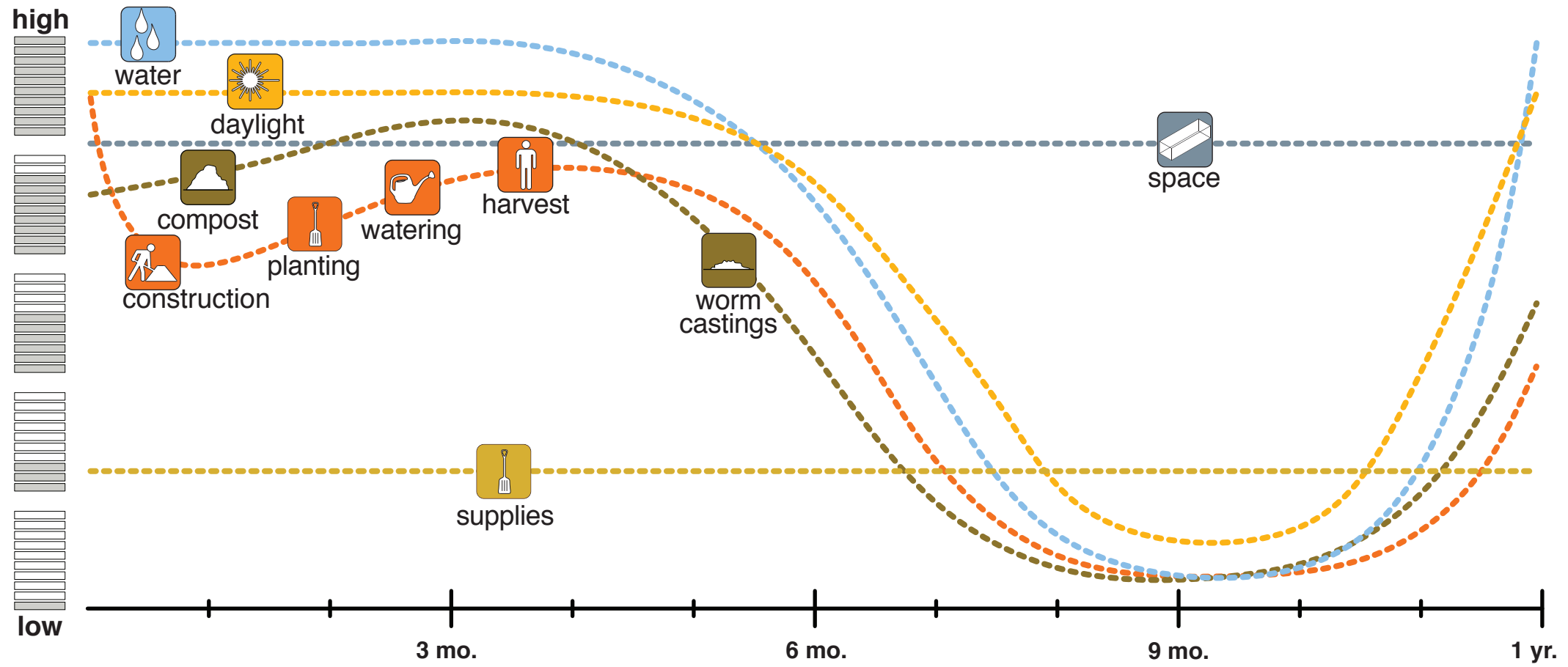
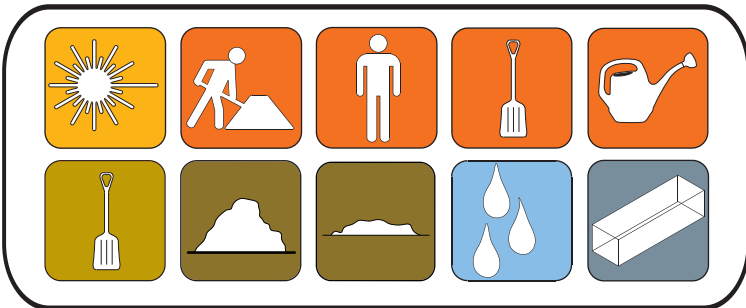
# crops input

labor: staff, volunteer  
 construction  
 planting  
 watering  
 harvesting

materials: gardening supplies  
 compost  
 worm castings  
 daylight  
 water  
 exterior space: 27,808 sf

# output

produce: 6 lbs / sf = 166,848 lbs / yr

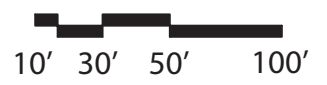
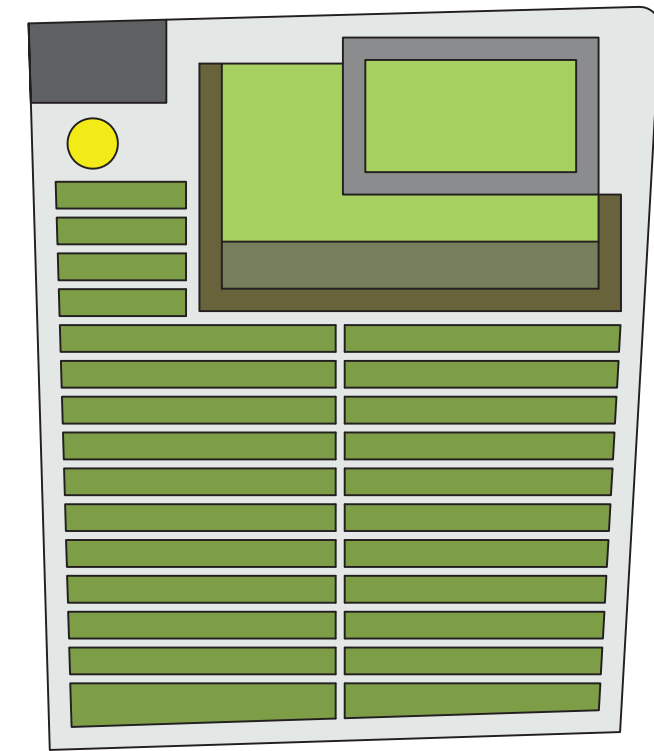
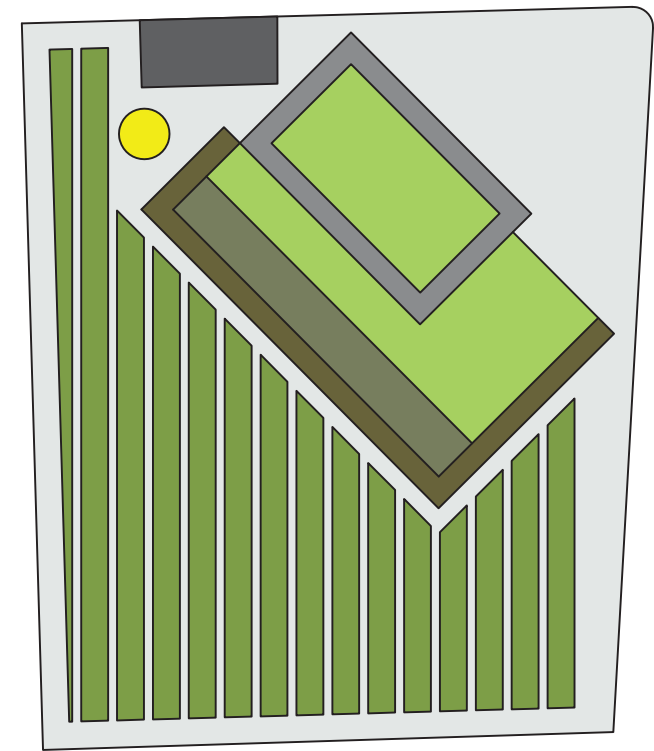
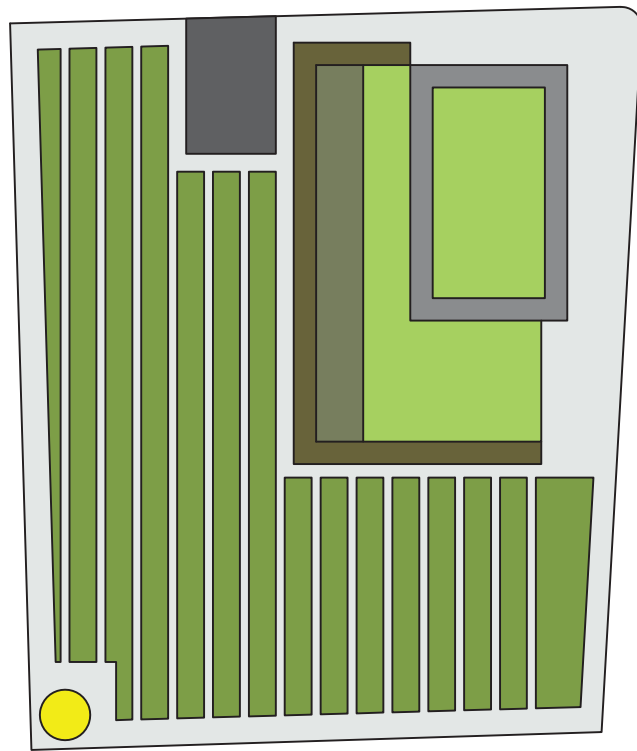
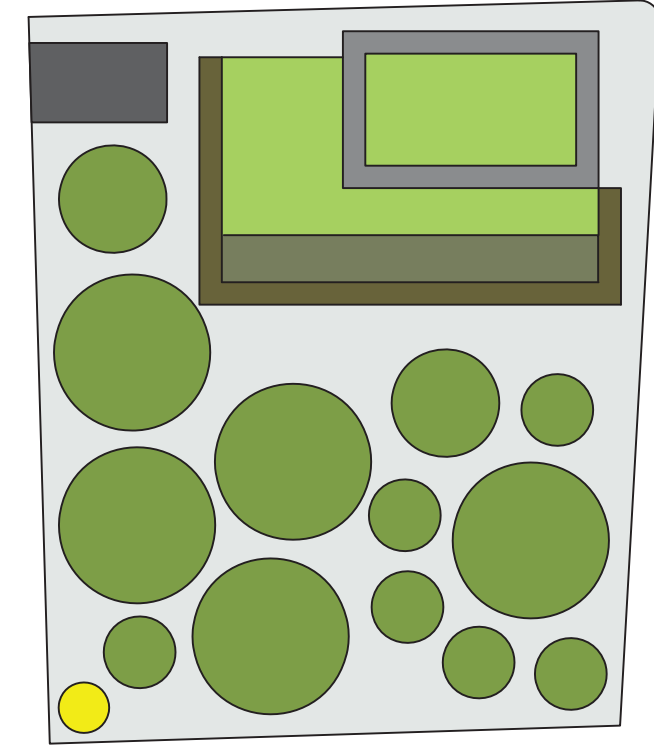
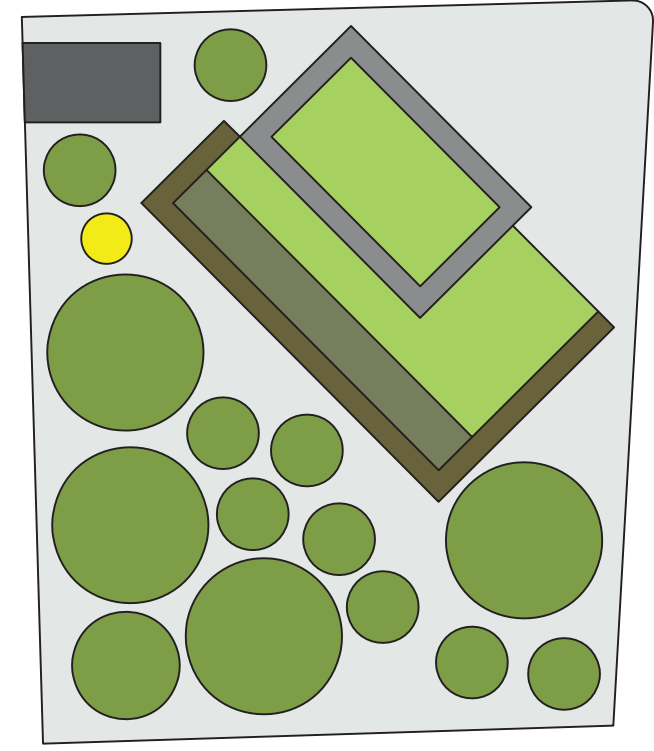
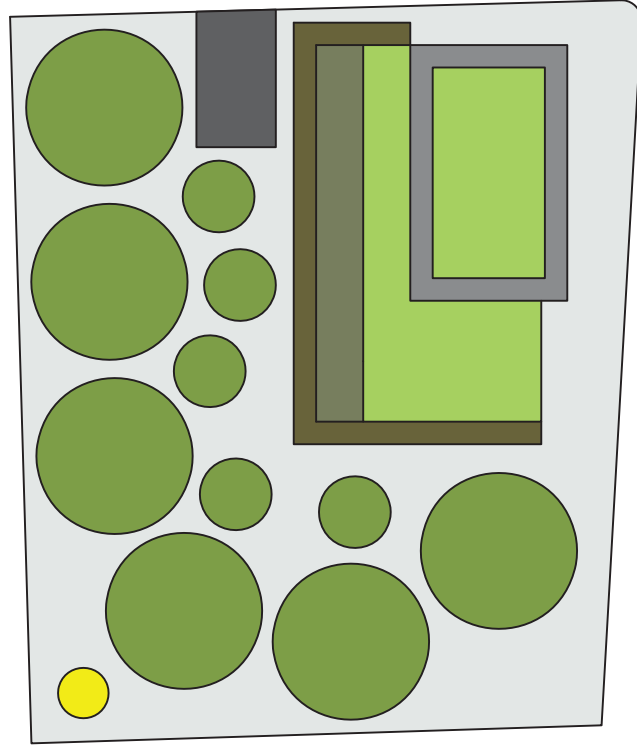




# conceptual site iterations

preliminary spatial configurations were explored in an effort to determine gross and net production areas, building footprint, and site and programmatic adjacencies. the net production areas were used to estimate the annual output capabilities of the 2 acre site, while accounting for the desired programmatic elements and the differentiation in production cycles between interior and exterior agricultural facilities.

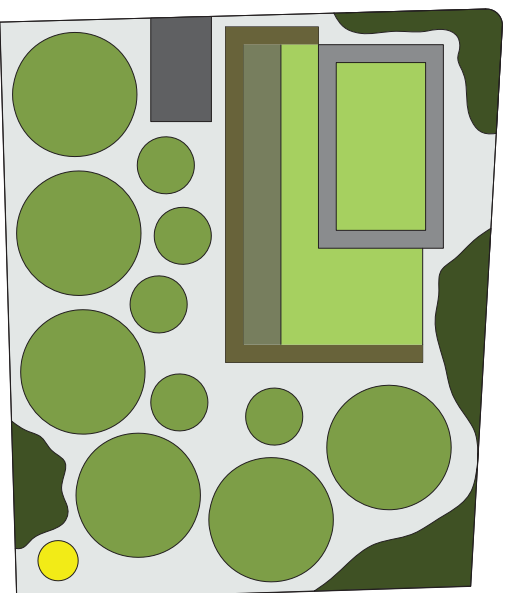
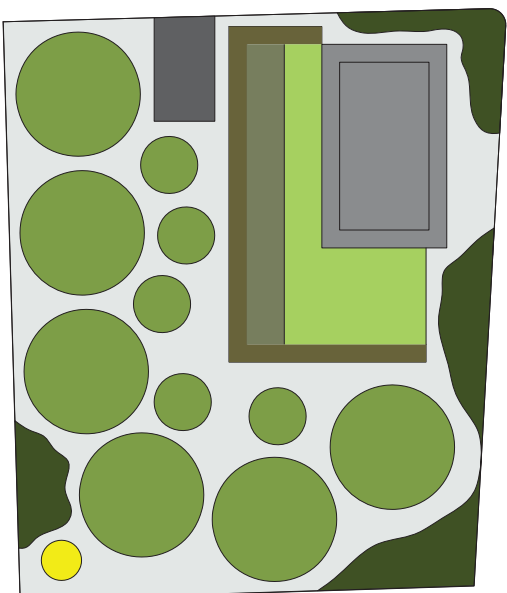
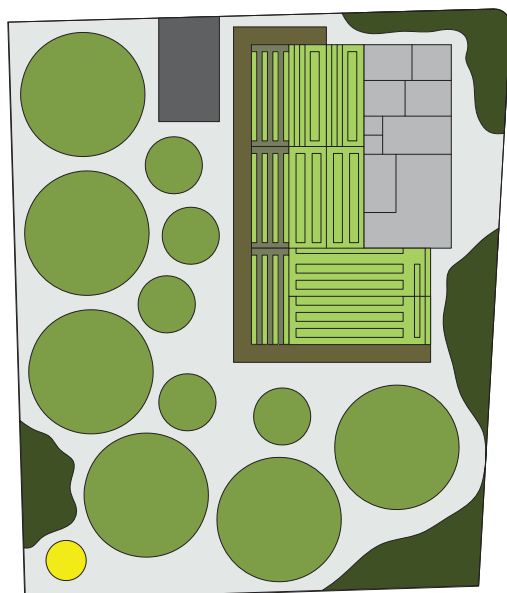
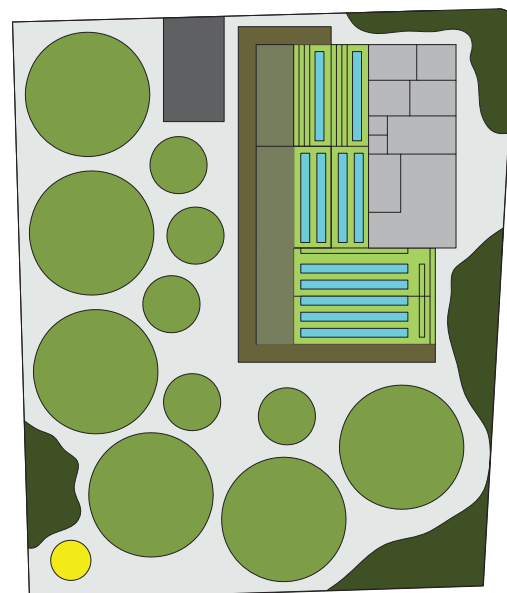
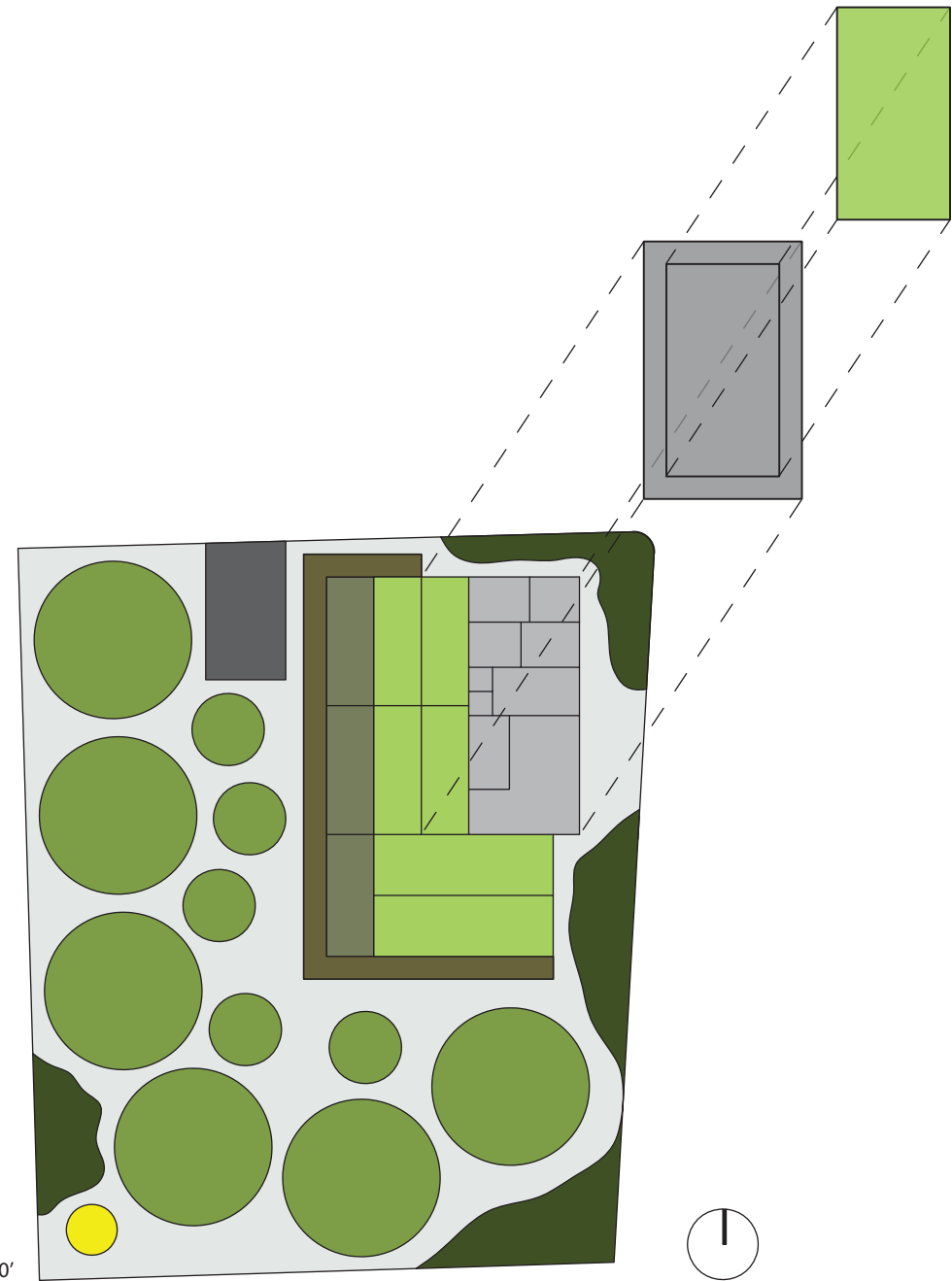
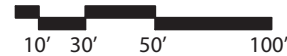
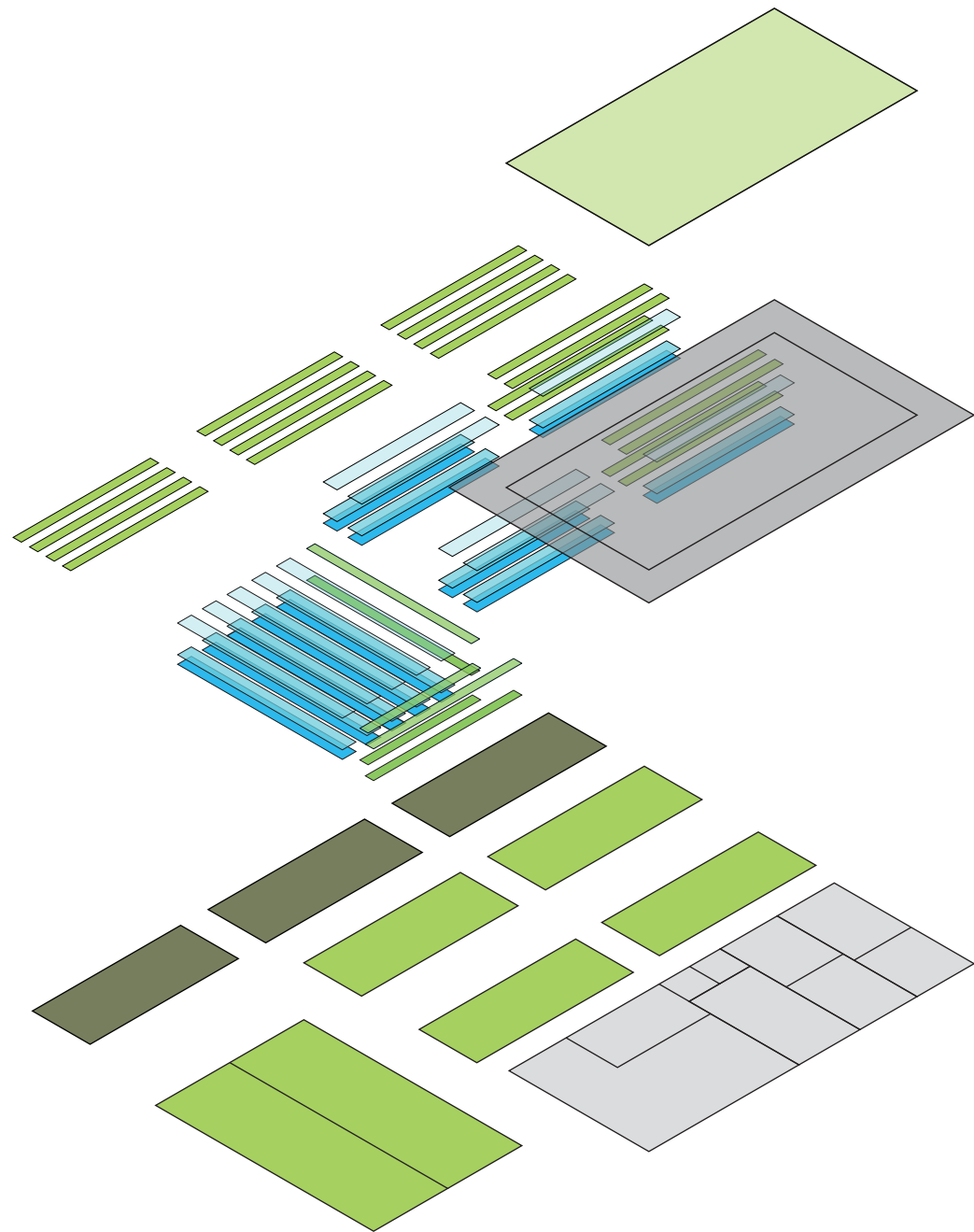
apiary	400 sf
greenhouses	7,600 sf
exterior gardens	32,588 sf
chicken coops	3,600 sf
compost	3,300 sf
loading and receiving	2,150 sf
recreation	7,980 sf





# conceptual site plan

apiary	400 sf
greenhouses	7,600 sf
exterior gardens	32,588 sf
chicken coops	3,600 sf
compost	3,300 sf
naturalized plantings	6,000 sf
loading and receiving	2,150 sf
recreation	7,980 sf
support facilities	5,585 sf
exterior circulation	24,187 sf
aquaponic systems	1,330 sf



a simplified production matrix was developed utilizing dietary recommendations, based on a 2,000 calorie diet, for the five different vegetable sub-groups. representative vegetables were chosen based on their caloric content; approximately average relative to the other vegetables within their respective sub-groups. dark green vegetables are represented by kale, orange vegetables by carrots, and so on. square footage dedicated to the production of each sub-group was based on average yields for urban farms utilizing aquaponic systems and the same dietary recommendations for individual consumption. given the dedicated production area, calorie count per unit, annual yield and market price for each of the representative vegetables, the annual produce output of the site was estimated in terms of total production (lbs), income, and calorie count. production estimates for each category were also determined for fish, poultry, eggs and honey, using growing power inc. as a basis and scaling the numbers to reflect the increased production expected from fully integrated, purpose driven design.

## dietary recommendations

vegetable consumption:  
(based on a 2000 calorie diet)

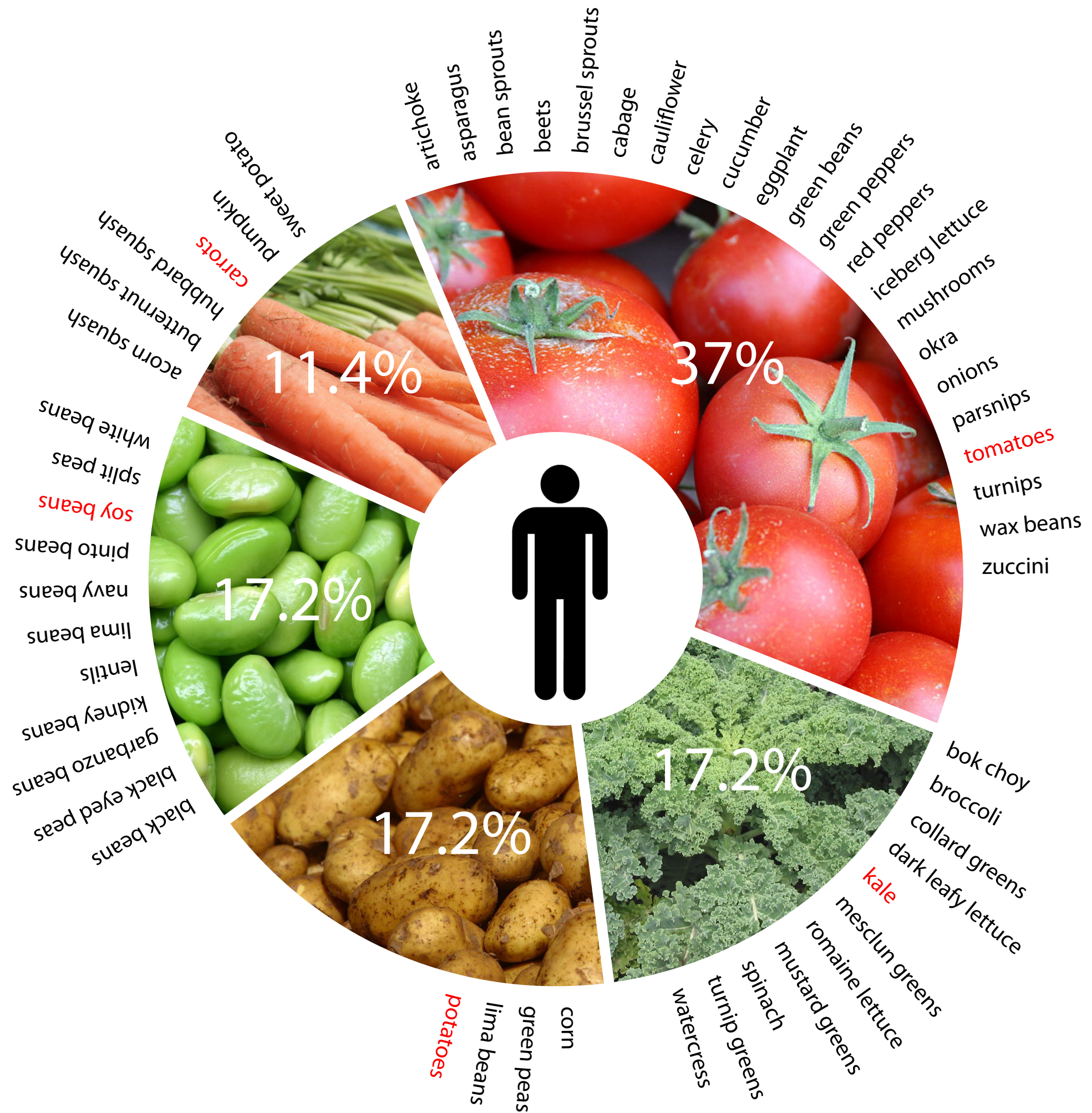
dark green vegetables  
3 cups / week

orange vegetables  
2 cups / week

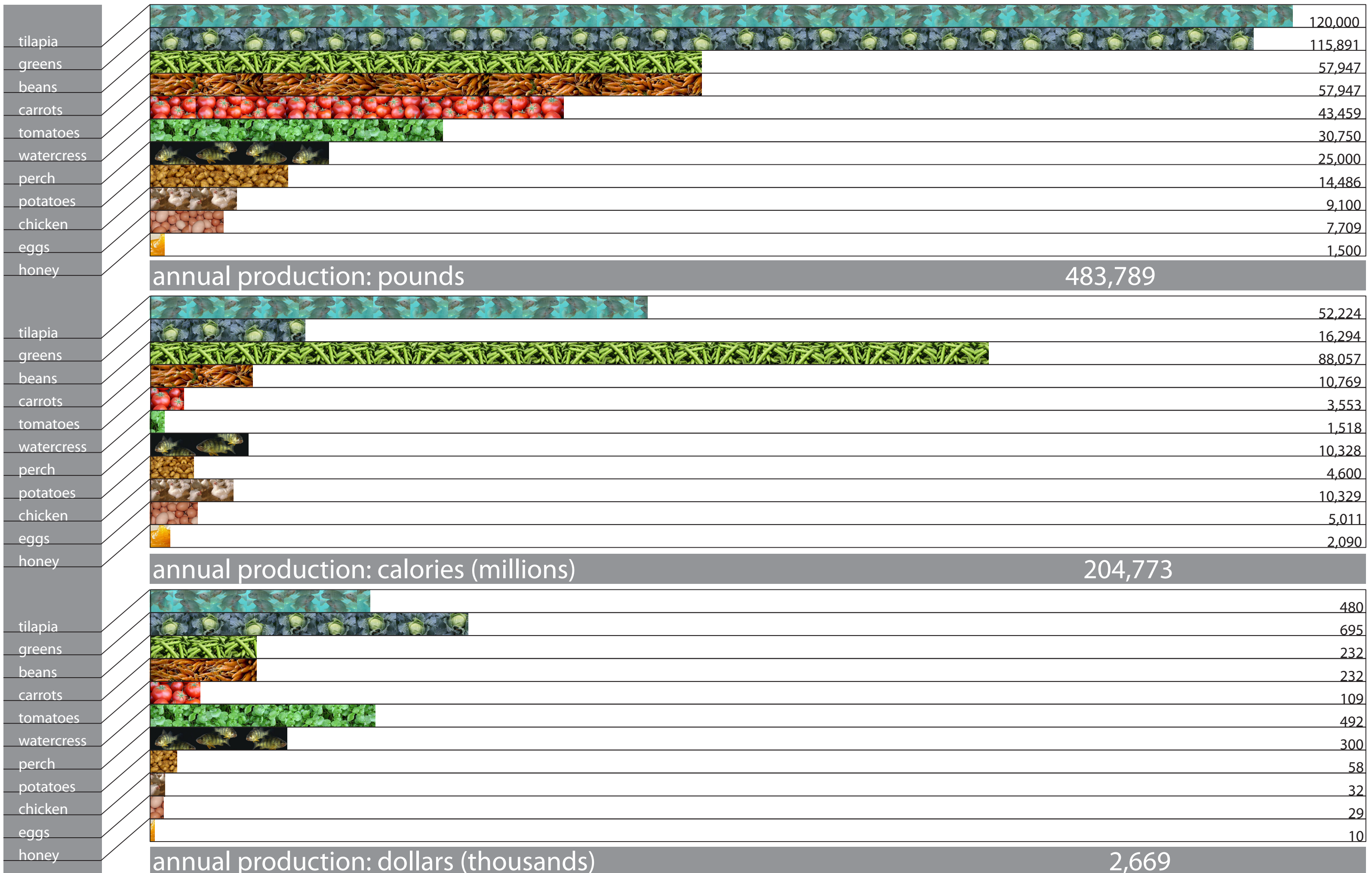
legumes (dry beans)  
3 cups / week

starchy vegetables  
3 cups / week

other vegetables  
6.5 cups / week







1 two acre sprout can feed

1234

people 400 calories per day

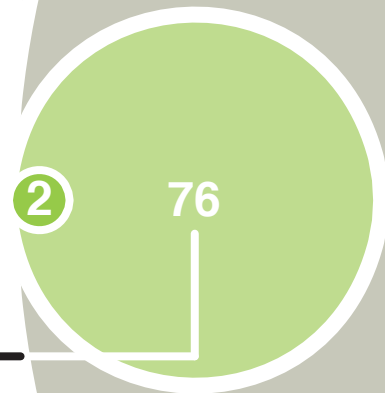
# roseland

1 two acre sprout can feed 1,392 roseland residents 400 calories of fresh produce and protein daily

38 two acre sprouts, or 76 acres, can feed all 52,723 roseland residents 400 calories of fresh produce and protein

there are an estimated 2,000 acres of vacant land in roseland. just 3.8% of this land would be required for 38 sprouts

there are an estimated 30,000 acres of vacant land on the south side of chicago



2,000

30,000



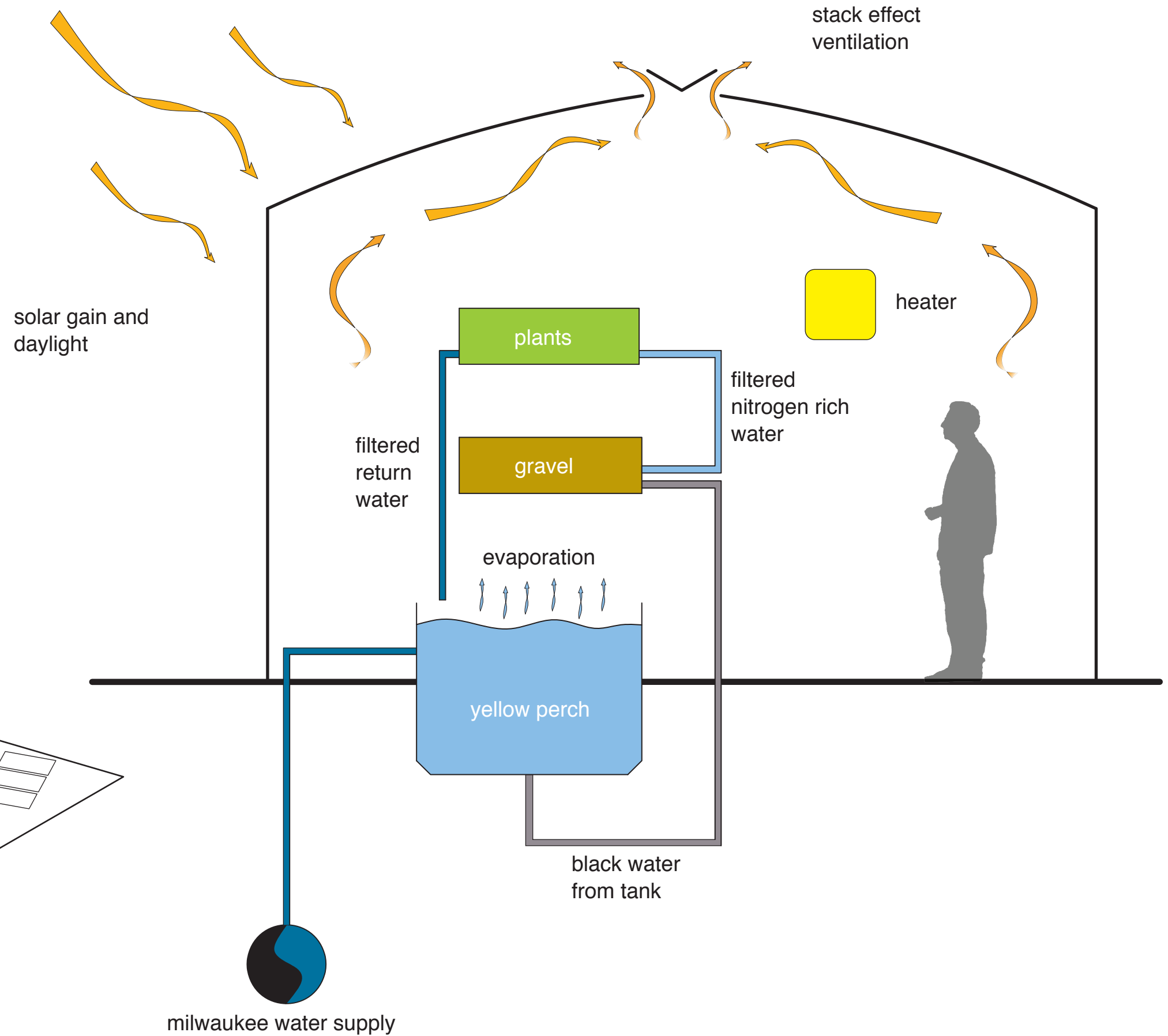
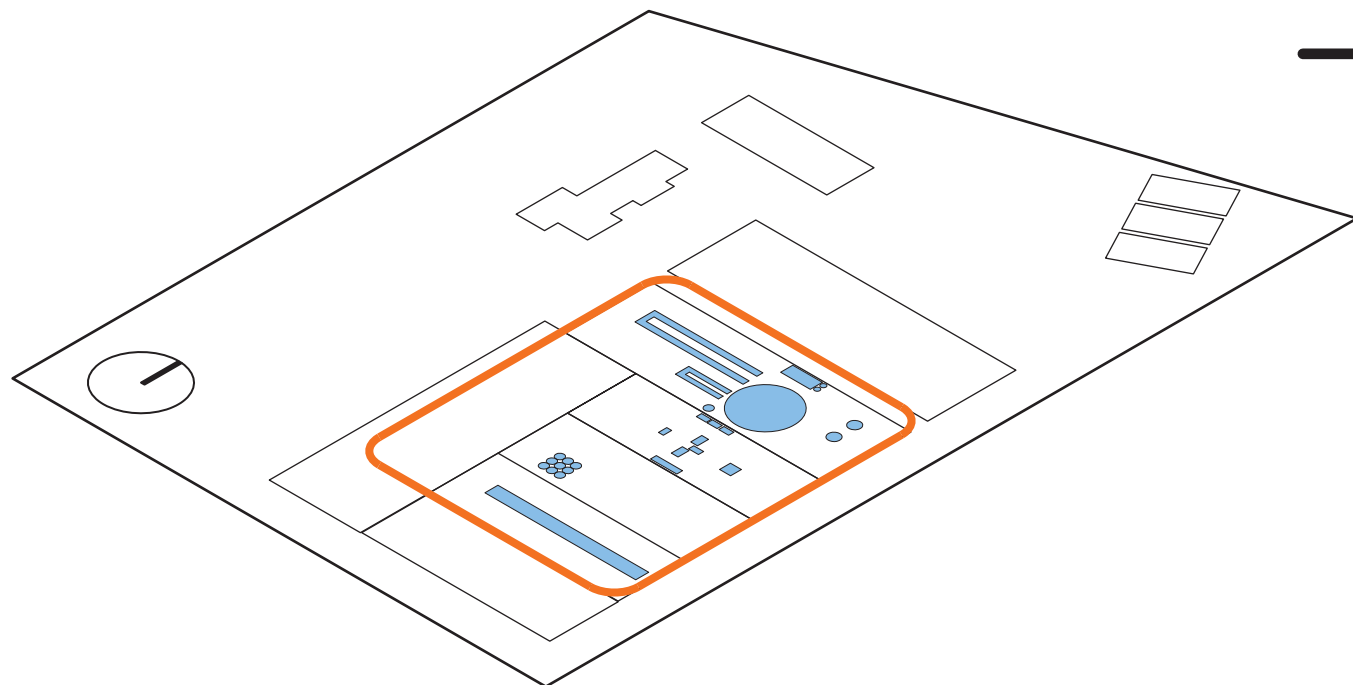
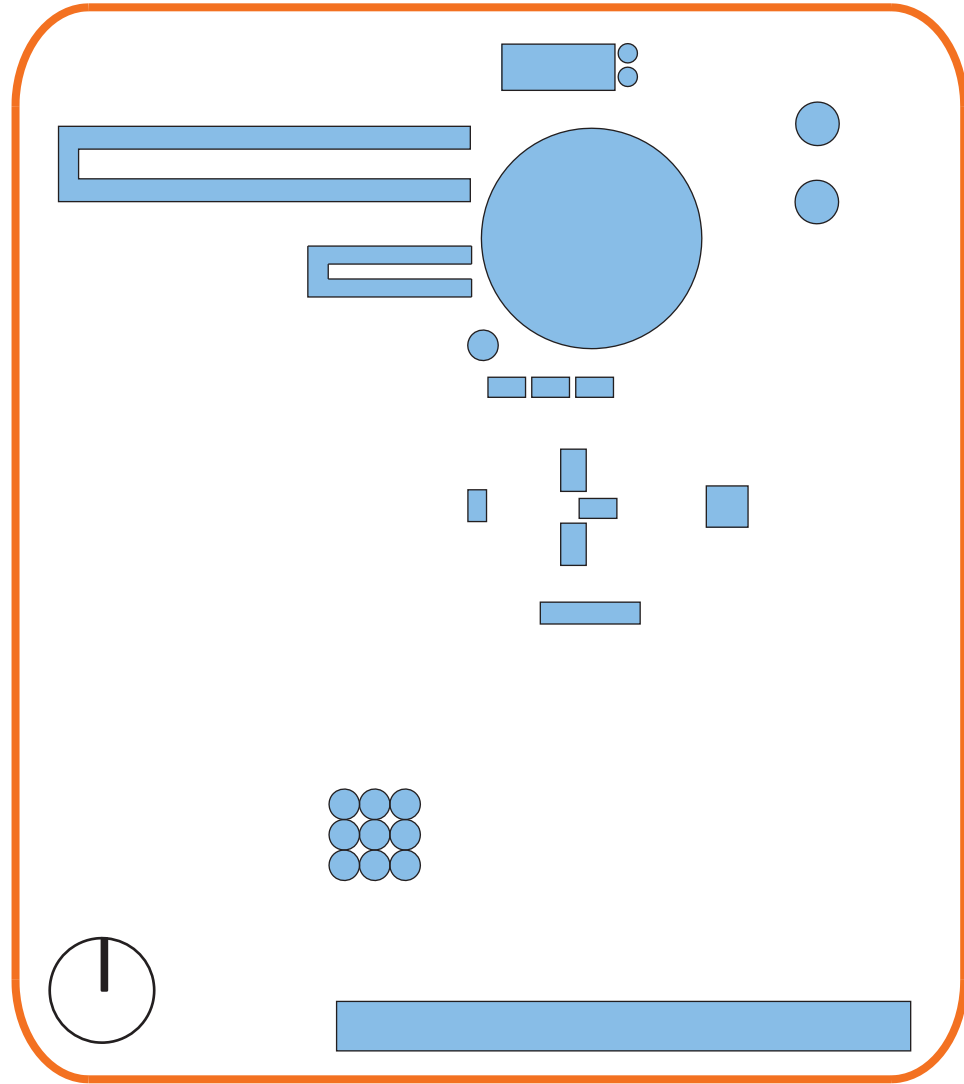
# creativity in programming

through fully integrated, bottom up design and an understanding of current best agricultural and recreation practices, **sprout** seeks to create a programmatically complex social institution that improves on the inefficiencies and inadequacies of current practices. guided by a philosophy of social and environmental stewardship, **sprout** will harness the potential efficiencies inherent in complex multi use institutions and collaborative agriculture systems. through evident utilization of these symbiotic relationships and other renewable resources such as solar hot water, radiant floors and storm water collection, **sprout** will create a high performance building that educates users on ecological awareness and the environmental consequences and connections related to food production and other human activities. in addition, **sprout** will include programmatic elements such as dietary education and food preparation. in doing so, **sprout** seeks to build upon the strong cultural and culinary heritage inherent in historic communities such as roseland.



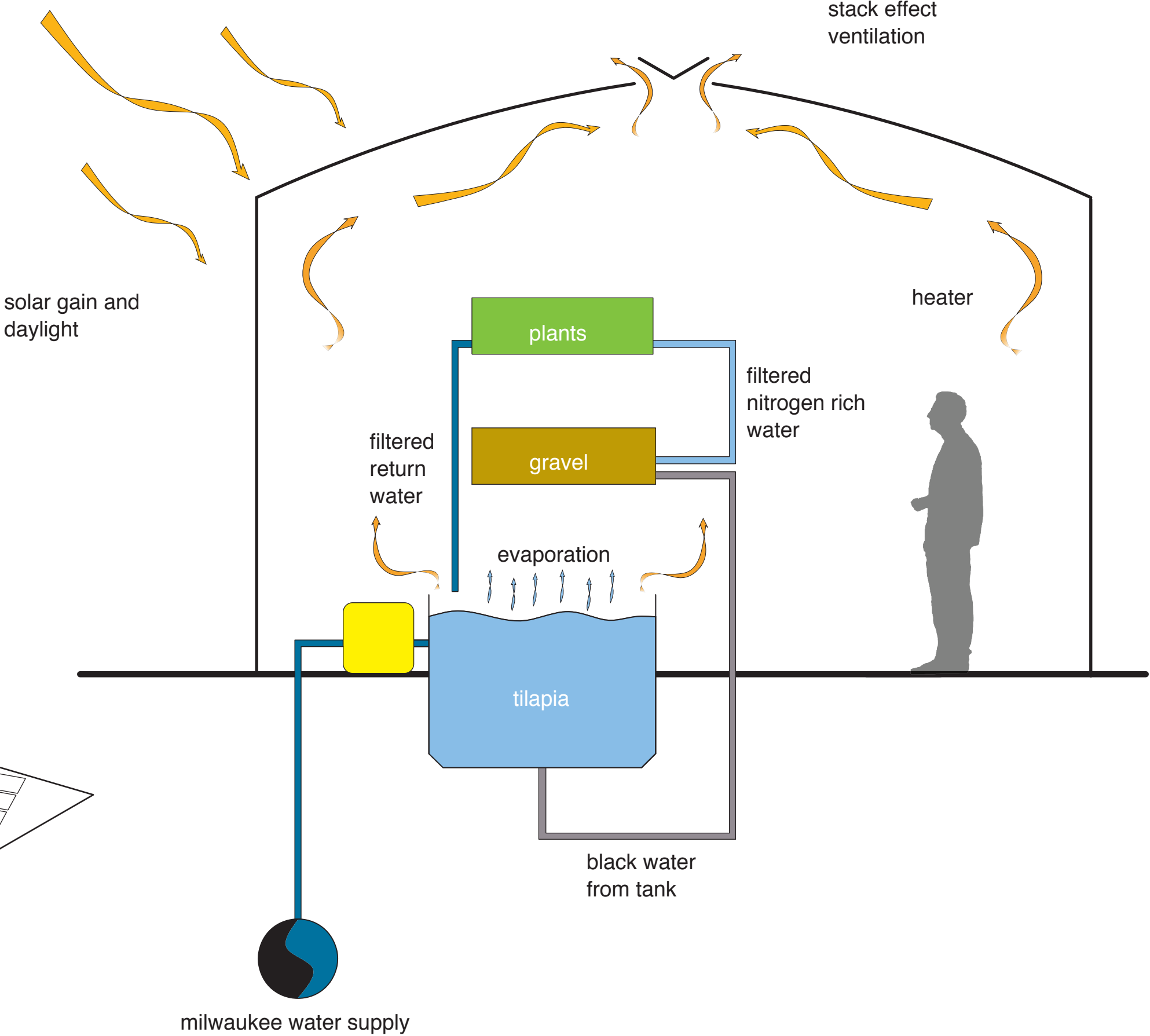
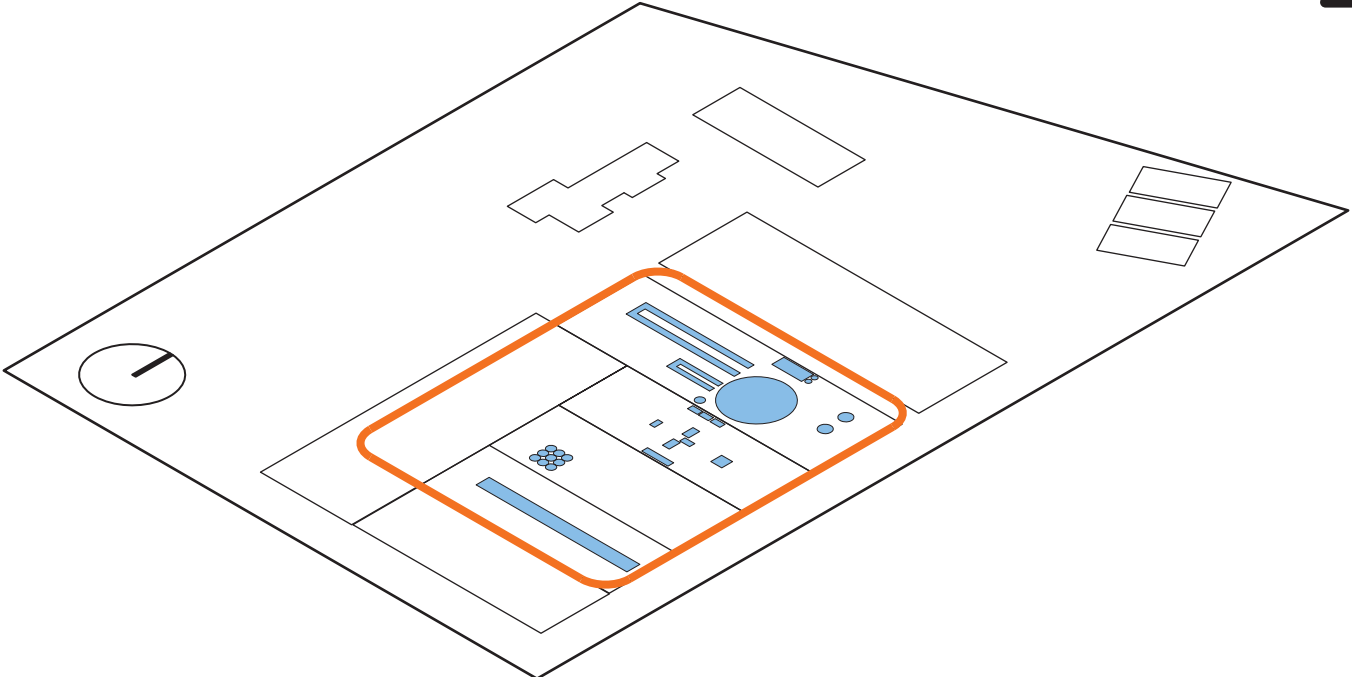
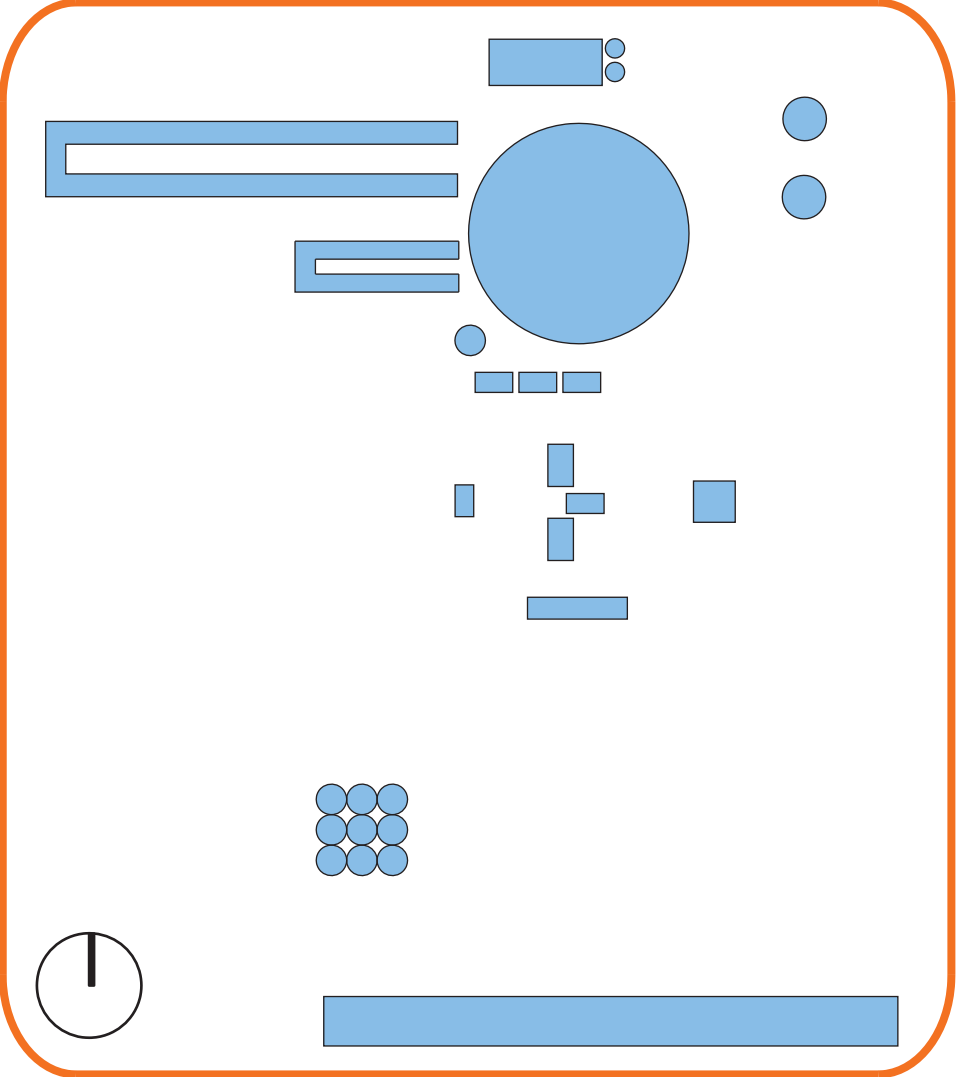


# systems diagram (perch): growing power



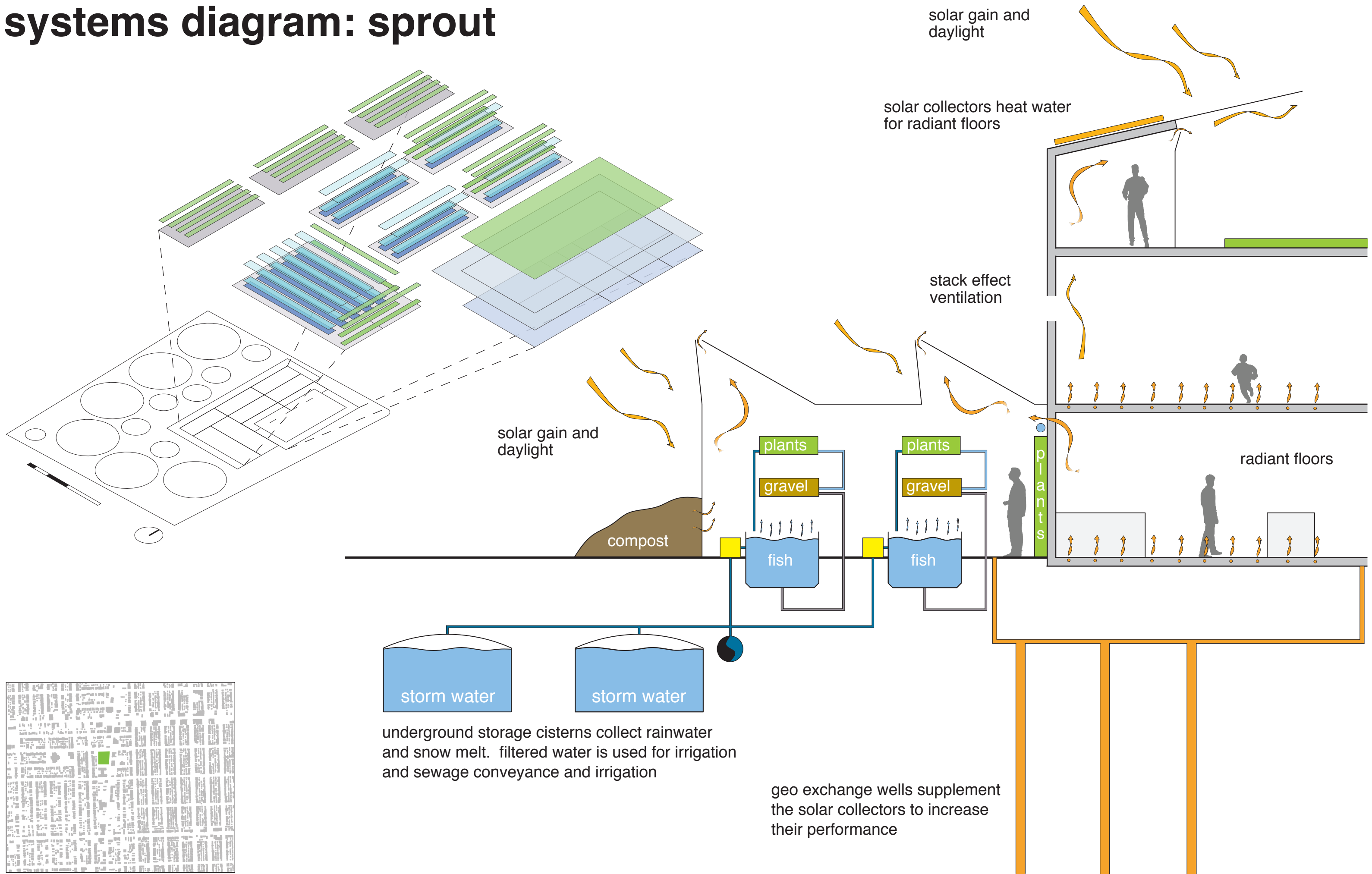


# systems diagram (tilapia): growing power





# systems diagram: sprout



# programmatic spatial requirements

total site area: 86,815 sf

## exterior

(6) gardens	3815 sf	25,680 sf
(5) gardens	800 sf	4000 sf
(3) chicken coops	1200 sf	3600 sf
apiary	400 sf	400 sf
composting	3300 sf	3300 sf
naturalized gardens	6000 sf	6000 sf
loading & receiving	2150 sf	2150 sf

total		45,130 sf
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## interior

(2) greenhouses	2140 sf	4280 sf
(4) greenhouses	1200 sf	4800 sf
flexible recreation space	7980 sf	7980 sf
classroom/processing	650 sf	650 sf
kitchen/classroom	650 sf	650 sf
store	840 sf	840 sf
(2) storage	500 sf	1000 sf
office	330 sf	330 sf
(2) locker rooms	440 sf	880 sf
(2) w/c	85 sf	170 sf
(2) m/e	500 sf	1000 sf
j/c	100 sf	100 sf

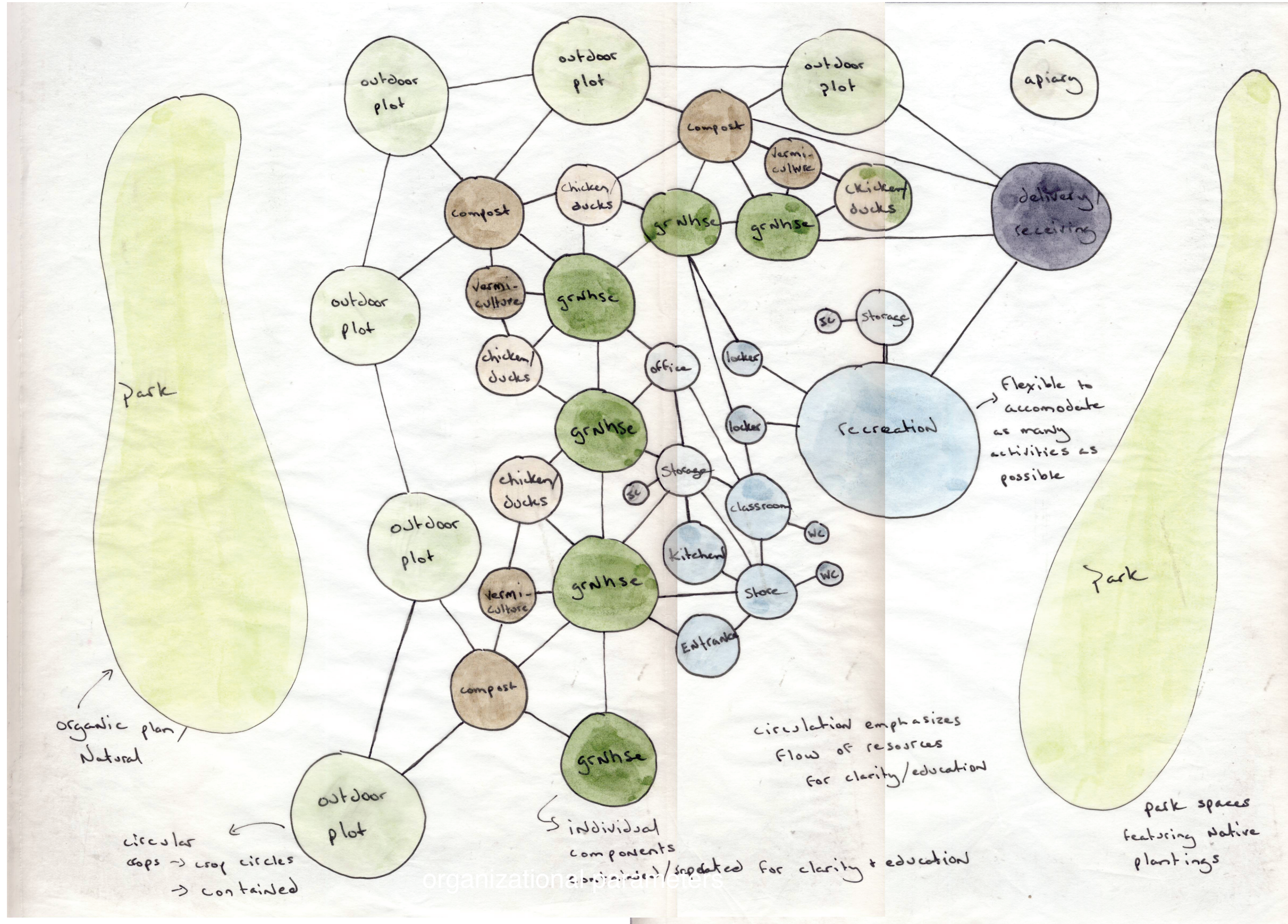
gross		23,180 sf
net		20,862 sf

quantitative parameters



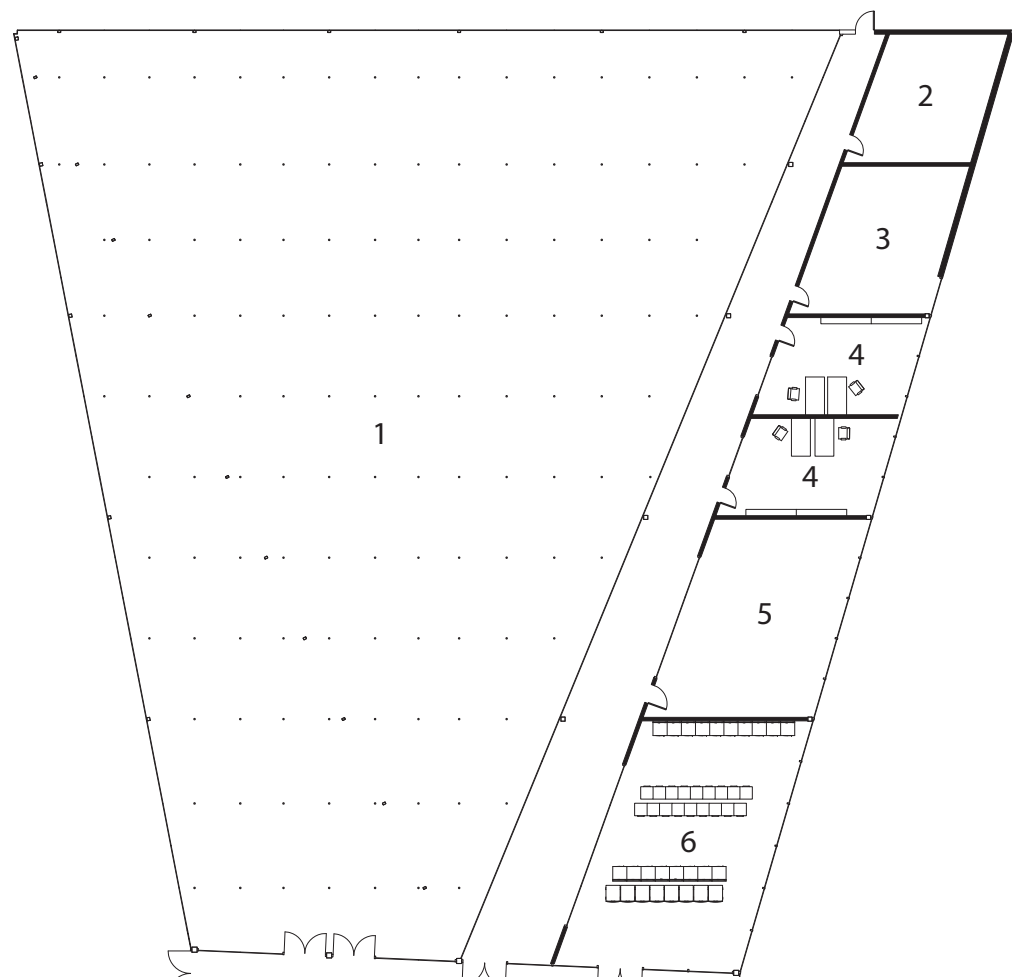


# programmatic adjacencies

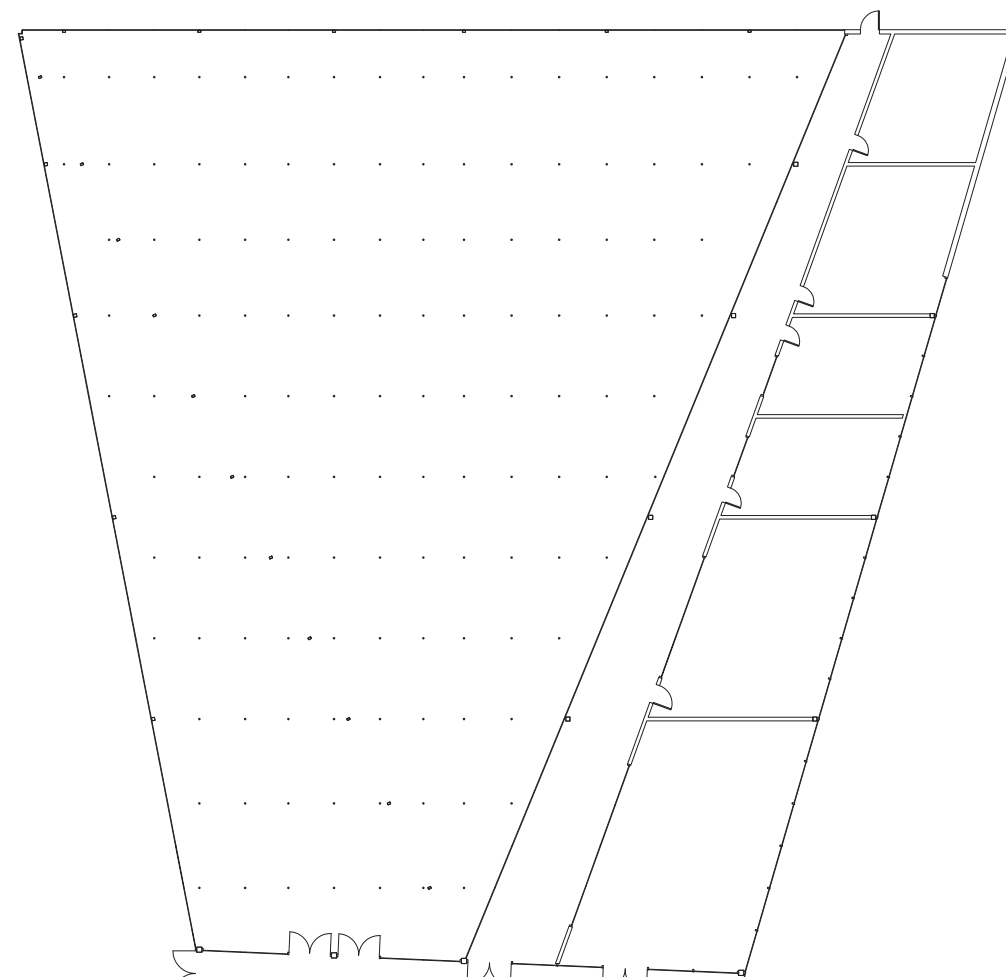




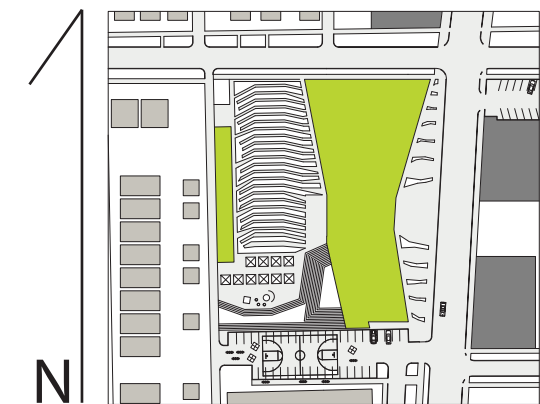
- 1. greenhouse
- 2. m/e
- 3. storage
- 4. offices
- 5. classroom
- 6. laundromat
- 7. pavilion
- 8. w/c
- 9. janitor closet
- 10. locker room
- 11. library
- 12. children's library
- 13. flexible recreation space



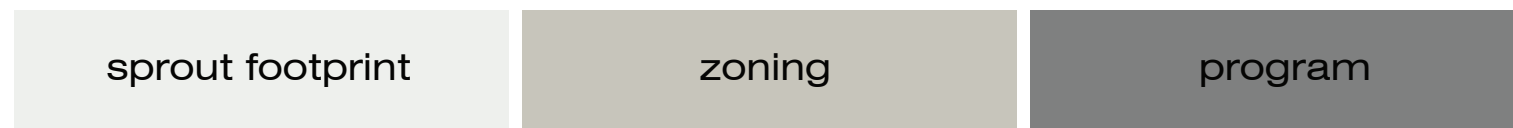
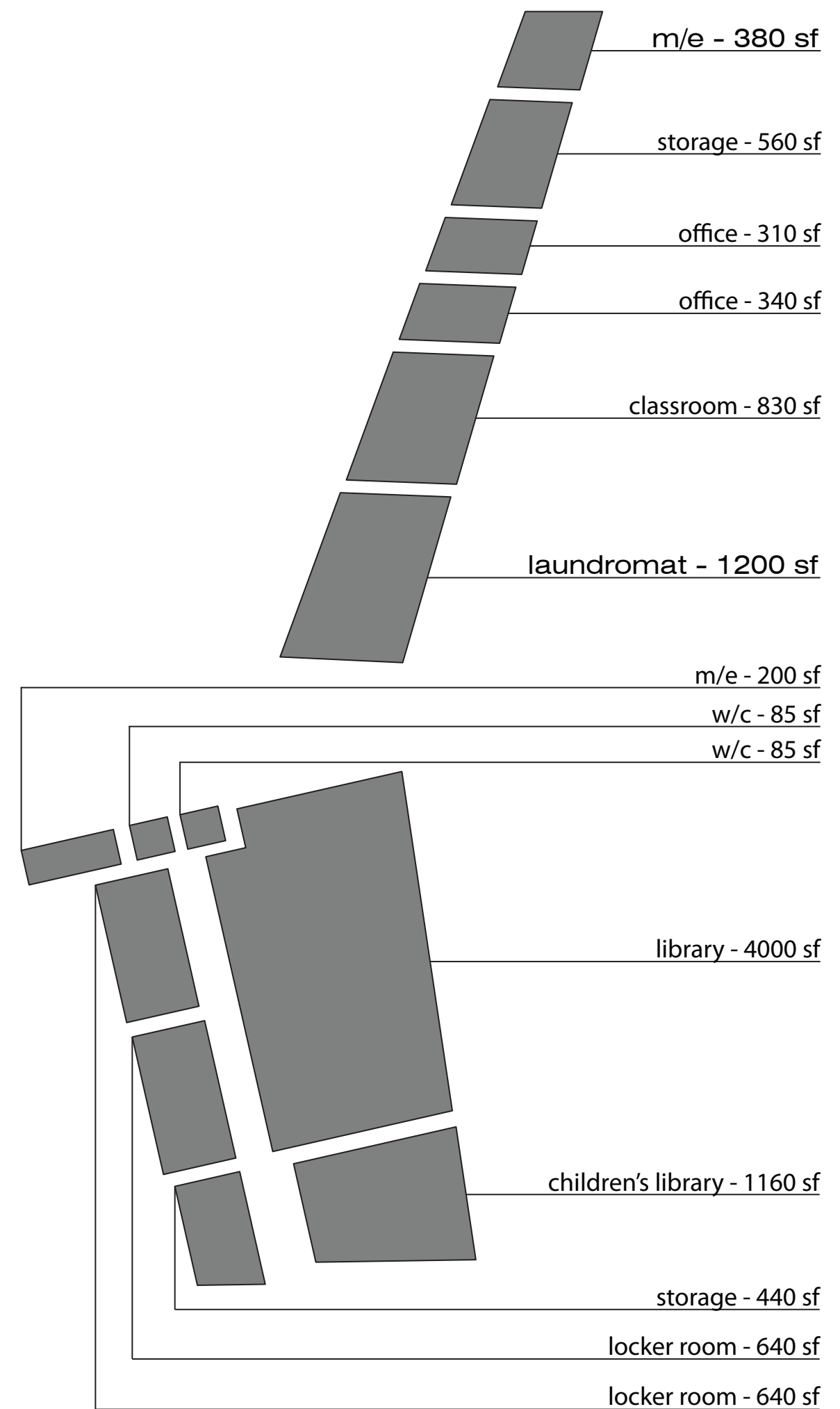
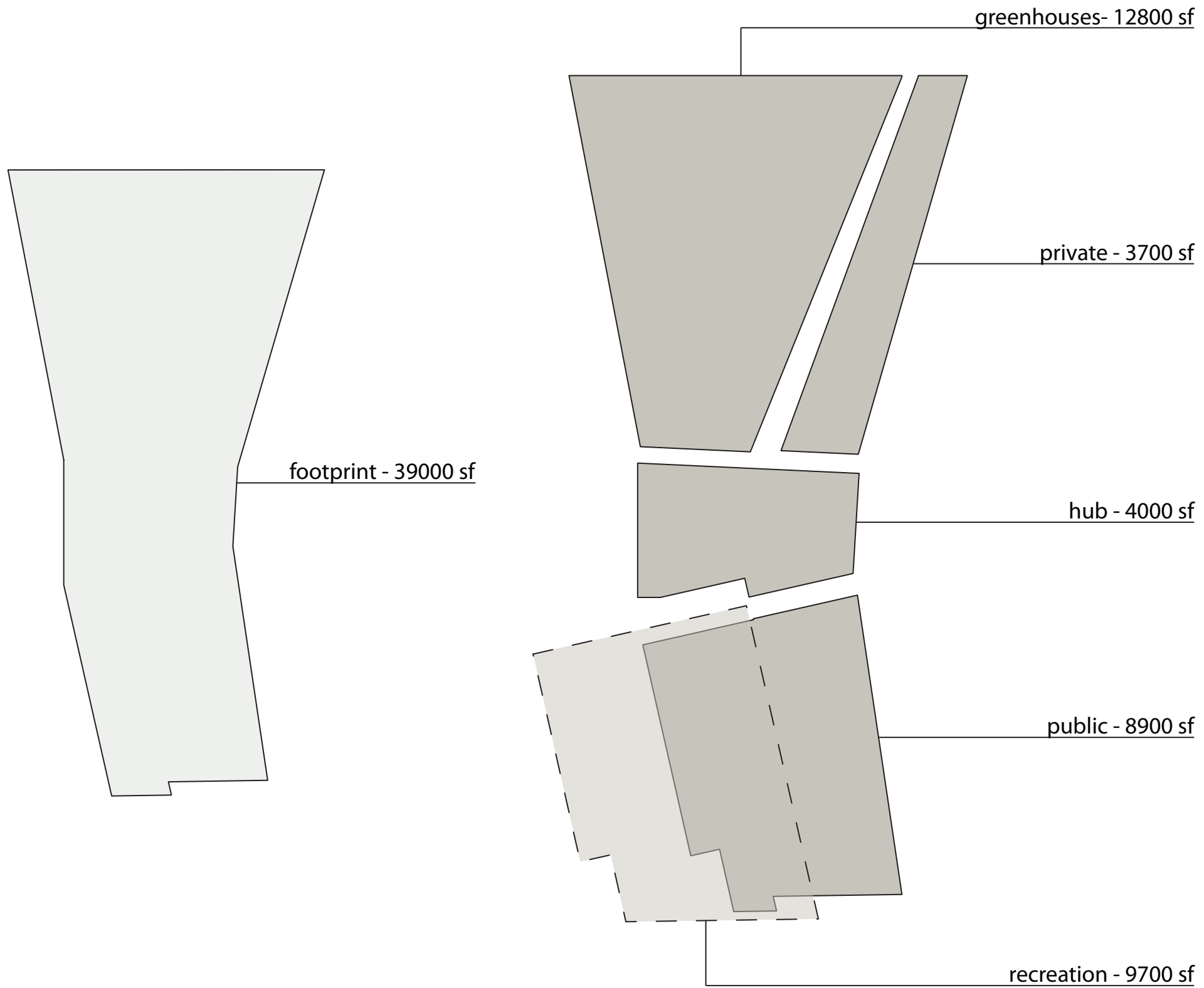
first floor



second floor



# program square footage

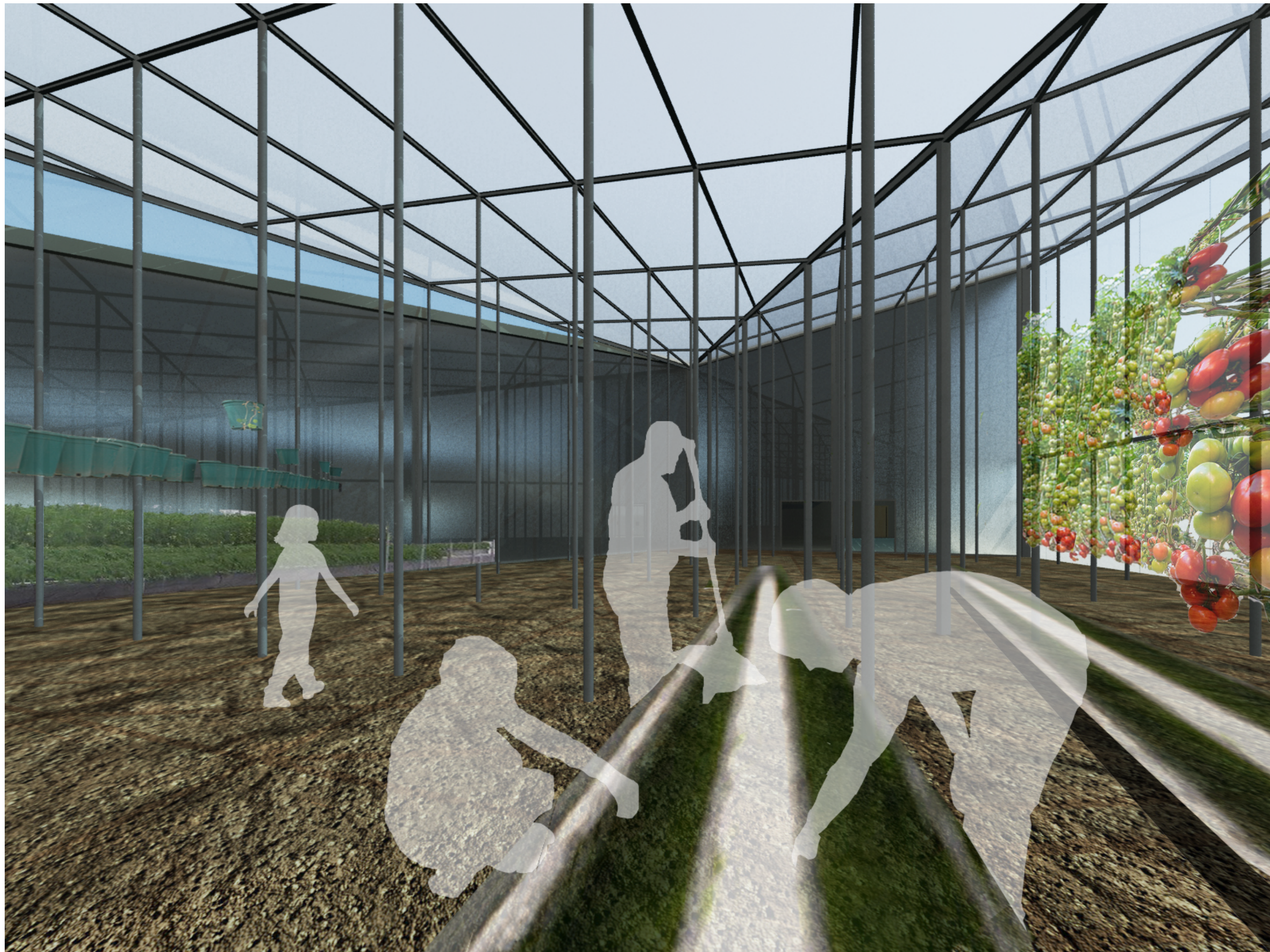




the core of the building is an adaptable hub which can be used for diverse activities such as farmer's markets, cooking and food preparation demonstrations, recipe swaps, and low impact group recreation. during warmer months, wall panels pivot on axis, creating a breezeway which serves as an open-air pavilion, allowing the agricultural program of the garden plots on the back of the facility to spill out into the public plaza in front of the building via farmers markets and demonstration planters. transparency within the core allows for visual connectivity between the diverse programmatic elements such as the library, laundromat, recreation room and greenhouse.

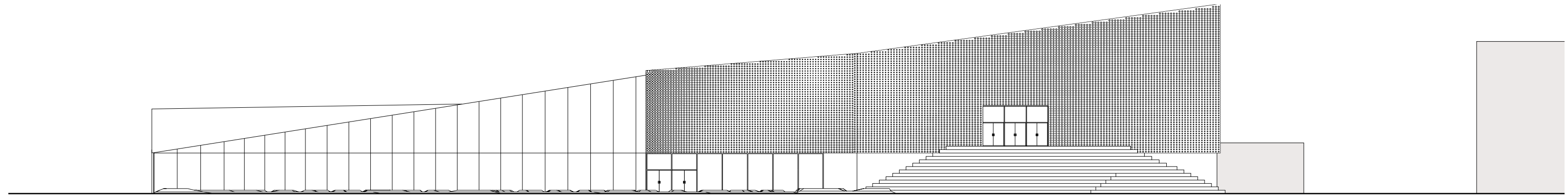




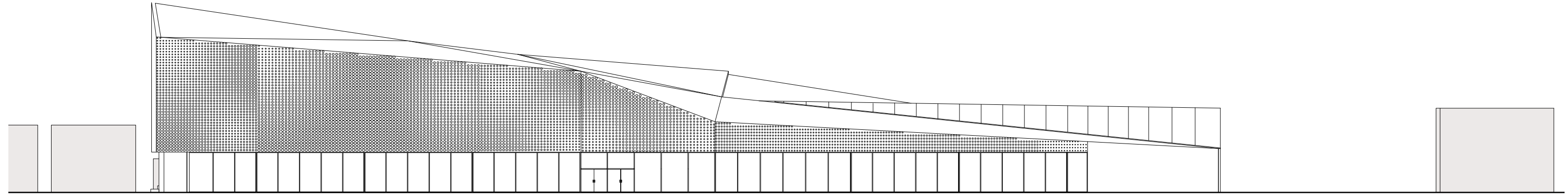


the 12,800 sf greenhouse allows for year-round production of produce, fish and worms. the primary feature are the aquaponic systems, based on the production of tilapia and yellow perch. the semi-closed loop system allows for vast reductions in water consumption while greatly increasing produce production. the height of the ceiling creates natural stack ventilation and facilitates vertical growth of produce. the frequency of the greenhouse structure serves as an armature from which to suspend growing structures for tomato vines and produce pots. the angle of the greenhouse roof enables it to serve as a giant rainwater collector, feeding underground cisterns which are used for produce irrigation. large bay doors on the west side of the greenhouse open to mitigate the separation of interior and exterior production during warmer months.

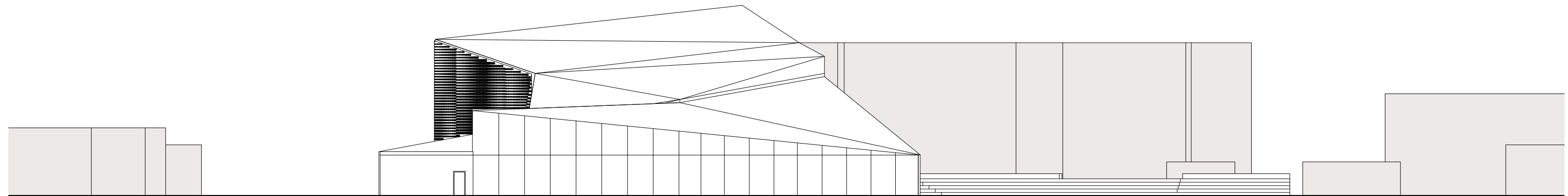




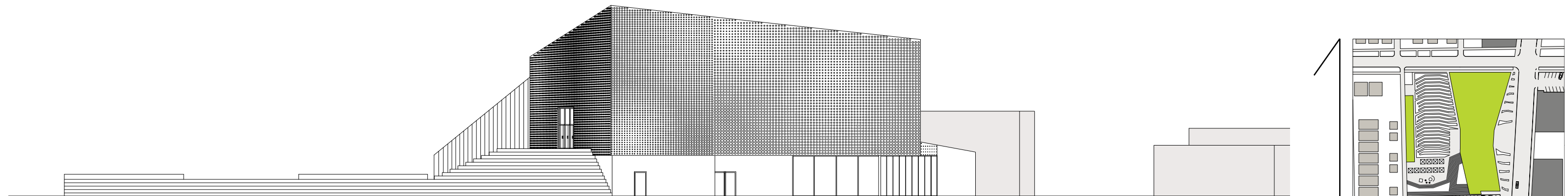
west elevation



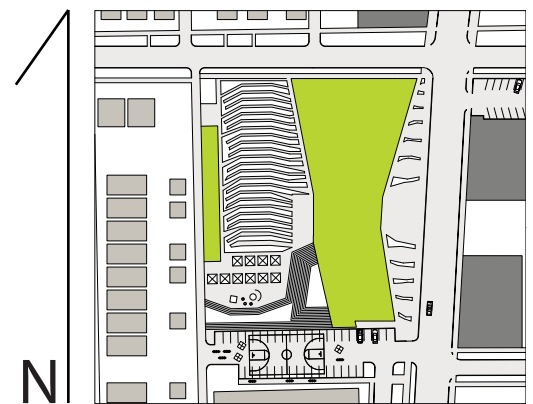
east elevation



north elevation



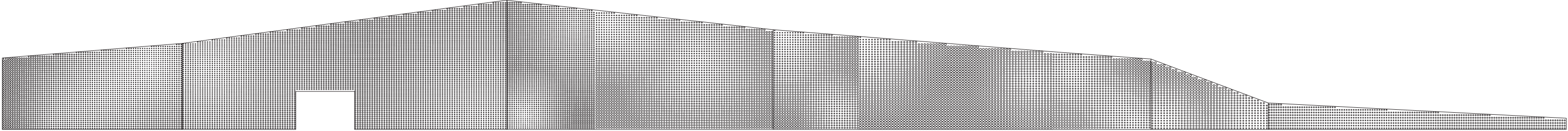
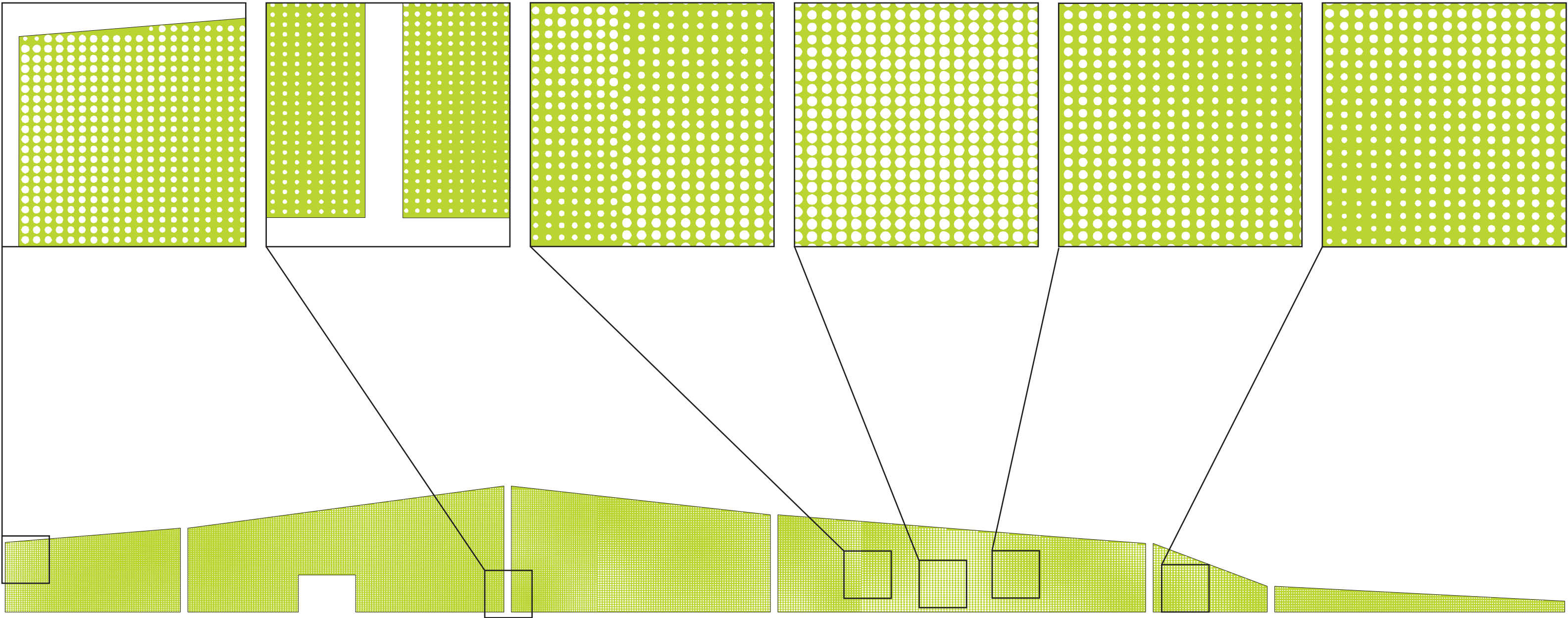
south elevation



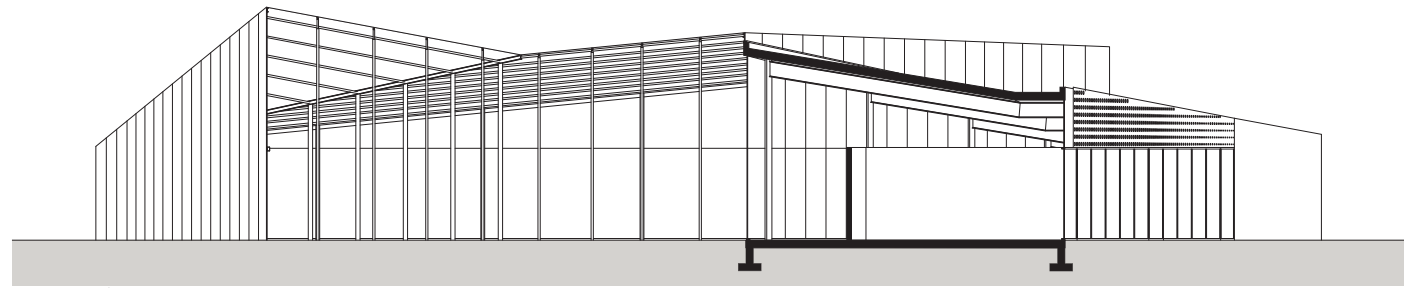


# screen details

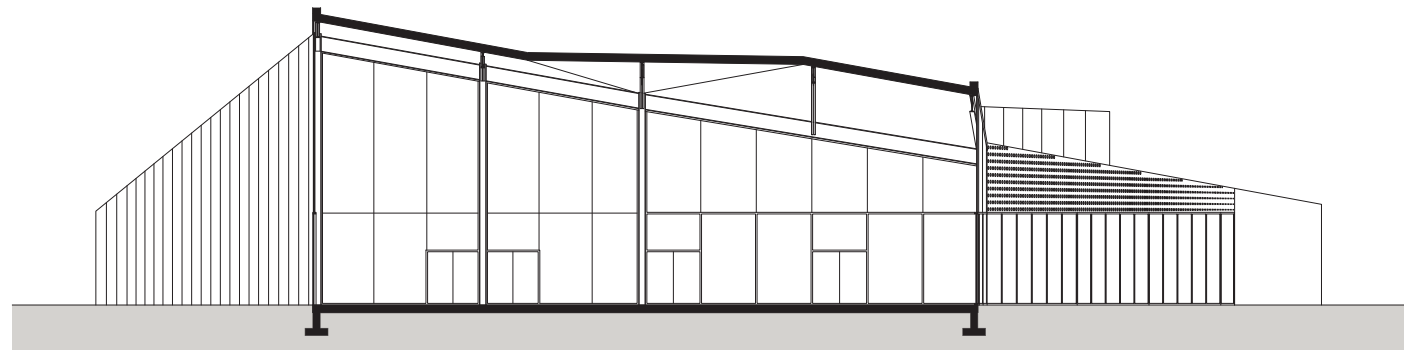
the volumes of the building are unified through the use of a perforated metal screen, which wraps the upper elevations of the building, excluding the greenhouse, beginning at 12'. perforations are manipulated to allow greater transparency within desired locations, depending on the particular programmatic elements and fenestration occurring behind the screen. perforations have larger radii and become more dense where greater transparency is desired over those volumes representing more public program and over picture windows, allowing increased visual connectivity between interior and exterior. the screen is painted a vibrant green to represent the agricultural foundation of the facility's program and further establish Sprout as a landmark along the michigan ave. corridor.



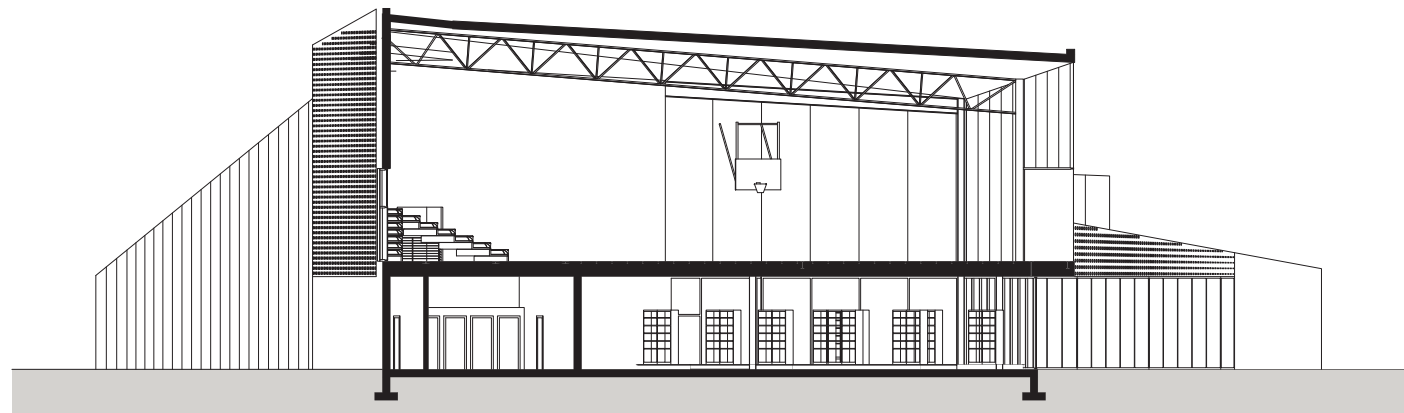




section aa



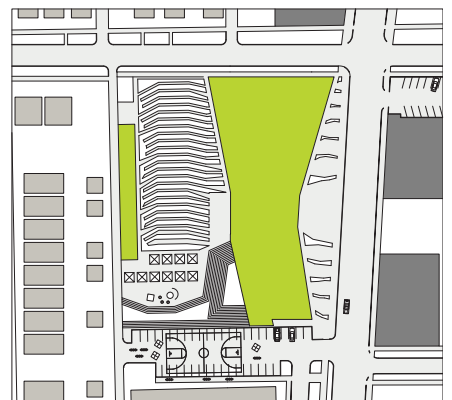
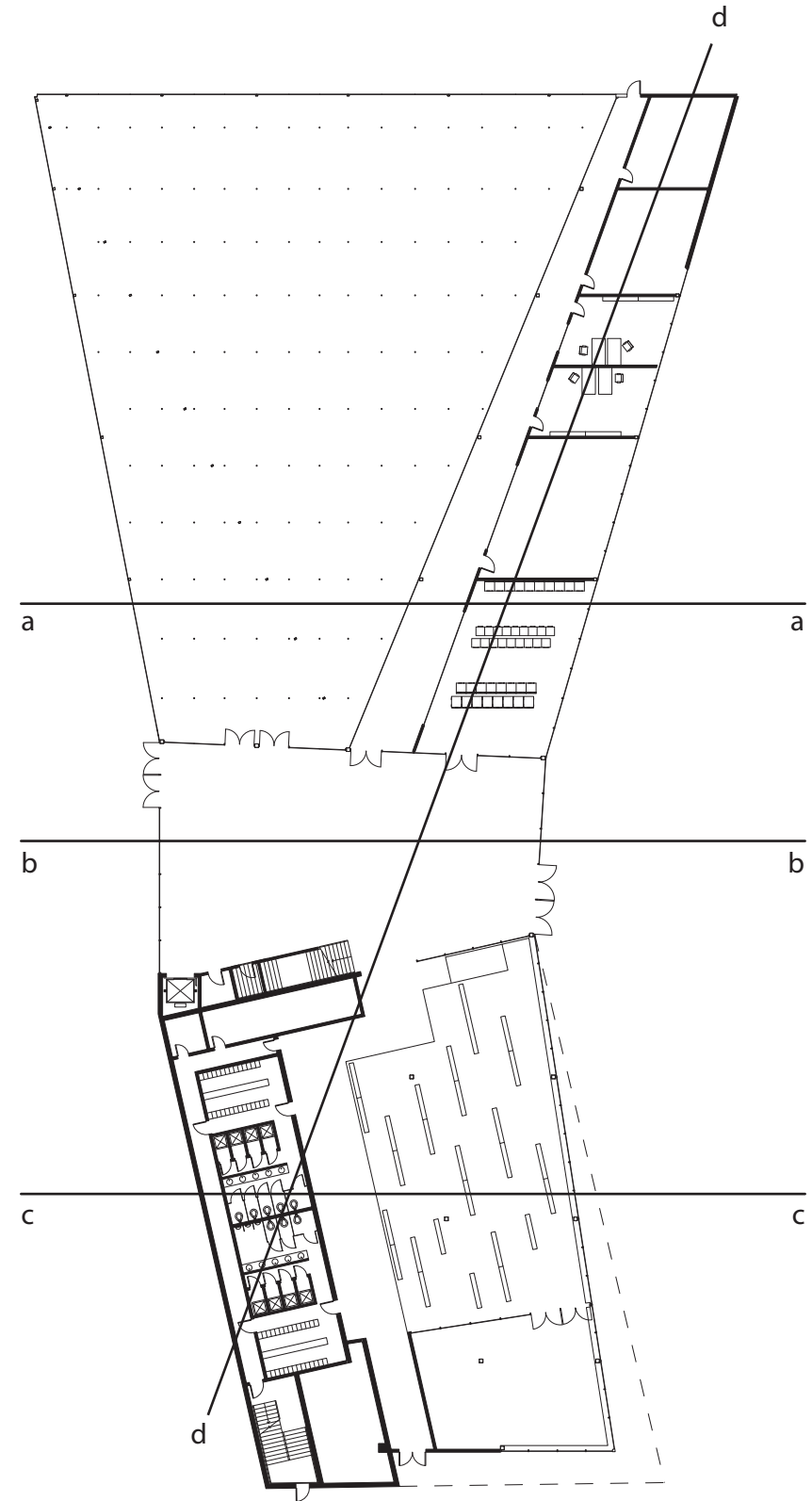
section bb



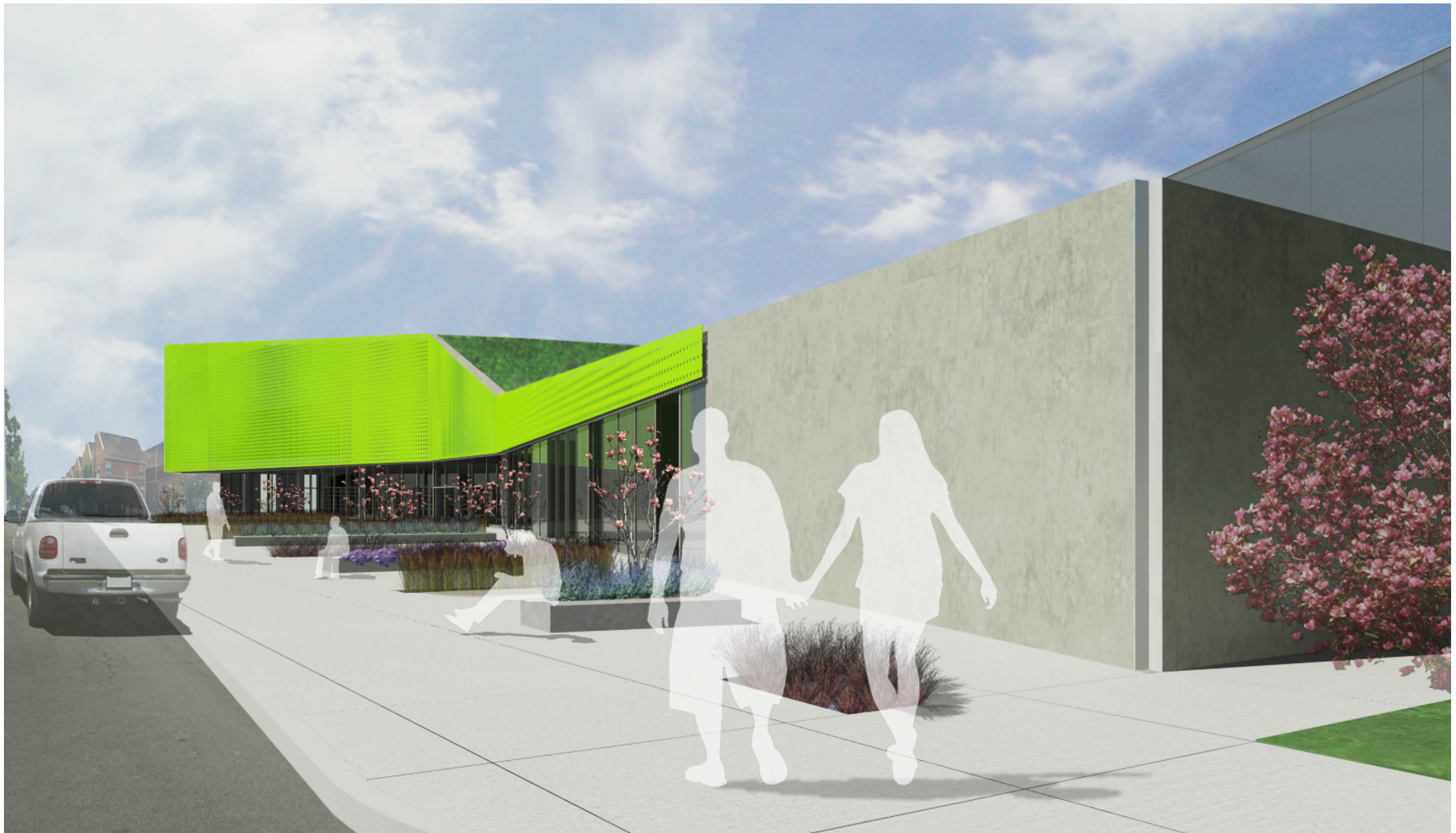
section cc



section dd

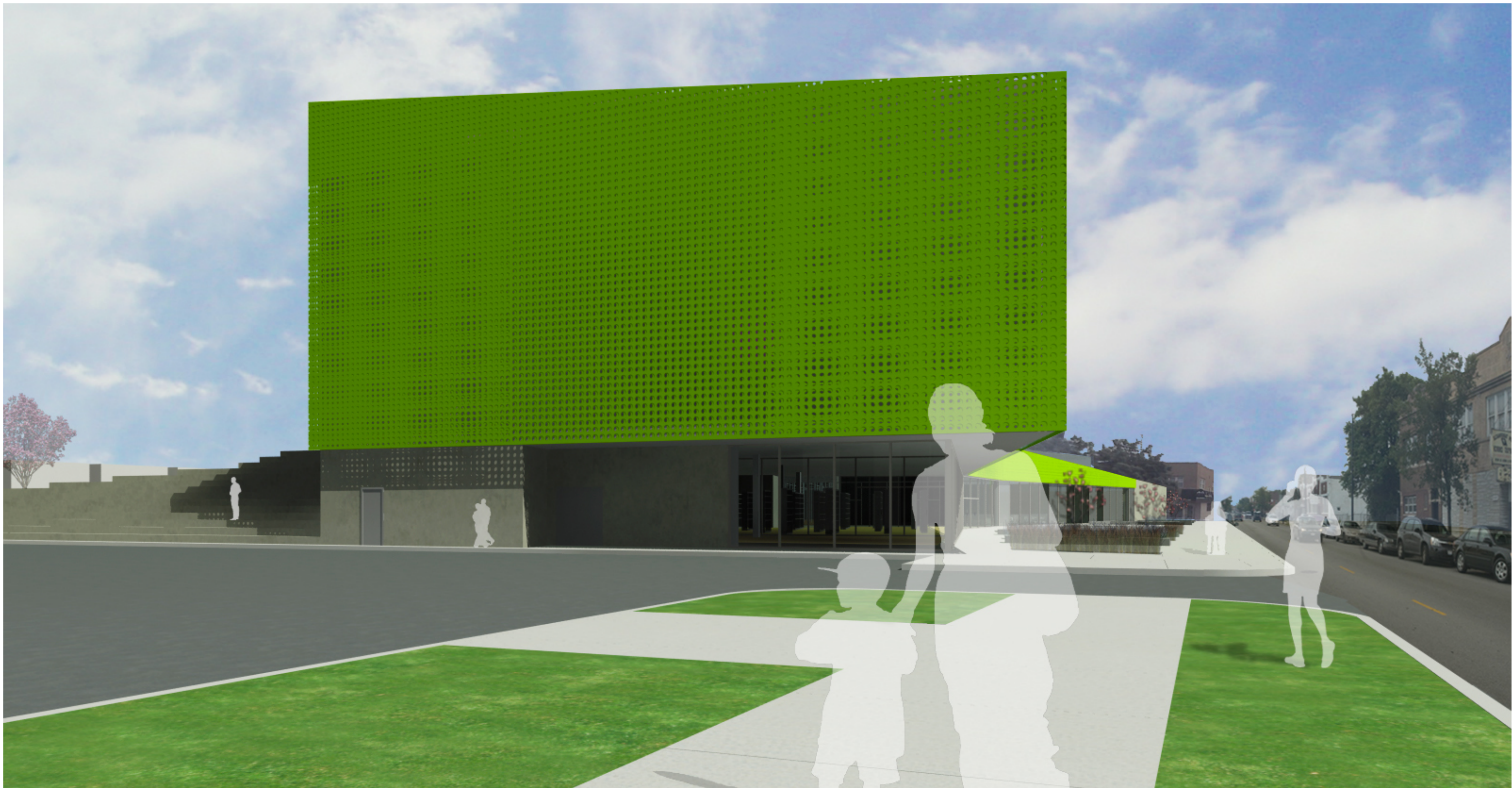






the north and south ends of the building angle east from the central core to create a public plaza and draw people to the main entrance of the facility while the elongated form engages michigan ave. along the full length of the site, serving as an inherent barrier to the production area behind the facility. the rhythm of interior and exterior fenestration, which becomes more transparent as the building's program transitions from private to public, gives passers-by direct views through the building to the greenhouse and agricultural plots. the angled greenroof is treated as a fifth facade, which slopes from it's peak of 55' on the southwest corner to 12' feet on the northeast corner, enabling the facility to address the disparate scale of existing buildings to the north and south of the sight. the angled form also provides pedestrians and vehicles approaching from the north views of the sedum plantings. potential stormwater runoff from the greenroof drains off the northeast corner of the building and is filtered through a series of constructed wetlands in the public plaza. the east elevation of the greenhouse rises above the main facility, giving it presence along michigan ave, indicating the agricultural nature of the facility.





the adaptable recreation facility cantilevers over the ground floor on the southeast corner, offsetting the volume and creating diffuse light for the library and children's library on the ground floor. although the layered facade appears opaque during the day, the perforated metal screen provides transparency when backlit at night, creating a visual connection between pedestrian and vehicular traffic and the recreational activities occurring within. passers-by on michigan ave. also have direct views to the terraced commons extending off the southwest corner of the building. the terraces are multifunctional, serving as a makeshift playground, seating for the additional playgrounds and farmer's markets immediately north and south, outdoor educational space for seminars and hands-on training, and egress from the second floor recreational facility. existing hardtop from the vacant sight is dug up and re-used as aggregate for the terraces, while the continuity in materiality from the building to the amphitheater unifies the elements.



commons

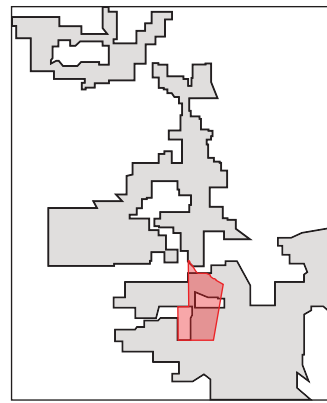
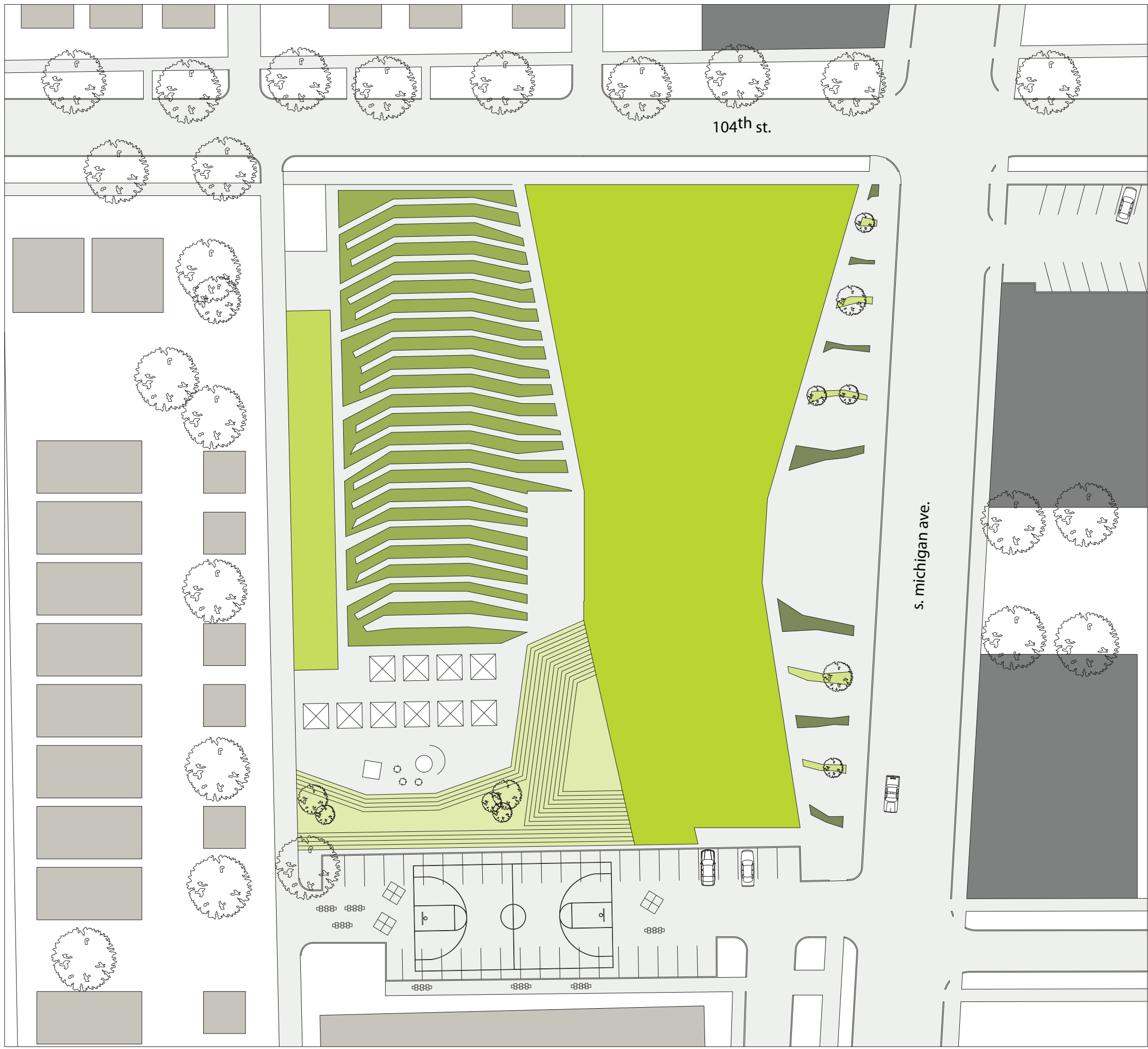
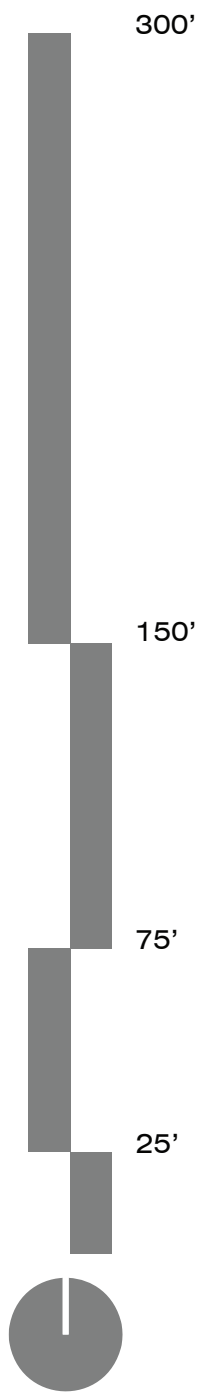
gardens

hoop house

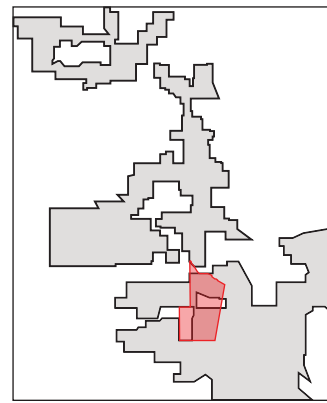
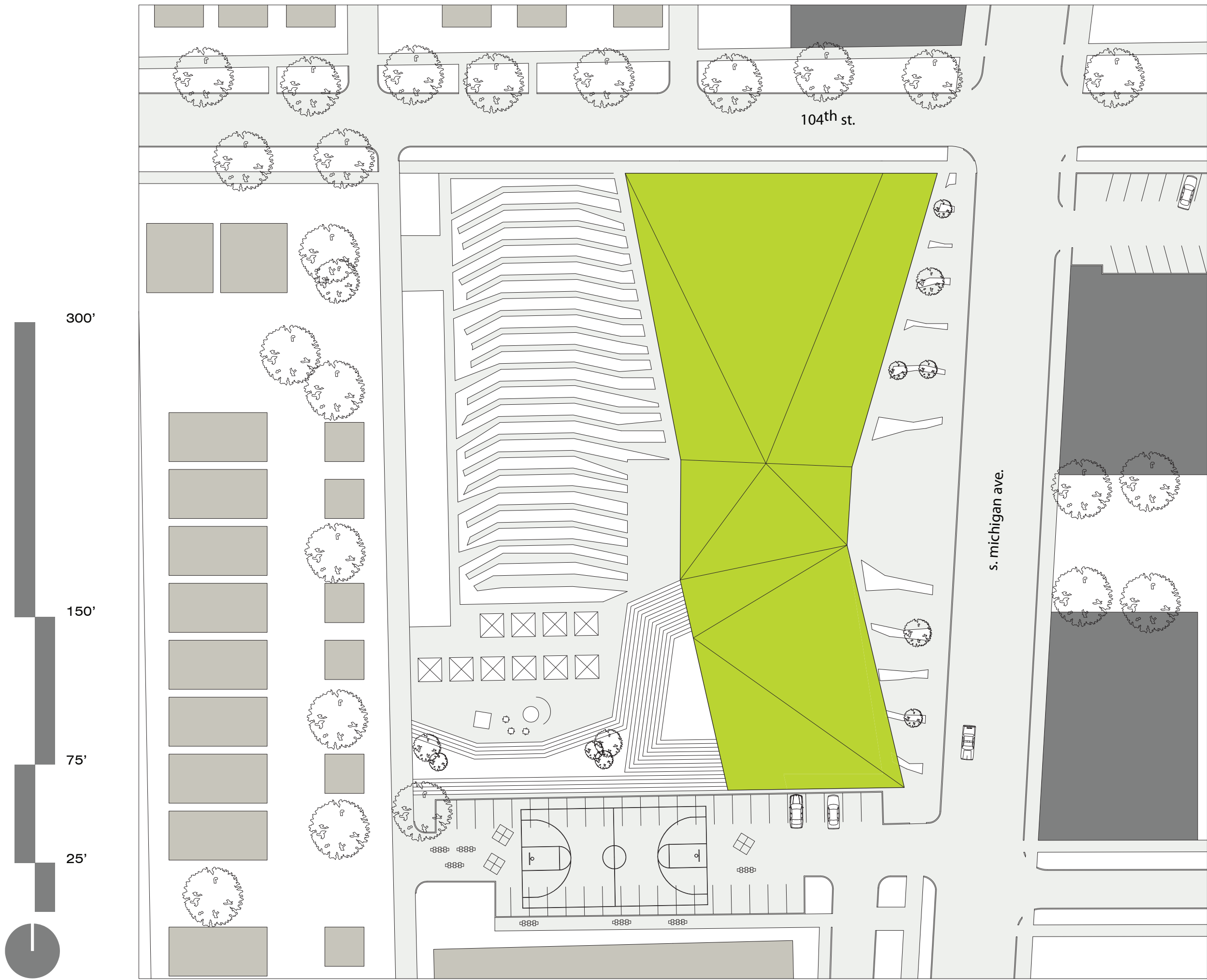
footprint

crops

wetlands

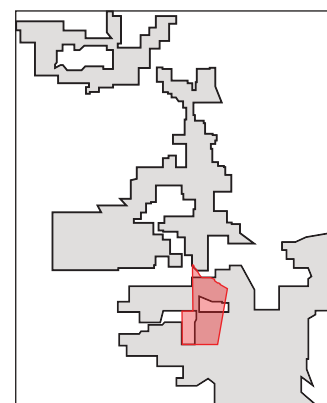
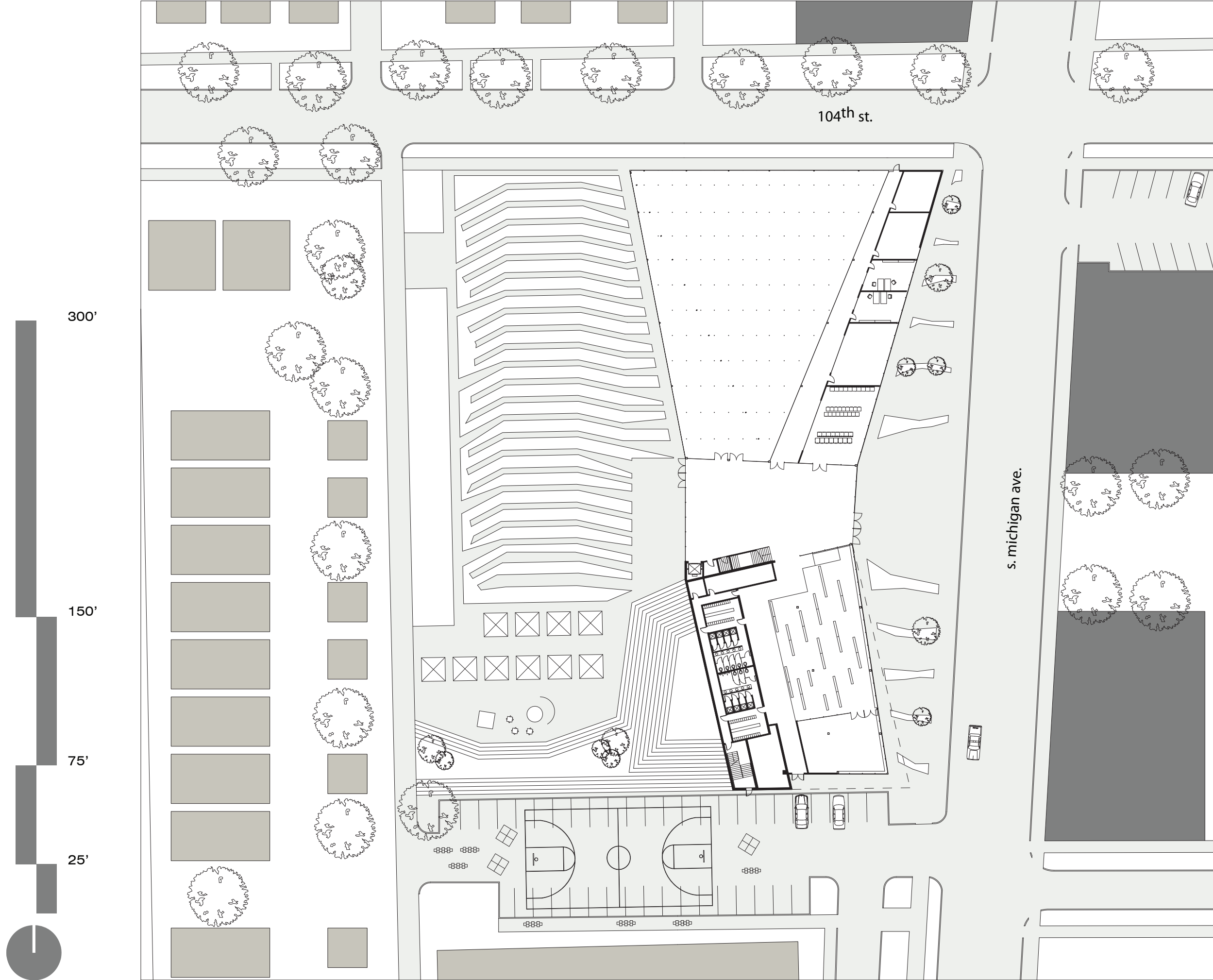


# roofplan





# floorplan

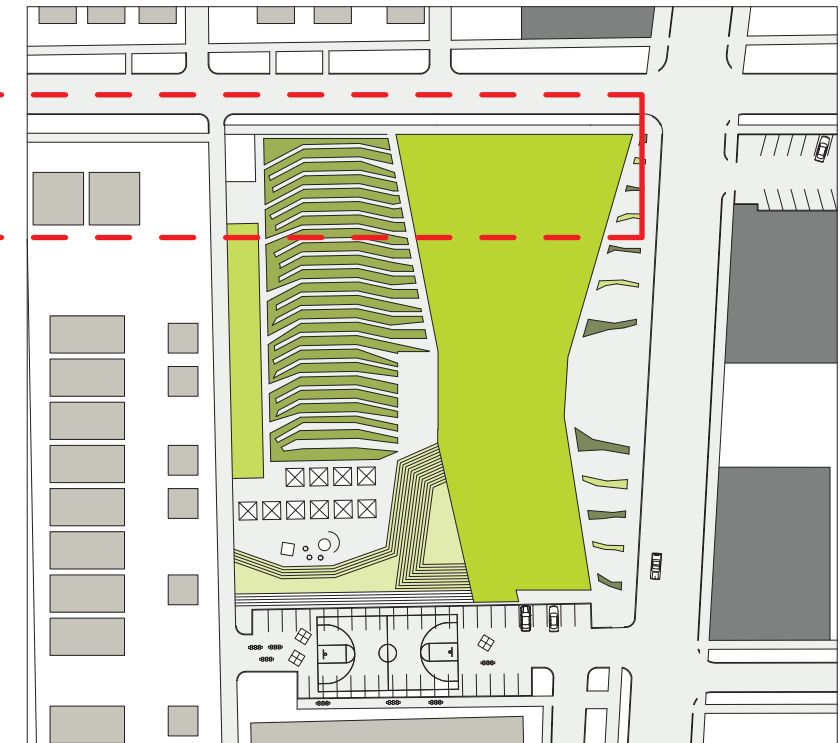
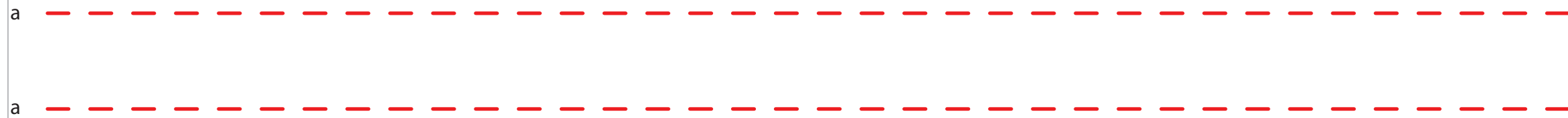




# site section aa

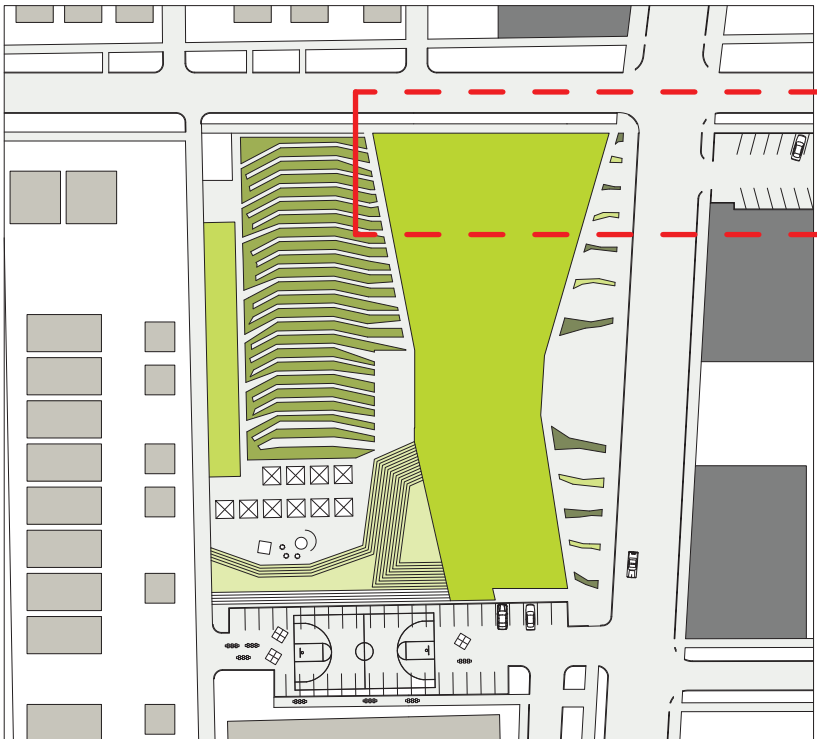
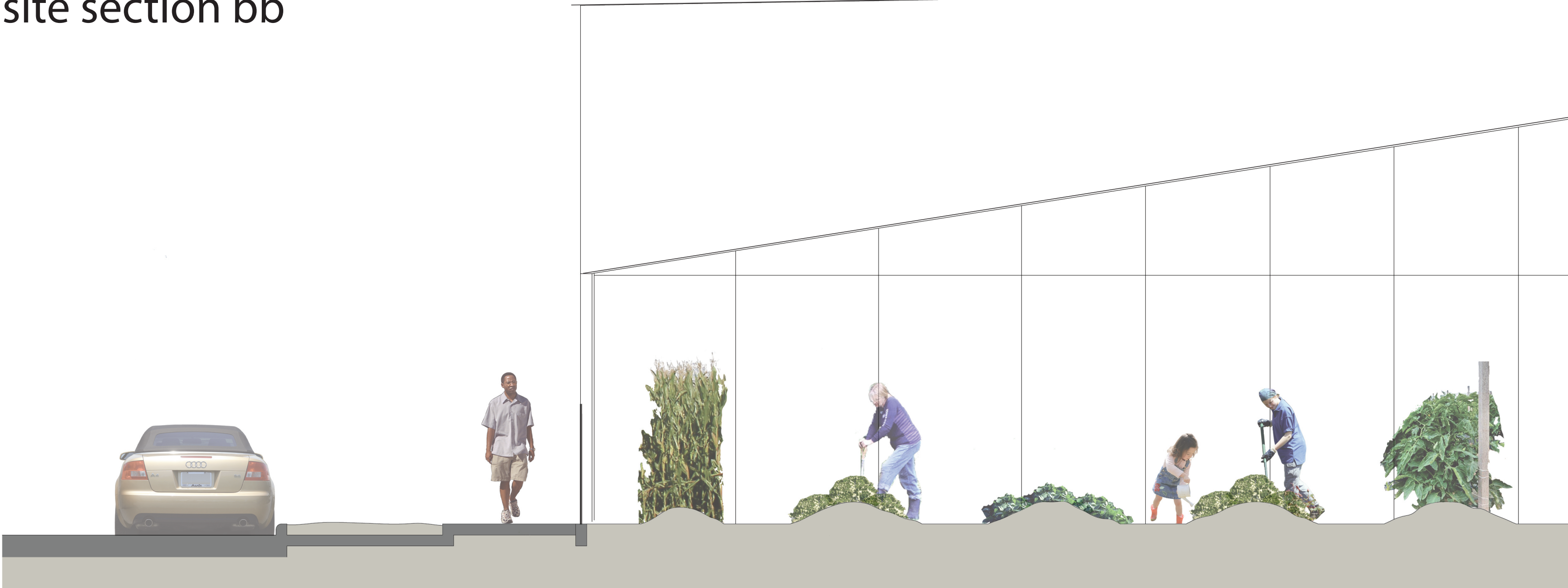


site section aa



the site to the east of the building serves as a public plaza along michigan ave. planting beds alternate between submerged constructed wetlands, which filter any stormwater runoff from the green roof, and raised plantings featuring native plants and small trees. the planting beds are spaced such that they provide a pedestrian scale to the large plaza while allowing for congregation of the community and large public events such as farmer's markets. the shape of the beds is derived from the agricultural plots to the west of the building, creating a dialogue between the public plaza in front of the building and the semi-public farm.

# site section bb



site section bb

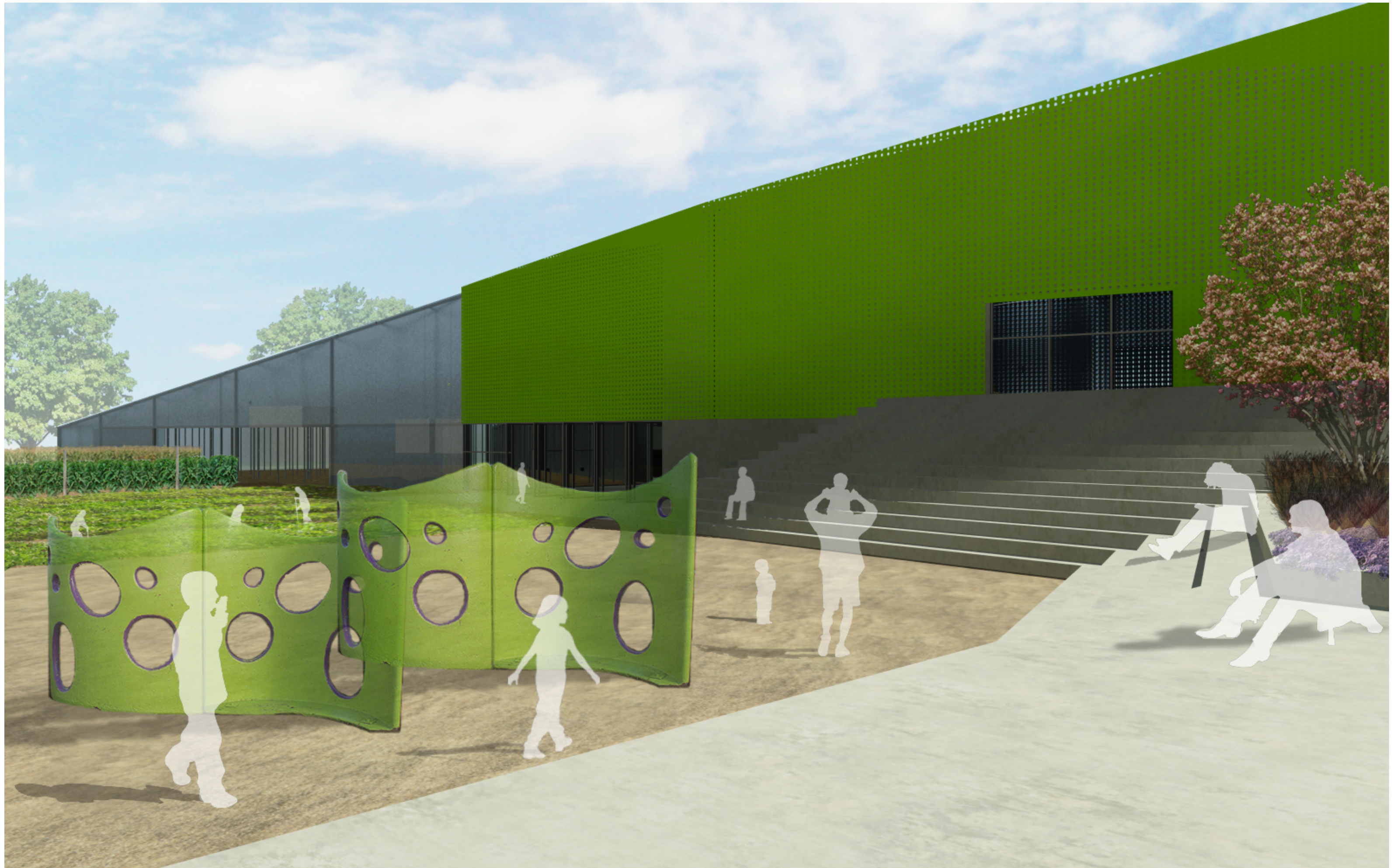
b  
b

the site to the west of the building contains the exterior agricultural plots. while the raised nature of the beds represent standard agriculture practices, the bent design is a diversion from the typical rectilinear layout of urban agriculture which seeks to maintain the utility of those formations while creating a site specific solution that relates to the facility itself. the widths of the paths between the plots vary, widening between those closer to the central volume of the facility to accomodate larger crowds expected during hands-on education and facility tours. to the north and west, the site is bounded by a fence similar to the perforated metal screen on the building's facade. perforations in the fence are smaller and less dense along the bottom to mitigate infiltration of rodents, and increase in size and frequency vertically along the fence to facilitate the desired visual connection between interior and exterior.



















# growing power, inc.

## location:

milwaukee, wisconsin, usa

## size:

1.6 acres, as well as auxiliary space at a separate location

## date:

1993

## type:

nonprofit organization

## concept:

growing power, inc. is the only operable farm within the city limits of milwaukee. it is a national nonprofit organization and land trust supporting the development and sustainability of community-based food systems, farmers markets, community gardens, school-based gardening and agricultural projects. it provides training and technical assistance in sustainable agricultural techniques that can be implemented in urban and rural settings.

"if people can grow safe, healthy, affordable food, if they have access to land and clean water, this is transformative on every level in a community. i believe we cannot have healthy communities without a healthy food system." ~ will allen

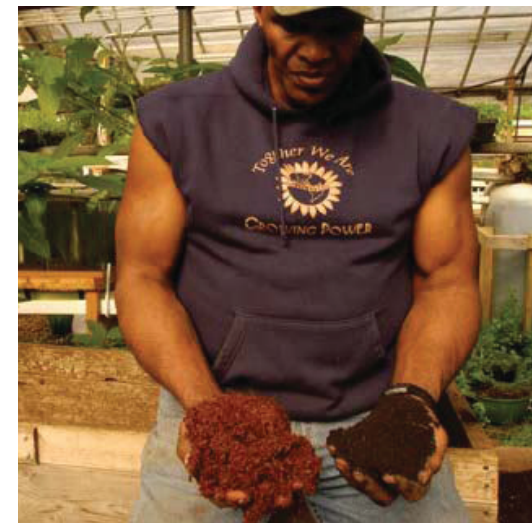
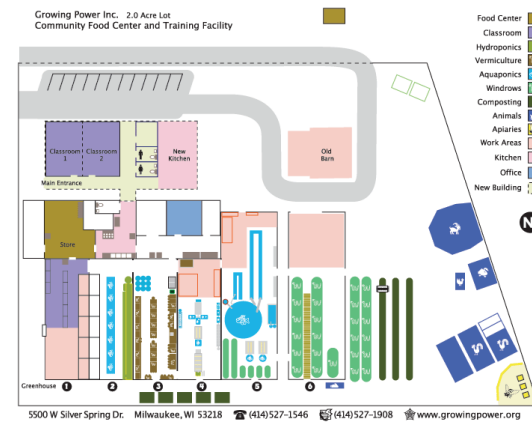
## purpose:

"our goal is a simple one: to grow food, to grow minds, and to grow community. growing power began with a farmer, a plot of land, and a core group dedicated to young people. today, our love of the land and our dedication to sharing knowledge is changing lives."

## facilities:

growing power is located on approximately 1.6 acres of land. the farm currently has six greenhouses which grow 12,000 pots of herbs salad mix, beet greens, and wide variety of other leafy vegetables and sprouts. the greenhouses also house the farms aquaponic systems, which produce tens of thousands of tilapia and yellow perch while greatly increasing plant production through a semi-closed loop system, and over 50 bins of red wiggler worms used for vermiculture. in addition to the greenhouses, the farm features:

- an apiary with 5 beehives housing 300,000 bees
- three poultry hoop houses with chickens and ducks
- outdoor pens for livestock including goats, rabbits and turkeys
- an anaerobic digester to produce energy from the farm's food waste
- a retail store to sell produce and meat from growing power and surrounding farms, worm castings and compost
- a kitchen for processing the farms production
- offices for employees and volunteer staff





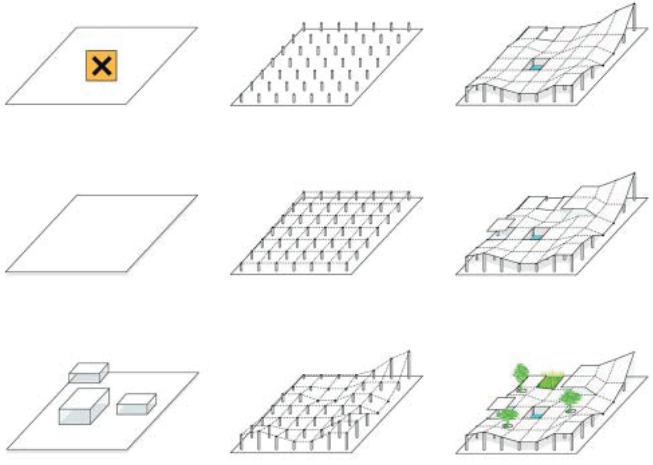
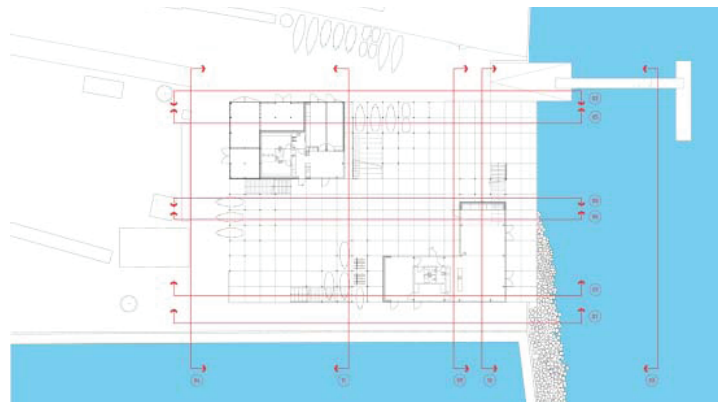
# maritime youth house

architect:  
plot; jds + big  
location:  
sundby harbour, copenhagen, dk  
size:  
2000 sq. m  
date built:  
06.2004  
budget:  
1.170.00 € (\$1.728.725)  
client:  
kvarterløft governmental city renewal project

concept:  
the maritime youth house was developed at the request of local citizens, and originally arose as part of the renovation of the area around holmbladsgade at the end of the 1990s. the locals wished for a center that could house leisure activities for children from the surrounding are, as well as accommodate the sundby sailing clubs youth section.

purpose:  
"the maritime youth house will strengthen the cultural and physical possibilities for youth in the neighborhood around holmbladsgade but can also be used by schools and youth clubs in the municipality of copenhagen for maritime activities. the maritime youth house is a center open to all, with an organized structure which facilitates many types of clientele. it is a vibrant and alive 'house for youth' with a broad spectrum of maritime activities and at the same time a center which holds arrangements, lectures and exhibitions on water related themes."

facilities:  
two clients with different programmatic desires had to share the facilities: a sail club and a youth house. whereas the youth house wanted outdoor space for children to play, the sail club needed most of the site to store boats. the building is the literal result of these two opposing demands: the undulating deck allows for boat storage underneath, while letting the children play above. the interior of the building is simple, with one defining characteristic: the front house, which is serves as a common room where most of the daily activities take place, as well as a workshop. the spaces are differentiated in the treatment of the concrete floor. hard surfaces on the interior contrast the wooden exterior; an inversion of typical treatments. this inversion reflects the emphasis placed on the outdoor activities of the youth house.





# gary comer youth center

## architect:

john ronan architects

## location:

chicago, illinois, usa

## size:

42,000 sf (8,600 sf rooftop garden)

## date built:

2006

## client:

comer science and education foundation

## type:

nonprofit organization

## concept:

the gary comer youth center is located on chicago's south side and provides an environment for area youths to spend their after-school hours. it supports the activities of the south shore drill team as well as a wide range of educational and recreational programs. the mission is to provide support to help students graduate from high school and prepare for college and careers. in addition, the youth center offers numerous activities throughout the year which are open to the broader public.

## purpose:

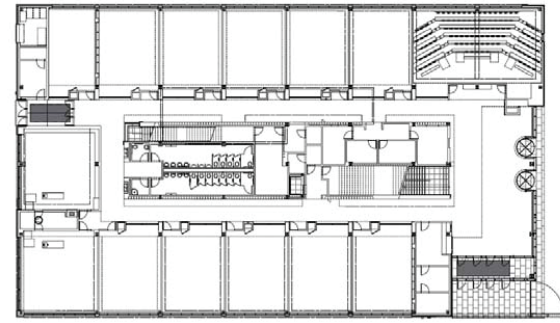
"the youth center is dedicated to providing a greater opportunity for young people in this neighborhood to practice, to learn, to study, and to sharpen their skills and intellect. this youth center is for the children. may they use it well." ~ gary comer

## facilities:

the center has created an environment where young people are offered the opportunity to participate in five primary program routes:

- academics
- arts and culture
- civic engagement
- college and career preparation
- health and fitness

a highlight of the center is the 8,600 sf rooftop garden where youth and community members grow a wide range of fruits and vegetables which are used in the center's cooking classes and meal preparation to help feed over 175 students. the building's main space is a programmatically adaptable gymnasium that converts to a 600 seat performance theater. the facility is used daily as practice space for the drill team, and converts to theater use via a motorized telescoping seating system. wrapping around this central space are programmatically adaptable bars that support a variety of educational and recreational programs including an art room, computer lab, dance room, classrooms, offices and exhibition spaces, among others.



<http://www.gychome.org>  
<http://www.hoerschaudt.com/rooftop-garden/gary-comer-youth-center.php#>  
<http://www.thelocalbeet.com/2009/07/22/visiting-the-gary-comer-youth-center%E2%80%99s-rooftop-garden/>  
[http://www.gardenabcs.com/uploads/GCYC\\_Rooftop\\_Garden\\_Case\\_Study.pdf](http://www.gardenabcs.com/uploads/GCYC_Rooftop_Garden_Case_Study.pdf)  
[http://www.jarch.com/#/projects/institutional/gary\\_comer\\_youth\\_center/story](http://www.jarch.com/#/projects/institutional/gary_comer_youth_center/story)  
<http://www.greenroofs.com/projects/pview.php?id=998>  
<http://featuresblogs.chicagotribune.com/theskylines/2009/01/gary-comer-yo-1.html>  
[http://www.e-architect.co.uk/chicago/gary\\_comer\\_youth\\_center.htm](http://www.e-architect.co.uk/chicago/gary_comer_youth_center.htm)



# windy city harvest

location: chicago, illinois, usa  
date built: 2008  
type: nonprofit organization

con cept: the windy city harvest urban agriculture pilot certification program is funded by the chicago botanic garden and accredited through chicago city colleges. the program provides education in sustainable horticulture and urban agriculture. it helps create job opportunities by training participants to cultivate organic produce which is then sold at retail outlets and made accessible to local residents of north lawndale and west side neighborhoods of chicago

purpose: "the vision for windy city harvest is to establish a viable social enterprise that creates training and employment opportunities in an economy that is: 1) putting increasing emphasis on local production; 2) seeking remedies for community food insecurity and poor health; and 3) in need of models that catalyze sustainable growth and development in underserved communities.

facilities: windy city harvest participants study at the city colleges of chicago arturo velasquez institute at 28th st. and western ave, among other locations. the locations provide greenhouses, classrooms and space for outdoor plant production. all instructors are trained and certified by the chicago botanic garden staff. in addition, workshops are offered in sustainable vegetable production through monthly courses such as: crop planning, seed starting, container gardens, pest control, harvest techniques and production planning. in june, 2009, the chicago botanic garden and cook county boot camp (ccbc) partnered to create a three-quarter (3/4) acre farm within the ccbc compound. the farm is one of several educational programs provided to inmates during their incarceration. participants learn how to grow and maintain organic vegetables which are used in the mess hall and donated to local food pantries.







# public farm 1 (@ p.s.1)

architect:

work architecture company

location:

long island city, new york, usa

size:

1/4 acre (10,890 sf)

date built:

2008

budget:

\$70,000

client:

moma/p.s.1 young architecture program

type:

nonprofit art institution

concept:

public farm 1 (pf 1) is the winning entry for the 2008 moma/ps1 young architecture program. built in the p.s.1 contemporary art center's courtyards as a backdrop to its warm up! music series, the temporary installation introduced a functioning urban farm in the form of a folded plane made of structural cardboard tubes.

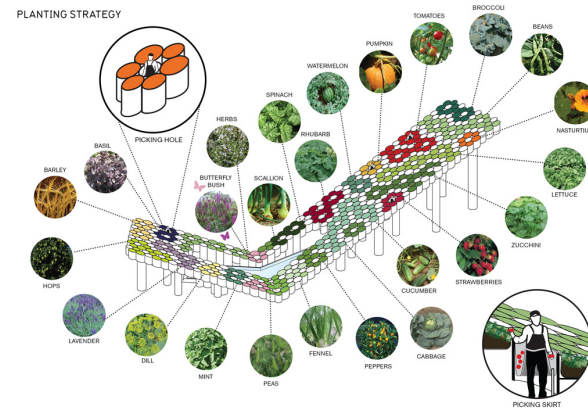
purpose:

public farm 1 functioned as an urban farm while providing an outdoor social space during the summer. "p.f.1's intent is to educate thousands of visitors on sustainable urban farming through the unique medium of contemporary architecture."

facilities:

p.f.1 combines playful programs with educational ones, creating a sense of community around the shared experience of urban farming. bringing sustainable construction together with sustainable agriculture, p.f.1 is built entirely from recyclable materials. it is also 100% solar powered and utilizes rain water collection for irrigation. the form of the structure is a folded plane made of cardboard tubes designed which serve as planters for vegetables, herbs and fruit. while most tubes are elevated to create a shade canopy, others extend to the ground and function as columns which house different programmatic elements including seating, sound environments, mobile phone charging station and a juice bar.

the produce and eggs produced were used in the restaurant at p.s.1, as well as sold at the green market held in front of the museum each saturday throughout the summer of 2008. the project was feasible through the use of gaia soil. developed at the gaia institute, it is made in part from recycled styrofoam, and therefore lighter than typical soil. the plantings were irrigated by underground pipes which directed water to the roots from the rainwater cistern.



<http://www.publicfarm1.org>

<http://www.work.ac/>

<http://www.nytimes.com/2008/02/07/arts/design/07cour.html>

<http://www.treehugger.com/files/2008/06/public-farm-1-now-open-for-picking-at-ps1.php>



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