Ujimaa Community Garden
Green Infrastructure Information Sheet

Location: 298-300 Morris Avenue Newark, NJ 07103	**Site Use:** Community
	Watershed Name: Lower Passaic River
Ward: Central	**Targeted Pollutants:** total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS) in surface runoff
Green Infrastructure Description: Rain garden, tree plantings, cistern	**Estimated Stormwater Captured and Treated Per Year:** Cistern & rain garden: 51, 000 gallons
Implementation Date: 11/6/15 **Green Infrastructure System:** Cistern (800 gallons) & Rain Garden (500 sq. ft.) **Drainage Area:** Cistern ~ 2,500 sq. ft. (rooftop) Rain Garden ~ 3,375 sq. ft. (rooftop and parking lot)	
Funding Sources: Newark Green Infrastructure 319 (h) Phase 2	
Partners/Stakeholders: Rutgers Cooperative Extension Water Resources Program, Rutgers Landscape Architecture Department, It Takes a Village, Inc., and Newark DIG	
Appendix A: Project Completed – Photograph of green infrastructure practice **Appendix B:** Ujimaa Garden Project Scope	

298-300 Morris Avenue, Newark, NJ

Ujimaa Community Garden

Appendix A:

Completed Project Photograph

November 6, 2015

Project Completed November 6, 2015

298- 300 Morris Avenue, Newark, NJ

Ujimaa Community Garden

Appendix B:

Ujimaa Garden Project Scope

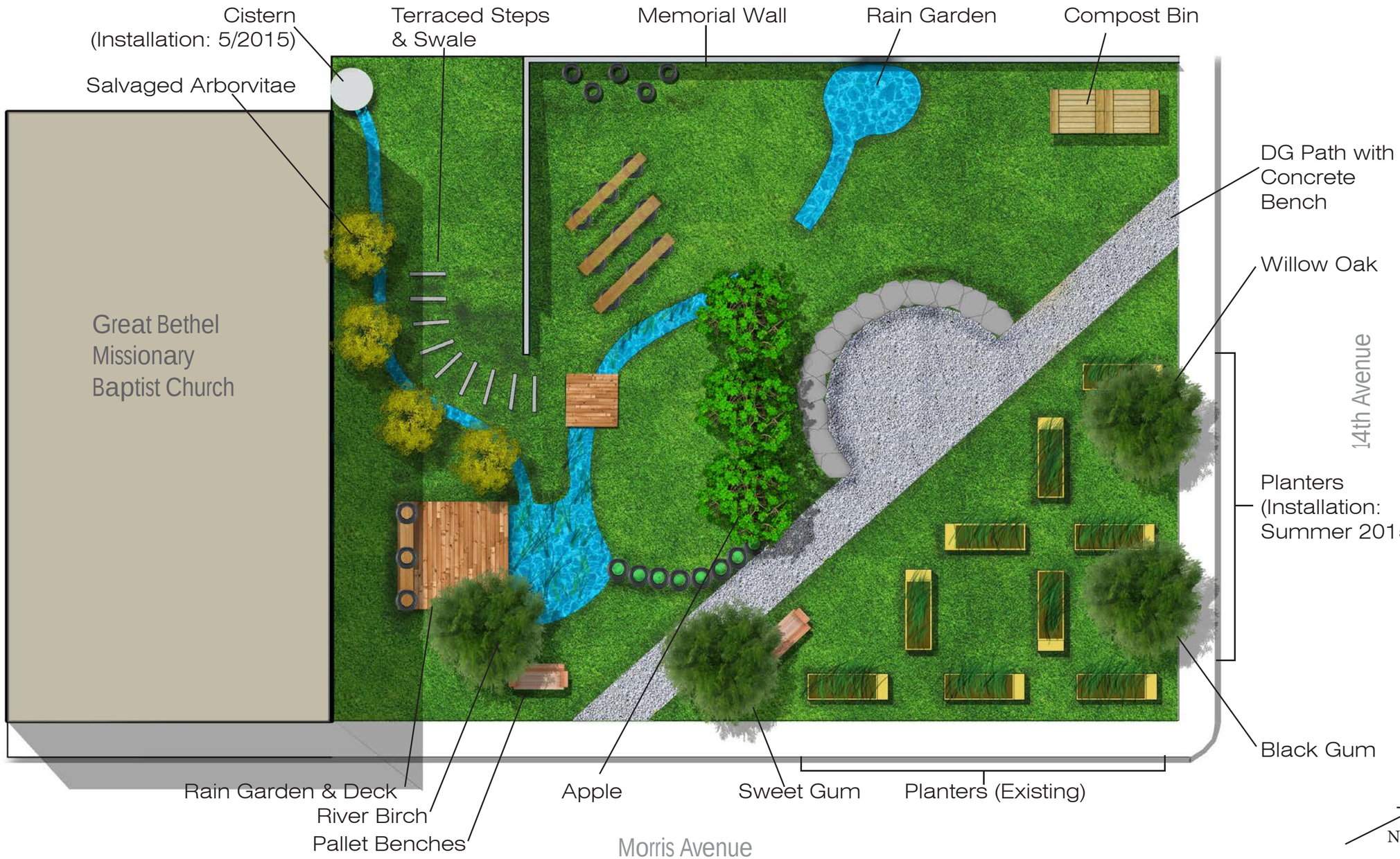
Newark Design/Build in Ujimaa Garden

Vacancy, Reuse, and Green Infrastructure for Environmental Justice

Ujima is one of the seven principles of Kwanzaa, meaning collective work and responsibility. In the spirit of ujima, our studio worked together with the community to redesign and build one of the few green spaces in this Central Ward neighborhood in Newark, New Jersey.

Ujimaa Garden Construction: As-Built

The community envisions Ujimaa Garden as a neighborhood oasis for social space, healthy food production, and green infrastructure. We worked with the community to design elements that layer these uses in the small site. We constructed two rain gardens, connecting swales, a deck over the rain garden, terraced steps up a steep slope, planting beds, a central social space with a concrete bench, additional seating, a structure for compost, and signs for the planters.



Rain Garden Plant List:
Red Columbine
Broom Sedge
Purple Coneflower
Blueflag Iris
Soft Rush
Blue Lobelia
Black-eyed Susan

Analysis: “Garden Sheds”

Thinking of community gardens as layered functional spaces that create measurable catchment areas in the surrounding neighborhoods, we used five garden functions to organize our analysis: water, food, soil, building materials, and social space. For each category, we analyzed at the site, neighborhood, and city scales.

Ujimaa Garden

Water Shed:

The site’s micro watershed - the spaces where runoff was coming directly to the site, including two adjacent streets and sidewalks, roofs, and a church parking lot - included 14,000 ft^2 of impervious surface. The more water we can capture in the upland areas of Newark, the less frequent CSO discharges will be in the lower areas.

Food Shed:

Ujimaa Garden is about 1/3 of an acre. If half the lot were used for food production, it could produce about 1,500 pounds of produce per growing season. This could supplement the diets of about 15 families for one season.

The neighborhood has many fast food restaurants and corner stores, but no nearby grocery stores to buy fresh produce.

Soil Shed:

The soil/compost shed includes a minimum number of people to create food scraps as well as the maximum number of publicly accessible trees in order to collect leaf litter. Ujimaa’s soil shed includes 766 trees, 5 acres of grass, and could yield 550 pounds of food waste per year.

Materials Shed:

We planned to source materials locally, primarily through salvaging at vacant lots in the area. The building materials shed focuses on vacant lots and commercial areas that are likely to have larger quantities of material to scrap or donate. Several auto shops and a Home Depot lie southwest of the site.

Social Shed:

Most residents adhere to the “4-block rule” and walk only short distances from their homes. Two wide, high traffic streets (Springfield Avenue and Jones Street) also create barriers to movement through the neighborhood. The closest park is over a mile away, much further than residents can safely walk.

Analysis: Vacant Lots

At the city scale, we looked at how Ujimaa Garden, a vacant lot until a few years ago, could be part of a larger network in the sewershed to mitigate the effects of stormwater in the city. This analysis is one example, applied to water, of how strategies developed at Ujimaa could be replicated to scale up the impact. The same strategy can apply to food, soil, building materials, and social spaces.

City of Newark

22 VACANT LOTS
WITHIN THE SEWER SHED

LEGEND

0 1500 3000 6000

N

UJIMAA GARDEN CAN CAPTURE
10,933 GALLONS FOR
A 1.25" RAIN EVENT

10,933 GALLONS

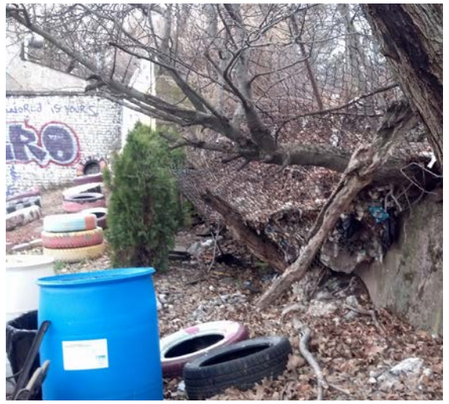
X 22 =

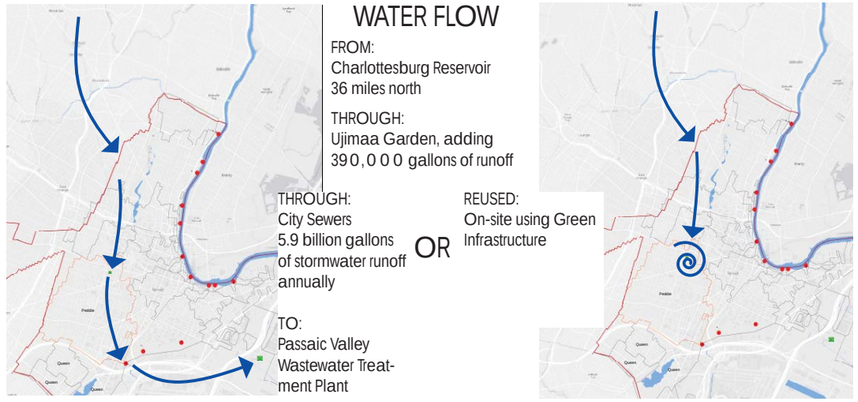
240,526 GALLONS CAPTURED

If green infrastructure projects were implemented on each of these lots we can potentially capture 240,526 gallons

Analysis: Water on the Site

Roof runoff from Greater Bethel currently pools behind the building (left). Runoff from the adjacent parking lot caused a fence and wall to collapse into the garden on the western edge (right). To mitigate, we calculated the runoff in order to scale green infrastructure elements.

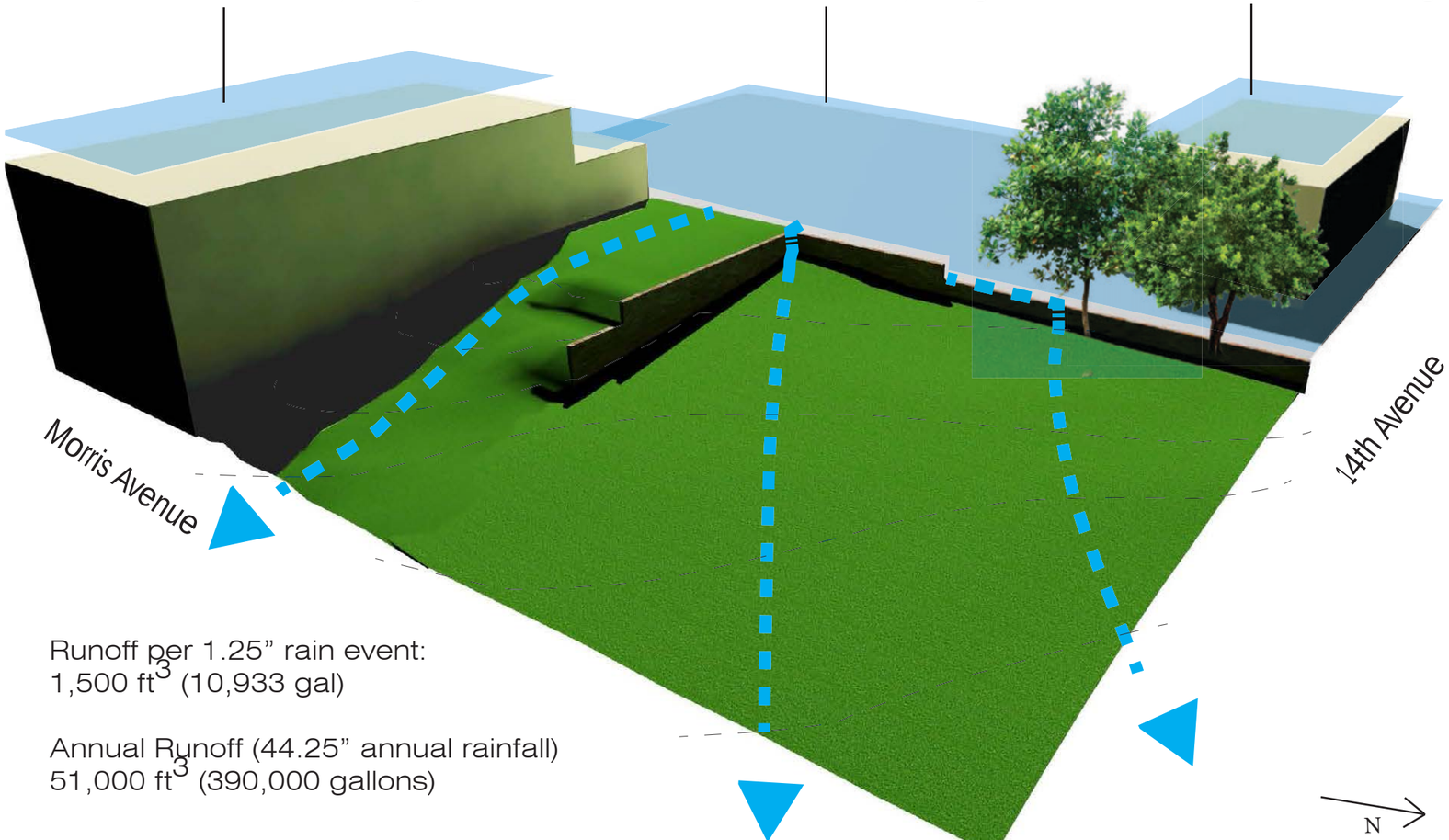




Greater Bethel Missionary Baptist Ch.
Area: 3,225 ft^2
Runoff/1.25” event: 2,300 gal

Parking Lot
Area: 8,200 ft^2
Runoff/1.25” event 5,250 gal

Shiloh Progressive Ch.
Area: 2,600 ft^2
Runoff/1.25” event: 1,900 gal

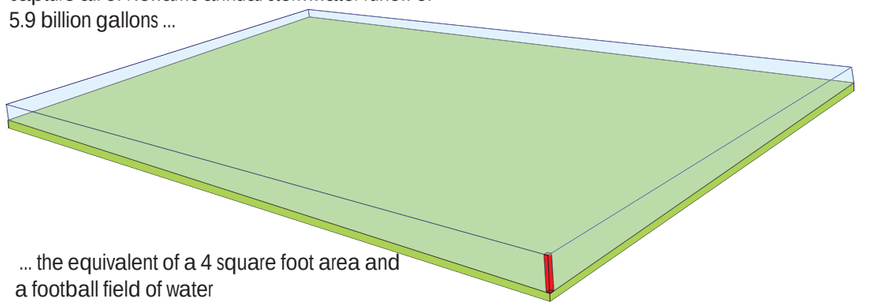


Runoff per 1.25” rain event:
1,500 ft^3 (10,933 gal)

Annual Runoff (44.25” annual rainfall)
51,000 ft^3 (390,000 gallons)

It would take over 15,000 Ujimaa Gardens to capture all of Newark’s annual stormwater runoff of 5.9 billion gallons ...

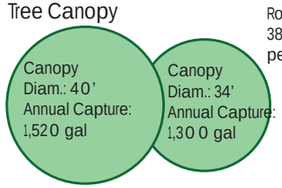
RUNOFF CAPTURE and the CITY



... the equivalent of a 4 square foot area and a football field of water

GREEN INFRASTRUCTURE

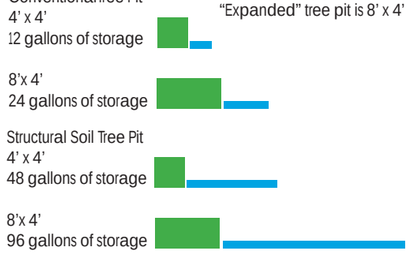
Tree Canopy



Rough estimate:
38 gallons annually
per canopy foot

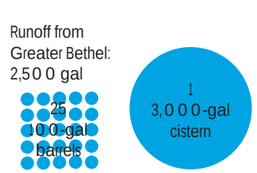
Tree Pits

New Jersey Tree Foundation:
Typically plants 4’ x 4’
“Expanded” tree pit is 8’ x 4’

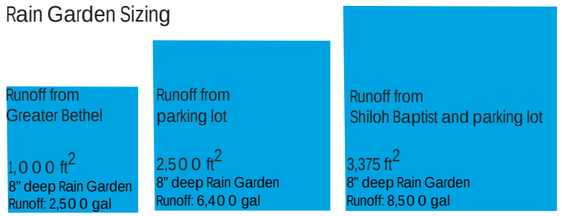


Rain Barrels

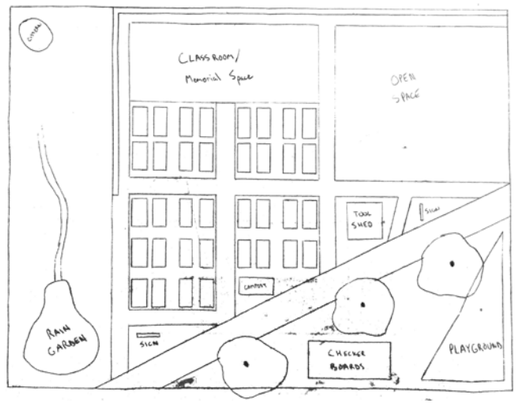
Rough estimate:
600 gallons per 1,000 ft^2 of roof for 1” of rainfall

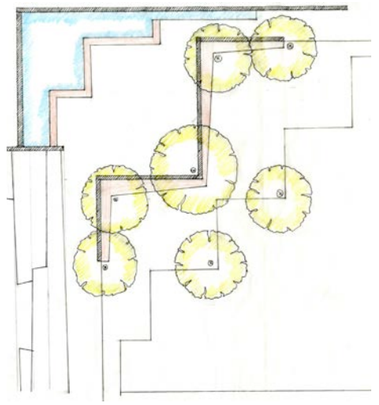


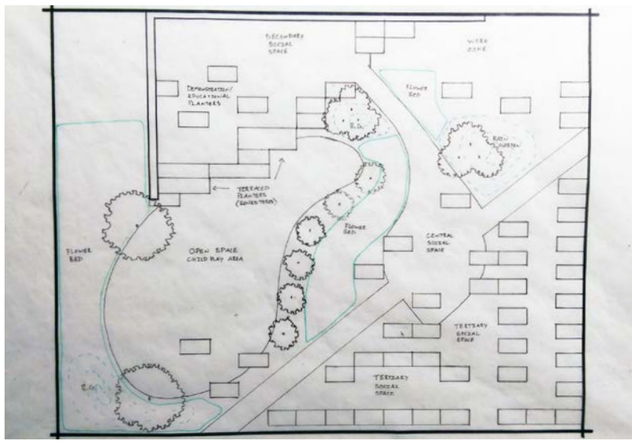
Rain Garden Sizing



Design: Preliminary Plans



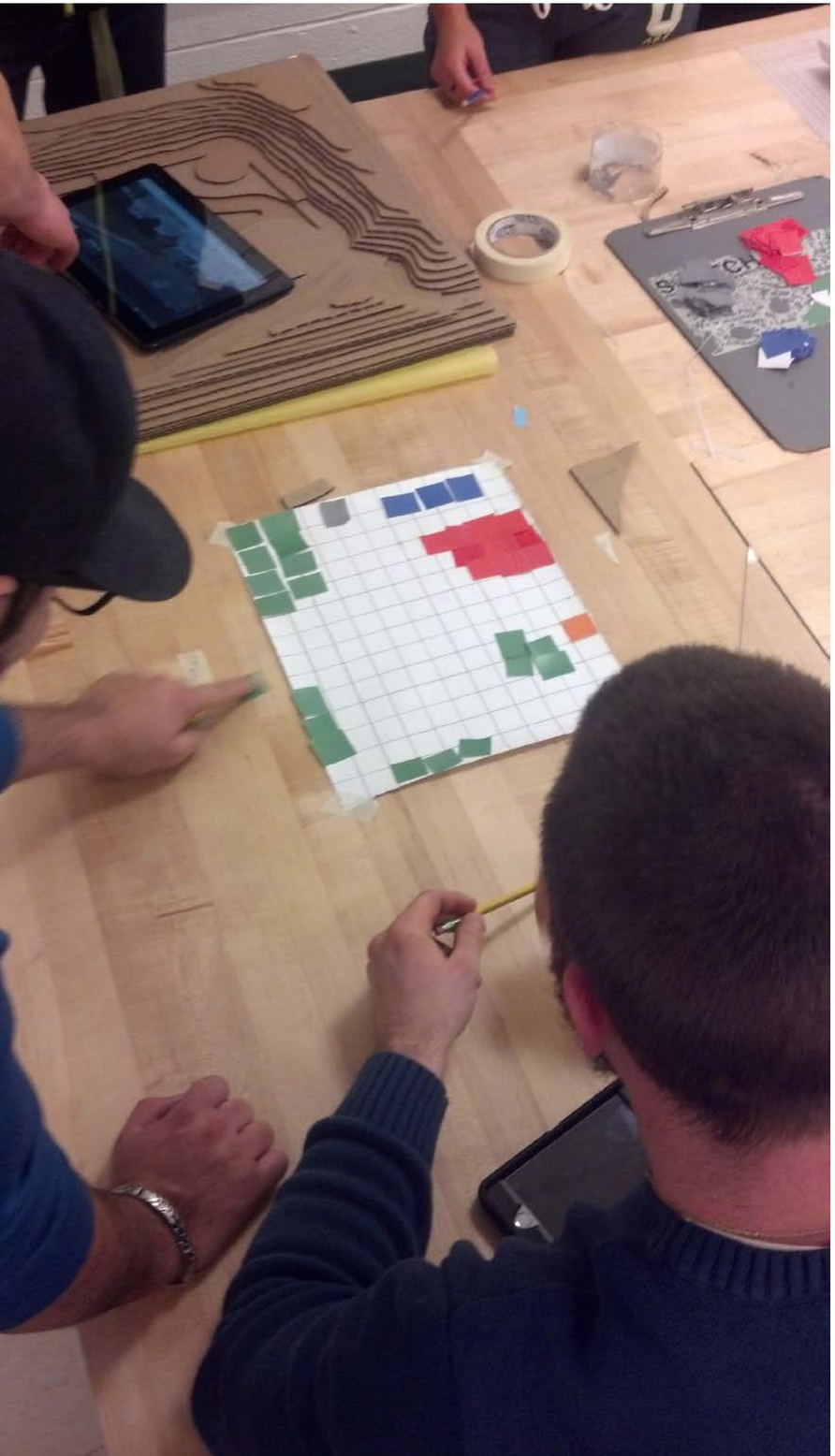


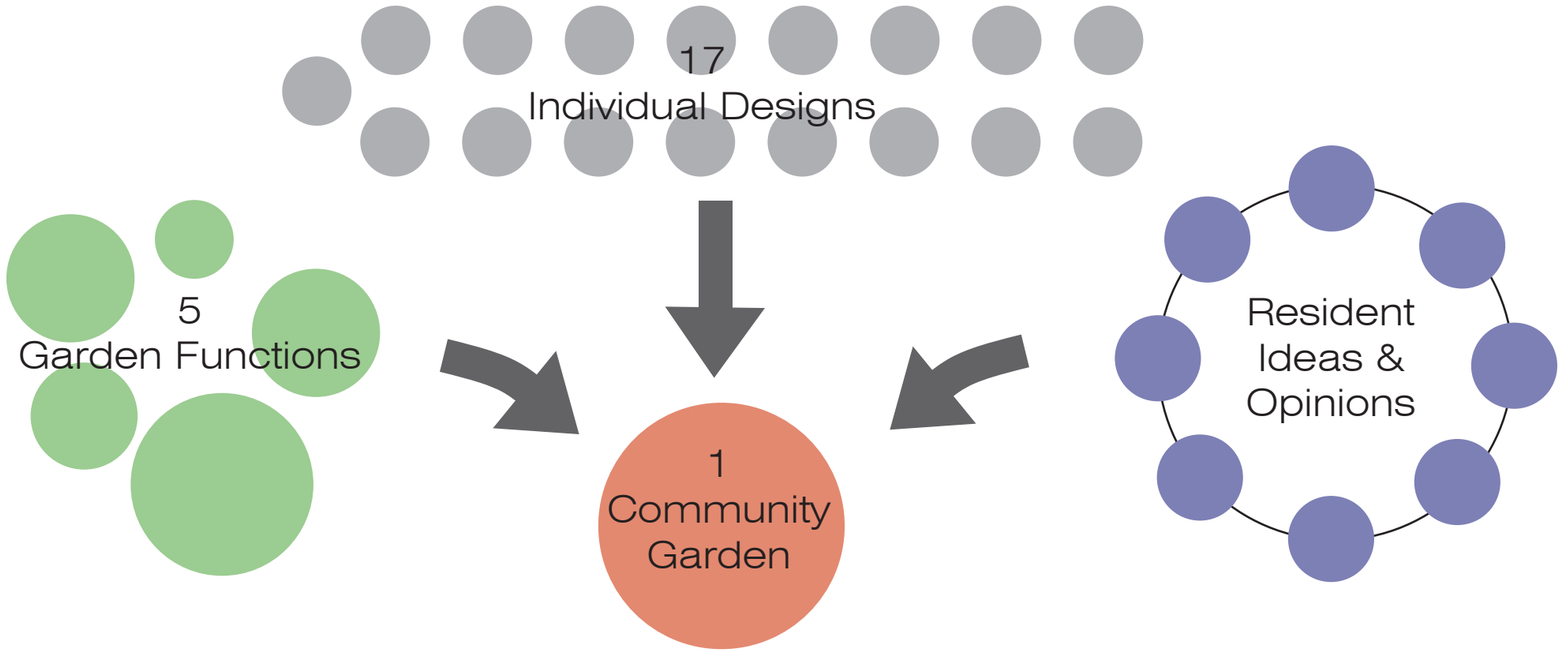


A series of meetings with our neighborhood partners taught us much more about the site than we could research on our own. Participants told us that they wanted the garden to provide a safe social space and to produce healthy food since so few options were nearby. Our client also wanted to use the site as a demonstration of green infrastructure.

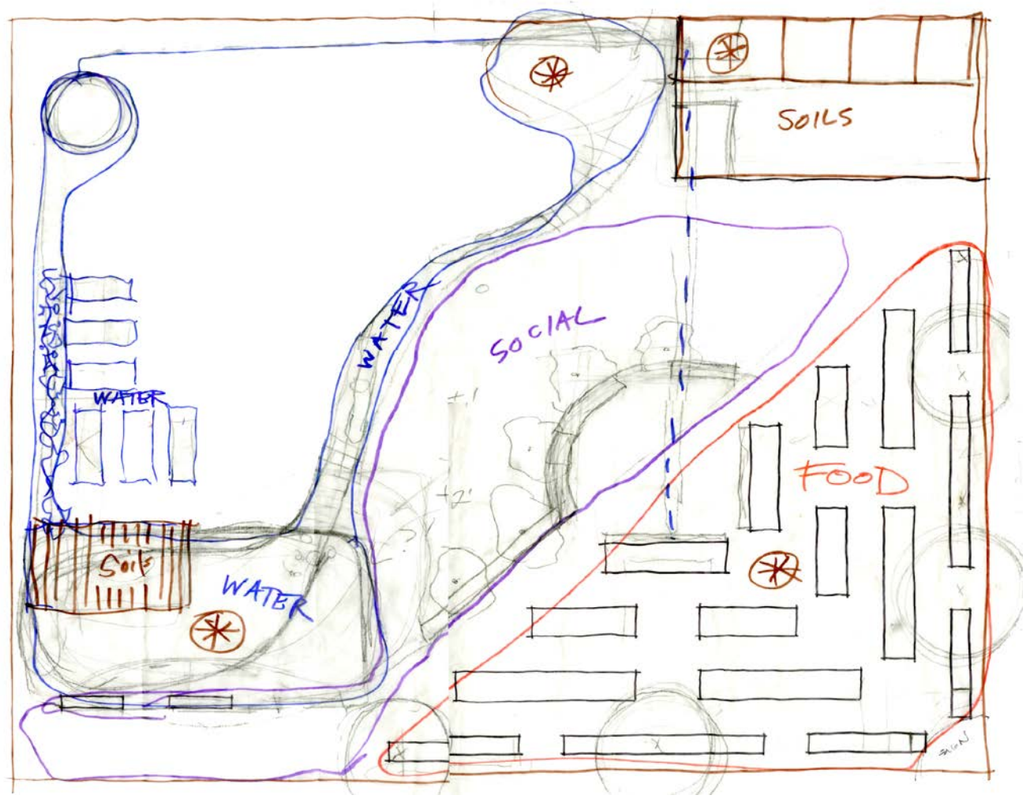
The community had created a memorial wall in the garden for residents who had passed before their time. We realized that the memorial wall was a sacred space to the neighborhood and should remain untouched.

Design: Synthesized Plan



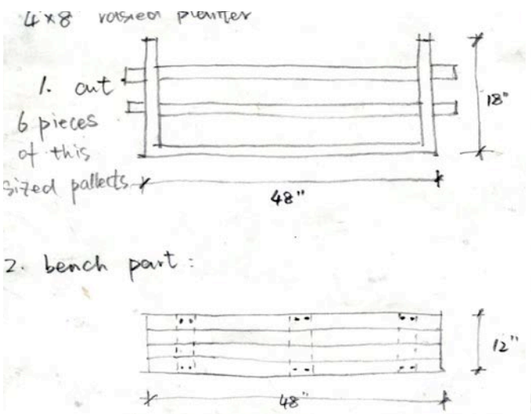


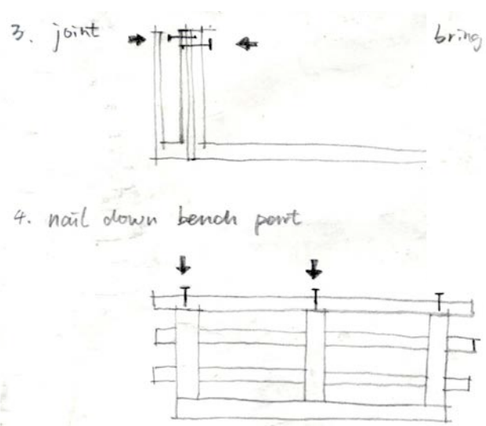
The synthesis plan process brought together all of the ideas we and the community had discussed during the first half of the semester. We decided which elements could be feasibly built, and which would have to wait for a bigger site or more resources.

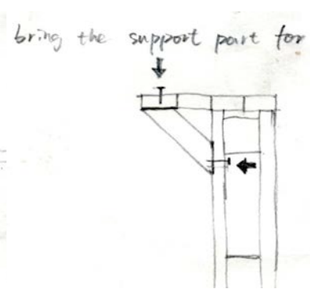


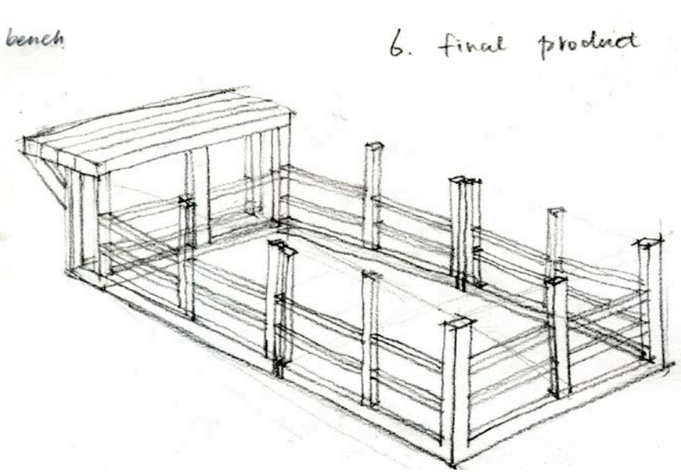
Design: Component Details

Planter Beds



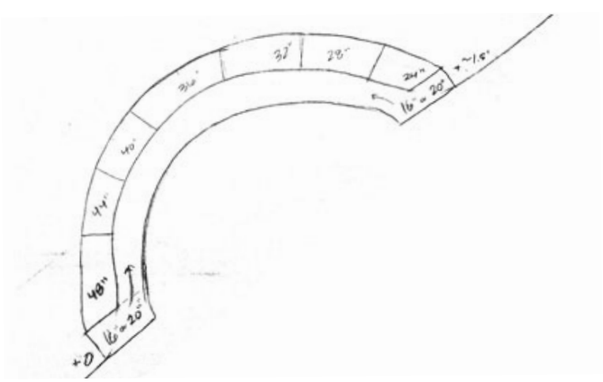


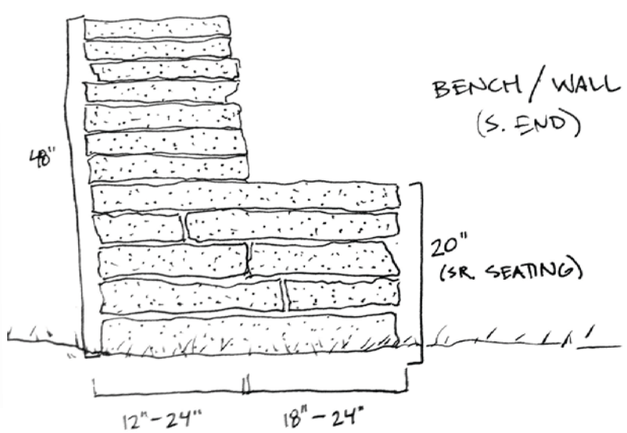


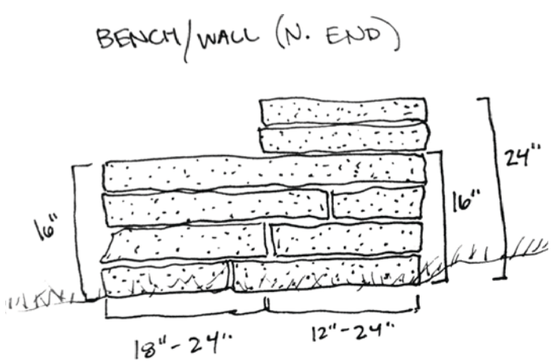


Through detail design, we explored ways to give form to the functions the community wanted in the garden. Some ideas were scrapped in favor of available materials or simpler construction methods that could be replicated by the community after our studio was over.

Concrete Bench







Building

Pre-Build Condition

We spent two days a week for five weeks working on the site. Every time we were there, residents and kids stopped to ask us what we were working on, and often lent a hand. Together, incrementally, we transformed the site into a space the community can use and enjoy.

Building: Concrete Bench and Seating

Pre-Build Condition

The concrete bench is the central social space of the site and is already heavily used by passers-by and volunteers in the garden.

We built other benches from pallets, placing one near the adjacent church to accommodate mingling on Sundays.

Building: Planting Beds

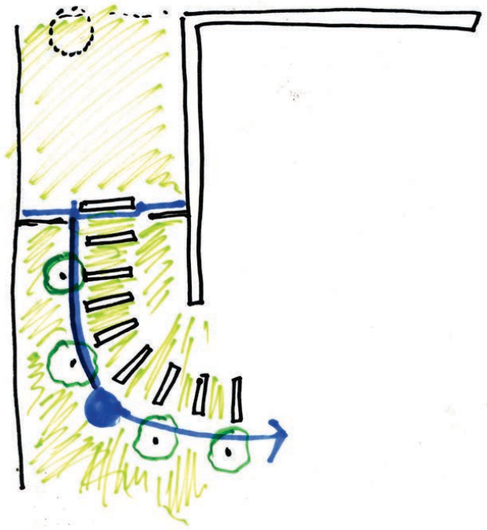
Planter beds make a porous edge at the highly trafficked corner of Morris and 14th Avenues. Some of the planter beds are self-wicking, which cuts down on the necessary frequency of watering.

Seating creates micro social spaces between the beds. Slate chalkboards allow the beds to be used as teaching tools.

Building: Terrace Steps


Pre-Build Condition

The terrace steps were cut into a steep slope to ease access along a path the community uses to access the other side of the block. A swale serves as overflow to the rain garden from the cistern that is being installed this month.



Building: Rain Garden, Swales, Bridges, and Deck


Pre-Build Condition

The deck and bench over the large rain garden create a small prospect from which to see the rest of the site. The swale that cuts west-to-east across the site provides a soft boundary between work and play zones. Water conveyance across the site consists of a vegetated swale and french drain. This system makes green infrastructure visible to garden visitors.

Building: Materials

We are proud that 100% of our structures were made of reused materials. We purchased screws, gravel and sand for the rain garden, decomposed granite for the path, soil for the planters, and plants.

The following materials were found or salvaged:
TIRES: site, garden neighbor
CONCRETE: demolished campus sidewalk
CONCRETE BLOCK: site, student's construction site
SLATE: roofing tiles on campus
PALLETS: Newark Home Depot, garden neighbor, campus buildings, landscape companies
BED LINERS: Illegal neighborhood signs
ROCKS and BOULDERS: Excavated on site

Building: Community Building

Working with the residents and kids was the most rewarding aspect of the project. We know they will build off of the elements we constructed that help make their garden a productive and useful space, and our school's Cooperative Extension will ensure they have support and expertise available when they need it.

A special thank you to our client's mom, who was always on site to help support us, and to feed us!