Reviving Agriculture Stewardship
&
Fostering Sustainability Empowerment
At Luther Burbank High School

Choua Vue
June 10, 2011

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A Senior Project/Thesis
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the Landscape Architecture Department at
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Abstract

The senior project assists with reviving the school garden through a sustainable design that provides constructive green spaces for engaging academics and youth development assets. The study site, Luther Burbank High School, is an urban school site in an impoverished neighborhood where the learning environment exposes students to various pitfalls that affect their peers and them. Lack of public green space around the school does not provide students with a space to socialize and be productive outside of the classroom. Assessment of the vision and goals for the school garden is significant in developing the design process. Surveying the student provided a collective report addressing the needs in setting up the garden space for education and recreation. Interviews with educators and administrators provided a greater view of the diversity in the student population and learning styles that occur at the school. Ultimately, the project develops a garden design that connects various education-incorporation into the garden areas to improve the wellness of urban youth.

Dedication

To my family:
Mom, Dad, Thai, Houa,
Mong, Sen, Tria, Sy, & Dallas,
for your sincere support and
for being so freakin' awesome.

To Hong Pham
and my EAOP family:
thank you for inspiring me
to accomplish so much during
my undergrad years at UC Davis.

To my LBHS students:
I've been very fortunate
to collaborate with such
an amazing group of students;
I look forward to all of the wonderful
contributions you all will make for the B.U.G.

To my LDA peeps:
no all-nighters will ever
be as fun and memorable
as the ones that we have had
for the past 3 years. Ya! so FLY!!!!

Acknowledgements

I would like to acknowledge my
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for their enthusiastic encouragement and
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In addition,
I would like to acknowledge
the Luther Burbank High School
students, staff, and parents for their
exceptional participation in this research
and for making this an enjoyable senior project.

Table of Contents

List of Illustrations

Chapter 1:
Discovering Luther Burbank High School

Growing up in a low-income community I observe the plight of many families in my neighborhood struggling to obtain stable jobs and relying on welfare and affordable housing for years. Families bring up their children in low socio-economic communities that are crime-ridden and the neighborhood facades are deteriorating and there is a lack of public green space for youth and families to interact with. Personal backyard gardens, community gardens, and school gardens seem to be the only green space heavens the disadvantaged neighborhood have. For youths, a school garden provides a safe, secure retreat for enrichment activities and allows them to improve the environmental image of their learning space. The benefits of a school garden grows beyond academics as it is a model for creating accessible green space for food, education, youth development, social networking, and recreation. Furthermore, a school garden cultivates a space for multiple productive services and empowers the senses to be engaging, and thus, a school garden is a significant feature for a school site in a disadvantaged neighborhood.

For the past three years I have worked with the Early Academic Outreach Program (EAOP) in the Department of Academic Preparation Programs (APP) at the University of California, Davis. My role as a Student Outreach Assistant (SOA) includes providing preparation support for economically and educationally disadvantaged students who are competitively eligible for post-secondary education at a four-year college university. Services that are contributed by UC

Davis' EAOP include academic advising, academic enrichment, college knowledge, entrance exams, and family engagement for students in the program (EAOP, 2010). The outreach region I work in include several middle and high schools in Central and South Sacramento, which is where I was introduced to the Luther Burbank High School community as it is one of the schools that EAOP collaborates with. Over the three years my interaction with the school, staff, and especially, the students, have given me a greater awareness about the need for a low-resourced community to provide a constructive green space for the instruction about the environment, sustainability, and the impacts on leading a healthy lifestyle for urban youth.

Figure 1.1: Student mural in school hallway of botanist, Luther Burbank

INTRODUCTION

The social and physical contexts of urban schools in impoverished neighborhoods can profoundly affect the well-being of the area's youth. Underserved schools are plagued with physical deterioration and lack environmental aesthetics to engage students in the learning process (Lautenschlager & Smith, 2007). Moreover, growing up in urban poverty can limit access to resources that promote healthy dietary behaviors and provide safe green space for recreation. A school garden is an educational asset that provides a social learning space for academics, health, and sustainable agriculture practices while fostering developmental opportunities for youths (Ober Allen, Alaimo, Elam, and Perry, 2008). A well-designed green space for a school garden improves the appearance of the academic environment, encourages positive behaviors, and potentially influences youth environmental awareness and appreciation in young people. Reviving the school garden at Luther Burbank High School through implementation of a sustainable design will provide a productive outlet for academics, youth development, and will contribute to the physical and mental wellness of urban youths.

Figure 1.2: Panorama of the agriculture yard at Luther Burbank High School

Creating an interactive garden environment will hopefully enhance the social competencies of students through garden-based learning, thus, improves the academic culture of the school. The school garden will serve as a safe and dynamic green space for outdoor education in various classes by providing recreational space for after-school activities and supporting school community awareness about sustainable urban agriculture. Promoting health and environmental awareness through first-hand experience will expose students to the benefits of gardening for physical and mental wellness and continually encourage their exploration of nature, leading to student stewardship of the garden space to maintain a year-round educational environment. Revitalization of the school garden for supporting academic endeavors and enrichment additionally promotes nutrition, fitness, and youth developmental growth.

Chapter 2:
LBHS AT A GLANCE

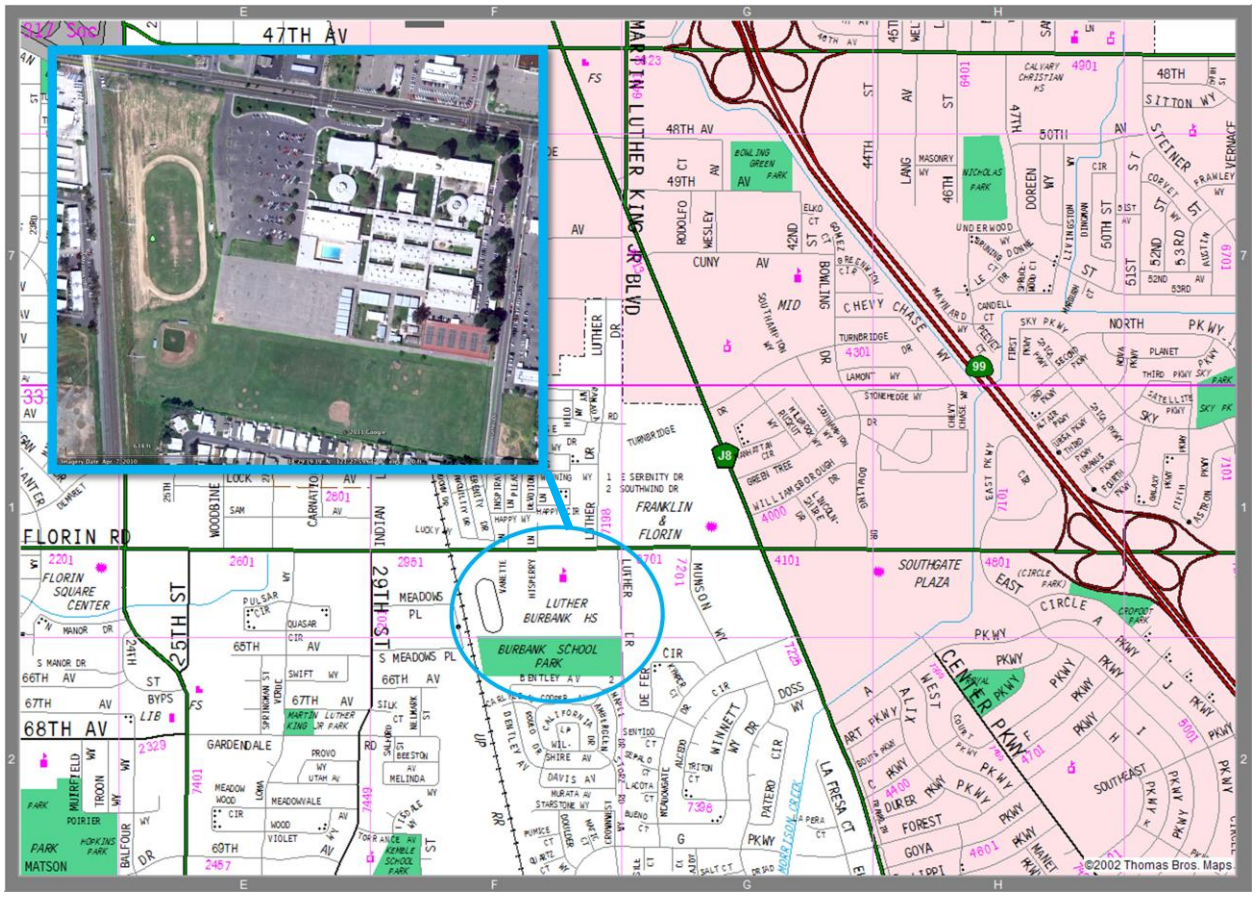


Figure 2.1: Location context map of the school site and the surrounding areas. Street layout map from the City of Sacramento Department of Information Technology (2009); inlet image by Google-Imagery (2011)

Located in the South Sacramento area, Luther Burbank High School is an urban school site situated between two major commuter highways (Interstate 5 and Highway 99) and it sits along the high-density commercial strip on Florin Road, reference map in Figure 2.1. Prior to the construction of the school, the site was located on open, undeveloped land and sat on the floodplains of the American River. The high school is one of 105 K-12 schools in the Sacramento City Unified School District and it is was established in 1961 as a public school that

currently serves over 2,000 students grades ninth through twelfth (SCUSD, 2010). Luther Burbank High School is the only school in its district to have the accredited International Baccalaureate (IB) Diploma Program and it is one of four high schools in the entire Sacramento area to provide this rigorous academic program for students. The high school's Army JROTC (Junior Reserve Officer Training Corps) program is award-winning in the boys, girls, and co-ed drill competitions at the district, regional, and state titles for a number of years (Yang, 2010). The academic and extra-curricular activities and level of accomplishments at Luther Burbank High School reflects their goal of serving excellence from staff to students.

LUTHER BURBANK HIGH SCHOOL

School District	Location	Establishment	Student Enrollment	Notable Programs
Sacramento City Unified School District K-12 schools (105)	South Sacramento	1961 Public 9th-12th	> 2,000	Advance Placement (AP) Program International Baccalaureate (IB) Diploma Program NJROTC

Figure 2.2: General overview of Luther Burbank High School. Data from Sacramento City Unified School District (2010)

Low-resourced and underserved, the neighborhoods surrounding Luther Burbank High School expose students to various pitfalls that affect inner-city youth. The prevalence of drugs, violence, delinquency, and unstable households – relating to financial difficulties, lack of health/home/food security, relocation, or unemployment/underemployment – are experiences that students from the surrounding impoverished neighborhood are likely to encounter; furthermore, the

school has a history of youth gang involvement, racial tension, academic underperformance, and teen pregnancy (Yang, 2010).

Student Population Profile

Student Body Demographics	
Students of Color	94%
Low-Income Background	82%
Eligible for Free or Reduced-Priced Lunch	84%
English Language Learners (ELL)	45%
Reached CDE physical fitness standards (9th graders)	< 25% over the last 4 years

Figure 2.3: Overview of the student population background. Data from Sacramento City Unified School District (2010)

Enrollment at the school is primarily students of color (94%) and a majority of the student population comes from low-income families. Additionally, 84% of the students are eligible for free or reduced price lunch programs and about 45% of the school has students who are English Language learners (ELL) (SCUSD, 2010). For the past four years, ninth graders at the school did not meet the California Department of Education physical fitness standards with less than 25% of students scoring in the "healthy fitness zone." A garden-based education model would provide interactive and multi-sensory context on improving nutritional conditions, food system security, physical activity, and environmental appreciation (Rahm, 2002). Additionally, mobilizing youth from diverse

backgrounds to beautify the urban school site through the garden would encourage students in developing leadership and life skills through constructive endeavors that promote positive peer interaction, sense of responsibilities, and work ethic – all of which will better prepare students for academics and the workforce as they transition from high school to post-secondary activities.

Revitalization Project

Luther Burbank High School had an agriculture program offered to students for elective credits and for extra-curricular opportunity as part of the various after-school activities. The program included gardening and livestock management where students raised chickens, rabbits, and a goat. However, the agriculture program ceased when the lead instructor retired in 2007 and the garden areas towards the rear of the school building were left unattended and overgrown with weeds (Yang, 2010). Optimistic faculty and students collaborated on locating funds and volunteer services to bring the school garden back to its previous productive state. Plans to revive the garden areas would teach students about the food system and making healthy dietary choices.

Planning for the school garden picked up momentum in the spring of 2010 as a student garden committee of about forty lead students was organized to be the main caretakers and users of the site (Tellez, 2011). Two teachers from the school collaborated to maintain an elective course on Career and Agricultural Science for which they oversee the instruction on gardening and management

of the garden area. The student garden committee and instructors have named the school garden, "Burbank Urban Garden," also known as the "BUG" which will serve as a multi-use environmental green space.

Figure 2.4: The neglected agriculture yard in summer 2010

Figure 2.5: The restored garden planters in fall 2010

The student garden committee is leading the movement for establishing the school garden as a long-lasting attribute to the campus and community. Understanding their vision and goals for the school garden is significant to

building the design process. Their mission and vision of the school garden is listed in the following set of goals:

- "Enhance multi-disciplinary curriculum with hands-on, experiential education.
- Provide students and staff with the opportunity to grow and eat fresh, organic, vegetables and herbs.
- Expose students to responsible environmental stewardship.
- Create and nurture natural ecosystems; improve the land through organic and sustainable gardening methods and techniques.
- Develop a program that will sustain itself from year to year.
- Provide a setting to display and celebrate student's creativity."

A survey of the students' experience with gardening provides insight to the level of interest students have for the school garden. Along with the forty students in the garden committee there are frequent student volunteers who work in the garden site but are not part of the Career and Agriculture Science course. Those student volunteers are also surveyed to compare the level of experience in gardening with that of the student garden committee.

Student Participation & Experience

Grade Level	Sex	Have a garden at home	What is planted in home garden	Help with the garden at home	Total
Careers and Agriculture Science Student Committee					
9th: 6 10th: 9 11th: 15 12th: 11	Male: 17 Female: 23	Yes: 25 No: 15	Vegetables: 25 Fruits: 8 Herbs: 14 Ornamental Flowers: 17	Yes: 25 No: 15	40
LBHS Student Volunteers					
9th: 2 10th: 5 11th: 11 12th: 9	Male: 12 Female: 15	Yes: 16 No: 11	Vegetables: 19 Fruits: 8 Herbs: 16 Ornamental Flowers: 12	Yes: 16 No: 11	27

Figure 2.6: Data compiled from a student survey

During the summer of 2010 the school was awarded a community grant from The Home Depot to support the purchases of tools and supplies in restoring the garden area. Furthermore, in the fall of 2010 Luther Burbank High School received a two-year grant from a health and fitness program started by Dr. Oz – a heart surgeon and co-founder of the HealthCorps foundation, a health service that educates youth and educators from across the nation about the health concerning obesity, nutrition, and physical wellness (HealthCorps, 2010). The health and fitness program grant is sponsored by the California Walnut Board and the grant would fund for a nutrition specialist from the HealthCorps to instruct students on balanced nutritional consumption. Separate funding sources support the garden activities and grants are fund-specific:

BUG Funding Sources

The Home Depot	ASSETs Program (After-School Safety and Enrichment for Teens)	California Walnut Board	Donation
$2,500 For purchasing tools and supplies to restore and maintain the garden **Amount left as of April 2011:** $800	$5,000 per year Funds after school instruction and services	$5,000 per year Funds health and nutrition education, activities, and outreach **Amount left as of April 2011 for the first year of the program:** $2,000	Donated supplies, materials, seedlings, and voluntary instruction from local professionals

Figure 2.7: Overview of the funding for Luther Burbank High School's gardening activities

Materials and supplies are in great need to maintain the garden plots but most of the funds is quickly depleting due to the amount used to set up and restore the garden areas. Funding will be a constant challenge until the "BUG" can produce sufficient revenues to economically sustain garden activities. Additionally, the ASSETs grant funds the after-school activities which basically

cover the instruction by the Career and Agriculture Science course. The California Walnut Board funds the education about health and fitness for which the fitness portion of the HealthCorps program have already been spent for physical fitness workshops and equipment. There is still funds left for the nutrition portion of the program and the school hopes to hire culinary students from the local community college to host cooking workshops using the produce harvested from the school garden (Yang, 2010 and Tellez, 2011).

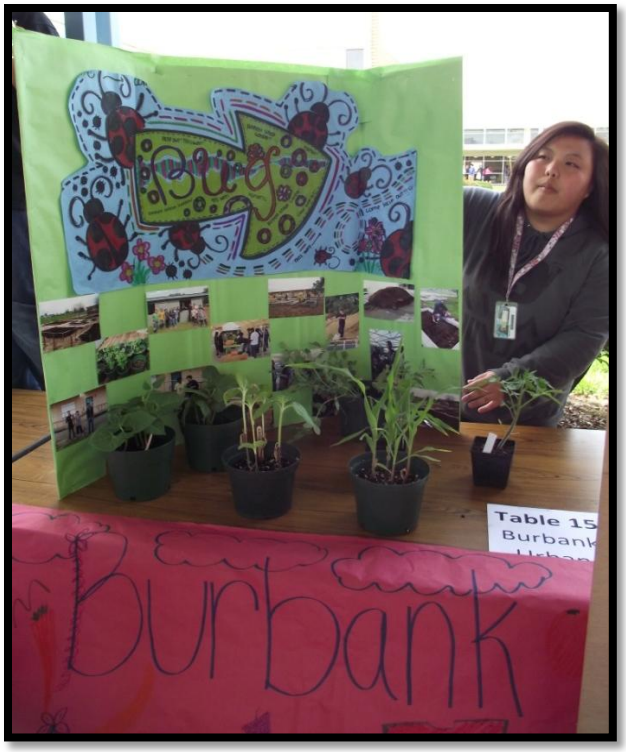


Figure 2.8: A junior from the student garden committee tabling

Aside from agricultural pursuits, the school garden provides a space for student-faculty interaction, problem solving, creativity, and celebration.

Chapter 3:
APPROACH

Collaboration with the student garden committee, instructors, and school staff was established to assess the potential of the garden area and develop creative educational elements for the garden. Foremost, the revitalization of the school garden established two defining features that are desired: firstly, garden areas for supporting academic endeavors and enrichment; secondly, recreation areas for outdoor activities. The Senior Project will produce a design that reflects educational green space for Luther Burbank High School.

Gathering demographics and knowledge of gardening from the student garden committee assist in selecting productive design elements to include in the garden. Assessing existing site conditions in the environmental context will determine opportunities and constraints for designing. Developing a design layout that contains those service spaces in the garden will be accomplished by comparing the garden elements of various inner-city youth gardens and sustainable agriculture community gardens. Conducting case studies of urban youth and community gardens will assist in identifying creative design characteristics that support the school's vision.

Surveying these student leads will provide a collective report addressing the needs to setting up the garden space for education and recreation. Interviews with educators and administrators will provide a greater view of the diversity in the student population and learning styles that occur at the school. Furthermore, reviewing the elemental and management success of youth

oriented gardens and community gardens practicing sustainable agriculture will assist in creating an interactive garden plan that draws interest year-round. Understanding the groups involved with the garden and their role also provides a better view of the support network to keep the garden engaging.

COMMUNITY SUPPORT & RESOURCES

LBHS	Garden Services	Health & Nutrition Services	Agriculture Education
Careers in Agricultural Sciences (BUG Student Committee)	California Walnut Board	HealthCorps Volunteers	Soil Born Farms
Healthy Food Task Force (Student Club)	Home Depot	Health Core Coordinator: Ms. Enweasor	UC Davis Student Farm Youth Gardening Coordinator: Leon Vehaba
Do Something Club (Community Service Based)	Beach Lake Stables	Sierra Health Foundation	Sacramento Area Community Garden Coalition
Key Club (Community Service Based)	AmeriCorps Volunteers		
Agriculture Instructors: Ms. Tellez & Ms. Bell	Habitat For Humanity		
ASSETs Program Manager: Ms. Yang	Landscape Gardener: Phoebe Feeley		
	Sacramento Home Harvest		

Figure 3.1: An overview of the groups/individuals involved in the B.U.G. and what their role is

Overall, the project will cater to the Luther Burbank High School community and the students that will continue to be involved with the Burbank Urban Garden. The end product for this project will include a site design that features garden areas for education and green spaces for recreation.

Chapter 4:
Case Studies

The project reviews existing youth-oriented gardens in urban setting and the management of these gardens to maintain yearly participation in gardening and education for youth. Moreover, students from Luther Burbank High School were invited to visit organic public gardens on the UC Davis campus as part of field observation research for the project and design schemes.

Case Study 1: Urban Sprouts, San Francisco, CA

A garden-based education program for youths at six middle and high schools in San Francisco, Urban Sprouts is a project that promotes nutrition awareness and services to under-served areas in the city (2009). A majority of the youths participating in Urban Sprouts come from low socioeconomic backgrounds and are at risk for delinquent activities. Also, the non-profit gardening program promotes eco-literacy, food availability, and community productivity (Goldberg, Merrigan, Ratcliffe, and Rogers, 2011). The program's growth is maintained through the set up of a garden network between the middle and high schools where students begin involvement in with school gardens at the feeder middle schools. A connection is established for students to continue their involvement as they transition between schools because Urban Sprouts' garden projects are located at the high schools in the surrounding area.

The encouragement of student-led science and nutrition education activities also is a significant factor that contributes to the success of the

program. The garden-based education focuses on science components that teach participants about soils, photosynthesis, decomposition, climate change, crop rotation, and the food web (Goldberg, Merrigan, Ratcliffe, and Rogers, 2011). Concepts in nutrition education that is taught include nutrient intake, food labels, and understanding the health lifestyle from goal setting of food consumption. Gardening activities of soil preparation, planting, maintenance, harvest, and consumption of the produces engage the Urban Sprout youth in concepts of science and nutrition.

Lastly, students are encouraged to celebrate their gardening endeavors by hosting cooking events for individuals to present ethnic dishes to the school. Also, themed garden events such as Urban Sprouts' "salad day" or the optional Saturday garden work party (for students and their families) provide opportunities for students to take lead and showcase their understanding from the garden-based education model (Urban Sprouts, 2009). The management of the middle and high school network is a great idea to introduce for the Burbank Urban Garden for setting up field days where the high school can invite the surrounding feeder elementary and middle schools to participate and explore the gardening activities. Additionally, the high school students can host garden education-related activities for the community to promote awareness of urban agriculture and increase interest in the garden for prospective students.

Visiting youth and community gardens will also provide opportunities for the school and students to observe how those gardens are organized and any creative academic feature that is incorporated into those garden spaces.

Case Study 2: Salad Bowl Garden, UC Davis

As the vision for the Burbank Urban Garden was set the exploration of flourishing and accessible gardens would provide the students and staff at Luther Burbank High School an opportunity to explore and view design and garden elements that appealed to them. In November 2010, a few students and school staff came for a campus visit to explore the Salad Bowl Garden in front of the Plant and Environmental Sciences Building on the University of California, Davis campus. As a leading institute in agricultural research, UC Davis was a great site for the students and staff to observe how implementation of urban agriculture can be accessible and visually appealing (Slideshare Inc, 2011). The connection between the public with agriculture is a concept that the group would like to model for Luther Burbank High School's garden.

Figure 4.1: Ceramics, message board, and picking baskets are elements that students wish to implement into the B.U.G. from their observation of the Salad Bowl Garden visit

The Salad Bowl Garden hosts a gradient of services for education and the environment. The area produces

food and display research for the community and it demonstrates home gardening and an educational space together. The inviting character of the garden included the harvest basket, welcome signage, flyer box that provide information for visitors, and the soil displays provided a wonderful comparison for the group to observe the different samples of earth. The beautiful vegetable entrance and themed salad garden acted as a living classroom that created a space for educational gardening and recreation – similar elements that the group wished to have for the Burbank Urban Garden.

Case Study 3: Good Life Garden, UC Davis

Another campus visit took place in December 2010 where students explored the UC Davis Good Life Garden at the Robert Mondavi Institute for Wine and Food Science, the newest organic garden addition to the campus. Unlike the salad planting theme at the Salad Bowl Garden, the Good Life Garden hosts a gradient of vegetables, herbs and flowers that bloom during specific seasons. The seasonal planting changes permit the garden to display a variety of produce that thrive best during those conditions (winter planting/harvesting at that time). The demonstration plots provide a different form of utilizing the space for gardening and education endeavors.

The edible landscape at the Good Life Garden is continuously changing to educate the UC Davis community about the connection between food and health. Moreover, the garden provides educational signage that compliments the seasonal planting and provides interesting information about the plants

including providing a brief history of the plant, nutritional facts, vitamin identification, and the benefits of the plant for consumption (Good Life Garden, 2010). Along with the detailed graphics, the students enjoyed the framed view looking out into the vineyards. Focusing views within the garden creates a sense of space be that enclosure, a threshold, or framing/screening. The seating areas tucked between garden plots also were a favored element that students would like for the Luther Burbank High School garden. Resting nooks around the garden area would encourage the students and staff of the high school to explore the garden and provide a retreat from the hardscape that is present throughout the school grounds. The patio with picnic tables and ornamental planting adjacent to the garden plots was garden feature that the students would also like to have for the school garden.

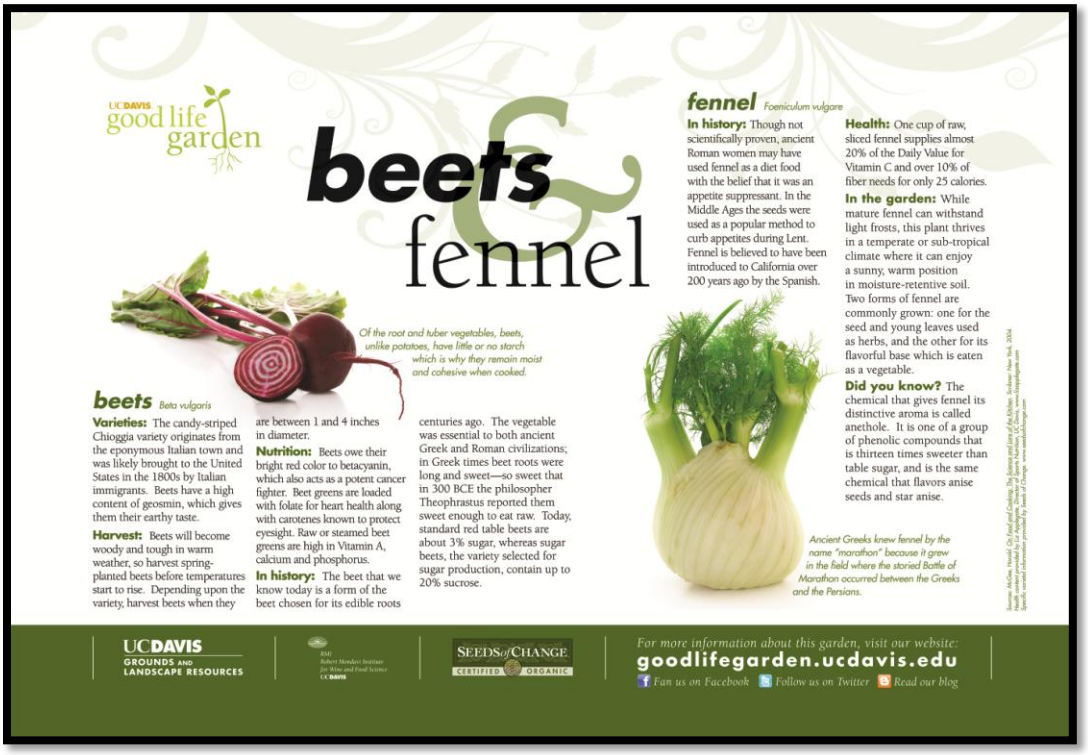


Figure 4.2: Educational interpretive signage like this one that is displayed in the Good Life Garden is an element students would like for the B.U.G. From Good Life Garden (2010)

Case Study 4: Student Farms, UC Davis

Figure 4.3: Students and parents explore the Student Farm

The exposure to urban agriculture and organic gardening for the student garden committee continues as they group visits the Student Farm at the University Extension. The campus visit is organized as a student-parent event so students could bring their parents to explore UC Davis's agriculture research. In March 2011, a handful of students from the Burbank Urban Garden student committee along with their parents toured the Student Farm and participated in agricultural ecology activities. The group identified plants, sampled fresh produce from the farm, explored the farm's facilities (greenhouse and prep stations) and observed the habitat that surrounds the Student Farm. The visit gave parents of the students an opportunity to discover the activities that their students were involved in during after-school hours. Building an understanding and connecting parents with the students' interests encourages the development of Burbank Urban Garden areas for a space that the greater community can be involved with once the garden begins to produce.

Students took note of garden elements at the farm that they would like to replicate in their school garden. Garden elements at the Student Farm that stood out to the Luther Burbank High School students most were the bee boxes

and floral plantings that attract wildlife. The students gained knowledge about pollination and the benefits for providing wildlife buffers around and in the garden area. Moreover, the students returned to visit Student Farm once more during the spring to observe the garden and compare the seasonal changes and effects on gardening throughout the school year. The field observations by the student garden committee from mid-fall to early-spring gave them opportunities to explore garden setting as it transition between seasonal and how to keep the garden interactive for students and the community.

Figure 4.4, 4.5, & 4.6: Students picking asparagus at the Student Farm, a group receiving a tour by a Student Farm gardener, and the whole group listening to a lecture from the Youth Gardening Coordinator, Leon Vehaba

Chapter 5:
The Site Study

The agriculture yard is located towards the rear of the school and is adjacent to the school's recreation fields. The site is enclosed with a six foot chain linked fence and there is only one open gate accessible to students during school hours; the remaining gates are usually locked unless there is a school event that requires the opening of additional gates to access the agriculture yard. The one open gate also leads toward the tennis courts that are adjacent to the study site. Classroom portables surround the agriculture yard and are situated at the edge of the site and provide views for students and instructors from the classroom. There are four main garden areas in the site: the original sixteen planters of the old agriculture program, a rose memorial garden, and two open turf areas that are about 900 square feet each.

Figure 5.1: The study site where the garden areas will be designed. From Google Imagery (2011)

Opportunities and Constraints

Understanding the infrastructure of maintaining the school garden is important to design elements that provide developmental opportunities for exploration and constructive endeavors.

BUG Infrastructure

Academic Enrichment	Agriculture Stewardship	Health & Nutrition	Eco-literacy	Youth Development
Natural Ecosystems & Climate	Soil Management	Food System & Access to Fresh Produce	Environmental Awareness	Hands-on Skills
Wildlife Habitats	Water Conservation	Dietary Behaviors	Green Beautification	Leadership & Responsibilities
Measurements & Calculations	Propagation	Physical Activeness/Fitness	Exploration of Nature	Constructive Use of Time
Data Collections of Production	Optimal Cultivation	Mental Wellness	Organic Cultivation	Social Competency
Problem-Solving & Discussion	Integrated Pest Management	Demonstration & Awareness Activities	Recycling & Composting	Civic Engagement
	Career Outlook			

Figure 5.2: A diagram reflecting the benefits that the B.U.G. will offer for students

The infrastructure of the Burbank Urban Garden is composed base off of the feedback from students and staff interviews. The responses share similar goals and vision for the future of this site thus having five key components to the purpose for this garden. Moreover, these underlying points assist in considering creativity outlets that embrace the various benefits for a school garden. Moreover, the diagram in Figure 5.2 can be used as a model for identifying the various activities in the garden that will support one or more of the five components for this learning green space.

Site Inventory

Luther Burbank High School's garden will be expanding beyond the sixteen planters in agriculture yard that was used for gardening when the agriculture program was still around. A survey of the inventory at the garden site included various farm structures from the old agriculture program and various open turf area that are ideal for developing as part of the garden. The existing items in the study site include:

Existing Site Items

Agriculture Structures	Garden Structures	Utilities
Portable Classroom	16 Raised Planters (in agriculture yard)	3 Air Conditioning Units (unattached from buildings)
Barn	4 Raised Planters (near the greenhouse)	Water Control Unit
3 Sheds	4 Compost Stalls	1 Light Pole
Storage		
Greenhouse		
Horse Stable (4 stalls)		
2 Animal Pens		

Figure 5.3: Inventory of the existing structures and utilities in the study site

Refer to Figure 5.6 for the overview of the existing site elements.

Figure 5.4 7 5.5: View from the main entrance & view of the barn

B.U.G. SITE INVENTORY

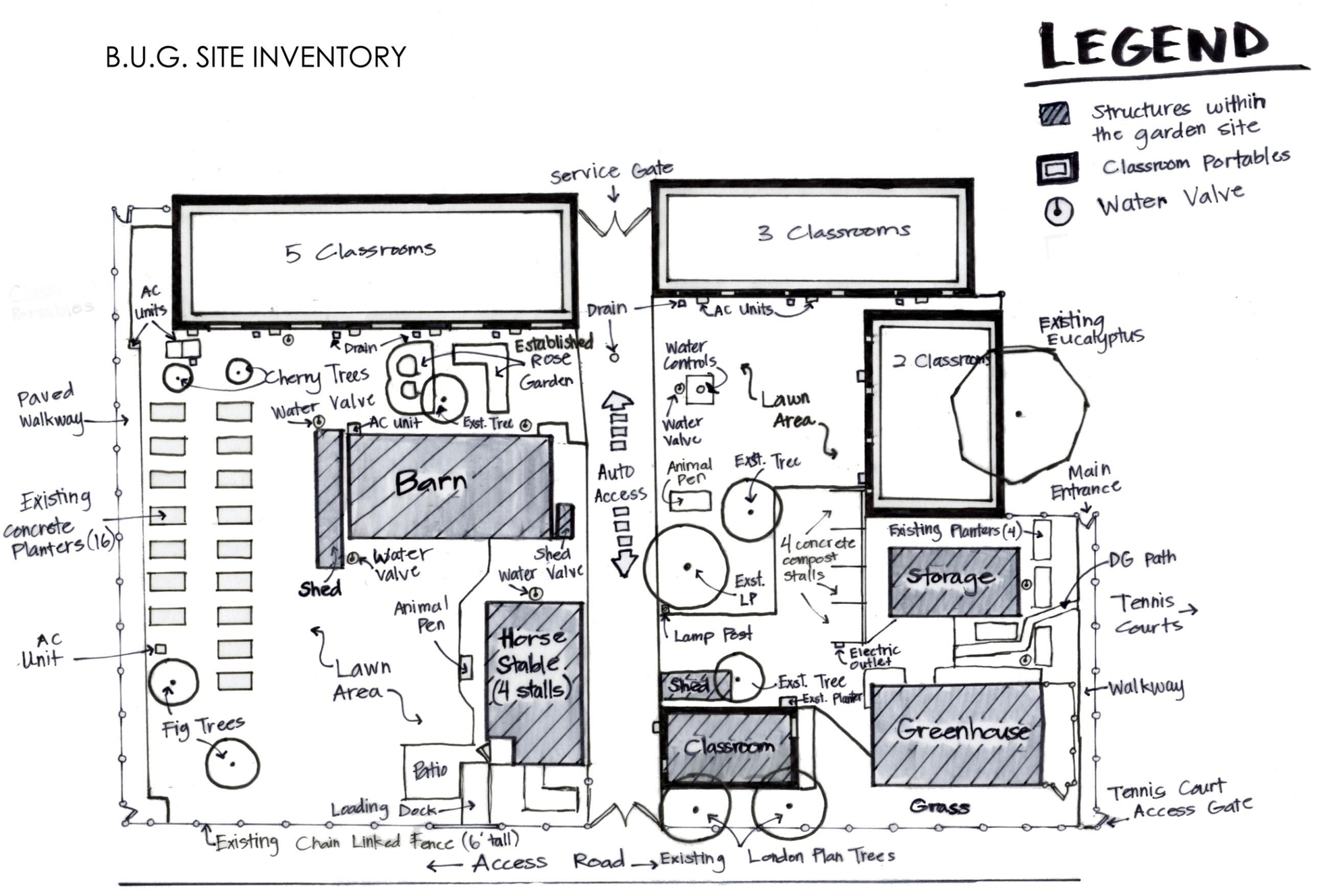


Figure 5.6: Site inventory of the study site

Site Analysis and Conditions

Site evaluation of the climatic elements show that the area behind the barn shades a good portion of the rose garden but the rest of the garden areas receive at least eight hours of sunlight. The entire site is relatively flat with less than a foot sloping out towards the edges of the site. The portable classrooms to the west and north of the site provide windbreak for the area from winter winds from the north and summer breezes from the southwest will provide cooling drifts during summer activities. Assessing the site provides an idea of the available space to design to provide the desired elements for the school garden. Figure 5.7 provides the site analysis and conditions of the study site.

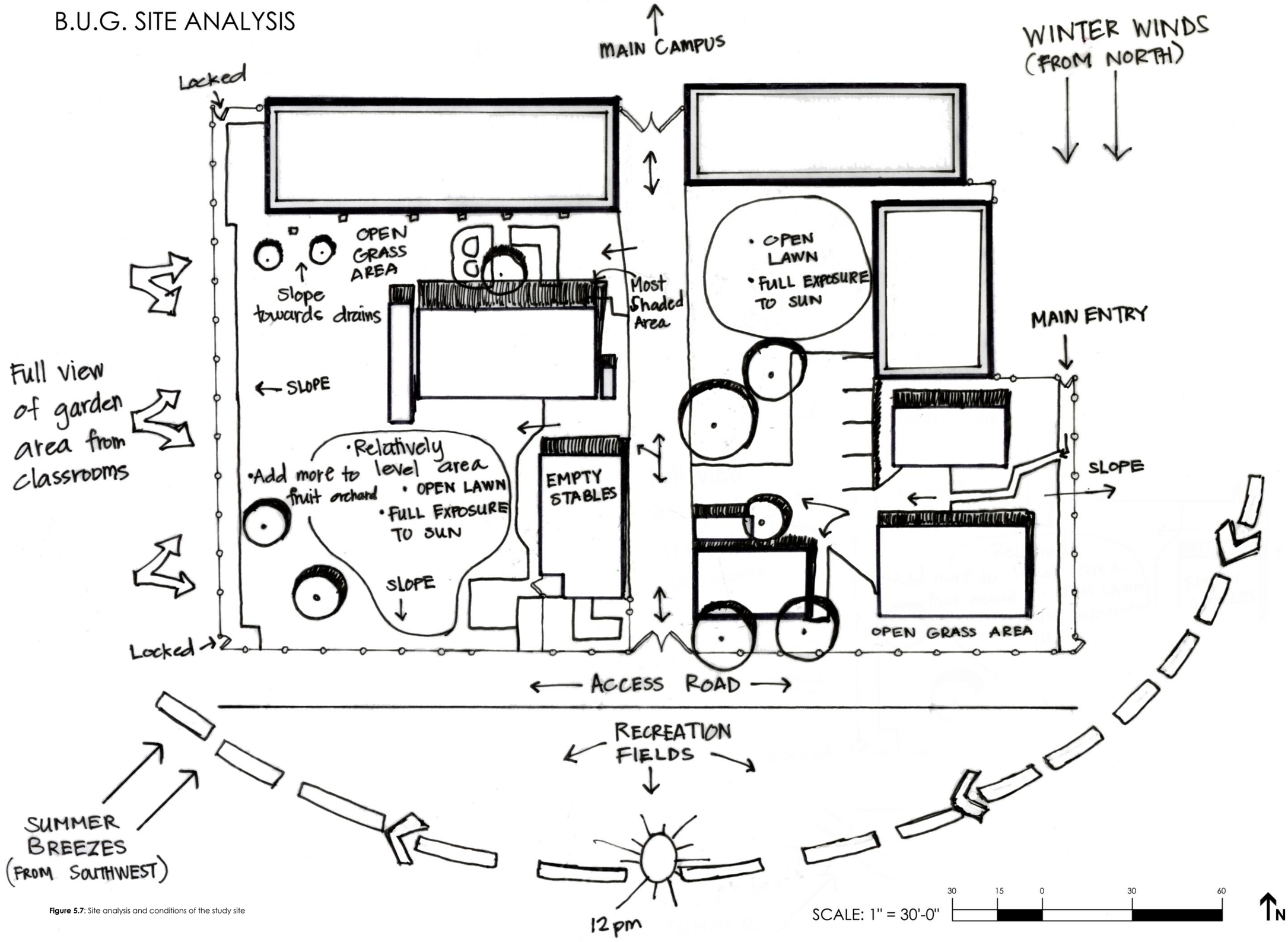


Figure 5.7: Site analysis and conditions of the study site

Chapter 6:
Preliminary Design

Concept

The vision for the Luther Burbank High School garden is to create a loop around the site that goes along various garden areas, refer to Figure 6.4 for the concept plan for the study site. Main garden areas include: school plots (to be maintained by the school garden committee), student plots (to be given to students who sign up to garden a plot), fruit orchard, rose memorial garden, open green space (enclosed in ornamental native planting), compost area, and flower corridor. The concept for the design would take an individual around these sites in a loop and allow them to explore a large portion of the site.

Figure 6.1 & 6.2: Views of the open grass area next to the green house and view of the rose memorial garden

Figure 6.3: Panorama of the grass area next to the compost stalls

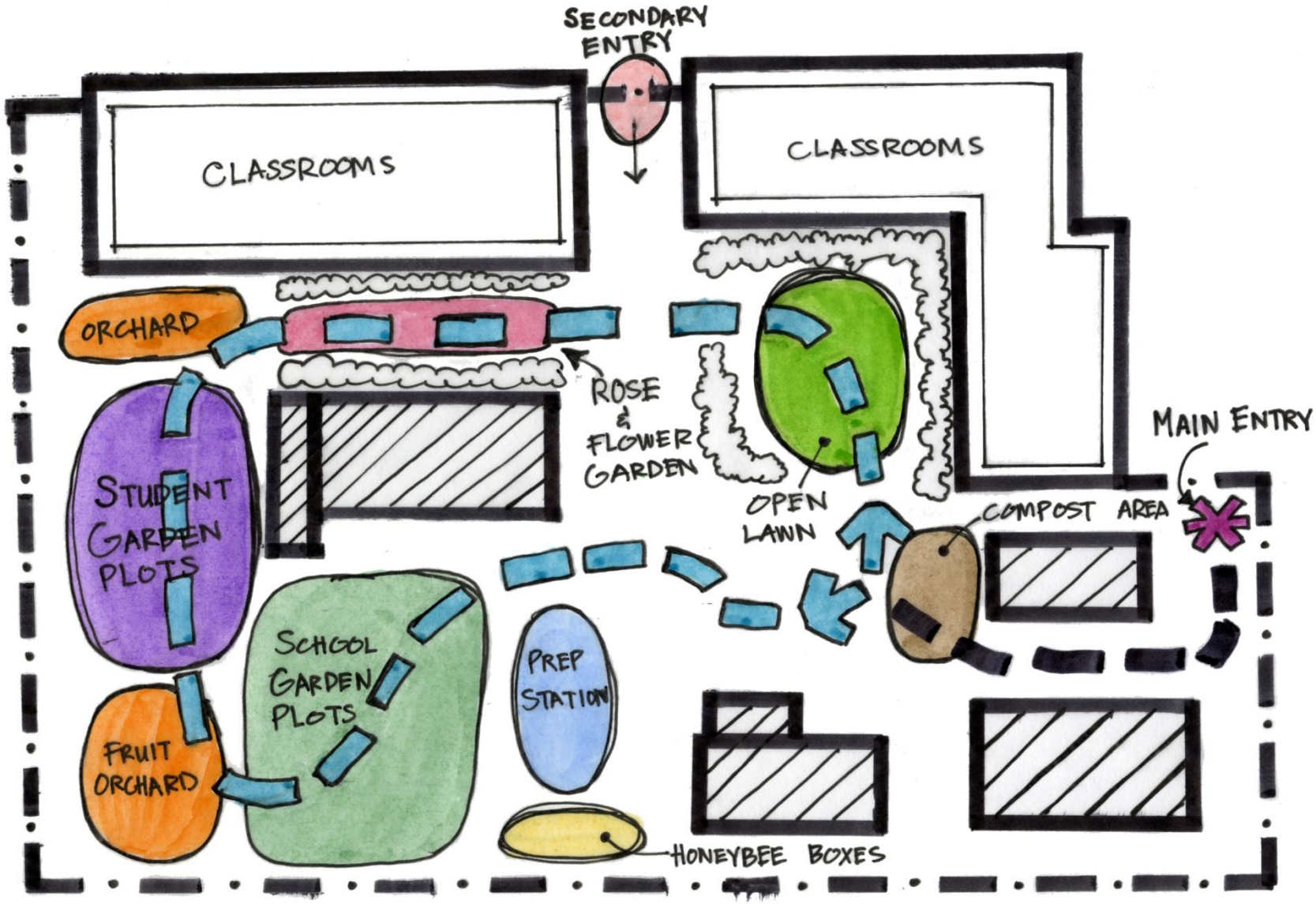


Figure 6.4: Concept Diagram for the garden areas

Schematic Design

Various garden layouts are presented to the students and staff for the area designated to become the school garden plots. These schematic designs reflect formal linear and informal curvilinear shaping of the space. Students favored a curvilinear shaping of the space to provide more access and flow around the garden plots. Figure 6.6 shows the schematic themes for the school garden area that could be incorporated.

Figure 6.5 &6.6: View of the grass area next to the horse stable.

Figure 6.7 & 6.8: View of the the Fig trees from the patio and a view of the grass area next to the shipping container shed.

Figure 6.9: Schematic garden design for the school garden area

Chapter 7:
Final Design

The final design provides and incorporates various educational features in to the garden areas in addition to shaping recreational space for the school to use. Creative and informative elements include producing ceramic sculptures of various fruits and vegetables for nutrition education and a ceramic display of garden insects to inform visitors of beneficial insects, such as bees, lady bugs, and butterflies, versus garden pests like spiders, snails, and stink bugs. Tree stumps can be used as seating and garden fencing along paths to create a rustic garden sense. Figure 7.3 shows the final design plan for the garden site.

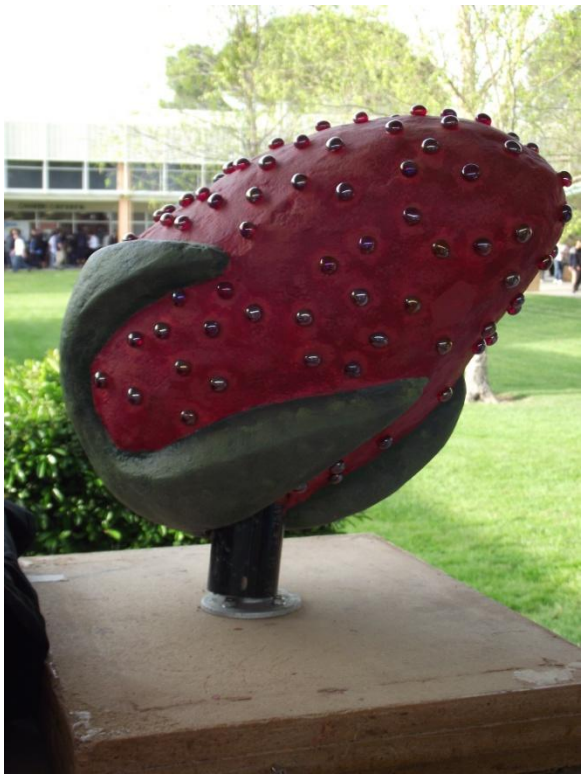


Figure 7.1 &7.2: Ceramic sculptures by students of fruits that will be placed on poles in the compost stalls area to inform visitors about the types of food that can will be used in the compost areas

B.U.G. Final Design – Site Plan Legend

1. Garden Entry
2. School Garden Layout
3. Berry Patch Plot – for growing strawberries, raspberries, and blueberries
4. Fruit Orchard w/ Seating
5. Garden Plots w/ Tree Stump Seating
6. Trellis Entry
7. Student Garden Plots
8. Fruit Orchard Along Classroom
9. Herb, Mint, and Medicine Theme Garden
10. Native Ornamental Planting
11. Rose Memorial Garden w/ Seating
12. Open Grass Area w/ Seating
13. Compost & Work Area
14. Birdhouse Alley
15. Squash-themed Garden at the Entrance
16. Flower Cutting Corridor
17. Worm Farm
18. Bee Boxes
19. Preparation Stations
20. Tool Shed

B.U.G. FINAL DESIGN -SITE PLAN

Figure 7.3: Site design plan

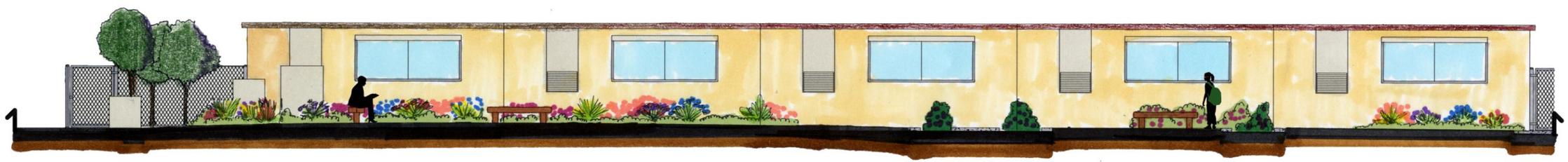
SCALE: 1" = 20'-0"

20 10 0 20 30

N

SECTION A-A'

SCALE: 1" = 10'-0"

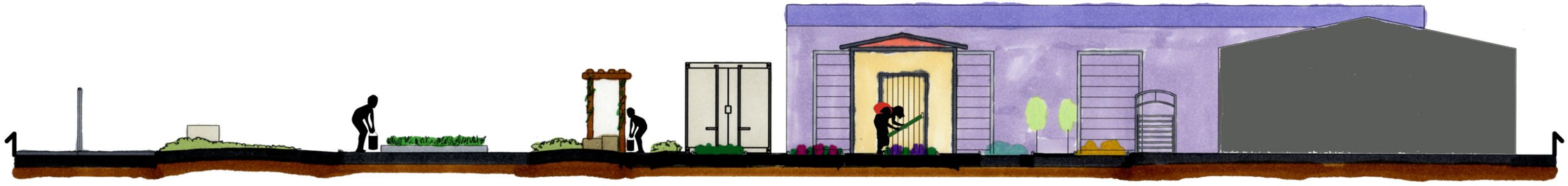


SECTION B-B'

SCALE: 1" = 10'-0"

B.U.G. FINAL DESIGN -SECTIONS

Figure 7.4: Site sections through the lawn area and Rose Memorial garden



SECTION C-C'

SCALE: 1" = 10'-0"

SECTION D-D'

SCALE: 1" = 10'-0"

B.U.G. FINAL DESIGN -SECTIONS

Figure 7.5: Site sections of the school garden areas

Figure 7.6: Perspective of Garden Entrance

Figure 7.7: Perspective of Garden Planters and Fruit Orchard

Figure 7.8: Perspective of the Rose Garden Memorial Entrance

Figure 7.9: Perspective of the Open Lawn Recreation Area

Chapter 8:
CONCLUSION

The project develops a space that caters to an academic outdoor classroom and a social retreat for the school. The design provides a gathering space for exhibition and leisure opportunities as well as connecting the students to the land for they are the stewards of the garden's academic culture and community activism. Furthermore, the goal is to develop a sustainable environment to support academic enrichment and recreation for health wellness for which the four garden areas will host constructive activities to meet those enrichment and recreation activities. Hopefully, this school garden can be an example for a safe, productive learning social environment for the school and similar schools in the district.

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