COMMUNITY GARDEN MASTER PLAN FOR SCHOB NATURE PRESERVE

- AWAKENING LOCAL INTEREST AND INVESTIGATING FEASIBILITY

Chenqu Fu

Committee:
Ming-Han Li: Chair – Department of LAUP
Geoffrey J. Booth: Member – Department of LAUP
Jeremy Merrill: Member – Department of LAUP
Thomas W. Boutton: Member – Department of ESSM

April 8, 2016
Executive Summary

Urban Agriculture is a strategy for improving food security and establishing a sustainable environment. Urban agriculture reflects a healthy lifestyle that does the following: to be close to nature; to satisfy a social connectivity, and to develop healthy food habits.

As landscape architects, we are sensitive to low impact development and high landscape performance design. Urban agriculture, as one of the strategies, benefits a neighborhood; environmentally, socially, and economically.

We propose an urban agriculture program that is based at the Schob Nature Preserve. The preserve will provide a community garden that serves to educate and inspire the community.
# Table of Content

1. Introduction .................................................. 6
2. Case Study .................................................... 19
3. Eastgate Neighborhood Plan ........................... 29
4. Quadruple Net Value Analysis ....................... 31
5. Design Programming ...................................... 55
6. Engaging Stakeholders .................................. 58
7. Communal Garden for Public ......................... 60
8. Urban Agriculture Education Programs ........... 65
9. Programming Master Plan .............................. 66
10. Summary ..................................................... 77
1. Introduction

The global food supply shortages remarkably disrupted people’s lives and the welfare in food crisis, and alerted people to understanding food security importance and implementing remediation. At the same time, people shifts attention from food access and availability to diet quality, wishing a healthy lifestyle against the fast-paced and pressured urban life.
1.1 Urban Agriculture

DEFINITION

(by Council on Agriculture, Science and Technology)

Traditional + Environmental
Urban agriculture is a complex system encompassing a spectrum of interests, from a traditional core of activities associated with the production, processing, marketing, distribution, and consumption, to a multiplicity of other benefits and services that are less widely acknowledged and documented.

These include recreation and leisure; economic vitality and business entrepreneurship; landscape beautification; and environmental restoration and remediation (Butler and Moronic 2002)
1.1 Urban Agriculture

**DEVELOPMENT AS GREEN INFRASTRUCTURE**

Green Infrastructure Grant Program in New York City encourages the development of urban farms as green infrastructure, storm water management, increased biodiversity, and providing ecosystem services and access to food. It’s obvious that engaging sustainability in urban food and agricultural systems is advocated and LEED, a standard of sustainable design, has impacted urban agricultural development.

Brooklyn Grange farm Photo: Brooklyn Grange (http://brooklyngrangefarm.com)

- **PREVENT STORMWATER RUN-OFF**
- **IMPROVE QUALITY OF LIFE**
- **CONTROL URBAN CLIMATE**
- **SOLVE FOOD INSECURITY**

Brooklyn Grange Farm:
- “the world’s largest roof-top soil farm
- 1 acre (0.4ha)
- grow a variety of produce
- keep egg-laying hens
- keep bees in a commercial apiary
- MANAGE 1 million gallons (3,785,411 liters of storm water/ year
- PROVIDE educational tours, urban farming and green roof consulting, and installation services

1.1 Urban Agriculture

**URBAN AGRICULTURE TYPOLOGY LIST**

(not conclusive)

- Community Garden
- Urban Farm
- Edible School Gardens
- Demonstration Landscapes
- Edible Estate
- Victory Garden
- Research/experimental Gardens
- Learning Garden
- Food Pantry Gardens
- Restaurant Seed to Table/ Farm to Table landscape
- Edible Hotel/ Resort Landscape
- Yardshare
- Multifamily Landscape
- Planned Neighborhood Food Landscapes

<table>
<thead>
<tr>
<th></th>
<th>Location</th>
<th>Uses</th>
<th>Sale</th>
<th>Recreation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Garden</td>
<td>neighborhood</td>
<td>non-profit</td>
<td>donate/ self consume</td>
<td>yes</td>
</tr>
<tr>
<td>Urban Farm</td>
<td>within/edge</td>
<td>for profit</td>
<td>direct sales</td>
<td>yes</td>
</tr>
</tbody>
</table>

Compare Community Garden and Urban Farm

Community garden and urban farm are two main types of urban agriculture. They do have variation in terms of characters of participants, objects, personal or for-profit uses. Urban farm is located within or at the edge of city, mostly build for profit by selling local food production, also provides the opportunities of recreation and volunteer. Community garden, derive from that people in a neighborhood come together to raise food. Most of time it is for non-profit, for their own consumption, or donation1.

1.2 Local Food

INCREASING DEMAND FOR LOCAL & ORGANIC

Demand for organic products in 210 U.S. farmers’ markets, 2005

A USDA survey of market managers found that demand for organic products was strong or moderate in most of the farmers’ markets surveyed around the country, and that managers felt more organic farmers were needed to meet consumer demand in many States.

U.S. organic food sales by category, 2005-14E

U.S. sales of organic products were an estimated $28.4 billion in 2012—over 4 percent of total food sales—and will reach an estimated $35 billion in 2014, according to the Nutrition Business Journal.

1.3 Food Environment

WHAT IS FOOD ENVIRONMENT?

Homes, schools, restaurants, community gardens, soup kitchens, food banks and other physical settings where the cost and availability of food influence what people eat. More broadly to include social influences, food marketing and other influences on food choice.¹,²

WHY FOOD ENVIRONMENT?

- Evidence gathered from measuring food environments can guide efforts to improve them.³
- Neighborhood planners and other policymakers might encourage more fresh food availability by offering grocery stores tax incentives, by setting up new farmers’ markets, or by changing zoning laws to encourage community gardens.
- Administrators might limit the availability of vending machines in schools.
- Public health researchers and citizens could ask local store owners to stock healthier foods, and encourage their friends and neighbors to purchase those foods.
- Officials might increase bus service to grocery stores; or in some food deserts, helping to open a new supermarket might be a more effective alternative to improving transportation.
- Some cities have organized food policy councils, which bring together these and other stakeholders in the food system to promote changes that improve their cities’ food environments.⁴

---

1.3 Food Environment

**FOOD ENVIRONMENT OF U.S.**

Farms with direct sale(%), 2007

**Definition:** Percentage of farms in the county that sell at least some products directly to final consumers. This includes sales from roadside stands, farmers markets, pick-your-own, door-to-door, etc. It does not include sales of craft items or processed products, such as jellies, sausages, and hams.

**Available years:** 2007

**Level of geography:** County

**Data sources:** 2007 Census of Agriculture.
1.3 Food Environment

SNAP participants (% pop), 2014*

**Definition:** Percentage of the State population receiving SNAP (Supplemental Nutrition Assistance Program, previously called Food Stamp Program) benefits in an average month.

**Level of geography:** State

**Data sources:** Tabulations by USDA Food and Nutrition Service (FNS), published December 6, 2013 on the SNAP Program Data page. Population data are from the U.S. Census Bureau, Population Estimates.
1.3 Food Environment

**FOOD ENVIRONMENT OF U.S.**

**Household food insecurity (%, three-year average), 2010-12**

**Definition:** Prevalence of household-level food insecurity by State. Food-insecure households were unable, at times during the year, to provide adequate food for one or more household members because the household lacked money and other resources for food. For most food-insecure households, inadequacy was in quality and variety of foods; for about a third—those with very low food security—amounts were also inadequate.

**Available years:** 2010-12 (aggregate data)

**Level of geography:** State

**Data sources:**

16%-20% TX
1.3 Food Environment

FOOD ENVIRONMENT OF U.S.

Adult obesity rate, 2013*

Definition: Prevalence of obesity based on self-reported height and weight among adults.

Available years: 2013

Level of geography: State

Data sources: Estimates are from Centers for Disease Control and Prevention (CDC) using data from the Behavioral Risk Factor Surveillance System (BRFSS) and can be downloaded directly from the CDC Obesity Prevalence map page.
1.3 Food Environment

**FOOD ENVIRONMENT OF TX & BRAZOS COUNTY**

Low income & low access to store (%), 2010

**Definition:** Percentage of people in a county with low income and living more than 1 mile from a supermarket, super-center or large grocery store if in an urban area, or more than 10 miles from a supermarket or large grocery store if in a rural area.

**Available years:** 2010

**Level of geography:** County


Local Food Store  
Farmer’s Market  
Brazos County

Low income & low access to store (%), 2010
1.3 Food Environment

FOOD ENVIRONMENT OF TX & BRAZOS COUNTY

Low income & low access to store (%), 2010

Definition: Percentage of people in a county with low income and living more than 1 mile from a supermarket, super center or large grocery store if in an urban area, or more than 10 miles from a supermarket or large grocery store if in a rural area.

Available years: 2010

Level of geography: County

1.3 Food Environment

FOOD ENVIRONMENT OF TX & BRAZOS COUNTY

Farm to school program, 2009

Definition: School programs include: direct sourcing from local producers, DOD Fresh, school gardens, farm tours, farm-related nutrition education or other classroom activities, and school menus and snacks highlighting locally sourced or locally available foods.

Available years: 2009
Level of geography: County
Data sources: The National Farm to School Network conducted surveys in 2004 and 2005-06, and compiled the data from these surveys as well as a self-reporting registry maintained by the Network since 2007 at the Farm to School webpage, supplemented by the Network’s periodic updating efforts.

Farmers’ markets, 2013

Definition: Number of farmers’ markets in the county. A farmer’s market is a retail outlet in which two or more vendors sell agricultural products directly to customers through a common marketing channel. At least 51 percent of retail sales are direct to consumers.

Available years: 2013
Level of geography: County
Data sources: County-level data for farmers’ markets were compiled by USDA Agricultural Marketing Service, Marketing Services Division.
2. Case Study

Case studies have identified policies that improve urban agriculture projects in cities.

Urban agriculture programs can improve casualness selection of foods for better nutrition.
2.1 Case Study: Boulder, CO

**HEALTHY COLLEGE TOWN**

- Boulder, CO, the home of University of Colorado.
- Famous for its great outdoors and fun community atmosphere.
- In rankings it regularly gets voted the best outdoor town, the brainiest city, one of the top cities for artists, and America’s Foodiest Town. (by Best College Reviews)
- Top rankings in recent year for **health, well-being, quality of life**
  - America’s Top 25 Towns to Live Well-Forbes.com
  - Gallup-Healthways Well-Being Index-USA Today
  - Best Cities to Raise an Outdoor Kid-Backpacker
  - American’s Foodiest Town-Bon Appetit
  - Top Brainiest Cities-portfolio.com

**BASIC INFO OF 2 CITIES- Boulder & College Station**

<table>
<thead>
<tr>
<th>Area</th>
<th>Population</th>
<th>Student</th>
<th>Climate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulder</td>
<td>25.7 sq mi</td>
<td>103,166</td>
<td>47,000</td>
</tr>
<tr>
<td>College Station</td>
<td>49.6 sq mi</td>
<td>100,050</td>
<td>58,809</td>
</tr>
</tbody>
</table>

**POLICY OF INCREASING LOCAL FOOD SUPPLY**

**The City’s Goal of Local Food**: The city has a goal of increasing the production and consumption of local foods.

**The City supports**:  
- Agricultural production on open space land  
- Create edible landscape  
- Increase access to fresh healthy food (farmers’ market)  
- Create a brand identify for Boulder foods.

**Policy of local food**:  
The existing Boulder Valley Comprehensive Plan (BVCP/2010) contains language focused on agriculture and food and states that a “strong local food system can positively impact the resiliency, health, economy and environment of the Boulder Valley and surrounding region.” and then makes the following relevant commitments:  
- Support local food production  
- Support regional efforts to enhance the food system  
- Support urban gardening and food production  
- Support access to locally produced food
2.1 Case Study: Boulder, CO

**EXISTING EFFORTS**

**Growing/Urban Gardens:** The city’s Water Conservation Program and its Department of Parks and Recreation contribute to efforts to grow gardens at Boulder Valley School District schools and to create local urban gardens by supporting them with free and/or reduced cost, low-water drip irrigation, providing a community garden site (i.e., Foothills Park) and school/park sites (i.e., Burke Park/ Horizon School).

**Goats and Gardens Summer Camp:** ages 6-11, hands-on, place-based activities, reconnect children with the earth, the food they eat, organic gardening practices, and the importance of biodiversity and community.

**Leasing Open Space Land:** The city’s Open Space and Mountain Parks Department currently has 508 acres of agricultural land dedicated to the production of local food products.

Regional Partnership: With leadership from Council Members Plass and Jones, the city regularly convenes a group of regional leaders to discuss local food matters.

**Zoning Allowances:** The city’s zoning code was revised to allow for the following uses related to local agriculture in various areas of the city. Residents are allowed to have personal gardens in most residential zones.
- Residents, can have small greenhouses
- Commercial crop production, allowed in agricultural zones
- Greenhouses and plant nurseries, allowed in industrial, public or agricultural zones
2.1 Case Study: Boulder, CO

NPO OF URBAN AGRICULTURE

Non-profit Organization has great effort to urban agriculture development, a coordinator of citizens and government.

Growing Gardens (established 1998)
- Non-profit organization
- Missions: enrich the lives of our community through sustainable urban agriculture.
- Vision: envisions people experiencing a direct and deep connection with plants, the land and each other.
- Growing Gardens manages more than 500 individual community garden plots across twelve locations in Boulder County. Throughout this program gardeners have the opportunity to grow their own fresh organic produce. Each garden is managed in partnership with a resident Garden Leader (or multiple Garden Leaders) who serve as valuable resources for the individuals gardeners as they navigate the dynamic Colorado growing season.

http://www.growinggardens.org

Education
- Adult Classes
- Children’s Field Trips
- Children’s Summer Camps
- After School Garden Clubs
- Beekeeping

Event
- Cultiva Farm Dinner
- Community Plant Sale
- Children’s Bee Earth Day
- Community Harvest Festival

Program
- The Cultiva Youth Project (Ages 12-19)
- The Children’s Peace Garden (Ages 4-10)
- Horticultural Therapy (Seniors and People with Disabilities)
- Fresh Food Families & Fitness
- The Community Gardens (General Public)
2.1 Case Study: Austin, TX

CRISIS OF FOOD DESERT

- 2009 United States Department of Agriculture (USDA) study found that areas with limited access to affordable nutritious food due to a lack of nearby grocery stores and lack of transportation, also known as food deserts, may be connected to public health concerns such as obesity and diet related diseases, especially in low-income communities;

- The USDA Food Desert Locator indicates there are currently more than twenty census tracts that could be considered food deserts in Austin;

- The 2011 Central Texas Foodshed Assessment (CTFA report) stated the Capital Area Food Bank provides food to over 200,000 people in Central Texas annually;

- The CTFA report also found that the five-county region includes some 29 farmer’s markets and 28 community gardens, with the majority of community gardens being located within Austin’s city limits;

- The City of Austin has provided financial and in-kind support to encourage the development of local farmer’s markets for ten years.

SUSTAINABLE FOOD DEVELOPMENT

- Nonprofit Organization: Sustainable Food Center (1993)
  - Provide education and social series opportunities
  - Mission is to cultivate a healthy community where all children and adults grow, share, and prepare healthy, local food.

- Boards and Committees: Sustainable Food Policy Board (2008)
  - An advisory body to City Council and Travis County Commissioner’s Court.
  - Coordinate city government, and non-profit organizations, and food and farming business.
  - Research on food security and nutritional status.
  - Explore new means to improve the local food economy, the availability, sustainability, accessibility, and quality of food and our environment.
  - Measures that improve existing local food production and add new programs, incentives, projects, regulations, or services.
2.1 Case Study: Austin, TX

Sustainable UA and Community Garden Program (2009)

- Application is required (2011)
  - "A person must submit an application to the director of the Public Works Department to obtain a release of a public easement, license for the non-city use of public property, or vacation of a public right-of-way."

- LICENSE AGREEMENT means a written agreement (or an amendment to a previously executed license agreement) between the city and a nonprofit organization approved by the director that allows eligible city land to be used as a city-supported community garden under this chapter and in a form acceptable to the city attorney.

- Waiver of certain fees related to sustainable urban agriculture (2011)
  - Meter Tap & Reconnection Fees (not to exceed Meter Size -5/8" plus actual cost of meter fees) shall be waived for the installation of a water meter solely for a City-Supported Community Garden as defined in Chapter 14-7 of the City Code.

- Guidance of application (2013)
  - This packet is intended as a guide for community leaders and groups wishing to create a community garden on City owned and managed property in Austin and/or to obtain City assistance with water tap waivers when starting a community garden on privately owned property. Under City Code Chapter 14-7, it is required that each community garden project be endorsed by a nonprofit organization. Garden site proposals are subject to approval by the COA department director responsible for that property. The instructions in this packet will both help you plan a well-organized, sustainable garden, and will improve the likelihood of securing approval for your proposal.

- Identify and map public lands
  - Identify and map public lands that would be appropriate for urban agriculture and qualified community gardens.

Required Design
- Water plan
- Composting area
- Signature
- Wildlife habitat
- Fencing
- Education and social services
- Plot organization
  - minimum of 10 plots
  - in-ground plot
  - raised bed plot
  - size: 10’x10’ - 20’x20’

Additional Design
- Tool shed
- Gathering space
- Kiosk or bulletin board

Identify and map public lands
- Identify and map public lands that would be appropriate for urban agriculture and qualified community gardens.

Sustainable UA and Community Garden Program (2009)
2.1 Case Study: School Yard Farm, Portland, OR

**UA DEVELOPMENT & ZONING CODE**

- Portland has 26 farmer’s markets, 22 acres of community gardens and over 170 food cart businesses.
- Portland is a haven for urban agriculture. Supplemental businesses such as bee keeping supply shops and farming supply stores have sprung up across the city in the last few years.
- The city has two main programs that cover urban agriculture: a Community Gardens Program established in 1975 and a Sustainable Food Program.
- Small farms just outside the city provide a local food economy and CSAs abound.
- The Food Zoning Code has a new chapter on food production and distribution within the city limits providing detailed guidelines for market and community gardens, CSAs and farmer’s markets.
- Community and respect for neighbors is part and parcel of Portland’s plan forward.
- Creating community and cultural awareness of food production rather than creating an urban economy based on locally grown food.

**THE FOOD ZONING CODE (2012)**

Adopted Zoning Code Changes

<table>
<thead>
<tr>
<th>Topic Area</th>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Gardens</td>
<td>Classified as Agricultural Use, only allowed in a few zones</td>
<td>Allow in all zones with regulations to mitigate impacts</td>
</tr>
<tr>
<td>Community Gardens</td>
<td>Allowed in all zones</td>
<td>Allow in all zones with regulations to mitigate impacts</td>
</tr>
<tr>
<td>Food Membership</td>
<td>Not mentioned in current code</td>
<td>Allow in all zones with regulations to mitigate impacts</td>
</tr>
<tr>
<td>Distribution Site</td>
<td></td>
<td>Add specific farmers market temporary use regulations</td>
</tr>
<tr>
<td>Farmers Markets</td>
<td>Regulated as a temporary use</td>
<td></td>
</tr>
</tbody>
</table>

**COMMUNITY GARDEN TOOLKIT**

Creating a new community garden:

- **Program:** Portland Community Gardens (PCG):
- **Criteria:**
  - demonstrated need
  - neighborhood support
  - parking
  - property
  - security
  - water
  - light
- **Request a Garden Plot**
  - Select Sites
  - Select Plots size
  - Assign a plot

Portland Community Gardens Map
https://www.portlandoregon.gov/parks/finder/index.cfm?showResult=yes&AmenityId=8
2.1 Case Study: School Yard Farm, Portland, OR

COMMUNITY GARDEN IN SCHOOL (AMEND CHAPTER 33.281)

- Support healthy, vibrant neighborhoods by increasing opportunities to grow, sell, and purchase healthful food. Gardening, farmers markets, and food membership networks can bolster a neighborhood’s sense of community by combining common interests with gathering places for social interaction, group activities, and educational programs. Institutions such as schools, faith-based facilities, hospitals, and community centers provide excellent opportunities for neighborhoods to increase food-centered activity and promote neighborhood cohesion.
- Regulation: a conditional use is required for changes to nonschool uses on school sites in the OS and R zone.
- “Daycare, Community Service, Community Gardens, Market Gardens, and nonprofit or social service Office uses are allowed at a school site. However, these uses must comply with the parking requirements in Chapter 33.266, Parking and Loading. In addition, any exterior recreation areas including playgrounds and fields must be maintained and open to the public at times when the use is not occupying the areas.”

SCHOOLYARD FARMS SUMMER CAMP

- Rising 1st graders through rising 6th graders will experience a week-in-the-life of an urban production farm while exploring the schoolyard, performing farm tasks, preparing healthy snacks, and participating in farm arts and crafts activities, scientific inquiry, and active play.
- Candy Lane Elementary: 5901 SE Hull Ave. Milwaukie, Oregon 97267
3. Eastgate Neighborhood Plan

Schob Nature Preserve is located at Eastgate Neighborhood area.

In 2011, City Council adopted The Eastgate Neighborhood Plan that addresses issues relating to community character and land use, neighborhood integrity, mobility and sustainability (Eastgate Neighborhood Plan, 2011).

Community garden and park improvement are listed as strategies to strengthen neighborhood identity and overall image in the Eastgate Neighborhood Plan, standing for public activity and communication.
Eastgate Neighborhood Plan (2011)

Eastgate Neighborhood

• Schob Nature Preserve could serve most of the Eastgate Neighborhood in 0.5 mile walking distance.
• There are more than 2,789 residents, 799 single-family homes in the neighborhood (3% of all).
• 518,000 sqf of commercial and business space is along the perimeter of residential area.
• College Hills Elementary School.

Age Distribution

• Lower percentage of college-aged students
• Higher percentage of primary and secondary school-aged children, and retirement-aged residents

Age Distribution of Eastgate (2000 Census)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-17 years old</td>
<td>14%</td>
</tr>
<tr>
<td>17-24 years old</td>
<td>27%</td>
</tr>
<tr>
<td>&gt;=65 years old</td>
<td>10%</td>
</tr>
<tr>
<td>Others</td>
<td>50%</td>
</tr>
</tbody>
</table>

Age Distribution of CS (2000 Census)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-17 years old</td>
<td>35%</td>
</tr>
<tr>
<td>17-24 years old</td>
<td>10%</td>
</tr>
<tr>
<td>&gt;=65 years old</td>
<td>51%</td>
</tr>
<tr>
<td>Others</td>
<td>4%</td>
</tr>
</tbody>
</table>
4. Quadruple Net Value Analysis

Quadruple Net Value Analysis is a tool for evaluating the four category values from a site design.

The analysis of Schob Nature Preserve informs that the park has remained a great environmental value, and provided adequate spaces, social infrastructures, and social activity. Its unique history and access to university resources, saves cost, however, direct economic value from the park design is limited. All 5 sensory experiences are an obvious deficiency compared to other issues, such as low park accessibility, poor maintenance, potential safety hazard, etc.

Design guidelines are adhered to in order to retain and improve the four-category value (Environmental, Social/Cultural, Economic, and Sensory).
4. Quadruple Net Value Analysis

Value Matrix

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Economic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sight</td>
<td>Property Value</td>
</tr>
<tr>
<td>Sound</td>
<td>Revenues</td>
</tr>
<tr>
<td>Touch</td>
<td>Conceptualization and Design Value</td>
</tr>
<tr>
<td>Smell</td>
<td>Construction Value</td>
</tr>
<tr>
<td>Taste</td>
<td>Operation and Value</td>
</tr>
<tr>
<td>• Green Space/ Plant Material</td>
<td>• Property Value</td>
</tr>
<tr>
<td>• Environmental Certification</td>
<td>• Conceptualization and Design Value</td>
</tr>
<tr>
<td>• Air Quality Impact</td>
<td>• Construction Value</td>
</tr>
<tr>
<td>• Energy Conservation</td>
<td>• Operation and Value</td>
</tr>
<tr>
<td>• Storm Water Management Practices</td>
<td>• Real Estate Transactions/Investment Adjacent to the Project</td>
</tr>
<tr>
<td>• Water Management Practices</td>
<td>• Real Estate Transactions/Investment Adjacent to the Project</td>
</tr>
<tr>
<td>• Environmental Education</td>
<td>• Real Estate Transactions/Investment Adjacent to the Project</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social/Cultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Safety and Security</td>
</tr>
<tr>
<td>• Public Access/Connectivity</td>
</tr>
<tr>
<td>• Health</td>
</tr>
<tr>
<td>• Education</td>
</tr>
<tr>
<td>• Public Visitation/Involvement</td>
</tr>
<tr>
<td>• Residential Proximity</td>
</tr>
<tr>
<td>• Public Art</td>
</tr>
<tr>
<td>• History</td>
</tr>
<tr>
<td>• Pedestrian Comfort</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensory</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sight</td>
</tr>
<tr>
<td>• Sound</td>
</tr>
<tr>
<td>• Touch</td>
</tr>
<tr>
<td>• Smell</td>
</tr>
<tr>
<td>• Taste</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Green Space/ Plant Material</td>
</tr>
<tr>
<td>• Environmental Certification</td>
</tr>
<tr>
<td>• Air Quality Impact</td>
</tr>
<tr>
<td>• Energy Conservation</td>
</tr>
<tr>
<td>• Storm Water Management Practices</td>
</tr>
<tr>
<td>• Water Management Practices</td>
</tr>
<tr>
<td>• Environmental Education</td>
</tr>
</tbody>
</table>

• Green Space/ Plant Material
• Environmental Certification
• Air Quality Impact
• Energy Conservation
• Storm Water Management Practices
• Water Management Practices
• Environmental Education
4. Quadruple Net Value Analysis

Value Matrix

- **Environmental**
  - The park design satisfies all the criteria. It considers stormwater management, energy saving, etc. The park will devote to provide ecosystem services that benefit people.

- **Economic**
  - The park brings limited economic benefits to adjacent property. And there is no economic production from the park, except for the economic impact to local economy by construction cost.

- **Social/Cultural**
  - As an outdoor classroom of college students, the park has strong social and cultural value, regarding to education and research activities. Accessibility and public involvement to residences need improvement.

- **Sensory**
  - The park has a strong sense of place, however, the 5 sense experience is limited. Taste, smell, and touch experiences can be improved.
QUADRUPLE NET VALUE REPORT

Social/Cultural Value

A. Safety and Security: Security staff in addition to local police, crime reduction in the area, additional lighting in public areas, security systems added for the project, additional security items to be measured.

Research:
1. There was no patrolling at the area and no security staff. It was very rare when we saw police patrol pass through the area.
2. There are a few lights in the entrance of the park and minimal streetlights on Ashburn Street. Mostly natural lighting from the sun is apparent during the day.
3. There were no additional security systems that were added for the project. The back woods of the park needs more lighting as well as trails. There is no visual security patrolling the area.

Sources:
3. Group note
4. Schob Nature Preserve Solar- Dr. Ming-Han Li

Analysis:
Crime rate of the neighborhood is unknown. City of College station is a low crime rate city, comparing to U.S average. Crime index shows that college station (204.1) is lower than U.S average (294.7). The park is in the neighborhood area and next to a tertiary road. Police patrol pass through the area rarely. There is a record that the addicts prowled about for a place to drug up. The west section of Schob Nature Preserve becomes one of their options.

Conclusions:
Schob Nature Preserve does not have security staff and security system. The area that the park put in is relatively quiet with limited police patrol. Potential safety hazard exists.

B. Public Access/Connectivity: Public access to project, public transit connections, number of trail connections, number of bicycle lanes in streets, number of bicycle facilities, pedestrian trails and walks, streetscape – seating/lighting/landscaping/walks

Research:
1. Intersects with two main streets, Ashburn and Lincoln. Lincoln intersects with S Texas and also intersects with University.
2. There is a bus route on Lincoln. Bus route 12 (reveille). 10 Minute walk from University square drop-off.
3. No bicycle lanes in close proximity.
4. No bicycle facilities in the surrounding area.
5. There are sidewalks along Ashburn street (alternating sides), none on Lincoln street.
6. There are benches in the park, and minimal lighting in the park.
7. Sidewalk is available at the park side.
8. No sidewalk at Ashburn Road to connect with it.
9. Sidewalk is available at Lincoln Ave and Francis Dr.

Sources:
1. Group notes
2. Google Earth pro

Analysis:
Schob Nature Preserve was residence lot, located in the Eastgate Neighborhood area. After construction, there are 2 main trails in the park that provides the opportunities for nearby residences to come close to the nature and enjoy it. There are two entrances at the north side. The other three sides are connected with private properties. Ashburn Road is a tertiary road. Only the residence that live at both side of the street, and visitors of Schob Nature Preserve will use Ashburn Road. Way finding is relatively poor. No signage to show the Park is nearby. Sidewalk system is fragmented. The iconic street light and a huge area of grassland consisted of the image of streetscape.
Conclusions:
Schob Nature Preserve provides good opportunities for public to enjoy the site, jogging on trails and contacting with nature. The connectivity is relatively poor. Fragmented sidewalk and bike line will not encourage people to select the healthier way to get there. The streetscape of Schob Nature Preserve is certainly well done, creating a sense of place, which is easy to recognize.

C. Health:
Length of trails and walks for walking and running, area of public parks and exercise areas, number of health education/events, number of pet related events, number of dog parks, air quality improvements (area of landscaped areas, number of new trees, number and caliper of preserved trees, electric car stations, alternative modes of transportation)

Research:
1. Length of the trails is very limited. They are roughly >1 mile in length. This makes this the shortest trail length of all the parks/preserves in College Station.
2. The in-motion exercise area is that of the trails in the park which are both made of tile blocks and small rock trail material.
3. The only other open spaces are a circular space, which is next to and follows the bridge and sitting area, and the open area between the fences and set in front of the preserve.
4. No health education/events.
5. There are no pet related events, however pets are allowed at all times on the park and cleaning after them is highly encouraged.
6. LAND students applied themselves in creating two Rain Gardens Installation due to a mini-grant program. This was done in spring 2015.
7. 93% green space. 140 new planted trees. 4.04 acre preserved woodland area.

Sources:
1. Group notes
2. Park CAD Drawing
3. Good Earth pro

Analysis:
Schob Nature Preserve has two main tails, which are suitable for walking and running. The total length is about one mile. It could not be a place to finish a long-distance running, but it’s a nice destination with seatings and nature landscapes. Most of the events happened in Schob Nature Preserve are research and education related. Health education, such as fitness, yoga, and meditation, is encouraged. There is no pet related infrastructure. Walking pet in the park is happened anyhow. There are 140 new-planted trees and 4.04 acre preserved woodland area. They contribute to decrease the production of associated air pollution and greenhouse gas emissions. They also remove air pollutants and store and sequester carbon dioxide. Ashburn road normally serve to less car numbers than Texas Ave. So the pollution made from Ashburn road will be relatively lower.

Conclusions:
Schob Nature Preserve provides opportunities for nearby residences to exercise, walk and run. It’s a great destination to holding health education or events. Pets are welcomed, but pet’s related infrastructure and events are highly recommended. It could increase the utilization of the park and improve social connectivity. The air quality improvement is another important reason for people to do activities in Schob Nature Preserve.

D. Education:
Number of educational programs created to promote environmental, historical and cultural education for project users and neighbors, signage, exhibits, points of interest that communicate the educational aspects of the project, level of coordination with schools and other educational institutions to educate the public about the project

Research:
1. Schob Nature preserve is now handled by the LAND department at Texas A&M. Since taking over, a mini grant has been given to the department and 4 proposals have been chosen for funding.
2. There is a large sign with the park’s name on it with a 2-3 people seating area
at the front of the preserve. There are 4 picnic/park tables at the entrance of the preserve under the first gazebo. As you maneuver and follow through the bridge there is another seating area of 2 tables.

3. Schob Nature preserve is associated with Texas A&M for educational purposes. Specifically, through the LAND department. Information about Schob Nature Preserve is available through the Texas A&M Website under the College of Architecture.

Sources:
1. Group notes

Analysis:
Schob Nature Preserve is a research base of students from LAUP department at Texas A&M University. It becomes an outdoor teaching and research laboratory where they can learn the knowledge, regarding to construction, design, stormwater management, and environment. The history of Schob Nature Preserve is delivered to each LAUP students when they are visiting. Schob Nature Preserve gets respects from nearby residence. They understand the meaning of Schob Nature Preserve that it is an important wildlife refuge. The large sign with the park’s name well delivered the park’s character. The warning sigh also informs that it’s a research base of Texas A&M faculty and students and also a public park for residences. The signage of rain garden is a well example of educational exhibition, either to students or residences. LAUP department is conducting the 4 mini grant project. One is finished. So the Schob Nature Preserve is utilized frequently under those projected recently. They also has annually field trip happened in Schob Nature Preserve.

Conclusions:
Schob Nature Preserve has strong coordination with LAUP department of Texas A&M University. Various project and annually field trip are conducted in the park for education and research purpose. It is well known and highly utilized by college students. There is no doubt that nearby resident is using the park daily. They can learning from the signage and do exercise by themselves. However, educational events or activity are suitable for them to take. It could regard to health, nature, and food.

E. Public Visitation/Involvement: Number/area of public use areas in the project, programmed events that include the public, number of organizations that will be involved in public activities, projected annual public visitation

Research:
1. Comfortably, there were two good public use areas with natural shaded areas. There was a roof/gazebo, seating areas (benches), and room for a lot of group interaction.
2. Schob Nature Preserve opening ceremony drew College Station council members and staff, TAMU administrators, faculty members, students, and neighbors to celebrate the opening of Schob Nature Preserve in Oct, 2014.
3. Schob Nature preserve is now handled by the LAND department at Texas A&M. Since taking over, a mini grant has been given to the department and 4 proposals have been chosen for funding.
4. Could not be found

Sources:
1. Group notes

Analysis:
Schob Nature Preserve is a public use friendly park. Seating and shading structured are provided, which is a nice spot for social activity and daily use. Programmed events that could be found are research and education related. Few are programmed for residences and children. The statistic data of annual public visitation is unknown. However students and faculty from LAUP department are main users under the 4 mini-grant projects.
QUADRUPLE NET VALUE REPORT

Social/Cultural Value

Conclusions:
Schob Nature Preserve has become an outdoor classroom for college students as proposed. Public visitation is frequent by students and also nearby residence. However, public activity or events are limited. Social involvement is needed. Schob Nature Preserve is waiting for improvement in that point.

F. Residential Proximity: number of residential units within the project, number of residential units within a 5 minute walk (.25 miles) from project, number of residential units within a 10 minutes walk (.5 miles) from project, number of facilities that support residential quality of life (dog parks, parks, trail systems, neighborhood retail within 5 minute walk, schools, churches, transportation access points, dark skies initiative, neighborhood events)

Research:
1. According to the plan, there is one residential unit attached to the park. However, there are several units surrounding the area as well (mainly middle age, older age residents).
2. 190 residential units within 0.25mile in proximity.
3. 520 residential units within 0.5mile in proximity.
4. There are no dog parks, no dog waste stations, and no lights within the park only in the entrance. There is a park trail system that is very small, >1 mile, everything around the park is residential homes and no other facilities. There is a bus stop that takes you to A&M campus. The stop is about a 5-10 minute walk from the park entrance.

Sources:
1. Group notes
3. Good Earth Pro

Analysis:
Schob Nature Preserve is located at the center of Eastgate Neighborhood Plan(2011). Within the 0.5miles, 10min-walking distance, most of the residents units could be covered. Schob Nature Preserve supports residential quality of life by providing a high quality nature area with preserved woodland and a large area of grassland. It benefits for living environment and provides a place for people to do exercise and walking. Events or activities are limited. Providing shading and seating area encourages social communication.

Conclusions:
Schob Nature Preserve could be a great destination for the Eastgate Neighborhood residences. It is accessible, it opens to public and also pets. The natural scene is a big attraction for this place to be an activity base for nearby residence, also the facilities that provided, including shading and seating area. Therefore, Schob Nature Preserve has a great opportunity to get nearby residences to be involved.

G. Public Art: number of permanent art sites within the project, number of areas that incorporate rotating art exhibits, number of tours associated with art exhibits, educational activities/facilities associated with art, local art organizations involved in the project

Research:
1. No art sites within the project.
2. Art is not one of the programs associated with the nature preserve.
3. There is no tour system that is associated with the nature preserve.
4. Schob Nature preserve is associated with Texas A&M for educational purposes. Specifically, through the LAND department.
5. There is no art organization involved in the project.

Sources:
1. Group notes

Analysis:
Schob Nature Preserve is an area all about nature. Art sites, exhibition, education that related to art are very limited in the site. All the structures in the park are functional and have artistic value. But it’s not the example of art.
Conclusions:
Public art is not existed in the park. It could be another attraction for Schob Nature Preserve and another opportunity for Schob Nature Preserve to involve more people to the park by events or activity.

H. History:
Number of historical exhibits and sites in the project, number of tours associated with site, local or regional history, educational activities/facilities that celebrate history, local historical organizations involved in the project.

Research:
1. No visible historic exhibits on site
2. No tour information was available about the site
3. Schob Nature Preserve opening ceremony drew College Station council members and staff, TAMU administrators, faculty members, students, and neighbors to celebrate the opening of Schob Nature Preserve in Oct, 2014.
4. Information was not available for the project

Sources:
1. Group note

Analysis:
The establishment of Schob Nature Preserve has its own and meaningful background. The history of the donation from Dr. Schob is worth to celebrate and popularize. The opening ceremony informed people that the park is finished and welcome to everybody.

Conclusions:
Schob Nature Preserve could be more popularized depending on its meaningful background and history. More related events and activities would be conducted in the following time, since it opens to public only in one year.

I. Pedestrian Comfort:
Area of streetscape with landscape, shade/sun (depending on the season), tree cover, seating areas, bicycle parking, lighting, disability compliance, alternative transportation facilities.

Research:
1. 2 main pergolas that provide shade for people gathering in the park. Underneath the pergolas are also several seating areas (benches). There are no bike racks in the area. Natural sunlight is the main form of lighting during the day.
2. Accessible through small ramps and a small bridge that connects trails.
3. The main way to get to the park is driving.

Sources:
1. Group notes

Analysis:
Schob Nature Preserve is accessible for disable people by adopting ADA design. Pergolas and vine shade two main seating areas. Parts of trails are shaded by tree canopy. Night light are only designed at the entrance of the park. No lighting at inside. Therefore utilization at nighttime is not encouraged. Main way to get to the park is driving. By walking only suitable for nearby residences.

Conclusions:
Schob Nature Preserve is a pedestrian friendly park. Shading, seating and ADA design are all considered. However, to improve pedestrian comfort is reasonable by providing more shading to seating area and walking area, and improving maintenance level of west loop area.
QUADRUPLE NET VALUE REPORT

Economic Value

A. Property Values: Taxable value of the property before and after development, taxable value of adjacent properties before and after development, taxable value of property within five minute walks before and after development stages

Research:
1. Taxable value of the property before and after development
   a. 2010: Market value $233,340
      i. According to CPI Inflation Calculator: this market value has the same buying power as $254,623.06 in 2015.
   b. 2013: Market value $202,560
      i. According to CPI Inflation Calculator: this market value has the same buying power as $206,897.15 in 2015.
   c. 2015: Market value $198,340
   d. The current tax rate for the property is 2.32%
      i. (Sources: Brazos CAD and HAR.com)

2. Taxable value of adjacent properties before and after development
   a. 904 Ashburn Ave.
      i. 2010: Market value $102,560
      ii. 2013: Market value $132,110
      iii. 2015: Market value $135,910
   b. 1002 Ashburn Ave.
      i. 2010: Market value $50,720
      ii. 2013: Market value $61,290
      iii. 2015: Market value $72,200
   c. 1003 Ashburn Ave.
      i. 2010: Market value $92,020
      ii. 2013: Market value $121,350
      iii. 2015: Market value $129,590
   d. 1001 Ashburn Ave.
      i. 2010: Market value $92,020
      ii. 2013: Market value $121,350
      iii. 2015: Market value $129,590
   e. 911 Ashburn
      i. 2010: Market value $92,020
      ii. 2013: Market value $121,350
      iii. 2015: Market value $129,590
   f. 909 Ashburn Ave.
      i. 2010: Market value $92,020
      ii. 2013: Market value $121,350
      iii. 2015: Market value $129,590

3. Taxable value of property within five minute walk before and after development stages
   a. The market value for the properties within the 77840 zip code area in October of 2014 was $186K. This was down -3.6%.
   b. The market value for the properties within the 77840 zip code area in October of 2015 is $140K. This is down -8.3%.
      i. This data is sourced from Realtors Property Resource Market Activity Report.

Sources:
1. Brazos CAD and HAR.com
2. Realtors Property Resource Market Activity Report
3. Zillow.com

Analysis:
The construction of Schob Nature Preserve was started at June, 2012 and fully opened to public at October 2014. The market value of Schob Nature Preserve reduced continually from 2010 to 2015. The property value of 8 adjacent housing from 2010 to 2015 increased. However, the market value for the properties within the 77840 zip code area was -3.6% in 2014, and down -8.3%.

Conclusions:
Schob Nature Preserve could one factor of increasing the property value of adjacent neighborhood. But it might not be the direct reason. Schob Nature
Preserve is an ongoing financial investment for the neighborhood and surrounding areas. The Park will positively contribute to the market values to surrounding real estate and aid in boosting these values as the housing market continues to rebound and shift through the real estate cycle.

**B. Revenues:** tourism $ generated on an annual basis by the project, occupancy rates, sales and rents before and after development, occupancy rates, sales and rents of adjacent properties before and after development, occupancy rates, sales and rents of property within 5 minute walk before and after development

**Research:**
1. There is no tourism money generated on an annual basis by the project
   a. However, there has been educational value gained from the project.
   b. In the time frame of September 2014 to August 2015, over 200 students were introduced to the Schob Nature Preserve. These students are learning, researching, and participating in outreach activities at the nature preserve.
   c. According to Texas A&M University professor, Dr. Ming Han Li, approximately 65-70 students actively use the nature preserve as a location to study and work on projects.
   d. These numbers do not include the use of the preserve from individuals within the neighborhood and surrounding areas.
   e. Also the student use index could very well have increased due to the continued advertisement of the project throughout the College of Architecture.

1. **Occupancy rates, sales, and rent before and after development**
   a. Occupancy 2010: Census tract 13.3
      1. 1,971 (85%)
   b. Occupancy 2013: Census tract 13.3
      1. 2,222 (91.6%)
   c. Occupancy 2015:
      1. Not included on American Fact Finder

2. **Sales**
   a. The property was listed at $249,900 in August of 2010 according to Realtors.com.
   b. The property was listed as sold in November of 2010 according to Zillow.com.
   c. The Brazos CAD listed a new owner for the property in 2011.

3. **Rent:**
   a. According to Zillow.com, the estimated monthly rental rate for 906 Ashburn is $1,913.00/mo. This rate is down $60.00 in the past thirty days.
   b. Occupancy rates, sales and rents of adjacent properties before and after development
   a. 904 Ashburn Ave.
      1. Occupancy 2010: Census tract 13.3
         a) 1,971 (85%)
      2. Occupancy 2013: Census tract 13.3
         a) 2,222 (91.6%)
      3. Occupancy 2015:
         a) Not included on American Fact Finder
      4. Sales
         a) The property was listed at $249,900 in August of 2010 according to Realtors.com.
         b) The property was listed as sold in November of 2010 according to Zillow.com.
      c) The property was listed at $249,900 in August of 2010 according to Zillow.com.
   b. 1002 Ashburn Ave.
      1. Occupancy 2010: Census tract 13.3
         a) 1,971 (85%)
      2. Occupancy 2013: Census tract 13.3
         a) 2,222 (91.6%)
      3. Occupancy 2015:
         a) Not included on American Fact Finder
      4. Sales
         a) No sales within the past 5 years.
      5. Rent
         a) According to Zillow.com, the estimated monthly rental rate for 1002 Ashburn is $1,800.00/mo. This rate is up $1.00 in the past thirty days.
   c. 1003 Ashburn Ave.
      1. Occupancy 2010: Census tract 13.3
         a) 1,971 (85%)
      2. Occupancy 2013: Census tract 13.3
         a) 2,222 (91.6%)
QUADRUPLE NET VALUE REPORT

Economic Value

3. Occupancy 2015:
   a) Not included on American Fact Finder

4. Sales
   a) No sales within the past 5 years.

5. Rent
   a) According to Zillow.com, the estimated monthly rental rate for 1003 Ashburn is $1,650.00/mo. This rate is down $21.00 in the past thirty days.

   e. 1001 Ashburn Ave.
   1. Occupancy 2010: Census tract 13.3
      a) 1,971 (85%)
   2. Occupancy 2013: Census tract 13.3
      a) 2,222 (91.6%)
   3. Occupancy 2015:
      a) Not included on American Fact Finder
   4. Sales
      a) No sales within the past 5 years.
   5. Rent
      a) According to Zillow.com, the estimated monthly rental rate for 1001 Ashburn is $1,695.00/mo. This rate is up $5.00 in the past thirty days.

f. 911 Ashburn
1. Occupancy 2010: Census tract 13.3
   a) 1,971 (85%)
2. Occupancy 2013: Census tract 13.3
   a) 2,222 (91.6%)
3. Occupancy 2015:
   a) Not included on American Fact Finder
4. Sales
   a) No sales within the past 5 years.
5. Rent
   a) According to Zillow.com, the estimated monthly rental rate for 911 Ashburn is $1,950.00/mo. This rate is up $79.00 in the past thirty days.

   h. 905 Ashburn Ave.
1. Occupancy 2010: Census tract 13.3
   a) 1,971 (85%)
2. Occupancy 2013: Census tract 13.3
   a) 2,222 (91.6%)
3. Occupancy 2015:
   a) Not included on American Fact Finder
4. Sales
   a) No sales within the past 5 years.
5. Rent
   a) According to Zillow.com, the estimated monthly rental rate for 905 Ashburn is $1,800.00/mo. This rate is up $65.00 in the past thirty days.

i. 703 Francis Dr.
1. Occupancy 2010: Census tract 13.3
   a) 1,971 (85%)
2. Occupancy 2013: Census tract 13.3
   a) 2,222 (91.6%)
3. Occupancy 2015:
   a) Not included on American Fact Finder
4. Sales
   a) No sales within the past 5 years.
5. Rent
   a) According to Zillow.com, the estimated monthly rental rate for 703 Francis is $1,878.00/mo. This rate is down $49.00 in the past thirty days.

j. 701 Francis Dr.
1. Occupancy 2010: Census tract 13.3
   a) 1,971 (85%)
2. Occupancy 2013: Census tract 13.3
   a) 2,222 (91.6%)
3. Occupancy 2015:
   a) Not included on American Fact Finder
4. Sales
   a) No sales within the past 5 years
5. Rent
   a) According to Zillow.com, the estimated monthly rental rate for 701 Francis is $1800.00/mo. This rate is up $129.00 in the past thirty days.

3. Occupancy rates, sales and rents of property within 5 minute walk before and after development
   a. Occupancy 2010: Census tract 13.3
      1. 1,971 (85%)
   b. Occupancy 2013: Census tract 13.3 
      1. 2,222 (91.6%)
   c. Occupancy 2015:
      1. Not included on American Fact Finder
   d. Occupancy 2010: Census tract 13.2
      1. 1,908 (88.2%)
   e. Occupancy 2013: Census tract 13.2
      1. 1,784 (82.7%)
   f. Occupancy 2015: Census Tract 13.2
      1. Not included on American Fact Finder
   g. Sales:
      1. Schob Park is within the College Hills Woodlands neighborhood. There are currently 4 properties for sale in the neighborhood. The average price is $369,325, with the average price per square foot at $146.
         a) Source: HAR.com
   h. Rent:
      1. In the 77840 zip code the rental rate average is $1,454.00. The College Station rental rate average is $1,687.00. This is according to Zillow.com.
      2. College Hills Woodlands: Rent prices are relatively stable, and availability is good. Rent prices have decreased by 25% over the past 3 months. This is 23% lower than the city average of $1,398 and 25% lower than the county average of $1,421.

Sources:
1. Census Tract
QUADRUPLE NET VALUE REPORT

Economic Value

Analysis:
Retired Dr. Michael Murphy was hired as the landscape architect to design the preserve. There is no fee for design. The main goal of design is to deliver Dr. Schob’s wish that is to use his property as a student residence and public park. So there is no economic impact to conceptual design.

Conclusions:
Dr. Michael Murphy, a Texas A&M faculty member at the time, designed the park at no cost, saving roughly $20,000 in fees. The design of the park was also an opportunity for A&M students to gain real world experience.

D. Construction Value: Number of jobs created during construction, total construction value, economic impact using the multiplier for construction impact

Research:
1. Number of labors that involved in the project is unknown
2. Final payment to Dudley Construction was $380,749 from $405,834 estimate
3. Economic impact of about $900,000 due to circulation of construction money

Sources:
1. Group notes
2. Drawing and Technical Specification

Analysis:
Construction of Schob Nature Preserve has strict technical specifications. Each phase has detailed requirement. A numbers of labors are involved during construction. Different types of job are provided. Total construction cost of construction was $380,749. About $900,000 is generated due to circulation of construction money.

Conclusions:
Dudley Construction, a College Station-based company, was contracted to build the preserve for $380,749. Based on the standard economic multiplier factor of 2.5, this resulted in a total economic impact of $900,000 for the local economy.

E. Operations and Management Value: number of jobs created to operate and maintain the project on an annual basis, annual budget to maintain of the project

Research:
1. As far as the number to maintain it the park is relatively self-sufficient aside from landscape maintenance, which once again was not readily available in any of the document or online. But for estimated that several people are in charge of mowing the grass.
2. Annual budget to maintain is unknown.

Sources:
1. Group Note

Analysis:
Number of jobs and budget of operation and managements are unknown. But based on site visit, East section of Schob Nature Preserve is maintained well. The west section brings people a feeling of abandon. The cost of operation and management to Schob Nature Preserve is limited. The park could not self-sufficient fully.

Conclusions:
There is a limited investment to operations and management of Schob Nature Preserve. It might save cost and labor, but low maintenance will reduce the park’s value in sensory aspect.

F. Real Estate Transactions/Investment Adjacent to the Project: number of annual real estate transactions within a 5 minute walk before and after the project, investment by adjacent properties to enhance their image and property values

Research:
1. Since the project took place it is logical to assume that at least a couple of real estate transactions have taken place however, since it is located in a neighborhood these transactions are the buying and selling of houses. In a neighborhood that was already developed before the park was put in.
2. Was not able to find evidence of investment by adjacent properties to enhance their image. The project is relatively new and furthermore these are private residences that are next to it.

Sources:
1. Group notes

Analysis:
The neighborhood was already developed before the park was put in. Schob Nature Preserve could be a new positive factor to impact real estate transactions of nearby neighborhood. Investment by adjacent properties is unknown.

Conclusions:
Schob Nature Preserve could impact nearby neighborhood positively. The level of real estate transactions and investment are unknown.
A. Green Space/Plant Material: % of project area dedicated to green space; urban heat island effect; number and types of plant material used in project; impact of plant material on air quality (carbon footprint resulting from plant material); xeriscape/low water usage plant material program.

Research:
1. Predevelopment condition: grassland & woodland
2. Preserved all the woodland area, 4.04 acre
3. Reduced grassland area: 0.33 acre (by path, plaza, and pavement)
4. 93% of the site is green space.
5. New planted trees (140), will benefit for mitigate urban heat island effect by absorbing CO2 and providing shade.
6. 140 trees will absorb 6720 pounds carbon dioxide per year (140x48 pounds of CO2 per year)
    assuming that all the tree live to be at least 40 years old, 542.1 tons of CO2 will be absorbed by the trees
    the average car emits 60 tons of CO2 every year, so over the all the trees lifetime (assuming 40 years) the preserve will offset 9.03 cars
7. Woodland area will absorb 23157.1 pounds carbon dioxide per year.
   (4.04x2.6x2204.6 = 23157.1 pounds)
   (1 metric ton=2204.6 pounds)
   (An acre of mature trees can capture 2.6 tons of CO2 per year.)
8. Plants material: various types of plants, including trees, shrubs, ground cover, grass and forbs, vines. Few trees are invasive and a lot of weed with low maintenance condition. These invasive species may cause problems later on because they will compete for water and resources with other planted trees.
   Some of the site species, such as Sugar Hack Berry, are very messy but provide food for birds and other wildlife.
9. Lots of dry tolerance plants are used in the rain garden that has effects on preservation and purification. Cattail benefits soil, water conservation, and is also aromatic. Johnson grass, in the Sorgrhum family, could stop erosion but also is known to produce hygrocyanic acid when it is exposed to frost or stress from drought. This chemical has been known to poisonous when ingested by animals. Johnson grass also doesn’t do well with repeated close mowing so controlling the spread of this grass my be problemsome.

Sources:
1. Schob Preserve Nature Preserve CAD Drawing.
2. Group notes.
3. Google Earth Pro
6. Rain garden- Professor Kim’s lecture Sep. 29th

Analysis:
Schob Nature Preserve is a nature conservation area. The site was a huge undeveloped area of grassland and woodland. About 7% area is compromised. The place is took by path, plaza and pavement, which are necessary and reasonable for providing basic park services. The planting plan shows great respect to existing old trees and groundcovers. They are protected and well organized with new-planted trees and shrubs. Base on the research, all the trees, including new-planted and preserved woodland will absorb 29,877.1 pounds CO2 per year that have significant effect on improving the air quality and reducing regional urban heat island effect. The rain garden is a great demonstration of xeriscape. Using dry tolerance plants benefits for water preservation and purification.

Conclusions:
The site had strong sense of nature, a conservation area of grassland and woodland. The built Schob Nature Preserve kept this characteristic and provided many opportunities for citizens to enjoy in and to understand the land. The project followed the strategy of low impact development. 93% of land area is green space. Only a small portion is compromised for pavement. The overall design was well proposed and protected the natural environment in a great extent. Reducing regional urban heat island effect and purify air quality are the most important efforts of Schob Nautre Preserve.

B. Environmental Certifications: LEED certification of the project; Sustainable Site Initiative (SSI) certification; Conservation organization certification; Smart growth recognition or certification.
Environmental Value

Research:
1. No LEED certified building on site
2. No SSI certified development on site
3. Obtain the national wildlife habitat certificate at 2015 spring.
4. Some sustainable efforts on site, including:
   - Preserve a huge area of woodland, with careful design.
   - Existing old trees are protected.
   - Native plants are used.
   - Low impact development application, such as rain garden, permeable pavement, vegetated swale, and urban forest.

Sources:
2. Group notes.
3. www.leed.net
4. www.sustainablesites
5. http://lauip.arch.tamu.edu/research/schob-nature-preserve/
7. Google Earth Pro

Analysis:
Schob nature preserve is a certified wildlife habitat. It is a wildlife-friendly preserved land and also a place for people to contact with nature. On the other hand, the certification reminds resident, researcher and designer not to ignore its environmental value. Schob nature preserve has the importance to research, to ecosystem, and the community. So far, the site is not rated by SITES. But the site has great potential to get high score, since many sustainable efforts in plan and design are existed. For instance, the existing woodland area is protected. Along the woodland edge area, trails are designed carefully to minimize disturbance. The rain garden, vegetated swale, and permeable pavement are effective strategies of storm water management. Preserving existing old trees could keep the original sense of place to nearby residence and remind their old memory. Native plants are used certainly.

Conclusions:
The certification of Wildlife Habitat is a great evidence for Schob Park to show its environmental value. It is a wildlife-friendly land and a natural park for people.

The plan and design has many concerns about sustainability and environment protection. Low impact development, storm water management, and xeriscape are crucial in sustainable site development. The site has the opportunity to be certified by SSI and get high score. LEED rating system is not appropriate for the site.

C. Air Quality Impact:
Total carbon footprint of the project (before and after); heat island impact of the project (before and after); air quality construction practices implemented on the project; alternative sources of transportation incorporated on the project.

Research:
1. 140 trees (new planted) will absorb 6720 pounds carbon dioxide per year (140x48 pounds of CO2 per year)
2. 140 trees (new planted) will generate 36,400 pounds of oxygen per year (140x260 pounds of O2 per year)
3. Woodland area will absorb 23157.1 pounds carbon dioxide per year. (4.04x2.6x2204.6= 23157.1 pounds)
4. The newly planted trees will generate $4,200,000 worth of oxygen for 50 years, control $4,200,000 worth of soil erosion and soil fertility, contribute $5,040,000 to the recycling of water and controlling humidity worth, contribute $8,400,000 to controlling air pollution worth. (A medium size tree produces about $30,000 worth of oxygen over ‘a period of 50 years, controlling soil erosion and soil fertility $30,000; recycling of water and controlling humidity $36,000 air pollution $60,000)
5. They provide erosion control measures to prevent erosion or displacement of soils and discharge or soil-bearing water runoff or airborne dust to adjacent properties, water, courses, streets and walkways.
6. Aggie Bus #12 (stop on Lincoln Ave, 4 min wall to the park) and bike line (on Lincoln Ave)

Sources:
2. Group notes.
3. Google Earth Pro
4. Drawing and Technical Specifications
QUADRUPLE NET VALUE REPORT

Environmental Value


Analysis:
Schob Nature Preserve has a compelling advantage to improve air quality and mitigate heat island impact. Most of the park is green space with minimized concrete area. Trees and vegetation decrease the production of associated air pollution and greenhouse gas emissions. They also remove air pollutants and store and sequester carbon dioxide. Especially the woodland area has great value to ecology, botany, zoology, geology and soil science, providing habitat to wildlife and services to the environment. Woodland area will absorb 23157.1 pounds carbon dioxide per year, and the new-planted 140 trees will absorb 6720 pounds carbon dioxide per year. Public transit is limited in the community. Bike line is existed only at the Lincoln Ave without a bike line system.

Conclusions:
Schob Nature Preserve, 93% green area, provides a green living environment to surrounding neighborhood. It benefits for mitigating urban heat islands, improving air quality, and improving quality of life. The value of preserved woodland area is infinite, for now, the benefit for environment, wildlife and research is far more important. The residences within walkable distance from Schob Nature Preserve will get benefit easily.

D. Energy Conservation: # and types of energy savings programs implemented on the project, alternative energy generating sources and facilities for the project, economic savings of the energy saving programs

Research:
1. Solar Sync Sensor:
   a. Reduce/increase watering times based on sunshine and outdoor temperature. Shut down irrigation system during rain/freezing condition. Saving water when extra sprinkling is not regulated.
   b. The sensor could save 30% water usage

2. LED Fixtures with light sensitive switching.
   a. LEDs offer the potential for cutting general lighting energy use. Saving energy dollars and carbon emissions in the process.
   b. They are long life span; create a bright, shadow-free environment that can improve the safety and comfort; durability and reliability.
   c. Operational cost over 23 years: Incandescent-$201; CFL-$48; LED-38$(per bulb)

Sources:
1. Group notes
3. Drawing and Technical Specifications

Analysis:
Schob Nature Preserve is a nature area with less energy using than housing project. Irrigation and lighting are the two main energy using. This project adopts energy conservation strategies by using solar sync sensor to make irrigation in a more efficient and economical way, which could save 30% water usage. LED fixtures could save energy dollars and has low operational cost in long-term than other types of bulb.

Conclusions:
In Schob Nature Preserve, solar sync sensor and LED fixtures are the main strategies of energy conservation. It helps irrigation to operate in a most efficient way, saving water usage, and supporting plants’ growing demand. LED fixtures reduce the cost of project and save energy dollars.

E. Storm Water Management Practices: % of site developed as impermeable surface, area of green roof, rain water harvesting programs, storm water runoff coefficients for the project, area of detention and retention facilities on site
QUADRUPLE NET VALUE REPORT

Environmental Value

Research:
1. 4.7% of site developed as pavement area (including pedestrian road, main entrance, west and east loop, 1 secondary loop, and the area near bridge), the material are permeable
2. There is no green roof.
3. Rain Garden; Rock Swale; Vegetated Swale (rock swale safely infiltrate and convey runoff) could harvest rain water
4. Park coefficients: 0.1-0.25
5. Retention facility: rain garden and swale

Sources:
1. Group notes
4. CAD Drawing

Analysis:
Schob Nature Preserve is developed as a public park. 93% of the park is covered by grassland or forest. Groundcover, shrubs and trees have great benefits to water absorption and great impacts on solving soil erosion issues. Most paving selection considered the issue of water runoff. Brick pavement and pebbles are good material to promote water absorption. The concrete paving in the woodland area might be not a good selection, in term of water management and visual impact. Grading plan shows that the design fully respects the existing site condition. They build vegetated swale, rain garden, and drainage outlet to direct water runoff from north (high elevation) to the creek (low elevation). Through the cleansing of vegetation and pebbles, water quality will get improved that will make the water system more healthier.

Conclusions:
Schob Nature Preserve is a public park that has great function on storm water management. The green land area could help to store water and prevent soil erosion. Most of the pavement areas are permeable. Rain garden and vegetated swale are effective strategies to direct water runoff to the existing creek.

F. Water Management Practices:
Low Water use facilities in the project; Gray water program; Water savings from xeriscape plant material; Low water usage irrigation system (drip system) impact; Automated water management system and its impact;

Research:
1. Do not have low water use facilities, such as toilets, sinks, or shower
2. Gray water program does not exist in the park
3. Xeriscape (Drought-tolerant landscaping) plant material
   a. Swales
      i. safety infiltrate and convey runoff
   b. Typha (Cattails)
      i. Soil and water conservation
   c. Johnsongrass
      i. Avoid soil erosion
   d. Native grasses
      i. absorb runoff and pollutants
   e. cut back on landscape water use by 50%-75%
4. Drip irrigation system
   a. High efficiency of water application
   b. Minimize fertilizer and nutrient loss
      i. Localized applications
   c. Less soil erosion and weed growth
   d. Saves 30-70% water usage
5. Solar Sync Sensor
   a. Reduce/increase watering times based on sunshine and outdoor temperature
   b. Automatically shut down irrigation system during rain/freezing condition
   c. Saving water when extra sprinkling is not regulated
   d. Could save up to 30% water usage

Sources:

Analysis:
Based on the research, Schob Nature Preserve do not have any low water use facilities. The Gray water program does not exist on the park. The function of xeriscaping or drought-tolerant landscaping is reducing or eliminating the need for water use. The xeriscape plant materials are widely use in preserve area, such as rock swale, Johnsongrass. The benefit of swale installation is reducing erosion and increase evaporation runoff. Other benefits from xeriscape plants are to absorb runoff and pollutants, soil and water conservation, and to avoid soil erosion. Irrigation system use for this area is the drip irrigation system. The benefits of using drip irrigation system include more efficient on water application, minimize fertilizer and nutrient loss. Also, compare with sprinkler system, drip irrigation system can saves 30-70% water usage. Solar sync sensor which is an on-site irrigation controllers, is an automated water management system used in the preserve area. It will work by measuring the sun’s intensity and surrounding air temperature to determine the watering times. Compared with traditional irrigation controllers, which apply the same watering program daily, solar sync system can save up to 30% water usage.

Conclusions:
Schob Nature Preserve basically do not have any water usage except of irrigation. The preserve area uses drip irrigation system plus solar sync sensor for irrigation. These are both effective ways in saving the usage of water. The design of xeriscape and the plant materials using in the preserve area serves the purposes to conserve the soil, absorb runoff, and cut back on landscape water use. The design of the water management is a great approach to Low-Impact Development.

G. Environmental Education: # of programs associated with environmental education in the project; # of organizations involved in environmental education in the project; Programs and organizations involved in the use and maintenance of the landscape; educational facilities on the site

Research:
1. “Living Classroom”
   a. Landscape Architecture and Urban Planning (LAUP) Department
   b. Recreation Parks and Tourism Sciences (RPTS) Department
2. 1 Schob Mini Grant Program
   a. Schob Scholars Program
3. 4 LAUP Mini-Grant Program
   a. “The Quadruple Net Value Analysis of Schob Park, College Station” by Geoffrey John BOOTH
   b. “Schob Nature Preserve Prairie Planting and Interpretation” by Bruce DVORAK
   c. “Sustainable Design and Implementation Plan for Creating a Hydrological Sensitive Demonstration Garden in the Schob Nature Preserve” by Jun Hyun KIM
   d. “Environmental Motorization and Interactive Display of Schob Preserve” by Galen NEWMAN
4. Expertise:
   a. Landscape architecture
   b. Urban planning
   c. Park design
   d. Recreational planning & management
   e. Plant and animal ecology
   f. Rain Garden
   g. Stormwater management
   h. Low impact development
   i. Sustainable development
5. Organizations involved in the project
   a. Landscape Architecture and Urban Planning (LAUP) Department
   b. Recreation Parks and Tourism Sciences (RPTS) Department
6. Information of interpretive signage (x1)
   a. Basic information of the Preserve area
   b. Acknowledgement
   c. Explanation of Rain Garden
c. Explanation of Rain Garden

Source:
1. http://laup.arch.tamu.edu/research/schob-nature-preserve/schob-scholars-program/mini-grant-program/
4. Interpretive signage from Schob Nature Preserve

Analysis:
LAUP and RPTS Department are both involved in environmental education in the project. Schob Nature Preserve is a “Living Classroom” for every TAMU students, especially for LAUP and RPTS students. It provides a learning opportunity for students to learn sustainable design, recreation planning, plant and animal ecology, LID demonstration garden, and rain garden from this project. A Schob Mini-Grant Program and four LAUP Mini-Grant Programs are associated with environmental education in the project. Those Mini-Grant Programs use different methods to research, analyze, and evaluate the value of the site. This is open to everyone, the users can get the information of the Preserve area from the interpretive signage, which is located in front of the bridge. The interpretive signage includes the foundation of the Preserve park, acknowledgements, and the simplify explanation along with the benefits of the rain garden.

Conclusions:
Schob Nature Preserve is a living learning opportunity not only for students from Texas A&M University but also for anyone who is interested in it. Students can benefit from involving in this project. Others can learn about rain garden by using interpretive signage. To maximize the educational value from this preserve area, my team would like to recommend adding more interpretive signages to introduce others with some valuable information about the Preserve area, such as xeriscape plant material.
A. Visual Impact

- Notable or award-winning designers and artists involved in the design
- Iconic and artistic elements of the project
- Water features in the project
- Quality of the project
- Adjacent streetscape enhancement resulting from the project
- Number of adjacent properties that have enhanced their design as a result of this project

Research:
1. BLA student and LAND 321 designed sections of the rain garden with faculty advisors of Dr. Jun-Hyun Kim and Dr. Ming-Han Li
2. Lots of vegetation and rain gardens
3. Creek at back in woody forestry
4. Since it serves as public parkland, maintenance seems to be monthly or more. Very overgrown vegetation on sidewalks, although front lawn is well maintained.
5. 301 feet streetscape is enhanced.
6. Few houses slightly enhanced their landscape as a result. Added more trees, circular driveway on one property, new features, one new house in an adjacent street along with an added pool.

Source:
1. Group note
2. CAD Drawing
3. Good Earth pro

Analysis:
There is no notable or awarding winning design in the park. Schob Nature Preserve is an outdoor classroom for LAUP students. All design made is by professor and student. The meaning of it is also worth to point out. Most iconic and artistic element of the park seems to be the big signage with park name and the pergola at the main entrance. The design and position make them standout. The creek is located at woodland area. Based on the location and condition, the creek is not desirable to be a water feature to enjoy. The level of maintenance is pretty poor at west loop of the park. Weeds are easy to be found near the loop and seating area. East loop is very neat. It’s no doubt that the entrance side of the park improved the streetscape of Ashburn Road. Elements that consist of streetscape are lighting, neat sidewalk, well-maintained grassland, old trees, and iconic structures. Few houses slightly enhanced their landscape as a result. They can look at Schob Nature Preserve through their backyard. Wildlife visits their house quiet often.

Conclusions:
The most important visual impact is that it provides 100% green space to visitors. Schob Nature Preserve shows a combination of preserved nature scene and organized park scene. The park improved streetscape of Ashburn Road significantly. Signage and pergola forms the iconic image of Schob Nature Preserve. Low level of maintenance impacts the visual value negatively. It brings people a feeling of abundant in some extent. The artistic element is really limited. It could be an opportunity for Schob Nature Preserve to attract more users and to hold diverse events and activities.

B. Smell

- Adjacent restaurants to the project
- Area of landscape improvements and flowering plants
- Food vendors, design of trash facilities and pick up process/proximity to pedestrian activity
- Proximity to positive and negative odiferous facilities (freeways, trains, recycling facilities, landfills, etc.)

Research:
1. No restaurants adjacent to the park
2. Flowers at front of the park, rain gardens by bridge, as well as native vegetation.
3. No food vendors.
4. No trash cans on sight on the nature preserve.
5. None only smells of flowers resulting from part of the rain garden.

Source:
1. Group note
2. CAD Drawing
Analysis:
Smell impact of park design is very limited. The flowering plants bring more visual impacts than smell. At least, the negative odiferous facilities are not existed near the park. Restaurants and food vendors are not available near the park and they are no suitable. Nature scene is the iconic image of Schob Nature Preserve. Therefore, more fragments flower or trees are highly recommended.

Conclusions:
Schob Nature Preserve is in good condition without negative odiferous facilities nearby. Smells of flowers resulting from part of rain garden is limited to form smell impact to visitors. For Schob Nature Preserve, restaurant nearby is not realistic. Food vendor might have during events or activities. Planting various flowers and flowering trees will be more effective to strong smell impact of the park.

C. Touch:
# and area of water facilities, # and types of facilities for the blind, American Disabilities Act (ADA) compliance and recognition, # and area of textured paving, vibrations associated with underground transportation activities, number of seating areas, water fountains, and shaded retreats (for summer)

Research:
1. Sewer in ground next to trail, along with 3 water facilities located on sight.
2. No facilities for blind
3. Yes, no stairs only inclined allowing for handicaps and wheelchairs
4. 3 textured pavements (concrete, crushed rock on trail, brick pavement)
5. No underground transportation activities
6. Seating areas – shaded pavilion at front, as well as seating next to bridge

Source:
1. Group notes
2. CAD Drawing

Analysis:
Water feature could bring visual and touch experience to visitors. But it is not existed in Schob Nature Preserve. Various pavements could bring people different experience and remind people different spaces. Stones step design in the rain garden provides great opportunities to touch the plants. Trails in the woodland area have the same function. Shaded seating is available in the park where is closer to plants. Wood structure could also bring nice experience to visitors in feeling.

D. Sound:
# of sound venues (concerts, programmed activities, kinetic art, etc.), sound system for the project, area of pedestrian friendly quiet areas (parks, open spaces, etc.), linear distance of streets adjacent to the project that generate traffic noise, proximity to noise generating activities (airports, railroads, high speed traffic corridors, industrial facilities)

Research:
1. No sound venues
2. No sound systems
3. 0.045 Miles
4. The linear distance of Lincoln Avenue 0.28 miles
5. University Dr. and Texas Avenue traffic causes high-speed traffic noise

Source:
1. Group notes

Analysis:
Schob Nature Preserve is located in the center of Eastgate Neighborhood. Sound venues are not observed near the site. Noise from Ashburn road is very low, since the road not highly used. The noise from main road, Texas Avenue, is hard to recognize. On the contrary, the park is relatively quiet. Especially at morning time, the only sound can hear is bird voice, which is continued and wonderful.
Conclusions:
Schob Nature Preserve is a relatively quiet park in the neighborhood. With less traffic noise from nearby road, bird sound is very clear and continued. It could delight visitors and bring people the sense of nature.

E. Taste: # of food vendors at the project, culinary activities at the project, water fountains, edible plants

Research:
1. No food vendors on site
2. No culinary activities
3. No water fountains, only drainage swale
4. No known edible, only native grasses and flowers, as well as the installed rain gardens sustained by storm water runoff absorbed from nearby impervious surfaces like sidewalks and parking lots.

Source:
1. Group notes

Analysis:
Schob Nature Preserve has no edible plants, no food vendors, no culinary activities, and no water fountains. Visitors could taste their own food.

Conclusions:
For the point of taste, Schob Nature Preserve only provides a place to eat. But it doesn’t provide any products that visitors could taste as a unique experience. Edible landscape is a vacancy for Schob Nature Preserve. Relative events or actives will be happened after developing edible landscape. It’s a great opportunities.
Respect nature and existing site condition by following low impact development strategies.

Improve public access and involvement by creating physical spaces and events opportunities.

Quantify the direct economic value that generated from a community garden.

Create a sense of place in terms of the 5 senses.

Avoid potential safety hazards.

**Schob Nature Preserve as a developed parkland:**

- Maintain great environmental value.
- Provide spaces and infrastructure for social and culture activities.
- Direct economic value from the park design is limited.
- 5 senses experience is an obvious deficiency comparing to low park accessibility, poor maintenance, potential safety hazard, etc.

**Design Guidelines**

- Respect nature and existing site condition by following low impact development strategies.
- Improve public access and involvement by creating physical spaces and events opportunities.
- Quantify the direct economic value that generated from a community garden.
- Create a sense of place in terms of the 5 senses.
- Avoid potential safety hazards.
5. Design Programming

SCHOB NATURE PRESERVE

Private Zone
• Student residence

Public Zone
• Students
• Researchers
• Children
• Citizens

Protected Zone
• Not touched area
5. Design Programming

TWO ALTERNATIVES

ALTERNATIVE 1
PROS
- Provides additional vigilance from the student residence.
- Two existing trees provide shade area.
- A shed nearby.
CONS
- Privacy at student residence is compromised.
- Reduce proximity to existing structures, pergolas and seatings.
- Separate from main parkland area.

ALTERNATIVE 2
PROS
- Privacy protection for student residence.
- Access to existing structures, pergolas and seatings.
- Located in outdoor classroom area.
- Closer to visitors.
CONS
- Prone to risks; loitering, wildlife and vandalism.
- Trees are needed to provide shade.
- Lacks a shed.
5. Design Programming

**SITE ANALYSIS - A1**

- Entrance:
  - Garden sign
- Social Area:
  - Seating
  - Activity lawn
- Planting Area:
  - In-ground plots
  - Raised beds
- Orchard:
  - Planting
  - Path
- Gate and Fence

---

**BUBBLE DIAGRAM - A1**

- Pedestrian Flow
- Design Boundary
- Existing Fence
- Existing Trees
- Shed
6. Engaging Stakeholders

In order to understand the extent of food awareness and the extent of interest in edible garden, four potential user groups were identified. Residents who live within half miles walking distance will benefit from the project. Children from College Hills Elementary School will also benefit from the school’s proximity. This project will be a great case for the City of College Station and City of Bryan to develop urban agriculture programs. Schob Nature Preserve has great potential to be a more diverse educational base for college students of Texas A&M University.

**Master Gardener** - Education activity participant, Involve students from Dept. of Sociology.

**Community Relations Coordinator** - Experience on garden establishment and coordination.

**College Hills Elementary School** - Appreciate the idea and be willing to participate.

**Student Resident & Neighbors** - Ambassador of Schob Nature Preserve, important role to each participant.
6. Engaging Stakeholders

MASTER GARDENER
Dr. Sarah Gatson
(Dept. of Sociology)
- Focuses on the sociology of community, citizenship, identity and culture.
- Be enthusiastic in edible garden.
- Master Gardener: special training in horticulture.
- Willing to learn and to help others.
- Her program: Urban Re-rural
- Would like to assist with edible garden establishment and horticulture training.

NEIGHBORHOOD AND COMMUNITY RELATIONS COORDINATOR, CITY OF COLLEGE STATION
Barbara Moore
- Participate and assist the establishment of community garden at College Hills Baptist Church, and coordinate with Master Gardeners.
- No edible garden or demonstration garden in College Station.
- Built a great relationship with Eastgate Neighborhood members.
- Agree with the idea of demonstration garden in Eastgate Neighborhood area.
- No policy or ordinance exists to support the development of urban agriculture.

STUDENT RESIDENT & NEIGHBORS
Justin Haug
- Build a good relationship with nearby residents.
- Wish to inform more residents of Schob Nature Preserve.
- With the sense of responsibility.
- Hope the following student residents could keep the spirit and celebrate the park.
- Great opinion to the garden location.

COLLEGE HILLS ELEMENTARY SCHOOL
Josh Hatfield (Principal)
- Award Gold with Distinction Award in Healthier U.S. School Challenge.
- Admit and appreciate the method of participating gardening works and activities to improve children’s physical and mental health.
- Interest in further project development.
7. Communal Garden for Public

Research on typical community garden management and operations will contribute to the practical issues of garden establishment.

Texas A&M University as the owner of Schob Nature Preserve has the responsibility to manage the parkland to be a communal park that provides education and demonstration capabilities. The initial steps on establishing garden operations will include selecting the type of garden, and forming a garden committee. The community garden’s food production value could be determined by counting the produce poundage into a dollar value. The research of regular gardening activities by month will be reflected in the master plan, in terms of the creation of reasonable public spaces that serve for different activities. Urban agriculture education could provide various programs that target all age groups. By researching the market outlook of edible flowers, the business opportunity of edible flowers is evident. It will bring benefits to the community garden, in terms of demonstration value and economic value.
7. Communal Garden for Public

**Community Garden Type:**
- Collective & Allotment
- Demonstration Raised Beds, Group Plots, Individual Plots.

**Garden Committee:**
- Establish and Run the Garden
- Coordinate & Organize Activities

**Garden Club:**
- Organize Participants
- Communication

**Potential Partner Organization:**
- Urban Re-rural Program
- College Hills Elementary School
- Community Development Department of CS
- Texas A&M AgriLife Extension - Master Gardener Program
- Brazos Valley Chapter - Texas Master Naturalist Program

**Community Garden Insurance Program**
- Protect the Organization and Its Members

---

**TASKS**
- Community Building
- Promote local food
- Maintenance
- Academic Research
- Capacity Building
- Education
- Environmental Stewardship

---


7. Communal Garden for Public

THE MOST POPULAR VEGETABLES
By Home Gardeners

- Tomatoes
- Cucumbers
- Sweet Peppers
- Beans
- Carrots
- Summer Squash
- Onions
- Hot Peppers
- Peas
- Radish
- Potatoes
- Salad Greens
- Pumpkins
- Watermelon

SCHOB NATURE PRESERVE:
- 6098 sq ft (0.14ac)
- 1790 sq ft (0.04ac)
- 895 pounds of fresh produce
- Worth $1790

0.5 pound / square Garden Area
- A well-maintained food garden

In-season Market Prices
- $2.00 / pound


MOST COMMONLY CONSUMED VEGETABLES
AMONG U.S. CONSUMERS, 2013

7. Communal Garden for Public

**TIMELINE/SCHEDULE**

**CENTRAL TEXAS**
- Two growing seasons
- 253 days annually (avg.)

MARKETING AND MARKET OUTLOOK
Market fresh, dried, candied, or in prepackaged salads.
- Upscale restaurant chefs and caterers.
- Fine bakeries (candied flowers).
- Retail marketing through farmers markets.


Edible flowers from San Diego’s Fresh Origins

Deep-fried Squash Blossoms

Nasturtiums Salad

Calendulas Pizza

Pansies Cake
## 8. Urban Agriculture Education Programs

<table>
<thead>
<tr>
<th>PROGRAMS</th>
<th>AGES</th>
<th>EDUCATION</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Farm</td>
<td>4-11</td>
<td>Healthy eating habits / Healthier community environment</td>
<td>Physical and Mental Development</td>
</tr>
<tr>
<td>Youth Farm</td>
<td>15-18</td>
<td>Engage at-risk youth / Learn sustainable growing/ Leadership development</td>
<td>Further education &amp; employment</td>
</tr>
<tr>
<td>Re-employment</td>
<td>17-21</td>
<td>Transitional jobs program/ Justice- involved youth</td>
<td>Further employment</td>
</tr>
<tr>
<td>Campus Farm</td>
<td>18-24</td>
<td>Hands on experience/ Class project/ Internship</td>
<td>Education /Research/ Outreach</td>
</tr>
<tr>
<td>Schooling</td>
<td>Adults</td>
<td>Professional certificate/ Formal instruction and hands-on training</td>
<td>Further education &amp; employment</td>
</tr>
<tr>
<td>Entrepreneurship &amp; Career</td>
<td>Adults</td>
<td>Courses in food production and business planning</td>
<td>Independent small business</td>
</tr>
<tr>
<td>Senior and Garden Exchange</td>
<td>Senior</td>
<td>Active living/ socialization/ relaxation/ better eating habits.</td>
<td>Physical and mental health/ Connecting with others</td>
</tr>
</tbody>
</table>

*Portland Schoolyard Farm; Windy City Harvest; Seniors and Garden Exchange (SAGE); Loyola Urban AG;*
9. Programming Master Plan

ALTERNATIVE 1

Legend

1. Gate & Signage
2. Residents Garden
3. Plots (3x10')
4. Raised Bed Table
5. Senior Garden
6. Learning Garden
7. Plots (10x10')
8. Activity Lawn
9. Bench
10. Outdoor Cafe
11. Orchard
12. Fence
13. Edible Flower Planting Bed
FALL

- Start a community garden
- Prepare beds
- Clear up the site
- Plant fall vegetable garden
- Plant perennial herbs
- Collect leaves
• Plant trees
• Prune
• Plant flowering bulbs
• Maintain compost piles
• Transplant plants
• Test soil
• Aerate soil
• Seed indoor
SPRING

- Plant cool weather crop
- Plant warm season vegetables
- Stake vine
- Manage pest
- Manage weed
- Deal with garden pest & animal
- Harvest vegetables & crops
SUMMER

- Harvest vegetables & crops
- Farms Market
- Check moisture
- Check irrigation
- Plant lots of vegetables
9. Programming Master Plan

ALTERNATIVE 2

Legend

1. Gate & Signage
2. Residents Garden
3. Plots (3x10’)
4. Raised Bed Table
5. Senior Garden
6. Learning Garden
7. Plots (10x10’)
8. Activity Lawn
9. Bench
10. Plots (8x8’)
11. Orchard
12. Fence
13. Farmers Market
14. Edible Flower Planting Bed

Legend:

- 1. Gate & Signage
- 2. Residents Garden
- 3. Plots (3x10’)
- 4. Raised Bed Table
- 5. Senior Garden
- 6. Learning Garden
- 7. Plots (10x10’)
- 8. Activity Lawn
- 9. Bench
- 10. Plots (8x8’)
- 11. Orchard
- 12. Fence
- 13. Farmers Market
- 14. Edible Flower Planting Bed
9. Programming Master Plan

Garden Area: 0.14 ac
Growing Area: 0.04 ac (1790 sq ft)
  • 21 in-ground plot (3’x10’) (630 sq ft)
  • 6 in-ground plot (10’x10’) (600 sq ft)
  • 9 raised bed (5’x5’) (225 sq ft)
  • 1 flower planting bed (335 sq ft)

<table>
<thead>
<tr>
<th>Item</th>
<th>Vendor</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Garden Tools</strong></td>
<td>THE HOME DEPOT</td>
<td>—</td>
<td>$760</td>
</tr>
<tr>
<td><strong>Noticeboard</strong></td>
<td>ULINE</td>
<td>$369</td>
<td>$369</td>
</tr>
<tr>
<td><strong>Start up Plants &amp; Seeds</strong></td>
<td>BURPEE</td>
<td>—</td>
<td>$430</td>
</tr>
<tr>
<td><strong>Signage</strong></td>
<td>—</td>
<td>—</td>
<td>$500</td>
</tr>
<tr>
<td><strong>In-ground Plot Wood Board</strong></td>
<td>THE HOME DEPOT</td>
<td>$6.77/lumber</td>
<td>$540</td>
</tr>
<tr>
<td><strong>Flower Bed Edging</strong></td>
<td>LOWE’S</td>
<td>$8.98/3ft</td>
<td>$302</td>
</tr>
<tr>
<td><strong>Fence</strong></td>
<td>THE HOME DEPOT</td>
<td>$59/7.75ft</td>
<td>$1484</td>
</tr>
<tr>
<td><strong>Path materials</strong></td>
<td>LOWE’S</td>
<td>$0.51/brick</td>
<td>$3025</td>
</tr>
<tr>
<td><strong>Decomposed Granite</strong></td>
<td>LOWE’S</td>
<td>$45/ cubic yard</td>
<td>$391</td>
</tr>
<tr>
<td><strong>Soil</strong></td>
<td>LOWE’S</td>
<td>$1.7/sq ft</td>
<td>$3123</td>
</tr>
<tr>
<td><strong>Table &amp; Chairs</strong></td>
<td>NEWYORKFIRST</td>
<td>$454/set</td>
<td>$1816</td>
</tr>
<tr>
<td><strong>Benches</strong></td>
<td>LOWE’S</td>
<td>$78</td>
<td>$546</td>
</tr>
<tr>
<td><strong>Irrigation Installation</strong></td>
<td>RAINBIRD</td>
<td>—</td>
<td>$4059</td>
</tr>
<tr>
<td><strong>TOTAL EXPENSE</strong></td>
<td></td>
<td></td>
<td>$17345</td>
</tr>
</tbody>
</table>
9. Programming Master Plan

Garden Area: 0.17 ac
Growing Area: 0.07 ac (3021 sq ft)
- 26 in-ground plot (3’x10’) (780 sq ft)
- 4 in-ground plot (10’x10’) (400 sq ft)
- 4 in-ground plot (8’x8’) (256 sq ft)
- 8 raised bed (5’x5’) (200 sq ft)
- 2 flower planting bed (1385 sq ft)

### Material Costs

<table>
<thead>
<tr>
<th>Item</th>
<th>Vendor</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garden Tools</td>
<td>THE HOME DEPOT</td>
<td>—</td>
<td>$760</td>
</tr>
<tr>
<td>Noticeboard</td>
<td>ULINE</td>
<td>$369</td>
<td>$369</td>
</tr>
<tr>
<td>Start up Plants &amp; Seeds</td>
<td>BURPEE</td>
<td>—</td>
<td>$430</td>
</tr>
<tr>
<td>Signage</td>
<td>—</td>
<td>—</td>
<td>$500</td>
</tr>
<tr>
<td>In-ground Plot Wood Board</td>
<td>THE HOME DEPOT</td>
<td>$6.77/lumber</td>
<td>$760</td>
</tr>
<tr>
<td>Flower Bed Edging</td>
<td>LOWE’S</td>
<td>$8.98/3ft</td>
<td>$994</td>
</tr>
<tr>
<td>Fence</td>
<td>THE HOME DEPOT</td>
<td>$59/7.75ft</td>
<td>$3935</td>
</tr>
<tr>
<td>Path materials</td>
<td>LOWE’S</td>
<td>$0.51/brick</td>
<td>$3414</td>
</tr>
<tr>
<td>Decomposed Granite</td>
<td>LOWE’S</td>
<td>$45/ cubic yard</td>
<td>$630</td>
</tr>
<tr>
<td>Soil</td>
<td>LOWE’S</td>
<td>$1.7/sq ft</td>
<td>$5135</td>
</tr>
<tr>
<td>Table &amp; Chairs</td>
<td>NEWYORKFIRST</td>
<td>$454/set</td>
<td>$1816</td>
</tr>
<tr>
<td>Benches</td>
<td>LOWE’S</td>
<td>$78</td>
<td>$312</td>
</tr>
<tr>
<td>Irrigation Installation</td>
<td>RAINBIRD</td>
<td>—</td>
<td>$5009</td>
</tr>
<tr>
<td><strong>TOTAL EXPENSE</strong></td>
<td></td>
<td></td>
<td><strong>$24064</strong></td>
</tr>
</tbody>
</table>
9. Programming Master Plan

DETAIL DESIGN - RAISED BED TABLE

Width of wheelchair
ADA Standards, 2010
10. Summary

OPPORTUNITIES
1. Increasing demand for local & organic food.
2. Unhealthy food environment of U.S., TX, Brazos.
3. Enthusiasm from stakeholders and their awareness of healthy food and lifestyle.
4. Site suitability:
   - Schob Nature Preserve serves university as “living classroom” and neighborhood park.
   - Eastgate Neighborhood has a large group of residents with diverse age distribution.
   - College Hills Elementary School is near the site.
   - Two alternative locations are identified.

QUADRUPLE NET VALUE ANALYSIS ➔ DESIGN GUIDELINES
1. Limitations and strengths of Schob Nature Preserve as a developed parkland.
2. Design guidelines are adhered to in order to retain and improve the four-category value.

LIMITATION
1. No policy or ordinance exists to support the development of urban agriculture in College Station.
2. Potential users are not quantified to provide statistical evidence for extent of interest.

BENEFIT
1. Increase biodiversity, provide ecosystem services, attract wildlife, reduce carbon footprint.
2. Improve public access, provide physical spaces and events opportunities, spread Schob Nature Preserve.
3. Harvest food production for donation or for sell.
4. Improve sensory value by creating all 5 senses experience.
5. Enhance the neighborhood identity.

COMMUNITY GARDEN IN SCHOB NATURE PRESERVE
Demonstration & Education

Sensory

Social/Cultural

Environmental

Economic

MATRIX

SUMMARY