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## Unorthodox but Functional Tools Used for the Ecological Design and Implementation of Pollinator Gardens

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### Notes:

Quincy Ipsaro won the first place in the Design category. She is a Biology student with a minor in Environmental and Sustainability Studies. She did this project as the Built Environment Intern at the University of Kentucky Office of Sustainability.

Carolina Segura-Bell was the faculty mentor.

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# Unorthodox but Functional Tools used for the Ecological Design and Implementation of Pollinator Gardens

## PROCESS

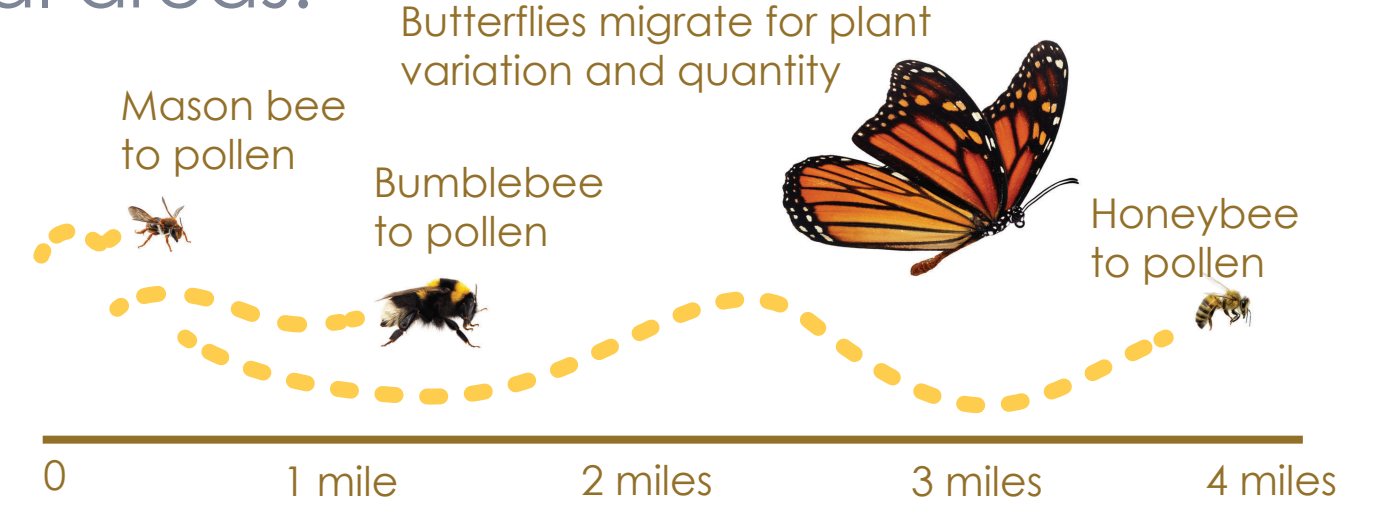
The focus of this research was to find new ways to identify and connect existing pollinator **habitats**, and to **design** and **install** a future type of pollinator garden that allows for the look of a pristine and colorful landscapes with the ecological benefits of a pollinator habitat.

Through the process the use of tools commonly used for analysis and study of pollinator habitats and connectivity in combination with tools and methods not commonly use in the biology field to visualize the designs. Both aim to create functional, beautiful, and biodiverse pollinator habitats.

## WHY POLLINATORS?

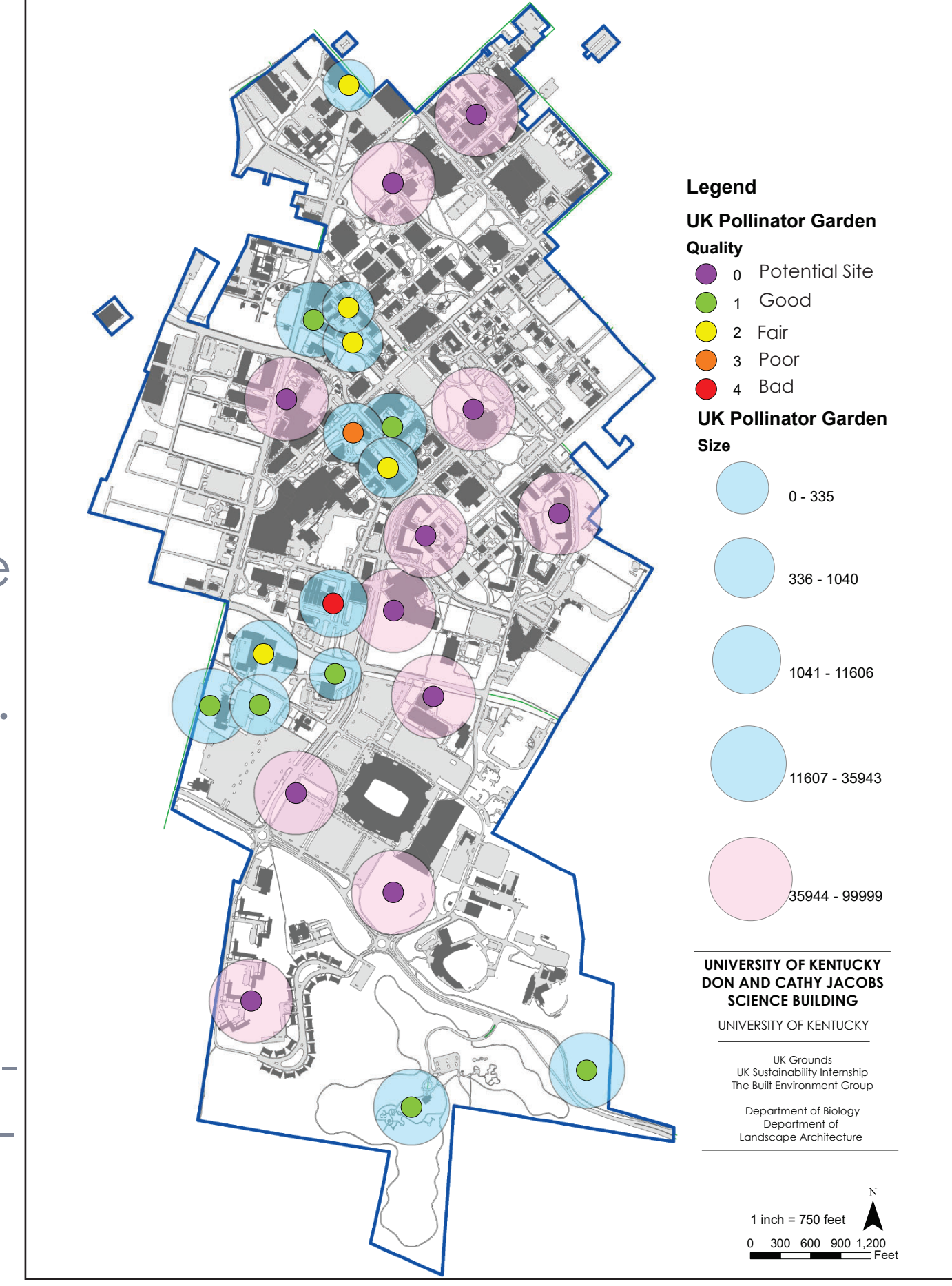
Lexington, Kentucky, is an important location for the restoration and expansion of pollinator habitat. Efforts to support healthy pollinator populations and protect pollinator habitats directly address the three pillars of sustainability: environmental protection, economic viability, and social equality.

The University of Kentucky campus is positioned in the middle of some juxtaposing landscapes. On the northern side of campus, it is just a short walk to downtown Lexington; whereas on the south side, there is an Arboretum and many residential neighborhoods. Kentucky is known for its agricultural prowess and there are many croplands and pastures within close driving distance from campus. Pollinator habitats bridge the gap between these different areas and support the pollination of most of the area's plants. Pollinator habitats affect and connect all of us whether we realize it or not. The University of Kentucky offers the green spaces needed to connect agricultural landscapes to downtown patches and residential areas.



## 1 Habitat Where to plant?

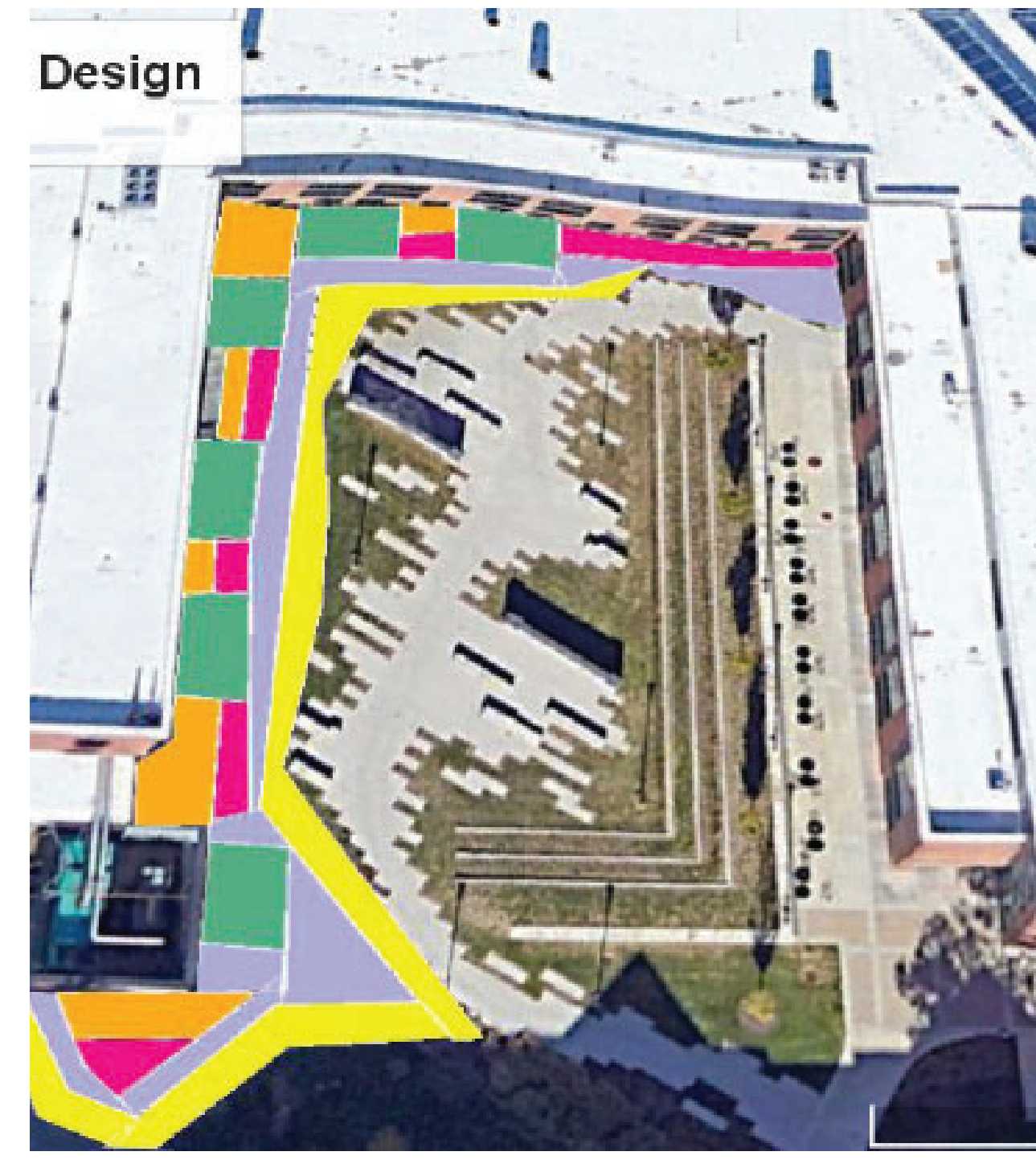
QGIS MAPPING EXISTING & POTENTIAL POLLINATOR SITES



The idea to create a seasonal and designed pollinator garden stemmed from our map of all the pollinator gardens on campus. Many of the current gardens are compact, with plants so tall they fall onto the sidewalk. This inconvenient design created disdain for university officials against pollinators. My hope in creating this garden was that it would connect some of the gaps between pollinator gardens and show that pollinators can be used for tasteful designs without overwhelming a space.

As you can see from the preexisting site photos, the JSB courtyard left much to be desired. Collaboration with the Ecology Lab led to the creation of ten research plots to be studied by students, and a 2,800 square foot design portion that demonstrates the juxtaposition between the chaos of native pollinator landscapes and the potential pollinators have to beautify outdoor spaces.

GOOGLE EARTH SITE



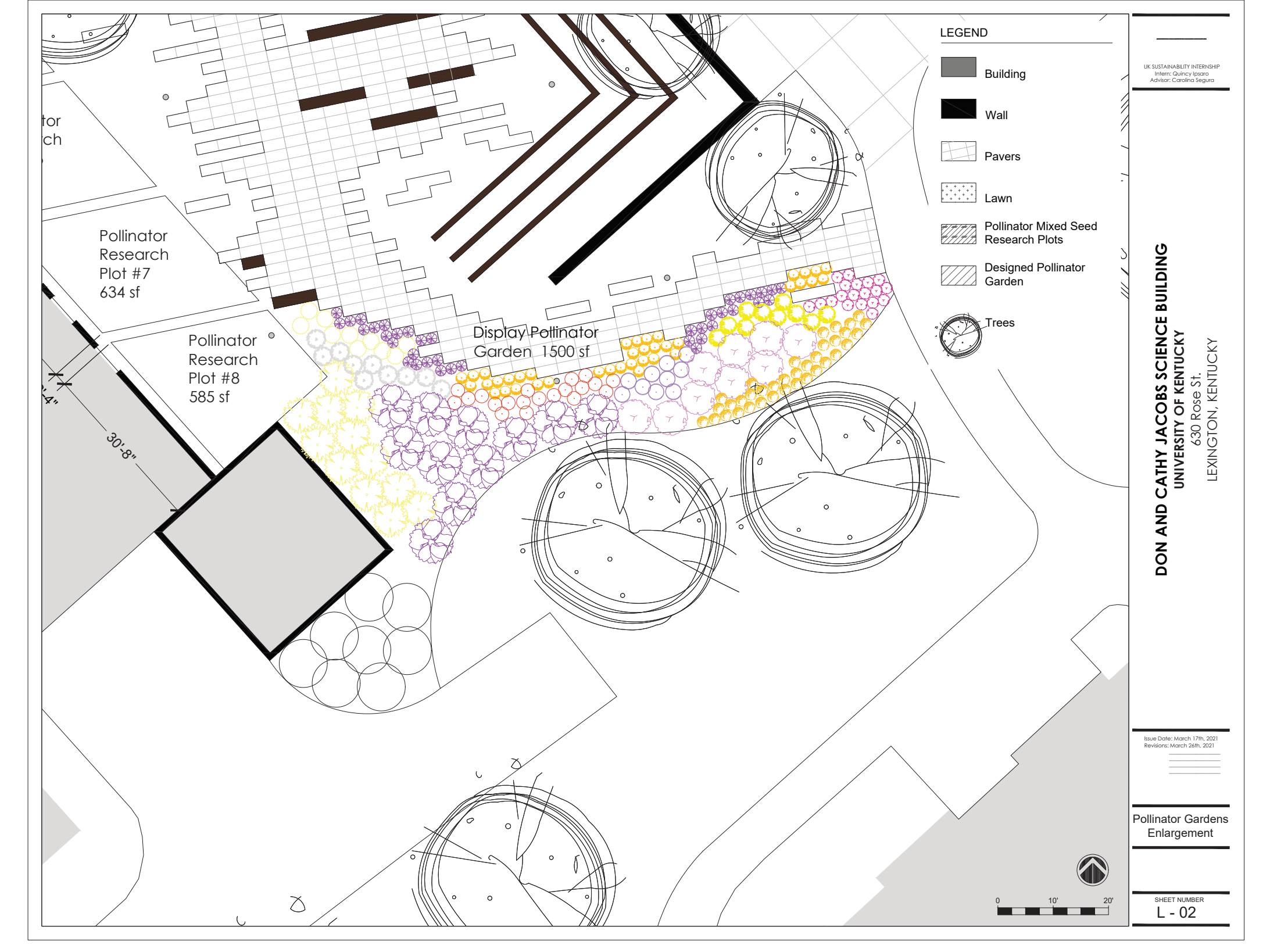
We began our design process by creating a plant list of all the natives we would like to see in our garden. We made sure to choose a color palette that would be diverse and bold in every season. We wanted students to use the space throughout the year and have several plants catch your eye during these times. We ensured each season had plants evenly placed throughout the plot and we wanted it to appear as though there were four different gardens, one for every season, so you were always surprised by the new and colorful plants changing each week without applied maintenance to add this feature.

## 2 Design What to plant?

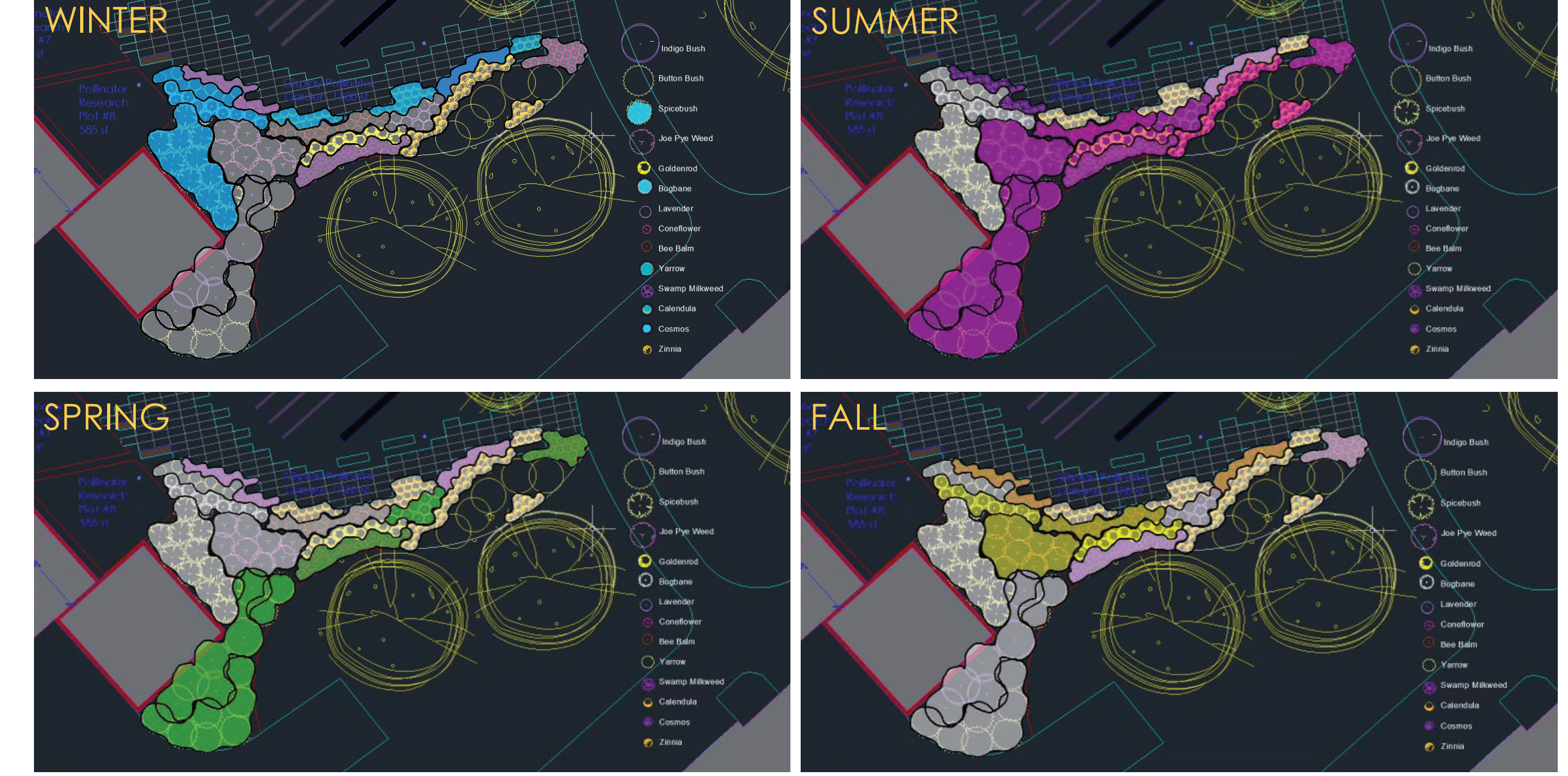
EXCEL PLANT LIST FOR PRELIMINARY PLANT PALETTE SELECTION, QUANTITIES, AND UNDERSTANDING OF PLANTS QUALITIES

Common Name	Height	Soil pH	Soil Moisture	Sun/Shade	Color	Bloom Time	Annual or Perennial
1 Bee Balm	3-4 ft	6.0-6.7	Moist	Full Sun (6-8 hours)	Red/Purple	July-September	Perennial
Blanket Flower	1-1.5 ft	6.1-6.5	Dry-Damp	Full Sun (6-8 hours)	Red/Yellow	June-October	Perennial
2 Bugbane	3-4 ft	6.8-7.0	Damp-Moist	Partial Sun (4 hours)	White/Purple	August-October	Perennial
Butterfly Weed	1-3 ft	6.0-7.0	Dry-Moist	Full Sun (6-8 hours)	Orange	June-September	Perennial
3 Button Bush	4-7 ft	6.6-7.3	Damp-Moist	Full Sun (6-8 hours)	White	June-August	Perennial
Calendula	1-3 ft	6.0-7.0	Damp-Moist	Full Sun (6-8 hours)	Orange	May-October	Annual
4 California Poppy	0.5-1 ft	6.5-8.0	Dry-Damp	Full Sun (6-8 hours)	Orange	April-June	Annual
Clover	0.5-1 ft	6.0-7.0	Moist	Full Sun (6-8 hours)	White/Pink	May-August	Perennial
Columbine	1-3 ft	6.0-7.0	Moist	Full Sun (6-8 hours)	Purple/White	April-July	Perennial
5 Coreopsis	1-3 ft	5.0-6.0	Dry	Full Sun (6-8 hours)	Yellow	May-September	Perennial
Cosmos	0.5-1 ft	6.0-6.8	Dry-Moist	Full Sun (6-8 hours)	All Colors	April-September	Annual
6 Early Sunflower	3-4 ft	6.0-7.5	Dry	Full Sun (6-8 hours)	Yellow	June-October	Annual
7 Indigo Bush	4-12 ft	6.5-7.0	Dry	Full Sun (6-8 hours)	Purple	April-June	Perennial
Joe Pye Weed	3-8 ft	6.5-7.0	Dry-Moist	Full Sun (6-8 hours)	Pink/Purple	July-September	Perennial
8 Lacy Phacelia	1-1.5 ft	4.4-8.5	Dry-Moist	Full Sun (6-8 hours)	Purple	June-August	Annual
Lavender	1-2 ft	7.0-8.0	Dry-Damp	Full Sun (6-8 hours)	Purple	April-August	Perennial
Lupine	1-3 ft	6.5-7.5	Damp	Full Sun (6-8 hours)	Purple	July-September	Perennial
Meadow Foam	0.5-1.5 ft	5.6-6.0	Dry-Damp	Full Sun (6-8 hours)	Yellow/White	May-July	Annual
Mexican Hat	1-1.5 ft	6.8-7.2	Dry-Damp	Full Sun (6-8 hours)	Red/Orange	May-August	Perennial
9 Purple Coneflower	1-3 ft	6.5-7.0	Dry	Full Sun (6-8 hours)	Purple	June-October	Perennial
Portridge Pea	1-3 ft	5.0-6.0	Dry-Damp	Full Sun (6-8 hours)	Yellow	July-September	Annual
10 Spicebush	8-12 ft	4.5-6.0	Dry-Moist	Partial Sun (4 hours)	Yellow	February-May	Perennial
Sunflower	5-10 ft	6.0-7.5	Moist	Full Sun (6-8 hours)	Purple	June-October	Annual
11 Swamp Milkweed	4-6 ft	5.8-6.8	Damp-Moist	Full Sun (6-8 hours)	Pink/Purple	July-September	Perennial
12 Yarrow	1-3 ft	5.5-6.8	Dry-Damp	Full Sun (6-8 hours)	White/Yellow	April-June	Perennial
13 Zig-Zag Goldenrod	1-4 ft	5.6-6.0	Dry	Full Sun (6-8 hours)	Yellow	July-September	Perennial
14 Zinnia	0.5-1 ft	5.5-7.5	Dry-Damp	Full Sun (6-8 hours)	Red/Orange	May-September	Annual

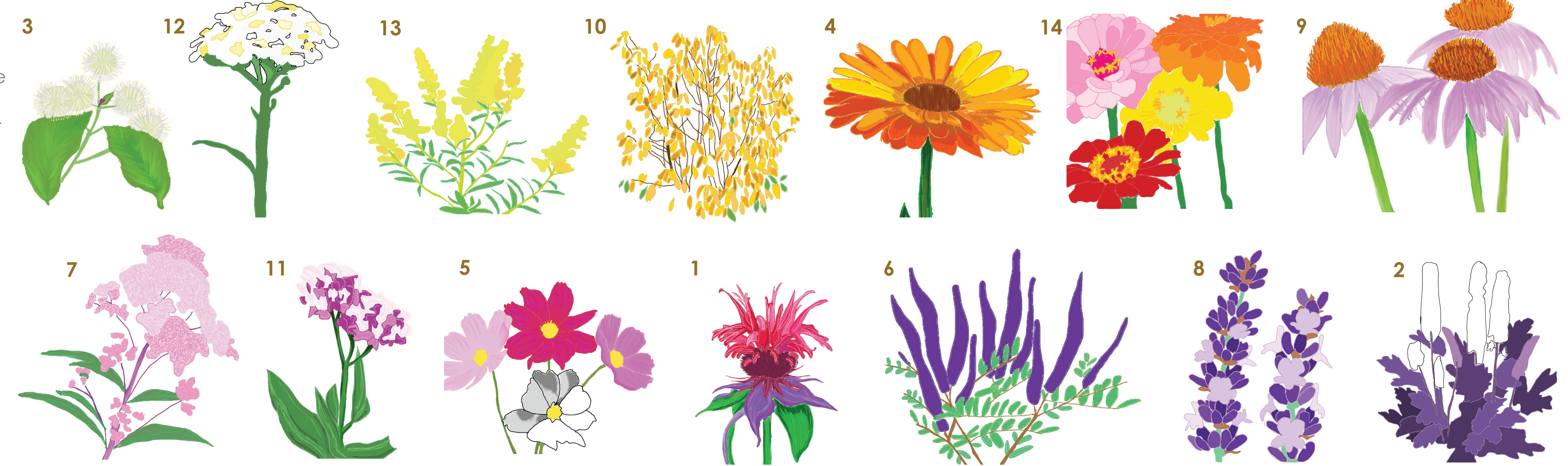
AUTOCAD RENDITION OF THE FINAL GARDEN DESIGN



PROCREATE RENDERING FOR BLOOM SEASON GRAPHICS



PROCREATE RENDERING OF PLANTS TO OBSERVE THE COLOR PALETTE



## 3 Installation How to plant?

PURCHASING, FUNDING & LABOR

Grant funding from the Student Sustainability Council and partnered with the UK Physical Plant Division in order to purchase approximately 250 plants from local nurseries, like Michler's, and the Horticulture Club.

In May 2020 volunteers from the Student Sustainability Council, Ecology Lab, and UK students just wanting to lend a hand. In the future Every semester over 100 students will conduct research on these gardens through the Ecology Lab and they will learn what makes up a pollinator habitat in Kentucky.

**\$1,500**  
**250 plants**  
**20 volunteers**

SITE PHOTOS TO DOCUMENT THE PROCESS

