

S.N.A.I.L. GARDEN PERMACULTURE

DESIGN PLAN

Designed By: Grace Elaine Booher

In gratitude to Dr. Rosemary Logan and Allison Benedict



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SNAIL GARDEN HISTORY

A Brief History Of SNAIL And People Involved:

The SNAIL Garden was started as a guerilla garden outside of the NAU Greenhouse Complex by Allison Benedict in 2012. Eventually the garden was made an official NAU campus garden in May of 2014. Garden Coordinators following Allison includes Kim Fesseden, Amanda Harder, George Magula, and Grace Booher. Faculty advisors that have contributed to the SNAIL garden are Patrick Pynes and Rosemary Logan. Other helpful volunteers involved are Kim Fesseden, Tyler Linner, Robert Chambers, Martha Sample, Ashlee Simson, Connor Moore, Darren Bingham, Matt Muchna, Ellen Vaughn, Molly McCormick, Marina Vasquez, Bridgette Brados, Parrish Jonen, Tyler Eckerman, Peggy Pollack, and many others. All of these people can be contacted via the contact sheet in SNAIL's google drive. Thank you to all who have dared to dream and believe in this garden.

Deep History Of The Land, SNAIL, Greenhouse, And People Involved:

Before the SNAIL garden was started, or even before NAU was created, this space had been native ponderosa pine forest. After NAU was built, it appeared to be some kind of dumping site. Even today, if you dig down just foot, you will find concrete, plastic, Waste, etc... Once the Greenhouse was built in 1988, there was a reclamation effort and the topsoil was rebuilt! Then, 25 years later, Allison Benedict began to guerilla garden outside the Greenhouse. Allison made beds, pathways, community, did a lot of hard landscaping, and harvested a good yield. Allison also created a Facebook for the club which helped greatly with volunteers. After Allison Benedict graduated, she passed the garden on to Kim Fesseden and others. The garden was maintained.

Once graduated, Kim passed it to Amanda Harder, whom loved and planted many carrots and parsnips. These still come up today and have become apart of the gardens yearly renewal and character. This is also when Dr.Pynes became the faculty advisor and offered his insights



to indigenous gardening. During Amanda's leadership, George Magula got involved with the SNAIL garden club and became vice president. I also found interest in the garden while taking Rosemary Logan's FYS class, Farm to School. Kim Fesseden introduced me to the space and taught me how truly special and spiritual the place had been for many before me. I then started to volunteer and worked as the secretary of the SNAIL garden. Once Amanda left, George took over the garden coordinator position and I was promoted to vice president. George worked hard to make a wonderful cold-hardy succulent bed in the garden and managed the club well, I also worked hard at increasing our number of volunteers and club involvement. We both went to many events, one of them being Earth Jam, to promote the club and gain more student involvement.



This is when Dr. Rosemary Logan stepped in as the new faculty advisor and offered her expertise on permaculture and community building. Once George left, I took on the Garden Club Coordinator position. I started by redesigning all of the beds in order to increase yield and aesthetic. I also advertised for and lead many activities in the garden to increase volunteers. I



managed to get some funding and planted a ton of new native and perennial plants for the garden. I wrote by-laws, the constitution, and created a bank account for the club. I've received a garden intern who built an in-ground compost system and helped me to sheet mulch the entire garden in order to build more topsoil. We have also solidified an official partnership with Students For Ecological Restoration (SER) and now share the space with them. We have recorded what we have grown, accomplished, contacts, tasks, etc. so that the next garden coordinator may begin with more knowledge and ease.

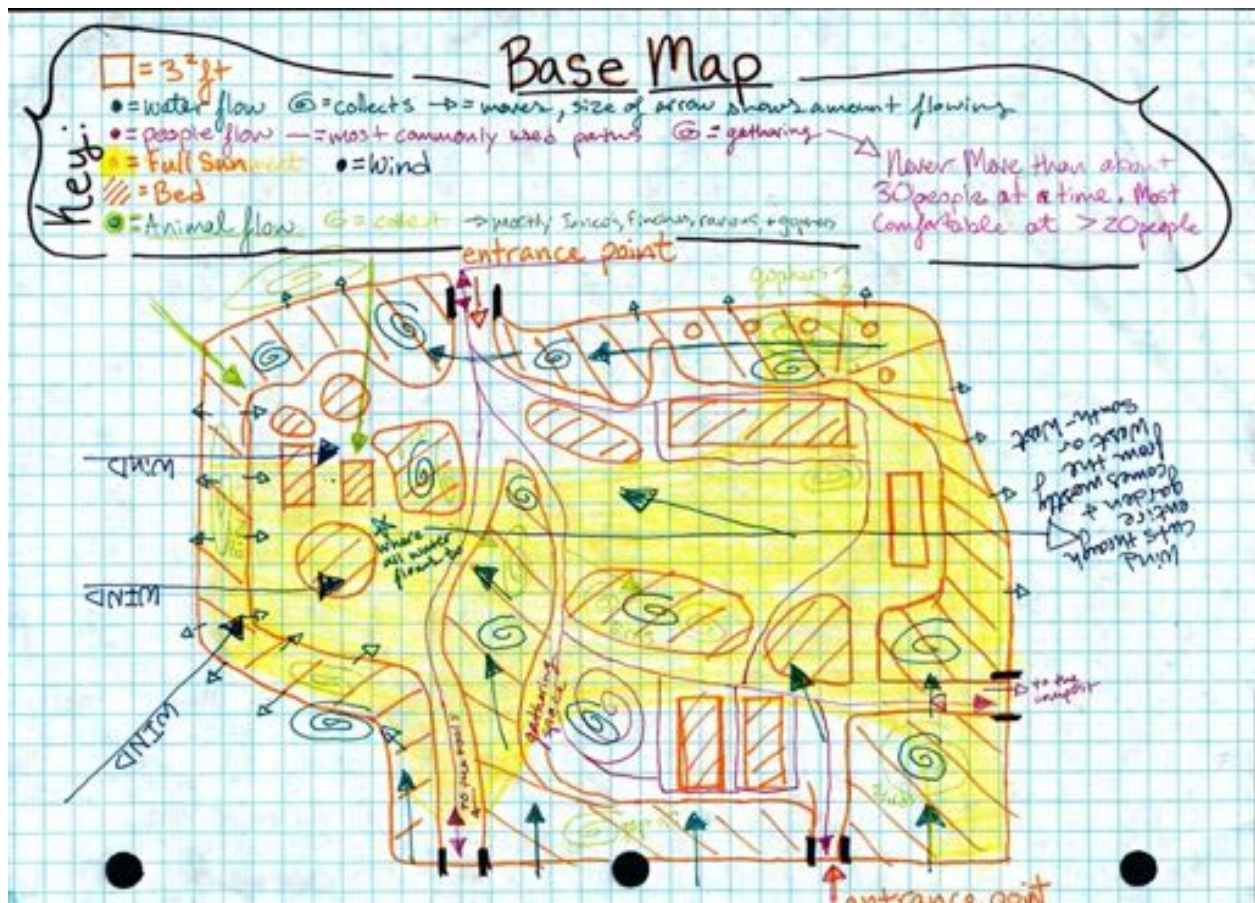
THE SNAIL GARDEN TODAY

Pictures of SNAIL as of 2019:



SNAIL OBSERVATIONS AND BASEMAP:

Base Map: This map articulates the flow and collection of water throughout the garden, Sun patterns, where garden beds and paths are currently at, wind movement, people traffic patterns, animal traffic patterns, and is to scale.



Base Map Details:

People Flow: Most go through the main two paths throughout the garden, which have been the main paths since Allison was in charge of the garden. People collect in the designated gathering space west of the two raised beds. There are 4 main entrance/exit points labeled on the map that people use. 2 of these points lead to compost or tools. The garden comfortably fits up to 20 people. However, 30 people have been in it at once before.

Animal Flow: Mainly there are gophers, a variety of bugs, ravens, finches, juncos, hawks, and I have seen a bobcat in the garden once. Most birds hangout in the ponderosa stand north of the garden and fly into the garden from there. Once in the garden, the birds tend to accumulate under the pinyon pine, by the hugelkultur, the pollinator garden and wildflowers section, in the least maintained parts of the garden, and where water accumulates. The ravens have had a variety of peculiar encounters with me in the garden. During the summer I had one with a hurt wing that would show up every day to greet me. The raven would follow me around the garden as I watered by foot. I've also had ravens drop a dead finch for me while I was gardening.

I've also had them swoop down and touch my hair. Most recently, I looked up while gardening to find upwards of 100 ravens circling the garden about 100 feet up, which went on for about 40 minutes. The juncos and finches typically will drink from pools of water while I water, or wait for me to throw out some bird seed. At the garden's peak, I'd say over 30 birds will be in the garden at a time. Gophers tend to accumulate in the northmost part of the garden by the fruit trees, and in the southmost part of the garden by the north facing slope. They tend to avoid any areas with really nice soil, which is surprising to me. The raised beds were implemented to prevent them from stealing up to 50% of my yields. This year, I had an abundance of plants in the garden compared to previous years and the gophers were less vigilant.

Sun Patterns: As shown by the yellow shading in the base map, this is where the sun is always at from sunrise to set. Other areas are typically part sun except for the top of the north facing slope, which is part shade as the building shades it during high noon. The other section that is not full sun or part sun is the corner closest to the stand of ponderosa pines- one ponderosa shades this area pretty constantly and it is therefore full shade- part shade in this north west corner of the garden. More details can be seen from my Sun Map in the conceptual design section.

Wind Patterns: Winds, as with most of flagstaff, come in the spring from the southwest. Most of my winds are westerly, as the greenhouse building shelters the garden from most southern winds. The wind typically runs all the way across the garden, as there are no current wind breaks other

than the hugelkultur. Winds are typically at 10mph but can have gusts of up to 40-50mph. This causes great damage to plants and covered beds and discourages birds from visiting.

Water Flow And Collection: Water as of right now, quickly comes off the roof of the green house and travels down the north facing slope on the south side of the garden. The garden used to slope about a foot down from the east side to the west side, but recently we sheet-mulched and tried to challenge that. Most water currently collects in the center of the U that the hugelkultur creates. In the past it appears they used a french drain to collect water at the bottom of the hill, and funnel it to that area by the hugelkultur. There are various spots around the garden that are sunken to collect water, such as where some fruit trees are planted, in some beds, and at the bottom of either side of the hugelkultur. Water moves quickly and while mulch helps clow and soak up the rain, the hard landscaping needs to be improved and diversified.

Other: about 23in of precipitation annually, averaged zone at 5, soil is mineral dense with a 6 inch layer of topsoil, growing season about 100 days long with the last freeze in early June. Elevation is about 6,900ft above sea level. The record high temperature is 97 degrees in July of 1973. The record low temperature is -30 in 1937. Typically the temperature ranges from 93 degrees F - -10 degrees F. The garden is approximately 5400 sq ft. There is about a 5 ft difference from the highest to the lowest point in the garden due to the north facing slope.

Occupation/Sharing Of Space: The space we have is moderately secure, the university has granted us the ability to garden, but that may be revoked at any time. The space has been occupied by gardeners for 7 years. Details are explained above in the History of SNAIL section. We do have to abide to certain rules that have to do with animals, materials used, and aesthetic, although it is more loosely enforced compared to the SLUGG garden. For example, we cannot have bees or chickens and we must use certain materials to build walls or pathways that are approved by NAU landscape management. Additionally, utilities such as electricity and water are currently solely supplied by the greenhouse. There is a small amount of irrigation systems that source from the greenhouse, and travel to an outlet by the current herb spiral and circular raised bed by the hugelkultur.



Permanent Structures: *There is one building (the greenhouse) to the south of the garden, a parking lot to the northeast, A stand of ponderosa pines to the North, and a large drainage ditch to the west. The building is 14,239 sq ft. However, we would only be collecting rain from a section of the roof that is 2,610 sq ft (the upper right corner of the main building that's L-shaped). This is simply due to the small scope and scale of the club's abilities to maintain and monitor active rainwater harvesting in the future. As for the parking lot, the entire garden is lifted about 2 feet to avoid toxic runoff thanks to Allison Benedict and many others who did some hard landscaping back in 2014. However, we still want to slow that water and filter it. The ponderosas help slow it a little before it runs to the large drainage site to the west of the garden. Additionally you will notice that there are power lines running directly over the garden. And lastly, there is a pipeline running all the way through the garden about 6 ft under at the bottom of the north facing slope.*

Social Observations: *Firstly, there is the SNAIL Garden Club of NAU students. The site is particularly accessible to students involved with the green house, working with facility services, or living in McConnell Hall. If we design the social space to have an area where students may easily study, it might be a nice spot for people to get away. Additionally, if we make a relaxing and stress relieving space, students may come to relax as well. We also want to provide a space where students may be their truest forms of self, expressing their intelligence, ideas, and creativity. We also want to provide a sort of outdoor classroom for professors and students across campus so that classes may be held in the garden. Additionally, well-done signage would be helpful for those exploring the garden who are unfamiliar with the plants and aspects of design.*

Next, is the Flagstaff Community which can include the boys and girls club of flagstaff, master gardeners, Kenzie Elementary, surrounding neighborhoods, and NAU faculty that are not professors. We will want to have a space geared for children where kids may familiarize themselves with the earth and each other and where play and creativity is encouraged. The outdoor classroom previously mentioned must also work for this younger group so they may also benefit from the space. If Kenzie was more involved, the college of education could also become involved and hold outdoor education workshops. Parks and Recreation majors may also benefit from having children in this outdoor space and lead team-building activities or educational workshops. For the surrounding neighborhoods, interested students, master gardeners, and NAU faculty we will provide small personal spaces for those who would like to garden. We will also provide a variety of recipes to encourage healthy and sustainable diets. Additionally, we will provide a space to connect with

others, relaxation and meditation space, space for creativity, and informative signage that will be fun to absorb.

DREAMS AND MISSION OF SNAIL

MISSION: THE MISSION OF THE SNAIL GARDEN CLUB IS TO PROVIDE A SAFE AND CREATIVE SPACE FOR NAU STUDENTS AND THE FLAGSTAFF COMMUNITY TO CONNECT TO THE EARTH, CONNECT TO THEMSELVES, AND CONNECT TO EACH OTHER. MORE DEEPLY, SNAIL SHOULD BE A SPACE FOR ALL TO COME AND BATTLE OPPRESSION, GROW FOOD, SUPPORT COMMUNITY, ENCOURAGE INDIVIDUALITY, SHARE KNOWLEDGE, INCREASE SUSTAINABILITY AND RESILIENCE, AND DEVELOP CHARACTER.

The Social Dream: *The garden should have so many interactive aspects that it should feel much like a museum with learning opportunities at every turn of the head. The space should be comfortable, inviting, inspiring, and communal. The garden must make people think and feel, or I have failed. This is not just a space for people to connect with the earth, but also a place for them to discover pieces of themselves and bond with one another. And the garden should not discriminate, it should appeal to as many individuals and intersectionalities as possible, there should be something for everyone. I must look at the commonalities among human beings and encourage those commonalities through design, much like I do when socially organizing. Everyone has to eat, everyone likes music, everyone is “nature”, everyone feels emotion, everyone wants peace and love and joy (even if that’s really deep down). Everyone wants to feel a sense of belonging and be involved in something bigger than themselves. Everyone enjoys a good space for relaxation, and everyone enjoys playing. I must incorporate all of these things and many more, covering all the bases to ensure that if one steps into the garden, there is a space for them. Additionally, there should be space for children and learning specifically. There should also be space for gathering and community building. Everyone deserves a chance at a feeling of ownership in the garden, stakeholding, and responsibility. The garden should also allow people with mobility issues to explore and enjoy, which is why large portions will have ADA compliant paths and garden beds.*

The Ecological Dream: *This space shouldn’t just be pretty or fun to hang out in, the space should benefit it’s surroundings and blend with the natural environment. Plants, infrastructure,*

materials used, and hard landscaping should artfully solve ecological problems such as soil health, water usage, energy usage, lack of connection to the outdoors, food security, diversity, animal health, resource usage, air cleanliness, etc... *SNAIL* being partnered with *SER* will help us greatly with plant selection and native plant restoration. Many materials should be upcycled and there should be a passive and active rainwater harvesting system. Hard landscaping should benefit visitors, plants, and animals. One of the goals of this garden is to be low maintenance and to mimic nature, working with it rather than against it. The garden should also encourage animal activity, and once finished there should be a large variety of creatures that rely on and enjoy the garden as well. There should be a pollinator garden, bird feeders, baths, and houses of various sizes.

The Aesthetic Dream: Aesthetically, I want the space to make a visitor feel like they're a kid playing pretend. I want there to be a sense of wonder, magic, creativity, and adventure. Even if a visitor is an adult, the space should make one seriously question if fairies are in fact real. The garden should draw the visitor in many different directions, and every time one turns a corner, a surprise should be waiting. Yet, the garden must also have rhythm, repetition, and order which should make a visitor feel much like they are watching the waves in the ocean. There should be an ebb and flow of emotions, movement, and color. The garden must walk a fine line of being predictable, yet surprising. The garden should be an experience, rather than just a place and designs should emanate small scale patterns of nature on a larger scale. The space should provoke emotion and thought much like a work of art. The garden should be interactive and have plenty of spots where one may sit and ponder. The garden should be well sheltered and have boundaries and barriers to enclose its visitors in something like a large hug from the garden. Yet, the garden should not look misplaced, native and naturalized plants should be present so that the boundaries are not harsh, but soft; This way, the garden will feel more like a natural oasis rather than a pop-up other world. Despite boundaries and barriers, there should still be small windows that invite your eye to stretch beyond the barriers, as *SNAIL* has a great big open feeling that we don't want to completely lose. There should be a small opening where one may look out across the rest of the landscape, perhaps on the west side of the garden. This may be achieved with trellacing and trained trees with a circular opening and trimming in its branches, much like some espaliers.

PROBLEMS AND SOLUTIONS

ANIMAL IMBALANCE (TOO MANY GOPHERS, NOT ENOUGH LARGE BIRDS OR OTHER LARGER PREDATORS, WANT MORE ANIMAL ACTIVITY IN GENERAL)

Gophers: chicken wire under beds, gopher deterrent technology, increase predator activity in the garden

The positive outlook is that they aerate the soil, are a predator to other pests, and are food for larger animals.

Large birds wanted: increase small bird populations, put out birdseed, put up large bird houses, supply a water source.

More animal activity wanted: establish native plants, windbreaks and large trees will increase habitat for animals, better soil and increase in microorganisms/insects.

PESTS/DISEASE (GREEN FLY, MILDEW, APHIDS, ANIMALS)

Pests/Disease: Special natural and organic mixture from Warners, soil health, diversity, increase in animal activity, specific animal deterrent such as fencing and chicken wire, pest deterrent plants like marigolds, native plants.

SOIL (ONLY 6 INCHES OF GOOD SOIL, THE REST IS ROCK AND DEBRIS)

Soil Health: sheet mulching, chopping and dropping, animal population increase, soil amendments, soil testing, aeration, Nitrogen fixers like legumes and comfrey, not using liquid fertilizers, having a compost bin, worms under the path in the greenhouse, lasagna bed with garlic, crop rotation, guilds, small scale keylining, slowing of H₂O, cover crops, mulching, deciduous trees, deep rooting plants to break up rocks and debris.

WATER

Water: North facing slope needs terracing, swales and berms, mulching, collection ditches, french drains, active water collection from the greenhouse roof, geodesic dome greenhouse will

<p>WIND</p>	<p>passively disperse water around it, tool shed roof active collection and dispersion, honeycomb design in pollinator garden meant to act much like the indigenous dry farming technique of waffle gardens, increase in plants to decrease erosion and slow water, Check dams.</p> <p><u>Wind:</u> Windbreaks of large trees that can handle wind burn and cold, multiple wind breaks throughout garden, wind breaks in curves rather than straight, evergreens, different heights of trees, walls, berms and swales to increase diversity in landscaping and break wind. Windbreaks will also help with filtering dust from the air, slow hail, prevent soil erosion, collect drift snow to increase water collection, raise the soil temperature, and increase wildlife habitat.</p>
<p>SHELTER/CLIMATE</p>	<p><u>Shelter/Climate:</u> create cold sinks, add thermal mass, compressed granite pathways, south facing U shape on south side of food forest section will increase thermal mass, (thermal parabolic suntraps), increased large plants, mulching, rock piles, wind breaks, geodesic greenhouse, dark evergreens, berms increase diversity of angles of sun, row covers, season extenders, overhead trellises reflect heat back to earth, wallo'waters, hugelkultur.</p>
<p>POLLUTION (TRASH FROM WIND/PASSER BYERS/PAST DUMPING, PARKING LOT RUN-OFF)</p>	<p><u>Trash:</u> put out a trash can, recycling bin, and compost bin, schedule microtrash pick-ups, education, storage for garden tools and pots, when digging take out concrete and debris</p>

<p>SUSTAINABILITY</p>	<p>from under ground.</p> <p><u>Parking lot run-off:</u> french drain from SER, plants for filtering, small pebbles for filtration.</p> <p><u>Sustainability:</u> salvaged materials such as pallets and old tires, fix broken tools, good storage to increase lifetime of tools, increase yields, organic only, local materials and resources only, Native and naturalized plants, education, animals welcome, resource harvesting like water and energy, low maintenance, plant and infrastructure permanence.</p>
<p>STORAGE</p>	<p><u>Storage:</u> storage benches in the gathering area, tool shed, inventory of materials.</p>
<p>IMPERMANENCE</p>	<p><u>Impermanence:</u> Plant large native trees and shrubs, infrastructure such as granite pathways, walls, signage, increase in club members, more historical information records such as past leaders, records of past planting/crop rotations, records of tasks and when it's best to do them, club maintenance tasks record, more community involvement, more professor and class involvement, strengthen partnerships.</p>
<p>BEAUTY</p>	<p><u>Beauty:</u> repetition of species and circular shapes, boundaries, garden art, activity stations, opening in trees to stretch one's eyes, parking lot sound barriers, community painting days, colors, flower planting succession, evergreens, patterns mimicking nature, height adding misery to what's around the corner, anchor plants, compression of space leading to open space= wow factor, color schemes,</p>

YIELDS/INCOME

consistency in materials, diversity.

Yields/Income: 3 high productivity beds, chicken wire gopher deterrent, organic pest and disease deterrent, records of tasks to help guide future leaders, record of how to sell at the farmers market, farmers market materials in tool shed, geodesic dome greenhouse extends season allowing for niche markets, records of what sells well at the farmers market, records of how to prep and care for harvest, wash station in gathering space, eating space, prep space, recipe cards available in the gardens gathering space, workshops on productivity of a garden

EDUCATION

Education: professional signage, chalk board, workshops, class integration, kenzie and killip field trips, community involvement, activities placed throughout garden, master gardeners, yoga classes, meditation workshops, outdoor art such as nature mandalas, increase connection to the earth, written records of lesson plans/community members interested/past events/activities/club records.

SOCIAL

Social: addressing food insecurity, encourage individuality, encourage creativity and critical thought, offer services to freshmen such as line drying laundry (free compared to dryers in dorms), activity centers throughout garden, blackboard, indigenous community involvement, meditation and yoga events, course integration, outdoor gathering space/classroom, space for

ACCESSIBILITY

children, play education, good signage, individual plots in one bed for those interested, relaxation areas, community ownership and stakeholding, educational workshops for college of education, workshops for parks and recreation majors, aesthetically pleasing, collaboration with SER.

Accessibility: visit with center for people with disabilities to make sure you're making as accessible as possible, compressed granite pathways, wheelchair accessible planting bed, signage, advertisement of accessibility, inclusive design throughout the garden.

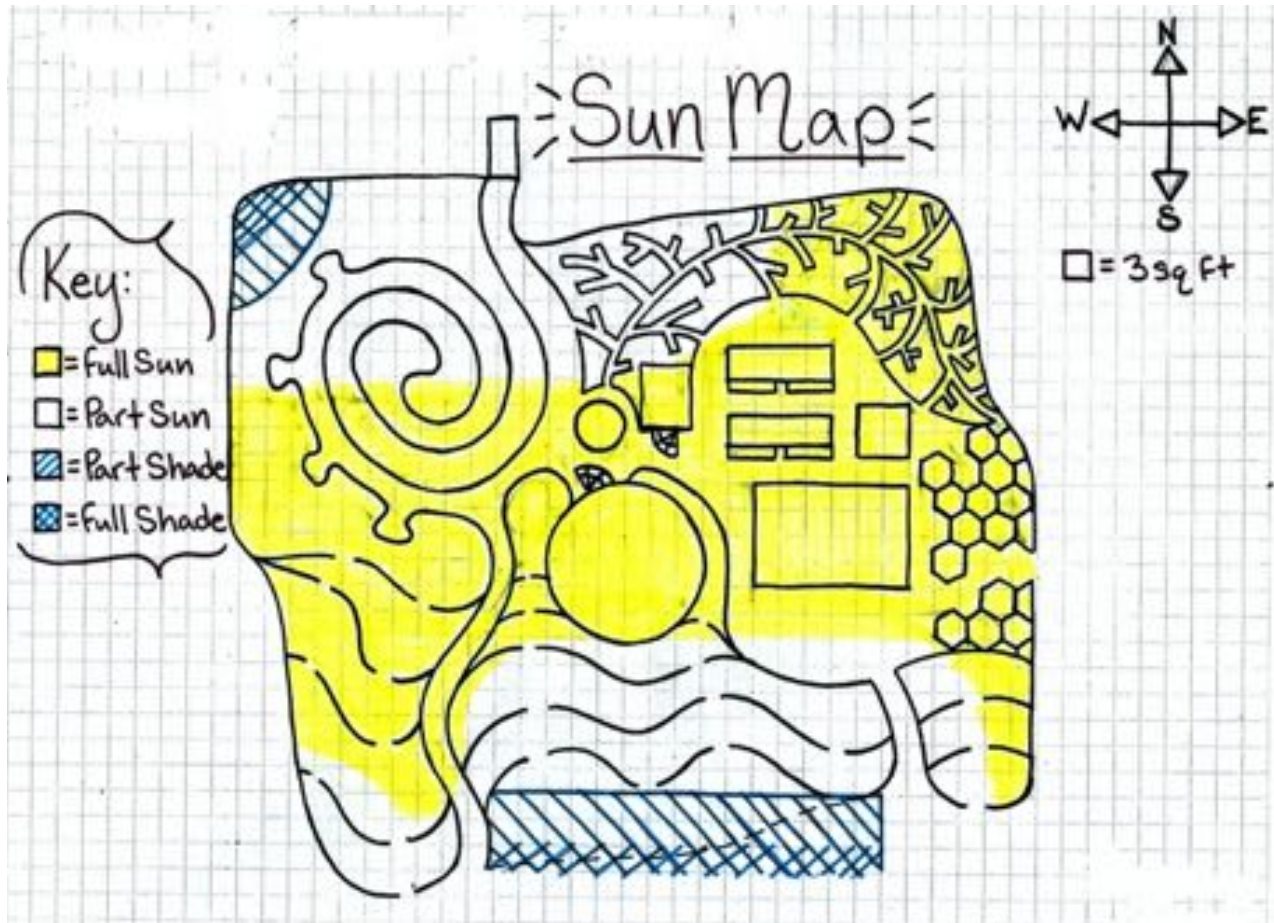
CLUB INVOLVEMENT

Freshmen: attend club fair and campus events such as earth jam, climate action plan movements, collaboration with RA staff, advertisement, collaboration with relevant colleges, collaboration with freshmen courses, collaboration with food security efforts on campus, collaboration with ASNAU, table in the union.

Cabinet: Decisions run by the entire cabinet before decided on and carried out, cabinet positions include president/vice president/secretary/and social media specialist. Cabinet will be supported by a faculty advisor. Cabinet elections take place as necessary.

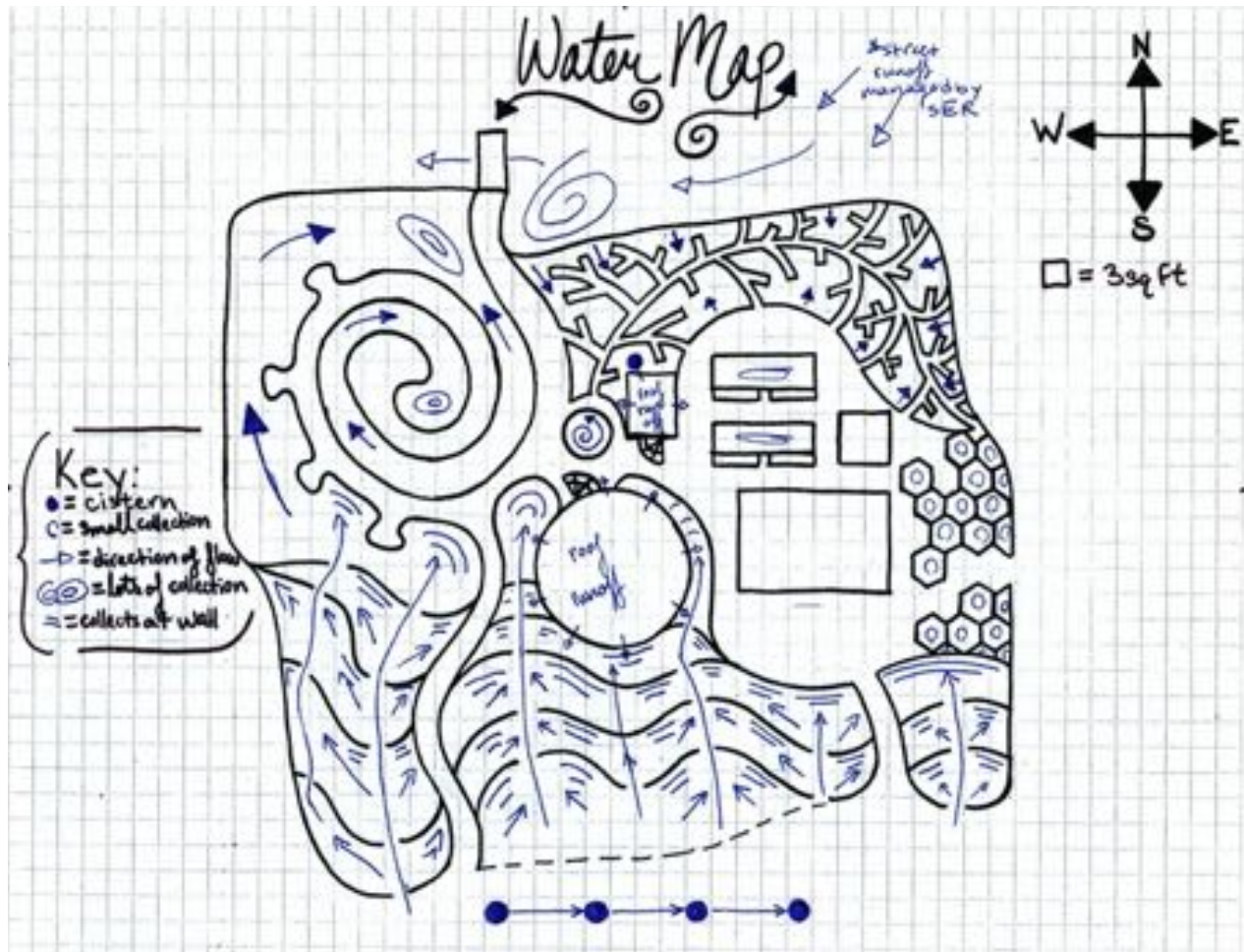
Resources: Google drive will have all needed information

SUN MAP



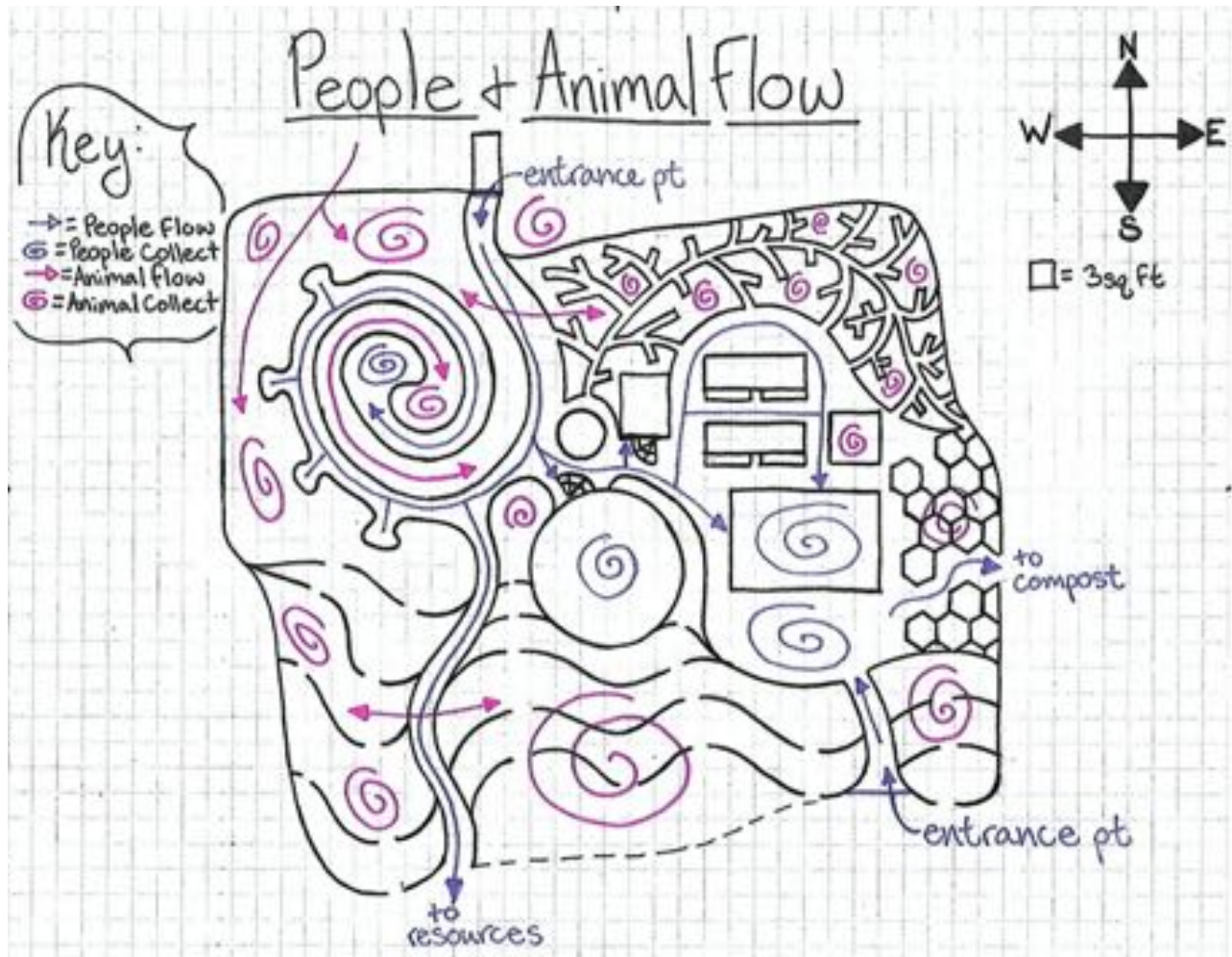
This map explains sun movement throughout the garden which varies little throughout the year, except for when considering intensity. Additionally, once the windbreak is planted and more high profile plants go into the food forest, the sun patterns will be more spotty. It is likely that we will see changes on the west side in the afternoons. However, the rest should stay relatively the same.

WATER FLOW MAP



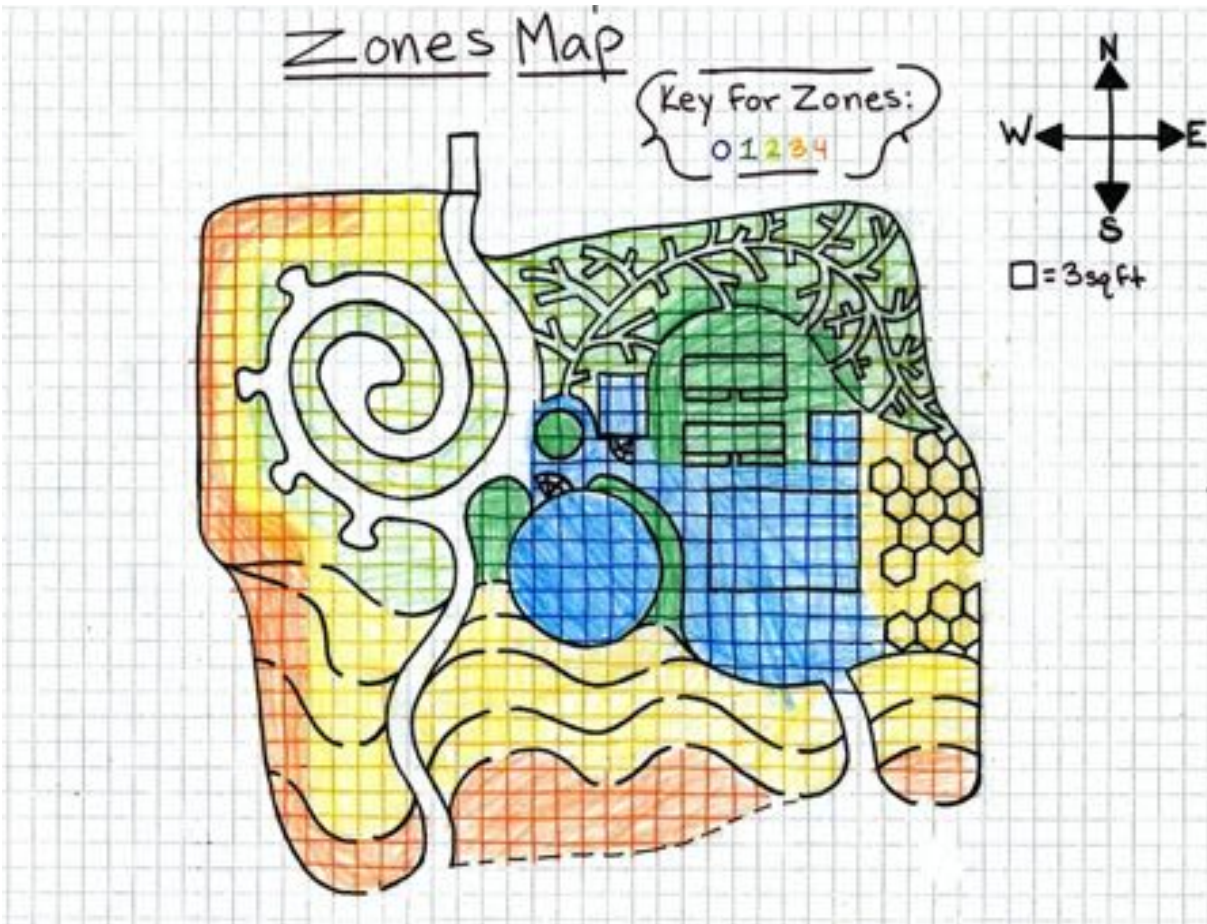
This map displays the flow and collection of water actively and passively. Obviously, active water harvesting will be explained more in depth in the future once I discuss details further with greenhouse head staff and facility/landscape department of NAU. Passive water harvesting however is in good detail and includes the terracing on the south side of the garden, berms and swales in the spiral, and waffle garden-esque honeycomb designs. Borders around the garden will be heightened to encourage water to not leak out of the sides of the garden and rather flow inwards and sink in. additionally there will be lots of mulching, plants, and organic matter to soak up heavy rain or snow fall.

PEOPLE AND ANIMAL FLOW MAP



This map shows the prediction of animal and people flow and collection once the garden design is completed. It is likely that people will gather in the gathering space, geodesic greenhouse, and at the center of the spiral section of the garden due to activities and designed social spaces. It is likely that animals will collect in the windbreaks on the west side of the garden, in the native low maintenance brush on the terraces, in the pollinator garden, in spaces where water will likely collect, and in the brush of the dense food forest.

ZONES MAP



Zone 0: This zone is concentrated in the gathering area, children's area, geodesic greenhouse, in-ground compost, and tool shed. This is justified by the fact that these areas will be where most people congregate.

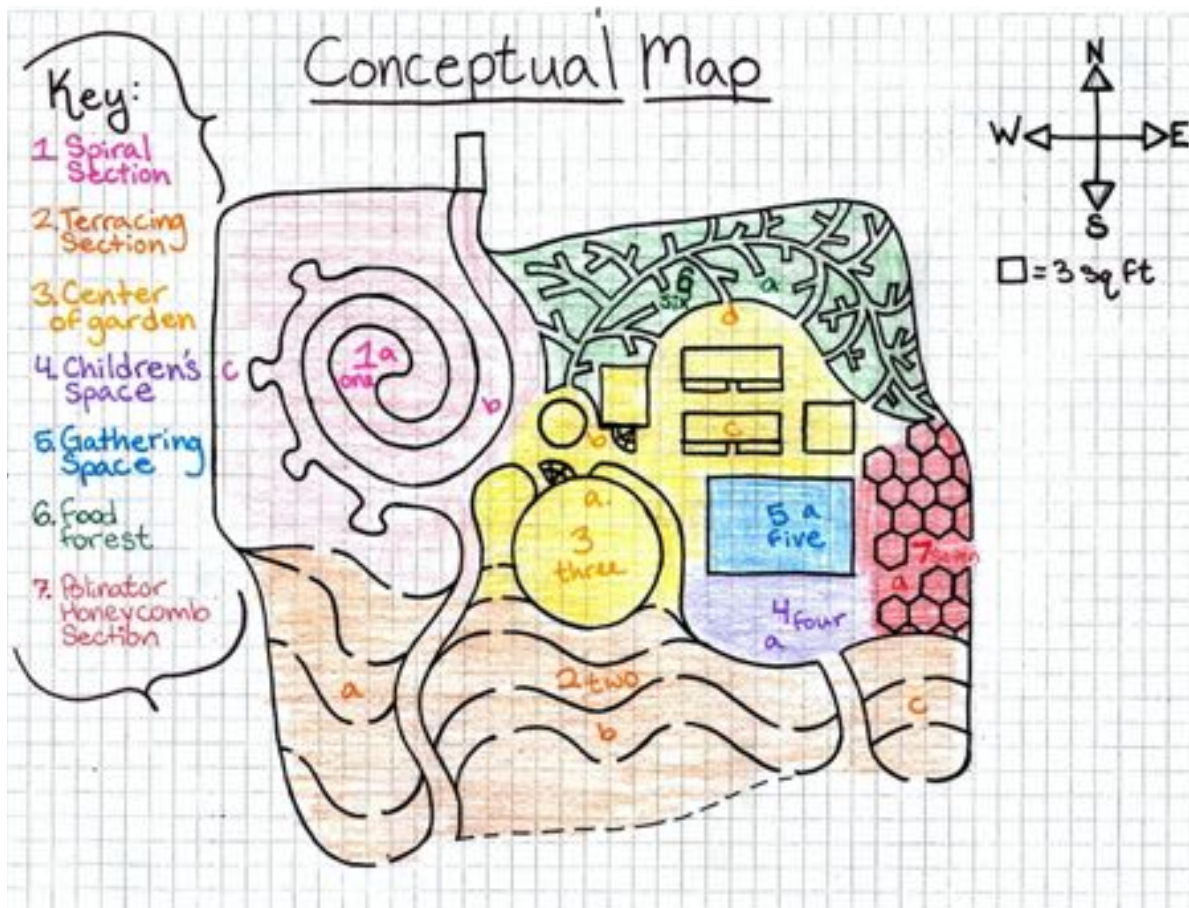
Zone 1: This zone surrounds the green house, herb spiral, raised beds, and around the south facing U shape. These spaces are clearly zone 1 spaces due to the high need plants that will be planted in these areas close to human activity.

Zone 2: This zone accumulates in the spiral section, and the food forest. These features are considered zone 2 because the plants in these areas will be low maintenance, but will still require moderate care and will still be visited by the traffic of people fairly regularly.

Zone 3: This zone is settled west of the spiral, on the northmost side of the terracing section, and the pollinator garden. This is obvious in that these areas will be lower maintenance plants and will receive little visitation from volunteers but will still require water

Zone 4: This zone accumulates on the westmost side of the spiral section and on the south most side of the terracing section. These areas are recognized as zone 4 because almost no human traffic will associate with the plants which will be native and extremely low maintenance.

CONCEPTUAL DESIGN



This map shows the different sections of the garden based off design needs and solutions. There are further details on the next page. The spiral section will be for windbreaks and some semi-needy plants that require shelter and different water needs. The terracing section is meant to slow water and will be planted with low maintenance native plants. The center of the garden is where there will be the least amount of animal activity and where most high need plants will be planted, as it is close to the gathering space and children's space. The children's space will be an area for creativity, play, and education meeting social needs of Kenzie elementary and other kid-based garden activities. The gathering space will address communal needs and allow for more people together in the garden compared to the past. The food forest section is for a display of forest gardening, which will be semi low maintenance and will allow for high yields with little work and a great buffer to the parking lot. The pollinator honeycomb section will help attract pollinators to the garden and will need little maintenance once successive planting is complete.

DETAILED DESIGN

CONSISTENCY THROUGHOUT THE GARDEN: all pathways will be a rich brown compacted granite.

Other materials used for pathways will be slated Malapai rock and bricks in a herringbone design.

Retaining walls will be malapai boulders or red sandstone. Style of the garden accessories will be whimsical.



1. Spiral Section:

A. Magical Brunch space:

- This space will be at the center of the spiral section and will be for small gatherings of just a few people. This space should exuberate the feeling of being hugged by the garden, as you will be completely surrounded by plants. In this area there will be design aspects including a white wrought iron antique dining set, teacup/teapot bird feeders, an antique mirror, a small fairy garden, a crystal wind chime/suncatcher, and a small bird bath. The color scheme for the plants will be deep purples, greens, light purples, royal blues, baby blues, white, and dark purple/black foliage. Overall planting will be mimicking moist petran forest. Slated malapai with lichen will be inlaid into the rich brown compacted granite and gradually decrease as you exit the center of the spiral.
- Plant List:
- Trees: weeping cherry tree
- Large bushes/larger plants: Fernbrush, woods rose, double bubble mint, showy milkweed, sacred datura, palmers penstemon, lady ferns, western blue flag iris, sunset crater penstemon, toadflax penstemon, whipples penstemon, tatarian honeysuckle, peonies, bleeding hearts, dark purple and light pink hollyhocks, colorado dwarf globe blue spruce, lilac, deers ears or elkweed
- Smaller plants: pink nodding onion, fendlers sandwort, lady fern, Harebells, comfrey, purple aster, rocky mountain columbine, silvery lupine, blue flax, white geranium, dakota vervain, hoary tansyaster, maravilla, wild bergamont, coyote mint, arizona valerian, dark purple coral bells
- Groundcovers/really small: western yarrow, littleleaf pussytoes, bearberry, native strawberries, violas, dwarf mountain fleabane, redroot buckwheat, creeping barberry, blackfoot daisy, mountain bluebells, creeping evening primrose, pink phlox, siberian iris, crocus, vinca minor/major

B. Planted garden bed with various water needs:

- This bed will transition from the magical brunch space. It will be on top of a small hill, so low water needs are required. It will consist of these plants:
- **Trees:** new mexican olives
- **bushes/larger plants:** apache plume, light pink hollyhocks, bannaa yuccas, agave, sentury plant, wolf berry, fringed sage brush, indian rice grass, rock spire, azure blue sage, elderberries
- **Smaller plants:** blue flax, rockymountain bee plant, purple aster, southwestern prickly poppy, california poppies, blue gramma, woolly locoweed, wine cups, purple prairie clover, old mans whiskers, winterfat
- **Ground covers:** western yarrow, bearberry, pussytoes, new mexico vervain

C. Windbreak section/hugelkultur:

- This section will be about 2 curving lines of trees serving as a windbreak. The plants in this section will need to be self-sufficient.
- **Trees:** Norway spruce, eastern red cedar, pinyon pine, rocky mountain juniper, new mexican locust, blue colorado spruce, privet
- **Large bushes:** siberian peashrub, common buckthorn, wolfberry, 3 leaf sumac, coyote willow, fernbrush, lilac, woods rose
- **Smaller plants:** shasta daisy, vinca minor, yarrow

2. Terracing Section: This section should be extremely low maintenance plants, have mostly orange, red, yellow, and pink blooms.

A. West side:

- **Plants:**
- **Trees:** amur maple, nanking cherry, chokecherry, native american plum, new mexican locust,
- **Bushes:** cliffrose, apache plume, serviceberry, black chokeberry, wolfberry, red osier dogwood, fringed sage, mountain mahogany, forsythia, twin berry, cinquefoil bush, golden currant, persian yellow rose, rabbitbrush,
- **Small plants:** southwestern prickly poppy, california poppies, butterfly milkweed, wine cups, fendlers sundrops, indian paintbrush, hardy hummingbird trumpet, blanket flower, firewheel, dakota vervain, aspen sunflower, mammoth sunflowers, naturalized sunflowers, jones false goldenaster, arizona rubberweed, daffodills, scarlet gila, winterfat, banana yucca, sunset crater penstemon, scarlet bugler, palmers penstemon, desert penstemon, cutleaf coneflower, scarlet globe mallow, desert plume, white prairie aster,
- **Ground cover:** matted buckwheat, creeping evening primrose, wild oregano,

B. Center, low profile plants for geodesic greenhouse:

- Will have the same plants as section A and C, except taller plants will be limited.

C. East side: same plants as west side section A.

3. Center of The Garden:

A. Geodesic Greenhouse:

- Link To Greenhouse: <https://growingspaces.com/shop/18-foot-diameter-greenhouse-kit/>
- The greenhouse is geodesic, and will have underground heating system. The greenhouse will have worm farms beneath the pathways as well. It will also have a water tank for aquatic plants and fish if nature allows it. It also will have a solar powered fountain for water aeration. Aquatic plants will include hardy water lily, frogbit, duckweed, and taro.
- Plants inside the greenhouse will include these perennials: figs, bougainvillea, camellias, fiddlehead fern, yacon, caladiums, dahlias, creeping jenny, prickly pear, and saucer magnolia. For annuals in the greenhouse plants will include yerba mansa, ginseng, begonias, jasmine, yellow pear tomatoes, cherry red tomatoes, rainbow tomatoes, pattypan squash, red scarlet runner beans, okra, cucumbers, banana peppers, jalapenos, summer greens, watermelons, geraniums, potted african violets, and more.

B. Tool shed and Herb Spiral:

- Tool Shed: this space will hold the obvious tools, team building activities, a task sheet, and store seeds.
- Herb spiral: the herb spiral will include cilantro, chamomile, wormwood, oregano, basil, dill, mint, lemon balm, borage, feverfew, liquorice, lovage, and more.

C. Raised beds, Season extenders, garden beds surrounding greenhouse, and In-Ground Compost:

- In the raised beds we will have: red mustard, spinach, collards, broccoli, asparagus, artichokes, brussel sprouts, garlic, onions, beans, cabbage, cauliflower, radishes, beets, potatoes, kale, kohlrabi, carrots, sweet potatoes, arugula, swiss chard, turnips, rutabaga, and lettuce.
- In the season extenders: summer greens, nasturtium, more sensitive herbs, medicinal plants, sensitive flowers.
- In the garden beds around the greenhouse: calendula, echinacea, sunflowers, lavender, corn, pumpkins, blueberries, raspberries, canyon grapes.
- In ground compost bin will be used regularly and will provide opportunities for workshops.

D. South facing U-shaped garden:

- This garden will help shelter plants, and gain optimal thermal mass. This may end up being the warmest spot in the garden. I plan to have stepping stones bordering the u shape that will have the moon phases painted on it. Plants in this area will include calendula, echinacea, summer crops, tatsoi, lettuce, pumpkins.

4. Children's Space:

- This space is near and dear to my heart. I want the space to encourage creativity, critical thinking, problem solving, emotional and behavioral learning, teachable moments, and community. There are few plants, however.

- Features:





- All kinds of toys will be stored in storage benches in the gathering space. Additionally there will be laminated lesson plans, crafts, and activities to do with kids.

5. Gathering Space:

- This space will be for community gardening and will be beneath a trellis with wisteria growing on it or virginia creeper. This space will include a hammock that can be taken down, a wash basin and counter, a sundial, storage benches/seating, yoga mats in storage seating, a blackboard and chalk, a sign in notebook, art supplies, laminated recipes, a table and chair for studying, solar powered charging station, a laundry line and clothespins, a variety of books in a little library, crafts to do, etc...

6. Food Forest:

- This section will have pathways like this:



- This section will have fruit trees (mostly apples), maples that can be tapped, a ton of elderberries, saskatoon service berries, lemonade berries, strawberries, blueberries, blackberries, raspberries, comfrey, calendula, medicinal native plants, vinca minor for groundcover, etc...

7. Pollinator Garden:

- In this part of the garden there is honeycomb shaped waffle garden-esque beds that will be planted with masses of wildflowers such as flax, blanketflower, poppies, milkweed, sunflowers, penstemon, yarrow, calendula, nasturtium, purple coneflower, sulfur cosmos, lilac, queen annes lace, fleabane, sedum, beebalm,

primrose, mexican hat, sage, rosemary, chamomile, black eyed susan, zinnia, globe mallow, blue gramma, and goldenrod. This space should be extremely diverse in color and should feel much like a wildflower meadow. There should be dishes of water laying out, some bare dirt, and rock piles.



IMPLEMENTATION

- *Implementation is far off. In the future, to carry out this plan we will need to submit a greenfund proposal with the support of facility services by mid january. I plan to have another garden intern next semester which will be helpful. I will need to do a lot of community organizing and emailing. Additionally, I will have to find some man power, and schedule meetings with a variety of people. This project will likely take until the end of summer 2020.*