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Transitions of PA Safe-house Garden Bed

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Transitions of PA Safehouse Garden Bed

Molly Garrahy, Lauren McDougal, Amanda Pennett, Christian Tait.

Environmental Studies 411

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Acknowledgements

We would like to thank all of the Transitions staff, especially Shannon Fisher in her help and guidance throughout this project, as well as Abby Gulden-Luthi in her help to coordinate donation efforts. Alongside this we would like to thank Your Building Center in Milton for their donations that made constructing our garden bed possible. Finally, we want to acknowledge Professor Amanda Wooden's influence and support throughout this project with ideas and support in our report endeavors. Thank you to everyone who helped make this project possible.

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I. Introduction

The aim of the Environmental Community Projects class is to provide seniors who are majoring in Environmental Studies the opportunity to have a long lasting impact on the Lewisburg or surrounding communities through sustainable and ethical environmental projects. In collaboration with Transitions of PA, the community project that has been created embodies a variety of principles we have learned throughout our collective research, environmental and community experiences. Through detailed research on these topics and collaboration with our Transitions of PA community partner contact, Shannon Fisher, we were able to construct a raised garden bed that achieves our community partner's main goals: to create a natural space for therapeutic use, while making the indefinite upkeep of the garden low-maintenance for staff

The non-profit organization, Transitions of PA allows those in crisis, particularly domestic abuse victims, to find support and resources through providing temporary residence at one of Transitions' three safehouses. We have built a raised garden bed as a therapeutic resource for the Lewisburg safehouse guests, with principles of sustainable gardening in mind. The act of gardening becomes a form of therapy as the connection to the natural elements and intentionality behind sustainable gardening methods have significant mental health benefits. Beyond acting as a therapeutic activity, community gardening has been proven to support social connections and act as a pathway to building support and developing a stronger sense of trust, particularly empowering this community. To ensure optimal accessibility for safehouse guests, educational materials including brochures, outlining the key ways to interact with the garden, and a guidebook for staff, detailing how to sustainably garden, were distributed at the completion of the

garden bed. This project encompasses community service, sustainability, and environmental education, all of which have been key to each of our experiences as students.

Shannon Fisher was our main community project throughout the project. Transitions ' priority was having a space for guests to talk about their experiences while engaging with their five senses to feel grounded, with low maintenance upkeep for the staff. They were also excited about possibly recreating this project at other safehouse locations. Our report includes background information about the organization, the research, and literature, our methods of gathering guests' potential range of interest and involvement with the final product, and the physical component of building the garden and sensory table and filling the bed. Further recommendations, a guidebook for staff, and interactive brochures for guests will ensure the garden's longevity for years to come.

II. Background

Transitions, PA was founded in 1975 by a group of women to create a support network for women, children, and men escaping domestic violence. The organization has since grown throughout the Sunbury, Selinsgrove, and Lewisburg area with donations and grants to support its several services and the needs of the diverse communities seeking help. Guests residing in the safe houses, provided by Transitions of PA, are fleeing possible situations of domestic violence or other related cases of abuse. In 2019-2020, the safehouse department provided "3,199 shelter nights to 108 adult and child victims [survivors] of domestic violence" (Transitions of PA 2022). Most Guests reside in the safe house for 45 to 60 days until they have established a safe place to stay. Transitions of PA provides multiple services including emergency housing, legal advisory, counseling for victims and their families, support groups, and community outreach and advocacy programs. Other services were provided to "2,016 adult victims [survivors] and 133 child victims [survivors] of domestic violence and sexual assault" (Transitions of PA 2022).

The creation of a therapeutic garden bed at the Lewisburg safe house provides additional mental health benefits to guests alongside Transitions services. Gardening as a method of therapy provides a space to practice grounding skills and techniques to cope with overwhelming feelings and thoughts. This includes the use of the five senses and motor skills when interacting with the garden, increasing emotional well-being and providing structured routines. Grounding activities help mediate intrusive thoughts by doing something physical, such as pulling weeds or sowing seeds, to shift attention away from the stressor. Gardening is accessible to all ages and can be interacted with year-round, as there is always something that needs to be done in a garden.

The garden space provides peace during a possibly stressful time that connects safehouse guests back to the community. Gardening and farming are essential parts of the Union County

economy. While located in a rural area, Lewisburg by comparison is more urban, thus a raised bed was constructed to fit the environment. Urban gardening introduces pollinator species and fresh vegetables to the safehouse backyard, and skills to a guest who can continue this important practice beyond their safehouse transition.

III. Literature Review

Community Gardens for Therapeutic Practice

The value of this project lies in the ways the garden can be utilized to benefit the mental health of those living in the Transitions' safehouse. We as humans are naturally drawn to the elements of the outdoors and need to reconnect with nature as our lives have evolved with increased stress and time inside. "A cognitive explanation commonly used draws on the way we perceive our surroundings and how we, just as our early ancestors, are easily attuned to different threats and dangers in nature, such as wild animals. In the busy everyday life of today with its huge flood of information, this selection of what stimuli to attend to has become more difficult and demanding however, and we run the risk of depleting this capacity" (Kaplan and Kaplan, cited in Adevi & Mårtensson 2013). For the guests of Transitions' safehouse, this can be used as an essential tool for managing the intense stress levels of those in crisis. When communicating with our community partner, Shannon Fisher, about the particular therapeutic elements of the garden, she referenced the grounding sense that gardening provides through connecting with one's 5 senses: seeing the work, feeling the soil and sunlight, smelling the flowers and/or herbs, etc. This explanation provided great insight into the purpose of the garden and emphasized the importance of the sensory table we will include in our construction. "Attention is paid to the emotionally nurturing bonds that potentially evolve between person and place, and the meaning-making associated with this process, without neglecting the benefits of visually experiencing greenery and the exercise associated with gardening" (Adevi & Mårtensson 2013). Gardening can provide the guests with light physical exercise on top of all the mental benefits, and potentially a connection to their home as some may have previous gardening or farming

experience. The connection to the Earth we are providing can increase the guests' nutrition and be used in mental health treatments/activities. “Qualitative studies have provided insight into service users’ experiences of gardening-based interventions, with a range of potential benefits highlighted, including enhanced emotional wellbeing, improved social functioning, improved physical health and opportunities for vocational development” (Clayworthy et. al, 2013). In this therapy method, participants can feel the natural elements, such as the sun on their skin and dirt on their hands. Besides the basic benefits of being outside, regenerative agricultural practices, specifically, offer a greater potential for participation and enrichment from the garden. These practices emphasize hands-on gardening that is particular to the plants that are being cultivated. Some of these key practices include intercropping, use of natural fertilizers, hand-sowing seed, and using natural resources such as compost and seedless straw to add nutrients to the soil. This idea of nourishment allows the guests to establish a relationship with the garden and watch how their care directly impacts the growth of the plants.

The way the garden is operated within this community, as Guests work together, is the key to its longevity and success. “Given that social relatedness has been found to predict happiness or subjective well-being [78], it is reasonable to expect that community gardening should have at least comparable effects to home gardening on subjective well-being” (Dillon & Koay 2020). Our plans for optimal interaction and accessibility include creating brochures for the Guests to use to understand how they can interact with the garden and what is growing in certain months, what tasks must be done to support the garden and the microbiome of the soil. It is important to offer this educational piece as it offers an opportunity for the Guests to experience something possibly new for them.

Constructing the Garden Bed

A raised bed garden is the best garden design for this project. Not only is a raised bed easier to maintain, but it is practical and allows for easy access to harvest the fresh produce that will be available. This garden design is also the most practical design given the area of the safe house yard we had available to work with. The walls surrounding the raised bed help maintain the soil and any other particles that would otherwise be escaping from a normal garden on the ground. Since it is a raised bed, we do not have to tamper with the existing grass that is around our work area, the bed will be nourished completely with its soil.

The materials that we used to construct this bed and sensory table include Hem Fir hardwood, concrete corner blocks, and Burlap lining, used as a barrier for the bottom of the bed. This Burlap lining is biodegradable, allowing plants and vegetables within the garden to flourish without being harmed by chemicals. We resourced this burlap from Walmart, as it is environmentally ethical and serves as a barrier between the ground and the garden bed.

The main material that was used for the construction of the bed and sensory table is Hem Fir hardwood. This hard wood was obtained through Your Building Centers for Milton, a contact that was provided by our community partner, Shannon. Through communication with Karrie Ravert, this organization was able to supply us with the Hem Fir hardwood in the form of a donation, as few portions of wood were needed. Your Building Centers was able to donate one 2x12x18, and three 2x12x8s, as we requested. We confirmed that this Hem Fir wood was unbleached and untreated, as any bleached or treated hardwood would, over time, leak chemicals into the soil and then into the produce. This would ultimately contaminate the produce in the garden, breaching our principles of environmental sustainability and ethics.

As for the general construction of the bed and sensory table, we used concrete corner blocks that house each piece of lumber. This allowed us to easily place each piece of lumber into the concrete corner blocks, with no use of screws or power tools. The only tools we needed were a hand power drill to secure the sections of the sensory table, which Christian had access to. Once the frame of the garden was assembled, we created a base inside to begin the process of cultivating the garden. Using sheet mulching, we created a healthy base of nutrients for the garden bed and suppressed any unwanted weeds. After the Burlap lining, 4 to 6 overlapping layers of wet newspaper or cardboard were placed at the bottom, followed by alternative layers of carbon materials and nitrogen materials in about 1-inch layers. It is important to start with the nitrogen layer and end with a carbon layer on top to create a "'blanket' that discourages flies from laying eggs on exposed nitrogen material such as kitchen scraps" (OSU, 2022). After the initial layer of cardboard, the second layer added to the garden bed contained a mix of coffee grounds collected by Transitions staff, leaves, and algae gathered from Professor Wooden's personal pond. Next, the bulkiest layer was put down, which included sticks and red oak wood chips. The last layer of the base, before topsoil and mulch were added to fill up the rest of the raised bed, was a thick layer of compost to ensure a healthy soil microbiome. The compost was dark, rich with nutrients. Finally after organic topsoil, purchased from Reifs, was used to fill the remaining space in the garden bed, mulch was also used to add to the nutrients in the soils. Sheet mulching is a slow process, taking about six months for the material to fully decompose because "there is little or no heat reaction from the microorganisms to speed the process along" (OSU 2022). However, adding a few inches of planting soil on top makes it ready for planting and allows the process to continue underneath. With this research, the longevity of the garden is attributed to the healthy soil.

Inside the Garden Bed

One of the main principles in sustainable gardening is intercropping, or planting in loose patterns of diverse plants. With our garden including both vegetables and flowers, we will be able to achieve this and include how to map out where to sow the seeds of certain plants in our guidebook for staff. “Crops that root deeply such as parsnips, carrots, and tomatoes can be intercropped with shallow vegetables such as broccoli, lettuce, and potatoes…Classic combos are tomatoes with basil and marigolds with cabbage” (Grant 2013). Depending on the results of our surveying, we will pair certain vegetables together and disperse flowers between sections. In our future guidebook, we will be able to draw up a basic map of the garden regarding how to plant the seeds. Depending on the particular depth recommended, a layer of seed should be sown evenly throughout a shallow trench that can be dug easily with one’s fingers. When they begin to sprout, the weaker seedlings may be plucked out, depending on the type of vegetable and its spacing needs.

It is generally suggested “to pair cool-season flowers with cool-season veggies, and warm/hot-season flowers with warm/hot-season veggies” (Boss 2022). Our priority will be planting a combination of cool-season vegetables with cool-season flowers, as our project starts in early spring and the plants need to survive late frosts and still harvest/bloom before the extreme summer heat. The sources advised to look for carrots or tomatoes that are hardy and resistant to pests. This will lower the care and skill set needed to keep those vegetables healthy. Many plants receive benefits from being planted next to another species. Some relationships include tomatoes planted near basil will have higher yields, and a tall sunflower will not only provide tasty seeds, but shade for other plants. Flowers can bring pollinators that will keep pests low, “help with biodiversity, and contribute to the longevity of the garden” (Majewska 2020).

In gathering potential plants, our research included considerations of sunlight exposure when to plant, tending needs, how plants will grow next to each other, and what attracts pollinators or other pests. Our main concern was to research plants with low maintenance needs, so that they may be taken care of by anyone regardless of their gardening experience. This information is recorded in the guidebook and brochures for Transitions' guests to plant in the future, with suggestions of tomatoes, squash, marigolds, etc. We obtained seedlings from the Bucknell Farm and have compiled a list of potential community donors for the first planting. We are not physically planting the chosen flowers and vegetables, rather we have provided this community the resources to cultivate their garden fully independently. We have provided the safehouse staff with a report detailing the specific ways to cultivate the flora and how to ensure that the garden continues to fulfill its purposes.

IV. Methods

Confidentiality Training and Research Ethics

Before being able to engage with this project, our group went through particular training regarding confidentiality. Because the organization we are serving is a non-profit for those in crisis, we had to obtain special training in how to interact with safehouse guests and what information we could not share with anyone. Each researcher has also gone through CITI training as a baseline requirement for engaging with community members while completing these kinds of projects to ensure we understand the ethical concerns within research and projects involving other people.

Survey and IRB Approval

A survey was created and distributed to current safehouse guests in order to gauge interest in participation in the new garden. Beyond general questions, the survey included a section where guests could write in their personal preferences of what they would like to see in the garden. The survey draft was edited and approved by both Professor Wooden and Transitions Staff Shannon Fisher before being submitted to the IRB. The IRB, or Institutional Review Board, ensures that all research and/or interactions with people to obtain information are done ethically and confidentially. This is particularly important for this group, as the disclosure of their location could put them in direct harm. Thus, there was no identifying information on the survey and the only two written responses were optional. This model maintains anonymity while still allowing us to survey safehouse Guests about garden preferences and participation. The final survey shown in ***Appendix I***V was approved by the Bucknell Institutional Review Board on March 21st,

2024. This survey was then distributed to Guests in two separate Safehouses, resulting in 4 responses as shown in ***Appendix IV***.

Resourcing

Grant Application

Through Bucknell's Center for Sustainability and the Environment, the micro-grant program was utilized for this project. After our application, the community project was approved for the micro-grant, with an amount of $300.00. This grant was used to purchase the organic topsoil that filled the majority of the garden bed as well as bins to be used for the sensory table component of the garden.

Community Outreach for Resource Gathering

Through working with Transitions Fund Development Director, Abby Gulden-Luthi, and our main contact, Shannon Fisher, we worked to reach out to different community contacts in the area asking for donations. This was primarily done using the donation letter listed under ***Appendix IV***, which was created and shared with us by Abby during our time working with Transitions. Using this, we were able to reach out to contacts using the correct information and Transitions methods/goals to try and obtain donations.

Garden Bed Construction

We decided to create an L-shaped garden bed that includes a sensory table to increase the ways it can be used, particularly with children in mind. Dividing the space into 4 sections, the sensory table component was completed with 4 plastic bins placed into the wooden frame, which were drilled from the bottom to prevent water buildup. In our research for the construction of the

frame of the bed, we made sure to look for unbleached and untreated wood so no contaminants would leach into the soil from watering or rain. We decided to use the rounded cement blocks to hold the frame of the garden bed in place, as seen in ***Appendix I***, and to place separate bins in the garden table that can be easily removed for cleaning purposes and evolving goals for the garden.

Project Timeline

Due to the time constraints of our semester, the main goals within our timeline were completing construction and finishing the educational material to leave with Transitions. Alongside items being due in the course, our main goals occurred in March through the completion of the IRB process, our grant application was accepted in early April, and construction also began in early April. A more detailed timeline of our tasks and goals can be found in ***Appendix II***.

V. Project Components

Project Goals

The main premise of this project was to create a raised garden bed located in the backyard of one of Transitions' safehouses, however, the impact of this garden goes far beyond the physical construction of the project. With this project, we worked to leave the guests of the Lewisburg safehouse with an outlet to relieve some of the stress of various issues they are personally confronting as a new activity to be incorporated as a part of the therapy services.

Our community partner's main goal was the creation of a raised garden bed that will be incorporated into the mental health treatment Transitions of PA offers, and to be used as the first model of what could be implemented at their other safe houses. Alongside this, our community partner communicated that we keep the staff's prior knowledge and time available in mind as we present them with the information needed to keep the garden running. Within our timeline, we were able to meet the goals of garden bed construction based on our design, compile a list of community contacts to ensure donations for years to come, and complete a brochure and guidebook to leave behind for staff, guiding them on how to care for the garden. Staff and guests will be responsible for planting the chosen flowers and vegetables as well as implementing the practices we have outlined in our reports.

Community Outreach and Resourcing

By asking local farms and community gardens for seeds, bulbs, etc., reliance on grants or donated funds was not necessary in covering expenses for what will be planted inside the garden bed. Creating these relationships within Union County, which is known for agriculture, Transitions of PA is connected back to the community. Relationships created through this project

have the potential to contribute to the longevity of the garden. The proposed items asked for are guided by responses given in the survey to support the wants and needs of the guests. This list can be changed when needed and reshared with contacts made throughout the semester. The essential items asked for in donations include:

- Vegetable Seeds or Seedlings (especially sunflowers, green beans, tomatoes, marigolds, zinnias, and watermelon)
- Flower Seeds, Bulbs, or Seedlings
- Sticks, leaves, etc. - layering for the mulch base of the garden
- Bags of fertilized soil

Garden Bed Construction

We started construction of the garden bed at the chosen location, the backyard of one of Transitions' safehouses, pictured in ***Appendix I***. After having visited the site with Shannon, we decided on the location of the garden bed to be about three feet from the small shed. Construction was started on April 4th, using the time slot dedicated to our weekly community partner meeting. To start, we assembled the 8x12's by measuring and lining them to be cut in order to fit our dimensions of the garden. We then cut each piece of wood to size, constructed the base using concrete blocks, and lowered each piece of wood into their respective slots within the concrete corner blocks. The base of the bed was then constructed after each piece of lumber was lowered into the slots to produce the end product shown in ***Appendix I***. Burlap was then rolled over the middle of the garden bed and measured to fit the frame of the bed. The end of the burlap roll did not reach the other end of the bed, so we decided to line the bottom of the bed with a couple of layers to ensure adequate containment of soil. The week of April 8th, we stapled the

Burlap to the bed and the week of April 15th, we started filling the bed with our sheet mulching layers.

To fill the garden bed, we used sheet mulching or the “lasagna” method of creating a healthy soil composition. The method alternates carbon and nitrogen layers to suppress weeds and add beneficial plant nutrients. We used the suggested weight ratio of carbon to nitrogen of 30:1. The first carbon layer on top of the burlap lining was cardboard boxes (without tape or glossy coatings) laid out flat and overlapped to prevent sunlight from encouraging grass or weeds from growing. Next, was a thin nitrogen layer of used coffee grounds collected from the guests’ kitchen, and leaves and algae from Professor Wooden’s backyard pond. Coffee grounds were debated to be used due to the concern that they would be too acidic, lowering the pH of the soil, and making it difficult for plants like tomatoes to grow (Cohrs, 2023). However, the nitrogen level of coffee grounds (around 1-2%) is too low to have an intensive effect on soil pH. The larger concern would be the residual caffeine “in the spent coffee grounds [that] can suppress germination” (Cohrs, 2023). To combat this problem, placing the coffee grounds at the lowest nitrogen level and combining it with the leaves and algae allows the caffeine to wear off before it contacts any roots.

The next layer is the bulkiest, holding the most carbon. It comprises sawdust from a neighbor’s yard and sticks donated by environmental studies faculty and a local farm. With the high carbon of this layer, it was important to water it every few inches. The following layer is nitrogen in the form of a thin layer of compost resourced from the Lewisburg community garden. Next, about 6 inches of topsoil will be placed on top. Having the compost underneath the topsoil will ensure direct contact with important nutrients in the first stages of plant growth. We did not expect to encounter the problem of the topsoil settling after a few days of rain. The topsoil

became condensed into the layer of sticks below it making it difficult to plant the donated tomato seedlings. The brand of topsoil used was given to the safehouse staff so they could purchase more until they had an adequate depth.

The depth of the bed is about 11 inches. Most lasagna mulching projects are several layers deep, and decompose over six months before any planting. We altered the layers for the shallow bed, while considering the ratio, to allow for immediate planting and healthy soil in the long run. It is starting the process of "winterizing" the bed now, as these layers take about a year to fully decompose into a result of an entire bed filled with soil. The topsoil layer allowed staff to immediately plant the donated tomato seedlings while everything below decomposed. Come next spring,

Production of Educational Materials, and Presentation

Brochures

The brochures, shown in ***Appendix III***, were distributed to guests of the safehouse the week of May 6 to maximize accessibility and understanding of how to interact with the garden. Basic information on the concept of the garden and the regenerative practices it incorporates are included as well as an explanation of the mental health benefits that come out of engaging with a community garden. The brochures mainly break down how guests can easily interact with the garden throughout the year and contribute to the health of the garden in their own way. The guidebook provided to the staff of Transitions' of PA will include more specific information on how to properly conduct sustainable gardening practices.

Guidebook

The guidebook provided to Transitions of PA staff assists in the staff and guests' ability to keep the garden running for a long time. Included in the guidebook are details about each practice the community garden incorporates, such as hand sowing, intercropping, cover cropping, etc. Specific directions on how to plant seeds and nourish the garden are included as well as the features of the sensory table component. As we have suggested intercropping methods, an illustration is provided to staff to ensure the plants are being arranged generally with enough space and where they will benefit each other the most as shown in ***Appendix III***. A physical copy of the guidebook was printed and given to the staff the week of May 6.

VI. Discussion

Design of Sensory Table

The sensory table was designed to have four slots where separate bins could be placed, allowing different materials to be used for playing with. In this way it would be possible to remove the containers, clean them, and replace what may be inside (such as soil, sand, water, etc). By using the wood to separate the sections of the table, it would remain secure and make sure that the bins placed would not be able to tip over and spill, or be blown away by wind because they are slotted in. However, what was not taken into consideration was the ground below the sensory table and how this would change with time. There have been reports of weeds growing, and due to the size of the separate sections of sensory slots, it is hard to remove the weeds because a weed whacker or other weed removal tool does not fit. To address this, there are a few options to consider when deciding on removing the sensory table and extending the garden bed or attempting to keep it in place. The first option is to remove the wood, place mulch and soil in the bottom, then replace the wood and lay the sensory bins on top of this new layer. Mulch would help block the weeds and deprive them of light which would over time kill them off, or at least reduce the number of them and thus reduce the need to remove them. Using this method would allow the sensory table to stay with minimal upkeep in the form of manually removing a few weeds every once in a while. Another option would be to completely remove the sensory table, by taking out the bins and wood sections, more soil and layers can be added to then extend the garden bed and allow more space for planting. Finally, the last option would use both of the previously mentioned above, we would suggest removing half of the sensory bins to add extra garden space and implementing the weed-suppressing option for the other half. This would allow a sensory space to still exist, with even less management needed as two spaces

would be used instead of four, and allow extra space for planting in connection with the garden bed.

Overall, due to the issues that have arisen since the implementation of the sensory bed, we suggest covering the ground below the bins with mulch to reduce weed growth and management, although there will be some weeds to pull. Removing the sensory table section to extend the garden bed and allow more space for planting. Finally, doing a mix of both options and reducing sensory table space while increasing the garden space for more planting. All three options should help in the management of weeds while allowing sensory table space or more garden space.

Brochure creation and distribution

The brochures were designed and produced using Canva with templates provided through the site. Side 1 of the brochure, shown in ***Appendix III***, includes basic information on what exactly regenerative gardening is and the principles behind this mode of agricultural cultivation. The middle section, located on the back of the brochure, encourages guests to ask staff to read the guidebook if they are interested in obtaining more specific information on garden care or have any additional questions. Side 2, or the inside of the brochure, includes 3 sections, 2 of which are dedicated to how guests can specifically engage with the garden. This is broken down between cooler and warmer months, with bullet points suggesting simple and direct tasks guests may participate in. The third section included in the middle is the most lengthy, as it importantly outlines the specific mental health benefits of engaging with the garden bed. The purpose of this section is to aid guests in understanding why gardens can be used for therapeutic practices and how participating can directly benefit their well-being. Using the micro-grant provided through

Bucknell's Center for Sustainability and the Environment, we printed approximately 15 copies of the brochure and handed them over to staff during the week of May 6.

Guidebook creation and distribution

The guidebook was created primarily for the staff of Transitions, as they will be tasked with garden upkeep for the foreseeable future. The guidebook is divided into many sections, including basic suggestions for tasks, suggested plants, gardening terms and definitions, a suggested intercropping map, and a list of community contacts to reach out to for donations. This is an essential component to ensure the garden will thrive for years to come. The format of the guidebook is straightforward and made to be as concise as possible, so that staff will be able to quickly find the knowledge or resource they need at any given point. As we will not be there physically upon completion of this project, it is essential to provide and pass along the knowledge we have accumulated through research and experience working in gardening and farming. A physical copy was printed and provided to Transitions of PA the week of May 6.

VII. Future Recommendations

Basic Garden Upkeep and Practices

Details of how to specifically sow vegetables and flowers as well as other key sustainable practices are included in the guidebook provided to staff at the conclusion of our project. To ensure the garden's longevity it is not only important to establish a steady source of donors for a yearly supply of seeds, soils, etc., but to also establish a deep knowledge of the unique ecological basises of the garden. We have begun the process of community outreach, however Transitions of PA staff will be responsible for the future of maintaining these community connections. We have provided a concise list of contact information in the guidebook for staff to reference.

Weed prevention is an essential component in ensuring the garden will be properly nourished. To suppress weeds, newspaper (without colorful ink) should be spread out and seedless straw should be added on top. This also provides moisture retention and will eventually break down and contribute to soil quality. Each growing season this weed suppression tactic should be done at the start/when plants or seeds are added to the soil.

Material Replacement

Due to using a fir wood variant in constructing the garden bed, replacing the wood is suggested to happen every 5 to 7 years. Another factor is the wood we used is untreated and unbleached, which may increase chances of rot due to environmental exposure. Pennsylvania has an average rainfall stretched throughout the year, which could mean the wood would need to be replaced closer to 3 or 4 years. This is an endeavor that will take additional time and potential volunteers. The concrete blocks should take much longer before they need replacement, approximately 50 years, with minimal tampering or outside damage from things other than used

in gardening. As long as the blocks aren't hammered on, or overly harmed, they will outlast the wood and not need to be replaced for a long period of time. Tools and trellises will need replacement as they wear and become unfit for use, this can be done using the community contacts to either find donations or for a low cost at local stores.

Winterizing the Garden bed.

Properly "winterizing" a garden bed is important to longevity. Snow can introduce mold and other harmful bacteria to the soil. The first step is to clear out any plants that will not survive the frost. Perennial bulbs can stay as they will start to grow once there isn't a threat of frost. Stems and leaves can be composted, or left on top of the soil to decompose there, but it is recommended against putting seeds or roots in compost because it can encourage germination. Additionally, sheet mulching can be used to winterize the garden. In the late fall, what is left in the garden can be cut down and laid on top as a nitrogen source. Leaving stems or leaves adds a healthy nitrogen layer. More leaf mulch or compost can be added on top as well. A protective layer (cardboard with rocks to weigh it down) keeps the heat inside and the soil safe from snow. The material will have time to decompose throughout the winter, and come spring, be nutrient-dense for planting. The soil can be "refreshed" by adding more layers in the winter if it is alternating nitrogen and carbon. When there is no chance of frost, the protective layer can be removed, and the soil can be hand-tilled using shovels or rakes to mix the layers and encourage airflow. The soil will be healthy and ready for planting come spring! (Sharp, 2022) Beyond renewing sheet mulching, another important step at the end of a growing season is cleaning and sanitizing tools and trellis supports and storing them in a dry place to prevent fungi and diseases from spreading (Sharp, 2022).

VIII. Conclusion

We accomplished the physical component of the garden bed, provided tomato seedlings donated from the Bucknell Farm, and composed easily digested material about horticultural therapy and how to interact with the garden. The goals of our community partner acted as guidelines. The garden bed is low-maintenance because of weed suppression methods like the first cardboard layer of the lasagna-mulching. Guests can use their five senses to interact with the bed in any season using their brochure. Staff can use the guidebook to shape their therapy practices with proper regenerative garden terms. With our research and survey to understand guests' interests and needs for this space, a garden project can be replicated at any of the Transitions of PA's safehouses.

Any challenges met throughout this project were discussed thoroughly with our community partner to make sure the solution aligned with their goals. Research supported any action taken while prioritizing the main mission of Transitions of PA: to provide victim-survivors with a safe, healthy environment during their stay. The garden bed is an extension of that message as interaction with the garden is an incredible form of grounding therapy. The longevity and replication of this project are two long-term goals, and we are proud and excited to see the garden bed bloom.

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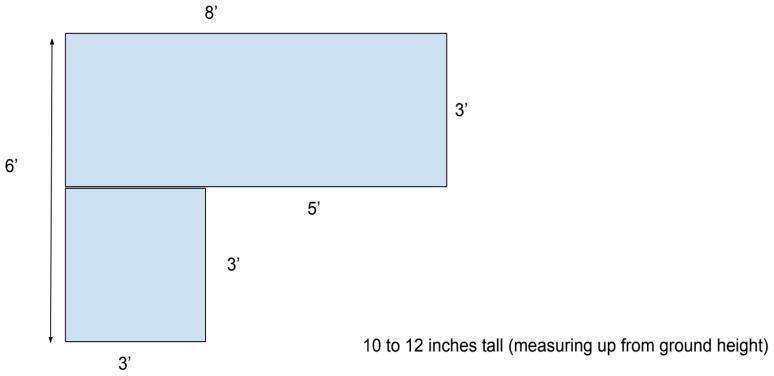
X. Appendices

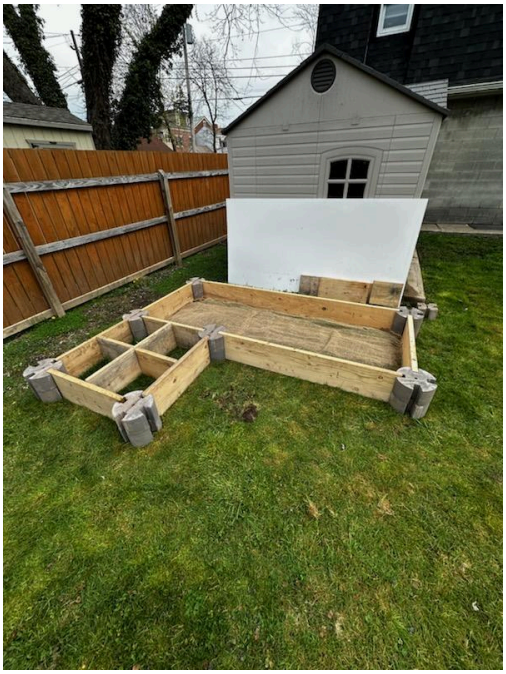
Appendix I: Construction of Garden Bed

Backyard Photo

Bed Dimensions



Constructed Garden Bed



Appendix II: Tasks and Timeline

Week 3: 2/25-3/2

Tasks:

- Research and Report Design

Week 4: 3/3-3/9

Tasks:

- Research
- IRB Proposal
- Grant Application

Due:

- Project Design Revision (3/5)

Week 5: 3/10-3/16

Tasks:

- Finalize survey
- Community outreach for resources
- Research

Due:

- Submit Survey to Transitions

Week 6: 3/17-3/23

Tasks:

- Compile Survey Results (or move to week 7)
- Start guidebook/brochure

- Meet with Transitions Therapists or hear back from Shannon about that question

Due:

- Draft Interim Report (3/19)

Week 7: 3/24-3/30

Tasks:

- Survey results work if needed
- Compile Research and Information for Interim Report

Due:

- Interim Report (3/29)

Week 8: 3/31-4/6

Tasks:

- Grant application complete and hopefully accepted
- Complete or finish community outreach for resources
- Begin drafting project report

Week 9: 4/7-4/13

Tasks:

- Start construction
- Finish draft of guidebook/brochure
- Finish draft project report

Week 10: 4/14-4/20

Tasks:

- Review guidebook/brochures with Transitions/Wooden

- Start draft of Public Presentation
- Work on presentation for Transitions
- Last-minute touch-up of draft project report

Due:

- Draft Project Report (4/19)

Week 11: 4/21-4/27

Tasks:

- Revise Project Report
- Finalize guidebook/brochures
- Set up presentation time with Transitions

Due:

- Public Project Presentation (4/26)

Week 12: 4/28-5/4

Tasks:

- Transition presentation?
- Finalize Community Project Report

Week 13: 5/5-5/11

Tasks:

XI. Finalize construction

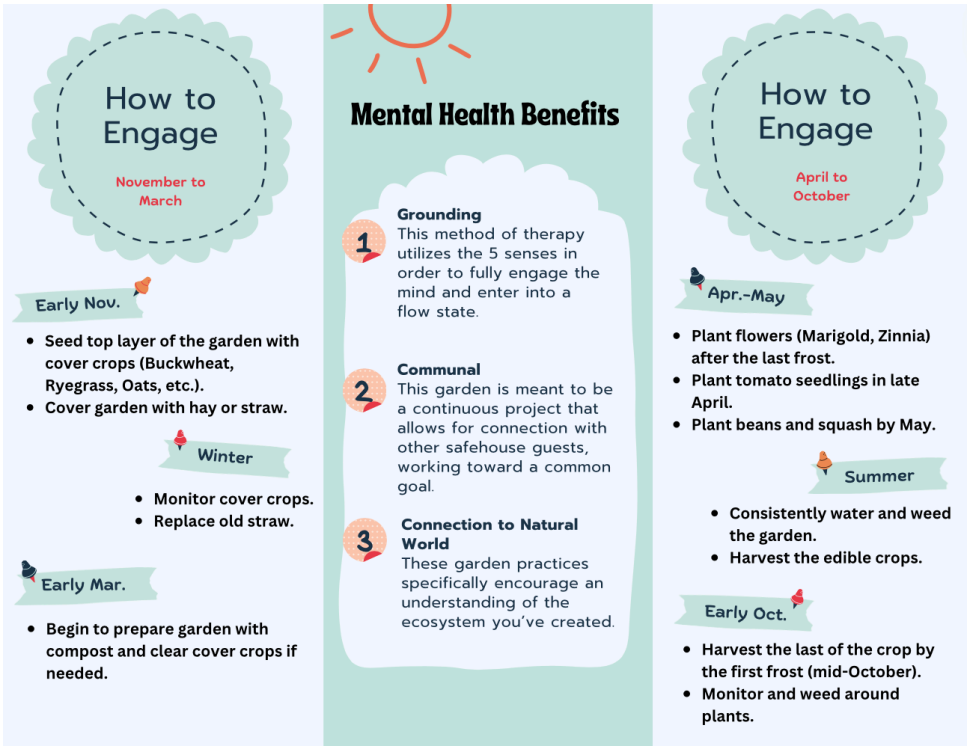
XII. Planting?

Due: Final Community Project Report and Portfolio (5/8) and Individual Reflection Essay (5/8)

Appendix III: Educational Materials

Brochures

Side 1



Side 2

Guidebook

****submitted as separate document**

Appendix IV: Survey and Outreach Materials

Survey Results

Participant	Likelihood of Interaction (1-10)	Likelihood of Child's Interaction (1-10)	Suggested Plants
1	9	10	Carrots, Radishes, Bell peppers, cabbage, Strawberries, Lettuce, Yellow string beans, Blueberries, Cherry Tomatoes
2	10	N/A	Squash, Watermelon, Green Beans, Tulips, Daffodils, Sunflowers
3	10	10	Edibles and flowers
4	10	10	Watermelon, cucumbers, tomatoes

Informed Consent and Survey

Transitions Garden Project Survey: Informed Consent to Participate

This survey aims to discover your interest in participating in a backyard garden while you are residing at the Transitions safehouse. No identifying information is asked in this survey, and all answers will be kept anonymous. If you start this survey, you can change your mind and stop at any time, participation is completely voluntary.

Due to our institution's ethics rules, please do not continue onto the survey unless you are 18 or older.

This survey was designed by Bucknell student researchers working with Transitions. We are **Molly Garrahy, Lauren McDougal, Amanda Pennett, and Christian Tait**. We will have access to the anonymous results to complete our research to plan and build the backyard garden.

Questions about the research, complaints, or problems: Contact Lauren McDougal (email) lkm010@bucknell.edu or Prof. Amanda Wooden (email) aw021@bucknell.edu

Questions about your rights as a research participant, complaints, or problems: Contact the Bucknell Institutional Review Board at 570-577-2013 or irbchair@bucknell.edu.

You are welcome to keep this form.

Transitions Garden Survey Questions

Please circle your response and/or free response when necessary:

Are you 18 or older?

Yes

No

If yes please continue the survey, if no please do not continue due to our institution's research ethics rules.

Have you gardened in the past?

Yes

No

Do you have a current interest in gardening?

Yes

No

Are you interested in helping with the garden box construction if you are still a guest at the time?

Yes

No

On a scale of 1-10 how likely are you to interact with the garden box? (1 being unlikely, 10 being very likely)

1 2 3 4 5 6 7 8 9 10

How likely is your child going to interact with the garden box? If applicable (1 being unlikely, 10 being likely)

1 2 3 4 5 6 7 8 9 10

What would you like to see in the garden box?

Flowers

Vegetables and/or Edible plants

Both

Please list any that come to mind:

Do you have children who might be interested in gardening?

Yes

No

Would you like a sensory table with the garden box for your child to use?

Yes

No

How likely is your child to interact with the sensory table? (1 being unlikely, 10 being likely)

1 2 3 4 5 6 7 8 9 10

Additional comments/questions/concerns:

Template Letter for Community Outreach for Resources

Dear Your Building Centers in Milton,

Transitions of PA offers free, confidential and comprehensive services to survivors and families to make our community safer. for those who experience domestic violence, sexual assault, and

human trafficking, it can be a difficult and challenging journey. Transitions of PA works hard to ensure victims, survivors, and their families have the assistance they need to create a path to safety. **Our service area is Snyder, Union and Northumberland counties**.

This year we are pleased to be working with a group of students from Bucknell's Environmental Studies department. These seniors will be building raised garden beds at our Union County safe house location. This raised garden bed will allow our clients staying in the safe house to have an outlet and also grow fresh fruit and vegetables to eat.

We are requesting your support in the form of donated food grade lumber for the raised bed. this Ray's bed will be XX by XX by XX in size therefore we are expecting it will take (insert number of 2x4s) **your donation helps survivors of domestic violence, sexual assault, or human trafficking take the next steps to finding their path forward.** We can promote your donation on our website and social media pages.

We are a 501c3 nonprofit organization, Therefore your donation is tax deductible. Our EIN# is 23-2089699.

Thank you for your consideration. I'm happy to discuss donations and promotion if you have any questions. Please do not hesitate to contact me. I can be reached at 570-523-1134 or abby_g@transitionsofpa.org.

Sincerely,

Abby Gulden-Luthi

Appendix V: Community Member Contacts

Mae-Ling Kranz (Transitions CEO)

- maeling_k@transitionsofpa.org

Shannon Fisher (Transitions Staff)

- shannon_f@transitionsofpa.org

Abby Gulden-Luthi (Fund Development Director)

- 570-452-2671

Heather Over (Grants and Compliance Director)

- 570-523-1134 etx.106

Bucknell Farm and Lewisburg Community Garden

- Main contact: Jen Partica jsp030@bucknell.edu

Greenleaf Greenhouses

- (570) 492-0888
- 3672 Snydertown Rd, Danville, PA 17821

Hilly Springs Flower Farms

- (570) 765-1500

City Boy Nursery

- Call (570)768-1355 or Email @ jackumup1@yahoo.com.