



# **City Tree Farm: Construction Implementation & Operations Plan**

**Forest ReLeaf of Missouri  
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## Executive Summary

Forest ReLeaf of Missouri has a simple but powerful mission to *plant trees and enrich communities*. Since it was founded in 1993, it has helped to plant over 200,000 trees throughout Missouri and Illinois by providing individuals, communities, and organizations with trees grown at its 7-acre nursery at Creve Coeur Park in Maryland Heights, MO. In addition to offering trees, the nursery provides volunteer, education, and outreach opportunities. However, due to the location of Forest ReLeaf's Creve Coeur nursery, about 20 miles west of downtown St. Louis, its trees and many of its engagement opportunities are not accessible to residents living in the city of St. Louis. To help address this issue, Forest ReLeaf would like to create a tree farm in the heart of St. Louis, on the grounds of The Scott Joplin House. The Scott Joplin House is a State Historic Site, owned and operated by the Missouri Department of Natural Resources State Parks.

Forest ReLeaf of Missouri vision of the City Tree Farm is to bring trees into the heart of the city of St. Louis, closer to the urban communities it serves, and provide an educational anchor to its broader statewide mission. Through the experience of growing trees, the City Tree Farm will build a connection with nature for city residents of all ages.



Source: Google Maps

To investigate the feasibility of developing an urban tree farm, Forest ReLeaf has undertaken a multi-faceted approach that began with stakeholder engagement in Phase 1, creation of a tree farm concept design for the site in Phase 2, and in Phase 3 development of this construction implementation and operations plan.

## City Tree Farm Objectives

Forest ReLeaf's City Tree Farm will provide:

- Tree, environmental, and cultural related **education and engagement** opportunities.
- Tree **distribution** location in the heart of St. Louis.
- Tree **production and operations** in the heart of the city that serves as a satellite to the Creve Coeur Nursery.

## City Tree Farm Plan Summary

To meet Forest ReLeaf's objectives for the City Tree Farm the following elements are needed:

- **Tree Production Space.** The site at the Scott Joplin House would contain a 4,900 square foot designated area for tree production. At this size the site has the capacity to grow approximately 4,000 three gallon sized pots, 3,300 five gallon sized pots or 2,500 seven gallon sized pots. A mixture of these sizes would result in sufficient space for an average of 3,200 containerized trees annually. This would support two tree giveaways in the City of St. Louis each year.
- **Overwintering Structure.** Since containerized stock is grown above ground, plant roots are more susceptible to cold damage that can cause injury or death. To ensure that any trees and seedlings left on site overwinter are protected from cold weather conditions the construction of a shade structure for the summer that could also serve as a hoop house in the winter will be needed.
- **Staffing.** The City Tree Farm will require staff to operate. A full-time, year round Site Coordinator would be responsible for overseeing site build-out, plant propagation, repotting of trees, irrigation, pest/disease monitoring and treatment, facilities maintenance, managing volunteers and interns, distributing trees and other responsibilities related to running the City Tree Farm. As the tree farm grows, additional part-time assistants may be needed, which can provide opportunities for green job training and workforce development.
- **Partnerships.** Expansion and development of partnership opportunities to support the development of the City Tree Farm, programming opportunities, and outreach are essential.
- **Pavilion.** A 30-foot x 30 foot outdoor pavilion to serve as a covered gathering space for partner events, classes, workshops, tree distribution events and tree potting activities. The structure will serve as the main programmatic space for the site.



- **Potting Supplies.** Benches and supplies to pot tree seedlings and propagate trees from seed.
- **Equipment Storage.** A secure structure for storing equipment, supplies, and materials on-site. Equipment that would need to be stored on site include hand tools, shovels, carts, pots, watering equipment, first aid kits and signage.
- **Utilities.** Water service is essential for the tree farm operation to provide irrigation to the trees growing on site. Electricity will be needed to provide lightning for security and use of the pavilion and space during the evening. Future sanitary needs should also be considered during initial utility installation to avoid having to install it after the site is fully developed and operational.
- **Site Access.** A paved drive/parking lot is needed to provide easy access on/off the site for volunteer and tree distribution events.
- **Security.** To reduce vandalism, theft, and trespassing of the tree farm, fencing is needed. To complement site elements at The Scott Joplin House, a six-foot high wrought iron fence would be installed.

## Implementation

The development of the City Tree Farm will occur in three-phases.

- **Phase 1: Establishment.** This phase involves securing funds to construct the tree farm and all its required elements. During this phase the City Tree Farm site coordinator would be hired and the build-out of the tree farm would begin. It is anticipated that once funding is secured the tree farm can be operational in about one-year.
- **Phase 2: Launch Operations.** The first full year of operations should begin in the winter with crop planning, supply ordering, and preparations for the growing season. Starting in the spring, the tree farm will produce its first plant material and host its first volunteer work days. Shifting into summer, the site coordinator will focus on plant care and site maintenance. Educational events, internships, workforce development programming and other engagement can begin. In the fall, the tree farm will host its first tree distribution events, utilizing the trees that were planted in the spring.
- **Phase 3: Growth and Expansion.** Following the first full year of operation a strategic plan should be developed to guide the next three to five years of operations and fundraising to sustain the City Tree Farm into the future.

## Investment

Based on the financial projections for this project a total of \$1,095,955 will be needed to sustain the City Tree Farm from establishment to year 4. The largest investment will occur during the Establishment Phase which will require capital and utility investments, that will bring the total to \$367,515. Following the establishment phase the costs per year decrease.

BUDGET SUMMARY: Forest ReLeaf City Tree Farm	Establishment	Year 1	Year 2	Year 3	Year 4
<b>Income</b>					
FOUNDATION GRANTS/FUNDRAISING	\$ 367,515	\$ 174,350	\$ 183,850	\$ 188,690	\$ 181,550
<b>GRAND TOTAL INCOME</b>	<b>\$ 367,515</b>	<b>\$ 174,350</b>	<b>\$ 183,850</b>	<b>\$ 188,690</b>	<b>\$ 181,550</b>
<b>Expenses</b>					
PERSONNEL	\$ 104,200	\$ 131,000	\$ 133,200	\$ 142,940	\$ 135,400
PROFESSIONAL FEES	\$ 36,000		\$ -	\$ -	\$ -
PROGRAM SUPPLIES	\$ 16,900	\$ 15,500	\$ 16,800	\$ 17,900	\$ 18,300
CAPITAL INVESTMENTS	\$ 139,125	\$ -	\$ 6,000	\$ -	\$ -
UTILITIES AND INSURANCE	\$ 71,290	\$ 27,850	\$ 27,850	\$ 27,850	\$ 27,850
<b>GRAND TOTAL EXPENSES</b>	<b>\$ 367,515</b>	<b>\$ 174,350</b>	<b>\$ 183,850</b>	<b>\$ 188,690</b>	<b>\$ 181,550</b>

## Construction Implementation and Operations Plan

The Construction Implementation and Operations Plan that follows was developed by Davey Resource Group, Inc., and the Tree Pittsburgh Heritage Tree Nursery. The plan provides specific details on the elements needed to establish Forest ReLeaf's City Tree Farm and are based on review of stakeholder engagement feedback and the City Tree Farm concept plan; interviews with Forest ReLeaf of Missouri staff; feasibility analysis of site and project elements; case studies; and the consultant team's knowledge and experience. The plan includes details on elements from tree farm growing capacity and weed control to staffing and budgets.

# Introduction

## Project Background

Forest ReLeaf's mission is to *plant trees and enrich communities*. Today, this mission can be seen in Forest ReLeaf's work in helping to restore tree canopy in both natural areas and cities. The organization operates a nursery at Creve Coeur Park in Maryland Heights, MO about 20 miles west of downtown St. Louis. The 7-acre nursery grows approximately 20,000 trees each year that are distributed to individuals, communities, and organizations. The nursery also offers volunteer, education, and outreach opportunities. Due to its location, distance from downtown and lack of public transportation options, many of these opportunities, however, are not accessible to residents living in the city of St. Louis. Forest ReLeaf is interested in expanding its tree growing operations by creating a tree farm in the heart of St. Louis to provide city residents access to trees and bring them closer to Forest ReLeaf's mission.

The location of the proposed City Tree Farm is on the grounds of The Scott Joplin House, a State Historic Site, owned and operated by the Missouri Department of Natural Resources State Parks. To investigate the feasibility of developing a City Tree Farm Forest ReLeaf has undertaken a three-phase project. Phase 1 stakeholder engagement, Phase 2 creation of concept design for the site and Phase 3 development of construction implementation and operations plan (this document).

## Phase 1: Stakeholder Engagement

Forest ReLeaf in partnership with EMD Consulting conducted the first session of public engagement in spring 2022. The purpose of this session was to bring together potential stakeholders and partners to present and vet the City Tree Farm idea, discuss programming and collaboration, and to ultimately understand if there was support for a City Tree Farm. The following stakeholders and partners were engaged in session #1:

- Missouri Department of Conservation
- Scott Joplin House State Historic Site (Missouri Department of Natural Resources)
- St. Louis City
- Green City Coalition
- KIPP St. Louis High School
- Harris-Stowe State University
- Great Rivers Greenway

The results of the session validated that a City Tree Farm for St. Louis is an idea supported (enthusiastically) by stakeholders and partners. Recommendations provided for community engagement opportunities for Forest ReLeaf to consider as the project plan and timeline is finalized, include:

- Connect with neighborhood organizations, churches, senior communities, and schools to distribute trees and raise awareness about the City Tree Farm project.
- Build neighborhood support through door-knocking outreach and presence at community events.
- Host volunteer engagement workdays.
- Assist St. Louis City with tree fulfillment for residents.
- Work with Harris-Stowe State University to explore credit, internship, and job opportunities for students and alumni.
- Develop educational partnerships with local schools.
- Offer job volunteer training in partnership with other green organizations.
- Foster interest among and across groups of visitors to the Scott Joplin House, the City Tree Farm, Great Rivers Greenway, Missouri State Parks, and other local institutions
- Provide a space for community events such as performances and workshops.
- Collaborate with Green City Coalition on park planting projects.
- Explore partnerships with local artists.

## Phase 2: Conceptual Design

With support from stakeholders and partners, DTLS Landscape Architecture was commissioned to create a concept plan with a preliminary vision of how to best utilize the space for an urban tree farm. A design charrette with Forest ReLeaf, stakeholders and partners was conducted in June 2022 to understand their needs for the space. The initial concept plan divides the City Tree Farm site into three areas:

1. Working, potting, and distribution
2. Outreach, engagement, and flexible use space
3. Growing operations

A lit curvilinear path links the pedestrian access gate at the corner of North Beaumont and Samuel Shepard Drive with the vehicular access area between Samuel Shepard and the alley to the south of the tree farm and leads visitors through all three areas of the farm. A storage shed and bulk materials storage area are located by the vehicular access drive. A pavilion and shade structures are next to the potting area. **The concept plan will be refined based on the information provided in this plan.**

## Phase 3: City Tree Farm Construction Implementation & Operations Plan

With stakeholder engagement completed and a conceptual plan in place, Davey Resource Group, Inc., and the Tree Pittsburgh Heritage Tree Nursery were brought on to develop a Construction Implementation and Operation Plan (this document). The planning process included:

- Site visits to the proposed City Tree Farm site and the Creve Coeur Nursery.
- Review of the stakeholder engagement feedback and City Tree Farm concept plan.
- Interviews with Forest ReLeaf staff.



- Feasibility analysis of site and project elements.
- Case studies of urban nursery programs in Pittsburgh, PA, Savannah, GA and Washington, DC.

The plan addresses the following topics, identified during the planning process:

- Tree farm growing capacity
- Tree stock size
- Groundcover and weed control
- Overwintering of tree stock
- Staffing
- Volunteers
- Site design and layout considerations
- Programming
- Phasing
- Budget

## Case Studies

Three case studies were developed to help Forest ReLeaf in planning and understanding the possibilities for the City Tree Farm. The locations/organizations for the case studies were selected to provide a broad understanding of how different organizations operate their nurseries; they focus on:

- City of Savannah, GA Urban Tree Nursery
- Pittsburgh, PA - Tree Pittsburgh Heritage Tree Nursery, Audubon Center for Native Plants (Beechwood Farms) and Grow Pittsburgh.
- Casey Trees, Washington, DC

The case studies, presented next, describe each program, provide operational information (number of trees, stock size, staff, etc.), and program highlights. This information can help Forest ReLeaf today, as they begin to implement the City Tree Farm and, in the future, as they look to expand and grow the activities the farm can provide.

## CASE STUDY: City of Savannah, GA Urban Tree Nursery

The City of Savannah operates three tree nursery locations within the city - with the mission of providing flood and stormwater mitigation by expanding Savannah's tree canopy. Two of the nursery sites are on residential lots (0.25-0.5 acres in size) and the third is on FEMA property adjacent to a flood mitigation site.

**Number of Trees:** The current capacity of all three nurseries is approximately 600 trees

**Source and Stock:** Trees are purchased at 3 to 7 gallons from a local nursery and are moved up to 15 gallon containers and grown out for 2-3 years.

**Species:** Grows nine species - six species that were selected for flood and saltwater tolerance; and three species of citrus trees were added based on community demand.

**Customer Base:** Residents and businesses in economically disadvantaged, flood prone neighborhoods, vacant properties and FEMA sites.

**Staff:** No full time dedicated staff.

**Operating Budget:** \$350,000 (grant funded)

### Highlights

- **Grant funded** project. Received a \$350,000 grant from the Southeast Sustainability Directors Network to establish the nurseries - the grant provided funding for purchase of pots and trees, weed fabric, drip irrigation systems, and tools, as well as paying for Victory Gardens' staff labor, the Apprenticeship Program training, and outreach events.
- **No full time dedicated staff.**
  - Program uses City staff and grant partner, Victory Gardens, to perform weeding, mowing, and irrigation.
  - Created an apprenticeship program that recruited local residents to assist in nursery operations (workforce development)
- **Youth engagement has been the most beneficial** part of the nurseries.
  - Children have taken ownership of the nursery as something they helped create which has helped the community embrace it as their own.
  - **Nursery pots are painted by children** from the surrounding communities to both foster engagement and make the nurseries more attractive
- City of Savannah provides **water free of charge** for irrigation
- **Land is owned by the City of Savannah** and is provided at no charge.
- **FEMA property that is not within a neighborhood** has been challenging to manage and is prone to theft and vandalism of trees.
- **None of the sites are fenced.** With the exception of the FEMA property, having the nurseries within the neighborhoods and part of the community, residents feel connected to them and vandalism is almost non-existent.
- Creation of a **unique art mural** at one of the nurseries has brought publicity

## CASE STUDY: Pittsburgh, PA

Within Pittsburgh, there are several organizations that operate urban nurseries.

### Tree Pittsburgh Heritage Tree Nursery

The Heritage Nursery is a program of the non-profit Tree Pittsburgh and works to provide high quality locally adapted, genetically diverse woody plant material to tree planters in western Pennsylvania. The nursery started on a ½ acre lot in the city that had a hoop house, shed, deer fencing and drip irrigation. The nursery has grown and moved to a 2-acre site that contains a greenhouse, 6 hoop houses, storage facilities, and a pole barn. The full campus also includes Tree Pittsburgh's office.

**Number of Trees:** Grows 20,000 containerized trees per year and 50,000 seedlings per year.

**Source and Stock:** Trees are primarily grown from locally collected seed and are grown out to 2-3 gallon pots. A small percentage of stock is grown from purchased bare root materials.

**Species:** The nursery grows more than 90 native tree and shrubs species.

**Customer Base:** Tree Pittsburgh projects; local environmental, conservation and land management groups; landscape contractors; municipalities; individuals.

**Staff:** Full-time Heritage Nursery Director, Nursery Operations Manager, and Seed Technician. Two part-time, seasonal nursery technicians.

**Annual Operating Budget:** \$250,000

### Audubon Center for Native Plants (Beechwood Farms)

The Audubon Center for Native Plants (ACNP) is a program of the Audubon Society of Western Pennsylvania. The ACNP allows Audubon to increase the promotion, protection and propagation of native plants, and to integrate native plant education into programming.

**Source and Stock:** Grows perennials, shrubs and trees from hand collected seeds.

**Customer Base:** Audubon Society of Western PA projects; public.

**Staff:** Full-time nursery manager; full-time seasonal employee

**Annual Operating Budget:** \$150,000

### Grow Pittsburgh: Garden Dreams

Grow Pittsburgh develops and supports food-growing initiatives and programs across the region. Garden Dreams Urban Farm & Nursery is Grow Pittsburgh's fourth and newest production site. The site has a greenhouse that will allow Grow Pittsburgh to grow fruit and vegetable seedlings as well as provide workforce development and educational programming. Garden Dreams is on land owned by the Allegheny Land Trust and is made up of four formerly vacant city lots

**Numbers:** Production at the site is estimated to be 20,000 seedlings each year.

**Source and Stock:** Primarily grows vegetables, native plants, perennial flowers & fruits in 3 - 4" and 1-2 gallon pots. They are started from catalog seeds or plugs/ cuttings.

**Customer Base:** Public, community gardens, school gardens and food co-ops

**Staff:** Full-time manager; two part-time, seasonal sales assistants; and one part-time, seasonal production assistant; two workshare staff (exchange greenhouse space for hours); one full-time job corp extern.

**Annual Operating Budget:** \$125,000

## Highlights

- **Tree Pittsburgh Heritage Tree Nursery**

- A **reliable, clean water source and irrigation system** is the most essential aspect of a successful nursery operation.
- **Avoid unnecessary moving of nursery stock between two nurseries.** This can lead to stress and damage to the trees; as learned when Tree Pittsburgh maintained two nursery locations.
- **Have a dedicated site manager for each nursery location** to ensure plants are being properly cared for and the site is being maintained.
- **Plan for future infrastructure from the beginning and phase out development.** For example, size water system for full buildout; leave space for expansion of structures; efficiently use space to maximize output.
- **Good security is important.** Tree Pittsburgh uses shipping containers beautified with murals painted by local artists for secure storage.
- **Involve nursery program manager** in organizational goal setting and strategic planning to build ownership and investment in the success of the nursery.
- **Provide plenty of shade and respite** for staff and volunteers.
- **Most popular program is the tree adoption program.** Many of the recipients become volunteers, donors and supporters.
- **The Tree Tender program is successful and popular; there** are over 1,000 certified Tree Tenders in the Pittsburgh area.
- **Recruit knowledgeable, hardworking staff who genuinely care about the mission** and success of the program.
- **Avoiding staff burnout** by setting attainable goals and pacing program growth.

- **Audubon Center for Native Plants (Beechwood Gardens)**

- **Manage shopping and tree distribution.** Does not allow shopping at the nursery to preserve staff time.
- **Complimentary programming** helps to expand awareness of native plants & drive sales. For example, the Audubon Backyard Habitat program.
- **The right staff skill sets are important.** Need a plant person AND a business person, or someone who possesses both skills (rare).
- **Avoid staff burnout.** Manage workload and set realistic production expectations.

- **Grow Pittsburgh: Garden Dreams**

- **Unique, accessible programming is key.** Project Grow hosts “Paw Paw Parties” to share the fruit with city residents.
- **Follow the community’s lead.** Listen and implement programming and grow plants that the community wants.
- **Involve the site manager** in organizational initiatives, strategic planning and budgeting so they feel connected to the greater mission.

## CASE STUDY: Casey Trees

Casey Trees was established in 2002 with a mission “To restore, enhance and protect the tree canopy of the nation’s capital.” They established a nursery in 2011 on land in Berryville, VA, gifted to the nonprofit by the Casey family. Operations have expanded from 15 to 100 acres in cultivation

**Number of Trees:** 30,000 trees with a goal to expand to 40,000 trees.

**Source and Stock:** Trees are field grown in root bags to a size of 1.5” - 2” caliper. Tree stock is from liners purchased from commercial nursery growers.

**Species:** Currently grows 67 species and cultivars - both native and non-native. Selection is based on suitability for urban planting, aesthetic appeal and ecological value.

**Customer Base:** Casey Trees planting projects (~7,000/yr); community groups in Washington DC and the region; municipalities, including Washington DC and Baltimore, MD.

**Staff:** 11 full-time staff and 13 part-time staff focus on nursery operations.

**Operating Budget:** Information not available.

### Highlights

- **Funded** through an endowment from the Casey Family, Washington DC and grants.
- They have barns and sheds for equipment and tool storage but no greenhouses, hoop houses or shade structures - **all plants are grown in full sun**
- Originally started out growing balled-and-burlapped nursery stock but it proved to be operationally challenging and reduced productivity. **Moving to rootbags has increased operational efficiency**, more than doubled their delivery capacity (100 rootbag versus 35 B&B per truck) and improved the quality of stock.
- **Charging for educational classes has increased attendance** and improved the quality of classes they can offer. Reduced pricing and donations are options for those that cannot afford to pay.
- **Clearly define goals and track progress.** Avoid the temptation of grand, sweeping goals and focus on simple, attainable goals (simple does not equal easy).
- **Consider expanding out-of-nursery operations** by expending more resources into planning planting projects and protecting them after the fact, the actual impact of the work is increased.
- **Embrace cultivars and non-native species.** To meaningfully impact canopy, trees need to appeal to a broader audience and be easy to maintain.



# City Tree Farm: Construction Implementation & Operations Plan

## Vision

Forest ReLeaf of Missouri's City Tree Farm will bring trees into the heart of the city of St. Louis, closer to the urban communities it serves and provide an educational anchor to its broader statewide mission. Through the experience of growing trees, the farm will build a connection with nature for city residents of all ages.

## Section 1: Description

The objectives of Forest ReLeaf's City Tree Farm are to provide:

- Tree, environmental, and cultural related **education and engagement** opportunities.
- Tree **distribution** location in the heart of St. Louis.
- Tree **production and operations** and serve as a satellite to the Creve Coeur nursery.

These objectives align closely with its mission of *"planting trees and enriching communities"* as well as with its more recent focus on environmental justice. By bringing its operations into the city, Forest ReLeaf can more effectively enrich communities most in need and isolated from the elements Forest ReLeaf seeks to strengthen healthy tree canopy and vibrant green spaces. Opportunities for environmental and ecologically based educational opportunities are much more limited within the city, and the City Tree Farm will provide a valuable addition to the existing resources provided by Missouri Department of Conservation, Missouri Botanical Gardens, Operation Brightside, and similar organizations.

Through establishment of the City Tree Farm, Forest ReLeaf will broaden its presence within the city of St. Louis and support its organizational vision to grow a more resilient tree canopy across Missouri's communities that support healthy people, healthy habitats, and a healthy planet.

## Plan Layout

The City Tree Farm Construction Implementation & Operations Plan detailed below covers topics from site layout and utility considerations to growing operations and seed production to budget and staffing.

## Section 2: Location & Site Elements

The proposed location of the City Tree Farm is on the grounds of The Scott Joplin House - on a  $\frac{3}{4}$  acre site bounded by Samuel Shepherd Dr., North Beaumont St., and a two-way alley. The site, which is owned and operated by the Missouri Department of Natural Resources, will be provided at no cost to Forest ReLeaf of Missouri.

The site is well situated for St. Louis residents to access, as well as residents in Metro East and inner-ring suburbs like Brentwood, Webster Groves, Kirkwood, and Grantwood Village. The city location is also likely to attract new customers from city-based neighborhood associations and schools. Individuals coming up interstate 55 from southern Missouri may also find the city location more convenient. The site is also accessible by public transportation.



***Proposed City Tree Farm Site (yellow rectangle)***

Source: Google Earth

### Section 2.1. Site Assessment

Assessment and planning of the following elements will ensure the optimal layout of the tree farm:

- Orientation
- Wind
- Soil, Topography, and Drainage
- Access
- Utilities

## Orientation

The tree farm site is a  $\frac{3}{4}$  of an acre rectangular parcel with the narrow span of the site oriented north-south and the length of the site spanning east-west. One large persimmon tree located in the south-center of the property casts shade to the north. No other structures or vegetation impede sun exposure to the site. This is beneficial for a uniform growing environment for the trees grown on site but could create an inhospitable environment for users of the space during hot summer months. Strategic shade structures are recommended.

## Wind

In general, the prevailing winds in St. Louis come from the west or south-west. This means the wind will primarily blow from N. Leffingwell Ave towards the north-east corner of the site. Due to the flat and open nature of the site, wind will always need to be considered. A tree farm can face significant setbacks and damage from high winds therefore all elements of the site, permanent or temporary, should be well battened down with anchors or concrete footers. Any temporary shade structures or canopies should be removed and stored during the winter months. Potted trees should be tightly packed in rows to stand up to wind gusts. It is recommended that any massing structures, such as storage areas or walls, be oriented on the west or south face of a structure to provide shelter from the wind.



At Tree Pittsburgh, vegetative berms have been planted with fast growing conifers to provide wind breaks (pictured left).

## Soil, Topography, and Drainage

One major advantage to this site is that it is mostly level. A container tree farm is most effective on flat ground. However, even sites that appear flat may have low spots that can cause problems. The site should be inspected after heavy rain for any ponding. If drainage issues occur, the land should be graded with a slight

pitch to move water runoff to an area of the site where it can be infiltrated into the ground or absorbed by plantings.

A major advantage to a containerized tree farm is that the stock does not need to be planted in the ground; though it is still important to keep in mind that urban soils can be contaminated with remnants from former structures or industry that took place there. Before digging, the soil should be tested for contaminants such as heavy metals or PCB's. PPE should be used when digging to protect from sharp objects under the soil's surface.

## Access

The primary use of the site will be community engagement, therefore vehicular access to the site should be carefully considered. All roads directly surrounding the site accommodate two-way traffic and do not require parking permits. The traffic load is relatively low being that the site is not on a main artery. Heavy duty vehicles such as box trucks or truck-and-trailers will need access to the site for material deliveries and pick-ups. A sufficient turning radius in and out of the site will need to be provided. See Access section below for additional details for this site.

## Utilities

An 811 call should be made to identify all existing utilities including water, electricity, sewer, fiber optic/cable/telephone, and gas lines. An assessment of their accessibility and usability should be made. The location of overhead and underground utilities should be considered when placing landscaping on the site.

## Section 2.2. Size and Tree Farm Production Capacity

The Forest ReLeaf City Tree Farm will be unique in that it will serve as both an outreach facility and a working nursery. **The goal of the site is to weave together education, distribution, and production seamlessly on a site that is welcoming, purposeful and mission oriented.** The site will include a pavilion, learning garden, tree distribution space, and a small production tree farm with the capacity to produce approximately 3,000 trees for distribution to the surrounding community.

## Section 2.3. Infrastructure & Site Elements

### Pavilion

A 30-foot x 30-foot outdoor pavilion is proposed to be constructed to serve as a covered gathering space for classes, workshops, tree distribution events and for potting trees. This structure will serve as the central focal point and main programmatic space for the site.

There are many material options for pavilion style structures including wood, vinyl, and concrete block. Pavilion roof material is typically shingles, sheet metal or standing seam metal. A timber frame wood structure with shingle roofing is recommended for its durable structure and classic appearance. Standing seam metal roofing can enhance the aesthetic of a pavilion, however it can increase cost by 30-50%. Concrete piers should be used for the foundation of the structure that withstands wind, snow, and temperature changes. Flooring material options are gravel, pavers, or concrete. While gravel flooring is more economical, a concrete floor provides the greatest durability, accessibility, and functionality. Lighting, signage, and landscaping is recommended around the structure to improve wayfinding, security, and aesthetics.

The pavilion is shown on the Conceptual Site Plan in the center of the property. It is recommended that the structure be shifted further west, alternating it with the potting area to better allow for:

- ADA accessibility
- Proximity to driveway for loading and unloading
- Coverage from sun/ rain during distribution events
- Allows for future tree farm expansion
- Allows potting area to be shifted closer to tree production area

When selecting a builder for the pavilion, choose an experienced contractor who is familiar with local building codes and adept at procuring building permits from the city. These processes can be timely and if not well handled can slow down construction. The current average price for a constructed timber frame pavilion structure is \$40 per square foot. The average price for poured reinforced concrete is \$10 per square foot. The estimated cost to construct the 900 square foot pavilion is \$45,000. Adding an estimated \$4,500 for lighting and electrical service and \$2,500 for furnishings and landscaping will bring the total cost of construction to approximately \$52,000.

	Price per sq. ft.	Estimated Cost
<b>Timber frame pavilion 30' x 30'</b>	\$40.00	\$36,000.00
<b>Reinforced Poured Concrete floor 30'x30'</b>	\$10.00	\$9,000.00
<b>Lighting/ electric</b>	\$5.00	\$4,500.00
<b>Furnishing, signage</b>		\$2,500.00
<b>TOTAL:</b>		<b>\$52,000.00</b>

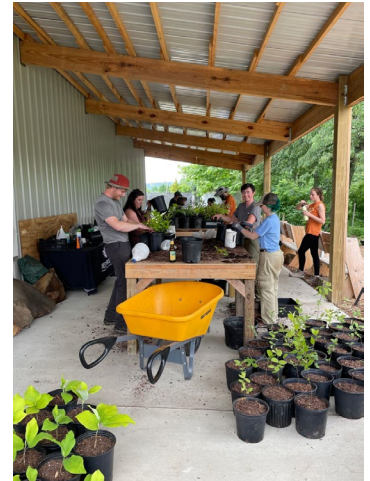


## Potting area

An area of the site should be designated for potting and plant propagation activities. The potting area does not have to be large, but it is the heart of the tree farm and engagement operations and should be centrally located and easily accessible. The essential components to a



propagation area are potting benches, water access and overhead coverage from the elements. Proximity to the main growing areas and soil storage area are important considerations, however materials can be moved in and out of the propagation area using wheelbarrows, nursery carts or utility vehicles. *(Tree Pittsburgh's Heritage Nursery's potting benches pictured left and right).*



In the Conceptual Master Plan, the potting area is shown adjacent to the driveway. It is recommended that the potting area be shifted east of the pavilion to be closer in proximity to the tree production area. Mobile potting benches can be constructed which can be moved into the pavilion when the space is not being used for events. Alternatively, seasonal canopies can be erected to protect staff and volunteers from rain and sun. If budget allows, the pavilion could be enlarged to accommodate a permanent propagation space.

## Equipment Storage

A secure and stable structure, at least 200 square feet in size, is needed for storing equipment, supplies and materials onsite. A prefabricated shed or a retrofitted shipping container with ventilation, electricity and shelving can be used as secure storage units. Shipping containers are typically 8-feet x 20-feet or 40-feet in size *(image below: shipping containers that Tree Pittsburgh uses for storage that have been painted with murals).*

Common tools and supplies needed for a small tree farm operation, include:

- Tools (shovels, rakes, pitchforks, pruners, basic construction tools)
- Wheelbarrows
- Nursery carts
- Gloves
- Buckets
- Pots and trays
- Tags and labels
- Basic office supplies, logs, and records
- Computer/ tablet
- Signage

- Watering equipment and supplies: hoses, wands, breakers
- Fuel
- Pesticides and fertilizers (Note: agricultural chemicals should be kept in a separate locked area in accordance with state regulations.)
- First-Aid Kit, AED, eyewash station, fire extinguisher



## Utilities

**Water service** can be obtained through a city water main along Samuel Shepard Drive. Costs for a city tap and permit range from \$680 for a 2-inch line to \$6,900 for a 6-inch line; a 3-inch line would be sufficient and cost approximately \$1,290 for city installation and permitting. A further 75-feet of PVC line would need to be installed by a private contractor to bring water service into the middle of the lot for irrigation. An additional cost of \$12,000-\$18,000 is estimated for this installation. The total cost for water and irrigation service is estimated at \$19,000-\$21,000 with city and contractor costs.

**Electrical service** with an underground cable can be most easily obtained from the powerlines on North Beaumont St. It will require approximately 200-feet of underground utility line to reach the pavilion and vehicle access. Alternatively, service could be obtained from the alley which will use less line but will require routing underneath the alley. Accessing the electrical utilities from N. Beaumont Street and installing an underground line, light posts for the pathway and parking area lighting, and an electrical vault is estimated to cost \$24,500 to \$26,500. The conceptual design shows 6 to 8 light posts as the only electrical feature; the irrigation system will need service, and lighting for the pavilion and shed is recommended. A 240 volt service with a 20

amp circuit would provide ample power and be able to serve a sound system for events as well. Total private contractor costs are estimated to be \$24,500 to \$26,500.

Consideration should be given to the placement of the electrical vault, as they can be large, unsightly features. Pairing it with the irrigation box would be optimal to keep all utilities together. The box could be painted to improve its appearance on the site.

**Sanitary Service.** While the initial tree farm will utilize portable restrooms, the future build-out of the site may lead to the installation of a permanent restroom. Future sanitary needs should be considered during initial utility installation to identify if a capped sanitary lead can be installed to avoid having to tear up the site after it is fully developed and operational.

### Zoning

The City of St. Louis's zoning for the parcel is J-Industrial and there should be no restrictions against using it for a tree farm operation.

## Section 2.4. Access - Customer Pick-up; Shipping & Receiving Logistics

For volunteer events and educational offerings street parking is expected to be sufficient, however overflow parking at the Scott Joplin House may be an option for large events. It is proposed that the access driveway of the site be restricted to one-way from north to south. Vehicles will enter the site from the more visible Samuel Shephard Dr. driveway and pull through to the designated pick-up area and exit onto the alley.

The driveway to the site should be designed to allow for sufficient turning radius for box trucks or truck-and-trailers from the alley and road. The alley will likely be too narrow to accommodate school buses and large trucks so an alternative access plan should be considered.

For larger events such as tree giveaways, traffic control and clear signage will be required. At Tree Pittsburgh Giveaway events, custom weatherproof a-frame signs and traffic cones are used for wayfinding (image on right).



## Section 2.5. Security

Vandalism, theft, and occupation of the tree farm space by vagrants are all possible and should be addressed with the installation of a 6-foot high wrought iron fence, as shown in the concept plan. This fencing material compliments the fence that is around The Scott Joplin House and provides a cohesive and uniform look to the site. Fencing the site will require approximately 710 linear feet of fencing, with two gates for vehicular access and one at the corner of Samuel



Shepard Drive and North Beaumont Street for pedestrians. Installation of this fence is estimated to cost between \$18,000-\$23,000 depending on specifications of the design and gate construction.

## Section 2.6. Production and Operations

### Tree Stock and Size

The size of trees grown at the City Tree Farm site will meet the needs of customers in an urban environment. Trees should be large enough to plant where they will not be damaged and small enough for customers to be able to carry and bring home. The City Tree Farm will produce primarily potted containerized tree stock in sizes ranging from 3 gallon to 7 gallon and reaching 5-6-feet tall. This size plant can be produced in 1-2 years using bare root liners and is a manageable size for tree planters and producers to handle.

### Growing from Seed

The City Tree Farm will pilot a seed growing operation using seeds collected by Missouri State Parks. The seeds will be prepared and stratified at the Creve Coeur location then, in the spring, will be started in six-inch (6") box trays at the City Tree Farm. It is advisable to place the seed trays on benches for ease of care and to minimize the spread of fungal disease and prevent rooting into the ground. Depending on the species, some seedlings may be ready for up-potting into 1 or 2 gallon pots in the first growing season. The remaining seedlings will be overwintered in the on-site hoop house and will continue to be cared for at the urban site until they are large enough to be up-potted.

*Images below of seed growing operations at the Tree Pittsburgh Heritage Tree Nursery.*



## **Containers**

There are many types of nursery containers available to the industry. The most widely used container is the injection molded black plastic nursery pot. It is sturdy, long lasting and does not break down when exposed to the elements. If collected, they can be reused many times over. The down side to these containers is that they are difficult to recycle and often end up in a landfill. Root pouches are an alternative to plastic pots and are made from a combination of fabric and recycled water bottles. These pots are not recyclable or reusable in most cases but do address the issue of circling roots that are a problem with smooth plastic pots. A truly sustainable pot that holds up to the difficult conditions of a tree farm is yet to be designed, however industry advances are being made in this area.

Six-inch trays are commonly used for starting tree seeds because the depth accommodates a deeper taproot. These trays can be purchased at [Stuewe and Sons, Inc.](#)

## **Production Space and Capacity**

The conceptual plan provides a 70-foot x 70-foot area (4,900 square feet) designated for tree production. It is recommended that the grow rows be placed in blocks of 70-feet long by 6 pots wide, with each block separated by a 3-foot wide path. This layout optimizes production square footage and sun exposure. It also works efficiently for irrigation layout and protects the grow rows from wind. Tree farm staff, volunteers, and visitors can move easily through the space, and it creates a neat and orderly appearance.

When planning the layout of the growing area, the tree rows should be oriented from north to south, parallel to N. Beaumont St. This layout will provide uniform light exposure as the sun moves through the sky. Haphazard growing areas can result in uneven plant growth and inconsistent moisture retention due to shading and make the trees more susceptible to blowing over during storms and windy days. .

## **Groundcover**

Prior to placing the containerized trees in the rows, weed control must be considered. Weeds can quickly outgrow woody plant material causing a tree farm to appear unkempt. Beyond aesthetics, weeds will compete with the trees for water and nutrients and can spread their seeds to the potted plants if kept unchecked.

Successful weed control is a multi-pronged strategy. It is best practice to apply a landscape barrier to the ground to suppress the growth of the majority of weeds. To do this, first remove any existing weeds or grass from the proposed area. This can be done using a sod remover or by placing black plastic or cardboard over the area for several days. Herbicide can also be used. Once the area is cleared and leveled, edge the perimeter of the growing area to form a neat



border around the cleared ground; this will make maintenance easier. Next a woven polypropylene weed barrier should be applied evenly over the space; taking care to overlap any seams and fasten securely with landscape staples (*right image*). Most weed barriers have measurement lines woven into the fabric in even increments. These lines should be oriented in the direction of the grow rows (north-south). Once the weed barrier is applied, crushed limestone gravel or wood chips can be spread at the edged perimeter to prevent weeds from growing up between the sod and the fabric. Maintenance of the edges will be important. If a clean level area is left around the edges, a lawn mower can easily be used to maintain the perimeter.



Despite these methods, weeds will still find their way into the tree farm. A combination of weed-whacking, hand weeding and spot spraying will be necessary throughout the season to keep weeds under control.

Many nurseries apply pre-emergent to the potted plants in the spring. This prevents weed seeds from germinating in the pots. An organic alternative to pre-emergent is rice hulls.

### **Irrigation**

The most critical element of a tree farm operation is access to a reliable water supply. Containerized plants can quickly die without irrigation, so it is important to establish a water connection prior to moving any plants to the site. Contact the city water authority to inquire about tap-in fees and water metering (see Utilities section above). Water prices have been rising nationally in recent years. In some cities programs exist that subsidize water use for non-profit organizations. At the original Tree Pittsburgh urban nursery site, water fees were waived through a similar program.

Once a meter is established, a water mainline, and irrigation system can be installed. A plumber with experience in irrigation should be hired to appropriately install backflow prevention and properly size the pipe diameter. It is advised that the mainline is sized not just for current needs, but for future expansion plans as well. The mainline should be buried below the frost line and located in an area that can easily be accessed if repairs are needed. No structures or paving should be built over the water mainline and a utilities map should be created to locate the line. A valve box with a shutoff valve should be installed at the head of the line and at each expansion break to stop water flow in the event that repairs, or additions are required.

Irrigation zones can be installed from the mainline to move water into different locations of the tree farm. An experienced plumber can design zones with the appropriate sizing and flow and add pressure regulators where necessary. Automated programs such as a Rainbird irrigation

controller can be utilized to control sprinkler heads or drippers, however it is advised that hose bibs be installed every 50-100 feet for times when hand watering is necessary.

The irrigation lines should be shut down and emptied of water using an air compressor before winter. This annual winterization can be contracted by an irrigation company.

### Overwintering

Overwintering is an important concern for maximizing plant survival. Since containerized stock is above ground, plant roots are more susceptible to cold damage than stems and foliage.

Therefore, it is important to protect them from extreme temperatures. Overwintering can take place in hoop house structures that can also be used for shade in the summer. This is the most common form of overwintering and provides the most protection for plants. In the winter, shade structures/hoop houses are covered with 6-mil, white polyethylene plastic. White poly-plastic is preferable to clear because solar radiation is reflected out, reducing extreme heat buildup. Plants should be completely dormant or hardened off, packed tightly together, and well-watered before covering and sealing off the hoop-houses for the winter. An alternative cost-effective, but more labor-intensive overwintering method is to keep plants outdoors and cover the root zones with a thick layer of wood chips or mulch.

Moving leftover trees to overwinter at the Creve Coeur location is an option, however it will be burdensome and could cause damage to the trees. It is recommended that the City Tree Farm construct a small shade structure/hoop house at the City Tree Farm to overwinter hold-over trees until the spring season. The structure should be oriented north-south; however east-west is also acceptable.

### Species

Species grown at the City Tree Farm should be those most appropriate for urban plantings; shrubs, shrubby or multi-stem species and evergreens are not favored in urban areas due to sightline and safety issues. Species suitable for use as street trees or urban lawn trees should be emphasized. While the “true native” vs. “nativar” (native cultivars) debate will certainly continue, there is little doubt that cultivars of native species that have been selected for uniform growth habit (to limit the need for structural pruning) and lack of fruit allow native species to be used in environments in which they would otherwise be inappropriate. Such species are more approachable to typical city residents and often still retain many of the ecological benefits that straight-species natives are valued for. This approach to species selection, using a mix of native and urban tolerant nativars/non-native trees, is taken by both Casey Trees and Savannah Tree Nursery, and has proven to be effective for urban plantings.

To start, the City Tree Farm should **focus on 6-8 urban-tolerant species** to grow at the site. Some may be native straight-species trees, such as **oaks** which are the keystone genus of Missouri’s forests and continue to be some of the most important and beneficial shade tree species in urban areas. Some **fruit trees native to Missouri** such as **paw paw, persimmon and serviceberry** can serve as urban lawn or street trees and can make excellent additions to

community gardens along with nut trees. **Small to medium sized trees such as sweetbay magnolia, river birch, hornbeam, and tupelo** (black gum) are appealing in residential or urban areas. Some **non-natives** that have proven to be **resilient in urban conditions** should also be considered. While not appropriate for most street tree sites, **sugar maples are excellent urban park trees and their iconic leaf was the inspiration for Scott Joplin’s “Maple Leaf Rag”**.

## Section 2.7. Risk Management & Regulations

### Risk Management

Despite all efforts, unforeseen events happen and the safety and security of the users of the space should be planned for. Forest ReLeaf shall enact a safety plan to mitigate risk of injury and illness to staff and visitors to the site. Some events that should be considered in this plan are:

- General site safety practices
- Volunteer/ Visitor safety policies
- Site security
- Safe handling of chemicals
- Administering AED, CPR and First Aid
- Maintenance of property and equipment
- Fire
- Flood
- Severe storm/ lightning strike
- Dangerous or reckless individuals
- Reporting incidents and injuries

Forest ReLeaf will mitigate the risk of catastrophic losses by having all appropriate insurances in place, including general liability.

### License, Permits and Regulations

Forest ReLeaf of Missouri is currently registered with the Missouri Department of Agriculture to sell and give away trees from their Creve Coeur location; the City Tree Farm would require a separate license, the cost of which would be based on annual sales figures. Sales under \$2,000 annually would qualify for a “Restricted Nursery Dealer” license at a cost of \$50 per year, and sales over \$2,000 qualifies for a “Nursery Dealer” license at a cost of \$125 per year.

## Section 2.8. Management & Organization

### Leadership

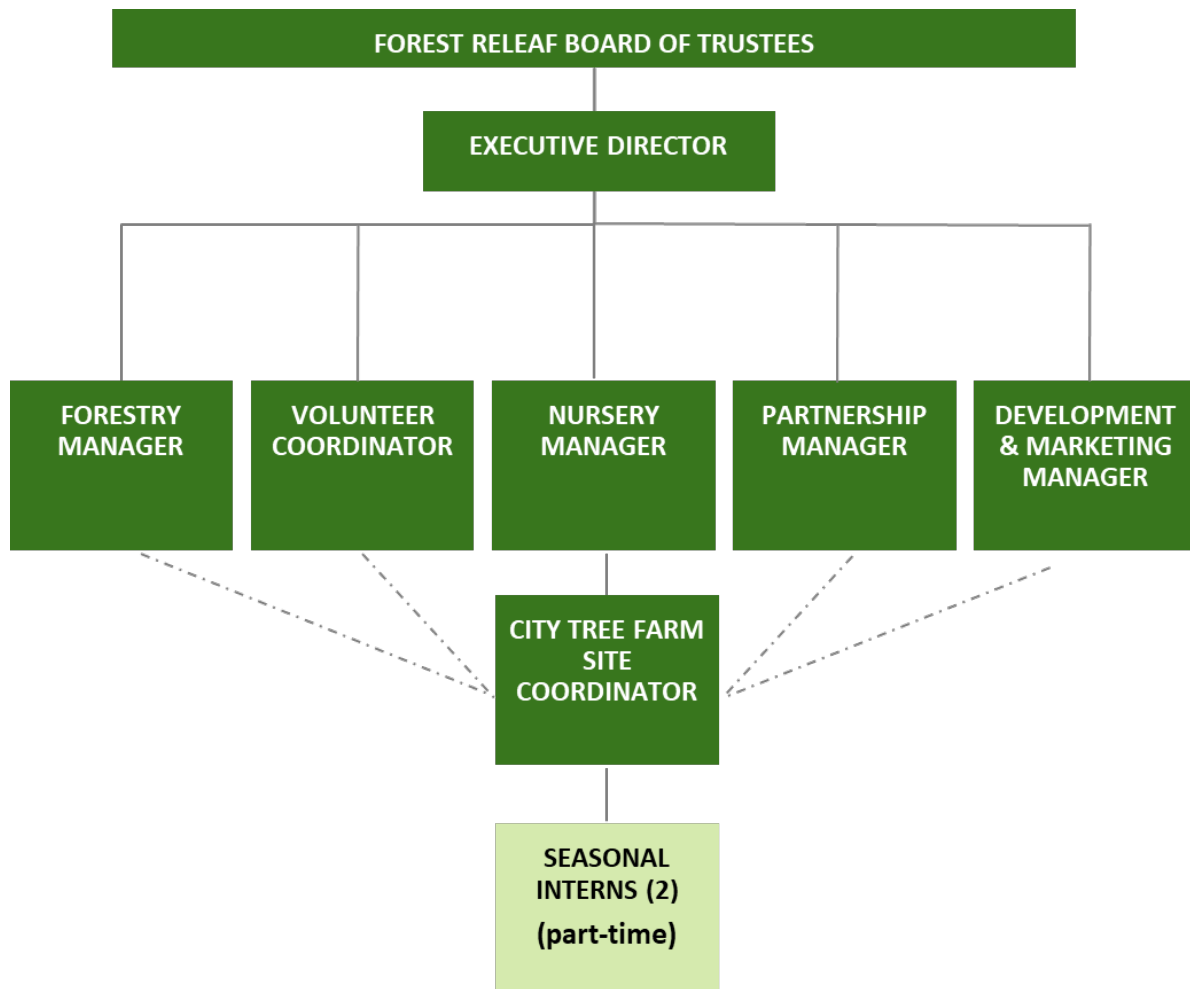
The City Tree Farm program will receive leadership and oversight from the Executive Director (ED) and the Board of Trustees, especially during Phases 1 and 2 of development. The ED will administer fundraising efforts, program planning, and implementation of the Tree Farm Plan and will ensure that the tree farm’s program goals are in alignment with those of broader organizational goals. The ED will also oversee the hiring of the Site Coordinator in Phase1 of operation.

## Site Operations Staffing

It is recommended that a full-time, year round Site Coordinator (SC) be hired at the end of Phase 1 to spearhead tree farm operations at the urban site. The SC will be responsible for overseeing site build-out, plant propagation, repotting of trees, attending the irrigation, pest/disease monitoring and treatment, facilities maintenance, managing volunteers and interns, distributing trees and other responsibilities related to running the City Tree Farm. The SC will be responsible for meeting production goals, ensuring quality standards, and maintaining best management practices.

In year two of operation, one or more part-time assistants or interns may be added to the program. This role will provide opportunities for green job training and workforce development, while also providing support to the site coordinator as the program grows.

The SC will report to and work closely with the Nursery Manager to ensure production practices are consistent. Forest ReLeaf's staff in other roles, including the Forestry Manager, Partnership Manager and Volunteer Coordinator will utilize the urban site for engagement and outreach activities in tandem with the tree farm operations and may provide operational support when necessary. The Partnership Manager will be responsible for the educational offerings and will manage the pavilion space. The Volunteer Coordinator will connect volunteers and community members with experiences at the urban site. The Forestry Manager will inform the City Tree Farm species curation and coordinate tree distributions in the surrounding urban communities. The City Tree Farm has a diverse range of uses and ReLeaf staff will need to work together as a team to operate the site, as they will all play a role in its success. The organization chart below outlines the reporting structure of the City Tree Farm site coordinator and interns. The dotted lines represent the connections the City Tree Farm site coordinator will have with staff in other roles.



*Forest ReLeaf organization chart with City Tree Farm staffing*

## Section 2.9. Outreach, Engagement and Partnerships

### Programming and Partnership Opportunities

The Missouri Department of Conservation, Missouri State Parks, and St. Louis City Forestry will be core partners in this initiative.

Programming opportunities at the City Tree Farm will be greatly increased and diversified by bringing access closer to public and private schools within the city. Summer youth camps and youth groups based in St. Louis can be engaged to access and use the site. Field trips can be paired with trips to the Scott Joplin House Museum, Citygarden, The Missouri Botanical Garden,



Seed St. Louis demonstration garden and Operation Brightside. The tree farm can also serve as a guest location for programming by groups such as Great Rivers Greenway, the Missouri Community Forestry Council, the Missouri Green Industry Alliance, and the Green Dining Alliance. The groups that operate these programs can be valuable program partners.

Tree potting, workshops (e.g., tree pruning, planting, and care) and art projects can serve as valuable engagement opportunities, while also increasing the tree farm's aesthetic appeal and bolstering community buy-in. Taking a lesson learned from the Savannah Urban Nursery, having local school groups paint tree pots could be an excellent way to give each tree a sense of individual identity, break up the monotony of the black pots and even allow individuals to track the course of each tree.

In a partnership with Missouri State Parks, Forest ReLeaf will also pilot a seed growing operation at the City Tree Farm. Forest ReLeaf will receive seeds that have been collected from the state parks and will grow the seeds into stock for eventual out planting back in the parks. In addition to strengthening ties to State Parks, the seed program also provides enhanced horticultural programming and will provide multi-season engagement opportunities for volunteers and trainees working in the urban site.

The existing Forest ReLeaf plantings at Gateway Middle School and DeSoto park - approximately a half mile away - can serve as nearby satellite educational areas. They can be used to demonstrate tree growth rates and the logistics of planning planting projects, as well as the need for ongoing maintenance. During the summer when potting activities are not viable, mulching, watering, and weeding tree rings at these locations could serve as volunteer and engagement opportunities.

Spring and fall activities can involve potting, up-potting, and tree giveaways. Classes on wild native edibles could be given in partnership with community garden organizations.

## Section 3.0. Phased Implementation

### Phase 1: Establishment

During Phase 1, the establishment phase, a fundraising campaign will be launched to acquire the funds necessary to develop the site. A steering committee composed of key staff, board of trustee members, and stakeholders should be created to guide the decision making for the project. Once funds are secured the steering committee will create a work plan that will guide implementation of the elements outlined in the City Tree Farm Plan. All site elements, except the hoop house, are installed during Phase 1 - see example Phase 1 Work Plan below.

### Phase 2: Launch Operations

Phase 2 of the tree farm is the launch of physical operation of the site. At this stage in development a site coordinator should be hired and most of the site infrastructure should be in place.

The first full year of operations should begin in the winter with crop planning, supply ordering, and preparations for the growing season. During this time, pilot events should also be planned and scheduled for the City Tree Farm. Starting in the spring, the tree farm will produce its first plant material and host its first volunteers. Shifting into summer, the site coordinator should focus on plant care and site maintenance. Educational events, internships, workforce development programming, and other engagement can begin. In the fall, the tree farm will host its first tree distribution events, utilizing the trees grown on site in the first year. If needed, stock will be supplemented from the Creve Coeur Nursery. Any remaining stock will either be overwintered on site (preferred) or taken to Creve Coeur for overwintering. At the conclusion of the first year an analysis should be conducted to determine areas of success and opportunities for improvement and growth.

### Phase 3: Growth and Expansion

Following the first full year of operation and completion of operational analysis identified in Phase 2, a strategic plan should be developed to guide the next three to five years of operations and fundraising to sustain the City Tree Farm into the future. Opportunities for expansion will be assessed at this time. Examples of expansion may include staffing increases, the construction of a hoop house, construction of permanent restroom facilities, etc. The possibility of revenue generating programs may also be evaluated at this time (i.e., event rentals, tree sales, summer camps, etc.)

### Example Phase 1 Work Plan

TASK	MONTH											
Tasks may begin as soon as funding is secured and can occur at any time of year unless otherwise noted. *Optimal timing for earthwork and construction should be determined by the contractor.	1	2	3	4	5	6	7	8	9	10	11	12
Site assessment												
Finalize placement of site elements and structures												
Engage site designer to develop construction documents												
Release RFP for pavilion												
Grading and earthwork*												
Install Utilities												
Select pavilion contractor												
Secure building permits and zoning approvals												
Build driveway, steps, paved paths												
Install security fence												
Install storage structure												
Place portable toilets and handwashing station												
Begin pavilion construction*												
Hire site coordinator												
Layout tree farm production area												
Install irrigation mainline and watering zones												
Place weed barrier												
Install lighting and electric in pavilion												
Build soil storage bays												
Build potting benches												
Order tree farm materials and supplies (4-6 months prior to first growing season)												
Schedule engagement events												
Ready to Launch!												

## Section 3.1 Financial Planning

### Budget & Cost Estimates

The following table provides a budget summary. The complete budget and project projections can be found in greater detail in the budget table that follows this section. Budget estimates are based on Tree Pittsburgh Heritage Nursery historical performance and industry averages.

BUDGET SUMMARY: Forest ReLeaf City Tree Farm	Establishment	Year 1	Year 2	Year 3	Year 4
<b>Income</b>					
FOUNDATION GRANTS/FUNDRAISING	\$ 367,515	\$ 174,350	\$ 183,850	\$ 188,690	\$ 181,550
<b>GRAND TOTAL INCOME</b>	<b>\$ 367,515</b>	<b>\$ 174,350</b>	<b>\$ 183,850</b>	<b>\$ 188,690</b>	<b>\$ 181,550</b>
<b>Expenses</b>					
PERSONNEL	\$ 104,200	\$ 131,000	\$ 133,200	\$ 142,940	\$ 135,400
PROFESSIONAL FEES	\$ 36,000		\$ -	\$ -	\$ -
PROGRAM SUPPLIES	\$ 16,900	\$ 15,500	\$ 16,800	\$ 17,900	\$ 18,300
CAPITAL INVESTMENTS	\$ 139,125	\$ -	\$ 6,000	\$ -	\$ -
UTILITIES AND INSURANCE	\$ 71,290	\$ 27,850	\$ 27,850	\$ 27,850	\$ 27,850
<b>GRAND TOTAL EXPENSES</b>	<b>\$ 367,515</b>	<b>\$ 174,350</b>	<b>\$ 183,850</b>	<b>\$ 188,690</b>	<b>\$ 181,550</b>

### Phase 1: Establishment

It is expected that the Executive Director (ED) will spearhead the establishment phase and dedicate significant hours to this project in the first year, as outlined in the budget table. A fundraising campaign will be launched to acquire the funds necessary to develop the site. During this time the Development and Marketing Manager will provide support to the ED. Once funds are acquired and development of the tree farm is underway, the Nursery Manager will assist the ED to oversee build-out and hire the Site Coordinator. As the City Tree Farm becomes operational, the ED can gradually scale back their involvement to an as-needed basis.

### Phase 2: Launch Operations

In the first year of operations, the Executive Director will continue to provide oversight to the City Tree Farm staff to ensure organizational goals are being met. Training and direct supervision of the Site Coordinator will be provided by the Nursery Manager. As the SC becomes more comfortable and proficient in day-to-day operations of the tree farm, oversight can be scaled back.

### Phase 3: Growth and Expansion

The tree farm will refine its operations and explore opportunities for growth and revenue generation. During this time, seasonal support staff may be brought on and workforce development programs may begin.

## **Grants & Partnerships**

In addition to the Missouri Department of Conservation which has committed funding to the Forest ReLeaf's City Tree Farm, other potential funding sources for this project are:

- Grants, including Community Development Block grants and other green infrastructure programs.
- Federal and State funding
- Corporate Partners
- Foundations
- Private donations
- In-kind donations

Potential partners and funders, may include:

- Missouri State Parks
- Missouri Department of Natural Resources
- St. Louis City Forestry
- Great Rivers Greenway
- Missouri Department of Agriculture
- The Audubon Society
- The Nature Conservancy



## Forest ReLeaf of Missouri City Tree Farm Budget

BUDGET: Forest ReLeaf City Tree Farm		Establishment	Year 1	Year 2	Year 3	Year 4				
Income										
Foundation Grants/ Fundraising Needs by Year	\$	367,515	\$	174,350	\$	183,850	\$	188,690	\$	181,550
Expenses*										
<i>*Does not include rent/ mortgages or land acquisition costs</i>										
PERSONNEL (Hourly rates are estimates and include payroll taxes and insurance)										
Salary - Executive Director \$55/ hr (8hr/ wk ~ 2hr/ wk)	\$	22,880	\$	17,160	\$	11,440	\$	8,580	\$	5,720
Salary - Development and Marketing Manager \$45/ hr (8 hr/wk ~ 2hrs/ week)	\$	18,720	\$	9,360	\$	4,680	\$	4,680	\$	4,680
Salary - Nursery Manager \$45/ hr (12hr/wk ~ 4hr/wk)	\$	23,400	\$	23,400	\$	18,720	\$	14,040	\$	9,360
Salary - Site Coordinator - starting \$35/ hr (Full-time 40 hrs/week)	\$	36,400	\$	72,800	\$	72,800	\$	72,800	\$	72,800
Salary - Volunteer Coordinator \$35/hr (~4hrs/ wk or as needed)	\$	2,800	\$	7,280	\$	7,280	\$	7,280	\$	7,280
Part-Time Intern - (Part-time - 24 hrs/week for 40 weeks per year)	\$	-	\$	-	\$	17,280	\$	17,280	\$	17,280
Part-Time Intern - (Part-time - 24 hrs/week for 40 weeks per year)							\$	17,280	\$	17,280
Staff Professional Development			\$	1,000	\$	1,000	\$	1,000	\$	1,000
Total Personnel	\$	104,200	\$	131,000	\$	133,200	\$	142,940	\$	135,400
PROFESSIONAL FEES										
Site Planning and Development	\$	10,000								
Graphic Design/ Marketing Plan	\$	8,000	\$	-	\$	-	\$	-	\$	-
Grading/ Earthwork	\$	10,000	\$	-	\$	-	\$	-	\$	-
Site Construction Contractors	\$	8,000	\$	-	\$	-	\$	-	\$	-
Total Professional Fees	\$	36,000			\$	-	\$	-	\$	-
PROGRAM SUPPLIES										
Plant Material (Specialty bareroot seedlings)	\$	2,000	\$	2,200	\$	2,400	\$	2,600	\$	2,800
Soil (starting at \$3/cu ft)	\$	6,000	\$	6,500	\$	7,000	\$	7,500	\$	7,500
Pots (starting at \$.75/ 3 gallon pot)	\$	3,000	\$	3,200	\$	3,600	\$	4,000	\$	4,000
Label Printer/ Labels / Promotional Materials	\$	1,000	\$	400	\$	400	\$	400	\$	400
Fertilizer/ Amendments	\$	500	\$	500	\$	600	\$	600	\$	700
Pesticides	\$	500	\$	500	\$	600	\$	600	\$	700
Tools/ Small Equipment	\$	1,200	\$	600	\$	600	\$	600	\$	600
Hoses and Irrigation Accessories/ Fittings	\$	1,200	\$	600	\$	600	\$	600	\$	600
Other Materials and Supplies	\$	1,500	\$	1,000	\$	1,000	\$	1,000	\$	1,000
Total Program Supplies	\$	16,900	\$	15,500	\$	16,800	\$	17,900	\$	18,300
CAPITAL INVESTMENTS										
Pavilion	\$	52,000	\$	-	\$	-	\$	-	\$	-
Security Fencing	\$	24,000	\$	-	\$	-	\$	-	\$	-
Hardscape (Steps, paths, road)	\$	20,000	\$	-	\$	-	\$	-	\$	-
Irrigation	\$	10,000	\$	-	\$	-	\$	-	\$	-
Soil Media/ Compost Storage Area	\$	8,000	\$	-	\$	-	\$	-	\$	-
Potting Benches	\$	2,500	\$	-	\$	-	\$	-	\$	-
Hoop House 14' x 24'	\$	-	\$	-	\$	6,000	\$	-	\$	-
Education Garden	\$	8,000	\$	-	\$	-	\$	-	\$	-
Landscaping	\$	8,000	\$	-	\$	-	\$	-	\$	-
Other / Contingencies (5%)	\$	6,625	\$	-	\$	-	\$	-	\$	-
Total Capital Investments	\$	139,125	\$	-	\$	6,000	\$	-	\$	-
UTILITIES AND INSURANCE										
Utility Tapping Fees:	\$	1,290								
Water	\$	21,000	\$	3,000	\$	3,000	\$	3,000	\$	3,000
Electric	\$	25,500	\$	1,350	\$	1,350	\$	1,350	\$	1,350
Portable Toilets	\$	3,500	\$	3,500	\$	3,500	\$	3,500	\$	3,500
General Liability Insurance	\$	20,000	\$	20,000	\$	20,000	\$	20,000	\$	20,000
Total Utilities/ Insurance	\$	71,290	\$	27,850	\$	27,850	\$	27,850	\$	27,850
GRAND TOTAL EXPENSES	\$	367,515	\$	174,350	\$	183,850	\$	188,690	\$	181,550