

City of Ann Arbor Parks Special Project Application – Pocket Forests at Buhr Park

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Organization: Ann Arbor Pocket Forest Team, a collaboration of the Ann Arbor chapters of Wild Ones, the Citizens' Climate Lobby, and the Buhr Park Children's Wet Meadow Project.

Location of proposed project: Buhr Park

Please provide a sketch or design to help explain the project.

To explain the project, please watch this [video](#) as the best introduction to this application.

Thank you!

At this [LINK](#) is a map locating several suggested locations in Buhr Park that would work well for a pocket forest. Location One was selected as our preferred pilot site because it would adjoin six existing apple trees, which could benefit both the old and new trees. The detailed plan for this site can be seen at this [LINK](#). This design will eliminate the need to mow around the existing apple trees, will help protect them from machinery, and increase moisture retention in the soil. Adding new plants near the existing trees also will benefit the new trees, through the underground mycorrhizal network connections they are expected to make with the apple trees. The resulting expansion of the apple tree area will produce a lovely setting that will invite human interest and pleasure.

Pocket forests are well suited to a wide variety of sites, and other potential sites in the Park that you might prefer will almost certainly work well for us. All locations shown on the map are open to discussion.

Please provide any maps or example photos pertinent to the project.

[Hamilton Ontario](#) (where we visited in person)

[Daheny Park in Cambridge, MA](#)

[Cragmont School in Berkeley, CA](#)

[Tiny Forest–See how quickly they grow!](#) (video)

Project description

We propose to pilot the Miyawaki method of dense tree planting by creating pocket forests of native species in two or more phases at Buhr Park. It's important to our goals to start a pilot in 2024, to make the most of the significant community enthusiasm that exists now for this project. We currently have support committed for a 2024 installation from a multitude of volunteers, plant donors, and local native plant nurseries. The phases would include the following:

Phase One: Planned for spring through fall of 2024. In spring we will engage in site preparation, described further below. The soil will be ready by fall, and we will plant the first forest at Location One, north of the ice rink and just south of the apple trees. As shown in the plan, this forest would consist of two planted areas of 25' (east-west) x 50' (north-south), separated by a 4' unplanted path, for a total of 2700 square feet. The area under the apple trees, and between them and the new forest, will be mulched. Site preparation would start in spring of 2024.

Phase Two: After proof through the Phase One pilot that our conception and implementation are sound, we propose to broaden the pilot in 2025 by planting two additional, nearly-linked forests at Locations 2A and 2B, on either side of the east path into the park from Easy Street. Phase Two will allow study of forest performance in sites that are near each other but different, one having a low, damp condition (2A), the other having a slightly higher, drier microclimate (2B). These two forests could eventually form a wide shade tunnel over the sidewalk, adding an attractive feature to the park. The forests would be planted well away from the walkway to allow its continued use by maintenance crews and their equipment.

Site Preparation

The planting of pocket forests has become a worldwide phenomenon. As would be expected, there are varying approaches regarding site prep. The following is a brief description of several options, from most complex to simplest, followed by the application of these options to our particular project:

1. The original Miyawaki method calls for the soil to be removed to a depth of one meter, mixed with compost, and replaced, which loosens the soil and naturally promotes enhanced root growth. Proponents ascribe a large part of the Miyawaki forests' success to the deep tilling. The challenge of this method is that it requires the use of heavy machinery, with associated cost, staging space, and potential adjacent soil compaction.
2. Next is a mechanized adaptation of the permaculture "double dig trenching" technique, in which a trench is dug, the soil is modified with compost, and the soil from the next trench fills the previous one. This allows for the use of a much smaller machine which greatly reduces the above challenges.
3. Finally, a no-dig method in which, at least five months prior to planting day, overlapping cardboard is placed on top of the turf grass, wet down thoroughly, and covered with at least six inches of compost. By planting time, the cardboard has broken down and saplings can be set in place without further prep.

For the Phase One pilot, we propose to experiment by using the mechanized double-dig prep (Option #2), for half the forest, and the no-dig method (Option #3) for the other half. We would monitor, record, and compare the growth of the two locations. Over time this will give us valuable longitudinal data to guide future pocket forest efforts.

A final note regarding site preparation. There are thriving Miyawaki forests worldwide which were planted using the Options #1 and #2 site prep approaches, some of which are over 40

years old. These forests provide a wealth of data supporting intensive site preparation. More recently, a great many pocket forests have been planted using the no-dig method due to its greater accessibility. In Hamilton, Ontario, for example, individuals are creating small pocket forests in their backyards. To our knowledge, the oldest of these is approximately six years, making it difficult to assess their long-term health.

Planting

On planting day, the site will receive a dense mix of native woody saplings. Selected species will include four height categories: forest floor, shrub, sub-canopy tree, and canopy tree. Species will be planted to achieve a mix of heights, with no two canopy species next to each other, at about 2.5 feet between each plant. This is approximately four plants per ten square ft, or about 1,080 total plants for Phase One. Stakes will be used to mark each sapling to help prevent damage, and six inches of mulch (a mix of straw, leaves, and wood chips) will be added throughout. We will not place mulch in direct contact with the saplings. For the first two to three years, the mulch will be replenished as needed. We will weed and water for the first three years to allow the healthy establishment of the plants. After, maintenance will consist of biannual monitoring, and any management of invasives that might be needed.

What benefit will this project provide to the park system or residents of Ann Arbor?

This project is aligned with the Parks Department's mission of cultivating exceptional experiences and with its core values - especially "Stewardship, Innovative Improvements, Integrity, Community, Excellent Parks and Spaces, and Fun." Additionally, as a replicable project, this Pocket Forest will demonstrate an innovative way to sequester carbon - quickly.

Please view our [video](#) for the many benefits Pocket Forests provide to the surrounding community. As with any forest, the benefits are far reaching and include beauty and pleasure, native habitat for increased biodiversity, improved air quality, moderating heat stress and providing shade, stormwater control, promoting community stewardship of the land, and more.

Awareness of the benefits is rising, because Miyawaki forests are taking off globally. They grow quickly, sequestering far more carbon than conventional landscaping. The fast growth allows the community to observe and enjoy the progress of the forest. Because low-cost or free saplings are planted, children can be hands-on during planting. In small but dense forests, hundreds of trees and shrubs are planted, so this community-led project can involve scores of people of all ages.

Buhr Park already has a lot of exciting sustainability-oriented endeavors with the Children's Wet Meadows, Food Forest, Project Grow Perennial Garden, and the Spruce-Hickory Grove. The Buhr Park Pocket Forest will build upon these, and as we publicize this crowd-pleasing effort, we'll connect it with the larger ecosystem of sustainable projects at the park. We want people to be aware of the many positive impacts made by special projects in the parks!

We plan to record the progress of the Pocket Forest and assess its ability to deliver the ecosystem services which Miyawaki method forests can provide. Please see this [analysis](#) for an example of rigorous monitoring that we hope to emulate. Our ultimate goal is to see many more of these mini-forests planted throughout our area, and this pilot will provide invaluable real life information. We envision these forests springing up at many schools, parks, businesses, and even homeowners' yards. This project is a great fit with the City's commitment to environmental health and sustainability, and its identity as "tree town."

Are there stakeholders that will be affected by this project who should be taken into consideration? Have you initiated contact or gained their support? This could include adjacent neighbors, other park users or groups involved in similar projects.

We have considered the distance to potential solar panels of surrounding neighbors, and will use that to guide the placement of species chosen. At Location One there is no danger of creating solar panel interference. At Locations 2A and 2B (Phase Two), we would locate the forests outside the solar footprint of any adjacent properties.

We will be contacting neighbors on Easy Street, Manchester Road, and Colony Court to discuss the project and confirm their support. Multiple Manchester Road neighbors have offered the use of their water spigots for past wet meadow projects, and we believe they and others will be similarly supportive of this effort.

We understand it is customary for the Parks to send surveys to the neighbors, so we have created an example of potential survey content, at this [link](#). One method of distribution could be QR codes on temporary corrugated lawn signs at the park, such as this [mock-up survey sign](#) illustrates.

If the project is approved, we will need to inform park users of what is happening at the site. We created a mock-up of a [temporary corrugated cardboard](#) sign to inform folks of what is planned. We created a mockup of a more [permanent metal sign](#), to be installed on planting day.

What resources (materials, equipment, expertise or staff time) will this project require from the City?

Our intention is to provide all the labor and funding for this project, as well as hand tools, to minimize the burden on City staff. At the same time, we recognize that some staff time will be needed, and we would welcome suggestions based on your experience. In terms of materials, we would like the city to provide approximately twenty-five cubic yards of compost (for the forest area only) and fifty cubic yards of wood chips (for the forest and under the apple trees) during our spring site preparation.

What level and type of commitment do you expect to contribute and for how long? How many service hours do you see this needing by you or others? Is this project sustainable without you? Do you have volunteers who want to contribute?

Many hours (100+) will be needed for research, planning, publicizing and networking. Our steering committee team has been meeting weekly to work on these tasks. The committee consists of members of the Ann Arbor chapters of Wild Ones (WO), the Citizens’ Climate Lobby (CCL), and the Buhr Park Children’s Wet Meadow Project (BPCWMP). There has also been a lot of interest expressed in this project from members of the larger groups. We anticipate ample volunteers from these chapters for the planting, watering and weeding. We can also reach out to additional “tree-interested” folks, such as those in the City’s tree pruning program, for volunteers. After the first three years when the forest is established, the project will be largely self-sustaining, save for biannual monitoring and any invasives control needed -although these dense forests are designed to avoid invasion.

Maintenance Considerations

| | Maintenance and Care needed | Done by whom? | Anticipated number of hours |
|---------------------------|--------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------|
| Planting and fencing | Installation–site prep, planting, mulching, watering, and fencing. | WO, CCL, BPCWMP, volunteers, neighbors, schoolkids, etc. | 100 hours planting 25 hours fencing |
| First Year – Post Project | Weeding and Watering | “ | 4 hours week during the growing season |
| Second Year | Weeding and Watering | “ | 2 hours per week |
| Long Term | Bi-annual monitoring and invasive control | “ | 10 hours per year (by our group) |

Timeframe - details related to planning, preparation and installation

| | Description of work | Done by whom? | Start and end dates |
|--------|---------------------------------------|---------------------------------------|---------------------|
| Part 1 | Native species selection, site design | Steering committee | Winter 2024 |
| Part 2 | Site preparation | Volunteers and paid trenching workers | Spring 2024 |
| Part 3 | Planting & fence | Community volunteers | Mid-October 2024 |

| | | | |
|--|--------------|--|--|
| | installation | | |
|--|--------------|--|--|

BUDGET INFORMATION Considering the potential cost of a project is an important step in the proposal process. Please include the necessary research to provide information on immediate and long term costs, material sourcing, and funding. Consider all expenses associated with work in each stage of the project, and long-term maintenance.

| | Description of materials | Estimated Cost |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Immediate costs | Cardboard (recycled) Plant material Tools for planting Compost and Mulch (wood chips & leaves) Straw bales Signage Hoses Fencing Trenching services | Free - steering committee \$600 (see tree budget doc) Borrowed - WO and CCL chapters Free from city or provided by WO and CCL chapters \$ 150 \$ 300 \$ 100 \$2,500 \$2,000 Mike Appel Environmental Design |
| Long-term costs | None | |
| Additional costs | None | |
| | Total: | \$5,050 |

From where do you anticipate sourcing the materials?

We plan to recruit donations of the shrubs and trees from Wild Ones members who will save “volunteer” saplings in their yards until planting day. See the [Share List](#) we are using to track these donations. If there are additional species needed, we will order them from local native plant nurseries and the Washtenaw County Conservation District.

If available, we will use free City compost and mulch, and our chapter members will provide the balance.

The fencing will be similar to what is at the Buhr Park Project Grow site. We will source fencing materials locally.

Online vendors such as Buildesign.com show that (4) corrugated cardboard signs can be ordered for \$100 total, while 24 x 24” aluminum signs can be purchased for less than \$100 each. We’ll buy posts at a local hardware store.

Volunteers can bring their own shovels on planting day. We can probably borrow hoses, but if new ones are needed we will purchase locally.

We have obtained two rough estimates for the double-dig trenching. RainScapes owner Eric Wagner thought it would cost around \$900 to mechanically till and mix in compost, while Mike Appel Environmental Environmental Design would charge approximately \$2,000. The cost differential is likely because Appel is insured while Wagner is not. We believe the insurance will be required, and have used the larger estimate in our budget.

Who will be responsible for the costs? Are you requesting funding from the City?

We will be responsible for the costs, we are not requesting funding from the City.

Are any materials being donated for this project? Have you pursued any opportunities for donations or grants as a source of funding?

Yes, most of the plant materials will be donated, and planting tools will be borrowed.

We are applying for a Washtenaw County [School and Community Habitat grant](#), and will also apply for a [Sustaining Ann Arbor Together grant](#), and an [Elizabeth Dean Fund grant](#).