Organizing a Neighborhood Tree & Understory Planting
By Brad Lancaster

If you are just beginning, you could start small, even with just one tree. You could do this on **private property** (No permit required) or **in the public realm** such as the public right-of-way (Permit required – this is the area between street curb and property line where you usually have a sidewalk or dirt foot path).

You can take on a planting with all volunteer labor, or with the help of contractors.

This guide is for doing so in the public rights-of-ways with the help of experienced passive water-harvesting contractors, because the Dunbar/Spring Neighborhood Foresters have found this approach results in higher-capacity water-harvesting basins that are truly examples of the new paradigm we are trying to help create—where rainwater is the sustainable water source of our public right-of-way plantings (once established), rather than extractive municipal water; and this green infrastructure also doubles as more significant flood control. When we did the plantings all volunteer, we did not have the capacity to get the basins to their ideal size.

1. **Promote the planting**
   See [this link for promotion ideas and resources](#).

2. **Start a list of potential planting sites** by address and the adjoining property owner/resident requesting the planting. Note that as of yet, unknown constraints may shift things in step 4.

3. **Call blue stake at 811** — a free service locating and marking underground utility lines.
   *Note that when you call, they will ask if you have marked the area where the work will be done. You don’t have to have it marked if you give them clear verbal directions of where you want to locate underground utilities such as, “Please check the entire public right-of-way adjoining the property at address XX”. If it is a corner lot, be sure to have them check the public right-of-way on both sides of the property. Best to give them cardinal directions, such as whether the public right-of-way where you’ll plant is on the north, south, east, or west side of the adjoining property.*
4. With blue stake markings of underground utilities in place, use a pointed shovel to mark the perimeter of your water-harvesting basins and the tree locations. 

This step is made easier your first time, if doing so with an experienced neighborhood forester and/or passive water-harvesting contractor.

Just making lines in the dirt that you can easily erase and remark them as needed. Things may change as you work within the following setbacks and requirements:

- **Required minimum setbacks of tree plantings from utility lines:**

<table>
<thead>
<tr>
<th>Utility</th>
<th>Required setback</th>
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<tbody>
<tr>
<td>Water lines</td>
<td>– 3 feet</td>
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<tr>
<td>Natural gas lines</td>
<td>– 3 feet</td>
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<tr>
<td>Electrical lines (underground)</td>
<td>– 3 feet</td>
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<tr>
<td>Telephone lines (underground)</td>
<td>– 3 feet</td>
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<tr>
<td>Cable TV (underground)</td>
<td>– 3 feet</td>
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<tr>
<td>Electrical poles, phone vault &amp; pullboxes</td>
<td>– 10 feet</td>
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<tr>
<td>Sanitary sewer lines</td>
<td>– 10 feet</td>
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<tr>
<td>Fire hydrant</td>
<td>- 10 feet</td>
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<tr>
<td>Sanitary sewer manholes</td>
<td>– 15 feet</td>
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- **You must maintain a continuous minimum 5-foot wide pedestrian path parallel with the street.**

- **Paths between water-harvesting basins that ensure pedestrian access between street and main footpath should be minimum 5-feet wide.** Try to align placement of these paths between basins with front gates and paths to front doors, so you create welcoming invitations as opposed to irritating barriers.

- **If there is parallel parking along the street curb, you must maintain a minimum 2-foot wide “pedestrian platform” level with the top of the street curb on to which passengers can step on to when exiting a parallel-parked car. On one end, the pedestrian platform must connect to a footpath (fig. 1).**
Figure 1. Street-side basins with pedestrian platform. Blue arrow represents stormwater flow.

Note: that a pedestrian platform is not needed if the water-harvesting planting basin is no wider than 4 feet (fig. 2A, B).
Fig. 2A. Small-space street-side basin. Plan view above. Elevation view below. Reproduced with permission from “Rainwater Harvesting for Drylands and Beyond, Volume 2, 2nd Edition” by Brad Lancaster, www.HarvestingRainwater.com

Fig. 2B. Small-space street-side basin, elevation view. Reproduced with permission from “Rainwater Harvesting for Drylands and Beyond, Volume 2, 2nd Edition” by Brad Lancaster, www.HarvestingRainwater.com
• Trees cannot be planted where they will grow to block the view of traffic signs (Stop and Yield signs). A rule-of-thumb is no tree planting along street curb within 50 feet in front of a stop or yield sign. Though, if a traffic sign comes into the street, like in a traffic-calming chicane, then trees can be planted closer to the sign along the main street curb (not the street-side curb of the chicane). Fig. 3.

![Fig. 3. Yield sign brought further into street within traffic-calming chicane allows for trees planted along street curb without blocking view of sign. Photo credit: Brad Lancaster](image)

• Ideally, water harvesting basins and tree plantings are between public walkways and street for easy street runoff access, for more of a physical barrier between cars and pedestrians, and to maximize shading of walkway and street.

When you can’t get the plantings close enough to the street to access street runoff, look to capture runoff from walkways, driveways, and/or roofs instead.

And if you don’t have enough room in the public right-of-way for plantings, see if you can instead place them just within the adjoining private property, so the trees on the private property can grow to help shade and shelter the public walkway.

**Try to maximize the size of your water harvesting basins (within the on-site constraints) to maximize their flood-control and life-generating potential.** In the Dunbar/Spring Neighborhood where we have 20-foot wide public rights-of-ways we push for basins with a minimum size of 8’ long, 5’ wide, and 1’ deep, for an annual stormwater-harvesting capacity of over 4,500-gallons per year. That’s easily
enough to support all the basin's associated native plantings, and enable them to grow vigorously.

Note that we use contractors to excavate these 4,500-gallon basins and do the rock work. If it were an all-volunteer effort, basins of this size would be more of a challenge.

**Don’t get discouraged if these constraints are reducing the plantings and basin sizes you were hoping for.**

It will still be an improvement even if you only get one tree in where before there were none.

And when you don’t have room *beside the street* in the public right-of-way between street and property, you could look to *in-street* strategies such as water-harvesting, traffic-calming round-a-bouts/traffic circles and chicanes or bump outs. But this *in-street* work is more expensive and requires getting a petition signed to show that at least 60% of those living within one block of the proposed in-street strategy want it. Contact the City of Tucson Department of Transportation Traffic Engineering Division for more info. And note that [Trees for Tucson has grants and support for such neighborhood Green Infrastructure](#).

**Additional information**

You can get more guidance on these water-harvesting earthworks and plantings — with lots of color illustrations—in the book *Rainwater Harvesting for Drylands and Beyond, Volume 2, 2nd Edition*.

5. **Once you have your basin outlines set, make a list of the plants that will be planted in each basin.**

This step is made easier your first time, if doing so with an experienced neighborhood forester and/or passive water-harvesting contractor.

See Appendix 4 of *Rainwater Harvesting for Drylands and Beyond, Volume 1, 3rd Edition* for a list of native trees and understory plants that are easy to succeed with. The lists also give the plants’ average size a maturity, their water needs, and their ideal rain garden planting zone.

Select and place plants so once they grow to their mature size, they will not block access to pathways and streets, or sight lines to traffic signs (figs. 4A, B).
Fig 4A. Plants placed too close together and where they will grow to block pathway as illustrated by circles drawn in the dirt to represent the new plants’ expected size at maturity. Move and reassess plants’ placement as needed. Reproduced with permission from “Rainwater Harvesting for Drylands and Beyond, Volume 2, 2nd Edition” by Brad Lancaster, www.HarvestingRainwater.com

Fig 4B. Plants well-placed and spaced based on their expected mature size. Pathway access kept clear. The plants can now be planted in the ground. Reproduced with permission from “Rainwater Harvesting for Drylands and Beyond, Volume 2, 2nd Edition” by Brad Lancaster, www.HarvestingRainwater.com
6. Remove all **invasive plants** like Bermuda grass from the water-harvesting and planting area before you begin excavation. Otherwise, the invasive plants could take over after you start harvesting water and irrigating your new plantings.

7. If you haven’t yet done so, get in contact with passive water-harvesting contractors to see when they could do the excavation and rock work on the basins.

The work the Dunbar/Spring Neighborhood Foresters have the contractors do includes:
- Excavate water-harvesting basins
- Haul away the excavated soil
- Remove gravel and landscape mounds from the public right-of-way (if these barriers to pedestrians exist at a work site, we require this removal to be part of the package)
- Haul away the excavated gravel and landscape mounds
- Order and deliver rock for the water-harvesting basin banks’ stabilization.
(We use Catalina granite rock because it is a naturally found surface rock in Tucson – giving the basins a more natural and softer appearance. Catalina granite is not mined, but rather is harvested from road construction and building site projects when those sites are bladed.
We do NOT use exploded rock, which is mined from below the soil’s surface. It is jagged, and has a comparatively unnatural appearance.)
- Hand set the rock stabilization of the water-harvesting basins
- Core drill the street curb where needed to direct street runoff into the water-harvesting basins.
- Apply surface mulch to the basins after they are planted by volunteers.

Contractor work **could also** include:
- Removing invasive plants from the work area before basins are excavated.
- Picking up, setting up, and returning barricades and signage if the project requires a barricade plan.
(But Dunbar/Spring Neighborhood Foresters have done this step to save money. We also use barricades provided by the excavation contractor, which reduces the amount of barricades we need to rent from the barricade rental company)
- Do the plantings
(But Dunbar/Spring Neighborhood Foresters do this along with other volunteers to get more people involved, aware of the program, and build community)
- Apply for and manage the permit
(But Dunbar/Spring Neighborhood Foresters have done this to save money and have more say in the design and implementation of the project)
A few recommended licensed contractors that have worked great for the Dunbar/Spring Neighborhood Foresters are:

- John Litzel of Little John Excavating
dustylj@q.com
520-730-9350
John is a master backhoe operator. He shows up with his own backhoe and can coordinate a truck to haul away the excavated soil.

- Jeff Rhody of Dryland Design
jeff@drylanddesign.com
520-909-4946
Jeff is a master layer of rock. He can coordinate the order and delivery of rock to stabilize the banks of the water harvesting basins.

- Concrete Coring Company
520-795-7667
They can cut the curb or drill core holes. We typically go with 4”-diameter core holes as they are much cheaper than curb cuts.
The contractor should drill these so the hole slopes down into the basin, AND is angled in the direction of flow down the street gutter.

8. Apply for the permit.
The neighborhood’s forester(s) could do this, or the contractor.

9. Once you have the permit, share it with the contractors and finalize schedule for the work to be done with the contractors.
The Dunbar/Spring Neighborhood Foresters schedules this work in late winter to avoid the heat. Makes for happier contractors and volunteers.

See here for an example permit. Note the design details we specify in the permit, such as the planting terraces in the banks of the basins. We find these give us a greater diversity of microclimates for more diverse plantings, and they more readily grow vegetation that creates a bigger physical & visual barrier keeping people out of the basins.

We hold off scheduling the curb cut/curb core drilling contractor until AFTER the basins are excavated and their banks are rocked.
Fig. 5. Contractor Little John Excavating excavating and hauling away excavated soil to create street-side basin. Photo credit: Brad Lancaster

Fig. 6. Basin excavated. Contractor checking depth of basin and planting terraces with laser level. Photo credit: Brad Lancaster
Fig. 7. Beautiful rock work by contractor Dryland Design stabilizing basin banks and planting terraces. Local surface rock – Catalina granite – used. Photo credit: Brad Lancaster

Fig. 8. Contractor drilling 4-inch core hole to basin. Reproduced with permission from “Rainwater Harvesting for Drylands and Beyond, Volume 2, 2nd Edition” by Brad Lancaster, www.HarvestingRainwater.com
10. **Once the work is done by the contractors, schedule and promote the planting.**
Best to do this on a weekend. Start early to avoid the heat. 4 hours is usually a good block of time. More than that and volunteers start to lose interest.

See here for an [example planting announcement/invitation](#).

11. **Gather up all needed tools, plants, and materials for planting day.**
In your event promotion, ask that everyone bring their own tools, hat, and water bottle(s).
Make sure you have extra tools on hand for those that may lack them.

If you coordinate and schedule with Trees for Tucson well in advance, they may be able to supply you with tools for a planting along with a Trees for Tucson staff person.

**Tools**
Strive to have a pointed shovel for every volunteer. Other good tools to have:
- Pick axes
- Rock rakes
- Caliche bar/digging bar
- Gloves
- Garden trowels
- Pruning saws
- Pruning loppers
- Hand pruners
- Two empty 5-gallon buckets
- Wheel barrows
- Permanent markers – so everyone can put their names on their own tools.
Otherwise tools get mixed up or lost.

**Plants, including seed**
All nursery-grown plants that will be planted.
- We get 1-gallon size plants for all understory plantings, and 5-gallon size trees. This saves us a lot of money and time by not getting larger plants. We can dig smaller planting holes. And the smaller plants will grow faster and within three to five years surpass the size of larger plants planted.
- We also work with local native plant nurseries such as Desert Survivors to get a discounted price on the plants purchased for the neighborhood planting. And we promote the nursery at the planting. They also don’t charge tax as they are a non-profit.
If Desert Survivors does not have what we need, we then check Spadefoot Nursery. If they don’t have what we need, we then check with Nighthawk Nursery. And sometimes we can’t get everything we want so we always have “alternate plants” on our plant list, just in case.
- The day before planting, we place the plants we’ll plant in each basin, inside the yard of the basins’ adjoining property. That way we don’t have to move the plants far the busy day of planting.
- Each year, the Dunbar/Spring Neighborhood Foresters buys a 1-pound bag each of Wildland Restoration’s Bosque del Bac Habitat Restoration seed mix and Old Town Tucson Wildflower seed mix. We buy direct from Wildland Restoration. This saves us a lot of money since we get a bulk discount. This usually gets us enough seed for all the planting events throughout the year. At the annual Rain & Tree Planting event we plant the wildflower seed in shallow (1-inch deep) trenches around the perimeter of the basin and in its planting terraces, while the Habitat Restoration
seed mix (larger plants) is placed in shallow trenches in the bottom of the basins and the planting terraces.

Other materials
Cooler full of drinking water
Some snacks
Sign-up sheets, pens, and clip board to get the names, contacts, and neighborhoods of all the volunteers that participate

12. Planting day
We start at a site from which it is easy to walk to the next site.

We begin with a quick inspiring introduction:
• what we are trying to achieve,
• why we plant the rain before we plant,
• why we utilize multi-use native plants,
• what has been achieved so far,
• how we hope this will spread to other neighborhoods and how we can help,
• invite everyone to become a Neighborhood Forester, or to at least come to our other workshops and Work & Learn parties
• we thank all for who came out to help.

Then we have everyone introduce themselves with their name, and where they live.

Quick safety talk and logistics (such as where there are bathrooms, water, and snacks)

Quick planting demonstration. Then people plant.
(We’ll have to do the planting demonstration again and again throughout the planting as new people show up).

We will have placed each plant (in its pot) where we want it planted in the basins BEFORE we begin (fig. 10).
Fig. 10. Nursery-grown plants placed exactly where they are to be planted. See figs. 4A and B to make sure plants will still fit within site constraints once they grow to their mature size. Photo credit: Brad Lancaster

We ask that everyone place their excavated soil (when digging planting holes) outside of basin (so we don’t fill it up). Its good to have an empty 5-gallon bucket or two on hand for this.

Holes are only dug as deep and wide as the root ball in the planting pot.

Microbasins are created around each newly planted plant to hold hose water when the plant is irrigated to get it established (figs. 11 and 12).
Fig. 11. Creating a microbasin around newly planted screwbean mesquite to hold supplemental irrigation water in the establishment period. Photo credit: Brad Lancaster

Fig. 12. Micro basins with supplemental irrigation water. Photo credit: Brad Lancaster
We get volunteers to create and plant shallow wildflower seed trenches around the perimeter of the basins—a great job for kids (fig. 13)!

![Kids planting native wildflower and restoration seed mix in shallow trench around stormwater-harvesting basin. Photo credit: Brad Lancaster](image)

**Fig. 13. Kids planting native wildflower and restoration seed mix in shallow trench around stormwater-harvesting basin. Photo credit: Brad Lancaster**

We try to remember to take pictures.

Apply wood chip mulch (provided by contractor) to bottom of basins and planting terraces.

Water the new plantings. Usually we can bring out a hose from adjoining property, but can also fill up a wheelbarrow or buckets with water to bring to plantings.

Adjoining residents of the basins are given verbal instructions for how to care for the basins, we’ll follow up with an email with these instructions along with invite to follow up workshops and Work & Learn stewarding parties. We ask that the basin steward(s) water the new plantings three times per week for the first month. After that one to two deep waterings per week through fall, and into winter if the winter rains don’t arrive (figs. 14A, B).
Fig. 14A. Bucket drip irrigation used to water plants during establishment period. Avoids cost and leaks of a drip irrigation system. Reproduced with permission from “Rainwater Harvesting for Drylands and Beyond, Volume 2, 2nd Edition” by Brad Lancaster, www.HarvestingRainwater.com

Fig. 14B. 1/8-inch (3-mm)-diameter hole in the side of the bucket discharges the water like a drip-irrigation emitter. Note on bucket reduces theft of bucket when watering in the public right-of-way. Reproduced with permission from “Rainwater Harvesting for Drylands and Beyond, Volume 2, 2nd Edition” by Brad Lancaster, www.HarvestingRainwater.com
We collect up all empty planting pots and take them back to the nurseries for reuse.

On to the next basin.

**Build Community**
Introduce yourself to those you don’t know, and ask where they are from, and how they found out about the planting event. Ask them to fill in the sign-up sheet so we can contact them for future events.

Introduce volunteers to each other.

Keep giving people encouragement. Show them how to fix mistakes and explain why it’s a mistake and why the correction is better so they see for themselves.

Keep talking up how fantastic it is the volunteers are helping each other as they improve the neighborhood, which improves the watershed, which improves the City and the world!

Talk to folks about how they could get more involved with Neighborhood Foresters and how the more they commit to do, the more we can support them.

*Fig. 15. Dunbar/Spring Neighborhood Foresters after planting stormwater-harvesting basin. Wood-chip mulch for bottom of basin and planting terraces yet to come (there was none available in town at time of planting). Cut-up prunings used as mulch in the meantime. Photo credit: Brad Lancaster*
13. With plantings done, and all work complete, call in to close out the permit and have final inspection. Sometimes the City sends out an inspector, sometimes they don’t.

14. Invoice for work
We ask that excavation and rockwork contractors send the Neighborhood Foresters their invoices, we then send these on to those that had work done, copying the contractors in the email. This way we can help track true costs to better set estimated prices for the following year. Since curb core work is not as expensive as the basin and rock work, Neighborhood Foresters pays the curb coring contractor for all the neighborhood work in one go, then the Dunbar/Spring Neighborhood Foresters invoices each address for their curb core(s). The Dunbar/Spring Neighborhood Foresters also invoices each address for its plants and the delivery of those plants.

15. Share what you accomplished in the neighborhood newsletter, meeting, listserv, or social media. How many plants planted, how much water will be harvesting annually, how many volunteers helped out, etc. And when and where the next event is. This helps improve folks’ awareness of the good work, and increases their desire to participate.