Chapter 4: Landscape Planning and Design

After determining the approximate size of your water storage tank, the next step is to start the landscape planning process. However, it should be noted that a landscape plan (especially a roof-reliant plan) does not always develop in a linear fashion. Because the components of a landscape plan are so directly related to each other, these components often evolve simultaneously. And as landscape components change during the planning process, other components are also affected and often further adjustments must be made.

With that caveat in mind, a roof-reliant landscaping project should be undertaken only if thorough landscape planning is completed before the installation begins. Not only is a cistern system a significant financial investment, serious safety concerns must be addressed. In addition, permits may be required.[6]

Whether you use pen and paper, computer assisted design, three-dimensional modeling or any other design method, a landscape design provides the size and precise location of both existing and proposed landscape features. At a minimum, a roof-reliant landscape design typically indicates the specific location of structures, utility lines, the four components of your cistern system (collection, conveyance, storage and distribution), plant material, pathways, roads, patios, property lines and easements.

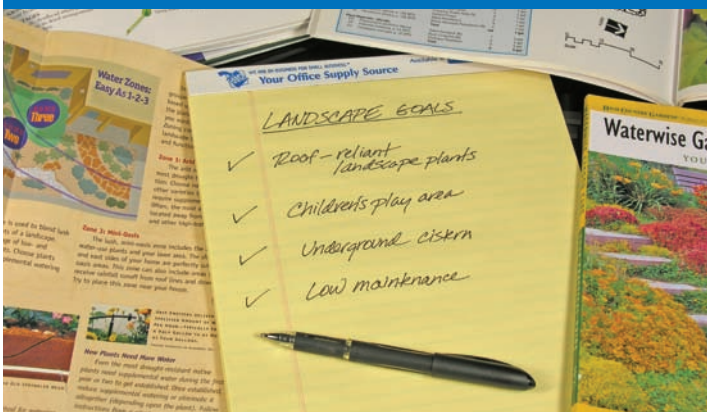
Whether you are providing multiple sets of plans for various people or you just want to make sure you install your own system properly, it is extremely useful to have a clear, visual representation of the landscape design. Installing a complete cistern system typically necessitates a scaled drawing so that the backhoe operator, the cistern installation crew, the irrigation contractor, the landscaper, the electrician and the homeowner can all ensure that their respective jobs are performed correctly. Expensive mistakes can be avoided with an accurate landscape design. In addition, you may be violating state laws and local ordinances if you fail to submit a scaled drawing of your proposed work and do not obtain any necessary permits.

[6] Always check with appropriate regulating entities before starting a roof water harvesting project.

A Five-Phase Landscape Design Process

To help in the landscape design process, a detailed five-step process is presented in this manual. Proceeding slowly and carefully with your landscape design will save time, money, aggravation and, quite possibly, significant quantities of water.

Clarify the Scope of Your Project



PHASE 1: Clarify the Scope of Your Project

The first phase in designing your landscape should be to establish goals and objectives that help clarify the scope of your project. These goals will help set the course for your design and ensure that you create a roof-reliant landscape that is compatible with your lifestyle.

To help you get started, here is an important list of planning and design questions:

- Will your landscape consist of only roof-reliant plants?
- Do you plan on installing your landscape in phases? If so, over how many years?
- What have you determined is the appropriate size of your cistern?
- Do you have a strong preference for an aboveground cistern or a below-ground cistern?

The answers to these questions may help you to answer the basic design considerations that follow.

Preliminary Budget

Unless you are already familiar with the costs of

landscaping and cistern systems, your preliminary cost estimates will probably have less to do with the actual costs of roof-reliant landscaping and cistern systems than it will be based on how much money you think you will have available for your project. This is the most realistic starting point available to you at this stage in the process. Knowing that you can adjust your budget as you receive more information, you can now begin making decisions about your roof-reliant landscape.

Your Commitment to Maintenance
Before designing a landscape, it is important to consider how much time you are willing to spend on landscape and cistern system maintenance. Many people find that the best landscape maintenance plan consists of a combination of do-it-yourself time and some occasional unskilled labor and/or professional assistance.

Outdoor Living Areas
Sometimes an excellent place for an underground cistern is under an outdoor living area—a place where people can relax, read, play games and/or have a meal. Such a location depends on two factors: (1) how often the system will need maintenance and (2) how expensive is it to remove and replace the surface of the outdoor room. For example, it would be a mistake to install a cistern system that needs regular maintenance under an expensive flagstone patio, but installing a cistern under an easily removable shredded-bark surface would be appropriate.

Children's Play Areas
Cisterns can be situated appropriately under temporary play structures, such as a lightweight swing set, a trampoline or a playhouse. However, placing such an item so close to where children play requires extra diligence about ensuring that your cistern's serviceway remains locked and inaccessible (except when being serviced).

Handicap Access
Handicap access (if needed) should be taken into consideration at the outset of the design process. Retrofitting a landscape to offer such access can be an expensive proposition.

Domestic Animals
Domestic animals can have a profound effect on any landscape. When establishing your water distribution lines (especially drip irrigation lines and other components that will be aboveground), take into account the possible effects that domestic animals might have on them.

Storage
The landscape is often a place where certain large items need to be stored, including firewood, compost piles, toolsheds and recreational vehicles. Aboveground cisterns can sometimes hide these eyesores, while an underground cistern can sometimes be buried underneath them.

Use Worksheet 2 (on the next page) to help record and clarify the goals for your new landscape.

Figure 4-1: A successful landscape begins with careful planning and design.

WORKSHEET 2:
SETTING GOALS FOR YOUR LANDSCAPE (Circle all that apply)

1. Preliminary budget (first year)
< $5,000 $5,000 -15,000 $15,000-30,000 > $30,000

2. Maintenance
< 1 hr./month 1-3 hrs./month 3-6 hrs./month > 6 hrs./month

3. Outdoor living areas
< 4 people 4-8 people 8-12 people > 12 people

4. Children's play areas
Yes No Specify_____

5. Handicap access
Yes No Specify_____

6. Domestic animals
Dog (dog run OK?) Cat (indoor OK?) Other _____

7. Storage
Firewood Storage/Toolshed Compost Pile RV Other _____

8. Projected time before the sale of your property
< 3 years 3-5 years 5-10 years > 10 years

9. Other_____
_____

Evaluating the Site

PHASE 2: Evaluating the Site

The second step in the landscape design process is site evaluation. This consists primarily of observation and research.

Observation

Below is a list of environmental factors that are important in landscape site evaluation. Take this list out on your property at different times of day and during different seasons of the year to observe and take notes about these items. Many of these factors combine to create microclimates, the small areas in your landscape that have different growing conditions than those that exist on your property as a whole.

- Moisture. Where does the water fall from your roof? Where does moisture remain after a heavy rain?
- Wind exposure. What direction do winds typically come from? Is there a time of day and/or a time of year when the winds are extremely strong and persistent?
- Temperatures. Where are the hottest and coolest spots on your property? Determining the location of hot and cool temperatures on your land will help when it is time to decide which plants should be placed where.
- Shade and light. How far does your house cast its shadow on the north side of your house during the winter solstice (December 21st)? How does that shadow differ from that of the summer solstice (June 21st)?
- Slope. How will the slope of your property affect where a cistern might be located?
- Vegetative cover. How can you use the existing vegetation on your property for the benefit of your future landscape? What plants might need to be transplanted to another part of the property?
- Wildlife habitat. Which aspects of natural wildlife do you want to encourage and/or discourage in your landscape?
- Use and traffic patterns. Observe and predict the human activity that is likely to occur on your property.
- Views and privacy. What views do you want to protect? Landscaping can be very effective at enhancing beautiful vistas and hiding ugly views, and it can also be critical in creating privacy.

Research

Studying your site also requires gathering public information about your specific region and your particular property. Your research should include information provided by landscape professionals, surveyors and government agencies; it can also include many other sources of information such as family, friends and neighbors, especially those who have lived in your community for many years.

Topics to be included in your research at this point in your design process include:

- Locations of utility lines
- Property lines and easements
- Restrictions on development
- Permits
- Soil types
- Frost dates
- Frost depth
- Flood potential
- Wildfire potential
- Local plant palette

Develop a Conceptual Plan

PHASE 3: Develop a Conceptual Plan

The third phase of landscape design is the development of a conceptual plan. Here, you integrate the scope and goals of your design with your site observations and evaluation. A conceptual plan provides the basic form of your landscape design, which includes the most important requirements of the plan with few details.

Every conceptual plan shows three types of features: fixed, variable and natural. Fixed features include property lines, easements, utility lines and exterior walls of permanent structures. Fixed features also include existing hardscaped areas, parking areas, driveways and pathways.

Variable features are those that could work in more than one place in your landscape. These can include cisterns, entertainment areas, play areas and planting beds.

Your conceptual plan should also reflect the information about the natural features of your landscape that you gathered from your observations and research in the site evaluation phase of the landscape design process. You should indicate where moisture collects, where prevailing winds come through, where temperatures differ, where you'll have summer shade and winter sun, where wildlife corridors and habitat exist, and so forth.

It is important to place your cistern system somewhere on your conceptual plan, knowing that at any time during the design process you can always change its location, its relationship to grade and its size.

Figure 4-2 (a finished conceptual plan) and Figure 4-3 (a filled out Worksheet 2) show how the conceptual plan and the worksheet can work together.

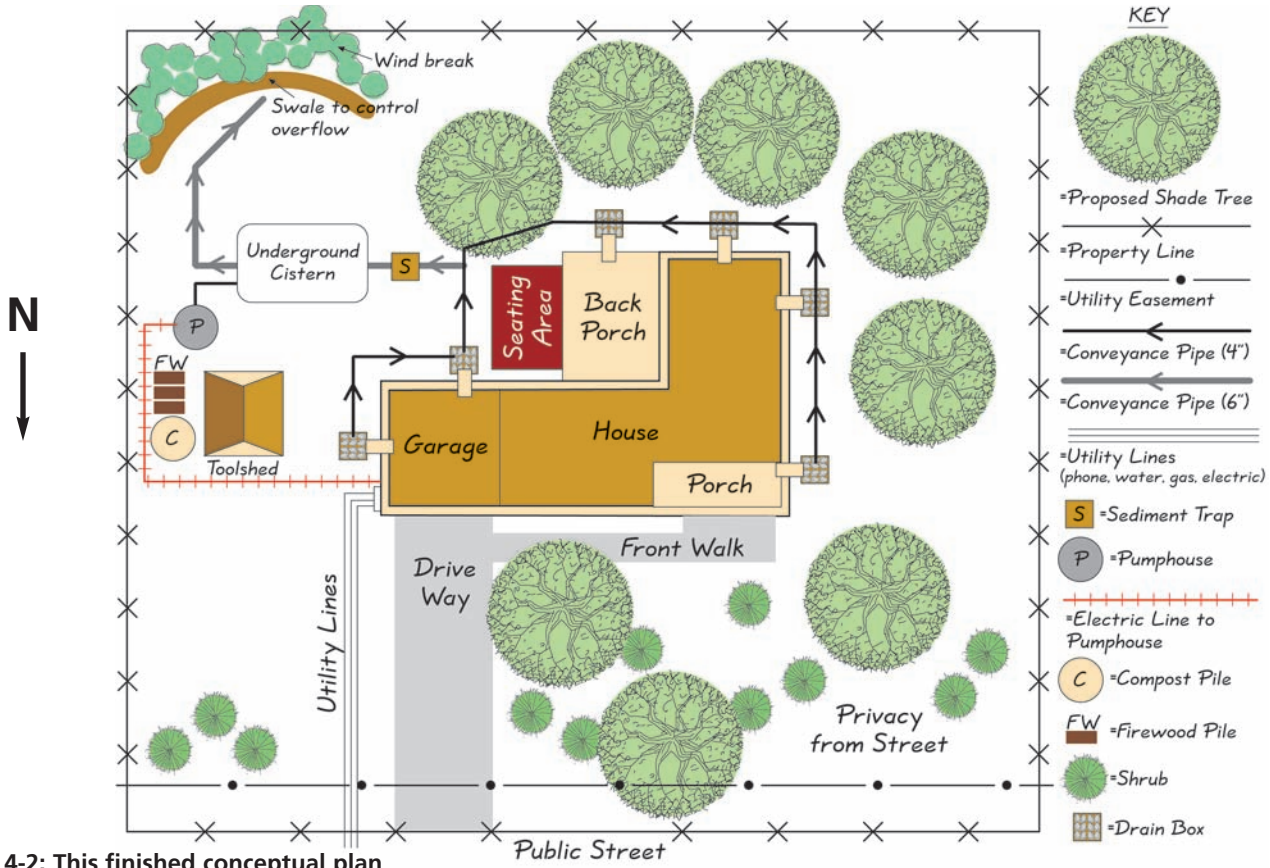


Figure 4-2: This finished conceptual plan shows the buried components for the entire site.

WORKSHEET 2:
SETTING GOALS FOR YOUR LANDSCAPE (Circle all that apply)

1. Preliminary budget

<$5,000 $5,000 - $15,000 $15,000 - $30,000 >$30,000

2. Maintenance

<1 hr./month 1-3 hrs./month 3-6 hrs./month >6 hrs./month

3. Outdoor living areas

<4 people 4-8 people 8-12 people >12 people

4. Children's play areas

Yes No Specify _____

5. Handicap access

Yes No Specify _____

6. Domestic animals

Dog (dog run OK?) Cat (indoor OK?) Other Not Applicable

7. Storage

Firewood Storage/Toolshed Compost Pile RV Other _____

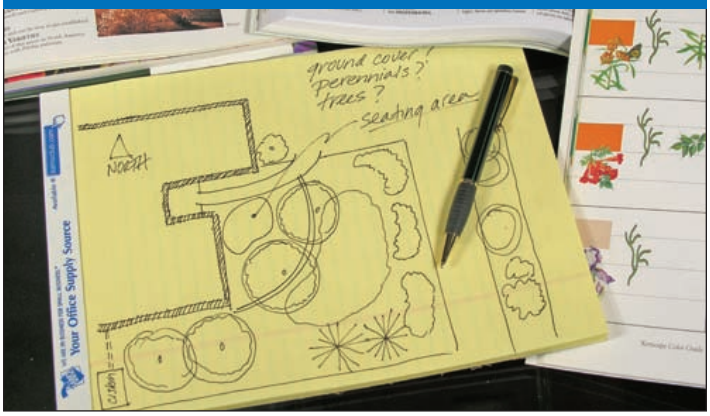
8. Projected time before the sale of your property

<3 years 3-5 years 5-10 years >10 years

9. Other Windbreak needed on Southeast side of property

Figure 4-3: A filled-out worksheet shows the goals for the landscape.

Generate Various Options



PHASE 4: Generate Various Options

Now it is time to determine options for the landscape features you will have on your property and where they will be placed in relationship to each other. Based on your conceptual design, start to determine the places where the various features of your landscape might best be located.

In order to provide you with some basic knowledge about important landscape features that are of particular interest to the roof-reliant landscaper, we have developed a list of common roof-reliant landscape features. It is not necessary to include all of these features in your landscape design.

The common roof-reliant landscape features are:

- Cistern system
- Erosion and drainage control
- Plant material
- Hardscape
- Fences and walls
- Recreation areas
- Lighting

Choose a Design

PHASE 5: Choose a Design

Choosing a design for your final roof-reliant system is a very personal decision. It involves your particular sense of aesthetics, your level of desire for being outdoors, your finances, your level of commitment to roof reliance and many other factors.

For many homeowners, the selection process begins with a narrowing down of choices. If financial factors are of primary importance, some of the more expensive options may be rejected at this point. If aesthetics are your number one concern, then perhaps aboveground tanks can be ruled out.

At this stage in the process, define and locate the set of rooftop water harvesting options that you will work with as you proceed with your project. This design is not necessarily the only or best final option; it is simply a draft to work with during the rest of the planning process.

Locate and define walkways, patios, walls and other hard surfaces that may contribute to the water available to plants. Place the largest plants—the shade trees, vines and shrubs needed for privacy and/or wind screening. Then overlay the accent plants, groundcovers and other smaller plants you are considering for seasonal color and texture so that you begin to have a sense of how much total surface area will be planted.

At this point, you do not need to decide what each specific plant will be, but do think about which areas will be the most xeric and which will act as "oases." You may want to note favorite plants so that they get first consideration when you begin matching the planting plan to the water budget.