

7 Steps to Building the Dream Water Garden

The perfect water garden can be achieved as long as you follow the right steps. Here are 7 tips to help build that dream water garden.



Step 1 in Building the Dream Water Garden – Finding the Perfect Location

It's time to start thinking about location for that dream water garden. The following tips will help you plan where to build it:

1. Learn how the sunlight travels across the yard and what direction water run-off drains to. The water garden should be located where interaction can be made by a patio or deck and with a pleasant view from a window inside.
2. About 5 to 6 hours of sunlight per day is important for fish and plant life. When excessive amounts of sunlight are present, floating plants and lilies can help reduce exposure which could prevent algae blooms.
3. Prevent site run-off from entering the pond. Chemicals and other debris from the yard can affect the natural balance of the pond. Also consider where the overflow from the pond will go after a heavy rain.
4. Trees are a great shade tool in any landscape and their leaves and twigs can find their way into the pond. Design and install the proper filtration components, such as a skimmer, to ensure a pleasant ponding experience with minimal maintenance.
5. Don't forget to check local regulations. There may be design restrictions in your area or a building permit may be required. Always remember to dial 811 before you dig. Know what's below.



Step 2 in Building the Dream Water Garden – Excavating the Pond

Once you've chosen the perfect location for the new water garden, it's time to start the excavation process. The steps below will help you set the foundation for a professional-looking pond:

1. Use a garden hose, string, chalk powder and/or spray paint to lay out the shape of the pond for digging. Adjust as necessary to avoid roots, utilities, and other obstacles during installation. Don't forget to call 811 before you dig!
2. Excavate the soil to about 8 inches deep: Hint: that is the standard depth of a shovel head. Decide where the level shelf or shelves will be. Make them shapely large so you can enter and exit the pond safely...and don't forget a location to place plants. Paint the next level and dig it out 8 inches. Repeat this process until you reach the desired depth.
3. As you excavate the pond, it is important to cut a shallow edge at about 1-4 inches deep and 12-15 inches wide beyond the pond rim for coping. This will allow you to place rocks around the edge, keeping the liner out of sight.
4. A standard water garden depth is 24 inches (2 feet), but check your local codes for requirements. Use a string level to ensure that you will have a uniform water level with respect to your skimmer opening and the pond edge. If you are constructing a waterfall or stream, be sure to move the excavated dirt to its location and begin forming the shape.



Step 3 in Building the Dream Water Garden – Installing the Pond Liner

Now that you've excavated the pond like a pro, the next step is installing the pond liner. When building a pond, liner sizing is crucial and, if done correctly, it will help you set the stage for the addition of water and overall pond decorations:

1. When building a pond, liner sizing is crucial. To calculate the required liner size for the pond, use the following formula:

$\text{Length of Pond} + (\text{Depth} \times 2) + 2 \text{ Feet} = \text{Length of Liner}$

$\text{Width of Pond} + (\text{Depth} \times 2) + 2 \text{ Feet} = \text{Width of Liner}$

Calculate your stream liner using the length and width of your stream. Add 10% to the liner square footage to determine your underlayment needs.

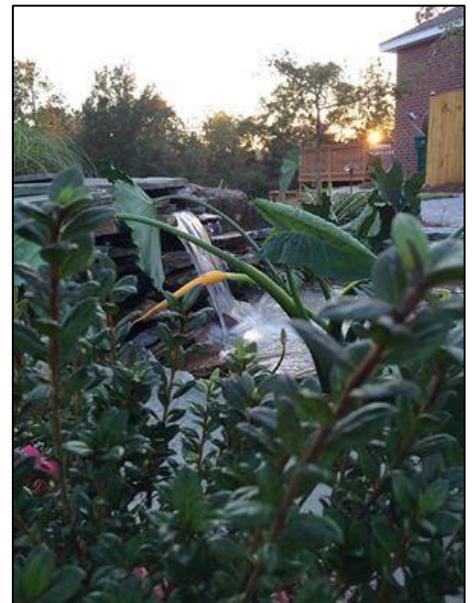
2. Make sure the interior walls and bottom of the pond are smooth and free of rocks or debris. If roots are visible, trim them back below the earth's surface.
3. Underlayment will help aid in the smooth installation of your liner. Place the underlayment in first.
4. Utilize multiple people to assist in placing the liner into the pond. EPDM liner weighs a third of a pound per square foot. A 15x15 piece weighs 68 pounds. With people on each side, lightly feather the liner to get air under it. Then "float" the liner in place.



Step 4 in Building the Dream Water Garden – Selecting the Correct Pump

Selecting the correct type of pump for the water garden is imperative to maintaining a healthy pond. Listed below are a few important tips for selecting the right pump for your needs:

1. The pump is the heart of any water garden. Little Giant recommends that the water garden have two pumps if you are planning a water feature (fountain, waterfall, pond ornament, etc.): one for filtration and one for the feature. Larger pumps can support filtration and a water feature at the same time.
2. For ponds larger than 1,000 gallons, the water should be filtered at least once an hour. This means that if you have a 2,000-gallon pond, you should have at least a 2,000-gallon-per-hour (GPH) pump. Water gardens less than 1,000 gallons need to be filtered 2-3 times an hour. The smaller the pond the more frequent the flow. To calculate your gallons, use this equation: $L \times W \times \text{avg } D \times 7.48 = \text{gallons}$.
3. The height at which the water is discharged above the pond affects the amount of water a pump will move. Normally, the higher the water is pumped above the water surface, the lower the amount of water it can pump. Therefore, if the top of your stream is 5 vertical feet higher than your pond, you should select a pump satisfying your flow needs at 5 feet. E.g. 2,000 gph at 5 feet.
4. When selecting the ideal pump, it is better to oversize slightly than undersize it. For example, a pump rated at 700 gph can be reduced to 625 gph, but a pump rated at 500 gph cannot produce the extra flow needed.



Step 5 in Building the Dream Water Garden – Filtration Type

Along with a pump, the filter is one of the most important components in maintaining a healthy, clear pond.

1. **Mechanical Filter** – Called a mechanical filter because it physically traps the pieces of debris and algae in the water. Most are designed to filter water before it enters the pump. This helps keep fountain heads, as well as the pump, clear of clogging debris. This type of filter should be ran continuously while the pump is in operation.
2. **Biological Filter** (preferred for ponds containing fish) – Called a biological filter because it provides an environment for “good” bacteria to colonize. These good bacteria work to break down harmful ammonia into nitrites, then nitrates, a great fertilizer for pond plants. This type of filter needs to operate on a continuous basis (24 hours a day), otherwise the colonized bacteria will decrease.
3. **Combination Filters** – Some filters utilize both forms of filtration by having mechanical filter media precede the biological section of the filter. Therefore, combining the best of both worlds, you minimize negative debris clogging while maximizing plant and fish life.



Step 6 in Building the Dream Water Garden – Water Treatment

It is imperative to the health of fish and plants to keep your pond's water clean and clear.

1. **Dechlorinate The Water** – Once you have filled the pond, remove harmful chlorines and chloramines that are inherent to tap water. Little Giant's liquid dechlorinator will remove these harmful properties. Use the dechlorinator any time you add water to the pond. Follow the application instructions on the bottle.
2. **Test The Water** – Little Giant's test strips will give you a reading on the pH level, nitrite level, and buffering capacity of your pond. The buffering capacity is the alkalinity level, which helps prevent large pH swings.
3. **Buffer The Pond** – Add Little Giant's buffer to maintain a buffering capacity of 80-240 ppm (parts per million). A properly buffered pond will resist changes in pH due to acid rain and other external factors.
4. **Adjust pH Level** – If the level is not above 6.5, apply Little Giant's pH Increase by following bottle application rates. You should not change the pH level more than .2 points per day. A drastic change can cause stress and possibly harm your fish. A pH reading of 7.0 is optimal.
5. **Add Water Clarity Products** – Flocculants will help clear and maintain the ugliest of dirty water problems. Be sure to clean your mechanical filter system multiple times after using a flocculant.





Step 7 in Building the Dream Water Garden – Winterizing the Pond

It's that time of year again! Winterizing the pond is an essential way to keep the pump in good, working condition.

1. As the water temperature drops below 50°F, Koi begin to slow down and do not require feeding. However, if you have fish that are still active and hungry, they should be fed a fish food designed for cold water feeding. Biological activity decreases below 50°F and will not break down the excess protein that is contained in most summer fish foods. In cold weather, we recommend purchasing [Cold Weather Fish Food](#) from your local Little Giant dealer.
2. To ensure that the pond is healthy, remove all organic debris, such as leaves and excess plant material. Leaves break down, causing an excess of nutrients in the ecosystem when spring begins. This causes “pea soup” or green water (planktonic algae) to occur for a few weeks in the spring. Protect the pond from debris with [Little Giant's Pond Netting](#).
3. If the pond is in a climate where the surface will freeze completely, it is important to provide a hole in the ice for gas exchange. Fish still need oxygen during the winter months, so keeping an opening and adding air allows for proper gas exchange. If gas exchange cannot occur, the fish could suffocate. De-ice the pond with [Little Giant's Pond De-Icer](#) and add oxygen with our submersible air pumps.
4. To minimize green water in the spring and ease the cleanup process, add winter bacteria. As the water temperature cools below 50°F, the summer bacteria begin to hibernate. You can continue the biological activity with cold water bacteria and enzymes. Make spring start up easier by adding [Autumn and Winter Prep](#) all season long.
5. Your pump can run continuously over the winter season. A flow of 1,500 to 2,000 gallons per hour or higher is ideal. Be sure to adjust the stream and waterfall to prevent ice dams from diverting the water during the winter. Letting the water continue to flow is a great way to add oxygen to the system for bacteria and fish. Check out our selection of [Little Giant F Series Pumps](#) for increased energy efficiency.
6. If you decide to remove the pump for the winter, take steps to ensure it will operate come spring time. For direct drive pumps with shaft seals, we suggest cleaning the volute and impeller if accessible and placing it in a bucket of clean water in a frost-free area. This protects the pump's seals from drying and cracking. For wet rotor pumps, disassemble, clean, and dry the entire product and place on a dry, clean shelf inside for winter. For specific instructions on winterizing the pump, check our website by entering the model number in the search box and selecting the instruction sheet on the product page.