



Water garden & stream

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by **Spike Carlsen**

Whether it's a stream in the middle of the woods or a fountain in the heart of downtown, few things rival the sight and sound of moving water. It's relaxing, mesmerizing, contemplative. Well, you don't have to pack up the family and drive for hours for that experience. You can create your own water garden, complete with babbling brook, in your own back yard.

We'll show you how to create a water garden—without spending a fortune or your entire summer doing it. Preformed shells, rubber liners and off-the-shelf pumps and filters put the project's costs and skill requirements within easy reach of any do-it-yourselfer. You'll put in your share of sweat equity busting sod and hauling stone. But when you're done, you'll have a landscape feature to enjoy for years. Here's the story.

Preformed shells and ready-to-go pumps make pond building simple. Moving 5 tons of stone—well, that's another matter!





WATER GARDENS— no two are the same

Since every yard and homeowner is different, every water garden is unique. Yours can be large or small, simple or complex.

There are two basic ways to create a water garden. The first is to use a flexible rubber-like liner made of EPDM, the same material used for flat commercial roofs. Using this method, you dig the shape and size pond you want, then line the hole with a sheet of this heavy-duty material. Homeowners who want to “dive into” water gardening in a big way choose this flexible liner; they can create large, deep ponds that can hold many, and many varieties of, fish and plants. For information on building this type of pond, see “Do-it-Yourself Water Garden,” June '00, p. 118. To order a copy, see p. 116.

We elected to go the other route by using preformed rigid shells or liners. (Actually, we joined two shells with a small stream made from the flexible liner mentioned above.) The shells we used are constructed of heavy-duty polyethylene, but you can also get ones made from fiberglass and other materials. Most shells have built-in ledges for plants and don't require as much planning and ground preparation as the flexible liners. Shells do limit your design to the shapes available, but linking several together increases your options. For a water garden of small to moderate size, shells offer a lot of convenience.

Preformed shells come in a wide variety of shapes and sizes. Our garden center stocked a dozen shells ranging in size from a 4-gallon mini pond to the 210-gallon butterfly-shaped shell we used. It could special-order dozens of other shells as well. You can buy shells



with or without spillways, the molded lips that allow water to flow from one pond to another. You can even buy preformed streams and waterfalls for connecting a series of ponds. You can install a single pond, cascade a series of ponds down a hillside, plunk one in the middle of a patio or use one as a focus for a small retreat in a corner of your back yard.

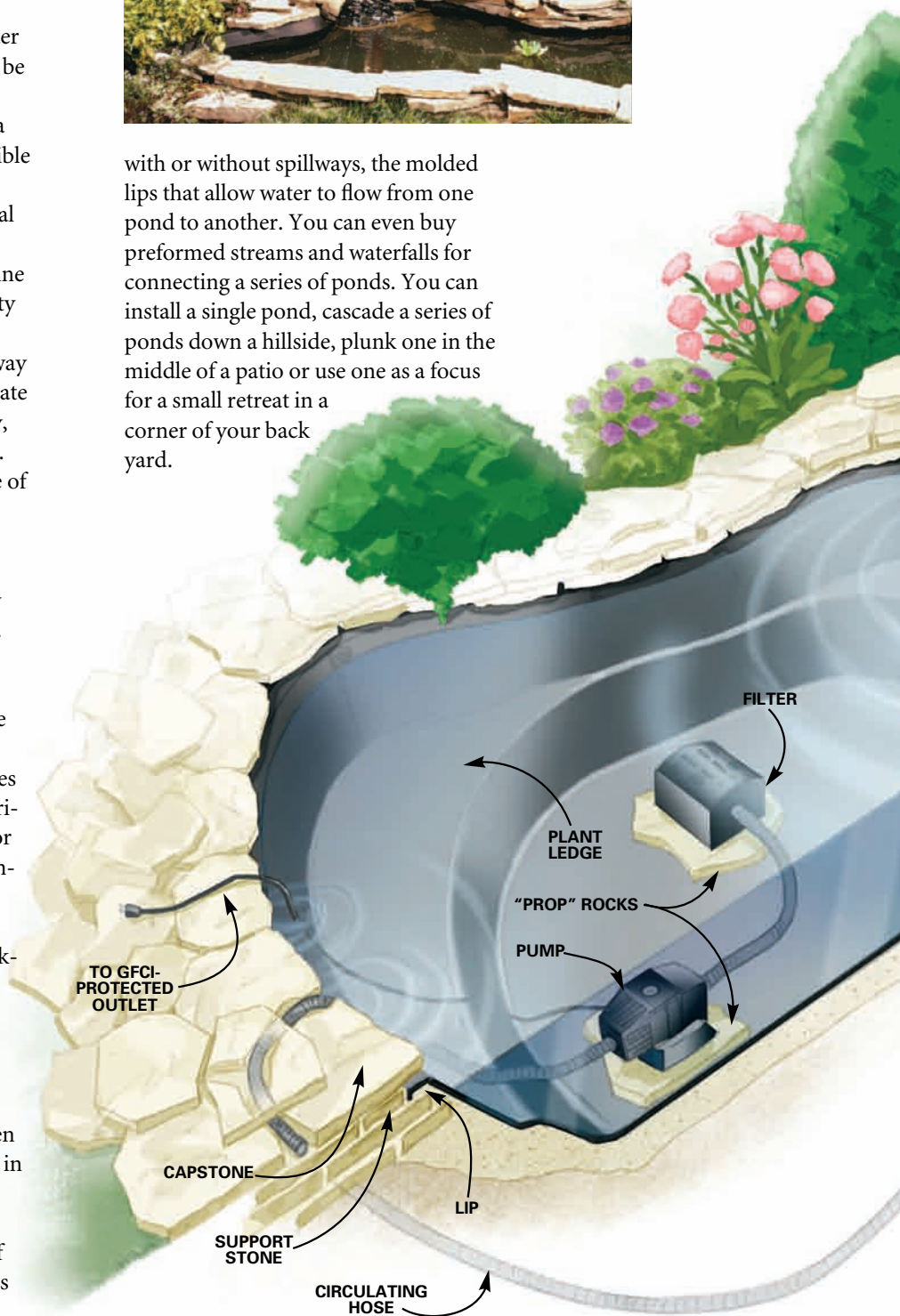




FIG. A
CONSTRUCTION
DETAILS OF
PONDS AND
STREAM

WATER IS DRAWN
through the filter by the
pump, then pushed
through the circulating
hose to the upper pond.

LOCATION, location, location

We elected to nestle our water garden into an existing flower bed about 20 ft. from the house. But remember, a water garden is a living thing—it makes noise, attracts wildlife and requires upkeep. Locate it where you can best appreciate it. And remember that you have neighbors, too.

Our experts gave us a few tips on positioning water gardens:

1. Select a location that receives four hours or more of direct sun a day if you plan on including aquatic plants.
2. Make certain the area has good drainage. Locate the pond away from the bottom of steep slopes so debris, fertilizers and pesticides don't run into your pond. If you're connecting two ponds with a stream like we did, make sure you have an adequate slope. Position your pond so runoff flows downhill and away from any houses.
3. A lot of literature warns against positioning your pond under or near trees. But hey, this is the real world! If you wind up situating the pond in a

treed area, expect to spend more time plucking out leaves, needles and branches before they decompose. And watch out for roots as you dig.

4. Think safety. Building codes in most areas are nebulous about water gardens. Most communities don't require barriers or fences, but ask before you dig in. Otherwise, let common sense rule. If there are free-range toddlers in the neighborhood, consider building a barrier around your yard or pond.
5. Call your utility companies and have them mark out the path of all underground wires, cable and pipe. Their locations may very well require you to change your game plan. Digging into an underground wire or pipe can be expensive and dangerous—even deadly.

Remember, moving water isn't just for looks; it keeps the water filtered and aerated and helps prevent stagnation. If you install just a single pond, plan on including a pump, filter and fountain to keep the water circulating and fresh.

INSTALL the pond shells

1 POSITION AND ADJUST

the preformed liners or shells until you find a design that fits the site and your tastes. Keep the shells away from steep downhill slopes where debris and lawn chemicals could run into them.



2 DIG a hole 6 in. wider and 2 in. deeper than the liner. Mimic the shape and depth of the shell, including the ledges. Test-fit the shell frequently to ensure a solid fit.



3 SPREAD a layer of coarse sand to protect the bottom of the liner and the ledges from sharp rocks. Sand also makes the leveling process easier.



4 LEVEL the liner in every direction. Make certain the bottom and ledges are resting solidly on sand. Use a level on a long, straight 2x4 to level lengthwise.

Before making any purchases, get copies of the literature showing the size and shape of the shells your supplier has available. Select a few models, then use a garden hose to create a rough footprint of where they'd go and how they'd connect. We settled on the 210-gallon "Butterfly" pond (about \$300) from Atlantic Water Gardens for the lower pond and the 165-gallon "St. Lawrence" pond with spillway (about \$190) from MacCourt. See Buyer's Guide, p. 45, for more information.

Once you've obtained your shells, position them (**Photo 1**), then use a shovel to trench an outline 6 in. larger than the ponds. Remove the shells and dig (**Photo 2**) the hole for the lower pond. You need to create a hole that will support the bottom of the shell as well as the ledges. Lower the shell into the hole frequently to check the depth, shape and position of shell and ledges. Dig the hole about 2 in. deeper than the intended final elevation because the sand base you'll spread next will raise it back up (**Fig. A**). Make certain the lip of the shell will be at least 2 in. above the surrounding soil or else dirt and muddy rain-water may flow in.

Next spread and level a 2-in. layer of coarse sand over the bottom of the hole (**Photo 3**). Set the shell in place and check everything out. Does the sand fully support the bottom? Is the shell level (**Photo 4**) in every direction? Is the lip at least 2 in. above the surrounding soil? Are the edges of any ledges supported? If the answer to all these questions is "yes," you can start backfilling the pond.



5 BACKFILL around the liner with a 50/50 mix of sand and soil at the same rate water is filling it. Compact the soil and sand as you place it. Fully support the ledges when the backfill reaches that level.

Tip

Use the level of the water in the shell as a guide for fine-tuning the height of the ledges; the ledges are flexible enough to lift or lower an inch or so to maintain a level perimeter.



6 TUCK the hose connecting the upper and lower ponds under the lip of the shell. Continue to extend and protect the hose from kinks and pinches as you do the stonework around both ponds.

Fill the pond with 2 to 3 in. of water, then check the shell for level again. This is critical; the water in your pond will be level, so if the shell is tilted, the water line will show it! Pack a mixture of half sand and half soil around the base of the pond as you fill it with more water (**Photo 5**). Be sure to pack sand under the ledges before the water

reaches them; they're flimsy and need support.

Once we had the lower pond back-filled within about 8 in. of the top, we tucked the corrugated hose under the lip of the shell (**Photo 6**). This hose is used to recirculate water from the pump in the lower pond to the "mouth" at the far end of the upper pond.



7 POSITION the upper liner, again first digging an oversize hole, then placing it on a layer of sand to protect it. Make sure to provide a sufficient change in elevation so there's a strong, positive flow from upper to lower pond.

Dig the hole for the upper shell, then level it and line it with sand as you did the lower shell. Make sure you have an adequate height difference (**Photo 7**) for your falls and stream. If you're building on a slope, you may be able to bury the entire upper shell. Our site was flatter, so we used stone, sand and soil to partially build up around the shell.

BUILD UP the edges with stone

8 INSTALL the flagstone. Set the first support layer of stone level with the lip of the liner. Overhang the second “cap” layer of stone to cover and disguise the lip of the liner.



9 CONTINUE to add stone to support the ledges of the upper pond. Create the walls and base of the canal leading to the lower pond at the same time. The planter area creates a stable surround as well as a more natural-looking transition between upper and lower ponds.



10 SPREAD a layer of sand in the stone canal, sloping it toward the lower pond. Continue packing and leveling the sand to create a solid “stream bed.”

You can disguise the lip of your liner with overhanging plants, stone or a combination of both. We primarily used stacked flagstone.

Spread a 1- to 2-in. layer of sand around the lower pond, then set a layer of flagstone so the upper surface is level with the lip of the shell (**Photo 8**). This allows you to cantilever the second layer of “capstones” over the lip of the pond without them weighing directly on the lip.

There’s no exact science to the stonework part of this project. Use the ugliest, most irregular stones for

the first support layer, since you won’t see them anyway. Select and install capstones that conform to the shape of the pond edge. We built and rebuilt the stone layers around the bottom pond several times before we found a pattern we liked.

Once you have the lower pond surrounded with stone, build your way up and around the upper pond. Start with a wide stone base around the upper pond. This will allow you to lay a slightly sloped, stable wall as you build up to the lip. Solidly support the ledges of the pond with

rock and soil when you reach them. We created a small rock planter (**Photo 9**) that stepped up to the upper pond and helped make a more natural-looking transition.

While you’re doing the stonework around the upper pond, snake the free end of the corrugated hose (**Photo 6**) to the far end of the upper pond. Bury it and cover it within the rocks, but don’t pinch it. Extend the free end of the hose so it discharges into the far end of the upper pond, then secure and disguise the hose with cap rocks.

BUILD a lazy river

We created a small stream from the spillway of the upper pond to the lower pond. We began by building a small canal out of stone (Photo 10), then sloped a layer of sand across the bottom. We then laid the rubber liner into the canal (Photo 11), draped the excess liner up and over the walls of the canal, then added another layer of stone to disguise it. Make sure the canal is deep enough to prevent water from escaping.

Support the liner and curve it up and behind the spillway to contain the water. Make certain the other end drapes well into the lower pond. Use water from a garden hose to test the slope and flow of your little river as you build it. Again, don't expect to get everything right the first time. Building with irregular stone isn't the same as building with flat, square wood. Use small stone chips to shim and stabilize larger stones as you work.

Once you're satisfied with the design and watertightness of your stream, use pond foam (a black, weather-resistant expanding foam available through your pond dealer) to secure thin stone to the top and face of the spillway to disguise it (Photo 12). We added smooth stones to the bottom of the stream to hide the liner and create a more natural-looking flow.

Continue adding stone up and around the upper pond and upper pond lip.



11 **LAY** the rubber liner in place, draping it over the sides of the canal wall and into the lower pond. Tuck the liner up and behind the upper spillway. Use water from a garden hose to test flow and watertightness as you work.



12 **USING** special pond foam, attach thin layers of stone to conceal the plastic spillway. Complete the stonework around the upper pond.

ALL THE RIGHT STUFF

If you want a long-lasting water garden, keep these buying tips in mind:

- Some pond shells are flimsy and more likely to flex under the pressure of heavy backfill or freezing, expanding soil. Do some comparison shopping before you buy. Both manufacturers listed in our Buyer's Guide (p. 45) offer sturdy shells.
- Buy the thickest EPDM rubber liner you can find. It commonly comes in 40-mil and heavier-duty 60-mil thicknesses.
- Invest in heavy-duty hose for circulating the water. Once it's buried, it's hard to make repairs. The corrugated version we found was quite crush resistant.
- Pump size is based on the desired flow rate, plus the height and distance it needs to push the water. Read the manufacturer's guidelines; when in doubt, opt for the larger pump.
- Order excess flagstone. You'll be better off finding shapes that fit than doing a lot of cutting. You can use any leftover material to build a path or a garden border.

13 **CONNECT** the filter, pump and hose. Place the lower pond pump and the upper pond inlet hose as far from each other as possible. This will help ensure a more thorough water filtration and minimize stagnation. Keep a careful eye on the water level for several days to make sure there are no leaks or clogs.

OOPS!

While we were photographing the cover, someone stood on a sharp rock in the spillway, creating a pinhole tear in the liner. We didn't discover this slow leak until several days later. The pump in the lower pond kept circulating the water, but hour by hour, water leaked through this small cut, and less water was making its way back to the lower pond. Eventually it nearly went dry. If we hadn't caught it, we would have burned out the pump and most likely killed the flowers and fish. Water loss from even dinky leaks or splashes adds up fast.

TFH^{plus}

Find out more about aquatic plants and fish for your pond at www.familyhandyman.com.

Buyer's Guide

Water garden supplies can be found at many large garden centers. Three manufacturers: **ATLANTIC WATER GARDENS:** (609) 927-8972. www.atlanticwatergardens.com. Lawn ponds, filters, skimmers and accessories.

BECKETT CORP.: (888) 232-5388. www.beckett pumps.com.

MacCOURT: (800) 552-5473.

www.maccourt.com. Preformed lawn ponds.



PUMPS, fountains and wildlife

If your ponds are full of sand, rock bits and other construction debris, siphon, pump or use a big wet-dry vacuum to remove the water and refill the ponds with fresh water.

Connect the filter and pump to your water circulating line so the water is drawn through the filter before it reaches the pump (**Photo 13**). We added a T-fitting to our pump so we could circulate water to the upper pond and to a small statue beside the lower pond.

Set the filter on a few small rocks so it doesn't rest directly on the bottom where it's more likely to become clogged with debris. Plug in your pump, then keep an eye on water levels and flow to make sure everything is functioning properly

and there are no leaks. (See "Ask Handyman," Nov. '01, p. 8, for information on installing outdoor receptacles. To order a copy, see p. 116.) Pay attention to the pump and filter literature for maintenance information. Keep the upper end of the hose out of the upper pond to prevent a possible siphoning effect.

Maintaining clean water and establishing aquatic plants and fish are complex topics we won't even pretend to address here. Suffice it to say, understanding the dynamics of your pond and doing proper maintenance will make the difference between a pond you'll want to linger around for hours and one you'll want to fill in with dirt and plant with petunias in a few years. See "For More Information," below. 

For More Information

- "Pools, Ponds and Waterways," Dawn Grinstain, Grove Press, 1992. www.suttonbooks.com
- "The Complete Pond Builder," Helen Nash, Sterling, 1996. barnesandnoble.com

Art Direction • HOPE FAY
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