

How to Build a Pondless Waterfall
Koi Pond- Dispelling Myths About Concrete
Pondless Waterfalls- Concrete vs Pond Liner
Koi Pond & Waterfall- Top 21 Most Asked Questions Answered
Pondless Waterfall - No Filter Needed
Koi Pond or Pondless Waterfall- Where Do I Begin?
Koi Pond- Fish or No Fish?
Pond Design- Digitally Design Masterpieces- Virtual Water Features Part I
Koi Pond- Filter vs. Fish
Koi Pond- Is pH Important?
Pond Liners- 7 Reasons Why I Don't Use Them
Koi Pond- Biological Filters
Pondless (Convertible) Waterfalls - Both Ways
Seven Most Asked Questions About UV Pond Filters
Construct A Pond & Waterfall That Will Last For Decades
Pondless Waterfalls - Groundless Claims
Koi Pond- Liners vs Professional Construction
Pond Design- Digitally Design Masterpieces- Virtual Water Features Part II
Ultraviolet Light vs. Algae - Water Garden Facts
Koi Pond- Oxygen Levels
Ponds & Waterfalls- Layout & Excavation
Koi Pond- Water Chemistry
Koi Pond and Waterfall Builders- What You Need to Know
Koi Pond- Digital Masterpieces- Virtual Water Features Part I
Pond Liners- The Hole Story
Want a Koi Pond? Get a Clue

Articles by Douglas C. Hoover

Pondless Waterfalls- Why Pondless?
Pond Liner Defects - Count The Cost
Ponds & Waterfalls- Water Living
Water Feature Forums-Oh My!
Koi Pond- Which Pump to Use
Predator - Proof Your Pond
Ponds and Waterfalls - A Growing Asset
Skimming Off the Top - Profits From Inferior Skimmers
Water Gardens Exposed
How Not To Build A Liner Pond
Liner Disciples: Not Eating Their Own Dog Food
Here is How To Design The Perfect Water Garden
Digitally Designed Water Gardens: Big Bucks! Impressive
Koi Pond- Finding a Contractor - 18 Important Things to Know
Water Garden Deceptions
Want To Build A Waterfall & Pond? Confused?
How To Design A Water Garden
Does my Water Garden Need a UV? A Simple Test
How to Find The Right Pond Builder
Design Water Gardens - \$350 Per Hour

How To Build A Pondless Waterfall

Definition: A pondless waterfall is a waterfall that cascades into a subterranean catch basin or cistern rather than a pond. The collected water is then returned to the top of the waterfall by means of a pump system.

Why Pondless?

I built the first pondless waterfall in 1984. Building codes state that ponds can only be 18” deep or you are required to conform to all of the same building codes and requirements of a swimming pool (6 foot fence perimeter, special gates, door alarms, etc.).

Since this waterfall was located in the front yard, it could not be more than 18” and if it was, there was not enough space for a large enough pond to prevent it from being sucked dry by the time the water returned back to the pond by way of the waterfall.

My term for this type of water feature was “child-proof” rather than “pondless.”

Russell Landscape on his website, boasts to having built the very first pondless waterfall a few years ago. He utilizes pond liners in his construction, in conjunction with a sump pump. Liners cannot be guaranteed against gnawing rodents, tree roots or sharp objects, and sump pumps are the least energy-efficient pumps available. I go into great detail on the critical flaws of pond liner construction in my article, Pondless Waterfalls: Concrete vs. Liners www.ezinearticles.com Expert author: Douglas Hoover). In this article I actually prove that pondless waterfalls are cheaper to build using concrete and steel rather than using a pondless waterfall liner kit. Not to mention that it is cheaper to operate and maintain.

If you want the waterfall to look natural, be sure to remove plenty of dirt, recessing the waterfall into the ground. Many make the mistake of constructing it above the natural grade level of the original grade. Rocks do not look natural sticking above the surface of the ground. This is especially if the waterfall rocks are the only ones visible on the bank, hill or grade where the waterfall is located. The rocks of the waterfall should give the appearance that over the years water has washed down the hill or bank, eroding away the original surface soil and exposing the rocks hidden beneath. Photos and illustrations can be seen at the “Waterfall Gallery” www.watergartenauthority.com)

Rebar

The next step is to apply the 3/8” rebar 8 to 10 inches on center, criss-crossing each other, and fastening them together in a grid using a tie wire to fasten them together. Small 2” x 2” blocks called dobies are then placed under the grid to hold above the dirt. When concrete is applied, it must completely surround all the rebar. No rebar can be touching the soil or it will rust. And rust, like cancer, will spread and follow the rebar into the concrete structure. As the rebar rusts it swells, much like wood when it gets moisture in it. The swollen rebar hydrologically causes the concrete to crack.

Plumbing

Use flexible PVC pipe, not rigid pipe, because it is easy to manipulate around the corners and over uneven ground. But most of all, by using flex you will eliminate the need for fittings such as elbows and couplings under ground, thus eliminating possible future sources of leaks.

You can install the flex under the rebar or alongside it, down the waterfall’s course. One of the major flaws with liner constructed pondless waterfalls is that they use sump pumps which suck energy (60% more than centrifugal pumps). They then fill the cistern containing the pump with gravel, reducing the available water space. Consequently, when the waterfall is started up, most of the catch basin or cistern is drained of water before the previously pumped water can return to the basin. This makes it necessary to regularly add water to the basin or the pump will run dry and burn up.

Concrete Construction

In concrete construction, anti-vortex suction drains (just like what is used in swimming pools) can be installed in the bottom of the basin. Galvanized grating can then be spanned across the basin and rock placed on top of the grating to hide it.

Now the basin is empty and free of gravel to allow plenty of room for water storage. An out-of-pond, high-efficiency centrifugal pump can be used to circulate the water. Unlike sump pumps that are used in liner construction, a centrifugal pump uses 60% less energy, is easy to maintain, carries three times the warranty, has four to five times the life expectancy, and there is no need ever to access the basin or remove stinky, filthy gravel to get to the pump.

Concrete Application

Most concrete pumpers know how to apply concrete to waterfall rebar, and they only charge a couple of hundred dollars. Troweling is easy; anyone can do it because it does not need to be smooth. Just knock down the rough edges and smooth with a sponge.

The concrete itself only costs \$100-\$125 a yard with most pondless waterfalls requiring only 2 to 3 yards. Check out the cost of a liner kit alone (without any labor)! Google “concrete vs. pond liner.”

Don't waste your money on a temporary solution. Concrete and rebar and actually cost less and will last decades longer.

Koi Pond- Dispelling Myths About Concrete

What do some liner promoters and salesmen say about professional pond installations using concrete and rebar, plus mortar to hold the rocks?

(1) “One problem with concrete and mortar construction is that of cement alkali leaching out for some time after construction, poisoning the pond water with high alkalinity. It also leaves unsightly white deposit build-ups at the points of exit and on the surface of rocks in the waterfall.”

NOT TRUE! If the concrete you use to pour the shell is a 7-sack mix with 40% pea gravel and stealth fiber mix, the concrete is so dense that no leaching can even occur. Also, because of the density of the concrete, it is not only waterproof, but stronger than normal 5-sack mix used to pour driveways, patios and sidewalks. Finally, if you coat the finished surface with Thoro-seal, one of several non toxic concrete sealers, it cannot leach.

(2) “When you use mortar mix to secure the rocks in a waterfall, the water that soaks into the porous mortar joints, leaches out alkali and phosphorescence that poisons the pond.

TRUE in the past, but not anymore. Regular mortar is porous, allowing water to pass through, dissolving and collecting the cement residue. This had been a major concern of mine for many years. After the completion of a waterfall, I would have to run the waterfall for two or three weeks, shutting it off every 4 or 5 days, and acid-clean the white alkali residue off the rocks that had built up. Then, when we were finished, we would have to acid clean and rinse out the pond.

Twelve years ago I discovered a secret formula that would render the mortar mix non porous and waterproof. It also makes regular mortar mix three times stronger. It is produced by adding one 45# bag of thinsset (used to apply ceramic tile to a shower wall) to two bags of type S mortar mix. Once it cures, it becomes so dense, it is totally waterproof and will not leach any alkali after it cures (3 to 4 days). In addition, this mix is so strong in its holding ability that once it cures, a sledge hammer is needed to remove a rock. In most cases, the rock breaks up before coming free from the secret formula mortar.

It is not only waterproof, but it bonds very well with all types and textures of rocks. It will create a watertight barrier that comes in handy when building rock dams in the waterfall. The main feature of my special formula, is that it allows for much more creativity. You have the ability to raise the water level above the confines of the concrete shell without water leaking through the mortar joints, as in the case of regular type mortar mix.

This special mix is not for sale in the stores, and never will be, because I give the formula away for free! This discovery has revolutionized the effectiveness of mortar mix and its ability to bond, waterproof, and prevent alkali leaching.

A Dramatic Test

A 4,000 gallon swimming pool was converted into a concrete koi pond with two large waterfalls, held together with my new mortar mix, and an 8' x 12' island. The rocks surrounding the island, were also held by the new formula. When the project was completed, all the surfaces were given a quick, mild acid wash, and the pond was filled and dechlorinator was added. The following day, \$3,000 worth of my own personal koi fish were transferred into the concrete koi pond. They all swam calmly around the island, inspecting every nook and

cranny. None of them experienced any stress and they remained in their temporary quarters for three months with no incidents. If that dramatic demonstration was not enough to convert the skeptics, nothing will.

So what is the bottom line?

Pond liners cannot be guaranteed not to leak, for a myriad of reasons. Concrete and rebar ponds, if built properly, will stay leak-free for decades, if not generations. You be the judge. You're the one investing your hard earned money and time into it.

Be as wise as an owl and as sharp as the many objects that can puncture a liner shell.

Koi Pond & Waterfall- Top 21 Most Asked Questions Answered

Q What is the ideal depth for a koi pond?

A In my experience of over 25 years, 4 to 5 feet is ideal. You need a minimum of 3 feet for koi fish for several reasons. Safety for fish from wading cranes they can not wade in 3 feet of water. Plus the water temperature in shallow ponds fluctuates too much with the changes in ambient temperature. The greater the volume of water, the longer it takes for the temperature to change. Warm water or fluctuating temperatures are unhealthy for fish.

Q What is the ideal size for a pond?

A The ideal size would be determined by the size of your yard. Its size should be proportional to the size of the yard. Also, the larger the pond, the greater the maintenance.

Q What is your opinion on using a liner to construct a pond rather than using a hard molded or concrete one.

A My recommendation is and always has been to use concrete. However, if you are on a tight budget or do not plan on living there for an extended period time, a liner would be recommended. In this case, you would have to add a thin layer of mortar between the liner and soil to prevent tree roots, ground squirrels, rats, mice, gophers or chipmunks from compromising the liner. The hard molded, preformed plastic ponds become brittle from the sun's UV rays in just a couple of years. No good!

Q What type of pond filter do you recommend?

A That cannot be answered simply because many factors are involved. Do you have an existing pond with a submersible pump or above-ground pump? What's the volume of the pond? Do you have fish, and if so, how many? What size plumbing pipe is being used? This is so involved, I have devoted an entire chapter in my construction manual to the subject. I have an 8000 gallon pond with above-ground pump and I use a pressurized biological bead filter. It takes 2 minutes to back flush with the turn of a handle and keeps my pond crystal clear.

Q I have tons of algae hanging from the rocks in my falls and growing in clumps in my hand. What can I do to get rid of it?

A When the first Polynesians settled in Hawaii between 300 and 600 AD, they were probably very annoyed by the aggressive, wild, pervasive taro plant, just like you are your algae. They tried to chop it down, burn it, stomp it, but to no avail. It just came back, so they eat it, and still do to this day. In fact, it's a staple like peanut butter is to some Americans. Just kidding! However, if you told me it was watercress I would suggest eating it. Many pond stores will try to sell you a very expensive algaecide to solve your problem, but all you need to do is increase the salt content of your water. Some experts recommend one pound of rock salt to every 100 gallons of water. This will not hurt your fish; in fact, it will help to produce a healthy shine coat. However, it will harm most of your plants if you apply that dose all at once. Plus the dead and decaying algae will deplete the oxygen and this will harm your fish. Apply it slowly over a week or two, and be patient. It takes longer to kill it this way, but your fish will appreciate it! This topic is also a chapter in my construction manual.

Q Should I keep salt in my pond on a regular basis?

A If you maintain a specific gravity of 1.000, your fish will be less susceptible to ulcer and fin rot. And you will keep the algae from getting out of control.

Q I am considering building a waterfall between my house and my neighbor's against the fence. Will the sound of the falls annoy them if I let it run 24 hours a day?

A The sound generated by a waterfall is called white noise, which is very relaxing and soothing, not annoying. I have several hundred clients who leave their falls running 24/7 and none have ever had a neighbor complain. In fact, they all appreciate the fact that they did not have to spend the money to enjoy the sound.

Q How many koi fish can I put in my pond?

A The amount could range from 150 to 250 gallons per fish. If you are starting out with small 6" to 8" long koi, they can reach 2 feet in three years, depending on how much food and how often you feed them. They could even grow to over 3 feet long! The overcrowding of fish produces stress and a lot of waste material. It can reduce the health of the fish and result in various diseases. Also, a less crowded pond is more pleasant to look at.

Q Do I really need a filter in my pond?

A Not in every case. If your pond is small and you have any guppies or mosquito fish and adequate water plants covering 1/3 to 1/2 of your pond, your pond will clean itself by means of the nitrogen cycle. The biological aspects of pond chemistry is well covered in my waterfall and construction manual.

Q How long do koi fish live?

A The average life span of koi in Japan is 70 years. Some have been known to live to 100 or more, such as the legendary Hanako, alleged to have lived for over 200 years. Unlike the amazing results of the meticulous care the Japanese give their koi, American koi live a fraction of that time, usually due to neglect and lack of care or proper environment.

Q How can I protect my koi against predators?

A Unfortunately, most people that come to me are frustrated people who already have a pond or a rather poorly planned pond. If your pond is shallow, less than 3 feet, or has a shallow end, the raccoons, coyotes, cranes, egrets, etc. have easy access to your fish. You may think your fish are safe because you have a deep end for the fish to retreat to. Well, you and your fish are dead wrong. A crane will stand perfectly still for 10 to 20 minutes waiting for the koi to forget he is there. Some will regurgitate chum into the deep pond, luring the fish to the surface. Your only solution is a net, or try the crane statue, scarecrow, or high-frequency sound emitters for smaller animals. However, one of my clients watched a crane land next to his crane statue. While the scarecrow was pelting him with a stream of water, it snatched up one of their prize koi.

A critter-proof pond is over 3 feet everywhere and has a raised deck 13" minimum over the water surrounding the pond. Raccoons cannot swim and catch fish at the same time, and they or the birds will not be able to reach the water.

Q I would like to have a koi pond but I live in Michigan and every year ponds and lakes freeze over. Will they survive?

A There are fish in those lakes you are talking about: blue gill, bass, sunfish, carp, and they all survive. And guess what? Koi are in the carp family. Koi were originally raised for food in Japan. They would grow rice in the summer and then flood the rice patties and raise koi in the winter, cutting holes in the ice to catch them for food. However, your pond must be 4' to 6 feet deep to ensure the water stays about 40° on the bottom. Turn off the waterfall and bottom drain, draw water from the skimmer to keep the bottom still. Place swimming pool

solar blankets over the surface. If your pond is deep enough, you can let it freeze over. However, you need to install a horse tank heater to keep a hole open in the ice to allow any ammonia gas from rotting debris on the bottom to escape. If your pond is less than 4 feet deep, take the koi indoors for the winter and place them in a garage or basement tank.

Q Can I keep koi and goldfish together?

A Yes, you can. They are both cold water fish and members of the carp family. Most other cold water fish can also swim together, such as shubunkins, rudd, orfe, blue gill, mosquito fish, guppies, sunfish, bass, etc. However, only in deeper ponds where the mean temperature is 65 degrees or less on the bottom for bass, sunfish and blue gill.

Q Should my pond have a bottom drain?

A First of all, a bottom drain is essential for a healthy pond. However, if it is exposed and the suction is strong enough, turtles or fish can get stuck to it and not be able to get loose. Therefore, two drains should be hooked in series to relieve the pressure between them, just as in a swimming pool. Bottom drains draw falling waste from the fish before it reaches the bottom, keeping it clean. Areas where it does build up can be swept to the drains for easy cleaning. If you are using a submersible pump or pulling the water from a skimmer, water is not circulating properly on the bottom of the pond. That is where rotting debris is producing ammonia and other toxic gases.

Q My pond water is very clear, but my fish are dying. What is wrong?

A Drinking water might taste good, smell good, and look clear. But some of the most toxic chemicals that are known to cause cancer are colorless, odorless and tasteless. I recommend that you purchase a test kit from a pond store and check your water regularly. Nitrates, nitrite and ammonia are all detrimental to fish. Ammonia and nitrite can, at high levels, be fatal to fish. These substances are dissolved in the water and consequently are impossible to detect by the clarity of the water and they can break down the fishes' immune system.

Q What type of filter do you recommend?

A For any pond over 1000 gallons, I recommend a pressurized biological bead filter that can be back washed. I have used Aqua Ultraviolet Ultima II filters for years. Most larger pond suppliers carry them. Their filters range from 1000 gallons to 10,000 gallons. Up-flow and gravity flow filters require regular cleaning, which is a filthy job. The filter media is packed with stinky, putrid fish waste and decaying pond scum. As you handle the filter screens, media, scrubbers, etc., you will have little white feces-eating worms that are 1/16" long crawling on your hands and arms. Not to mention the noxious smell that burns your eyes and lungs.

It cost pennies on the dollar to make, yet dealers charge a fortune. You pay the price for the filter and in the time it takes to maintain it you pay an additional cost for your time maintaining it. With a pressurized filter, it only takes the turn of a handle for 2 to 3 minutes and the filter is clean. The waste water is not wasted either. You can water your plants with it using the discharge hose. If you can imagine, that brown, colored, stinky water is packed with nitrogen. It's better than Miracle Grow T.M. I have used my 6000 gallon Ultima II for over eight years and it works as well now as they day it was installed. Happy, happy fish!

Q How much does an average pond cost?

A What is average? It depends on whether you are talking about a liner pond or a professional concrete and rebar pond. A typical liner pond can be 6 feet by 8 feet, and depending on who is installing it, could cost between \$2,500 and \$3,500. The other dimensions are pretty much proportionate. Liner ponds are susceptible to leaks from punctures, gophers, and rats, etc. Concrete ponds last for decades and on the average cost only 20% more than liner ponds.

Q My pond is green and I can not see my fish. What should I do?

A Your challenge is algae (suspended planktonic algae), which does not directly hurt the fish. However, algae gives off oxygen during the day from photosynthesis. But unfortunately, it uses up oxygen at night. In addition, it is unsightly and blocks the view of the fish. You can increase the salt content or install an ultraviolet light, which not only kills spore algae but kills the bacteria that causes the water to become murky and stinky.

Q I heard that UV light will also kill the beneficial bacteria. Is that true?

A If I say "No," I am calling many so-called professional experts liars. So I will put it this way. All the beneficial pond bacteria such as aerobic or anaerobic bacteria, nitrobacter, etc., reside in the filter or in the decaying debris at the bottom of the pond. They aren't floating around in the pond. Bacteria and algae containing pathogenic disease are, and as they pass through the UV light, they are eradicated.

Q Do I need a waterfall for my pond?

A With no hesitation, YES! Most definitely. First of all, waterfalls are beautiful to look at. The sound is soothing and relaxing and the water moving over rocks generates negative ions which are added to the air. As you breathe negatively charged air, it relieves stress and anxiety. Waterfalls also add extra oxygen to the pond. Waterfalls are a must!

Q I heard concrete ponds will leach alkali into the pond. Is that true?

A Yes and no. A poorly constructed concrete pond will, but only until algae starts growing on the sides. Also if the pond is constructed of 3500 psi concrete and coated with Thoro-seal T.M., it is impossible for alkali to leach out. Plus, if you use Doug Hoover's secret mortar mix formula, the mortar in the waterfall between the rock will not leach either.

Q What is the advantage of building a waterfall using concrete and mortar?

A A major reason is that the rock will be securely mortared in place, preventing a serious accident from rocks sliding, as with a liner waterfall. Trust me, some day, some adventurous child will climb onto it. That is a lawsuit in the making.

Pondless Waterfalls- Concrete vs Pond Liner

The get-rich-quick factor in the pond liner industry has forced up the price of pond liner kits to equal the cost of concrete construction. If you search for the truth about concrete ponds and waterfalls from reading the literature of the greed-driven liner pond industry, you will not find it. Why? Because if the truth be known, no one in their right mind would invest good, hard-earned money in a pond liner!

The pond liner track record speaks for itself:

More than 37% of all waterfalls have serious structural damage within 3 years of construction.

57% of homeowners say they are rather unsatisfied with the way their waterfall came out after the project was completed.

One in three waterfalls and ponds are leaking water within nine months of completion.

63% of "do-it-yourselfers" say they wished they had the proper information from the "get go" or that they had hired someone.

These statistics are from the pond liner industry itself (Bob Wilder, 48-Hour Waterfall). I can confirm and attest to these figures myself. I have built over 1,900 concrete and rebar waterfalls and ponds over the past 26 years. I have ripped out and replaced dozens of defective liner ponds and replaced them with concrete ones with lifetime warranties.

Pond liner guys will not attach more than a one-year warranty. They make no guarantee against rats, mice, ground squirrels, gophers, tree roots and sharp objects.

Let's compare apples to lemons ... First, let's talk about apples (concrete waterfalls). We will construct a pondless waterfall that is 20 inches wide at the top by 20 feet long, becoming 24 inches wide at the bottom, to create a spillway 3 feet tall. At the bottom is a catch basin 4 ft. x 6 ft. x 3 ft. deep. The costs of excavation are as follows:

To dig a waterfall and basin takes two men 4 hours @ \$20 per hour = \$160.

The flexible PVC pipe is 35 ft. @ \$1.25 per ft. = \$44.

Concrete (3500 psi with stealth fiber): 2 ½ yards = \$250.

20 pieces of 20 ft. x 3/8 inch rebar = \$100.

One 1/3 HP high efficiency pump, 2800 GPH, 356 watts = \$429.

One anti-vortex drain = \$10.

Four 2 x 4 ft. heavy plastic corrugated or galvanized plans to cover the collection basin = \$35.

Setting the rebar: 3 man-hrs. = \$225.

Pumping and finishing 2 ½ yards of concrete: 4 man-hrs. @ \$75/hr. = \$300.

Applying thoro-seal, 1 sack + 1 hour = \$43.

Rock work + 8 sacks mortar mix: labor - 8 man-hrs. @ \$75/hr. = \$600.

Mortar: \$40.

TOTAL EXCAVATION COST FOR A CONCRETE POND = \$2,236.

With this type of construction, no filter is needed. The water in the basin is not exposed to sunlight, so there are no algae. Plus the top layer of rock and the planks are easily removed for cleaning out debris about once a year. If a plastic screen is placed over the planks before the rock layer, cleaning is reduced by 90%.

Now let's talk about the lemons (the liner folks). The pondless waterfall liner kit advertised by all the disciples of the "liner messiah" on their websites is \$1,940 + tax & shipping, or \$2,176.

And now for the math: One concrete/rebar construction pondless waterfall completed with high-efficiency pump = \$2,236. One pondless liner kit to build a pondless waterfall of the exact same dimensions = \$2,176. If I did the math correctly, the completed concrete pondless waterfall costs \$60 more than the pondless waterfall liner kit; however, it is still in the box!

Concrete and rebar pondless waterfall has a lifetime warranty. Liner pondless waterfall: 1 yr. warranty on labor, lifetime warranty against factory defect. But there is no warranty whatsoever against holes caused by rats, mice, ground squirrels, gophers, tree roots, sharp objects, etc. Sorry Charlie!

Concrete and rebar pondless waterfalls use a high-efficiency above-ground pump that is easy to service (it has a 3 yr. warranty). The 1/3 HP pump is small, very quiet, and easily hidden behind a couple of rocks or plants next to the falls, or piped to another part of the yard. The liner pondless waterfall uses a submersible sump pump that is placed in the bottom of the basin, and then buried with hundreds of pounds of rocks. To service this pump (only a 2 ½ yr. warranty), all the slimy, stinky rocks have to be removed from the basin first.

The concrete and rebar pondless waterfall pump produces 5,800 gallons per hour at only 356 watts (retail \$429). The liner pondless waterfall kit comes with a sump pump (they advertise as "the best pump on the market"). It produces 5,700 gal/hour (100 gal. less) at a whopping 911 watts of power (over twice that of the above-ground pump). You will pay \$525 more per year for electricity (at \$.12/kwh) for that extra 555 watts. Their pump costs \$600 retail (\$171 more than the above-ground). Oh, did I mention "the best warranty in the industry" is only 2 ½ years, compared to 3 years for the above-ground?

The concrete and rebar pondless waterfall's rocks are all mortared in place. So anyone, especially small children, can climb on the rocks without them moving, with possible serious injury resulting. With liner

pondless waterfalls, rocks will move and shift on their own without help. After a few months, the ugly liner is exposed in the falls and around the pond.

While building the concrete pondless waterfall, design liberties can be taken, such as altering the length, width or shape of the feature. With a liner pondless waterfall, the parameters have already been set by the manufacturer of the kit.

The concrete pondless waterfall can utilize the large, open basin to install an Aquafill automatic water leveling device. In addition, the basin can be made smaller because the space for water is not taken up by rocks as it is in the liner pondless waterfall basin. The only rock that exists is on top of the galvanized or plastic plank cover.

Wow! Concrete waterfalls are stationary, permanent, lifetime life-expectancy, cheaper to build, cheaper to operate, easier to clean, easy to maintain, longer pump warranty, safer and more natural looking! Apples or lemons? You be the judge!

I am sick and tired of these amateurs giving my life-long profession a bad name by their exaggerated, dishonest and sensational claims – only to be backed up by a nebulous warranty and, at best, shoddy workmanship. My disclaimer: There are professionals installing liners that do take measures to prevent rodent or root attacks by placing a thick layer of mortar under and over the liner. I found that if you are going to go to all that extra work and expense, just build it with 3500 psi concrete to begin with!

Pondless Waterfall - No Filter Needed

That is correct – a properly designed pondless waterfall needs no filter. It also does not need a centipede module, snorkel vault, or pump housing. The liner industry added all of these unnecessary contraptions to their kits to drive up their profit margins.

I have built hundreds of pondless waterfalls over the years, starting with my first one in Fallbrook, California. So, regarding this subject, “A man with experience is not at the mercy of a man with an argument.”

1. Value: Pondless waterfalls constructed with a liner cannot be warranted against holes caused by mice, rats, ground squirrels, gophers, chipmunks, tree roots, sharp objects, etc. However, pondless waterfalls that are constructed with concrete and rebar can be warranted for life. Because of this fact, a professionally constructed pondless waterfall will actually add equity to a home. We have compared the cost of materials and labor (hiring a concrete contractor and rebar fabricator) of both methods of construction and discovered that concrete and rebar pondless waterfalls cost the same or less than liner kits cost, uninstalled still in the box)! [Read my article, “Pondless: Concrete vs. Liner” in ezinearticles.com]

2. Filter: Advocates of pondless waterfalls require you to install a “bio-falls” at the top of the falls for a filter. This is a waste of the customer’s money because it is not needed. Note: this plastic molded box is cheap to produce and returns exorbitant profits, plus it tacks on additional maintenance costs to the client, requiring periodic cleaning.

3. Pump: For several years the promoters of pondless waterfall liners recommended placing a sump pump in the bottom of the collection basin, and then fill it with gravel. I talked to a woman recently who said, when she turned on the sump pump, before the pumped water would return to the basin, the pump was sucking air (the basin was empty). She did not know where the pump was and the installer would not return her calls. A friend of hers found the pump at the bottom of the basin buried in gravel. And, the pump was all plugged up with debris. There is no telling how many thousands of pondless waterfall customers have this very same problem.

4. Needless extras: The pondless waterfall liner guys came up with the brilliant idea of producing a pump chamber with holes in the bottom, or a centipede or snorkel vault. These are all fancy terms for worthless devices for which they can charge more money. All these contraptions do is keep the gravel away from the

pump.

5. Correcting two major design flaws: Our pondless waterfalls are designed with a catch basin. It not only does not contain any gravel at all, but it does not utilize an inefficient, high-maintenance, energy-sucking sump pump that only has a one or two-year warranty. Our pondless waterfall basins (constructed of concrete) contain two 8" anti-vortex suction drains, which feed an above-ground, high-efficiency centrifugal pump which is warranted for three years. The pump uses up to 60 percent less energy, is easy to hide, silent and maintenance free. It utilizes a leaf basket with a "twist and lift" cover for removing debris.

The basin is covered with five or six galvanized grates that are covered with rocks to hide it. The grating holes only allow debris small enough to be drawn through openings in the suction drains where it can be collected in the pump basket for easy removal, thus keeping the basin free from collecting debris. There is no need to ever get into the basin. There is a fail-safe Aquafill water leveler to keep the basin full so you never need to worry about it running dry and burning up the pump. Not to mention that the total volume of the basin is available for water, unlike the liner pondless waterfall that wastes 80 percent of its capacity with gravel. Over several months the gravel plugs up with rotting debris, creating a putrid, slimy, filthy job for the pondless waterfall owner.

5. Last, but by no means least: The reason concrete pondless waterfalls do not need filters is because, unlike the water that slowly moves through the gravel in the basin of a liner pondless waterfall (where the water becomes stagnant from its inability to move freely), concrete pondless waterfalls have an open chamber in the basin, allowing the rapid and free flow of water. This rapid circulation assures that mosquito larvae cannot survive. Nor can algae survive since the basin is covered. This keeps out the sunlight, cools off the water and keeps it clear.

Since a pondless waterfall does not have a pond, you are not dealing with fish food, fish waste, and large quantities of decaying debris. Consequently, there is no need for a filter in a properly designed concrete pondless waterfall. Hundreds of pondless waterfalls since 1984 will attest to that fact.

Koi Pond or Pondless Waterfall- Where Do I Begin?

1.) Have you thought about A Water Feature?-- Is it true that a water feature will add equity to my home? What about a swimming pool? Doesn't a pond require a lot of upkeep? What is the average cost? Do I need a building permit? Do I have to have fish? ...we travel a lot!

American Society of Landscape Architects

Landscape Architects Identify Trends for 2007

WASHINGTON, Dec. 21 /PRNewswire-USNewswire/ --"Sustainable design is bigger than ever and homeowners and commercial building owners alike are looking to utilize outdoor spaces even more. The New Year will bring a number of exciting and creative design solutions from landscape architects.

Homeowners are requesting that landscape architects design complete outdoor rooms, such as kitchens and bars, for entertaining. Water features such as koi ponds, waterfalls, and fountains continue to be popular (with no signs of slowing), according to a new survey of leading members of the American Society of Landscape Architects (ASLA)."

The American Nurseryman Association reports that "water features are the fastest growing trend in landscaping since 1990 (2007 should break all records.)"

Regionally, in-ground pools will add about 5 percent to the value of a home in the Northeast, about 6 percent in the Midwest, and 7.5 percent in the Southeast and West. In the Southwest, a swimming pool will add nearly 11

percent to the home's value.

If you add a \$35,000 pool to a \$300,000 house, you will just barely recover your initial expense. However, you still have the high maintenance cost and you have just limited the future buyers of your home to people who want a pool. Therefore, you have actually reduced the equity in your home. On the other hand, everyone loves a beautiful water feature, young and old! Therefore, increased equity!

Swimming pools require constant attention and maintenance. Unlike ponds, pool owners cannot rely on the nitrogen cycle to lend a hand at keeping the water healthy. This can only be accomplished by due diligence and a myriad of chemicals. Unlike a pond, the enjoyment of a pool comes from its use; and for most regions of the country, the climate dictates a very short period of time for pool use. Unless you heat your pool, then your dumping more money in your pool.

A pond requires minimal attention compared to swimming pool. Once a properly constructed pond is established with the right proportion of fish, plants and biological elements, a pond will take care of itself, the rest is enjoyment, year round. You do not need to use a pond as you do a pool, it only need to exist for you to enjoy.

2.) What do I do about the safety of my small children or grandchildren? How big should it be? Is this something I can do on my own or do I need professional help building a pond?

Unlike a swimming pool, ponds can be child proofed, with very little expense. A swimming pool, however, requires special self-closing gates with special latches. Another required code requirement is 95-decibel alarms on all exit doors leading to the back yard.

And for your added peace of mind, you can install an unsightly, removable, lightweight fence that cost hundreds of dollars. Then you can continually agonize over whether you, or someone else, forgot to close the fence gate.

A pond, however, can be filled with large boulders, which can be removed later when the children are grown. Or you can construct a pondless waterfall to begin with. Now you still can enjoy the sight and sound of cascading water without the concerns for safety.

An added advantage of a pondless waterfall is that a pondless waterfall costs less to construct and maintain. A pondless waterfall can be added to your front yard, meet all building code requirements, increase curb appeal, and thereby increase the equity and the resale value of your home.

The "size of the water feature" is a relative term. There are many factors that need to be considered. Far more than can be discussed in the space I have allotted for this article. I will cover it in my next article. A few questions to ask yourself: How big is your yard? Where do you spend the majority of your time? What is your budget? How is the size, shape and topography of your yard related to certain limitations regarding the building codes? Will the existing water table affect your water feature? Does your property currently have adequate drainage? Do you have underground utilities? If so, where are they located? What are the local building codes regarding pond depth? Do you need a building permit, or a licensed contractor? ...just to name a few of the topics covered.

Whether you need a professional contractor is another article. What type of access do you have to your property? Do you want large boulders? If so, is there proper clearance for a crane or Bobcat? How do you find a qualified contractor? How do you go about qualifying them? Are they properly licensed? Insured? Bonded? Workmen's compensation? Liability insurance? Hospitalization? References? Background checks and much, much more. Do your homework and proper research prior to commencement, it could save you thousands of dollars.

3.) What is the single most important first step in building a water feature? What about equipment? Should I get koi fish and a turtle? Where should I place my pond and waterfall? All these questions can be addressed with two words: Plan & Design!

First, decide where you spend most of your leisure activity. ...family room, living room, patio etc. Your waterfall and pond should be in close proximity to that location. Not in the far corner of your property. Sound and visualization are two of the major benefits of a waterfall and pond. These decisions are part of the planning process. Once you decide on these issues, the design process begins.

The best way to approach this phase is to consider a digital design. There are companies that can produce an incredible digitally designed, virtual photo of your backyard, by simply providing them with a digital photo of the area you want the water feature located. You may opt to digitally design your own. There are digital design programs that are simple to master on your own for less than a hundred dollars. Just search the web by typing in digitally designed ponds or waterfalls.

The type of equipment you should use is dependent upon the size of your pond. Your budget is another factor. If you have a small budget, you're looking at designing a small pond. In addition, look at the available options for construction materials.

You can buy a rubber liner kit and install it yourself, or have a rubber-liner-kit-installer-guy install it for you. Bottom line, either way, there is no guarantee against bucked-toothed critters such as mice, rats, ground squirrels, gophers and ground hogs, from burrowing underneath your expensive rubber liner and chewing a hole in it. Concrete (3500psi) and rebar is the best construction method, and if done correctly, will last for generations. Concrete ponds cost only 10 to 20% more to build than liner ponds.

Your pond will require less maintenance if you allow the nitrogen cycle to do all the work. This means you need to do your part by providing the elements needed for the nitrogen cycle to operate. The fish provide the waste which produces nitrates and ammonia. Certain essential bacteria break down the nitrates and ammonia into safe byproducts used by the plants and other organisms.

Once this process is started, with the aid of a biological filter and possibly an ultraviolet light, future maintenance is minimal and routine. An above ground, high efficiency pump produces more water flow at half the energy and less initial cost than a sump pump used with liner ponds. The savings in electrical costs alone could easily pay for the additional cost of professional concrete construction in less than three years.

4.) Where do I find the equipment and construction material I need to complete my project? How do I know what size filter, pump or ultraviolet light I need? If I want to have a concrete pond and waterfall shell, Where do I begin?

The internet is the best place to start looking for equipment. Local pond stores are usually higher priced, because of overhead expense. Most of the internet dealers are knowledgeable on sizing pumps, filters and ultraviolet lights to any size pond or waterfall. However, keep in mind, most online dealers are trying to push pond liners, sump pumps and pond liner-related filters and accessories.

Look for energy efficient pumps first, and those dealers will carry concrete pond related products such as bottom drains, pool type skimmers and pressured, back-flushable biological bead filters. Also, Liner dealers sell the cheap mechanical autofill devices, because of a high profit margin.

Make sure you invest in a reliable electronic autofill system that is less likely to malfunction such as the levelors and aquafill systems. A stuck float could result in the chlorine poisoning death of all your fish and possibly thousands of dollars in flood damage.

If you act as your own project manager, you can get competitive bids from local concrete contractor for pouring your pond and waterfall shell. Also find a stone mason who will build your waterfall using mortar. With liner ponds and waterfalls, the rocks sit on the liner and can easily move when stepped on by adults or children resulting in serious accidents.

Trying to save hundreds up front, could possibly cost you thousands down the road. You get what you pay for.

Koi Pond- Fish or No Fish?

What is a koi pond without koi? A pond! Now that is boring...

Many clients who want a waterfall and koi pond do not want koi fish to take care of. Actually, a pond will require less attention with fish than without. If a koi pond has a waterfall to aerate the water, koi fish will produce waste that is broken down by nitrifying bacteria into nitrate nitrogen, and water plants will use the nitrogen and thrive. In turn, the koi fish eat the algae and small water insects that live on the rocks and plant roots. And those bugs eat other smaller bugs that eat microscopic bugs that eat bad bacteria bugs. This is called the nitrogen cycle. A properly balanced koi pond like this will pretty much take care of itself.

Koi fish food can get lodged in the plants, rocks and vegetation around the perimeter of the koi pond. If the koi fish cannot find the food, it simply decays, adding unnecessary nitrates to the water and resulting in more food for algae to grow. To eliminate this problem I fashioned what I term as a Koi Fish Food Corral made from a 4 to 5 foot piece of 1-1/2 inch flexible PVC pipe and fastened together with a single 1-1/2 inch coupling, creating a circular corral.

This corral keeps the koi food in one place, and prevents it from floating off into rock crevices, plants or the skimmer. Plus it allows for the proper portioning of koi food. It is easy to tell if you've given the koi fish too much. If food is still there after a couple of minutes and the koi fish seem to have had enough, they have, and you should remove the leftovers. Lay it in the sun to dry and feed it to them later. It is easy to collect the extra food that the koi fish don't eat by using a small net. It is better to feed them too little than too much. In a case like this, more is not better.

Sometimes my clients originally expressed a concern that koi fish would be a burden or a hassle. They would worry about having to feed them daily, or what they would do when going on vacation. I would explain that the koi fish are extremely important with regard to their contribution to the nitrogen cycle. The nitrogen cycle is what makes a koi pond low in maintenance and nearly self-sufficient.

As long as you only stock the koi pond with small fish such as guppies and mosquito fish, they will never need to be fed. They can exist solely on food that the pond provides naturally.

A chlorinated pond, on the other hand, requires continuous maintenance. The chlorine dissipates from the water as it flows over the falls and turns into chlorine gas. This means that fresh chlorine needs to be added regularly and your backyard will smell like a swimming pool all the time. The chlorine also causes many minerals and suspended particles to precipitate and build up on the rocks, causing unsightly white stains in the water's path.

When chlorine is not added regularly, leaves and other decaying debris in the pond will cause algae to grow, turning the pond green. So after convincing the client to give my suggestion a try, I returned a few weeks later to find that they have not only purchased some large koi fish, but have given them all cute names, like Charlie and Doug.

If the client wishes to have larger fish such as koi, the nitrogen cycle will need a little extra help from a biological filter and an ultraviolet light. The larger the number and size of the koi fish, the greater the waste material produced. This means that some of it must be removed from the water. Increased quantities of nitrates and nitrites increase the amount of ammonia and other by-products such as pea soup algae, the type that turns the water green. A biological filter will aid in the breakdown of toxic nitrites into less harmful nitrates, and an ultraviolet light will kill algae spores and disease-causing pathogens as they pass through the UV light on the way to the filter.

So, what else can I say to convince you to get fish? They are fun to watch? They are cute? They come in handy during times of famine? Got fish? Got turtles? Got tadpoles? No? Then, get some! Your pond will be much more appealing and exciting. It is like having the Learning Channel or Discovery Channel in your back yard.

Every day brings a new discovery: baby fish hatching; a dragonfly struggling from its cocoon; a tadpole slowly, very slowly, turning into a frog; two crayfish, doing what they do to make baby crayfish... now that is a discovery! A turtle, shedding its shell... now that is a miracle. If you have kids or grandkids, or neighbor kids, grab some or all of them and make it an adventure. Pile them into the car or bus and go to the local pond store and gather up a passel of predacious and peculiar pond creatures. Better yet -- build a koi pond first and then do it.

Koi Pond- Filter vs. Fish

There are many different types of filters available today for koi ponds which require regular cleaning. The decaying fish waste and pond debris need to be removed from the filter, flushed and cleaned with a garden hose – a labor intensive, stinky, filthy, disgusting job if there ever was one!

Biological filters are designed to filter out particulate and organic substances. By utilizing anaerobic bacteria-laden filter media, a bio-filter breaks down harmful toxic substances into harmless by-products. Busy koi ponds without a bio-filter will develop an environment harmful to its inhabitants as a result of the build-up of fish waste, decaying pond creatures and leaves and other debris that have settled to the bottom.

The size of the bio-filter used in a koi pond is in direct proportion to the number of fish per gallon. The more fish, the more waste and the bigger the filter that is needed. Do you really need a filter? Not necessarily on the small ones -- not if you follow nature's guidelines. Natural lakes and ponds don't have mechanical bio-filters and they are home to many healthy fish.

If, however, the koi fish begin to overpopulate the lake and start running out of food, they would thin out naturally until the population was small enough to be sustainable by their environment. Such a hypothetical overpopulation would cause an imbalance in the nitrogen cycle by producing too much nitrite from the koi fish waste. Then the increased pH of the water would create an algae bloom that could fill the lake and choke off the koi fish.

Man-made koi ponds can be controlled mechanically and chemically to allow for larger numbers of koi fish per gallon than would be found in nature. Many formulas exist for dictating the proper number of koi fish a pond can hold, whether you calculate koi fish per square surface foot, koi fish per cubic foot, koi fish per gallon, pounds per gallon, or pounds per cubic foot. The bottom line here is: healthy water equals healthy koi fish. If your water is fish-friendly, the number is insignificant, within reason.

If the air were pure, and if you had plenty of food and water, and a healthy way to eliminate, you could live in a small house with 30 other people and stay reasonably healthy, were it not for one thing: stress. Koi fish are like humans in that respect. If it gets too crowded, the koi fish will try to leave the koi pond and some actually do, but they do not get far. If koi fish are jumping out of a koi pond, it is not because they have an exploring nature; the koi pond is either too crowded or the quality of the water is less than desirable.

FILTER TECHNOLOGY

Man-made devices stretch the natural parameters set by nature, allowing the koi pond to support more life than it normally would. The biological filtering system is the best way to accomplish this. The more advanced the technology, the more effective its ability to treat water. There are as many different types and configurations of filters as there are people wanting to get rich off manufacturing and marketing their own filters. Almost every koi pond or water gardening magazine contains more advertisements for filters than any other product. Which one is the best? First, let's discuss the various types that are available.

The most common filters are the up-flow, down-flow, submersible, recycling and pressurized types. The most common problem plaguing the operation of any filter is channeling. Water will always take the path of least resistance. Filters use a variety of filter media or material for the water to pass through. Pond water contains a

large amount of suspended matter that collects in this filter media, eventually blocking or plugging the spaces between the material. As this occurs, the water will divert to another available path until it, too, clogs. Eventually, the water flow will find a permanent channel, avoiding the filtration process altogether until the media is removed, cleaned and replaced.

In the case of a down-flow filter, it operates on the principle of gravity, as opposed to pressure or up-flow. So when the media begin to clog, gravity is not sufficient to force the water through the available channel at the same rate that water is being pumped through, so it spills out the overflow drain back into the koi pond, unfiltered.

The most efficient and maintenance-free filters are pressurized filters that have a backwash feature. A bio-filter contains filter media on which nitrifying bacteria reside, and which break down the toxic nitrites into less toxic nitrates that can be used by the water plants. Consequently, the more surfaces that are available per square centimeter of material, the more effective the filter.

Recent technology developed by Aqua Ultraviolet produces special hexagonal beads for their pressurized filters, which possess the greatest maximum available surface area of all existing filter media. They are tapered so that the beads are less likely to group together. Back washing forces water through the filter in the opposite direction, breaking loose solid material and flushing it free down the drain outlet. Or, with the use of a flexible ribbed hose, it will direct the nitrogen-rich waste-water onto the lawn, trees or flowers. Maintenance involves a simple turn of handle for about one to two minutes.

Down-flow or upflow and submersible filters require disassembling and washing of all enclosed media, and then returning it to the filter -- a very messy and dirty process. Unfortunately, pressurized back-washable filters are costly and are designed for larger projects for use with out-of-pond pumps which are needed to adequately back-wash the filter. Thus, it is necessary to settle for the high maintenance, less effective down-flow or up-flow filters for smaller koi ponds of up to 300 gallons. If you are one of those people who now have, or are thinking about building a small koi pond, I have great news for you! Twenty-five years ago when I started in this business, there were few small pond filters available. However, with the advent of the liner pond in the early nineties, everybody and his brother-in-law started manufacturing down-flow filters in their garage. With no marketing plan, capital, or quality craftsmanship, most all the fly-by-night-by-the-seat-of-their-pants back alley filter hopefuls faded out.

A filter for a 250 gallon koi pond will range from \$160-\$200; for a 1000 gallon koi pond, \$300-\$400; and for a 2000 gallon koi pond filter from \$500-\$600.

Pond Design- Digitally Design Masterpieces- Virtual Water Features Part I

One of the most challenging aspects of designing ponds and waterfalls is trying to convey my ideas to my client. Coming up with award-winning pond designs or implementing them using adequate skills and experience is not a problem. My challenge is getting my client to see what I see. Drawing and painting are not my forte; it is next to impossible for me to draw a rock, not to mention water. The hardest part for me is drawing perspective. Prior to discovering the art of digital design my most common phrase used was , “Just trust me.” Wait till your pond and waterfall is finished, I promise you’ll like it. Unfortunately, “trust me” are the most common two words spoken by used car salesmen! Thank goodness that most of my clients were referrals from other satisfied customers and already knew what I was capable of creating. Imagine a referral customer base of over 1,900 satisfied clients.

A few years ago I discovered a computer program called Photo Shop and realized I could use it to create virtual photos of water features. I learned how to cut an item from one picture and paste it into another. Actually, that was nothing new for me since I did that in third grade. It’s called cut and paste. Only now I’m using a mouse

instead of rounded scissors and edible white paste. (I hear the manufactures are adding vitamins to it now. :)

I started out scanning dozens of photographs into "Photo Shop," which converted them into a digital image capable of being manipulated in hundreds or thousands of ways. The Photo Shop program has a large learning curve, especially for someone who is unfamiliar with graphic design techniques, so I started searching for a solution for my pond design department.

DIGITIZING PHOTOS

Microsoft has developed a user-friendly software (small learning curve) for working with photographs. They can be scanned into the program or digital photos from a digital camera can be downloaded into the program. Then each picture can be enhanced through a variety of processes such as brightness, contrast, blur, tint, etc., all with a simple click of the mouse. Once the photo is finished, I can then cut out objects from the picture, such as rocks, groups of rocks, plants, or portions of the waterfall and pond. Which I did from several thousand photos of waterfalls and ponds I have constructed over the past 26 years. I gathered these jpg images into an indexed library.

Using this process with pictures from hundreds of my projects, I was able to build a substantial library of objects for pasting into the "before" photo of a client's yard for a pond design. Now I can take a digital picture of someone's yard and download it into Microsoft's "Digital Image Suite" program. Next, by dragging various items from my library, I can construct a waterfall and pond of any shape, size or configuration onto that picture.

So thanks to the arrival of the digital age, I can construct on paper a virtual image or idea that was in my head. As a result, my clients can see exactly what their pond and waterfall will look like when finished. Now a pond design takes only minutes. Whether you are building a waterfall and pond for yourself or for a customer a pond design or waterfall design can be a marvelous thing. Simply marvelous! Happy koi, peace & joy

see a free demo training video and sample designs at:
http://watergardenauthority.com/Ultimate_Training_Course.php

Pond Design- Digitally Design Masterpieces- Virtual Water Features Part II

TRICKS I'VE LEARNED

Digital Designs are not only a current wave or trend, it is predicted to be the wave of the future. I am glad I discovered this concept four years ago and adapted it to my water feature business.

I started constructing waterfalls in 1982 and have since designed and built over 1,900 in southern California. All my designs were sketched by hand and I am by no means an artist. My clients really were not sure from my sketches what they were going to end up with. Now, however, with digital virtual designs, there is never any question.

I spent over two years using Microsoft's Digital Image Suite program to cut images of rocks, portions of falls, ponds, plants, fish, turtles etc. from close to 10,000 photos and created a digital library to pull from. Now I can literally create thousands of different water features from these images.

I placed some of my virtual designs on our website and one day, one of my old clients and friend called me. She exclaimed, "I just saw my cat Mittens sitting on a rock of a waterfall staring down at some fish in a pond and it is not my pond, how is that possible? Where did you take that picture?" She was completely flabbergasted! Goes to show how realistic Digital designs are.

Microsoft's program is only one of many programs. I also own Photoshop and Illustrator, but both programs have a large learning curve and for the average person are very costly. Digital Image Suite is only around \$100

and fairly easy to master.

In creating a pond design digitally, you first need a digital photo of the area (mega pixels minimum). Next, load it into your digital imaging program. Now you are ready. Many graphic or photo software programs will let you manipulate an object.

For example, each individual object that is dragged to the work space is surrounded by a “bounding” box with nodes on the sides and corners on the box. By clicking on a corner node and holding down the mouse, you can drag the corner to make the object larger or smaller. By clicking on the side node you can make the object in the box fatter or taller. With this feature alone you can totally disguise any object, be it a rock or plant, by changing its dimensions. Just by dragging a rock to the work space, copying and pasting it several times, you can change the shape of each copy of the original object. Not only can you make the rock wider, taller, flatter, larger, or smaller, you can also warp the shape, change the color, shade it or tint it.

So with only a handful of rocks on the work space, you could create a veritable rock quarry! By dragging the nodes in a section of pond water, you can make the water fit any size pond by stretching or narrowing it.

Need a couple more weirs in your waterfalls? A few more plants in the pond? A cat, a tree, a rock, bench, gazebo, bridge, stream? Just click and drag & paste, it's that simple. Right after seeing the virtual photograph of his back yard, a homeowner exclaimed, “Let's do it”. Not, how much will it cost, just “Let's do it”. Another client joked, “Wow, this is so beautiful, I think instead of you building the waterfall, I'll just have this enlarged and paste it over our living room window!”

I want to encourage you to add digital design to your business. You will not just impress your clients, they will know exactly what they are going to end up with. Did I mention increased revenue?

Not only do I charge \$350 per pond design photo, I recently increased my construction prices by 30 percent. And since implementing digital pond designs in my bids, my closing ratio on signed contracts has soared from 60% to 80%. Eight out of ten proposals/contracts come back signed with a deposit check enclosed. Not to mention an additional \$350 value added, for a digital pond design.

Let's face it: people like to see what they are getting before they hand over their hard earned money.

SOME TECHNICALITIES

If you are considering adding digital designing to your business, make sure you invest in a good digital camera – at least 5 megapixels. The one I use is the Fuji S2 Pro SLR. It is 12.1 Mb or over 12 million pixels per inch (4,256 x 2,848). Also, your computer needs to be able to handle the software with the proper amount of Ram, and the appropriate size processor and hard drive. If you are using a Windows system, the minimum that you should have is Windows 98, ME, 2000 or XP.

To work with most digital imaging software programs, your computer should have a 500 mHz or higher processor, 128 Mb of Ram or higher. I have 851 mHz and 640 mb of Ram. Your hard drive space should be at least 250 Mb (mine is 120 Gb, however I work with video also), super VGA monitor (800 x 600), 16 bit color or better.

MAKING THE SALE

If you are a contractor or pond builder, constructing ponds and waterfalls for a living, you must ask yourself, “Do I want to increase my income by 15 to 20 percent?” If the answer is yes, then you need to start providing your clients with a digital pond design. When I meet with my client for the first time to survey their yard, I ask several important questions:

1. Where do you spend most of your time when you are inside the house? Ninety percent of the time the answer is, the living room.

2. Where do you spend most of your time when you are outside? That answer is usually the patio.

By establishing these facts up front, you can explain that the waterfall and pond location needs to be nearby the place where they spend the majority of their time. For example, outside the living room window or slider and near the patio. If their waterfall and pond are located in the back corner of their property, the only time they will enjoy it is if they make an effort to go out to where it is.

Once these issues are settled you now know where to take the picture. It is best to do a pond design in the place where it will end up being built. The next step is to explain that I take a digital picture of the area and create a virtual photo of the proposed waterfall and pond. I then explain that if they decide to go ahead with the project we will deduct the entire \$350 from the proposal. This is an incentive for them to go with you to get back their money. If they do not accept your proposal you still made \$350, which more than pays for the time spent.

You will rarely receive a “no” when your prospective client is deciding what to do. In addition, I mention to the client that if they decide to get other bids, they will have the photo which will allow them to compare apples to apples when getting the other bids. The best part is they see their finished water feature actually in their back yard.

A virtual photo of a digital pond design is to a waterfall and pond builder what a movie preview trailer is to the motion picture industry. While visiting the Macintosh dealer in San Diego, I was asked to observe the quality of the Power Mac’s processor. The Apple representative played a trailer from the movie “Winged Migration.” This clip was designed to play on the average Windows screen in a 3" x 3" window. He played it on the Power Mac’s 30" screen at full screen size. The result of this single visual presentation was my response: “I’ll take it,” not “How much?” When your client sees an award winning masterpiece in their own yard, more than likely they will say yes.

Please note that my sales success rate of more than 80 percent is not solely the result of using virtual photos. I have been designing and constructing waterfalls and ponds for over twenty five years, with over 1,900 projects completed. However, it is obvious that this innovation can greatly enhance the success of any business, no matter how young.

Waterfalls and ponds are becoming a common addition to current landscape designs, with the projected future trends being even more promising. The digital age is upon us and we have the perfect product to utilize this technology. So get ready to give your computer a tune-up and let’s get started! My heart is to share my 25 years of experience with others, so if you have a question about water features or their construction, I am here to help you.

Koi Pond- Is pH Important?

It can mean the difference between life and death of your koi fish!

Alkaline Koi Ponds

Generally speaking, alkaline conditions are more common than acidic in ponds, especially the newer ones. If the pH remains over 8.5 for any length of time, the koi fish will become stressed or diseased. Here are some helpful examples:

- Symptoms • Lethargic or listless fish due to damaged mucus coating; prone to fungal infection and other disease
- Plants chalky in appearance due to calcium deposits
 - Prominence of waste chemicals which harm pond life

- Biological filter loses effectiveness

Reasons

- Introducing fish too soon into a newly constructed pond that was not properly sealed; the lime or alkali from the cement will raise the pH to the top of the scale. Even a shovel full of concrete or mortar can cause serious problems.
- Lime leaching from cement products such as blocks, stepping stones and similar materials over a period of time.
- Lime in stone products subject to erosion
- Excessive growth of algae.

Solutions

- If the pond alkalinity is from the koi pond being new, allow adequate time for the pond to age. To speed up this process introduce bacteria found in a koi pond starter solution.
- Institute a partial pond water change to dilute the alkalis
- If high alkalinity is due to an over-abundance of algae, remove excessive growths of thread algae.
- If these steps do not result in a lower pH, use acidifying compounds or pond pH buffers.

Acidic Koi Ponds

Low pH conditions occur less often than alkalinity in koi ponds.

Symptoms

- Fish become stressed, resulting in sickness; they may start dying off.
- Oxygenating plants such as hyacinths, water lettuce, Elodea and Anacharis become discolored and wilted.
- Biological filtration ceases to operate correctly.

Reasons

- Pond water may have lost its buffers due to excessive amounts of rain, which is soft and very acidic in many areas due to pollution. Loss or decrease in buffering agents can create drastic fluctuation in pH.
- There may be high levels of humic acid or other organic acids produced by build-up of decomposing plants and leaves.

Solutions

- Regular partial water changes
- Adding buffers to pond by placing a mesh bag of oyster shell gravel, dolomite or crushed coral gravel in filter or waterfall. Water passing through the material will pull out the calcium carbonate and raise pH.
- Using pond-buffer salts (sold in pond supply stores)

Partial Water Changes

Wastes and toxins tend to build up in most ponds, despite use of a biological filter. As water evaporates, pollutants remain and build up over time, becoming dangerously concentrated. For this reason it is highly

recommended for smaller koi ponds that you drain and replace 20 percent of the koi pond a couple of times a year. Larger koi ponds are generally much more stable and the water chemistry does not fluctuate radically. This water should be siphoned or pumped from the bottom of the koi pond, where the majority of pollutants collect.

No more than 20 percent should be replaced since larger amounts could easily upset the balance of the koi pond. This is especially true if the replacement water is softer or contains high levels of chlorine or chloramines. It would also be advantageous to keep most of the rotting debris cleared from the bottom. Decaying fish and pond waste produce ammonia, methane and other toxins which can be fatal to the koi pond family.

If you are adding water with a garden hose, it is best to adjust to low volume and a mist that sprays gently through the air before entering the pond. This will allow some of the chlorine to evaporate. If you add the water quickly, add a dechlorinating product to the koi pond to neutralize the chlorine and chloramines. Unless you are adding water to your koi pond by means of an electronic aquafill water leveling system, always use some type of a timer or alarm to remind you to turn off the water! If left unattended for an extended period of time, you could find your pond overflowing and your koi fish dying from chlorine poisoning. It happened to me... several hundred dollars worth!

Pond Liners- 7 Reasons Why I Don't Use Them

1. Liners will eventually leak. Manufacturers have varying warranties, ranging from 15 to 30 years, with a 75-year life expectancy. In reality, it will definitely last as long as the guarantee claims as long as you leave it in the box, and store it in your garage.

Once you place it in the ground, nature's forces begin a contest to see which will break its water-tight integrity first. Vying for the title of culprit are gophers, ground squirrels, chipmunks, rats, moles, roots from trees, plants and weeds, sharp rocks, heavy rocks, sharp objects, and moose (if you live in Alaska).

If a leak does develop, it is next to impossible to locate it without removing all the rocks covering the liner, draining the pond, spreading the liner out on the ground, and inspecting every square inch. A tiny pin hole can lose five gallons every 24 hours.

2. Bottom drains cannot be utilized with liners. Liner advocates discount the use of bottom drains primarily because they would rather not, since approximately one half the sources for leaks in liner ponds are from bottom drains. When the liner is cut to install the drain, sealants are used along with pressure rings to make a water-tight seal. The sealants dry out or break down and seal collars warp, resulting in time-consuming, costly repair.

3. You cannot use out-of-pond pumps. Since liner advocates don't use bottom drains, they can't use above-ground pumps, which leave no other choice but to use sump pumps. These pumps were originally designed to pump water from sump pits in basements and cellars. They are not designed to save energy; in fact, they are the greatest consumers of energy per horsepower of all pumps. The largest retailer/wholesaler of liners, pumps and accessories sells a sump pump which produces 4200 gallons per hour at 704 watts for \$339.00. This pump needs to be pulled from the pond to clean debris from its intake screen. It is a potential shock hazard to fish and humans and is filled with oil, which has the potential of leaking out and covering the surface of the pond.

In contrast, an above-ground pump that supplies 600 gallons more per hour (4,800) for less than half the energy cost (348 watts) and costs over \$100 less. Running this pump 24 hours per day will result in a savings of over \$500 per year over the sump pump. In other words, the energy savings would pay for the above-ground pump and put an additional \$270 cash in your pocket the first year alone.

If that isn't enough incentive, a second reason to use the above-ground pump is that there is never a need to

worry about it clogging since we install two 8" anti-vortex drains on the bottom. The only maintenance required is to occasionally remove the lid from the leaf basket on the pump and dump the debris from the catch basket. Because this is a high-efficiency pump, it is extremely quiet, and standing right next to it you can barely hear it running.

With liner ponds the sump pump is located at the outside edge of the pond, not in the middle as in professional concrete and rebar constructions. We place two 8" anti-vortex drains in the middle of the pond, 24" apart. As fish waste and other suspended particles and algae spores settle to the bottom, they are drawn into the drains and taken out by the filter. An ultraviolet light is placed in series between the filter and pond return in order to kill pathogenic bacteria which can cause disease and turn the pond green.

In deeper ponds that use liners, all the waste material settles and collects on the bottom and rots, creating ammonia that is toxic to fish and other aquatic life. Because a sump pump is located near the outer edge of the pond and not in the middle on the bottom, maximum efficient circulation cannot be reached. This creates toxic cloudy areas in the pond's bottom. Most liner ponds I've seen are only 24" deep, and circulation is not an issue in these cases. However, koi fish are not recommended in these kinds of ponds; koi experts recommend a depth of at least 3 feet.

4. You cannot use a high pressure maintenance free biofilter with a liner pond. When using a sump pump, you have to use a gravity feed bio-falls, down-flow or upflow filter. All of these are inefficient and result in high maintenance costs. They need to be cleaned often by removing all the waste-laden filter media. To say the least, this is a filthy, stinky, messy job which neither my female clients nor most of my male clients expect to perform.

Aqua Ultraviolet's high pressure filter contains state-of-the-art technology enabling it to simply be back washed with a turn of the handle. The discharge hose can direct the fish waste and particulate debris down the drain, or it can be used to water the garden or lawn. The high pressure filter is designed to handle five to ten times the volume of water that a gravity flow unit or bio-falls can handle.

In addition to all this, the patented bead design of this filter allows for maximum surface area in which nitrifying bacteria can live and break down nitrites. The "Liner Guy" wants you to use his messy, dirty, stinky inefficient filter because it is his filter, and it costs very little to manufacture compared to the professional bead filter. My opinions about filters come from many years of experience, and trying nearly every one that is on the market. I even jumped on the "filter bandwagon" for a couple of years and used my own design.

Why? Because of the unbelievable profit margin! When I discovered the Aqua Ultraviolet filter advertised in several pond magazines, I gave it a try. I've been using it for over ten years with no problems whatsoever. My clients clean the filter with the turn of a handle and stay clean themselves. A great side benefit to this filter is that you can have twice the number of fish in your pond than when using the inefficient gravity filters. By the way, this is not a paid endorsement of their product!

5. Safety is a concern when pond liners are used. After a hole is dug, a pond liner is placed in the hole and then it's filled with water. Rocks are then placed around the perimeter of the pond to cover up the edge of the pond liner, and more rocks are piled up on a mound of dirt covered with another liner to create a waterfall. From my 26 years of experience, I've learned that many adults are just like kids when it comes to ponds and waterfalls.

They inevitably climb on the rocks of the waterfall and the pond's edge. Since the rocks are all loose, they can move, tilt or shift on the pond liner, resulting in someone falling and getting hurt or, worse, drowning. With professional concrete and rebar construction, all the rocks are cemented in place, providing a secure foundation to walk or climb on.

6. Pond liners limit pond shape and configuration. Why are most liner ponds circular or oval in design? Because pond liners are dispensed on rolls and therefore available only in square or rectangular shapes. If an L-shaped pond was designed, you would need to bunch up an inordinate amount of pond liner into the inside corner. Not

only is it wasting expensive square feet of pond liner material, it makes it difficult to stack rocks on top of the bunched up liner so as to cover it up.

Oh sure, “Liner Guy” you’re thinking, why doesn’t he mention that special shaped pond liners can be custom made? Okay, I’ll mention it! Custom pond liners can be made to order. And now I’ll mention that this customized pond liner is going to cost you as much as constructing a professional pond with rebar and concrete that will last a lifetime. There, I mentioned it!

7. Last but not least, Integrity. When I read articles written by “the Liner Guy’s” disciples, bragging about the ungodly profits derived from pond liner construction, I can’t help but wonder how they sleep at night. The profit derived from one day’s work -- digging a hole, dropping in a pond liner, covering its surface and perimeter with loose rock, and plugging in an energy-sucking sump pump -- equals what I made in four or five days of labor. One big difference: their warranty is one year, if you’re lucky; but one built with concrete and steel is for a lifetime!

I’m the person that the past customers of “the Liner Guy” called two or three years down the road, asking me to fix the leak in their stinky green liner pond. A client in Poway, California paid \$6,500 for a liner pond with a necklace of rock around the perimeter and a 3 x 4 foot fiberglass waterfall at its edge. I actually had to suppress a laugh when I saw it out of respect for my client’s grief.

This pond had a bottom drain that leaked; however, the major loss of water stemmed from a tree root puncture. In addition, it was obvious that this “Liner Guy” disciple did not have his customer’s long term financial well being in mind after I discovered a cheap, 7- amp energy-sucking “Jacuzzi pump. We replaced it with a 3.6 amp high-efficiency pump that supplied nearly twice the flow.

Next, we pulled out the liner, reconfigured the pond’s oval shape to serpentine, and constructed the pond and waterfall shell using rebar (8" on center) and 3500 psi concrete with stealth fiber added. We installed two 8" bottom drains, added a professional skimmer, a Venturi air supply valve, a natural rock waterfall, a turtle island that supported a 25 foot bridge spanning the pond, an “Ultima II” high pressure, back-washable filter, ultraviolet light, lighting in the pond and waterfall. plus an electronic AquaFill pond water leveler. All this took us eight days from start to finish and cost only \$2,000 more than the client originally paid.

In Conclusion: Is it any wonder why I despise the “get rich quick” scheme of pond liner construction? The “liner guy” hates hearing me refer to concrete and rebar ponds as “professional construction.” They insist their liner ponds are professional construction. And if so, why do they sell the very same kits to do-it-yourself homeowners as to the construction business people for hire?

I am proud to claim over 1,900 satisfied customers over 26 years. Ninety-five percent of my clientele comes from referrals by satisfied customers. I don’t have to wonder why that is so.

Is there a place for liner ponds? Yes, if you’re renting and expect to move in two or three years. Or if you’re setting up a temporary display. No, I’m not totally against liners. They’re great for truck beds and cheap swimming pools! Actually, I have made thousands of dollars over the years from pond liners – by replacing them with concrete and steel!

Koi Pond- Biological Filters

Contrary to common belief, biological filters do not process or filter the solid waste of fish in your koi pond. They continue to build up and putrefy, creating a breeding ground for harmful species of heterotrophic bacteria which are pathogenic to koi fish. As stated, the biological filtration process utilizes Nitrosomonas bacteria to break down ammonia into nitrite and nitro bacter, further converting nitrites into nitrates, which is less harmful to koi fish.

Plants now utilize the nitrate and phosphate for fertilizer; if you have not provided an adequate ratio of water plants to koi fish, “hard” algae (growing on rocks and koi pond walls) and “free- floating” algae use nitrate and phosphate to reproduce. The key to preventing this condition, called “algae bloom,” is to provide enough nonsoil bearing plants such as water lettuce and hyacinths to compete for the nitrate and phosphate. Since these two plants are tropical and can only survive in warm climates, hardier varieties such as Elodea and Anacharis will perform well in cold climates. These plants are commonly used in bio-filter ponds.

A bio-filter pond is used in conjunction with shallow koi ponds with small populations of koi fish. It will also eliminate the need for a mechanical bio-filter and a second pump to operate it. The bio-filter pond is located higher than the main pond for two reasons. It prevents the koi fish from eating the plants and it allows the water from the waterfall to be filtered as it passes through the plants prior to spilling into the lower koi pond.

An adequate ratio of plant cover for the koi pond’s surface is approximately 20 to 30 percent. This is a basic rule of thumb and many factors can change this equation. For example: koi fish population, water temperature, and debris accumulating from leaves or over-feeding the koi fish. I have said many times that the Koi Pond is the koi’s living room, dining room and toilet.

If you do not have a bio-filter, that could explain why your koi pond is a tad green, stinky, or cloudy, and why your finned family is gulping air on the surface. Trust me. That will not be for long. Fish gulping air to survive would be like you -- in an attempt to avoid breathing poisoned air -- gulping water to survive. I have a do-it-yourself simple instruction sheet with diagrams, for building your own bio-filter using \$25-\$35 worth of parts from any home improvement store. Also includes a shopping list of necessary items. download free (no sign-in) no obligation...
<http://www.askdoughoover.com/>

Pondless (Convertible) Waterfalls - Both Ways

Many people who are looking for a waterfall are opting in for pondless waterfalls — out of necessity, not choice. Ponds pose several challenges, some involving safety issues and some maintenance. Ponds and toddlers do not mix. Many people with small children so desperately want a waterfall and pond that they are willing to surround it with a fence. Even so, there is still the fear of an unlocked gate becoming a door to disaster. How natural looking could a fenced water garden be? But that is the price they are willing to pay to enjoy its benefits.

Disciples of the “liner messiah” tout the “pondless” waterfall as the solution to the problem. I believe it is a solution to a problem, but not the only one. First of all, you must ask yourself, is this a time-sensitive situation? Yes it is, because water is no longer a hazard when the children learn how to swim.

Parents of small children often spend many thousands of dollars on a pondless waterfall that must remain pondless. But when the children have grown and they would like to have a pond with water, it could cost twice as much to remodel the existing pondless structure.

As children get older and get more inquisitive and begin to explore nature, a pond can become a live “discovery channel” in their back yard. They can watch fish hatching from eggs, dragonflies emerging from a cocoon, tadpoles transforming into frogs, two crayfish battling over a potential mate, fish and turtles eating out of their hands. And they will not get any of that in school.

I was inspired to create a pondless (convertible) waterfall and developed two styles for my customers. A pondless (convertible) waterfall is basically a waterfall that spills into a pond filled with rocks. There is still enough room for hyacinths and lilies in the pond, with enough exposed water for small fish such as guppies or mosquito fish. You can even make a couple of areas for a turtle to hide and hibernate in the winter.

With this type of waterfall, you have the best of both worlds – all of the elements of a pond, but none of the

potential dangers posed by deeper water, and no maintenance issues. When the children are older, the rocks are simply removed from the pond and larger fish can be added.

Now you have:

1. eliminated the dangers,
2. reduced maintenance issues,
3. added an element of intrigue,
4. created a miniature wildlife refuge,
5. maintained the option of a pond,
6. expanded the water feature from a waterfall to a water garden,
7. enhanced and increased the number of potential buyers in the future, and
8. enhanced and broadened the appeal of your property to a larger range of future buyers.

The two styles of convertible pondless waterfalls are raised and below grade. The raised pond can be formal by constructing the surrounding seat wall out of block and covering it with stucco, quartzite, marble, tile or slate. Or it can be surrounded by alternating large boulders and rock walls (some of which serve as seating), which creates a more natural motif.

Seven Most Asked Questions About UV Pond Filters

1. Is an ultraviolet light a filter? Yes, as far as the definition of filter goes. A filter is a device that removes unwanted material from liquid, gas, light or sound. Ultraviolet light removes harmful bacteria such as pathogens from the water. In the case of algae or planktonic spores, the UV light would act more like a transformer than a filter. The UV light transforms the live algae spores into dead algae spores; it does not filter them out.
2. Do I need an ultraviolet light in my pond? Some ponds need a UV light and some do not. If you have a small pond with a few guppies or mosquito fish, and it is 50% covered with hyacinth, water lettuce, or lilies, and it is being aerated by a fountain or waterfall, the answer is: No! If you have many fish, few plants, and a cheap bio-filter, yes, a UV light would help a great deal. Most large ponds of 20,000 gallons or more tend to be more stable biologically and nature's hydrogen cycle keeps everything in check.
3. Does the UV light kill beneficial bacteria? You probably ask that question because some liner pond guy told you, or you read it on his website, that it does. Well, it does not. Beneficial bacteria are not floating around with the algae spores and pathogens. Aerobic and anaerobic bacteria, nitrobacter, and other bacteria are busy working and doing what they do. They live on the surface of things in the pond and in the rotting debris on the bottom of the pond, breaking down nitrites into nitrates and nitrogen, and breaking down ammonium into ammonia gas. Ultraviolet light does, however, kill the microscopic animals such as the rotifers and daphnia which each planktonic algae ("pea soup" algae). However, the UV light is taking care of those too, anyway.
4. What size should I get? Ultraviolet lights are sized by watts and the number of watts you need is determined by the size pond you have. You should move the entire volume of the pond through the filter and UV light at least every three hours, and ideally every 1.5 hours. If you have a 1000-gallon pond, you need a 1,500 gallon per hour pump. So you would need to get a UV light that is rated to handle 1,500 gallons per hour passing through it.
5. Which is the best UV light to purchase? Do your homework. Do not just compare the prices of the unit.

Compare warranties and replacement bulb prices. Find out the flow rates and the amount of time that water is exposed to the UV light. What is the lamp life rating? Is it U.L. listed? Is it made of UV resistant materials? Is the power supply easy to disconnect? Is the lamp easy to remove? Does it have a lamp lens wiper so it can be cleaned without taking the fixture apart? Is the transformer located on the cord and not on the UV light body? Does it come with unions for easy disconnection from the system for maintenance? Buy a model that has the clear inspection cap so you can see at a glance if the lamp is working.

6. Where do I install the UV light in the system? The UV light should be installed after the bio-filter. This way, you are running filtered water through the fixture and it will stay clean longer.

7. How long should a bulb last? If you keep it clean (once a week), it should last for 18 months. This is all the more reason you should be willing to pay the extra \$10 to \$15 for the wiper model, because the labor would be too intensive if you had to take the fixture apart, remove the quartz lens, clean it, and then reinstall it every week. If you drop it or twist the cap on wrong and break it, it costs \$60 to \$80 for a new quartz lens. With the wiper model you simply pull a plunger several times and internal wiper acts as a squeegee to clean off the lens. If you do not clean the lens regularly, it will only last for a year, not 18 months. You can actually get two years out of your UV light if you turn it off during the winter months when the water is cold and the algae are dormant.

In conclusion I would like to suggest that you can never buy a UV light that is too big, but you can certainly purchase one that is too small!

Construct A Pond & Waterfall That Will Last For Decades

Are you considering a water feature for your home or do you build them for a living, you will be excited you read this article.

Many people lately are arriving at the startling revelation that water gardening is not what it was cracked up to be. As a retired master waterfall builder, it is a joy to know that over the past 26 years I created something for over 1,900 clients, that brought them more joy and pleasure than anything they had ever spent money on in their entire lives; beautiful, relaxing, stress-relieving, life regenerating water gardens.

Why would I make such a brazen statement? Because it is true!

If you are desiring such a water garden for your own enjoyment, or if you would like to design and construct a water garden with these results, there are a few major things to consider:

For how long would you like to enjoy your water garden? Would you like a water garden with as little maintenance as possible? Is monthly operating expense an issue? Are warranties or guarantees important to you? What about durability and lasting esthetics? Are you concerned about possible liability regarding safety and regulations?

These are only a few of the many questions you should find answers to prior to constructing or investing in a water garden.

There exists a community of gold diggers who have discovered that their picks and shovels can now be used in mining a new treasure: rubber liner ponds and waterfalls; fast, easy and extremely profitable. Rubber pvc liners were originally designed for flat roof construction, not ponds. How did this concept become so popular for water features? The answer is simple: greed and laziness.

You tell me which scenario sounds easier, 1 or 2:

Scenario #1: Dig a hole in the ground, pile up the dirt beside the hole. Drape a liner over the hole and pile of

dirt, and stack rocks on the liner. Fill the hole with water, dropping in an energy-sucking sump pump and attaching a hose, routing it to the top of the waterfall. Plug in the pump. Collect your money and split.

OR Scenario #2: Dig a hole in the ground and pile the dirt beside the hole, tamping or compacting the pile as you add more dirt. Lay down "schedule 40" flexible pvc pipe for dual anti-vortex suction drains and skimmer. Construct a steel rebar grid over the entire pond and waterfall surface area, 8" to 10" on center. Place 2" cement "dobie" blocks under the rebar to hold it up off the ground. Pump 3500 psi or 4000 psi shot crete (a form of concrete) over the entire surface, surrounding the rebar. Then trowel it smooth. Install professional pool skimmer and anti-vortex drains, high-efficiency, energy-saving centrifugal pump, a pressurized state-of-the-art back-flushable, bead filter, and an ultraviolet light with cleaning wiper. Apply the rock using Aquamedia mortar mix, which assures none of the rock will ever move, making them safe to walk on and no alkali will leach from the concrete or mortar.

Which scenario sounds easier to perform? Which one sounds cheaper to build? Which one sounds faster to build? Which seems to easily retain its beauty? Which do you suppose involves less maintenance? Which would not be damaged by sharp objects? Which one would not be affected by gnawing rodents? Which one would heavy or sharp rocks be unable to affect? Which one would require the least maintenance? Which do you think would cost more? Which would be more economical to operate? Which would last for decades or generations?

The question should actually be, which one costs more in the long term? With energy savings and maintenance alone, the concrete water feature would pay for itself in 10 years and last a hundred.

What would it cost to completely disassemble the liner pond in order to try and find holes made by rats, gophers, ground squirrels, chipmunks, tree roots, sharp objects, etc.?

Do the math! Which do you prefer? Serenity or insanity.

Koi Pond- Liners vs Professional Construction

Why is there so much talk about pond liners? Which ones are UV protected, or stronger, or last longer? I am by no means an expert on liner technology, nor have I ever used them in my 26 years of designing and building waterfalls. If you're a "liner guy" disciple, I'm sure you're thinking, "Oh no, here he goes." To tell the truth, I have been minding my own business for over two decades, just watching, reading and listening to all the "experts."

I've listened to how "pond liners are simple to install," and "pond liners are inexpensive compared to concrete and steel," and "pond liners are quick to install." Or "pond liners last for 50 years," "pond liners bring higher profits to pond construction and waterfall construction," and "liners don't contaminate the water with alkali as does concrete construction." Yes, I've almost sold myself on listening to the facts of the "experts." Well, not quite, due to a few facts of my own.

So, a pond liner is guaranteed for 40 to 50 years? I would have to agree with that, as long as you leave it in its box the whole time. Too bad a liner manufacturer's warranty doesn't include damage from gophers, ground squirrels, chipmunks, rats or mice. Or tree, plant and weed roots. Or from stretching and punctures in the liner due to heavy rocks and other sharp objects. Startling fact: a puncture only the size of a pin hole can cause a pond to lose one drip per second, or 5 gallons in just 24 hours. That's a pin hole, not a hole made by a pair of buck teeth on a burrowing mammal.

Imagine along with me for a minute. You have spent \$350 on a pond design and then \$8,000 of your hard-earned money for a pond and waterfall. This water feature is impressive. They dug a big hole, piled up some dirt at one end, draped a large rubber liner over the whole thing, and placed giant boulders all around the fish pond and on the dirt mound. Smaller rocks fill in between the boulder and additional rocks cover the liner in the pond. Now, it's two years later and you've just come home from a two-week vacation to find the pond

half empty (or half full, if you're a positive person).

There must be a leak! How did this happen? Where is it? No problem, you think, I remember the salesman's pitch: "If you should ever get a leak, just clean off the area around the hole, dry it off, and using the directions enclosed in the patching kit, apply this patching material." But there's only one problem: Where is the leak? or leaks? How do I find them? And if I do find them, and I'm successful in patching them up, what's to keep it from leaking again?

Okay, I'm going to snap my fingers and you'll wake up. "Snap!" Surprise! That was only a mental exercise with a happy ending. It wasn't real! Or was it? Yes, it was. The short story you just heard was true. One out of every eight projects we do involves replacing the leaky liner for an angry fish pond/leaky liner owner.

Why am I finally speaking up now, after 26 years and well over 1,900 waterfalls and fish ponds? Because I'm angry, too! Not at the "liner guy" who sells the pond liners, but at his disciples around the country who are bragging how much money they make in just one or two days. I'm not upset at the fact that they make in two days what takes me six to seven days to make in constructing my fish ponds of rebar and 3000 psi concrete.

My ire stems from having to charge \$8,000 to replace a \$6,000 liner pond that lasted only two years. (A pond liner with padding didn't stop a tree root which traveled 25 feet to do its destructive work.) For only an additional 16% in cost, that client could still be enjoying his original pond, stress-free, for his lifetime and that of his children and grandchildren and great-grandchildren.

The main features touted by pond liner promoters are simplicity, low cost, quick installation, and extremely high profits. In an article published in his catalog/magazine of liners and accessories, the "liner messiah" has obviously taught his disciples well, as you can read in this excerpt:

"If you hire us to install your pond, you get a choice of buying it with or without a stream. We offer no other choices! The pond we build covers an area of 11 by 16 feet, has a maximum depth of 2 feet, and a beautiful waterfall. We'll build your pond in one day. The basic pond costs \$5,100 and if you want to connect the falls with a stream, you're looking at an extra \$1,000. That's it. End of story. No mas."

That's what Ernie Selles, president of Patio Ponds and disciple of the "liner guy," said. Another quote from Ernie in the same catalog is, "I get out of bed every morning and look forward to going to work in a way that I never had before." I noticed he didn't mention how well he slept.

Let's do the math on Ernie's installation. The pond, stream, and waterfall cost is \$6,100. The actual retail cost of the kit is only \$1,000. \$5,100 profit for only one day of labor. Notice: unlike our package, they offer no lights, no autofill, and the pond is only two feet deep. Yet three feet minimum are required for koi fish. A two foot pond affords no protection from predators such as raccoons and herons, and the shallow depth is affected easily by rapid temperature changes, causing undue stress on the pond's inhabitants. They do not like to construct ponds over two feet deep, because they are more susceptible to cave-ins.

We would build the same pond with a depth ranging from 3 to 3 ½ feet, with no shallows for dining predators. It is constructed of rebar 18 inches on center with a shell of 3000 psi concrete (sidewalks and driveways are typically 2000 psi). This 7 sack, 60% pea with fiber mix is so dense that it's waterproof. However, we still coat it with ThoroSeal. The pond is equipped with two anti-vortex bottom suction drains, a skimmer to remove surface debris, and an out-of-pond pump that produces 5000 gallons per hour at only 2.6 amps, compared to the liner guy's pumps which are only 4200 gallons per hour at 7.6 amps – over twice the cost of energy! In addition, you have to pull his heavy cast iron monster pump out of the water to clean out debris.

We would also include a state of the art Aqua Ultraviolet filter and UV light – the best money can buy. The liner guy's filter needs to be disassembled in order to clean it by hand. The Ultima II filter requires the simple turn of a handle to back flush the debris. This system has been operational in my water features for six years with no problems. We include an ultraviolet light in our system that kills the bacteria that create smells, kills

pathogens that cause disease and algae spores that turn the water green. This light has a wiper arm that cleans the internal lens without the need to open the light.

We also offer an automatic electronic water level control system, the “AquaFill” by Aquamedia Corp.com that keeps the water level of the pond constant. Pond liner installers use floats that are mechanical like the float in a toilet tank. Mechanical fillers can corrode and stick, causing overflows and even poisoning the fish with excess chlorinated water. However, the AquaFill does not stick or corrode.

Not only are all our ponds designed a minimum of three feet deep, we build caves for the turtles and fish to hide in. With pond liner construction, rocks cannot be cemented to the liner and consequently many are loose, creating a hazard if someone were to step on them. Kids will be kids and I promise they will eventually be running up and down the falls. We have no loose rock because they are all cemented in place with Aquamedia Mortar Mix, which is not only three times stronger than regular mortar, it is very dense. As a result, alkali will not leach out into the water and create a pH problem. Regular mortar mix is porous and water passes through the joints of the rock, carrying with it cement residue. This in turn creates stain trails high in pH, easily poisoning the fish.

In conclusion, as an educated customer, would you pay \$6,100 for a rubber pond liner or spend the same amount or a little more to get a shell made of concrete and steel that not only would never leak, but would last for decades. So what are we as contractors looking for? Exorbitant profits or peace of mind with long-term, happy clients?

It is more enjoyable for me to get a call eight years down the road from a content client than to get a complaint of a leaky pond. What does the “liner guy” disciple say? “Sorry, we only have a one year warranty”? Or do they go back and remove all the rocks, pull out the pond liner, clean it, repair the leaks, and replace all the rocks and equipment at no cost? Liners or professional installations?

You say pond liners are professionally installed.

Then why is the very same liner kit sold to homeowners and do-it-yourselfers? The reason is, it doesn't take an experienced professional to install one.

All you need is “a garden hose and a shovel”!

Ultraviolet Light vs. Algae - Water Garden Facts

What is the best way to control algae and impurities in backyard water gardens? It is not as simple as you think! Ultraviolet light was discovered to have adverse effects on certain organisms commonly found in ponds, such as specific types of bacteria and algae. For this reason, UV light treatment of ponds has become very popular and effective in controlling certain forms of bacteria such as pathogens and planktonic algae.

Planktonic algae are cousins to filamentous algae, also sometimes referred to as string or blanket algae. Unlike filamentous algae, planktonic algae are common to ponds and are critical to a pond's food chain. They provide food for many microscopic animals that, in turn, are eaten by animals higher up the food chain such as water bugs and fish fry. Unfortunately, these algae can bloom to nuisance levels, requiring immediate control methods.

Planktonic algae or “pea soup” algae are microscopic, free-floating plants. They are generally found near the surface of a lake or pond, within the top two or three feet where sunlight can help provide food through photosynthesis. Planktonic algae consist of green algae, blue-green algae, diatoms, and euglenas. Some species of planktonic algae, primarily blue-greens, can be toxic to animals and emit an odor or foul taste to water.

Algae are most prevalent in the summer months and are extremely sensitive to water temperatures, thriving in

warmer water. Cold water inhibits their reproduction and growth, resulting in a clear pond in the winter months. Algae blooms usually occur in the spring, around April or May, as the water temperature begins to rise. Depending on the algae species, the water turns various shades of green or brown.

In a natural pond or lake, microscopic animals such as the rotifers and daphnia create large populations which begin devouring the algae bloom; then the water becomes clearer. Once temperatures reach about 72 degrees Fahrenheit, the microscopic animal population declines rapidly, with decreased reproduction; this is when they become prey to fish fry, resulting in the proliferation of algae. This can be controlled by an increased number of hyacinths or bog plants to help regulate the nutrients that algae thrive on.

In addition to water plants, the single most effective control for planktonic algae is ultraviolet filter treatment. As the pond water passes through the UV light, the algae spores are killed. The deeper the pond, the cooler the water remains, and the better the chances for controlling algae growth.

Planktonic algae could create a serious threat to the fish population if it were to die off quickly. The dying algae deplete the oxygen in the water, threatening the fish. The same goes for filamentous or string algae. In small amounts, this type is beneficial as food for fish; however, it can get out of control rapidly and choke the pond. Even though string algae provide oxygen during the sunlight hours, it also consumes oxygen from dusk to dawn, canceling out the oxygen-generating benefit. In addition, if you attempt to kill off the algae all at once using herbicide or salt, the resulting effect of the dying algae depleting the oxygen could be fatal to the fish.

Great caution should be taken when handling liquid or granular fertilizer so that it never is introduced into a pond. Also, be aware of any possible contamination from groundwater run-off accessing the pond. Fertilizer, even in minute quantities, can trigger algae blooms and, in larger quantities, can poison your pond.

Most generally, an abundance of algae is a direct result of excess nutrients in the pond. If you already have a biological filter and a UV light, the source of the excess nutrients could be from (1) the watershed, (2) too many fish in proportion to the size of the pond, (3) an inadequate filter system, or (4) not cleaning or back-washing the filter often enough. These are the types of conditions that warrant an ultraviolet light in conjunction with a good biological filter for the removal of the extra nutrients, suspended particles and algae spores, as well as the microorganisms that cause the water to stink and turn the water cloudy. The UV light will need to be cleaned regularly; and if it has been over one year, it may need the bulb replaced. Or you may need to add more plants to your waterfall and pond.

Filamentous or string algae are also referred to as “moss” or “pond scum.” It forms dense mats of hair-like fibers growing on the sides of the pond and submerged objects. The algae produce oxygen which becomes trapped in the strands and mat formations, causing it to float on the pond’s surface. Portions of the exposed raft of floating algae become overexposed to the sun and die. The brownish-green bubbly condition gives the appearance of a disgusting scum, hence its name. However, if you were to gather up this slimy mess and wring out the water, you would quickly discover it is not slimy or scummy at all, but rather has a soft, fibrous cotton textures and smells of freshly mowed grass. As it hangs from the rocks in a waterfall, it looks like anything but that.

The best way to control string algae is by hand. Actually gather up the floating mats in the pond and hanging clumps in the falls. If you are planning to use a herbicide for control, always remove the bulk of algae by hand first. You will reduce the chance of oxygen deprivation from the dying algae.

An ultraviolet light with wiper cleaning device can reduce the amount of algae significantly. Have an expert calculate the size of your pond and how many watts you need for the proper rate of flow per hour.

The proper equipment can mean the difference between owning a water garden that can provide more joy and pleasure than anything you ever spent money on, or it can be your biggest nightmare.

Koi Pond- Oxygen Levels

Adequate oxygen is essential for the health and survival of your koi fish and other pond creatures. As pond life utilizes the oxygen content of the water, it needs to be replaced. Oxygen enters the water where these two contact each other – primarily at the koi pond’s surface. That is why a waterfall is such a vital adjunct to your water feature.

As the water passes over and splashes against the rocks, it picks up large quantities of oxygen, aerating the water. Aeration can similarly be achieved with a fountain or water pump. These methods increase the area of water coming into contact with the air; in addition, the resulting circulation prevents stagnation of the koi pond.

SOME SYMPTOMS OF OXYGEN DEPRIVATION:

- Koi fish gasping at the surface for extended periods of time.
- Overnight death of fish, especially the larger, more sensitive ones.
- Water that appears murky black and emits an unpleasant odor.
- Koi fish are attempting to or actually do jump out of the koi pond.

REASONS

- Oxygen is being consumed by large quantities of decomposing debris on the bottom of the koi pond.
- Excessive amounts of algae are using up the oxygen during nighttime hours with shorter daylight hours.
- Too many fish for the size of the koi pond.
- Surface covered over with lily pads.

SOLUTIONS

- Remove debris
- Decrease algae growth
- Decrease number of koi fish
- Decrease number of lily pads.

PLANTS

Oxygen is also produced by submerged “oxygenating” aquatic plants and algae. Plants not only help regulate the oxygen levels of your koi pond; they cool off the surrounding area as well. Plants that normally would not survive in direct sunlight or desert climate thrive in the immediate vicinity of a waterfall due to the high evaporation rate. The water splatters and thins out as it rolls over rock, increasing the surface exposure. The resulting evaporating water becomes a heat exchanger, cooling the surrounding air by as much as 15 to 20 degrees. The evaporating water increases the humidity protection to the plants from the harsh rays of the sun.

When adding plants to a waterfall, there are many places that can facilitate plants, such as baby tears and different types of moss. Places that would not be conducive to actual water plants could be flat or craggy areas that receive splashing, providing the necessary moisture for the moss, baby tears (*Soleirolia soleirolii*) or *Isotoma fluviatilis*. Other water plants that do not require a specific root base can be placed almost anywhere in

a waterfall such as water pea, parrot feather and watercress.

An attribute of moss or baby tears is that it does not require a large quantity initially to look great. If it receives the proper amount of moisture, it will spread and grow rapidly, even climbing up rocks and other areas of the koi pond.

It is important to plant the proper type of vegetation to prevent overcrowding when they become mature. A good example is two common pond plants, Papyrus and Horse Tail (*Equisetum fluviatile*). Both of these plants need to be contained, either in a planter pot or a separate pocket built right into the koi pond or waterfall.

Consider creating a bog pond or bog planter on the perimeter of your koi pond. A bog pond is a raised, shallow (6 to 8 inches deep) pond filled with bog plants. Here is one of the best lists I have found to date with more information on the subject: (<http://www.plantideas.com/bog/index.html>). Flood this area with a portion of the unfiltered waterfall return water and allow it to trail back into the koi pond. You have now created a very effective natural biological filter. The fish waste, as it is absorbed by the bog soil, is broken down into ammonia by aerobic bacteria (using oxygen). These aerobic bacteria reproduce at higher rates than do the beneficial Nitrosomonas bacteria, which actually break down the ammonia. So aerobic bacteria compete for oxygen with the Nitrosomonas and use so much of it that the area they inhabit becomes anaerobic, or oxygen-deficient.

The ammonia by-product of fish waste being broken down by aerobic bacteria is now “attacked” by Nitrosomonas. This further breaks it down into toxic nitrite. Then the nitrite is broken down by other aerobic bacteria called nitrobacters, which convert nitrite into beneficial nitrates in the form of food for the plants.

Smaller bog planters can be created at the koi pond’s edge, in much the same way as the larger bog pond was. As the water passes through these bog planters and goes through the process of being cleaned, it picks up oxygen before returning to the pond.

Douglas C. Hoover; CEO of Aquamedia Corp, master Waterfall Builder, freelance writer and author designer, architect, inventor, engineer, writer, author and builder of over 1,900 waterfall and ponds in California or the past 26 years. Inventor and manufacturer of the "AquaFill" T.M., electronic float control system for ponds, pools, fountains and hot tubs.
<http://www.watergartenauthority.com>

One of the most effective ways to add large quantities of oxygen to the water is by the use of Venturi injectors. For a complimentary instruction sheet on how to construct a Venturi injector, download at homepage.mac.com/doughoover.

Ponds & Waterfalls- Layout & Excavation

First of all: know what you want. If you need some ideas, visit the library or your local book store and browse through landscape books, garden and pond magazines. You can also search the web and read and study as much as possible.

Layout is the most important phase of the entire project. I have heard many complaints from disappointed clients after they had a chance to get used to their new addition to the landscape. “I only wish we had made it bigger ... made it deeper ... added an island ... made it longer and constructed a bridge ... built it closer to the house ... installed a larger water pump for the waterfall ... or ... built the waterfall higher or wider.”

Most of these wishes could have been granted for a reasonable cost before or during construction. But waiting until afterward means incurring a major expense that may be cost prohibitive. If your choice is to omit the item or feature because of its cost, then make structural preparations to allow for adding it on later. You can plan and design the landscape to allow for easy additions to the koi pond later just by the strategic placement of trees,

sprinklers, drain lines, and much more.

When you decide exactly where you want to place the koi pond, take your time laying it out. A garden hose is popular for this job because it can easily be moved around until the desired shape is achieved. Once that is accomplished, you can use construction paint and spray the ground in the outline of the hose. If there is any doubt about where to locate the koi pond, give it a couple of days and ask for outside opinions. Then walk around the yard while you observe the proposed spot from various angles, especially views from inside your house, from the room where you spend most of your time.

Remember to take into consideration everything around it. How close is the nearest tree? Will its roots pose a problem later? Is there going to be sufficient sun throughout the day? Some water plants require more sun exposure than others, such as lilies. Make sure you know where the main power, water and sewer lines are routed to the house. It is not so good to find out after the fact that the gas or water line runs right through the center, 36 inches below the surface of a 48 inch deep koi pond.

Do not land-lock a section of your yard that may later need drains, sprinklers or heavy construction material. Place in advance or remove such items and install necessary drains and sprinklers. If it is not convenient to run the sprinklers at this time, run 4 inch drainpipe sleeves under the stream or section of pond to enable running low voltage wire and sprinkler lines later.

When it comes to the koi pond depth, if you plan to have it more than 18" deep, you will need to check with the local building codes to determine if a 6 foot perimeter fence is required. You may also need door alarms and self-closing gates at the side of the house. If the koi pond site is not level, do not worry about it; you will have all the excavated dirt from the pond to level out uneven terrain and get creative with terracing for an upper koi pond and waterfall or a sloped portion of the yard for a stream or creek.

A pond can be placed on the side of a hill by constructing a retaining wall to hold back portions of the hill. Drive a stake in the ground until the top of it represents the water surface of the koi pond. Continue with additional stakes in the shape of the proposed pond using a level as you go. Keep in mind how deep the koi pond should be and begin to remove the dirt. As you do so, note the condition of the soil and determine if you will need only shovels and a pick, or if you will have to rent a jackhammer. Also, if the soil is sandy and unstable, you may need to shore up the sides with plywood forms and supports prior to pouring concrete.

Most often the soil from a pond excavation can be used to create berms in the landscape plus mounding for a waterfall. If the koi pond is large the excavated dirt can be used to terrace a level back yard, facilitating a second, elevated koi pond. If there is no access to the back yard for a bobcat or excavator, additional soil will need to be removed by wheelbarrow and can be dumped into a rented trash bin or dumpster.

The most important stage of the water feature project is planning, not layout and excavation. If you have not planned and predesigned your waterfall and koi pond by now, file this article away until you do.

Koi Pond- Water Chemistry

The most basic conditions of your koi pond water chemistry are the pH factor (which stands for potential Hydrogen) and water hardness. These factors alone can determine the life or death of your koi pond's inhabitants (I call them the "Fam Fam").

The pH of the koi pond water is measured on a scale of 1-14, with a reading of 7 considered "neutral." Any reading above 7 is alkaline; anything below 7 is acidic. Most fish prefer a pH value of 7.2 to 7.6, or just slightly on the alkaline side of the scale. However, koi and goldfish can adjust to gradual changes in pH from as low as 7 to as high as 8.5 and still remain healthy and flourish.

Hardness or buffers in the koi pond water can raise the pH levels. Even though hardness is a separate measure

from pH, the two respond to each other chemically. Pure or “distilled” water has a pH of 7 and an absence of buffers or hardness. Neutral pH is unstable, however, and if it has no buffers or hardness, it can quickly drop to the lower (acidic) end of the pH scale – as low as 4.2 to 4.8. At this level of acidity the fish’s gills become burned and eventually become unable to extract oxygen from the water, ultimately suffocating.

Should the pH in your koi pond ever drop to these levels, never try to raise the pH too quickly. By placing coral gravel, dolomite, or oyster shell gravel in a nylon filter bag inside your filter or directly in the waterfall, moving water can pass through it and the pH will rise to 7.0 or 7.3 in less than two days.

To prevent the drastic fluctuation in hardness buffers affecting pH, you should include one or more of these gravels in your filter system at all times – especially if you are replenishing your pond with soft water. The gravel should be replaced every 9 to 12 months since all the buffers will be leached out by that time. If the buffers are used up and the pH level drops to 6.0 or lower, the nitrifying bacteria that break down the toxic fish waste, ammonia, and nitrite will stop functioning. At a low pH, highly toxic ammonia chemically changes to relatively non-toxic ammonium. If you raise the pH rapidly, the ammonium will also quickly return to ammonia, which could be fatal to your fish.

Please invest in the health of your fish. Purchase a koi pond test kit from any pet or pond store. Invest the time to read the directions and start regularly testing your koi pond. Remember, clear water does not mean clean! As in the water we drink, just because the water looks clear, smells good, and tastes good does not mean it is clean.

Most of the most toxic, cancer-causing priority pollutants listed by the E.P.A are colorless, odorless, and tasteless. Do not ever forget the simple facts: You have a toilet in a separate room of your house. Your scaly friend’s living room is their toilet, and they have to swim in it. Keep it flushed and clean.

Douglas C. Hoover; CEO of Aquamedia Corp, master Waterfall Builder, freelance writer and author designer, architect, inventor, engineer, writer, author and builder of over 1,900 waterfall and ponds in California or the past 26 years. Inventor and manufacturer of the "AquaFill" T.M., electronic float control system for ponds, pools, fountains and hot tubs.

Koi Pond and Waterfall Builders- What You Need to Know

Before installing a water feature you need to ask yourself several important questions first:

What is your budget? How much can you spend on the entire project? You could spend \$3,000 on a water feature and find out you still need an additional \$1,000-1,500 for plants and amenities, such as a deck, gazebo, walkways, fish or landscape lighting in the pond, waterfall and lawn. Other possible extras are a biological filter, auto-fill for pond, skimmer, back-flushable bio-filter, and more.

How big is a water feature? If you are building your own, then structurally size is not that big an issue! I would charge the same price for a 3-foot high waterfall as I would for a 5-foot; the same for a 3 by 5-foot pond as a 4 by 6. There is only a \$200 difference in cost between the 1,000 and 2,000 square feet of concrete shell surface. Your main concern about size should be space, not cost. How much of your yard can you sacrifice? Even if the space between your house and the property line fence is limited, a water feature can be incorporated.

Small ponds 1½ to 3 feet deep can facilitate a sump pump located within the pond. Even though a sump pump is inexpensive, it consumes much more energy than an above-ground pump. A pond any deeper than 3 feet requires an exterior pump for better accessibility and maintenance, and at a higher cost. But they pay for themselves in a short period of time with the energy savings. Also, larger ponds require greater filtration, more cleaning and maintenance.

The size of the waterfalls will determine the size of the pump needed. The higher the waterfalls, the bigger the

pump needed to supply the water and the greater the cost for electricity. Height creates head pressure which requires more energy and is the major factor in operating cost.

How much entertaining will you do? Will you need a deck? If so, how big? You might consider placing a pond next to an existing deck. Many people do just the opposite, they build a pond and then construct a deck beside it. In this case, you can take advantage of an existing deck and construct an open stairway (stair bridge) to span the pond. This affords unique access to the opposite side.

Will you have adequate room for table and chairs? Do you want a spa? Or a fire pit or barbeque? Enough lawn for games? Where do you spend most of your outdoor leisure time? That is the area for your waterfall! The waterfall will bring you the most enjoyment, therefore it should be located closest to the area where you plan to spend most of your time out of doors.

Do you want to see or hear the waterfall from indoors? Consider adding an exterior patio or French doors to your house to access your water feature area. Do you wish to have fish and other aquatic creatures? Long term, a properly maintained nitrogen cycle costs less than maintaining a pond that uses chlorine and other chemicals. Fish, plants and proper bacteria are needed for healthy pond and nitrogen cycle. Once properly established, a healthy fish pond is virtually maintenance free.

Are you willing to remove or replace certain trees or bushes to enhance the waterfall and pond? Some trees have very aggressive root systems that can literally move concrete as they grow, causing cracking and upheaval. Certain trees can contribute a great deal of debris to the water feature that fouls the water and may cause premature failure of the filter system.

What type of rock do you want? A commonly used rock is cobble stone. However, because of the round shapes, water rolls over the surfaces and creates a minimum of sound or visual effect. In contrast, irregular, angular, sharp-edged granite or similar rock creates turbulent conditions similar to white water as it flows over the edges. The greater the “white water” the more sound is produced. Also, a side benefit is the aeration of water which benefits fish and discourages the production of algae. However, do not attempt to match the color of rock with the decor of the house, brick and other features of your home. Stay natural – contrast is good!

What about electrical supply for the pump and equipment? In 20 years I have never seen the electrical costs for supplying power to the equipment site exceed \$1,200, and the average is less than \$400.

What about a water supply for an automatic water leveling system? Water is very accessible in any household and getting it to the water feature site is a minor expense. Simply tap into an outside water faucet.

There are hundreds of questions that arise in the course of a water feature project. It is best that most of these questions are answered prior to commencement of construction, it could save you hundreds of dollars by avoiding mistakes.

Pond Liners- The Hole Story

Sometimes I get calls from people who have purchased a new home with an old pond that has a big problem. The number one complaint is that it will not hold water; second is that the water is green; third is that the rock work is ugly – an eyesore!

At that point I ask if their waterfall and pond are constructed with a pond liner, and they are surprised that I knew that. However, eighty percent of all these types of calls pertain to a liner pond and waterfall. We have replaced over \$80,000 worth of defective liner ponds. One customer in Rancho Bernardo, California, had spent \$14,000 to have a koi pond and waterfall built by a large and well respected local pond liner supply company. They complained of needing to add water daily since the liner pond was constructed over a year ago.

The pond liner installer's response was that the loss of water was from evaporation. The liner pond was fitted with a manual auto fill system and they discovered the solenoid was turning on every 15 minutes to replenish the loss. In addition to the annoying water loss, they could not enjoy their fish for half the year because of murky green foul-smelling water. They reported the pond liner company came out dozens of times dumping various concoctions in the pond with a promise of startling results. The results were startling all right – our client sued the pond liner store and contracted with us.

The first thing I discovered was that the volume of the liner pond was 8,000 gallons and the waterfall pump was only 1,000 gallons per hour. It was taking eight hours to run the total pond volume through the filter. Secondly, the filter was rated for a 2,000 gallon pond, not 8,000. (Filters are usually overrated by their manufacturers as it is.) Third, the ultraviolet light was also rated for a 2,000 gallon pond, making it only one-quarter effective (according to its ratings) at controlling suspended algae growth. Fourth, because the pump was only 1,000 gallons per hour, it was not strong enough to properly backwash the filter, which requires four times the flow to be back-flushed properly.

Consequently, the filter was overloaded with rotting waste material that was contributing to additional pollution of the liner pond. The fifth defect in design was caused by the pond's large surface area, which was surrounded by several deciduous trees that were dropping their leaves into the liner pond. Needless to say, there was no skimmer installed. So all this debris ended up rotting on the bottom of the pond, contributing to the nitrate and ammonia overload.

The sixth discovery was that the suction drain on the bottom was at the same end of the liner pond as the waterfall. Consequently, the water was only circulating between the water returning to the pond and the water leaving it (from waterfall to drain). Half the liner pond was not circulating properly and was stagnating because the nitrifying bacteria were not receiving adequate oxygen to do their job of breaking down the nitrites.

NOW LET'S DO IT RIGHT

We were asked to assess the condition of the liner pond and determine the cost to correct the problems found. We turned off the waterfall in the liner to test the evaporation theory and discovered (with the falls turned off) that the pond was losing 25 to 30 gallons per day, or 750 gallons per month! Installing a larger pump filter and UV was not going to solve all their problems.

I suggested that since a reputable pond builder and store owner was involved, he should get a second opinion. He was confident that, with our reputation of 22 years and 1,800 ponds under our belt (at that time), we knew what we were doing.

After finding a temporary home for the fish, we drained the liner pond and quickly made two discoveries. As the water was being pumped out of the pond, there was a small waterfall developing from the water that poured back through a hole in the liner created from a tree root. Also, water was leaking back through a loose seal around the bottom drain as fast as we could pump it out. (This continued for some time, revealing there were hundreds of gallons of water being stored in the sandy soil surrounding the perimeter of the liner pond due to the ongoing leaks.)

We offered to repair the faulty drain and patch the punctured liner and refill it, but the owner insisted we do it right, using rebar plus 3500 PSI concrete and skimmer. Unfortunately, not one single item in the entire system could be reused in the new construction. Even the PVC piping had to be scrapped since it was undersized for the pump.

In the final analysis, because this project was not thought out or designed properly, the initial \$14,000 spent was entirely wasted. Replacing everything and installing it correctly cost the customer \$17,000. The new pond was constructed of 3/8" and 1/2" rebar, 10" on center with 4 1/2" of 3500 PSI concrete and fiber mix added. The ugly fiberglass waterfall was removed and replaced with a natural looking waterfall constructed of concrete real granite rock.

A skimmer was installed on the opposite side of the pond from the waterfall. The bottom suction drains (two anti-vortex drains in series to prevent turtles or fish from getting sucked against the drain) were placed on the opposite side of the pond from the waterfall to maximize circulation.

Next, a Venturi valve was installed to add additional oxygen and create a circular current in the pond. This delivers oxygenated water to all areas. A 6000-gallon biofilter was installed with two 180-watt ultraviolet lights. The high efficiency filter pump, which runs 24 hours a day, and is rated at 4,800 gallons per hour.

We installed a second pump of the same rating to allow for twice the flow volume off the waterfall on demand. It is also operated by a timer that comes on twice a day for one hour. This keeps sediment stirred up in the waterfalls and pond to aid the filter in removing it. The skimmer now removes 90 percent of all debris falling into the pond before it can become waterlogged and sink to the bottom.

The electronic water level control we installed in the previous pond at the owner's request was the only item that was reused in the new system. It is designed to add water to the pond automatically as needed due to normal water loss through evaporation and wicking around bog planters into adjacent soil.

This story has been repeated dozens of times over the past few years. Fortunately, most of them were on a much smaller scale.

Most of our business is word of mouth, so I imagine there are many people who, not knowing whom to call, simply gave up and turned their water feature into a rock garden. Think twice before investing too much money into a liner pond. Ask the contractor specific questions about the precautions he takes against leaks caused by roots and critters. Also, get several bids on concrete and rebar constructed ponds, they usually only cost 20% more and can be expected to last for decades.

My last word of advice, be patient, take your time and thoroughly investigate the contractor and his claims.

Want a Koi Pond? Get a Clue

Liner ponds leak, concrete ponds leach. Fish get diseases if they are not eaten first. Algae are a constant problem. And what about mosquitoes and West or East Nile Virus?

Ponds are high maintenance, so do I get a pressurized bead bio-filter? Do I get an up-flow filter or down-flow filter? Or a side-flow? How about a waterfall? Bio-falls? Pondless falls? Liner fall? Concrete fall?

I had a pond once, and you could not see the fish for the algae. Someone said to use algaecide, and somebody else said to get a U.V. Someone said to get more plants, and someone else said I had too many fish for the size of my pond. No problem...a crane ate half of them and last month a raccoon ate the rest.

Someone said I need a scarecrow sprinkler or a pond net. I asked, What for? I don't have any fish, only lots of mosquitoes. So someone else said, buy some mosquito fish, you can get them free from the Department of Fish and Game. I got the mosquito fish, and my sump pump that the liner guy installed in my liner pond ate all my mosquito fish.

My pump was plugged with mosquito larvae and dead mosquito fish. Someone said I could scrape them off the pump screen with a kitchen knife. That worked well, but I accidentally stabbed the liner. I Googled leaky liner and found someone who calls himself The Fall Guy. He said I should get rid of my sump pump and liner and install a concrete and rebar pond with bottom drains and a high-performance, low-energy centrifugal pump, a pressurized back-flushable filter, a U.V. light, and an electronic auto-fill system.

He said that, unlike liners that have no warranty against acts of nature, concrete and rebar ponds which are built

and sealed properly will last for decades. Plus, with the proper design and equipment, they will be next to maintenance-free.

I said, okay!

It cost me 20 percent more to do all this than what the original liner pond cost me to be installed.

It's been 5 ½ years, I have a wooden deck built around my pond 14 inches above the pond surface. The pond is 3 feet deep in the shallow end, and 5 feet in the deep end. Raccoons hang onto the deck, lean over, and swipe at the surface of the water. Cranes stand at the edge wishing the pond was shallower or that they could bend down that far so they can scarf up a scaly snack. Their eyes are pathetic. I almost find myself sprinting to the kitchen to find them a snack. NOT!

Once a week I turn the handle on my bio-filter and back-flush the brown, nitrogen-laden waste water into several 5-gallon buckets from an attached flexible pool filter hose. Then I water my trees and plants with it. Talk about miracle grow!

After 1 to 2 minutes of back flushing, I pull the wiper plunger on my U.V. a few times to clean off the internal quartz lens housing the U.V. bulb. The film (pond scum) is instantly removed from the lens, giving the U.V. bulb 6 months of extra life.

The U.V. light kills pathogens that cause illness to my fish and other bacteria that cause the pond to stink. It also kills what is known as planktonic algae that turn the pond green. Twice a year I throw in some rock salt to keep the salt level at a specific gravity of 1.0. The fish have a healthy skin coat, my plants are happy, and string algae are virtually nonexistent. My water is crystal clear, and an electronic aquafill maintains the level of the water automatically.

Pondless Waterfalls- Why Pondless?

Who built the first pondless waterfall? If I had to venture a guess, God did. What exactly is a pondless waterfall?

A pondless waterfall is cascading water that vanishes in between rocks, collecting somewhere out of sight. In nature, maybe the water works its way into an underground chasm, or aquifer, or even a subterranean stream or river.

With building codes becoming stricter across the country, there are more regulations being imposed concerning the depth of a pond, especially in the light of increased numbers of deaths from drowning. Therefore, pond construction is restricted in many public thoroughfares.

Another issue to consider is vandalism: pranksters throw items in the water such as soap to create bubbles and foam; sometimes people simply discard trash in the water. All this makes pondless waterfalls more appealing.

A pondless waterfall is the answer to many problems in our diverse world. No pond, no maintenance! Another positive benefit of a pondless waterfall is the money that is saved. If you do not have a pond, less material and labor is required in the construction.

At the base of the waterfall is a collection basin. The width of the basin is usually a little wider than the waterfall. The breadth and depth of the basin determines how much water capacity there is. The larger the pondless waterfall, the larger the basin needs to be.

If the basin is too small, when the pump starts pumping water to the top of the falls, before it cascades back

down into the basin it is almost empty. With a large basin, the differential between the amount of water being pumped from the basin and the water returning is minimized. This eliminates the possibility of the water being sucked dry in the basin before it has a chance to come all the way down.

When creating their pondless waterfalls, many pond liner installers place the pump in the bottom of the basin, and then they fill up the basin by piling rocks around and on top of the pump. The major problem with this lazy procedure is that when the sump pump gets fouled up with debris or simply wears out, all the dirty, slimy rocks need to be removed in order to service the pump.

If you construct the shell of the pondless waterfall and basin with concrete, then you can place a suction drain in the basin and use an above-ground pump. These are 40% to 50% more energy-efficient and have a 3-year warranty, rather than only 2 ½ years, as have most sump pumps.

In addition, for convenience in cleaning, a ledge is formed around the perimeter of the basin to facilitate galvanized or plastic grids bridging the top of the basin. These grids are then covered with a single layer of rock to hide them. Then, when the time comes to clean the basin, it only takes minutes to remove the surface covering of rocks and grids.

With this type of concrete construction, the basin will hold a greater volume of water because it has not been filled with as many rocks, the way pond liner guys do. And it also provides a space in the pondless waterfall basin to install an electronic Aquafill automatic water leveler. This is necessary since there is no way of knowing when the basin needs to be refilled (until the pump burns up from lack of water).

Pond Liner Defects - Count The Cost

So you are considering building your own koi pond, or having one built? Do not add your name to the growing list of disgusted leaky pond owners.

Please research all aspects of water gardening before proceeding. I am not suggesting you google pond liners, or koi ponds, or how to build a koi pond. Because what you will discover is hundreds of pond liner websites promoting pond liners. Besides promoting pond liners, they sell and install them, in addition to inferior filters and energy-sucking sump pumps. What is that all about?

First of all, the reason you find thousands of pond liner advocates on the web and only a handful of professional concrete and rebar pond builds is just one simple reason: Greed. You are thinking, “Good grief, this dude is radical!” You want radical? How about this: I will give you \$5 for every website that promotes and sells liners and does mention all the negative aspects of liners, compared to concrete and rebar pond construction. You, however, must pay me only \$1 for all those pond liner websites who are dishonest and do not mention that the factory warranty only covers factory defects, not damage from tree roots, gophers, ground squirrels, chipmunks, rats, mice and kids with sharp objects, not to mention lazy liner installers who do not know what they are doing.

In addition, do those websites that sell inferior, intermittent (rather than continuous use), energy-sucking sump pumps with one-year warranties tell you that you will need to pull the pump out at least once a week to clean it? An executive at Aquascape, Inc., once admitted, “. . .how would a customer react if he knew the truth, that they would have to pull their pump twice a week to clean it?” [Quoted from Water Garden News.]

I recently had someone argue with me about the difference in cost between a liner pond and waterfall, and a professional concrete one. A customer was given two bids: one for a liner pond for \$12,000 and another for a professional concrete pond for \$18,500. How can you justify a different of \$6,500? he asked me. Here’s how:

1. The project consisted of a 6 ft. waterfall cascading over a retaining wall. The liner proposal involved spilling over the top wall, which would require raising the liner on both sides to hold water. The professional approach

was to notch the wall down by 3½”, tying the rebar for the waterfall into that of the wall. The waterfall would be coming through the wall rather than over the top, which is much more natural looking. The professional concrete and rebar construction carries a 30-year warranty and the liner guy only offered one year.

2. What if, after all those boulders are set in place with a bobcat, and the back and side yards are completed (meaning no more access for a bobcat), the liner springs a leak from the pressure of heavy boulders, tree roots, rodents, rats, mice, gophers, ground squirrels or chipmunks? Let’s say the hole is in an area where a boulder needs to be removed in order to patch it, how do you move it? And where is the leak? And is there more than one leak? See my point?

3. What will it cost, even if it could be done, to remove all the rock and boulders, patch the leaks, and rebuild the waterfall and pond? Less than \$12,000? What if the client does not trust the patching idea and decides to rip everything out and do it right with concrete and steel? How will he get the bobcat in? See the point now?

The liner guy gets in and out in one or two days. The professional concrete pond and waterfall takes a week or two. Does the phrase, “You get what you pay for” ring a bell?

Ponds & Waterfalls- Water Living

We can’t live without it. Water is the very source of life That is why we are so strongly attracted to it. Maybe because we cannot live more than a few days without water, we want to have it close by. Most people would like to live next to it, whether in the form of a stream, river, lake or ocean.

Unfortunately, there aren’t enough bodies of water to go around for everybody, even for those who can afford living near them. The price of beach front property reflects the fact that it is scarce and in high demand. Even for those fortunate enough to own such property, there is a major trade-off and a good share of disadvantages.

Who wouldn’t like to have a water garden on their property, or a flower and vegetable garden, or even a wonderful orchard with oranges, apples, plums, peaches, lemons and avocado? Maybe a corral with a horse or two. So much for thinking about a garden with most ocean front property. You’re lucky if you have enough land to be able to walk between the houses!

We can now see why water gardens with waterfalls and ponds are becoming so popular. If you can’t take your home to the water, just bring the water to your home!

Why is it so peaceful, yet still invigorating at the beach? Is it the sight or sound of the ocean waves, the smell of the salt water? You may be surprised to discover that the actual feelings of peace, relaxation, stress, and anxiety release has little to do with the sight or sounds or smell of the ocean. Extensive research has shown that moving water puts additional negative ions into the air. Breathing this supercharged air has an extremely positive effect on our body. The ocean creates the greatest quantity of negative ions of all moving water.

Therefore, it has the most beneficial effects on our moods while drawing the largest crowds. For the same reason, waterfalls create such pleasant and relaxing environments. You have probably noticed how wonderful the air smells and feels just prior to, during and after a rain storm – again negative ions.

For a fraction of the cost of ocean or lake front living, almost every homeowner can reap the benefits of a waterfall and pond in their back yard. Ranging from an atmosphere of intimacy to one of grandeur, it’s whatever the budget can endure. Virtually everyone can own a portion of the best that nature has to offer. There are as many different varieties, shapes and sizes of waterfalls as there are rocks. Consequently, with a pond design of your choice, no two ever look the same and they provide a natural individuality for each homeowner.

Waterfalls can cascade into koi ponds, a stream, swimming pool, spa or simply spill through a rock-covered

grate into a subterranean catch basin, from where it gets pumped and recirculated. This type of backyard pond design is great for someone with small children, since it eliminates the need for a hazardous pond. It's also perfect for someone with a very small yard or for those looking for little or no maintenance.

The soil removed in excavating a pond can be utilized to create a mound or berm to provide elevation for a cascade. A waterfall can pass through terraced retaining walls on its way down to a pond at ground level. By passing through rather than over the top, it will give the impression that the waterfall always existed and the retaining wall was constructed later on either side.

A backyard pond not only provides allure and charm to your property, it is as though you own a part of the Discovery Channel. The pond's occupants provide a never-ending and forever changing source of entertainment and education. From the antics of a pair of acrobatic turtles to the male crayfish, claws clashing and gnashing over the prize of a fair lady, each day becomes a new chapter in the life of your pond. Are you the type that might say, "I don't ever want to own fish!" and then eventually end up with several, even giving them all names? I've seen this happen over and over again, because pond owners become personally attached to the inhabitants of their water garden pond as if they were family members or pets.

At night a well-designed backyard pond becomes a whole new adventure, especially if you have built-in lighting. The cascading, splashing water against the lights create an amazing symphony of light and sound. Dancing light reflected on the surrounding rocks, plants, fence or house becomes hypnotic and mesmerizing. Most people only experience this atmosphere at expensive hotels or resorts. Now you can own the same experience in your own back yard..

If you are considering a water feature as an investment in your property, may I add several words of caution. Down the road, these may save you the heartache, sorrow and aggravation of dirty, murky, green, smelly water, sick or dead fish, leaky pond or waterfall, or high maintenance and energy costs.

1. Take your time.
2. Plan it out.
3. Research the subject thoroughly.
4. Seek out an expert in the field. A few years of experience are important.
5. Make sure the expert is licensed and bonded.
6. Accept only concrete and steel rebar construction. Never use a pond liner. Proponents of pond liners will claim there is a 40 or 50 year warranty on the liner. Not true! It's only true if you leave the pond liner in the box. It would work only in a perfect world – where there were no gophers, squirrels, chipmunks, rats, tree roots, sharp rocks, pebbles or other such objects. Once you have a hole, it is impossible to find. Even a pin-hole will allow 5 gallons of water per day to pass.
7. Do not use submersible pumps. They are inefficient and expensive to operate and are difficult to maintain. Debris collects in them, requiring frequent cleaning. Submersibles can leak oil that may kill the pond inhabitants or, worse, short out and create a shock hazard.
8. Use a biological filter to help eliminate nitrates and nitrites from the water. (I recommend a pressurized back-flushable filter, not a gravity flow.)
9. Install a skimmer for removal of surface leaves and debris.
10. Use two anti-vortex drains on the bottom of the pond for suction line to prevent whirlpools and fish or turtles from being sucked into the drain.
11. Make sure your pond is a minimum of three feet deep to regulate water temperature in the summer months

and to discourage herons and raccoons from dining out.

12. Build caves and ledges for turtles and fish to hide in.

13. Install an ultraviolet light to kill bacteria that cause smells and pathogens that kill fish and algae spores that create green water.

14. Do not use mechanical auto-fill valves; only use an electronic one like the AquaFill System. It does not stick or malfunction – thus preventing pond overflow and dead fish from chlorine poisoning.

15. Use plenty of water plants in the falls and pond. They provide extra oxygen and food for the fish and act as natural filters, utilizing the nitrate nitrogen in the water.

16. Use a high-efficiency, out-of-pond pump that conserves energy. By operating it 24 hours a day, a high-quality biofilter (such as one made by Aqua Ultra Violet) will receive a continuous flow of oxygenated water, which the anaerobic bacteria require in order to live. The bacteria are essential for breaking down hydrocarbons, nitrates and nitrites in the water.

17. Make sure you have proper drainage around the pond and waterfall so run-off from the rain storms does not enter the pond and contaminate it with silt, fertilizer, pesticides, etc.

18. Learn basic pond maintenance. (An ounce of prevention is worth a [pond] cure.)

When I say “everyone should have a waterfall,” I’m not simply promoting my life’s passion. Considering how much enjoyment a water garden and waterfall can give you, dollar for dollar, cubic foot for cubic foot, hour for hour, it is your best buy for many long, healthy and happy years to come.

From my experience with hundreds of pond owners in San Diego, I have discovered that the money spent on a well designed garden pond and waterfall will surely bring you more long term pleasure and joy than anything you ever purchased in your life.

Living is not truly living without water.

Water Feature Forums-Oh My!

What a hoot! I’m learning a lot and fast about the nature of on-line forums.

I can only speak of my experience with forums related to the water garden or water feature industry. I have decided to join a waterfall and pond related forum and start sharing my somewhat biased views and experience with pond liners.

As of late, I have discovered that sharing my bias towards pond liners with a forum full of pond liner installers is something like trying to pass out Bibles at a porn convention!

Some startling statistics that could explain why:

1. More than 37% of all waterfalls have serious structural damage within 3 years of it being built.
2. 57% of homeowners say they’re rather unsatisfied with the way their waterfall came out – after the project was completed.
3. Nearly 1 in 3 waterfalls and ponds are leaking water within 9 months of completion.
4. 27% of all outdoor waterfalls and ponds have pumps that are either too strong or too weak – causing

unnecessary expenditures down the road.

5. 63% of ‘do it yourselves’ said they wish they had the proper information from the ‘get go’ or they wished they would have hired someone!

These statistics are from the pond liner industry itself (Bob Wilder, 48-Hour Waterfall). I can confirm and attest to these figures myself. I have built over 1,900 concrete and rebar waterfalls and ponds over the past 26 years. I have ripped out and replaced dozens of defective liner ponds and replaced them with concrete ones with lifetime warranties. Pond liner guys will not attach more than a one-year warranty.

They make no guarantee against rats, mice, ground squirrels, gophers, tree roots and sharp objects. They know the truth, they just don't share it.

Some guy on the forum was questioning the need to fill up the catch basin of a pondless waterfall with loose rock and gravel, thus covering up the sump pump. I thought this was a good question, because I wondered the same thing myself.

Water from a pondless waterfall is captured in a basin at its base. With a liner pond, they teach that after placing the pump in the bottom, you then fill it up with loose gravel. I'm thinking that would create three problems:

If you have to service or clean the garbage off the intake of the sump pump, you would first need to pull out all the stinky, slimy, poopy-laden rock.

The basin would not hold much water if the rock takes up most of the space. When you turn on the waterfall, most of the water is sucked from the catch basin before the water can cascade back to the basin.

There would be no room to install an auto-fill system, which means you would need to fill the basin area often with a garden hose to prevent the pump from running dry.

So I decided to be a nice guy and post my article, Pondless Waterfalls: Concrete vs. Liners, on the forum. This was a really bad idea – much like trying to untangle a nest full of rattle snakes.

Before I could post answers to several questions that were posed by a sincerely curious forum member, I was locked out of the website. By guess who? The administrator of the site, who was also the owner of the site, the webmaster, and the very guy who made the original inquiry about pondless waterfall construction!

According to him, several forum members complained to him that I was a spammer trying to sell my waterfall system. What? I don't sell concrete and rebar. Nor do I sell high-efficiency centrifugal pumps, or Thoroseal, or galvanized grating to place over the basins, or anti-vortex drains, or rock! So what did he mean by saying I was trying to sell my system?

Well I soon figured it out, and it turns out that they probably meant I was trying to malign their system, not sell mine. I did a little research, and guess what? Mr. Administrator and Mr. Domain Owner was also a pond liner installer. End of mystery!

Read my article Pondless Waterfall: Concrete vs. Liner and you will get, as Paul Harvey says, “the rest of the story.”

Koi Pond- Which Pump to Use

When I started in the waterfall and pond design & construction business in January of 1982, I was asking the same question. I had a slight advantage over most when it came to answering the question, “Which pump do I use?”

I came out of the energy conservation field, so I was already savvy about energy consumption topics.

It was a challenge in the seventies, when I was trying to convince people that they should buy the Mitsubishi compact fluorescent bulb to save energy. This was the first of its kind and it retailed for \$12 to \$14. Its lumen or light output was equal to a 60-watt incandescent bulb, which sold for \$.60 in most stores. I needed to convince the engineer at Betty Ford Hospital that a \$12, 12-watt bulb would save the facility \$35,000 a year in electrical costs. I did so, and it did!

Pumps are no different when it comes to performance vs. energy consumption. The rule of thumb is: If an electrical appliance was engineered to be used only occasionally, as opposed to continually, rest assured, it is not engineered or built with the highest industry standards in mind.

Sump pumps were designed to be submerged underwater and pump that water to a different location. Their most common uses are in basements, bunkers, bilges, and that sort of thing. These pumps would only come on by demand, when a float control indicated a high water level.

Sump pumps were cheap to buy because they were built cheaply. It did not matter that they consumed more energy than the more expensive centrifugal pump, since they only came on occasionally.

These pumps turned out to be perfect for the get-rich-quick liner pond industry for three major reasons: They were cheap to buy, as were the liners;

They were simple to install; and

They were easy to hide.

One major drawback of sump pumps that the liner pond industry does not share with their clients is that they are literally energy sponges. But then, that is not the only thing they forget to mention to their usually innocent and unsuspecting clients.

These easy-to-install, easy-to-make-a-killing liners that come with a 20-50 year warranty (against factory defects only) are actually a meal down the road to a burrowing gopher, rat, mouse, ground squirrel, chipmunk or muskrat.

How do I know? I replace liners with concrete and rebar for a living and I ask if the customer if the liner salesman told them the pros and cons about the liner. (Most cons don't!)

Besides a sump pump costing twice as much to operate than a high efficiency, centrifugal pump, they plug up easily. (By the way, the liner guys changed the name to a "submersible pump" and they are now using the term "waterfall pump.") Concrete and rebar constructed ponds with bottom anti-vortex drains seldom, if ever, plug up.

In the industry magazine, Water Garden News, the vice president of product management for the Aquascape Company stated,

A lot of the time, the more energy efficient the [sump] pump, the less solids and debris it can handle. So often the consumer is excited the pump will only cost them \$10 a month to run, but what they did not know is that they are going to have to be out there 3 times a week, cleaning the intake of the [sump] pump to keep it going.

Water Garden News is a trade magazine that is for manufacturers, wholesalers and retailers in the water garden industry. This information was not meant for the consumers' eyes. Until now!

Read my article entitled Pondless Waterfall: Concrete vs. Pond Liner ; ezinearticles.com. I cover the subject in depth, and expose the truth about pond liner promoters. All of the costs involved in building a pondless waterfall are analyzed by comparing the two techniques: using concrete & rebar or a rubber liner.

The difference in the cost of energy consumption between a 5700 gallon per hour sump pump and a 5800 gallon per hour high-efficiency centrifugal pump is staggering. The sump pump uses twice as much energy, costs \$171 more to purchase, and its warranty is 6 months less! Look before you leap and research before you weep.

Predator - Proof Your Pond

I will teach you how to build a new pond or remodel your existing pond and make it completely safe from predators – except for bears. If you have bears in your yard, you have more to worry about than losing some fish.

If you have ever experienced finding a family member missing or laying by the pond half eaten (fish family member) or three-quarters eaten, you probably were not too thrilled about it. Especially if it was named Charlie or Nemo and had eaten from your hand every day for a couple of years.

I would imagine you want to get your finger around its neck for just a couple of minutes. You thought: what should I do? Install an electric fence, scarecrow, decoy, or plastic floating alligator? Cover my pond with an ugly net? Buy one of those owls or crane statues, or maybe a BB gun, pellet gun or (if your loss brought tears) a shotgun? Or maybe, all of the above!

I do not have time to explain why 75% of this stuff does not work; as for the other 25%, the resulting benefits are not worth the trouble. That will be covered in my article entitled “Which Pond Predator Deterrents Work?”

Now I am going to explain how to build or remodel your pond so predators have no reason to put your pond on their dinner tour.

If you have done your research, you have read all the recommendations of the pond “experts”: that if you build your pond over 24 inches deep and create hiding places in the rock, your fish will be safe from cranes.

WRONG! Before I remodeled my pond, which is five feet deep, I sat in my office and from the window I watched a 5 ½ foot crane land at the pond’s edge. Instantly the koi fish swam to the bottom of the pond for safety.

Smart fish, huh? No, dumb fish! I watched the crane stare at the water for a few minutes, standing as still as a statue. Then suddenly he leaned forward and vomited up into the pond part of an earlier meal. As the regurgitated morsels began to slowly sink below the surface, my dumb, beautiful, colorful, expensive koi proceeded to swim to the surface to intercept the generous offering from the air mail delivery.

I discovered three things: (1) cranes are smarter than fish; (2) the depth of a pond is not a major deterrent; and (3) the more colorful a koi fish and the more it costs, the better it tastes! Because those are the ones that the cranes eat first.

That experience taught me an expensive lesson, and allowed me to figure out how to guarantee that it would never happen again.

One fallacy touted by “experts” is to build ledges around the pond to hold marginal plant pots. The raccoons love that idea, found on almost every pond liner website on the internet. Here we go, now, so pay attention. You can argue with me later if you feel you have to. However, a man with experience (26 years and over 1,900 ponds) is not at the mercy of a pond liner guy with an argument.

First of all, you should never build ledges, period. Marginal plants should be placed in border planters that are contained within raised bond beam walls; lower bog planters can house papyrus, cattails, horse tail or iris, which prevents predators from standing at the edge. Photos can be seen on my website.

Depending on the perimeter of your pond, you should design your waterfall to encompass a good percentage of

the pond's edge, rather than a small, narrow area as found in most designs. You should also make sure that the waterfall is steep and does not afford a landing near the water's edge. In a flat back yard, this can be accomplished by building a raised berm using the dirt from the pond excavation. This creates a raised shore line. In these raised shore line areas you can create sheer rock cliffs, providing places for moss, baby tears, isotoma or ground cover between the rocks.

In the one quarter to one third of the remaining pond's edge, you should build a dock-style walkway or deck that is 13 inches off the surface of the pond. Allow it to cantilever over the edge, which consists of a sheer raised rock bond beam. Pictures are on the website and in the construction manual.

With this design, the cranes are standing on the edge of the deck or dock walkway a full 13 inches above the surface of the water, so they cannot bend over far enough to snag the fish. They just stand there and stare for a while, and then they will fly away. The raccoons, likewise, will hang over the edge of the deck and paw at the water's surface. The only thing they will accomplish is to scare the fish, causing them to stay in the deep water. Raccoons are not very patient, nor do they have the ability to sit still for any length of time to allow the fish to swim to the surface.

If you have dogs, you need to assure that they have an exit from the pond if they fall in. The exit area should consist of a heavy fishing net hung over the side of a ramped wall area. The slanted wall is angled enough to allow the dog to easily climb up the net, but too steep for a raccoon or crane to ascend.

Ponds and Waterfalls - A Growing Asset

Ponds and waterfalls are fast becoming the focal point or centerpiece of many landscapes and properties today. Architects, builders and owners of both commercial and residential property are discovering the joy, pleasure and financial benefits that adding a water feature or water garden can afford.

Increased Income:

Incorporating a water feature into a design provides an edge over the competition. Adding the element of water is adding the second most important element on earth. It is the most important substance on earth for supporting life, second only to oxygen. Landscape designers charge \$150 to \$1,500 for designing a water feature. They can easily add thousands of dollars of additional revenue per year by doing so. Water features can quickly become your specialty or trademark, and a major source of extra income.

Increased Property Value

Professionally constructed water gardens or water features not only will increase the equity in a property, but they add unique charm and appeal for future buyers. Most neighborhoods in America consist of tract homes. Every fourth, fifth or sixth home is identical, the only differences being superficial in nature. The only distinguishing characteristics are accoutrements such as house trim and landscaping.

Over the past 25 years many of my water garden clients have discovered that the deciding factor in the sale of their home was their water feature. And just as important is the fact that their equity had increased seven or eight times what they had originally invested in their water feature. Their water garden had given them the advantage over other homes with similar square footage that had more ordinary landscaping.

Esthetic Value

With well over 1,900 water garden clients, I could not count the number of times I have heard them say that their water garden has brought them more long-term joy and pleasure than anything they have purchased in their life. They are providing powerful testimony to the calming, relaxing and alluring effects of a waterfall.

Educational Value

A water garden provides entertainment, education and emotional relaxation. It is a live "Discovery Channel" in

your back yard. Many people take vacations to travel to exotic tropical places like an island paradise or a far-away rain forest. Little do they realize that they could have some of the very same wildlife on their own property to enjoy every day!

Gathering Information

Whether you are looking for information on how to professionally build or maintain a water garden, waterfall or pond, or you are interested in designing your own personal waterfall, or you are interested in learning how to add digital designing to your existing water garden business; the internet is a good place to start.

Common Mistakes

Just keep in mind that there are thousands of websites touting rubber liner construction. Liner ponds are not necessarily the least expensive way to go. In most cases, unless they are installed properly, they will leak as a consequence of burrowing rats, mice, ground squirrels, chipmunks, gophers or tree roots; and heavy rocks or sharp objects.

There are only a couple of sources for digital design programs for designing water gardens. There are free DVD presentations available on training movies to teach the digital design of water gardens. There are resources for digital design software and digital libraries. You can Google “Digitally Designed Ponds.” You can also get free and unbiased information and resources from askdoughoover.com (retired master waterfall builder).

Skimming Off the Top - Profits From Inferior Skimmers

Trading Reliability, Simplicity and Effectiveness For Skimmer Profits

Tom Barthel’s article, “Pulling the Envelope,” in the May 2007 issue of Water Garden News, has got me going. In it he said, “Technological innovations for skimmers and filter-fall products have leveled off recently. On the rise, instead, are units that use creative features and meet the customer’s need for low maintenance, durable products sold at competitive prices.”

He is confirming the truth about what I have been preaching for over ten years. The true reason that sales of liner skimmers and fall-filters have leveled off is because their poor performance is coming back to “bite” the skimmer scammers in the bottom line! These skimmers are designed for making profits, not filtering ponds.

The so-called pond experts operate like the pharmaceutical industry. They advise consumers on the so-called benefits of the very products they produce and sell, in this case skimmers. Drug companies sell products which generally mask the actual symptoms of a disease and in the process mess up the body’s balance even more. This creates yet a new need for another drug to mask yet another symptom.

If the skimmer’s engineering and design is not effective in providing the proper filtration of water, it will not only require regular cleaning, but will demand another “drug” or band-aid. Hence, yet another innovation sweeps the planet, and this engineering marvel is designed to solve yet another water garden ailment. Some of the “drugs” used to treat ineffective filters are what I call the “flim-flam filter falls,” the “bio-balls filter falls,” the “ooh-la-la cha-ching cha-ching filter falls”.

These are some of the sales pitches you might hear from the purveyors of miracle potions for your ailing water garden: “Oh you poor thing, your pond is turning green, your water has body odor. (the fish are exhibiting an evolutionary behavior, by trying to leave the water and live on land.) Here, we just happen to have something for those two symptom. It’s called ‘Green Be Gone’, only \$32 a pint and we recommend you buy a gallon. Then, add three bottles of our ‘fish safe’ (we’re not sure about the turtles) and plant-safe, ‘Stink Be Gone.’ So that your fish will go back in the water where they belong, we recommend our very own private label, ‘Home Sweet Home pH Up.’ And if that does not work, for another \$39 per pint, try our ‘Home Sweet Home pH Down.’

Oh, and I have some bad news for you. My technician just got back from your house call and discovered that

your leaky pond is from a big fat rat that chewed a hole in it. Sorry, our warranty does not cover that, only factory defects.”

This is why the liner pond experts recommend covering the bottom of your pond and the catch basin of your pondless waterfall with rocks. It is to give you added surface area for the nitrifying bacteria to grow which is not provided by the cheaply produced, expensive to buy, state-of-the-art, Berkeley-designed, MIT-engineered, Rubber Maid approved, maintenance-laden, grotesque profit-making, scum-sucking skimmers and fall-flushing plastic wonder devices!

I don't claim to be political, but I do claim to be correct. Why? Because “a man with experience is not at the mercy of a man with an argument.” After building more than 1,900 concrete ponds and waterfalls over 26 years with no cracks or leaks, my experience speaks for itself. I have always wondered why I have no competition in the area of professional concrete ponds and waterfalls. The answer is simple: everyone is using liners. Why? Because they are cheaper? No! It's because the liner industry has spent millions in advertising that they are cheaper.

They never mention all the negative aspects of liner construction, such as rodents, tree roots, sharp objects, the weight of the rocks, etc., that can puncture holes and cause leaks. Let's compare the cost differences in construction and long-term maintenance of both concrete and liner ponds.

Let's look at the facts, rather than water garden hype, liner industry tent revival terminology, and biased opinions from the liner messiah's disciples, the tinker-toy skimmer and filter salesmen. To be fair with my comparison, I'm not going to use the pond liner “messiah” Aquascape as my example, even though everyone knows they are truly the “Microsoft” of the liner industry.

I'm going to use someone who claims to be the best in the industry. Proof of this fact is that he suggests you google “Pondless” and you will find him at the top of the first page. He also states “My skimmers, filters and pumps are the best in the entire water garden industry.” His statements are now in the public domain since they can be found on his website.

So let's use Russell Water Gardens for our comparisons between two ponds: one built with a rubber liner and the other constructed professionally with concrete, rebar and highly efficient, quality equipment.

I. Pond 12' x 14' x 4.5' deep (no rocks)

Russell Water Garden's equipment and materials pricing:

1. 25' x 27' liner (required for a pond 12' x 14' x 4.5') \$675
2. 25' x 27' underlayment material \$675
3. Hydro Centrimax HC-050 4,500 gph, 6.5 amp,
2 yr. warranty (Russell's own pump) \$650
4. Hydroclean “Piper” skimmer (Russell's own) \$560
5. Dolphin Hydro Vortex filter (Russell's own) \$830
6. 100 ft. 2” flex PVC pipe \$260
7. 80-watt UV light \$764
8. 10 20-watt underwater lights \$600

TOTAL (with everything still in the box) \$ 5,014

II. Professional Concrete Pond

Pricing of materials available to contractors and/or homeowners, including labor:

1. 5 yards concrete (3500-7000 psi) with stealth fiber \$525
2. 426 sq. ft. rebar (8-10" on center @ \$2 per sq. ft.
including materials & labor \$852
3. Concrete pumper – 5 yards (ranges from \$175-200) \$200
4. Concrete labor (3 men @ \$35/hr. x 3 hrs) \$225
5. 3 bags Thoroseal plus labor \$150
6. Sequence pump (#5800SEQ23 w/leaf basket;
5800 gph, 3.1 amps, 3 yr. warranty) \$423
7. Aqua Ultraviolet Ultima II 4000 filter \$855
8. 100 ft. of 2" flex PVC piping \$143
9. Emperor Aquatics 80-watt UV light with wiper \$629
10. Skimmer (professional concrete/gunite pond,
with low water valve waterway Renegade) \$ 87
11. 10 20-watt underwater lights – Alpine \$240

TOTAL cost of Material and Labor (project completed) \$ 4,329

So far, I have shown a difference between the costs of two types of ponds, except for the important fact that labor is not included in the first example and it is included in the second. Now for some information on construction methods and pumps.

1. Construction Method

Liner: These manufacturers only provide warranty against factory defect, not from heavy sharp rocks, gnawing mice, rats, ground squirrels, gophers, chipmunks, groundhogs, tree roots, sharp objects, animal claws such as raccoons, dogs, etc. Concrete (3500 – 7000 psi rebar with stealth fiber): When constructed professionally, concrete ponds and waterfalls can carry a lifetime warranty, something that no liner can do.

2. Pumps:

Most liner ponds use sump pumps, which use 50 to 60% more energy than a high-efficiency centrifugal pump, and which carry an inferior warranty. In the previous comparison, the Sequence pump costs 35% less than Russell's, and it pumps 25% more water per hour for 1/3 less the energy and with 1/3 longer warranty than Russell's pump. In six years, if you had to replace Russell's pump every two years (the length of the warranty), the cost of the pumps plus electricity would be: \$1,950 (3 pumps) + \$4,853 (energy cost using it 24 hrs. a day, 7 days a week for 6 years) = \$6,803. On the other hand, with the Sequence 5800SEQ23 pump, there is a 3-year warranty; over 6 years the pump cost would be \$846 (2 pumps) + \$2,314 (energy cost @ 24 hrs./day, 7 days a week, 6 yrs.) = \$3,160.

So the total cost of energy for the Hydro Centrimax pump plus the warranty replacement cost over six years is a whopping \$3,643 more than that of the Sequence pump!

NOTE: Russell's website publishes the following statement: "You will find that Hydro Centrimax™ pumps are the best value of any centrifugal pump on the market today."

Russell also boasts about his skimmer being the best. Twenty dollars worth of plastic that he sells for \$560 – let's see if they really are the best.

Here are his instructions for cleaning his "HydroClean Pond Skimmer:

1. "Lift the lid off the skimmer and take out the skimmer net at the front."
2. "Shake the skimmer net to get rid of any debris." [Try not to get any on you.]
3. "If there is any algae on the skimmer net, hose it off as needed."
4. "Replace the skimmer net in front of the skimmer unit."
5. "Behind the net there is a brush rack, a bar with large brushes hanging from it. Pick up the brush rack and shake it to get the debris off." [Be sure not to splatter any of the pond scum, fish waste, worms and parasites on yourself.]
6. "Replace the brush rack in the skimmer behind the skimmer net." [Be sure to wash your hands very thoroughly when you are finished.]
7. "Failure to clean the skimmer can lead to slow water flow and place stress on the pump. It can even cause the pump to overheat and burn out. Check the skimmer often to see if it needs maintenance."

Now, let's compare Russell's \$560 maintenance-intensive, messy skimmer with the Waterways Renegade professional concrete pond skimmer at only \$87.

Here are the maintenance instructions:

"Lift the lid, remove the basket, dump debris, replace basket, close lid. No need to check skimmer often. If the basket gets full, the pump will not be affected, even if the water level in the pond drops below the skimmer opening. This skimmer has a special float valve system that by-passes the skimmer in the event of neglect or low water level."

Russell's biofilter is very similar to his skimmer in design. While it is basically a molded tub, Russell claims his "Hydro Vortex" filter supports a higher number of fish than other brands of biological filters. Even though, there are several manufacturers of biological filters that can easily out-perform this simple elementary and cheap design. It is the same as comparing an economy car to a high performance luxury model.

Only in this case, you are comparing an economy filter with a state-of-the-art, high performance, engineered, no maintenance (a simple turn of a handle to clean it) filter for only \$25 more.

Bottom line I repeat: "A man with experience is not at the mercy of a man with an argument." The pond I described is my pond.

I have the Sequence pump, Aqua Ultraviolet filter and UV light, anti-vortex drains, professional skimmer, and four times more fish than the so-called experts say I should have. My pond is crystal clear, my fish are healthy, and I have not lost one of them to disease in the four years I've had them. The only chemical that

I have ever recommended to any of my 1,900+ clients in their professionally constructed concrete pond is rock salt, which controls the algae and aids in the slime coat of the fish.

Water Gardens Exposed

Whether you are considering a water feature for your home or whether you build them for a living, this article is for you.

There are increasingly greater numbers of people arriving at the startling revelation that water gardening is not what it was cracked up to be. For 26 years I have promised my clients that the water feature I build for them would bring them more long-term joy and pleasure than anything they had purchased in the past.

Why would I make such a brazen statement? Because it is true!

If you are desiring such a water garden for your own enjoyment, or if you would like to design and construct a water garden with these results, there are a few major things to consider:

For how long would you like to enjoy your water garden? Would you like a water garden with as little maintenance as possible? Is monthly operating expense an issue? Are warranties or guaranties important to you? What about durability and lasting esthetics? Are you concerned about possible liability regarding safety and regulations?

These are only a few of the many questions you should find answers to prior to constructing or investing a water garden.

There exists a community of gold diggers who have discovered that their picks and shovels can now be used in mining a new treasure: rubber liner ponds and waterfalls; fast, easy and extremely profitable.

Rubber pvc liners were originally designed for flat roof construction, not ponds. How did this concept become so popular for water features? The answer is simple: greed and laziness.

You tell me which sounds easier, Scenario 1 or Scenario 2:

Scenario #1:

1. Dig a hole in the ground, pile up the dirt beside the hole.
2. Drape a liner over the hole and pile of dirt, and stack rocks on the liner.
3. Fill the hole with water, dropping in an energy-sucking sump pump and attaching a hose, routing it to the top of the waterfall. Plug in the pump.
4. Collect your money and split.

OR Scenario #2:

1. Dig a hole in the ground and pile the dirt beside the hole, tamping or compacting the pile as you add more dirt.
2. Lay down "schedule 40" flexible pvc pipe for dual anti-vortex suction drains and skimmer.
3. Construct a steel rebar grid over the entire pond and waterfall surface area, 8" to 10" on center.
4. Place 2" cement "dobie" blocks under the rebar to hold it up off the ground.
5. Pump 3500 psi or 4000 psi shot crete (a form of concrete) over the entire surface, surrounding the rebar. Then trowel it smooth.

6. Install professional pool skimmer and anti-vortex drains, high-efficiency, energy-saving centrifugal pump, a pressurized state-of-the-art back-flushable, bead filter, and an ultraviolet light with cleaning wiper.

7. Apply the rock using Aquamedia mortar mix, which assures none of the rock will ever move, making them safe to walk on.

Which scenario sounds easier to perform? Which one sounds cheaper to build? Which one sounds faster to build? Which do you suppose involves less maintenance? Which seems to easily retain its beauty? Which one would not be affected by gnawing rodents? Which would not be damaged by sharp objects? Which one would heavy or sharp rocks be unable to affect? Which would last for decades or generations? Which would be more economical to operate? Which one would require the least maintenance? Which do you think would cost more?

The question should actually be, which one costs more in the long term? With energy savings and maintenance alone, the concrete water feature would pay for itself in 10 years.

What would it cost to completely disassemble the liner pond in order to try and find holes made by rats, gophers, ground squirrels, chipmunks, tree roots, sharp objects, etc.? Do the math!

How Not To Build A Liner Pond

Do you waste your money on lottery tickets? Feed your hard earned money to the one-armed bandits in the casinos? Drive without a seat belt? Then a pond liner is for you. You obviously like taking chances and are not too concerned about the outcome. Well, when someone spends thousands of dollars on a liner pond, they are playing the odds. Will their liner pond leak or not. From my 26 years experience in the pond business, I can assure you that the odds are not in your favor. This is an article the liner pond dudes do not want you to read. If you were not giving my industry such a bad name, there would be no need for this writing.

The liner pond gurus such as the “Liner messiah” with his own magazine and catalog, recruits unsuspecting followers with a “Build a Liner Pond Day”, and shows how easy it is to get something for next to nothing. Here is what these liner pond guys do:

- Lay out the pond with a garden hose
- Remove the sod and dig the hole
- Drop in our guaranteed liner
- Fill with water
- Drop in our pump
- Run our pipe
- Throw a piece of our liner on the pile of discarded dirt
- Stick in our filter
- Cover pile of dirt with loose rock
- Turn on our pump
- Throw in your fish
- Collect your money and split.

Does this sound a bit harsh on the pond liner industry? Well, here is “the rest of the story. ”I am going to add a few more items that the liner pond guys omitted:

- Ground squirrels
- Gophers
- Mice
- Rats
- Chipmunks
- Moose
- Sharp rocks
- Heavy rocks
- Falling rocks
- Sharp objects
- Tree roots
- Plant & weed roots
- Leaky drain seal
- Leaky skimmer seal
- Kids with sharp or pointed objects

Did the liner pond guy offer you a discount if any of the above occurred in your pond? Here is what you would have had to do if any of them happened in your newly-built liner pond (and I know the Liner Guy did not give you this list):

- Take out the fish
- Turn off the pump
- Take out the loose rock (hope you did not use too many)
- Pump out the pond
- Take out the pump
- Take out the liner
- Spread out the liner on the lawn
- Clean off the dirt and algae
- Inspect every square inch of the liner for holes.

(Sure, there are short cuts, but if you assume you have fixed the problem after patching a hole, put everything back and then discover there was more than one hole, you might be a tad irritated. Remember this rule of thumb: one pinhole and you can lose five gallons of water every 24 hours!)

- Patch the hole or holes
- Repeat the whole process over again, only in reverse.

Hey, sound familiar? It should, with the exception of laying out the garden hose and digging a hole, you have just built another water feature!

If it had been done the professional way to begin with, all this time to tear it apart and put it back together could have been used to design and build another permanent project with steel and concrete.

Can you imagine if this scenario was referring to a project involving large boulders that were set in place with heavy equipment such as an end loader or crane? Not to mention lawn sprinklers, flower gardens, trees and shrubs that were growing there, and sidewalks and hardscapes installed! It can cost 30% more to tear out a liner pond and replace it with a professional one made with rebar and concrete. Where as if they had built a professional waterfall and pond in the first place it would have only cost about 20% more. Does the term penny wise and pound foolish mean anything to you?

Liner Disciples: Not Eating Their Own Dog Food

I have been visiting water garden forums lately, and "I have not had this much fun since kindergarten art class."

Wow! Did I discover something amazing. I have known for many years that one of the major challenges in raising koi fish is to keep the koi from eating their own. Consequently, the eggs are separated from the pond as quickly as possible to prevent this.

After spending some time reading the Piranha Press (water garden forums), I am scared to wade into the water [forum] or even "get my feet wet." Good grief, talk about "eating their own" . . .

Where are the loyalty, appreciation, gratitude, dedication, camaraderie and "family pride" Pride? In the Lion's Pride, the lioness hunts to feed the Lion and her cubs. If she is unable to bring home the bacon, the cubs could become lunch for the Lion. In the Liner Pride, there is no "Pride" [sense of fam fam] and like the cubs, they are all branded as "food storage"! ... with a very limited shelf life.

Some time around 1990, Greg Witstock, the lion of the liner industry, started the "pond liner craze" which transformed into the "pond liner frenzy," as quoted in many pond magazines. I have lovingly given Greg Witstock the title of "Liner Messiah," since he founded Aquascape Design Inc. Aquascape manufactures pond liner kits, and Greg has developed a marketing plan ("the way"), selling through his nation-wide network of pond liner installers, the "disciples."

Witstock has invested a fortune in product engineering and development. He has developed successful sales tools and techniques for his "disciples" using a diverse line of products, training videos, books and sales materials that can literally guarantee a "disciple's" success if they follow the "way".

You may ask, that all sounds very good, so what is the down side? Well, the liner industry is marketing an overpriced and inferior product with a dismal track record.

The pond liner track record speaks for itself:

More than 37% of all waterfalls have serious structural damage within 3 years of construction.

57% of homeowners say they are rather unsatisfied with the way their waterfall came out after the project was completed.

One in three waterfalls and ponds are leaking water within nine months of completion.

63% of “do-it-yourselfers” say they wished they had the proper information from the “get go” or that they had hired someone.

These statistics are from the pond liner industry itself (Bob Wilder, 48-Hour Waterfall; pond liner installer for 18 years). I can confirm and attest to these figures myself. I have built over 1,900 concrete and rebar waterfalls and ponds over the past 26 years. I have ripped out and replaced dozens of defective liner ponds and replaced them with concrete and rebar, attaching lifetime warranties. I have also advised and aided angry pond liner owners by successfully suing the installers that refused to come back and correct serious leak problems.

The words “frenzy” and “craze,” used often when relating to the pond liner industry, are ironically very appropriate. “Crazed” is usually used as an adjective and means wildly insane or excited. The industry is exploding. Why? It is basically fueled by greed (a get rich quick scheme).

Where else can you spend \$500 - \$800 for a do-it-yourself kit, install it in one day, and walk away \$2,500 - \$4,500 richer? You should ask questions when you discover that professionals with college degrees are leaving their professions to install liner ponds. That’s really “craze-e!”

The word “frenzy” is a noun defined as a state or “period” of uncontrolled excitement or wild behavior. That sort of describes the eating etiquette of a Piranha! Notice, it is for a period of time. What happens when there are more pond liner kit installers than there are customers? Even professionals with college degrees are installing pond kits, due to the exorbitant profits. What about the growing awareness of the statistics related to the undependability of liners? Or the reputation of, or lack of, business ethics and shoddy workmanship? What happens when the clients find out they were deceived by not being told the whole truth about liners? (Read, “Pond Liners: Seven Reasons Why I Don’t Use Them” by Doug Hoover – Google.) What is the answer to all these questions? The “frenzy” state or period of uncontrolled excitement or wild behavior will cease.

And what about the state of the water feature business’ reputation when the proverbial dust settles and the truth about pond liners becomes evident? This is the reason I am speaking out now! Building waterfalls and ponds has been my love and my bread and butter for over a quarter of a century.

I was eavesdropping on one of the hundreds of forum sites. I copied only two pages of posts and replies by forum members and/or pond liner “disciples.” Here is a brief summary:

Greg Witstock was praised for his accomplishments. Greg’s financial success of “ADI” Aquascapes Design Inc. was touted. Comments were made about overpriced products, bordering on gouging. Discussions took place on how products could be produced using specific common plumbing products, for a fraction of the price. Better priced pumps with longer warranties could be found elsewhere.

However, the liner disciples are still using Greg’s beautiful brochures, videos and door hangers, which he makes available to all his disciples at a fraction of the cost. But they are not being loyal to their “messiah” by using Aquascape products because they are shopping around for cheaper products. There is no such thing as product loyalty or professional etiquette. But then again, are Piranhas or starving lions known to demonstrate loyalty or appreciation?

After logging in on this particular water garden forum, I tried to share some facts about concrete pond construction or using high performance pumps and quality building products. Let’s see, which of these is easier to do:

1. Build a pond using concrete and steel that takes a week to finish and nets \$5,000 profit, and guarantee the finished product for 20 years or more?... or
2. Build a liner pond in a single day, for a profit of \$5,000, and guarantee the liner for one year against factory defect and not have to be responsible when rats, gophers or tree roots compromise the liner, because it wasn’t covered by the warranty?.

Is it any wonder that after I posted my articles “Pondless Waterfalls: Concrete vs. Liners” and “Pond Liners: Seven Reasons why I do Not Use Them,” I was locked out of the forum and banned from the website? It was akin to shouting, “I love the Jewish people!” at a Klu Klux Klan rally.

I discovered the forum administrator was also the webmaster and owner of the domain name and owner of a landscaping company that installs pond liners!

The “Liner Messiah” showed them the way, and his “disciples” took what they wanted and went their way.

Don’t compromise your integrity. It is the essence of who you are and what you will become. Build your character on a strong foundation, and when the storms of life and winds of adversity beat you upside the head, you will stand!

Build your waterfall and pond on a strong concrete (4500psi) and rebar foundation. And when the rats, gophers and tree roots come, you will have no regrets, your integrity will shine like the noonday sun, and your waterfall will bring you long-term joy, peace, relaxation and pleasure for decades to come. I Promise.

Here is How To Design The Perfect Water Garden

A water garden can be the most enjoyable investment you could ever make, or the biggest wet nightmare. A recent phone call from an angry water garden owner prompted this article. What she was describing to me was just the opposite of what would be considered the ideal water garden experience.

She began by telling me the pond was leaking, and she needed to add water daily. It was full of algae and smelled like dead fish. Besides needing to pull the sump pump out of the pond every three days to clean the algae and debris from its intake screen, her electric bill was out of hand since she installed the pond. She continued: “The grandkids were climbing around on the waterfall and the rocks slid around, exposing the liner everywhere.”

When she complained to the contractor about needing to add water every couple of days, he came out and did something and it stopped losing water. She explained that she told a friend that her water bill was three times its normal cost and that she heard running water all the time and thought it might be a stuck toilet tank float. The friend investigated and discovered the contractor had installed a mechanical water level controller to the pond. He did this instead of fixing the leak, apparently assuming that the client would never figure it out.

Then came the dreaded question she asked me: “Can you help me out?” my automatic response is, “How much did you spend on your pond and waterfall?” She answered, “\$6,500!” I then asked, “Before taking your money, did the contractor give you any of the negative aspects of a liner pond, such as dangers from gnawing rodents, tree roots, sharp rocks, and other such objects?” She answered, “No, nothing at all.”

Since we do not try to patch or fix other contractors’ mistakes, there was only one reply I could give: that we would have to rip it all out and start from scratch. I explained that I had counseled at least a dozen of my clients in similar situations to go to small claims court to try to recover their investment from unscrupulous contractors. Every one of them was successful in court, thanks to their consultations with me and my assistance to them as an expert witness. One did not even have a contractor’s license and the customer had to put a lien on his house to recover her money.

Here is a summary of what I tell these people whom I have helped:

1. Research every aspect of water gardening before you start. You will rarely get unbiased information from pond liner advocates that sell pond liner kits and sump pumps. All of their so-called pond advice and “how-to” information is identical because they plagiarized false or inaccurate information from each other.

2. Find a qualified contractor.

<http://ezinearticles.com/?Koi-Pond:-Finding-a-Contractor----18-Important-Things-to-Know&id=395698>

3. Build the water garden, pond and waterfall using rebar and concrete. The pond liner track record speaks for itself: More than 37% of all waterfalls have serious structural damage within 3 years of construction. 57% of homeowners say they are rather unsatisfied with the way their waterfall came out after the project was completed. One in three waterfalls and ponds are leaking water within nine months of completion. 63% of “do-it-yourselfers” say they wished they had the proper information from the “get go” or that they had hired someone.

<http://ezinearticles.com/?Pondless-Waterfalls---Concrete-vs-Pond-Liner&id=397171>

4. Use an energy-efficient centrifugal pump. Sump pumps are not designed for continuous operation only intermittent duty. In addition, they have limited warranties and use up to 60% more energy than centrifugal pumps. <http://ezinearticles.com/?Koi-Pond:-Which-Pump-to-Use&id=409120>

5. Install an autofill water level controller.

http://www.watergartenauthority.com/AquaFill_Water_Leveler.html

A water garden should not be considered a short term investment. Water gardens in most cases will bring more long term joy and pleasure than anything someone could spend money on. It is something that should last for decades. If it is built with concrete and rebar, it is built to last. Liner construction, however, does not last. Take it from a professional. If it is not worth doing right, then it is not worth doing at all.

Digitally Designed Water Gardens: Big Bucks! Impressive

Usually a house is a man’s greatest asset; “his home is his castle.” A house or home can easily become the most important possession for a family, which would include its surroundings or landscape.

Recently, several of the landscape architects and design associations have predicted trends towards homeowners spending more money to dress up their landscapes and add outdoor living spaces, including water gardens or water features. Increasingly more homeowners are spending non-discretionary income on their homes, inside and out, rather than on second homes or exotic vacations. It is not surprising that the landscape design business is flourishing.

With the exception of a few large landscape architectural design firms, most have not taken advantage of the high tech design software tools available to the industry. This is due to the high cost and a steep learning curve related to the graphics and design technology.

When plotting out a water garden, most landscaping contractors are currently providing their clients with a hand-drawn sketch or sketches or floor plan. Many landscape designers and architects currently use CAD/CAM or 3D-type software programs. At best, these programs produce stilted, unnatural results. Only a couple of the programs offer water garden related images, and they fall far short of offering enough objects to create more than a handful of unrealistic looking water features.

The “Water Garden Digital Image Library” – first of its kind – has just been released by Aquamedia Corp. It consists of png-formatted images of actual images of rocks, water, waterfalls, ponds, water plants, aquatic creatures such as turtles and fish, etc. The “Water Garden Digital Image Library 5.0” is packaged with Microsoft’s Digital Image Suite 9 software and a two hour training video of Master Waterfall Builder Douglas Hoover teaching, step by step, how to design a virtual water garden using a digital photograph of a back yard.

Many architects, designers and landscapers charge as much as \$3,500 for an average detailed landscape plan in

southern California. But most homeowners are more interested in a general concept than they are the details, and it is easier for them to get excited about a \$350 digitally designed photo than about a detailed floor plan of the entire property. Today's "NOW Generation" wants to see how it will look NOW!

A \$350 virtual photograph that only takes one hour to produce, has a greater impact and leaves a stronger impression than a \$2,500 landscape plan which takes me ten hours to draw. I can produce ten digital photo designs in the time it takes to draw one floor plan. One can easily do the math . . . four designs a day, five days a week, multiplies out to \$364,000 per year.

The training video for the Digital Image Library 5.0 is concise and attentive to minor detail and will allow almost anyone with basic computer skills to become proficient at using its software. This trio: Library, software and training video, will allow the designer to create hundreds of different water gardens, and clients will see an actual photograph of a water garden in their yard.

The timing could not be better for introducing The Water Garden Digital Image Library. This artistic tool will allow landscapers, architects and designers to vividly express their visions and ideas to their clients. The customers will be able to see exactly what they will be getting with no room for confusion or doubt. This added service will put the professionals in a class by themselves. And the homeowners will be impressed, to say the least, by the classy virtual waterscape they are looking at.

The "Water Garden Digital Image Library" offers several major benefits: It increases net profits by closing more sales, and it provides extra revenue from the change to digital design. It sets you apart from your competition. It reassures your customers that what they see is what they actually get. It personalizes the design by placing it into an existing photo of their yard. Digital design does not require you to measure the area of the photo in which you are placing the virtual image.

Best of all, by offering a digital design, you are compensated for your time spent with the client in the event they reject your bid. Clients will gladly pay \$350 for a digital design and it only takes an hour to complete the average design. Four designs per day, five days per week, is \$364,000 per year. What great potential!

The impressive virtual photos are a vivid testimony to its potential. FREE sample designs and a FREE demo movie can be seen at: http://www.watergardenauthority.com/Ultimate_Training_Course.php

Koi Pond- Finding a Contractor - 18 Important Things to Know

Because there is such a wide range of information to be learned on this topic of koi pond and waterfall construction and so much technical information out there, you may decide to seek professional assistance to complete part or all of the water features. Before you proceed, here are 18 extremely important facts you should know...

1. Remember: asking friends or neighbors for recommendations for building a koi pond is always an option, but they are unlikely to have had occasion to conduct business with a water feature professional. It is a very narrow specialty field.
2. Many liner pond people are not only inexperienced, they are working from job to job on a shoe string budget, which results in the illegal practice of mingling funds, using the deposit from one job to finish up the last etc. What is worse, many liner installers are unlicensed. This business attracts these types because it takes very little investment to get started (shovel, rake, garden hose and wheelbarrow) while making tons of money from unsuspecting people. Plus, In many cases a building permit is not required to build an 18 inch deep liner pond. If not installed by a licensed professional, a liner pond can end up being your biggest nightmare.
3. Contact the American Society of Landscape Architects (ASLA) or the Association of Professional Landscape

Designers (APLD) for referrals to professionals in your area.

4. Always interview more than one professional to have a better idea of expected costs and finished product.
5. However, you should never make your choice based on cost alone; rather, consider what you can afford coupled with good references and experience.
6. It is advisable to seek the help of a specialist and ask for references.
7. It is particularly helpful to find a professional who can supply the names of the last four or five customers who have been serviced satisfactorily. Providing a few good references is not usually difficult, especially if the contractor decides to pick and choose the best handful from the past 20 or so jobs. It is quite another matter to divulge the last four or five customers consecutively and to note whether they are satisfied with the work ethic of the contractor.
8. Don't be shy about speaking to these previous customers.
9. Find out whether the work was done on time and came in on budget.
10. Build a rapport with them and ask to visit the project in order to inspect the work first hand!
11. Do the inspection preferably without the contractor so you can ask sensitive questions.
 - A. Did they finish when they said they would?
 - B. Did they correct problems without a hassle?
 - C. Did they respect your property and privacy during the course of the job?
 - D. Did they honor their bid or ask for more money?
12. Do research on your own. NOTE: ASK FOR COPIES
 - A. Contact the State Contractor's Board to insure that they have a contractor's license.
 - B. Is their Contractors License up to date?
 - C. Do they have surety bond? (In case the contractor splits with your money, you can collect.)
 - D. Do they have adequate liability insurance? (damage to yours or your neighbor's property -a min. of \$1 million.
 - E. Do they have workmen's compensation insurance? (medical care/loss of wage, injured on you property)
13. Check the local Business Bureau for reports from a possible disgruntled client.
14. Check with the local police department. They may have a record of drug abuse and at times split with the funds, only to show up later back in business.
15. Never give them more money than can be accounted for in material and or labor expended on the project.
16. With every check you pay them, ask for a lien release for that amount. Especially, get a final lien release upon completion of the job. If they did not pay a vendor for materials used on your home, without a lien release that vendor can attach your house until you pay it (again!).
17. You should always insist on a written contract with detailed descriptions of the work to be performed.
18. Finally, do not forget to demand a reasonable time schedule and payment plan. This procedure protects both

parties against misunderstandings that can arise later.

Water Garden Deceptions

If you bought a product from a salesman based on the information and “facts” he shared with you about that product, and that salesman did not share with you the dangers or the negative aspects of that product, did he lie to you in the process of holding back the truth? Here are some real-life examples of what has been taking place in the water garden industry:

1. Pond liner installers will tell you that their liners have a 20- or 30-year warranty, but they neglect to mention the truth – that this only covers factory defects. They hold back important facts about their industry, such as the fact that more than 37% of all liner waterfalls have serious structural damage within three years of completion. And they neglect to say that over half (57%) of liner pond owners say they are dissatisfied with the way their waterfall turned out.

Ask yourself if your pond liner salesman divulged that one in three waterfalls and ponds leak within only 9 months of completion, or that 63% of do-it-yourselfers that purchased pond liner kits say they wished they were told the truth from the beginning, or they would have had the job done professionally, with concrete and steel. These statistics come from the pond liner industry itself!

2. Pond liner advocates tell you that their liner construction is superior to concrete construction. They make statements all the time that they replace leaky concrete ponds. But they neglected to tell you that the concrete ponds they replaced were constructed of a thin layer of cement poured over chicken wire that was laid right on the dirt. Did they tell you it was not built with 3 ½ inches of 6000 psi concrete, using rebar 10 inches on center? No, they did not; you can count on it! Would you consider that dishonest? Is withholding the truth for the purpose of deceiving the same as lying?

3. Did the liner dude tell you that their warranty does not cover damage from animal claws or burrowing, gnawing animals like gophers, rats, mice, chipmunks, and ground squirrels, or tree roots, sharp rocks, or sharp objects purposely or unintentionally thrown into the pond? So is that dishonest and unprofessional? Is withholding the truth or covering up the truth actually a lie?

4. Did the liner guy tell you that unlike the liner pond, the rock around a concrete pond and in the waterfall is secured with mortar whereas the liner pond rock is loose creating a serious hazard for exploring children?

Did he warn you that the liner would eventually become exposed from the rocks shifting, and you would need to regularly rearrange the rocks to keep the liner covered?

5. Did the proclaimed professional liner pond designer tell you the sump pump they were installing uses 60% more energy than a centrifugal, high-efficiency pump does? Or that the warranty is 1/3 the duration of the centrifugal pump? Did they mention that it will have to be pulled out of the pond twice weekly to remove the debris from the intake screen?

6. Did the liner promoter tell you how much dirty, filthy labor is involved in maintaining and cleaning the poorly designed liner filter and skimmers? Or that bio-falls and filters are known in the industry to be inferior to pressured bead filters? More deceit?

7. Did the liner expert explain that they can only make the liner pond two to three feet deep because if it is any deeper, the sides could cave in?

8. Did the learned liner lecturer share the simple fact that pond liner kits are now so expensive that you can build a pondless waterfall with concrete and rebar, installing the best high-efficiency pump available, at a cheaper price than what a kit costs while still in the box? Read the article “Pondless Waterfalls: Concrete vs.

Liner.”

9. Did the liner soothsayer tell you that you don't want a concrete waterfall and pond because they leach alkali from the cement that can poison the fish? Is this is another twisting of the truth.

If the pond shell is coated with two coat of non-toxic Thoroseal upon completion, the concrete is made completely waterproof and no alkali can leach out. In addition, if all of the rocks in the waterfall are cemented into place using an “S-type” of mortar mixed with Thinset, the mortar cannot leach and the rocks are secure. So now there is no danger of an accident from moving loose, unstable, stacked rocks as is done in liner construction. The same goes for all the rocks around the pond.

So tell me, what can it cost you to have the truth withheld? Let me and dozens of my clients whose liner ponds I have replaced with concrete and steel answer that question for you – thousands of dollars!

In conclusion, reader, let me ask you: Is twisting the truth or withholding the true facts the same as lying, or is it not? You be the judge

Want To Build A Waterfall & Pond? Confused?

If you have spent much time Googling “waterfalls” or “water gardens” on the internet, you are obviously asking yourself, who is right? Who do I believe? What method or product do I use? Do I use a liner or concrete?

Do you spend your money on lottery tickets or feed your hard earned money into casino slot machines? Do you drive without a seat belt or change lanes without looking in the rear view mirrors? Then a liner pond is for you. You obviously like taking chances and are not too concerned about the outcome.

When someone spends thousands of dollars on a liner pond, they are playing the odds. Will their liner pond leak or not? As a retired master waterfall builder with 26 years in the pond business, I can assure you that the odds are not in your favor. This is one article the liner pond dudes do not want you to read. If they were not giving my industry such a bad name, there would be no need for this article. Where do they get their training or experience?

A “wannabe” liner pond expert attends the renowned John Russell Academy's “Build a Pond Day” and receives a complimentary box lunch plus an honorary Pond Builders degree and certificate proclaiming them a certified, bona fide pond builder. Ooowbaby! No longer a wannabe, now he be one. Liner pond installers brag about cashing in on a daily income of \$2000 per day net (that is gross), and they know how little they need to do to earn it. The pond liner business is like having a slot machine without any odds, a cash cow, a money tree, treasure trove or legal scam.

You may ask, what do I have to gain from telling you this? Well, first of all I do not use liners, because they all will eventually leak for dozens of reasons. I have used only concrete and steel construction for the past 26 years, while replacing scores of leaky liners. So what is the catch? I do not sell concrete or steel and, to date, do not sell pond equipment or supplies. I write free articles that teach people the right way to construct waterfalls and ponds and expose builders who are taking advantage of unsuspecting people who want to own their own water garden.

Before you sign a pond liner contract, please read all my articles on this subject. Google “pond liners vs. concrete.” Or go to ezinearticles.com and enter “Doug Hoover” in the Expert Author search box.

So let me explain how the pond liner installer can make so much profit from your waterfall and pond.

He first lays out the shape of the proposed pond using a garden hose. He then paints the line on the ground and removes the sod. While digging the pond, he piles the dirt at one end of the pond to create a base for a waterfall.

Then he drops in the rubber liner, installs a skimmer and a bio-falls. He runs a hose from a sump pump in the pond to the top of the dirt mound, places rocks around the perimeter of the pond's edge to hide the liner and on the dirt mound to create the waterfall. Finally he fills the pond with water, turns on the pump, throws in the fish, and collects your money.

Does this sound a bit harsh on the pond liner industry? Well, here is "the rest of the story." I am going to add a few more items that the liner pond guys omitted: Holes caused by ground squirrels, gophers, mice, rats, chipmunks, moose, sharp rocks, heavy rocks, falling rocks, sharp objects, tree roots, plant & weed roots, leaky drain seal, leaky skimmer seal, kids with sharp or pointed objects, animal claws or tree roots.

Did the liner pond guy offer you a refund or a free repair if any of the above occurred in your pond? Here is what you would have had to do if any of them happened in your newly-built liner pond (and I know the Liner Guy did not share this scenario): Take out the fish, turn off the pump, take out the loose rock (hope they were not installed with a crane or Bobcat), pump out the pond, take out the pump, take out the liner, spread out the liner on the lawn, clean off the dirt and algae, inspect every square inch of the liner for holes.

Sure, there are short cuts, but if you assume you have fixed the problem after patching a hole, put everything back and then discover there was more than one hole, you might be a tad irritated. Remember this rule of thumb: one pinhole and you can lose five gallons of water every 24 hours! Patch the hole or holes, then repeat the whole process over again, only in reverse.

Hey, does this sound familiar? It should, because with the exception of laying out the garden hose and digging a hole, you have just disassembled and rebuilt another water feature!

If it had been done the professional way to begin with, all this time to tear it apart and put it back together could have been used to design and build another permanent project with steel and concrete.

Can you imagine if this scenario was referring to a project involving large boulders that were set in place with heavy equipment, such as an end loader or crane, and the landscape is completed and access gates and fences replaced? Not to mention lawn sprinklers, flower gardens, trees and shrubs that were growing there, and sidewalks and hard scape installed!

It can cost 30% more to tear out a liner pond and replace it with a professional one made with rebar and concrete. Whereas if they had built a professional waterfall and pond in the first place, it would have only cost about 20% more.

Does the term "penny wise and pound foolish" apply?

How To Design A Water Garden

If you have ever designed a water garden by sketching with colored pencils on a sheet of graph paper, let me be the first person to tell you that there is a better way! Here's why:

1. Increase Your Net Profits

Prior to introducing digitally designed water gardens, I would close 6 out of 10 sales, or 60 percent. Now, by using a digital design, I sell 80 percent. On the remaining 20% I still made money even though I did not close the sale because I charged \$350 for each design.

So besides earning an additional income of \$2,800 (\$350 for each of the eight signed contracts for building a water garden), the digital designs earned an additional \$700 for the two building contracts that were not signed. At an average of 100 water features built per year, I have added \$35,000 to my bottom line just with digital design revenue.

Finally, you must consider the additional contracts that were signed on the basis of the digital design alone. If my annual gross income before offering digitally designed water features was \$600,000, then 20% or \$120,000 is money I would not have had without digital designs.

2. Set Yourself Apart from the Competition

Our digital designs elicit positive responses and compliments, which I rarely received before with sketches and floor plans. Unlike sketches or floor plans, digital design provides a virtual photograph so a client sees what he is getting in advance. Digitally designed water gardens eliminate misunderstandings that can sometimes arise from poor communication, involving vague or convoluted descriptions, drawings and sketches. What you see is literally what you get.

Digital designs look (and are) professional, and with computer software so widely available now, and various instructional programs that are easy to follow, there is really no reason to wait! Any edge you can get on your competitors will be affect your bottom line.

3. Reassure your Customer

A portfolio of previous digitally designed water features can be used to sell the design option to future clients. When offering the digital design package to a customer, the portfolio shows them what other clients received, and that they are not alone in a decision to opt in to getting their own digital design.

4. A Personalized Picture

A digitally designed water garden actually allows the client to see the finished water garden in their own back yard. This allows them the feeling of ownership since the photograph is of their own yard, except now they see the finished water garden in it.

5. No Tape Measures

Providing a digitally designed water garden eliminates the need to sketch out their back yard and take extensive measurements. Sketches and measurements are replaced by the simple click of the camera shutter, and the computer mouse in the virtual world of the water garden digital library.

6. No Sale? No Problem!

Even if you do not get the sale, you will earn \$350 for a design you otherwise would not have made. Before offering the digital design option, all the time you spent with the client consulting, sketching and measuring, plus travel time, was wasted if you did not sell the job. By selling a digital design, you have received \$350 for your effort and walk away feeling fairly compensated.

7. The Digital Design Fee is Refunded

By offering a refund of their design cost if the client decides to sign the contract, your closing ratio will increase. You tell the client that \$350 will be deducted from the labor in the contract if they decide to sign with you. They are now more willing to part with their money. You explain that they not only will see exactly what they are getting, but they will have a photograph to use when they get other bids. The labor in the contract is not an exact amount, and will vary from job to job. So it is impossible for the client to know if they actually were refunded their \$350. You simply state in the contract that the \$350 refund was deducted from the labor cost. The labor figure is necessarily an estimate; it is never itemized, nor are materials. So in reality you can easily add a few extra dollars in either category to cover the refund money, which is actually only on paper.

In summary, I can tell you that by adding digital designs to my business, I have increased my bottom line by 38 percent!

You can easily see how someone could make a good living just designing water gardens, especially at \$350 per

hour for a 6 to 8 hour day.

For more information, Google “digitally designed ponds” or get free information, and watch videos on digital design at http://watergardenauthority.com/Ultimate_Training_Course.php

Does my Water Garden Need a UV? A Simple Test

1. Is your water cloudy or green?
2. Does your pond or waterfall stink?
3. Have you forgotten how many fish you have or what color they are?

If you answered yes to these three questions, you may need an ultraviolet light,

There are several types of algae found in a pond. One type may turn your water green, another brown, and yet another could mimic the smell of a sewer or dead fish.

Algae need nutrients to thrive. When a pond has excessive nutrients, it could be the result of too many fish. Also, it could be an inadequate bio-filter, over-feeding the fish, feeding them the wrong type of food, or run-off from the surrounding area depositing dirt, debris or fertilizer into the pond.

These pond conditions can be remedied by reducing the number of fish, if in fact it is over-crowded. Another remedy is to cover 50% of the pond’s surface with water lettuce or hyacinths. A third remedy is to install a bio-filter; if you already have one, you can install a better, more efficient one.

In nature, if a pond is overcrowded, the strong fish survive and the weak perish. When our ponds are overcrowded, we compensate for the increased waste and by-products with mechanical devices such as bio-filters and ultraviolet lights.

If a natural pond is overcrowded and the nitrate and ammonia levels create vast algae blooms, the algae die, depriving the fish of oxygen and many fish die. Now there is less waste creating less algae, and the eco-system is once again balanced.

If you respond properly to the signs and signals provided by your pond, you can intervene in what would normally be a calamity. We can filter the water, irradiate it, buffer it, treat it, aerate it, skim it, cool it, cover it, monitor it, or change it. UV light is just another weapon in our pond maintenance arsenal.

How to Find The Right Pond Builder

There is such a wide range of information to be learned on this topic of koi pond and waterfall construction. and so much technical information to learn, you may decide to seek professional assistance to complete part or all of the water features. Before you proceed, here are some extremely important facts you should know...

Make sure that you have a basic knowledge about water gardening and the various methods of construction. Google> concrete pond vs liners

Try asking friends or neighbors for recommendations for building a koi pond is always an option, but they are unlikely to have had occasion to conduct business with a water feature professional. It is a very narrow specialty field so the next step might be to do a search on the internet for your specific region.

If you are considering a liner pond, please note that many liner pond people are not only inexperienced, they are

working from job to job on a shoe string budget, which results in the illegal practice of mingling funds, using the deposit from one job to finish up the last etc. What is worse, many liner installers are unlicensed. This business attracts these types because it takes very little investment to get started (shovel, rake, garden hose and wheelbarrow) while making tons of money from unsuspecting people. Plus, In many cases a building permit is not required to build an 18 inch deep liner pond. If not installed by a licensed professional, a liner pond can end up being your biggest nightmare.

Contact the American Society of Landscape Architects (ASLA) or the Association of Professional Landscape Designers (APLD) for referrals to professionals in your area, but do not settle on one referral. Always interview more than one professional to have a better idea of expected costs and finished product. However, you should never make your choice based on cost alone; rather, consider what you can afford coupled with good references and experience. It is advisable to seek the help of a specialist and ask for references. Do not presume they are a professional, ask them to supply the names of the last four or five customers who have been serviced satisfactorily and let them tell you of his professionalism.

Providing a few good references is not usually difficult, especially if the contractor decides to pick and choose the best handful from the past 20 or so jobs. It is quite another matter to divulge the last four or five customers consecutively and to note whether they are satisfied with the work ethic of the contractor.

If you have already gone to this much trouble, don't be shy about interviewing these previous customers. Ask questions like was the work done on time and on budget? Build a rapport with them and ask to visit the project in order to inspect the work first hand! Do the interview and inspection preferably without the contractor present so you can ask sensitive questions like, did they correct problems without a hassle and respect your property and privacy during the course of the job? Did they honor their bid or ask for more money without a change order?

Do research on your own. NOTE: ASK FOR COPIES. Contact the State Contractor's Board to insure that they have a contractor's license. Is their Contractors License up to date? Do they have surety bond? (In case the contractor splits with your money, you can collect.) Do they have adequate liability insurance? (damage to yours or your neighbor's property -a minimum of \$1 million. Do they have workmen's compensation insurance? (medical care/loss of wage, injured on you property) Check the local Business Bureau for reports from a possible disgruntled client. Check with the local police department. They may have a record of drug abuse and at times split with the funds, only to show up later back in business.

Never give them more money than can be accounted for in material and or labor expended on the project. With every check you pay them, ask for a lien release for that amount. Especially, get a final lien release upon completion of the job. If they did not pay a vendor for materials used on your home, without a lien release that vendor can attach your house until you pay it (again!).

You should always insist on a written contract with detailed descriptions of the work to be performed. Finally, do not forget to demand a reasonable time schedule and payment plan. This procedure protects both parties against misunderstandings that can arise later.

Design Water Gardens - \$350 Per Hour

If you have read any of my articles before, you know I specialize in sharing my knowledge and experience in the water garden business over the past 26 years. Because I don't own or promote a water garden supply store, I can therefore present unbiased and balanced information – whether it is advice on the best construction methods for a water garden, or which models of U.V. or pump have the best warranties or the are the most energy efficient.

I have shared with you before about the incredible financial benefits of offering clients digital designs. Even if

you are a do-it-yourselfer homeowner, a digital design is a low-cost and effective way to get your ideas and vision across in a brilliant, vivid, virtually real way. It is the most important first step of any water garden project.

For several years now I have been presenting virtual designs to my customers. Googling “digital design ponds” or “digital design water gardens” will result in seven cad cam or 3D-type design programs. These types of software produce stilted, unnatural, unrealistic results. In the past 26 years I have designed and constructed well over 1,900 water gardens for commercial and residential clients. Until recently, most of these designs were produced the “old fashioned” way, by hand drawing them.

Unless the architect is an artist, their drawing is generally a floor plan with an accompanying side view of individual components or features. The end result would be that the client does not have a realistic view of the proposed project.

Another negative aspect of the old way of doing things is the investment of time in making the drawing. Consequently, I had to charge \$500 to \$2,500 for a design drawing.

A few years ago I discovered that I could scan various water garden photos, then download them into Adobe’s Photoshop program, and cut out objects or portions out of the photographs. By downloading a photo into Photoshop, I could then take these “jpg” cut-outs such as rocks, plants, portions of waterfalls and ponds, into the photo. By moving the item around, resizing, cloning and adjusting various aspects, I could create a virtual realistic and natural water garden that would look the actual photo of a completed project.

Soon, by repeating this process one object at a time, I created a Library of water garden related images that allowed me to create thousands of variations of an actual water garden design. Amazingly, 8 out of 10 prospective clients paid me \$350 to get a digital water garden design of their back yard. It was not long before I could produce a design in as little as 15 minutes, with the average being about one hour.

My clients can now see exactly what they are getting with no confusion, misunderstandings or misconceptions, such as those you could get from a typical hand-drawn architectural floor plan. Plus, the client has a specific water garden design photo with which to procure additional bids. I tell the client that if they go with me, I will deduct the \$350 from the labor cost of the proposal. However, if they decide not to hire me, I have been compensated for what little time I have invested in this sales call. In most cases the client is so impressed with my digital design, they opt to go with me. This design program has increased my closing ratio by 38% by setting me apart from my competition.

Photoshop currently costs \$700 to purchase, and has a very long learning curve. I discovered a program for only \$129, “Microsoft Digital Image Suite.” It produces similar results as Photoshop for a fraction of the investment of both money and time learning it. It is amazing how such a small investment can bring such a large return! If you decided to create three to four designs a day, it would probably only take you half a day. Working five days per week, this would give you an annual income of over \$300,000 per year! To show how this is done, I have placed a presentation video and demo video with sample designs on the internet for your convenience at: http://www.watergartenauthority.com/Digital_Design.html