Landscaping Notes

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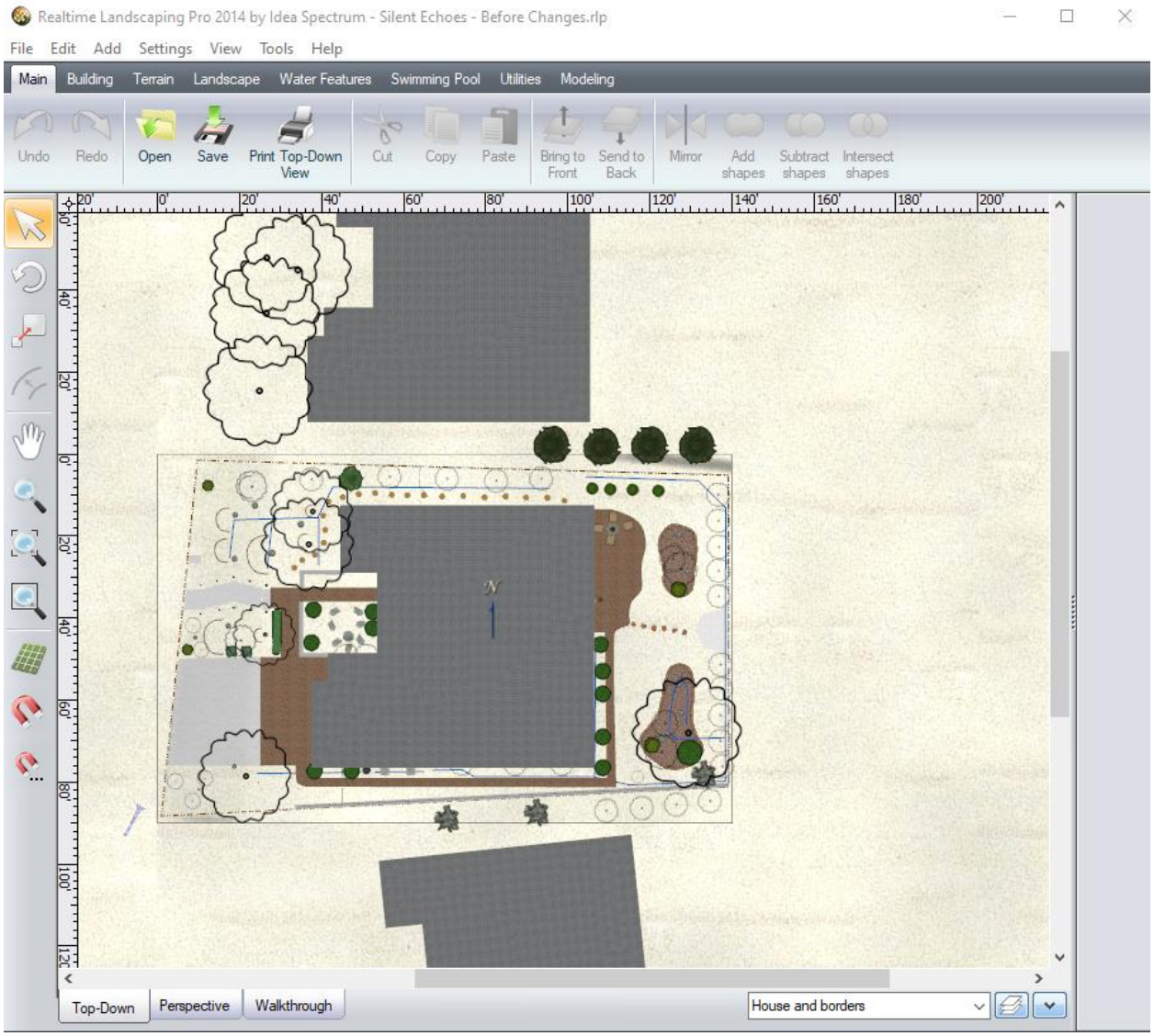
Landscape Design Software

Here is the CAD tool that I used to do my yard design. They have a free trial, but I liked it so much that I chose to purchase the 'pro' version for $150 (they also have 'plus' for $100 and 'architect' for $400.)

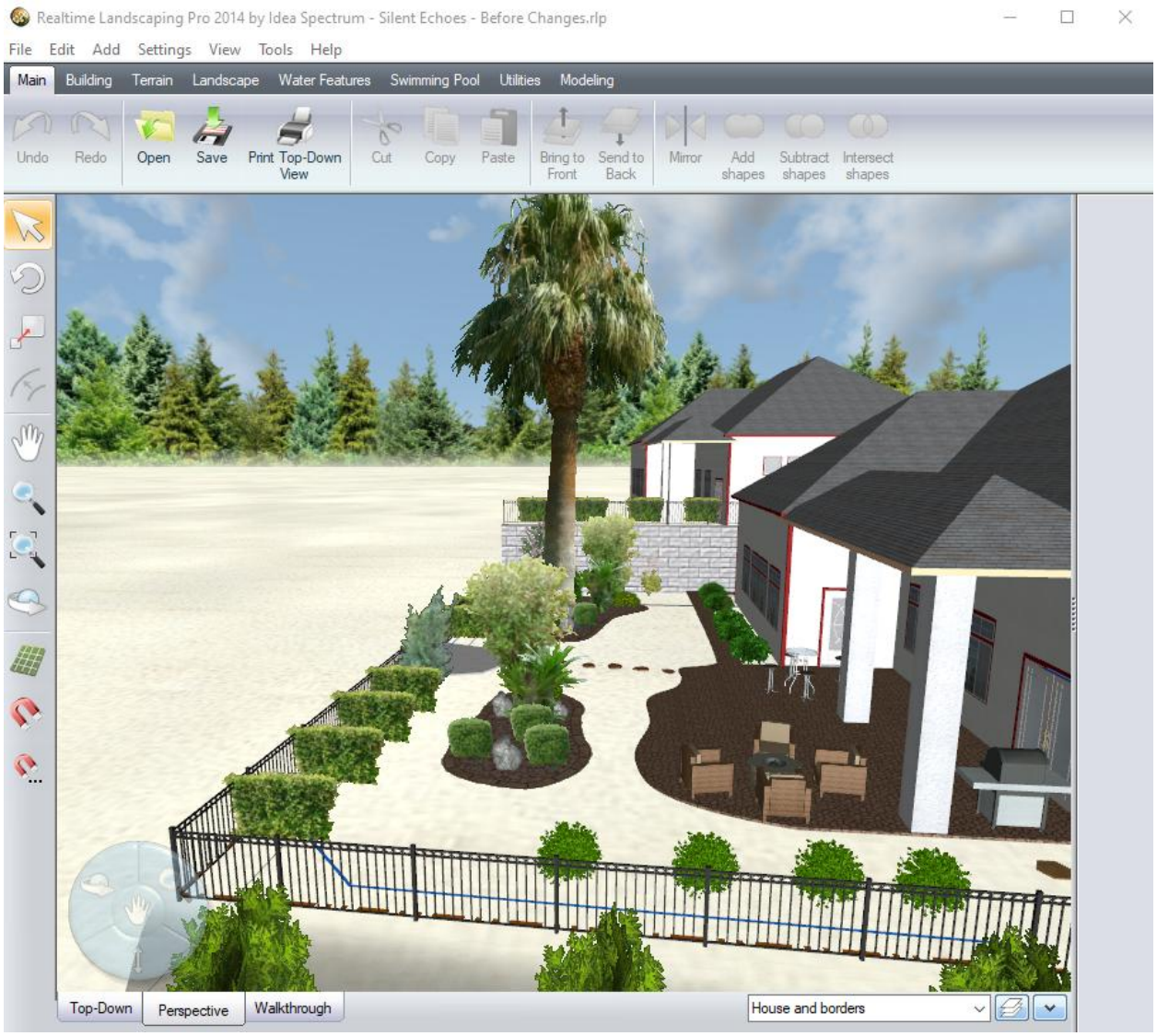
[Ideaspectrum Landscape Design Software]

It is a bunch of work to measure all of your property to get an accurate model but once completed it is very handy for doing planning landscaping changes such as new plants, pools, hot tubs, and other construction projects. It will generate the design documents required for most HOA design committees.

Here is a compressed look at my landscaping.



As you can imagine it will also generate the 3D views from the models which is very helpful when trying to figure out if a certain type of plant would look better in this spot or that one.



Dripper Choice

I had originally used adjustable flow drippers on all of the plants.

However these suffer from a number of issues as follows.

1. It's impossible to tell how much water is being applied because of the manual adjustment.
2. If bumped by a rabbit or something, the adjustment can change – in extreme cases the cap will fly off and shoot water into the air.
3. The water flow is not constant if the water pressure changes.

Because of these issues, it required constant tweaking to be able to get the required amount of water to each plant. Eventually I got tired of dealing with this and replaced all of the bubbler heads with 'pressure compensating' drippers.

With these all the problems go away and you can exactly calculate how much water is being distributed to each plant.

These drippers come in various standard flow rates: 1, 2, 5, 10, … gallons per hour.

Choosing Dripper Flow Rates

To determine what dripper sizes to use you need the following information:

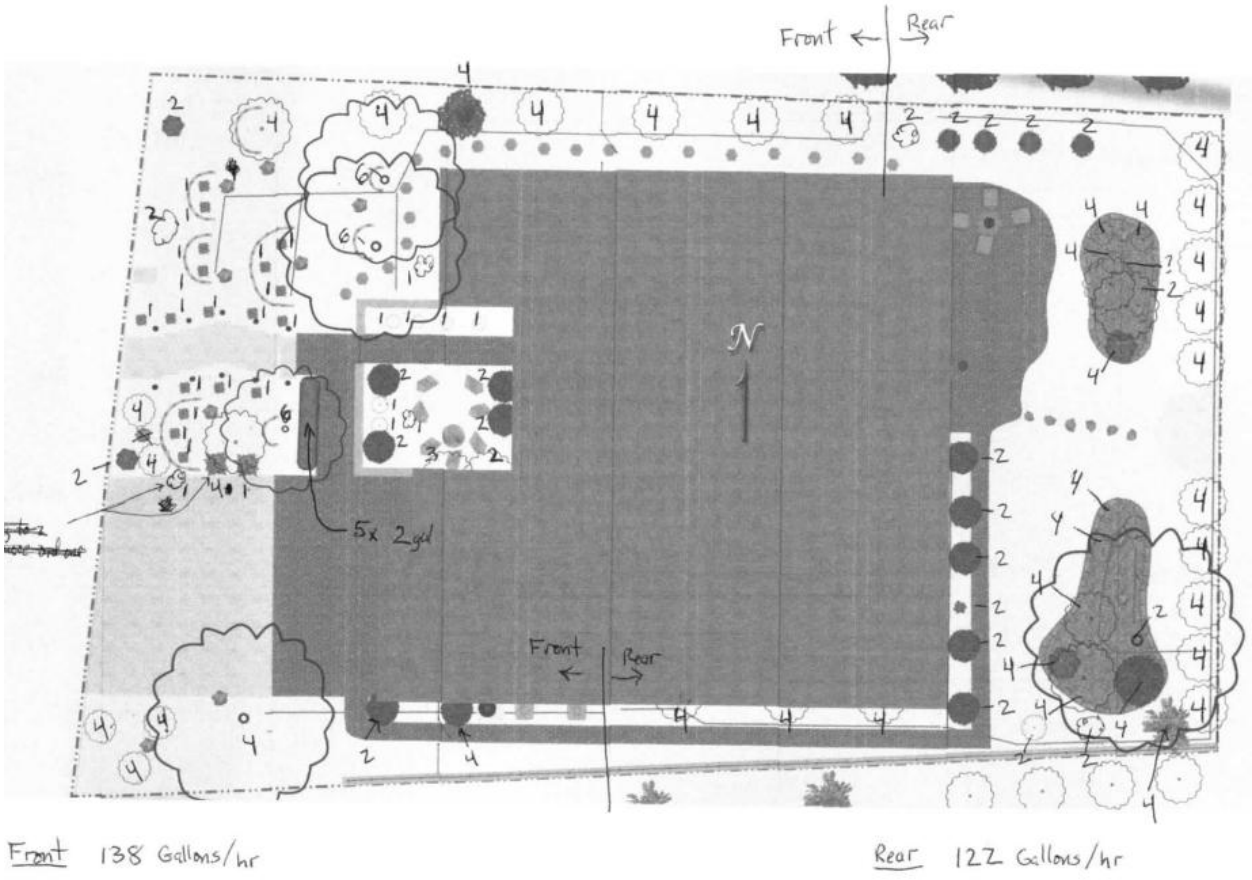
1. The water flow rate at your house.
2. The number of plants you have on each irrigation line.
3. The amount of water needed for each plant.

The flow rate (1) can be determined using a 5 gallon bucket and a stop watch. Simply time how long it takes to fill up the bucket using a hose on full blast.

When I did this it took 56 seconds which translates to 321 gallons per hour.

Research shows that you should only plan on using ½ of the flow rate. Using more than this causes the pressure to drop too low and the dripper will stop working properly. Therefore, in this case, the drippers should be chosen to limit the flow to less than 160 gallons per hour.

Next, using your landscape layout, you need to assign watering amounts to each plant based upon its size (bigger plants need more water – see chart at the end of this section) so the total flow does not exceed 160 gallons per hour. If you have lots of plants it can be seen that you will need to use lower flow drippers and run the water longer. If you have few plants you can use higher flow drippers and run the water for shorter periods of time.



Keep in mind that you should always use at least two drippers per plant (unless they are really small) placed on opposite sides of the trunk. This is necessary so that the water is evenly distributed to the roots.

In the example shown, the plant gallons per hour rates are 1, 2, and 4. Therefore using 1 and 2 gallon per hour drippers works out very nicely.

Plant Water Requirements

This chart is an excerpt from the Southern Nevada Water Authority (as of 2/2022) and should be used as a guideline to how much water different sized plants need in Las Vegas.

HOW MUCH SHOULD YOU WATER YOUR SHRUBS and TREES
(how many minutes / gallons**)**
Remember "how many minutes" varies with the emitter you use. Most are rated in gallons per hour, so for convenience…
This chart will use a "one gallon per hour" drip as example to determine minutes.
Please consult with a qualified professional to make certain proper watering is selected for your landscape.

Typical Watering Amount	Winter	Spring – Fall	Summer
Bedding Plants and Vegetables	20-30 minutes	30 minutes	45 minutes
Trees (1 emitter* per sq. yd.)**	1-2 hour	2 hours	2 hours
Shrubs (1 emitter* per foot in size*)**	45 minutes	1 hour	1 hour
Desert Plants (1 emitter* per 2 foot size)	45 minutes	1 hour	1 hour

**** With all your trees, shrubs and desert plants larger than 1 foot in height, you should have a minimum of 2 drips on each plant. This makes certain that you have adequate coverage around the root system, and not just on one side.***

***** "per sq. yd." refers to the area beneath the trees' canopy. A tree with a canopy that spread 10 ft. in width would have approximately 9 sq. yd. root area. Check with our Nursery Advisors if you need help calculating.***

****** "per foot in size" refers to the height or width of a shrub, which ever is greater.***

Fertilizer Distribution

Choice of System

A properly installed drip irrigation system will have some sort of filter on the line (below left.) You can unscrew the canister on the filter and insert fertilizer tablets (below right) into the screen mesh which provides fertilizer as your irrigation system waters your plants.

This was my first choice (because it was already installed in my system) but I was sadly disappointed for several reasons:

1. You can only fit about 15 tablets into the canister and the instructions on the package recommend 1 table per bubbler.
2. Since I have around 75 bubblers on each circuit , it would take 5 watering cycles to put enough fertilizer on the plants
3. Every time you take apart the canister it causes mechanical strain which will ultimately cause your lines to start leaking.
4. The fertilizer tablets are very expensive – about $26/packet (1/4lb) on Amazon. I'm sure you could find them cheaper somewhere else but not as cheap as bulk fertilizer.
5. The tablets are hard to find and often out of stock.
6. The fertilizer is not evenly distributed in the water flow so some plants get more and others less.

For these reasons I ended up going with a much more industrial solution seen below.

This is available at the drip depot web site for about $400:

[Ez-flo high capacity quick fill systems - size : 1.75 gallon (dripdepot.com)]

With this system you can use any water-soluble fertilizer. I chose the following which is available on Amazon for about $26 for a 5 pound bag. Several reviews showed that this was commercial farm grade, which contains more nutrients, and many people opted to use the cheaper Miracle Grow available in supermarkets at a lower cost.

Installation

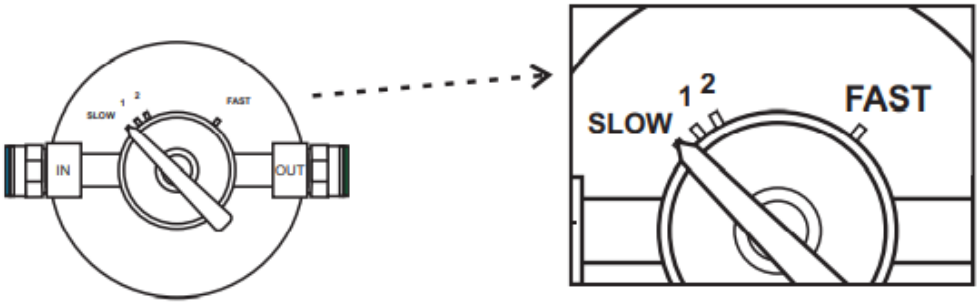
The system should ideally be installed in a standard 24” underground box so that there is room enough for the unit and the control valve. Additionally, this makes it very easy to get the unit in and out when refilling it. You can see below, the anti-siphon valve (to the left), the black box with the fertilizer system, and the tan box with the irrigation valves. This is the ideal setup as the water flows left to right from the anti-siphon, thru the fertilizer system (where the fertilizer is added to the water), and finally to the irrigation valves which distribute the fertilized water to the plants.

My neighbor had a gardener install his, and didn’t specify the larger box, so he ended up with it in a smaller box which is very hard to work on and refill. Additionally, there is no room for the control valve so the gardener put it in the above-ground anti-siphon section vertically and exposed to possible freezing in the winter.

Calculating System Settings

The EZ-FLO unit has an adjustment knob to change how much fertilizer is distributed when the valves are turned on.

Setting	*Ratio	OZ. of fertilizer per gal. of water	Based on Watering Frequency*
Slow	15000:1	.008 (1/20 tsp)	4+ days per week
1	8000:1	.017 (1/10 tsp)	3 days per week
2	2000:1	.064 (2/5 tsp)	2 days per week
Fast	400:1	.320 (2 tsp)	1 day per week



From this chart and other research I chose to use the following seasonal settings:

1. Winter – '2'
2. Spring/Fall – '1'
3. Summer – 'Slow'

From the EZ-FLO data, this model (when completely filled with fertilizer) will not run out of fertilizer until the following amounts of water are passed through the system.

Model	EZ KIT-1
Slow	26,250
# 1	14,000
# 2	3,500
Fast	700

To figure out approximately how long it will take between fertilizer refills, follow these steps.

1. The system uses approximately 125 gallons/hour per valve (add up all of the bubbler gallon/hour ratings.)
2. The system runs each of 2 valves for one hour each day – 250 gallons of water per day.
3. The system runs 1 day/week winter, 3 days/week spring/fall, and 6 days/week summer.
4. So gallons/week = 250 winter, 750 spring/fall, 1,500 summer.
5. The weeks between fertilizer refills are therefore:
    a. Winter (setting 2) = 3,500/250 = 14 weeks
    b. Spring/Fall (setting 1) = 14,000/750 = 18 weeks
    c. Summer (setting slow) = 26,250/1,500 = 17 weeks

From this, it can be seen that the system will need to refill the fertilizer approximately every 3 months or so.

If you would like to have less frequent refills you can simply purchase a larger EZ-FLO system. This will of course cost more and require a larger in-ground casing, but will result in less yearly maintenance.

For home use, re-filling the unit 4 times a year seems like a good balance and it easy to put a reminder on your calendar to do so.

Fertilizer Choice

Each plant has slightly different fertilizer requirements so it may be difficult to find a fertilizer that works perfectly for every plant.

Fertilizers are rated with three numbers (ex: 4-2-4) which refer to the amounts of certain chemicals needed.

Some basic research on the internet will provide you with the requirements for your plants. For example:

- Palm uses 4-2-4
- Holly uses 4-6-4 or 4-3-4

Since 4-2-4 is almost the same as 4-3-4, they can probably both use the same fertilizer.

Remember also that these numbers denote the 'ratio' between the amount of one chemical to another chemical. Therefore instead of using 4-3-4 you could also use 8-6-8 (which is twice as concentrated) and only need to apply ½ as much.

I chose to use a generic 20-20-20 fertilizer for my desert landscaping.

After roughly 4 weeks of running the system with this fertilizer, I can see amazing results!

The bush below had been on the verge of death for the past year or so. As you can see in the photo below, there is a small section of dark green leaves (highlighted with yellow in the bottom left area below) which were the only leaves for the past year or so.

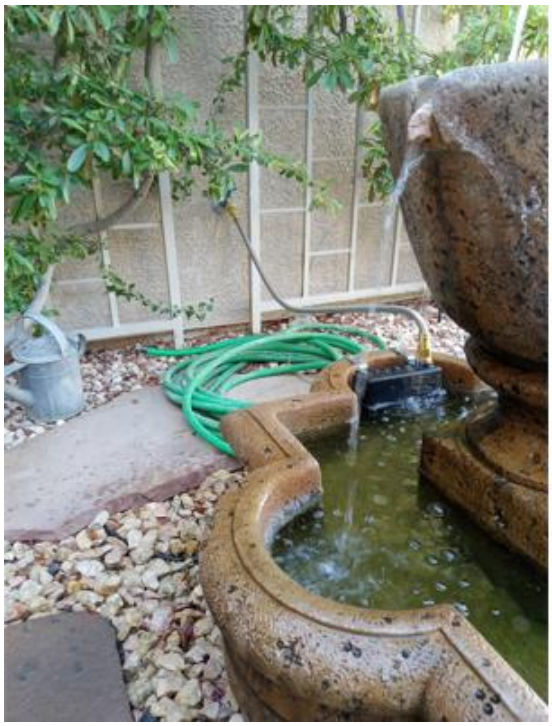
All of the light green leaves are new growth since the fertilizer has been applied. This entire area used to look like dead branches. You can see that about 90% of the plant was leafless before and is now very healthy and vibrant.

Automatically Filling Fountain Water

If you have a fountain (or other water feature) you know that it can get tiring keeping it filled up all the time.

A simple solution to this problem is to add a float valve which can be purchased on Amazon here: Float Valve for about $25. You will also need a garden hose long enough to go from your fountain to the closest outdoor water faucet.

I used the "Little Giant Trough-O-Matic Stock Water Tank Float Valve Controlled Watering Tank with Plastic Housing and Expansion Brackets (Item No. TM825T)" but there are certainly other alternatives.



I originally drilled two holes in the fountain and attached it with screws (left picture above.) The unit comes with a clamp that you may be able to use if your fountain edge is not too thick - in which case there is no drilling at all. Over time this did not work so well and it was difficult to service the float valve which resulted in the water level gradually creeping up and eventually flowing over the edge.

I later (after learning how to weld) welded two custom stainless steel brackets (right picture above) to have the float valve attached to a brick – the whole assembly simply sits in the bottom of the fountain now. This is much better because it is very simple to lift it out and clean the algae out and move the sealing washer. The water level is now much more consistent.