

# DE-CENTRALIZED SANITARY SYSTEMS VS. CENTRALIZED SANITARY SYSTEMS (Part III)

If you are just now joining us, we are discussing septic fields vs. centralized sanitary treatment. You will need to get the previous two issues to catch up, if you haven't read it already. Here is the grand finale of this article.....

### Centralized Treatment

Central sewer's biggest positive aspect is very similar to the septic system's biggest pro. The centralized treatment systems found in virtually every town and city allow for the homes to be densely packed, and for people to live on multiple floors of the same building while at the same time protecting public health by treating all of our sanitary waste.

What a mess we would have if everyone were still emptying chamber pots into the street every day. Nobody wants that.

### OWNERSHIP COSTS

Financial analysis of each system must be performed to evaluate its effectiveness and desirability as an alternative, right?

### Decentralized Treatment

Many people with septic fields might believe that their cost of ownership of that system is \$0 per year. After all, they aren't paying a sewer bill, right?

The analysis of system cost has to go much deeper than that, though. There are several key factors that have to be considered when calculating the cost of ownership of a septic field. Here are the ones we will consider for this analysis:

- 1) Cost of Land
- 2) System Installation Cost
- 3) System Design Life
- 4) System Maintenance Cost

The Cost of the Land used to install the Septic Field must be considered in the overall cost of ownership of the system. Even if the Owner was going to purchase the additional land to have some "elbow room", the use of that property is significantly impacted by having a functioning septic field on it. In many cases, the septic field will occupy approximately 0.50 Acres,

with another 0.50 Acres set aside for future system replacement. We will approximate the Land Cost for a typical system at \$10,000.

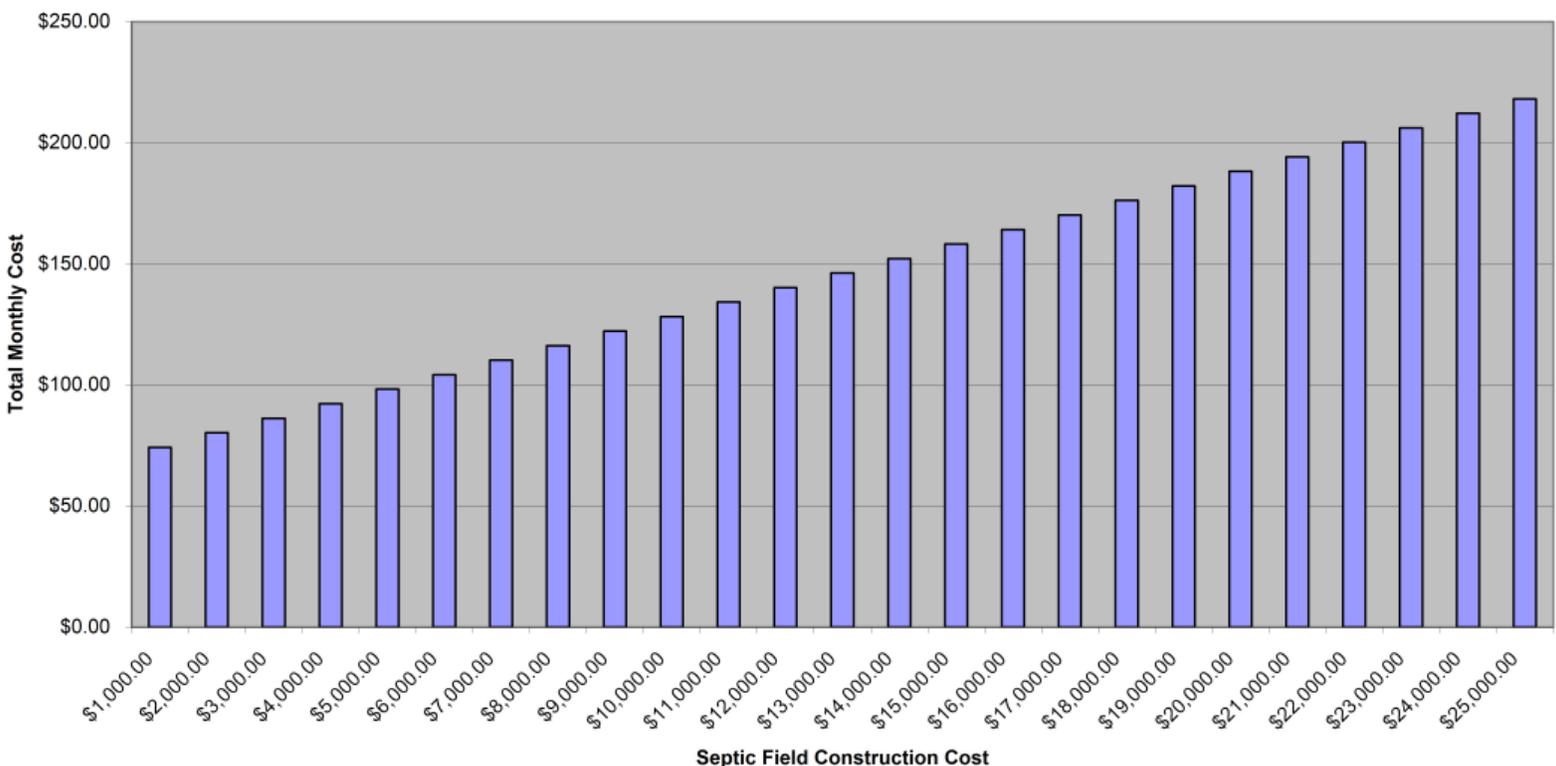
The System Installation Cost will vary widely depending on the type of system required (which is dictated by local ordinance and soil types.) However, we can be pretty confident that these costs will continue to climb. The average installation cost for most systems in Allen County, IN is approximately \$15,000, which is the number we will use for this analysis.

The longest reasonable design life for a septic field is about 30 years with excellent design, construction, and maintenance. Most systems will not continue to function properly for that long, but that is the number we will use for this study.

At the very least, a Septic Tank must be pumped out once every 3-4 years, which can be divided out to determine the basic annual maintenance expense. Additional maintenance costs include: septic tank chemical additives, mowing the leach field,

## Total Septic Field Monthly Cost

\$10,000 Ground Cost, 6% Interest, 30 Year Design Life and Payment, \$100 Annual Maintenance



# SANITARY SYSTEMS...CONT.

etc. For the purposes of this basic study, we will assume a pumping cost of \$250 every three years, with an additional cost of about \$20 per year in other maintenance, for a total annual maintenance cost of about \$100.

As a result, our total up-front costs would be about \$25,000, with additional annual maintenance of about \$100 per year.

How do we determine our actual cost of ownership? An accountant could answer that question better than I could, but the layman's explanation is that we have to factor in a few other variables like: inflation, discount rates, life of the system, and maybe a couple others.

For our purposes, we will shortcut some of that and look at it like this:

We have to completely pay off the initial investment within 30 years, because that's when we have to build the system all over again. The monthly payment on that \$25,000 initial investment we mentioned earlier with a term of 30 years and an interest rate of 6% is about \$150 per month. When you add in the \$100 per year annual maintenance costs you get a payment in today's dollars of about \$160 per month.

Thirty years from now, when you have to build a new system, that \$160 won't look like such a big number due to inflation, but you will also have to pay more to replace the system because contractors will probably be making over \$100 per hour in take home pay.

## Centralized Treatment

People on centralized treatment systems might think the only thing they are paying for each month is their sewer bill, but they would be wrong.

We also have to look at several factors to find out how much we're paying each month to be able to flush the toilet in town.

- 1) Cost of Land
- 2) System Installation Cost
- 3) Tap fees
- 4) System Design Life
- 5) System Maintenance Cost

Maybe those factors look familiar?

The Cost of Land is a little tricky to figure out when you're on centralized treatment.

The reason it's a little tricky is because most homes that have a sanitary sewer line tap to a centralized treatment facility are on a small lot, therefore there is no "extra" ground for the septic field. However, the property these homes are built on is generally worth more money per acre than the rural properties that septic fields occupy, so the homeowner pays a premium for the ground that can connect to public sewer. For the purposes of this example, we will estimate that upgrade cost to be \$5,000 per lot.

The system installation cost for the central collection lines also gets paid for by the homeowner. You might think that the developer pays for those systems, but he has to set the price of the lot to include the sanitary costs, so when the lot is sold the buyer is also paying for the sanitary system. The price for each lot varies quite a bit, but a reasonable average budget price per lot is around \$5,000.

Tap fees per home vary widely from market to market and even from neighborhood to neighborhood. For our example we will use a total tap fee of \$2,500, but we have seen these costs range from \$0 to about \$5,000.

The system design life for a gravity collection system is usually around 80 years. Pumping systems are usually designed for about 40 years. In an effort to "play fair," we will assume the average life span, or about 60 years.

The system maintenance costs will be the monthly sewer bill plus any repairs to the private tap and/or grinder system employed by the home. We will assume a sewer bill of \$30 per month and \$50 per year to fix any problems with the system.

What does that total for the homeowner? Well, the first 3 items are all generally paid for with the Mortgage (and we will continue to use the 30 year mortgage life.) The difference here is that the design life is longer than 30 years, so we will take the 30 year payment rate and spread it out over the 60 year design life.

That means that the infrastructure costs about \$37.50 per month and the treatment and

maintenance costs about another \$35 per month for a total bill in today's dollars of about \$72.50 per month.

How high would the infrastructure costs have to be to make the City system cost more than the decentralized septic field system? Well, the installation of the system, the ground costs, and the tap fees would have to exceed \$32,000 to match the costs of the septic field example given previously. The extended design life and low maintenance costs of the centralized sewer system make it very competitively priced compared to the septic field.

## CONCLUSIONS AND SUMMARY

Centralized sewer and waste water treatment is a pretty good deal financially. Even though you have a monthly bill to pay, it can actually end up costing less money than a septic field without a standard monthly treatment bill.

Decentralized sanitary treatment systems are also a good deal, if you want to build in a remote area. Extending sanitary sewer service for long distances for a handful of houses can run the cost of municipal sewer up high enough that the septic field option becomes more cost effective. Additionally, septic fields are much more eco-friendly than many of our previous choices have been for handling human waste streams. They also smell better.

Careful consideration must be given to all the factors of each system prior to making a selection. It's easy to get tunnel vision and assume that one option will be more cost effective than another, and that can cost us all precious resources at a time when we have little to spare.

Well, I hope you have enjoyed this three-month excursion into the world of waste treatment. You probably haven't enjoyed it as much as I have--but then again, you aren't getting paid to read this, either!

Have a great rest of the summer. I can't believe it's almost gone already.

See you next time.



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