

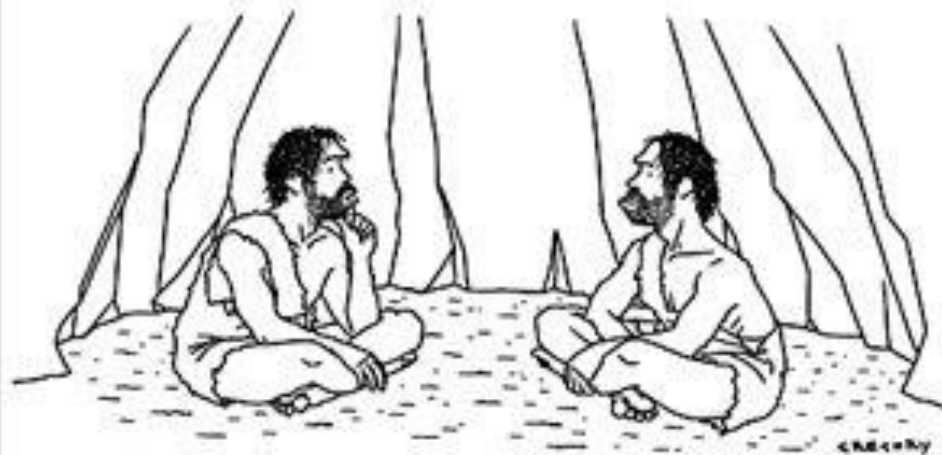


Residential level problems solved by
engineered solutions.



“There is no civilization without Civil engineering”

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“Something’s just not right—our air is clean, our water is pure, we all get plenty of exercise, everything we eat is organic and free-range, and yet nobody lives past thirty.”



Homeowner concerns

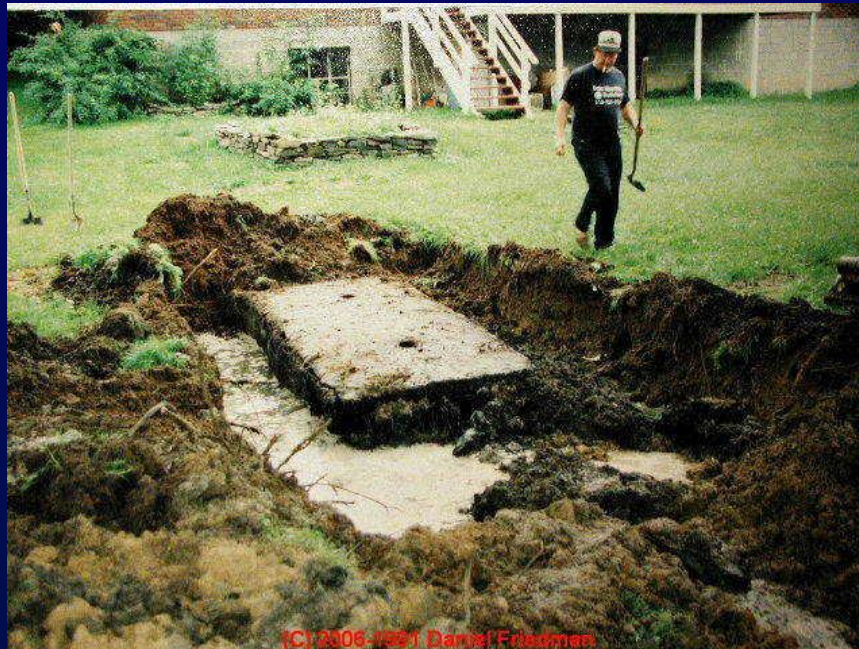


Homeowner concerns

1) Does my toilet flush??

Homeowners largest fear and
greatest mystery

“I just don’t even want to know.”



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Proper maintenance – “If your septic system costs as much as your car would you maintain it? Things like changing the oil, inspection, tire rotation.”



Your septic system costs more than your car and it is harder to replace.

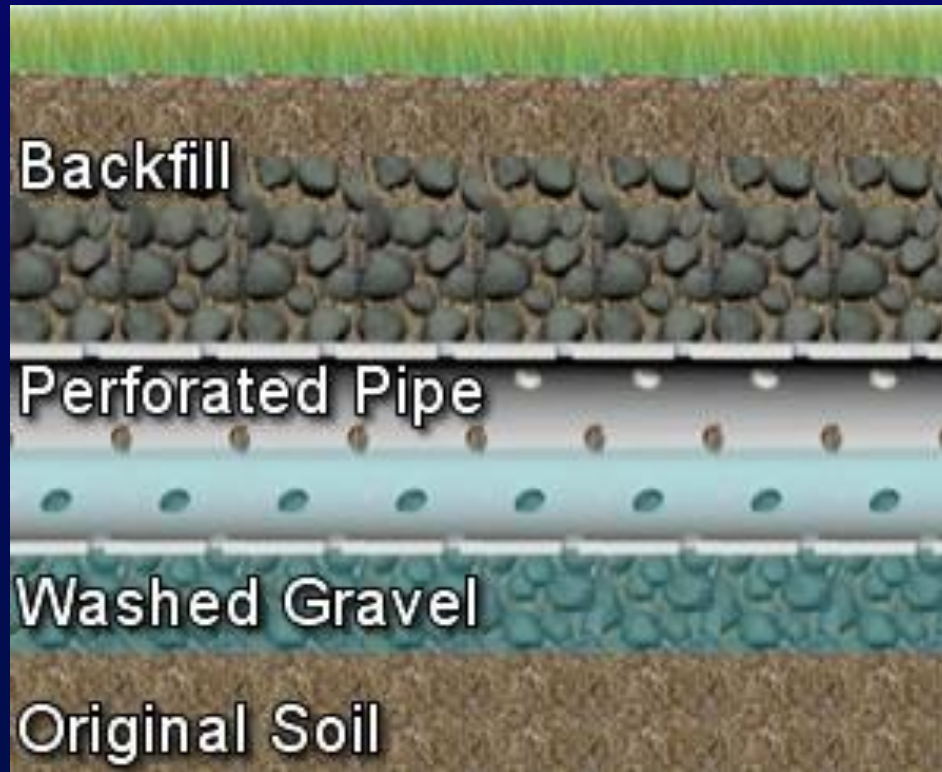


Solutions---none are cheap

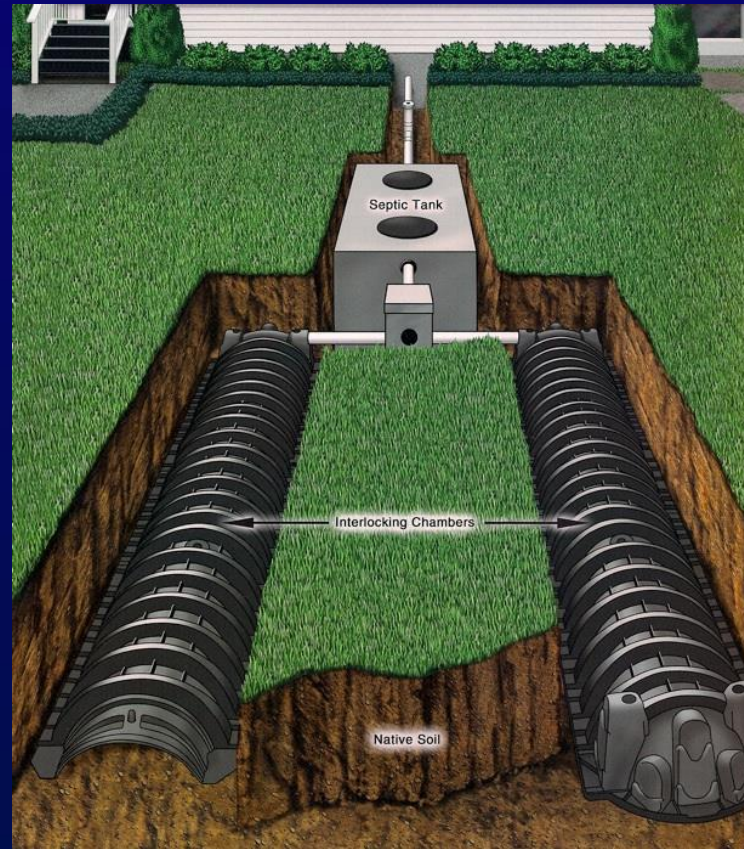


Rebuilding a leachfield

- Pipe and Stone



Septic Chambers



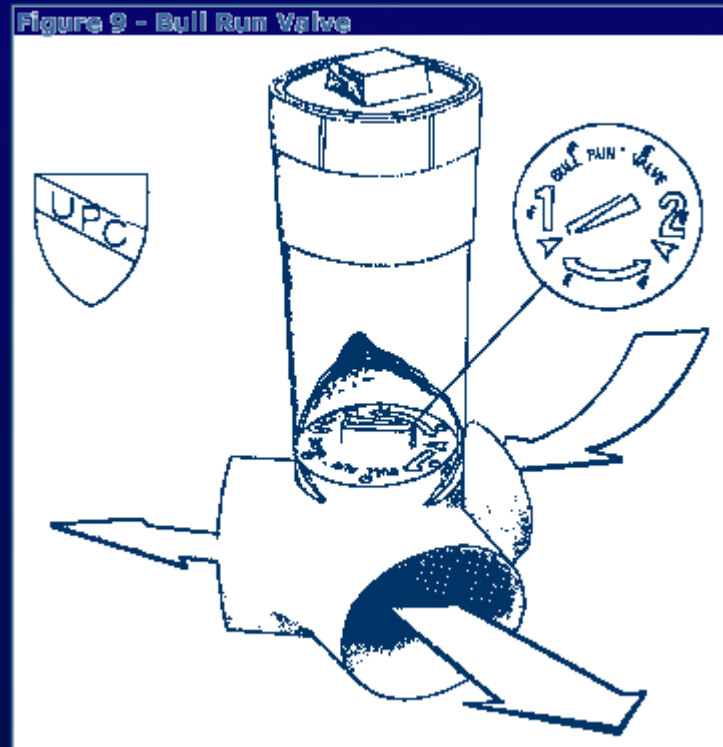
Chamber advantage

- Masking—What is the flow through stone?
- -----What is the remaining area?
- -----How much of a biomat will I have in that infiltrative surface area that remains?

An idea that has been tried four times in 20 years



Bull Run Valve



Septic system resting

- Biomats form in all leachfields.
- Allowing the systems to rest with no added nutrients can clear the space in between soil particles and restore soil perc.
- The client already paid for his failed system that served the home for so long.
- Allowing the rest period can and will allow it to serve again.



Biomat



Homeowner concerns

- Does my toilet flush?
- Is my basement dry?

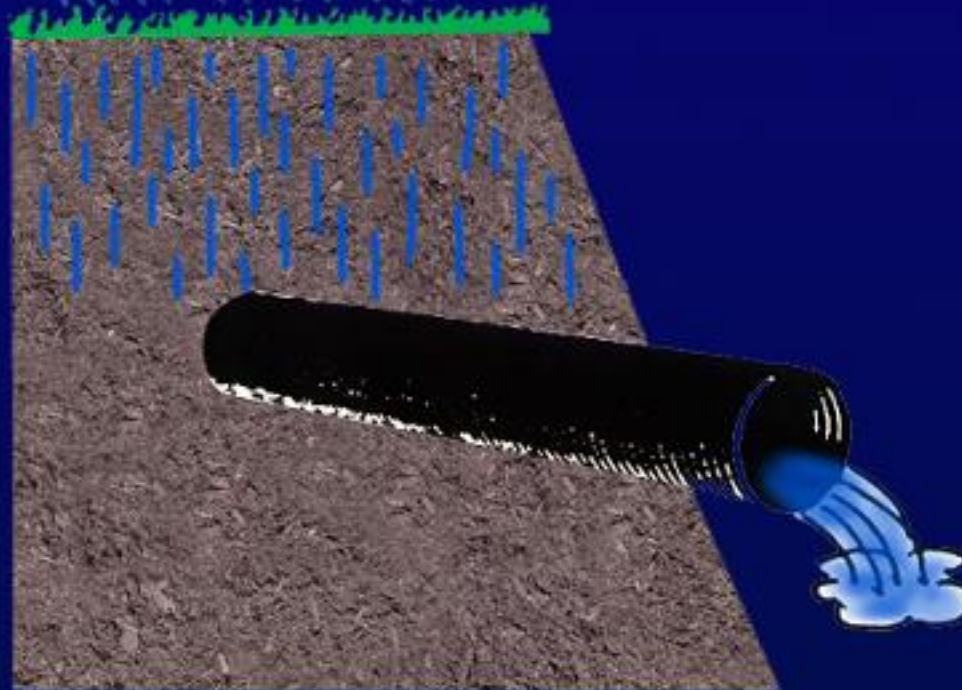
Sump Pumps

- 1) Sump pumps are great!!!!!!!!!!!!
- 2) What's the one thing you need?
- 3) When does the power go out?
- 4) Usually when it rains very, very hard

Water runs on Gravity

- Does the grade slope away from the home?
- Are gutters and down spouts maintained?
- What type of soils are you on?

**If you can't daylight it don't
build it!!!!!!!**



Tip for suitable soils



Homeowner Concerns

- Does my toilet flush
- Is my basement dry?
- I'm on a well, will it run dry.

Rain water harvesting





Homeowner Concerns:

- 1) Does my toilet flush?
- 2) Is my basement dry?
- 3) I'm on a well, will it run dry?
- 4) How do I make the puddles go away?

Under drain

- For over 50 years the industry has had plastic drainage pipe to make the puddles go away
- Farms
- Sports field
- Golf Courses
- Lawns
- Before that there was clay tile.



Driveway slope the wrong way?



- Duraslot and other sheet flow can really help.



Open grate or Expanded Aluminum Heel Guard



Homeowner Concerns?

Really should be who is going to the post season?

