

A large, dense pile of unsorted puzzle pieces in various colors including yellow, green, blue, orange, and red. The pieces are scattered across the entire frame, creating a textured, chaotic background. A semi-transparent dark blue horizontal band is overlaid across the middle of the image, containing the text.

Ready to put the puzzle  
together?

## When you think about flooding, what do you think of?

Rivers?  
Roads?  
Bridges?  
Infrastructure?  
Fools?



## Let's share a story and do a little detective work

### The Setting:

- July 2021
- Starting to recover from over a year of drought conditions,
- It started to rain,
- Big rains,
- Many days of rain,
- Saturated soils etc.
- No named storms

A NH WWTF started to see an increase in volume...

You know where this is going....



## What Was Going On?

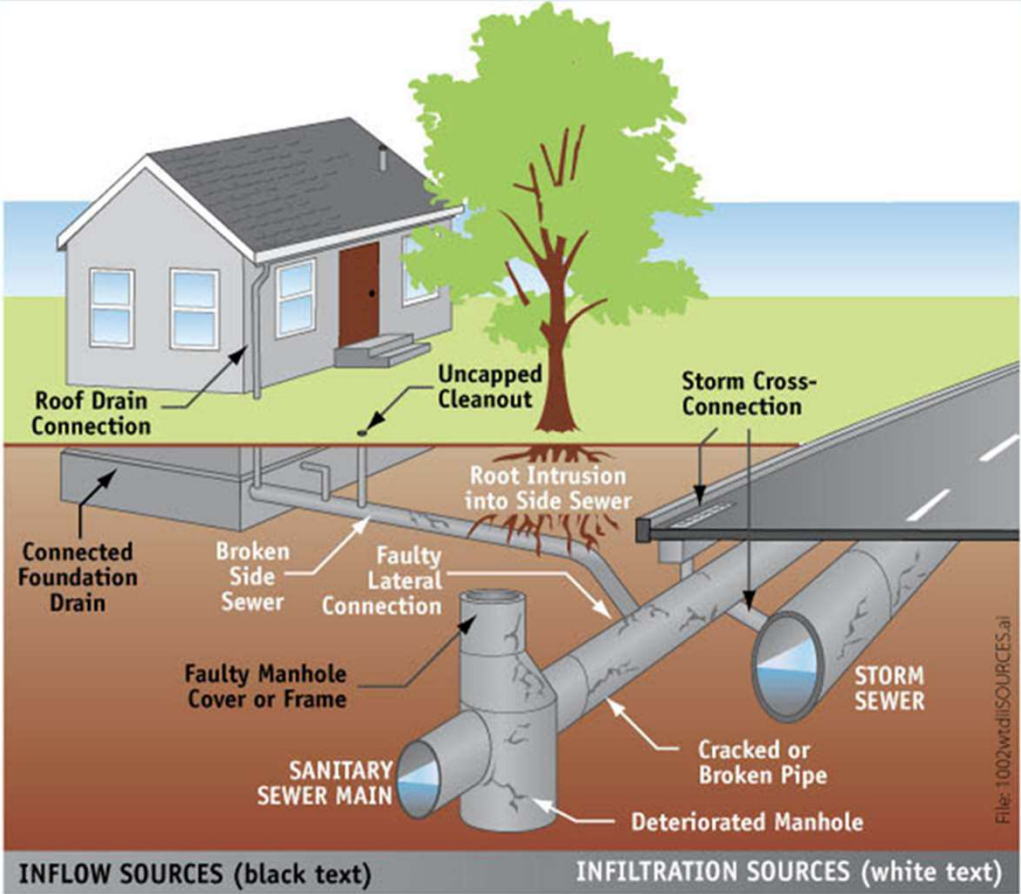
- Volume in Sequencing Batch Reactor (SBR) tanks were unbalanced and too high
- Operator had to stay through the night to manage the regularity of the system's SBRs
- During normal flows, he was able to operate SBRs at 3.5 cycles/day but during this high flow period he had to go up to 5.5 cycles/day along with a gradual decanting off both SBR tanks to bring the levels down to where they should be
- Put more water through the plant quicker; in smaller batches
- No visible flooding around the plant???



These solar panels have nothing to do with the flooding  
They are just awesome to see on their old lagoon!



**Ah ha!** Due to infiltration and inflow the WWTF's volume was increased  
Operator suspects the bulk of the inflow came from a neighborhood in a fairly wet area



[Inflow and Infiltration \(I&I\) \(envirosight.com\)](http://envirosight.com)

**What data would be useful in figuring this out?**

**What might be a good remedy?**

Data points to gather:

- Do these homes in the low lying area have sump pumps?
- Are there other illicit connections?
- Is there unknown infiltration?
- Has this happened before?
  - What were the conditions when it did?
  - Ask the eldest (and wisest) operator!



## How Can You Make a Business Case for a Remedy?



### Fixing the inflow

- Install a hard line to direct sump pump flow away from plant?
- Identify potential illicit connections?
- **How do you convince the public to pay for this?**

### Fixing the infiltration

- Use a CCTV to scan the sewer pipes?
- Increase sewer maintenance; vac truck?
- Have a liner blown into the sewer pipes?
- Replace private service connections?
- **How do you convince the public to pay for this?**



- Saves the plant energy + money not having to treat clean water
- Prolongs the life of the plant
- Prevents an increase in user fees
- Decreases need to upgrade the plant

