

# The Climbing Hill Saga – A Public Water Supply Soap Opera

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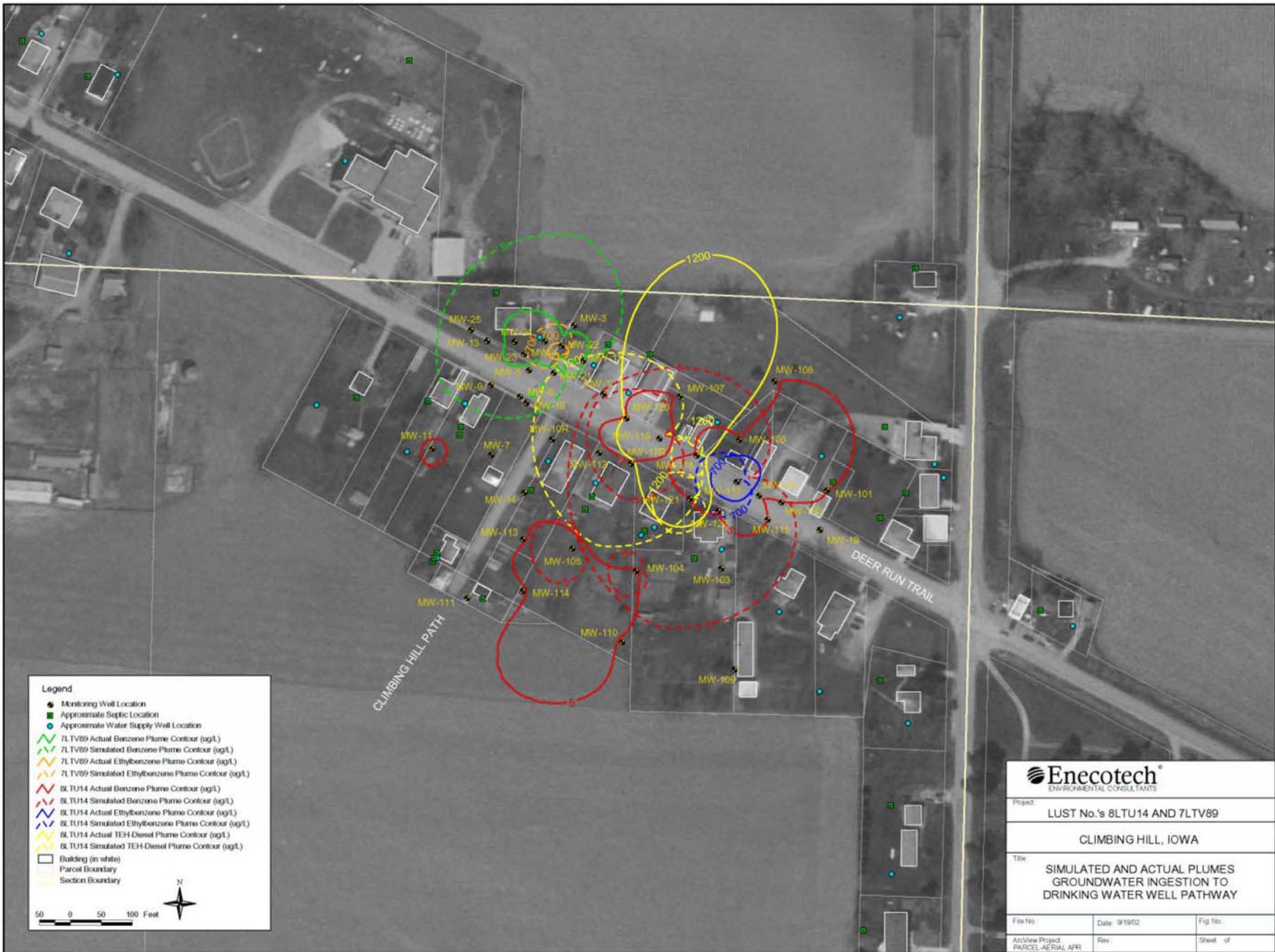
*The Barn*  
Groceries  
Beer      Food

*Coca-Cola*  
Ice Cold  
Enjoy  
*Coca-Cola*  
Available Inside

ICE

# Background

- Contamination first discovered in 1990 during a tank closure - two LUST sites
- Five contaminated drinking water wells were identified (but one abandoned when property owner moved home)
- First contaminated DWW identified in 1991 and most recently, in 1999, Barn PWS well becomes contaminated
- At least 12 other residences at high risk



**Legend**

- Monitoring Well Location
- Approximate Septic Location
- Approximate Water Supply Well Location
- 7LTV89 Actual Benzene Plume Contour (ug/L)
- 7LTV89 Simulated Benzene Plume Contour (ug/L)
- 7LTV89 Actual Ethylbenzene Plume Contour (ug/L)
- 7LTV89 Simulated Ethylbenzene Plume Contour (ug/L)
- 8LTU14 Actual Benzene Plume Contour (ug/L)
- 8LTU14 Simulated Benzene Plume Contour (ug/L)
- 8LTU14 Actual Ethylbenzene Plume Contour (ug/L)
- 8LTU14 Simulated Ethylbenzene Plume Contour (ug/L)
- 8LTU14 Actual TEH Diesel Plume Contour (ug/L)
- 8LTU14 Simulated TEH Diesel Plume Contour (ug/L)
- Building (in white)
- Parcel Boundary
- Section Boundary

50 0 50 100 Feet

N

**Enecotech**  
ENVIRONMENTAL CONSULTANTS

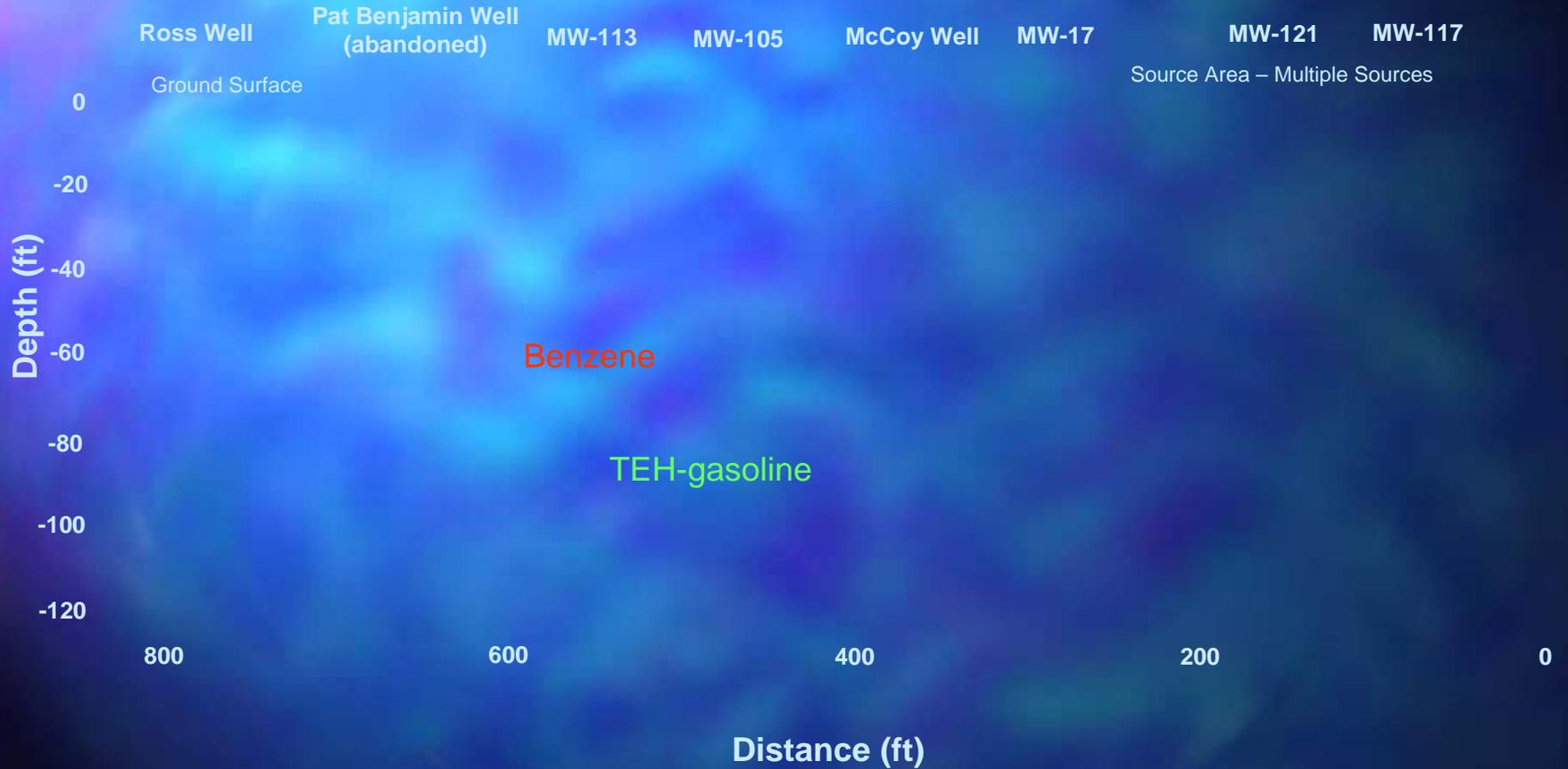
Project: LUST No.'s 8LTU14 AND 7LTV89

CLIMBING HILL, IOWA

Title: SIMULATED AND ACTUAL PLUMES GROUNDWATER INGESTION TO DRINKING WATER WELL PATHWAY

File No.	Date: 9/19/02	Fig No.
As/View Project: PARCEL AERIAL APR	Rev	Sheet of

# Climbing Hill Cross-Section



# Interim Solution

- Prior to 1999 - bottled water supplied to owners of impacted wells
- After 1999 - point-of-use treatment systems installed in an effort to provide increased protection to affected well owners

# Factors in Determining Long-Term Solution

- Soils are silty clay
- Groundwater is very deep with wells in area primarily in the glacial till unit with interbedded sand lenses
- Contam. wells outside of known plume
- Numerous potential unknown sources
- Climbing Hill is unincorporated
- Lowest cost, most technically feasible option

# Private Association Wells Selected as Long-Term Solution

- Cleanup thought to be unsuccessful
- Failed to gain support for rural water
- Cost issues
- County unable to assist financially
- Residents not likely to handle a PWS

# Work Completed

- Obtained legal access to install wells
- Formed legal associations among groups of residents
- Installed wells, piping infrastructure
- Connected all residences
- Chlorinated systems before use

So we have the community  
well system designed, we  
have the potential risks  
reasonably addressed, we're  
finally done, right...

Nothing is that Easy

What follows is a glimpse at some of the less defined issues that are difficult to predict, but which are huge factors in a community well project. These should be evaluated when you consider cleanup versus replacement of a water supply.

$$2(y+3) + 4(y+12) = -2(y+10) + 4(y+6) + 3(2y+8)$$
$$2y + 6 + 4y + 48 = -2y - 20 + 4y + 24 + 6y + 24$$

# It's Not Our Problem Mentality

$$3(2x+5y) + 2(-4x+6y) = 4(x+5y) + 5(2x+4y) + 2(4x+3y)$$
$$6x + 15y + -8x + -12y = 4x + 20y + -6x + -12y + -8x + -12y$$

$$3(a+b) - 2(-4a+3b) + 5(a+3b) = -3(a+4b) + 2(-6a+4b) + 3(2a+5b)$$
$$3a + 3b + 8a - 6b + 5a + 15b = -3a - 12b + -12a + 8b + 6a + 15b$$

$$7(m+2n) - 3(-2m+4n) = 5(6m-7n) + 3(5m+6n)$$
$$7m + 14n + 6m - 12n = 30m - 35n + 15m + 18n$$

$$7(x+4y-6z) = 4(4x-6y-7z) - 2(2+7x+3y)$$



# It's Not Our Problem

- This is a common occurrence in any community water project. "Our wells are fine, we don't need rural water, why should we have to pay for that?"
- Then reality hits: How come you aren't replacing our wells?
- SOLUTION: Explicit communication with the residents as to the advantages and disadvantages and what they will not get if they choose to opt out.

# Local Rivalries and Neighborhood Relationships

# Local Relationships

- Association well groupings of residents was made difficult by this, different neighbors who did not want to have to be tied together
- Animosity remaining from some residents against those who didn't support rural water
- SOLUTION: Reminding the residents of their common goals. If necessary and possible, make some adjustments. Never take sides.

# The Central Office

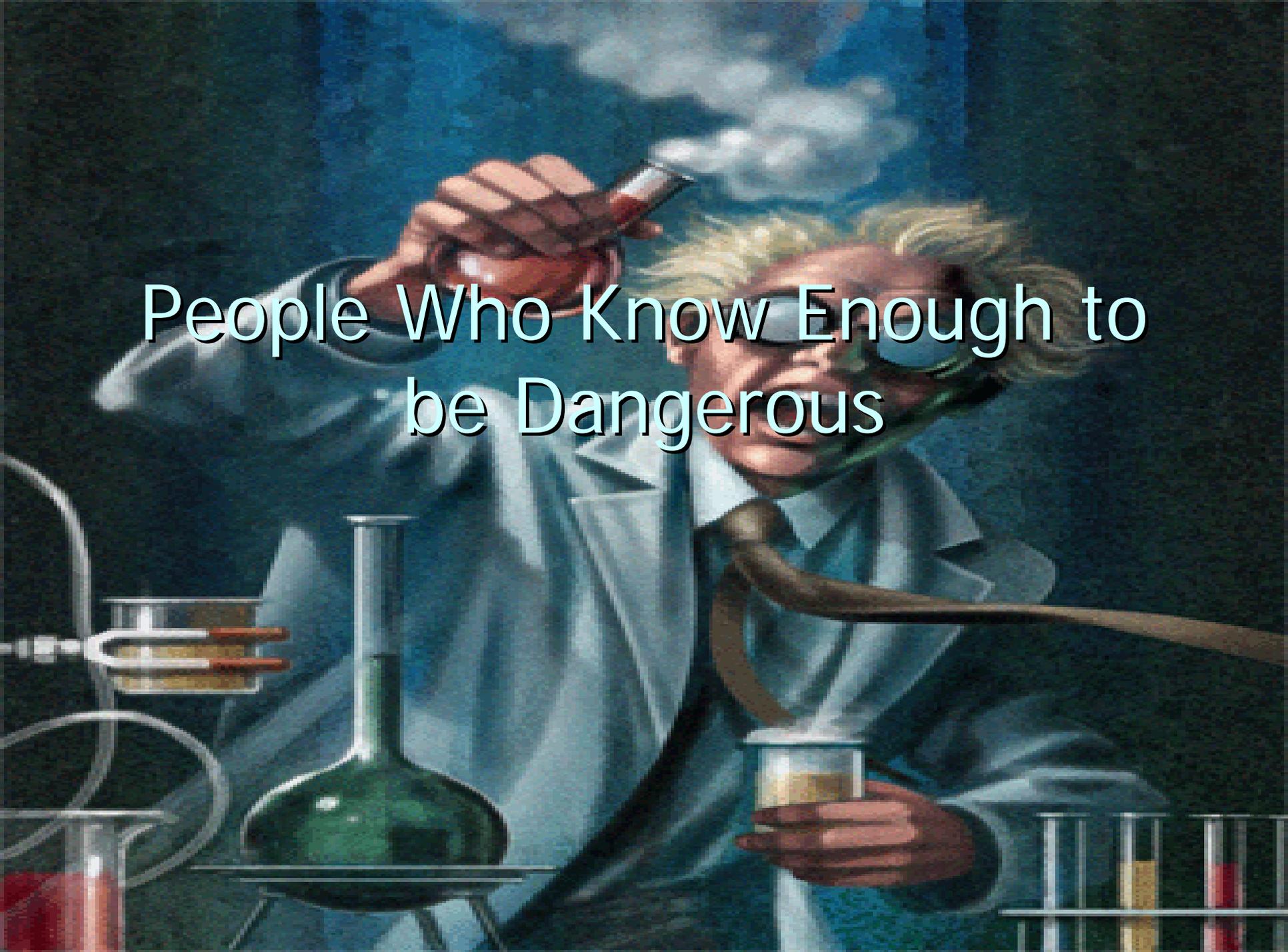
# The Central Office

- Sometimes the project staff down at headquarters is viewed as that stiff suit government type who doesn't understand what these people have to go through.
- SOLUTION: Get to know the local people. Talk to them about things going on. Have field staff that can stop by and make a presence, visit yourself as often as you can. Have ONE contact person that they know they can call.

# The Local Activists

# Local Activists

- These folks are well-intentioned, but do not understand the background of the project.
- They bully, threaten lawsuits, call the US Senator, set unrealistic deadlines.
- SOLUTION: Understand they are a good watchdog for the neighborhood. They can assist you in getting things done. Be straight with them, don't let them bully you, and draft that response letter to your Senator.

A digital illustration of a scientist with wild, spiky blonde hair and safety goggles. He is wearing a white lab coat over a blue shirt and a brown tie. He is pouring a red liquid from a test tube into a round-bottom flask on a stand. In his other hand, he holds a small vial containing a yellow substance. The background is a dark blue sky with white clouds. Various pieces of laboratory glassware, including a beaker with red liquid and a rack of test tubes, are visible in the foreground.

People Who Know Enough to  
be Dangerous

# Dangerous Knowledge

- This might be the local driller, or a guy that does plumbing, or construction work. Knowledgeable, but not familiar with project background or reasons.
- They can cast doubt on what you are doing that will spread to other residents.
- SOLUTION: Realize these people do have knowledge that can be useful. Maybe they are pointing out something that wasn't thought of. Make sure you are confident in your engineer.

# The Local Monopoly Game

# The Local Monopoly Game

- Small towns are no different than cities. People come and go, just more likely, they move across the street.
- The owners just assume because they have moved in their situation is taken care of.
- SOLUTION: Any legal agreements should be tied to the land and not the individual. Plan in your project that someone is going to move an old house on that vacant lot. Clear project goals.

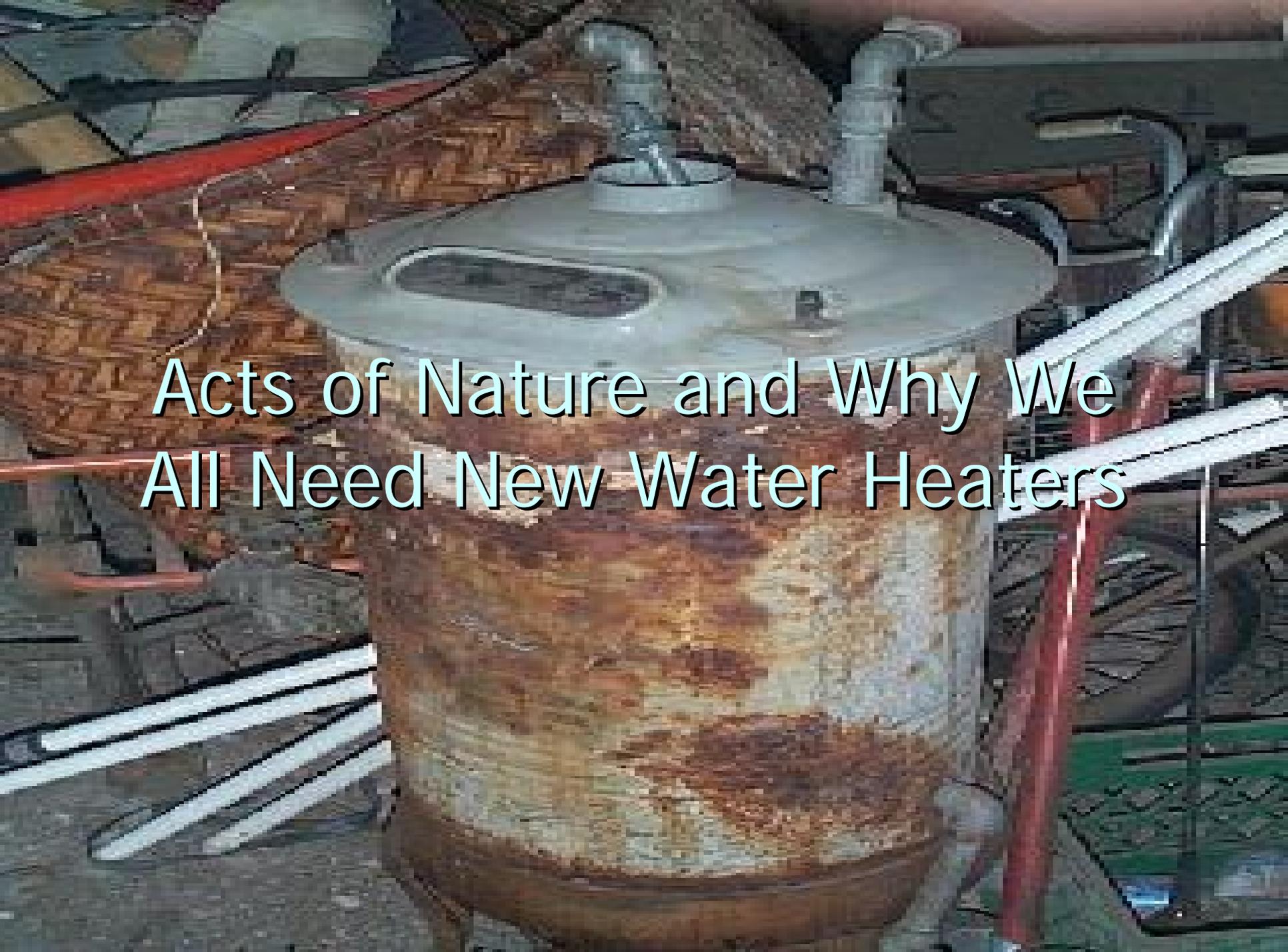
Balancing What Residents are  
Entitled to versus being the  
Home Improvement Grant  
Program

# Which costs are fair and which are not?

- These residents have been impacted by petroleum contamination for some time. They deserve to have many of their water issues made easier on them.
- Lawn damage by equipment
- Nicks on the siding
- Old water pipes, pumps, etc.
- Concrete barriers around wellhead
- Iron removal/water softener in dilapidated building

# Which costs are fair and which are not? continued

- SOLUTION: Take lots and lots of before and after pictures. Be sure your contractor and their subs use the utmost care dealing with people's property. Try to be clear from the beginning what costs are covered and what are not. Is the cost low enough for the item that just including it will make everybody's life a little easier?

A photograph of a heavily rusted, cylindrical water heater tank in a utility room. The tank is the central focus, showing significant brown and orange rust. It is surrounded by various pipes, some wrapped in white insulation, and a layer of brown insulation on the wall behind it. The lighting is somewhat dim, highlighting the texture of the rust and the surrounding environment.

# Acts of Nature and Why We All Need New Water Heaters

# Acts of Nature and the Water Heater

- Residents had just gotten new, clean water, when the line supporting the packer assembly snapped causing well damage and a series of equipment problems.
- Sent sand and mud through all the individual household lines, pressure tanks, allowed interconnection between the upper and lower aquifers.

- # Acts of Nature and the Water Heater (continued)
- Received complaints about clogging of filters for water softeners. Replaced the filters.
  - Received concerns about damage to water heaters. One resident wanted new water heaters for everyone. Had all existing flushed.
  - SOLUTION: Research options that might correct the problem before replacing everything. Order one for everyone.

A close-up photograph of a person's hand holding a clear glass filled with water. The person's nose and mouth are visible on the right side of the frame, as if they are about to take a sip. The background is a blurred landscape with green hills and a blue sky. The text "Our Old Water Tastes Better" is overlaid in the center of the image.

Our Old Water Tastes Better

# Our Old Water Tasted Better

- People would rather risk drinking petroleum-contaminated water than to drink water with high iron or TDS
- People do not understand that they might have been lucky to have clear, iron free water, but that moving 5 feet over does not even guarantee them the same result.
- SOLUTION: Research hydrology as best you can. Plan on buying iron removal and water softeners or no need for well.

# Manganese and the Bad Hair Color Job

# Mn and the Bad Hair Job

- Got everyone high-powered iron removal systems, then the local hairdresser complained the water was turning her clients' hair orange and blue
- Water chemistry can have unusual effects on things you wouldn't normally anticipate
- SOLUTION: Water softeners. Iron removal does nothing for manganese. Residences required both iron removal and water softeners.

A community water supply project is more than just engineering. It's people. They have their personalities and relationships. You have to learn how to take these into account, plan as best you can, and learn as you go on what you can't predict.

And when you are costing out a water supply project, realize there are numerous small costs that come into play and can make consideration of cleanup activities or rural water comparative value-wise.

Feel free to contact me with  
any questions:

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