The problem...
What lies beneath

Low ground-water levels are causing some Boston structures to rot under the surface

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From the front, 6 Cazenove St. looks like a typical South End brick row house. But back, a bin that holds dirt and debris from a covered pit hints at the disease eating away at the guts of the building.

The four-story house’s pilings are rotting, because the ground-water levels in this filled part of old Boston have dropped, leaving the wood exposed to air and bacteria. Neighbors said the property owner abandoned repairs after realizing how extensive the damage is.

“I don’t think he realized what it would entail financially,” said Catheryn Sanfilippo, a realtor who lives next door. “We know his pilings are gone. The new owner has the dirt still piled in his backyard, so now we’ve got this open cavity, and we don’t know what structural damage it’s continuing to do. And under the house you can hear rats running around.”

Like a spreading virus, properties in some Boston neighborhoods continue to be afflicted with major structural problems caused by diminishing ground water. Leaks in subsurface structures,

Air exposure causes rot

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・Technology a culprit

Impermeable surface materials, public work, and transportation projects, and the way a basement is kept dry all combine to lower the water table of Boston’s filled lands.

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The solution...
Two approaches to fix rotting

RECHARGING THE GROUND-WATER TABLE

Ground-water recharge systems are required for most new construction or remodel work done in the Groundwater Conservation Overlay District.

1. Rainwater, drained from a roof, is collected in a storage tank.
2. The water is carried from a perforated pipe buried below the street to replenish the ground water.

REPAIRING FAILED PILINGS

Fixing rotten pilings can be expensive, costing $250,000 or more. How it is done:

1. Rotting pile is cut 2 feet below typical low-water level.
2. Steel pipe replaces removed section of wood.
3. Underpinning is encased in concrete.

SOURCES: Beacon Hill Civic Association; Journal of the Boston Society of Civil Engineers; Boston Groundwater Trust; Neighborhood Association of the Back Bay

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The opportunist…
Appendix 3 - Hourly Tide Experiment
Benefits

• Gives students valuable field training
• Involves physical plant, professional geologists
• Maintains long-term hydrogeologic database
• Teaches students that their efforts involve contributing real, valuable data and conclusions
• Provides an easy, cost-free, practice-oriented teaching device (reproducible)