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WATER WORRIES

LI officials fear new plans
could contaminate
crucial aquifer

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Inside ExploreLI

TOP STORIES

ANCIENT AQUIFER, MODERN PROBLEMS

Bid to pump from the purest water underlying LI prompts worries about contamination, saltwater intrusion

BY JENNIFER BARRIOS
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The region's purest, most protected source of drinking water could become contaminated and infused with saltwater if New York City and a Nassau County water district are able to pump from the ancient Lloyd aquifer under Long Island, local officials and experts fear.

The Lloyd, lying along the bedrock deep under geographic Long Island, already is becoming increasingly salty and unfit to drink at the edges because of overpumping to slake the human thirst for water.

Now, as New York City readies a plan to begin pumping anew from its shuttered network of Queens wells — which includes four sunk in the Lloyd — and an inland Nassau County water district attempts to become the first non-coastal community to surmount a state moratorium on drilling into the

Lloyd, policymakers and experts are viewing the moves with concern.

"The Lloyd is special, it's limited, and it should be held as a reserve for coastal communities, period," said Sarah Meyland, director of the Center for Water Resources Management at the New York Institute of Technology in Old Westbury.

Long Island is a federally designated sole-source aquifer region, meaning the Island's 2.8 million residents rely solely on the underground aquifer system for drinking water.

Of the three main aquifers under Nassau and Suffolk counties, the Lloyd is the oldest and deepest, with water on the South Shore more than 8,000 years old.

It's also thought to be the purest water, largely untouched by the contamination from years of industrial and other human activity that has marred the higher aquifers — including the Magothy, the aquifer from

which much of Long Island gets its water.

The Lloyd holds about 9 percent of Long Island's freshwater, but for some coastal communities where the upper aquifers have been overwhelmed with saltwater, such as Long Beach, the Lloyd is the only source of water.

Moratorium on most wells

A 1986 state moratorium bans all but coastal communities from sinking new wells into the Lloyd. The state Department of Environmental Conservation grants exemptions only for "just cause and extreme hardship."

The state has never granted such an exemption, although the Suffolk County Water Authority made the first serious attempt at one in 2003, seeking to use Lloyd water to dilute elevated nitrate levels in the water from its Northport wellfield.

While DEC staff and an administrative law judge recom-

We think this source of water supply should be reserved for communities that don't have any other source of water supply available."

— Michael Alarcon, director of the Suffolk Department of Health's Bureau of Environmental Engineering

mended granting the exemption, it was denied in 2007 by then-DEC Commissioner Alexander "Pete" Grannis.

After the rejection, the water authority ended up spending \$500,000 to run a line from another well to Northport instead.

"I think the real concern of the commissioner was not what we were doing in Suffolk County, but what they would do in Nassau County based on the determination he made," said Timothy Hopkins, the water authority's general counsel, reflecting on the Lloyd application.

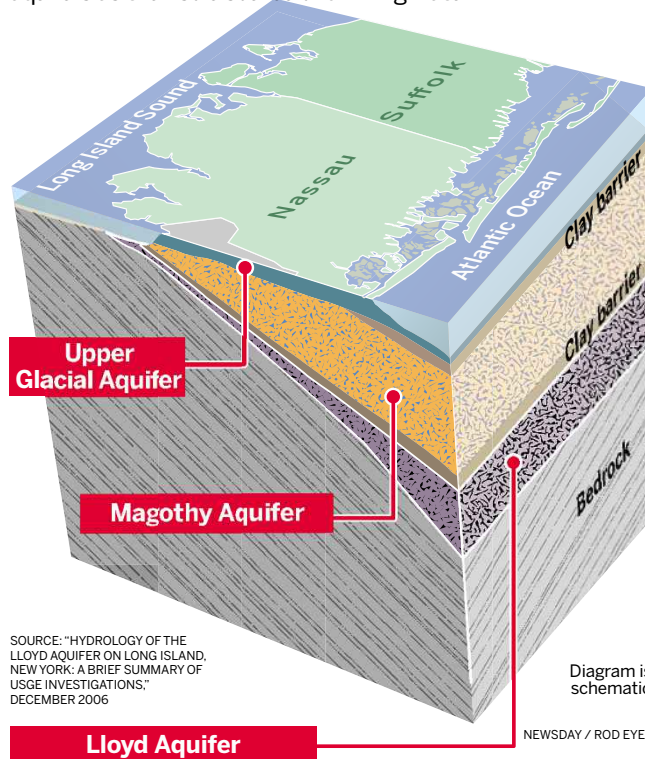
This year, in the second application for an exemption since the moratorium was created, the Bethpage Water District — affected by underground contamination from the former Northrop Grumman Naval site — applied to the state to deepen one of its wells from the Magothy aquifer into the Lloyd.





THE WATER SUPPLY

Long Island's 2.8 million residents rely on the underground aquifers as their sole source of drinking water.



SOURCE: "HYDROLOGY OF THE LLOYD AQUIFER ON LONG ISLAND, NEW YORK: A BRIEF SUMMARY OF USGS INVESTIGATIONS," DECEMBER 2006

Diagram is schematic

NEWSDAY / ROD EYER

Lloyd Aquifer

Deepest, coldest and cleanest aquifer. Made of a quartz-rich sand and gravel in a clay-like mix. It may take several hundred years for water to travel from surface to this layer. Thickness of Lloyd ranges from zero on the northern shore to more than 500 feet in south-central Suffolk. Water ranges from 2,000 to more than 8,000 years old.

exemption, DEC considers it in a "gray area," and needs a full technical review, a DEC spokesman said.

The moves have garnered intense interest from environmentalists, policymakers, other water districts and Nassau County, which penned a letter to DEC in February opposing Bethpage's application.

The two-page letter from Michael Alarcon, director of the county Department of Health's Bureau of Environmental Engineering, opposed the application on three main grounds: the well is prohibited by the moratorium, drilling into the Lloyd could contaminate it, and the new well would "present an unacceptable stress" on the aquifer.

Alarcon also wrote to New York American Water's engineer, H2M, in September, urging the water agency to withdraw its Lloyd application and seek instead to drill a new well into the Magothy or Upper Glacial aquifers.

"We think this source of water supply should be reserved for communities that

new wells outside of the area, among other measures.

H2M, Bethpage's engineer, told the DEC in April that it wasn't possible to find parcels of land for new wells — and even if the district were to build new wells, those too would be threatened by the advancing plume.

Once Bethpage's application is considered complete, it must go through an adjudicatory hearing process before it is considered by the agency's commissioner, according to the DEC.

Glen Head applies for site

The state agency is considering another Lloyd application, from New York American Water for a new well in Glen Head.

While New York American Water argues that the proposed well — part of the agency's Sea Cliff operation — is in a coastal community and thus not required to seek an

"Use of the aquifer requires specific permission," the district's January application reads. "But with no future viability of existing Well No. 4-1, and the deteriorating water quality throughout much of the district, the Lloyd formation must now be considered as a potential water supply source."

While the drinking water supplied to Bethpage residents is treated so it is safe and exceeds all quality standards, the "options are inadequate" for the district to develop other sources of water outside the plume, said district spokesman David Chauvin.

"The district feels strongly about the merits of this application and we are hopeful the DEC will recognize the extraordinary circumstances facing the Bethpage community," he said.

The DEC responded to the application by deeming it incomplete, telling Bethpage it should have considered drilling

not respond to a request for comment, plans to issue a draft environmental impact statement on the planned Queens wells' reactivation in the spring, according to a stakeholder letter the agency sent out in September.

But Long Island's coastal communities, such as the City of Long Beach, which relies solely on the Lloyd for its water due to saltwater intrusion into the upper aquifer system there, are girding for a fight against both Bethpage's application and New York City's plans.

"Long Beach's water quality is impacted by how much water is pumped from the Lloyd aquifer on a regional basis," Long Beach City Manager Jack Schnirman said, addressing the regional planning council.

The city's plans "could potentially make the Lloyd aquifer unusable for residents of Long Beach in the future," he said, adding: "Long Beach does not have an alternative water source."

But even without the additional pumping, either in New York City or in Nassau, it appears that the Lloyd already may be overextended.

New research conducted by Frederick Stumm, a research hydrologist with the U.S. Geological Survey's New York Water Science Center in Coram, appears to show that the line of saltwater intrusion — where the Atlantic Ocean pushes against the underground freshwater — in the Lloyd is much closer to the coast than previously thought, although it's still unclear exactly where that line lies.

That points to the fact that the Lloyd aquifer likely already is overpumped, he said.

"Obviously you wouldn't have saltwater intrusion in some of the coastal communities if the resource was managed at a level that would be sustainable," Stumm said.

That news underscores the importance of keeping the Lloyd as pristine as possible, Meyland said.

"The policy has been, given all the other water that is available to water utilities, the Lloyd is there as a backup emergency supply — especially for coastal communities that have nowhere else to go," she said.

That was echoed by geologist and State Assem. Steve Englebright (D-Setauket), who said the Lloyd — pure, ancient and in limited supply — should be kept "for a true emergency."

"That's our fallback," he said. "That's our ace in the water hole."

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don't have any other source of water supply available," Alarcon said at a meeting of the Long Island Regional Planning Council last month.

Along with the Bethpage application, observers also have expressed concern about New York City's planned reactivation of part of its network of wells in Queens, four of which tap into the Lloyd, as part of the city's plan to find new sources of water while it addresses leaks in its upstate aqueduct system.

Existing wells are exempt

The aquifer systems that lie under Nassau and Suffolk counties also run under Queens and Kings counties, which are geographically on Long Island.

The city's Department of Environmental Protection, which did