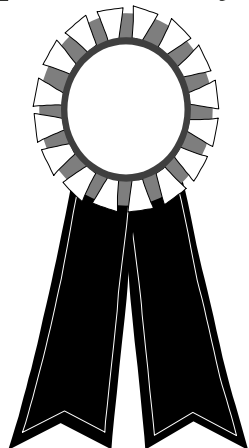


The Ground Water Sentinel

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Well Head Protection Awards

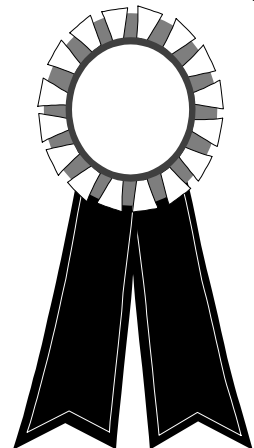
Millburn, Essex County, June 2003

East Hanover, Morris County, February 2004

Chatham Borough, Morris County, 8 March 2004

Pompton Lakes, Passaic County, 11 March 2004

Chester Township, Morris County, April 2004



Highlands Water Resources: The Bottom Line on Over Development

When Governor McGreevey created the Highlands Task Force last year, interest peaked in an area where the demand for new development is being weighed against the need for maintaining a crucial regional water supply. However, efforts to preserve the Highlands region for water supply purposes have been urged throughout the previous century. A 1907 report to the Potable Water Commission states that, "*The Highlands' watersheds are the best in the State in respect to ease of collection, in scantiness of population, with consequent absence of contamination; in elevation, giving opportunity for gravity delivery, and in softness as shown by chemical analysis. These watersheds should be preserved from pollution at all hazards, for upon them the most populous portions of the State must depend for water supplies. There has been too much laxness in the past regarding this important matter.*"¹

Drinking water from the New Jersey Highlands is estimated to be distributed to 292 municipalities in New Jersey. "These municipalities are home to 64% of the State's population."² Ground water mainly supplies the needs for people living in 90 municipalities in the

Highlands, and predominantly surface water is transferred outside the Highlands for use in 202 municipalities.³ Many of these municipalities that are supplied by water from the Highlands are located in the heavily developed and densely populated areas of the Passaic, Hackensack, Raritan, and Delaware River Basins.

But development within water supply areas degrades both the quality and quantity of these resources. In 1888 the Board of Trade of Newark sought a pure water supply for the city because the lower Passaic River was severely polluted. The Rev. Horace F. Barnes was quoted as saying, "The map of New Jersey will show us where there is plenty of pure water. Our great watershed [in the Highlands] is three times as large as that of New York [City], but remains practically unused."⁴ A century later the Highlands of New Jersey are becoming overdeveloped, and the quantity and quality of water supplies from the Highlands are becoming depleted and degraded.

Today, although water still precipitates at a rate of about 2,800 million gallons of water a day (mgd) on the 1,250

¹ Highlands Task Force. 2004. Highlands Task Force Action Plan, Recommendations to Preserve New Jersey's Highlands, A Report to Governor James E. McGreevey and the New Jersey Legislature, March 2004. Page 3. <www.savethehighlands.org/>.

² Hoffman, J.L. & S.E. Domber. 2004. Potable Water Supplies in 1999 by New Jersey's Highlands. New Jersey Department of Environmental Protection, New Jersey Geological Survey.

³ Hoffman, J.L. & S.E. Domber. 2004. Potable Water Supplies in 1999 by New Jersey's Highlands. New Jersey Department of Environmental Protection, New Jersey Geological Survey.

⁴ "Not Fit For Drinking — New Water Supply Agitation." Newark Evening News. 14 June 1888. <www.scc.rutgers.edu/njh/SciANDTech/Newark-Water/not-fit-entire.htm>.

square miles of the New Jersey Highlands, it is being overused. About 50% (1,400 mgd) of this water leaves the Highlands via streamflow. An estimated 41% (1,100 mgd) is lost to evapotranspiration, and about 9% (300 mgd) is consumptive water use that is not returned to Highlands watersheds.⁵ Much of this water that is “consumed” is used depletively in Newark and other urban and suburban areas in New Jersey and not reused before it gets discharged to the ocean.

Streamflow data indicate losses in water that can be stored and used when needed. Stormwater runoff now accounts for about 26% (380 mgd) of streamflows out of the Highlands.⁶ Very little of stormwater runoff can be captured for use. Baseflow, which is water that soaks into the ground and seeps slowly into streams after the storms have ceased, is a measure of the amount of precipitation that has recharged ground water and not been consumed by ground water pumpage. Baseflow should be over 80% of stream flow in the Highlands, but now it averages only 74% (1,040 mgd). Baseflow is less than 50% “in some of the most urbanized areas within the Highlands with documented large ground water withdrawals.”⁷

Being first and foremost a major source of drinking water for the State, the Highlands should be given top

priority when it comes to protecting surface and ground water resources. But what are the key factors? Unregulated development destroys uplands and forests that serve as water collectors and purifiers; pavement and structures prevent rainfall from soaking into the ground and recharging aquifers; and increased storm-water runoff sends additional pollutants into streams and reservoirs. Development also increases the demand for water. Thus, the overall outcome is a reduction in the ground water that feeds streams and reservoirs between rainstorms, and replenishes aquifers that supply private and community wells.

The “Highlands Task Force Action Plan” notes that between 1995 and 2000 the Highlands lost to development 17,000 acres of forest and 8,000 acres of farmland.⁸ These losses are estimated to have caused a loss of 22 mgd of recharge to ground water and base flows in the streams in the Highlands.⁹ This is enough water to supply more than 300,000 people with clean drinking water. Most of the people who are being impacted by this loss live in the Highlands and get their water from wells. Isn't it time to protect the “green infrastructure” that nature provides in the Highlands and that supplies clean water to millions of people in New Jersey?

⁵ United States Department of Agriculture Forest Service, Phelps, Marcus G. & Hoppe, M., Compilers. 2002. New York-New Jersey Highlands Regional Study, 2002 Update. NA-TP-02-03. Page 41.

⁶ United States Department of Agriculture Forest Service, Phelps, Marcus G. & Hoppe, M., Compilers. 2002. New York-New Jersey Highlands Regional Study, 2002 Update. NA-TP-02-03. Page 41.

⁷ United States Department of Agriculture Forest Service, Phelps, Marcus G. & Hoppe, M., Compilers. 2002. New York-New Jersey Highlands Regional Study, 2002 Update. NA-TP-02-03. Page 47.

⁸ Highlands Task Force. 2004. Highlands Task Force Action Plan, Recommendation to Preserve New Jersey's Highlands, A Report to Governor James E. McGreevey and the New Jersey Legislature, March 2004. Page 4. <www.savethehighlands.org/>.

⁹ Recharge loss estimated at rate of 25,000 acre-feet per year.

On-line Ground Water Resources

EPA Ground Water Primer — <http://www.epa.gov/seahome/groundwater/src/ground.htm>

Learn ground water basics with this interactive on-line resource.

Citizen's Guide to Groundwater Protection — <http://www.epa.gov/safewater/protect/citguide.html>

This 1990 report, updated in 1999, provides basic information about ground water, the major sources of ground water contamination, and how to protect ground water quality. English and Spanish versions.

EPA Groundwater & Drinking Water Homepage — <http://www.epa.gov/safewater/>

General information about the EPA's Office of Ground Water and Drinking Water (OGWDW).

EPA Region II Sole Source Aquifers — <http://www.epa.gov/region02/water/aquifer/>

Details on the aquifer systems of the Buried Valley, Rockaway River, Highlands, and others.

NJGS Aquifer Recharge Mapping — <http://www.nj.gov/dep/njgs/enviroed/aqfrchrg.htm>

Overview of NJ Geological Survey Aquifer Recharge Mapping Program

NJGS Guidelines for Delineations of Well Head Protection Areas in New Jersey —

<http://www.state.nj.us/dep/njgs/whpaguide.pdf>