

## COMMISSIONER'S COLUMN

### NHDES urges all private well users to test their water supply

Recent concerns over elevated levels of man-made chemicals in well water in some southern New Hampshire locales demonstrate the truth in the adage, "We never know the worth of water till the well is dry."<sup>1</sup> Or, as in this latest situation, until the well is suspected of being contaminated by human activity.

In New Hampshire, equal numbers of households rely on private wells and community water systems.<sup>2</sup> This is in contrast with the nation overall, in which only one in seven households uses a private well.<sup>3</sup> While NHDES thoroughly supervises the public water systems that supply schools, restaurants, places of work and half of the state's homes, there is no similar oversight to ensure the safety of water from private wells. Consequently, it is up to well users to protect their families by testing their water and, when necessary, installing and maintaining treatment systems or using other water sources.



Too often, if water looks, smells and tastes good and no one in the family is getting sick, it is thought to be safe. This view is probably more prevalent where there are no obvious sources of contamination nearby. In reality, naturally-occurring contaminants – from our native bedrock – are far more likely to present health hazards than any human activity. One in five bedrock wells in New Hampshire has high levels of naturally-occurring arsenic, and most have levels of radon that warrant follow-up testing. Other contaminants – both natural and human in origin – are less common but occur often enough to warrant routine testing.

Consequently, NHDES urges private well users

to test their well water regularly, and provides guidance to municipalities to help ensure that private well water supplies are indeed "potable," as required

### Just waiting for the grass to grow at Lower Liberty Hill Road

After nearly 10 years of extensive site investigations and remediation planning, and two construction seasons implementing the remedial action plan, cleanup of the Lower Liberty Hill Road site in Gilford has come to a conclusion. Contamination of the site dated back to the decommissioning of the Messer Street Manufactured Gas Plant (MGP), circa 1952-53. Liquid coal tar was removed from equipment at the former plant and disposed of at what was then a gravel pit on Liberty Hill Road. An unknown quantity of coal tar was disposed of at the gravel pit, then backfilled. Sometime in the 1970s, the property and surrounding area began to be developed into a residential neighborhood.

Information regarding the off-site disposal of liquid byproducts from the former Messer Street MGP first came to light in 2004. EnergyNorth (currently d/b/a Liberty Utilities), the successor owner to the company that operated and dismantled the Messer Street MGP, notified NHDES in November 2004 that it believed waste from the former Messer Street MGP was disposed of at an off-site location along Liberty Hill Road.

From late 2004 to mid-2006, EnergyNorth conducted a comprehensive site investigation focusing on four impacted properties on Liberty Hill Road and Jewett Brook,

## Commissioner's Column *continued from page 1*

under the International Plumbing Code, when issuing certificates of occupancy.<sup>4</sup> NHDES recommends testing all wells for 15 contaminants, plus some additional tests where human-caused contamination is a possibility. The State Public Health Laboratory and more than a dozen accredited private labs can do the testing.

Encouragingly, it seems to be increasingly common for home buyers to have well water tested, and more communities are organizing well testing events. The "Community Well Testing Toolkit" developed by Dartmouth College, in cooperation with NHDES, makes it easier for communities to hold such events.

However, outreach and education are not enough to bring about a substantial increase in private well testing. It is essential to first understand why more people don't get their well water tested, and to address those barriers. One reason more people don't test their well water is that they are not sure how they would use the test results. To address this need, NHDES has developed a unique online tool, "Be Well Informed," which provides an interpretation of lab test results along with customized recommendations regarding water treatment options. The tool was developed with funding from the U.S. Centers for Disease Control and Prevention, in consultation with water treatment providers.

Looking ahead, NHDES is working with the New Hampshire Association of Realtors to inform both realtors and home buyers about well testing, since home buying presents a unique opportunity for well users to see the value in well testing. By working with a number of partners, we hope yearly private well water testing will become the norm in New Hampshire, resulting in long-term improvements in public health.

For more information on how to get your private well tested, search the internet for "NHDES Private Well Testing." ■

<sup>1</sup> Attributed to Thomas Fuller

<sup>2</sup> 2014 Behavioral Risk Factor Surveillance System Survey conducted for NHDHHS

<sup>3</sup> USGS (2014), Estimated Use of Water in the United States in 2010, Table 6. <http://pubs.usgs.gov/circ/1405/>

<sup>4</sup> Guidance to Refine the Potable Water Definition in New Hampshire Municipal Building Codes (2016). <http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-15-1.pdf>



## Climate change is already occurring

NHDES has been working to reduce our programs' contributions to climate change and to incorporate adaptation responses into our programs. During this time many of our program staff and our stakeholders have expressed the need to have a short informational presentation that can be shared with various audiences as a background to climate change, what impacts we are seeing here in New Hampshire and what we can expect in the future.

Please feel free to view our new video, which can serve as an introduction to having an interactive discussion about climate change with your audiences.

<https://www.youtube.com/user/NHDES>

## ENVIRONMENTAL NEWS

*Environmental News* is published six times a year by the New Hampshire Department of Environmental Services.

Thomas S. Burack, **Commissioner**  
Clark Freise, **Asst. Commissioner**

**Division Directors**  
Michael Wimsatt, **Waste Management**  
Craig Wright, **Air Resources**  
Eugene Forbes, **Water**

**Environmental News**  
James Martin, **Editor**  
Kathryn Michener, **Layout**

**Editorial Board**  
Catherine Coletti    Timothy Drew  
Sherry Godlewski    Gretchen R. Hamel  
Gary Lynn            Barbara McMillan  
Rene Pelletier        Sharon Yergeau

29 Hazen Drive • Concord, NH 03301  
603-271-3503  
[www.des.nh.gov](http://www.des.nh.gov)  
[editor@des.nh.gov](mailto:editor@des.nh.gov)  
*Printed on recycled paper.*

**Liberty Hill** *continued from page 1*

which borders these properties to the southwest. EnergyNorth also acquired these properties in 2006. The work performed as part of the site investigation included groundwater monitoring, soil sampling, soil gas testing and indoor air monitoring to determine the nature and extent of contamination.

From 2007 to 2012, NHDES and Liberty Utilities, the current responsible business entity, held numerous public informational meetings with residents and Town officials during the course of investigations and development of the remediation plan. Several remedial action plans were proposed before a final plan was approved by NHDES in December 2012. Additional pre-design site investigation work was performed during 2013 prior to NHDES' approval of the final design and authorization to proceed with its implementation in December 2013.

Cleanup of the Lower Liberty Hill Road site took place during the 2014 and 2015 construction seasons with oversight by NHDES. Approximately 97,000 cubic yards of soil were excavated, of which 44,176 cubic yards were



shipped off-site for treatment at a thermal desorption facility located in Loudon. Contaminated stormwater and groundwater encountered during the excavation work was treated onsite to meet NHDES and USEPA standards before being discharged to Jewett Brook. Given the location of this project in a residential neighborhood, considerable effort

was given to ensure the health and safety of adjacent property owners. During construction, the site was completely fenced with air monitoring stations installed around the perimeter of the site to continuously monitor particulates and contaminant emissions. Vibration and odor monitoring was also conducted.

Backfilling and regrading of the site was completed in the fall of 2015. Other than groundwater monitoring, which will continue at the site until groundwater quality meets state standards, the only step that remains is waiting for the grass to grow. ■



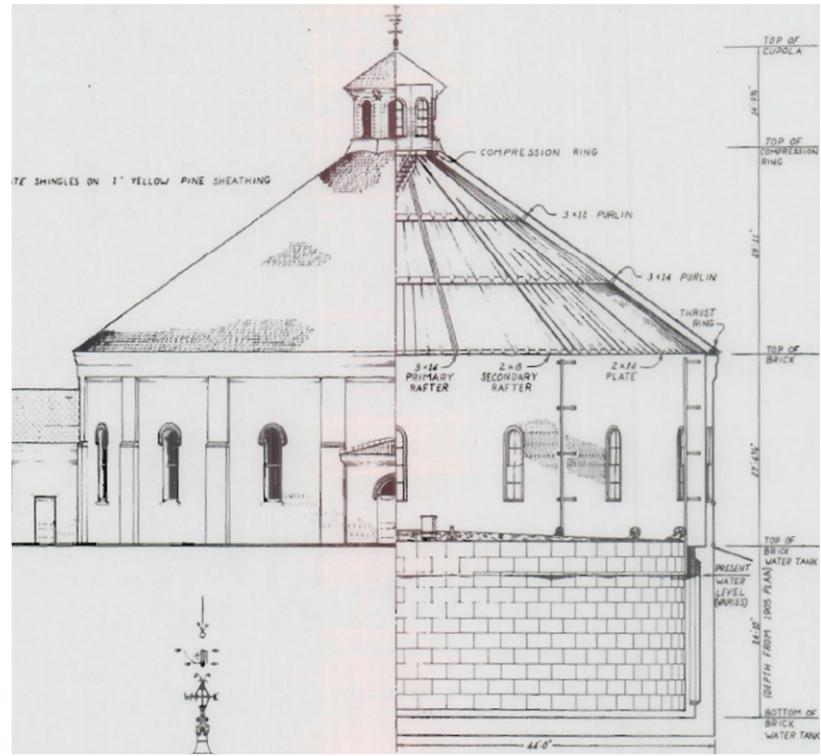
## The Concord gas holder

Most people around Concord are familiar with the brick gas holder at the intersection of South Main and Water Streets, which has recently been in the news for the local efforts to preserve, restore or possibly even renovate/re-use the historic brick structure. Constructed in 1888, the gas holder stands as the single remaining structure associated with the former Concord Manufactured Gas Plant (MGP), which produced coal gas on the site from 1854 until 1952. By the latter date, the local manufacture of gas from coal was replaced by natural gas that was easily available by the then-recent development of an interstate network of natural gas pipelines. A handsome example of engineering architecture from a prior industrial era, the Concord gas holder is believed to be the last-remaining intact gas holder in the U.S. – hence, the great interest in its preservation or re-use.

Missing from most of the recent discussions are some key details associated with the form and function of the gas holder; as its size, configuration and overall condition are critical elements that would factor into any plans to preserve or re-use the structure. Keeping in mind that its original function was to provide pressurized storage of coal gas (manufactured on site) prior to its distribution throughout the city, the internal workings of the holder are not directly evident from its exterior appearance. A few details in that regard:

- A close look at the exterior brick walls of the gas holder reveals that the walls rise a bit higher than 25 feet above the surrounding lawn areas. What is not so evident is that on the inside, the floor of the structure is found at a depth of about 24 feet below the surrounding grade – the bottom of the structure is about as deep below grade as the exterior brick walls are high.
- Storage of the coal gas was historically provided by a circular metal tank, open at its base, which now sits within the below-grade portion of the structure. The diameter

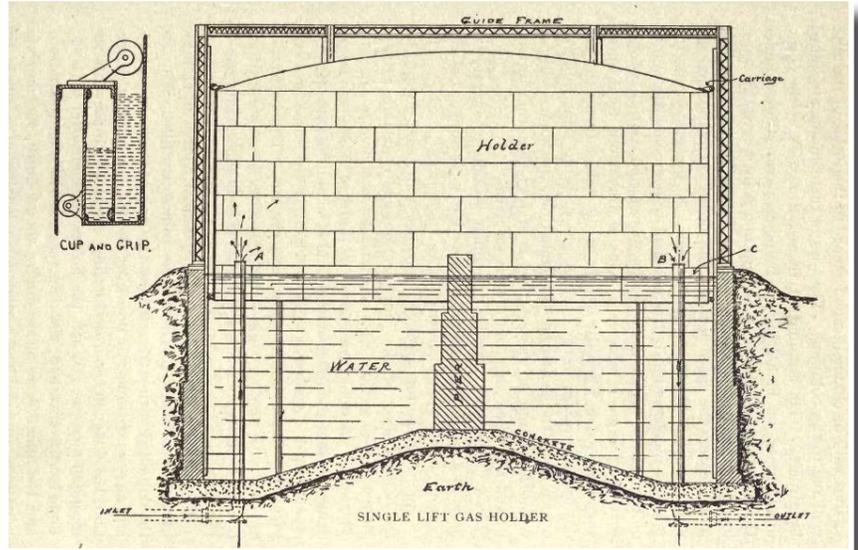
Figure 1



of the tank is a bit smaller than the diameter of the brick structure (about 88 feet) and, when it was operational, the base of the structure housing the storage tank was (nearly) filled with water. Coal gas, pumped into the tank via piping from below, would rise to fill the “headspace” within the tank above the level of the water. As more coal gas was added, the tank itself would rise within the brick holder structure, guided by a system of vertical rails inside the building. The height of the tank inside the holder structure varied in response to the gas volume (a balance between on-site production and customer demand). The tank is fabricated from riveted individual plates of “boiler iron” and, having a reported weight of 80,000 pounds, the weight of the tank provided sufficient pressure to move



Figure 2



trance to the interior was provided via the southern doorway – the roof of which recently collapsed as reported in a recent Concord Monitor article. Once inside, a moth-ball like naphthalene odor of residual coal tar provided a sharp reminder of the holder’s 60+ years of prior use during the active life of the MGP facility. The top of the storage tank, separated from the interior walls of the building by about a one-foot gap, extended across the interior of structure, at about the same elevation as the entry way. Temporary scaffolding spanned the interior above the top of the tank and provided a walkway for workers needing to access the building interior. Walking directly across top of the tank was strictly prohibited as the steel plate from which it is constructed is relatively thin, having not been designed to support traffic. In addition to a final repair of the roof, what to do with the tank itself and the ~24-foot deep void space underlying its top surface remain as key considerations that any potential redevelopment would need to address. ■

the coal gas into the customer distribution system (i.e., “downstream” from the gas holder). The steel tank remains in place within the brick holder building at the present time.

- Figure 1 provides a vertical cross-sectional view of the Concord Gas Holder, and depicts the iron tank in its “empty” position - resting within the base of the holder building. Figure 2 provides a conceptual representation of a typical gas holder comparable to Concord, which was a commonly-used design in the industry at that time. Note the storage tank depicted in Figure 2 is in the “filled” position – raised within the building structure. The central “pier” shown in Figure 2 supported the top of the storage tank when empty. Investigations of the interior of the iron tank in the Concord holder during the prior remediation work have confirmed that the Concord holder is built with a similar central pier, constructed of brick and mortar.
- Prior environmental cleanup operations completed by the current site owner, Liberty Utilities, and prior predecessor utilities have long ago removed the standing water and residual coal tar from the interior of the tank and holder. At some point (apparently not long after the construction of the former “3-ring” gas holder in 1921), the brick holder was used primarily as a “relief holder,” which was part of an interim gas production process step containing more residual coal-tar like contaminants than were present in the final gas. While some groundwater has seeped back into the base of the structure, at present the steel tank rests in the below-grade portion of the holder building, almost entirely “in the dry.”
- A visit to the site a few years ago, during the initial efforts undertaken by Liberty to assess repairs to the historical damage to the roof of the building, afforded an opportunity to take a look at conditions inside the building. En-



# New Hampshire Coastal Risk and Hazards Commission draft report and recommendations available for public comment

After two and a half years of study, the New Hampshire Coastal Risk and Hazards Commission (RSA 483-E) released its draft report for public comment at a special meeting with coastal area lawmakers held on Friday, March 18 at Brown's Lobster Pound in Seabrook. The draft report, *Preparing New Hampshire for Projected Storm Surge, Sea-Level Rise, and Extreme Precipitation*, summarizes New Hampshire's vulnerabilities to projected coastal flood hazards and puts forth recommendations to minimize risk and improve resilience.

The draft report includes a summary of scientific conclusions compiled by a science committee. New Hampshire sea levels are expected to rise between 0.6 and 2.0 feet by 2050 and between 1.6 to 6.6 feet by 2100. Today's extreme storm surge events will have a significantly greater inundation extent and occur more frequently over time. Annual precipitation is expected to increase by as much as 20% by the end of the 21st century, compared to the late 20th century, while extreme precipitation events are projected to increase in frequency and in the amount of precipitation produced.

"The Seacoast region is home to more than 25% of New Hampshire's workforce," explained Senator Nancy Stiles of Hampton. "The state has a responsibility to ensure people and property are protected in the face of the trends of increased storm surge and flooding, and this report will help the state meet its responsibilities."

The Commission advises that New Hampshire should not wait to respond to these threatening impacts. In fact, the key to managing economic, environmental and social impacts is to begin early and adapt incrementally. The recommendations are primarily directed to the State legislature, state agencies and municipalities but successful implementation of the recommendations will require collaboration between the public and private sectors and among many stakeholder groups.

As an initial step toward ensuring the Commission's recommendations get implemented, Senator David Watters of Dover introduced SB 374 in the fall of 2015 to require agencies to regularly compile the best available science for coastal New Hampshire. The bill, which has passed both the Senate and House of Representatives, requires NHDES to convene a multi-agency group to update and summarize coastal flooding trends every five years, based on sea-level rise, extreme precipitation and storm surge projections.

"The state and municipalities each have responsibilities for roads, public buildings, sewer and water and other infrastructure," said Senator Watters. "The report emphasizes that early and consistent collaboration between state and local governments can result in solutions which in turn increase our preparedness and resiliency."

The Commission's full draft report is available for public review and comment through June 30, 2016 on the Commission's website at <http://nhcrhc.stormsmart.org/draft-for-comment/>. The Commission will release a final report prior to its sunset on December 1, 2016. ■



Written comments can be emailed to [crhc-comments@rpc-nh.org](mailto:crhc-comments@rpc-nh.org) or mailed to:

Attn: Julie LaBranche  
Rockingham Planning Commission  
156 Water Street, Exeter, NH 03833

The public is also invited to attend and provide input on the Draft Report and Recommendations at Public Meetings scheduled on the following dates:

**Thursday, May 26, 2016, 7 PM**

Hugh Gregg Coastal Conservation Center  
89 Depot Road, Greenland, NH 03840

**Wednesday, June 1, 2016, 7 PM**

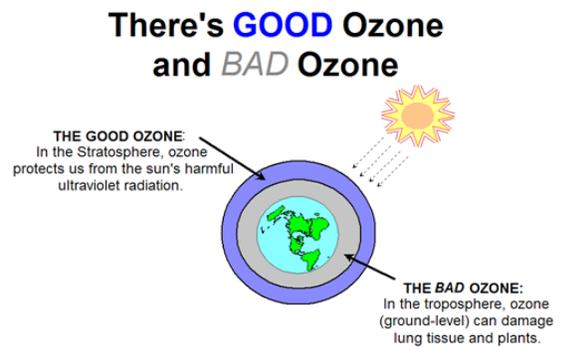
Sugden House at the Seacoast Science Center  
570 Ocean Blvd., Rye, NH 03870

For additional information about the Commission, please visit the Commission's website at <http://nhcrhc.stormsmart.org/>, or contact Julie LaBranche at (603) 778-0885, or Nathalie Morison at the NHDES Coastal Program at (603) 559-1500.

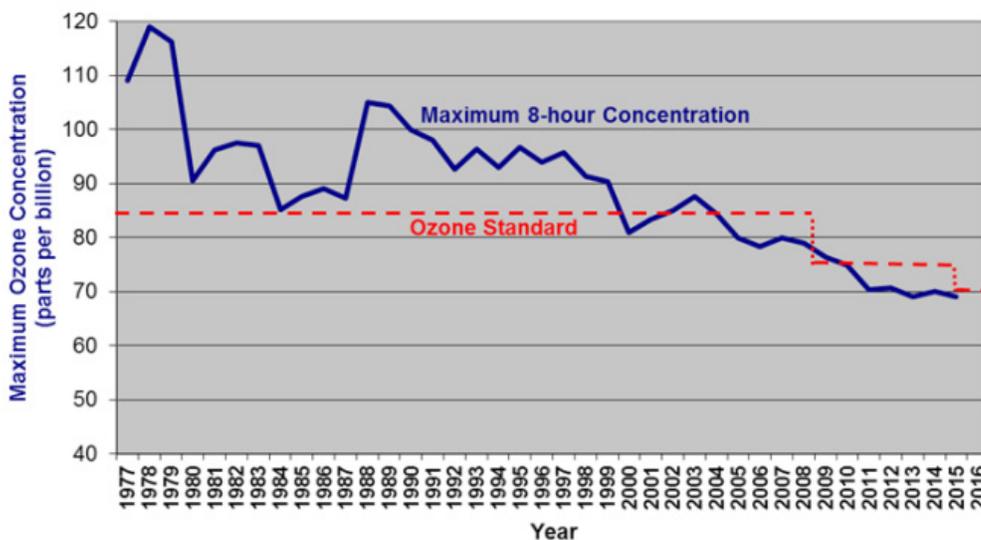
# Summertime air quality

If you notice more Air Quality Action Days this summer, it is not because there is more air pollution in New Hampshire, it is because the ozone standard has been strengthened. Ozone is the summer time air pollutant also known as smog. On October 1, 2015, the U.S. Environmental Protection Agency (EPA) strengthened the National Ambient Air Quality Standard (NAAQS) for ground-level ozone from 75 to 70 parts per billion (ppb). If NHDES issues an Air Quality Action Day this summer, it means that you are being notified earlier, at a lower pollution level, so that you can take precautionary measures more quickly. In general, the ozone trend in New Hampshire has been going down steadily. This is due to stricter controls on industry, electrical utilities and vehicles.

Ground-level ozone also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. Even small amounts in the air can have harmful effects.



Ozone Trend in New Hampshire (1977-2015)



## What exactly is ground-level ozone?

Ground-level ozone is not emitted directly into the air, but is created by chemical reactions between nitrogen oxides (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Emissions from industrial facilities, electric utilities and motor vehicle exhaust are some of the major sources of NOx. Major sources of VOC are gasoline vapors, chemical solvents and some natural sources such as trees and vegetation. In New Hampshire, ozone pollution occurs mainly during our hot summer days.

## How is the standard decided?

The decision to lower the standard is based on extensive scientific evidence about ozone's effects on public health and welfare. The updated standard will improve public health protection, particularly for at-risk groups including children, older adults, people of all ages who have lung diseases such as asthma, and people who are active outdoors, especially outdoor workers. It will also improve the health of trees, plants and ecosystems.

## What are some of the harmful effects of ground-level ozone on public health?

Breathing in ground-level ozone can trigger a variety of health problems, including chest pain, coughing and throat irritation. It can worsen bronchitis, emphysema and asthma.

## Why did EPA release a new standard now?

Under the Clean Air Act, EPA is required to review the health standards for certain pollutants every five years. As part of that review, the agency convenes a group of independent scientific advisors, called the Clean Air Scientific Advisory Committee, to review the latest health information and make a recommendation. This group advised EPA that the former standard of 75 ppb was not fully protective of public health and recommended a new stricter standard between 60 and 70 ppb; leaving the policy decision of what standard provides an "adequate margin of safety" to EPA's Administrator, as required by the Clean Air Act.

## How do I sign up to receive an ozone forecast?

You can sign up to receive daily email about air quality in New Hampshire at <http://www.enviroflash.info/>. ■



PRSRT.STD  
U.S. Postage  
PAID  
Concord, NH  
Permit No. 1478

29 Hazen Drive; PO Box 95  
Concord, NH 03302-0095

OR CURRENT RESIDENT

---

## NH celebrates Bike and Walk to Work Day May 20, 2016

Since 2002, the NHDES and other state agencies and employers have designated the third Friday in May “Bike and Walk to Work Day,” an annual celebration to encourage employees to make non-motorized means of transportation their choice for commuting. Many people who participate in the annual promotion as first-time commuters will continue to walk or bike to work.

Motor vehicles contribute 40% of all air pollution in the United States. These pollutants contribute to climate change and the formation of ground-level ozone, which is harmful to human health. While it would take a major shift in transportation choice to have a significant effect on air quality, individuals can feel good in knowing that by making a sustainable transportation choice, they are reducing traffic congestion, saving money and doing their part for the clean air.

Bicycling and walking also improve physical and mental fitness which leads to reduced risk of disease. These activities help businesses by reducing medical costs and employee absenteeism.

New Hampshire’s celebration is inspired by the League of American Bicyclists that, since 1956, has designated May as National Bike Month, and

the third Friday in May National Bike to Work Day. With increased interest in healthy, sustainable and economic transportation options, it’s not surprising that, from 2000 to 2013, the number of bicycle commuters in the U.S. grew by more than 62%.

Look for an event in your community and save money and have fun by walking or biking to work on May 20! ■

