

The Lake Reporter



FEBRUARY 2012 • VOLUME 10 • ISSUE 1

Some Facts to Know About Hydraulic Fracking

By Gary P. Hoffman

Introduction and Ground Rules

This document contains only general topic information; not the detailed specific item by item bullets that will be provided later. All data included here are from the DEC's own documents, none are from either pro or anti Fracking groups - for maximum credibility.

The Timeline

The timeline began for us when the revised, draft, supplemental generic environmental impact statement was released for review on September 7th. A 96 day comment period is allowed, ending December 12th.

Upcoming in October is a draft release of the DEC's proposed Regulations, a completely separate document. This will have a (presumably) 60 day comment period that will also end on or about Dec 12th. Thus all comments on all documents will be due by then.

Now that all reviews and comments are submitted, the NYS DEC will review all comments on both documents and then issue the final Environmental Impact Statement and the Regulations. These will immediately have the force of law.

What's a Well Pad and What's On it?

A well pad is a single fracking site. It is served by an access road, and must have gas pipelines connecting it to the main gas lines in the area. The pad will be generally a concrete surface, extending over some 7 or 8 acres of land. One or more wells (usually 8) will be drilled from a single pad.

Also present on each pad will be several generator sets, each

containing a 1,500 HP engine driving a generator. Also present will be several heavy duty compressors, driven by the generators, and producing high volumes of compressed air at about 15,000 psi pressure.

In addition, a supply of fracking chemicals will be kept on hand on the pad for immediate use. These are both dry and liquid chemicals kept in plastic totes (dry) or bottles (wet) in sufficient quantities for the wells to be drilled on that pad. Also present will be a supply of sand for use as proppant. Large pipes and many large tanks will be provided to receive and hold fresh water and produced water for disposal.

In addition, either one or two 10,000 gallon tanks of diesel fuel will be located on site, to supply the huge engines on the generators. Heavy duty industrial lights will be erected on the pad, and will be on all night during drilling.

Finally, from one to eight drilling rigs will be erected on the site, each having a height of up to 150 feet, plus the "Christmas tree" of attachments on top, which include the blowout preventers, separators, and other plumbing devices. There will also be a control shed, called the dog house, where rig operators will shelter during the bedlam of drilling.

What's a Single, Fracked Well ?

On each well pad, up to 8 single wells may be drilled, possibly all at once, or maybe 2 at a time. Each single well has its own single vertical hole extending down to the shale layer. Thus there will be up to 8 vertical holes on each pad. Each must have its own, triple layer, well casing of pipe and cement layers.

Each single well has to be drilled with its own drill rig. Each single well will then have one horizontal run in the shale layer, that may extend some 5000 feet laterally. Each of these single runs will be perforated and then fractured. Up to 8 million gallons of water will be used for a single well. Thus up to 64 million gallons of water will be used on each well pad. This will result in about 19.2 million gallons of highly

IN
THIS
ISSUE

Hydraulic Fracking	Page 1
From the Chair	Page 2
Letter	Page 3
Report from Education Committee	Page 6
Sustainability	Page 7
Lake Levels	Page 7
Township & Lake Development	Page 9
Natural Gas to Liquid	Page 10
Partnership Committee Update	Page 11

CONTINUED ON PAGE 4

From the Chair

By Brenda Keith

Greetings to all,

For new members and non-members, a reminder that the Canandaigua Lake Watershed Association is a not-for-profit watershed-wide membership organization whose parent organization was formed in 1953. The organization's mission has remained unchanged for 58 years:

The Canandaigua Lake Watershed Association works to protect the water quality and overall environment of the Canandaigua Lake watershed through public policy and educational programs that are grounded in scientific research and analysis.

As we evaluate the critical issues to consider on behalf of the Canandaigua Lake Watershed Association, the CLWA urges the DEC, as well as our local and statewide leaders, to consider its position before making any public policy decisions regarding the permitting of hydraulic fracturing in the Canandaigua Lake watershed. It is imperative that the Canandaigua Lake watershed be exempt from hydraulic fracturing, as are the Syracuse and New York City watersheds.

The DEC's Revised Draft Supplemental Generic Environmental Impact Statement (SGEIS) public comment period closed on

January 12, 2012. On Wednesday, January 11, 2012, the EPA weighed in to provide a critique and comments to the DEC regarding various points of correction and/or questions.

Currently many municipalities have moratoriums in place to continue the vital analyses needed to ensure that concerns regarding potential major impact on local issues such as agriculture, tourism (restaurant, lodging, and winery businesses), costs such as public service, public safety, social service, health, and real estate, as well as other real estate concerns, are thoroughly considered, and to validate home rule rights, requirements and responsibilities.

During the State of the Union message this week and again during a press conference in Las Vegas focused on natural gas production, President Obama announced that drilling for natural gas will be allowed on Federal lands. He stated that, "Experts believe that there is enough natural gas under our feet to last almost 100 years. We've got a lot of it. Removal has to be done safely. Energy companies will be required to disclose all chemicals used in fracking on Federal lands. Keep at it; take advantage of that resource," the President stated.

Unfortunately, the opinions of the experts which the President quoted and referenced do not ensure that the necessary scientific safeguards and oversight are in place or can be appropriately assured for the future. Additionally, as natural gas futures drop, companies such as Chesapeake are re-evaluating and positioning their organizations to potentially cut natural gas production while shifting their focus and efforts to oil production.

Based on unanswered scientific questions, lack of appropriate oversight, the topography, sensitive Finger Lakes water sources and watersheds, and many other factors such as tourism (a significant positive economic factor for upstate New York), the CLWA supports and encourages the moratoriums on hydraulic fracturing, both at the local and statewide levels. The New York State moratorium on hydraulic fracturing remains in place while the 40,000-plus submitted comments on the (SGEIS) are being reviewed and evaluated by the New York State Department of Environmental Conservation.

The CLWA will continue to be diligent in monitoring and protecting the Canandaigua Lake watershed, and we encourage our members and all watershed residents to join in helping preserve this valuable natural resource.

Sincere regards,
Brenda C. Keith, President

CANANDAIGUA LAKE WATERSHED ASSOCIATION BOARD OF DIRECTORS

Brenda Keith	President
Lynn Thurston	Past-President
Jack Dailey	President-Elect
Frank Kerwin	Treasurer
Thomas Harradine	Secretary
Stephen Lewandowski	Consultant
Edith Davey	Technical Assistant
Bob Brancato, Ted Carman, Marty DeVinney, John Fayko, Katrina Busch, Wade Sarkis, Don Shelve, Rod Smith, Tom Zimmerman	

Watershed Education Program: Nadia Harvieux, Sharon Radak

Please contact us at:

CLWA, Box 323, Canandaigua, NY 14424

Phone: 585-394-5030

E-mail: stachu14512@yahoo.com

Website: www.canandaigualakeassoc.org

The Lake Reporter is published quarterly and distributed free to members and supporters. We invite submissions. Please send them via e-mail to stachu14512@yahoo.com or to PO Box 323, Canandaigua, NY 14424.

Letter to the Editor

Cigarettes and Earthquakes

"We are being asked to risk the Finger Lakes so that big companies can make profits selling the gas overseas."

Reports linking cigarette smoking and lung cancer appeared in medical journals as early as 1912. Advances in science provided definitive links in the 1950's. However, it wasn't until 1964 that the Office of the US Surgeon General announced that cigarette smoking causes cancer. As late as 1975, the US Government included cigarettes as part of standard soldier's rations.

Big tobacco had big influence. Cigarette companies were sponsoring "studies" touting the benefits of smoking while pouring money into the coffers of political campaigns at all levels of government. They had billions in sales and well connected lobbyists. Cigarette tax revenues clouded better judgment. Although the Surgeon General in 1988 called nicotine in cigarettes as addictive as "heroin and cocaine", the CEOs of the seven largest US cigarette manufacturers each testified before Congress in 1994 that they believed nicotine was not addictive. Poisoning people for profits was above honor.

While various municipalities within New York regulated smoking over the years, the State finally banned smoking in public and workplace facilities in 2003. Forty years after the Surgeon General's announcement, New York State took action to protect its residents.

Now New York is poised to allow horizontal high-pressure hydraulic fracturing for the extraction of natural gas. The decision has supposedly been left to the Department of Environmental Conservation, which has published its findings in their SGEIS. Despite the admission of multiple "potential severe adverse impacts", the DEC states that they can all be mitigated. The DEC utilized consultants in preparing the report, including one whose President was an expert witness on behalf of Occidental Chemical in the Love Canal case.

If all adverse impacts can be mitigated, why does the DEC provide additional protection to the watersheds of New York City and Syracuse? They cite an EPA regulation about unfiltered watersheds versus filtered. Remember that filtering cigarettes was alleged to make them safer. The SGEIS lists pages of mitigative measures they will require for drilling permit issues. But who will monitor the hundreds of well sites the DEC says will likely operate simultaneously across the State? The Agency is neither capable nor equipped for the task. How does one mitigate human error, mechanical failure, 100 year storm events that happen every 5 years, industrial short-cuts to save a buck, and the fact that nobody knows with certainty what fissures and faults lie 2000 feet below us?

The EPA has determined that water wells in Wyoming and Colorado have been tainted by hydrofracking chemicals. Pennsylvania has found the same in rural communities just south of the New York border. Pennsylvania allows hydrofracking and as storage facilities for flowback have failed, the State is running out of places to store the waste. One solution has been to ship the waste to nearby Ohio where flowback has been pumped into non-productive well bores

near Youngstown. That economically depressed community has generated revenue by accepting the fracking waste. However, the process has come to a halt as the community of Youngstown has begun to experience earthquakes centered around the injected wells. A total of 11 earthquakes in 9 months have shaken an area that has no known history of seismic activity. The same phenomena have been reported in Arkansas and Texas near injection sites. (Like the tobacco CEOs, the gas companies and disposal contractors deny any relationship between the waste injections and the earthquakes.) The DEC claims it can mitigate the potential adverse impacts of injecting flowback into well bores. The citizens of Youngstown might disagree.

There is no question that our country needs a coherent energy policy and a sustainable plan to decrease our dependence on foreign oil. And yes, the natural gas production could provide an economic lift to depressed areas within New York State. However, the assistance is short term as the wells get depleted and production stops. Jobs disappear and the temporary economic bubble bursts. Then a community is left with useless well sites and unknown environmental issues. That's not a sustainable solution.

The price of natural gas in the US has dropped 60% in three years; we have a glut. We also have no infrastructure in place to make natural gas the answer to energy independence. It's hardly profitable to drill for natural gas at these prices. In fact, oil and gas companies in North America have recently taken on Chinese partners who have invested huge sums with companies operating hydrofracking sites in the US and Canada (Sinopec in Ohio and Michigan; Cnooc in Texas, Colorado and Wyoming; PetroChina in Canada). With depressed natural gas prices, this strategy allows oil and gas companies to share the cost of drilling operations, making it financially feasible to extract and transport the gas to end users – perhaps in Asia, where prices are four times as high. We are being asked to risk the Finger Lakes so that big companies can make profits selling the gas overseas.

Finally, according to a recent study, New York retirement plans have significant investments in oil and gas companies. These investments by New York's two largest public pension plans accounted for 5.5% (\$11.9 billion) of those funds' total assets while contributing 21.1% of those funds' total gains in the period 2005 to 2009. ("The Financial Contribution of Oil and Natural Gas Company Investments To Major Public Employee Pension Plans in Seventeen States, 2005 – 2009: New York" by Robert J. Shapiro and Nam D. Pham). In addition, the oil and gas industry contributes millions of dollars to political campaigns in the State. How do these conflicts of interest influence the fracking decision in Albany?

Despite what the engineers tell us, the DEC cannot mitigate all the possible severe adverse impacts of hydrofracking. These impacts are showing up in other states with increasing frequencies. Like the tobacco companies, the gas industry is only interested in making profits. The State pension funds and politicians have significant conflicts. We must hope and demand that New York gets this one right the first time and doesn't wait until it's 40 years too late.

Wade Sarkis

Some Facts About Hydraulic Fracking

CONTINUED FROM PAGE 1

contaminated, radioactive, produced water to be disposed of from each pad.

Perforation means the punching of holes through the pipe in the 5,000 ft horizontal section. Shaped explosive charges are used for this - similar to anti-tank rounds. Once perforated, then the fracking fluid is forced into each single well, one at a time, at 15,000 psi pressure. This is what actually fractures the shale rock layers.

Unfiltered Water Supplies

There is some obvious disinformation being spread about unfiltered water supplies. In actual fact, even New York City dwellers don't want ground up fish heads appearing in their water faucets. Thus it is obvious that rudimentary filtering is always present, consisting of coarse screens and coarse particulate filters sufficient to keep out fish, logs, seaweed, and bulk dissolved solids like mud.

Similarly these "unfiltered" supplies are always chlorinated before going to homes to kill pathogens that would otherwise cause serious human health issues. At the least, protozoa, amoeba, and common bacterial must be killed before they reach the home.

If nothing more than the above is done, then the water supply is still considered unfiltered as a practical matter. Nothing more complex than those items mentioned above is removed from the water. Thus chemicals, insecticides, fertilizers, animal waste, and who knows what else can still make its way into the home. The fact that our towns do in fact provide this elementary degree of treatment does not mean that our water is filtered.

Only very high quality water supplies, such as the water in the Finger Lakes, can be used with such rudimentary precautions. It is obvious that if these waters were to be polluted in any way by chemicals or radioactivity, or just about anything else, that the water would then be rendered unusable for humans or domestic animals. This would end the use of the Finger Lakes as a source of drinking water, end the sport fisheries, and halt all agricultural activities in the area.

As an unfiltered water supply, it is obvious that the same exemptions allowed to the New York City and Syracuse watersheds should be extended without question to the Finger Lakes.

Health Effects of Fracking Chemicals

In order to summarize potential human health effects the DEC has divided all of the chemicals used or encountered during fracking into several classes of chemicals. Then the effects of each class are briefly listed. The following are extracts from this material.

- Petroleum Distillate Products - Adverse effects on the gastrointestinal system and the central nervous system. Contact can also cause skin irritation, blistering, or peeling.
- Aromatic Hydrocarbons - Adverse effects on the nervous system, liver, kidneys and blood forming tissues. Increased risk of leukemia. Damage to unborn offspring. Adverse effects on red

blood cells. Damage to respiratory tract and increased risk of nasal and lung tumors.

- Glycols - May adversely affect the kidneys and reproduction.
- Alcohols and Aldehydes - May affect the central nervous system. Ingestion may cause severe pain, vomiting, coma, and possibly death. More cases than normal of cancers of the nose and throat.
- Amides - Can damage the reproductive system, and cause cancer.
- Amines - Adversely affects the liver and kidneys. May also cause genetic damage and cancers.
- Organic Acids, Salts, Esters, and related chemicals - Corrosive or irritating to skin. Also affects mucus membranes.
- Microbiocides - Data are limited for many of these. However may cause at least effects on the respiratory and gastrointestinal tracts, and on the liver, kidneys, and nervous system.
- Other Constituents - Data are either lacking or have been withheld. However some are known to affect the eyes, liver, and kidneys, and to cause cancer in some cases.

Problems with the Produced Water

Produced water emerges from the drilled well in the period immediately after fracking. In addition to containing all the toxic chemicals that were in the original fracking fluid, the produced water brings to the surface chemicals that are found deep in the shale layers. These include most notably salt, in heavy concentrations, and radiation and radioactive isotopes found in the shale. These include alpha, beta, and gamma radiation, as well as dissolved amounts of at least 3 isotopes of radium.

Radium can become quite concentrated and has a half life of over 1600 years. There is no way of making radium non-radioactive, so the only solution is to secure the radioactive material someplace safe for thousands of years. In the past, this waste has in some cases been buried in landfills. In other cases it is suggested that this material be injected into deep underground caves. Both methods require the material to be transported which can obviously lead to worker exposure and accidental spills.

The non-radioactive components of produced water require very complex treatment procedures in themselves. Thus special disposal plants have to be built and operated and become subject to failure, wear out, and human error. If the treatment plants are not at the drill site (and they never would be) then the produced water must also be transported many miles, in hundreds of thousands of truck trips. Truck accidents are thus virtually certain when this many trips are undertaken. No plants presently exist in NYS that can accept this waste.

Problems with the Production Brine

Production brine is the salt laden water that is continually brought to the surface along with the natural gas, during the entire productive life of each single well. The brine contains not only salt, but if the gas produced is "sour" then there may also be sulfur present.

Some Facts About Hydraulic Fracking

CONTINUED FROM PAGE 4

Since both are incompatible with passage through natural gas pipeline and use infrastructure, a separator must be located at each producing well head. This takes out the salt and other contaminants then passes the purified gas into the pipeline.

The resulting wastes are temporarily stored on site and must be periodically transported to a treatment plant capable of handling these wastes. Special treatment plants are required, as the salt especially would destroy the steel pipe and pumps in standard plants, nor can those plants remove sulfur. Thus this waste would also have to be transported, with the associated risks, and special plants would have to be built to accommodate these wastes.

It goes without saying that the production brine is also radioactive, as is any water returned to the surface from the depths. There are no provisions in place as yet to deal with this serious concern.

Visual Impacts

It is important to note that so called "triple" drill rigs that would be used in many cases are over 150 feet tall. Thus they are visible for a very long distance. In addition there are bright lights extremely visible at night. Finally the generators, compressors, chemical storage pallets and 18 wheel trucks are also highly visible. None of this is compatible with the natural environment of the Finger Lakes.

Noise Impacts

According to the DEC, the noise from drill rig operations is literally deafening. That is to say that the sound levels exceed 80 dBA on the A-weighted Sound Pressure Level scale. Depending on the number of rigs operating at once, and the distance from the wells, the persons near well pads may be exposed to levels that even exceed this value.

80 dBA is a significant number because persistent exposure to sounds at or above this level are specifically known to cause hearing damage. The DEC has proposed to mitigate this problem by possibly limiting the number of simultaneously operating rigs at a site. However this is not guaranteed to reduce exposures to below 80 dBA for every person, even if this regulation can be realistically enforced by observation and sound pressure level measurements made at each drilling site.

Sound barriers have also been proposed. However the barriers shown in illustrative pictures from the DEC are improperly designed, being composed of straight walls of limited height. Straight walls reflect the sound back into the center where they combined with fresh sound and thus reinforce the total sound level to up to 30 dBA higher than it would be. Thus if the barrier reduces sound through it by 30 dBA (which would be very good performance) all this does is cancel the reverberant buildup and has no net effect. Finally the limited height of the barriers will fail to contain the sound to the inside of the barrier, as sound waves can easily refract over the top of barriers of limited height.

Even if the mitigation measures were to prove adequate to limit

exposures to below levels that cause hearing damage, the remaining loud noises are clearly not compatible with our natural environment in the Finger Lakes.

What are Regions A, B, and C? How might they affect us?

The NYS DEC has identified 3 regions of the State, called A, B, and C, which combined contain the majority of the gas available from shale in NYS. Region A contains the best resources, and includes Chemung, Tioga, and Broome counties. Region B contains medium gas resources, and includes Delaware, Otsego, and Sullivan counties. Region C contains the least productive (but still usable) gas resources, and includes Cattaraugus and Chautauqua counties.

It should be noted that, taken together, these three areas contain about 80% of the recoverable natural gas in NYS. Also these areas located along the border with PA are among the poorest in the state and are most in need of economic development. It should be noted that persons in these areas generally tend to support fracking.

On the other hand, the areas in the state outside of A, B, and C contain only limited gas resources. Also, the vast majority of the fresh surface waters of the state are located in Lake Ontario and the Finger Lakes, which lie outside of these areas. Finally, the majority of the persons opposed to fracking are located outside of these areas, which obtain their wealth from the value of the lands surrounding the scenic lakes, as well as from tourism, wine growing, farming, and other activities which are incompatible with fracking.

One could imagine a reluctant compromise that would permit hydrofracking in areas A, B, and C, but not elsewhere in the state. This would give the gas companies access to the vast majority of the gas available. It would tend to satisfy most of the pro-frackers and most of the anti-frackers as well. While one could wish for no fracking at all in NYS, this position might represent a viable compromise that our elected officials might be willing to support.

How can the wastes be disposed of?

The wastes from hydrofracking require highly specialized disposal plants. These would have to be built and operated at great expense. Due to their complexity, they would be very susceptible to failure. Maintenance costs would be high. Transportation of the wastes to the plants would raise serious issues. Finally, radioactive wastes really have no satisfactory disposal methodology; at best, they would be re-buried deep underground - we hope permanently.

What are the Biggest Risks?

In view of all that has been written above, this question can be easily answered. The greatest risks come from surface spills and accidental discharges. These in turn will be caused by human error and equipment failures, as well as basic accidents.

Given the huge scale of the handling and transporting efforts that must be undertaken, it is absolutely certain that spills, errors, and accidents will occur. The only unknowns are exactly where and when.

CONTINUED ON PAGE 6

Some Facts About Hydraulic Fracking

CONTINUED FROM PAGE 5

Discharge of wastes into large surface bodies of water such as the Finger Lakes and Lake Ontario are the worst case scenarios as they affect not only the greatest numbers of people, but are also the slowest to clean up through natural means. There are no means of cleaning these up by human intervention. The scale of the problem is simply too large.

How do we balance risks and rewards ?

If we accept that some fracking will occur in NYS because of lack of political will to prevent it, then we can see that the only somewhat balanced risk/reward scenario is one that keeps the fracking away from the major bodies of surface water and uses areas where the returns are large enough to balance the risk.

Master Plan

The NYS DEC states that if a permit is applied for in a community where the master plan and/or zoning requirements do not allow fracking, then the permit cannot be issued without a further review, in which the local community will have a significant input. Quite possibly the local communities will prevail in these instances.

It is therefore absolutely necessary that every community in NYS has an updated Master Plan in place BEFORE fracking permits are issued. Given the fast moving pace of events, all communities should be updating their master plans NOW.

There are numerous examples of master plan language given in the DEC document, which communities would do well to consult. **CLWA**

Report From the Education Committee

By Nadia Harvieux

"Ewww, what's that?!" was a common exclamation heard from kids looking at aquatic insects at the All About Watersheds table at the Rochester Museum and Science Center this past Saturday. Six students from Naples 7th grade Accelerate Science class were on hand to lend their expertise, having spent time in September identifying aquatic insects at Naples Creek and learning about their importance as indicators of water quality.

"They are macroinvertebrates," explained Naples 7th grader, Seth Price. "They came from Naples Creek in the Canandaigua Lake Watershed." Fellow classmate, Ashton Kastner, enthusiastically described "these insects are bioindicators, they can tell us if the water in Naples Creek is clean or dirty."

Students volunteered their Saturday to assist Watershed Educator, Nadia Harvieux, with the Canandaigua Lake Watershed Association's All About Watersheds Science Saturday program. "We do this program every year at the museum to educate families about water quality and watersheds."

Michaela Sheedy and Annie Clearman helped kids and parents identify stoneflies, crane flies and a dragonfly larva, giving them an up-close view of each under the microscope before sending kids down to classmates, Zach Dormer and Genevieve Ferguson, to make dragonfly magnets.

"Working with the little kids was my favorite part of the day," said Zach, and Michaela agreed "it was fun to see how

excited people were looking at the insects with the microscope."

"The whole experience was incredibly valuable for my students" reflected Naples science teacher, Maureen Russell. "Not only were they excited to share what they had learned from our water monitoring field trip to Naples Creek, they wanted to go a step further and engage the community in learning about the importance of aquatic insects in monitoring water quality."



Naples seventh grade students (back row, left to right: Annie Clearman, Michaela Sheedy, and Zach Dormer and (front row, left to right) Ashton Kastner, Genevieve Ferguson, and Seth Price at the Rochester Museum and Science Center. **CLWA**

Sustainability - Green Initiative 2012 and Beyond

Going green is being discussed and talked about in many different ways. Sustainability is smart for businesses. It's smart for communities. It's smart for everyone.

But there are challenges/barriers to becoming "greener". Recognizing these challenges CLWA is working to build a collaborative group of partners. This group is made up of Canandaigua Chamber of Commerce, Finger Lakes Community College and Finger Lakes Visitors Connection.

The two goals that the group is in the process of refining are:

- Develop and implement a process to educate and inform businesses of any size within our area on successful "sustainability practices" they can use in their company
- Recognize the businesses in our area that have successfully implemented sustainability practices/programs into their work environment.

Our plans to move forward with this - starts with identifying varied resources locally, regionally and on the Internet that can help compile tangible, practical tips and expertise in sustainability. A future activity, we hope later this year, would be to offer to local businesses an informative conference on sustainability and/or a series of sessions that provides specific

ways small business of any kind can be "greener".

As you can see we have work to do to refine our goals and plans plus build our knowledge base.

If you are interested in this initiative and would like to volunteer and participate in this, let us know by contacting Stephen Lewandowski at (585) 394-5030.

If you know of some great source of information send us the information. As this initiative moves forward, we will keep you up-to-date on our progress.

Think "Green" CLWA



New Look for CLWA Website

By Katrina Busch

Coming Soon

The Marketing Committee is very happy to announce our website is getting a new look and a better approach to sharing information with our members and the community. Launching in March, the new website will be visually compelling, while sharing key information and events related to the health of our watershed. We plan to have videos, reports, articles, recommend sites and more to help keep everyone who visits in the know. Be sure to check it out in March: www.canandaigualakeassoc.org

Once our new site is launched we will also begin creating our presence on Facebook. We want to reach out to new audiences and by using social media, especially Facebook, we hope to increase our reach to help gain support in what we are all focused on... preserving, protecting and promoting our wonderful natural resource. We will keep you posted on our progress and hope you all visit! CLWA

Lake Levels

By Stephen Lewandowski

Though we have had far less snow than normal, our precipitation has continued about average for this time year.

Canandaigua Lake has continued to run slightly above the Guide Curve. As of this writing, it is at 687.42 feet above mean sea level, about six inches above the winter level called for by the Guide Curve.

Keeping the lake at a winter low lessens the possibility of ice and wave damage at the shore as well as creating capacity to hold the early spring runoff events (melting snow and ice as well as precipitation) which has historically contributed to the worst flooding.

Those of you who occasionally look at the daily lake levels in the Weather section of the Daily Messenger must be disappointed to find that the Messenger is no longer printing these facts. I am indebted to Will Clark at the Canandaigua Wastewater Treatment Plant for this information about the lake levels CLWA

NYS Representatives Canandaigua Lake Watershed

Senate

*Senator Michael F. Nozzolio, 54th NYS Senate District, 119 Fall St., Seneca Falls, NY 13148 (315) 568-9816 (Towns of Farmington, Manchester)

Senator Thomas O'Mara, 53rd NYS Senate District, 105 E. Steuben St., Bath, NY 14810 (607) 776-3201 (Towns of Middlesex, Italy, Potter)

Senator Patrick Gallivan, 59th NYS Senate District, 143 N. Main St., Warsaw, NY 14569 (585) 786-5048 (Towns of Hopewell, Gorham, Canandaigua, Bristol, S. Bristol, and Naples, City of Canandaigua)

Assembly

Assemblyman Philip Palmesano, 136th NYS Assembly District, 105 E. Steuben St., Bath, NY 14810 (607) 776-9691 (Towns of Middlesex and Italy)

Assemblyman Sean Hanna, 130th NYS Assembly District, 3045 E. Henrietta Rd., Henrietta, NY 14467, (585) 334-5210 (Towns of Farmington, Bristol, S. Bristol and Naples, Village of Naples)

Assemblyman Brian M. Kolb, 129th NYS Assembly District, 607 W. Washington St., Suite 2, Geneva, NY 14456 (315) 781-2030 (Towns of Hopewell, Gorham, Canandaigua, City of Canandaigua)

*Does not represent the watershed per se but sometimes takes an interest

Membership Campaign

The Watershed Association's membership year is now the calendar year. Previous membership years beginning/ending at other times have caused us bookkeeping problems. Our current membership year begins January 1 and ends December 31.

Most of you who receive this newsletter have paid annual dues for 2012. In the very near future those of you who have not signed up for 2012 will receive a reminder from our Membership Committee to make a donation for 2012.

Remember how important the health and beauty of Canandaigua Lake is to you and your family. Please consider an upgrade to your membership level. **CLWA**



You've Enjoyed the Lake - Now Consider a Gift That Continues Giving...

Make a contribution to acknowledge or commemorate a friend or family member. We will print acknowledgements and memorials in *The Lake Reporter*.

Consider including the Canandaigua Lake Watershed Association, Inc. in your will or estate plan. Provide for the future of Canandaigua Lake by making a new will, modifying your existing will, or by including the Canandaigua Lake Watershed Association, Inc. in your evocable trust. Consult with your attorney or financial planner. Here is some sample language for an unrestricted bequest for general purposes: "I hereby give, devise and bequeath to the Canandaigua Lake Watershed Association, Inc., a nonprofit corporation in

New York State, for its general purposes _____ dollars, or _____ percent, or all the rest, residue, and remainder of my estate."

Our official name is the Canandaigua Lake Watershed Association, Inc., and this name should be used on all legal documents. Gifts to the Canandaigua Lake Watershed Association, Inc. qualify as charitable contributions to a 501(c)3 organization for federal income, estate and gift tax purposes.

Township and Lake Development Update

by the Township and Lake Development Committee

(T. Carman, W. Sarkis, J. Dailey, R. Smith and A. Kraus)

As a result of the slow economy and reluctance on the part of commercial lenders to make loan commitments in the housing sector, in particular investment to second home construction, commercial development on the Canandaigua Lake waterfront in 2011 was virtually nonexistent. The growth trend has been in the development of single family homes financed by individuals and built as second homes. Many are being built on lots where a tear-down has occurred or with the consolidation of multiple adjacent parcels to make a larger site. The size of new homes being built on the lake is well above the national average of 2400 square feet. All of the towns around the lake seem to be doing a better job conducting site plan reviews and taking into consideration slope, access, erosion and storm water runoff. More often than in the past, Planning Boards are considering how to best balance the owner's desires with town codes and the environmental impact on the lake and surrounding watershed. They are frequently asking questions such as whether the proposed construction is suited to the topography or is the topography of the site being altered to fit the desired design. These are positive trends.

The Canandaigua Lake Watershed Association has devoted a significant amount of time, resources and study to understanding the potential impact of horizontal gas extraction known as hydrofracking. At the annual meeting in August we identified this as our greatest near-term concern because of the potential threat it poses to the pure water we enjoy and count on in the Canandaigua area and throughout the Finger Lakes Region. Since then many of the towns have taken a more proactive position. The majority of lake municipalities have enacted some form of hydrofracking moratorium or are considering one in order to buy time until further scientific based knowledge is available and regulations can be strengthened to catch up with the rapid advances in drilling and gas extraction technology. The Department of Environmental Conservation has recently closed the public input phase of their review process on horizontal drilling. They will be developing their final recommendations and regulations for the management of horizontal drilling in New York State.

These municipalities have horizontal drilling moratoriums in place or under review:


Town of Canandaigua	Moratorium in place
City of Canandaigua	Agenda item for consideration
Gorham	Moratorium in place
Middlesex	Moratorium adopted by Town Bd.
Italy	(Research and add status)

Naples Town & Village	Moratorium in place
Town of South Bristol	Moratorium scheduled for Town Board Vote

The Town of South Bristol has passed and enacted a steep slopes regulation. The goal is to manage and limit harmful soil disruption and erosion in steep slope areas of the town. This is a major step taken on the part of the Town and Planning Boards toward protection of these environmentally sensitive areas in their town. The Town of Middlesex is working on a steep slope regulation and the Planning Board is close to making a recommendation which would then go to the Town Board.

These steps represent an increased awareness on the part of the municipalities. This is indicative of a more proactive approach being taken as a result of support from residents, Watershed Officials and the Canandaigua Lake Watershed Association.

The revised Canandaigua Lake Uniform Docks and Mooring Regulations have been approved by all the municipalities surrounding the lake and have been submitted to the State of New York for approval. This approval is expected and the new regulations should be enacted later this year. This represents a significant strengthening and application of a uniform standard for all lake front structures, permanent docks and boat accessory structures. It will also provide consistent zoning regulations with respect to all commercial and residential development on the Canandaigua Lake shoreline.

Many of these regulation changes and enhancements have been worked on over a several year span and are the result of diligent and collaborative effort by many dedicated residents and town board members. Some projects and issues of concern arise suddenly with the announcement of a planned subdivision or unique project. As members of the CLWA we strive to keep you updated and apprised on developing and significant issues. We appreciate your support and the voice you bring to your local town meetings in helping to address key issues regarding the lake and the ongoing protection of our valuable watershed. 

Converting Natural Gas to a Liquid

By Gary P. Hoffman

Much has been printed in the popular press in recent times about converting Natural Gas into a liquid product that could be sold overseas. Although this immediately sounded to the author like an unlikely process, I have nevertheless looked into the matter carefully from a factual perspective. Here are the facts.

Natural Gas is mostly (80%) Methane, with significant amounts (up to 10%) of Ethane gas mixed in, along with several other contaminants, including Sulfur, Carbon Dioxide, and some traces of others. The Ethane can be separated and sold and used profitably. It can be converted to valuable products such as Ethylene.

The Impurities such as Carbon Dioxide and Sulfur and the others can be removed, although not without some expense in both dollars and energy.

This leaves approximately 80% of the original gas as more or less pure Methane.

Methane, CH₄, cannot be liquefied through conventional means. That is, one cannot compress the methane to high pressure, and then super cool it until it becomes a liquid. This is not because the process is impossible. Rather it is because the process uses far more energy than is present in the gas itself, plus the process costs more to execute than the final sale of the gas is worth.

Yet people in business persist in stating that the gas will be liquefied and sold at a profit, which means that there must be another process out there.

This called for more due diligence. Sure enough - there is another process. It is not even new. It was invented prior to WW II by German engineers Fischer and Tropsch. It was even used by the Nazis during the war to produce liquid truck fuels as the Allied Forces progressively isolated Germany and cut off their sources of traditional fuels.

This process has several steps. The Ethane gas is first removed, for sale separately. Then the impurities are removed, but at the cost of some money and energy. Finally a catalytic process is employed to ultimately produce fuel through a long process of several steps, which I will omit here for simplicity. The result is a liquid fuel very similar to diesel fuel, which can also be refined into other liquid fuels if that is so desired. This final set of fuel products have the advantage of burning quite cleanly, as the impurities are no longer present. So far, so good.

But is it practical? There's the rub. While the process has been demonstrated at fairly large scales, the first problem is that 42% of the energy in the gas is consumed in the conversion process. This provides a yield of only 58% at the plant location. The second problem is that the plants themselves have proven much harder and more expensive to produce than was expected - for instance the Shell Pearl plant in Qatar is years behind schedule and billions over budget, and they "hope" it will enter production in 2012 - more than 10 years later than expected.

Next the fuel must be shipped. If one uses supertankers, which is likely, then you lose another big chunk of the energy in the gas to power the ship across the ocean.

Finally you must consider the end use of the liquid. With the large quantities involved, the most thermodynamically efficient way to use the liquid is to convert it back to gas (which uses some more of the energy) and then burn it in a gas fired, modern electrical power plant. Or the fuel could be left as a liquid and used in a power plant similar to a conventional oil or coal fired plant. In either case, the best efficiency you can hope for is around 30%. This is better efficiency than using it in transportation, for instance, nor is there a need for all of this gas in simple heating applications, which can be efficient.

So, starting with 100%, then losing 42% in conversion, we are down to 58% of the energy remaining. If we use a further 10% running Supertankers and then gas/liquid line pumps to move the fuel, we are down to 48% remaining. If we can harvest 30% of that productively, then $0.3 \times 0.48 = 0.144$. In other words, 14.4% of the original energy of the gas is delivered to the end user.

If the gas is extremely plentiful and cheap at the well head - then this can be profitable for the gas companies. If gas is neither plentiful nor cheap, then the process is financially worthless.

So, at best, if we permit fracking so that we temporarily have plentiful, cheap gas, then the oil companies can make money in this way. However the rest of the planet's people are the losers, as we will gain access to only 14.4% of the energy that was originally available, at the cost of the ruinous effects of the fracking process. **CLWA**

This analysis was undertaken for the Vine Valley Hydrofracking Study Group.

Update on the Partnership Committee

By Lynn Thurston and Bob Brancato

Your Association continues to work with other organizations on important initiatives.

The Finger Lakes Regional Watershed Alliance (FLRWA), comprised of all nine watershed organizations in the Finger Lakes including the CLWA, continues to weigh in on hydrofracking from a regional perspective. It has submitted comments to the DEC on the latest draft regulations and highlighted the need to not allow hydrofracking in the Finger Lakes at this time due to the following concerns.

1. The science and technology related to hydrofracking is not robust enough to ensure the safety of the water resources that supply drinking water to millions of Finger Lakes and New York State residents.
2. Natural gas drilling increases sediment loading into rivers, streams and lakes. This will degrade water quality and increase the costs placed on municipal drinking water facilities to provide safe drinking water.
3. There is no effective means to properly neutralize and dispose of flowback water that is environmentally safe and protects our drinking water resources. Further, no complete treatment for flowback water and waste from HVHF for natural gas currently exists.

Many other concerns have been expressed regarding truck traffic, air pollution, and quality of life issues. These are important and valid concerns, as is the need to recognize the employment generating opportunities and the value of lessening our dependence on foreign sources of energy, but the Alliance has chosen to focus on the need to protect our region's drinking water supplies at all costs.

The FLRWA is also working on initiatives related to invasive species. Owasco Lake has recently seen the introduction of Asian Clams and Cayuga Lake is battling Hydrilla, which is an incredibly aggressive plant that can rapidly block entire waterways if left unchecked. Work is underway in partnership with the Finger Lakes Institute to develop a citizen monitoring program. Chances are we will need your help, so please expect to hear more about this initiative as events unfold.

The CLWA continues to work in partnership with the Finger Lakes Land Trust. The Land Trust recently completed a fourth conservation easement in the vicinity of Bristol Harbor/Seneca Point. The 22-acre easement encompasses a rugged ravine, and an area of farmland. It adjoins another

conservation easement property and overlooks Canandaigua Lake's western shore. The easement was donated by Chris Luley, who resides on the property.

This Fall the Land Trust acquired 65 acres within the heart of High Tor Wildlife Management Area. Located in the Town of Italy, the property is a short distance from the West River and it adjoins the state wildlife management area and other lands acquired by the Land Trust for conservation. The property was a gift from Constellation Brands.

The Land Trust also finalized a contract to acquire 35 acres of woodlands located just north of the Constellation Brands property. This acquisition should be completed during 2012 and will nearly link the Constellation Brands tract to our existing Great Hill Nature Preserve. During the coming year, a considerable amount of effort will go into developing a restoration/interpretation/management plan for this area. Preliminary plans call for restoration of native grasslands and the development of a scenic overlook off Sunnyside Road.

The Land Trust is also working in partnership with the Town of Canandaigua to complete the purchase of conservation easements on two farms and they're working on several other conservation easement donations within the watershed.

Noted elsewhere in this newsletter, the Partnership Committee is pleased to be working with the Finger Lakes Visitor's Connection, Finger Lakes Community College and the Canandaigua Chamber of Commerce on a green initiative. We continue to work with the Watershed Council on a range of initiatives, including a research project that will value and rank the important role each type of land cover in the watershed contributes to keeping the quality of our drinking water high. We value our partnerships with our towns, villages and municipalities. In 2012 we will continue to work with them on environmental issues that they, too, deem important. **CLWA**

Canandaigua Lake Watershed Association
P.O. Box 323
Canandaigua, NY 14424

Non-Profit Org.
U.S. Postage
PAID
Canandaigua, NY
Permit No. 40

A Publication of the Canandaigua Lake Watershed Association
Vol. 10 Issue 1

Be a Friend of Canandaigua Lake

The Canandaigua Lake Watershed Association has a strong base of supporters and a significant history of Protecting Canandaigua Lake and its watershed. Because of numerous and complex challenges, we need YOUR support.

Please return this form (or a copy of it) with your contribution. Remember your contribution is TAX DEDUCTIBLE.

Your 2012 membership benefits include a quarterly newsletter, committee participation and reports, special alerts on crucial issues, invitations to events and the Annual Meeting, but most important, you will know you're doing YOUR PART to protect this precious resource.

Yes, please process my 2012 tax-deductible membership in the Canandaigua Lake Watershed Association.

- _____ \$25 **Supporter** (student rate)
_____ \$35 **Guardian**
_____ \$100 **Lake Leader** (your gift at this level helps to pay for water testing)
_____ \$250 **Watershed Steward** (says it all)
_____ \$1000 **Benefactor** (your gift at this level supports our education program)

Name _____

Principal Address _____

I own property in the watershed town of _____

Email address _____

Principal phone number _____ Alternate phone number _____

**Please mail this membership form and your check to:
CLWA, P O Box 323, Canandaigua, NY 14424**