TOWN OF COLDEN
APR 12 2013
TOWN CLERKS OFFICE

GAS DRILLING IN THE TOWN OF COLDEN

A Report to the Colden Town Board & All Colden Citizens

Prepared by

The Town's Hydrofracking Committee

John Antkowiak, Member

Ronald Fraser, Chairman

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Linda Thomas, Member

April 11, 2013

Transmittal Letter

To: Members of the Colden Town Board

David Arcara, Councilman

Annie Hoffman, Supervisor

Patrick Murphy, Councilman

Gerald Pietraszek, Councilman

Patricia Zurbrick, Councilwoman

From: Members of the Hydrofracking Committee

The Hydrofracking Committee is pleased to submit the attached report for your consideration and guidance.

To guide our work, we started by reviewing the contents of Colden's officially adopted master land use plans and the Town's zoning ordinances. Only then did we look at gas drilling-related land use issues and consider appropriate public responses.

Land use planning is one of the Board's major responsibilities and a primary tool for shaping the Town's future. While our recommendations address current gas production and gas storage activities in the Town, our most pressing recommendations concern appropriate Town responses to the land use impacts associated with high volume, hydraulic fracturing (HVHF) drilling technologies.

Should the Town decide to adopt zoning ordinances, as recommended herein, appropriate court-tested ordinance language is readily available in the zoning ordinances of the Towns of Dryden and Middlefield.

We are ready, at your earliest convenience, to meet with you to discuss the contents of the report to answer questions and help you decide where to go from here.

In addition, to help all residents of Colden become familiar with the contents of this report, we recommend that copies of this report be widely disseminated, that a public information meeting be held in the Senior Center and that a copy of the report be placed on the Town's web-site.

Sincerely yours,

Members of Colden's Hydrofracking Committee

INTRODUCTION

Committee's Purpose. The Colden Town Board established the Hydrofracking Committee to review land use impacts associated with natural gas drilling activities in the Town and to compile a list of recommended gas drilling–related concerns for incorporation into the Town's zoning ordinance. As an advisory unit of the government of the Town of Colden, the committee agreed that we were not in the business of promoting or opposing the exploration for, production of, or storage of natural gas in the Town. Rather, our task was to consider whether or not existing and future gas-related land uses conform to the town's established land use policies – as set forth in its two adopted master plans and its zoning ordinances. These land use policies define what is, and what is not, in the best interests of the Town's residents.

Drilling Moratorium. The committee conducted its work during a Town-established six-month gas drilling moratorium (Local Law No. 2-2012) passed by the Town Board on October 4, 2012 which reads, in part, "At the present time, there are no Town restrictions or regulations in regard to use of land within the Town for horizontal drilling and hydraulic fracturing. The Town Board finds that the commercial exploration for and production of native natural gas and oil by hydraulic fracturing or horizontal gas well drilling in the rural environment of the Town of Colden may violate the rights of residents and impose a significant threat to their health, safety and welfare....by allowing the intentional deposit of toxins into the air, soil, water, environment, and the bodies of residents within the Town... [and] ... may pose a threat to some, if not all, of the natural water supply upon which the Town of Colden relies as its sole source of water."

Scope of Study. It soon became clear to us that we could not adequately assess the potential land use impacts of high volume, hydraulic fracturing (HVHF) drilling operations and recommend appropriate natural gas drilling public policies without first looking closely at the ongoing gas production and gas storage activities in the Town. For this reason, the committee studied, and this report addresses, the full range of land use issues associated with current and future gas drilling-related land use issues within Colden.

The report consists of two parts. Our recommendations for each type of gas well, along with supporting information, come first. To better understand how the committee arrived at these recommendations, an appendix provides the reader with a chronology of our activities from start to finish.

SUMMARY OF ACTIVITIES

The committee followed a three-step approach. First the Town's master land use plans were studied in detail. This was followed by an equally detailed look at the Town's land use zoning ordinances. Finally, we applied the guidance found in the plans and ordinances to gas drilling activities in Colden.

Review of Colden's Master Plans. Land use planning is a major, legal responsibility of Towns in New York. In the Town of Colden, natural gas production and storage operations constitute a significant land use and one that that deserves more public oversight than has been the case in the past. Land use planning is the primary tool by which the Town shapes it future.

The New York Bill of Rights for Local Governments section in the State Constitution states, to be effective, "...every local government shall have the power to adopt and amend local laws not inconsistent with the provisions of this constitution or any general law relating to....the protection, order, conduct, safety, health and well-being of persons or property therein."

To put Town adopted master plans into their legal and land use planning perspective, we turned to the New York State publication, *Zoning and the Comprehensive Plan*, 2011, including, the following passages:

"Early zoning enabling laws were fashioned with the view that zoning risked being declared unconstitutional because it had the potential to severely limit zealously-guarded property rights. To safeguard against that outcome, the drafters [of the enabling laws] required the actual [zoning] regulations to be based on a logical and 'comprehensive plan' for the betterment of the whole community....The comprehensive plan requirement also provided the means to remove the planning process from immediate political considerations and allow for a more objective analysis of community growth and need (p. 3) .... New York requires that zoning be adopted in accordance with a well-considered or comprehensive plan. This requirement reflects both underlying constitutional considerations and a public policy that views zoning as a tool to plan for the future of communities. Over the years, the New York courts have defined the comprehensive plan to be the governing body's process of careful consideration and forethought, resulting in zoning that is calculated to serve the community's general welfare....Once the plan is adopted, the community's land use regulations must be consistent with it." (p. 10)

First, the Town adopts its master plan. Only then can the Town enact a zoning ordinance in accord with that master plan. A zoning ordinance that contradicts, or is constructed without regard for the content of the master plan, is legally not acceptable. The master plan is both a general statement presenting a vision of the town's future, and a guide for deciding whether or not specific land uses fit into the town's hopes for its future.

Colden's Master Land Use Plans. The Town has prepared two master plans, adopted in 1970 and 1993, that define the goals and values held by the people of Colden as they relate to land use planning and development of their Town. They identify enduring qualities considered by the Town's citizens to be essential characteristics of the Colden community and, taken together, provide the community's guiding vision for the betterment of the whole community.

The Town's master plans provided a wide range of land use-related goals and planning standards that guided our work, including:

PHYSICAL ENVIRONMENT: Protect the Town's drinking water; Preserve open spaces; Keep the Town's unspoiled, natural and pleasant surroundings; Avoid land uses that disturb fragile soils and drainage patterns.

QUALITY OF LIFE: Preserve Colden's picturesque, small town character; Preserve the Town's rural, agricultural heritage; Promote nearby recreational and outdoor opportunities; Keep Colden a safe and healthy place to live; Avoid conflicting land uses.

ECONOMIC DEVELOMENT: Foster agricultural use of the land; Avoid polluting and offensive commercial activities; In residential areas, avoid land use activities that are noxious or offensive by reason of dust, fumes, gas, noise, odor, refuse matter, smoke, vibration and unreasonable use of lights or night-time operations; Avoid commercial activities that will congest and overcrowd our roads; Be aware that land use conflicts involving the gas storage industry and the town's development might arise in the future.

DEMOCRACTIC PROCESS: It is up to the people of Colden to decide the Town's future; Town leaders must acknowledge public attitudes towards change.

Review of Colden's Zoning Ordinances. Because what one private landowner does on his or her land can harm other citizens, Article II of the adopted Colden Code states, "It is the intent of the comprehensive zoning plan hereby established to implement the comprehensive Master Plan 2002 of the Town of Colden... [it]... is adopted in order to promote and protect public health, safety, comfort, convenience, prosperity and other aspects of the general welfare... [and encourage]... the most appropriate use of land in the most desirable manner." Colden's master plan goals and values have been translated into zoning ordinances by:

- Establishing an orderly planning/development process; forming the Planning Board and Environmental Planning Board and special ad-hoc committees.

- Adopting zoning regulations that avoid conflicting land uses. Examples include: Colden's Wind Energy Conversion System Code; Building and Sign Control Codes; Junkyard Control Code and the Right to Farm ordinance.

- Helping the people of Colden decide their own future by holding public information hearings on public issues. Examples: Rails to Trails; Need for a new water district; New gas drilling technologies.

Examples of existing land use restrictions on Colden landowners' use of their land:

LAND USE CATEGORY	PROHIBITED LAND USES	PUBLIC RISKS AVOIDED
SIGNS	Billboards, roof signs, fluttering or revolving devices	Visual/environment degradation for town residents
	Signs that impair public safety or poorly constructed	Impaired roadway sightlines; signs that can't withstand high winds
OFF STREET PARKING	Parking spaces with less than *350 square feet for each* parking space	Unsafe maneuvering room for *property occupants*
GASOLINE STATION	Not allowed within 300 feet of a school, church, playground or park	Putting residents in a potential danger zone
WINDMILLS	Locating a windmill closer than 100 feet from neighboring property lines	Noise and visual/environmental degradation

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Review of Gas Drilling Operations in Colden. The committee's next step was to apply the guidance found in Colden's master plans and zoning ordinances to a specific land use: current and future gas drilling in the Town. Each type of gas drilling operation is discussed in the following sections.

Active Vertical Gas Producing Wells

Background. Table 1 presents a profile of the ten vertical gas production wells currently operating in the Town of Colden. Map 1 shows the location of these wells. All ten wells are between 2,500 and 3,100 feet deep and all but one taps gas in the Medina Sandstone rock strata.

Land Use Impacts. To assess the future land use impacts of these wells, on January 18, 2013 the Hydrofracking Committee sent letters to the well operators requesting answers to the following questions:

- "Over the next ten years, to increase the productivity of your wells, how many times do you anticipate that you will cleanout, stimulate or hydrofrack each gas well?

- "Approximately how many gallons of drilling fluid do you anticipate using during each cleanout, stimulation or hydrofracking of the wells?"

The committee received responses from the Pan Energy Co. (three wells), Matrix Energy Development, Inc. (one well), and Seneca Resources Corp. (three wells).

All three drilling companies reported they had no plans to perform production enhancing cleanout or stimulating maintenance on their wells during the next ten years.

Recommendations. Based on our research, the Hydrofracking Committee concludes that the overall land use impacts associated with these ten gas production wells – including environmental risks and risks to the health of the Town citizens – are low.

However, since eight of the ten wells are more than 30 years old, and well casing failure rates increase with age, the risk of gas leakage into the atmosphere and surrounding water sources must be considered a public concern in the future.

Therefore, we recommend that the Town's Environmental Planning Board be tasked with maintaining an ongoing liaison with the well operators and the New York State Department of Environmental Conservation (NYSDEC) to ensure that well maintenance and testing requirements are adhered to and that, when these wells are no longer active, that the well operators have plugged them in accord with state regulations.

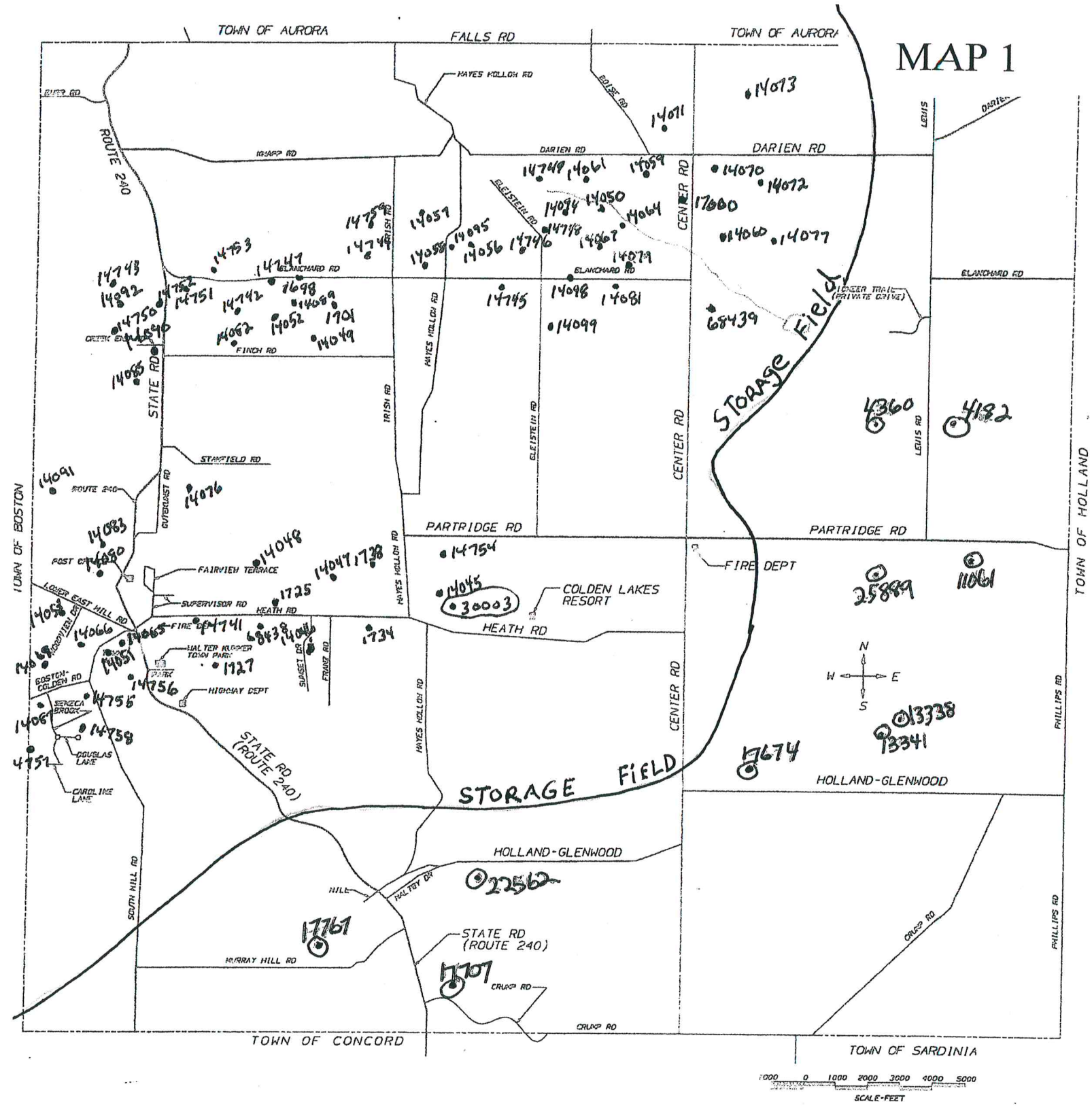
Table 1

ACTIVE GAS PRODUCTION WELLS, TOWN OF COLDEN (July 2012)

Well Name	Well Operator	Year Drilled	Depth in Feet	Rock Strata	2011 Production (1,000 Cubic Feet)	Wellhead value at Sept 2012 rate of $2.71 per 1000 c.f.	Residential value at Sept 2012 rate of $14.91 per 1,000 c.f.
Wroblewski Francis 2	Walter Kammer	1974	2,973	Medina	247	$669	$3,682
Spencer IGC-1775	Dennis/ Donna Czarniak	1960	3,048	Medina	100	$271	$1,491
Brant 1784-I	Seneca Resources Corp.	1961	3,044	Medina	394	$1,067	$5,874
Zimmerer 1791-I	Ibid	1962	2,850	Medina	109	$295	$1,625
Hancher 1790-I	Ibid	1962	2,755	Medina	249	$674	$3,712
Smith N-1	Pan Energy Co.	1982	2,640	Onondaga Limestone	464	$1,257	$6,918
PAC-1	Ibid	1982	2,700	Medina	50	$135	$745
Montgomery-1	Ibid	1982	2,915	Medina	105	$284	$1,565
Walek E-1	Matrix Energy Dev.	1995	2,940	Medina	553	$1,498	$8,245
Baker 1	US Energy Dec Corp	2010	3,024	Medina	3,132	$8,487	$46,698

Source: NY DEC, July 2012 data & US Energy Information Administration for selling prices.

MAP 1



TOWN OF Colden

ACTIVE gas development : 10 wells = ⊙

Active gas storage : 69 wells = •

30003 = horizontal well

SOURCE: NY DEC

July 2012

Active Vertical and Horizontal Gas Storage Wells

Background. Map 1 shows the locations of National Fuel Gas Supply Corporation's 69 active gas storage wells (68 vertical wells and one horizontal well) in the Town of Colden. Natural gas produced elsewhere is pumped into and stored in these wells in the warm months when the demand for gas is low and then pumped out in the cold, winter months when household demand for gas is high.

The boundary for the Colden Gas Storage Field, covering approximately the northwest two-thirds of the Town's area (See Map 1), was established in 1954. The Colden Storage Field is not a single continuous reservoir, but is made up of four separate pools – Aurora, Blanchard, Heath, and Scattered – with a total of 166 vertical wells and two horizontal wells in the Whirlpool Sandstone formation, a part of the Medina Sandstone formation located 2,000-3,000 feet below ground. The entire 22,000 acre storage field spans parts of the Towns of Colden, Aurora and Boston.

In 1960 there were 662 households in the Town. By 2010 there were 1,304 households with many of the new homes located in the gas storage field. The Town's population also grew during this time from 2,377 in 1960 to 3,265 in 2010. As the Town's population has grown, more and more residents have been impacted by gas storage operations. This necessitates that the Town and National Fuel find ways to reconcile the resulting residential-industrial land use conflicts as they arise.

Land Use Impacts. To assess the future land use impacts of these wells, the Hydrofracking Committee met with representatives of National Fuel in February 2013. Here is what we learned:

- No new gas storage wells, vertical or horizontal, are planned to be drilled in the next five years. The company is currently evaluating how well its first horizontal well in Colden will boost the storage field's performance. If the results are good, the need for drilling new vertical wells could be eliminated and the need for reworking existing vertical storage wells could also be reduced. Based on the outcome of this evaluation, the company will decide whether to drill additional horizontal storage wells.

- None of the existing vertical wells are currently scheduled for performance enhancement rework and stimulation/hydrofracking in the next ten years. However, future decisions to rework existing individual wells will be based on the results of periodic well performance testing in the future. When testing shows a decline in the performance of a well, it may then need to be reworked to boost its performance.

- During the past ten years the company has reworked and hydraulically fractured 16 wells located in the Town – an average of 1.5 wells per year -- and, since 1954, when the Colden storage field was first placed into operation, the number of reworked and hydraulically fractured

wells in the Town has totaled 23. If the horizontal well on Hayes Hollow Road boosts the gas field's performance significantly, then the need to rework existing vertical wells, at the historical rate of 1.5 per year, might go down.

Reworking an existing active gas storage well consists of cleaning out the wellbore, installing a new well casing (smaller diameter) inside the existing casing and then perforating the new casing and hydrofracking (stimulating) within the Whirlpool Sandstone gas storage zone.

In the past, National Fuel estimates that about 14,000 gallons of fracking fluid has been used to hydrofrack a vertical well and approximately 10,000 gallons of drilling fluid is also used when reworking one vertical well.

For comparison purposes, fracking ONE HVHF well uses 5-8 MILLION gallons of water mixed with varying amounts of chemicals – estimated by researchers to range from 30 to 300 tons of chemicals. And, over its lifespan, each HVHF well may be re-fracked multiple times.

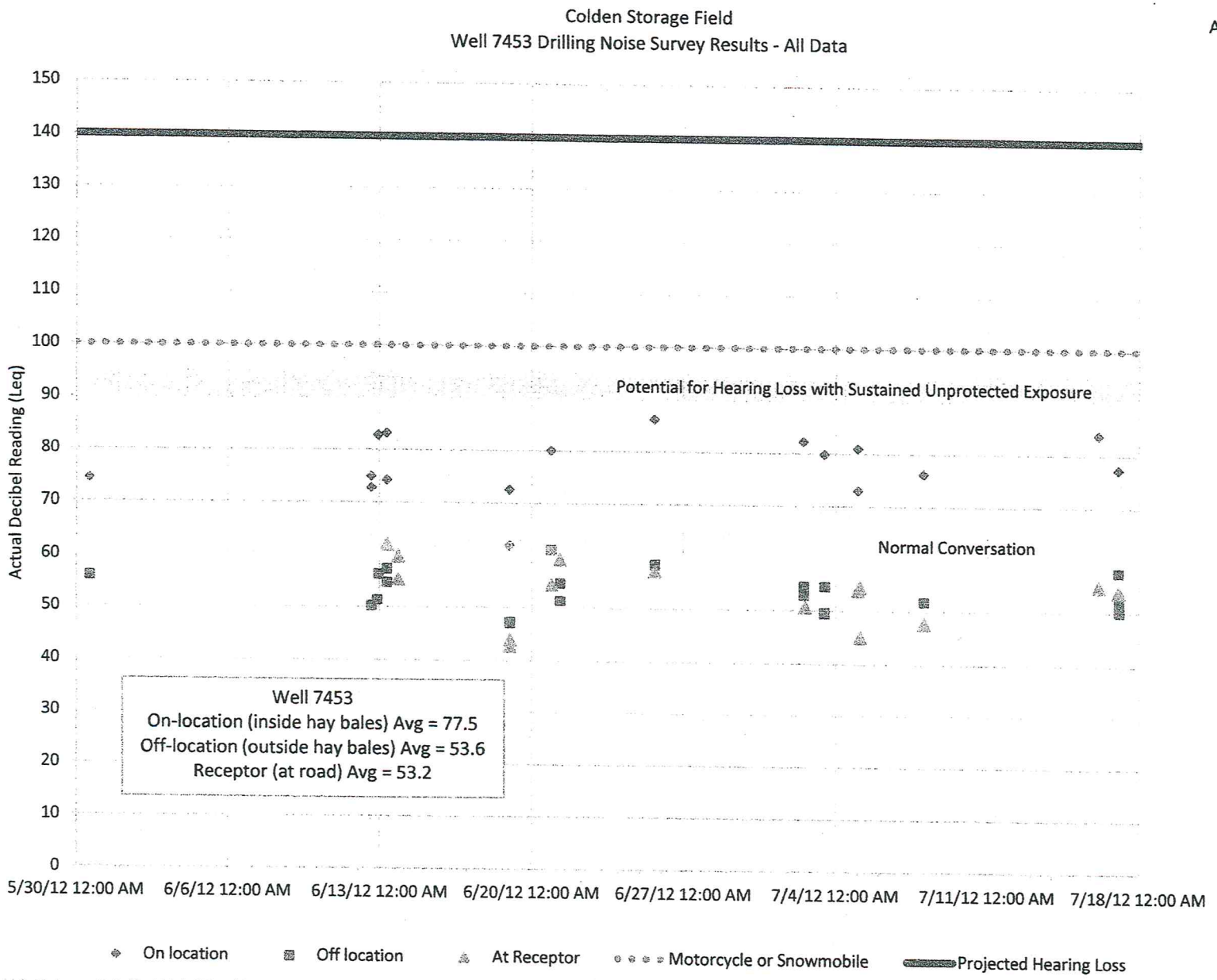
- National Fuel is also responsible for maintaining most of the 71 abandoned and plugged wells in the Town, in addition to the company's 69 active gas storage wells.

Abandoned and plugged wells are inspected and tested for integrity and leakage annually. Active storage wells are visually inspected monthly. In addition, twice a year a "shut-in" test of the storage field is performed to detect possible stored gas leakage areas. The company's representatives added that since 1954 there has not been a single instance of a failed gas well casing – apparently due to the company's ability to identify and rework degraded wells before they leak.

- Noise levels recorded by National Fuel during the 2012 drilling of the new horizontal gas storage well along Hayes Hollow Road (National Fuel well number 7453; DEC well number 30003) are shown on Graph 1, prepared by National Fuel. This data indicates that noise levels at neighboring properties ("At Receptor" locations on the graph) did not exceed the level of normal human conversations.

However, the committee spoke with several Town residents living near the site of the horizontal well drilled on Hayes Hollow Road who have indicated that the perceived noise levels at their homes were substantially above the level of a conversation voice or 60 decibels (dBA), as reported by National Fuel. The discrepancy between these anecdotal reports from the residents and the technical noise level data collected by National Fuel needs further study to reconcile the differences.

Attachment 1



GRAPH 1

National Fuel's gas storage field operates under permits from both NYSDEC and the Federal Energy Regulatory Commission (FERC). According to FERC's regulations for the operation of gas storage fields, found in 18 CFR 157.206, any horizontal directional drilling or drilling of wells which occurs between 10 pm and 7 am must be conducted with the goal of keeping the perceived noise at the nearest receptors located at nearby residences at or below 55 decibels (dBA). This noise restriction is a standard condition of the company's gas storage drilling permit. It is unclear how FERC enforces this standard.

Recommendations. **Based on our research, the Hydrofracking Committee concludes that the overall land use impact associated with 69 active gas storage wells and 71 abandoned wells is moderate due mainly to the land use conflicts resulting from the large number of these wells in close proximity to the ever growing number of residential properties in the Town.**

National Fuel's past performance in operating the Colden Gas Storage Field appears to have effectively protected the Town against potential negative impacts to the surrounding environment – including chemical spills, road damage due to heavy truck traffic, water well contamination, etc. The company appears to have in place the necessary inspection and testing procedures to continue its past track record into the future. The Town should maintain a close working relationship with National Fuel to ensure that the safety of the Town's residents remains a top priority for the company.

One issue remains unresolved: the alleged excessive, perceived noise levels associated with drilling the Hayes Hollow Road horizontal well, as reported by nearby Colden residents. It is not yet clear that the noise monitoring procedures used by National Fuel accurately measured the noise levels actually experienced by nearby residents. The committee recommends that the Town adopt a noise ordinance that limits the level of noise permitted to cross property lines during nighttime hours. It is further recommended that the Town should establish a noise testing capability independent of National Fuel.

The committee recommends that the Town's Environmental Planning Board be tasked with maintaining an ongoing liaison with National Fuel and the NYSDEC to ensure that required maintenance and testing requirements for active storage wells and abandoned, plugged wells are adhered to.

High Volume, Hydraulically Fractured (HVHF) Gas Wells

Background. HVHF well operators think in terms of gas fields, not old-fashioned, single gas wells. A typical HVHF gas drilling permit application may encompass a 640 acre, one square mile, "spacing unit," in which will be located a pad containing up to six or more separate vertical-to-horizontal wells, or one vertical well connected to multiple horizontal wellbores.

The vertical well portion is drilled down to the gas bearing rock formation and then the drill is turned horizontal sending a lateral wellbore out for up to a mile or more in length through the targeted gas strata. To completely tap the gas bearing strata below, drillers routinely abut spacing units on the surface forming a patchwork of multiple well pads that saturate the subsurface gas reservoirs and the surface landscape for miles and miles in all directions. See photos 1 – 4, courtesy of Chris Burger.

These drilling fields are huge, heavy industrial operations. Just one HVHF well pad (See photos 3 and 4) is many times larger than the simple, old-style vertical gas production wells and the pad used by National Fuel to drill its horizontal storage well on Hayes Hollow Road. For example, one drilling field could take in the southeastern one-third of the Town of Colden (east of Center Road and north of Crump Road) and include a dozen six-well, HVHF drilling pads.

Land Use Impacts. The following land use impacts will convey more thoroughly how these industrial-sized drilling fields differ from the ten gas producing and 69 storage wells currently operating in Colden.

Truck Traffic. DEC's revised draft Supplemental Generic Environmental Impact Statement (dSGEIS, 2011), compares the number of round truck trips needed to construct and frack a simple vertical well VERSUS the construction of a single HVHF drilling pad and then drill and frack ONE of the pad's six wells.

One vertical well -- 1,810 round truck trips

One HVHF well - - 3,958 round truck trips

[Times 6 for a 6-well pad = 23,748 round trips]

Fracking Operation

(delivering 10,00 -15,000 pounds per square inch of pressure)

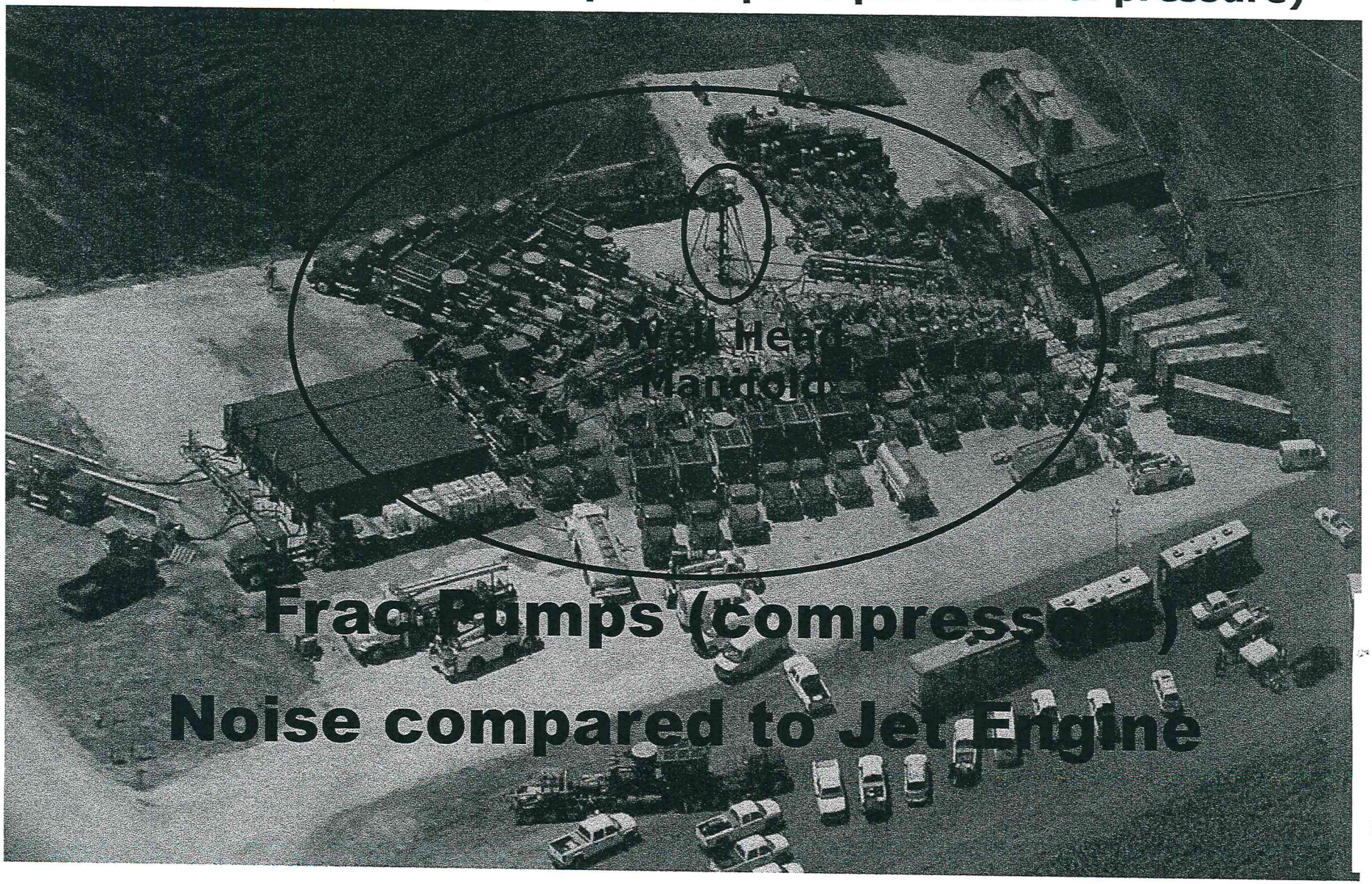


PHOTO 1

Starting from Individual Well Site

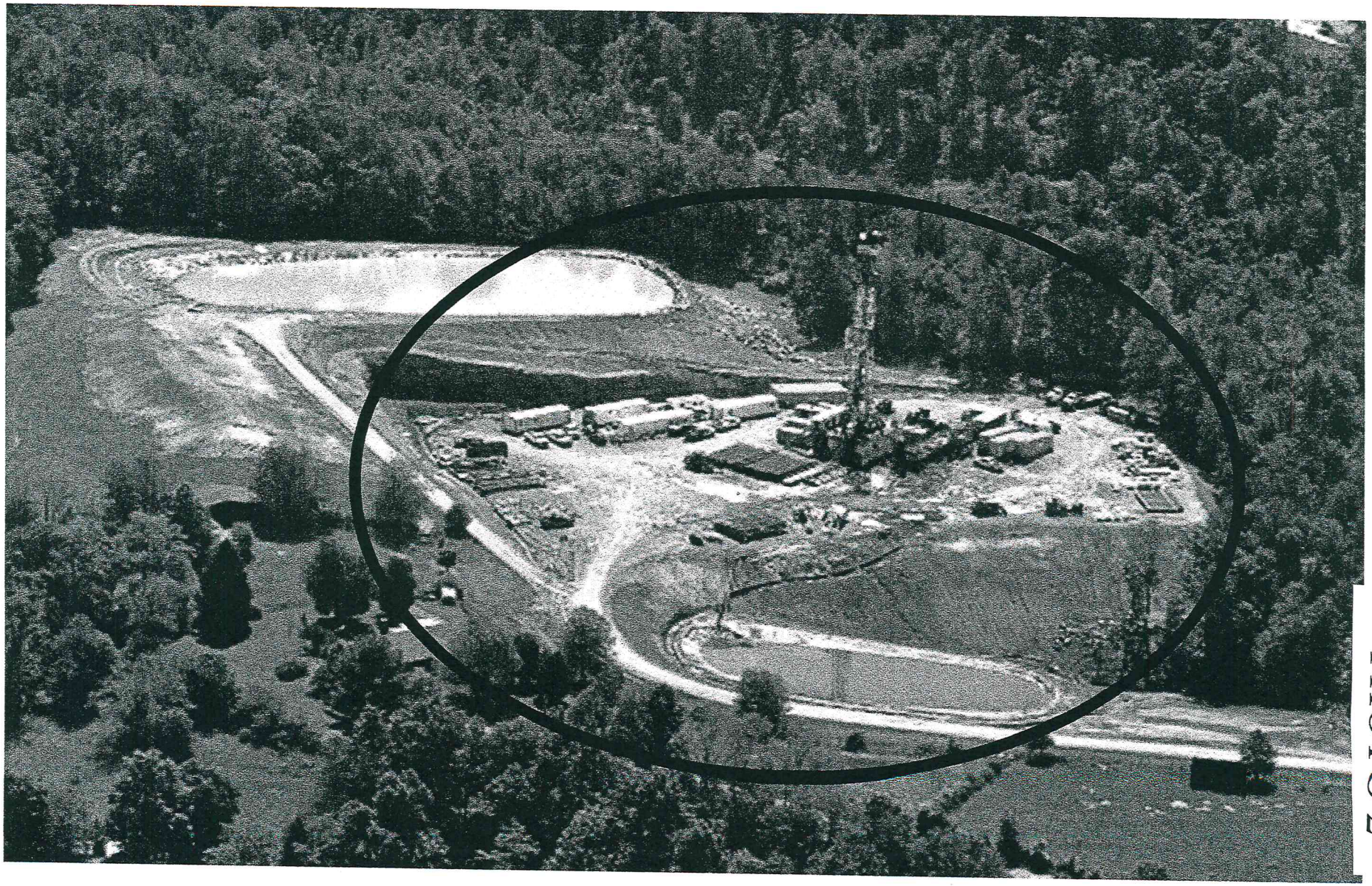


PHOTO 2

Building out the Gas Field

Wells, Access Roads, Collection Pipes

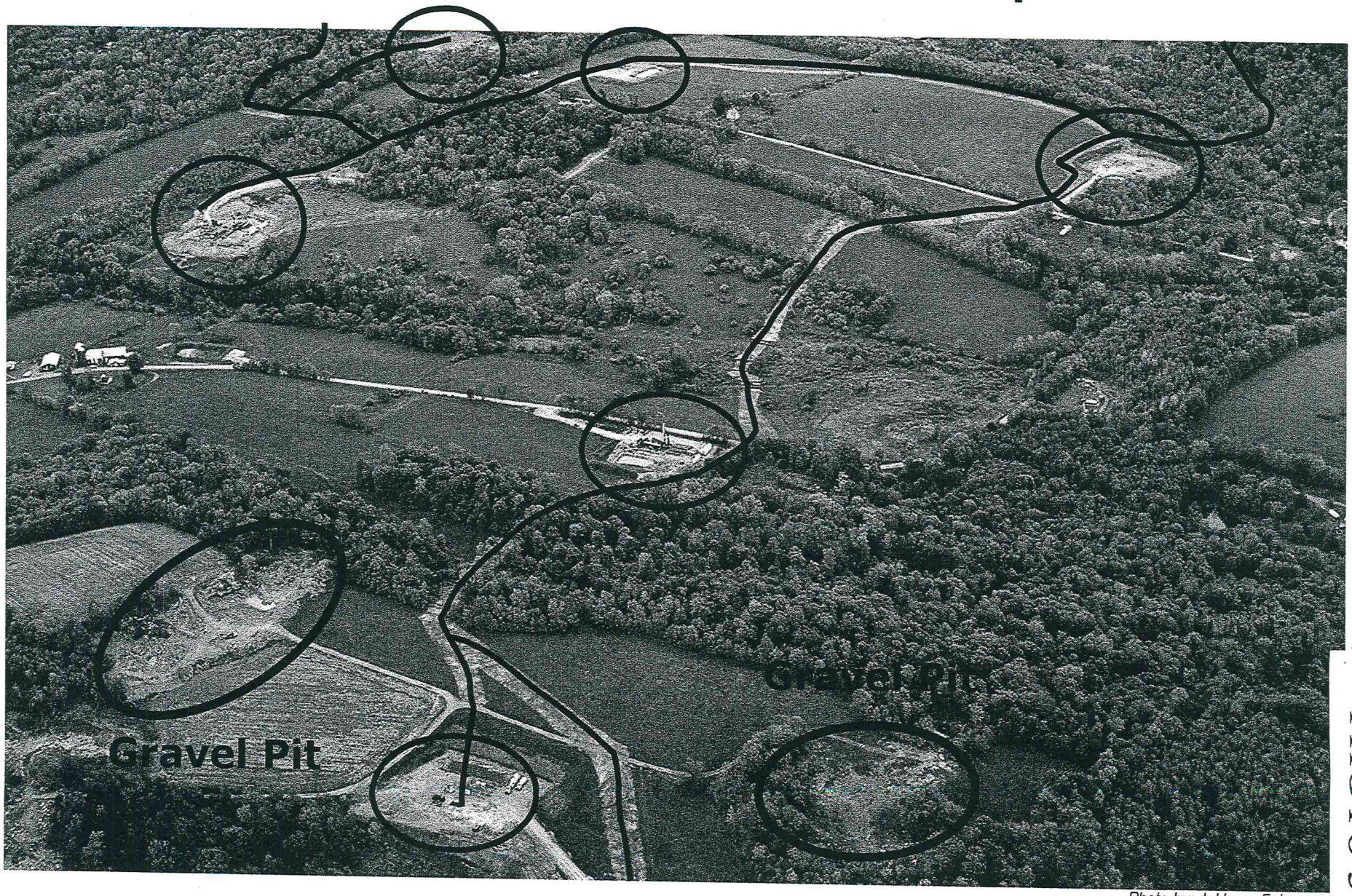


Photo by: J. Henry Fair

PHOTO 3

Gas Field

Allegheny National Forest Penn.

PHOTO 4

What do these trucks haul to a from a single HVHF well?

- Water, 5-8 million gallons per frack;
- Chemicals, estimates vary from 30 to 300 tons per frack.
- Drilling and fracking fluid wastes, 1.0 to 1.6 million gallons per frack.

New York Department of Transportation estimates that roadway damage due to building and servicing a horizontal well to be about $300,000 per lane mile, and the wear and tear on local roadways from one heavy drilling truck is estimated to equal the wear and tear caused by about 9,000 automobiles.

Health Hazards. Round the clock truck traffic exhaust fumes and emissions from equipment and road dust can cause respiratory ailments. Accidental chemical spills and leakage can pollute soil, streams and drinking water supplies.

Graph 2 lists the potential health impacts associated with chemicals used during hydrofracking operations. A comparison of the health risks associated with chemicals used in non-fracking operations (National Fuel's drilling of its horizontal well along Hayes Hollow Road, for example) and HVHF operations, is found in Table 2.

Drilling pad operations generate massive amounts of site lighting at night, noise levels significantly above 55 decibels and often compared to the sound of a jet engine, and then flaring of gas may contribute to discomfort and illness for nearby residents.

Well casing failures and improper well construction can allow chemicals and gas to migrate into drinking water supplies and wells, streams and ponds.

Studies of newly drilled wells in Pennsylvania, 2010-2012, found a failure rate of 6.9%. Other industry data indicate that 30 year old gas wells have failure rates in the 60% range.

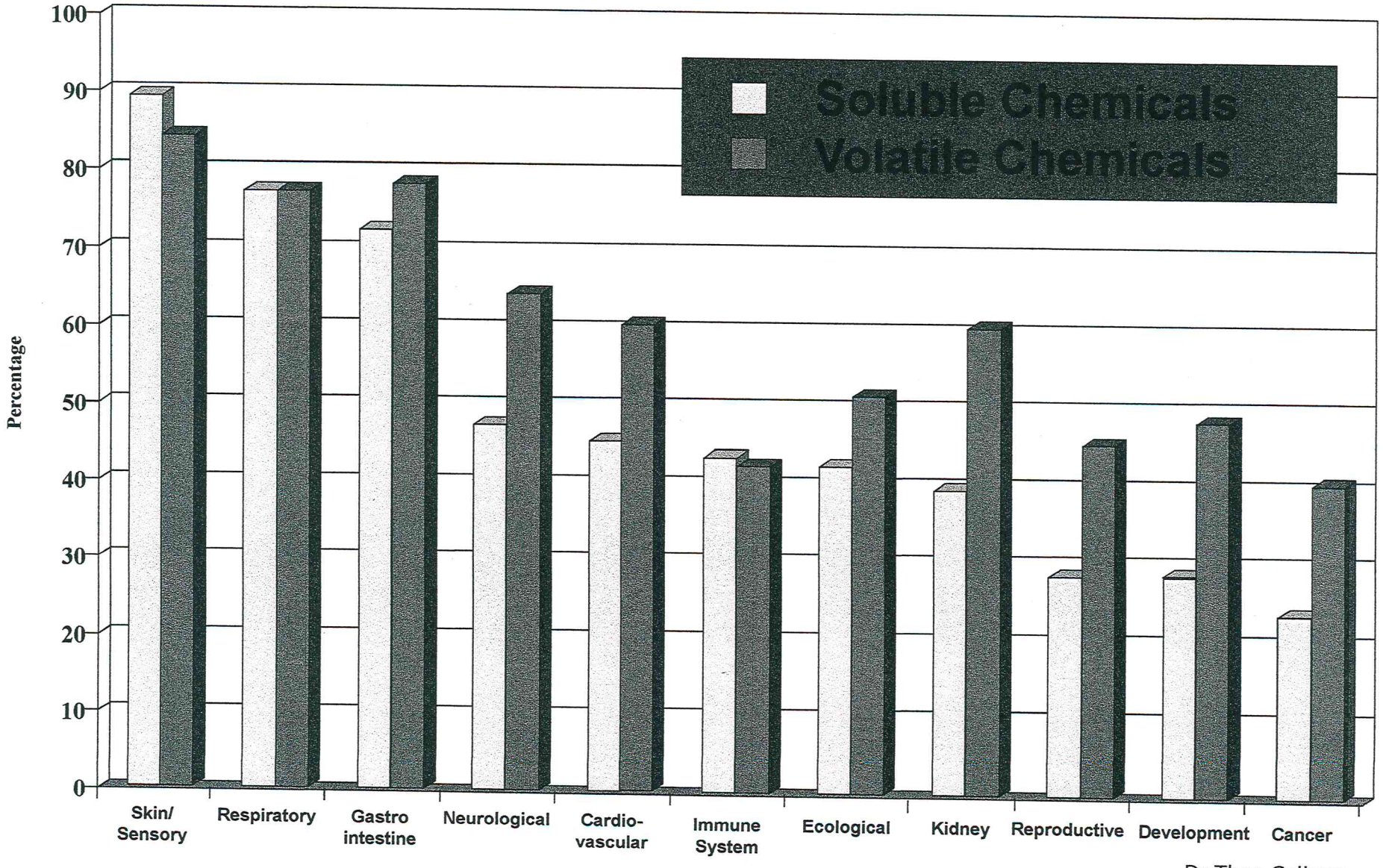
"It is impossible to build a well that does not leak."

Dr. Tony Ingraffea, Professor of Civil Engineering, Cornell University

These health hazards are a 24 hour, seven day a week reality during HVHF operations.

Frac Fluids (identified thus far)

Percent of Chemicals Used/Associated Health Effects



-Dr Theo Colburn

GRAPH 2

TABLE 2, Chemical Health Hazards

National Fuel Horizontal Well (**Non-fracking**) Drilling Fluid Additives used at its Hayes Hollow & Heath Roads well site.

Product Name	MSDA Sheet Health Number
Aqua Pac	*1*
Calcium Carbonate – Medium	0
Conqor 404	1
White Soluable Muriate of Potash	1
White Starch	0
Xanthan Gum	2
Aqua Pac LV	1
Biocide	1
HEC-10	1 (?)
Magma Fiber	1 (?)
Polly-Plus (Liquid)	1 (?)

Source: National Fuel Co. provided Material Safety Data Sheets

MSDA = Material Safety Data Sheet

0 = No health hazard

1 = Exposure cause irritation, minor residual injury

2 = Intense exposure could cause residual injury

3 = Short exposure could cause moderate residual injury

4 = Very short exposure could cause death

Typical Horizontal & Vertical **Hydrofracking** Fluid Additives

Additive Type/Main Component	MSDA Sheet Health Number
Diluted Acid/ Hydrochloric or Muriatic Acid	3
Biocide/ Glutaraldehyde	2
Breaker/Ammonium persulfate	2
Corrosion Inhibitor/ N,n-dimethyl formamide	1
Crosslinker/Borate Salts	2
Friction Reducer/Polyacrylamide/Mineral Oil	0
Gel/ Guar gum or hydroxyethyl cellulose	2
Iron Control/ Citric Acid	2
KCl/Potassium Chloride (salt)	1
Oxygen Scavenger/Ammonium bisulfite	3
pH Adjusting Agent/Sodium or potassium carbonate	2
Proppant/Silica, quartz sand	*0*
Scale Inhibitor/Ethylene glycol	1
Surfactant/Isopropanol	1

Source: http://geology.com/energy/hydraulic-fracturing-fluids/

HVHF Drilling Time Line.

Site Preparation	10-20 days
Drilling (each well)	50-70 days
Fracking (each well)	4-10 days
Flow back (each well)	3-10 days
TOTAL	67-110 day PER WELL
GRAND TOTAL	400- 640 days for a SIX-WELL PAD

Well Lifespan: One HVHF well, with an estimated 30 year lifespan, may be refracked every five to ten years. The health hazards associated with truck traffic, the use of tons of chemicals and the disposal of millions of gallons of drilling wastes will be encountered again and again as each well is refracked.

Other Land Use Impacts

Construction: In addition to the drilling pad, permanent allied gas production equipment with a land use impact includes: Pipelines to ship gas to market; compressor stations to push gas along in the pipeline; separators to remove water from gas and gas storage tanks.

Housing: Rents in Pennsylvania, went from $500 to $1,500.

Property Values: May decline as much as 22% (DEC dSGEIS)

Farming: In Pennsylvania, 40% of the farms in drilling communities went out of business.

Recommendations. The committee finds that the known land use impacts associated with high volume, hydraulic fracturing (HVHF) – a wide area, heavy industrial operation – are incompatible with the land use and community values promoted in the Town's adopted master plans and zoning ordinance. We recommend that the Town's zoning ordinance be amended to prohibit both HVHF drilling activities for oil or gas, and the disposal of HVHF waste fluids from elsewhere, in the Town of Colden. We further recommend that vehicles transporting such fluids and wastes be prohibited on Town roads.

The committee also recommends that the Town's Environmental Planning Board be tasked with maintaining an ongoing liaison with the NYSDEC to discover, at the earliest possible date, when a prospective driller submits an application to NYSDEC for a HVHF drilling permit in the Town. The Town should then notify NYSDEC, while the application is pending, that HVHF drilling is not permitted in Colden.

Abandoned, Inactive & Plugged Gas Wells

Background. Map 2 shows the location of known abandoned and inactive gas wells in Colden.

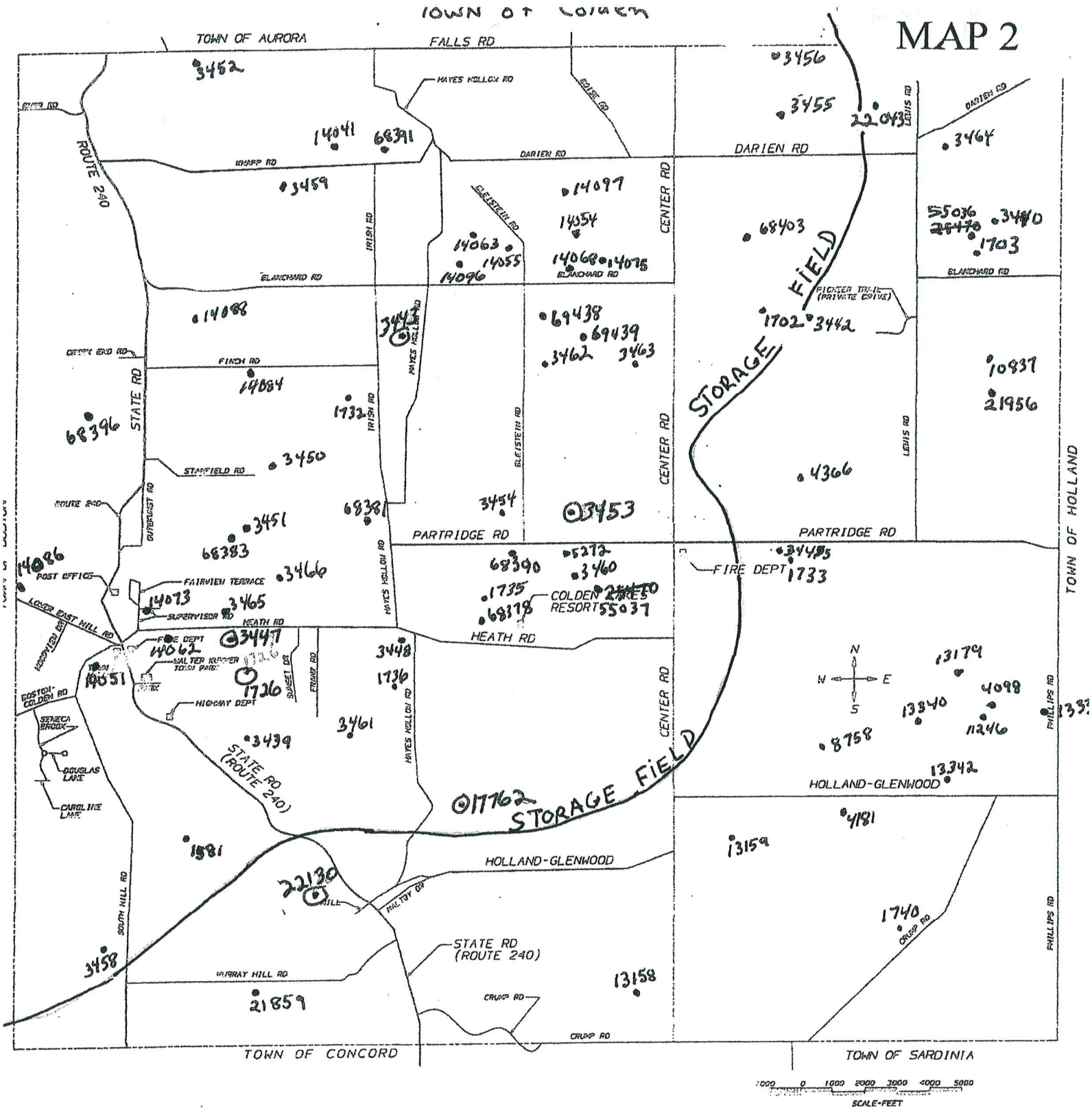
Land Use Impacts. According to the NYSDEC, in July 2012, there were 71 known abandoned and plugged wells in the Town of Colden. Most of these wells – those located in the Colden Gas Storage Field -- are maintained by National Fuel.

NYSDEC grants an "Inactive" well status for a variety of reasons and for a one year period. "Shut-in" well status (loss of pipeline access, etc.) is granted by NYSDEC, upon application by the well operator, for not more than one year, but renewable on a year by year basis with good cause. Upon expiration of shut-in status, operators must commence producing gas or plug the well.

Temporary abandonment of a well is allowed for only 90 days without NYSDEC permission. After 90 days the well must be returned to active status, placed in "Inactive" status or plugged.

Recommendations. We recommend that the Environmental Planning Board track *the periodic testing of these wells for casing failures and gas leakage in accord with* NYSDEC regulations and to determine whether wells listed by NYSDEC as inactive are temporarily "shut-in" wells or temporally abandoned for other reasons, and when wells are no longer producing gas, insure that they are properly plugged by the well operator in accord with state regulations.

MAP 2



71 plugged and Abandoned wells = •

6 Inactive Wells = ⊙

Source: DEC July 2012

Appendix

THE COMMITTEE'S WORK SCHEDULE

Our open-to-the-public meetings schedule and agendas provided a progressive research and learning experience that prepared committee members to consider appropriate recommendations in accord with the Town's established land use planning guidance.

***FIRST MEETING**, October 23, 2012.*

We reviewed the Town's drilling moratorium and, to orient the committee to the legal status of land use planning in New York Towns, we reviewed, as described above, New York's Constitution and the legal role assigned to Town Master Plans.

SECOND MEETING, November 14, 2012.

Code of Ethics. Copies of the adopted Colden Code of Ethics were passed out to each member. "Standard of Conduct, Paragraph E," clearly applies to the members of this committee since we will be giving the Town Board advice concerning the possible need for legislative actions. That paragraph reads as follows:

"Disclosure of interest in legislation. To the extent that he knows thereof, a member of the Town Board and any officer or employee of the Town of Colden, whether paid or unpaid, who participates in the discussion or gives official opinion to the Town Board or any other official board or agency on any legislation before the Town Board or any other official board or agency shall publicly disclose on the official record the nature and extent of any direct or indirect financial or other private interest he has in such legislation."

The Town's Code of Ethics clarifies that we, as a committee, work for the citizens of Colden, not ourselves and it fosters honest, objective advice from the committee to the Town Board. In addition, from our readers' point of view, disclosure of the committee members' personal connections with the gas and oil industry lends credibility to the report's content. Disclosure statements submitted by committee members are on file with the Town Clerk.

Colden's Master Land Use Plans. As described above, we reviewed Colden's master land use plans, adopted in 1970 and 1993, to define the goals and values held by the people of Colden as they relate to land use planning and development of their Town. These plans identify enduring qualities considered by the Town's citizens to be essential characteristics of the Colden community and, taken together, provide the community's guiding vision for the betterment of the whole community.

Consideration of industrial land uses is largely absent in these plans. One reason for this is that Colden lacks developable sites with the basic infrastructure needed by industrial activities – especially sites possessing public water and sewer services.

An extended discussion of gas drilling as a land use is also absent from these plans as well. This is perhaps a reflection of two factors. First, old fashioned, shallow (2,000-3,000 feet deep) vertical gas production and storage wells in the Medina Sandstone and Onondaga Sandstone were once thought to be a limited land use risk to the environment and human health. Second, when these plans were adopted there was a widely believed conventional wisdom that the state preempted the local governments in both regulating how drilling was to be conducted and where drilling was to take place.

Recently, however, New York courts have ruled (Towns of Dryden and Middlefield) that local governments do have the power to control, through their zoning ordinances, whether or not land in their jurisdictions will be used for gas drilling. The state alone regulates how drilling operations are to be conducted. If these rulings survive on appeal, future local government land use plans across New York State are likely to pay more attention to gas drilling than in the past. (More on this below)

THIRD MEETING, December 19, 2012.

Town of Colden's Zoning Ordinances. We paid close attention to Chapter 106 of Colden's Adopted Code, "Wind Energy Conversion Systems," and Chapter 108 to learn how the town, in the recent past, went about assessing and regulating the land use implication of new wind energy technologies. We reviewed a detailed list of the Planning Board's wind energy related actions from 2008 to 2010. The Town adopted these wind energy zoning ordinances to "minimize the impact on adjacent properties and to protect the health, safety and welfare of the residents of the Town."

We took particular note of the Planning Board's attention to the many ways in which these wind systems can create land use safety hazards and nuisances for surrounding property owners, including noise, visual degradation, lighting interference, impact on birds and electromagnetic interferences of household appliances. The Town has a solid track record of carefully identifying risks to land, neighbors, environment and quality of life in the town. This has been done in the past by paying close attention to land use impacts of new or proposed land use activities when assessing a zoning requirement. When needed, the Town has established new standards to regulate negative land use impacts. For example, Chapter 106 sets, for the first time in Colden, specific allowed noise limits for wind energy conversion systems.

We also noted that wind energy systems, like gas drilling, are not directly addressed in the town's master plans. In this regard, the wind energy zoning case demonstrates how these master plans can extend their influence into an unclear future filled with new land use planning challenges.

FOURTH MEETING, January 9, 2013.

To gain a better understanding of the nature and extent of the vertical gas production wells operating in Colden, we compiled and discussed:

- A profile of the 10 active vertical gas production wells (See Table 1)
- A graph plotting the yearly production of each well since 1986 and,
- A map showing the geographic location of each well (See Map 1)

FIFTH MEETING, January 22, 2013.

To better understand how other New York towns are addressing HHVF gas drilling-related issues, we discussed:

a.) The Town of Wales' 2011 law banning the future use of HVHF drilling within the town based on the town's self-rule sovereignty granted by the U.S. and New York Constitutions. Potentially legal weaknesses of the Wales law were examined, including that its language has not been tested in court.

b.) The Town of Holland's 2012 law, exercising the town's authority to use special permits to regulate the location and use of land for HHVF drilling. Holland will require drillers to test drinking water wells and repair damaged roads. Potentially legal weaknesses of the Holland law were examined, including its possible infringement on the state's authority to regulate drilling operations, including water testing.

c.) Two separate February 2012 Supreme Court decisions have upheld the legal authority of the Towns of Dryden and Middlefield to enact land use zoning ordinances banning gas drilling in their jurisdictions. These rulings are now being appealed by gas drillers and landowners. An Appellate Division Court is expected to rule soon on these cases. The legal tug-a-war looks like this:

The **towns** claim their authority to control land uses, including gas drilling, comes from New York's Town Law, sections 261, 264, 265 and the Statutes of Local Governments, section 10(6) and New York's Municipal Home Rule Law.

The **landowners** (Cooperstown Holstein Corp.) **and drillers** (Anschutz Exploration Corporation – and now Norse Energy Corp) claim that only the state, not local governments, have the authority to say where gas drilling will take place. They cite the Environmental Conservation Law, including the Oil, Gas and Solution Mining Law (ECL sect. 23-0303) and the Mined Land Reclamation Law (ECL Art. 23, Title 27). The contentious language in the ECL reads: "The provision of this article shall supersede all local laws or ordinances relating to the regulation of the oil, gas and solution mining industries; but shall not supersede local government jurisdiction over local roads or the rights of local governments under the real property tax law."

Judges in both the Dryden and Middlefield cases have ruled that local governments may exercise their powers to control land use to determine where in their borders gas drilling may or may not take place, while the ECL gives the state authority to regulate all technical and operational drilling matters on a consistent statewide basis. These two Supreme Court rulings are currently being heard by an Appellate Division court in Albany.

SIXTH MEETING, February 13, 2013

National Fuel Gas Supply Corp. representatives Ed D'Amico and Ray Harris met with the committee and discussed, in detail, the questions raised in the committee's December 17th, 2012 and January 18th 2013 letters to Mr. Harris.

SEVENTH MEETING, February 26, 2013

To gain a better understanding of the possible land use impacts associated with HVHF drilling, we viewed Chris Burger's power point presentation titled "Tight Shale Gas Extraction in the Northeast." About a dozen Town citizens attended this meeting.

EIGHTH MEETING, March 13, 2013

We reviewed and reworked fact sheets for active vertical gas production wells; active gas storage wells; and, HVHF wells and began drafting land use zoning and administrative recommendations for presentation to the Town Board.

To better understand the tensions that arise between landowner rights and community-wide rights, we looked at existing examples of government imposed restrictions on the use of privately owned land.

AT THE TOWN LEVEL: Colden's zoning ordinances are described above on Page 4.

STATE LEVEL: On May 16, 2012, the New York Assembly passed a bill (A03245) to clarify the authority of local governments to restrict the location of oil and gas drilling. The bill passed with 93 votes for and 46 votes against. Assembly Speaker Sheldon Silver issued a press release that reads, in part:

"Speaker Sheldon Silver today announced the passage of legislation reinforcing the ability of local governments to regulate where oil and natural gas drilling may take place through the use of local zoning ordinances. Passage of the measure comes after over 100 local governments statewide have approved zoning restrictions on the controversial practice known as hydrofracking... this legislation makes it clear that local governments retain the right to adopt laws that regulate land use provided that they do not regulate the operation of oil, gas, and solution mining industries... Citizens need to have a say in the direction of their communities and

to determine if an industry like hydrofracking is appropriate for their area... Local government zoning ordinances affecting where and if oil and gas drilling activities may occur in a municipality have been upheld by two separate trial courts... **This legislation clarifies the current law and is in complete harmony with the judicial decisions [see towns of Dryden and Middlefield below]. The bill will prevent unnecessary and costly litigation thereby protecting local property taxpayers...This legislation clarifies strong home rule power in relation to oil and gas drilling and codifies the recent New York Supreme Court rulings**... It ensures that current and future local zoning laws can dictate where these mining activities occur, even with a regulatory program at the state level... The measure amends Article 23 of the Environmental Conservation Law, which grants the state sole authority to regulate the oil, gas and solution mining industries, and codifies local governments' ability to use local zoning laws or ordinances to dictate where these kinds of activities can occur."

In mid-June 2012 Governor Cuomo's office put forth the idea that each local community ought to decide whether or not to allow the drillers in. The Governor suggested the state would respect local decision to ban drilling and would consider issuing new drilling permits only in geographic areas where the local municipalities have officially said they want drilling—and presumably the risks.

On February 21, 2012, the State of New York Supreme Court ruled, in Anschutz Exploration Corporation v. Town of Dryden, that the town's zoning amendment banning horizontal hydrofracking is not preempted by the supersession clauses in the state's Oil, Gas and Solution Mining Law and the Mined Land Reclamation Law. The court said:

"Local governments may exercise their powers to regulate land use to determine where within their borders gas drilling may or may not take place, while DEC regulates all technical operational matters on a consistent statewide basis in locations where operations are permitted by local law."

On February 24, 2012, a State of New York Supreme Court, in Cooperstown Holstein Corp. v Town of Middlefield, ruled that the supersession clause of the Environmental Conservation Law, 23-0303(2), "does not serve to preempt a local municipality such as defendant from enacting land use regulations within the confines of its geographical jurisdiction and, as such, local municipalities are permitted to permit or prohibit oil, gas and solution mining or drilling in conformity with such constitutional and statutory authority."

Both of these decisions are being appealed.

FEDERAL LEVEL: If land use restrictions at the state and local level set limits on what a landowner can or cannot do with his property, the National Gas Act of 1938 MANDATES that property owners within the boundaries of a federally authorized natural gas storage field -- such as the Colden Gas Storage Field established by the National Fuel Gas

Supply Corp. in 1954 with a federal permit – MUST allow the storage of gas under their property.

If land owners don't voluntarily give National Fuel permission to store gas beneath their property through a lease or other agreement, the company has a federally granted authority to use the power of eminent domain, or condemnation, to force the property owner to consent to the storage of gas under his property.

CONCLUSION: To protect the general welfare, all levels of government have in the past, and will in the future, exercise the authority to regulate land uses and restrict the rights of property owners.

NINTH MEETING, March 26, 2013

The committee reviewed and made changes to a draft of the final report to the Town Board.

TENTH MEETING, April 10, 2013

The committee approved the final report for delivery to the Town Board.