

GRASSROOTS
Environmental Education

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**Connecticut General Assembly
Environment Committee
Public Hearing
February 23, 2018**

Re: SB 103 – An Act Concerning Hydraulic Fracturing Waste in Connecticut to prohibit the receipt, collection, storage, treatment and disposal of waste from hydraulic fracturing.

Thank you to The Honorable Senator Miner, The Honorable Senator Kennedy, The Honorable Representative Demicco and distinguished members of the Committee for the opportunity to address this public hearing.

Grassroots Environmental Education is a science based environmental health nonprofit providing public education on environmental health issues and practical solutions for local and state governments, health care providers, school systems, environmental and health organizations nationwide. Grassroots works directly with a network of leading medical and scientific experts in the field of environmental health to bridge the gap between emerging science and public understanding through evidence-based tools and educational programs.

Grassroots commends the Committee for the introduction of SB103 to ban fracking waste in the state and strongly supports this critically important legislation that will protect the health and safety of Connecticut residents and the state's precious natural resources. We include herein our extensive comments of March 13, 2017 that provide the evidence-based research regarding the adverse health and environmental impacts associated with fracking waste and its byproducts.

Out of deep concern for the protection of the health and safety of its residents, sensitive natural resources and the local economy, fifteen New York counties as well as New York City have enacted comprehensive fracking waste bans along with thirty-seven Connecticut towns thus far.

We've attached the fracking waste bans enacted by Suffolk and Nassau Counties in New York, our neighbors along the Long Island Sound. Both counties recognized the potential for irreversible radioactive contamination to the Sound and adverse public health impacts from the handling, acceptance, application, disposal, treatment or storage of fracking waste and its byproducts, which prompted the inclusion of the most protective language in their bans. In fact, the law tasks their Department of Consumer Protection with oversight of consumer products on store shelves to ensure compliance.

To that end, we recommend the following to strengthen S.B. 103:

- 1) Close the hazardous waste loophole to properly recognize and classify fracking waste, which meets and indeed, exceeds criteria for hazardous waste based on peer-reviewed scientific studies.
- 2) The definition of fracking waste should also include all relevant forms of oil and gas extraction, production and storage waste including liquid or solid waste or its constituents generated as a result of natural gas and oil extraction activities which may consist of water, brine, chemicals, naturally occurring radioactive materials, heavy metals or other contaminants; leachate from solid wastes associated with natural gas and oil extraction activities; any waste that is generated as a result of or in association with the underground storage of natural gas and liquefied petroleum gas well storage operations; any products or byproducts resulting from the treatment, processing or modification of any of the above wastes.
- 3) Provision for bids and contracts related to the construction or maintenance of all publicly owned roads or real property within the state regarding purchase or acquisition of materials or retention of services.
- 4) Inclusion of penalties for each violation of law e.g. fine of \$25,000 per violation for the sale, application and/or acceptance of natural gas waste or oil waste (Bans enacted in New York counties and New York City include such penalties)
- 5) Exclusion of the acceptance of fracking waste and its byproducts for research purposes.

We strongly urge the swift enactment of the most protective legislation to ban fracking waste in Connecticut to safeguard public health, our water resources and our economy.

Respectfully submitted by,

Ellen Weininger
Director, Educational Outreach
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**Memo of Support
Connecticut General Assembly Environmental Committee
Public Hearing March 13, 2017**

HB 6329 AN ACT CONCERNING HYDRAULIC FRACTURING WASTE IN CONNECTICUT

To permanently prohibit the storage, disposal, handling and use of hydraulic fracturing waste in Connecticut.

Grassroots Environmental Education commends the introduction of HB 6329 and strongly supports this critically important legislation that will protect the health and safety of Connecticut residents and the state's natural resources. We urge inclusion of the following important changes to strengthen the bill:

1) Definition of fracking waste should also include all relevant forms of oil and gas extraction, production and storage waste including liquid or solid waste or its constituents generated as a result of natural gas and oil extraction activities which may consist of water, brine, chemicals, naturally occurring radioactive materials, heavy metals or other contaminants; leachate from solid wastes associated with natural gas and oil extraction activities; any waste that is generated as a result of or in association with the underground storage of natural gas and liquefied petroleum gas well storage operations; any products or byproducts resulting from the treatment, processing or modification of any of the above wastes. 2) Provision to be included in bids and contracts related to the construction or maintenance of all publicly owned roads or real property within the state regarding purchase or acquisition of materials or retention of services. 3) Inclusion of penalties for each violation of law e.g. fine of \$25,000 per violation for the sale, application and/or acceptance of natural gas waste or oil waste (Bans enacted in New York counties and New York City include such penalties)

Grassroots Environmental Education is a science-based, environmental health nonprofit, providing public education on environmental health issues and practical solutions for local and state governments, health care providers, school systems, environmental and health organizations nationwide. Grassroots works directly with a network of leading medical and scientific experts in the field of environmental health to bridge the gap between emerging science and public understanding through evidence-based tools and educational programs.

Highly contaminated radioactive fracking waste byproducts and their constituents continue to pose an urgent public health threat due thousands of oil and gas wells and other production, storage and processing operations in neighboring states. Proliferation of radioactive waste byproducts and their constituents could result in irreversible damage and place significant financial and health burdens on taxpayers. Due to the huge volume of fracking waste produced,

industry is increasingly interested in repurposing waste byproducts by grinding and blending them with other materials for roads and construction. Other companies are processing or dewatering the waste and using the salts for icemelt. Significant gaps and serious concerns remain regarding the safety of processing fracking waste resulting in end products that could be even more hazardous containing excessively high levels of radioactive materials and other contaminants.¹

In recognition of this urgent public health threat, to date, public officials are taking precautionary steps to protect the health and safety of residents and their water supplies. To date, ten Connecticut towns have already enacted fracking waste bans and more than a dozen other towns are actively engaged in the process. In New York fifteen counties have enacted fracking waste bans including Westchester, Nassau, Suffolk, Rockland, Putnam, Ulster, Orange, Albany, Schoharie, Oneida, Tompkins, Cayuga, Clinton, Onondaga and Erie Counties. In August 2016, New York City enacted a comprehensive fracking waste ban that now protects the health and safety of its eight and a half million residents and its natural resources. The State of Connecticut must follow their lead without further delay.

Hydraulic fracturing, also known as "hydrofracking", is a technology used for oil and gas extraction from shale formations which involves the injection of millions gallons of fresh water mixed with hundreds of chemicals and sand forced under high pressure into the well bores to crack open the shale. Ten to forty percent of this highly toxic mixture is returned to the surface with the oil or gas and additional contaminants including volatile organic compounds (VOCs) such as benzene, a carcinogen linked with blood disorders, heavy metals (e.g., arsenic, lead, chromium, mercury), brine 8 times saltier than seawater, and radioactive elements including Radon and Radium which are known carcinogens.

The extraction process produces two types of wastewater. Flowback water is the chemically treated fracking fluid that returns to the surface shortly after a fracking operation. Produced water, also known as formation water or fracking brine, is the fluid that comes out of the target drilling formation along with the oil or gas. The process also produces tons of semi-solid waste in the form of drilling muds, sludge and cuttings.

Produced water or fracking brine has high levels of chlorides and bromides and contains toxic heavy metals. Produced water and semi-solids (drill cuttings, sludge and drilling muds) can contain high levels of Radium-226 and Radium-228. Radium-226 has a half-life of 1600 years and is linked to anemia, cataracts, bone, liver and breast cancers and death.² It also emits gamma radiation that can travel fairly long distances through air, raising risks for cancer in communities. Radon, a decay product of Radium is considered the leading cause of lung cancer in non-smokers with no safe level of exposure.³ There are approximately 21,000 deaths per year attributed to Radon.⁴ Radioactive materials including Radium and its decay product, Radon, are known to be significantly higher in the Marcellus Shale.⁵

Radon is an odorless, tasteless and colorless gas formed by the radioactive decay of Radium, Uranium and Thorium and has a half-life of 3.8 days. Polonium and Lead, the decay products of Radon, have a half-life of 138 days and 22.3 years respectively and are solids known to

¹ Earthworks, "Wasting Away: Four States' Failure to Manage Gas and Oil Field Waste from the Marcellus and Utica State," April 2014, <http://www.earthworks.org/toxprofiles/>

² <http://www.atsdr.cdc.gov/toxprofiles/>

⁴ Ibid.

⁵ E. Rowan, M. Engle, 2011, Radium content of oil and gas field produced waters in the northern Appalachian Basin, U.S. Geological Survey Report 2011-1135

attach to dust particles. Lead is a neurotoxin with no safe threshold level of exposure and is linked with cognitive deficits and attention deficit/hyperactivity disorder in children and low birth weight. It is linked to elevated blood pressure in adults and is an important risk factor for renal failure.⁶ U.S. EPA classifies Lead as a probable human carcinogen while Polonium is considered a radioactive carcinogen. Radon absorbed by the lungs decays further into Polonium and Lead damaging lung tissue. Lead and Polonium can also damage DNA and RNA.⁷ The exposure pathway of all three of these radioactive materials is through inhalation and possible ingestion.

Data from the Pennsylvania Department of Environmental Protection (DEP) reveals that from 2010-2014, other states have accepted hundreds of thousands of tons of fracking waste byproducts, including wastewater and drill cuttings, from fracking operations in Pennsylvania into landfills.⁸ Leachate from those landfills is accepted at wastewater treatment plants ill equipped to process hazardous chemicals and radioactive materials in oil and gas drilling waste byproducts.

State and federal laws exclude oil and gas waste byproducts from the definition of hazardous waste even though it exceeds criteria for hazardous classification. These exemptions eliminate hazardous waste tracking requirements for handling, storage, treatment and disposal.⁹

In his report, **Consideration of Radiation in Hazardous Waste Produced from Horizontal Hydrofracking**,¹⁰ Ivan White, a staff scientist for the congressionally commissioned National Council on Radiation Protection charged with the protection of military and civilian populations, expressed concern regarding the cavalier attitude toward human exposure to radioactive material and stated that radioactivity should never be released into the environment in an uncontrolled manner because of the potential for exposure from the many potential pathways that exist.¹¹ Radioactive materials can migrate through air exposing crops and plants, soil, animals, livestock, food supplies and humans. Radioactive contaminants can also migrate through soil and surface or groundwater exposing sand and sediment, aquatic animals and plants, fish, irrigation water, vegetation, animals, livestock, food supplies and humans. He further stated that the type of radioactive material found in the Marcellus Shale formation and brought to the surface by hydrofracking is the type that has a long half-life and could easily bio-accumulate over time delivering a dangerous radiation dose to potentially millions of people long after the drilling is over.¹²

According to a U.S. Geological Survey study, levels of total Radium tested in the wastewater from eleven active New York vertical gas wells averaged over 8,400 pCi/L exceeding the EPA's maximum contaminant level for drinking water (5 pCi/L for combined Radium-226 and Radium-228) by more than 1,000 times.¹³

In a 2011 review of federal, state and company records, the New York Times reported that in a sampling of wells studied in Pennsylvania and West Virginia, reported levels of Radium or other

⁶ Textbook of Children's Environmental Health, Edited by P. Landrigan, R. Etzel, Oxford University Press, 2014

⁷ Ibid.

⁸ http://www.depweb.state.pa.us/portal/server.pt/community/dep_home/5968

⁹ http://www.earthworksaction.org/files/publications/FS_LoopholesForPollutersNEW.pdf

¹⁰ <http://www.grassrootsinfo.org/pdf/whitereport.pdf>

¹¹ Ibid.

¹² Ibid.

¹³ E. Rowan, M. Engle, Radium content of oil and gas field produced waters in the northern Appalachian Basin, U.S. Geological Survey Report 2011-1135

radioactive elements exceeded EPA's maximum contaminant level for drinking water by 100 times to more than 1,000 times.¹⁴

The TENORM report released by the Pennsylvania Department of Environmental Protection (PA DEP) indicates significant radioactivity levels in waste associated with gas development and production exceeding EPA's maximum contaminant levels by more than several thousand times. Radium-226 levels in flowback samples were measured between 551 pCi/L and 25,500 pCi/L while Radium-228 levels were measured between 248 pCi/L and 1,740 pCi/L. Radium-226 levels in produced water or brine samples were measured between 40 pCi/L and 26,600 pCi/L while Radium-228 concentrations were measured between 26 pCi/L and 1,900 pCi/L.¹⁵

Naturally occurring radioactive materials (NORM) are distributed through geologic formations and exist undisturbed in nature whether at the earth's surface or below the surface. However, when NORM are disturbed and transported by human activity to human environments they are considered technologically enhanced naturally occurring radioactive materials (TENORM) increasing potential of exposure that may result in concentration levels above background levels.¹⁶ The term NORM is often misused when applied to radioactive material introduced into human environments by oil and gas extraction, production and storage operations. Typically, radioactive oil and gas drilling waste byproducts are improperly classified as NORM instead of TENORM that have special disposal requirements.

In a recent peer-reviewed study at University of Texas and University of North Texas Health Science Center, School of Public Health, Department of Environmental and Occupational Health,¹⁷ soil and water (sludge) obtained from reserve pits used in unconventional natural gas activities were analyzed for the presence of technologically enhanced naturally occurring radioactive material (TENORM). Samples were analyzed for total gamma, alpha, and beta radiation, and specific radionuclides. Laboratory analysis confirmed elevated beta readings. Specific radionuclides present included Thorium-232 and Radium-226 radionuclides. According to the authors, many of the radionuclides found in oil and gas drilling waste and their constituents are not addressed by regulatory guidance documents and negligible information is provided in determining potential of cumulative effects of simultaneous exposure to several radionuclides or potential human and animal health impacts. The study also indicated that the Environmental Protection Agency (EPA) and the Nuclear Regulatory Commission (NRC) do not have established federal regulations that directly govern NORM waste from the oil and gas industry.¹⁸

The authors describe synergistic catalysis, a relatively new field of chemical study concerned with the ability of synthetic chemicals to spontaneously form new chemical bonds when exposed to sunlight, water, air and radionuclides or other chemical catalysts.¹⁹ The potential health risks of resulting compounds are unknown and pose a public health threat as mixtures of hydrofracking chemicals, interaction of chemicals with radioactive materials and reaction of chemicals with other contaminants under heat and pressure cause unknown synergistic reactions.²⁰

¹⁴ <http://www.nytimes.com/interactive/2011/02/27/us/natural-gas-documents-1-intro.html?ref=us>

¹⁵ http://www.depweb.state.pa.us/portal/server.pt/community/dep_home/5968

¹⁶ <http://www.ncbi.nlm.nih.gov/pubmed/23552651>

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ibid.

Regulators and operators may be grossly underestimating radioactivity levels in oil and gas waste by using improper methods to detect radiation. Dr. Julie Weatherington, a soil scientist, describes the inability of casual readings of radioactivity of oil and gas waste byproducts for its proper assessment. She points out Radium-226 and Radium-228 emit Alpha and Beta but that the Gamma emitters cannot be measured in the field.²¹ A sample must be taken and a minimum of 21 days waiting period is required in order to get an ingrowth curve measuring Lead and Bismuth, decay products of Radium.²² At that time, gamma spectrometry must be conducted in the lab to assess the gamma emitters in the fracking waste sample.

Dr. Michael Schultz and his colleagues at the University of Iowa, in their peer-reviewed study,²³ tested the accuracy of the Radium measurement technique used and recommended by the U.S. EPA for analyzing radioactivity in drinking water since studies have shown that the drinking water method is unsuitable for solutions with high radioactive concentrations characteristic of fracking waste byproducts. Several methods were used to assess Radium isotopes in a sample of gas drilling waste from the Marcellus Shale. One method, the co-precipitation technique used by the EPA recovered less than 1 % of Radium-226, the most abundant Radium isotope in the gas drilling waste byproduct sample. Another method known as gamma-ray spectroscopy, the gold standard for Radium analysis, detected 91% of the Radium.²⁴ The authors' findings indicated that the EPA method is ineffective for analyzing oil and gas drilling waste byproducts. Their subsequent study calls attention to the use of radium alone to predict radioactivity concentrations can greatly underestimate total radioactivity levels and that uranium and thorium decay series require scrutiny as well.²⁵

The Pennsylvania Department of Environmental Protection (DEP) data noted a marked increase in radiation alarms at Pennsylvania landfills between 2009-2012 triggered by waste trucks from hydrofracking wells with over 1,000 of those radiation alarms coming from oil and gas drilling waste byproducts.²⁶

Bill Hughes, chair of the Wetzel County Solid Waste Authority in West Virginia, reported that tests on water leaching from the Meadowfill landfill shows varying levels of radioactivity averaging 250 pCi/L in 2013 and at times spiking as high as 2,000 pCi/L, many times higher than the clean drinking water standard while another local landfill in Wetzel taking large amounts of hydrofracking waste also demonstrated significant levels of radioactivity.²⁷ Hughes acknowledged that radioactivity occurs in the drill cuttings and brine from the Marcellus gas wells.

Landfill disposal of radioactive waste from oil and gas extraction, production and storage operations could contaminate them for thousands of years. All landfill membranes fail eventually and leaching or flooding could result in contamination of nearby ponds, streams, or groundwater. Leachate from landfills is a frequent cause of groundwater contamination and its disposal cannot be safely handled by wastewater treatment facilities or via applications on farmland or other real property.

²¹ <https://www.youtube.com/watch?v=J9VIUa9AIB4> <https://www.youtube.com/watch?v=s0zI9IX2EwU>

²² *Ibid.*

²³ <http://pubs.acs.org/doi/abs/10.1021/ez5000379?source=cen>

²⁴ *Ibid.*

²⁵ <http://ehp.niehs.nih.gov/wp-content/uploads/advpub/2015/4/ehp.1408855.acco.pdf>

²⁶ <http://triblive.com/business/headlines/3945499-74/gas-radiation-radioactivity#axzz3X9aXRbFF>

²⁷ <http://www.publicnewsservice.org/2014-04-21/environment/marcellus-waste-radioactivity-in-water-leaching-from-landfills/a38864-1>

Fifty-nine scientists attested to the fact that wastewater treatment facilities are not designed to treat chemicals, contaminants and highly radioactive materials produced from hydrofracking operations.²⁸ High bromide levels in oil and gas waste byproducts are highly corrosive to equipment and can react during water treatment to form brominated trihalomethanes linked to bladder and colon cancers and are associated with birth defects. Once added to drinking water supplies, trihalomethanes are difficult to eliminate.²⁹

According to another study conducted at Duke University, authors examined water quality and radioactivity of discharged effluents, surface waters, and stream sediments associated with a treatment facility site in western Pennsylvania.³⁰ Downstream from the treatment facility, concentrations of chloride and bromide were above background levels and Radium-226 levels in stream sediments at the point of discharge were 200 times greater than upstream and background sediments and above radioactive waste disposal threshold regulations posing potential public health and environmental risks of Radium bioaccumulation in areas of shale gas waste byproduct disposal.³¹

Agricultural areas are especially vulnerable to the immediate threat posed by radioactive oil and gas waste byproducts and their constituents. Mounting evidence reveals livestock illness and death from acute toxicity poisoning from harmful exposures to oil and gas drilling waste byproducts. Reproductive problems in cows and higher rates of stillborn and deformed calves have also been reported.³²

Presence of highly radioactive materials and other contaminants on farmland and in food products can cause irreparable damage and serious financial impacts. Protection of the quality and safety of food production is imperative for the health and safety of residents and to ensure consumer confidence in food production.

Vehicles transporting radioactive fracking waste byproducts increase the risk of human and animal exposure and contamination of water, air, soil and farmland when accidents, leaks, and spills occur. Due to lack of proper hazardous classification and tracking requirements, trucks hauling the waste have no special hazardous waste warning signs or emergency instructions placing first responders and residents at risk.

Truck accidents, spills, leaks and road spreading applications can expose drivers, passengers, pedestrians, animals and livestock to radioactive materials while contaminating nearby surface waters, residential areas, school properties and cropland. Radioactive particles may become airborne as trucks and passenger vehicles travel along roads and can be tracked on tires into driveways and garages and ultimately tracked in on shoes into homes. Rain and snowmelt carrying radioactive materials can run off road surfaces where it can migrate onto nearby property, farms and into streams, ponds and irrigation systems, leach into soil or seep into groundwater. These numerous pathways of exposure pose increased risk for human and livestock inhalation and ingestion of highly radioactive materials, and carcinogenic and endocrine disrupting chemicals.

Potential exposure to toxic chemicals and radioactive contaminants comes at a tremendous toll to human health and the economy. An updated and expanded analysis of the costs of

²⁸ <http://www.psehealthyenergy.org/site/view/1035>

²⁹ <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1566350/>

³⁰ <http://pubs.acs.org/doi/abs/10.1021/es402165b>

³¹ Ibid.

³² http://www.psehealthyenergy.org/data/Bamberger_Oswald_NS22_in_press.pdf

environmentally mediated diseases in children nationwide by Dr. Leo Trasande, Associate Professor in the Department of Pediatric Environmental Medicine and Population Health at NYU Medical Center, found that the costs of childhood cancer, asthma, and neurological disorders had escalated from \$54.9 billion in the 2002 analysis to \$76.6 billion in 2008. Dr. Trasande states that the analysis re-emphasizes for policy makers the implications of failing to prevent toxic chemical exposures not only for the health of children but also for the health of the economy.³³

Emphasis must be placed on primary prevention, eliminating hazards BEFORE children and adults are exposed. Disease and dysfunction triggered by toxins can be prevented and it is imperative that strong measures be taken to prevent harmful exposures to hazardous materials in oil and gas waste from extraction, production and storage operations. The potential for irreversible damage is far too great a socio-economic burden for any region to withstand. The mere perception of contamination could have far-reaching consequences.

Grassroots Environmental Education strongly urges the swift passage of HB6329 with full inclusion of the aforementioned edits to protect public health and safety and resources.

Grassroots is available to answer any questions you may have and provide further documentation.

Respectfully submitted by,

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³³ <http://content.healthaffairs.org/content/30/5/863.abstract>

Introduced by: Presiding Officer Norma Gonsalves, Deputy Presiding Officer Richard Nicoletto, Alt. Deputy Presiding Officer Howard Kopel, Minority Leader Kevan Abrahams, and Legislators Siela Bynoe, Carrie Solages, Denise Ford, Laura Curran, Francis X. Becker, Vincent Muscarella, Ellen Birnbaum, Delia DeRiggi-Whitton, Michael Venditto, Laura Schaefer, Dennis Dunne, Judy Jacobs, Rose Marie Walker, Donald MacKenzie and David Denenberg

LOCAL LAW NO. 15-2014

A LOCAL LAW AMENDING LOCAL LAW NO. 3-2012 IN RELATION TO PROHIBITING THE APPLICATION, SALE, TREATMENT AND IMPORTATION OF NATURAL GAS WASTE AND OIL EXTRACTION WASTE.

Passed by the Nassau County Legislature on October 29, 2014
Voting: ayes: 19 nays: 0 abstained: 0

Became a Law on November 7, 2014 with the approval of th County Executive.

APPROVED AS TO FORM
DEPUTY COUNTY ATTORNEY

BE IT ENACTED BY THE COUNTY LEGISLATURE OF THE COUNTY OF NASSAU, as follows:

Section 1. Local Law No. 3-2012 is hereby amended to read:

§1. Short Title.

This law shall be known as the "Law Against the Application, Sale, Treatment and Importation of Natural Gas Wastes and Oil Extraction Wastes."

§ 2. Legislative Intent.

This Legislature finds that hydraulic fracturing is a mining technique used to extract fossil fuels that have collected in layers of porous rock.

This Legislature further finds that hydraulic fracturing, commonly known as "hydrofracking," involves the injection of fracturing fluids through a well into a rock formation at a force exceeding the parting pressure of the rock, which causes fractures in the rock through which oil and natural gas can be released and captured for further processing and use.

This Legislature further finds that fracturing fluids are comprised of water and chemical additives, including, but not limited to, biocides, surfactants, viscosity-modifiers and emulsifiers, which vary in toxicity and include known carcinogens.

This Legislature further finds that once hydraulic fracturing has been completed at a well site, the fluids used to fracture the rock, commonly referred to as flowback water, return to the surface.

This Legislature further finds that the New York State Department of Environmental Conservation identified few sewage treatment plants in Nassau County as facilities capable of handling flowback water or other wastewater from hydraulic fracturing activities.

This Legislature further finds that tertiary wastewater treatment facilities treat water to remove nitrogen, phosphorous, and carbons, but do not treat for all of the chemicals in fracturing fluid and flowback water.

This Legislature further finds that Nassau County's wastewater treatment facilities discharge treated water into waterways which feed into Long Island's sole source aquifer.

This Legislature further finds that it is not in the best interests of Nassau County or its

residents to accept toxic byproducts of hydraulic fracturing into Nassau County sewage treatment facilities for processing.

This Legislature further finds that several municipalities have prohibited the use of hydraulic fracturing waste on municipal property and roadways and that several states and municipalities, including the counties of Westchester and Rockland, have enacted laws to prohibit the use or sale of hydrofracking waste within their jurisdictions.

This Legislature also finds that relatively safe extraction of oil and natural gas via vertical wells does indeed create waste and byproducts that are similar to that of hydraulic fracturing, which also contaminates our groundwater, the environment and threatens biological health.

This Legislature concludes that it is in the best interests of Nassau County residents to take additional steps at this time to ensure that the waste products generated by hydrofracking and the extraction of oil and natural gas via vertical wells will not threaten the environment of Nassau County or the health of its citizens.

Therefore, the primary purpose of this local law is to prohibit the acceptance of wastewater produced by hydraulic fracturing by sewage treatment facilities located in, owned and/or operated in or by Nassau County, as well as prohibit the use of hydraulic fracturing waste, oil extraction waste and natural gas waste on County property and roadways and the sale of hydrofracking waste, oil extraction waste, and/or natural gas waste within the jurisdiction of Nassau County.

§ 3. Definitions. As used in this law, the following terms shall have the meanings indicated:

“Application” shall mean the act of placing or spreading of natural gas waste, hydrofracking waste, and/or oil extraction waste

“County” shall mean Nassau County.

"Hydraulic fracturing" shall mean fracturing of a rock by man-made fluid-driven fracturing techniques for the purpose of stimulating natural gas or other subsurface hydrocarbon production.

"Natural gas extraction activities" shall mean all geologic or geophysical activities related to the exploration for or extraction of natural gas or other subsurface hydrocarbon deposits, including but not limited to, core, rotary and vertical drilling, hydraulic fracturing and storage and storage operations involving natural gas extraction waste.

"Natural gas waste" shall mean any waste that is generated as a result of natural gas extraction activities, which may consist of water, chemical additives, or naturally occurring radioactive materials ("NORMS") and heavy metals. Natural gas waste includes, but is not limited to, hydraulic fracturing waste and leachate from solid wastes associated with natural gas extraction activities, including derivative materials formed by processing and/or breaking down natural gas waste.

"Oil extraction activities" shall mean all geological and geophysical activities related to the exploration or extraction of oil by way of vertical drilling, and storage and storage operations involving ~~natural~~ oil extraction waste.

"Oil extraction waste" shall mean any waste that is generated as a result of oil extraction activities by way of vertical drilling, which waste may consist of water, chemical additives or naturally occurring radioactive materials ("NORMS") and heavy metals, including derivative materials formed by processing and/or breaking down oil extraction waste.

§4. Prohibition.

- A. No sewage treatment facility located in, owned and/or operated in or by Nassau County shall accept or treat flowback water, natural gas waste, oil extraction waste or any other wastewater resulting from hydraulic fracturing activities.

- B. The sale or distribution of natural gas waste and oil extraction waste within the County is prohibited.
- C. The application of natural gas waste on any road or real property in the County is prohibited.
- D. No natural gas waste shall be permitted to enter the County.
- E. No oil extraction waste shall be permitted to enter the County.
- F. The application or distribution of oil extraction waste on any road or real property in the County is prohibited.
- G. No products with ingredients or additives that originated from natural gas waste may be sold or distributed within the County.
- H. No products with ingredients or additives that originated from oil extraction waste may be sold or distributed within the County.

§ 5. County Bids and Contracts.

- A. All County bids and contracts related to the purchase or acquisition of materials to be used to construct or maintain any roads or real property located within the County shall contain a provision stating that no materials containing natural gas waste or oil extraction waste shall be utilized in the performance of such contracts.
- B. All County bids and contracts related to the retention of services to construct or maintain any roads or real property located within the County shall include a provision stating that no materials containing natural gas waste or oil extraction waste shall be utilized in providing such a service.
- C. All County bids shall include the following statement: "We, _____ of the _____ hereby submit a bid for materials, equipment or labor for the _____ . The bid is for bid documents titled _____. We hereby certify under penalty of perjury that no natural gas waste or oil extraction waste will be utilized by the undersigned bidder or any contractor, sub-contractor, agent or vendor thereof in connection with the bid; nor will the undersigned bidder or any sub-contractor, agent or vendor thereof apply or supply any natural gas waste or oil extraction waste to any property or road(s) of Nassau County as a result of the

submission of this bid if selected." The Statement shall otherwise be sworn to under penalty of perjury in a form satisfactory to the Nassau County Attorney.

§ 6. Enforcement and Promulgation of Rules. The County Board of Health and the Commissioner of the County Department of Public Works and the Commissioner of the County Office of Consumer Affairs, in consultation with one another, are hereby authorized and empowered to jointly promulgate such rules and regulations as they deem necessary for the implementation and enforcement of the provisions of this law. Furthermore, in addition to any other enforcement power conferred by this local law or other applicable law, the County Department of Health, Environmental Health Division, the County Department of Public Works and the County Office of Consumer Affairs, Weights and Measures Division, shall be authorized and empowered to participate with other local, state and federal law enforcement agencies, including the Environmental Crimes Unit of the Office of the Nassau County District Attorney, in joint initiatives to enforce the provisions of this local law.

§ 7. Penalties. Any violation of Section 4 of this law shall constitute an unclassified misdemeanor, punishable by a fine not to exceed \$25,000 per violation and/or up to 30 days imprisonment. Each sale, distribution or application of natural gas waste or oil extraction waste shall constitute a separate and distinct violation. Each violation of Section 4 of this law shall also constitute a civil violation. The County Attorney is hereby authorized to bring and maintain a civil proceeding in a court of competent jurisdiction to recover the fines imposed under this Section, as well as to enforce the provisions of this local law through appropriate monetary and equitable relief.

§ 8. Applicability. This law shall apply to all actions occurring on or after the effective date of this law.

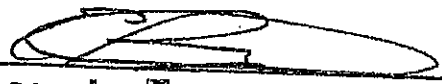
§9. Reverse Preemption. This law shall be null and void on the day that state or federal legislation goes into effect, incorporating either the same or substantially similar provisions as are contained in this law. The County Legislature may determine via resolution whether or not identical or substantially similar state or federal legislation has been enacted for the purposes of triggering the provisions of this section.

§ 10. Severability. If any clause, sentence, paragraph, subdivision, section, or part of this law or the application thereof to any person, individual, corporation, firm, partnership, entity, or circumstance shall be adjudged by any court of competent jurisdiction to be invalid or unconstitutional, such order or judgment shall not affect, impair, or invalidate the remainder thereof, but shall be confined in its operation to the clause, sentence, paragraph, subdivision, section, or part of this law, or in its application to the person, individual, corporation, firm, partnership, entity, or circumstance directly involved in the controversy in which such order or judgment shall be rendered.

§ 11. SEQRA Determination. It is hereby determined, pursuant to the provisions of the State Environmental Quality Review Act, 8 N.Y.E.C.L., section 0101 et seq. and its implementing regulations Part 617 of 6 N.Y.C.R.R., and Section 1611 of the County Government Law of Nassau County, that the adoption of this local is an "Unlisted" Action within the meaning of 6 N.Y.C.R.R. Part 617, and has directed the preparation of an Environmental Assessment Form , and based on the information in the Environmental Assessment Form and the criteria in Section 617.7 of 6N.Y.C.R.R. Part 617 has determined in accordance with the mandates of SEQRA that this proposed local law will not have a significant impact on the environment, and no further review is required.

§ 12. Effective Date. This local law shall take effect sixty (60) days after it shall have become a law.

APPROVED



County Executive

DATE November 7, 2014

Intro. Res. No. 1117-2014

Laid on Table 2/11/2014

Introduced by Legislators Spencer, Hahn, Calarco, Anker, Schneiderman, Krupski, and Stern

**RESOLUTION NO. 294 -2014, ADOPTING LOCAL LAW
NO. 13 -2014, A LOCAL LAW PROHIBITING THE SALE AND
USE OF HYDRAULIC FRACTURING BYPRODUCTS**

WHEREAS, there was duly presented and introduced to this County Legislature at a meeting held on February 11, 2014, a proposed local law entitled, "**A LOCAL LAW PROHIBITING THE SALE AND USE OF HYDRAULIC FRACTURING BYPRODUCTS**"; now, therefore be it

RESOLVED, that said local law be enacted in form as follows:

LOCAL LAW NO. 13 -2014, SUFFOLK COUNTY, NEW YORK

**A LOCAL LAW PROHIBITING THE SALE AND USE OF
HYDRAULIC FRACTURING BYPRODUCTS**

BE IT ENACTED BY THE COUNTY LEGISLATURE OF THE COUNTY OF SUFFOLK, as follows:

Section 1. Legislative Intent.

This Legislature hereby finds and determines that hydraulic fracturing is a technology used to extract fossil fuels that have collected in layers of porous rock.

This Legislature also finds that this technology, commonly referred to as "hydrofracking", involves the high pressure injection of fresh water mixed with chemicals and sand through a well into a rock formation, which causes fractures in the rock and the release of natural gas which is captured for further processing and use.

This Legislature determines that a certain percentage of the highly toxic fracturing fluid mixture, commonly referred to as "flowback water", returns to the surface with the gas and additional contaminants including volatile organic compounds, heavy metals, high salinity brine and radioactive elements.

This Legislature also finds that the County of Suffolk previously recognized the environmental and public health concerns associated with the byproducts of hydrofracking, prohibiting the County's sewage treatment facilities from accepting the byproducts of hydraulic fracturing (Resolution No. 244-2012) and prohibiting the use of hydraulic fracturing brine on County property or roadways (Resolution No. 1006-2012).

This Legislature further finds that several states and municipalities, including the counties of Westchester and Rockland, have enacted laws to prohibit the use or sale of hydrofracking byproducts within their jurisdictions.

This Legislature concludes that the County of Suffolk must take additional steps at this time to ensure that the waste products generated by hydrofracking do not threaten the environment of Suffolk County or the health of its citizens.

Therefore, the purpose of this local law is to prohibit the sale of hydrofracking byproducts in Suffolk County, to bar the introduction of these byproducts into the County's wastewater treatment facilities and to prohibit the use of these byproducts on any roads within the County's boundaries.

Section 2. Definitions.

As used in this law, the following terms shall have the meanings indicated:

"HYDRAULIC FRACTURING" shall mean the fracturing of shale formations by man-made fluid-driven techniques for the purpose of stimulating natural gas or other subsurface hydrocarbon production.

"NATURAL GAS EXTRACTION ACTIVITIES" shall mean all geologic or geophysical activities related to the exploration for or extraction of natural gas or other subsurface hydrocarbon deposits, including but not limited to, core and rotary drilling and hydraulic fracturing.

"NATURAL GAS WASTE" shall mean any waste that is generated as a result of natural gas extraction activities, which may consist of water, chemical additives, or naturally occurring radioactive materials ("NORMS") and heavy metals. Natural gas waste includes, but is not limited to, leachate from solid wastes associated with natural gas extraction activities.

"APPLICATION" shall mean the physical act of placing or spreading natural gas waste on any road or real property located within the County of Suffolk.

Section 3. Prohibitions.

- A. The introduction of natural gas waste into any wastewater treatment facility, within the County of Suffolk or operated by the County of Suffolk, is prohibited.
- B. The sale of natural gas waste within the County of Suffolk is prohibited.
- C. The application of natural gas waste on any road or real property located within the County of Suffolk is prohibited.

Section 4. Applicability.

This law shall apply to actions occurring on or after the effective date of this law.

Section 5. Penalties.

Any violation of Section 3 of this law shall constitute an unclassified misdemeanor, punishable by a fine not to exceed \$5,000 per violation and/or up to 30 days imprisonment. Each sale and/or application of natural gas waste shall constitute a separate and distinct violation.

Section 6. Severability.

If any clause, sentence, paragraph, subdivision, section, or part of this law or the application thereof to any person, individual, corporation, firm, partnership, entity, or circumstance shall be adjudged by any court of competent jurisdiction to be invalid or

unconstitutional, such order or judgment shall not affect, impair, or invalidate the remainder thereof, but shall be confined in its operation to the clause, sentence, paragraph, subdivision, section, or part of this law, or in its application to the person, individual, corporation, firm, partnership, entity, or circumstance directly involved in the controversy in which such order or judgment shall be rendered.

Section 7. SEQRA Determination.

This Legislature, being the State Environmental Quality Review Act (SEQRA) lead agency, hereby finds and determines that this law constitutes a Type II action pursuant to Section 617.5(c)(20), (21), and/or (27) of Title 6 of the NEW YORK CODE OF RULES AND REGULATIONS (6 NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection. The Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination of non-applicability or non-significance in accordance with this law.

Section 8. Effective Date.

This law shall take effect immediately 60 days after its filing in the Office of the Secretary of State.

DATED: April 29, 2014

APPROVED BY:

/s/ Steven Bellone
County Executive of Suffolk County

Date: May 28, 2014

After a public hearing duly held on May 14, 2014
Filed with the Secretary of State on June 1, 2014