

League of Women Voters of Delaware

October 22, 2014

Thank you for this opportunity to comment on the Green Recovery Technologies (GRT) application for a Coastal Zone permit. As you may know, the League of Women Voters of Delaware has a proud history of support for the Coastal Zone Act since before its passage in 1971. We do not take lightly attempts to lessen the impact of the Act.

In order to better understand the situation described in the applicant's permit request, several of our members visited the site on October 10, viewing the entire site, including the laboratory where the proposed process is carried out on a 1/72 scale. When operational, plant officials told us, GRT will produce enough oil to fill a tank car every 36 hours and enough protein to fill 2 trucks per day.

We learned that the operation has been tested at a laboratory in Houston at 50% capacity, assuring us that the process is viable.

As you know, Delaware processes 565 million chickens per year¹, resulting in waste which is currently "spread or plowed onto farm fields or recycled at company-owned operations."² Offensive odors and harmful run-off from this practice are well documented. GRT's operations could help with diminishing the waste from chicken processing plants and thereby reduce environmental issues connected to this waste. Because GRT's processing takes place in a nearly closed apparatus, and because materials will be stored in tightly covered containers, there does not appear to be a potential for odor escaping into the neighborhood.

Coastal Zone Act Regulations state that an activity or facility that will result in any negative environmental impact shall contain an offset proposal. This regulation is partially accomplished by the applicant's payment of a fee to DEDO, which determines the number of environmental credits needed for an offset.

The offset purchase option is not clearly explained to the public either on DNREC's website or on DEDO's website. An explanation of the principles of these purchased offset credits, including how the cost is determined and the nature of the offset, is important so that the public can fully engage in the permit process. Many supporters of the Coastal Zone Act look forward to the time that the Goals and Indicators are put into effect, as required by the Act's Regulations, so that both businesses and the public have a standardized expectation, and full knowledge of what is taking place in terms of offsets.

¹ Delaware Agriculture, Ed Kee, 2010 http://www.nass.usda.gov/Statistics_by_State/Delaware/Publications/DE%20Ag%20Brochure_web.pdf

² Delawareonline, Jeff Montgomery, Sept.29, 2014 <http://www.delawareonline.com/story/news/local/2014/09/29/hearing-needed-poultry-sludge-recycling-plan/16423079/>

The permit for which GRT applied relates to the nitrogen oxides (NOx) resulting from combustion of natural gas in the boilers that help to run the system. Boiler emissions from the gas-powered heaters amount to 5 tons of NOx per year. To provide a comparison, the University of Delaware emits 40,000 tons of NOx per year, and the formerly proposed Data Center at the University of Delaware Chrysler plant facility was projected to emit 54 tons per year.³

Even without a full understanding of the DEDO offsets, we conclude that the harmful effect of sending 5 tons of NOx into the environment is dwarfed by the successful re-use of thousands of tons of poultry waste that would otherwise be spread onto farms and super load our waterways with unnecessary organic material. However, before a permit is granted, we urge that the applicant be required by DNREC to submit a more complete application, including safety responses to the handling of dimethyl ether (DME), an unusually volatile material. DME, as you know, is both a health and safety hazard; its use could lead to fires and explosions, and its accidental release into the atmosphere can promote ozone formation. Additional safety data should be included in a revised application. In particular, the League looks forward to the following additional or expanded information:⁴

- page 7, Air. Include the pollutants CO₂, CH₄, CH₄O and other VOCs, as well as SO₂ and NOx
- pages 10, 11, Part 5.1 a, c, f. Please expand on responses, including how DME would be handled; its dangers; an MSDS for DME is also needed.
- page 13, Part 6A, 6.1 (list pollutants, list new total emissions), 6.2, 6.3, 6.4. A description of control measures regarding DME is essential.

In addition to the need for DNREC to supply adequate public information regarding offset credits, DNREC ought to require that the applicant:

- modify the application to explicitly include process solvents; [see attachment for more detail].
- correct typos relative to section numbers. For example, in both Sections 5 and 6A, comments within those sections incorrectly refer to earlier sections;
- fill in the final column labeled "offset sufficiency" in the Coastal Zone Environmental Impact Offset Matrix in the appendix.

The League requests that the record be left open for additional public comment.

³ Greenhouse Gas Emissions, <http://archive.delawareonline.com/assets/pdf/BL212559929.PDF>

⁴ Application for a Coastal Zone Act Permit, Green Recovery Technologies LLC, Aug.22, 2014 <http://www.dnrec.delaware.gov/Admin/CZA/Lists/Coastal%20Zone%20Act%20Application%20Status/Attachments/23/GRT%20CZA%20Permit%20Application.pdf>

ATTACHMENT: COMMENTS ON THE GRT COASTAL ZONE PERMIT APPLICATION AND THE NEED TO IMPROVE THE PERMIT APPLICATION FORM

Comments related to suggested changes in the Permit Application Form are shown in red.

The League's greatest concern on reading the Green Recovery Technology, LLC (GRT) permit application is that it fails to mention the dimethyl ether (DME) solvent, which poses both a health and safety hazard, including the possibility of fires and explosions, and the environmental risk of a substantial emission of an ozone causing volatile organic compound (VOC). The DNREC Application for a Coastal Zone Act Permit⁵ PART 5, **PROJECT OPERATIONS** (Page 9), reads in part as follows, with bolding and italics added for emphasis:

- 5.1 *Describe the characteristics of the manufactured product and all the process and/or assembly operations utilized* by the proposed project. Include in the description (use attachments if necessary):
- a. *the raw materials, intermediate products, by-products and final products and characteristics of each. Review any materials' risk of carcinogenicity, toxicity, mutagenicity and/or the potential to contribute to the formation of smog. Provide material safety data sheets (MSDS) if available;*
 - c. *the nature of the materials mentioned above in 4.1(a)⁶ as to whether or not the materials require special means of storage or handling;*
 - f. *list the size and contents of any anticipated aboveground or underground storage tank systems that may be constructed or utilized in support of facility operations;*

The failure to mention DME and its properties could have been because GRT considers the solvent proprietary and did not want its identity to be made public, but that could have been handled by redaction in the public record. **Another problem is that the permit application doesn't explicitly ask for the amounts, properties and leakage rates of solvents used – although it should.** DME is a VOC that, in combination with NOx and sunlight, can produce ozone and smog. It also has a wide range of flammability and explosion limits when mixed with air, compared with other organic compounds, with a Lower Explosive Limit (LEL) of 3.4%

⁵ Application for a Coastal Zone Permit, <http://www.dnrec.delaware.gov/Admin/CZA/Documents/CZA%20Permit%20Application.pdf>

⁶ This is a typographical error in the DNREC application: this should be 5.1(a).

in air by volume and an Upper Explosive Limit (UEL) of 27.0%.⁷ It requires special storage and handling. League members were assured by Kenneth Laubsch that it would receive that treatment during their plant visit, but there is no evidence of it in the application.

Dimethyl ether is used as a solvent in the chemical industry, but is very volatile, with a boiling point of -24.8° C and a vapor pressure at 20° C or 68° F of 5 atmospheres; it has a liquid density of 0.73 relative to water. League members were told that the 1000-gallon above-ground DME storage tank would be charged with 850 gallons (2.6 tons) of the liquid solvent, and that the expected process loss rate was about 10 gallons (about 61 pounds) per year.

PART 6A ENVIRONMENTAL IMPACTS – Air Emissions (Page 11) reads in part as follows, with bolding and italics added for emphasis:

6.1 *Describe project emissions ...*

6.2 *Describe how the emissions change in the event of a mechanical malfunction or human error.*

6.3 *Describe any pollution control measures to control emissions to be utilized to control emissions to the levels indicated above in 5.1.*⁸

6.4 Show evidence that applicant has, or will have, the ability to maintain and utilize this equipment listed in 5.3⁹ in a consistently proper and efficient manner ...

The expected DME emissions are not in the application, nor is it acknowledged that there is the possibility of the loss of most or all of the DME in the worst possible case. The control measures were not described in the application, though League members were shown sprinkler nozzles around the DME storage tank for water to be sprayed in case of a fire, and told in person by Mr. Laubsch that he had discussed what was to be done in case of a fire with the local fire chief, and that several safety valves would be closed to minimize DME leakage in case of an emergency.

Mr. Laubsch has expertise in a number of fields essential to operating the GRT facility whose technology, if here proven safe and effective, holds the promise of processing large quantities of waste into bio-fuel and feed grade protein. The League of Women Voters of Delaware would like to see the GRT technology widely used to convert a large amount of chicken

⁷ **Lower and Upper Explosive Limits for Flammable Gases and Vapors (LEL/UEL).** At: [https://www.mathesongas.com/pdfs/products/Lower-\(LEL\)-&-Upper-\(UEL\)-Explosive-Limits-.pdf](https://www.mathesongas.com/pdfs/products/Lower-(LEL)-&-Upper-(UEL)-Explosive-Limits-.pdf). The difference between the LEL and UEL is expected to increase with increasing temperature, pressure and vessel size.

⁸ This is a typographical error in the DNREC application: this should be 6.1.

⁹ This is a typographical error in the DNREC application: this should be 6.3.

waste separated into useful biodiesel fuel and protein for aquaculture, as GRT proposes. The permit application in its present form, however, is incomplete. The DNREC application form should be modified to explicitly include process solvents and to eliminate typographical errors, and the answers to the improved parts properly completed by GRT before a permit to operate is issued.



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We are dismayed that that the DNREC Secretary has judged that the application submitted by Green Recovery Technologies (GRT) is sufficiently accurate and detailed to be acceptable. We have two critical concerns: 1) that the procedures outlined in the document "Regulations Governing Delaware's Coastal" be adhered to in every respect whatsoever, because a failure to do so would set a precedent that would undermine the future value of this law in protecting this vital resource, and 2) that the Secretary of DNREC makes it clear that dnrec will play whatever role it can under the laws governing it to protect the health and safety of those who live and recreate in the Coastal Zone.

Regarding the first issue: The very fact that all the processing equipment was constructed within the building before a Coastal Zone Permit was obtained is of concern because the Regulations seem to describe a process in which a series of checks should ensure that all steps in the process are carried out in a specified order. A first step requires that DNREC receive proof that the property to be occupied by the development is appropriately zoned for the use and that the project is in compliance with the comprehensive development plan in effect for the area in which the facility will be built. Statements to that effect are found on page 6, Evidence of Local Zoning and Planning Approval. This document was not signed by GRT. Examination of the document submitted in lieu of it (Att. 02) clearly indicates that there was a question as to whether that second criterion was met. We understand that GRT may have submitted a revised plan that

We are troubled that DNREC has judged the application submitted by Green Recovery Technologies (GRT) to be acceptably complete and accurate. We have two critical concerns: 1) that the procedures outlined in the document "Regulations Governing Delaware's Coastal" be adhered to in every respect, because failure to do so would set a damaging precedent and 2) that the Secretary makes it clear that DNREC will employ all means legally available to protect the health and safety of those who live, work and recreate in the Coastal Zone.

Regarding the first issue: The fact that all the processing equipment was constructed before a Coastal Zone Permit was obtained suggests that some aspects of the Regulations may not have been adhered to. The first step requires that DNREC receive proof that the property occupied by the development is appropriately zoned for the use and that the project is in compliance with the comprehensive development plan for the area in which the facility will be built.

A form delineating these requirements (page 6) was not signed by GRT. The document submitted in lieu of it (Att. 02) clearly indicates a question as to whether the second criterion was met. Nothing in the file indicates that it has been met.

Furthermore, it is our understanding that the Land Use Department should not grant permits for significant changes to a facility until they are sure that the Coastal Zone Permit has been signed. Permits seem to have been granted, suggesting that the specified process was not followed.

Finally, the "Certification by Applicant" signed by GRT's CTO requires that all information submitted must be true and complete. There are clearly cases in which the answers do not meet these criteria. As one example, on p. 7, asked about environmental impacts to the air, the response is that greenhouse gas emissions "are limited to oxides of sulfur and nitrogen". This is not true. A response in an

obviates this concern but, because there is no record of this in the file available to the public, we remain concerned as to whether the law is being properly followed.

Furthermore, it is our understanding that the Land Use Department should not grant permits for significant changes to the building or equipment housed therein until they have been assured that the Coastal Zone Permit has been granted. Since it appears that permits were granted, we are led to believe that, in some way, the prescribed process was not properly followed. If so, that concerns us greatly.

Finally, the "Certification by Applicant" signed by the Chief Technical Officer of GRT clearly states that, under penalty of perjury, that all the information contained in the application is true and complete. There are many cases in which the answers do not meet these criteria.

One example is on p. 7 where, asked about environmental impacts to the air, the response given is that greenhouse gas emissions "are limited to oxides of sulfur and nitrogen". This statement is not true, as shown by an answer in the first attachment, where it is reported that several tons of carbon dioxide and smaller amounts of methane along with other ghg's will also be emitted. Other examples will be submitted later and/or in the next section. It is disturbing that the Secretary found this application satisfactory in view of such inaccurate or incomplete answers.

Our second concern is that insufficient attention was paid in the application to potential dangers from dimethyl ether, the solvent used to extract the lipids (from animal fat) in this process. The facts that this solvent is volatile, extremely flammable and can explode on exposure to high heat or a spark even when the levels of solvent vapor are very low, is simply not made clear in the application. An MSDS (Materials Solvent Data Sheet), which would have given this information, was required for this application, but was not supplied.

We also note that, because the solvent is only referred to as "fractionation gas" or "liquified gas", this permit would allow any gas, however toxic, explosive or otherwise dangerous to be employed. It is imperative that any final permit contain disclosure of the exact kind and quantity of material used.

It is of further concern that, in those places where the applicant was asked about dangerous aspects of the project and what steps would be taken to minimize damage in case of human error or equipment failure, no relevant response was given. In view of the fact that there are many homes within 2000 feet of the facility and some less than 1000 feet away, as well as a park/playground in the near vicinity, make these issues particularly troubling.

We are not saying that we have evidence that this operation will be dangerous. Rather, we are concerned that evidence (that could be understood by the general public) has not been provided here.

Although there are scientists, including chemists, in our Conservation and Executive Committees, none of us would claim to have the expertise to decide whether all safety precautions are in place based on the drawings provided in the application.

We request a continuance of the comment period for an additional 30 days. At that time, if all the questions and comments made tonight have not been answered in a satisfactory way, and those answers provided to the public in a timely and transparent way, we request that this application be denied.