



STATE OF DELAWARE
**DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL**
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DOVER, DELAWARE 19901

Office of the
Secretary

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Secretary's Order No. 2018-W-0021

Re: Application for a Sludge Storage Permit of Mountaire Farms of Delaware, Inc. for its Millsboro Poultry Processing Complex at 29005 John J. Williams Highway, Millsboro, Sussex County

Date of Issuance: March 28, 2018
Effective Date: March 28, 2018

Pursuant to 7 *Del. C.* §§ 6003, 6004(b), 6006(4), and other relevant authority, the Department of Natural Resources and Environmental Control (“Department”) issues this Order, approving a permit to allow Mountaire Farms of Delaware, Inc. (“Mountaire”) to store sludge at its Millsboro poultry processing complex, located at 29005 John J. Williams Highway, Millsboro, Sussex County (“Facility”). The Delaware Regulations controlling the storage of sludge are provided in the *Guidance and Regulations Governing the Land Treatment of Wastes*, 7 *Del. Admin. C.* § 7103, and more specifically, in Part III, B, *Land and Treatment of Sludges and Sludge*, § 7103-100 to 161 (“Regulation 7103”).

Background

On October 4, 2017, Mountaire submitted an application to the Department's Division of Water, Surface Water Discharges Section ("SWDS") for a permit to store liquid sludge from its onsite wastewater treatment plant ("WWTP") in an abandoned lagoon at the Facility. The Department provided public notice of the permit application on October 18, 2017.

On December 28, 2017, Mountaire submitted an amended permit application, which added a proposal for the storage of dry sludge and provided details for the proposed groundwater monitoring system ("Application"). The Department provided public notice of the amended permit application on December 31, 2017, and announced that the Department would hold a public hearing on January 23, 2018. The notice further indicated that the Department would accept written public comments until the conclusion of the public hearing, and that the Department would consider all comments received regarding the October application.

On January 23, 2018, the Department conducted a public hearing on the Application at the Millsboro Town Hall, presided by the Department's hearing officer, Robert P. Haynes, Esquire. Approximately sixty-five people attended the public hearing.

Following the public hearing, Mr. Haynes sought the SWDS's technical assistance and requested that the SWDS respond to the public comments and make a recommendation on the Application. In response, the SWDS provided its Technical Response Memorandum ("TRM"), which responded to the public comments. In the TRM, the SWDS concluded that the Department should approve the Application because it satisfied the Department's regulatory requirements for sludge storage, and because the sludge storage is "necessary to improve the efficiency of Mountaire's Millsboro WWTP and ultimately improve the quality of spray irrigated wastewater." The TRM included a draft sludge storage permit.

Mr. Haynes prepared the attached Hearing Officer's Report ("Report"), which set forth the procedural history, summarized and established the record of information ("Record") relied on in the Report, and provided findings of fact, reasons, and conclusions that recommend that the Department approve the Application and issue a permit to Mountaire based upon the SWDS's draft sludge storage permit. The Report also addressed the public comments and concluded that the public comments did not warrant the Department's denying the permit, or delaying the permit decision to receive more information.

Discussion

The Application seeks a permit to transfer excess sludge that accumulated in the WWTP's two anaerobic treatment lagoons to a previously abandoned storage lagoon at the Facility. Mountaire proposes to retrofit the abandoned storage lagoon and create an onsite sludge storage area ("SSA"). The proposed retrofit includes: clearing the SSA, preparing the SSA's soil surface, installing an artificial liner over the prepared soil surface, and installing groundwater-monitoring wells. These steps will allow the SSA to meet the Department's sludge storage requirements set forth in Regulation 7103. The purpose of the sludge storage at the SSA is to allow the dewatering of the liquid sludge, and the short-term storage of dry sludge for off-site removal.

Mountaire seeks to store the sludge onsite to expedite the sludge removal from the anaerobic lagoons, which will improve the efficiency of the WWTP and improve the WWTP's ability to produce clean spray effluent in compliance with the Department's limits. Because landfills do not accept liquid sludge, Mountaire can only dispose of dry sludge. Currently, the sludge that contains liquid will need to be dewatered prior to offsite disposal. In addition, due to the number of load restrictions at facilities accepting the dry sludge, Mountaire is currently limited to removing five to six truckloads of dry sludge per day. The proposed storage and dewatering of liquid sludge will expedite that removal process and allow Mountaire to remove up to thirty truckloads of dry sludge per day from the anaerobic lagoons for storage in the SSA and/or subsequent offsite disposal. Mountaire will continue to remove dry sludge from the SSA until all of the sludge is removed from the site.

Mountaire intends to transfer liquid sludge to Geotubes – dewatering “socks” – in the SSA. Each Geotube is capable of holding approximately four hundred tons of sludge, and Mountaire has demonstrated that the SSA can hold at least ten Geotubes. Mountaire also proposes storing dry sludge in the SSA in spaces next to the Geotubes. Mountaire does not plan any long-term sludge storage at the SSA, but instead proposes to use the SSA for the short-term storage and dewatering of the sludge and subsequent proper offsite disposal.

The Record provides the Department with all the necessary information required to issue this Order, which approves a sludge storage permit based upon the Application's design for the SSA and the proposed sludge storage in the SSA. The Department's permit will include reasonable terms and conditions to ensure protection of the public health and the environment from risks from the stored sludge. Any deviation from the permit conditions may result in enforcement action.

In issuing this Order, the Department finds that the Application meets the regulatory requirements for sludge storage. Moreover, the Application provides a method that will remove excessive sludge from the two anaerobic lagoons more expeditiously, which will improve the efficiency of the WWTP and ultimately improve the quality of the wastewater effluent. The Application demonstrates that the SSA's design minimizes any adverse impact on public health and the environment by meeting the requirements of Regulation 7103, which includes, but is not limited to, soil permeability, groundwater monitoring, restricting public access, odor, flooding, and stormwater management.

Conclusion

The Department concludes and directs the following:

1. The Department has jurisdiction under *7 Del. C.* §§ 6003, 6004, 6006(4) and other relevant authority to make a final determination on the Application after holding a public hearing, considering the public comments, and other information in the Record;
2. The Department provided proper public notices of the Application and the public hearing pursuant to *7 Del. C.* § 6004(b);
3. The Department considered all timely and relevant public comments in the Record as established in the Report and the SWDS TRM prior to issuing this Order as its final decision;
4. The Department considered the Report and the SWDS TRM in further support for this decision;

5. The Record supports approval of the Application and the SWDS's issuance of the Permit based upon the Draft Permit, which includes reasonable conditions to protect the environment and public health;
6. The Department shall publish this Order on its internet site, and the SWDS shall provide legal notice of this Order in the same manner that the SWDS provided legal notice of the Application; and
7. This Order has been approved at this time to coordinate with Mountaire's estimated completion of the onsite sludge storage area.



Shawn M. Garvin
Secretary

HEARING OFFICER'S REPORT

TO: The Honorable Shawn M. Garvin
Secretary, Department of Natural Resources and Environmental Control

FROM: Robert P. Haynes, Esquire
Senior Hearing Officer, Office of the Secretary
Department of Natural Resources and Environmental Control

RE: **Mountaire Farms of Delaware, Inc.'s Amended Application for a Sludge Storage Permit for its Millsboro Poultry Processing Complex at 29106 John J. Williams Highway, Millsboro, Sussex County**

DATE: February 23, 2018

I. PROCEDURAL HISTORY

This Report considers the Record established for the Secretary of the Department of Natural Resources and Environmental Control ("Department") on Mountaire Farms of Delaware, Inc.'s ("Applicant") amended application ("Application")¹ to store sludge from its wastewater treatment plant ("WWTP") serving its Millsboro Poultry Processing Complex, 29106 John J. Williams Highway, Millsboro, Sussex County ("Facility").

The Department's Division of Water, Surface Water Discharges Section ("SWDS") received the Application on December 28, 2017, and provided public notice² of it. The public notice re-opened the public comment period³ until the conclusion of the January 23, 2018 public hearing at the Millsboro Town Hall, 322 Wilson Highway, Millsboro. I presided over the public hearing, and approximately sixty-five persons attended.

Following the public hearing, I requested the SWDS to provide their expert recommendation on the Application and to respond to the public comments.

¹ The Application amended an October 4, 2017 application, which the SWDS provided public notice on October 18, 2018. The SWDS received public comments based on this public notice.

² In the December 31, 2017 issues of *The News Journal* and *The Delaware State News*.

³ The Department notice indicated that it would include comments submitted on the October 4, 2017 application

The SWDS provided the attached Technical Response Memorandum (“TRM”), which recommends that the Department issue the Applicant a permit based upon a draft permit (“Draft Permit”) provided with its TRM. The SWDS recommended the Draft Permit because the Applicant's plans for the design of the proposed sludge storage area (“SSA”) met the Department's regulatory requirements. The SSA would use land within an abandoned WWTP spray irrigation storage lagoon, which the Applicant would retrofit to meet the Department's regulatory requirements for sludge storage. This Report recommends that the Department approve the Application based upon the Record established below, and direct the SWDS to issue the Applicant a permit based upon the Draft Permit.

II. SUMMARY OF THE RECORD⁴

The Record includes the following: 1) the documents introduced as exhibits at the public hearing, 2) all written public comments timely received, 3) the verbatim transcript of the public hearing, and 4) this Report, the TRM, and the documents identified in this Report and the TRM.

A. Summary of the Public Hearing Record

I opened the public hearing with introductory remarks and provided a presentation that set forth the public hearing's agenda and procedures. I introduced Brian Churchill, SWDS' Environmental Scientist, who provided the following documents as exhibits:⁵

DNREC Exhibit 1-The October 4, 2017 application,
DNREC Exhibit 2-The legal notice of the October 4, 2017 application in October 18, 2017 *The News Journal* and the *Delaware State News* that opened the public comment period on the October 4, 2017 application,
DNREC Exhibit 3- The December 28, 2017 amended Application,
DNREC Exhibit 4-Public notices published in the December 31, 2017 issues of *The News Journal* and *The Delaware State News*, and on the State of Delaware on-line public meeting calendar of the amended Application and the January 23, 2018 public hearing, and

⁴ This summary of Record does not determine any fact.

⁵ The Department provides documents for the record at the public hearing solely to assist the public in making public comments. The Department does not have a burden of proof to develop a record during the public hearing.

DNREC Exhibit 5- Timely submitted written public comments.

Mr. Churchill also provided a slide presentation on the Application, which is DNREC Exhibit 6. The presentation provided an overview of the WWTP's generation of wastewater from the Facility's chicken processing operations and the sanitary sewage from the Facility's restrooms. He said that sanitary sewage represented approximately one percent of the WWTP's average daily flow of two million gallons per day.

He described the WWTP's treatment process, beginning with the removal of fats in the wastewater, and then the treatment process that lowers nitrogen by breaking down the organic waste of solids from the chicken processing. He described the third step in the treatment process as clarifying the wastewater by settling the solids. He indicated that the final step is to disinfect the wastewater to kill any pathogens. The Applicant stores and sprays the treated wastewater on its nearby spray irrigation areas.

Mr. Churchill indicated that the treatment process accumulates sludge, which the Applicant proposed to remove for short-term on-site storage at the SSA. He stated that the Applicant's sludge removal maintenance was insufficient, which caused an upset in the treatment process that caused the treated wastewater to contain high levels of nitrogen and bacteria. He stated that the Applicant corrected the high bacteria level, but that the nitrogen level, while improved, remains excessive because accumulated sludge prevents proper treatment. Mr. Churchill explained that the Applicant proposed large-scale sludge removal as soon as possible to restore the treatment efficiency of the anaerobic lagoons and reduce the nitrogen levels in the treated wastewater.

Mr. Churchill displayed aerial photographs that identified the WWTP and the proposed SSA. He described the Applicant's current removal of sludge from the lagoons to landfills that

can only receive five to six truckloads per day. He indicated that the Applicant is seeking additional sludge disposal locations to increase the sludge removal.

He said that the lagoons contain liquid sludge, but that landfills require de-watered sludge. Consequently, he explained that the Applicant proposed storing liquid sludge at the SSA in de-watering socks, which he described as fabric-like porous material that are filled with liquid sludge and allows the liquid to drain out until there is dry sludge that the landfills accept. He indicated that the Applicant proposed to store, on a short-term basis, dry sludge mixed with lime prior to its removal off-site.

Mr. Churchill identified the proposed SSA as using an abandoned WWTP lagoon that was capable of receiving thirty truckloads a day of sludge. He indicated that the Applicant proposed to remove the stored sludge as quickly as possible to landfills. He said the SSA has an existing wall around its perimeter from the lagoons walls. The Applicant would prepare the soils to meet the Department's permeability requirements based upon acceptable results from soils testing. He stated that the Applicant proposed to install a thick polyvinyl chloride ("PVC") liner on top of the prepared soils in the SSA. He explained that the SSA would be sloped to flow drained liquids from the sludge to a sump pump for pumping back to the WWTP for further treatment.

Mr. Churchill described the amended Application's changes from the original application reflected adding dry sludge storage. Mr. Churchill indicated that the Applicant proposed to apply lime to the stored dry sludge as needed to control odors. He said the amended Application also provided details on the proposed groundwater monitoring.

Mr. Churchill displayed the Facility's monitoring well locations and noted the proposed three groundwater wells, with two wells installed downgradient and one upgradient of the SSA.

He said that the groundwater flows to the southeast from the storage area. He indicated that the Department did not anticipate any loss of nutrients from the SSA, and that the monitoring wells would detect any discharge that would impact the groundwater's nitrogen level beyond its background level.

The Applicant's counsel, Mr. Elio Battista, Jr., of the law firm of Parkowski, Guerke and Swayze, spoke. He explained that the Application seeks to store the sludge in the proposed SSA, where liquid sludge would be de-watered and removed as dry sludge off-site. He indicated that the removal of the sludge from the aerobic lagoons would increase the treatment time and capacity of the lagoons. He stated that the Applicant retained Reid Engineering Company. He provided Mr. John H. Reid, P.E.'s written statement, which I marked as Applicant Exhibit 2.

Mr. Battista explained that the Application complied with all applicable statutes, regulations and ordinances for the proposed installation of an artificial impervious liner in addition to the soil compacted liner. He further stated that the Application contained analytical testing data, subsurface exploration data, a geo-textile de-watering plan, engineering reviews, a groundwater monitoring plan and applicable county approvals. He stated that the Application was to prevent, minimize and mitigate any potential risks of harm and to protect the public health, welfare and the environment. Mr. Battista also provided his written statement, which is marked as Applicant Exhibit 1.

Mr. Reid's statement described how the Applicant proposed to retrofit an abandoned spray storage lagoon into the SSA. He explained that the Applicant retained Reid Engineering Company to review Terra Renewal's proposed design for the SSA. Mr. Reid's statement indicated that the Application was part of the Applicant's plan to remove accumulated sludge in the two existing anaerobic lagoons for disposal off-site.

He explained that the proposed SSA would be located on the northeast corner of the WWTP and just south of the old oxidation ditch basin. Mr. Reid's statement indicated that the Applicant was using Terra Renewal to remove approximately six thousand dry metric tons of sludge solids from the two existing anaerobic lagoons. His statement indicated that most of the sludge solids in the lagoons are in a thickened liquid form with a water content of approximately seventy-four percent. His statement explained the proposed placement of the fluid solids in Geotubes, which he described as static sludge storage de-watering units or 'socks'. He indicated a Geotube had a grooved footprint of approximately 200' long and 42' wide. He stated that each Geotube could hold four hundred dry tons of sludge. He described the Geotubes as draining the liquids in the sludge through the fabric, and retaining the solids. He stated that the SSA would flow the drained liquids from the de-watered sludge in a drainage swale down to a sump pump for pumping back to the WWTP for treatment.

Mr. Reid's statement also indicated that some of the accumulated sludge was too concentrated, or solid, for pumping into the Geotubes. Consequently, the Applicant proposed excavating this sludge, mixing it with lime for odor abatement, and transferring it to the SSA next to the Geotubes prior to its removal offsite. His statement described how the liquids from the sludge would be collected and returned to the WWTP for treatment.

B. Post-Hearing Record

I requested SWDS' expert assistance on the Application and the public comments. The SWDS provided the attached TRM, which recommended that the Department approve the Application and issue a permit based upon a Draft Permit. The TRM reviewed and responded to the public comments and recommended the issuance of the Draft Permit. The TRM indicated the Application complied with the Department's regulatory requirements set forth in the *Guidance*

and Regulations Governing the Land Treatment of Wastes, 7 DE Admin. Code 7103

("Regulation 7103").

The TRM recommended approval of the sludge storage at the SSA based upon the Application, subject to the terms and conditions in the Draft Permit that required the SSA to meet the Department's regulatory requirements. The Draft Permit requires that the SSA's soils meet the soil permeability requirements. In addition, the TRM's recommended approval relied on the Application's design for the SSA, which included, in addition to the soil preparation, the installation of a thirty-mill thick impermeable liner between the soil layer and the stored sludge. The TRM also described how the liquid sludge will be stored for de-watering in Geotube fabric containers until de-watered to dry sludge and removal off-site. The TRM and Draft Permit require that no particular load of sludge in the SSA should remain stored in the SSA for longer than two years. The Department expects that the Applicant will remove the stored sludge as soon as possible to make room for additional storage until the Applicant has removed the excess sludge from the WWTP.

The SWDS recommends approval of the groundwater well monitoring system using one upgradient well and two downgradient wells that will report nitrogen levels in the groundwater and should indicate any leaks from the SSA. The Facility already has a groundwater monitoring well system and these additional wells will be required specifically to monitor any possible releases from the SSA.

The Applicant provided the SWDS with updated information on February 16, 2018 and February 23, 2018, which confirmed the Application's proposed construction and operation of the SSA to store sludge from the WWTP consistent with the Department's regulatory requirements.

III. FINDINGS OF FACT

I recommend that the Department find that it has sufficient information in the Record, as established above, to support its approval of the Application and to direct the SWDS to issue the Applicant a permit consistent with the Draft Permit.

The Department regulates the Facility's WWTP operation pursuant to a Spray Irrigation Permit. The WWTP's treatment process is designed to use two anaerobic lagoons to reduce the level of contaminants in the wastewater to within specified limits prior to spraying the treated wastewater on designated spray irrigation areas.

The two anaerobic lagoons produce sludge that accumulates in the lagoons. The Department defines sludge as "the accumulated semi-liquid suspension, settled solids, or dried residue of these solids that is deposited fromliquid waste in a municipal or industrial wastewater treatment plant...." *Guidance and Regulations Governing the Land Treatment of Wastes. 7 DE Admin. Code 7103* ("Regulation 7103").

The Applicant should remove accumulated sludge in the two anaerobic lagoons periodically as part of routine WWTP maintenance to ensure the two lagoons are able to treat wastewater to meet the WWTP's Department imposed effluent limits in the Spray Irrigation Permit.

The Department approved by permits the Applicant's removal of sludge and its land application to various farm fields in the Agricultural Use Permit and sludge removal to landfills in sludge transportation permits.

The two anaerobic lagoons experienced problems meeting the Department's effluent limits, and the NOV describes the problems in detail. The Applicant identified excessive sludge

in the two anaerobic lagoons' treatment as the likely cause for the WWTP's inability to meet the treatment limits in the Spray Irrigation Permit.

The Applicant and the Department are still investigating the reasons why too much sludge accumulated in the two anaerobic lagoons, but the Applicant identified the failure of the WWTP's operators to properly schedule sludge removal. The Applicant replaced its WWTP operators and retained outside consultants to assist in the planning to restore the two anaerobic lagoons to proper sludge levels. The Applicant's experts and the SWDS' experts agree that the removal of the excessive sludge, along with other maintenance activities, should restore the WWTP's treatment process to meet the Department's effluent limits.

The Applicant will pump the liquid sludge from the two anaerobic lagoons into Geotubes at the SSA, with each Geotube capable of holding up to four hundred dry metric tons. The Geotubes are 200 feet long by 42 feet wide and the Applicant's drawing shows their placement in the SSA, which also has available space for holding the dry sludge. Based on the drawing, the SSA could hold at least 4,000 tons in Geotubes and have space available to store dry sludge next to the Geotubes.

The SWDS expects the de-watering to take up between three to six months depending on weather conditions and the water content of the liquid sludge. Once the liquid sludge becomes dry sludge from the dewatering, then the Applicant will remove the sludge from the SSA. The Draft Permit does not allow any long-term storage of any sludge, which Regulation 7103 defines as "storage" of more than two years for any load of sludge. Instead, the sludge will be stored and removed, thereby creating storage space for additional sludge until the completion of the removal of the excess WWTP sludge. This removal should improve the WWTP treatment process, which already has experienced improved treatment since the removal began. The WWTP continues to

operate and apply treated wastewater via spray irrigation to the approved spray fields based upon the Spray Irrigation Permit, which remains in effect and is not the subject of this proceeding.

The Department's approval of the Applicant will provide a faster method to remove the excessive sludge in the two anaerobic lagoons, which should improve the WWTP's treatment process to meet the Department's effluent limits in the Spray Irrigation Permit. The Application's approval will allow the Applicant to pump liquid sludge to the SSA twenty-four hours a day and seven days a week into the Geotubes, and to excavate dry sludge by trucking it to the SSA. The Applicant also will continue to remove dry sludge by trucks to offsite locations.

The Applicant's consultant, Mr. Reid, in his prepared statement, set forth the steps that entails site preparation of the proposed SSA to meet the Department's requirements. These steps include placing a compacted soil layer to achieve the Department's permeability requirements for the soil in the SSA and installing a thirty-mill thick PVC liner over the soil layer.

The SWDS reviewed the Application and found that its design would meet the Department's regulatory requirements. If the Department issues a permit, the SWDS regulatory role will also monitor the SSA's construction to ensure it complies with the permit and the sludge stored also complies with the permit. The SWDS agrees that faster sludge removal of the excessive sludge in the two anaerobic lagoons represents a reasonable method to restore the WWTP's ability to treat wastewater to meet the Department's effluent limits. The SWDS' Draft Permit sets forth reasonable terms and conditions for regulating the construction of the SSA and its use to store sludge in a manner consistent with the Department's Regulation 7103. The Applicant provided updates on its construction of the SSA that showed that the SSA would comply with the Department's regulatory requirements and that sludge could be stored at the completed SSA.

The SWDS considered the public comments and provided responses to them. The public comments raised issues with the proposed sludge storage and the proposed SSA. I recommend that the Department find that the public comments do not support any change in the amended Application and that the Draft Permit's terms and conditions protect the environment and public health.

IV. REASONS AND CONCLUSIONS

Based upon the above, I recommend that the Department approve the amended Application and direct the SWDS to issue the Applicant a permit to store sludge in the SSA, subject to the Draft Permit's reasonable terms and conditions.

The recommended approval of the Application considers the public comments, which sought changes to or the denial of the Application. I summarize the public comments as follows:

1) the Department should deny the Application because it fails to meet the Department's regulations for protecting the groundwater from contaminants in the stored sludge; 2) the Department should require Sussex County permit for the SSA; 3) the Department should shutdown or slow down Applicant's discharges from the WWTP until the WWTP meets the effluent limits in the Spray Irrigation Permit; 4) the proposed on-site sludge storage could cause odors, and 5) the Department should deny the Application and require the Applicant to continue and expand its current method of sludge removal by excavation and trucking sludge to offsite locations. Upon consideration of the above-summarized public comments, I recommend concluding that the public comments do not support any denial or change to the Application for several reasons.

On the first issue raised by the public comments, namely concerns with the possible contamination of groundwater, I conclude that the public comments do not support denial of the

Application or any changes to the SWDS' Draft Permit. The Draft Permit will authorize sludge storage based upon the Application and the completion of the SSA that complies with Regulation 7103. The Draft Permit requires that the SSA must comply with Regulation 7103.

The second issued raised by the public comments claims that Sussex County should issue a permit for the SSA. The Department has no authority over Sussex County's permitting of matters within Sussex County's exclusive authority to regulate as a local governing body. The Department reasonably relies upon information in the Record that Sussex County's permitting official's position provided to the Department in response to the public comments. This information indicates that Sussex County determined that the Applicant does not need any Sussex County permit for the SSA. The SWDS indicates that the Department has all the information it needs in the Record to issue a sludge storage permit based upon the Draft Permit that will allow sludge storage consistent with Regulation 7103.

The third issue raised by the public comments seeks to require the Applicant to reduce or even cease Applicant's chicken processing and/or use of its WWTP until the WWTP's problems are fixed⁶. The Department considers the Application for a sludge storage permit, and determines if it meets the Department's regulatory requirements in Regulation 7103. In contrast, the Department regulates the WWTP's operations in the Spray Irrigation Permit that the Department issued in 2017 and this permit remains in effect for five years. The Applicant's stated purpose of the Application is to allow faster sludge removal from the WWTP's lagoons, which the Applicant proposed as one remedy for the WWTP's treatment problems. I agree that approval of the Application is important to restoring the WWTP's treatment process faster than the current sludge removal method.

⁶ The closure of the WWTP likely would result in the Facility's closure.

The fourth issue raised in the public comments concerns possible odor from the stored sludge. The Applicant proposed odor control measure when odors are detected from the stored sludge and I recommend finding that these measures that include adding lime to the sludge or other odor control substances are reasonable. I recommend that the Department allow the Applicant to control odor based upon best management practices. The risk of odor does not support denial of the permit application, but it supports permit conditions that require odor control and the Draft Permit contains such conditions.

The fifth issue the raised in the public comments seeks to deny the permit application and instead propose that the Applicant continue to remove sludge by trucks and increase the truck removal. I recommend that the Department reject this proposal because the current truck removal is limited to dry sludge. The Application proposed removing the liquid sludge for de-watering before its truck removal off-site. The public comments fail to account for the removal of sufficient liquid sludge to allow the two anaerobic lagoons to operate properly. More importantly, pumping the liquid sludge to the SSA for de-watering is a reasonable method to dry the liquid sludge for removal to landfills, which do not accept liquid sludge. Thus, the removal of liquid sludge justifies the approval of the Application as a reasonable and well-supported method to remove far more sludge than currently removed.

The Applicant proposes to pump the liquid sludge twenty-four hours a day, seven days a week. This provides a faster method than any truck removal. Moreover, the truck removal of dry sludge will continue and may increase if the Applicant finds more landfills willing to accept the sludge under terms acceptable to the Applicant. I conclude that the Record includes support from both the SWDS' and the Applicant's experts for the Application, and its proposed solution to the WWTP's excessive sludge problem.

In summary, I recommend that the Department issue an Order that approves the Application and directs the SWDS to issue a sludge storage permit to the Applicant based upon the Draft Permit. I recommend that the Department enter the following as conclusions and ordering paragraphs.

1. The Department has jurisdiction and authority to issue the Applicant a sludge storage permit based upon the Application and other information in the Record that the Applicant provided to the SWDS in support of the Application,
2. The Department provided public notice of the Application and the January 23, 2018, public hearing in a manner required by the law,
3. The Department held a public hearing and considered all timely submitted and relevant public comments in making its decision,
4. The Department directs the SWDS to issue a permit based upon the Draft Permit and to monitor the SSA construction and sludge storage to ensure that it complies with the permit's reasonable terms and conditions and with the Department's laws, regulations and other permits, and
5. The SWDS shall publish legal notice of this Order as a final agency action on the Application in the same manner as the SWDS published public notice of the Application, and the Department shall publish the Order on the Department's web site.



Robert P. Haynes, Esquire
Senior Hearing Officer



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MEMORANDUM

TO: Robert P. Haynes, Esq., Senior Hearing Officer, Office of the Secretary

THROUGH: Virgil Holmes, Director *VH 3/2/18*
 Bryan A. Ashby, Program Manager *BAA 2/28/18*

FROM: Brian Churchill, Environmental Scientist *BC 2/22/18*

RE: Technical Response Memorandum Regarding the January 23, 2018 Public Hearing on the Amended Sludge Storage Permit Application for the Temporary Storage of Sludge at the Millsboro Mountaire Farms, Inc. Facility

DATE: February 22, 2018

This Technical Response Memorandum (TRM) was prepared at the request of the presiding hearing officer to assist in the completion of the Hearing Officer's Report to the Secretary of the Department of Natural Resources and Environmental Control (Department) and the final decision on issuance of a sludge storage permit for the temporary storage of anaerobic sludge at the Millsboro Mountaire Farms, Inc.

On October 4, 2017, the Department's Division of Water, Surface Water Discharges Section (SWDS), received a permit application from Mountaire Farms, Inc. (Mountaire) to obtain a sludge storage permit under Part III, B. of 7 DE Admin. Code 7103, The Regulations Governing the Land Treatment of Waste (the Sludge Regulations) for the dewatering and temporary storage of an estimated 6,000 dry metric tons of liquid sludge in dewatering socks. As proposed the storage area would be located within the footprint of a former spray irrigation storage lagoon at the Millsboro Mountaire wastewater treatment plant (WWTP), approximately 2 miles east of the Town of Millsboro.

On October 18, 2017 the Department placed a legal notice for the Millsboro Mountaire sludge storage permit application in in the News Journal, the Delaware State News, and on the Department's website.

On December 28, 2017, the SWDS received an amended permit application from Mountaire that included additional information beyond what was submitted in the October 4, 2017 permit application. The amended permit application added a request to store solid anaerobic sludge mixed with lime. Additionally, the amended permit application included language indicating that groundwater monitoring of the storage area would occur as approved by the Department.

On December 31, 2017 the Department placed a legal notice for the Millsboro Mountaire amended sludge storage permit application and notice of a January 23, 2018 public hearing on the permit application in the News Journal, the Delaware State News, and on the Department's website. The Department received several requests for a public hearing and comments on both the original and the amended sludge storage permit applications.

On January 23, 2018 a public hearing was held at the Millsboro Town Hall/Town Center located at 322 Wilson Highway, Millsboro, DE 19966. Approximately 60 members of the public and several members of the press attended the hearing. Several individuals provided comment and raised concerns related to the amended permit application. Several comments made by the public were thoroughly addressed during the hearing and the Department's responses to those questions are available in the hearing transcript. This technical response document will focus on addressing public comments and questions that were not comprehensively answered during the Department's January 23, 2018 public hearing.

1) **J. Meyer/Donna Skibbe's comments on behalf of Protecting Our Indian River beginning at transcript page 23:**

a) Mr. Meyer asked what is all of the material clogging the lagoons?

Water is required for chicken processing. Small pieces of fat, skin, meat, etc. (solids) are removed from the chicken processing wastewater through various processes. While many solids are removed in the beginning of the wastewater treatment process, some solids pass further into the wastewater treatment plant. In 2012 a dissolved air flotation (DAF) unit was installed in the wastewater treatment plant to remove solids, prior to entry into the anaerobic lagoon. Even with the DAF unit, over time solids from the wastewater have continued to accumulate in various lagoons at the WWTP, including the anaerobic lagoons. It should be noted that solids are meant to settle out in various parts of the WWTP as part of the treatment process. However, due to the lack of sludge removal maintenance activities at the Millsboro Mountaire WWTP, the anaerobic lagoons have become full of sludge and are currently ineffective at breaking down certain chemicals of concern in the wastewater. When the anaerobic lagoons are mostly free of solids, wastewater in the anaerobic lagoons undergoes treatment not only more efficiently but also for a longer period of time. The lack of efficiency of the anaerobic lagoons is reducing the quality of spray irrigation wastewater and as a result, it is critical that excess solids in the anaerobic lagoons are removed as soon as possible.

b) He asked if Mountaire had removed solids from the lagoons since January 1, 2015.

Yes, sludge has been removed from various parts of the WWTP since January 1, 2015. However, only relatively small quantities of excess sludge known as waste activated sludge (excess sludge generated in the clarifiers) was removed from the WWTP in 2015 and 2016, and the removal of anaerobic sludge did not occur during this time period. A large quantity of sludge (including anaerobic sludge, waste activated sludge, and sludge from the current wastewater storage lagoon) was removed from the WWTP during the second half of 2017 and removal of accumulated sludge that is located throughout the WWTP continues to date.

c) He asked is there any assurance that the dewatering effort will not result in more nutrients being discharged from the plant.

The primary nutrient of concern in wastewater at the Millsboro Mountaire facility is nitrogen. Continued removal of anaerobic sludge from the anaerobic lagoons is a critical component of increasing treatment and reducing the amount of total nitrogen in the wastewater. The Department has required that the anaerobic sludge storage area meet regulatory requirements for storage liners, in Part III, B. of 7 DE Admin. Code 7103, The Regulations Governing the Land Treatment of Waste, which are in effect for the protection of groundwater during sludge storage activities. Mountaire's sludge storage liner proposal meets Department requirements. The Department's draft permit would require that liner(s) be maintained and inspected and any compromised areas be repaired or replaced as needed. Any liquids collected in the storage area will be pumped into the WWTP for treatment. Additionally, Mountaire has recently installed a network of groundwater monitoring wells surrounding the storage area to identify any increase in nutrients in groundwater above background levels.

d) He commented that Mountaire could have stopped the spray irrigation.

This permit application is specific to Mountaire's request to store sludge in accordance with 7 DE Admin. Code 7103, The Regulations Governing the Land Treatment of Waste. Operation of the wastewater treatment facility and spray irrigation at Mountaire is permitted through the Department's Ground Water Discharges Section (GWDS) in accordance with 7 DE Admin. Code 7101, Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems and is, therefore, outside the scope of this sludge storage permit application.

e) He asked about the soil testing that showed from one to four feet of sand in the proposed storage area, and that the soil table showed a layer of clay.

Soil testing data in the amended permit application consisted of preliminary soils data collected prior to the removal of vegetation inside of the former spray irrigation storage lagoon. This data was collected to determine the suitability of existing soils in the storage lagoon and was not representative of the final soil permeability rating and was never intended to be interpreted as such. Upon issuance, the sludge storage permit will only authorize storage of sludge in a sludge storage facility constructed in accordance with 7 DE Admin. Code 7103, The Regulations Governing the Land Treatment of Waste §149.0 – Permanent Storage Facilities. Placement of sludge into a storage facility that

does not conform to these regulations will constitute a permit violation subject to enforcement actions by the Department.

f) He questioned Sussex County's approval of the proposed storage without a floodplain permit, the Application's reliance on elevations that not based upon a current survey, and stated Google Earth provides a reliable data source for various applications.

Originally Sussex County indicated that it was satisfied with the proposed storage proposal and that it did not require any approvals or permits. Immediately prior to the January 23, 2018 hearing, Sussex County indicated that they would like additional information related to elevations of the proposed sludge storage area. The Department is currently working with Mountaire and Sussex County related to this concern. The sludge storage area (storage area and the surrounding berm) has been surveyed in reference to a known elevation (NAVD88 datum) and it will be demonstrated that the additional 100 year flood plain concerns raised by Sussex County are addressed prior to the commencement of sludge storage activities. Google Earth does not have "highly accurate elevation data" in all locations of Delaware and, therefore, is not utilized by the Department for permit verification purposes. The elevations in Google Earth are not representative of the proposed sludge storage area and the Google map presented at the hearing is not accurate relative to the actual survey data that has been collected (Exhibit 1). Ultimately, the Department will rely on Sussex County to inform the Department that Sussex County is satisfied that the proposed storage facility meets Sussex County's flood plain requirements.

g) Are there no screens and sumps to stop such solids?

Mountaire installed a dissolved air flotation solids (DAF) unit upstream from the anaerobic lagoons in 2012 to help reduce the amount of "solids" that pass into the wastewater treatment plant. Additionally, the anaerobic lagoons are in place to treat solids generated by chicken processing. The primary issue is not that amount of solids entering the plant but rather a buildup of solids in the system over time due to inadequate removal practices.

2) L. Podolski's comments beginning at transcript page 29:

a) He asked about the groundwater monitoring plan.

Mountaire had a groundwater monitoring plan developed by a consulting company known as Earth Data Incorporated. The Department had a staff hydrologist review the proposed groundwater monitoring plan and confirm that the location and construction of the proposed wells were appropriate to characterize groundwater impacts above background levels and were in compliance with Department requirements. As stated during the Department presentation at the January 23, 2018 hearing, one upgradient well and two downgradient wells were recently installed. The aforementioned monitoring wells will be sampled prior to permit issuance to determine background levels of various parameters in groundwater. Upon permit issuance, the groundwater monitoring wells will be sampled at minimum quarterly during sludge storage activities.

b) He questioned the reliance on a desktop review of the floodplain and elevations.

See response for 1 f.

c) He questioned the soil testing based solely upon the proposed use of geo-tubes and not based upon the storage of dry sludge.

Soil testing data in the amended permit application was preliminary soils data collected prior to the removal of vegetation inside of the former spray irrigation storage lagoon. This data was not representative of the final soil permeability rating and was never intended to be interpreted as such. Upon issuance, the sludge storage permit will only authorize storage of sludge in a sludge storage facility constructed in accordance with 7 DE Admin. Code 7103, The Regulations Governing the Land Treatment of Waste, §149.0 – Permanent Storage Facilities. Department sludge storage requirements are designed to be protective regardless of the type of material being stored.

d) He asked about security and protective measures for the sludge storage area.

Department representatives have visited the proposed sludge storage area multiple times and have determined the area is sufficiently secure for the storage of anaerobic sludge.

e) He asked about the qualifications of the WWTP staff and best management practices to control odor.

The Department requires that wastewater operators be licensed in accordance with the Department's Regulations for Licensing Operators of Wastewater Treatment Facilities. The size and complexity of the Millsboro Mountaire wastewater treatment facility requires the highest level wastewater operator (level 4) oversee wastewater operations. Mountaire has several licensed wastewater treatment operators (and additional licensed wastewater operators contracted through Tidewater Utilities) and the operation of the wastewater treatment plant must be under the supervision of a Wastewater Operator in "Direct Responsible Charge" at all times. Sludge transfer activities will be conducted by a wastewater contractor that was contracted for this purpose. This wastewater company is the same company that is preparing the lagoon for the sludge storage activities.

Mountaire's sludge storage permit will have language that requires Mountaire to monitor and maintain a log book of any odors generated from the sludge storage area on a daily basis. Odor mitigation language will be written into the sludge storage permit. Mountaire has proposed covering stored sludge with lime if there are nuisance odors.

f) He asked about distance between the floor of the proposed sludge storage facility and groundwater and the risk of harm to Swan Creek from any releases from the sludge.

Prior to permit issuance, Mountaire will demonstrate that the seasonal high water table is at least two feet below the floor of the lagoon based on groundwater elevations in monitoring wells. See 1.c. for additional information.

3) M. Payan's comments beginning at transcript page 34:

- a) She questioned the available space in the storage area and asked how there would be sufficient space for both the dry and liquid sludge.

The exact amount of sludge in the two anaerobic lagoons is unknown but the applicant estimates the amount of sludge to be removed at approximately 6,000 dry metric tons. The sludge will be temporarily stored in the proposed sludge storage area to allow for expedited clean-out of the anaerobic lagoons and allow for significant improvements in wastewater treatment at the facility. It is estimated that sludge dewatering in a Geotube takes 3 to 6 months. Multiple loads of sludge per day will be removed from the site for disposal. Storage space will be freed up in the storage area for additional sludge as sludge removal activities continue. The sludge removal process will continue until project completion. As noted in the Department's January 23, 2018 hearing presentation, Mountaire continues to seek additional sludge disposal options to increase the rate of sludge removal from the facility.

- h) She questioned placing the sludge on sand.

No sludge will be placed on sand. Sludge will be placed on liner(s) that meets the Department's requirements specified in Part III, B. of 7 DE Admin. Code 7103, The Regulations Governing the Land Treatment of Waste.

- c) She commented that the existing monitoring wells did not stop the problem.

The sludge storage facility construction requirements as detailed in 7 DE Admin. Code 7103, The Regulations Governing the Land Treatment of Waste were established to prevent contaminant migration into groundwater from sludge storage activities. Groundwater monitoring wells with quarterly monitoring will afford an extra measure of protection by allowing discovery of groundwater impacts beyond background levels and prompt repair of the liner(s) if the liner(s) was somehow compromised.

- d) She questioned the storage of sludge in a floodplain.

See 1 f above.

- e) She advocated trucking the sludge away and did not want it to require approximately two years to complete the project.

As stated in the Department's January 23, 2018 presentation, temporary storage of sludge from the anaerobic lagoons will increase the amount of anaerobic sludge removal from several truckloads a day (currently 5 to 6) to approximately 30 loads a day. There are a sufficient number of trucks available to haul the sludge; however, the consistency of the sludge limits the end markets and ability to truck the sludge away for disposal. As stated in the Department's January 23, 2018 presentation, the liquid sludge has to be dewatered before landfills will accept the material. Also, while the WWTP only processes approximately 1% sanitary waste, the material is regulated as a sewage sludge which further limits potential disposal locations. Therefore, the amount of sludge hauled away is limited by the number of facilities that are willing to accept the material. Mountaire is

actively looking for additional disposal options to increase the amount of material disposed of offsite on a daily basis. While Mountaire is looking for additional sludge disposal options, it is critical that sludge removal occurs as quickly as possible to help improve wastewater treatment and the quality of spray irrigation wastewater.

4) K. Haynes' comments beginning at transcript page 37:

His comments were on dredging, water quality and fish kill issues in the Indian River.

Mr. Haynes reported a fish kill to the Department's Division of Fish & Wildlife (F&W) prior to the Department's January 23, 2018 hearing. The Department's F&W investigated the fish kill and their report indicated that cold weather caused the fish kill (Exhibit 2). Mr. Haynes provided the Department with Google Earth maps of possible dredging during the Department's hearing. The hearing officer determined the maps and comment provided by Mr. Haynes was not relevant to Mountaire's sludge storage permit application.

5) J. Haynes' comments beginning at transcript page 39:

- a) She asked why no fine was associated with the Department's November 2, 2017 Notice of Violation.

A Notice of Violation is the preliminary step in the Department's enforcement process. The Department is not able to comment on an ongoing enforcement investigation. In addition, the Notice of Violation is not relevant to Mountaire's sludge storage application.

- b) She asked if the sludge would be from only the Millsboro WWTP.

Yes, Mountaire's proposal and the draft permit limits sludge storage in the proposed sludge storage facility to only sludge from Mountaire's Millsboro anaerobic lagoons.

- c) She requested a slow-down in the poultry processing until the problem is solved.

This permit application is specific to Mountaire's request to store sludge in accordance with 7 DE Admin. Code 7103, The Regulations Governing the Land Treatment of Waste. Operation of the wastewater treatment facility and spray irrigation at Mountaire is permitted through the Department's Ground Water Discharges Section (GWDS) in accordance with 7 DE Admin. Code 7101, Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems and is, therefore, outside the scope of this sludge storage permit application.

6) B. Goldman's comments beginning at transcript page 46:

- a) He asked about whether aerobic lagoons were common at treatment plants and he did not think the Millsboro WWTP used them.

Anaerobic treatment lagoons are commonly used for wastewater treatment.

- b) He suggested that the applicant obtain more landfills to receive the sludge.

As stated in the Department's January 23, 2018 presentation, the applicant is actively looking for additional sludge disposal options. See 3.e for additional information. Additionally, landfills cannot receive liquid sludge and consequently the temporary storage and dewatering of liquid sludge is a necessary step prior to sludge transport for disposal at a landfill.

7) J. Baccus' comments beginning at transcript page 51:

He raised his mother's health issues from drinking the water at her house in Possum Point.

The permit application under consideration is for temporary sludge storage at Mountaire's Millsboro facility. The sludge storage facility construction requirements as detailed in 7 DE Admin. Code 7103, The Regulations Governing the Land Treatment of Waste were established to prevent contaminant migration into groundwater from sludge storage activities. The temporary storage of sludge in the proposed storage area should help improve the quality of the effluent from Mountaire's Millsboro facility.

8) M. Cato's comments beginning at transcript page 53:

- a) She asked if Mountaire had permits to increase its capacity over the years.

The Department regulates increased manufacturing capacity through the Coastal Zone Act permitting process. The last increase authorized was for the facility's feed mill. The Department's is unaware of any expansions in violation of Department requirements at the Millsboro Mountaire facility.

- b) She asked where the sludge was going and referenced farm fields.

As stated in the Department's January 23, 2018 presentation and expanded on during the public hearing, anaerobic sludge is currently being landfilled out of state. Mountaire is seeking additional disposal options. There are no plans to land apply the anaerobic sludge on fields Mountaire has permitted for the land application of sludge.

9) M. Orlin's comments beginning at transcript page 56:

She asked how could the problems have happened and how can the public trust the Department.

The Department is still investigating failures that lead to the wastewater treatment plant upset at Mountaire's Millsboro facility. As stated in the Department's January 23, 2018 presentation, it appears that an excessive build-up of solids in the wastewater treatment plant resulted in the system failure. The Department is aware that Mountaire replaced certain personnel which they claim were responsible for the upset condition at the WWTP.

10) J. Austin comments:

Written comments submitted on January 23, 2018 included many of the comments in Mr. Meyer's comments and included technical comments on the borings taken of the soils in the storage area, and the calculated elevation of the storage area's walls above the floodplain.

See 1. e and 1. f above.

Surface Water Discharges Section Recommendation:

The Surface Water Discharges Section recommends issuing the storage permit for the storage of anaerobic lagoon sludge from the Mountaire Millsboro facility. Mountaire's permit application and storage area will meet Department requirements in Part III, B. of 7 DE Admin. Code 7103, The Regulations Governing the Land Treatment of Waste for sludge storage prior to the commencement of sludge storage activities. The temporary storage of sludge is necessary to help improve the efficiency of Mountaire's Millsboro WWTP and ultimately improve the quality of spray irrigated wastewater. Delay in issuance of the storage permit will delay corrective action activities at the wastewater treatment plant necessary to improve wastewater effluent. Included with this memo is a draft sludge storage permit.



DUFFIELD
ASSOCIATES
Soil, Water & the Environment

Duffield Associates, Inc.
144 South Governors Ave.
Dover, DE 19904
Phone: 302.239-6634
Fax: 302.239-8485
duffnct.com

February 16, 2018

Via Electronic Mail

Mr. Austin Pajda
Mountaire Farms
PO Box 1320
Millsboro, DE 19966

RE: Millsboro WWTP
Wastewater Storage Lagoons

Dear Mr. Pajda:

In accordance with your request, we have reviewed historical drawings and a recent topographical survey for existing storage lagoon ST-1003A located at your processing facility in Millsboro, Delaware. Copies of the reviewed drawings are attached and include plans and sections of the existing lagoon and a topographical survey completed by Steven M. Adkins Land Surveying LLC and dated February 14, 2018 (Adkins Survey).

Lagoon ST-1003A is adjacent to Swan Creek, a tributary of Indian River. Historically, the lagoon was used for the storage of treated wastewater prior to spray irrigation discharge. Based on the historic drawings, the lagoon's operation volume is depressed below existing grade around the entire lagoon perimeter. The total depth of the lagoon varies depending on location. Design operating conditions are based on a depth of 4 feet, which includes 3 feet operating depth and 1 foot freeboard. Operating volume is approximately 3.7 million gallons. At the high water level (operating), the lagoon has a surface area of approximately 4.1 acres.

The top of berm elevation for ST-1003A shown on the historic drawings is 15+/- feet; however, the datum of these drawings is unknown. We completed a comparison of the elevations shown on the historic drawings and site elevations based on 2 foot contours available from the State of Delaware, FirstMap datasets. Based on this analysis, the datum of the historic drawings is 5 to 6 feet higher than the datum of the 2 foot contours which we understand are based on the NAVD88 datum. As noted in our previous communication on this issue, the topographic survey is required to fully verify the lagoon elevations based on the NAVD88 datum.

We reviewed the Adkins Survey which was completed in the NAVD88 datum. The existing top of bank elevation for ST-1003A based on this new data ranges from 15 feet adjacent to Swan Creek to over 28 feet adjacent to the "existing spray irrigation lagoon." The recent survey appears to confirm the historical top of berm elevation. It should also be noted that the new survey indicates the bottom of the lagoon elevation ranges from 7.4 to 9.0 feet. The historic operating volume information presented above is based on a bottom elevation of 10 feet.

Mr. Austin Pajda
Project No. 10806.BE
February 16, 2018
Page 2



Published FEMA mapping for the area indicates a 100 year flood elevation of 8 feet. Therefore, the 100 year flood as shown on the FEMA maps would not overtop the lagoon ST-1003A.

You also requested that we consider the possibility of the lagoon being overtopped by captured rainfall. We understand that you intend to install a pump in the lagoon which will discharge captured rain water to the wastewater treatment plant at a rate of 1,000 gallons per minute. The 500 year, 24 hour rainfall in Sussex County is 13 inches. Based on the 500 year storm event, we project that the lagoon would accumulate approximately 2.51 million gallons (MG) of stormwater. This is a conservative estimate determined by multiplying the 500 year rainfall depth and the lagoon surface area noted above. This estimate also includes runoff into the lagoon from an approximate 3 acre drainage area adjacent to and northwest of the lagoon; our calculation assumes that the approximate 3 acre drainage area is impervious and 100% of the runoff enters the lagoon. Based on the historical drawings of the lagoon, the operating volume (3.7 MG) exceeds the projected volume for the 500 year storm event (2.51 MG), which could be pumped back to the treatment plant in approximately 1.7 days at the design flow rate. This assumes the plant can accept 1,000 GPM continuously for 24 hours.

I trust this information is sufficient for your needs. Please feel free to contact me if you have any questions or require additional information.

Sincerely,

DUFFIELD ASSOCIATES, INC.

A handwritten signature in blue ink, appearing to read "Scott C. Hoffman".

Scott C. Hoffman, P.E.
Water Resources Division Director

SCH:hmc
10806.BE.0218-Pajda Lagoon Drawings.COR

Enclosures

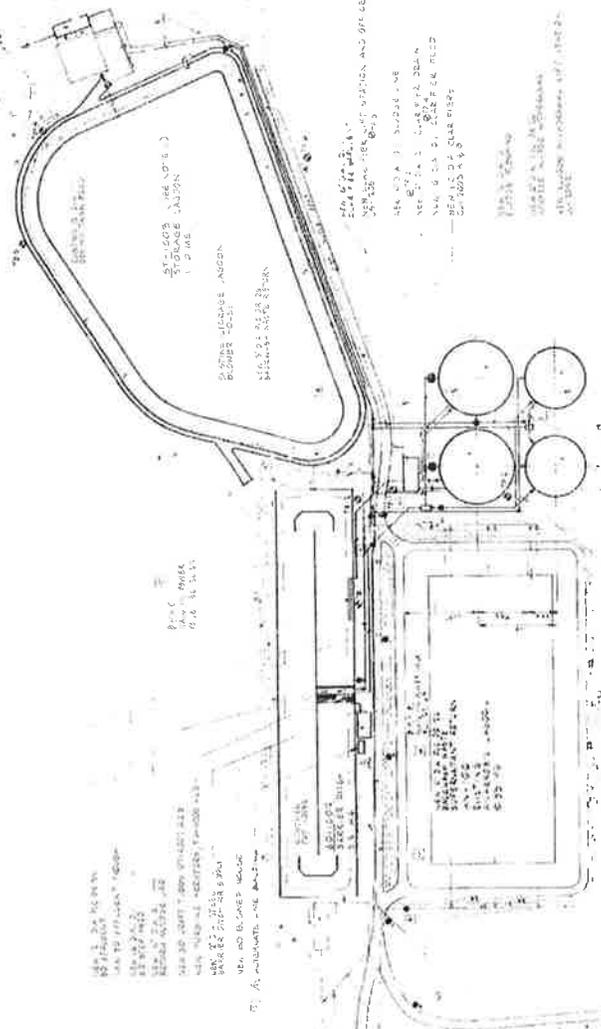


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CONDUIT TO NEW 1000 G.P.M. TANKS, APPROX. 6' (SEE NOTE 2)

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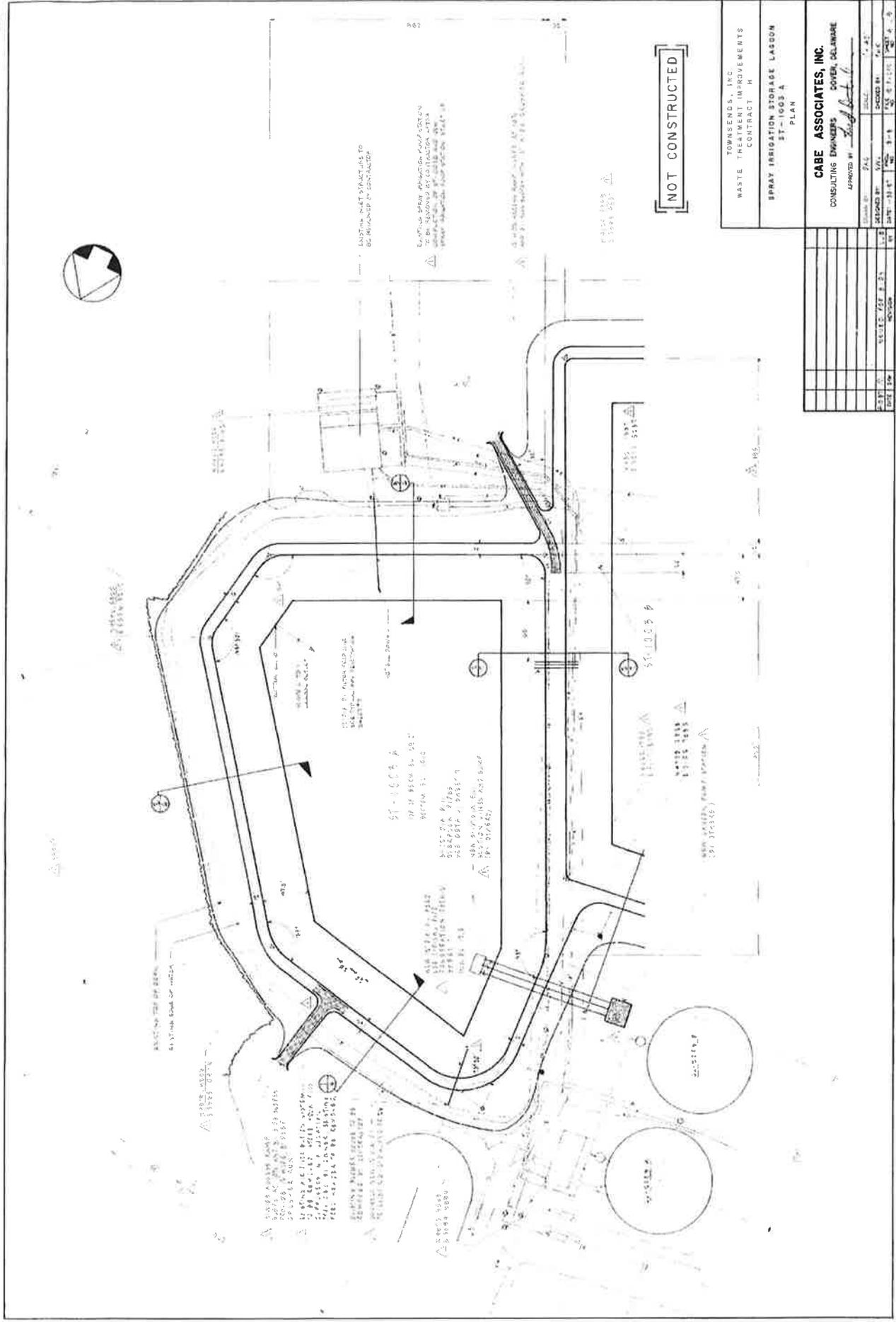
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TOWSENGS, INC. WASTE TREATMENT IMPROVEMENTS CONTRACT D	
SITE LAYOUT	
CABE ASSOCIATES, INC. CONSULTING ENGINEERS DOVER, DELAWARE	
DATE	NOV 19 1968
SCALE	AS SHOWN
PROJECT NO.	W-1000A
DESIGNED BY	W. J. B. B.
CHECKED BY	W. J. B. B.
APPROVED BY	W. J. B. B.



NOT CONSTRUCTED

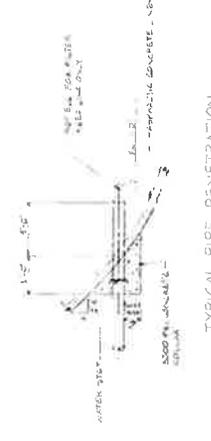
TOWNSENDS, INC.
WASTE TREATMENT IMPROVEMENTS
CONTRACT H

SPRAY IRRIGATION STORAGE LAGOON
ET-1003 A
PLAN

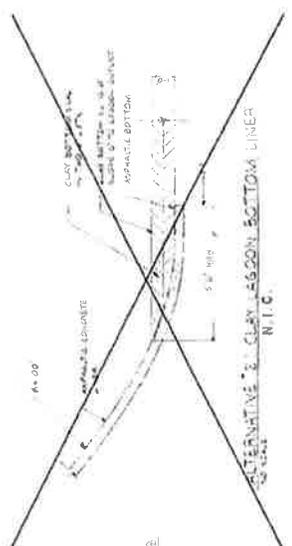
CABE ASSOCIATES, INC.
CONSULTING ENGINEERS
DOVER, DELAWARE

APPROVED BY: *[Signature]*

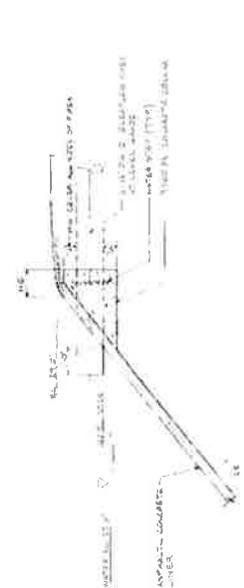
DATE	NO.	DESCRIPTION
10/15/03	1	ISSUED FOR PERMIT
11/10/03	2	REVISED PER COMMENTS
12/15/03	3	REVISED PER COMMENTS
01/15/04	4	REVISED PER COMMENTS
02/15/04	5	REVISED PER COMMENTS
03/15/04	6	REVISED PER COMMENTS
04/15/04	7	REVISED PER COMMENTS
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03/15/05	18	REVISED PER COMMENTS
04/15/05	19	REVISED PER COMMENTS
05/15/05	20	REVISED PER COMMENTS



TYPICAL PIPE PENETRATION



ALTERNATIVE CLAY LAGOON BOTTOM LINER N.I.C.





DNREC

89 Kings Highway
Dover, Delaware 19901

DAILY FISH KILL REPORT

Date Reported	1/16/2018
Date DNREC/DNREC Representative Responde	1/16/2018
Name of Water Body	Indian River
Closest Road/Landmark	Possum Point Road, Millsboro Delaware
Watershed Basin	Inland Bays/Atlantic Ocean Basin
Weather (cloud cover, wind speed/direction)	Partly sunny Wind: southerly at 5 mph
Air Temperature	40° F
Report Submitted by	Bruce Cole

Additional Observations/Comments (probable cause, symptoms, duration, etc.)

On January 16, 2016, a fish kill was reported to the Delaware Division of Fish and Wildlife (DFW). This kill occurred on the Indian River near Possum Point. The approximated 100 dead fish observed were identified as Gizzard Shad, *Dorosoma cepedianum*. It appeared to have happened days earlier and was over by the time it was reported.

For 13 consecutive days, December 27, 2017 through January 8, 2018, Delaware experienced below average temperatures with highs never getting above the freezing point. Multiple days during this timeframe started off with temperatures in the single digits and highs only in the teens. This extended period of extreme cold resulted in covering the inland bays and Indian River with ice.

Soon afterwards, January 9, 2018 through January 11, 2018, Delaware experienced 3 consecutive days in the 60's°F. This warm spell resulted in melting much of the ice cover and exposing dead Gizzard Shad.

When winter extreme cold events are experienced, Gizzard Shad will often perish and freeze in or below the ice cover where they can't be seen. Once the temperatures warm and the ice melts, the well preserved dead Gizzard Shad appear to have immediately perished, even though they may have died days or even weeks earlier.

Gizzard Shad are known to exhibit high mortality rates as water temperatures decline, especially during ice formation. Within any given year, Gizzard Shad survival is often associated with a function of the rate of temperature decline preceding ice-on as well as ice duration.

Single species winter Gizzard Shad kills are common in both Delaware tidal and non-tidal waters during extended extreme cold periods.

Being a single species Gizzard Shad winter kill, the DFW recommends no further action at this time.

Note: A Gizzard Shad kill associated with this same cold event occurred in the "Bethany Canals" near Anchorage Avenue in Bethany.

Species Affected	Life Stage	# Killed
Gizzard Shad	Adult	100



DNREC

89 Kings Highway

Dover, Delaware 19901

DAILY FISH KILL REPORT



Gizzard Shad, Possum Point IR, 01-16-2018



**AUTHORIZATION FOR THE STORAGE OF SLUDGE UNDER THE LAWS OF
THE STATE OF DELAWARE**

1. Pursuant to the provisions of 7 Del. C., §6003

Mountaire Farms of Delaware, Inc.
P.O. Box 1320
Millsboro, Delaware 19966

is hereby granted a permit to operate short term sludge storage facility that meets Department requirements for a "permanent storage facility". This permit is limited to the storage of anaerobic lagoon sludge generated at the Millsboro Mountaire poultry processing facility.

2. The sludge storage facility authorized herein consists of the following:

One (1) sludge storage facility meeting the requirements for a permanent sludge storage facility. The storage facility is contained within a former storage lagoon located southeast of the Millsboro Mountaire wastewater treatment clarifiers and south of the oxidation ditch. The portion of the lagoon utilized for sludge storage is approximately 400 feet X 200 feet. Beneath the sludge storage area, soils are comprised of at least a 1 foot thick compacted soil layer with an installed permeability of 1.0×10^{-7} cm/sec. or less in combination with an artificial liner at least 30 mil in thickness with a permeability of 1.0×10^{-7} cm/sec. or less. The storage facility has approximately a 0.5% slope to allow for collection of leachate in a sump during sludge drying activities. All collected leachate and rainwater from sludge in the storage facility shall be pumped into the wastewater treatment plant for treatment.

3. The storage facility shall be constructed in accordance with the plans and specifications submitted to the Department dated December 28, 2017 and shall comply with the restrictions, requirements, and other conditions set forth in Parts I, II, and III hereof:

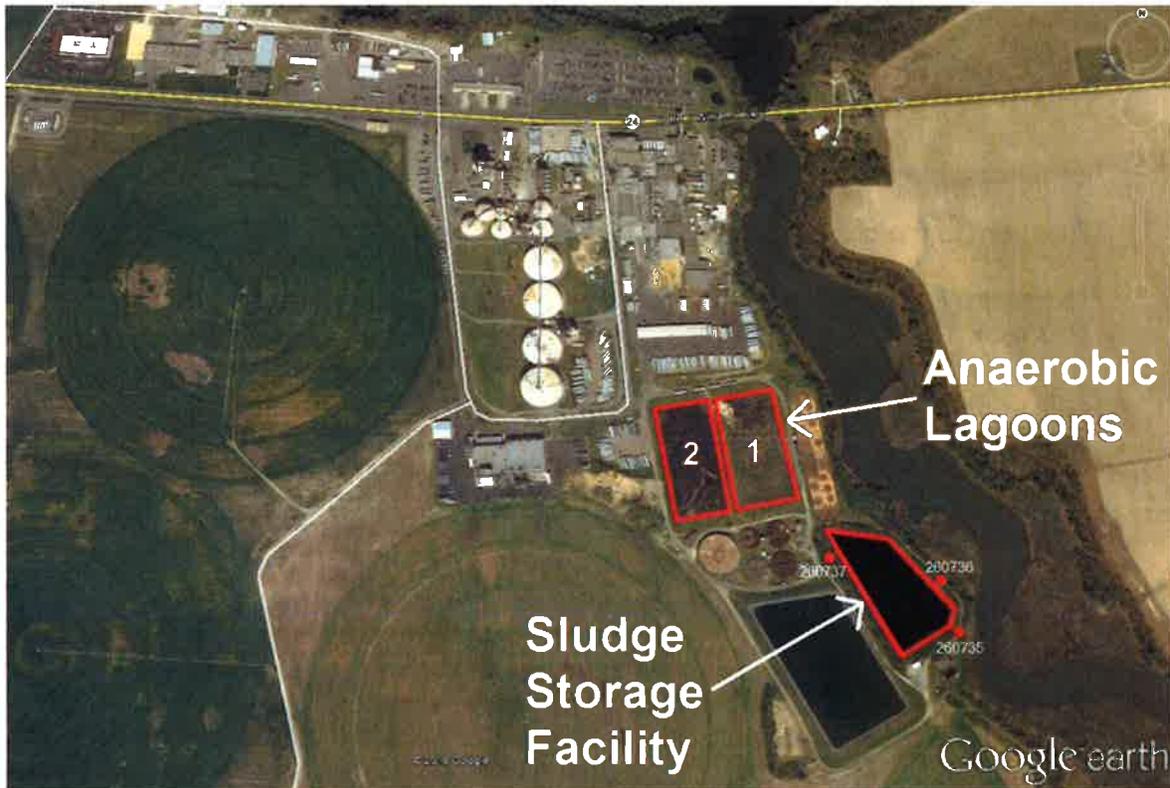
Bryan A. Ashby, Program Manager
Surface Water Discharges Section
Division of Water
Department of Natural Resources
and Environmental Control

Date Signed

A. SITE LOCATION

The sludge storage facility is located approximately 2 miles north east of the Town of Millsboro.

Tax parcel number: 234-32.00-117.00



B. REGULATORY AND SUPPORTING DOCUMENTS

The land treatment operation shall be conducted in accordance with the following documents:

1. The Department's Guidance and Regulations Governing the Land Treatment of Wastes; Part III, (B), the Land Treatment of Sludges and Sludge Products; and,
2. The permit application and supporting information dated December 28, 2017.

C. MONITORING REQUIREMENTS

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to store anaerobic sludge as outlined in this permit. Such sludge storage shall be monitored by the permittee as specified below:

1. GROUNDWATER MONITORING

Parameter	Unit of Measurement	Minimum Frequency	Sample Type
Depth to Water	Hundredths of a foot	Quarterly	In-Situ
pH	S.U.	Quarterly	Field Test
Dissolved Oxygen	mg/l	Quarterly	Field Test
Specific Conductivity	UMHOS/CM	Quarterly	Field Test
Temperature	°C	Quarterly	Field Test
Total Dissolved Solids	mg/l	Quarterly	Field Test
Total Nitrogen as N	mg/l	Quarterly	Grab
Organic Nitrogen	mg/l	Quarterly	Grab
Nitrate + Nitrite Nitrogen	mg/l	Quarterly	Grab
Ammonium as N	mg/l	Quarterly	Grab
Total Phosphorus	mg/l	Quarterly	Grab
Chloride	mg/l	Quarterly	Grab
Sodium	mg/l	Quarterly	Grab
Arsenic, Total	mg/l	Every 5 Years	Grab
Cadmium, Total	mg/l	Every 5 Years	Grab
Chromium, Total	mg/l	Every 5 Years	Grab
Copper, Total	mg/l	Every 5 Years	Grab
Lead, Total	mg/l	Every 5 Years	Grab
Mercury, Total	mg/l	Every 5 Years	Grab
Molybdenum, Total	mg/l	Every 5 Years	Grab
Nickel, Total	mg/l	Every 5 Years	Grab
Selenium, Total	mg/l	Every 5 Years	Grab
Zinc, Total	mg/l	Every 5 Years	Grab
Total Coliform	Colonies/100ml	Annually	Grab

- a) Groundwater samples shall be collected and analyzed individually from the three (3) monitoring wells located immediately up gradient (DNREC ID 260737 (L-3)) and down gradient (DNREC ID's 260735 (L-1) and 260736 (L-2)) of the sludge storage facility.
- b) Groundwater monitoring results for each monitoring well shall be reported using the State of Delaware Well Identification Tag Number that are required on all wells in accordance with the Delaware Regulations Governing the Construction and Use of Wells, Section 10, A.

Part II

A. MANAGEMENT REQUIREMENTS

1. Sludge Storage Activities

The permittee shall prepare and maintain an operational record for each day that sludge is storage in the permitted storage lagoon. The daily operational record shall include a bound log book which includes the following:

- a) General daily weather conditions (temperature, wind direction, and approximately amount of precipitation);
- b) The strength of any odors noted downwind of the storage facility (immediately adjacent to the storage facility and immediately downwind of the Mountaire Millsboro property boundary or a location at the Millsboro Mountaire facility where no odor cannot be detected); and,
- c) Any vectors noted in or around the sludge storage facility.

The permittee shall notify the Department within one (1) business day of any odors related to the sludge storage facility noted at the property boundary or of any nuisance vectors noted in or around the sludge storage facility. Simultaneously, the permittee shall take steps to reduce odors and the attractiveness of the sludge to vectors by applying lime to the stored sludge and other actions required by the Department.

2. Operation of Facilities

The permittee shall at all times properly maintain and operate all structures, systems, and equipment for treatment, control and monitoring, which are installed or used by the permittee to achieve compliance with the permit or the Guidance and Regulations Governing the Land Treatment of Wastes.

3. Noncompliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any requirement or condition specified in this permit, the permittee shall provide the Department with the following information, in writing, within five (5) days of becoming aware of such condition:

- a) In writing thirty (30) days before any planned physical alteration or addition to the permitted facility or activity, if that alteration or addition would result in any significant change in information that was submitted during the permit application process;
- b) In writing thirty (30) days before any anticipated change which would result in noncompliance with any permit condition or Part III, (B), of the Guidance and Regulations Governing the Land Treatment of Wastes;
- c) Orally within twenty four (24) hours from the time the permittee became aware of any noncompliance which may endanger the public health or the environment, at (302) 739-9946 during normal working hours, or (800) 662-8802 after normal working hours, and;

- d) In writing as soon as possible but within five (5) days of the date the permittee knows or should know of any noncompliance unless extended by the Department.

This report shall contain:

- 1) A description of the noncompliance and its cause;
 - 2) The period of noncompliance including to the extent possible, times and dates and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
 - 3) Steps taken or planned to reduce or eliminate reoccurrence of the noncompliance.
- e) In writing as soon as possible after the permittee becomes aware of relevant facts not submitted or incorrect information submitted, in a permit application or any report to the Department. Those facts or the correct information shall be included as a part of this report.

4. Minimize Impacts

The permittee shall take all necessary actions to eliminate and correct any adverse impact on the public health or the environment resulting from permit noncompliance.

B. RESPONSIBILITIES

1. Renewal Responsibilities

At least one hundred eighty (180) days before the expiration date of this permit, the permittee shall submit a new application for a permit or notify the Department of the intent to cease operation by the expiration date. In the event that a timely and sufficient reapplication has been submitted and the Department is unable, through no fault of the permittee, to issue a new permit before the expiration date of this permit, the terms and conditions of this permit are automatically continued and remain fully effective and enforceable.

2. Entry and Access

The permittee shall allow the Department, consistent with 7 Del. C., Chapter 60, to:

- a) Enter the permitted facility;
- b) Inspect any records that must be kept under this permit;
- c) Inspect any facility, equipment, practice, or operation permitted or required by this permit;
- d) Sample or monitor for the purpose of assuring permit compliance, any substance or any parameter at the facility or land application site.

3. Provide Information

The permittee shall furnish to the Department within a reasonable time, any information requested, including copies of records, which may be used by the Department to determine whether cause exists for modifying, revoking, reissuing, or terminating the permit, or to determine compliance with the permit or Part III, (B), of the Guidance and Regulations Governing the Land Treatment of Wastes.

4. Transfer of Ownership or Control

This permit shall be transferable to a new owner or operator provided that the permittee notifies the Department by requesting a minor modification of the permit before the date of transfer and provided that the transferee shows evidence of a legal right to use the site and is otherwise in compliance with all applicable provisions of Part III, (B), of the Department's Guidance and Regulations Governing the Land Treatment of Wastes.

5. Operation of Facility

The permittee shall at all times properly maintain and operate all structures, systems, and equipment for treatment, control and monitoring, which are installed or used by the permittee to achieve compliance with this permit or Part III, (B), of the Guidance and Regulations Governing the Land Treatment of Waste.

6. Permit Revocation and Modification

a) After notice and opportunity for a hearing, this permit may be modified or revoked in whole or in part during its term for cause including, but not limited to, the following:

- 1) Violation of any terms or conditions of this permit;
- 2) Obtaining this permit by misrepresentation or failure to disclose fully all of the relevant facts;
- 3) Any change in operating conditions that requires either a temporary or permanent permit modification; or
- 4) If the Department finds that the public health, safety or welfare requires emergency action, the Department shall incorporate findings in support of such action in a written notice of emergency revocation issued to the permittee. Emergency revocation shall be

effective upon receipt by the permittee. Thereafter, if requested by the permittee in writing, the Department shall provide the permittee a revocation hearing and prior notice thereof. Such hearings shall be conducted in accordance with 7 Del. C., Chapter 60.

b) The Department may revoke this permit if the permittee violates any permit condition, any provisions of Part III, (B), of the Guidance and Regulations Governing the Land Treatment of Wastes, or fails to pay applicable Department fees.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or maybe subject under 7 Del. C., Chapter 60.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation.

9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application or any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

11. Compliance Required

The permittee shall comply with all conditions of the permit. Failure to do so constitutes a violation of this permit, which is grounds for enforcement and the imposition of penalties as provided in 7 Del.C., Chapter 60, grounds for permit termination or loss of authorization to discharge or to operate pursuant to this permit, grounds for permit revocation and reissuance or permit modification, or denial of a permit renewal application.

12. Reopener

In the event that the Part III, B, of the Guidance and Regulations Governing the Land Treatment of Wastes or applicable Federal Regulations are revised, this permit may be reopened and modified accordingly after notice and opportunity for a public hearing.

Part III

A. SPECIAL CONDITIONS

1. The sludge storage/management facilities authorized herein shall in no way cause or contribute to the discharge of pollutants into surface water or into groundwater.
2. The sludge storage/management system authorized herein shall receive only anaerobic solids as specified in the permit application.
3. The storage of sludge, as approved in this permit, shall not cause objectionable odors or attract vectors as determined by the Department. Odors deemed unacceptable shall be mitigated in accordance with Mountaire's permit application and requirements in Part II, A. 1 of this permit.
4. The permittee shall maintain a log of the total estimated quantity of sludge stored in the storage facility.
5. Sludge from the storage facility may not be land applied in the State of Delaware without written Department approval.
6. All liquid generated from the dewatering of the anaerobic sludge and/or leachate generated from precipitation shall remain contained on the 30 mil plastic storage liner/in the storage swale/sump prior to pumping to the wastewater treatment plant for treatment.
7. The permittee shall maintain the storage area liners (1 foot thick soil liner and PVC liner) in such a manner as to avoid conditions that could affect the structural integrity of the liner. Such conditions include but may be limited to the following:
 - a. Erosion damage;
 - b. Damaged caused by animal burrows;
 - c. Damaged caused by heavy equipment;
 - d. The presence of vegetation including aquatic plants, weeds, woody shrubs or trees growing within five feet of the edge of the artificial liner;
 - e. Any other conditions that indicate nutrients from sludge storage may leave the storage area and impact groundwater.
8. The permittee shall visually inspect the liners and surrounding berms on a monthly basis to ensure proper maintenance. Records of inspections must be kept in a written log. In the event that inspection reveals any evidence of damage that threatens the structural integrity of the berm or liners (1 foot thick soil liner and PVC liner), or that may result in an unauthorized discharge of pollutants to surface or groundwater, the Department must be notified within 24 hours and appropriate steps must be taken to correct the damage.
9. Anytime sludge is added to the sludge storage lagoon regulated under this permit, a licensed wastewater operator shall be present at the Millsboro Wastewater Treatment Plant.

10. Beginning with the date sludge is placed in the sludge storage area, sludge shall not remain in the sludge storage lagoon for longer than two (2) calendar years. Failure to remove sludge from the storage area within the timeframe specified above may result in the Department evoking provisions listed in Part II B. 6 of this permit and/or enforcement action as provided in 7 Del. C. Chapter 60.
11. A log must be kept of all sludge stored (each solid sludge pile or liquid sludge dewatering sock) in the storage area. The log shall include:
 - a. An identifying designation for each pile or sock;
 - b. The date each sock or pile was initially created;
 - c. The date the material was removed from the storage area;
 - d. The quantity of material removed from each sludge pile or dewatering sock for disposal; and,
 - e. The location the material was disposed of.

