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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. 2006-W-0025

Re: Applications of the New Castle County Department of Special Services to Renew and Modify its Surface Water Discharge Permit and to Amend its Land Treatment System Permit for the Middletown-Odessa-Townsend Regional Wastewater Treatment Plant Water Farm No. 1 near Odessa, New Castle County

Date of Issuance: June 6, 2006
Effective Date: June 6, 2006

Under the authority granted the Secretary of the Department of Natural Resources and Environmental Control ("Department" or "DNREC") under *7 Del C.§6003*, the following findings, reasons and conclusions are entered as an Order of the Secretary. This Order considers the applications of New Castle County's Department of Special Services ("NCC") for two permits, which were the subject of a consolidated public hearing held on March 30, 2006.

One application seeks to renew and modify NCC's permit for the surface water discharge of treated effluent from NCC's Middletown-Odessa-Townsend regional wastewater treatment plant, known as Water Farm No. 1 ("MOT Plant") into the Appoquinimink River, which is a permit issued pursuant to the federal National Pollutant Discharge Elimination System ("NPDES") of the federal Clean Water Act, and *7 Del. C. Chapter 60*. The second application requests an amendment to NCC's Land Treatment System ("LTS") permit for the spray irrigation of treated effluent. NCC seeks to reduce the MOT Plant's buffer zone from 150 to 75 feet, which is the area between the spray

irrigation fields and NCC's property line. In addition, the amendment reflects the changes to effluent from the MOT Plant's expansion and upgrade.

The Department's Hearing Officer developed a record of decision, and prepared a report of recommendations, dated May 15, 2006 ("Report"), a copy of which is appended to this Order and incorporated herein. The Report recommends issuance of the NPDES permit based upon the draft permit that experts within the Department's Division of Water Resources prepared. In addition, the Report recommends issuance of the LTS permit amendment that grants the reduced 75 feet buffer zone.

The Report considers the public comments, which opposed certain parts of the Department's draft NPDES permit and the requested reduction to the spray irrigation field's buffer zone. The Report concludes that the draft NPDES permit's limits satisfied the existing Total Maximum Daily Loads ("TMDLs") for the discharge into the Appoquinimink River, as established by the United States Environmental Protection Agency ("EPA"). The Report also finds that NCC satisfied its burden to show changed conditions that support the requested reduction to the spray irrigation field's buffer zone since the Department last considered and denied NCC's request in 2002.

I adopt the Hearing Officer's Report and its review of the record and recommendations. I agree with the Report that the public comments raised important issues for the Department to consider. The Department shares many of the public's concerns. The Department considers that the concerns can be addressed through permit conditions designed to protect the environment. One concern is the potential adverse impact from increased discharges of the MOT Plant's treated effluent into the Appoquinimink River. This concern will be addressed in a LTS permit condition that

shall require NCC to use spray irrigation to the maximum extent possible, as allowed under the Department's regulations, before any surface discharge may occur during warm weather months. While the Department could impose a discharge limit in the NPDES permit, the Department determines that such a limit would not allow NCC operational flexibility that is needed. The operational flexibility is based upon the Department's approval of the MOT plant's expansion to treat 2.5 million gallons per day ("mgd') in order to meet the growing demand for central sewer service in southern New Castle County. Currently, NCC can use spray irrigation for up to an average of 1.0 mgd based upon operational restrictions. Thus, the NPDES permit should allow NCC the operational flexibility to use a surface water discharge when necessary, but the Department also will impose in the LTS permit a condition that will require NCC to use spray irrigation to the maximum extent possible during the warm weather months before any surface water discharge may occur.

The MOT Plant is unique in Delaware with its two possible methods for the discharge of treated effluent. The Department previously expressed its preference that NCC should utilize spray irrigation and that a surface water discharge should occur only as the last resort. The LTS permit condition is consistent with the Department's environmental policies to protect the surface waters. The spray irrigation condition will protect the Appoquinimink River from the adverse consequences from pollutants in the treated effluent, particularly nitrogen, during warmer weather when the water quality is more sensitive and pollutants may cause algae growth that could harm the water quality.

The Report also recommends not requiring NCC to dispose of the wastewater treatment sludge, but instead to allow its temporary storage in Lagoon No. 2 until NCC

prepares a disposal plan for Department review and approval. NCC is placed on notice that it will be responsible for any odor problems from this temporary solution, and that NCC should submit its final proposed method for sludge disposal to the Department as soon as possible in order to avoid possible serious adverse consequences from the temporary storage of sludge in Lagoon No. 2.

The permit condition requiring NCC to use spray irrigation to the maximize extent possible would be subject to the Department's regulations that restrict spray irrigation. The same regulations also require a 150 foot buffer zone, unless a smaller buffer zone may be justified. The Department finds that changed conditions and the need to increase spray irrigation to the maximum extent possible supports reducing the LTS permit's buffer zone from 150 feet to 75 feet. The Department rejected a requested reduction in 2002, but the record indicates that NCC has made changes, particularly the installation of lower spray equipment, that support the requested reduced buffer zone.

In sum, as more fully described in the reasons and findings in the Report, I adopt and direct the following as a final order of the Department:

1. The Department has jurisdiction under its statutory authority to make a determination in this proceeding;

2. The Department provided adequate public notice of the proceeding and the public hearing, and held the public hearing in a manner required by the law and its regulations;

3. The Department considered all timely and relevant public comments in making its determination;

4. The record of decision supports the issuance of the permits based upon the application, and such reasonable conditions that the Department official delegated to prepare the permits determines are necessary to protect the environment and public health;

5. The duly authorized Department official shall timely prepare and issue the permits consistent with this Order; and

6. The Department shall provide notice of this Order to the persons affected by this Order, as determined by the Department, including those who participated in the hearing process.

s/*John A. Hughes*_

John A. Hughes
Secretary

HEARING OFFICER'S REPORT

TO: The Honorable John A. Hughes
Secretary, Department of Natural Resources and Environmental Control

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

RE: Applications of New Castle County Department of Special Services to Renew and Modify Surface Water Discharge Permit and to Amend Land Treatment System Permit for the Middletown-Odessa-Townsend Water Farm No. 1 Regional Wastewater Treatment Plant near Odessa, New Castle County.

DATE: May 15, 2006

I. BACKGROUND AND PROCEDURAL HISTORY

On March 30, 2006, the Department of Natural Resources and Environmental Control ("Department") held a public hearing in Odessa, New Castle County in order to hear public comments on two permit applications submitted by New Castle County's Department of Special Services ("NCC"). The two permit applications were for NCC's Middletown-Odessa-Townsend Regional Water Farm No. 1 ("MOT Plant"), which is a waste water treatment plant located near Odessa, New Castle County.

One application was to renew and amend the MOT Plant's surface water discharge permit[1] for the treated effluent, as issued pursuant to the federal National Pollutant Discharge Elimination System ("NPDES ") of the federal Clean Water Act, *33 U.S.C. §§1342*, and state authority in *7 Del C. §6003.* In the second application, NCC seeks to amend a Land Treatment System ("LTS") permit[2] for the land application of the MOT Plant's treated wastewater. The Department held a joint hearing because of the common issues of fact, and the public requested a joint hearing. The common issues of fact relate to the MOT Plant's unique ability in Delaware to

[1] NPDES Permit No. DE 0050547 and State Permit No. WPCC 3185E/75.
[2] LTS Permit No. 3005-93-04.

discharge its treated effluent by two methods-spray irrigation via the LTS permit or surface water discharge via the NPDES permit.

The two permit applications reflect the March 2006 MOT Plant expansion and upgrade, [3] which increased the treatment capacity from 1.7 million gallons per day ("mgd") to 2.5 mgd in order to meet the growing demand for NCC's central sewer system.[4] The MOT Plant also was upgraded by changing from a lagoon treatment method to an advanced sequential batch reactor ("SBR") method that will significantly improve the treatment process and remove more pollutants from the treated wastewater's effluent.

On March 28, 2003, NCC submitted its NPDES permit application. Under the Department's procedures, the Department's technical experts in the Surface Waters Discharges Section of the Division of Water Resources ("DWR") conducted a thorough review of the application and prepared a draft NPDES permit, which the Department issued for public notice and comment on December 14, 2005. The Department's draft NPDES permit removed the current NPDES permit's limits for chlorine and lead. The draft NPDES permit retained the current permit's limits for pH, carbonaceous biochemical oxygen demand ("CBOD"), total phosphorous and total kjeldahl nitrogen ("TKN"). The draft NPDES permit also removed the current NPDES permit's 0.5 mgd discharge flow limit, and replaced the quantity limit for total suspended solids ("TSS") with a concentration limit. The draft NPDES permit also replaced the fecal coliform limit with an enterococcus limit.

The public notice allowed the public to comment on the draft permit until January 13, 2006, or to request a public hearing. The Department received a joint letter, dated January 4,

[3] The growth in flows to the MOT Plant was slowed by the Town of Middletown's 2002 completion of its own treatment facility, which resulted in the diversion of 0.5 mgd of flow from the MOT Plant to the Middletown facility. NCC notes that this flow could return to the MOT Plant at Middletown's discretion.
[4] The expansion was approved by Department permit WPCC 3004/04, issued March 8, 2004.

2006, from the Southern New Castle County Alliance ("SNCCA") and Delaware Wildlands. This letter commented on the draft NPDES permit and requested a public hearing.

NCC's LTS application, dated November 4, 2005, seeks to amend its LTS permit to reflect the changes to the treated effluent from the upgrade, and to reduce the spray irrigation area's buffer zone, that is, the area between the spray fields and the NCC property line, from 150 feet to 75 feet. If this change is approved, then NCC will extend the range of the existing five pivoting spray systems and add five solid sets, or fixed systems, in order to increase the spray irrigation field's acreage to 155.3 acres for the five pivoting systems and 11.4 acres for the solid sets.[5] Thus, a total of 166.7 acres will be sprayed, which will allow 1.33 mgd to be discharged under design conditions.

DWR's experts reviewed the NCC's LTS application, and determined it was administratively complete. Consequently, the Department published public notice of the application on January 22, 2006, and the public had until February 6, 2006, to provide comments and/or to request a public hearing. On February 6, 2006, SNCCA submitted a request for a public hearing on the LTS permit application, along with a request for a joint hearing with the draft NPDES permit. The Department determined that both requests for a public hearing were meritorious within the meaning of *7 Del. C. §6004*, and, consequently, the Department published notice of the public hearing on March 30, 2006, at which I presided. [6]

II. SUMMARY OF THE RECORD

This report of recommendations is based upon the record of decision, which contains: 1) a verbatim transcript of the March 30, 2006, public hearing, 2) documents, marked as Exhibits ("Ex."), which were admitted into the record as hearing exhibits, and 3) information I reviewed

[5] Part of the additional acreage is existing land that NCC purchased, but has not used for spray irrigation.
[6] This Hearing Officer was assigned to preside over the hearing, to develop a record of decision and to prepare a report of recommendations for the Secretary of the Department.

or obtained, including from the Department files and the Department's technical experts, including the DWR memoranda, dated April 20, 2006, and April 21, 2006, that are attached to this Report. In addition, I researched issues and conducted a field inspection of the MOT Plant and requested additional information from NCC, which was provided.

At the hearing, Tony Hummel, an Engineer in DWR's Surface Water Discharges Section ("SWDS"), and Ron Graeber, Manager of SWDS' Large Systems Branch, made presentations on the draft NPDES permit and LTS permit application, respectively. In addition, the Department provided for the record the Department's exhibits, which included the applications, the public comments, the draft NPDES permit and the public notices. [7] Regis Yurcich, NCC's Chief of Facility Maintenance, made a presentation, which he provided as NCC's exhibit.

Several persons in attendance at the hearing made comments, as indicated by the hearing sign-in sheet and transcript. In addition, I granted a request from the public to allow written comments to be submitted until April 7, 2006. The Department received one written comment during this extended public comment period.

The public comments on the LTS permit application may be summarized as opposing the proposed reduction from 150 feet to 75 feet in the spray irrigation buffer zone. The public comments did note the improvement in the MOT Plant's overall operations, its personnel and its community relations. The public comments on the draft NPDES permit application raised the following issues: whether the draft NPDES permit should have a limit on the amount of treated effluent that may be discharged, whether the draft NPDES permit properly reflects limits for

[7] The Department's role at the hearing was two-fold. On the LTS application, the Department took no position until after a public hearing. Instead, the Department developed the hearing record with certain information relevant to the record of decision, including the legal proof of the public notices, and any timely and relevant written public comments. The Department role in the NPDES permit is different, as required by the federal and Department procedures, because the Department prepared a draft permit, which set forth its tentative decision.

certain pollutants, and whether the draft NPDES permit properly allows the disposal of wastewater treatment process solid wastes.

I requested technical assistance from DWR, and DWR provided memoranda dated April 20, 2006 and April 21, 2006. In addition, I requested NCC to explain how spray irrigation would be used consistent with the Department's concerns with stream discharges. NCC provided a response that indicated how NCC would spray irrigate to the maximum extent possible.

I consider the record of decision to be well-developed, and it will provide the Secretary with the relevant information necessary to support the Department's final decision.

III. DISCUSSION AND REASONS

The Department's statute and regulations set forth the underlying regulatory authority for the Department's exercise of its authority to issue or deny a permit. The authority to issue a permit includes imposing such reasonable conditions on the permittee that are consistent with the regulatory purposes. In *7 Del. C. §6003(a)(4),* the General Assembly granted the Department plenary authority to regulate "any activity…[i]n a way which may cause or contribute to discharge of a pollutant into any surface or ground water…." Pursuant to this broad statutory authority to protect the environment, the Department promulgated regulations. *Delaware Regulations Governing the Control of Water Pollution*, as amended ("Water Regulations"), *7 Del. Admin. Code §§7200 et seq.*, and *Guidance and Regulations Governing the Land Treatment of Wastes* ("LT Regulations").

This Report will first review the draft NPDES permit and the issues raised by the public comments. The NPDES permit process is a federal program that the Department administers, subject to the regulatory supervision of United States Environmental Protection Agency ("EPA"). EPA already reviewed and approved the draft NPDES permit as part of the Department's process. The public comments on the draft NPDES permit questioned the draft

permit's lack of any discharge limit, the lack of any limit for total nitrogen, and the disposal of solid wastes from the treatment process.

On the issue of the lack of any discharge limit, the Department's technical experts explained that the draft permit did not have a discharge limit because the MOT Plant has a 2.5 mgd design capacity, which is reflected in its operating permit. Consequently, the MOT Plant already is subject to a 2.5 mgd operating permit limit. The experts determined that imposing the same limit in the NPDES permit was not necessary.

I agree that the NPDES permit does not need a discharge flow limit. The MOT Plant was designed to treat 2.5 mgd, and the Department already has issued a permit with this limit. To impose a lower limit would be contrary to this permit. Moreover, the MOT Plant needs the ability to discharge all the treated effluent that it is capable of producing. Currently, most of MOT Plant's annual effluent is discharged via spray irrigation. The spray irrigation operationally is limited to approximately 1.0 mgd, and would have a 1.33 mgd capability if the increased acreage is approved for the LTS permit. Consequently, there is not enough spray irrigation capability to meet the MOT Plant's 2.5 mgd capacity. Thus, while the Department could impose a flow limit, the Department's experts recommend no discharge limit. Instead, the experts recommend that surface discharges be regulated by other permits, namely, the LTS permit and the existing 2.5 mgd limit in the MOT Plant's operating permit.

Based upon the concern with surface water discharges, I recommend that the Department include as a condition in the LTS permit the requirement that spray irrigation be used to the maximum extent possible to avoid any surface water discharge during warm weather months. Conversely, the LTS permit condition to maximize spray irrigation will minimize any surface water discharge. This recommendation is consistent with NCC's current operations, and its statement on how it will operate in the future. Moreover, it is consistent with the Department's

direction to NCC, as expressed in Secretary Hughes' May 12, 2004, letter and DWR Director Donnelly's April 2, 2004, letter. The Department clearly has stated that spray irrigation should be used and that no surface discharge into the Appoquinimink River should occur if other alternatives are available. Thus, I recommend that the Department should reflect the preference for spray irrigation as a condition in the LTS permit and not in the NPDES permit.

The LTS permit condition to spray irrigate to the maximum extent possible is not a quantified condition, but will rely on judgment. This condition will provide NCC with operational flexibility to use a stream discharge when needed, but NCC will have the burden to show the Department that spray irrigation was not possible during the warm weather months. The issue of the selection of the method for discharge of the treated effluent is consistent with the Department's prior expression of the preferred method, and including the preference as a permit condition in the LTS permit is appropriate. In sum, I recommend no limit in the NPDES permit, but instead recommend that the policy to require NCC to use spray irrigation to the maximum extent possible during the warm weather months.

The public comments also raised the issue of the draft NPDES permit's lack of a limit on total nitrogen. The Department's technical experts explained that the MOT Plant was designed to meet the EPA's Total Maximum Daily Loads ("TMDLs"), as established in December 2003, for the Appoquinimink River. These TMDLs included specific TMDLs for the MOT Plant. The draft NPDES permit places the same limits on all the same pollutants as EPA's TMDLs. The pollutants are: TKN, Phosphorous, and CBOD. In addition, the Department imposed a concentration limit for TSS. I find that the Department's experts properly prepared the draft NPDES permit and that the limits are consistent with the applicable TMDLs for the MOT Plant.

The experts further explained the reasoning for EPA's use of TKN as a pollutant and not the more commonly used total nitrogen. TKN provides a better indicator to protect a water's

oxygen levels from the oxygen depletion caused when TKN converts to nitrate, particularly during warmer months when the water quality is most sensitive to harmful pollutants such as nitrogen. I find that the Department's experts provided a sound scientific basis of the use of TKN and for not including a total nitrogen limit.

The public comments also raised a concern with unlimited total nitrogen loads into the Appoquinimink River from the MOT Plant. Again, the Department shares this concern. Absent a total nitrogen TMDL, the Department does not have sufficient information at this time to determine a total nitrogen limit. Nevertheless, the Department is aware that the SBR method could increase the amount of potentially harmful total nitrogen entering the Appoquinimink River. The Department recognizes the need to limit total nitrogen in its TMDLs because of its potentially harmful impact on water quality, particularly during warmer weather. Indeed, EPA's TMDLs for the Appoquinimink River do include limits total nitrogen for every other segment of the Appoquinimink River except for the waste load allocation ("WLA") assigned to the MOT Plant. Thus, the Department is concerned with the total nitrogen discharge, particularly with the SBR treatment method, but this concern will be addressed in the LTS permit and not the NPDES permit until more information is available.

The public also raised an issue concerning the method of handling the solids from the wastewater treatment process. First, the screening process removes ordinary municipal solid waste before the wastewater is treated. This solid waste is ordinary trash such as bottles, plastic material, branches and other items. These items are removed and disposed as municipal solid waste in a manner this is consistent with EPA approved wastewater treatment procedures. The Department's technical experts also approve of this removal and disposal procedure. I agree that municipal solid waste material that is removed prior to the wastewater treatment process by the screening process should not be subject to the same testing as required for the wastewater

effluent's solid waste, which consists of the bio mass solids byproducts, or wastewater treatment sludge.

The public comment raised an issue with the treatment of the wastewater treatment sludge. Again, this is concern of the Department's, and was highlighted by the DWR memorandum dated April 21, 2006, attached to this Report. NCC acknowledged that the SBR treatment process will significantly increase the amount of sludge that the MOT Plant will generate. Currently, NCC plans to store the sludge in Lagoon No. 2, although NCC is studying other disposal methods for future use. The Department's experts indicate that the storage of sludge in Lagoon No. 2 may cause a significant odor problem in the future. The Department's concern is that Lagoon No 2 could turn anoxic or anaerobic, which would essentially result in it becoming a large open air cesspool. This result would generate considerable foul and obnoxious odors, and could be a violation of the permit and other laws and regulations. Obviously, NCC would not want this to occur.

The Department could require the removal of the sludge, as recommended by some of the Department's experts. The other option is to allow NCC to continue to study the issue and make a recommendation when the study is completed, as recommended by other Department experts. I find that the temporary deposit of sludge into Lagoon No. 2 has the potential for causing a significant odor problem within the next couple of couple years. I find that in the near term, the use of Lagoon No. 2 is an acceptable solution to storing the sludge until NCC develops a long-term solution. I do not find that the NPDES permit needs to reflect this as a permit condition at this time, but recommend that the Department formally place NCC on notice that it is expected to continue to investigate this issue and take such prudent managerial action to prevent any future problems. The Department would like to avoid the release of the odors from Lagoon No. 2, which would trigger a public outcry and likely a Department enforcement action for the permit

violation. The threat of future enforcement for an odor problem at a wastewater treatment plant is always present, but when a plant operator is warned about a particular problem and that problem occurs, then the Department may impose even greater consequences for a permit violation. In sum, I recommend that the draft NPDES permit be issued without requiring a plan for the handling of the sludge, and the Department will allow NCC to continue to study the issue in order to present the Department with a plan in the future prior to any odors problems.

In sum on the NPDES permit, I recommend that the draft NPDES permit be issued without any modifications based upon my recommendation that the spray irrigation be used to the maximum extent possible. If the spray irrigation is not used to the maximum extent possible, then I recommend a discharge limit be imposed in the NPDES permit.

Turning to the LTS permit application and public comments, the single issue was the opposition to the proposed reduction to the spray irrigation buffer zone from 150 feet to 75 feet. NCC previously sought to reduce the buffer zone to 75 feet in 2001, but the Department denied this request in Secretary's Order No. 2002-W-0060, issued November 12, 2002.

First, NCC bears the burden to show that a reduced buffer zone is supported. Subsection 312 of the LT Regulations requires buffer zones, which are "required to protect the public from aerosol sprays." The regulations' minimum buffer zone is 150 feet "between the edge of the wetted field area and all property boundaries and the shoulder of internal an external roads" for the MOT Plant, which is a restricted access property. The same subsection allows for less of a buffer zone "if the designer can demonstrate that aerosols will be contained within the site and/or no threat to public health or the environment exists." In effect, the buffer zone is an added measure of protection to prevent the public from any contact with the sprayed treated effluent.

Based upon the record, I find that NCC has overcome its burden and demonstrated that changed conditions support allowing a reduction in the buffer zone from 150 to 75 feet. First,

NCC has installed perimeter fencing to curtail public access.[8] Second, NCC has installed a perimeter barrier of evergreen trees, which will shield the adjacent properties from any overspray. This barrier is approximately 30 feet in height. NCC also has converted unused walking trails into additional vegetation as part of this barrier. Third, and most important, NCC changed its spray equipment in October 2003, which was after the last public hearing. I observed the lower spray irrigation system and it discharges downward from approximately five feet above the ground. It would be difficult, except in high wind conditions, for the spray to drift more than a few feet away from its intended spray area. I find that the requested 75 feet buffer zone should provide more than ample protection to the adjoining properties. The prior spray equipment were high off the ground in order to maximize the spray's trajectory over the maximum area possible. In addition, NCC will use smaller solid sets to irrigation.[9] The fourth reason is that there has not been any complaint about overspray since the new equipment was installed. The fifth reason is the improved treatment via the SBR method, which reduces the public health risk from any pathogens in the treated effluent.

I further note that the Department may revoke the reduction in the buffer zone if the Department determines that aerosols from the spray irrigation are leaving the MOT Plant's property. In addition, I recommend that the signs posted at the perimeter include the Department's toll free complaint telephone number. The Department also wants to encourage NCC's use of spray irrigation, and increasing the amount of land that may be sprayed is consistent with encouraging more spray irrigation. Thus, the Department wants NCC to fully use its property that the Department determined was acceptable for spray irrigation so long as the treated effluent remains on NCC's property.

[8] The fence is four feet in height and not a security fence. Instead, it is more of a minor deterrent.
[9] Until these solid sets are operational, the Department will not be able to evaluate their ability to control the spray and may require changes to reduce the possibility of aerosol from leaving the property.

The last issue with the LTS permit is the need to include the usage of spray irrigation as the preferred method for the MOT Plant's treated effluent, as discussed above in the NPDES permit. The LT Regulations specify in considerable detail when spray irrigation is not to occur. The MOT Plant and the lower discharge of pollutants could use the NPDES as its exclusive discharge method for its treated effluent absent some regulatory control in the LTS permit to use spray irrigation to the maximum extent possible. I recommend a LTS permit condition to provide the regulatory control over the MOT Plant's discharge of treated effluents. The MOT Plant should use its surface water discharge only when spray irrigation and storage are not available during the warm weather months. This is consistent with the Department's prior statement of the preferred method for the MOT Plant's treated effluent.

In sum, I recommend that the Department grant the LTS permit amendment to reduce the buffer zone from 150 feet to 75 feet. In addition, I recommend that the LTS permit include a condition that requires NCC to use spray irrigation for the MOT Plant's treated effluent to the maximum extent possible consistent with the Department's LT Regulations.

IV. RECOMMENDED FINDINGS AND CONCLUSIONS

Based upon the discussion and reasons, I find and conclude that the record supports approval of the issuance of permits to NCC for a NPDES permit based upon the draft NPDES permit and a LTS permit consistent with this Report. I recommend the Secretary adopt following findings and conclusions:

1. The Department has jurisdiction under its statutory authority to make a determination in this proceeding;

2. The Department provided adequate public notice of the proceeding and the public hearing in a manner required by the law and its regulations;

3. The Department held a public hearing in a manner required by the law and its regulations;

4. The Department considered all timely and relevant public comments in making its determination;

5. The Department should issue the permits, subject to those conditions necessary, appropriate and reasonable to protect the environment and public health;

6. The Director of DWR shall authorize the timely preparation and issuance of the permits consistent with the Secretary's final decision.

s/Robert P. Haynes
Robert P. Haynes, Esquire
Hearing Officer

MEMORANDUM

To: Bob Haynes, OTS
From: Tony Hummel, SWDS, DWR
Thru: Peder Hansen, SWDS, DWR
RE: Technical Response to Public Hearing Comments for New Castle County, Department of Special Services, Water Farm No. 1 NPDES Permit
Date: April 20, 2006

In response to your April 13, 2006 memo requesting expert technical assistance in preparing the Hearing Officer's Report, I have prepared the following responses for Issues 2 and 3. Issue 1 pertains to the Spray Irrigation Permit and should be addressed by the Groundwater Discharges Section.

Issue 2: As indicated in the Public Notice Draft Fact Sheet and reiterated in the public hearing testimony, the limit for Total Kjeldahl Nitrogen (TKN) was based on the waste load allocation (WLA) for the facility from the TMDL. The TMDL included a WLA for TKN based on the concern for dissolved oxygen (DO) impairment, not nutrients. As explained in the hearing testimony, TKN impairs DO, whereas the nitrate/nitrite (NO_3/NO_2) portion of total nitrogen (TN) do not. Other than the TKN WLA in the TMDL, no other State or Federal water quality standards for nitrogen exist at this time. If at some later date a water quality standard or WLA is promulgated for TN, the standard would be implemented in the next permit reissuance or the permit could be reopened and modified to include a TN limit.

Issue 3: Part III.A. 5, 6, and 7 of the Public Notice Draft Permit require management of sludge in accordance with applicable State and Federal laws and regulations. No other permit requirements regarding sludge are needed at this time. When current sludge management practices are no longer effective or feasible, the facility shall be required to submit a sludge management plan to the Department for review and approval. Also, for the record, at least two other Delaware NPDES permittees currently store municipal sewage sludge in lagoons as part of their treatment regime.

Please call me if you have any questions or need anything further.

To: Robert Haynes, Hearing Officer

From: Ronald Graeber

Cc: Peder Hansen
Marlene Baust

RE: Technical Response to Public Hearing Comments for New Castle County, Department of Special Services, Water Farm No. 1 Spray Irrigation Permit

Date: April 21, 2006

In response to your April 13, 2006 memo requesting expert technical assistance in preparing the Hearing Officer's Report, the following responses address Issues Number 1 and 3.

Issue 1:

As previously discussed, New Castle County's (NCC) request to reduce perimeter buffers at Water Farm I was the subject of an April 30, 2002 public hearing. A copy of that hearing transcript, my report to the Hearing Officer and the resulting Secretary's Order are included for your review and consideration as Attachment 1. The 2002 Secretary's Order denied NCC's request to reduce buffers.

Buffer requirements are based on the level of treatment provided. Part II, B, Sections 303 and 312 of the Guidance and Regulations Governing the Land Treatment of Wastes (Attachment 2) detail treatment and buffer requirements for wastewater spray irrigation facilities. Based on Section 303, Water Farm 1 is considered a "restricted public access" site. The buffers are required to prevent aerosols from migrating beyond the spray field and to protect the public from potential exposure to pathogens.

Part II.B. Section 312 of the Guidance and Regulations Governing the Land Treatment of Wastes establishes minimum buffers of 150 feet to the property line for restricted public access sites. However, Section 313 states that lesser distances may be allowed if the designer can demonstrate that aerosols will be contained within the site and/or no threat to public health or the environment exists.

New Castle County has requested a reduction in the perimeter buffer from 150 feet to 75 feet. They plan to contain aerosols on site by:

1. Retrofitting the spray irrigation pivots with longer drop tubes and the latest generation of constant volume nozzles.
2. Not using end guns on the irrigation pivots.
3. Providing a thick wooded evergreen barrier to the spray fields.
4. Eliminating seldom utilized walking paths and returning them to natural habitat through the planting of hundreds of native hardwood saplings.
5. Providing a greater level of treatment which will reduce pathogen potentials.

Although the greater level of treatment will not meet unlimited public access criteria, the 75 foot buffer, with the additional safeguards, should be sufficient to retain aerosols on site. The Spray Irrigation Permit will still require the retention of aerosols on site. Any alleged permit violations may be reported to DNREC at 1-800-662-8802.

Additionally, the Department does not require NCC to keep adjacent property owners periodically informed about the water farm's operations. However, NCC has an Oversight Committee that is open to the public and meets quarterly to discuss facility operations.

Issue 3:

Based on my professional experience and expertise, I have strong concerns regarding NCC's plan to discharge aerobically treated sludge into Lagoon #2. Lagoon #2 is a 49 Million gallon lagoon designed to treat low strength wastewater, reducing BOD concentrations from 100 mg/l to 25 mg/l. Lagoon #2 has three 25Hp aerators capable of providing approximately 150 pounds of oxygen per hour. This will not be enough oxygen to keep the lagoon aerobic if sludge is discharged to the lagoon.

Attachment C provides general information on sludge generation rates for mechanical and lagoon treatment systems. A mechanical system, like the SBR's recently constructed at Water Farm 1, will generate significantly more sludge than a lagoon treatment system.

If Lagoon #2 turns anoxic or anaerobic, significant obnoxious odors will be generated; and, considerable time will be needed to either evacuate or reaerate the lagoon to eliminate the odors. Consequently, I recommend we deny the request to discharge sludge into Lagoon #2 until or unless NCC provides engineering analyses demonstrating that sufficient oxygen will be provided to keep the sludge aerobic. In the interim sludge can either be landfilled, permitted for agricultural reuse, or hauled off-site for additional processing.