

**Joshi, J.R.**

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**From:** Toni King <ToniKing@murphybrownllc.com>  
**Sent:** Friday, June 13, 2014 1:12 PM  
**To:** Joshi, J.R.  
**Subject:** 40-136  
**Attachments:** Ben Rice Permit Application.pdf

This is a permit application for the old Lindell farm. The new owner is requesting a change from a 8200 feeder to finish to 9626 wean to finish.

- $\Delta$  in operation type
- No other changes

*A Operation Type*

Please do not leave any question unanswered.

Facility Number: 40-36 or Permit Number: NCA240136  
 Facility Name: Grace Farm (Old Lindell Farm)  
 Landowner's name (must match the name on the Certified Animal Waste Management Plan) Benny Rice  
 Landowner's Mailing address 458 Joe Morris Rd.  
 City, State Kenly NC Zip 27542  
 Telephone Number (include area code): 919-920-9152  
 County where facility is located: Greene  
 Farm Manager's name (if different from Landowner): \_\_\_\_\_  
 Farm Manager's telephone number (include area code): \_\_\_\_\_

**Submit a copy of the most recent Waste Utilization Plan for this facility with this application. The Waste Utilization Plan must be signed by the owner and a technical specialist.**

I attest that this application has been reviewed by me and is accurate and complete to the best of my knowledge. I understand that if all required parts of this application are not completed and that if all required supporting information and attachments are not included, this application package will be returned to me as incomplete. Note: In accordance with NC General Statutes 143-215.6A and 143-215.6B, any person who knowingly makes any false statement, representation, or certification in any application shall be guilty of a Class 2 misdemeanor which may include a fine not to exceed \$10,000 as well as civil penalties up to \$25,000 per violation. (18 U.S.C. Section 1001 provides a punishment by a fine of not more than \$10,000 or imprisonment of not more than 5 years, or both for a similar offense.)

Printed Name of Signing Official (Landowner, or if multiple Landowners all landowners should sign.

If Landowner is a corporation signature should be by a principal executive officer of the corporation):

Name: Benny Rice Title: owner

Signature: Benny Rice Date: 6-2-2014

THE COMPLETED APPLICATION SHOULD BE SENT TO THE FOLLOWING ADDRESS:

**NORTH CAROLINA DIVISION OF WATER QUALITY  
 WATER QUALITY SECTION  
 NON-DISCHARGE PERMITTING UNIT  
 1617 MAIL SERVICE CENTER  
 RALEIGH, NORTH CAROLINA 27699-1617  
 TELEPHONE NUMBER: (919) 733-5083 FAX NUMBER: (919) 715-6048**



North Carolina Department of Environment and Natural Resources

Pat McCrory  
Governor

John E. Skvarla, III  
Secretary

May 12, 2014

Benny G. Rice  
Grace Farm  
504 Joe Morris Road  
Kenly, NC 27542

Subject: Certificate of Coverage No. NCA240136  
Grace Farm  
Animal Waste Management System  
Greene County

Existing COC

Dear Benny G. Rice:

In accordance with your Notification of Change of Ownership received March 5, 2014, we are hereby forwarding to you this Certificate of Coverage (COC) issued to Benny G. Rice, authorizing the operation of the subject animal waste management system in accordance with NPDES General Permit NCA200000.

**This COC shall be effective from the date of issuance until June 30, 2017, and shall hereby void Certificate of Coverage Number NCA240136 dated June 5, 2012.**

This approval shall consist of the operation of this system including, but not limited to, the management and land application of animal waste as specified in the facility's Certified Animal Waste Management Plan (CAWMP) for the Grace Farm, located in Greene County, with an animal capacity of no greater than the following swine annual averages:

Wean to Finish: 0  
Wean to Feeder: 0  
Farrow to Finish: 0

Feeder to Finish: 8200  
Farrow to Wean: 0  
Farrow to Feeder: 0

Boar/Stud: 0  
Gilts: 0

If this is a Farrow to Wean or Farrow to Feeder operation, there may also be one boar for each 15 sows. Where boars are unnecessary, they may be replaced by an equivalent number of sows. Any of the sows may be replaced by gilts at a rate of 4 gilts for every 3 sows

Pursuant to this COC, you are authorized and required to operate the system in conformity with the conditions and limitations as specified in the General Permit, the facility's CAWMP, and this COC. An adequate system for collecting and maintaining the required monitoring data and operational information must be established for this facility. Any increase in waste production greater than the certified design capacity or increase in number of animals authorized by this COC (as provided above) will require a modification to the CAWMP and this COC and must be completed prior to actual increase in either wastewater flow or number of animals.

1636 Mail Service Center, Raleigh, North Carolina 27699-1636  
Phone: 919-807-6464 \ Internet: <http://www.ncdenr.gov/>

**Please pay careful attention to the record keeping and monitoring conditions in this permit. The Animal Facility Annual Certification Form must be completed and returned to the Division of Water Resources by no later than March 1st of each year.**

If your Waste Utilization Plan has been developed based on site-specific information, careful evaluation of future samples is necessary. Should your records show that the current Waste Utilization Plan is inaccurate you will need to have a new Waste Utilization Plan developed.

Upon abandonment or depopulation for a period of four years or more, the Permittee must submit documentation to the Division demonstrating that all current NRCS standards are met prior to restocking of the facility.

Per 15A NCAC 02T .0111(c), a compliance boundary is provided for the facility and no new water supply wells shall be constructed within the compliance boundary. Per NRCS standards a 100-foot separation shall be maintained between water supply wells and any lagoon or any wetted area of a spray field.

Please be advised that any violation of the terms and conditions specified in this COC, the General Permit or the CAWMP may result in the revocation of this COC, or penalties in accordance with NCGS 143-215.6A through 143-215.6C, the Clean Water Act and 40 CFR 122.41 including civil penalties, criminal penalties, and injunctive relief.

If any parts, requirements, or limitations contained in this COC are unacceptable, you have the right to apply for an individual NPDES Permit by contacting the staff member listed below for information on this process. Unless such a request is made within 30 days, this COC shall be final and binding.

**In accordance with Condition III.27 of the General Permit, waste application shall cease within four (4) hours of the time that the National Weather Service issues a Hurricane Warning, Tropical Storm Warning, or a Flood Watch associated with a tropical system for the county in which the facility is located. You may find detailed watch/warning information for your county by calling the Newport/Morehead City, NC National Weather Service office at (252) 223-5737, or by visiting their website at: [www.erh.noaa.gov/er/mhx/](http://www.erh.noaa.gov/er/mhx/)**

This facility is located in a county covered by our Washington Regional Office. The Regional Office Water Quality Regional Operations Section Staff may be reached at (252) 946-6481. If you need additional information concerning this COC or the General Permit, please contact the Animal Feeding Operations Branch staff at (919) 807-6464.

Sincerely,

*for* Thomas A. Reeder, Director  
Division of Water Resources

Enclosures

cc: (Certificate of Coverage only for all ccs)  
Washington Regional Office, Water Quality Regional Operations Section  
Greene County Health Department  
Greene County Soil and Water Conservation District  
WQROS Central Files (Permit No. NCA240136)  
AFO Notebooks

## Animal Waste Management Plan Certification

(Please type or print all information that does not require a signature)

<b>Existing</b>	or	<b>New</b>	or	<b>Expanded</b>	(please circle one)
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**General Information:**

Name of Farm:	Grace Farm	Facility No:	40-136
Owner(s) Name:	Benny G. Rice	Phone No:	919-920-9152
Mailing Address:	458 Joe Morris Road Kenly, NC 27542		
Farm Location:	County Farm is located in: <u>Greene</u>		
Latitude and Longitude:	35 30' 43" / 77 48' 07"	Integrator:	<u>Murphy Brown</u>
Please attach a copy of a county road map with location identified and described below (Be specific: road names, directions, milepost, etc.):			
Take NC 58 N towards Wilson for 10.3 miles and turn left on SR 1225; Go 0.4 To Lindell Crossroads and turn left onto Lindell Road SR 1253. Go 2.6 miles to Farm entrance on the left			

**Operation Description:**

Type of Swine	No. of Animals	Type of Poultry	No. of Animals	Type of Cattle	No. of Animals
<input type="checkbox"/> Wean to Feeder	_____	<input type="checkbox"/> Layer	_____	<input type="checkbox"/> Dairy	_____
<input type="checkbox"/> Feeder to Finish	_____	<input type="checkbox"/> Pullets	_____	<input type="checkbox"/> Beef	_____
<input type="checkbox"/> Farrow to Wean	_____				
<input type="checkbox"/> Farrow to Feeder	_____				
<input type="checkbox"/> Farrow to Finish	_____				
<input checked="" type="checkbox"/> Wean to Finish	9626				
<input type="checkbox"/> Gilts	_____				
<input type="checkbox"/> Boars	_____				

**Expanding Operation Only**

Previous Design Capacity	Additional Design Capacity	Total Design Capacity
Acreage Available for Application:	63.08	Required Acreage: <u>63.08</u>
Number of Lagoons / Storage Ponds:	1	Total Capacity: 1,980,126 Cubic Feet (ft <sup>3</sup> )
Are subsurface drains present on the farm:	Yes	or <span style="border: 1px solid black; padding: 2px;">No</span> (please circle one)

If YES: are subsurface drains present in the area of the LAGOON or SPRAY FIELD (please circle one)  
 \*\*\*\*\*

**Owner / Manager Agreement**

I (we) verify that all the above information is correct and will be updated upon changing. I (we) understand the operation and maintenance procedures established in the approved animal waste management plan for the farm named above and will implement these procedures. I (we) know that any expansion to the existing design capacity of the waste treatment and storage system or construction of new facilities will require a new certification to be submitted to the Division of Environmental Management before the new animals are stocked. I (we) understand that there must be no discharge of animal waste from the storage or application system to surface waters of the state either directly through a man-made conveyance or from a storm event less severe than the 25 - year, 24 - hour storm and there must not be run-off from the application of animal waste. I (we) understand that run-off of pollutants from lounging and heavy use areas must be minimized using technical standards developed by the Natural Resources Conservation Service. The approved plan will be filed at the farm and at the office of the local Soil and Water Conservation District. I (we) know that any modification must be approved by a technical specialist and submitted to the Soil and Water Conservation District prior to implementation. A change in land ownership requires written notification to DEM or a new certification (if the approved plan is changed) within 60 days of a title transfer.

Name of Land Owner:	Benny G. Rice	Date:	<u>6-2-14</u>
Signature:	<u>Benny G. Rice</u>		
Name of Manager (if different from owner):	_____		
Signature:	_____	Date:	_____

## Technical Specialist Certification

I. As a technical specialist designated by the North Carolina Soil and Water Conservation Commission pursuant to 15A NCAC 6F .0005. I certify that the animal waste management system for this farm named above has an animal waste management plan that meets or exceeds standards and specifications of the Division of Environmental Management (DEM) as specified in 15A NCAC 2H.201 and the USDA-Natural Resources Conservation Service (NRCS) and/or the North Carolina Soil and Water Conservation Commission pursuant to 15A NCAC 2H.0217 and 15A NCAC 6F .0001.0005. The following elements are included in the plan as applicable. While each category designates a technical specialist who may sign each certification (SD, SI, WUP, RC, I), the technical specialist should only certify parts for which they are technically competent.

### II. Certification of Design

#### A) Collection, Storage, Treatment System

Check the appropriate box

Existing facility without retrofit (SD or WUP)

Storage volume is adequate for operation capacity; storage capability consistent with waste utilization requirements.

New, expanded or retrofitted facility (SD)

Animal waste storage and treatment structures, such as but not limited to collection systems, lagoons and ponds, have been designed to meet or exceed the minimum standards and specifications.

Name of Technical Specialist (Please Print): Toni W. King  
Affiliation Murphy-Brown, LLC Date Work Completed: \_\_\_\_\_  
Address (Agency): P.O. Box 856, Warsaw, NC 28398 Phone No.: (910) 293-3434  
Signature: Toni W. King Date: 6-2-2014

#### B) Land Application Site (WUP)

The plan provides for minimum separations (buffers); adequate amount of land for waste utilization; chosen crop is suitable for waste management hydraulic and nutrient loading rates.

Name of Technical Specialist (Please Print): Toni King  
Affiliation Murphy-Brown, LLC Date Work Completed: \_\_\_\_\_  
Address (Agency): P.O. Box 856, Warsaw, NC 28398 Phone No.: (910) 293-3434  
Signature: Toni W. King Date: 6-2-2014

#### C) Runoff Controls from Exterior Lots

Check the appropriate box

Facility without exterior lots (SD or WUP or RC)

This facility does not contain any exterior lots.

Facility with exterior lots (RC)

Methods to minimize the run off of pollutants from lounging and heavy use areas have been designed in accordance with technical standards developed by NRCS.

Name of Technical Specialist (Please Print): Toni W. King  
Affiliation Murphy-Brown, LLC Date Work Completed: \_\_\_\_\_  
Address (Agency): P.O. Box 856, Warsaw, NC 28398 Phone No.: (910) 293-3434  
Signature: Toni W. King Date: 6-2-2014

D). Application and Handling Equipment

Check the appropriate box

Existing or expanding facility with existing waste application equipment (WUP or I)

Animal waste application equipment specified in the plan has been either field calibrated or evaluated in accordance with existing design charts and tables and is able to apply waste as necessary to accommodate the waste management plan: (existing application equipment can cover the area required by the plan at rates not to exceed either the specified hydraulic or nutrient loading rates. A schedule for timing of applications has been established; required buffers can be maintained and calibration and adjustment guidance are contained as part of the plan).

New, expanded or existing facility without existing waste application equipment for spray irrigation. (I)

Animal waste application equipment specified in the plan has been designed to apply waste as necessary to accommodate the waste management plan: (proposed application equipment can cover the area required by the plan at rates not to exceed either the specified hydraulic or nutrient loading rates; a schedule for timing of applications has been established: required buffers can be maintained: calibration and adjustment guidance are contained as part of the plan).

New, expanded or existing facility without existing waste application equipment for land spreading not using spray irrigation. (WUP or I)

Animal waste application equipment specified in the plan has been selected to apply waste as necessary to accommodate the waste management plan: (proposed application equipment can cover the area required by the plan at rates not to exceed either the specified hydraulic or nutrient loading rates: a schedule for timing of applications has been established; required buffers can be maintained: calibration and adjustment guidance are contained as a part of the plan).

Name of Technical Specialist (Please Print): Toni W. King

Affiliation Murphy-Brown, LLC Date Work Completed: \_\_\_\_\_

Address (Agency): P.O. Box 856, Warsaw, NC 28398 Phone No.: (910) 293-3434

Signature: Toni W. King Date: 6-2-2014

E) Odor Control, Insect Control, Mortality Management and Emergency Action Plan (SD,

SI, WUP, RC or I)

The waste management plan for this facility includes a Waste Management Odor Control Checklist, an Insect Control Checklist, a Mortality Management Checklist and an Emergency Action Plan. Sources of both odors and insects have been evaluated with respect to this site and Best Management Practices to Minimize Odors and Best Management Practices to Control Insects have been selected and included in the waste management plan. Both the Mortality Management Plan and the Emergency Action Plan are complete and can be implemented by this facility.

Name of Technical Specialist (Please Print): Toni W. King

Affiliation Murphy-Brown, LLC Date Work Completed: \_\_\_\_\_

Address (Agency): P.O. Box 856, Warsaw, NC 28398 Phone No.: (910) 293-3434

Signature: Toni W. King Date: 6-2-2014

F) Written Notice of New or Expanding Swine Farm

The following signature block is only to be used for new or expanding swine farms that begin construction after June 21, 1996. If the facility was built before June 21, 1996, when was it constructed or last expanded \_\_\_\_\_

I (we) certify that I (we) have attempted to contact by certified mail all adjoining property owners and all property owners who own property located across a public road, street or highway from this new or expanding swine farm. The notice was in compliance with the requirements of NCGS 106-805. A copy of the notice and a list of property owners notified is attached.

Name of Land Owner: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Manager (if different from owner): \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### III. Certification of Installation

#### A) Collection, Storage, Treatment Installation

New, expanded or retrofitted facility (S)

Animal waste storage and treatment structures, such as but not limited to lagoons and ponds, have been installed in accordance with the approved plan to meet or exceed the minimum standards and specifications.

*For existing facilities without retrofits, no certification is necessary.*

Name of Technical Specialist (Please Print): \_\_\_\_\_

Affiliation \_\_\_\_\_

Date Work Completed: \_\_\_\_\_

Address (Agency): \_\_\_\_\_

Phone No.: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

#### B) Land Application Site (WUP)

Check the appropriate box



The cropping system is in place on all land as specified in the animal waste management plan.



Conditional Approval: all required land as specified in the plan is cleared for planting; the cropping system as specified in the waste utilization plan has not been established and the owner has committed to establish the vegetation as specified in the plan by \_\_\_\_\_ (month/day/year); the proposed cover crop is appropriate for compliance with the waste utilization plan.



Also check this box if appropriate

If the cropping system as specified in the plan can not be established on newly cleared land within 30 days of this certification, the owner has committed to establish an interim crop for erosion control:

Name of Technical Specialist (Please Print): \_\_\_\_\_

Toni W. King

Affiliation: Murphy-Brown, LLC

Date Work Completed: \_\_\_\_\_

Address (Agency): P.O. Box 856, Warsaw, NC 28398

Phone No.: (910) 293-3434

Signature: Toni W. King

Date: 10-2-2014

**This following signature block is only to be used when the box for conditional approval in III. B**

I (we) certify that I (we) have committed to establish the cropping system as specified in my (our) waste utilization plan, and if appropriate to establish the interim crop for erosion control, and will submit to DEM a verification of completion from a Technical Specialist within 15 calendar days following the date specified in the conditional certification. I (we) realize that failure to submit this verification is a violation of the waste management plan and will subject me (us) to an enforcement action from DEM.

Name of Land Owner: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Name of Manager (if different from owner): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

C) Runoff Controls from Exterior Lots (RC)

Facility with exterior lots

Methods to minimize the run off of pollutants from lounging and heavy use area have been installed as specified in the plan.

*For facilities without exterior lots, no certification is necessary.*

Name of Technical Specialist (Please Print): \_\_\_\_\_

Affiliation \_\_\_\_\_ Date Work Completed: \_\_\_\_\_

Address (Agency): \_\_\_\_\_ Phone No.: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

D) Application and Handling Equipment Installation (WUP or I)

Check the appropriate block

Animal waste application and handling equipment specified in the plan is on site and ready for use; calibration and adjustment materials have been provided to the owners and are contained as part of the plan.

Animal waste application and handling equipment specified in the plan has not been installed but the owner has produced leasing or third party application and has provided a signed contract: equipment specified in the contract agrees with the requirements of the plan; required buffers can be maintained; calibration and adjustment guidance have been provided to the owners and are continued as part of the plan.

Conditional approval: Animal waste application and handling equipment specified in the plan has been purchased and will be on site and installed by \_\_\_\_\_ (month/day/year); there is adequate storage to hold the waste until the equipment is installed and until the waste can be land applied in accordance with the cropping system contained in the plan; and calibration and adjustment guidance have been provided to the owners and are contained as part of the plan.

Name of Technical Specialist (Please Print): \_\_\_\_\_

Toni W. King

Affiliation Murphy-Brown, LLC Date Work Completed: \_\_\_\_\_

Address (Agency) P.O. Box 856, Warsaw, NC 28396 Phone No.: (910)293-3434

Signature: Toni W. King Date: 6-2-2014

**The following signature block is only used when the box for conditional approval in III D above has been checked.**

I (we) certify that I (we) have committed to purchase the animal waste application and handling equipment as specified in my (our) waste management plan and will submit to DEM a verification of delivery and installation from a Technical Specialist within 15 days following the date specified in the conditional certification. I (we) realize that failure to submit this verification is a violation of the waste management plan and will subject me (us) to an enforcement action from DEM.

Name of Land Owner: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Manager (if different from owner): \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

E) Odor Control, Insect Control and Mortality Management (SD, SI, WUP, RC or I)

Methods to control odors and insects as specified in the Plan have been installed and are operational. The mortality management system in the Plan has also been installed and is operational.

Name of Technical Specialist (Please Print): \_\_\_\_\_

Toni W. King

Affiliation Murphy-Brown, LLC Date Work Completed: \_\_\_\_\_

Address (Agency) P.O. Box 856, Warsaw, NC 28396 Phone No.: (910)293-3434

Signature: Toni W. King Date: 6-2-2014

Please return the completed form to the Division of Water Quality at the following Address:

**Department of Environment, Health, and Natural Resources  
Division of Water Quality  
Water Quality Section, Compliance Group  
P.O. Box 29535  
Raleigh, NC 27626-0535**

Please remember to submit a copy of this form along with the complete Animal Waste Management Plan to the local Soil and Water Conservation District Office and to keep a copy in your files with your Animal Waste Management Plan.

## NUTRIENT UTILIZATION PLAN

Grower(s):	Ben Rice
Farm Name:	Grace Farm
County:	Greene
<b>Farm Capacity:</b>	
Farrow to Wean	
Farrow to Feeder	
Farrow to Finish	
Wean to Feeder	
Wean to Finish	9626
Feeder to Finish	
Storage Structure:	Anaerobic Lagoon
Storage Period:	>180 days
Application Method:	Irrigation

The waste from your animal facility must be land applied at a specified rate to prevent pollution of surface water and/or groundwater. The plant nutrients in the animal waste should be used to reduce the amount of commercial fertilizer required for the crops in the fields where the waste is to be applied.

This waste utilization plan uses nitrogen as the limiting nutrient. Waste should be analyzed before each application cycle. Annual soil tests are strongly encouraged so that all plant nutrients can be balanced for realistic yields of the crop to be grown.

Several factors are important in implementing your waste utilization plan in order to maximize the fertilizer value of the waste and to ensure that it is applied in an environmentally safe manner:

1. Always apply waste based on the needs of the crop to be grown and the nutrient content of the waste. Do not apply more nitrogen than the crop can utilize.
2. Soil types are important as they have different infiltration rates, leaching potentials, cation exchange capacities, and available water holding capacities.
3. Normally waste shall be applied to land eroding at less than 5 tons per acre per year. Waste may be applied to land eroding at 5 or more tons per acre annually, but less than 10 tons per acre per year providing that adequate filter strips are established.
4. Do not apply waste on saturated soils, when it is raining, or when the surface is frozen. Either of these conditions may result in runoff to surface waters which is not allowed under DWQ regulations.
5. Wind conditions should also be considered to avoid drift and downwind odor problems.
6. To maximize the value of the nutrients for crop production and to reduce the potential for pollution, the waste should be applied to a growing crop or applied not more than 30 days prior to planting a crop or forages breaking dormancy. Injecting the waste or disking will conserve nutrients and reduce odor problems.

This plan is based on the waste application method shown above. If you choose to change methods in the future, you need to revise this plan. Nutrient levels for different application methods are not the same.

The estimated acres needed to apply the animal waste is based on typical nutrient content for this type of facility. In some cases you may want to have plant analysis made, which could allow additional waste to be applied. Provisions shall be made for the area receiving waste to be flexible so as to accommodate changing waste analysis content and crop type. Lime must be applied to maintain pH in the optimum range for specific crop production.

This waste utilization plan, if carried out, meets the requirements for compliance with 15A NCAC 2H .0217 adopted by the Environmental Management Commission.

**AMOUNT OF WASTE PRODUCED PER YEAR ( gallons, ft<sup>3</sup>, tons, etc.):**

Capacity	Type	Waste Produced per Animal	Total
9626	Farrow to Wean	3212 gal/yr	gal/yr
	Farrow to Feeder	4015 gal/yr	gal/yr
	Farrow to Finish	10585 gal/yr	gal/yr
	Wean to Feeder	223 gal/yr	gal/yr
	Wean to Finish	838.1 gal/yr	8,067,551 gal/yr
	Feeder to Finish	986 gal/yr	gal/yr
	<b>Total</b>		<b>8,067,551 gal/yr</b>

**AMOUNT OF PLANT AVAILABLE NITROGEN PRODUCED PER YEAR (lbs):**

Capacity	Type	Nitrogen Produced per Animal	Total
9626	Farrow to Wean	3.85 lbs/yr	lbs/yr
	Farrow to Feeder	7.23 lbs/yr	lbs/yr
	Farrow to Finish	19.05 lbs/yr	lbs/yr
	Wean to Feeder	0.4 lbs/yr	lbs/yr
	Wean to Finish	1.5 lbs/yr	14,439 lbs/yr
	Feeder to Finish	1.77 lbs/yr	lbs/yr
	<b>Total</b>		<b>14,439 lbs/yr</b>

Applying the above amount of waste is a big job. You should plan time and have appropriate equipment to apply the waste in a timely manner.

**LAND UTILIZATION SUMMARY**

The following table describes the nutrient balance and land utilization rate for this facility. Note that the Nitrogen Balance for Crops indicates the ratio of the amount of nitrogen produced on this facility to the amount of nitrogen that the crops under irrigation may uptake and utilize in the normal growing season.

**Total Irrigated Acreage:** 52.174  
**Total N Required 1st Year:** 14934.808  
**Total N Required 2nd Year:** 0

**Average Annual Nitrogen Requirement of Crops:** 14,934.81  
**Total Nitrogen Produced by Farm:** 14,439.00  
**Nitrogen Balance for Crops:** (495.81)

The following table describes the specifications of the hydrants and fields that contain the crops designated for utilization of the nitrogen produced on this facility. This chart describes the size, soil characteristics, and uptake rate for each crop in the specified crop rotation schedule for this facility.

Reception Area Specifications

Nitrogen

Tract	Field Hyd	Irrigated Acreage	Soil Type	1st Crop Code	Time to Apply	1st Crop Yield	1st Crop lbs N/Unit	Lbs N/Ac	Lbs N Residual	Lbs N /Ac	Total lbs N Utilized	Lbs N /Ac	Total lbs N Utilized	2nd Crop Code	Time to Apply	2nd Crop Yield	2nd Crop lbs N/Unit	Lbs N /Ac	Total lbs N Utilized	Lbs N /Ac	Total lbs N Utilized	
T141	1	4.45	WaB	B/C	Mar-Sept	5.4	43.75	236.25			1051.313		222.5	K	Sept-Apr	1	50	50	286.25		1273.813	
T141	2	2.55	WaB	B/C	Mar-Sept	5.4	43.75	236.25			602.4375		127.5	K	Sept-Apr	1	50	50	286.25		729.9375	
T3	3	5.93	WaB	B/C	Mar-Sept	5.4	43.75	236.25			1400.963		296.5	K	Sept-Apr	1	50	50	286.25		1687.463	
T2121	5	5.1	WaB	B/C	Mar-Sept	5.4	43.75	236.25			1204.875		255	K	Sept-Apr	1	50	50	286.25		1459.875	
T2121	7	1.64	WaB	B/C	Mar-Sept	5.4	43.75	236.25			387.45		82	K	Sept-Apr	1	50	50	286.25		469.45	
T3	8	5.31	WaB	B/C	Mar-Sept	5.4	43.75	236.25			1254.488		265.5	K	Sept-Apr	1	50	50	286.25		1519.988	
T3	9	5.75	WaB	B/C	Mar-Sept	5.4	43.75	236.25			1358.438		287.5	K	Sept-Apr	1	50	50	286.25		1645.938	
T2121	10	4.38	WaB	B/C	Mar-Sept	5.4	43.75	236.25			1034.775		219	K	Sept-Apr	1	50	50	286.25		1253.775	
T2121	11	0.88	WaB	B/C	Mar-Sept	5.4	43.75	236.25			207.9		44	K	Sept-Apr	1	50	50	286.25		251.9	
T2121	12	3.76	WaB	B/C	Mar-Sept	5.4	43.75	236.25			888.3		188	K	Sept-Apr	1	50	50	286.25		1076.3	
T2121	13	1.37	WaB	B/C	Mar-Sept	5.4	43.75	236.25			323.6625		68.5	K	Sept-Apr	1	50	50	286.25		392.1625	
T3	14	1.64	WaB	B/C	Mar-Sept	5.4	43.75	236.25			387.45		82	K	Sept-Apr	1	50	50	286.25		469.45	
T3	15	2.39	WaB	B/C	Mar-Sept	5.4	43.75	236.25			564.6375		119.5	K	Sept-Apr	1	50	50	286.25		684.1375	
T3	16	3.43	WaB	B/C	Mar-Sept	5.4	43.75	236.25			810.3375		171.5	K	Sept-Apr	1	50	50	286.25		981.8375	
T141	sub1	0.3	WaB	B/C	Mar-Sept	5.4	43.75	236.25			70.875		15	K	Sept-Apr	1	50	50	286.25		301.875	
T3&T2121	sub2&3	1.704	WaB	B/C	Mar-Sept	5.4	43.75	236.25			260.82		55.2	K	Sept-Apr	1	50	50	286.25		316.02	
T3	sub4	0.24	WaB	B/C	Mar-Sept	5.4	43.75	236.25			56.7		12	K	Sept-Apr	1	50	50	286.25		68.7	
T2121	sub5	0.51	WaB	B/C	Mar-Sept	5.4	43.75	236.25			120.4875		25.5	K	Sept-Apr	1	50	50	286.25		145.9875	
T3	sub6	1.44	WaB	B/C	Mar-Sept	5.4	43.75	236.25			340.2		72	K	Sept-Apr	1	50	50	286.25		412.2	
Totals:		52.174									12326.11		2808.7									14934.81

Handwritten notes and circled totals:   
 - Red circles around 52.174, 12326.11, 2808.7, and 14934.81.   
 - Red arrows pointing to the 10th and 11th rows.   
 - Red text: "B/C = 11/10/15", "Bermuda 11/04/15", "K = small", "K = grains".

Reception Area Specifications

\*\*Optional Phosphorus\*\*

Tract	Field	Irrigated Acreage	Soil Type	1st Crop Code	Time to Apply	1st Crop Yield	P Removal Rate	Lbs P /Ac	Total lbs P Utilized	2nd Crop Code	Time to Apply	2nd Crop Yield	P Removal Rate	Lbs P /Ac	Total lbs P Utilized	Total Lbs P /Ac	Total Gallons		
T3	4	4.65	WaB	C	Mar-Sept	5.4	12.3	66.42	308.853	L	Sept-Apr	1	14.6	14.6	67.89	81.02	376.743	269102.1	
T2121	6	5.52	WaB	C	Mar-Sept	5.4	12.3	66.42	366.6384	L	Sept-Apr	1	14.6	14.6	80.592	81.02	447.2304	319450.3	
T3&T2121	Sub2&3	0.736	WaB	C	Mar-Sept	5.4	12.3	66.42	48.88512	L	Sept-Apr	1	14.6	14.6	10.7486	81.02	89.63072	42593.37	
<b>Totals:</b>																			
																	10.906	724.3765	159.2276

This plan does not include commercial fertilizer. The farm should produce adequate plant available nitrogen to satisfy the requirements of the crops listed above.

The applicator is cautioned that P and K may be over applied while meeting the N requirements. In the future, regulations may require farmers in some parts of North Carolina to have a nutrient management plan that addresses all nutrients. This plan only addresses nitrogen.

In interplanted fields ( i.e. small grain, etc, interseeded in bermuda), forage must be removed through grazing, hay, and/or silage. Where grazing, plants should be grazed when they reach a height of six to nine inches. Cattle should be removed when plants are grazed to a height of four inches. In fields where small grain, etc, is to be removed for hay or silage, care should be exercised not to let small grain reach maturity, especially late in the season (i.e. April or May). Shading may result if small grain gets too high and this will definately interfere with stand of bermudagrass. This loss of stand will result in reduced yields and less nitrogen being utilized. Rather than cutting small grain for hay or silage just before heading as is the normal situation, you are encouraged to cut the small grain earlier. You may want to consider harvesting hay or silage two to three times during the season, depending on the time small grain is planted in the fall.

The ideal time to interplant small grain, etc, is late September or early October. Drilling is recommended over broadcasting. Bermudagrass should be grazed or cut to a height of about two inches before drilling for best results.

#### CROP CODE LEGEND

Crop Code	Crop	Lbs N utilized / unit yield
A	Barley	1.6 lbs N / bushel
B	Hybrid Bermudagrass - Grazed	50 lbs N / ton
C	Hybrid Bermudagrass - Hay	50 lbs N / ton
D	Corn - Grain	1.25 lbs N / bushel
E	Corn - Silage	12 lbs N / ton
F	Cotton	0.12 lbs N / lbs lint
G	Fescue - Grazed	50 lbs N / ton
H	Fescue - Hay	50 lbs N / ton
I	Oats	1.3 lbs N / bushel
J	Rye	2.4 lbs N / bushel
K	Small Grain - Grazed	50 lbs N / acre
L	Small Grain - Hay	50 lbs N / acre
M	Grain Sorghum	2.5 lbs N / cwt
N	Wheat	2.4 lbs N / bushel
O	Soybean	4.0 lbs N / bushel
P	Pine Trees	40 lbs N / acre / yr

Acres shown in the preceding table are considered to be the usable acres excluding required buffers, filter strips along ditches, odd areas unable to be irrigated, and perimeter areas not receiving full application rates due to equipment limitations. Actual total acres in the fields listed may, and most likely will be, more than the acres shown in the tables.

See attached map showing the fields to be used for the utilization of animal waste.

## SLUDGE APPLICATION:

The following table describes the annual nitrogen accumulation rate per animal in the lagoon sludge

Farm Specifications	PAN/yr/animal	Farm Total/yr
Farrow to Wean	0.84	
Farrow to Feeder	1	
Farrow to Finish	4.1	
Wean to Feeder	0.072	
Feeder to Finish	0.36	

The waste utilization plan must contain provisions for periodic land application of sludge at agronomic rates. The sludge will be nutrient rich and will require precautionary measures to prevent over application of nutrients or other elements. Your production facility will produce approximately 0 pounds of plant available nitrogen per year will accumulate in the lagoon sludge based on the rates of accumulation listed above.

If you remove the sludge every 5 years, you will have approximately 0 pounds of plant available nitrogen to utilize. Assuming you apply this PAN to hybrid bermuda grass hayland at the rate of 300 pounds of nitrogen per acre, you will need 0 acres of land. If you apply the sludge to corn at a rate of 125 pounds per acre, you will need 0 acres of land. Please note that these are only estimates of the PAN produced and the land required to utilize that PAN. Actual values may only be determined by sampling the sludge for plant available nitrogen content prior to application. Actual utilization rates will vary with soil type, crop, and realistic yield expectations for the specific application fields designated for sludge application at time of removal.

## APPLICATION OF WASTE BY IRRIGATION:

The irrigation application rate should not exceed the intake rate of the soil at the time of irrigation such that runoff or ponding occurs. This rate is limited by initial soil moisture content, soil structure, soil texture, water droplet size, and organic solids. The application amount should not exceed the available water holding capacity of the soil at the time of irrigation nor should the plant available nitrogen applied exceed the nitrogen needs of the crop.

If surface irrigation is the method of land application for this plan, it is the responsibility of the producer and irrigation designer to ensure that an irrigation system is installed to properly irrigate the acres shown in the preceding table. Failure to apply the recommended rates and amounts of nitrogen shown in the tables may make this plan invalid.

\*This is the maximum application amount allowed for the soil assuming the amount of nitrogen allowed for the crop is not over applied. In many situations, the application amount shown cannot be applied because of the nitrogen limitation. The maximum application amount shown can be applied under optimum soil conditions.

Your facility is designed for >180 days of temporary storage and the temporary storage must be removed on the average of once every 6 months. In no instance should the volume of the waste stored in your structure be within the 25 year 24 hour storm storage or one foot of freeboard except in the event of the 25 year 24 hour storm.

It is the responsibility of the producer and waste applicator to ensure that the spreader equipment is operated properly to apply the correct rates to the acres shown in the tables. Failure to apply the recommended rates and amounts of nitrogen shown in the tables may make this plan invalid.

Call your technical specialist after you receive the waste analysis report for assistance in determining the amount of waste per acre and the proper application prior to applying the waste.

## Application Rate Guide

The following is provided as a guide for establishing application rates and amounts.

Tract	Hydrant	Soil Type	Crop	Application Rate in/hr	Application Amount * inches
T141	1	WaB	B/C	0.6	1
T141	2	WaB	B/C	0.6	1
T3	3	WaB	B/C	0.6	1
T2121	5	WaB	B/C	0.6	1
T2121	7	WaB	B/C	0.6	1
T3	8	WaB	B/C	0.6	1
T3	9	WaB	B/C	0.6	1
T2121	10	WaB	B/C	0.6	1
T2121	11	WaB	B/C	0.6	1
T2121	12	WaB	B/C	0.6	1
T2121	13	WaB	B/C	0.6	1
T3	14	WaB	B/C	0.6	1
T3	15	WaB	B/C	0.6	1
T3	16	WaB	B/C	0.6	1
T141	sub1	WaB	B/C	0.6	1
T3	sub4	WaB	B/C	0.6	1
T2121	sub5	WaB	B/C	0.6	1
T3	sub6	WaB	B/C	0.6	1



## NUTRIENT UTILIZATION PLAN CERTIFICATION

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**Name of Farm:** Grace Farm  
**Owner:** Ben Rice  
**Manager:**

**Owner/Manager Agreement:**

I/we understand and will follow and implement the specifications and the operation and maintenance procedures established in the approved animal waste nutrient management plan for the farm named above. I/we know that any expansion to the existing design capacity of the waste treatment and/or storage system, or construction of new facilities, will require a new nutrient management plan and a new certification to be submitted to DWQ before the new animals are stocked.

I/we understand that I must own or have access to equipment, primarily irrigation equipment, to land apply the animal waste described in this nutrient management plan. This equipment must be available at the appropriate pumping time such that no discharge occurs from the lagoon in the event of a 25 year 24 hour storm. I also certify that the waste will be applied on the land according to this plan at the appropriate times and at rates which produce no runoff.

This plan will be filed on site at the farm office and at the office of the local Soil and Water Conservation District and will be available for review by NCDWQ upon request.

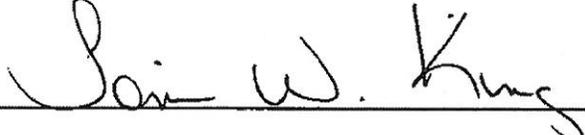
**Name of Facility Owner:** Ben Rice

**Signature:**  6-2-14  
Date

**Name of Manager (if different from owner):** \_\_\_\_\_

**Signature:** \_\_\_\_\_  
Date

**Name of Technical Specialist:** Toni W. King  
**Affiliation:** Murphy-Brown, LLC.  
**Address:** 2822 Hwy 24 West, PO Drawer 856  
Warsaw, NC 28398  
**Telephone:** (910) 293-3434

**Signature:**  6-2-2014  
Date

# NUTRIENT UTILIZATION PLAN

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## REQUIRED SPECIFICATIONS

- 1 Animal waste shall not reach surface waters of the state by runoff, drift, manmade conveyances, direct application, or direct discharge during operation or land application. Any discharge of waste which reaches surface water is prohibited.
- 2 There must be documentation in the design folder that the producer either owns or has an agreement for use of adequate land on which to properly apply the waste. If the producer does not own adequate land to properly dispose of the waste, he/she shall provide evidence of an agreement with a landowner, who is within a reasonable proximity, allowing him/her the use of the land for waste application. It is the responsibility of the owner of the waste production facility to secure an update of the Nutrient Utilization Plan when there is a change in the operation, increase in the number of animals, method of application, receiving crop type, or available land.
- 3 Animal waste shall be applied to meet, but not exceed, the nitrogen needs for realistic crop yields based upon soil type, available moisture, historical data, climatic conditions, and level of management, unless there are regulations that restrict the rate of applications for other nutrients.
- 4 Animal waste shall be applied to land eroding less than 5 tons per acre per year. Waste may be applied to land eroding at more than 5 tons per acre per year but less than 10 tons per acre per year provided grass filter strips are installed where runoff leaves the field (See USDA, NRCS Field Office Technical Guide Standard 393 - Filter Strips).
- 5 Odors can be reduced by injecting the waste or disking after waste application. Waste should not be applied when there is danger of drift from the land application field.
- 6 When animal waste is to be applied on acres subject to flooding, waste will be soil incorporated on conventionally tilled cropland. When waste is applied to conservation tilled crops or grassland, the waste may be broadcast provided the application does not occur during a season prone to flooding (See "Weather and Climate in North Carolina" for guidance).
- 7 Liquid waste shall be applied at rates not to exceed the soil infiltration rate such that runoff does not occur offsite or to surface waters and in a method which does not cause drift from the site during application. No ponding should occur in order to control odor and flies.
- 8 Animal waste shall not be applied to saturated soils, during rainfall events, or when the

## NUTRIENT UTILIZATION PLAN

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### REQUIRED SPECIFICATIONS

(continued)

- 9 Animal waste shall be applied on actively growing crops in such a manner that the crop is not covered with waste to a depth that would inhibit growth. The potential for salt damage from animal waste should also be considered.
- 10 Nutrients from waste shall not be applied in fall or winter for spring planted crops on soils with a high potential for leaching. Waste/nutrient loading rates on these soils should be held to a minimum and a suitable winter cover crop planted to take up released nutrients. Waste shall not be applied more than 30 days prior to planting of the crop or forages breaking dormancy.
- 11 Any new swine facility sited on or after October 1, 1995 shall comply with the following: The outer perimeter of the land area onto which waste is applied from a lagoon that is a component of a swine farm shall be at least 50 feet from any residential property boundary and canal. Animal waste, other than swine waste from facilities sited on or after October 1, 1995, shall not be applied closer than 25 feet to perennial waters.
- 12 Animal waste shall not be applied closer than 100 feet to wells.
- 13 Animal waste shall not be applied closer than 200 feet of dwellings other than those owned by the landowner.
- 14 Waste shall be applied in a manner not to reach other property and public right-of-ways.
- 15 Animal waste shall not be discharged into surface waters, drainageways, or wetlands by discharge or by over-spraying. Animal waste may be applied to prior converted cropland provided the fields have been approved as a land application site by a "technical specialist". Animal waste shall not be applied on grassed waterways that discharge directly into water courses, and on other grassed waterways, waste shall be applied at agronomic rates in a manner that causes no runoff or drift from the site.
- 16 Domestic and industrial waste from washdown facilities, showers, toilets, sinks, etc., shall not be discharged into the animal waste management system.

# NUTRIENT UTILIZATION PLAN

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## REQUIRED SPECIFICATIONS

(continued)

- 17 A protective cover of appropriate vegetation will be established on all disturbed areas (lagoon embankments, berms, pipe runs, etc.). Areas shall be fenced, as necessary, to protect the vegetation. Vegetation such as trees, shrubs, and other woody species, etc., are limited to areas where considered appropriate. Lagoon areas should be kept mowed and accessible. Berms and structures should be inspected regularly for evidence of erosion, leakage, or discharge.
- 18 If animal production at the facility is to be suspended or terminated, the owner is responsible for obtaining and implementing a "closure plan" which will eliminate the possibility of an illegal discharge, pollution and erosion.
- 19 Waste handling structures, piping, pumps, reels, etc., should be inspected on a regular basis to prevent breakdowns, leaks and spills. A regular maintenance checklist should be kept on site.
- 20 Animal waste can be used in a rotation that includes vegetables and other crops for direct human consumption. However, if animal waste is used on crops for direct human consumption, it should only be applied pre-plant with no further applications of animal waste during the crop season.
- 21 Highly visible markers shall be installed to mark the top and bottom elevations of the temporary storage (pumping volume) of all waste treatment lagoons. Pumping shall be managed to maintain the liquid level between the markers. A marker will be required to mark the maximum storage volume for waste storage ponds.
- 22 Waste shall be tested within 60 days of utilization and soil shall be tested at least annually at crop sites where waste products are applied. Nitrogen shall be the rate-determining nutrient, unless other restrictions require waste to be applied based on other nutrients, resulting in a lower application rate than a nitrogen based rate. Zinc and copper levels in the soil shall be monitored and alternative crop sites shall be used when these metals approach excessive levels. pH shall be adjusted and maintained for optimum crop production. Soil and waste analysis records shall be kept for a minimum of five years. Poultry dry waste application records shall be maintained for a minimum of three years. Waste application records for all other waste shall be maintained for a minimum of five years.
- 23 Dead animals will be disposed of in a manner that meets North Carolina regulations.

Grower: Benny Rice (Old Lindell 40-136)  
 Address: 458 Joe Morris Rd  
 Kenly, NC 27542  
 County: GREENE

Designed By: KBW  
 Checked By: DSE  
 Date: 05/20/14  
 Sheet 1 of 7

## ANAEROBIC WASTE LAGOON DESIGN

### FARM INFORMATION

Farm Population:

Nursery:	-----	0
Wean to Finish:	-----	9626 Hd.
Finishing:	-----	0
Farrow to weanling:	-----	0
Farrow to feeder:	-----	0
Farrow to finish:	-----	0
Boars:	-----	0
Storage Period:	-----	180 Days
25 Yr. / 24 Hr Storm Event	-----	7.5 In.
"Heavy Rain" Factor	Not Applicable	
Rainfall in Excess of Evaporation	-----	7.0 In.
Additional Water Usage:	-----	0
Additional Drainage Area:	-----	0

### LAGOON INFORMATION

Is Lagoon Designed as an Irregular Shape?	(Y/N) -----	Y
Does Operator Want Emergency Spillway?	(Y/N) -----	N
Was This Design Built Prior to Sept. 1996?	(Y/N) -----	Y
Is Drain Tile Req'd to Lower SHWT?	REQUIRED!!!!!!!	Y
Seasonal High Water Table Elev:	-----	101.00 Ft.
Freeboard:	-----	1.0 Ft.
Emergency Spillway Flow Depth:	Not Applicable	
Side Slopes:	-----	3 :1 (H:V)
	Press ALT-C to Download	0.0
	contour areas see sheet 2 of 7...	0.0
Top of Dike Elevation:	-----	105.00 Ft.
Finished Bottom Elevation:	-----	11.20 Ft.
Start Pump Elevation:	-----	19.92 In.
Stop Pump Elevation:	-----	60 In.
		103.34 Ft.
		100.00 Ft.

<u>LAGOON VOLUME</u>	<u>REQUIRED VOL.</u>	<u>DESIGN VOLUMES</u>	<u>% REQ'D.</u>
Storm Stor =	148115 (Cu.Ft.)	149,255 (Cu.Ft.)	100.77%
Temporary =	408575 (Cu.Ft.)	712,751 (Cu.Ft.)	174.45%
Permanent =	1106990 (Cu.Ft.)	1,119,020 (Cu.Ft.)	101.09%
<b>Total Volume =</b>	<b>1,663,680 (Cu.Ft.)</b>	<b>1,981,026 (Cu.Ft.)</b>	<b>119.07%</b>

1/2 Treatment Volume =	553,495 (Cu.Ft.)	
1/2 Treatment Volume Elevation =	97.11 Ft.	94.69 In.
90 Temporary Storage Volume Elevation =	102.11 Ft.	34.71 In.

Min. Required Liner Thickness	-----	1.6 Ft.
Lagoon Surface Area: (Inside TOD)	-----	236,984 S.F.

Grower: Benny Rice (Old Lindell 40-136)  
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 Sheet 2 of 7

**ACTUAL DESIGN VOLUME CALCULATIONS**

**BASE VOLUME:**  Cu. Ft.

**LAGOON STAGE-AREA VOLUMES**

<u>Elevation (FT.)</u>	<u>Contour Area (SF)</u>	<u>Incr. Vol. (Cu. FT)</u>	<u>Cumul. Vol. (Cu. FT)</u>
93.80	159,986		0
94.00	161,279	32,127	32,127
95.00	167,788	164,534	196,660
96.00	174,372	171,080	367,740
97.00	181,030	177,701	545,441
98.00	187,764	184,397	729,838
99.00	194,572	191,168	921,006
100.00	201,455	198,014	1,119,020
101.00	208,413	204,934	1,323,954
102.00	215,445	211,929	1,535,883
103.00	222,553	218,999	1,754,882
104.00	229,735	226,144	1,981,026
105.00	236,984	233,360	2,214,385

These volumes were calculated using the vertical average end area method.

TOTAL REQD VOL	1,663,680	CF	CUMULATIVE VOL.	ZONE VOL.	119.07%
END PUMP = = = =	100.00	FT	1,119,020 CF TR'MT	1,119,020	101.09%
START PUMP = = :	103.34	FT	1,831,770 CF TEMP	712,751	174.45%
MAX STORAGE =	104.00	FT	1,981,026 CF STORM	149,255	100.77%

Grower: Benny Rice (Old Lindell 40-136)  
 Address: 458 Joe Morris Rd  
 Kenly, NC 27542  
 County: GREENE

Designed By: KBW  
 Checked By: DSE  
 Date: 05/20/14  
 Sheet 3 of 7

**MINIMUM REQUIRED VOLUME CALCULATIONS**

**Permanent Storage:**

Required Treatment Volume:

Animal Type	Capacity	* ALW	* (cu.ft./lb)	= Total
Nursery	0	30	1.00	0
Wean to Finish	9,626	115	1.00	1,106,990
Finishing	0	135	1.00	0
Farrow to weanling	0	433	1.00	0
Farrow to feeder	0	522	1.00	0
Farrow to finish	0	1,417	1.00	0
Boars	0	400	1.00	0
<b>Total Required Treatment Volume (cu. ft.)=</b>				<b>1,106,990</b>

Sludge Storage Volume:

Animal Type	Capacity	* ALW	* (cu.ft./lb)	= Total
Nursery	0	30	0.00	0
Wean to Finish	9,626	115	0.00	0
Finishing	0	135	0.00	0
Farrow to weanling	0	433	0.00	0
Farrow to feeder	0	522	0.00	0
Farrow to finish	0	1,417	0.00	0
Boars	0	400	0.000	0
<b>Total Required Sludge Storage Volume (cu. ft.)=</b>				<b>0</b>

**Temporary Storage Volume:**

Manure Production:

Animal Type	Capacity *	Sto. Period d./day	= Total
Nursery	0	180	0.30
Wean to Finish	9,626	180	1.17
Finishing	0	180	1.37
Farrow to weanling	0	180	4.39
Farrow to feeder	0	180	5.30
Farrow to finish	0	180	14.38
Boars	0	180	4.06
<b>Total Manure Production (gals.)=</b>			<b>2,022,102</b>
<b>Total Manure Production (cu.ft.)=</b>			<b>270,334</b>

Excess Fresh Water:

Animal Type	Capacity *	Sto. Period d./day	= Total
Nursery	0	180	0.00
Wean to Finish	9,626	180	0.00
Finishing	0	180	0.90
Farrow to weanling	0	180	0.00
Farrow to feeder	0	180	0.00
Farrow to finish	0	180	0.00
Boars	0	180	0.00
<b>Total Fresh Water Excess (gals.)=</b>			<b>0</b>
<b>Total Fresh Water Excess (cu.ft.)=</b>			<b>0</b>

Grower: Benny Rice (Old Lindell 40-136)  
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Designed By: KBW  
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Sheet 4 of 7

**Temporary Storage Volume: (Cont.)**

Rainfall in Excess of Evaporation:

Vol.=(Lagoon Surface Area + Additional Drainage Area) \* Rainfall / 12in./ft

Vol.= (236984 sq.ft. + 0 sq.ft.) \* 7 in. /12 in./ft.

**Total Required Volume for Rainfall in Excess of Evap. (cu.ft.)= 138,241**

Storm Storage:

Vol.=(Lagoon Surf. Area + Addtl Drainage Area) \* 25Yr./24Hr. Storm(in) / 12in./ft.

Vol.= (236984 sq.ft + 0 sq.ft.) \* 7.5 in. /12 in./ft.

**Total Required Volume for 25Yr./24Hr. Storm Event (cu.ft.)= 148,115**

"Heavy Rain" Storage:

Vol.=(Lagoon Surf. Area + Addtl Drainage Area) \* "Heavy Rain" Factor (in) / 12in./ft.

Vol.= (236984 sq.ft + 0 sq.ft.) \* 0.0 in. /12 in./ft.

**Total Required Volume for "Heavy Rain" (cu.ft.) = 0**  
(for Extended Periods of Chronic Rainfall)

Additional Water Storage:

No Additional Water Storage is Required

0

0

**Total Required Storm Storage**

(25Yr. / 24Hr. Storm + 'Heavy Rain')= 148,115 (CU.FT)

**Total Required Temporary Storage**

(Manure Prod. + Excess Fr. Water + Rainfall Excess + Additional Water Storage) = 408,575 (CU.FT)

**Total Required Permanent Storage**

(Treatment + Sludge) = 1,106,990 (CU.FT)

**TOTAL REQUIRED VOLUME = 1663680 (CU.FT.)**

Grower: Benny Rice (Old Lindell 40-136)  
 Address: 458 Joe Morris Rd  
 Kenly, NC 27542  
 County: GREENE

Designed By: KBW  
 Checked By: DSE  
 Date: 05/20/14  
 Sheet 5 of 7

**LAGOON DESIGN SUMMARY**

Top of Dike Elevation	-----	105.00 FT.
Emergency Spillway Crest Elevation	-----	Not Applicable
Top of 25Yr. / 24Hr. Storm Storage	-----	104.00 FT.
Top of "Heavy Rain" Storage	-----	Not Applicable
Start Pump Elevation	-----	103.34 FT.
End Pump Elevation	-----	100.00 FT.
Top of Sludge Storage	-----	Not Applicable
Seasonal High Watertable Elev.	-----	101.00 FT.
Finished Bottom Elevation	-----	93.80 FT.
Inside Top Length	-----	Not Applicable
Inside Top Width	-----	Not Applicable
Side Slopes	-----	3:1 H:V
Lagoon Surface Area	-----	236,984 SF
Min. Liner Thickness (if required)	-----	1.6 FT.
Freeboard Depth	-----	1.00 FT.
Temporary Storage Period	-----	180 Days

**TOTAL DESIGN VOLUME = 1981026 (CU.FT.)**

**Zone Depths:**

Treatment / Sludge Storage Zone Depth	-----	6.2 FT.
Temporary Storage Zone Depth	-----	3.3 FT.
Freeboard / Storm Storage Zone Depth	-----	1.7 FT.
<b>Total Lagoon Depth</b>	<b>-----</b>	<b>11.2 FT.</b>

Grower: Benny Rice (Old Lindell 40-136)  
Address: 458 Joe Morris Rd  
Kenly, NC 27542  
County: GREENE

Design: KBW  
Checker: DSE  
Date: 05/20/14  
Sheet 6 of 7

### ZONE ELEVATIONS

TOP OF DIKE ELEV = 105.00

TOP OF STORM ELEV = 104.00

STRT PMP EL. = 103.34

TOP OF TEMP STORAGE ELEV = 103.34

END PMP EL. = 100.00

TOP OF TREAT ELEV = 100.00

SHWT = 101.00

FINISHED BOTTOM ELEV = 93.80

Grower: Benny Rice (Old Lindell 40-136)  
Address: 458 Joe Morris Rd  
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County: GREENE

Designed By: KBW  
Checked By: DSE  
Date: 05/20/14  
Sheet 7 of 7

This livestock waste treatment lagoon is designed in accordance with the United States Natural Resources Conservation Service PRACTICE STANDARD 359- WASTE TREATMENT LAGOON, revised prior to June, 1996.

**Emergency Spillway:**

An Emergency Spillway is not required.

**SHWT:**

Subsurface drain tile will be installed adjacent to the lagoon as shown on the site drawing. The tile is being installed to keep the seasonal high water table adjacent to the lagoon at or below the stop pump elevation.

NOTE: See attached Waste Utilization Plan

DESIGNED: \_\_\_\_\_

DATE: \_\_\_\_\_

COMMENTS: The lagoon has been designed as an irregular shape.

This design is update of start and stop pump elevations and to show the 1/2

treatment volume level for sludge storage. This design does not supercede the

original certification of the farm.

This updated design is for change of ownership and change of animal type (5/20/14)

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