

**State of North Carolina  
Department of Environment and Natural Resources  
Division of Water Quality**

**Animal Feeding Operations Permit Application Form**  
(THIS FORM MAY BE PHOTOCOPIED FOR USE AS AN ORIGINAL)

**NPDES General Permit - Existing Animal Waste Operations**

*Sloan Farm 31-655*  
*Sign back sheet only!*  
*\* Per J.R. Joshi*  
*\* NCDAMS*  
*Wm. College - DSWC*  
*3-13-13*

**1. GENERAL INFORMATION:**

- 1.1 Facility name: 31-655 Sloan Brothers Fa.
- 1.2 Print Land Owner's name: Troy & Corey Sloan
- 1.3 Mailing address: 168 Arthur Sloan Rd  
City, State: Chinquapin, NC Zip: 28521  
Telephone number (include area code): (910) 340-0469 - 340-0130
- 1.4 Physical address: same  
City, State: \_\_\_\_\_ Zip: \_\_\_\_\_  
Telephone number (include area code): (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_
- 1.5 County where facility is located: Dupl
- 1.6 Owner's email address: \_\_\_\_\_
- 1.7 Facility location (directions from nearest major highway, using SR numbers for state roads): South C 11  
on SR 1821
- 1.8 Farm Manager's name (if different from Land Owner): \_\_\_\_\_
- 1.9 Lessee's / Integrator's name (if applicable; circle which type is listed): Murphy Brown
- 1.10 Facility's original start-up date: 7-17-92 Date(s) of facility expansion(s) (if applicable): \_\_\_\_\_

**2. OPERATION INFORMATION:**

2.1 Facility number: \_\_\_\_\_

2.2 Operation Description:

Please enter the Design Capacity of the system. The "No. of Animals" should be the maximum number for which the waste management structures were designed.

<u>Type of Swine</u>	<u>No. of Animals</u>	<u>Type of Poultry</u>	<u>No. of Animals</u>	<u>Type of Cattle</u>	<u>No. of Animals</u>
<input type="checkbox"/> Wean to Feeder	_____	<input type="checkbox"/> Layer	_____	<input type="checkbox"/> Beef Brood Cow	_____
<input checked="" type="checkbox"/> Feeder to Finish	<u>2448</u>	<input type="checkbox"/> Non-Layer	_____	<input type="checkbox"/> Beef Feeder	_____
<input type="checkbox"/> Farrow to Wean (# sow)	_____	<input type="checkbox"/> Turkey	_____	<input type="checkbox"/> Beef Stocker Calf	_____
<input type="checkbox"/> Farrow to Feeder (# sow)	_____	<input type="checkbox"/> Turkey Poults	_____	<input type="checkbox"/> Dairy Calf	_____
<input type="checkbox"/> Farrow to Finish (# sow)	_____			<input type="checkbox"/> Dairy Heifer	_____
<input type="checkbox"/> Wean to Finish (# sow)	_____			<input type="checkbox"/> Dry Cow	_____
<input type="checkbox"/> Gilts	_____			<input type="checkbox"/> Milk Cow	_____
<input type="checkbox"/> Boar/Stud	_____				

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- 2.3 Acreage cleared and available for application (excluding all required buffers and areas not covered by the application system): \_\_\_\_\_ Required Acreage (as listed in the CAWMP): \_\_\_\_\_
- 2.4 Number of lagoons:   /   Total Capacity (cubic feet): \_\_\_\_\_ Required Capacity (cubic feet): \_\_\_\_\_  
 Number of Storage Ponds: \_\_\_\_\_ Total Capacity (cubic feet): \_\_\_\_\_ Required Capacity (cubic feet): \_\_\_\_\_
- 2.5 Are subsurface drains present within 100' of any of the application fields? **YES** or **NO** (circle one)
- 2.6 Are subsurface drains present in the vicinity or under the waste management system? **YES** or **NO** (circle one)
- 2.7 Does this facility meet all applicable siting requirements? **YES** or **NO** (circle one)

**3. REQUIRED ITEMS CHECKLIST:**

Please indicate that you have included the following required items by signing your initials in the space provided next to each item.

- |   | <u>Applicants Initials</u> |
|---|----------------------------|
| 3.1 One completed and signed original and one copy of the application for NPDES General Permit - Animal Waste Operations;   | _____                      |
| 3.2 Two copies of a general location map indicating the location of the animal waste facilities and field locations where animal waste is land applied and a county road map with the location of the facility indicated; | _____                      |
| 3.3 Two copies of the entire Certified Animal Waste Management Plan (CAWMP). If the facility does not have a CAWMP, it must be completed prior to submittal of a permit application for animal waste operations.          | _____                      |

The CAWMP **must** include the following components. *Some of these components may not have been required at the time the facility was certified but must be added to the CAWMP for NPDES permitting purposes:*

- 3.3.1 The Waste Utilization Plan (WUP) must include the amount of Plant Available Nitrogen (PAN) and Phosphorus produced and utilized by the facility
- 3.3.2 The method by which waste is applied to the disposal fields (e.g. irrigation, injection, etc.)
- 3.3.3 A map of every field used for land application, with setbacks to surface waters or any conduits to surface waters (including field ditches), with the exception of grassed waterways that are designed and maintained according to NRCS standards.
- 3.3.4 The soil series present on every land application field
- 3.3.5 The crops grown on every land application field
- 3.3.6 The Realistic Yield Expectation (RYE) for every crop shown in the WUP
- 3.3.7 The PAN and Phosphorus applied to every land application field
- 3.3.8 The waste application windows for every crop utilized in the WUP
- 3.3.9 The required NRCS Standard specifications
- 3.3.10 A site schematic
- 3.3.11 Emergency Action Plan
- 3.3.12 Insect Control Checklist with chosen best management practices noted
- 3.3.13 Odor Control Checklist with chosen best management practices noted
- 3.3.14 Mortality Control Checklist with the selected method noted
- 3.3.15 Lagoon/storage pond capacity documentation (design, calculations, etc.); please be sure to include any site evaluations, wetland determinations, or hazard classifications that may be applicable to your facility
- 3.3.16 Operation and Maintenance Plan
- 3.3.17 Phosphorus Loss Assessment Tool (PLAT) Results, including the data sheets for each field.

If your CAWMP includes any components not shown on this list, please include the additional components with your submittal. (Composting, waste transfers, etc.)

If your CAWMP includes any components not shown on this list, please include the additional components with your submittal. (Composting, waste transfers, etc.)

**4. APPLICANT'S CERTIFICATION:**

I, Troy Sloan (Land Owner's name listed in question 1.2), attest that this application for Aws 310655/Sloan Brothers (Facility name listed in question 1.1) 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.

Signature Troy Sloan Date 3-13-13

**5. MANAGER'S CERTIFICATION:** (complete only if different from the Land Owner)

I, \_\_\_\_\_ (Manager's name listed in question 1.6), attest that this application for \_\_\_\_\_ (Facility name listed in question 1.1) 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 as incomplete.

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

THE COMPLETED APPLICATION PACKAGE, INCLUDING ALL SUPPORTING INFORMATION AND MATERIALS, SHOULD BE SENT TO THE FOLLOWING ADDRESS:

**NORTH CAROLINA DIVISION OF WATER QUALITY  
AQUIFER PROTECTION SECTION  
ANIMAL FEEDING OPERATIONS UNIT  
1636 MAIL SERVICE CENTER  
RALEIGH, NORTH CAROLINA 27699-1636  
TELEPHONE NUMBER: (919) 733-3221  
FAX NUMBER: (919) 715-6048**

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Aquifer Protection Section



North Carolina Department of Environment and Natural Resources

Division of Water Quality

Coleen H. Sullins

Director

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary

Existing COC

October 1, 2009

Troy M Sloan  
Sloan Brothers  
1705 S NC 111  
Chinquapin, NC 28521

Subject: Certificate of Coverage No. AWS310655  
Sloan Brothers  
Swine Waste Collection, Treatment,  
Storage and Application System  
Duplin County

Dear Troy M Sloan:

In accordance with your renewal request, we are hereby forwarding to you this Certificate of Coverage (COC) issued to Troy M Sloan, authorizing the operation of the subject animal waste management system in accordance with General Permit AWG100000.

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 Sloan Brothers, located in Duplin County, with a swine animal capacity of no greater than the following annual averages:

Wean to Finish:	Feeder to Finish: 2448	Boar/Stud:
Wean to Feeder:	Farrow to Wean:	Gilts:
Farrow to Finish:	Farrow to Feeder:	Other:

If this is a Farrow to Wean or Farrow to Feeder operation, there may 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.

The COC shall be effective from the date of issuance until September 30, 2014, and shall hereby void Certificate of Coverage Number AWS310655 that was previously issued to this facility. 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.

Please carefully read this COC and the enclosed State General Permit. Please pay careful attention to the record keeping and monitoring conditions in this permit. Record keeping forms are unchanged with this General Permit. Please continue to use the same record keeping forms.

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

The issuance of this COC does not excuse the Permittee from the obligation to comply with all applicable laws, rules, standards, and ordinances (local, state, and federal), nor does issuance of a COC to operate under this permit convey any property rights in either real or personal property.

Per 15A NCAC 2T .0105(h) 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, storage pond, 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 including civil penalties, criminal penalties, and injunctive relief.

If you wish to continue the activity permitted under the General Permit after the expiration date of the General Permit, then an application for renewal must be filed at least 180 days prior to expiration.

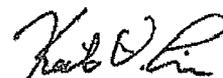
This COC is not automatically transferable. A name/ownership change application must be submitted to the Division prior to a name change or change in ownership.

If any parts, requirements, or limitations contained in this COC are unacceptable, you have the right to apply for an individual permit by contacting the Animal Feeding Operations Unit 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 II.22 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 Wilmington Regional Office. The Regional Office Aquifer Protection Staff may be reached at (910) 796-7215. If you need additional information concerning this COC or the General Permit, please contact the Animal Feeding Operations Unit staff at (919) 733-3221.

Sincerely,



for Coleen H. Sullins

Enclosure (General Permit AWG100000)

cc: (Certificate of Coverage only for all cc's)  
Wilmington Regional Office, Aquifer Protection Section  
Duplin County Health Department  
Duplin County Soil and Water Conservation District  
APS Central Files (Permit No. AWS310655)  
AFO Notebooks  
Murphy-Brown, LLC

# Animal Waste Management Plan Certification

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

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Aquifer Protection Section

MAY 10 2011

Existing  or New  or Expanded  (Please circle one)

**General Information:**

Name of Farm: Sloan Brothers Facility No: 31-655  
 Owner(s) Name: Troy + Corey Sloan Phone No: 298-4023  
 Mailing Address: 1750 South NC 111 Chinaquapin, NC, 28521  
 Farm Location: Fourteen Digit Hydrologic Unit: 03030007060010  
 Latitude and Longitude: 34° 58' 52" / 77° 42' 17" County: Duplin

Please attach a copy of a county road map with location identified and describe below (Be specific: road names, directions, milepost, etc.):  
Take NC 41 N towards Beulaville; About 0.8 mile out of town, turn right onto NC 111 S thru Lyman; Go 2.7 miles turn right on SR 1821; Go 0.5 mile to farm entrance on right.

**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 checked="" type="checkbox"/> Feeder to Finish	<u>2448</u>	<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	_____				

Other Type of Livestock: \_\_\_\_\_ Number of Animals: \_\_\_\_\_

**Expanding Operation Only:**

Previous Design Capacity: \_\_\_\_\_ Additional Design Capacity: \_\_\_\_\_

Total Design Capacity: \_\_\_\_\_

Acreage Available for Application: 19 Required Acreage: 18.55  
 Number of Lagoons/Storage Ponds: 1 Total Capacity: 496650 Cubic Feet (ft<sup>3</sup>)

Are subsurface drains present on the farm:  YES or NO (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 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: Troy Sloan  
 Signature: Troy M Sloan Date: 8-5-97  
 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 the 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.0217 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)	Kraig Westerbeek
Affiliation:	Murphy Family Farms
Address(Agency)	P.O. Box 759 Rose Hill, NC 28458
Signature:	 Date: 8-5-97

### B) Land Application Site (WUP)

The plan provides for minimum separation (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):	Kraig Westerbeek
Affiliation:	Murphy Family Farms
Address (Agency):	P.O. Box 759 Rose Hill, NC 28458
Signature:	 Date: 8-5-97

### C) Runoff Controls from Exterior Lots

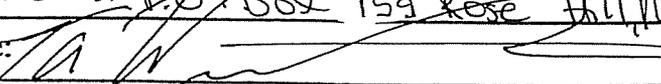
Check the appropriate box

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):	Kraig Westerbeek
Affiliation:	Murphy Family Farms
Address (Agency):	P.O. Box 759 Rose Hill, NC 28458
Signature:	 Date: 8-5-97

**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 application 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 part of the plan).

Name of Technical Specialist (Please Print): <u>Kraig Westerbeek</u>	
Affiliation: <u>Murphy Family Farms</u>	
Address(Agency): <u>P.O. Box 759 Hill, No 28458</u>	Phone No: <u>289-2111</u>
Signature: <u>[Signature]</u>	Date: <u>8-5-97</u>

**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): <u>Kraig Westerbeek</u>	
Affiliation: <u>Murphy Family Farms</u>	
Address (Agency): <u>P.O. Box 759</u>	Phone No.:
Signature: <u>[Signature]</u>	Date: <u>8-5-97</u>

**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 1991. 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 the 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 (SI)

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:	
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 established 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): <i>Kraig Westerbeck</i>	
Affiliation: <i>Murphy Family Farms</i>	
Address(Agency): <i>P.O. Box 159 Rose Hill, NC 28458</i>	Phone No.: <i>289-2111</i>
Signature: <i>[Signature]</i>	Date: <i>8-5-97</i>

This following signature block is only to be used when the box for conditional approval in III.B above has been checked.

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 Manger (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 areas have been installed as specified in the plan.

For facilities without exterior lots, no certification is necessary.

Name of Technical Specialist (Please Print):	
Affiliation:	
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 proposed 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 contained 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 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): <i>Kraig Westerbeek</i>	
Affiliation: <i>Murphy Family Farms</i>	
Address(Agency): <i>P.O. Box 759 Rose Hill NC 28458</i>	Phone No.: <i>289-2111</i>
Signature: <i>[Signature]</i>	Date: <i>8-5-97</i>

The following signature block is only to be 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 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:

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 as specified in the Plan has also been installed and is operational.

Name of Technical Specialist (Please Print): <i>Kraig Westerbeek</i>	
Affiliation: <i>Murphy Family Farms</i>	
Address (Agency): <i>P.O. Box 759 Rose Hill NC 28458</i>	Phone No.: <i>289-2111</i>
Signature: <i>[Signature]</i>	Date: <i>8-5-97</i>

**Please return the completed form to the Division of Environmental Management at the following address:**

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

**Please also 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 Management Plan For Animal Waste Utilization  
03-13-2013

This plan has been prepared for:

*Sloan Brothers  
Troy & Corey Sloan Brothers  
168 Arthur Sloan Rd*

*Chinquapin, NC 28521  
910-298-4158*

This plan has been developed by:

*Billy W Houston  
Duplin Soil & Water Conservation  
165 Agriculture Dr  
Suite B*

*Kenansville, NC 28349  
910-296-2120*

*Billy W Houston*  
\_\_\_\_\_  
Developer Signature

Type of Plan: Nutrient Management with Manure Only

**Owner/Manager/Producer Agreement**

I (we) understand and agree to the specifications and the operation and maintenance procedures established in this nutrient management plan which includes an animal waste utilization plan for the farm named above. I have read and understand the Required Specifications concerning animal waste management that are included with this plan.

*Troy Sloan*  
\_\_\_\_\_  
Signature (owner)

*3-13-13*  
\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature (manager or producer)

\_\_\_\_\_  
Date

This plan meets the minimum standards and specifications of the U.S. Department of Agriculture - Natural Resources Conservation Service or the standard of practices adopted by the Soil and Water Conservation Commission.

Plan Approved By: *Billy W Houston*  
\_\_\_\_\_  
Technical Specialist Signature

*3/13/13*  
\_\_\_\_\_  
Date

RECEIVED/DENR/DWQ

MAR 19 2013

Aquifer Protection Section

## Narrative

Acres shown in the WUP for fields 1 thru 4 are for the maximum irrigatable acres, which includes buffer areas not wetted by traveling gun. These acres will be irrigated using a Honey Wagon. Sloan Brothers will be responsible for obtaining a lease agreement or purchasing required equipment[IE: Honey Wagon] for this WUP to be considered valid. An irrigation (wetted acres) design showing individual pulls on all available fields must be completed after clearing and establishing field number 4 (See Attached Aerial Map).

\*\*\*BASED ON AN IRRIGATION DESIGN(WETTED ACRES FOOTPRINT), AFTER COMPLETION OF LAND CLEARING, IF A MINIMUM OF 22.5 ACRES IS WETTED BY THE TRAVELER(Irrigation Gun), FROM ESTABLISHED HYDRANT LOCATIONS, THE ABOVE STATEMENT WILL BE NULL AND VOID\*\*\*

XX Field number four(4) will not be used for waste application until PLAT has been completed XX

**Nutrients applied in accordance with this plan will be supplied from the following source(s):**

Commercial Fertilizer is not included in this plan.

S7	Swine Feeder-Finish Lagoon Liquid waste generated 2,269,296 gals/year by a 2,448 animal Swine Finishing Lagoon Liquid operation. This production facility has waste storage capacities of approximately 180 days.				
Estimated Pounds of Plant Available Nitrogen Generated per Year					
Broadcast	5227				
Incorporated	8976				
Injected	9885				
Irrigated	5681				
	Max. Avail. PAN (lbs) *	Actual PAN Applied (lbs)	PAN Surplus/Deficit (lbs)	Actual Volume Applied (Gallons)	Volume Surplus/Deficit (Gallons)
Year 1	5,681	6663	-982	2,661,536	-392,240

Note: In source ID, S means standard source, U means user defined source.

\* Max. Available PAN is calculated on the basis of the actual application method(s) identified in the plan for this source

The table shown below provides a summary of the crops or rotations included in this plan for each field. Realistic Yield estimates are also provided for each crop, as well as the crop's P2O5 Removal Rate. The Leaching Index (LI) and the Phosphorous Loss Assessment Tool (PLAT) Rating are also provided for each field, where available.

If a field's PLAT Rating is High, any planned manure application is limited to the phosphorous removal rate of the harvested plant biomass for the crop rotation or multiple years in the crop sequence. Fields with a Very High PLAT Rating should receive no additional applications of manure. Regardless of the PLAT rating, starter fertilizers may be recommended in accordance with North Carolina State University guidelines or recommendations. The quantity of P2O5 applied to each crop is shown in the following table if the field's PLAT rating is High or Very High.

### Planned Crops Summary

Tract	Field	Total Acres	Useable Acres	Plat Rating	LI	Soil Series	Crop Sequence	RYE	P2O5	
									Removal (lbs/acre)	Applied (lbs/acre)
7400	1	5.38	5.38	Low	N/A	Foreston	Small Grain Overseed	1.0 Tons	15	N/A
							Hybrid Bermudagrass Pasture	6.0 Tons	7	N/A
7400	2	7.24	7.24	Low	N/A	Foreston	Small Grain Overseed	1.0 Tons	15	N/A
							Hybrid Bermudagrass Pasture	6.0 Tons	7	N/A
7400	3	4.93	4.93	Low	N/A	Noboco	Small Grain Overseed	1.0 Tons	15	N/A
							Hybrid Bermudagrass Pasture	6.0 Tons	7	N/A
7400	4	12.26	8.58	Unknown	N/A	Foreston	Small Grain Overseed	1.0 Tons	15	N/A
							Hybrid Bermudagrass Pasture	6.0 Tons	7	N/A

PLAN TOTALS:            29.81    26.13

LI	Potential Leaching	Technical Guidance
< 2	Low potential to contribute to soluble nutrient leaching below the root zone.	None
>= 2 & <= 10	Moderate potential to contribute to soluble nutrient leaching below the root zone.	Nutrient Management (590) should be planned.
> 10	High potential to contribute to soluble nutrient leaching below the root zone.	Nutrient Management (590) should be planned. Other conservation practices that improve the soils available water holding capacity and improve nutrient use efficiency should be considered. Examples are Cover Crops (340) to scavenge nutrients, Sod-Based Rotations (328), Long-Term No-Till (778), and edge-of-field practices such as Filter Strips (393) and Riparian Forest Buffers (391).

PLAT Index	Rating	P Management Recommendation
0 - 25	Low	No adjustment needed; N based application
25 - 50	Medium	No adjustment needed; N based application
51 - 100	High	Application limited to crop P removal
> 100	Very High	Starter P application only

The Waste Utilization table shown below summarizes the waste utilization plan for this operation. This plan provides an estimate of the number of acres of cropland needed to use the nutrients being produced. The plan requires consideration of the realistic yields of the crops to be grown, their nutrient requirements, and proper timing of applications to maximize nutrient uptake.

This table provides an estimate of the amount of nitrogen required by the crop being grown and an estimate of the nitrogen amount being supplied by manure or other by-products, commercial fertilizer and residual from previous crops. An estimate of the quantity of solid and liquid waste that will be applied on each field in order to supply the indicated quantity of nitrogen from each source is also included. A balance of the total manure produced and the total manure applied is included in the table to ensure that the plan adequately provides for the utilization of the manure generated by the operation.

**Waste Utilization Table**

**Year 1**

Tract	Field	Source ID	Soil Series	Total Acres	Use Acres	Crop	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A)	Comm. Fert Applied (lbs/A)		Res. (lbs/A)	Applic. Method	Manure PA Nutrient Applied (lbs/A)	Liquid Manure Applied (acre)	Solid Manure Applied (acre)	Liquid Manure Applied (Field)	Solid Manure Applied (Field)
									N	N							
7400	1	S7	Foreston	5.38	5.38	Small Grain Overseed	10/1-3/31	50	0	0	0	Irrig.	50	19.97	0.00	107.45	0.00
7400	1	S7	Foreston	5.38	5.38	Hybrid Bermudagrass Pasture	3/1-9/30	205	0	0	0	Irrig.	205	81.89	0.00	440.54	0.00
7400	2	S7	Foreston	7.24	7.24	Small Grain Overseed	10/1-3/31	50	0	0	0	Irrig.	50	19.97	0.00	144.60	0.00
7400	2	S7	Foreston	7.24	7.24	Hybrid Bermudagrass Pasture	3/1-9/30	205	0	0	0	Irrig.	205	81.89	0.00	592.85	0.00
7400	3	S7	Noboco	4.93	4.93	Small Grain Overseed	10/1-3/31	50	0	0	0	Irrig.	50	19.97	0.00	98.46	0.00
7400	3	S7	Noboco	4.93	4.93	Hybrid Bermudagrass Pasture	3/1-9/30	205	0	0	0	Irrig.	205	81.89	0.00	403.70	0.00
7400	4	S7	Foreston	12.26	8.58	Small Grain Overseed	10/1-3/31	50	0	0	0	Irrig.	50	19.97	0.00	171.36	0.00
7400	4	S7	Foreston	12.26	8.58	Hybrid Bermudagrass Pasture	3/1-9/30	205	0	0	0	Irrig.	205	81.89	0.00	702.58	0.00
													Total Applied, 1000 gallons		2,661.54		
													Total Produced, 1000 gallons		2,269.30		
													Balance, 1000 gallons		-392.24		
													Total Applied, tons			0.00	
													Total Produced, tons			0.00	
													Balance, tons			0.00	

Notes: 1. In the tract column, ~ symbol means leased, otherwise, owned. 2. Symbol \* means user entered data.

The Irrigation Application Factors for each field in this plan are shown in the following table. Infiltration rate varies with soils. If applying waste nutrients through an irrigation system, you must apply at a rate that will not result in runoff. This table provides the maximum application rate per hour that may be applied to each field selected to receive wastewater. It also lists the maximum application amount that each field may receive in any one application event.

### Irrigation Application Factors

Tract	Field	Soil Series	Application Rate (inches/hour)	Application Amount (inches)
7400	1	Foreston	0.50	1.0
7400	2	Foreston	0.50	1.0
7400	3	Noboco	0.50	1.0
7400	4	Foreston	0.50	1.0

The Nutrient Management Recommendations table shown below provides an annual summary of the nutrient management plan developed for this operation. This table provides a nutrient balance for the listed fields and crops for each year of the plan. Required nutrients are based on the realistic yields of the crops to be grown, their nutrient requirements and soil test results. The quantity of nutrient supplied by each source is also identified.

The total quantity of nitrogen applied to each crop should not exceed the required amount. However, the quantity of other nutrients applied may exceed their required amounts. This most commonly occurs when manure or other byproducts are utilized to meet the nitrogen needs of the crop. Nutrient management plans may require that the application of animal waste be limited so as to prevent over application of phosphorous when excessive levels of this nutrient are detected in a field. In such situations, additional nitrogen applications from nonorganic sources may be required to supply the recommended amounts of nitrogen.

### Nutrient Management Recommendations Test

YEAR		0			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	7400	1	Req'd Nutrients	50	0	30	0	0	0	0	0
Acres	App. Period	5.38	10/1-3/31	Supplied By:								
CROP		Small Grain Overseed		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	1.0 Tons	03-08-13	Manure	50	27	68	6	0	1	0	0
P Removal	Rating	15 lbs/ac.	Low	BALANCE	0	27	38	6	0	1	0	0
Tract	Field	7400	2	Req'd Nutrients	50	0	10	0	0	0	0	0
Acres	App. Period	7.24	10/1-3/31	Supplied By:								
CROP		Small Grain Overseed		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	1.0 Tons	03-08-13	Manure	50	27	68	6	0	1	0	0
P Removal	Rating	15 lbs/ac.	Low	BALANCE	0	27	58	6	0	1	0	0
Tract	Field	7400	3	Req'd Nutrients	50	0	0	0	0	0	0	0
Acres	App. Period	4.93	10/1-3/31	Supplied By:								
CROP		Small Grain Overseed		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Noboco		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	1.0 Tons	03-08-13	Manure	50	27	68	6	0	1	0	0
P Removal	Rating	15 lbs/ac.	Low	BALANCE	0	27	68	6	0	1	0	0
Tract	Field	7400	4	Req'd Nutrients	50	0	0	0	0	0	0	0
Acres	App. Period	8.58	10/1-3/31	Supplied By:								
CROP		Small Grain Overseed		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	1.0 Tons	03-08-13	Manure	50	27	68	6	0	1	0	0
P Removal	Rating	15 lbs/ac.	Unknown	BALANCE	0	27	68	6	0	1	0	0

### Nutrient Management Recommendations Test

YEAR	0		N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
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NOTE: Symbol \* means user entered data.

## Nutrient Management Recommendations Test

YEAR		1			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	7400	1	Req'd Nutrients	205	0	100	0	0	0	0	0
Acres	App. Period	5.38	3/1-9/30	Supplied By:								
CROP		Hybrid Bermudagrass Pasture		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	6.0 Tons	03-08-13	Manure	205	112	281	25	1	5	1	0
P Removal	Rating	7 lbs/ac.	Low	BALANCE	0	112	181	25	1	5	1	0
Tract	Field	7400	2	Req'd Nutrients	205	0	60	0	0	0	0	0
Acres	App. Period	7.24	3/1-9/30	Supplied By:								
CROP		Hybrid Bermudagrass Pasture		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	6.0 Tons	03-08-13	Manure	205	112	281	25	1	5	1	0
P Removal	Rating	7 lbs/ac.	Low	BALANCE	0	112	221	25	1	5	1	0
Tract	Field	7400	3	Req'd Nutrients	205	0	30	0	0	0	0	0
Acres	App. Period	4.93	3/1-9/30	Supplied By:								
CROP		Hybrid Bermudagrass Pasture		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Noboco		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	6.0 Tons	03-08-13	Manure	205	112	281	25	1	5	1	0
P Removal	Rating	7 lbs/ac.	Low	BALANCE	0	112	251	25	1	5	1	0
Tract	Field	7400	4	Req'd Nutrients	205	0	30	0	0	0	0	0
Acres	App. Period	8.58	3/1-9/30	Supplied By:								
CROP		Hybrid Bermudagrass Pasture		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	6.0 Tons	03-08-13	Manure	205	112	281	25	1	5	1	0
P Removal	Rating	7 lbs/ac.	Unknown	BALANCE	0	112	251	25	1	5	1	0

NOTE: Symbol \* means user entered data.

The Required Soil Test Values shown in the following table provide a summary of recommended actions that should be taken if soil tests indicate excessive levels of copper or zinc. Fields that receive manure must have an annual soil analysis for these elements. High levels of zinc and copper can adversely affect plant growth. Alternative crop sites must be used when the concentration of these metals approach excessive levels. Site life can be estimated by dividing the amount of copper and zinc to be applied in lbs/acre by 0.036 and 0.071, respectively and multiplying the result by 0.85. By adding this quantity to the current soil index for copper or zinc, we can predict life of the site for waste disposal.

In addition to copper and zinc indices, this table also provides a summary of lime recommendations for each crop based on the most recent soil sample. Application of lime at recommended rates is necessary to maintain soil pH in the optimum range for crop production.

Required Soil Test Values

Tract	Field	Crop	pH	Lime Recom. (tons/acre)	Cu-I	Copper Recommendation	Zn-I	Zinc Recommendation
7400	1	Small Grain Overseed	7.0	0.0	188	None	161	None
7400	1	Hybrid Bermudagrass Pasture	7.0	0.0	188	None	161	None
7400	2	Small Grain Overseed	6.9	0.0	214	None	194	None
7400	2	Hybrid Bermudagrass Pasture	6.9	0.0	214	None	194	None
7400	3	Small Grain Overseed	6.8	0.0	244	None	241	None
7400	3	Hybrid Bermudagrass Pasture	6.8	0.0	244	None	241	None
7400	4	Small Grain Overseed	6.8	0.0	244	None	241	None
7400	4	Hybrid Bermudagrass Pasture	6.8	0.0	244	None	241	None

The following Lagoon Sludge Nitrogen Utilization table provides an estimate of the number of acres needed for sludge utilization for the indicated accumulation period. These estimates are based on average nitrogen concentrations for each source, the number of animals in the facility and the plant available nitrogen application rates shown in the second column.

Lagoon sludge contains nutrients and organic matter remaining after treatment and application of the effluent. At clean out, this material must be utilized for crop production and applied at agronomic rates. In most cases, the priority nutrient is nitrogen but other nutrients including phosphorous, copper and zinc can also be limiting. Since nutrient levels are generally very high, application of sludge must be carefully applied.

Sites must first be evaluated for their suitability for sludge application. Ideally, effluent spray fields should not be used for sludge application. If this is not possible, care should be taken not to load effluent application fields with high amounts of copper and zinc so that additional effluent cannot be applied. On sites vulnerable to surface water moving to streams and lakes, phosphorous is a concern. Soils containing very high phosphorous levels may also be a concern.

Lagoon Sludge Nitrogen Utilization Table

Crop	Maximum PA-N Rate lb/ac	Maximum Sludge Application Rate 1000 gal/ac	Minimum Acres 5 Years Accumulation	Minimum Acres 10 Years Accumulation	Minimum Acres 15 Years Accumulation
Swine Feeder-Finish Lagoon Sludge - Standard					
Corn 120 bu	150	13.16	30.69	61.38	92.07
Hay 6 ton R.Y.E.	300	26.32	15.34	30.69	46.03
Soybean 40 bu	160	14.04	28.77	57.54	86.31

The Available Waste Storage Capacity table provides an estimate of the number of days of storage capacity available at the end of each month of the plan. Available storage capacity is calculated as the design storage capacity in days minus the number of days of net storage volume accumulated. The start date is a value entered by the user and is defined as the date prior to applying nutrients to the first crop in the plan at which storage volume in the lagoon or holding pond is equal to zero.

Available storage capacity should be greater than or equal to zero and less than or equal to the design storage capacity of the facility. If the available storage capacity is greater than the design storage capacity, this indicates that the plan calls for the application of nutrients that have not yet accumulated. If available storage capacity is negative, the estimated volume of accumulated waste exceeds the design storage volume of the structure. Either of these situations indicates that the planned application interval in the waste utilization plan is inconsistent with the structure's temporary storage capacity.

**Available Waste Storage Capacity**

Source Name	Swine Feeder-Finish Lagoon Liquid		Design Storage Capacity (Days)
Start Date	9/1		180
Plan Year	Month	Available Storage Capacity (Days) *	
1	1	85	
1	2	70	
1	3	101	
1	4	119	
1	5	136	
1	6	161	
1	7	178	
1	8	180	
1	9	180	
1	10	162	
1	11	145	
1	12	129	

\* Available Storage Capacity is calculated as of the end of each month.

## Required Specifications For Animal Waste Management

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 that 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 Management 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 by 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 soil surface is frozen.
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 a 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.
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 soils 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 five (5) years.
23. Dead animals will be disposed of in a manner that meets North Carolina regulations.

## Crop Notes

The following crop note applies to field(s): 1, 2, 4

Small Grain: CP, Mineral Soil, low-leachable

In the Coastal Plain, oats and barley should be planted from October 15-October 30; and rye from October 15-November 20. For barley, plant 22 seed/drill row foot and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Oats should be planted at 2 bushels/acre and rye at 1-1 1/2 bushels/acre. Plant all these small grains at 1-1 1/2" deep. Adequate depth control is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply no more than 30 lbs/acre N at planting. Phosphorus and potash recommended by a soil test can also be applied at this time. The remaining N should be applied during the months of February-March.

The following crop note applies to field(s): 3

Small Grain: CP, Mineral Soil, medium leachable

In the Coastal Plain, oats and barley should be planted from October 15-October 30; and rye from October 15-November 20. For barley, plant 22 seed/drill row foot and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Oats should be planted at 2 bushels/acre and rye at 1-1 1/2 bushels/acre. Plant all these small grains at 1-1 1/2" deep. Adequate depth control is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply no more than 30 lbs/acre N at planting. Phosphorus and potash recommended by a soil test can also be applied at this time. The remaining N should be applied during the months of February-March.

The following crop note applies to field(s): 1, 2, 4

Bermudagrass CP, Mineral Soil, Poorly Drained to Somewhat Poorly Drained.

Adaptation: Effective artificial drainage MUST be in place to achieve Realistic Yield Expectations provided for these soils.

In the Coastal Plain, hybrid bermudagrass sprigs can be planted Mar. 1 to Mar. 31. Cover sprigs 1" to 3" deep (1.5" optimal). Sprigs should be planted quickly after digging and not allowed to dry in sun and wind. For Coastal and Tifton 78 plant at least 10 bu/ac in 3' rows, spaced 2' to 3' in the row. Generally a rate of 30 bu/ac is satisfactory to produce full groundcover in one or two years under good growing conditions. Tifton 44 spreads slowly, so use at least 40 bu/ac in 1.5' to 2' rows spaced 1' to 1.5' in row. For broadcast/disked-in sprigs use about 60 bu/ac. Soil test for the amounts of lime, phosphorus, potassium and micronutrients to apply preplant and for annual maintenance. Apply 60 to 100 lb/ac N in the establishment year in split applications in April and July. For established stands apply 180 to 240 lb/ac N annually in split applications, usually in April and following the first and second hay cuts. Reduce N rates by 25% for grazing. Refer to NCSU Technical Bulletin 305 Production and Utilization of Pastures and Forages in North Carolina for more information or consult your regional agronomist or extension agent for assistance.

The following crop note applies to field(s): 3

Bermudagrass: CP, Mineral Soil, Moderately Well Drained.

Adaptation: Well-adapted.

In the Coastal Plain, hybrid bermudagrass sprigs can be planted Mar. 1 to Mar. 31. Cover sprigs 1" to 3" deep (1.5" optimal). Sprigs should be planted quickly after digging and not allowed to dry in sun and wind. For Coastal and Tifton 78 plant at least 10 bu/ac in 3' rows, spaced 2' to 3' in the row. Generally a rate of 30 bu/ac is satisfactory to produce full groundcover in one or two years under good growing conditions. Tifton 44 spreads slowly, so use at least 40 bu/ac in 1.5' to 2' rows spaced 1' to 1.5' in row. For broadcast/disked-in sprigs use about 60 bu/ac. Soil test for the amounts of lime, phosphorus, potassium and micronutrients to apply preplant and for annual maintenance. Apply 60 to 100 lb/ac N in the establishment year in split applications in April and July. For established stands apply 180 to 240 lb/ac N annually in split applications, usually in April and following the first and second hay cuts. Reduce N rates by 25% for grazing. Refer to NCSU Technical Bulletin 305 Production and Utilization of Pastures and Forages in North Carolina for more information or consult your regional agronomist or extension agent for assistance.

# Sloan Brothers Farm Fac 31-655 Tract-7400

NOTE: Field/Acres As Shown Have Required Buildings Removed



F6A

12.28 ac

F6A

F6A 5.38 ac

F6A





PLAT Results For: Duplin 3/12/2013 2:24:09 PM

INPUTS

Calendar Year: 2013  
 County: Duplin  
 Producer Identifier: sloanbr  
 Tract Number: 7400  
 Field Number: 1  
 Soil Series: FoA: Foreston loamy fine sand, 0 to 2 percent slopes  
 Crop: Hybrid Bermudagrass (Pasture) :  
 BMPs: Buffer Width Width = 30 ft.  
 Fertilizers: Swine-Lagoon liquid

Yearly Applied Amount: 3.2 ac in  
 Lb P2O5: 53.4 lb  
 Application Method: All other surface

applications

Soil Loss: 1.6 t/ac/yr  
 Receiving Slope Distance 0-9 ft  
 Soil Test 0" - 4" 145  
 WV Factor (USER) 1.19  
 Artificial Drainage System: NO  
 Hydrologic Condition: FAIR

OUTPUTS

PARTICULATE P	=	1
SOLUBLE P	=	7
LEACHATE P	=	0
SOURCE P	=	5
<hr/>		
TOTAL P RATING	=	13 (LOW)

INPUTS

Calendar Year: 2013  
 County: Duplin  
 Producer Identifier: sloanbr  
 Tract Number: 7400  
 Field Number: 2  
 Soil Series: FoA: Foreston loamy fine sand, 0 to 2 percent slopes  
 Crop: Hybrid Bermudagrass (Pasture) :  
 BMPs: Buffer Width Width = 30 ft.  
 Fertilizers: Swine-Lagoon liquid

Yearly Applied Amount: 3.2 ac in  
 Lb P2O5: 53.4 lb  
 Application Method: All other surface

applications  
 Soil Loss: 1.6 t/ac/yr  
 Receiving Slope Distance 0-9 ft  
 Soil Test 0" - 4" 174  
 WV Factor (USER) 1.23  
 Artificial Drainage System: NO  
 Hydrologic Condition: FAIR

OUTPUTS

PARTICULATE P	=	1
SOLUBLE P	=	8
LEACHATE P	=	0
SOURCE P	=	5
<hr/>		
TOTAL P RATING	=	14 (LOW)

PLAT Results For: Duplin 3/12/2013 2:28:05 PM

INPUTS

Calendar Year: 2013  
 County: Duplin  
 Producer Identifier: sloanbr  
 Tract Number: 7400  
 Field Number: 3  
 Soil Series: NbA: Noboco loamy fine sand, 0 to 2 percent slopes  
 Crop: Hybrid Bermudagrass (Pasture) :  
 BMPs: Buffer Width Width = 30 ft.  
 Fertilizers: Swine-Lagoon liquid  
                     Yearly Applied Amount: 3.2 ac in  
                     Lb P2O5: 53.4 lb  
                     Application Method: All other surface

applications

Soil Loss: 1.6 t/ac/yr  
 Receiving Slope Distance 0-9 ft  
 Soil Test 0" - 4" 218  
     WV Factor (USER) 1.21  
 Hydrologic Condition: FAIR

OUTPUTS

PARTICULATE P	=	2
SOLUBLE P	=	11
LEACHATE P	=	0
SOURCE P	=	6
<hr/>		
TOTAL P RATING	=	19 (LOW)



**Predictive Soil Report**

Client: Sloan Brothers Farm/Corey/Troy Advisor:  
 168 Arthur Sloan Rd.  
 Chinquapin, NC 28521  
 Mehlich-3 Extraction  
 County: Duplin Farm: 12/21/2012 Completed: 12/21/2012  
 Links to Helpful Information

*\* See PLAT \* Attached.*

Sample ID: 1	Recommendations:										Nutrients (lb/acre)				More Information Note: 12 Note: \$ Note: 12 Note: \$	
	Crop	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I	Mg	S	Mn	Zn		Cu
1 - Berm Hay/Pas,E				0.0	0.0	0.0	60-80	0	30	0	0	0	pH\$	0	0	0
2 - Berm Hay/Pas,M				0.0	0.0	180-220	0	100	0	0	0	0	pH\$	0	0	0

Test Results [units - WV in g/cm<sup>2</sup>; CEC and Na in meq/100 cm<sup>2</sup>; NO<sub>3</sub>-N in mg/dm<sup>2</sup>]:

HM% WV	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I	Mg	S	Mn	Zn	Al	Cu	Na	ESP	SS-I	NO <sub>3</sub> -N
0.76	1.19	8.3	100	0.0	7.0	145	56	72	45	28	28	28	161	161	188	0.1	1			

Sample ID: 2

Lime History:	Recommendations:										Nutrients (lb/acre)				More Information Note: 12 Note: \$ Note: 12 Note: \$	
	Crop	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I	Mg	S	Mn	Zn		Cu
1 - Berm Hay/Pas,E				0.0	0.0	60-80	0	10	0	0	0	0	pH\$	0	0	0
2 - Berm Hay/Pas,M				0.0	0.0	180-220	0	60	0	0	0	0	pH\$	0	0	0

Test Results [units - WV in g/cm<sup>2</sup>; CEC and Na in meq/100 cm<sup>2</sup>; NO<sub>3</sub>-N in mg/dm<sup>2</sup>]:

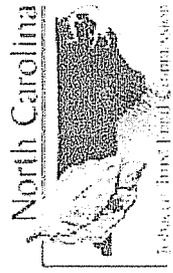
HM% WV	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I	Mg	S	Mn	Zn	Al	Cu	Na	ESP	SS-I	NO <sub>3</sub> -N
0.92	1.23	8.7	100	0.0	6.9	174	74	81	55	36	36	36	194	194	214	0.1	1			

Sample ID: 3

Lime History:	Recommendations:										Nutrients (lb/acre)				More Information Note: 12 Note: \$ Note: 12 Note: \$	
	Crop	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I	Mg	S	Mn	Zn		Cu
1 - Berm Hay/Pas,E				0.0	0.0	60-80	0	0	0	0	0	0	pH\$	0	0	0
2 - Berm Hay/Pas,M				0.0	0.0	180-220	0	30	0	0	0	0	pH\$	0	0	0

Test Results [units - WV in g/cm<sup>2</sup>; CEC and Na in meq/100 cm<sup>2</sup>; NO<sub>3</sub>-N in mg/dm<sup>2</sup>]:

HM% WV	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I	Mg	S	Mn	Zn	Al	Cu	Na	ESP	SS-I	NO <sub>3</sub> -N
1.25	1.21	8.6	100	0.0	6.8	218	97	112	60	40	40	40	241	241	244	0.1	1			



Reprogramming of the laboratory-information-management system that makes this report possible is being funded through a grant from the North Carolina Tobacco Trust Fund Commission.  
 Thank you for using agronomic services to manage nutrients and safeguard environmental quality.  
 - Steve Troxler, Commissioner of Agriculture

Sloan Brothers Farm/Corey/Troy

**Understanding the Soil Report: explanation of measurements, abbreviations and units**

**Recommendations**

Lime

If testing finds that soil pH is too low for the crop(s) indicated, a *lime recommendation* will be given in units of either ton/acre or lb/1000 sq ft. For best results, mix the lime into the top 6 to 8 inches of soil several months before planting. For no-till or established plantings where this is not possible, apply no more than 1 to 1.5 ton/acre (50 lb/1000 sq ft) at one time, even if the report recommends more. You can apply the rest in similar increments every six months until the full rate is applied. If MG is recommended and lime is needed, use dolomitic lime.

Fertilizer

Recommendations for *field crops* or *other large areas* are listed separately for each nutrient to be added (in units of lb/acre unless otherwise specified). Recommendations for N (and sometimes for B) are based on research/field studies for the crop being grown, not on soil test results. K-I and P-I values are based on test results and should be > 50. If they are not, follow the fertilizer recommendations given. If Mg is needed and no lime is recommended, 0-0-22 (11.5% Mg) is an excellent source; 175 to 250 lb per acre alone or in a fertilizer blend will usually satisfy crop needs, SS-I levels appear only on reports for greenhouse soil or problem samples.

Farmers and other commercial producers should pay special attention to *micronutrient levels*. If \$, pH\$, \$pH, C or Z notations appear on the soil report, refer to \$Note: Secondary Nutrients and Micronutrients. In general, homeowners do not need to be concerned about micronutrients. Various crop notes also address lime fertilizer needs; visit [ncagr.gov/agronomi/pubs.htm](http://ncagr.gov/agronomi/pubs.htm).

Recommendations for *small areas, such as home lawns/gardens*, are listed in units of lb/1000 ft. If you cannot find the exact fertilizer grade recommended on the report, visit [www.ncagr.gov/agronomi/obpart4.htm#fs](http://www.ncagr.gov/agronomi/obpart4.htm#fs) to find information that may help you choose a comparable alternate. For more information, read *A Homeowner's Guide to Fertilizer*.

**Test Results**

The first seven values [soil class, HM%, WV, CEC, BS%, Ac and pH] describe the soil and its degree of acidity. The remaining 16 [P-I, K-I, Ca%, Mg%, Mn-I, Mn-AI1, Mn-AI2, Zn-I, Zn-AI, Cu-I, S-I, SS-I, Na, ESP, SS-I, NO3-N (not routinely available)] indicate levels of plant nutrients or other fertility measurement. Visit [www.ncagr.gov/agronomi/uvrst.htm](http://www.ncagr.gov/agronomi/uvrst.htm) for more information.

**Report Abbreviations**

<b>Ac</b>	exchangeable acidity
<b>B</b>	boron
<b>BS%</b>	% CEC occupied by basic cations
<b>Ca%</b>	% CEC occupied by calcium
<b>CEC</b>	cation exchange capacity
<b>Cu-I</b>	copper index
<b>ESP</b>	exchangeable sodium percent
<b>HM%</b>	percent humic matter
<b>K-I</b>	potassium index
<b>K2O</b>	potash
<b>Mg%</b>	% CEC occupied by magnesium
<b>MIN</b>	mineral soil class
<b>Mn</b>	manganese
<b>Mn-AI1</b>	Mn-availability index for crop 1
<b>Mn-AI2</b>	Mn-availability index for crop 2
<b>Mn-I</b>	manganese index
<b>M-O</b>	mineral-organic soil class
<b>N</b>	nitrogen
<b>Na</b>	sodium
<b>NO3-N</b>	nitrate nitrogen
<b>ORG</b>	organic soil class
<b>pH</b>	current soil pH
<b>P-I</b>	phosphorus index
<b>P2O5</b>	phosphate
<b>S-I</b>	sulfur index
<b>SS-I</b>	soluble salt index
<b>W/V</b>	weight per volume
<b>Zn-AI</b>	zinc availability index
<b>Zn-I</b>	zinc index

Operator: =====> Troy Sloan(31-655

County:== =====> Duplin

Date:==== =====> 05/06/11

Dist.to nearest residence (other than owner): ft.

sows (farrow to finish):===>

sows (farrow to feeder):eder):===>

head (finishing only):===== 2448

sows (farrow to wean):=====>

head (wean to feeder):===== 0

Ave. Live Weight for other operations(lbs.)=>

Storage volume for sludge accum. (cu. ft.):=>

Treatment Volume (min. 1 cu. ft./lb.)===== 1.0

25 Year - 24 Hour Rainfall (in.)===== 7.5

Rainfall in excess of evaporation (in.)===== 7.0

Drainage area of buildings & lots (sq. ft.)=>

Volume of wash water (gallons/day)=====>

Temporary storage period (days)===== 180

Freeboard (ft.):===== 1.0

Side slopes (inside lagoon):===== 2.5 : 1

Inside top length (ft.):===== 335.0

Inside top width (ft.):===== 190.0

Top of dike elevation (ft.):===== 49.7

Bottom of lagoon elevation (ft.):===== 37.7

Seasonal high water table(SHWT) elev.(ft.):=> 39.0

Total required volume:===== 488096 cu. ft.

Actual design volume:===== 526854 cu. ft.

Stop pumping el.(> or = to 39.0 ft.SHWT) 45.5 ft.  
(> or = to 43.7 ft.Min.)

Required minimum treatment volume: 330480 cu. ft.

Volume at stop pumping elevation: 344405 cu. ft.

Start pumping elev.:===== 48.0 ft.

Volume at start pumping elevation: 486526 cu. ft.

Actual volume less 25yr-24hr rain: 487073 cu. ft.

NOTE: Verify that temp. storage is adequate:

Req. volume to be pumped:===== 117835 cu. ft.

Actual volume to be pumped:==> 142121 cu. ft.

#4

## OPERATION & MAINTENANCE PLAN

Proper lagoon liquid management should be a year-round priority. It is especially important to manage levels so that you do not have problems during extended rainy and wet periods.

Maximum storage capacity should be available in the lagoon for periods when the receiving crop is dormant (such as wintertime for bermudagrass) or when there are extended rainy spells such as the thunderstorm season in the summertime. This means that at the first signs of plant growth in the later winter/early spring, irrigation according to a farm waste management plan should be done whenever the land is dry enough to receive lagoon liquid. This will make storage space available in the lagoon for future wet periods. In the late summer/early fall the lagoon should be pumped down to the low marker (see Figure 2-1) to allow for winter storage. Every effort should be made to *maintain* the lagoon close to the minimum liquid level as long as the weather and waste utilization plan will allow it.

Waiting until the lagoon has reached its maximum storage capacity before starting to irrigate does not leave room for storing excess water during extended wet periods. Overflow from the lagoon for any reason except a 25-year, 24-hour storm is a violation of state law and subject to penalty action.

The routine maintenance of a lagoon involves the following:

- Maintenance of a vegetative cover for the dam. Fescue or common bermudagrass are the most common vegetative covers. The vegetation should be fertilized each year, if needed, to maintain a vigorous stand. The amount of fertilizer applied should be based on a soils test, but in the event that it is not practical to obtain a soils test each year, the lagoon embankment and surrounding areas should be fertilized with 800 pounds per acre of 10-10-10, or equivalent.
- Brush and trees on the embankment must be controlled. This may be done by mowing, spraying, grazing, chopping, or a combination of these practices. This should be done at least once a year and possibly twice in years that weather conditions are favorable for heavy vegetative growth.

NOTE: If vegetation is controlled by spraying, the herbicide must not be allowed to enter the lagoon water. Such chemicals could harm the bacteria in the lagoon that are treating the waste.

Maintenance inspections of the entire lagoon should be made during the initial filling of the lagoon and at least monthly and after major rainfall and storm events. Items to be checked should include, as a minimum, the following:

- Waste Inlet Pipes, Recycling Pipes, and Overflow Pipes—look for:
  1. separation of joints
  2. cracks or breaks
  3. accumulation of salts or minerals
  4. overall condition of pipes

Lagoon surface—look for:

1. undesirable vegetative growth
2. floating or lodged debris

Embankment—look for:

1. settlement, cracking, or "jug" holes
2. side slope stability—slumps or bulges
3. wet or damp areas on the back slope
4. erosion due to lack of vegetation or as a result of wave action
5. rodent damage

Larger lagoons may be subject to liner damage due to wave action caused by strong winds. These waves can erode the lagoon sidewalls, thereby weakening the lagoon dam. A good stand of vegetation will reduce the potential damage caused by wave action. If wave action causes serious damage to a lagoon sidewall, baffles in the lagoon may be used to reduce the wave impacts.

Any of these features could lead to erosion and weakening of the dam. If your lagoon has any of these features, you should call an appropriate expert familiar with design and construction of waste lagoons. You may need to provide a temporary fix if there is a threat of a waste discharge. However, a permanent solution should be reviewed by the technical expert. Any digging into a lagoon dam with heavy equipment is a serious undertaking with potentially serious consequences and should not be conducted unless recommended by an appropriate technical expert.

Transfer Pumps—check for proper operation of:

1. recycling pumps
2. irrigation pumps

Check for leaks, loose fittings, and overall pump operation. An unusually loud or grinding noise, or a large amount of vibration, may indicate that the pump is in need of repair or replacement.

NOTE: Pumping systems should be inspected and operated frequently enough so that you are not completely "surprised" by equipment failure. You should perform your pumping system maintenance at a time when your lagoon is at its low level. This will allow some safety time should major repairs be required. Having a nearly full lagoon is not the time to think about switching, repairing, or borrowing pumps. Probably, if your lagoon is full, your neighbor's lagoon is full also. You should consider maintaining an inventory of spare parts or pumps.

Surface water diversion features are designed to carry *all* surface drainage waters (such as rainfall runoff, roof drainage, gutter outlets, and parking lot runoff) away from your lagoon and other waste treatment or storage structures. The only water that should be coming from your lagoon is that which comes from your flushing (washing) system pipes and the rainfall that hits the lagoon directly.

You should inspect your diversion system for the following:

1. adequate vegetation
2. diversion capacity
3. ridge berm height

Identified problems should be corrected promptly. It is advisable to inspect your system during or immediately following a heavy rain. If technical assistance is needed to determine proper solutions, consult with appropriate experts.

You should record the level of the lagoon just prior to when rain is predicted, and then record the level again 4 to 6 hours after the rain (assumes there is no pumping). This will give you an idea of how much your lagoon level will rise with a certain rainfall amount (you must also be recording your rainfall for this to work). Knowing this should help in planning irrigation applications and storage. If your lagoon rises excessively, you may have an inflow problem from a surface water diversion or there may be seepage into the lagoon from the surrounding land.

### **Lagoon Operation**

#### **Startup:**

1. Immediately after construction establish a complete sod cover on bare soil surfaces to avoid erosion.
2. Fill new lagoon design treatment volume at least half full of water before waste loading begins, taking care not to erode lining or bank slopes.
3. Drainpipes into the lagoon should have a flexible pipe extender on the end of the pipe to discharge near the bottom of the lagoon during initial filling or another means of slowing the incoming water to avoid erosion of the lining.
4. When possible, begin loading new lagoons in the spring to maximize bacterial establishment (due to warmer weather).
5. It is recommended that a new lagoon be seeded with sludge from a healthy working swine lagoon in the amount of 0.25 percent of the full lagoon liquid volume. This seeding should occur at least two weeks prior to the addition of wastewater.
6. Maintain a periodic check on the lagoon liquid pH. If the pH falls below 7.0, add agricultural lime at the rate of 1 pound per 1000 cubic feet of lagoon liquid volume until the pH rises above 7.0. Optimum lagoon liquid pH is between 7.5 and 8.0.
7. A dark color, lack of bubbling, and excessive odor signals inadequate biological activity. Consultation with a technical specialist is recommended if these conditions occur for prolonged periods, especially during the warm season.

#### **Loading:**

The more frequently and regularly that wastewater is added to a lagoon, the better the lagoon will function. Flush systems that wash waste into the lagoon several times daily are optimum for treatment. Pit recharge systems, in which one or more buildings are drained and recharged each day, also work well.

- Practice water conservation---minimize building water usage and spillage from leaking waterers, broken pipes and washdown through proper maintenance and water conservation.

- Minimize feed wastage and spillage by keeping feeders adjusted. This will reduce the amount of solids entering the lagoon

### Management:

- Maintain lagoon liquid level between the permanent storage level and the full temporary storage level.

- Place visible markers or stakes on the lagoon bank to show the minimum liquid level and the maximum liquid level (Figure 2-1).

- Start irrigating at the earliest possible date in the spring based on nutrient requirements and soil moisture so that temporary storage will be maximized for the summer thunderstorm season. Similarly, irrigate in the late summer/early fall to provide maximum lagoon storage for the winter.

- The lagoon liquid level *should never* be closer than 1 foot to the lowest point of the dam or embankment.

- Do not pump the lagoon liquid level lower than the permanent storage level unless you are removing sludge.

- Locate float pump intakes approximately 18 inches underneath the liquid surface and as far away from the drainpipe inlets as possible.

- Prevent additions of bedding materials, long-stemmed forage or vegetation, molded feed, plastic syringes, or other foreign materials into the lagoon.

- Frequently remove solids from catch basins at end of confinement houses or wherever they are installed.

- Maintain strict vegetation, rodent, and varmint control near lagoon edges.

- Do not allow trees or large bushes to grow on lagoon dam or embankment.

- Remove sludge from the lagoon either when the sludge storage capacity is full or before it fills 50 percent of the permanent storage volume.

- If animal production is to be terminated, the owner is responsible for obtaining and implementing a closure plan to eliminate the possibility of a pollutant discharge.

### Sludge Removal:

Rate of lagoon sludge buildup can be reduced by:

- proper lagoon sizing,
- mechanical solids separation of flushed waste,
- gravity settling of flushed waste solids in an appropriately designed basin, or
- minimizing feed wastage and spillage.

Lagoon sludge that is removed annually rather than stored long term will:

- have more nutrients,
- have more odor, and
- require more land to properly use the nutrients.

Removal techniques:

- Hire a custom applicator.
- Mix the sludge and lagoon liquid with a chopper-agitator impeller pump through large-bore sprinkler irrigation system onto nearby cropland; and soil incorporate.
- Dewater the upper part of lagoon by irrigation onto nearby cropland or forageland; mix remaining sludge; pump into liquid sludge applicator; haul and spread onto cropland or forageland; and soil incorporate.
- Dewater the upper part of lagoon by irrigation onto nearby cropland or forageland; dredge sludge from lagoon with dragline or sludge barge; berm an area beside lagoon to receive the sludge so that liquids can drain back into lagoon; allow sludge to dewater; haul and spread with manure spreader onto cropland or forageland; and soil incorporate.

Regardless of the method, you must have the sludge material analyzed for waste constituents just as you would your lagoon water. The sludge will contain different nutrient and metal values from the liquid. The application of the sludge to fields will be limited by these nutrients as well as any previous waste applications to that field and crop requirement. Waste application rates will be discussed in detail in Chapter 3.

When removing sludge, you must also pay attention to the liner to prevent damage. Close attention by the pumper or drag-line operator will ensure that the lagoon liner remains intact. If you see soil material or the synthetic liner material being disturbed, you should stop the activity immediately and not resume until you are sure that the sludge can be removed without liner injury. If the liner is damaged it must be repaired as soon as possible.

Sludge removed from the lagoon has a much higher phosphorus and heavy metal content than liquid. Because of this it should probably be applied to land with low phosphorus and metal levels, as indicated by a soil test, and incorporated to reduce the chance of erosion. Note that if the sludge is applied to fields with very high soil-test phosphores, it should be applied only at rates equal to the crop removal of phosphorus. As with other wastes, always have your lagoon sludge analyzed for its nutrient value.

The application of sludge will increase the amount of odor at the waste application site. Extra precaution should be used to observe the wind direction and other conditions which could increase the concern of neighbors.

### Possible Causes of Lagoon Failure

Lagoon failures result in the unplanned discharge of wastewater from the structure. Types of failures include leakage through the bottom or sides, overtopping, and breach of the dam. Assuming proper design and construction, the owner has the responsibility for ensuring structure safety. Items which may lead to lagoon failures include:

- Modification of the lagoon structure---an example is the placement of a pipe in the dam without proper design and construction. (Consult an expert in lagoon design before placing any pipes in dams.)
- Lagoon liquid levels---high levels are a safety risk.
- Failure to inspect and maintain the dam.
- Excess surface water flowing into the lagoon.
- Liner integrity---protect from inlet pipe scouring, damage during sludge removal, or rupture from lowering lagoon liquid level below groundwater table.

NOTE: If lagoon water is allowed to overtop the dam, the moving water will soon cause gullies to form in the dam. Once this damage starts, it can quickly cause a large discharge of wastewater and possible dam failure.

---

#3

Sloan Yam

# EMERGENCY ACTION PLAN

## PHONE NUMBERS

DWQ 910-796-7436 / 910-796-7215 / 1-800-858 0368  
 EMERGENCY MANAGEMENT SYSTEM 910-296-2160 x 231  
 SWCD 910-296-2120 x 3  
 NRCS 910-296-2120 x 3

This plan will be implemented in the event that wastes from your operation are leaking, overflowing, or running off site. You should not wait until wastes reach surface waters or leave your property to consider that you have a problem. You should make every effort to ensure that this does not happen. This plan should be posted in an accessible location for all employees at the facility. The following are some action items you should take.

1. Stop the release of wastes. Depending on the situation, this may or may not be possible. Suggested responses to some possible problems are listed below.

A. Lagoon overflow-possible solutions are:

- a. Add soil to berm to increase elevation of dam.
- b. Pump wastes to fields at an acceptable rate.
- c. Stop all flows to the lagoon immediately.
- d. Call a pumping contractor.
- e. Make sure no surface water is entering lagoon.

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MAR 08 2013

Aquifer Protection Section

B. Runoff from waste application field-actions include:

- a. Immediately stop waste application.
- b. Create a temporary diversion to contain waste.
- c. Incorporate waste to reduce runoff.
- d. Evaluate and eliminate the reason(s) that caused the runoff.
- e. Evaluate the application rates for the fields where runoff occurred.

C. Leakage from the waste pipes and sprinklers-action include:

- a. Stop recycle pump.
- b. Stop irrigation pump.
- c. Close valves to eliminate further discharge.
- d. Repair all leaks prior to restarting pumps.

D. Leakage from flush systems, houses, solid separators-action include:

- a. Stop recycle pump.
- b. Stop irrigation pump.
- c. Make sure no siphon occurs.
- d. Stop all flows in the house, flush systems, or solid separators.
- e. Repair all leaks prior to restarting pumps.

E. Leakage from base or sidewall of lagoon. Often this is seepage as opposed to

- a. Dig a small sump or ditch away from the embankment to catch all seepage, put in a submersible pump, and pump back to the lagoon.
- b. If holes are caused by burrowing animals, trap or remove animals and fill holes and compact with a clay type soil.
- c. Have a professional evaluate the condition of the side walls and lagoon bottom as soon as possible.

2. Assess the extent of the spill and note any obvious damages.

- a. Did the waste reach any surface waters?
- b. Approximately how much was released and for what duration?
- c. Any damage noted, such as employee injury, fish kills, or property damage?
- d. Did the spill leave the property?
- e. Does the spill have the potential to reach surface waters?
- f. Could a future rain event cause the spill to reach surface waters?
- g. Are potable water wells in danger (either on or off of the property)?
- h. How much reached surface waters?

3. Contact appropriate agencies.

- a. During normal business hours, call your DWQ (Division of Water Quality) regional office; Phone - - -. After hours, emergency number: 919-733-3942. Your phone call should include: your name, facility, telephone number, the details of the incident from item 2 above, the exact location of the facility, the location or direction of movement of the spill, weather and wind conditions. The corrective measures that have been under taken, and the seriousness of the situation.
- b. If spill leaves property or enters surface waters, call local EMS phone number - - -.
- c. Instruct EMS to contact local Health Department.
- d. Contact CES, phone number - - -, local SWCD office phone number - - -, and local NRCS office for advice/technical assistance phone number - - -.

4. If none of the above works call 911 or the Sheriff's Department and explain your problem to them and ask that person to contact the proper agencies for you.

5. Contact the contractor of your choice to begin repair of problem to minimize off-site damage.

a. Contractors Name: See Attached  
b. Contractors Address: List  
c. Contractors Phone: \_\_\_\_\_

6. Contact the technical specialist who certified the lagoon (NRCS, Consulting Engineer, etc).

a. Name: Kraig Westerbeek - Murphy/Brown  
b. Phone: 910-293-3434

7. Implement procedures as advised by DWQ and technical assistance agencies to rectify the damage, repair the system, and reassess the waste management plan to keep problems with release of wastes from happening again.

INSECT CONTROL CHECKLIST FOR ANIMAL OPERATIONS **MAY 10 2011**

Source	Cause	BMP's to Minimize Odor	Site Specific Practices
(Liquid Systems)			
Flush Gutters	Accumulation of solids	<input checked="" type="checkbox"/> Flush system is designed and operated sufficiently to remove accumulated solids from gutters as designed. <input type="checkbox"/> Remove bridging of accumulated solids at discharge	
Lagoons and Pits	Crusted Solids	<input checked="" type="checkbox"/> Maintain lagoons, settling basins and pits where pest breeding is apparent to minimize the crusting of solids to a depth of no more than 6-8 inches over more than 30% of surface.	
Excessive Vegetative Growth	Decaying vegetation	<input checked="" type="checkbox"/> Maintain vegetative control along banks of lagoons and other impoundments to prevent accumulation of decaying vegetative matter along water's edge on impoundment's perimeter.	
(Dry Systems)			
Feeders	Feed Spillage	<input type="checkbox"/> Design, operate and maintain feed systems (e.g., bunkers and troughs) to minimize the accumulation of decaying wastage. <input type="checkbox"/> Clean up spillage on a routine basis (e.g. 7-10 day interval during summer; 15-30 day interval during winter).	
Feed Storage	Accumulations of feed residues	<input type="checkbox"/> Reduce moisture accumulation within and around immediate perimeter of feed storage areas by insuring drainage away from site and/or providing adequate containment (e.g., covered bin for brewer's grain and similar high moisture grain products). <input type="checkbox"/> Inspect for and remove or break up accumulated solids in filter strips around feed storage as needed.	
Animal Holding Areas	Accumulations of animal wastes and feed wastage	<input type="checkbox"/> Eliminate low area that trap moisture along fences and other locations where waste accumulates and and disturbance by animals is minimal. <input type="checkbox"/> Maintain fence rows and filter strips around animal holding areas to minimize accumulations of wastes (i.e. inspect for and remove or break up accumulated solids as needed).	

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Dry Manure Handling  
Systems

Accumulations of animal wastes

- Remove spillage on a routine basis (e.g. 7-10 day interval during summer; 15-30 days interval during winter) where manure is loaded for land application or disposal.
  - Provide for adequate drainage around manure stockpiles.
  - Inspect for and remove or break up accumulated wastes in filter stripes around stockpiles and manure handling areas as needed.
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The issues checked () pertain to this operation. The landowner/integrator agrees to use sound judgment in applying insect control measures as practical.

I certify the aforementioned insect control Best Management Practices have been reviewed with me.

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(Landowner Signature)

For more information contact the Cooperative Extension Service, Department of Entomology, Box 7613, North Carolina State University, Raleigh, NC 27695-7613.

AMIC--November 11, 1996

MAY 10 2011

SWINE FARM WASTE MANAGEMENT ODOR CONTROL CHECKLIST

Source	Cause	BMP's to Minimize Odor	Site Specific Practices
Farmstead	Swine production	( <input checked="" type="checkbox"/> ) Vegetative or wooded buffers; ( <input checked="" type="checkbox"/> ) Recommended best management practices; ( <input checked="" type="checkbox"/> ) Good judgment and common sense	
Animal body surfaces	Dirty manure-covered animals	( <input checked="" type="checkbox"/> ) Dry floors	
Floor surfaces	Wet manure-covered floors	( ) Slotted floors; ( ) Waterers located over slotted floors; ( ) Feeders at high end of solid floors; ( <input checked="" type="checkbox"/> ) Scrape manure buildup from floors; ( ) Underfloor ventilation for drying	
Manure collection pits	Urine	( <input checked="" type="checkbox"/> ) Frequent manure removal by flush, pit recharge, or scrape	
	Parital micorbial decomposition	( ) Underfloor ventilation	
Ventilation exhaust fans	Volatile gases;	( <input checked="" type="checkbox"/> ) Fan maintenance;	
	Dust	( <input checked="" type="checkbox"/> ) Efficient air movement	
Indoor surfaces	Dust	( <input checked="" type="checkbox"/> ) Washdown between groups of animals ( ) Feed additives; ( ) Feeder covers; ( ) Feed delivery downspout extenders to feeder covers	
Flush tanks	Agitation of recycled lagoon liquid while tanks are filling	( ) Flush tank covers ( ) Extend fill lines to near bottom of tanks with anti-siphon vents	
Flush alleys	Agitation during wastewater conveyance	( ) Underfloor flush with underfloor ventilation	
Pit recharge points	Agitation of recycled lagoon liquid while pits are filling	( ) Extend recharge lines to near bottom of pits with anti-siphon vents	
Lift stations	Agitation during sump tank filling and drawdown	( ) Sump tank covers	
Outside drain collection or junction boxes	Agitation during wastewater conveyance	( ) Box covers	
End of drainpipes at lagoon	Agitation during wastewater	( ) Extend discharge point of pipes underneath lagoon liquid level	
Lagoon surfaces	Volatile gas emissions Biological mixing Agitation	( <input checked="" type="checkbox"/> ) Proper lagoon liquid capacity ( <input checked="" type="checkbox"/> ) Correct lagoon startup procedures ( <input checked="" type="checkbox"/> ) Minimum surface area-to-volume ratio ( <input checked="" type="checkbox"/> ) Minimum agitation when pumping ( ) Mechanical aeration ( ) Proven biological additives	
Irrigation sprinkler nozzles	High pressure agitation Wind draft	( <input checked="" type="checkbox"/> ) Irrigate on dry days with little or no wind ( <input checked="" type="checkbox"/> ) Minimum recommended operation pressure ( <input checked="" type="checkbox"/> ) Pump intake near lagoon liquid surface ( ) Pump from second-stage lagoon	

Storage tank or basin surface	Partial microbial decomposition Mixing while filling Agitation when emptying	<input type="checkbox"/> Bottom or midlevel loading <input type="checkbox"/> Tank covers <input type="checkbox"/> Basin surface mats of solids <input type="checkbox"/> Proven biological additives or oxidants
Settling basin surface	Partial microbial decomposition Mixing while filling Agitation when emptying	<input type="checkbox"/> Extend drainpipe outlets underneath liquid level <input type="checkbox"/> Remove settled solids regularly
Manure, slurry or sludge spreader outlets	Agitation when spreading Volatile gas emissions	<input checked="" type="checkbox"/> Soil injection of slurry/sludges <input checked="" type="checkbox"/> Wash residual manure from spreader after use <input type="checkbox"/> Proven biological additives or oxidants
Uncovered manure, slurry or sludge on field surfaces	Volatile gas emissions while drying	<input checked="" type="checkbox"/> Soil infection of slurry/sludges <input checked="" type="checkbox"/> Soil incorporation within 48 hours <input checked="" type="checkbox"/> Spread in thin uniform layers for rapid drying <input type="checkbox"/> Proven biological additives or oxidants
Dead animals	Carcass decomposition	<input checked="" type="checkbox"/> Proper disposition of carcasses
Dead animal disposal pits	Carcass decomposition	<input type="checkbox"/> Complete covering of carcasses in burial pits <input type="checkbox"/> Proper location/construction of disposal pits
Incinerators	Incomplete combustion	<input type="checkbox"/> Secondary stack burners
Standing water around facilities	Improper drainage Microbial decomposition of organic matter	<input checked="" type="checkbox"/> Grade and landscape such that water drains away from facilities
Manure tracked onto public roads from farm access	Poorly maintained access roads	<input checked="" type="checkbox"/> Farm access road maintenance

Additional Information:

Available From:

Swine Manure Management; 0200 Rule/BMP Packet	NCSU-County Extension Center
Swine Production Farm Potential Odor Sources and Remedies, EBAE Fact Sheet	NCSU-BAE
Swine Production Facility Manure Management: Pit Recharge--Lagoon Treatment; EBAE 128-88	NCSU-BAE
Swine Production Facility Manure Management: Underfloor Fluse--Lagoon Treatment; EBAE 129-88	NCSU-BAE
Lagoon Desig and Management for Livestock Manure Treatment and Storage; EBAE 103-83	NCSU-BAE
Calibration of Manure and Wastewater Application Equipment; EBAE Fact Sheet	NCSU-BAE
Controlling Odors from Swine Buildings; PIH-33	NCSU-Swine Extension
Environmental Assuranc Program: NPPC Manual	NC Pork Produces Assoc
Options for Managing Odor; a report from the Swine Odor Task Force	NCSU Agri Communications
Nuisance Concerns in Animal Manure Management: Odors and Flies; PRO107, 1995 Conference Proceedings	Florida Cooperative Extension

The issues checked  pertain to this operation. The landowner/integrator agrees to use sound judgment in applying odor control measures as practical.

I certify the aforementioned odor control Best Management Practices have been reviewed with me.

\_\_\_\_\_  
(Landowner Signature)

MAY 10 2011

## MORTALITY MANAGEMENT METHODS

(check which method(s) are being implemented)

- Burial three feet beneath the surface of the ground within 24 hours after knowledge of the death. The burial be at least 300 feet from any flowing stream or public body of water.
- Rendering at a rendering plant licensed under G. S. 106-168.7
- Complete incineration
- In the case of dead poultry only, placing in a disposal pit of a size and design approved by the Department of Agriculture.
- Any method which in the professional opinion of the State Veterinarian would make possible the salvage of ~~part of a dead~~ animal's value without endangering human or animal health. (Written approval of the State Veterinarian must be attached)