

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

Animal Waste Management Systems
Request for Certificate of Coverage

Facility Currently Covered by an Expiring State Non-Discharge General Permit

RECEIVED/DENR/DWR

MAR 14 2014

Water Quality Regional
Operations Section

On September 30, 2014, the North Carolina State Non-Discharge General Permits for Animal Waste Management Systems will expire. As required by these permits, facilities that have been issued Certificates of Coverage to operate under these State Non-Discharge General Permits must apply for renewal at least 180 days prior to their expiration date. Therefore, all applications must be received by the Division of Water Resources by no later than **April 1, 2014**.

Please do not leave any question unanswered. Please verify all information and make any necessary corrections below.

Application must be signed and dated by the Permittee.

1. Facility Number: 310306 and Certificate of Coverage Number: AWS310306
2. Facility Name: Linwood Jenkins Farm
3. Landowner's name (same as on the Waste Management Plan): Linwood Jenkins
4. Landowner's mailing address: 866 Cypress Creek Rd
City/State: Wallace NC Zip: 284667275
Telephone Number (include area code): (910)285-7600 E-mail: _____
5. Facility's physical address: 866 Cypress Creek Rd
City: Wallace State: NC Zip: 28466
6. County where facility is located: Duplin
7. Farm Manager's name (If different than the Landowner): Linwood Jenkins
8. Farm Manager's telephone number (include area code): _____
9. Integrator's name (if there is not an integrator write "None"): Murphy-Brown LLC
10. Operator in Charge (OIC) name: Linwood Jenkins Telephone Number 910-285-7600 OIC # AWA 19654
11. Lessee's name (if there is not a lessee write "None"): none
12. Indicate animal operation type and number:

Swine

Wean to Finish
Wean to Feeder 2600
Farrow to Finish
Feeder to Finish
Farrow to Wean
Farrow to Feeder
Boar/Stud
Gilts
Other

Horses - Horses
Horses - Other

Cattle

Dairy Calf
Dairy Heifer
Milk Cow
Dry Cow
Beef Stocker Calf
Beef Feeder
Beef Brood Cow
Other

Sheep - Sheep
Sheep - Other

Dry Poultry

Non Laying Chickens
Laying Chickens
Turkeys
Other
Pullets
Turkey Poults

Wet Poultry

Non Laying Pullets
Layers

Mail one (1) copy of the most recent Waste Utilization Plan (WUP) along with the field maps for this facility with this completed and signed application as required by NC General Statutes 143-215.10C(d) to the address below. The WUP must be signed by the owner and a certified technical specialist.

As a second option to mailing paper copies of the application package, you can scan and email one signed copy of the application and the WUP to: animalpermits@ncdenr.gov

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

Printed Name of Signing Official (Landowner, or if multiple Landowners all landowners should sign. If Landowner is a corporation, signature should be by a principal executive officer of the corporation):

Name: Linwood Jenkins Title: owner

Signature: Linwood Jenkins Date: 3-11-14

Name: _____ Title: _____

Signature: _____ Date: _____

Name: _____ Title: _____

Signature: _____ Date: _____

THE COMPLETED APPLICATION SHOULD BE SENT TO THE FOLLOWING ADDRESS:

**NCDENR-DWR
Animal Feeding Operations Branch
1636 Mail Service Center
Raleigh, North Carolina 27699-1636**

**Telephone number: (919) 807-6464
E-mail: animalpermits@ncdenr.gov**

WASTE UTILIZATION PLAN

PRODUCER: Lynwood Jenkins

LOCATION: 866 Cypress Creek Rd.
Wallace, NC 28466

TELEPHONE: (910) 285 7600

TYPE OPERATION: wean - feeder

NUMBER OF ANIMALS: 2600
(Design Capacity)

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The waste from your animal facility must be land applied at a specified rate to prevent pollution of surface and/or groundwater. The plant nutrients in the animal waste should be used to reduce the amount of commercial fertilizer required for the crops in the fields where the waste is to be applied. This waste utilization plan uses nitrogen as the limiting nutrient. Waste should be analyzed before each application cycle. Annual soil tests are strongly encouraged so that all plant nutrients can be balanced for realistic yields of the crop to be grown.

Several factors are important in implementing your waste utilization plan in order to maximize the fertilizer value of the waste and to ensure that it is applied in an environmentally safe manner. Always apply waste based on the needs of the crop to be grown and the nutrient content of the waste. Do not apply more nitrogen than the crop can utilize. Soil types are important as they have different infiltration rates, leaching potentials, cation exchange capacities, and available water holding capacities. Normally waste shall not be applied to land eroding at greater than 5 tons per acre per year. With special precautions, waste may be applied to land eroding at up to 10 tons per year. Do not apply waste on saturated soils, when it is raining, or when the surface is frozen. Either of these conditions may result in runoff to surface waters which is not allowed under DEM regulations. Wind conditions should also be considered to avoid drift and downwind odor problems. To maximize the value of nutrients for crop production and to reduce the potential for pollution, the waste should be applied to a growing crop or applied to bare ground not more than 30 days prior to planting. Injecting the waste or disking will conserve nutrients and reduce odor problems.

The estimated acres needed to apply the animal waste is based on typical nutrient content for this type of facility. Acreage requirements should be based on the waste analysis report from your waste management facility. Attached you will find information on proper sampling techniques, preparation, and transfer of waste samples to the lab for analysis.

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

WASTE UTILIZATION PLAN

Amount of Waste Produced Per Year (gallons, ft, tons, etc.)

2,600 animals X 0.42 (tons) waste/animal/year = 1,092 (tons) waste/year.

Amount of Plant Available Nitrogen (PAN) Produced Per Year

2,600 animals X 0.48 lbs. PAN/animal/year = 1,248 lbs. PAN/year. (PAN from N.C. Guide Std. 633) Tech

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

The following acreage will be needed for waste application based on the crop to be grown and surface application:

Table 1: ACRES OWNED BY PRODUCER

Tract #	Field* No.	Soil Type	Crop	Lbs. N Per Acre	Acres	Lbs. N Utilized	Month of Application
T8399	1	AuB	Bermuda(H)	275	3.89	1069.75	March - Sept. +
T8399	~1	AuB	Small Grain	50	3.89	194.5	Sept. - April
Total					3.89	1,264.25	

**This N is from animal waste only. If nutrients from other sources such as commercial fertilizer are applied, they must be accounted for. N must be based on realistic yield expectation.*

NOTE: The applicator is cautioned that P and K may be over applied while meeting the N requirements. Beginning in 1996 the Coastal Zone Management Act will require farmers in some eastern counties of North Carolina to have a nutrient management plan that addresses all nutrients. This plan only addresses Nitrogen.

WASTE UTILIZATION PLAN

Table 2: ACRES WITH AGREEMENT OR LONG TERM LEASE

**(Agreement with adjacent landowner must be attached)
(Required only if operator does not own adequate land [see
Required Specification 2])**

Tract #	Field No.	Soil Type	Crop	Lbs. N Per Acre*	Acres	Lbs. N Utilized	Month of Application
Total						-	

* See footnote for Table 1.

Totals from above Tables

	Acres	Lbs. N Utilized
Table 1	3.89	1,264
Table 2	0.00	-
Total	3.89	1,264
Amount of N Produced		1,248
Surplus or Deficit		(16)

NOTE: The Waste Utilization Plan must contain provisions for periodic land application of sludge at agronomic rates. The sludge will be nutrient rich and will require precautionary measures to prevent over application of nutrient or other elements.

WASTE UTILIZATION PLAN

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

Application of Waste by Irrigation

Field No.	Soil Type	Crop	Application Rate (In/Hr)	Application Amount (In.)
1	AuB	Bermuda	0.6	.5-1

THIS TABLE IS NOT NEEDED IF WASTE IS NOT BEING APPLIED BY IRRIGATION, HOWEVER A SIMILAR TABLE WILL BE NEEDED FOR DRY LITTER OR SLURRY.

Your facility is designed for 180 days of temporary storage and the temporary storage must be removed on the average of once every 6 MONTHS. In no instance should the volume of waste being stored in your structure exceed Elevation *see lagoon design.

Call the local Natural Resources Conservation Service (*formerly Soil Conservation Service*) or Soil and Water Conservation District office after you receive the waste analysis report for assistance in determining the amount per acre to apply and the proper application rate prior to applying the waste.

Narrative of operation:

Acres shown are 'wetted' acres with Senninger 5023 sprinklers, blue nozzles, at 55psi sprinkler pressure.

WASTE UTILIZATION PLAN

WASTE UTILIZATION PLAN AGREEMENT

Name of Farm: Lynwood Jenkins

Owner / Manager Agreement

I (we) understand and will follow and implement the specifications and the operation and maintenance procedures established in the approved animal waste utilization plan for the farm named above. 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 Environment Management (DEM) before the new animals are stocked. I (we) also understand that there must be no discharge of animal waste from this system to surface waters of the state from a storm event less severe than the 25-year, 24-hour storm. The approved plan will be filed on-site at the farm office and at the office of the local Soil and Water Conservation District and will be available for review by DEM upon request.

Name of Facility Owner: Lynwood Jenkins
(Please print)

Signature: Lynwood Jenkins Date: 5-23-01

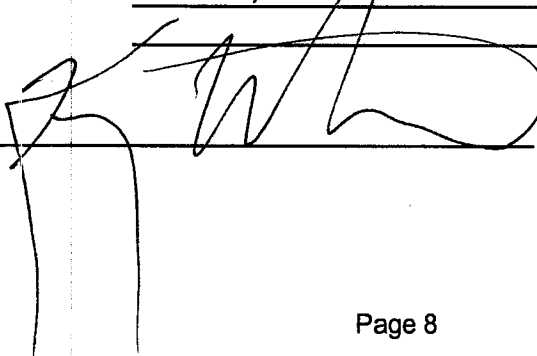
Name of Manager (If different from owner): _____

Signature: _____ Date: _____

Name of Technical Specialist: (Please print) Kraig A. Westerbeek

Affiliation: Murphy Family Farms

Address (Agency): P.O. Box 759
Rose Hill, NC 28458

Signature:  Date: 5/23/01

Wettable Acres Determination Certification

Name of Facility: Lynwood Jenkins Facility Number: 31 - 306
Owner(s) Name: 866 Cypress Same Phone No: 910 289-2111 285-7600
Mailing Address: 866 Cypress Cr. Rd. Wallace, NC 28466

By signing this form, the facility owner and Technical Specialist acknowledge the completion of the Wettable Acres Determination. All necessary Wettable Acre Determination Field Data Sheets and calculations were completed to conduct a Wettable Acre Determination. The facility's Waste Utilization Plan has been amended as necessary to reflect actual wetted acreage. A copy of all worksheets, calculations, and other Wettable Acres Determination documents, along with the applicable Waste Utilization Plan and Wettable Acre Determination Certification will be filed with the local Soil and Water Conservation District. A copy will also be kept on site with the Certified Animal Waste Management Plan. Any future modifications must be approved by a technical specialist and filed with the Soil and Water Conservation District prior to implementation. If any modifications to the existing irrigation system or any new irrigation equipment was required to adequately address the waste management needs of this facility, an Irrigation Specialist or Professional Engineer has certified the design and installation below.

Owner Name: Lynwood Jenkins
Owner Signature: Lynwood Jenkins Date: _____

Technical Specialist Name: Kraig Westerbeek
Technical Specialist Signature: [Signature] Date: 5/23/01

If assisted by an Irrigation Specialist or Professional Engineer please read and sign below:

Animal waste application equipment has been designed or modified to apply waste as necessary to accommodate the waste management plan and according to NRCS Standards. Animal waste application equipment has been installed according to NRCS Standards and is ready for use.

Irrigation Specialist/PE Name: _____
Irrigation Specialist/PE Signature: _____ Date: _____

Submit this form to:
Attn: Sonya Avant
Non-Discharge Compliance Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699-1617

Thrust Blocking										
Thrust Block Area = Thrust / Soil Bearing Strength										
Thrust:			feet							
Soil Bearing Strength:			feet							
End Cap:		#DIV/0!	ft2							
90 degree elbow:		#DIV/0!	ft2							
Tee:		#DIV/0!	ft2							
45 degree elbow:		#DIV/0!	ft2							
Pipe Pressure Rating Check										
Pressure Rating of Pipe to be Used:					psi					
Max. Pressure on system when running:				83.5	psi					
70% of Pressure Rating:				0	psi					
If Max. Pressure on system is less than 70% of Pressure Rating, OK										
Net Positive Suction Head Check										
NPSHA:										
NPSHR:				*from pump curve						
If NPSHA>NPSHR, OK										

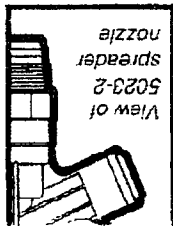
- Built-in hex wrench for easy in-the-field maintenance

- Standard lower bearing pipe thread:

3/4" NPT male (female also available)

- Flow rates: 6.5 to 20.1 gpm

(0.4 to 1.27 L/s)



- 12° angle ideal for uniform tree irrigation
- Single nozzle design minimizes clogging
- 23° angle is good for overhead applications
- Double-nozzle design provides enhanced distribution

5023-1-3/4" M

5023-2-3/4" M

5012-1-3/4" M

Model 5012-1-3/4" M

- Single nozzle design for maximum diameter

5012-1-3/4" M

SPRINKLER		BASE PRESSURE		U.S. - Diameter (feet)		METRIC - Diameter (meters)	
(psi)		(psi)				(bar)	
30	#13 Nozzle - White (13/64")	Flow (gpm)	Clam. at 1.5' height (feet)	65	#13 Nozzle - White (5.16mm)	Flow (l/s)	0.5m (m)
30	#14 Nozzle - Blue (7/32")	7.49	77	65	#14 Nozzle - Blue (5.55mm)	0.46	0.40
30	#15 Nozzle - Dark Brown (15/64")	8.09	75	65	#15 Nozzle - Dark Brown (5.95mm)	0.52	0.45
30	#16 Nozzle - Orange (1/4")	8.63	74	65	#16 Nozzle - Orange (6.35mm)	0.58	0.49
30	#17 Nozzle - Green (6.75mm)	9.17	73	65	#17 Nozzle - Green (6.75mm)	0.64	0.53
30	#18 Nozzle - Orange (1/4")	9.71	71	65	#18 Nozzle - Orange (6.35mm)	0.70	0.58
30	#19 Nozzle - Dark Brown (15/64")	10.25	69	65	#19 Nozzle - Dark Brown (5.95mm)	0.76	0.64
30	#20 Nozzle - Blue (7/32")	10.79	67	65	#20 Nozzle - Blue (5.55mm)	0.82	0.70
30	#21 Nozzle - Green (6.75mm)	11.33	65	65	#21 Nozzle - Green (6.75mm)	0.88	0.76
30	#22 Nozzle - Orange (1/4")	11.87	63	65	#22 Nozzle - Orange (6.35mm)	0.94	0.82
30	#23 Nozzle - Dark Brown (15/64")	12.41	61	65	#23 Nozzle - Dark Brown (5.95mm)	1.00	0.88
30	#24 Nozzle - Blue (7/32")	12.95	59	65	#24 Nozzle - Blue (5.55mm)	1.06	0.94
30	#25 Nozzle - Green (6.75mm)	13.49	57	65	#25 Nozzle - Green (6.75mm)	1.12	1.00
30	#26 Nozzle - Orange (1/4")	14.03	55	65	#26 Nozzle - Orange (6.35mm)	1.18	1.06
30	#27 Nozzle - Dark Brown (15/64")	14.57	53	65	#27 Nozzle - Dark Brown (5.95mm)	1.24	1.12
30	#28 Nozzle - Blue (7/32")	15.11	51	65	#28 Nozzle - Blue (5.55mm)	1.30	1.18
30	#29 Nozzle - Green (6.75mm)	15.65	49	65	#29 Nozzle - Green (6.75mm)	1.36	1.24
30	#30 Nozzle - Orange (1/4")	16.19	47	65	#30 Nozzle - Orange (6.35mm)	1.42	1.30
30	#31 Nozzle - Dark Brown (15/64")	16.73	45	65	#31 Nozzle - Dark Brown (5.95mm)	1.48	1.36
30	#32 Nozzle - Blue (7/32")	17.27	43	65	#32 Nozzle - Blue (5.55mm)	1.54	1.42
30	#33 Nozzle - Green (6.75mm)	17.81	41	65	#33 Nozzle - Green (6.75mm)	1.60	1.48
30	#34 Nozzle - Orange (1/4")	18.35	39	65	#34 Nozzle - Orange (6.35mm)	1.66	1.54
30	#35 Nozzle - Dark Brown (15/64")	18.89	37	65	#35 Nozzle - Dark Brown (5.95mm)	1.72	1.60
30	#36 Nozzle - Blue (7/32")	19.43	35	65	#36 Nozzle - Blue (5.55mm)	1.78	1.66
30	#37 Nozzle - Green (6.75mm)	19.97	33	65	#37 Nozzle - Green (6.75mm)	1.84	1.72
30	#38 Nozzle - Orange (1/4")	20.51	31	65	#38 Nozzle - Orange (6.35mm)	1.90	1.78
30	#39 Nozzle - Dark Brown (15/64")	21.05	29	65	#39 Nozzle - Dark Brown (5.95mm)	1.96	1.84
30	#40 Nozzle - Blue (7/32")	21.59	27	65	#40 Nozzle - Blue (5.55mm)	2.02	1.90
30	#41 Nozzle - Green (6.75mm)	22.13	25	65	#41 Nozzle - Green (6.75mm)	2.08	1.96
30	#42 Nozzle - Orange (1/4")	22.67	23	65	#42 Nozzle - Orange (6.35mm)	2.14	2.02
30	#43 Nozzle - Dark Brown (15/64")	23.21	21	65	#43 Nozzle - Dark Brown (5.95mm)	2.20	2.08
30	#44 Nozzle - Blue (7/32")	23.75	19	65	#44 Nozzle - Blue (5.55mm)	2.26	2.14
30	#45 Nozzle - Green (6.75mm)	24.29	17	65	#45 Nozzle - Green (6.75mm)	2.32	2.20
30	#46 Nozzle - Orange (1/4")	24.83	15	65	#46 Nozzle - Orange (6.35mm)	2.38	2.26
30	#47 Nozzle - Dark Brown (15/64")	25.37	13	65	#47 Nozzle - Dark Brown (5.95mm)	2.44	2.32
30	#48 Nozzle - Blue (7/32")	25.91	11	65	#48 Nozzle - Blue (5.55mm)	2.50	2.38
30	#49 Nozzle - Green (6.75mm)	26.45	9	65	#49 Nozzle - Green (6.75mm)	2.56	2.44
30	#50 Nozzle - Orange (1/4")	26.99	7	65	#50 Nozzle - Orange (6.35mm)	2.62	2.50
30	#51 Nozzle - Dark Brown (15/64")	27.53	5	65	#51 Nozzle - Dark Brown (5.95mm)	2.68	2.56
30	#52 Nozzle - Blue (7/32")	28.07	3	65	#52 Nozzle - Blue (5.55mm)	2.74	2.62
30	#53 Nozzle - Green (6.75mm)	28.61	1	65	#53 Nozzle - Green (6.75mm)	2.80	2.68
30	#54 Nozzle - Orange (1/4")	29.15		65	#54 Nozzle - Orange (6.35mm)	2.86	2.74
30	#55 Nozzle - Dark Brown (15/64")	29.69		65	#55 Nozzle - Dark Brown (5.95mm)	2.92	2.80
30	#56 Nozzle - Blue (7/32")	30.23		65	#56 Nozzle - Blue (5.55mm)	2.98	2.86
30	#57 Nozzle - Green (6.75mm)	30.77		65	#57 Nozzle - Green (6.75mm)	3.04	2.92
30	#58 Nozzle - Orange (1/4")	31.31		65	#58 Nozzle - Orange (6.35mm)	3.10	2.98
30	#59 Nozzle - Dark Brown (15/64")	31.85		65	#59 Nozzle - Dark Brown (5.95mm)	3.16	3.04
30	#60 Nozzle - Blue (7/32")	32.39		65	#60 Nozzle - Blue (5.55mm)	3.22	3.10
30	#61 Nozzle - Green (6.75mm)	32.93		65	#61 Nozzle - Green (6.75mm)	3.28	3.16
30	#62 Nozzle - Orange (1/4")	33.47		65	#62 Nozzle - Orange (6.35mm)	3.34	3.22
30	#63 Nozzle - Dark Brown (15/64")	34.01		65	#63 Nozzle - Dark Brown (5.95mm)	3.40	3.28
30	#64 Nozzle - Blue (7/32")	34.55		65	#64 Nozzle - Blue (5.55mm)	3.46	3.34
30	#65 Nozzle - Green (6.75mm)	35.09		65	#65 Nozzle - Green (6.75mm)	3.52	3.40
30	#66 Nozzle - Orange (1/4")	35.63		65	#66 Nozzle - Orange (6.35mm)	3.58	3.46
30	#67 Nozzle - Dark Brown (15/64")	36.17		65	#67 Nozzle - Dark Brown (5.95mm)	3.64	3.52
30	#68 Nozzle - Blue (7/32")	36.71		65	#68 Nozzle - Blue (5.55mm)	3.70	3.58
30	#69 Nozzle - Green (6.75mm)	37.25		65	#69 Nozzle - Green (6.75mm)	3.76	3.64
30	#70 Nozzle - Orange (1/4")	37.79		65	#70 Nozzle - Orange (6.35mm)	3.82	3.70
30	#71 Nozzle - Dark Brown (15/64")	38.33		65	#71 Nozzle - Dark Brown (5.95mm)	3.88	3.76
30	#72 Nozzle - Blue (7/32")	38.87		65	#72 Nozzle - Blue (5.55mm)	3.94	3.82
30	#73 Nozzle - Green (6.75mm)	39.41		65	#73 Nozzle - Green (6.75mm)	4.00	3.88
30	#74 Nozzle - Orange (1/4")	39.95		65	#74 Nozzle - Orange (6.35mm)	4.06	3.94
30	#75 Nozzle - Dark Brown (15/64")	40.49		65	#75 Nozzle - Dark Brown (5.95mm)	4.12	4.00
30	#76 Nozzle - Blue (7/32")	41.03		65	#76 Nozzle - Blue (5.55mm)	4.18	4.06
30	#77 Nozzle - Green (6.75mm)	41.57		65	#77 Nozzle - Green (6.75mm)	4.24	4.12
30	#78 Nozzle - Orange (1/4")	42.11		65	#78 Nozzle - Orange (6.35mm)	4.30	4.18
30	#79 Nozzle - Dark Brown (15/64")	42.65		65	#79 Nozzle - Dark Brown (5.95mm)	4.36	4.24
30	#80 Nozzle - Blue (7/32")	43.19		65	#80 Nozzle - Blue (5.55mm)	4.42	4.30
30	#81 Nozzle - Green (6.75mm)	43.73		65	#81 Nozzle - Green (6.75mm)	4.48	4.36
30	#82 Nozzle - Orange (1/4")	44.27		65	#82 Nozzle - Orange (6.35mm)	4.54	4.42
30	#83 Nozzle - Dark Brown (15/64")	44.81		65	#83 Nozzle - Dark Brown (5.95mm)	4.60	4.48
30	#84 Nozzle - Blue (7/32")	45.35		65	#84 Nozzle - Blue (5.55mm)	4.66	4.54
30	#85 Nozzle - Green (6.75mm)	45.89		65	#85 Nozzle - Green (6.75mm)	4.72	4.60
30	#86 Nozzle - Orange (1/4")	46.43		65	#86 Nozzle - Orange (6.35mm)	4.78	4.66
30	#87 Nozzle - Dark Brown (15/64")	46.97		65	#87 Nozzle - Dark Brown (5.95mm)	4.84	4.72
30	#88 Nozzle - Blue (7/32")	47.51		65	#88 Nozzle - Blue (5.55mm)	4.90	4.78
30	#89 Nozzle - Green (6.75mm)	48.05		65	#89 Nozzle - Green (6.75mm)	4.96	4.84
30	#90 Nozzle - Orange (1/4")	48.59		65	#90 Nozzle - Orange (6.35mm)	5.02	4.90
30	#91 Nozzle - Dark Brown (15/64")	49.13		65	#91 Nozzle - Dark Brown (5.95mm)	5.08	4.96
30	#92 Nozzle - Blue (7/32")	49.67		65	#92 Nozzle - Blue (5.55mm)	5.14	5.02
30	#93 Nozzle - Green (6.75mm)	50.21		65	#93 Nozzle - Green (6.75mm)	5.20	5.08
30	#94 Nozzle - Orange (1/4")	50.75		65	#94 Nozzle - Orange (6.35mm)	5.26	5.14
30	#95 Nozzle - Dark Brown (15/64")	51.29		65	#95 Nozzle - Dark Brown (5.95mm)	5.32	5.20
30	#96 Nozzle - Blue (7/32")	51.83		65	#96 Nozzle - Blue (5.55mm)	5.38	5.26
30	#97 Nozzle - Green (6.75mm)	52.37		65	#97 Nozzle - Green (6.75mm)	5.44	5.32
30	#98 Nozzle - Orange (1/4")	52.91		65	#98 Nozzle - Orange (6.35mm)	5.50	5.38
30	#99 Nozzle - Dark Brown (15/64")	53.45		65	#99 Nozzle - Dark Brown (5.95mm)	5.56	5.44
30	#100 Nozzle - Blue (7/32")	53.99		65	#100 Nozzle - Blue (5.55mm)	5.62	5.50
30	#101 Nozzle - Green (6.75mm)	54.53		65	#101 Nozzle - Green (6.75mm)	5.68	5.56
30	#102 Nozzle - Orange (1/4")	55.07		65	#102 Nozzle - Orange (6.35mm)	5.74	5.62
30	#103 Nozzle - Dark Brown (15/64")	55.61		65	#103 Nozzle - Dark Brown (5.95mm)	5.80	5.68
30	#104 Nozzle - Blue (7/32")	56.15		65	#104 Nozzle - Blue (5.55mm)	5.86	5.74
30	#105 Nozzle - Green (6.75mm)	56.69		65	#105 Nozzle - Green (6.75mm)	5.92	5.80
30	#106 Nozzle - Orange (1/4")	57.23		65	#106 Nozzle - Orange (6.35mm)	5.98	5.86
30	#107 Nozzle - Dark Brown (15/64")	57.77		65	#107 Nozzle - Dark Brown (5.95mm)	6.04	5.92
30	#108 Nozzle - Blue (7/32")	58.31		65	#108 Nozzle - Blue (5.55mm)	6.10	5.98
30	#109 Nozzle - Green (6.75mm)	58.85		65	#109 Nozzle - Green (6.75mm)	6.16	6.04
30	#110 Nozzle - Orange (1/4")	59.39		65	#110 Nozzle - Orange (6.35mm)	6.22	6.10
30	#111 Nozzle - Dark Brown (15/64")	59.93		65	#111 Nozzle - Dark Brown (5.95mm)	6.28	6.16
30	#112 Nozzle - Blue (7/32")	60.47		65	#112 Nozzle - Blue (5.55mm)	6.34	6.22
30	#113 Nozzle - Green (6.75mm)	61.01		65	#113 Nozzle - Green (6.75mm)	6.40	6.28
30	#114 Nozzle - Orange (1/4")	61.55		65	#114 Nozzle - Orange (6.35mm)	6.46	6.34
30	#115 Nozzle - Dark Brown (15/64")	62.09		65	#115 Nozzle - Dark Brown (5.95mm)	6.52	6.40
30	#116 Nozzle - Blue (7/32")	62.63		65	#116 Nozzle - Blue (5.55mm)	6.58	6.46
30	#117 Nozzle - Green (6.75mm)	63.17		65	#117 Nozzle - Green (6.75mm)	6.64	6.52
30	#118 Nozzle - Orange (1/4")	63.71		65	#118 Nozzle - Orange (6.35mm)	6.70	6.58
30	#119 Nozzle - Dark Brown (15/64")	64.25		65	#119 Nozzle - Dark Brown (5.95mm)	6.76	6.64
30	#120 Nozzle - Blue (7/32")	64.79		65	#120 Nozzle - Blue (5.55mm)	6.82	6.70
30	#121 Nozzle - Green (6.75mm)	65.33		65	#121 Nozzle - Green (6.75mm)	6.88	6.76
30	#122 Nozzle - Orange (1/4")	65.87		65	#122 Nozzle - Orange (6.35mm)	6.94	6.82
30	#123 Nozzle - Dark Brown (15/64")	66.41		65	#123 Nozzle - Dark Brown (5.95mm)	7.00	6.88
30	#124 Nozzle - Blue (7/32")	66.95		65	#124 Nozzle - Blue (5.55mm)	7.06	6.94
30	#125 Nozzle - Green (6.75mm)	67.49		65	#125 Nozzle - Green (6.75mm)	7.12	7.00
30	#126 Nozzle - Orange (1/4")	68.03		65	#126 Nozzle - Orange (6.35mm)	7.18	7.06
30	#127 Nozzle - Dark Brown (15/64")	68.57		65	#127 Nozzle - Dark Brown (5.95mm)	7.24	7.12
30	#128 Nozzle - Blue (7/32")	69.11		65	#128 Nozzle - Blue (5.55mm)	7.30	7.18
30	#129 Nozzle - Green (6.75mm)	69.65		65	#129 Nozzle - Green (6.75mm)	7.36	7.24
30	#130 Nozzle - Orange (1/4")	70.19		65	#130 Nozzle - Orange (6.35mm)	7.42	7.30
30	#131 Nozzle - Dark Brown (15/64")	70.73		65	#131 Nozzle - Dark Brown (5.95mm)	7.48	7.36
30	#132 Nozzle - Blue (7/32")	71.27		65	#132 Nozzle - Blue (5.55mm)	7.54	7.42
30	#133 Nozzle - Green (6.75mm)	71.81		65	#133 Nozzle - Green (6.75mm)	7.60	7.48
30	#134 Nozzle - Orange (1/4")	72.35		65	#134 Nozzle - Orange (6.35mm)	7.66	7.54
30	#135 Nozzle - Dark Brown (15/64")	72.89		65	#135 Nozzle - Dark Brown (5.95mm)	7.72	7.60
30	#136 Nozzle - Blue (7/32")	73.43		65	#136 Nozzle - Blue (5.55mm)	7.78	7.66
30	#137 Nozzle - Green (6.75mm)	73.97		65	#137 Nozzle - Green (6.75mm)	7.84	7.72
30	#138 Nozzle - Orange (1/4")	74.51		65	#138 Nozzle - Orange (6.35mm)	7.90	7.78
30	#139 Nozzle - Dark Brown (15/64")	75.05		65	#139 Nozzle - Dark Brown (5.95mm)	7.96	7.84
30	#140 Nozzle - Blue (7/32")	75.59		65	#140 Nozzle - Blue (5.55mm)	8.02	7.90
30	#141 Nozzle - Green (6.75mm)	76.13		65	#141 Nozzle - Green (6.75mm)	8.08	7.96
30	#142 Nozzle - Orange (1/4")	76.67		65	#142 Nozzle - Orange (6.35mm)	8.14	8.02
30	#143 Nozzle - Dark Brown (15/64")	77.21		65	#143 Nozzle - Dark Brown (5.95mm)	8.20	8.08
30	#144 Nozzle - Blue (7/32")	77.75		65	#144 Nozzle - Blue (5.55mm)	8.26	8.14
30	#145 Nozzle - Green (6.75mm)	78.29		65	#145 Nozzle - Green (6.75mm)	8.32	8.20
30	#146 Nozzle - Orange (1/4")	78.83		65	#146 Nozzle - Orange (6.35mm)	8.38	8.26
30	#147 Nozzle - Dark Brown (15/64")	79.37		65	#147 Nozzle - Dark Brown (5.95mm)	8.44	8.32
30	#148 Nozzle - Blue (7/32")	79.91		65	#148 Nozzle - Blue (5.55mm)	8.50	8.38
30	#149 Nozzle - Green (6.75mm)	80.45		65	#149 Nozzle - Green (6.75mm)	8.56	8.44
30	#150 Nozzle - Orange (1/4")	80.99		65	#150 Nozzle - Orange (6.35mm)	8.62	8.50
30	#151 Nozzle - Dark Brown (15/64")	81.53		65	#151 Nozzle - Dark Brown (5.95mm)	8.68	8.56
30	#152 Nozzle - Blue (7/32")	82.07		65	#152 Nozzle - Blue (5.55mm)	8.74	8.62
30	#153 Nozzle - Green (6.75mm)	82.61		65	#153 Nozzle - Green (6.75mm)	8.80	8.68
30	#154 Nozzle - Orange (1/4")	83.15		65	#154 Nozzle - Orange (6.35mm)	8.86	8.74
30	#155 Nozzle - Dark Brown (15/64")	83.69		65	#1		

IRRIGATION SYSTEM DESIGN PARAMETERS

Landowner/Operator Name: Lynwood Jenkins
Address: 866 Cypress Creek Rd.
Wallace, NC 28466
Telephone: (910) 285 7600

County: Duplin

Date: 5/23/01

Table 1 - Field Specifications

[illegible]

TABLE 3 - Solid Set Irrigation Gun Settings

Make, Model and Type of Equipment			Senninger 5023 Sprinklers		Operating Parameters				Comments-Acres per zone
Line No.	Number of Hydrants	Wetted Diameter (feet)	Hydrant Spacing(ft) Along Pipelines	Between Pipelines	Application Rate (in/hr)	Nozzle Diameter (inches)	Operating Pressure at Gun(psi)	Operating Time at Hydrant(hr.)	
A	9	102	80	80	0.15	7/32	55	3.29	9X.1145 =1.03
B	11								11X.1145=1.26
C	9								9X.1145 =1.03
D	5								5X.1145=.57
	34								
								Total Acres =	3.89
L1A	.57 Acres								
L1B	.685 Acres								
L1C	.57 Acres								
L1D	.57 Acres								
L2A	.456 Acres								
L2B	.57 Acres								
L2C	.456 Acres								

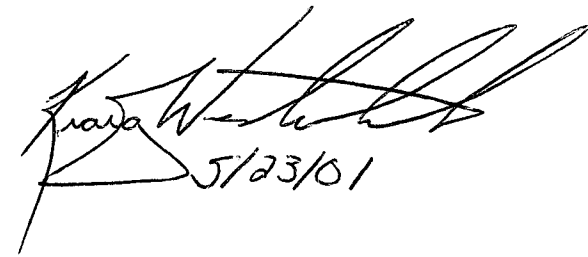
TABLE 4 - Irrigation System Specifications

	Traveling Irrigation Gun	Solid Set Irrigation
Flow Rate of Sprinkler (gpm)		10.1
Operating Pressure at Pump (psi)		83.5
Design Precipitation Rate (in/hr)		0.15
Hose Length (feet)		XXXXXXXX
Type of Speed Compensation		XXXXXXXX
Pump Type (PTO, Engine, Electric)		Electric
Pump Power Requirement (hp)		#DIV/0!

TABLE 5 - Thrust Block Specifications

TABLE 5 - Thrust Block Specifications	
	THRUST BLOCK
LOCATION	AREA (sq. ft.)
90 degree bend	#DIV/0!
Dead End	#DIV/0!
Tee	#DIV/0!
Gate Valve	#DIV/0!
45 degree bend	#DIV/0!

IRRIGATION SYSTEM DESIGNER



5/23/01

Name: Kraig Westerbeek
Company: Murphy-Brown
Address: PO Box 759 Rose Hill, NC 28458
Phone: (910) 289 2111

Required Documentation

The following details of design and materials must accompany all irrigation designs:

1. A scale drawing of the proposed irrigation system which includes hydrant locations, pipelines, thrust block locations and buffer areas where applicable.
2. Assumptions and computations for determining total dynamic head and horsepower requirements.
3. Computations used to determine all mainline and lateral pipe sizes.
4. Sources and/or calculations used for determining application rates.
5. Computations used to determine the size of thrust blocks and illustrations of all thrust block configurations required in the system
6. Manufacturer's specifications for the irrigation pump, traveler and sprinkler(s).
7. Manufacturer's specifications for the irrigation pipe and/or USDA-NRCS standard for IRRIGATION WATER CONVEYANCE.
8. The information required by this form are the minimum requirements. It is the responsibility of the designer to consider all relevant factors at a particular site and address them as appropriate.
9. Irrigation pipes should not be installed in lagoon or storage pond embankments without the approval of the designer.

NOTE: A buffer strip of 25' or wider must be maintained between the limits of the irrigation system and all perennial streams and surface waters per NC Statutes.

Narrative of Irrigation System Operation

Acres shown are 'wetted' acres using tables for excessively spaced sprinklers. Grower is responsible for insuring that the sprinkler pressure shown in this design is maintained during irrigation events. Failure to maintain 55 pi sprinkler pressure will result in less acreage being wetted than is shown.

CALCULATIONS			
Sprinkler Specifications			
Sprinkler Type:	Senninger 5023		
Nozzle Size:	7/32	inches	
Sprinkler Pressure:	55	psi	
Flowrate(GPM):	10.1	gpm	
Wetted Diameter:	102	feet	
Sprinkler Spacings			
Desired Spacing (%):	60	%	
Design Spacing(feet):	61.2	*PVC irrigation pipe normally comes in 20' pieces, so round to the nearest multiple of 20.	
Actual Spacing (feet):	80	feet	
Actual Spacing (%):	78	%	*EXCESSIVELY SPACED
Application Rate			
Application Rate = $(96.3 \times \text{Flowrate}) / \text{sprinkler spacing squared}$			
Design App. Rate =	0.15	in/hr	
Run Time per Set			
Run time per set = Desired application / Design application rate = hours			
Desired app. (in.) =	0.5	inches	
Run time per set =	3.29	hours	
Mainline Velocity			
Velocity = $.408 \times \text{Flowrate} / \text{pipe diameter squared}$ feet/sec.**			
**For buried pipelines, velocity should be below 5 feet per second			
Pipe size:	2	inches	
# Sprinklers Oper.:	4		
Velocity=	4.12	ft/sec.	
Maximum Lateral Line Entrance Velocity			
Pipe size:	2	inches	
# Sprinklers Oper.:	4		
Velocity =	4.1208	ft/sec.	

Maximum Mainline Friction Loss

Lateral Used: D

Total distance: 1500 feet

Friction Loss is figured using Hazen/William's Equation

Friction Loss= 3.15 feet/100 feet

Max. Mainline Loss = 47.2 feet or 20.4 psi

Maximum Lateral Line Loss

Lateral line friction loss is determined using the assumption that 3/4 of the Friction Loss occurs in the first 1/3 of the lateral line

Total Lateral Length: 320 feet

sprinklers on Lat.: 4

Frict. Loss at 1/3 lat. 3.36 feet

Max. Lateral Loss: 4.48 feet or 1.94 psi

Total Dynamic Head

Sprinkler Pressure: 55 psi

Lateral Line Loss: 1.94 psi

Elevation head: 0 psi

Mainline loss: 20.4 psi

Suction head and lift: 2.1 psi

5% fitting loss: 4.0 psi

TOTAL(TDH) = 83.5 psi or 192.8 feet**Horsepower Required**

Horsepower = Flowrate x TDH(feet) / 3960 / Pump efficiency

Pump Description: Monarch

Pump Efficiency: %

Horsepower Req'd: #DIV/0! Hp

Spray Feild Layout

← Road →

Turkey House

Water Way

Feed Tanks

Pump House

Well

Hog House

Lagoon

Line 2 ABC

Lagoon Pump

Line 1 ABCD

A

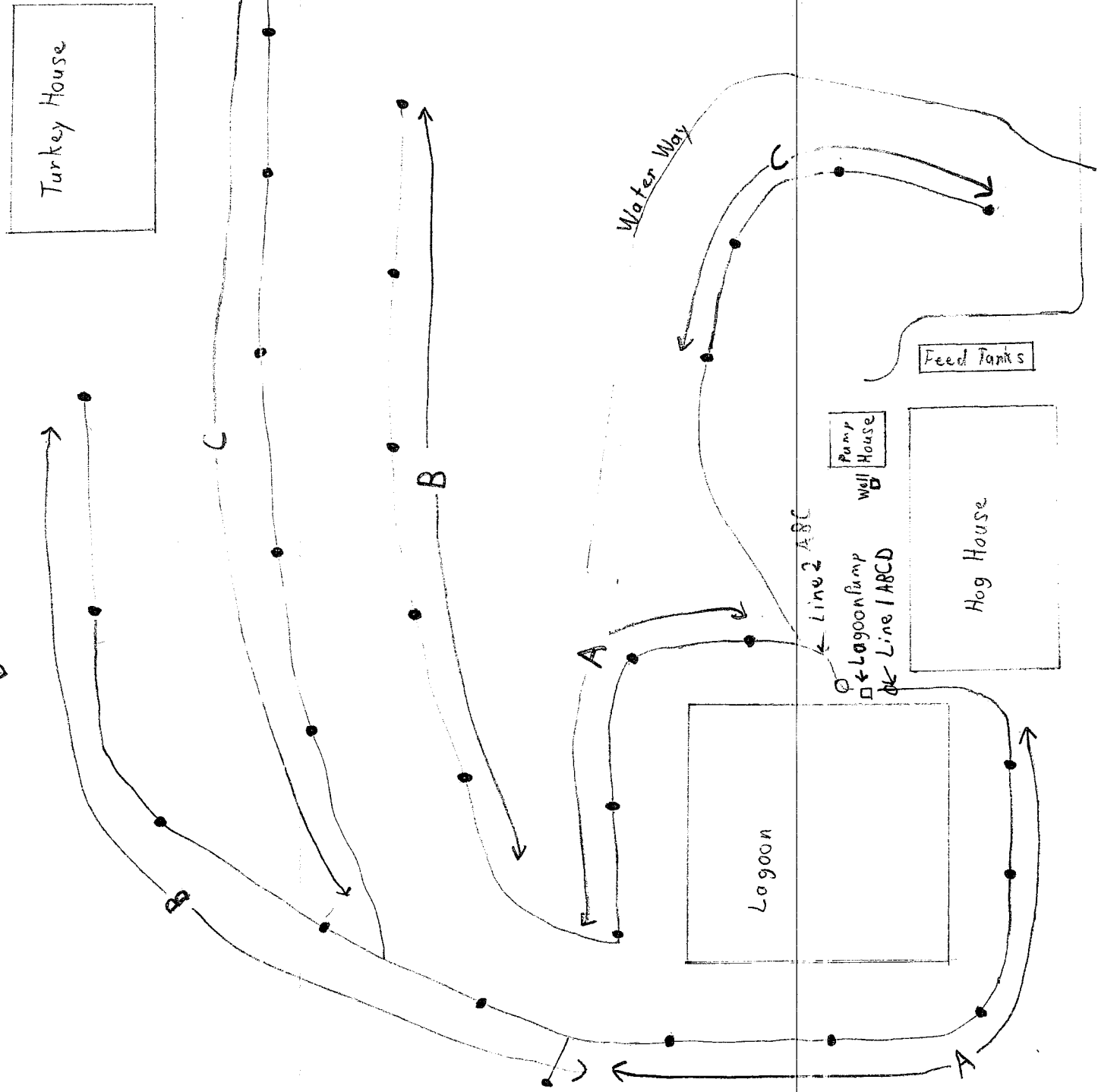
B

C

D

A

B



34501-1501 - excessive SP402d

1" - 150'

Linnwood Jenkins

