

Animal Waste Management Plan for Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest

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**Nederend
Farms
LLLP-
DBA
Nederend
Heifer
Ranch
&
Beef
Northwest**

2016

***Animal Waste
Management Plan***

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2016

***Animal Waste
Management Plan***

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GENERAL INFORMATION

Oregon Department of Agriculture CAFO Division Animal Waste Management Plan Signature Sheet	ODA USE ONLY MA# _____ AWMP# _____ Approved Date _____ Received Date _____
Facility Name: <u>Beef Northwest</u>	
Facility Address: <u>3455 Victorio Road</u> <u>Nyssa, Oregon 97913</u>	
Operated by: <u>Beef Northwest</u>	
Mailing Address: <u>P.O. Box 209</u> <u>Boardman, OR 97818</u>	
<i>Complete if different than the Operator</i> Owned by: <u>Nederend Farms LLLP</u>	
Mailing Address: <u>4998 Hogg Road</u> <u>Homedale, ID 83628</u>	
☐ As the Operator of <u>Beef Northwest</u> , I agree to manage this facility in accordance with the existing Animal Waste Management Plan (AWMP) # _____ on file with ODA and maintain those practices as described in the plan. This signed AWMP is incorporated into the CAFO NPDES General Permit by reference (Permit Condition S3.A.2.). ☐ If changes are made to the animal population, facilities and/or management of the CAFO, a new AWMP must be submitted to ODA for approval at least 45 days before the modification is implemented unless a different schedule is allowed by ODA in writing (Permit Condition S3.D.1 and 2).	
Operator's Signature	Date
Operator's Name (Please Print)	

GENERAL INFORMATION

BACKGROUND AND SITE INFORMATION

Animal Feeding Operation: Large Concentrated CAFO

Type & Size: Dairy – 15,000 animals
Cattle – 17,000 animals

Latitude/Longitude: N43.90808⁰, W117.09935⁰

Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest is located approximately a 6.4 miles northwest of Nyssa, Oregon in Malheur County, Oregon.

Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest is owned by Nederend LLLP. Nederend Farms will be managed by the Nederend family and Beef Northwest will be managed by Barry Kane and Wes Killion. There is no change to the total number of permitted animals but the animal classification will change from all beef cattle to part beef cattle and part dairy livestock. A request for modification of animal classification is located in Section 5.

Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest consists of a feedlot facility which will be used manage dairy replacement livestock and beef cattle at various growth stages. The Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest feedlot facility shown on the Production Area Map on page 2-7 will be used to manage heifers and calves on the south part of the feedlot and the north part of the feedlot facility will be used to manage beef cattle.

Mortalities that occur during the year on the Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest Farm are moved to the solid manure storage area until a rendering service can pick them up and properly dispose of them.

Manure Handling

Manure is collected in the cattle pens shown on the Production Area Map on page 2-7. A concrete feed bunk and travel lane is adjacent to the cattle pens which contain a concrete area for water troughs. Typically, two cattle pens share one watering trough. Any rainfall runoff from the cattle pens including processing and hospital areas is directed to conveyance ditches that flow to the transfer ponds, settling basins and evaporation ponds. There is also an equipment wash area that drains to the settling basins and evaporation ponds. Manure is periodically mounded in the cattle pens for bedding mounds.

When Beef Northwest has excess solids containing manure removed from the pens they manage it is usually transferred to solids storage area shown on the Production Area Map on page 2-7. At times Beef Northwest will also remove solids from the settling basins, dry the solids and load them into manure spreader trucks and export them to neighboring farms. When Nederend Farms LLLP-DBA Nederend Heifer Ranch removes excess solids from the pens they manage they will be exported off farm immediately.

In most years runoff containing manure captured in the transfer ponds and settling basins that is stored in the evaporation ponds is evaporated so there is no export of wastewater to surrounding farms. In years when the water stored in the evaporation

GENERAL INFORMATION

ponds is not evaporated it is exported from the feedlot to neighboring farms using pumps and pipelines.

Beef Northwest will be utilizing a compost company to clean and export manure produced on the north part of the feedlot facility. Beef Northwest will be responsible for maintain export records and taking manure samples for testing and supplying the recipient of the manure with an analysis of the manure removed from the north part of the feedlot. Nederend Farms LLLP-DBA Nederend Heifer Ranch will be responsible for cleaning and exporting solids containing manure from the south part of the feedlot where the dairy replacement livestock will be cared for. Nederend Farms LLLP-DBA Nederend Heifer Ranch will be responsible for maintaining export records and taking manure samples for testing and supplying the recipient of the manure with an analysis of the manure removed from the south part of the feedlot. All wastewater collected in the transfer ponds, settling basins and evaporation ponds will be the responsibility of Beef Northwest to manage.

Nutrient Management

There is no performance based nutrient management or crop yields to be monitored since all solids and wastewater generated by the Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest operations will be exported. Several samples of the solid and liquid manure will be taken annually and analyzed to show the amount of nutrients being exported off farm. A solid and liquid manure nutrient analysis along with a chart showing the amount of nutrients that will be applied in pounds per ton for solids and pounds per thousand gallons for liquids will be provided to neighboring farmers receiving exported manure.

GENERAL INFORMATION

MANURE STORAGE AND NUTRIENT BALANCE SUMMARY

Manure Storage-

Storage Type:	Capacity	Estimated Storage Period
Evaporation Pond #1-	36 AF	125.2 Days
Evaporation Pond #2-	38 AF	132.2 Days
Settling Basins-	30.92 AF	107.6 Days
Transfer Ponds-	14.1 AF	49 Days
Solids Storage Area-	8,450,000 CF	>365 Days

Nutrient Balance-

Nutrients Generated:	N Generated (lbs) after Losses	P ₂ O ₅ Generated (lbs) after Losses
Solid Manure-	1,956,905 lbs	647,495 lbs
Liquid Manure-	102,995 lbs	34,079 lbs
Pasture Manure-	0 lbs	0 lbs
Total-	2,059,900 lbs	681,574 lbs

Exported Nutrients:	N Exported (lbs) after Losses	P ₂ O ₅ Exported (lbs) after Losses
Solid Manure-	1,956,905 lbs	647,495 lbs
Liquid Manure-	102,995 lbs	34,079 lbs
Total-	2,059,900 lbs	681,574 lbs

Crop Nutrient Removal:	N Utilized (lbs)	P ₂ O ₅ Utilized (lbs)
Total-	0 lbs	0 lbs

Net Nutrients:	Nutrients Generated after Losses(lbs.)	Nutrients Removed by Crop and Exported after Losses (lbs)	Net Nutrient Balance after Losses (lbs)
Nitrogen (N)-	2,059,900 lbs	2,059,900 lbs	0 lbs
Phosphate (P ₂ O ₅)-	681,574 lbs	681,574 lbs	0 lbs

System Losses:	Nutrients Generated (lbs)	Nutrients Remaining after Losses (lbs)	Nutrients Lost in System (lbs)
Nitrogen (N)-	2,746,534 lbs	2,059,900 lbs	686,633 lbs
Phosphate (P ₂ O ₅)-	851,967 lbs	681,574 lbs	170,393 lbs

GENERAL INFORMATION

EMERGENCY RESPONSE PLAN

In Case of an Emergency Storage Facility Spill, Leak or Failure

Implement the following first containment steps:

- a. Stop all other activities to address the spill.
- b. Stop the flow. For example, use skid loader or tractor with blade to contain or divert spill or leak.
- c. Call for help and excavator if needed.
- d. Complete the clean-up and repair the necessary components.
- e. Assess the extent of the emergency and request additional help if needed.

In Case of an Emergency Spill, Leak or Failure during Transport or Land Application

Implement the following first containment steps:

- a. Stop all other activities to address the spill and stop the flow.
- b. Call for help if needed.
- c. If the spill posed a hazard to local traffic, call for local traffic control assistance and clear the road and roadside of spilled material.
- d. Contain the spill or runoff from entering surface waters using straw bales, saw dust, soil or other appropriate materials.
- e. If flow is coming from a tile, plug the tile with a tile plug immediately.
- f. Assess the extent of the emergency and request additional help if needed.

Contacts to be made by the owner or operator within 24 hours

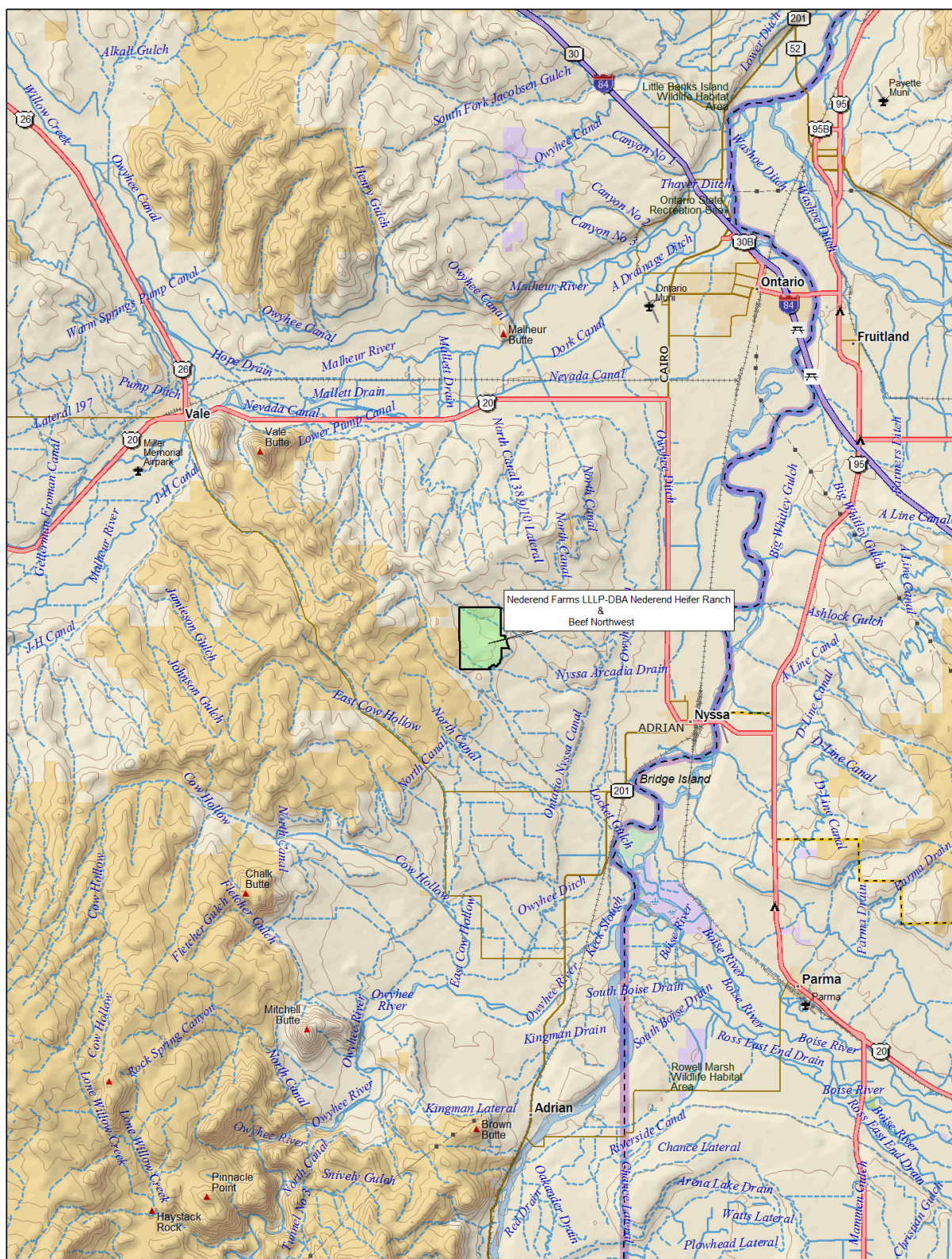
Organization	Phone Number
Oregon Dept. of Agriculture Natural Resources Division 635 Capitol St., N.E. Salem, OR 97301-2532	(503) 986-4700 TTD (503) 986-4762
Oregon Emergency Response System (OERS)	(800) 452-0311
County Environmental Health Department	(541) 473-5186
County Roads Department	(541) 473-5191

Be prepared to provide the following information:

- a. Your name and contact information.
- b. Farm location (driving directions) and other pertinent information.
- c. Description of emergency.
- d. Estimate of the amounts, area covered, and distance traveled.
- e. Whether manure has reached surface waters or major field drains.
- f. Whether there is any obvious damage: employee injury, fish kill, or property damage.
- g. Current status of containment efforts.

GENERAL INFORMATION

LOCATION MAP FOR NDEREND FARMS LLLP-DBA NDEREND HEIFER RANCH & BEEF NORTHWEST



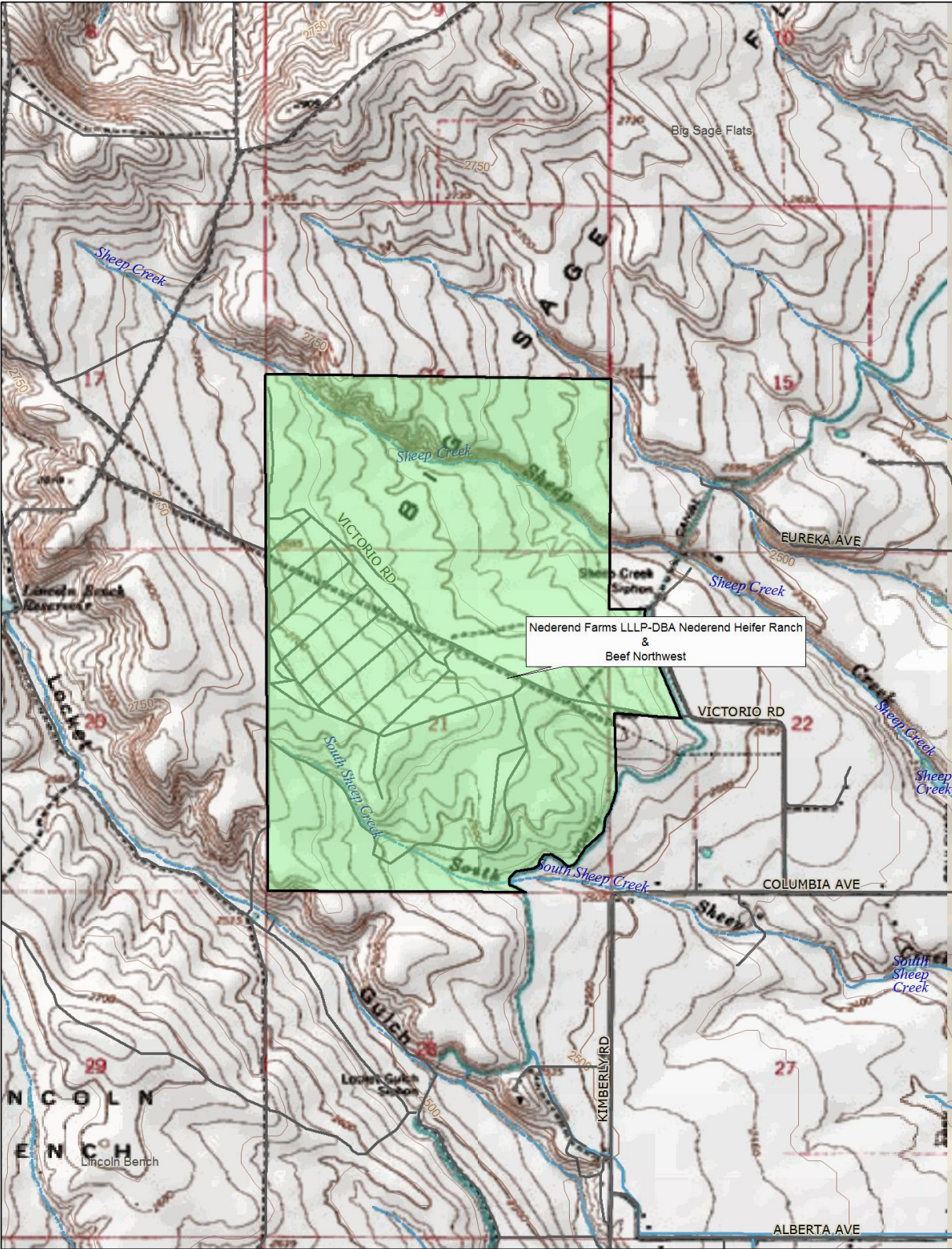
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GENERAL INFORMATION

TOPOGRAPHY MAP FOR NDEREND FARMS LLLP-DBA NDEREND HEIFER RANCH & BEEF NORTHWEST



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Nderend Farms LLLP-DBA Nderend Heifer Ranch & Beef Northwest AWMP

PRODUCTION AREA

ANIMAL NUMBERS

Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest is currently permitted for 32,000 beef cattle. Nederend Farms LLLP-DBA Nederend Heifer Ranch is planning to use the south part of the Beef Northwest feedlot to care for 15,000 heifers and calves. The northern part of the Beef Northwest feedlot will be used to care for 17,000 beef feeders. A request to modify the classification of permitted animal numbers is located in Section 5.

This plan was written based on the 15,000 dairy livestock and 17,000 beef cattle as described herein.

ANIMAL MORTALITY MANAGEMENT

Currently animal mortalities for the Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest are being disposed of by a rendering service. Other approved methods of dealing with mortalities may be employed by Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest as needed.

Having dead animals sent to an acceptable disposal site is the best method to deal with animal mortalities. A list of landfills and phone numbers can be found on the internet at <http://www.deq.state.or.us/lq/sw/disposal/permittedfacilities.html>. If a local landfill is not permitted to accept animal carcasses, the Oregon Department of Environmental Quality (DEQ) may grant an exception. Phone numbers to local DEQ offices can be found in most phone books or on the internet at <http://www.deq.state.or.us/about/locations.html>.

Under no circumstances are animal mortalities to be disposed of in any type of liquid manure storage facility.

COLLECTION OF MANURE, PROCESS WATER AND RUNOFF

Manure, bedding and wasted feed is collected in cattle pens on the Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest feedlot facility. The estimated volume of Manure bedding and wasted feed that will be collected annually was generated using the ORAWM workbook for Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest located in Section 5.

Leachate and rainfall runoff from areas containing manure is directed to collection facilities which transfers the leachate and rainfall runoff to wastewater storage facilities. The estimated volumes of leachate and rainfall runoff from the areas containing manure that will be collected annually were generated using the ORAWM workbook located in Section 5.

All process water from the Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest feedlot facility is directed to wastewater collection facilities. The estimated volume of process water that will be collected annually was generated using the ORAWM workbook located in Section 5.

PRODUCTION AREA

TREATMENT FACILITIES

There are no designed treatment facilities on the Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest operations.

STORAGE FACILITIES

The wastewater and solids collection and storage facilities for the Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest operations are shown on the Production Area Map on page 2-7. Capacities and estimate volumes to store for the waste storage facilities can be found on the Manure Storage and Nutrient Balance Summary on page 1-5.

TRANSFER OF MANURE, PROCESS WATER AND RUNOFF

Excess manure in the livestock pens on Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest that is removed periodically and transferred to solids storage area shown on the Production Area Map on page 2-7. Solids are stored in the solids storage area until they can be transferred to neighboring farms.

Rainfall runoff containing manure from the livestock pens and equipment wash water on Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest feedlot facility is captured in conveyance ditches and transfer ponds and transferred to the settling basins shown on the Production Area Map on page 2-7. Outflow from the settling basins is transferred to the evaporation ponds where it is stored until it evaporates or is transferred to neighboring farms.

PRODUCTION AREA

OPERATION AND MAINTENANCE CONSIDERATIONS

TRANSFER PONDS, SETTLING BASINS, AND EVAPORATION PONDS-

The transfer ponds, settling basins, and evaporation ponds shown on the Production Area Map on page 2-7 are used to store wastewater containing manure generated by the Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest. The storage capacity and estimated storage period for the transfer ponds, settling basins, and evaporation ponds are shown on the Manure Storage and Nutrient Balance Summary on page 1-5.

Emptying of the transfer ponds, settling basins, and evaporation ponds should begin in the spring and continue through the spring and summer months. To function properly and have the greatest management flexibility, the transfer ponds, settling basins, and evaporation ponds must be as empty as possible in the fall before the fall and winter rainy season begins. Any annual solids buildup in the transfer ponds, settling basins, and evaporation ponds must be removed to maintain design capacity. Records of all exports of wastewater and solids must be kept and include the date, amount transferred, name and address of recipient, and a copy of the manure analysis provided to the recipient.

Inspect the transfer ponds, settling basins, and evaporation ponds weekly to insure structural integrity and that at least 1 foot-6 inches of freeboard is being maintained to accommodate excess rainfall such as a 25 year-24hour storm and prevent embankment overtopping. If the structural integrity of a transfer pond, settling basin, evaporation pond and wastewater storage lagoon embankment is found to be compromised, immediately draw the liquid level down below the damaged area to determine the cause. Seek the services of a qualified engineer to assess the damage and recommend necessary repairs before allowing wastewater levels above the damaged area.

Pump the transfer ponds, settling basins, and evaporation ponds to the lowest level possible during the summer months and inspect the embankments for structural damage. If structural damage to the embankment of a transfer pond, settling basin, evaporation pond and wastewater storage lagoon is discovered, seek the services of a qualified engineer to assess the damage and recommend necessary repairs before allowing wastewater levels above the damaged area. Be sure to keep records of all exports of wastewater and solids and include the date, amount transferred, name and address of recipient, and a copy of the manure analysis provided to the recipient.

Do not permit livestock access to the pond or on pond embankments. Control undesirable vegetation growth by spraying or mowing. Control rodents as necessary. Check elevations of earthfills periodically and restored to grade and shape as necessary. Fill and reseed eroded embankment areas or repair with well graded rock riprap. Safety features such as signs and fences should be kept in good repair.

Do not dispose of animal carcasses in any settling basin or wastewater storage pond. It is against the law to do so.

PRODUCTION AREA

SOLIDS STORAGE AREAS-

The solids storage areas shown on the Production Area Map on page 2-7 are used to store solids containing manure generated by Beef Northwest. The storage capacity and estimated storage period for the solids storage areas is shown on the Manure Storage and Nutrient Balance Summary on page 1-5. Emptying of the solids storage area should begin in the spring and continue through the spring and summer months. To function properly and have the greatest management flexibility, the solids storage area must be as empty as possible in the fall before the fall and winter rainy season begins.

Records of all exports of solids must be kept and include the date, amount transferred, name and address of recipient, and a copy of the manure analysis provided to the recipient.

Periodically inspect concrete and asphalt slabs, walls and curbs and repair or replace broken sections as needed. Cleanup any spillage of manure and organics from outside of the solids storage area and place them back in the solids storage area.

Maintain all fences, railings, and/or warning signs to provide warning and/or prevent unauthorized human or livestock entry. Immediately repair vandalism, vehicular or livestock damage to the structure, earthen areas surrounding the structure, or any appurtenances.

BUILDING ROOFS-

Inspect building roofs annually as a minimum. Repair and/or replace all rusted sections and secure loose sections as needed. Immediately replace all broken trusses, rafters, beams, poles as needed. Immediately determining the cause and necessary modification(s) to prevent reoccurring structural failure is essential.

FENCES-

Inspect fences periodically and repair or replace broken or decayed posts and tighten sagging wire as needed. Broken wire can be spliced or replaced. Replace broken or missing insulators on electric fences as needed and repair or replace inoperative electric fence controllers.

Insure gates and other appurtenances are in good working order. Replace or repair components as needed.

LIVESTOCK WATERING FACILITIES-

Check all above ground connections, valves, gates, rodent guards, inlets and outlets to make sure they are functioning properly. Check troughs and tanks for leaks or cracks and repair or replace immediately, if necessary.

Make certain the area adjacent to the trough is well protected with gravel, paving, or good cover. Be sure that the outlet pipe has a free outlet and is not causing any serious erosion problems. Check periodically to see if debris has fallen into the trough or tank which may restrict inflow or planned functions of the outflow system.

Clean the entire system periodically and remove moss, algae growth, and/or sludge. Chemicals such as copper sulfate and chlorine can be used to prevent moss and algae

PRODUCTION AREA

growth. Local rules and regulations are to be followed when using chemicals to make sure they are safe for animals.

Where necessary maintain coverings and insulation to prevent damage by freezing.

Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.

Immediately repair any vandalism, vehicular or livestock damage.

PIPELINES-

Flush pipelines used for wastewater transfer with clean water following waste application, or as needed, to prevent particle buildup.

Drain the pipeline and components in areas that are subject to freezing. If parts of the pipeline cannot be drained, a non-toxic antifreeze solution may be added.

Check to make sure all valves and air vents are set at the proper operating condition so they can provide protection to the pipeline.

Inspect pipelines for signs of failure. Inspect risers and valves periodically for leaks or worn gaskets. Repair or replace pipeline, risers and valves as needed.

Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.

PUMPS-

Operate and maintain pumps in accordance with good judgment and manufacture's manuals and recommendations.

Drain liquid manure from pumps during cold weather to prevent freezing. If parts of the system cannot be drained, a non-toxic antifreeze solution may be added.

Inspect pumps periodically and remove debris wrapped around shafts and impellers. Maintain foot valves and check valves for proper operation.

For proper operation of electric motors and controls, maintain lubrication for all bearings, keep electric panel free from obstructions and debris. Maintain electrical safety devices, assure all electrical contacts are tight, and lock main electrical switch to "OFF" position during non-use season. Maintain adequate shade and ventilation for pump motors.

For proper operation of pumps, maintain lubrication for all bearings and pump shafts, assure belts are adjusted properly, maintain safety covering devices on open shafts and belt drives, check to make sure all safety valves and devices are set at proper operating conditions so they may provide protection to the pump and power unit. For centrifugal pumps, periodically measure tolerance between pump impeller and pump casing (i.e. wearing) and replace wear ring as needed to help restore new pump operating characteristics.

Use portable pressure gauge (preferably a liquid filled gauge) to monitor pump performance.

Replace, tighten, or repair broken or loose connections and lines as needed.

PRODUCTION AREA

WELL(S)-

Protect the area immediately surrounding the well from being damaged by agriculture machinery, vehicles, or livestock.

All fences, railings, and/or warning signs shall be maintained to provide warning and/or prevent unauthorized human or livestock entry.

Do not allow any foreign debris to accumulate and maintain soil and vegetative covering in the immediate vicinity of the well.

Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.

Check metal surfaces for rust and other damage especially sections in contact with earthfill and with other materials. Repair or replace damaged section and apply paint as a protective covering.

Keep all surface water from entering or accumulating at the immediate vicinity of the well site.

Immediately repair any vandalism, vehicular, or livestock damage.

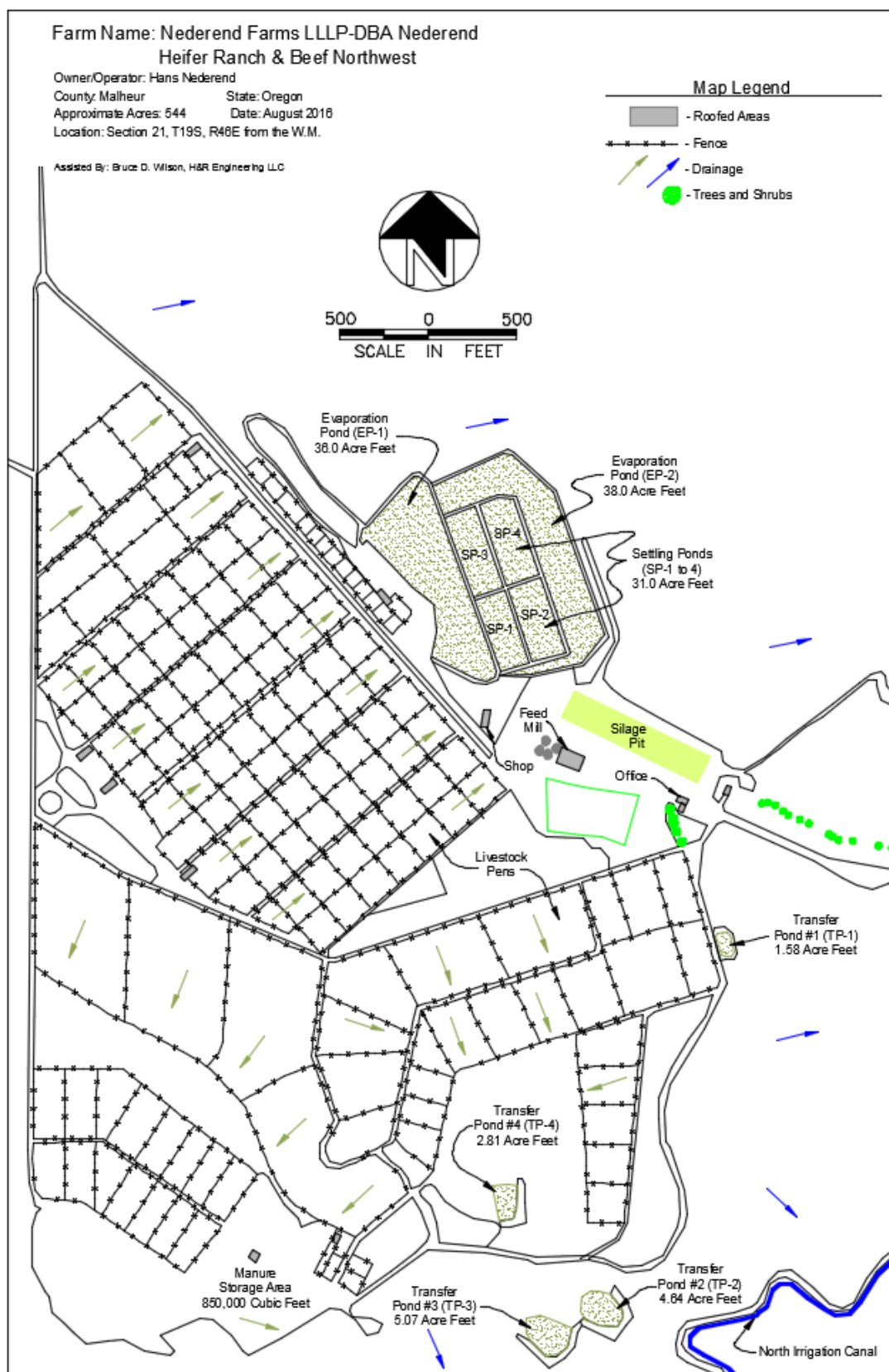
CHEMICAL HANDLING CHECKLIST-

The following measures shall be taken to prevent chemicals from contaminating process water or storm water storage and treatment systems:

1. Make sure all chemicals are stored in proper containers. Expired chemicals and empty containers are to be properly disposed of in accordance with state and federal regulations. Pesticides and associate refuse are to be disposed of in accordance with the FIFRA label.
2. Chemical storage areas are to be self-contained with no drains or other pathways that will allow spilled chemicals to exit the storage area.
3. Chemical storage areas are to be covered to prevent chemical contact with rain or snow.
4. Emergency procedures and equipment are to be in place to contain and clean up chemical spills.
5. Chemical handling and equipment wash areas are to be designed and constructed to prevent contamination of surface waters, waste water, and storm water storage and treatment systems.

PRODUCTION AREA

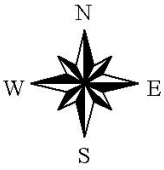
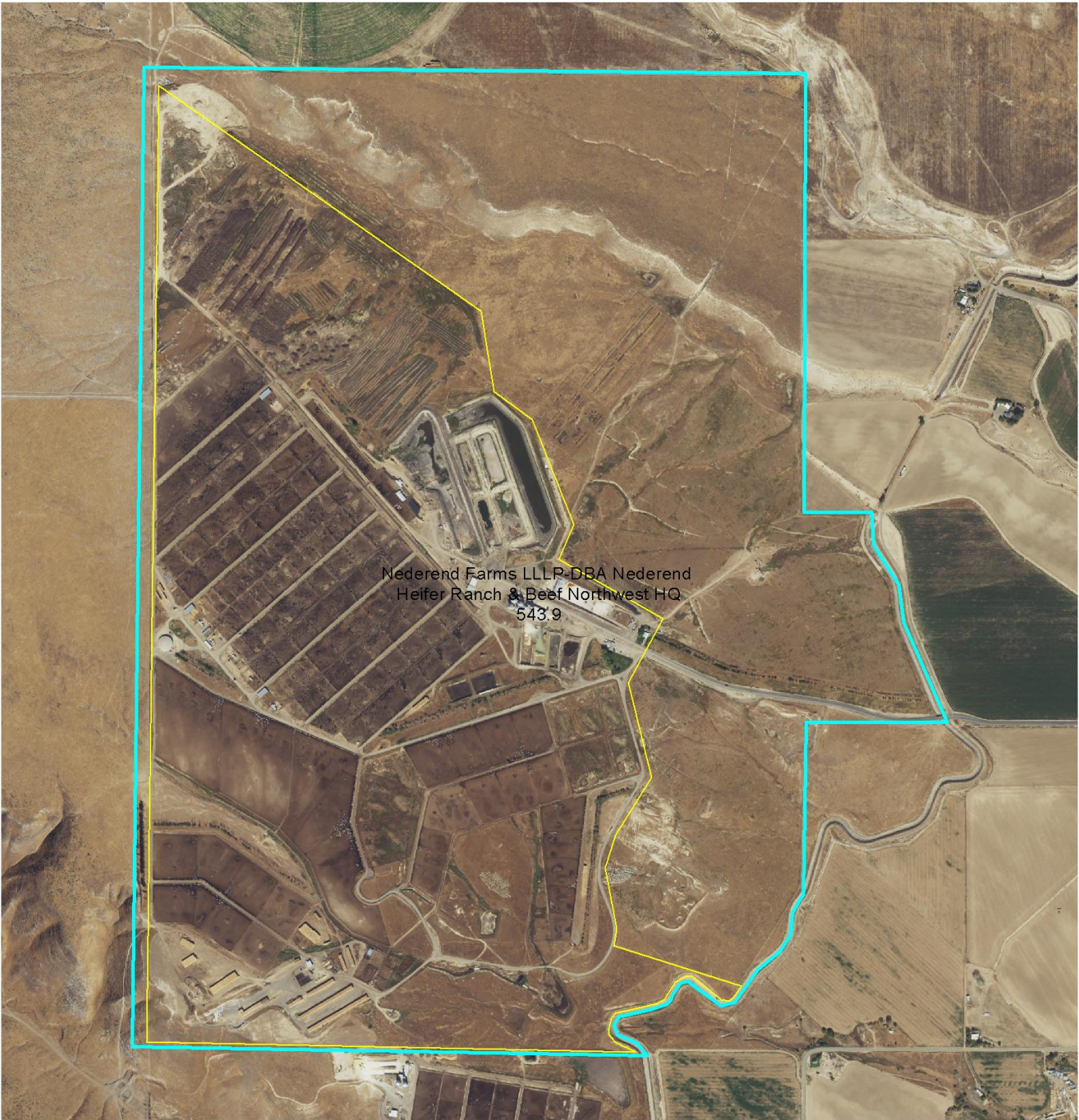
PRODUCTION AREA MAP FOR NEDEREND FARMS LLLP-DBA NEDEREND HEIFER RANCH & BEEF NORTHWEST



PRODUCTION AREA

MANURE UTILIZATION

**MAP OF NDEREND FARMS LLLP-DBA NDEREND HEIFER RANCH
& BEEF NORTHWEST**



Map Legend

Field Name
Acres - Field Boundary, Field Name, Acres

MANURE UTILIZATION

MANURE UTILIZATION

TRANSFER OF WASTEWATER AND SOLIDS CONTAINING MANURE

- ***Record transfers or exports*** of nutrients (manure and fertilizer) and maintain them for at least 5 years. The CAFO Recordkeeping Calendar or the tools and forms referenced in Section 5 may be used to record this information.

MANURE SAMPLING FREQUENCY

Sample liquids and solids containing manure during applications in early spring **annually** and have each sample analyzed for Total Nitrogen (TKN), Ammonium Nitrogen (NH₄-N), Phosphorus (P) and Potassium (K) plus percent moisture. Ask the lab to report results in pounds per ton for the solids containing manure and in pounds per thousand gallons for liquids containing manure. Analyses of solids and liquids containing manure should be performed by a laboratory that meets the requirements and performance standards of the Manure Testing Laboratory Certification Program (MTLCP), <http://www.mda.state.mn.us/licensing/pestfert/manurelabs.htm>.

HOW TO SAMPLE LIQUID MANURE

Obtain a composite following one of the procedures listed below and thoroughly mix. Using a plunger, an up-and-down action works well for mixing liquid manure in a five-gallon bucket. Fill a one-quart plastic bottle not more than three-quarters full with the composite sample. Store sample in freezer if not delivered to the lab immediately.

Procedure 1. Sampling from storage- Agitate storage facility thoroughly before sampling. Collect at least five samples from the storage facility or during loading using a five-gallon bucket. Place a sub sample of the composite sample in a one-quart plastic container. Sampling a liquid manure storage facility without proper agitation (2-4 hrs. minimum) is not recommended due to nutrient stratification, which occurs in liquid systems. If manure is sampled from a lagoon that was not properly agitated, typically the nitrogen and potassium will be more concentrated in the top liquid, while the phosphorus will be more concentrated in the bottom solids.

Procedure 2. Sampling during application- Place buckets around field to catch manure from spreader or irrigation equipment. Combine and mix samples into one composite sub sample in a one-quart plastic container.

MANURE UTILIZATION

HOW TO SAMPLE SOLID MANURE

Collect a composite sample by following one of the procedures listed below. A method for mixing a composite sample is to pile the manure and then shovel from the outside to the inside of the pile until well mixed. Fill a one-gallon plastic heavy-duty zip lock bag approximately one-half full with the composite sample, squeeze out excess air, close and seal. Store sample in freezer if not delivered to the laboratory immediately.

Procedure 1. Sampling while loading - Recommended method for sampling from a stack or bedded pack. Take at least ten samples while loading several spreader loads and combine to form one composite sample. Thoroughly mix the composite sample and take an approximately one pound sub sample using a one-gallon plastic bag. Sampling directly from a stack or bedded pack is not recommended.

Procedure 2. Sampling during spreading - Spread a tarp in field and catch the manure from one pass. Sample from several locations and create a composite sample. Thoroughly mix the composite sample together and take a one-pound sub sample using a one-gallon plastic bag.

Procedure 3. Sampling daily haul - Place a five-gallon bucket under the barn cleaner 4-5 times while loading a spreader. Thoroughly mix the composite sample together and take a one-pound sub sample using a one-gallon plastic bag. Repeat sampling 2-3 times over a period of time and test separately to determine variability.

Procedure 4. Sampling poultry in-house - Collect 8-10 samples from throughout the house to the depth the litter will be removed. Samples near feeders and waterers may not be indicative of the entire house and sub samples taken near here should be proportionate to their space occupied in the whole house. Mix the samples well in a five-gallon pail and take a one-pound sub sample, place it in a one-gallon zip lock bag.

Procedure 5. Sampling stockpiled litter - Take ten sub samples from different locations around the pile at least 18 inches below the surface. Mix in a five-gallon pail and place a one-pound composite sample in a gallon zip lock bag.

Sample Identification and Delivery

Identify the sample container with information regarding the farm, animal species and date. This information should also be included on the sample information sheet along with application method, which is important in determining first year availability of nitrogen.

Keep all manure samples frozen until shipped or delivered to a laboratory. Ship early in the week (Mon.-Wed.) and avoid holidays and weekends.

MANURE UTILIZATION

MANURE TESTS

**Nederend Farms LLLP-DBA Nederend
Heifer Ranch & Beef Northwest**

LIQUID MANURE ANALYSIS

Values are estimates from ORAWM

Report	Date	Sample I.D.	Lbs/1,000 gallons				%	%
			Total N	P ₂ O ₅	K ₂ O	NH ₄ -N	Moisture	Solids

2016

ORAWM	07/29/2016	Wastewater	9.77	3.17	4.13	NA	NA	NA
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**Nederend Farms LLLP-DBA Nederend
Heifer Ranch & Beef Northwest**

SOLID MANURE ANALYSIS

Values are estimates from ORAWM

Report	Date	Sample I.D.	Lbs/Ton				%	%
			Total N	P ₂ O ₅	K ₂ O	NH ₄ -N	Moisture	Solids

2016

ORAWM	07/29/2016	Solids Stack	24.83	8.07	10.49	NA	NA	NA
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Manure analyses should be performed by a laboratory that meets the requirements and performance standards of the Manure Testing Laboratory Certification Program (MTLCP), <http://www.mda.state.mn.us/licensing/pestfert/manurelabs.htm>.

Manure should be analyzed annually for a minimum of three (3) consecutive years to develop a cumulative manure analysis history as a basis for nutrient allocation to the fields.

MANURE UTILIZATION

MANURE UTILIZATION

Nederend Farms LLLP-DBA Nederend
Heifer Ranch & Beef Northwest

SOLID MANURE APPLICATION CHART

		MANURE ANALYSIS (As received lb/ton)			
		Total N	NH ₄ -N	P ₂ O ₅	K ₂ O
Test Date:	Estimate	24.83	12.41	8.07	10.49
Source:	Solids Pile				

Manure Nutrient Content					
Thickness to apply (in)	Manure Applied (T/A)	Total N (lb/A)	Available N (lb/A)	P ₂ O ₅ (lb/A)	K ₂ O (lb/A)
0.013	1.00	25	12	8	10
0.026	2.00	50	25	16	21
0.039	3.00	74	37	24	31
0.052	4.00	99	50	32	42
0.066	5.00	124	62	40	52
0.079	6.00	149	74	48	63
0.092	7.00	174	87	56	73
0.105	8.00	199	99	65	84
0.118	9.00	223	112	73	94
0.131	10.00	248	124	81	105

CUSTOM:

Spreader	Rate	Total N	Available N	P ₂ O ₅	K ₂ O
Spreader 1	12.1	301	151	98	127
Spreader 2	18.2	452	226	147	191
Spreader 3	36.4	904	452	294	382

SOLID MANURE SPREADER 2 CALIBRATION

SPREADER VOLUME AND WEIGHT CALCULATIONS

Stack height above sideboard = 1 ft

Length = 15.3 ft

Depth = 2 ft

Width = 5.4 ft

Spreader Volume = 231 ft³

Weight of Manure = 12,543 lbs

MANURE DENSITY CALCULATIONS

BUCKET

Top Diam 11 Height 13.75 Volume 0.756 ft³

Weight 41 lbs

Manure Density = 54 lbs/ft³

SPREAD AREA CALCULATIONS

Spread Width = 15 ft

Spread Length = 1,000 ft

Area Spread = 15,000 ft² or 0.34 acre

Manure Rate Spread = 0.84 lbs/ft²
36,424 lbs/acre
18.2 ton/acre

SOLID MANURE SPREADER 1 CALIBRATION

SPREADER VOLUME AND WEIGHT CALCULATIONS

Stack height above sideboard = 1 ft

Length = 15.3 ft

Depth = 2 ft

Width = 5.4 ft

Spreader Volume = 231 ft³

Weight of Manure = 12,543 lbs

MANURE DENSITY CALCULATIONS

BUCKET

Top Diam 11 Height 13.75 Volume 0.756 ft³

Weight 41 lbs

Manure Density = 54 lbs/ft³

SPREAD AREA CALCULATIONS

Spread Width = 15 ft

Spread Length = 1,500 ft

Area Spread = 22,500 ft² or 0.52 acre

Manure Rate Spread = 0.56 lbs/ft²
24,283 lbs/acre
12.1 ton/acre

SOLID MANURE SPREADER 3 CALIBRATION

SPREADER VOLUME AND WEIGHT CALCULATIONS

Stack height above sideboard = 1 ft

Length = 15.3 ft

Depth = 2 ft

Width = 5.4 ft

Spreader Volume = 231 ft³

Weight of Manure = 12,543 lbs

MANURE DENSITY CALCULATIONS

BUCKET

Top Diam 11 Height 13.75 Volume 0.756 ft³

Weight 41 lbs

Manure Density = 54 lbs/ft³

SPREAD AREA CALCULATIONS

Spread Width = 15 ft

Spread Length = 500 ft

Area Spread = 7,500 ft² or 0.17 acre

Manure Rate Spread = 1.67 lbs/ft²
72,848 lbs/acre
36.4 ton/acre

MANURE UTILIZATION

Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest

LIQUID MANURE APPLICATION CHART

MANURE ANALYSIS (As received lb/1000 gal)

		Total N	NH ₄ -N	P ₂ O ₅	K ₂ O
Test Date:	Estimate	9.77	4.89	3.17	4.13
Source:	Tank				

Manure Nutrient Content

Thickness to apply (inch)	Manure Applied (gallons)	Total N (lb/A)	Available N (lb/A)	P ₂ O ₅ (lb/A)	K ₂ O (lb/A)
0.25	6,789	66	33	22	28
0.50	13,577	133	66	43	56
0.75	20,366	199	100	65	84
1.00	27,154	265	133	86	112
1.25	33,943	332	166	108	140
1.50	40,731	398	199	129	168
1.75	47,520	464	232	151	196
2.00	54,308	531	266	172	224

CUSTOM:

Tank Wagon	3,630	35	18	12	15
Big Gun	12,144	119	59	38	50
Spreader Bar	20,364	199	100	65	84

EQUIPMENT CALIBRATION CALCULATIONS

TANK WAGON MANURE SPREADER CALIBRATION

Volume of Wagon = 3,000 gallons OR 401 ft³

Spread Length = 600 ft

Spread Width =

60 ft

Application Area

Area Spread = 36,000 ft² OR 0.83 acre

NOTE: Area spread is the total area covered by the tank wagon application.

APPLICATION RATE = 3,630 gall/acre OR 0.13 in/acre

NOTE: Inch/acre should be close to amount collected in a rain gauge or pan

BIG GUN TRAVELOR APPLICATION RATE CALCULATIONS

Nozzle Diameter 1.00 inch Wetted Dia 330 feet

Pump Pressure 80 psi Flow Rate 230 gpm

Hose Speed = 24 sec/foot

= 2.5 feet/minute

= 150 feet/hour

Spread Width =

330 ft

Application Area

Length of Pull = 1,200 ft

Area Spread = 396,000 ft² OR 9.09 acre

NOTE: Area spread is the total area covered by the big gun application.

APPLICATION RATE = 12,144 gall/acre OR = 0.45 inch/acre

NOTE: Inch/acre should be close to amount collected in a rain gauge or pan

SPREADER BAR APPLICATION RATE CALCULATIONS

Spreader Bar Width 12 ft

Flowrate 279 gpm

Time to Apply 5 Hrs

Spread Width =

120 ft

Application Area

Spread Length = 1,492 ft

Area Spread = 179,040 ft² OR 4.11 acre

NOTE: Area spread is the total area covered by the spreader bar application.

APPLICATION RATE = 20,364 gall/acre OR = 0.75 inch/acre

NOTE: Inch/acre should be close to amount collected in a rain gauge or pan

RISK ASSESSMENT

MANURE STORAGE RISK ASSESSMENT WORKSHEET

Ground & Surface Water Contaminants - Nutrients, Organics & Pathogens					
Rating Item	Low Risk 4 Points	Low-Mod Risk 3 Points	Mod-High Risk 2 Points	High Risk 1 Point	Score
1. No on-farm storage facilities	Wastes hauled off farm for proper storage and disposal			Daily spreading of livestock wastes	NA
2. On-farm storage Manure stack	Manure stack covered; on impermeable surface; rainfall and runoff diverted; built to NRCS standards.	Manure covered; on low permeable soil; rainfall and runoff diverted.	Manure partially covered; on slightly permeable soils; some runoff collected.	Manure not covered; runoff not collected.	2
and/or Liquid/Slurry storage	Concrete, clay lined, or other liquid tight design; designed and built to NRCS standards; properly maintained; no cracks and leaks.	Earthen structure built to NRCS standards and properly maintained.	Not designed to NRCS standards; on slightly permeable soils; poorly maintained, some evidence of cracks and leaks.	Not designed to NRCS standards; on permeable soils; not maintained; leaks and cracks.	3
3. Storage volume	Not full at end of rainy season; if liquid/slurry adequate capacity to hold 25-year, 24-hour storm; solids removed to avoid loss of storage capacity.	Not full at end of rainy season; if liquid/slurry not adequate capacity to hold 25-year, 24-hour storm.	Storage facility requires occasional emptying during the rainy season; if liquid/slurry not adequate capacity to hold 25-year, 24-hour storm.	Storage facility requires regular emptying during the rainy season; if liquid/slurry not adequate capacity to hold 25-year, 24-hour storm.	4
4. Storage location	Manure stack or earthen pond located more than 500 feet from well, stream, pond, or drainageway. Or Liquid/slurry storage located more than 200 feet from well, stream, pond, or drainageway or has emergency containment dike for accidental spills or leaks.	Manure stack or earthen pond located between 250-500 feet from well, stream, pond, or drainageway. Or Liquid/slurry storage located between 100-200 feet from well, stream, pond, or drainageway	Manure stack or earthen pond located less than 250 feet downslope from well, stream, pond, or drainageway. Or Liquid/slurry storage located more than 100 feet downslope from well, stream, pond, or drainageway	Manure stack or earthen pond located less than 250 feet upslope from well, stream, pond, or drainageway. Or Liquid/slurry storage located 100 feet from upslope well, stream, pond, or drainageway	4
Livestock Waste Storage Rating for Ground & Surface Waters		Accumulative Score (sum of above ratings)			13.00
		Average Score (sum of ratings / number of items rated)			3.25
Overall Risk Rating-		Low to Moderate Risk			

Ratings: 3.6-4=Low risk, 2.6-3.5=Low to moderate risk, 1.6-2.5=Moderate to high risk, 1-1.5=High Risk

Source: Modification of Oregon Home*A*Syst, EM 8546, Worksheet #7, Livestock Waste Storage

Water Quality Technical Note No. 1, Water Quality Indicator Tools, October 2000

RISK ASSESSMENT

PRODUCTION AREA RISK ASSESSMENT WORKSHEET

Ground & Surface Water Contaminants – Nutrients, Organics & Pathogens					
Rating Item	Low Risk 4 Points	Low-Moderate Risk 3 Points	Mod-High Risk 2 Points	High Risk 1 Point	Score
1. Location	More than 200 feet from well and more than 500 feet from stream, pond, or drainageway	Between 100-200 feet of well and between 250-500 feet from stream, pond, or drainageway	Between 50-100 feet of well and between 100-250 feet from stream, pond, or drainageway	Less than 50 feet of well and less than 100 feet from stream, pond, or drainageway	3
2. Livestock water source	Stock water in troughs, with overflow diverted to wastewater system	Stock water in troughs with overflow diverted from lot area. Stock excluded from streams or ditches.	Live water fenced, with stock water provided in water gap.	Stock water provided by live stream or irrigation ditch.	3
3. Surface water diversion	All upslope and roof water diverted. Diversion and gutters well maintained.	Most upslope surface and roof water diverted. Diversions and gutters occasionally maintained.	No surface water diverted. Some roof water collected and redirected. Gutters and diversions not maintained.	All water (surface and roof water) runs through the yard.	4
4. Lot runoff control system	No yard runoff. Fully covered area or runoff from surfaced lot directed to waste storage facility.	All runoff collected from compacted, earthen lot. Solids mounded and collected or stored.	Most of lot runoff diverted to filter strip and collected. Some solids removed.	Lot runoff uncontrolled. Solids rarely collected.	3
5. Yard cleaning and scraping	No yard (animals confined)	Every month or two lot smoothed, leveled, and regularly shaped.	Quarterly. Lot rough and irregular in shape.	Rarely. Lot poorly sited and developed for cleaning and scraping.	3
6. Dairy cow concentration on yard	No yard. Confined to barn, roofed yard or pasture.	75 sf/a or more on fenced, curbed concrete pad and/or 400 sf/a on graded earthen surface. More than 1800 sf/a in exercise area.	50 sf/a or more on concrete pad and/or 200-300 sf/a on earthen surface. More than 1200 sf/a in exercise area.	Some concrete, less than 50 sf/a and less than 200 sf/a on earthen surface.	4
7. Dairy replacements concentration	No yard. Confined to barn, roofed yard, or pasture.	More than 40 sf/a on fenced, curbed concrete pad and/or more than 150 sf/a on earthen yard.	40-20 sf/a on concrete and/or 75-150 sf/a on earthen surface.	Less than 75 sf/a on earth.	3

RISK ASSESSMENT

Ground & Surface Water Contaminants – Nutrients, Organics & Pathogens					
Rating Item	Low Risk 4 Points	Low-Moderate Risk 3 Points	Mod-High Risk 2 Points	High Risk 1 Point	Score
8. Beef feeder concentrations	No yard. Confined to barn.	Barn and/or paved lot more than 50 sf/a. Earthen lot with mound more than 300 sf/a, or without mound more than 500 sf/a.	No shelter. Paved lot with 30-50 sf/a. Earthen lot with mound 150-300 sf/a or earthen without mound 250-500 sf/a.	Paved less than 30 sf/a. Earthen less than 250 sf/a.	2
9. Beef cows/heifers concentrations	Barn, roofed yard, or pasture.	Barn with paved lot more than 60 sf/a. Earthen with mound 400 sf/a or without mound 600 sf/a.	Paved lot more than 30 sf/a. Earthen with mound 200-400 sf/a or without mound 300-600 sf/a.	Paved less than 30 sf/a. Earthen without mound less than 200 sf/a.	2
10. Sheep/ewes concentrations	No yard. Confined to barn, roofed yard, or pasture.	Barn and paved lot more than 20 sf/a. Earthen more than 40 sf/a.	Barn and paved lot 15-20 sf/a. Earthen 25-40 sf/a.	Barn and paved lot less than 15 sf/a. Earthen less than 25 sf/a.	NA
11. Feeder lambs concentrations	No yard. Confined to barn, roofed yard, or pasture.	Barn and paved lot more than 10 sf/a. Earthen more than 25 sf/a.	Barn and paved lot 5-10 sf/a. Earthen 10-25 sf/a.	Barn and paved lot less than 5 sf/a. Earthen less than 10 sf/a.	NA
12. Hogs/sows Concentrations	No yard. Confined to barn.	Shed and paved lot more than 30 sf/a.	Shed and earthen lot more than 10 sf/a	Shed and earthen lot less than 10 sf/a.	NA
13. Horses concentrations	No yard. Confined to barn, roofed yard, or pasture.	Earthen exercise lot more than 2,500 sf/a.	Earthen exercise lot 1,000-2,500 sf/a.	Earthen exercise lot less than 1,000 sf/a	NA
14. Poultry concentrations	No lot. In building.	.	Earthen lot of more than 4 sf/a.	Earthen lot of less than 4 sf/a.	NA
Livestock Yard Rating		Accumulative Score (sum of above ratings)			27.00
		Average Score (sum of ratings / number of items rated)			3.0
Overall Rating-		Low to Moderate Risk			

Ratings: 3.6-4=Low risk, 2.6-3.6=Low to moderate risk, 1.6-2.5=Moderate to high risk, 1-1.5=High Risk

Note: sf/a = square feet per animal

Source: Modification of Oregon Home*A*Syst, EM 8546, Worksheet #8, Livestock Yards Management

Water Quality Technical Note No. 1, Water Quality Indicator Tools, October 2000

RISK ASSESSMENT

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OREGON ANIMAL WASTE MANAGEMENT DESIGN AID (ORAWM)

8/10/2016

Version 5.2

CLIENT: **Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest**ASSISTED BY: **Bruce D. Wilson, H&R Engineering LLC**

ANIMAL WASTE MANAGEMENT SYSTEM INVENTORY

ANIMAL INVENTORY

ANIMAL INVENTORY														
Type of Animal	Number of Animals	Average Weight (lbs.)	Animal Units (1,000 lb.)	Nutrient Production						Manure CF/D/AU	Annual			
				(lbs./day/1000 lb. Animal Unit)			(lbs./day)				Days Confined	Days Grazed	Days Off Farm	
				N	P	K	N	P	K					
HEIFERS (12-24 Months)	▼	7,500	950	7,125.0	0.27	0.05	0.12	1895.25	324.19	855.00	0.90	365	0	0
CALVES (1-12 Months)	▼	7,500	330	2,475.0	0.42	0.05	0.11	1039.50	133.65	272.25	1.34	365	0	0
FINISHING CATTLE	▼	17,000	750	12,750.0	0.36	0.04	0.11	4590.00	561.00	1402.50	1.24	365	0	0
	▼													
	▼													
	▼													
	▼													
	▼													
	▼													
	▼													
Totals/Averages-		32,000	677	22,350.0	0.34	0.05	0.11	7,524.8	1,018.8	2,529.8	1.1			

GRAZING PERIOD

Type of Animal	Percent of Month and Number of Animals Grazing												AU-YR.
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
HEIFERS (12-24 Months)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	0
CALVES (1-12 Months)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	0
FINISHING CATTLE	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
	17000	17000	17000	17000	17000	17000	17000	17000	17000	17000	17000	17000	0
													0
													0
													0
													0
													0
													0
													0
													0
													0
													0
Total AUM's Available>>	0	0	0	0	0	0	0	0	0	0	0	0	0
Total AUM's Needed>>>>	0	0	0	0	0	0	0	0	0	0	0	0	0
Total AUM's>>>>>>>>>>>>	0	0	0	0	0	0	0	0	0	0	0	0	0

8/10/2016

Version 5.2

ANIMAL WASTE MANAGEMENT SYSTEM INVENTORY

[illegible]

WATER USE THAT ENTERS LIQUID STORAGE FACILITY					
Type of Water Use	Number of Animals	Number of Washes per Day	Gallons of Water Used per Wash-Day	Total Water Use per Day, Gallons	Total Water Use per Day, Cubic Feet
Animal Washwater	32000	0	0.00	0	0.0
Equipment Wash		1	850.00	850	113.6
Flushwater		0	0.00	0	0.0
Miscellaneous		1	6960.00	6960	930.5
Total>>>>>>>>>>>>>>>>>>>>>>>>				7810	1044.1

CROP DATA								
Field Number	Acres	Crop	Percent Dry Matter (DM)	Yield Units	Target Yield	Nutrients Removed in Pounds per Acre		
						Nitrogen N	Phosphorous P ₂ O ₅	Potassium K ₂ O
			▼					
			▼					
			▼					
			▼					
			▼					
			▼					
			▼					
			▼					
			▼					
Off Farm			▼					
Total Acres-	0.0							

8/10/2016

Version 5.2

ASSISTED BY: **Bruce D. Wilson, H&R Engineering LLC**

ANIMAL WASTE MANAGEMENT SYSTEM INVENTORY

[illegible][illegible]

8/10/2016

Version 5.2

ANIMAL WASTE MANAGEMENT SYSTEM PRODUCTION

MONTHLY VOLUMES															
Month	Runoff in Cubic Feet				Facility Water Use Cubic Feet	Manure		Bedding		Solids Separated		Solids in Liquids		Total Solids	Total Liquids
	Roof Area Square Feet	Paved Slab Area Square Feet	Unpaved Lot Area Square Feet	Silage Pit Surface Area, SF		Solids Cubic Feet	Liquids Cubic Feet	Cubic Feet	Pounds	Cubic Feet	Pounds	Cubic Feet	Pounds	Cubic Feet	Cubic Feet
October	1,855	30,405	0	33,447	32,368	99,906	690,618	0	0	750,997	27,035,895	39,526	1,422,942	750,997	137,600
November	3,396	64,941	0	31,815	31,324	96,683	668,340	0	0	726,771	26,163,770	38,251	1,377,041	726,771	169,727
December	3,938	53,793	0	33,447	32,368	99,906	690,618	0	0	750,997	27,035,895	39,526	1,422,942	750,997	163,072
January	3,682	50,285	0	33,447	32,368	99,906	690,618	0	0	750,997	27,035,895	39,526	1,422,942	750,997	159,307
February	2,968	40,540	0	30,184	29,235	90,237	623,784	0	0	678,320	24,419,518	35,701	1,285,238	678,320	138,628
March	3,082	33,679	0	33,447	32,368	99,906	690,618	0	0	750,997	27,035,895	39,526	1,422,942	750,997	142,102
April	2,397	32,744	0	31,815	31,324	96,683	668,340	0	0	726,771	26,163,770	38,251	1,377,041	726,771	136,531
May	2,797	45,841	0	0	32,368	99,906	690,618	0	0	750,997	27,035,895	39,526	1,422,942	750,997	120,532
June	2,169	41,475	0	0	31,324	96,683	668,340	0	0	726,771	26,163,770	38,251	1,377,041	726,771	113,219
July	1,027	16,840	0	0	32,368	99,906	690,618	0	0	750,997	27,035,895	39,526	1,422,942	750,997	89,761
August	1,084	17,775	0	0	32,368	99,906	690,618	0	0	750,997	27,035,895	39,526	1,422,942	750,997	90,753
September	1,370	22,453	0	31,815	31,324	96,683	668,340	0	0	726,771	26,163,770	38,251	1,377,041	726,771	125,212
Annual	29,766	450,769	0	259,416	381,103	1,176,309	8,131,464	0	0	8,842,385	318,325,862	465,389	16,753,993	8,842,385	1,586,443
Annual Gallons	222,652	3,371,753	0	1,940,435	2,850,650	8,798,795	60,823,353	0	0	66,141,040	3,481,107	3,481,107	66,141,040	11,866,597	

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REFERENCES

OREGON ANIMAL WASTE MANAGEMENT DESIGN AID (ORAWM) Version 5.2

8/10/2016

CLIENT: **Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest**
 ASSISTED BY: **Bruce D. Wilson, H&R Engineering LLC**

ANIMAL WASTE MANAGEMENT SYSTEM PRODUCTION

MONTHLY NUTRIENT PRODUCTION

Month	Pounds of Nutrients from LIQUIDS			Pounds of Nutrients from SOLIDS			Pounds of Nutrients from GRAZING			Total Pounds of Nutrients from ALL SOURCES		
	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
October	11,663	3,618	4,725	221,604	68,741	89,774	0	0	0	233,267	72,359	94,499
November	11,287	3,501	4,573	214,455	66,523	86,878	0	0	0	225,743	70,025	91,450
December	11,663	3,618	4,725	221,604	68,741	89,774	0	0	0	233,267	72,359	94,499
January	11,663	3,618	4,725	221,604	68,741	89,774	0	0	0	233,267	72,359	94,499
February	10,535	3,268	4,268	200,158	62,089	81,086	0	0	0	210,693	65,356	85,354
March	11,663	3,618	4,725	221,604	68,741	89,774	0	0	0	233,267	72,359	94,499
April	11,287	3,501	4,573	214,455	66,523	86,878	0	0	0	225,743	70,025	91,450
May	11,663	3,618	4,725	221,604	68,741	89,774	0	0	0	233,267	72,359	94,499
June	11,287	3,501	4,573	214,455	66,523	86,878	0	0	0	225,743	70,025	91,450
July	11,663	3,618	4,725	221,604	68,741	89,774	0	0	0	233,267	72,359	94,499
August	11,663	3,618	4,725	221,604	68,741	89,774	0	0	0	233,267	72,359	94,499
September	11,287	3,501	4,573	214,455	66,523	86,878	0	0	0	225,743	70,025	91,450
Annual	137,327	42,598	55,632	2,609,207	809,369	1,057,015	0	0	0	2,746,534	851,967	1,112,647

MONTHLY IMPORTS INTO STORAGE FACILITIES

Month	Liquids		Solids	
	Cubic Feet	Gallons	Cubic Feet	Tons
October	0	0	0	0
November	0	0	0	0
December	0	0	0	0
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
Totals-	0	0	0	0

REFERENCES

OREGON ANIMAL WASTE MANAGEMENT DESIGN AID (ORAWM)

Version 5.2

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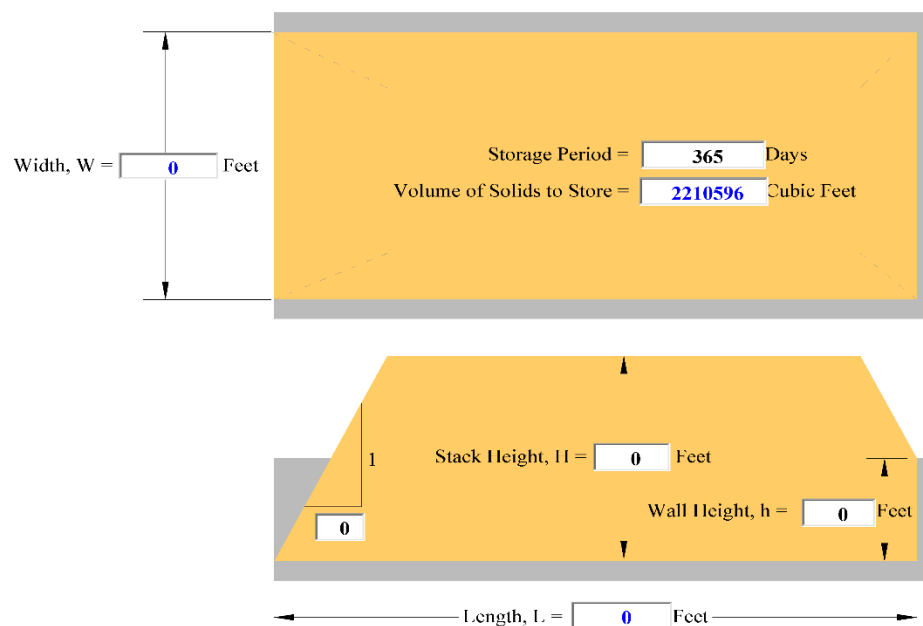
CLIENT: Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest
 ASSISTED BY: Bruce D. Wilson, H&R Engineering LLC

ANIMAL WASTE MANAGEMENT SYSTEM STORAGE

SOLIDS STACKING FACILITY

VOLUME OF MONTHLY SOLIDS STACKED IN FACILITY

Solids Storage Facility Parameters	Value	Month	Number of Days	Manure CF	Bedding CF	Solids to Store CF	Solids to Store Tons	Normal Runoff CF
Storage Period, Days=	365	October	31	750,997	0	187,749	13,518	0
Stacking Width, W in Feet=	0	November	30	726,771	0	181,693	13,082	0
Stacking Height, H in Feet=	0.00	December	31	750,997	0	187,749	13,518	0
Wall Height, h in Feet=	0.00	January	31	750,997	0	187,749	13,518	0
Stack Side Slope (X:1)=	0.00	February	28	678,320	0	169,580	12,210	0
Existing Storage, Cubic Feet=	8,450,000	March	31	750,997	0	187,749	13,518	0
Surface Area of Existing Storage, SF=	850,000	April	30	726,771	0	181,693	13,082	0
25 Year-24 Hour Storm Runoff, CF=	104,833	May	31	750,997	0	187,749	13,518	0
Volume Needed, Cubic Feet=	2,210,596	June	30	726,771	0	181,693	13,082	0
Design Volume, Cubic Feet=	0	July	31	750,997	0	187,749	13,518	0
Is Facility Covered?	NO	August	31	750,997	0	187,749	13,518	0
Volume Reduction Factor=	0.75	September	30	726,771	0	181,693	13,082	0
		Annual	365	8,842,385	0	2,210,596	159,163	0



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CLIENT: Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest

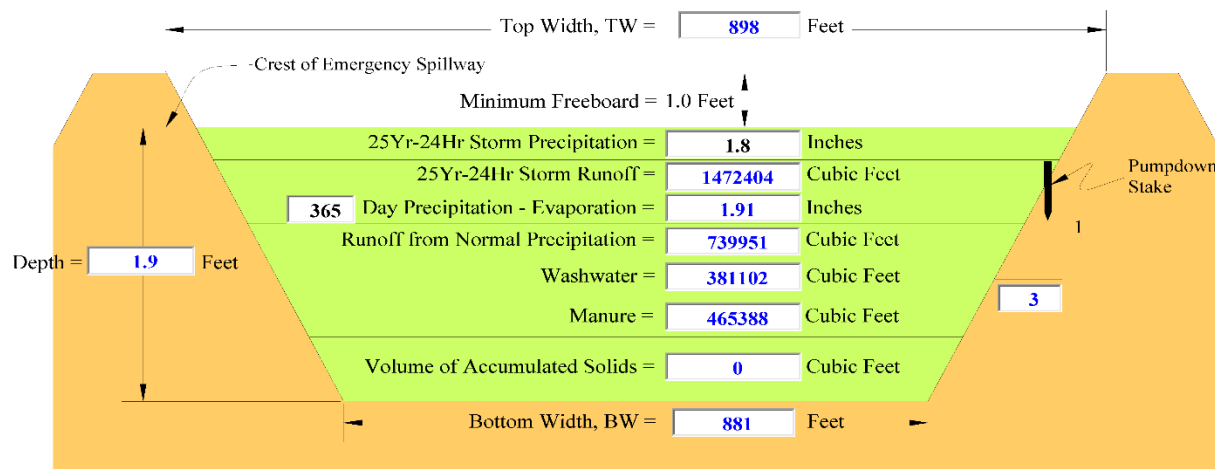
ASSISTED BY: Bruce D. Wilson, H&R Engineering LLC

ANIMAL WASTE MANAGEMENT SYSTEM STORAGE

EVAPORATION POND

MONTHLY INFLOWS INTO EVAPORATION POND

Evaporation Pond Parameters	Value	Month	Number of Days	Rain-Evap on Pond CF	Rain-Evap on Existing Storage, CF	Normal Runoff CF	Washwater CF	Solids CF	Waste to Store CF	Waste to Store Gallons
Storage Period, Days=	365	October	31	-89,376	-96,231	65,707	32,368	39,526	-48,007	-359,120
Side Slope (X:1)=	3.00	November	30	46,368	49,924	100,153	31,324	38,251	266,020	1,989,968
Bottom Width, BW, Feet=	881	December	31	45,024	48,477	91,178	32,368	39,526	256,574	1,919,303
Bottom Length, BL, Feet=	881	January	31	36,960	39,795	87,413	32,368	39,526	236,062	1,765,866
Accumulated Solids Duration, Years=	0	February	28	-3,360	-3,618	73,691	29,235	35,701	131,650	984,810
Existing Storage, Acre Feet=	104.92	March	31	-65,856	-70,907	70,208	32,368	39,526	5,338	39,933
Surface Area of Existing Storage, SF=	868,252	April	30	-198,241	-213,445	66,956	31,324	38,251	-275,156	-2,058,307
Minimum Soil Liner Depth, Feet=	1.00	May	31	-278,209	-299,547	48,638	32,368	39,526	-457,225	-3,420,279
25 Year-24 Hour Storm Runoff, CF=	1,472,404	June	30	-357,506	-384,925	43,644	31,324	38,251	-629,212	-4,706,834
Top Width, TW, Feet=	898	July	31	-487,874	-525,292	17,867	32,368	39,526	-923,406	-6,907,558
Top Length, TL, Feet=	898	August	31	-411,938	-443,532	18,860	32,368	39,526	-764,717	-5,720,479
Volume Needed, Acre Feet=	82.1	September	30	-238,561	-256,858	55,638	31,324	38,251	-370,207	-2,769,338
Design Volume, Acre Feet=	34.3	Annual	365	-2,002,570	-2,156,159	739,952	381,103	465,389	-2,572,286	-19,242,034



REFERENCES

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CLIENT: **Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest**
 ASSISTED BY: **Bruce D. Wilson, H&R Engineering LLC**

ANIMAL WASTE MANAGEMENT SYSTEM UTILIZATION

NUTRIENTS AVAILABLE AFTER STORAGE

Nutrient Source	Type of Operation	Pounds of Nutrients Available			Percent Nutrients Retained After Storage			Pounds of Nutrients Retained After Storage		
	Type of Storage Facility	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
Liquids	Storage Pond (>50%) Dilution	137,327	42,598	55,632	75%	80%	80%	102,995	34,079	44,506
Solids	Solids Storage Facility (Unroofed)	2,609,207	809,369	1,057,015	75%	80%	80%	1,956,905	647,495	845,612
Grazing	NONE	0	0	0	100%	100%	100%	0	0	0

NUTRIENTS AVAILABLE AFTER APPLICATION

Nutrient Source	Type of Application System	Pounds of Nutrients Available			Percent Nutrients Retained After Application			Pounds of Nutrients Retained After Application		
		N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
Liquids	Sprinkling	102,995	34,079	44,506	75%	100%	100%	77,246	34,079	44,506
Solids	Broadcast (Incorporated 7 or more days after application)	1,956,905	647,495	845,612	70%	100%	100%	1,369,834	647,495	845,612
Grazing	Grazing	0	0	0	85%	100%	100%	0	0	0

NUTRIENTS AVAILABLE AFTER DENITRIFICATION

Nutrient Source	Location	Pounds of Nutrients Available			Percent Nutrients Retained After Denitrification			Pounds of Nutrients Retained After Denitrification		
	Soil Drainage Class	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
Liquids	Well Drained	77,246	34,079	44,506	94%	100%	100%	72,611	34,079	44,506
Solids	Well Drained	1,369,834	647,495	845,612	94%	100%	100%	1,287,644	647,495	845,612
Grazing	Well Drained	0	0	0	94%	100%	100%	0	0	0
TOTAL-								1,360,255	681,574	890,118

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Version 5.2

8/10/2016

CLIENT: **Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef Northwest**
ASSISTED BY: **Bruce D. Wilson, H&R Engineering LLC**

ANIMAL WASTE MANAGEMENT SYSTEM UTILIZATION

PERCENT OF MANURE TO BE APPLIED TO FIELD AND UTILIZATION ACRES NEEDED BASED ON											
NITROGEN, N											
Field Number	Acres	Crop	LIQUIDS			SOLIDS			GRAZING		
			Percent to be Applied	Pounds of Nutrients to be Applied	Acres Needed for Utilization of Nutrients	Percent to be Applied	Pounds of Nutrients to be Applied	Acres Needed for Utilization of Nutrients	Percent to be Applied	Pounds of Nutrients to be Applied	Acres Needed for Utilization of Nutrients
Off Farm			100%	102,995		100%	1,956,905		100%	0	
TOTALS-	0		100%	102,995	0	100%	1,956,905	0	100%	0	0

NUTRIENT BALANCE BASED ON AVAILABLE ACRES											
Field Number	Acres	Crop	NUTRIENTS APPLIED			NUTRIENTS REMOVED			NUTRIENT BALANCE		
			Nitrogen, N Lbs/Acre	Phosphorous, P2O5 Lbs/Acre	Potassium, K2O Lbs/Acre	Nitrogen, N Lbs/Acre	Phosphorous, P2O5 Lbs/Acre	Potassium, K2O Lbs/Acre	Nitrogen, N Lbs/Acre	Phosphorous, P2O5 Lbs/Acre	Potassium, K2O Lbs/Acre
Off Farm											

REFERENCES

REFERENCES

OREGON DEPARTMENT OF AGRICULTURE MODIFICATION OF ANIMAL NUMBERS National Pollutant Discharge Elimination System (NPDES PERMIT)

Statutory Authority
Oregon Revised Statutes (ORS) 468B.050 When permit required
ORS 468B.210 Maximum numbers of animals based on ability to contain, treat, hold and dispose of wastes as necessary to comply with all conditions of the permit.

A. General Information

Master Address #AG-P0063851CAFG EPA#ORG010157

Name or Business Name – Nederend Farms LLLP-DBA Nederend Heifer Ranch & Beef NorthwestFacility Location Address – 3455 Victorio RoadCity – Nyssa, ORZip Code- 97913County – Malheur**B. Livestock Type: Circle the item that best represents your operation.**

1. Beef Feedlot (Fattening) 2. Beef Cattle (Cow/calf) 3. Hogs 4. Sheep and Goats
5. Dairy Farm, Heifer Replacement Farm 6. Poultry/Broiler 7. Poultry/Eggs
7. Mink/Rabbits 8. Horses and Other Equine 9. Other _____

C. Current Permitted Animal Numbers: In the space below please describe your number of animals by herd composition or class.
Beef Northwest is a Large Concentrated CAFO currently permitted for 32,000 beef feeders.

D. Current Permitted CAFO Designation: Circle one. See reverse side for table.

Large Concentrated Medium Concentrated Medium Confined Small Confined Small Concentrated

E. Proposed change in permitted animal numbers: In the space below please describe your proposed animal numbers by herd composition or class.

Nederend Farms LLLP is requesting to be permitted for 17,000 beef feeders managed by Beef Northwest and 15,000 Heifers and Calves to be managed by Nederend Farms LLLP.

F. New CAFO Designation based on increase / decrease in animal numbers. Circle one. See reverse side for table.

Large Concentrated Medium Concentrated Medium Confined Small Confined Small Concentrated

G. Certification:

I understand that an approved animal waste management plan is required prior to permit increase. I agree to prepare and implement an animal waste management plan in accordance with the requirements and timelines specified in the permit.

Signature (operator or owner)_____
Date_____
Hans Nederend
Print Name_____
Signature (operator or owner)_____
Date_____
Print Name

REFERENCES

Definition of Legally Authorized Representative: See 40 CFR 122.22 for more detail. Please also provide the information requested in brackets []	
◆	Corporation — President, secretary, treasurer, vice-president, or any person who performs principal business functions; or a manager of one or more facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million that is authorized in accordance to corporate procedure to sign such documents
◆	Partnership — General partner <i>[list of general partners, their addresses, and telephone numbers]</i>
◆	Sole Proprietorship — Owner(s) <i>[each owner must sign the application]</i>
◆	City, County, State, Federal, or other Public Facility — Principal executive officer or ranking elected official
◆	Limited Liability Company — Member <i>[articles of organization]</i>
◆	Trusts — Acting trustee <i>[list of trustees, their addresses, and telephone numbers]</i>

SEND THIS FORM TO:

Oregon Department of Agriculture
Natural Resources Division
635 Capitol Street NE
Salem, Oregon 97301-2532

ANIMAL MODIFICATION REQUEST INSTRUCTIONS

A. GENERAL INFORMATION:

1. Enter the legal name.
2. Enter the common name of the facility or operation, if different than the legal name.
3. Enter the facility's physical address (physical location), including city, state, zip code and telephone number.

B. CIRCLE THE APPROPRIATE LIVESTOCK TYPE OF YOUR OPERATION.

- C. Self-explanatory
 D. Self-explanatory
 E. Describe your proposed animal increase by herd composition or class
 F. Self-explanatory
 G. Signature

CAFO Designation by Size Threshold (used for items D and F)

	Confined		Concentrated		
	Confines more than one animal for more than 4 months on prepared surface		Stabled or confined and fed or maintained for total of 45 days or more in any 12-month period Crops, vegetation, forage growth, or post-harvest residues not sustained in normal growing season in lot or facility		
	<i>Small Confined</i> Waste water control facility or disposal system for wet wastes	<i>Medium Confined</i> Waste water control facility or disposal system for wet or dry wastes	<i>Small Concentrated</i> Significant contributor of pollutants to waters of the U.S. Designated by director [40CFR §122.23(b)(9)]	<i>Medium Concentrated</i> Discharging pollutants to waters of the U.S. [40 CFR §122.23(b)(6)]	<i>Large Concentrated</i> [40 CFR §122.23(b)(4)]
Animal sector	Small Confined	Medium Confined	Small Concentrated	Medium Concentrated	Large Concentrated
Mature dairy cows ¹	<200	200-699	<200	200-699	≥700
Veal calves	<300	300-999	<300	300-999	≥1,000
Cattle ²	<300	300-999	<300	300-999	≥1,000
Swine > 55 lbs	<750	750-2,499	<750	750-2,499	≥2,500
Swine < 55 lbs	<3,000	3,000-9,999	<3,000	3,000-9,999	≥10,000
Horses	<150	150-499	<150	150-499	≥500
Sheep or lambs	<3,000	3,000-9,999	<3,000	3,000-9,999	≥10,000
Turkeys	<16,500	16,500-54,999	<16,500	16,500-54,999	≥55,000
Chickens, including laying hens or broilers w/wet waste system manure handling system)	<9,000	9,000-29,999	<9,000	9,000-29,999	≥30,000
Laying hens w/dry waste system	NA	25,000-81,999	<25,000	25,000-81,999	≥82,000
Broiler chickens w/dry waste system	NA	37,500-124,999	<37,500	37,500-124,999	≥125,000
Ducks w/other than wet waste system	<10,000	10,000-29,999	<10,000	10,000-29,999	≥30,000
Ducks w/wet waste system	<1,500	1,500-4,999	<1,500	1,500-4,999	≥5,000
Other animal type	As determined by ODA. ³		Designated by director.	NA	NA

¹ Whether milked or dry.

² Other than mature dairy cows or veal calves; cattle includes but is not limited to heifers, steers, bulls and cow/calf pairs.

³ To determine the number of animals that require permit coverage, ODA will compare the operation to the most similar animal type in the table.

REFERENCES

Notice of Registration and Oregon Confined Animal Feeding Operation (CAFO) National Pollutant Discharge Elimination System (NPDES) General Permit Summary

Overview of CAFO General Permit Summary

The Oregon CAFO General Permit No. 1-2009 (permit) was issued by the Oregon Department of Agriculture (ODA) and Department of Environmental Quality (DEQ) and became effective on **June 29, 2009**. The permit expires on **May 31, 2014**. A copy of the permit is enclosed. This Notice of Registration describes your specific permit registration information and an overview of permit requirements.

Your permit registration was renewed to CAFO Permit No. 1-2009 on **October 12, 2009**, and updated (change in operator) on **February 27, 2012**, based on information provided by you as follows:

Master Address No. AG-P0063851CAFG EPA Registration No. ORG010157

	Operator	Legal owner, if different
Name	WESLEY (WES) KILLION, MGR.	JIM AND JOHN WILSON
Business Name	BEEF NORTHWEST FEEDERS, LLC	
Mailing Address	3455 VICTORIO RD NYSSA, OR 97913	PO BOX 209 NORTH POWDER, OR 97867
Facility Address	3455 VICTORIO RD NYSSA, OR 97913	
Main Ph:	(541) 372-2101	
E-mail Address	wcs@bccfnorthwest.com	
Maximum Number of Animals	The maximum number of animals that may be held at this CAFO is 32,000 animals based on the following population: 32,000 beef feeders . You may not exceed this number by more than 10% or 25 animals, whichever is greater, without first providing ODA with a revised Animal Waste Management Plan (AWMP) and receiving written ODA approval.	
Facility Classification	Based on the type and size of your operation, ODA has determined that you operate a Large Concentrated CAFO . <i>Note: Large Concentrated CAFOs have additional requirements. Please see general permit.</i>	

Annual Permit Fee

Each fiscal year, you will be assessed an annual compliance fee of \$25.00 to maintain your registration under this general permit.

For Questions/ Additional Information

If you have questions, call your regional livestock water quality specialist for **Area VI** at **(541) 889-4042** or the Salem office at **(503) 986-4699**. Additional CAFO program information is available on the internet at http://oregon.gov/ODA/NRD/cafo_front.shtml

General Permit Conditions

The operator must be in compliance with all terms and conditions of the permit (not only this summary of the permit) at all times.

Prohibited Discharges

See permit section S2, p. 9 & 10 for full text.

The following types of discharges are prohibited:

- Contaminated runoff from confinement or waste accumulation areas;
- Overflow or discharges from waste storage facilities;
- Discharges due to improper land application activities from surface drainages or field tile outlets;
- Discharges due to equipment failure; and
- Leakage or seepage from facilities in the production area in excess of approved designs.

When Discharge is Allowed

Permit sections S2.B, p. 9; S2.C, pp. 9 & 10.

Production Area: Discharges of process waste water to surface waters of the state are generally prohibited except:

- When rainfall events cause an overflow of process waste water from a facility designed, constructed, operated, and maintained to contain all process-generated waste waters plus the runoff and direct precipitation from a 25-year, 24-hour rainfall event provided these discharges do not cause or contribute to a violation of state water quality standards; or
 - In the event of an upset or bypass condition. *These conditions are further defined in the permit.*
- All authorized discharges from the production area must be properly land applied or otherwise handled in a way that minimizes impacts on surface water and groundwater sources.

REFERENCES

	Land Application Area: Storm water runoff from the land application area is not considered a prohibited discharge and is allowed if the land is being managed in compliance with the AWMP approved by ODA.
Animal Waste Management Plan (AWMP) Requirement Permit section S3, pp. 12-15.	The permit requires that each permitted operation have a current AWMP approved by ODA. An AWMP describes how a CAFO is managed with respect to containment, treatment, storage, and utilization of manure, litter, and process wastewater in order to remain in compliance with permit conditions and water quality laws. The AWMP must accurately represent current land base, manure storage, herd/flock size, and current management practices used at the livestock operation. The AWMP must reflect production practices and be implemented accordingly.
Storage Requirement Permit section S2.E, p. 10.	You must provide adequate storage capacity for solid and liquid wastes at all times so that land application occurs only during periods when soil and weather conditions are suitable.
Monitoring, Recordkeeping & Reporting Permit section S4, pp. 16-19.	Monitoring, recordkeeping and reporting of waste applications, and inspection requirements must occur as described in an AWMP approved by ODA and requirements in section S4. of the permit. <i>Note: Large concentrated CAFOs have additional requirements.</i>
Land Application Rates & Timing Permit sections S2.C, pp. 9 & 10; S3.C, p. 12 & 13.	You must apply manure, litter and process wastes to lands at agronomic rates in accordance with proper agricultural practices and as specified in a waste management plan that has been approved by ODA. Waste applications must not exceed the capacity of the soil and crops to assimilate nutrients and minimize water pollution, must be quantifiable, and based on the NRCS Phosphorous Index, Agronomy Technical Note #26, revised June 2008, and must account for all other nitrogen and phosphorus. Prohibitions: If discharge to surface water or groundwater will result, application to flooded and saturated land is prohibited. Proposed waste and waste water application to frozen soil must be included in an AWMP. Land application of wastes or waste water during rainfall events that are expected to result in saturated soils or surface runoff is prohibited.
Duty to Report Noncompliance Permit section S4.D.1, p. 18.	If at any time you are unable to comply with any permit conditions, you have a duty to contact ODA immediately so the situation can be assessed and remedial actions taken if necessary. <i>Note: If you have a discharge to surface water or groundwater that is not allowed by the permit, you must notify ODA within 24 hours of the discharge. Please call your area livestock water quality specialist at (541) 889-4042 or CAFO Program support in Salem at (503) 986-4699.</i>
Annual Report Permit section S4.D.2, p. 18.	You must submit an annual report to ODA by March 15th of each year.
Construction of Waste Storage and Waste Water Control Facilities Permit section S2.E.2, p. 10.	S2.E. 2 of the permit states that you “must site, design, construct, operate, and maintain all waste storage facilities consistent with the AWMP. New and modified construction of waste facilities must be approved in advance and prior to construction by ODA in conformance with ORS 468B.055 and OARs 340-051 and 603-074.” Experimental or unproven technologies must receive prior approval from ODA. For all other modifications or new construction, no approval will be required. Certification forms are available from ODA.
Public Noticing & Participation Permit section S1.H, pp. 7 & 8.	Prior to approving new permit coverage, renewing permit coverage, or approving proposed substantial changes to an AWMP, ODA will provide public notice and participation.

Ray Jaindl, Administrator
Natural Resources Division