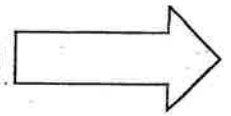


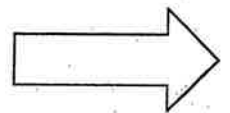
RECEIVED

**APR 11 2005
NATURAL RESOURCES
DIVISION**

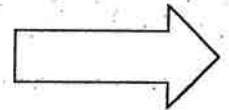
Summary of CAFO Operation



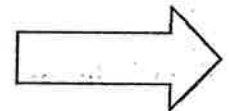
**Specific Descriptions &
Calculations**



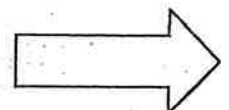
**Record Keeping & Reporting
Requirements**



**Large CAFO Additional
Requirements**



Miscellaneous



Animal Waste Management Plan

April 2005

Joel & Vikki Price Feedlot

Operated by:

Joel & Vikki Price
2551 Norwood Dr.
Nyssa, OR 97913
(541) 372-2759

Facility Address:
2551 Norwood Dr.
Nyssa, Oregon

Operation:

Beef Feedlot
Medium Federal CAFO

As owner and operator of the Joel & Vikki Price Feedlot, I intend to manage in accordance with the practices and operation and maintenance described in this Animal Waste Management Plan.

Signature

Vikki Price

Date

4/06/05

172703
05108

GENERAL NARRATIVE DESCRIPTION

Joel & Vikki Price Feedlot is located at 2551 Norwood Drive in Nyssa, Oregon and is owned by Joel & Vikki Price. The operation is a beef and dairy backgrounding feedlot and is set on 329.2 acres available for manure application in Malheur County. The feedlot is in full operation year around at which time, animal numbers may reach 500 head. The cattle are of mixed breeds. A majority of young animals are brought on to the feedlot at various times throughout the year at a weight of approximately 200 pounds. Most of the beef calves are shipped off the operation at approximately 800 pounds. Most of the Holstein heifers are shipped off the operation at approximately 1,200 pounds. The average weight of the animals during the confinement period is 700 pounds. Depending on the economic market, up to 50 beef calves are kept in the lot and finished out at a weight of 1,250 pounds.

Manure Collection Methods

All cattle are confined in earthen pens. The manure is collected in the pens where it dehydrated and used as bedding for the cattle. When the cattle are removed from the facility, the pens are cleaned and the dry manure is used as a soil amendment. Some manure is left in the pens, mounded and packed for bedding in the fall.

An earthen berm is maintained in order to catch waste runoff from the pens for evaporation. Grass filter strips are also maintained around the pens to reduce potential for runoff during a storm.

Manure Storage Facilities and Transfer

The manure generated at the facility is handled in a dry solid form. Dry manure is scraped and stacked within feedlots during the confinement period, and then land applied during the growing season. All manure will be contained

within the facilities. Clean water is diverted around the system, except in extreme conditions, when some rainfall enters the feedlots.

A berm is available to catch contaminated rainwater that falls on the pens. All liquid that is collected evaporates due to the dry climate (9.97" average annual rainfall, 40.23" average annual evaporation).

The solid manure is stored within the dry lot pens. Solid manure is transported to fields using a 600 cubic foot manure spreader.

Manure Utilization

The land available for manure application is owned and/or leased by Joel & Vikki Price as well as Ryan Martin. There are 360 acres adjacent to the operation and an additional 280 acres that are on a renewable lease. Currently (using numbers from the Beef Spreadsheet), 213 acres of alfalfa which yields 7.5 tons per acre, 45.5 acres of corn, grain which yields 4.44 tons (as-fed) per acre, the 40.5 acres of wheat yields 130 bushels per acre, and 30 acres of pasture which yields 5.1 tons (as-grazed) per acre. The crops are used as feed in a high roughage ration for the cattle. Additional feedstuffs are imported to the feedlot.

Manure is applied via a 600 cubic foot solid manure spreader. Dry manure will be spread in a corn grain - wheat rotation. Manure is also applied to the alfalfa and pasture as needed. None of the dry manure is currently exported off the farm.

Manure is not only used for nutrient benefits, but also to improve soil tilth via the inputs of organic material. This plan is balanced for nitrogen production and use.

**ANIMAL WASTE MANAGEMENT PLAN
MINIMUM REQUIRED ELEMENT**

OPERATION AND MAINTANENCE

Joel & Vikki Price Feedlot

Name of Operation

Mark all that apply to your operation.



Animal Access Lanes or Walkways

Damaged components will be repaired or replaced as needed. Debris and excess manure will be removed from roadway surfaces, road ditch and drainage areas. Maintain drainage area capacities. Maintain good vegetative cover on all slopes and watercourses.



Culverts

Inspect annually or after large rainfall event. All foreign objects restricting water flow will be removed. Damaged sections will be repaired or replaced. Erosion around inlet or outlet will be corrected.



Dry Stack Storage Facility

Solid manure storage facility will be inspected annually. Broken slabs and curbs will be repaired. Repair or replace rusted or damaged areas on roof structure. Broken gutters and/or downspouts will be repaired or replaced. Check for adequacy and function of drain away from downspouts. Check floor, side and back walls for soundness. Manure solids and leachate will not escape through cracks in the facility.



Feedlot Pens

(ODA does not advise long-term manure storage in open feedlot pens, even in low rainfall areas. Research is currently underway to determine environmental impacts of such practices.)

Maintaining a firm, dry feedlot surface is an important factor in good animal health and the environment. Diversion ditches or berms should direct clean water flow away from feedlot pens and holding areas. Storm water runoff from pens will be collected and stored appropriately. Dry manure will be contained within the pen until removed for storage or field application. Manure accumulations created by manure packs or mounding will be managed such that a pollution hazard is not created. Short-term mounding may be used in conjunction with quick clean-ups used to reduce manure pack from around aprons and under fences. Manure will be removed annually from pens. When removing manure from pens, care is taken to maintain the integrity of the compacted protective seal or "hard pan".



Fencing

Fences will be inspected periodically. Broken or decayed posts will be replaced. Sagging wire will be tightened. Broken wire will be spliced or replaced. Broken or missing insulators for electric fencing will be replaced. Vegetation will be controlled under the fences. Electric fencing will be sufficiently charged to detour animals.



Irrigation Water Management

Irrigation water application will be at rates that minimize transport of sediment, nutrients, and chemicals to surface water and ground water. Equipment modifications and/or soil amendments such as polyacrylamides and mulches should be considered to reduce erosion if needed.



Filter Strips

Maintain vigorous growth of vegetative covering. This includes reseeding, fertilization and application of herbicides when necessary. Periodic mowing, harvesting or grazing may also be needed to control height. Remove all foreign debris that hinders system operation. Limit the traffic from filter strip area. Limit livestock usage to vegetative growth periods when the animals will not damage vegetative root system or compact the soil. Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage.



Manure Application Equipment

All manure application equipment (including but not limited to sprinklers, big gun irrigators, spreaders and/or tank wagons) will be operated and maintained according to the manufacturer's manual. Equipment found to be broken or worn will be replaced. Equipment will be calibrated to ensure recommended rates are applied. Liquids will be drained from sprinklers or big guns prior to freezing weather. When system is flushed, rinse water is used following waste, and liquid and sediment is applied agronomically. Nozzles will be checked periodically and if worn, nozzles will be replaced. Minimize exposure to animal and organic wastes and manure gasses. Wear protective clothing when appropriate. When cleaning equipment after nutrient application, remove and save wastes in an appropriate manner. Avoid applying manure near surface water by establishing buffer strips and set backs, and use extreme care to avoid contaminating ground water.



Manure Effluent and Irrigation Transfer Lines.

Manure, effluent and irrigation lines shall be flushed with clean water periodically to prevent particle buildup and plugging. Manure flushed from the lines will be applied agronomically so that surface and groundwater will be protected. Manure, effluent and irrigation lines shall be inspected periodically for leaks or worn out nozzles, and repairs or replacements made as needed. Special inspection shall be done to pressure relief valves, risers and control valves. Shut off valves will be inspected annually. Avoid unnecessary travel over pipelines that will damage their integrity. Equipment found to be broken or worn will be replaced. Water will be drained during cold weather to prevent frozen or broken lines. These lines can explode if not properly maintained and may cause human injury.



Pumps

Pumps will be maintained in accordance with manufacturer's operation and maintenance manual. Effluent will be drained from pumps prior to freezing weather. Pumps will be inspected periodically to identify and remove debris wrapped around impeller or worn parts. Appropriate action will be taken to repair any worn parts. Liquids will be drained from pump prior to freezing weather to prevent breakage. It is recommended to have a spare pump or back up system in case a pump must be removed for an extended time for repair.



Trough or Tank

Watering facility will be inspected periodically. Damaged tank/trough will be repaired or replaced. Float valves will be maintained in good working order. Area immediately surrounding the

trough/tank will be maintained in a stable condition. Watering facilities will not be allowed to overflow if additional liquid will affect waste storage capacities.



Evaporation Waste Storage Pond

Prior to the storage season, empty the pond to provide storage capacity for the accumulation of wastewater and precipitation during the winter storage period. Sludge and accumulated solids will be removed from the pond periodically when buildup limits storage capacity in the pond. Depth markers are installed to assure maximum volume will be maintained and checked weekly. A 2-foot free board will be maintained to prevent spillage.

Maintain all pumps, pipeline, valves, and electrical and mechanical equipment in good operating condition following the manufacturer's recommendations. Immediately repair any vandalism, vehicular, or livestock damage to any earth fill. Immediately remove any obstructions or blockage of spillways, trash racks or pipe inlets. Settlement or cracks in earthen sections should be investigated to determine cause and immediately repaired. Maintain vigorous growth of vegetative coverings on the dikes to eliminate soil erosion. Eradicate or otherwise remove all rodents or burrowing animals and repair any damage caused by their activity. Fences and/or warning signs should be maintained as necessary to unauthorized human or livestock entry. Operate systems in a manner that minimizes odor and drift.





Signature of Legally Authorized Representative: _____

Vikki Price

Print Name: VIKKI PRICE

Date: 4/06/05

Narrative of production area & land application locations

**Aerial photo/topographical map showing numbered fields, production area, clean water diversions, surface water features
Soil maps of all application fields & map unit descriptions**

Manure, Litter and Process Waste Volumes

Manure, litter and process waste output collected & stored in this system. Bedding added & collected. Processed & wash water collected. Silage & feed processing leachate

Contaminated Storm Water

Direct rainfall into storage, slab or lot runoff collected, overflow from gutters or diversions

Nutrient Content of Manure, Litter & Processed Waste

Content & volume of nutrients in manure, litter & process waste generated. Actual test values are required of large CAFOs

Farm Nutrient Balance

Show amount of nutrients (N,P,K) generated, lost in storage, lost in application, or exported off farm annually. Nutrient applications must balance to most limiting nutrients as determined by NRCS Agronomy Tech Note 26 & NRCS Phosphorus Index. Include all acres required to balance nutrients owned or leased by the operator

Application Schedule & Limitations

Show scheduled applications of solids & liquids. Include date, amount & method of application to identified fields, describe calibration of equipment used to apply manure, litter & processed waste. Describe limitations to applications, indicate buffer areas & management to avoid frozen or saturated soils. Justify buffer width & management. Calculate the minimum storage required for liquids & solids. Indicate timing & application rates of irrigation water, irrigation must not allow leaching of soluble nutrients or runoff

Animal Mortality Management

Describe how the farm handles mortalities

SPECIFIC DESCRIPTIONS AND CALCULATIONS

Land Application Areas

Aerial photos showing numbered field locations for all manure application acreage and surface water features, a topography map and a schematic of the feedlot headquarters are included in this Animal Waste Management Plan.

There are 7 soil types found on the property including, 21A-C Nyssa Silt Loams and 25A-25B Owyhee silt loams. A soils map and soil map unit descriptions for all manure application areas are included in this Animal Waste Management Plan.

Manure and Waste Volumes

Calculated volumes of all manure, bedding, wash water, silage leachate, and contaminated storm water have been completed using an excel worksheet based from the NRCS Agricultural Waste Field Handbook. The worksheet is included in this Animal Waste Management Plan.

Nutrient Content of Manure, Little and Process Waste Water

The same excel worksheet was used to estimate volume of manure. On farm manure test results are used in the worksheet to estimate manure nutrient content.

Farm Nutrient Balance

The excel worksheet also includes calculated data for nutrient balance for the operation. Joel & Vikki Price Feedlot is balancing for nitrogen which is the most limiting nutrient as determined by the NRCS Phosphorus Index, which indicated a Site Vulnerability Class of MEDIUM.

Application Schedule and Limitations

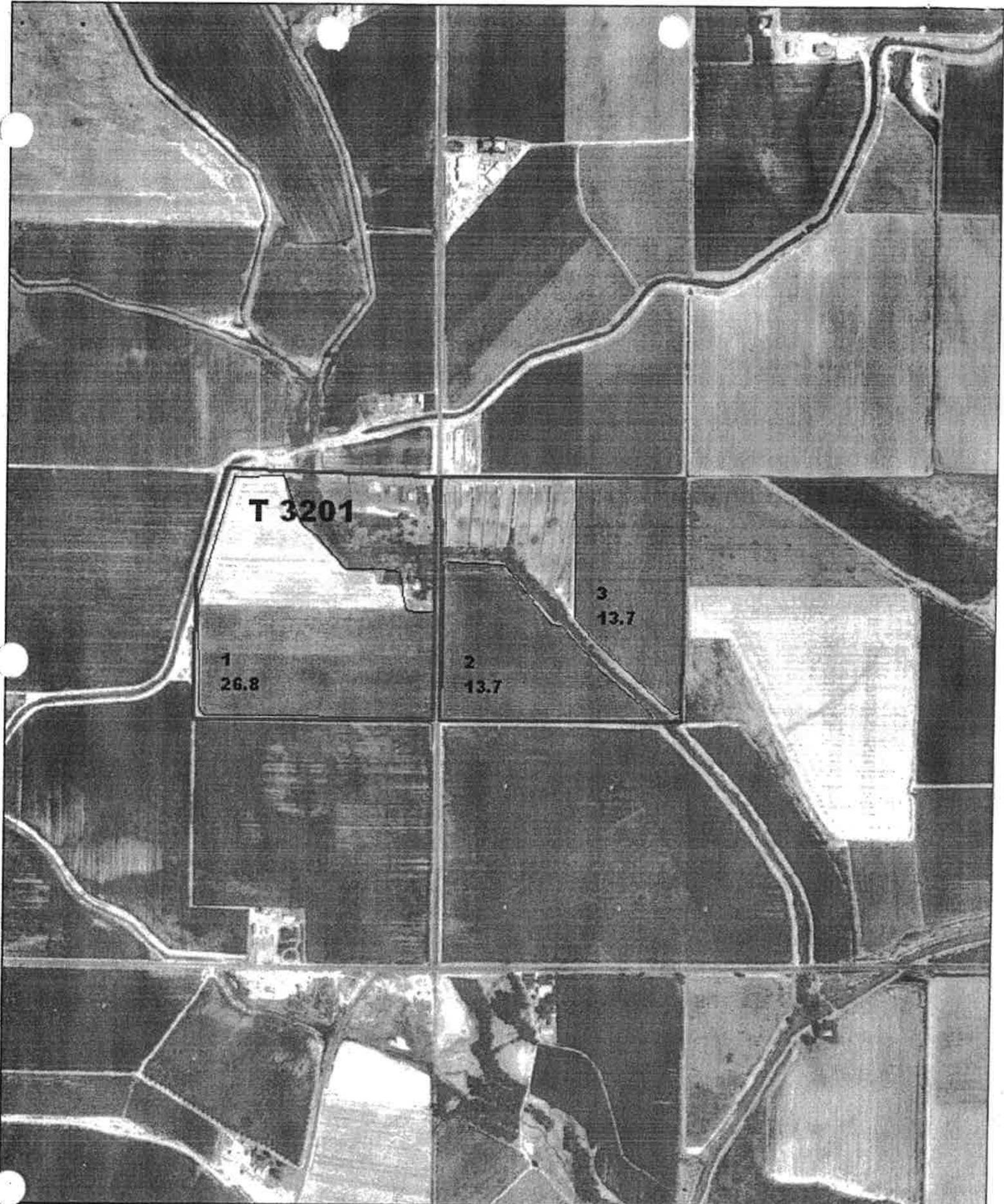
Solid manure is applied and incorporated into the soil primarily in the spring and late summer of each year. Manure applied to the corn ground is incorporated and planted, if applied in the spring. Manure applied to corn ground in the fall is incorporated, then the soil is bedded for the corn which is planted the following spring. Manure applied to the wheat ground is incorporated and planted.

Irrigation water from Owyhee Irrigation District is used on all of the manure application acreage. Siphon irrigation is used from April through October. To decrease non-point source pollution of surface and groundwater resources, irrigation water is applied at the volume, frequency and application rate in a planned conservation management system. An irrigation system adapted for the site conditions (soil, slope, crop grown, climate, and water quantity) will be available and capable of applying water to meet the intended purpose. Water will not be applied at rates of more than 2 inches per application or at rates that exceed soil infiltration or crop ET. No tile lines or other form of artificial drainage are used on the property.

A 30 foot vegetated buffer along the Owyhee Irrigation Ditch is in place that does not receive manure application. This area is naturally vegetated with grasses.

Animal Mortality Management

Deceased animals are buried in accordance with the State of Oregon's burial regulations. Livestock will not be buried near domestic wells or near live water.



Map of Tract #3201
Malheur County

400 0 400 800 Feet

0.0
HEL, NHEL



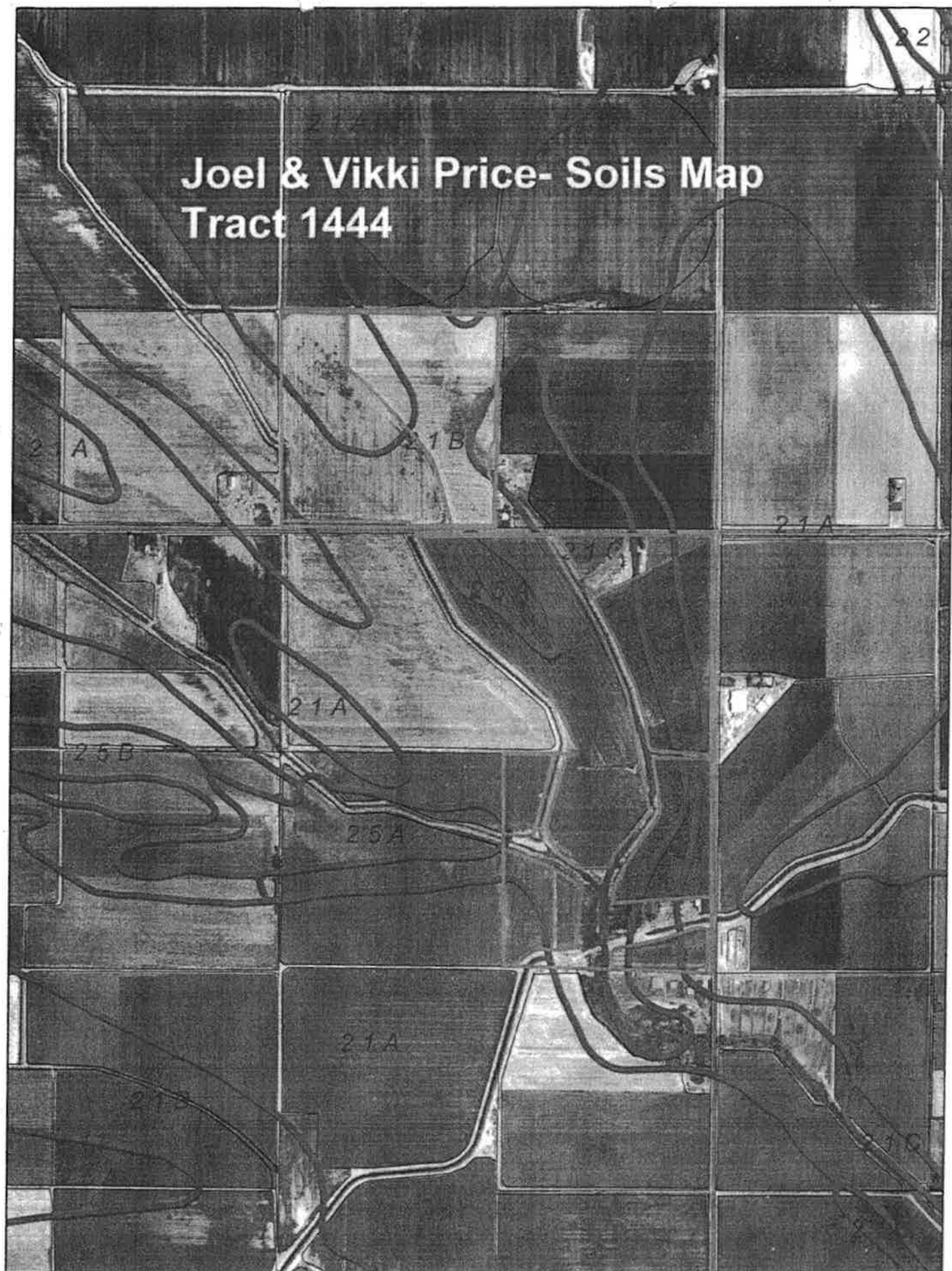
Calculated Acres
Status - NHEL
Wetland



August 3, 2004

This acreage is for FSA programs purposes only.
No warranty is made for any other use.

Joel & Vikki Price- Soils Map
Tract 1444



Joel & Vikki Price- Soils Map
Tract 1451

21A

21B

21A

21A

21B

21A

An aerial photograph of a rural landscape, likely a farm or tract of land. A prominent white boundary line runs diagonally from the top left towards the bottom right, dividing the land into several sections. The terrain is a mix of dark, possibly wooded or overgrown areas and lighter, more open fields. In the bottom right corner, there are some small, light-colored structures, possibly a house or a small farm building. The overall image has a grainy, high-contrast appearance typical of older aerial photography.

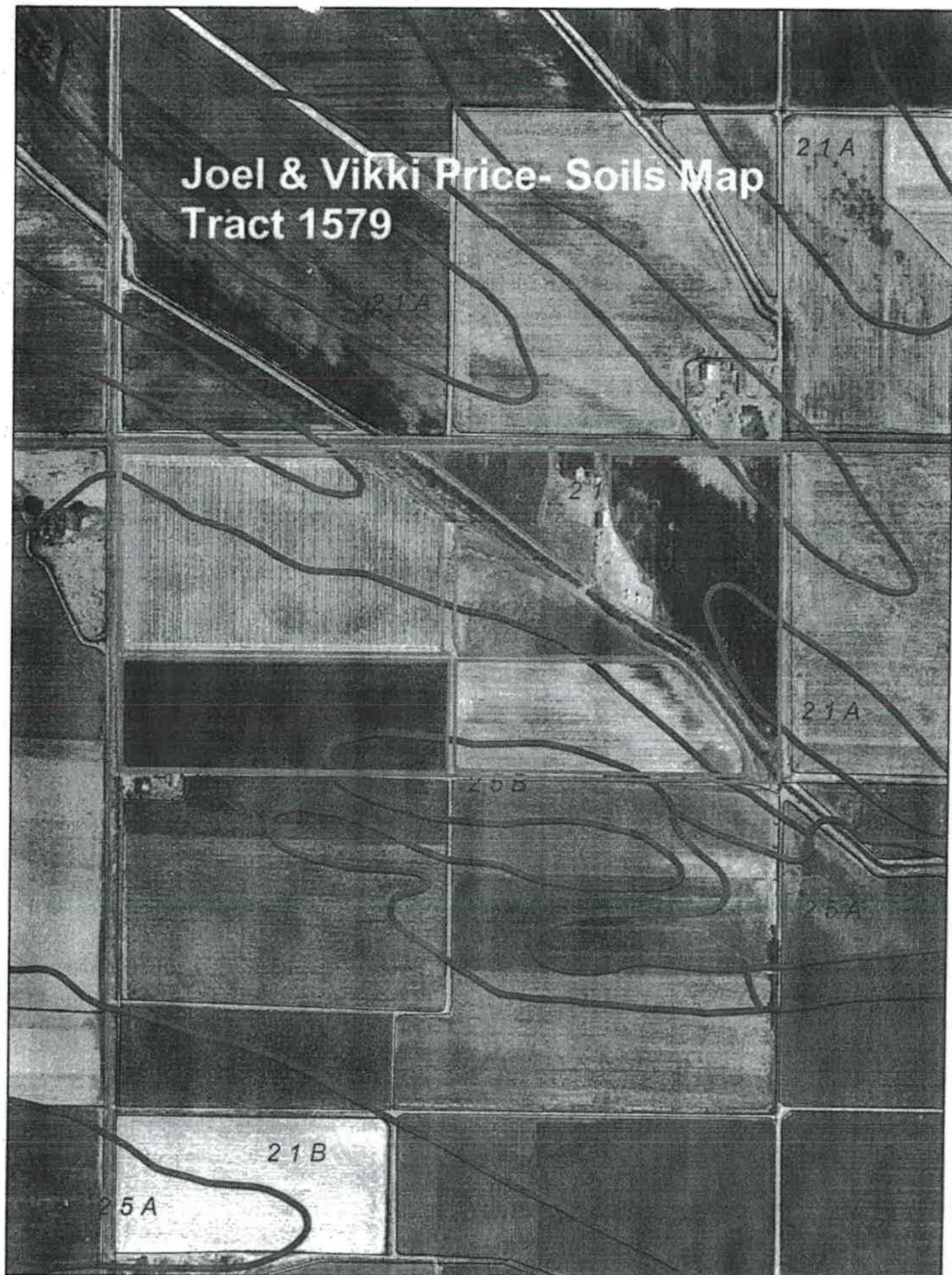
Joel & Vikki Price- Soils Map
Tract 1573

21A

21B

21A

**Joel & Vikki Price- Soils Map
Tract 1579**



**Joel & Vikki Price- Soils Map
Tract 3201**





Non-Technical Descriptions

Soil Survey Area: Malheur County, Oregon, Northeastern Part

Survey Status: Maintenance needed

Correlation Date: 12/01/1975

Distribution Date: 08/13/2002

Map Unit: 21A NYSSA SILT LOAM, 0 TO 2 PERCENT SLOPES

Description Category: SOI

The Nyssa soil is over 60 inches deep to bedrock, a hardpan is at 20 to 40 inches. It is silty, well drained and occurs on terraces. This soil is alkaline. Water erosion is a potential hazard.

Map Unit: 21B NYSSA SILT LOAM, 2 TO 5 PERCENT SLOPES

Description Category: SOI

The Nyssa soil is over 60 inches deep to bedrock, a hardpan is at 20 to 40 inches. It is silty, well drained and occurs on terraces. This soil is alkaline. Water erosion is a potential hazard.

Map Unit: 21C NYSSA SILT LOAM, 5 TO 8 PERCENT SLOPES

Description Category: SOI

The Nyssa soil is over 60 inches deep to bedrock, a hardpan is at 20 to 40 inches. It is silty, well drained and occurs on terraces. This soil is alkaline. Water erosion is a potential hazard.

Map Unit: 25A OWYHEE SILT LOAM, 0 TO 2 PERCENT SLOPES

Description Category: SOI

The Owyhee soil is over 60 inches deep to bedrock. It is silty, well drained and occurs on terraces. Permeability is slow. Water erosion is a potential hazard.

Map Unit: 25B OWYHEE SILT LOAM, 2 TO 5 PERCENT SLOPES

Description Category: SOI

The Owyhee soil is over 60 inches deep to bedrock. It is silty, well drained and occurs on terraces. Permeability is slow. Water erosion is a potential hazard.

PHOSPHORUS INDEX WORKSHEET – EASTERN OREGON

Date: 3/25/02

Sample Depth: 1-3ft.

Nutrient Application Method(s) Liquid Spray; Broadcast; Sidedress

Notes:

PHOSPHORUS LOSS RATING							Weighted Rating Value	
TRANSPORT FACTORS	Factor Weight	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)	Current	Planned
Soil Erosion – tons/ac/yr (RUSLE and/or WEQ)	1.50	< 1 (0)	1 – 3 (1.5)	4 – 6 (3.0)	7 – 15 (6.0)	> 15 (12.0)	1	0
Soil Erosion from Sprinkler Irrigation	0.25	No sprinkler irrigation (0)	Application rate < infiltration rate OR No visible runoff at field borders (0.25)	Application rate = infiltration rate OR Little to no visible runoff at field borders (0.5)	Application rate > infiltration rate OR Visible runoff at field borders (2.0)	Application rate > infiltration rate OR Excessive runoff visible at field borders. Rills and gullies present. (4.0)	0	0
Soil Erosion from Surface Irrigation – tons/ac/yr (SISL)	1.00	< 1 (0)	1 – 3 OR tail water return flow in place (1.0)	4 – 6 (2.0)	7 – 15 (4.0)	> 15 (8.0)	0	0
Runoff Class	1.00 – nonirrigated 0.50 – irrigated	Negligible (0)	Very low or low (0.5 IRR, 1.0 NIRR)	Medium (1.0 IRR, 2.0 NIRR)	High (2.0 IRR, 4.0 NIRR)	Very High (4.0 IRR, 8.0 NIRR)	1	1
Distance to Perennial Surface Waters / Buffer Widths	0.50	> 500 feet OR buffer > 30 ft. wide (or meets NRCS standards) next to surface waters (0)	300 – 500 feet OR buffer 20 - 30 ft. wide next to surface waters (0.5)	200 – 299 feet OR buffer 10 - 19 ft. wide next to surface waters (1.0)	100 – 199 feet AND buffer < 10 ft. wide next to surface waters (2.0)	No buffer next to surface waters OR Return flow from surface irrigation occurs with no buffer (4.0)	0	0
Subsurface Drainage	0.50	No tile drains (0)	Tile drains present Soil Test P (Olsen) < 40 ppm (0.5)	Tile drains present Soil Test P (Olsen) 40 - 120 ppm (1.0)	Tile drains present Soil Test P (Olsen) 121 - 170 ppm (2.0)	Tile drains present Soil Test P (Olsen) > 170 ppm (4.0)	0	0

PHOSPHORUS INDEX WORKSHEET – EASTERN OREGON

October 2001

2

Tract 1579 Fields 1

PHOSPHORUS LOSS RATING					Weighted Rating Value			
SOURCE FACTORS	Factor Weight	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)	Current	Planned
Soil Test P – 0-12" ppm (Olsen NaHCO_3)	1.00	(Soil Test P – 20) $\times$ 0.10 (_____ - 20) $\times$ 0.10 = _____ Assign 0 points if Soil Test P < 20 ppm Soil Test P					0	0
Commercial P Fertilizer Application Rate	1.00	$\text{lbs/ac P}_2\text{O}_5 \times 0.02$ $80 \times 0.02 = 1.6$ $\text{lbs/ac P}_2\text{O}_5$					2	2
Commercial P Fertilizer Application Method	1.00	None Applied (0)	Placed with planter OR Injected deeper than 2 inches OR Incorporated by plowing (1.0)	Incorporated deeper than 3 inches by disking, chiseling, etc. (2.0)	Incorporated less than 3 inches deep by harrowing, etc. (4.0)	Surface applied – not incorporated prior to irrigation or winter precipitation (8.0)	2	2
Organic P Source Application Rate	1.00	$\text{lbs/ac P}_2\text{O}_5 \times 0.02$ $281 \times 0.02 = 5.62$ $\text{lbs/ac P}_2\text{O}_5$					6	0
Organic P Source Application Method	1.00	None Applied (0)	Injected deeper than 2 inches OR Incorporated immediately (1.0)	Incorporated deeper than 3 inches by disking, chiseling, etc. within 5 days of application (2.0)	Incorporated less than 3 inches deep by harrowing, etc. within 21 days of application (4.0)	Surface applied – not incorporated prior to irrigation or winter precipitation (8.0)	2	2

Total Rating Value TFS $\times$ SFS	Site Vulnerability Class
< 30	Low
30 – 100	Medium
100 – 400	High
> 400	Very High

	Current	Planned
Transport Factors Subtotal (TFS)	2	1
Source Factors Subtotal (SFS)	12	6
Total Rating Value (TFS $\times$ SFS)	24	6
Site Vulnerability Class	LOW	LOW

PHOSPHORUS INDEX WORKSHEET – EASTERN OREGON

Producer: Joel & Vikki PriceCounty: MalheurTract No. 1573Field No(s). 1&2Date: 3/25/02

Soil Map Unit(s): _____

Soil Test P: 14ppm

Lab. Method: _____

Sample Depth: 1-3ft.Crop Rotation: Alfalfa (4yrs); Potatoes; WW; Corn (2yrs)Nutrient Application Method(s) Liquid Spray; Broadcast; SidedressPlanner: J. FenwickNotes: Calculations based on year in potatoes (planned year based on corn, winter wheat, alfalfa)

TRANSPORT FACTORS	Factor Weight	PHOSPHORUS LOSS RATING					Weighted Rating Value	
		None (0)	Low (1)	Medium (2)	High (4)	Very/High (8)	Current	Planned
Soil Erosion – tons/ac/yr (RUSLE and/or WEQ)	1.50	< 1 (0)	1 – 3 (1.5)	4 – 6 (3.0)	7 – 15 (6.0)	> 15 (12.0)	1	0
Soil Erosion from Sprinkler Irrigation	0.25	No sprinkler irrigation (0)	Application rate < infiltration rate OR No visible runoff at field borders (0.25)	Application rate = infiltration rate OR Little to no visible runoff at field borders (0.5)	Application rate > infiltration rate OR Visible runoff at field borders (2.0)	Application rate > infiltration rate OR Excessive runoff visible at field borders. Rills and gullies present. (4.0)	0	0
Soil Erosion from Surface Irrigation – tons/ac/yr (SISL)	1.00	< 1 (0)	1 – 3 OR tail water return flow in place (1.0)	4 – 6 (2.0)	7 – 15 (4.0)	> 15 (8.0)	0	0
Runoff Class	1.00 – nonirrigated 0.50 – irrigated	Negligible (0)	Very low or low (0.5 IRR, 1.0 NIRR)	Medium (1.0 IRR, 2.0 NIRR)	High (2.0 IRR, 4.0 NIRR)	Very High (4.0 IRR, 8.0 NIRR)	1	1
Distance to Perennial Surface Waters / Buffer Widths	0.50	> 500 feet OR buffer > 30 ft. wide (or meets NRCS standards) next to surface waters (0)	300 – 500 feet OR buffer 20 - 30 ft. wide next to surface waters (0.5)	200 – 299 feet OR buffer 10 - 19 ft. wide next to surface waters (1.0)	100 – 199 feet AND buffer < 10 ft. wide next to surface waters (2.0)	< 100 feet AND No buffer next to surface waters OR Return flow from surface irrigation occurs with no buffer (4.0)	0	0
Subsurface Drainage	0.50	No tile drains (0)	Tile drains present Soil Test P (Olsen) < 40 ppm (0.5)	Tile drains present Soil Test P (Olsen) 40 - 120 ppm (1.0)	Tile drains present Soil Test P (Olsen) 121 - 170 ppm (2.0)	Tile drains present Soil Test P (Olsen) > 170 ppm (4.0)	0	0
Transport Factors Subtotal (TFS)							2	1

PHOSPHORUS INDEX WORKSHEET – EASTERN OREGON

October 2001

2

Tract 1573 Fields 1 & 2

Tract <u>1573</u> Fields <u>1 & 2</u>		PHOSPHORUS LOSS RATING					Weighted Rating Value	
SOURCE FACTORS	Factor Weight	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)	Current	Planned
Soil Test P – 0-12" ppm (Olsen NaHCO ₃)	1.00	(Soil Test P – 20) x 0.10 (_____ - 20) x 0.10 = _____ Assign 0 points if Soil Test P < 20 ppm Soil Test P					0	0
Commercial P Fertilizer Application Rate	1.00	lbs/ac P ₂ O ₅ x 0.02 <u>181</u> x 0.02 = <u>3.6</u> lbs/ac P ₂ O ₅					4	2
Commercial P Fertilizer Application Method	1.00	None Applied (0)	Placed with planter OR Injected deeper than 2 inches OR Incorporated by plowing (1.0)	Incorporated deeper than 3 inches by disking, chiseling, etc. (2.0)	Incorporated less than 3 inches deep by harrowing, etc. (4.0)	Surface applied – not incorporated prior to irrigation or winter precipitation (8.0)	2	2
Organic P Source Application Rate	1.00	lbs/ac P ₂ O ₅ x 0.02 <u>281</u> x 0.02 = <u>5.62</u> lbs/ac P ₂ O ₅					0	0
Organic P Source Application Method	1.00	None Applied (0)	Injected deeper than 2 inches OR Incorporated immediately (1.0)	Incorporated deeper than 3 inches by disking, chiseling, etc. within 5 days of application (2.0)	Incorporated less than 3 inches deep by harrowing, etc. within 21 days of application (4.0)	Surface applied – not incorporated prior to irrigation or winter precipitation (8.0)	2	2

Total Rating Value TFS x SFS	Site Vulnerability Class
< 30	Low
30 – 100	Medium
100 – 400	High
> 400	Very High

Current		Planned	
Transport Factors Subtotal (TFS)	2		1
Source Factors Subtotal (SFS)	4 6		4 12
Total Rating Value (TFS x SFS)	28 16		48 12
Site Vulnerability Class	LOW		LOW

Eastern Oregon Phosphorus Index Worksheet

Operator _____ Price _____ Farm No. _____ Tract No. 1579 ~~7451~~ Field No. #1 Poors _____

Soil Map Unit(s) Nyssa SL

Soil Test P Results 10 ppm Soil Test X OSU _____ Other _____

Phosphorus Loss Rating (Value)					
Site Characteristic (Weight)	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)
Soil Erosion (1.5)	Not Applicable	< 5 tons/ac	5-10 tons/ac	10-15 tons/ac	>15 tons/ac
Irrigation Erosion (1.5)	Not Applicable	Tailwater recovery or QS<6 for very erodible soils or QS <10 for other soils	QS > 10 for Erosion Resistant Soils	QS > 10 for Erodible Soils	QS . 6 for Very Erodible Soils
Ruñoff Class (0.5)	Negligible	Very low or low	Medium	High	Very High
Soil P Test (1.0)	Not Applicable	Low 0-15 ppm	Medium 16-30 ppm	High 31-45 ppm	Excessive >45 ppm
P. Fertilizer Application Rate (0.75)	None Applied	1-30 P ₂ O ₅ Lbs/ Ac	31-90 P ₂ O ₅ Lbs/Ac	91-150 P ₂ O ₅ Lbs/Ac	> 150 P ₂ O ₅ Lbs/Ac
P. Fertilizer Application Method (0.5)	None Applied	Placed with planted deeper than 2 inches	Incorporated immediately before crop	Incorporated > 3 months before crop or surface applied < 3 months before crop	Surface applied > 3 months before crop
Organic P source application rate (1.0)	None Applied	1-30 P ₂ O ₅ Lbs/ Ac	31-60 P ₂ O ₅ Lbs/Ac	61-90 P ₂ O ₅ Lbs/Ac	> 90 P ₂ O ₅ Lbs/Ac
Organic P source application method (1.0)	None	Injected deeper than 2 inches	Incorporated immediately before crop	Incorporated > 3 months before crop or surface applied < 3 months before crop	Surface applied > 3 months before crop

$$1.5 \times 0 = 0$$

$$1.5 \times 1 = 1.5$$

$$0.5 \times 2 = 1$$

$$1.0 \times 1 = 1$$

$$0.75 \times 8 = 6$$

$$0.5 \times 1 = .5$$

$$1.0 \times 0 = 0$$

$$1.0 \times 0 = 0$$

Total of Weighted Rating Values	Site Vulnerability
< 8	Low
8-14	Medium
15-32	High
> 32	Very High

Total of Weighted Rating 10.0

Site Vulnerability Medium

Eastern Oregon Phosphorus Index Worksheet

Operator _____ Price _____ Farm No. _____ Tract No. 1451/ Field No. #1.

Soil Map Unit(s) Nyssa SL

1444 #7

Soil Test P Results 13 ppm Soil Test X OSU _____ Other _____

Phosphorus Loss Rating (Value)					
Site Characteristic (Weight)	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)
Soil Erosion (1.5)	Not Applicable	< 5 tons/ac	5-10 tons/ac	10-15 tons/ac	>15 tons/ac
Irrigation Erosion (1.5)	Not Applicable	Tailwater recovery or QS<6 for very erodible soils or QS <10 for other soils	QS > 10 for Erosion Resistant Soils	QS > 10 for Erodible Soils	QS . 6 for Very Erodible Soils
Runoff Class (0.5)	Negligible	Very low or low	Medium	High	Very High
Soil P Test (1.0)	Not Applicable	Low 0-15 ppm	Medium 16-30 ppm	High 31-45 ppm	Excessive >45 ppm
P. Fertilizer Application Rate (0.75)	None Applied	1-30 P ₂ O ₅ Lbs/ Ac	31-90 P ₂ O ₅ Lbs/Ac	91-150 P ₂ O ₅ Lbs/Ac	> 150 P ₂ O ₅ Lbs/Ac
P. Fertilizer Application Method (0.5)	None Applied	Placed with planted deeper than 2 inches	Incorporated immediately before crop	Incorporated > 3 months before crop or surface applied < 3 months before crop	Surface applied > 3 months before crop
Organic P source application rate (1.0)	None Applied	1-30 P ₂ O ₅ Lbs/ Ac	31-60 P ₂ O ₅ Lbs/Ac	61-90 P ₂ O ₅ Lbs/Ac	> 90 P ₂ O ₅ Lbs/Ac
Organic P source application method (1.0)	None	Injected deeper than 2 inches	Incorporated immediately before crop	Incorporated > 3 months before crop or surface applied < 3 months before crop	Surface applied > 3 months before crop

$$1.5 \times \underline{0} = \underline{0}$$

$$1.5 \times \underline{1} = \underline{1.5}$$

$$0.5 \times \underline{2} = \underline{1}$$

$$1.0 \times \underline{1} = \underline{1}$$

$$0.75 \times \underline{2} = \underline{1.5}$$

$$0.5 \times \underline{1} = \underline{.5}$$

$$1.0 \times \underline{0} = \underline{0}$$

$$1.0 \times \underline{0} = \underline{0}$$

Total of Weighted Rating Values	Site Vulnerability
< 8	Low
8-14	Medium
15-32	High
> 32	Very High

Total of Weighted Rating 5.5

Site Vulnerability LOW

Eastern Oregon Phosphorus Index Worksheet

Operator _____ Price _____ Farm No. _____ Tract No. 1451 Field No. #1 Home #2

Soil Map Unit(s) Nyssa SL

Soil Test P Results 9 ppm Soil Test X OSU _____ Other _____

Phosphorus Loss Rating (Value)					
Site Characteristic (Weight)	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)
Soil Erosion (1.5)	Not Applicable	< 5 tons/ac	5-10 tons/ac	10-15 tons/ac	>15 tons/ac
Irrigation Erosion (1.5)	Not Applicable	Tailwater recovery or QS<6 for very erodible soils or QS <10 for other soils	QS > 10 for Erosion Resistant Soils	QS > 10 for Erodible Soils	QS . 6 for Very Erodible Soils
Runoff Class (0.5)	Negligible	Very low or low	Medium	High	Very High
Soil P Test (1.0)	Not Applicable	Low 0-15 ppm	Medium 16-30 ppm	High 31-45 ppm	Excessive >45 ppm
P. Fertilizer Application Rate (0.75)	None Applied	1-30 P ₂ O ₅ Lbs/ Ac	31-90 P ₂ O ₅ Lbs/Ac	91-150 P ₂ O ₅ Lbs/Ac	> 150 P ₂ O ₅ Lbs/Ac
P. Fertilizer Application Method (0.5)	None Applied	Placed with planted deeper than 2 inches	Incorporated immediately before crop	Incorporated > 3 months before crop or surface applied < 3 months before crop	Surface applied > 3 months before crop
Organic P source application rate (1.0)	None Applied	1-30 P ₂ O ₅ Lbs/ Ac	31-60 P ₂ O ₅ Lbs/Ac	61-90 P ₂ O ₅ Lbs/Ac	> 90 P ₂ O ₅ Lbs/Ac
Organic P source application method (1.0)	None	Injected deeper than 2 inches	Incorporated immediately before crop	Incorporated > 3 months before crop or surface applied < 3 months before crop	Surface applied > 3 months before crop

$$1.5 \times \underline{0} = \underline{0}$$

$$1.5 \times \underline{1} = \underline{1.5}$$

$$0.5 \times \underline{2} = \underline{1}$$

$$1.0 \times \underline{1} = \underline{1}$$

$$0.75 \times \underline{8} = \underline{6}$$

$$0.5 \times \underline{1} = \underline{.5}$$

$$1.0 \times \underline{0} = \underline{0}$$

$$1.0 \times \underline{0} = \underline{0}$$

Total of Weighted Rating Values	Site Vulnerability
< 8	Low
8-14	Medium
15-32	High
> 32	Very High

Total of Weighted Rating 10.0

Site Vulnerability Medium

Eastern Oregon Phosphorus Index Worksheet

#5

Operator _____ Price _____ Farm No. _____ Tract No. 3201 Field No. Okano

Soil Map Unit(s) Nyssa SL

Soil Test P Results 32 ppm Soil Test X OSU _____ Other _____

Phosphorus Loss Rating (Value)					
Site Characteristic (Weight)	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)
Soil Erosion (1.5)	Not Applicable	< 5 tons/ac	5-10 tons/ac	10-15 tons/ac	>15 tons/ac
Irrigation Erosion (1.5)	Not Applicable	Tailwater recovery or QS<6 for very erodible soils or QS <10 for other soils	QS > 10 for Erosion Resistant Soils	QS > 10 for Erodible Soils	QS . 6 for Very Erodible Soils
Runoff Class (0.5)	Negligible	Very low or low	Medium	High	Very High
Soil P Test (1.0)	Not Applicable	Low 0-15 ppm	Medium 16-30 ppm	High 31-45 ppm	Excessive >45 ppm
P. Fertilizer Application Rate (0.75)	None Applied	1-30 P ₂ O ₅ Lbs/ Ac	31-90 P ₂ O ₅ Lbs/Ac	91-150 P ₂ O ₅ Lbs/Ac	> 150 P ₂ O ₅ Lbs/Ac
P. Fertilizer Application Method (0.5)	None Applied	Placed with planted deeper than 2 inches	Incorporated immediately before crop	Incorporated > 3 months before crop or surface applied < 3 months before crop	Surface applied > 3 months before crop
Organic P source application rate (1.0)	None Applied	1-30 P ₂ O ₅ Lbs/ Ac	31-60 P ₂ O ₅ Lbs/Ac	61-90 P ₂ O ₅ Lbs/Ac	> 90 P ₂ O ₅ Lbs/Ac
Organic P source application method (1.0)	None	Injected deeper than 2 inches	Incorporated immediately before crop	Incorporated > 3 months before crop or surface applied < 3 months before crop	Surface applied > 3 months before crop

$$1.5 \times \underline{0} = \underline{0}$$

$$1.5 \times \underline{1} = \underline{1.5}$$

$$0.5 \times \underline{2} = \underline{1}$$

$$1.0 \times \underline{4} = \underline{4}$$

$$0.75 \times \underline{0} = \underline{0}$$

$$0.5 \times \underline{1} = \underline{.5}$$

$$1.0 \times \underline{0} = \underline{0}$$

$$1.0 \times \underline{0} = \underline{0}$$

Total of Weighted Rating Values	Site Vulnerability
< 8	Low
8-14	Medium
15-32	High
> 32	Very High

Total of Weighted Rating 7.0

Site Vulnerability LOW

Agronomy Technical Note 26 - Appendix 4
Soils Data for the Eastern Oregon Phosphorus Index

SOIL SURVEY AREA NO.	SOIL SURVEY AREA NAME	MAP UNIT SYMBOL	COMPONENT NAME	COMP. PCT.	HYD. GROUP	SLOPE LOW (%)	SLOPE HIGH (%)	P INDEX RUNOFF CLASS	SURFACE TEXTURE	Kw	Kf
OR642	Malheur	1A	AHTANUM	85	D	0	2	medium	SIL	0.55	0.55
OR642	Malheur	3A	BULLY	85	B	0	2	low	SIL	0.43	0.43
OR642	Malheur	4A	CENCOVE	85	B	0	2	low	FSL	0.20	0.20
OR642	Malheur	4B	CENCOVE	85	B	2	5	low	FSL	0.20	0.20
OR642	Malheur	4C	CENCOVE	85	B	5	8	medium	FSL	0.20	0.20
OR642	Malheur	4D	CENCOVE	85	B	8	12	medium	FSL	0.20	0.20
OR642	Malheur	5A	CHILCOTT	85	D	0	2	medium	SIL	0.49	0.49
OR642	Malheur	5B	CHILCOTT	85	D	2	5	medium	SIL	0.49	0.49
OR642	Malheur	5C	CHILCOTT	85	D	5	12	high	SIL	0.49	0.49
OR642	Malheur	7A	FALK VARIANT	85	B	0	2	low	FSL	0.24	0.24
OR642	Malheur	8A	FELTHAM	85	B	0	2	low	LFS	0.20	0.20
OR642	Malheur	8B	FELTHAM	85	B	2	5	low	LFS	0.20	0.20
OR642	Malheur	8C	FELTHAM	85	B	8	12	medium	LFS	0.20	0.20
OR642	Malheur	9B	FELTHAM	85	B	2	5	low	SL	0.28	0.28
OR642	Malheur	9C	FELTHAM	85	B	5	8	medium	SL	0.28	0.28
OR642	Malheur	9D	FELTHAM	85	B	8	12	medium	SL	0.28	0.28
OR642	Malheur	10A	FELTHAM VARIANT	85	A	0	2	negligible	LFS	0.20	0.20
OR642	Malheur	11A	FROHMAN	85	C	0	2	medium	SIL	0.49	0.49
OR642	Malheur	11B	FROHMAN	85	C	2	5	medium	SIL	0.49	0.49
OR642	Malheur	11C	FROHMAN	85	C	5	8	high	SIL	0.49	0.49
OR642	Malheur	11D	FROHMAN	85	C	8	12	high	SIL	0.49	0.49
OR642	Malheur	11E	FROHMAN	85	C	12	20	high	SIL	0.49	0.49
OR642	Malheur	11F	FROHMAN	85	C	20	40	very high	GR-SIL	0.37	0.49
OR642	Malheur	12A	GARBUTT	85	B	0	2	low	SIL	0.49	0.49
OR642	Malheur	12B	GARBUTT	85	B	2	5	low	SIL	0.49	0.49
OR642	Malheur	12C	GARBUTT	85	B	5	8	medium	SIL	0.49	0.49
OR642	Malheur	12D	GARBUTT	85	B	8	12	medium	SIL	0.49	0.49
OR642	Malheur	13A	GREENLEAF	85	B	0	2	low	SIL	0.49	0.49
OR642	Malheur	13B	GREENLEAF	85	B	2	5	low	SIL	0.49	0.49
OR642	Malheur	14A	HARANA	85	B	0	2	low	SIL	0.32	0.32
OR642	Malheur	15A	HARANA	85	B	0	2	low	SICL	0.32	0.32
OR642	Malheur	15B	HARANA	85	B	2	5	low	SICL	0.32	0.32
OR642	Malheur	16A	HARANA	85	B	0	2	low	SICL	0.32	0.32
OR642	Malheur	17A	KIESEL	85	C	0	2	medium	SIL	0.43	0.43
OR642	Malheur	17B	KIESEL	85	C	2	5	medium	SIL	0.43	0.43
OR642	Malheur	18A	KIMBERLY	85	B	0	2	low	FSL	0.32	0.32
OR642	Malheur	19A	MCLOUGHLIN	85	B	0	2	low	SIL	0.55	0.55
OR642	Malheur	19B	MCLOUGHLIN	85	B	2	5	low	SIL	0.55	0.55
OR642	Malheur	19C	MCLOUGHLIN	85	B	5	8	medium	SIL	0.55	0.55
OR642	Malheur	20A	NOTUS	60	C	0	2	medium	COSL	0.28	0.28
OR642	Malheur	20A	FALK VARIANT	40	B	0	2	low	FSL	0.24	0.24
OR642	Malheur	21A	NYSSA	85	C	0	2	medium	SIL	0.37	0.37
OR642	Malheur	21B	NYSSA	85	C	2	5	medium	SIL	0.37	0.37
OR642	Malheur	21C	NYSSA	85	C	5	8	high	SIL	0.37	0.37
OR642	Malheur	21D	NYSSA	85	C	8	12	high	SIL	0.37	0.37
OR642	Malheur	21E	NYSSA	85	C	12	20	high	SIL	0.37	0.37
OR642	Malheur	22A	NYSSA	85	C	2	5	medium	SIL	0.37	0.37
OR642	Malheur	22C	NYSSA	85	C	5	8	high	SIL	0.37	0.37
OR642	Malheur	22D	NYSSA	85	C	8	12	high	SIL	0.37	0.37
OR642	Malheur	22E	NYSSA	85	C	12	20	high	SIL	0.37	0.37
OR642	Malheur	23A	NYSSA	50	C	0	2	medium	SIL	0.37	0.37

Data is from the NASIS database as of 7/2001

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Soils Data for the Eastern Oregon Phosphorus Index

SOIL SURVEY AREA NO.	SOIL SURVEY AREA NAME	MAP UNIT SYMBOL	COMPONENT NAME	COMP. PCT.	HYD. GROUP	SLOPE LOW (%)	SLOPE HIGH (%)	P INDEX RUNOFF CLASS	SURFACE TEXTURE	Kw	Kf
OR642	Malheur	23A	MALHEUR	40	C	0	2	medium	SIL	0.49	0.49
OR642	Malheur	23B	NYSSA	45	C	2	5	medium	SIL	0.37	0.37
OR642	Malheur	23B	MALHEUR	40	C	2	5	medium	SIL	0.49	0.49
OR642	Malheur	23C	NYSSA	45	C	5	8	high	SIL	0.37	0.37
OR642	Malheur	23C	MALHEUR	40	C	5	8	high	SIL	0.49	0.49
OR642	Malheur	24A	OTOOLE	85	C	0	2	medium	SIL	0.43	0.43
OR642	Malheur	25A	OWYHEE	85	B	0	2	low	SIL	0.49	0.49
OR642	Malheur	25B	OWYHEE	85	B	2	5	low	SIL	0.49	0.49
OR642	Malheur	25C	OWYHEE	85	B	5	8	medium	SIL	0.49	0.49
OR642	Malheur	25D	OWYHEE	85	B	8	12	medium	SIL	0.49	0.49
OR642	Malheur	25E	OWYHEE	85	B	12	20	medium	SIL	0.49	0.49
OR642	Malheur	26A	PODEN	85	B	0	2	low	SIL	0.28	0.28
OR642	Malheur	28A	QUINCY	85	A	0	2	negligible	LFS	0.32	0.32
OR642	Malheur	28B	QUINCY	85	A	2	5	negligible	LFS	0.32	0.32
OR642	Malheur	28C	QUINCY	85	A	8	12	very low	FS	0.17	0.17
OR642	Malheur	30A	SAGEHILL	85	B	0	2	low	FSL	0.37	0.37
OR642	Malheur	30B	SAGEHILL	85	B	2	5	low	FSL	0.37	0.37
OR642	Malheur	30C	SAGEHILL	85	B	5	8	medium	FSL	0.37	0.37
OR642	Malheur	31A	STANFIELD	85	C	0	2	medium	SIL	0.55	0.55
OR642	Malheur	32A	TRUESDALE	85	C	0	2	medium	FSL	0.24	0.24
OR642	Malheur	32B	TRUESDALE	85	C	2	5	medium	FSL	0.24	0.24
OR642	Malheur	32C	TRUESDALE	85	C	5	8	high	FSL	0.24	0.24
OR642	Malheur	32D	TRUESDALE	85	C	8	12	high	FSL	0.24	0.24
OR642	Malheur	33A	TURBYFILL	85	B	0	2	low	FSL	0.28	0.28
OR642	Malheur	33B	TURBYFILL	85	B	2	5	low	FSL	0.28	0.28
OR642	Malheur	33C	TURBYFILL	85	B	5	8	medium	FSL	0.28	0.28
OR642	Malheur	33D	TURBYFILL	85	B	8	12	medium	FSL	0.28	0.28
OR642	Malheur	35A	VIRTUE	85	C	0	2	medium	SIL	0.32	0.32
OR642	Malheur	35B	VIRTUE	85	C	2	5	medium	SIL	0.32	0.32
OR642	Malheur	35C	VIRTUE	85	C	5	8	high	SIL	0.32	0.32
OR642	Malheur	44A	WINGDALE	85	D	0	2	medium	SIL	0.28	0.28
OR642	Malheur	45A	JETT	85	B	0	2	low	SIL	0.24	0.24
OR642	Malheur	52A	WINGVILLE	85	D	0	2	medium	SIL	0.28	0.28
OR642	Malheur	53A	JUNTURA	85	D	0	2	medium	SIL	0.32	0.32
OR642	Malheur	62A	VEAZIE	45	B	0	3	low	GR-L	0.28	0.37
OR642	Malheur	68A	NEWELL	85	B	0	3	low	SIL	0.37	0.37
OR642	Malheur	75A	HOOPAL	85	D	0	2	medium	SIL	0.43	0.43
OR642	Malheur	80A	POWVAL	85	B	0	3	low	SIL	0.37	0.37
OR642	Malheur	81A	WELCH	85	D	0	2	medium	SIL	0.32	0.32
OR642	Malheur	84A	JOEVAR	85	B	0	3	low	SIL	0.37	0.37
OR642	Malheur	87A	LAWEN	85	B	0	3	low	FSL	0.17	0.17
OR642	Malheur	132A	TURBYFILL	85	B	0	2	low	FSL	0.28	0.28
OR642	Malheur	132B	TURBYFILL	85	B	2	5	low	FSL	0.28	0.28
OR642	Malheur	132BC	TURBYFILL	85	B	5	8	medium	FSL	0.28	0.28
OR642	Malheur	200A	TUCKER	85	C	0	2	medium	SIL	0.43	0.43
OR642	Malheur	201A	ZOLA	85	C	0	2	medium	L	0.32	0.32
OR642	Malheur	205A	TUCKER	45	C	0	2	medium	SIL	0.43	0.43
OR642	Malheur	205A	ZOLA	40	C	0	2	medium	SIL	0.37	0.37
OR642	Malheur	208A	WELCH	50	D	0	2	medium	SIL	0.32	0.32
OR642	Malheur	208A	ZOLA	40	C	0	2	medium	L	0.32	0.32
OR642	Malheur	209A	WITHERS	85	C	0	2	medium	SICL	0.37	0.37

Data is from the NASIS database as of 7/2001

Agronomy Technical Note 26 - Appendix 4
Soils Data for the Eastern Oregon Phosphorus Index

SOIL SURVEY AREA NO.	SOIL SURVEY AREA NAME	MAP UNIT SYMBOL	COMPONENT NAME	COMP. PCT.	HYD. GROUP	SLOPE LOW (%)	SLOPE HIGH (%)	P INDEX RUNOFF CLASS	SURFACE TEXTURE	Kw	Kf
OR642	Malheur	230B	MORFITT	85	B	2	5	low	L	0.37	0.37
OR642	Malheur	230C	MORFITT	85	B	5	12	medium	L	0.37	0.37
OR642	Malheur	230E	MORFITT	85	B	12	20	medium	L	0.37	0.37
OR642	Malheur	260A	VICKERY	85	C	0	2	medium	SIL	0.49	0.49
OR642	Malheur	260B	VICKERY	85	C	2	5	medium	SIL	0.49	0.49
OR642	Malheur	260C	VICKERY	85	C	5	8	high	SIL	0.49	0.49
OR642	Malheur	260D	VICKERY	85	C	8	12	high	SIL	0.49	0.49
OR642	Malheur	455B	BROWNSCOMBE	85	C	2	8	medium	SIL	0.32	0.32
OR642	Malheur	518C	VIRTUE	60	C	1	10	high	SIL	0.32	0.32
OR642	Malheur	560BC	VIRTUE	85	C	1	10	high	SIL	0.32	0.32
OR642	Malheur	610B	MADRAS	85	B	2	8	low	CB-L	0.20	0.32
OR642	Malheur	615B	ENCINA	85	B	2	5	low	SIL	0.32	0.32
OR642	Malheur	615C	ENCINA	85	B	5	12	medium	SIL	0.32	0.32
OR642	Malheur	710B	DAVEY	85	B	0	8	low	SL	0.20	0.20
OR642	Malheur	770C	GOLDRUN	55	A	2	12	very low	LS	0.17	0.17
OR642	Malheur	785B	MCCONNEL	85	B	3	8	medium	GR-FSL	0.32	0.64

WATER, WASTE, AND NUTRIENT COMPUTATIONS

Number of Animals

	Animals	Avg. Weight lb	Total 1000# Animal Units	Confinement Period (Days)
1	200	700	140	365
2	300	700	210	365
Total	500	1400	350	

Solid Storage (Feedlot pen size)

Pens 1-7	11 acres
Pens 8-9	2 acres

Evaporation Ponds for storm runoff

Pond 1
Pond 2

Total weight and volume of manure produced during confinement

*Estimated values from NRCS Agricultural Waste Management Handbook)

Manure Produced

	lb/day/Animal Unit	Total Weight ton (as excreted)	Total Weight ton (at application)
1	58.2	1487	446
2	58.2	2231	669
Total		3718	1115

	Cu ft/day/Animal Unit	Total Volume Cu ft
1	0.93	47523
2	0.93	71285
Total		118808

Total Nutrient Production

*Estimated values from NRCS Agricultural Waste Management Handbook

	Nutrients Produced lb/day	Total Nutrients Produced lb
Nitrogen	0.30	38325
Phosphorus	0.10	12775
Potassium	0.20	25550

Nutrient Losses

*Estimate from NRCS ORAWM Program and OSU Extension Publication EC 1094

Loss	Remaining N	Remaining P	Remaining K
Storage	50%	70%	60%
Application	70%	100%	100%
Denitrification	95%	100%	100%

Loss	Remaining N lbs	Remaining P lbs	Remaining K lbs	
Storage	19163	8943	15330	
Application	13414	8943	15330	
Denitrification	12743	8943	15330	Available for crop production

Nutrients Utilized

*Estimate from NRCS ORAWM Program

Crop	Acres	Yield Units per acre	Yield	N Utilized (lbs/acre)	P Utilized (lbs/acre)	K Utilized (lbs/acre)
Corn, grain	45.5	ton	4.44	143	57	43
Wheat, grain	40.5	bushel	130	130	69	31
Hay	213.2	ton	7.5	338	76	338
Pasture	39	ton	5.1	173	64	211
Total	329.2					

Volume and Nutrients Exported

0% of manure is exported to neighboring farmers

Exported tons	N exported lbs	P exported lbs	K exported lbs
0	0	0	0

Nutrients remaining for crop production on farm **after** export

Remaining N lbs	Remaining P lbs	Remaining K lbs
12743	8943	15330

Crop Utilization

Crop	Acres needed	lbs of N applied	lbs of P applied	lbs of K applied
Corn, grain	45.5	6506.5	2593.5	1956.5
Wheat, grain	40.5	5265	2794.5	1255.5
Hay	213.2	72061.6	16203.2	72061.6
Pasture	39	5190	1920	6330
Total	329.2	89023.1	23511.2	81603.6

Gross Nutrient Balance	Acres	lbs of N	lbs of P	lbs of K
	0	-76280	-14569	-66274

Climatic and Hydrologic Data

Climatic Station- Malheur Branch Experiment Station

25 year- 24 hour storm rainfall = 1.8 inches

Month	Average Monthly in Inche		% Lot Runoff Factors	
	Precipitation	Evaporation	Concrete*	Unpaved
January	1.26	0.74	100	0
February	0.98	1.09	100	0
March	0.92	2.06	100	0
April	0.70	3.79	100	0
May	0.98	5.12	100	0
June	0.83	6.08	100	0
July	0.19	7.62	100	0
August	0.38	6.51	100	0
September	0.49	4.03	100	0
October	0.71	1.98	100	0
November	1.21	0.50	100	0
December	1.32	0.71	100	0
Annual	9.97	40.23		

*No concrete lot runoff contributing to the manure system.

ANIMAL WASTE MANAGEMENT WORKSHEET

Version 1.4

10/18/02
STATE: OREGON

CLIENT: Joel & Wilda Price

ASSISTED BY: Jennifer Fenwick

CHECKED BY:

ANIMAL WASTE MANAGEMENT SYSTEM INVENTORY

Type of Animal	Number of Animals	Average Weight (lbs.)	Animal Units (1,000 lb.)	Nutrient Production						Annual	
				(lbs./day/1000 lb. Animal Unit)			(lbs./day)			Manure CF/D/ANU	Days Confined
				N	P	K	N	P	K		
BEEF COW	40	1,200	48.0	0.33	0.12	0.26	15.84	5.76	12.48	1.00	0
CALVES (1-12 Months)	20	700	14.0	0.31	0.04	0.24	4.34	0.56	3.36	1.30	242
HEIFERS (12-24 Months)	20	700	14.0	0.31	0.04	0.24	4.34	0.56	3.36	1.30	242
YEARLING	20	700	14.0	0.30	0.10	0.20	4.20	1.40	2.80	0.93	212
HEIFERS (12-24 Months)	181	1,000	181.0	0.31	0.04	0.24	56.11	7.24	43.44	1.30	365
FEEDER (High Energy Diet)	73	600	43.8	0.30	0.09	0.21	13.14	4.12	9.20	0.82	365
HEIFERS (12-24 Months)	72	1,600	43.2	0.31	0.04	0.24	13.39	1.73	10.37	1.30	365
Totals	426	1,375	90.0	0.32	0.09	0.24	10.45	3.46	8.14	1.1	

GRAZING PERIOD

Type of Animal	Percent of Month and Number of Animals Grazing											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
BEEF COW	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
CALVES (1-12 Months)	40	40	40	40	40	40	40	40	40	40	40	40
HEIFERS (12-24 Months)	20	20	20	20	20	20	20	20	20	20	20	20
YEARLING	20	20	20	20	20	20	20	20	20	20	20	20
HEIFERS (12-24 Months)	20	20	20	20	20	20	20	20	20	20	20	20
HEIFERS (12-24 Months)	181	181	181	181	181	181	181	181	181	181	181	181
FEEDER (High Energy Diet)	73	73	73	73	73	73	73	73	73	73	73	73
HEIFERS (12-24 Months)	72	72	72	72	72	72	72	72	72	72	72	72
Totals	48	48	48	48	48	48	48	48	48	48	48	48
Total ANU's Available	48	48	48	48	48	48	48	48	48	48	48	48
Total ANU's Needed	48	48	48	48	48	48	48	48	48	48	48	48
Total ANU's Available	48	48	48	48	48	48	48	48	48	48	48	48

ANIMAL WASTE MANAGEMENT SYSTEM INVENTORY

AREAS CONTRIBUTING RUNOFF TO LIQUID STORAGE FACILITY

[illegible]

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
Artificial Washwater				0	0.0
Equipment Wash				0	0.0
Flushwater				0	0.0
Miscellaneous				0	0.0
Total				0	0.0

Field Number	Acres	Crop	Condition	Yield Units	Target Yield	Nutrients Utilized in Pounds per Acre		
						Nitrogen N	Phosphorus P ₂ O ₅	Potassium K ₂ O
1451-2/1444-6	10.6	Grass/Legume Hay/Pasture	50% DM	Ton	5.10	173	64	211
1444-3	7.8	Grass/Legume Hay/Pasture	50% DM	Ton	5.10	173	64	211
1444-4	3.0	Grass/Legume Hay/Pasture	50% DM	Ton	5.10	173	64	211
1579-2,3	8.5	Grass/Legume Hay/Pasture	50% DM	Ton	5.10	173	64	211
1573-1/1579-1	45.5	Corn, Grain	▼	Ton	4.44	143	57	43
73-1/1579-5/320	40.5	Wheat, Grain Soft White	Winter	Bu	130.00	130	69	31
1/451/1573/1579	23.2	Alfalfa Hay	▼	Ton	7.50	338	76	338
1573-2/1444-5,8	53.4	Potatoes	▼	Ton	15.88	105	44	199
OT Farm	0.0	▼	▼	▼	▼	▼	▼	▼

CLIENT:	Joel & Vikki Price
ASSISTED BY:	Jennifer Penwick
CHECKED BY:	

ANIMAL WASTE MANAGEMENT SYSTEM INVENTORY

BEDDING VOLUME

Type of Animal	Type of Bedding Facility	Bedding Material	Unit Weight Lbs/Cu	Amount	Volume	Total	Total
				Lbs/Day/AU	Cu/Day/AU	Volume Cu/Day	Volume Lbs/Day
BREED COW							
CALVES (1-12 Months)							
HEIFERS (12-24 Months)							
YEARLING							
HEIFERS (12-24 Months)							
FEDDER/HIGH Energy Diet							
HEIFERS (12-24 Months)							

SOLIDS SEPARATION FACTOR

[illegible]

ANIMAL WASTE MANAGEMENT WORKSHEET

Version 1.4

10/18/02
STATE: OREGON

CHECKED BY:

ANIMAL WASTE MANAGEMENT SYSTEM PRODUCTION

MONTHLY VOLUMES

Month	Runoff in Cubic Feet				Facility Water Use Cubic Feet	Manure		Bedding Pounds	Solids Separated		Solids in Liquids		Total	
	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		Pounds	Cubic Feet	Pounds	Cubic Feet	Solids Cubic Feet	Total Liquids Cubic Feet
October	0	0	0	0	0	10,630	2,539	0	0	10,967	383,848	714	24,976	10,967
November	0	0	0	0	0	10,287	2,457	0	0	10,613	371,466	691	24,170	10,613
December	0	0	0	0	0	10,630	2,539	0	0	10,967	383,848	714	24,976	10,967
January	0	0	0	0	0	10,630	2,539	0	0	10,967	383,848	714	24,976	10,967
February	0	0	0	0	0	9,601	2,293	0	0	9,906	346,701	645	22,559	9,906
March	0	0	0	0	0	10,630	2,539	0	0	10,967	383,848	714	24,976	10,967
April	0	0	0	0	0	10,287	2,457	0	0	10,613	371,466	691	24,170	10,613
May	0	0	0	0	0	10,630	2,539	0	0	10,967	383,848	714	24,976	10,967
June	0	0	0	0	0	10,287	2,457	0	0	10,613	371,466	691	24,170	10,613
July	0	0	0	0	0	10,630	2,539	0	0	10,967	383,848	714	24,976	10,967
August	0	0	0	0	0	10,630	2,539	0	0	10,967	383,848	714	24,976	10,967
September	0	0	0	0	0	10,287	2,457	0	0	10,613	371,466	691	24,170	10,613
Annual	0	0	0	0	0	125,157	28,894	0	0	122,659	4,203,077	8,402	304,068	122,659

DAILY NUTRIENT PRODUCTION

Type of Animal	Pounds/Day of Nutrients from LIQUIDS				Pounds/Day of Nutrients from SOLIDS				Pounds/Day of Nutrients from GRAZING			
	N	P ₂ O ₅	K ₂ O		N	P ₂ O ₅	K ₂ O		N	P ₂ O ₅	K ₂ O	
BEEF COW	0.00	0.00	0.00		15.84	13.20	15.04		15.84	13.20	15.04	
CALVES (1-12 Months)	0.00	0.00	0.00		4.34	1.28	4.05		4.34	1.28	4.05	
HEIFERS (12-24 Months)	0.00	0.00	0.00		4.34	1.28	4.05		4.34	1.28	4.05	
YEARLING	0.00	0.00	0.00		4.20	3.21	3.37		4.20	3.21	3.37	
HEIFERS (12-24 Months)	0.00	0.00	0.00		56.11	16.59	52.35		56.11	16.59	52.35	
FEEDER(High Energy Diet)	3.29	2.36	2.77		9.86	7.07	8.31		13.14	9.43	11.08	
HEIFERS (12-24 Months)	3.35	0.99	3.12		10.04	2.97	9.37		13.39	3.96	12.49	
	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	
	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	
	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	

CLIENT: Joel & Vicki Price
ASSISTED BY: Jennifer Fenwick

CHECKED BY:

ANIMAL WASTE MANAGEMENT SYSTEM PRODUCTION

MONTHLY NUTRIENT PRODUCTION

Month	Pounds of Nutrients from LIQUIDS			Pounds of Nutrients from SOLIDS			Pounds of Nutrients from GRAZING			Pounds of Nutrients from OFF-FARM			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	N	P ₂ O ₅	K ₂ O
October	206	104	183	2,756	1,005	2,526	491	409	466	0	0	0	3,452	1,517	3,175
November	199	100	177	2,667	972	2,445	475	396	451	0	0	0	3,341	1,468	3,073
December	206	104	183	2,756	1,005	2,526	491	409	466	0	0	0	3,452	1,517	3,175
January	206	104	183	2,756	1,005	2,526	491	409	466	0	0	0	3,452	1,517	3,175
February	186	94	165	2,489	907	2,282	444	369	421	0	0	0	3,118	1,371	2,868
March	206	104	183	2,756	1,005	2,526	491	409	466	0	0	0	3,452	1,517	3,175
April	199	100	177	2,667	972	2,445	475	396	451	0	0	0	3,341	1,468	3,073
May	206	104	183	2,756	1,005	2,526	491	409	466	0	0	0	3,452	1,517	3,175
June	199	100	177	2,667	972	2,445	475	396	451	0	0	0	3,341	1,468	3,073
July	206	104	183	2,756	1,005	2,526	491	409	466	0	0	0	3,452	1,517	3,175
August	206	104	183	2,756	1,005	2,526	491	409	466	0	0	0	3,452	1,517	3,175
September	199	100	177	2,667	972	2,445	475	396	451	0	0	0	3,341	1,468	3,073
Annual	2,421	1,222	2,151	30,474	10,944	27,992	6,424	5,307	6,005	1,328	393	1,239	40,647	17,866	37,368

ANIMAL WASTE MANAGEMENT SYSTEM APPLICATION

MANAGEMENT CRITERIA FOR TRACTOR SPREADER APPLICATION OF SOLIDS

To apply 122,659 cubic feet of solids generated from the operation it will take approximately 616 trips annually. Based on applying NITROGEN, N at agronomic rate use the application depths, travel lengths, and loads per acre listed below for each crop.

Field Number	Acres	Crop	Tractor Spreader Capacity		Spread Width Feet	NITROGEN, N Concentration in Storage Facility		Pounds of Nutrients to be Applied	Number of Applications Needed to meet Crop Uptake	Inches of Solids to Apply	Travel Length per Load Needed in Feet	Loads per Acre
			Bushels	CF		PPM	Lbs/1000CF					
1-2/1444	10.6	Grass/Legume Hay/Pasture	160	199	15	1,991	12.42	173	1.00	0.6	273	11
1444-3	7.8	Grass/Legume Hay/Pasture	160	199	15	1,991	12.42	173	1.00	0.6	273	11
1444-4	3	Grass/Legume Hay/Pasture	160	199	15	1,991	12.42	173	1.00	0.6	273	11
1579-2-3	8.5	Grass/Legume Hay/Pasture	160	199	15	1,991	12.42	173	1.00	0.6	273	11
573-1/1579	45.5	Corn, Grain	160	199	15	1,991	12.42	143	1.00	0.5	330	9
1/1579-5/3	40.5	Wheat, Grain Soft White	160	199	15	1,991	12.42	130	1.00	0.4	363	8
51/1573/15	213.2	Alfalfa Hay	160	199	15	1,991	12.42	338	1.00	1.1	140	21
73-2/1444	53.4	Potatoes	160	199	15	1,991	12.42	105	1.00	0.4	451	6
0												

MANAGEMENT CRITERIA FOR BIG GUN SPRINKLER APPLICATION OF LIQUIDS

To apply 125,782 gallons of liquids generated from the operation it will take approximately 7 hours of pumping annually. Based on applying NITROGEN, N at agronomic rate use the application depths, set times, and travel rates listed below for each crop.

Field Number	Acres	Crop	Sprinkler Flowrate GPM	Wetted Diameter Feet	Portion of Wetted Diameter Receiving Liquids	NITROGEN, N Concentration in Storage Facility		Pounds of Nutrients to be Applied	Number of Applications Needed to meet Crop Uptake	Inches of Liquids to Apply	Application Rate in Inches/Hour	Set Time Needed in Hours	Travel Rate Needed in Feet/Minute
						PPM	Lbs/1000Gal						
151-2/1444	10.6	Grass/Legume Hay/Pasture	300	250	3/4 Circle	1,499	12.51	173	1.00	0.72	0.97	1.23	2.67
1444-3	7.8	Grass/Legume Hay/Pasture	300	250	3/4 Circle	1,499	12.51	173	1.00	0.72	0.97	1.23	2.67
1444-4	3	Grass/Legume Hay/Pasture	300	250	3/4 Circle	1,499	12.51	173	1.00	0.72	0.97	1.23	2.67
1579-2-3	8.5	Grass/Legume Hay/Pasture	300	250	3/4 Circle	1,499	12.51	173	1.00	0.72	0.97	1.23	2.67
573-1/1579	45.5	Corn, Grain	300	250	3/4 Circle	1,499	12.51	143	1.00	0.60	0.97	1.01	3.23
1/1579-5/3	40.5	Wheat, Grain Soft White	300	250	3/4 Circle	1,499	12.51	130	1.00	0.54	0.97	0.92	3.55
51/1573/15	213.2	Alfalfa Hay	300	250	3/4 Circle	1,499	12.51	338	1.00	1.41	0.97	2.39	1.57
73-2/1444	53.4	Potatoes	300	250	3/4 Circle	1,499	12.51	105	1.00	0.44	0.97	0.74	4.40
0													

ANIMAL WASTE MANAGEMENT WORKSHEET

CHECKED BY:

ANIMAL WASTE MANAGEMENT SYSTEM APPLICATION

MANAGEMENT CRITERIA FOR TANK WAGON APPLICATION OF LIQUIDS

To apply 125,782 gallons of liquids generated from the operation it will take approximately 31 trips annually. Based on applying NITROGEN, N at agronomic rates use the application depths, travel lengths, and loads per acre listed below for each crop.

Field Number	Acres	Crop	Tank Wagon Capacity Gallons	Spread Width Feet	NITROGEN, N		Pounds of Nutrients to be Applied	Number of Applications Needed to meet Crop Uptake	Inches of Liquids to Apply	Travel Length per Load Needed in Feet	Loads per Acre
					Concentration in Storage Facility PPM	Lbs/1000Gal					
21/144-1	10.6	Grass/Legume Hay/Pasture	4,000	15	1,499	12.51	173	1.00	0.36	1,192	2.4
144-3	7.8	Grass/Legume Hay/Pasture	4,000	15	1,499	12.51	173	1.00	0.36	1,192	2.4
144-4	3	Grass/Legume Hay/Pasture	4,000	15	1,499	12.51	173	1.00	0.36	1,192	2.4
1579-2-3	8.5	Grass/Legume Hay/Pasture	4,000	15	1,499	12.51	173	1.00	0.36	1,192	2.4
673-1/1579	45.5	Corn, Grain	4,000	15	1,499	12.51	143	1.00	0.30	1,441	2.0
1/1579-5/3	40.5	Wheat, Grain Soft White	4,000	15	1,499	12.51	130	1.00	0.27	1,583	1.8
51/1573/15	213.2	Alfalfa Hay	4,000	15	1,499	12.51	338	1.00	0.70	611	4.8
73-2/144-1	53.4	Potatoes	4,000	15	1,499	12.51	105	1.00	0.22	1,966	1.5
0											

CLIENT: Joel & Vicki Price
ASSISTED BY: Jennifer Kewick

ANIMAL WASTE MANAGEMENT WORKSHEET

Version 1.4

CHECKED BY:

10/18/02
STATE: OREGON

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		
		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%) Dewater	2,421	1,222	2,131	65%	80%	85%	1,574	978	1,879
Solids	Open lot (44% Bagged)	30,474	10,944	27,992	50%	75%	65%	15,237	8,208	18,195
Grazing	None	6,424	5,307	6,005	100%	100%	100%	6,424	5,307	6,005

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	1,574	978	1,829	75%	100%	100%	1,180	978	1,829
Solids	Broadcast (Incorporated 7 or more days after application)	15,237	8,208	18,195	70%	100%	100%	10,665	8,208	18,195
Grazing	Grazing	6,424	5,307	6,005	85%	100%	100%	5,461	5,307	6,005

NUTRIENTS AVAILABLE AFTER DENTRIFICATION

Nutrient Source	Location Type of Cattle Manure Soil Drainage Class	Pounds of Nutrients Available			Percent Nutrients Retained After Dentrification			Pounds of Nutrients Retained After Dentrification		
		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	1,180	978	1,829	94%	100%	100%	1,109	978	1,829
Solids	Well Drained	10,665	8,208	18,195	94%	100%	100%	10,026	8,208	18,195
Grazing	Well Drained	5,461	5,307	6,005	94%	100%	100%	5,133	5,307	6,005

ANIMAL WASTE MANAGEMENT WORKSHEET

Version 1.4

10/18/02
STATE: OREGON

CLIENT: Joel & Vicki Price
ASSISTED BY: Jennifer Penwick

CHECKED BY:

ANIMAL WASTE MANAGEMENT SYSTEM UTILIZATION

PERCENT OF MANURE TO BE APPLIED TO FIELD AND UTILIZATION ACRES NEEDED BASED ON

Field Number	Acres	Crop	LIQUIDS			SOLIDS			GRAZING		
			Percent to be Applied	Pounds of Nutrients to be Applied	Acres Needed for Utilization	Percent to be Applied	Pounds of Nutrients to be Applied	Acres Needed for Utilization	Percent to be Applied	Pounds of Nutrients to be Applied	Acres Needed for Utilization
1451-2/1444-6	10.6	Grass/Legume Hay/Pasture	0%	0	0	0%	0	0	20%	1,027	6
1444-3	7.8	Grass/Legume Hay/Pasture	0%	0	0	0%	0	0	20%	1,027	6
1444-1	3.0	Grass/Legume Hay/Pasture	0%	0	0	0%	0	0	15%	770	4
1579-2-3	8.5	Grass/Legume Hay/Pasture	0%	0	0	0%	0	0	15%	770	4
1573-1/1578-1	45.5	Com. Grain	34%	377	3	34%	3,409	24	0%	0	0
573-1/1579-5/201	40.5	Wheat, Grain Soft White	33%	366	3	33%	3,309	25	15%	770	6
1/1451/1579/1579/	213.2	Alfalfa Hay	33%	366	1	33%	3,309	10	15%	770	2
1573-2/1444-5-8	53.4	Potatoes	0%	0	0	0%	0	0	0%	0	0
0											
OR-Farm			0%	1.0	7	0%	0	59	0%	3,328	
TOTALS-			100%	1,109	7	100%	10,026	59	100%	6,461	29

NUTRIENT BALANCE BASED ON AVAILABLE ACRES

Field Number	Acres	Crop	NUTRIENTS APPLIED			NUTRIENTS UTILIZED			NUTRIENT BALANCE		
			Nitrogen, N Lbs/Acre	Phosphorus, P ₂ O ₅ Lbs/Acre	Potassium, K ₂ O Lbs/Acre	Nitrogen, N Lbs/Acre	Phosphorus, P ₂ O ₅ Lbs/Acre	Potassium, K ₂ O Lbs/Acre	Nitrogen, N Lbs/Acre	Phosphorus, P ₂ O ₅ Lbs/Acre	Potassium, K ₂ O Lbs/Acre
1451-2/1444-6	10.6	Grass/Legume Hay/Pasture	97	100	113	173	64	211	-76	36	-98
1444-3	7.8	Grass/Legume Hay/Pasture	132	136	134	173	64	211	-41	72	-37
1444-1	3.0	Grass/Legume Hay/Pasture	257	255	300	173	64	211	84	201	89
1579-2-3	8.5	Grass/Legume Hay/Pasture	91	94	106	173	64	211	-82	29	-105
1573-1/1578-1	45.5	Com. Grain	83	69	150	143	57	43	-60	12	107
573-1/1579-5/201	40.5	Wheat, Grain Soft White	110	95	185	130	69	31	-20	26	154
1/1451/1579/1579/	213.2	Alfalfa Hay	21	18	35	338	76	348	-317	-58	-203
1573-2/1444-5-8	53.4	Potatoes	0	0	0	105	44	199	-105	-44	-199
0											
OR-Farm											

**ANIMAL WASTE MANAGEMENT PLAN
MINIMUM REQUIRED ELEMENT**

ANIMAL MORTALITY

Management of Animal Mortalities for: Joel & Vikki Price Feedlot
NAME OF OPERATION

Animal mortalities will be disposed of in a manner that will comply with local, state and federal regulations. Please mark and describe the method(s) of animal mortality management used on this operation:

☐ REMOVAL SERVICE: _____

☐ COMPOSTED: _____

☐ INCINERATED: _____

☒ BURIED: In accordance w/ State
regulations

☐ OTHER: _____

Signature of Legally Authorized Representative: Vikki Price

Print Name: VIKKI PRICE Date: 4/06/05

Record Keeping and Reporting Requirements

Testing-Monitoring

Include the protocol for testing manure, litter and process waste

Include the protocol for testing and measuring crop nutrient removals

**Include the protocol for soil testing to evaluate nutrient application
and crop uptake**

Record Keeping- Include the following

**Date and amount of manure, litter and process waste applied by field.
Calculate N & P applied.**

Manure, litter and process waste volume exported

Reporting to Oregon Department of Agriculture

Any discharge within 24 hours

Amount of manure, litter and process waste applied annually

Amount of manure, litter and process waste exported annually

Record Keeping and Reporting

Soil samples will be taken in each field, once every 5 years. Manure samples may be taken, but are not required under this plan. If manure is exported, a manure sample will be required. Copies of the manure sample will be provided to the waste recipient as well as kept on file as part of this Animal Waste Management Plan. Protocol for sampling and testing soil, manure and crops are included in this Animal Waste Management Plan.

Joel & Vikki Price Feedlot records date and amount of manure applied to each field. The operator will also record the date and amount of any waste exported off site. The feedlot operator will report any discharge within 24 hours to the Oregon Department of Agriculture. Annual reports including amount of manure and wastewater applied and exported will be submitted each year.

ODA Soil Sampling Standard Methodology

March, 2001

This document is intended to describe a standard procedure for collecting, storing, and shipping soil samples collected by ODA staff and/or contractors. All ODA staff involved in soil sampling should have received training in Departmental protocols for soil sampling. The procedures described are intended to be used for non-hazardous samples that are not going to be analyzed for volatile constituents. Soil samples collected with the methods described can not be considered undisturbed samples.

Considerations for Choosing Laboratory Analyses

Before conducting any soil sampling, first decide what parameters you will be looking for and how they should be analyzed. This is important for choosing an appropriate analytical laboratory, for budgeting, and for knowing how soon the laboratory must receive your samples. Most of the sampling done by CAFO/NRD staff involves looking for nitrogen compounds, phosphorus compounds, potassium compounds, bacteria, and organic matter or total organic carbon. This section will focus on the analytical techniques for these compounds, and how to decide which chemical species to look for. If you are planning on analyzing for other compounds, consult with the NRD technical staff.

Nitrogen compounds: The nitrogen compounds we are usually concerned with are nitrate (NO_3), nitrite (NO_2), ammonia (NH_3), ammonium (NH_4), and total Kjeldahl nitrogen (organic nitrogen compounds, typically NH_2). Typically, the older the manure source, the more likely that the nitrogen will be in the form of nitrate. Manure starts as being mostly NH_2 to NH_4 , and eventually oxidizes to NO_2 and NO_3 .

Analysis of total Kjeldahl nitrogen (TKN) is standardized, so telling a laboratory you want a TKN analysis will get you about the same thing every time. The same is true for ammonia and ammonium. However for nitrate and nitrite, there are two widely used methods to choose from. EPA Method 300, which is an ion chromatography method, and EPA Method 353.2, which uses cadmium reduction. These analyses report nitrate and nitrite combined, or separately. You can specify how you'd like the results presented. However, if you do want nitrite reported separate from nitrate, then the sample must be analyzed (using either method) within 48 hours after collection. EPA Method 300 has a 48 hour holding time whether or not speciation of NO_2/NO_3 is requested, so usually EPA Method 353.2 is the better choice for nitrate/nitrite analyses.

Phosphorus compounds: In most cases, we are concerned with all phosphorus compounds that are not tied up with silicate minerals (e.g., apatite). However, standard total phosphorus analyses use an acid digestion, which will liberate phosphorus tied up in minerals. Because of this, the preferred method is AOAC Official Method 977.01. This method uses a water extraction of phosphorus, so that mineralized forms are not brought into solution. If the laboratory can not do this method, then request a weak acid extraction, which would use citric or acetic acid. Make sure the laboratory can supply a reference for any alternative method they propose, other than AOAC Official Method 977.01. If you are sure that there will be no significant mineral phosphorus component in the sample, then the laboratory can use a more traditional total

phosphorus (TP) analysis. The NRD hydrogeologist or hydrologist can give you advice on whether there is a potential for the presence of mineral phosphorus.

Potassium compounds: Sampling and analysis for potassium compounds has a lot in common with analyzing for phosphorus compounds. Standard analyses also use an acid extraction, which can liberate silicate-bound potassium. Generally we want to detect all water soluble forms of potassium. To avoid sampling mineral forms of potassium, request a STLC (soluble threshold limit test) extraction analysis, instead of EPA Method 3010. STLC is routinely done for toxic metals, but can also be performed successfully for potassium.

Bacteria sampling: Appropriate bacteria sampling and analysis is dependant mostly on getting the sample to the laboratory immediately. For identifying issues relating to manure, either fecal coliform or E. coli sampling is valid, but in both cases the samples should be analyzed by the laboratory the same day they are collected. Make sure the lab can give you a population count of the bacteria, a presence/absence analysis is usually not meaningful for the purposes of our investigation. Also, make sure the lab can analyze soil samples for bacteria - it is not commonly as available as analysis of water samples.

Hand Auger Sampling

Hand auger sampling is done by advancing the auger to approximately six inches below the desired depth of sampling, and then removing soil from the central portion of the auger barrel. The soil from the central part of the barrel should be used as the sample, because it is less likely to have been contaminated from material sloughing off the walls of the boring. Ideally, the sample should be placed in a laboratory supplied container, however new sealable plastic bags can be used if laboratory containers are not available. Whenever possible, take two samples at each sampling location. These should be labelled as 'A' and 'B' samples, so that you have a back up sample if something happens to one of them, or if you want to augment regular quality assurance/quality control procedures. Both 'A' and 'B' samples should be sent to the laboratory, but not necessarily analyzed. This is discussed further in the Sample Handling and Documentation section of this methodology.

Always backfill hand augered borings after sampling is finished. Do not advance hand augered borings into groundwater (including perched water), unless groundwater samples are needed.

Trowel or Shovel Sampling

Trowels, shovels, and other implements can also be used to obtain soil samples. Usually these are not very efficient for sampling below about one foot, and they are not accurate for sampling at a designed depth. They are appropriate for shallow soil sampling. When using these types of implements, follow the decontamination procedures described below. Remove all soil from the excavated area before obtaining a sample, so that the sample will be representative of the desired area.

Equipment Decontamination (Decon)

Decontamination is important to prevent false positive or erroneous analytical results for soil sampling. Generally decontamination involves removing as much of the soil from the sampling equipment as possible before using the equipment on another sample. Usually this can be done with tap water, an approved detergent, a brush, two buckets, plastic sheeting or some other portable clean surface, and deionized (or distilled) water in a spray bottle. Sampling equipment should be rinsed with deionized water after being washed and scrubbed with a detergent solution, especially if any metals will be the sample analytes. The scrub brush size must be appropriate to clean all surfaces that may contact samples, including the barrel of the auger. Sampling equipment should be decontaminated before each use, even if the equipment has been in clean storage. Sampling equipment should also be decontaminated before replacing equipment into the field vehicle between sample points and at the end of the day. Choose an area to do decon in advance, being careful to avoid areas where small spills of detergent or wash water would be a problem. Use plastic sheeting or other portable clean surface for holding decontaminated equipment between uses. Decontamination methods should be appropriate for the planned analytes. For example, if the analysis will be for sodium, then you should not use a detergent containing sodium carbonate. Many common detergents contain either sodium carbonate or some type of phosphorus compound, so be careful not to use these when sodium or phosphorus are the analytes. Other commercially available detergents - like Liquinox - should be used instead. If there are any questions as to the appropriateness of detergent, contact the appropriate ODA technical staff for assistance.

Sampling Strategies

Various methods can be used to determine how many samples to take, and where to take them. Economic limitations must also be considered, especially when the intended chemical analyses will be expensive. Most sampling schemes employed by ODA staff will be simple "Judgemental" schemes, where there will be some visible or olfactory evidence to justify sampling. Statistically valid sampling schemes are discussed in two EPA documents, "Preparation of Soil Sampling Protocols: Sampling Techniques and Strategies" and "Site Characterization for Subsurface Remediation." Comprehensive statistically relevant sampling plans should be peer-reviewed by ODA technical staff.

Sample Handling and Documentation

Sterile, clean sampling containers should be obtained from the lab complete with any specific instructions relating to the planned analytes. Make sure to follow the laboratory's guidance on holding times and quality assurance/quality control for each planned analyte.

After obtaining a sample, it should be labelled immediately to reduce the possibility of misidentification. The label should include the sample number (including 'A' and 'B' designations), date and time of collection, the collector's initials, and some name reference to the geographic location of the sampling. This information should also go into field notes taken during the sampling. The sample should then be placed in a chilled container, preferably with "blue ice" as opposed to wet ice. If wet ice is used, seal the samples in closeable plastic bags (providing a double seal against moisture) before storing. A chain-of-custody form must

accompany all samples collected, and must be signed by all parties who handle the samples. This form is needed to document where the samples have been and who has handled them. Information from the sample label should be repeated on a chain-of-custody form, along with laboratory instructions. Make sure to indicate which samples you want analyzed - typically you will not have the 'B' samples analyzed immediately, if at all. These are usually kept as a back-up. Ideally, the samples should be hand-delivered to a laboratory, however in many instances they will have to be shipped. Most of the time companies like UPS and Federal Excess will not sign chain-of-custody forms. In this case, provide a signed seal over every access to the shipping container. Make sure the laboratory receiving the samples documents the condition of the seal.

Along with information specific to each sample, field logs should contain a detailed description of where and when each sample was taken. This description should include sample depth, sampling equipment used, sampling location justification, approximate distances from reference points (this is usually best accomplished with a sketch), whether the samples had any obvious odors or discoloration, and what weather conditions were like during the field work. Sampling location justification should include a description of the area where the sample was taken, including any discoloration or obvious odors. Photographs of the sampling locations and their surroundings should also be taken.

Appendix A: Soil Sampling Procedure

The following procedure may be used as a step-by-step soil sampling procedure. If it should become necessary to deviate from this procedure in a way that may invalidate the sampling results, contact appropriate ODA technical staff for recommendations on modifications to the procedure.

1. Before going to the field location, inventory sampling equipment to ensure all necessary equipment is available (a sample list is available in Appendix B).
2. At the field location, select appropriate location for decontamination station. Ideally, this location will be proximal to sampling locations, but will have a very low risk of becoming contaminated due to site conditions (e.g., wind, traffic, etc.).
3. Set up decontamination station. Be careful not to contaminate the station. This area will allow you to store decontaminated equipment until ready for use.
 - a. Fill sprayer with demineralized (deionized) water.
 - b. Mix soap solution (Liquinox® or other approved soap) as directed by the label.
 - c. If bacteria sampling will occur, prepare the sterilizing agent as directed on the label or in Appendix E.
4. Decide why sampling will occur, and select appropriate analytes (see Appendix C).
5. Map out the location of the sampling sites, showing their locations relative to permanent landmarks and/or GPS coordinates. If you are doing sampling to establish an area-wide soil condition assessment (e.g., finding out if land application of manure has exceeded agronomic rates throughout a field), then state how many samples per unit area, and draw a dimensionless map of their locations.
6. Perform initial decontamination of equipment for appropriate analytes (i.e., you do not need to disinfect the equipment if bacteria will not be analyzed).
7. Decontamination procedure:
 - a. Clean as much soil off the auger as possible utilizing mechanical agitation (e.g., dry brush, garden spade, tapping barrel lightly on rock, etc.).
 - b. Use tap water to remove more dirt if desired.
 - c. Scrub sampling equipment with soapy water (including all areas where the equipment is touched by the technician). Ensure scrub brushes fit in all orifices and cracks of equipment.
 - d. Perform tap water rinse.
 - e. Shake to remove excess water.
 - f. If sampling for bacteria, apply sterilizing agent and satisfy contact times described on label or in department approved procedures.
 - g. Perform demineralized water rinse, then shake off excess water.

- h. Place decontaminated equipment on a clean (i.e., area known to be free of contamination) surface until equipment is to be used.

8. To collect a soil sample:

- a. Auger or dig to six inches above the desired sample interval.
 - b. Decontaminate the equipment used, and put on clean gloves.
 - c. Auger or dig to collect the sample.
 - d. Adjacent to the decontamination station, place the sample in a laboratory supplied or approved sampling container. Split the sample for all analytes except bacteria.
 - e. Once the sample is sealed (for additional security, seal sample containers with adhesive that bears your signature), label the sample. Information should include sample number (including A or B for split samples), sample technician, date, and farm name. Your field log should include this information, plus complete location descriptions and time of sampling. If storage on ice is required, place sample containers in sealed zip-lock bags.
 - f. Place the sample in the shipping or handling container. Ensure laboratory recommendations are followed (e.g., ice).
 - g. If another sample is to be taken from the same hole, return to step 6 and continue. If sampling is completed for this hole, decontaminate sampling equipment.
9. If other holes are to be sampled, return to step 6 and continue. If sampling is completed for this operation, decontaminate and store sampling equipment using the decontamination procedure. If equipment has not been allowed to air dry before storage, ensure the storage area is well ventilated, and that equipment can thoroughly dry in this location. (Note: Ensure contaminated equipment is never stored in your clean equipment storage area of your vehicle. If this occurs, decontaminate this area and allow it to air dry before returning sample equipment.)
10. Once sampling is complete, clean up the decontamination station and backfill the auger hole.
- a. For disposable equipment, decontaminate any gross contamination before cleaning re-usable equipment.
 - b. For re-usable equipment, ensure that the outsides of the containers are decontaminated when necessary. The insides of the containers need only be cleaned using subsequent steps of the decontamination procedure (e.g., the soapy water bucket should be rinsed with tap-water, washed with any disinfectant used, rinsed with demineralized water, and allowed to air dry. The tap-water equipment need only be washed with any disinfect used, rinsed with demineralized water, and allowed to air dry. And so on.).
 - c. Unless label restrictions indicate otherwise, all fluids may be safely disposed of by pouring them onto the land surface (preferably in a grassy area where runoff to a drainage is unlikely). Most fluids may also be poured down drains connected to sanitary sewers or septic systems. DO NOT POUR DISINFECTANTS INTO

Manure application record sheet

Field I.D.

Year

Nitrogen requirement for field

Phosphorus requirement for field

lb/ac/y

ib/ac/y

Application basis (Circle one)

Nitrogen Phosphorus

[illegible]

APPENDIX E - ANIMAL WASTE SAMPLING

Animal waste analysis is a key component of nutrient management. Complete analyses provide critical information about the animal waste composition, including pH and nutrient content. Actual nutrient content of animal waste varies with the type of animal, feed, storage system, and method of animal waste application. You should sample animal waste stored on site each time it is to be removed (for land application on or off site). Sample daily spread operations (if you land-apply daily) several times throughout the year to obtain a good estimate of nutrient content.

Description

Animal waste sampling is relatively simple, but must be done properly for reliable results. The sampling method differs based on the type of animal waste you generate at your farm (e.g., liquid, semi-solid, solid). Animal waste sampling generally consists of two to seven steps, depending on the type of animal waste. Although the number of steps varies based on the physical state of the animal waste, all of the methods rely on collecting a representative animal waste sample for analysis. Where bedding is collected with the animal waste, include both bedding and animal waste in the sample. Also, conduct sampling as close to the time of land application as possible. Specific techniques for gathering poultry litter, liquid animal waste, semi-solid animal waste, and solid animal waste samples are described below; you can use these to help develop sampling procedures at your farm. Remember that you should sample and analyze all animal waste at your farm. Work with your state and local agricultural Cooperative Extension Offices to ensure that you develop the proper procedures for your conditions and animal waste management methods.

Before sampling, know where the samples are to be shipped, how to pack and ship the sample, and what to use as sample containers. Many laboratories will furnish the proper sample containers for a small charge. Samples should never be collected and shipped in glass bottles, and they should be shipped on wet ice unless otherwise instructed by the laboratory. Contact your state or local agricultural Cooperative Extension Office for a list of laboratories that can perform your analyses. You should also wear gloves at all times, to protect yourself and the sample from contamination.

The test should analyze for such parameters as percentage of dry matter, ammonium-nitrogen, total-nitrogen, phosphorus (P or P_2O_5), and potassium (K or K_2O). Request results in the same units as your calibrated animal waste application system (see Appendix J for more information about calibrating animal waste spreaders and irrigators). For example, if your animal waste application is measured in tons per acre, request that your analysis be reported as pounds of nutrient per ton of animal waste.

Instructions for Collecting Poultry Litter Samples

Poultry litter is a mixture of poultry animal waste and the bedding (e.g., sawdust or rice hull) from houses used to raise broilers, turkeys, and other birds. You will need a clean 5-gallon bucket, a narrow, square-ended spade (or a soil spade), and a 1-quart plastic freezer bag to collect and store your sample. The five steps to collecting a representative poultry litter sample are described below.

Normally, bacteria analysis of soils will not be required. If soil areas are periodically subject to concentrated flow that may result in suspension of sediment in a water column, bacteria analysis may be appropriate. For unusual sampling situations, contact appropriate ODA technical staff for advice on sampling methodology.

Appendix D: Recommended Analytic Methods

The following is a list of the recommended methods of analysis for soil samples only. Some of the methods discussed can be used for water samples, but the rationale used in this document for choosing an analytical method is meant only for soil samples.

Nitrogen compounds: Analyses for total Kjeldahl nitrogen (TKN), ammonia, and ammonium are mostly standardized, so any method a reputable lab chooses should be fine. Nitrate and nitrite, have two widely used methods to choose from. EPA Method 300, which is an ion chromatography method, and EPA Method 353.2, which uses cadmium reduction. These analyses report nitrate and nitrite combined, or separately. You can specify how you'd like the results presented. However, if you do want nitrite reported separate from nitrate, then the sample must be analyzed (using either method) within 48 hours after collection. EPA Method 300 has a 48 hour holding time whether or not speciation of NO₂/NO₃ is requested, so usually EPA Method 353.2 is the better choice for nitrate/nitrite analyses.

Phosphorus compounds: In most cases, we are concerned with all phosphorus compounds that are not tied up with silicate minerals (e.g., apatite). Use AOAC Official Method 977.01, which is a water extraction of phosphorus, so that mineralized forms are not brought into solution. If the laboratory can not do this method, then request a weak acid extraction, which would use citric or acetic acid. Make sure the laboratory can supply a reference for any alternative method they propose, other than AOAC Official Method 977.01. If you are sure that there will be no significant mineral phosphorus component in the sample, then the laboratory can use a more traditional total phosphorus (TP) analysis. Analyses for phosphate (PO₄) are fairly standardized, so any method a reputable lab chooses should be fine.

Potassium compounds: Sampling and analysis for potassium compounds has a lot in common with analyzing for phosphorus compounds. Standard analyses also use an acid extraction, which can liberate silicate-bound potassium. Generally we want to detect all water soluble forms of potassium. To avoid sampling mineral forms of potassium, request a STLC (soluble threshold limit test) extraction analysis, instead of EPA Method 3010.

Bacteria sampling: Appropriate bacteria sampling and analysis is dependant mostly on getting the sample to the laboratory immediately. For identifying issues relating to manure, either fecal coliform or E. coli sampling is valid, but in both cases the samples should be analyzed by the laboratory the same day they are collected. Make sure the lab can give you a population count of the bacteria, a presence/absence analysis is usually not meaningful for the purposes of our investigation. Also, make sure the lab can analyze soil samples for bacteria - it is not commonly as available as analysis of water samples.

Appendix E: Recommended Disinfectants

All disinfectants should be used in accordance with the label instructions. General disinfectants (e.g., chlorine bleach) may also be used with concentrations and contact times as specified in this appendix. The only other disinfectant currently recommended for use is Virkon S, which is also used by the Animal Health division.

10. Demineralized water in spray rig for final rinse.
11. Chlorine bleach or other effective disinfectant.
12. Plastic sheeting to act as clean area (may want to include rocks to hold sheeting down in windy conditions).
13. Equipment that allows adequate field location of sample sites (e.g., GPS unit, compass, tape measure).
14. Camera.
15. Write-in-the-Rain notebook with pen that writes in the rain on both labels and the notebook.
16. Trash sacks for disposal of used supplies.
17. Ice chest and ice for sample preservation.
18. Security seals for containers to be shipped.
19. Box of latex gloves.

Appendix C: Soil Sampling Depth Matrix

Soil sampling occurs primarily for one of three reasons: 1) to determine that wastes are being applied at agronomic rates; 2) to ascertain whether or not deep leaching of waste constituents are occurring; and 3) to determine if wastes have run off to an area where wastes are prohibited. The following table provides guidance on sampling depth and pollutants of concern.

REASON FOR SAMPLING	SAMPLE DEPTHS	ANALYTES
Determination of agronomic application.	6 inch sample	Mineralizable N test or TKN, ammonium, and nitrate; ortho-phosphorus; and potassium.
Suspicion of deep leaching.	1 foot, 3 feet, and deepest rooting depth if significantly different than 3 feet.	Ammonium, nitrate+nitrite, ortho-phosphorus, and potassium.
Wastes suspected in prohibited area.	Collect visibly impacted soils. If soils are not visibly impacted, collect 6 inch sample. If deep leaching is suspected, also follow above guidance.	Use the determination of agronomic application analytes above for 6 inch and shallower samples, plus add total organic carbon. For deeper samples use the analytes above for suspected deep leaching.

SEPTIC SYSTEMS. Septic systems rely on beneficial bacteria for proper operation.

- d. If any equipment is not dry when placed in storage, ensure it is placed in a well ventilated storage area in the vehicle.
- e. For disposable equipment:
 - i. Remove excess water.
 - ii. Place all disposable items in the center of the decontamination pad (i.e. the plastic sheeting).
 - iii. Remove gloves and place in center.
 - iv. Making sure you do not touch the upper surface of the decontamination pad (the bottom has not been impacted by sampling), fold the pad over onto itself, and place the entire assembly into a large garbage bag. Seal the garbage bag, and dispose of in any trash receptacle. If necessary, the sealed sack allows you to transport the trash in your vehicle without contaminating your "clean" equipment storage.
- f. When backfilling, make sure the soil put into the hole is compacted as much as possible.

Appendix B: Sample Equipment List

The following is an example of a typical equipment list for soil sampling. Personal preference may result in substitution or addition of equipment.

1. Hand auger with appropriate extensions and barrels.
2. Gardening trowel.
3. Shovel.
4. Lab supplied sample (wide-mouth) jars.
5. Adhesive sample labels that allow assignment of sample number, date, time, person conducting sampling, and farm name.
6. Chain of custody forms that contain sufficient blocks to establish that hold-time criteria are not exceeded.
7. One or more buckets for wash water.
8. Round scrub brush that fits into auger barrels.
9. Liquinox soap (or other soap that meets chemical criteria).

#0342

**OPERATION AND MAINTENANCE PLAN
FOR
JOEL AND VICKI PRICE FEEDLOT
MALHEUR COUNTY, OREGON**

GENERAL

The Price Feedlot Waste Management System has been designed to manage waste generated by the feedlot in a manner that prevents or minimizes degradation of air, soil and water resource and protects public health and safety. The system has been planned to preclude discharge of pollutants to surface or ground water and to recycle waste through soil and plants to the fullest extent practicable.

The system was designed to accommodate waste from 300 feeder cows. The system will also accommodate contaminated storm runoff from the lots. The components of the waste management system include pipelines, mounding and waste utilization.

As operators of the Feedlot, Joel and Vicki Price are responsible for the operation and maintenance of the Waste Management System. Although the system was designed by the Natural Resources Conservation Service, based on the best available technical knowledge, it must be recognized that if the system is to operate as planned and designed, it needs to be periodically inspected, and properly operated and maintained.

OPERATION

Waste Management components and appurtenances will be operated as follows:

CONTAINMENT DIKES (MOUND)

The evaporation area contained behind the mounds will be cleaned out each spring/summer or when weather permits. It is critical that the sites be as clean as possible by November 1st to assure the maximum storage is available for the period of time when waste can not be spread on fields.

PIPELINES

Pipelines will need to be screened to prevent clogging. Owyhee Irrigation District before installation will approve the pipeline replacing the irrigation drain.

FENCING

Fencing is designed to keep livestock off of embankments. Fencing must be of a type that is stock proof.

WASTE UTILIZATION

Price Feedlot has 362 acres of Corn (grain and silage), Alfalfa, Alfalfa Seed, Wheat and Pasture. Manure will be spread when weather and crop conditions permit. The soil in the fields where manure will be spread is Nyssa Silt Loam. Soil should be tested yearly for nutrient levels to assure that soils are not being overloaded with nutrients, with special attention to Phosphorous levels. Manure should not be spread next to streams or drainage ways. To minimize soil sealing and maximize bacterial die-off, spreading will be done as evenly over the field as possible when weather forecasts predict a minimum of three days with less than 0.1 inches of precipitation.

**RECEIVED
JUL 24 2003
NATURAL RESOURCES
DIVISION**

MA #991222

**OPERATION AND MAINTENANCE PLAN
FOR
JOEL AND VICKI PRICE FEEDLOT
MALHEUR COUNTY, OREGON**

MAINTENANCE

Waste management components and appurtenances will be inspected and maintained as follows:

CONTAINMENT DIKES (MOUND)

The containment mounds will be inspected annually. Sludge and accumulated solids will be removed. Livestock will not be permitted on embankments. Undesirable vegetative growth will be controlled. Eroded areas will be filled and re-seeded. Embankment leaks will be repaired. Rodents will be controlled.

PIPELINES

Pipelines will be inspected periodically. Any leaks or broken sections will be repaired. Be aware during irrigation season excessive trash ^{may} plug line (screen properly). Safety features such as signs and fences will be kept in good repair. Post safety sign and fence the inlet structure for the 24" pipeline. Kept

30"

FENCING

Fences will be inspected often. Broken or decayed posts will be replaced. Sagging wire will be tightened. Broken wire will be spliced or replaced. Broken or missing insulators will be replaced.

PERMITS

It is the responsibility of the landowner/operator to obtain required permits.

SAFETY

Warning signs, ladders, ropes, bars, rails, and other devices shall be provided, as appropriate, to insure the safety of humans and livestock.

I will operated and maintain the Waste Management System in accordance with the plan.

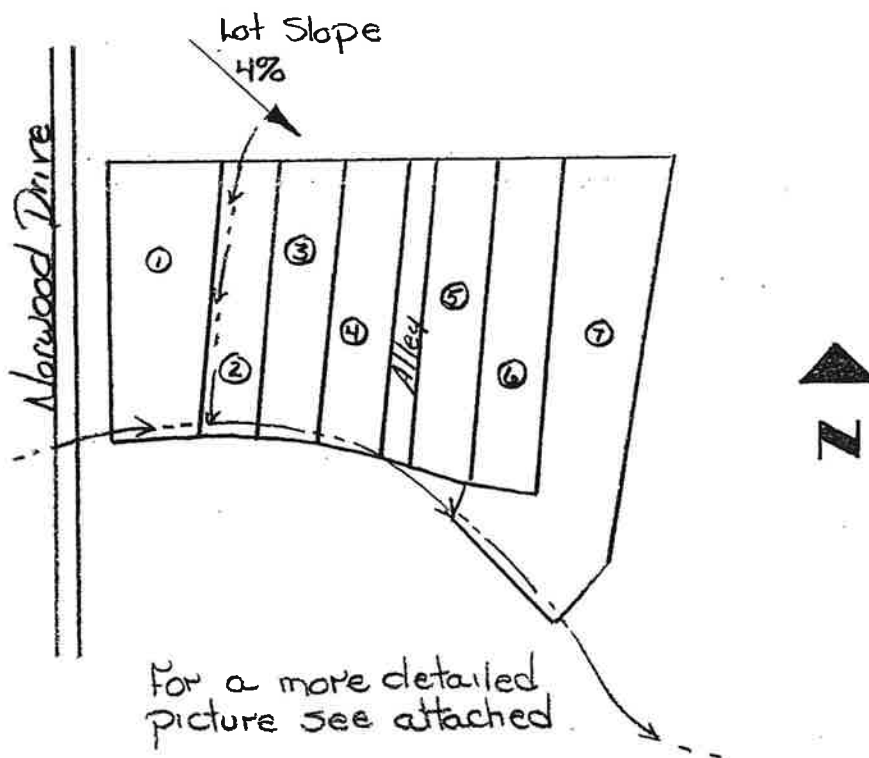
Joel & Vicki Price

Date

STATE <u>Oregon</u>	PROJECT <u>Joel & Vicki Price Feedlot</u>			
BY <u>J Phelps</u>	DATE <u>5/00</u>	CHECKED BY	DATE	JOB NO.
SUBJECT <u>Animal Waste Management System</u>				SHEET <u>1</u> OF <u>14</u>

Joel and Vicki Price are operating a feedlot near Owyhee Junction in Malheur County and wish to have an Animal Waste Management System developed on this feedlot which is currently owned by Okano Farms. Joel and Vicki are interested in purchasing this property.

Problems: Currently there is a tailwater ditch and a irrigation drain running through the feedlot.



STATE <u>OR</u>	PROJECT <u>Price</u>			
BY <u>JP</u>	DATE <u>5/00</u>	CHECKED BY	DATE	JOB NO.
SUBJECT <u>AWS</u>				SHEET <u>2</u> OF <u>14</u>

Inventory Data

1. 300 - Holsteins (dry) : Beef Average wt 700lb.
2. Most of manure is stored in pens for mounding and removed periodically and spread on the utilization area
3. Utilization Area
 - A. Size - 362 Acres
 - B. Soil - Moderately Well Drained
 - C. Crops
 - 1) Corn - 125 Ac
 - 2) Alfalfa - 125 Ac
 - 3) Wheat - 67 Ac
 - 4) Alfalfa Seed - 35 Ac
 - 5) Pasture - 10 Ac
4. Cattle will be confined year round
5. Lot Soil ~ Nyasa Silt Loam
6. Feedlot is earthen with minimal amounts of concrete

Solution

It appears that the Owyhee Irrigation Drain is our main concern also the tailwater off adjoining field. All other areas are contained and will not contaminate the waters of the State.

Design will consist of 2 pipelines 1 to replace the irrigation drain and one to transport tailwater to drain before it enters the pipeline.

Design will also include all management practices to ensure proper operation of the system.

STATE <u>OR</u>	PROJECT <u>Rice</u>			
BY <u>JP</u>	DATE <u>5/00</u>	CHECKED BY	DATE	JOB NO.
SUBJECT <u>Can't</u>				SHEET <u>3</u> OF <u>14</u>

Size Pipeline To Eliminate Owyhee Irrigation Drain

John Ross manager of the Owyhee Irrigation District told me a 24" would carry all flows. There is presently a 30" partially silted in culvert running under Norwood.

Total head in pipe would be: 8^2 Ft

78'
0+00

70'
6+17

69'
6+40

Survey

End of feedlot add extra joint to get away from contaminated area

Slope would be:

$$0+00 \rightarrow 6+40 = 1.28 \text{ Ft}/100\text{FT or } 0.0128 \text{ Ft}/\text{Ft}$$

What Q will a 24" PRC Carry

$$\begin{aligned} 24'' &= 3.14 \text{ Ft}^2 \\ K_p &= 0.00735 \\ K_m &= 1 \text{ (minor losses)} \\ L &= 640 \text{ Ft.} \end{aligned}$$

$$Q = 0 \sqrt{\frac{2gH}{1+K_m+K_p L}} = 3.14 \sqrt{\frac{(64.4)(8.2)}{1+1+(0.00735)(640)}}$$

$$Q = 27.9 \text{ CFS}$$

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Inlet Structure

Inlet will be placed a minimum of 12 ft down stream of Norwood to allow for clean outs and emergency road service. Tailwater from field above the feedlot will also enter here so it will adjoin pipeline. Structure will need to also meet Owyhee Irrigation requirements along with NRCS specifications. See Attached for possible inlet structures.

* Structure will need to be okayed by NRCS and OWID before installation.

Outlet Structure

Velocities should not warrent an outlet structure - Recommend mapping a cross sectional area of the channel to prevent SCOURING.

Pipeline to handle field tailwater will be 8" PRC 63 PSI 440 ft.

See ATTACHED.

8" 63 will carry 1.9 CFS @ 4.98 Ft/Sec

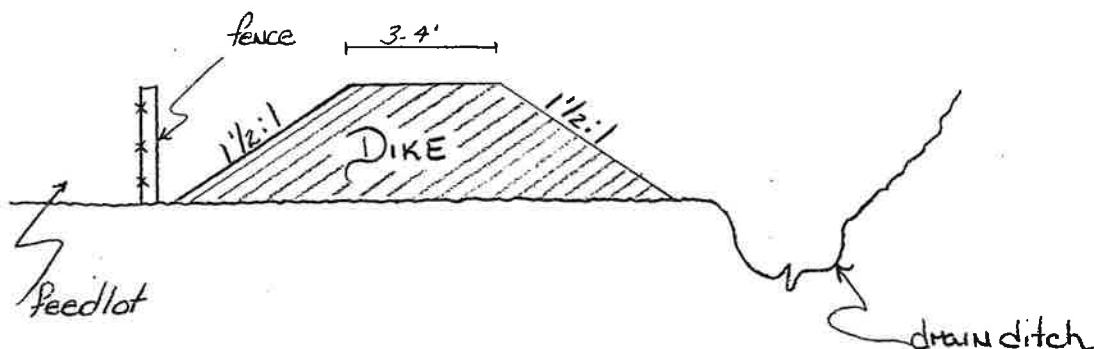
MORE THAN ADEQUATE.

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Mounds

Mounding will need to be installed on both lower ends of the feedlot to ensure no contaminated material enters the drain before or after the pipeline.

See Drawing



Contaminated Liquid Storage

All liquids will be stored within the feedlot. The storage area must have capacity for 1 year storage period.

1. Annual Lot Runoff
2. Normal Annual Precipitation less evaporation
3. 25 year - 24 hour runoff

Determine Lot Runoff

Annual Precipitation - 10 inches

Area - 5.5 Acres

Runoff as a percent of annual precip. - 10%

$$V = \frac{(\text{area} \times \text{Annual precip} \times \% \text{ runoff})}{12" / \text{ft}}$$

$$V = \frac{(5.5 \text{ Ac} \times 10" \times 10\%)}{12" / \text{ft}} = \underline{\underline{0.46 \text{ Ac Ft}}}$$

Nyssa
Surrey

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ORWIG



Determine 25year-24hour lot Runoff

25yr-24hr precip - 1.8"

Lot Areas - 5.5 Ac

CN - 90

Runoff depth - 0.93"

$$V = \frac{(\text{area})(\text{runoff depth})}{12"/\text{ft}}$$

$$V = \frac{(5.5)(0.93)}{12} = \underline{\underline{0.43 \text{ Ac} \cdot \text{ft}}}$$

No allowance required for annual normal precipitation less evaporation or accumulated solids.

Determine Total Storage Area Required

$V = \text{lot runoff (+) 25yr-24hr runoff}$

$$= 0.46 \text{ Ac} \cdot \text{ft} (+) 0.43 \text{ Ac} \cdot \text{ft} = \underline{\underline{0.89 \text{ Ac} \cdot \text{ft}}}$$

Determine Surface Area Required For Basin To Evaporate

$$\text{Area} = \frac{(\text{storage required} \times 12"/\text{ft})}{(\text{evap} - \text{precip})}$$

$$= \frac{(0.89 \text{ Ac} \cdot \text{ft} \times 12"/\text{ft})}{(34" - 10")} = \underline{\underline{0.45 \text{ Ac}}}$$

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Waste Utilization

Determine Nutrients In Excreted Manure

Number of animals - 300
Average Weight - 700 lbs
Daily Production of Nutrients per 1000 lb
animal - High Forage Diet

CHAP 4
AWMFH

N - 0.31 lb.
P - 0.11 lb.
K - 0.24 lb.

$$\text{lbs} = \frac{(\text{No} \times \text{Ave. Wt.}) (\text{Daily Production}) (\text{Days})}{1000}$$

$$\text{lbs. N} \sim (300 \times 700 / 1000 \times 0.31 \times 365) = \underline{23761.5 \text{ lbs}}$$

$$\text{lbs P} \sim (300 \times 700 / 1000 \times 0.11 \times 365) = \underline{8431.5 \text{ lbs}}$$

$$\text{lbs K} \sim (300 \times 700 / 1000 \times 0.24 \times 365) = \underline{18396.0 \text{ lbs}}$$

Convert Nutrients To Fertilizer Equivalents

$$\text{Total N} = \underline{23761.5 \text{ lbs}}$$

$$\text{Total P}_2\text{O}_5 = 8431.5 \times 2.29 = \underline{19308.1}$$

$$\text{Total K}_2\text{O} = 18396 \times 1.21 = \underline{22259.2}$$

Determine Nutrients Remaining After Storage

Nutrients Retained as % - open lot

N - 60
P - 70
K - 60

OSU Ext Ser

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= (Nutrients Produced X % Retained)

$$N \sim (23761.5 \times 60\%) = \underline{14256.9 \text{ lbs}}$$

$$P_2O_5 \sim (19308.1 \times 70\%) = \underline{13515.7}$$

$$K_2O \sim (22259.2)(60\%) = \underline{13355.5}$$

Determine Plant Available Nutrients

Plant Available Nutrients = (Amount Applied X % avail)

$$N - 53\%$$

$$P \sim 90\%$$

$$K \sim 93\%$$

$$N = (14256.9 \times 53\%) = \underline{7556.2 \text{ lbs}}$$

$$P_2O_5 = (13515.7 \times 90\%) = \underline{12164.1}$$

$$K_2O = (13355.5 \times 93\%) = \underline{12420.6}$$

Determine the Nutrients Required by the Crop and Soil to Produce the Yield Goal

Estimates : Recommend Soil Analysis performed and recommendations followed.

Crops - Corn	125 Ac
Alfalfa	125 Ac
Wheat	67 Ac
Alfalfa Seed	35 Ac
Pasture	10 Ac

After 3
Consecutive
Years

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CHAD G
AWMTR

Plant nutrient % in harvested crop

Corn - Grain ~ 1.61 N
0.28 P
0.40 K

Yield

146 bu

Corn Silage ~ 1.10 N
0.25 P
1.09 K

2.7 Tons

Alfalfa ~ 2.25 N
0.22 P
1.87 K

4 1/2 Ton

Wheat ~ 1.67 N Straw 0.51 N
0.39 P 0.06 P
0.33 K 0.71 K

102 bu

Alfalfa Seed ~ 6.20 N
0.70 P
2.30 K

610 lbs.

Pasture ~ 1.70 N
0.28 P
1.72 K

2 1/2 Tons

Corn Grain - 146 bu/ac @ 56 lb/bu = 8176 lbs

Corn Silage - 2.7 ton/ac @ 2000 lb/ton @ 35% dm = 18900 lbs

Alfalfa - 4.5 ton/Ac @ 2000 lb/ton = 9000 lbs

Wheat - 102 bu/ac @ 60 lb/bu = 6120 lbs

Alfalfa Seed - 610 lbs

Pasture - Grazed 2.5 ton/Ac @ 2000 lb/ton = 5000 lbs

1bP x 2.3 = P₂O₅

1bK x 1.2 = K₂O

Corn Grain ~ (1.61%) (8176) = 132 lb N
(0.28%) (8176) = 23 lb P - 53 lb P₂O₅
(0.40%) (8176) = 33 lb K - 40 lb K₂O

Corn Silage ~ (1.10%) (18900) = 208 lb N
(0.25%) (18900) = 47 lb P - 108 lb P₂O₅
(1.09%) (18900) = 206 lb K - 247 lb K₂O

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$$\begin{aligned}\text{Alfalfa} &\sim (2.25\%)(9000) = 203 \text{ lb N} \\ &\quad (0.22\%)(9000) = 20 \text{ lb P} - 46 \text{ lb P}_2\text{O}_5 \\ &\quad (1.87\%)(9000) = 168 \text{ lb K} - 202 \text{ lb K}_2\text{O}\end{aligned}$$

$$\begin{aligned}\text{Wheat} &\sim (1.67\%)(6120) = 102 \text{ lb N} \\ &\quad (0.39\%)(6120) = 24 \text{ lb P} - 55 \text{ lb P}_2\text{O}_5 \\ &\quad (0.33\%)(6120) = 20 \text{ lb K} - 24 \text{ lb K}_2\text{O}\end{aligned}$$

$$\begin{aligned}\text{Alfalfa Seed} &\sim (6.20\%)(610) = 38 \text{ lb N} \\ &\quad (0.70\%)(610) = 4 \text{ lbs P} - 9 \text{ lb P}_2\text{O}_5 \\ &\quad (2.30\%)(610) = 14 \text{ lbs K} - 17 \text{ lb K}_2\text{O}\end{aligned}$$

$$\begin{aligned}\text{Pasture} &\sim (1.70\%)(5000) = 85 \text{ lb N} \\ &\quad (0.28\%)(5000) = 14 \text{ lb P} - 32 \text{ lb P}_2\text{O}_5 \\ &\quad (1.72\%)(5000) = 86 \text{ lb K} - 103 \text{ lb K}_2\text{O}\end{aligned}$$

Determine N Requirements After Denitrification

Soil - Nyssa Silt Loam
- Well drained
- 3% organic matter

% of inorganic N denitrified $\sim 20\%$

$$\text{Corn Grain} \sim (132) \div (80\%) = 165 \text{ lbs N}$$

$$\text{Corn Silage} \sim (208) \div (80\%) = 260 \text{ lbs N}$$

$$\text{Alfalfa} \sim (203) \div (80\%) = 254 \text{ lbs N}$$

$$\text{Wheat} \sim (102) \div (80\%) = 128 \text{ lbs N}$$

$$\text{Alfalfa Seed} \sim (38) \div (80\%) = 48 \text{ lb N}$$

$$\text{Pasture} \sim (85) \div (80\%) = 106 \text{ lb N}$$

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10% Ave
CHAP II
ADDMFH

Determine N after Leaching

% retained as a % $\rightarrow 90\%$

Corn Grain $\sim (165) \div (90\%) = 183.0 \text{ lb N}$

Corn Silage $\sim (206) \div (90\%) = 229.0 \text{ lb N}$

Alfalfa $\sim (254) \div (90\%) = 282.0 \text{ lb N}$

Wheat $\sim (128) \div (90\%) = 142.0 \text{ lb N}$

Alfalfa Seed $\sim (48) \div (90\%) = 53.0 \text{ lb N}$

Pasture $\sim (106) \div (90\%) = 118.0 \text{ lb N}$

Determine N after Volatilization (application)

% N Retained After Application

Broadcast @ 7+ day before incorporation

80% Spring (Warm-Cool) Wet Soils

Corn Grain $\sim (183) \div (80\%) = 225.0 \text{ lbs N}$

Corn Silage $\sim (229) \div (80\%) = 286.0 \text{ lbs N}$

Alfalfa $\sim (282) \div (80\%) = 353.0 \text{ lbs N}$

Wheat $\sim (142) \div (80\%) = 178.0 \text{ lbs N}$

Alfalfa Seed $\sim (53) \div (80\%) = 66.0 \text{ lbs N}$

Pasture $\sim (118) \div (80\%) = 148.0 \text{ lbs N}$

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Total Crop Requirements

Corn Grain	~ N	~ 225.0 #
	~ P ₂ O ₅	~ 53.0 #
	~ K ₂ O	~ 40.0 #
Corn Silage	~ N	~ 286.0 #
	~ P ₂ O ₅	~ 108.0 #
	~ K ₂ O	~ 247.0 #
Alfalfa	~ N	~ 353.0 #
	~ P ₂ O ₅	~ 46.0 #
	~ K ₂ O	~ 202.0 #
Wheat	~ N	~ 178.0 #
	~ P ₂ O ₅	~ 55.0 #
	~ K ₂ O	~ 24.0 #
Alfalfa Seed	~ N	~ 66.0 #
	~ P ₂ O ₅	~ 9.0 #
	~ K ₂ O	~ 17.0 #
Pasture	~ N	~ 148.0 #
	~ P ₂ O ₅	~ 32.0 #
	~ K ₂ O	~ 103.0 #

Determine Acres Required To Recycle Nitrogen

$$\text{Required Ac} = \frac{\text{Plant Available N}}{\text{N Required By Crop}}$$

362 Total
Acres Apply
Evenly Over
All, But
Will Calculate
By Crop

$$\text{Corn Grain} \sim 7556.2 \div 225 = 34 \text{ Ac}$$

$$\text{Corn Silage} \sim 7556.2 \div 286 = 26 \text{ Ac}$$

$$\text{Alfalfa} \sim 7556.2 \div 353 = 22 \text{ Ac}$$

$$\text{Wheat} \sim 7556.2 \div 178 = 43 \text{ Ac}$$

$$\text{Alfalfa Seed} \sim 7556.2 \div 66 = 115 \text{ Ac}$$

$$\text{Pasture} \sim 7556.2 \div 148 = 51 \text{ Ac}$$

← LIMITING CROP
← LIMITING CROP

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Required Ac = Plant Available $\underline{\underline{P_2O_5}}$; P_2O_5 Required by Crop

Corn Grain $\sim 12164.1 \div 53 = 230 \text{ Ac}$

Corn Silage $\sim 12164.1 \div 108 = 113 \text{ Ac}$

Alfalfa $\sim 12164.1 \div 46 = 264 \text{ Ac}$

Wheat $\sim 12164.1 \div 55 = 221 \text{ Ac}$

Alfalfa Seed $\sim 12164.1 \div 9 = 1352 \text{ Ac}$

Pasture $\sim 12164.1 \div 32 = 380 \text{ Ac}$

Required Ac = Plant Available $\underline{\underline{K_2O}}$; K_2O Required By Crop

Corn Grain $\sim 12420.6 \div 40 = 311 \text{ Ac}$

Corn Silage $\sim 12420.6 \div 247 = 50 \text{ Ac}$

Alfalfa $\sim 12420.6 \div 202 = 62 \text{ Ac}$

Wheat $\sim 12420.6 \div 24 = 518 \text{ Ac}$

Alfalfa Seed $\sim 12420.6 \div 17 = 731 \text{ Ac}$

Pasture $\sim 12420.6 \div 103 = 121 \text{ Ac}$

* Generally Nitrogen is the controlling nutrient just be aware of Phosphorous and Potassium are excessive on some crops.

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Solids
Only

Determine Estimated Application Rate

$$\text{Manure Excreted Per Day} = 0.95 \text{ ft}^3/\text{day} / 1,000 \text{ lb Cow}$$

Total Manure Volume Per Year

$$= (0.95 \text{ ft}^3 \times 365) (700/1000 \times 300) = 72818 \text{ ft}^3$$

Calculate Weight Of Stored Material.

$$= \frac{72818 \text{ ft}^3 \times 60 \text{ lb / ft}^3}{2000} = 2185 \text{ TONS}$$

$$\frac{\text{Tons Applied}}{\text{Application Area}} = \text{Application Rate (Tons/Ac)}$$

Accounting For N

$$\text{TOTAL ACRES} = 362$$

$$\frac{2185 \text{ TONS}}{362 \text{ AC}} = 6.04 \text{ TONS / AC}$$