Example 2— Beef Confinement

- Two groups of 160 steers entering at 500 and leaving at around 750-800.
- Retained for at least 100 days.
- Solid manure, covered stack pad
- Clean out once a year during spring, not incorporated.
- Farmer wants the manure spread evenly.
- See attachment for more information.

Field	Acreage	Yield (tons/ac)	P (lbs./ac)
H2- Corn Silage	32	20	120
H7- Corn Silage	32	20	79

SOLIDS WORKSHEET 1 - ESTIMATING NUTRIENTS GENERATED PER CONFINEMENT PERIOD

1. Nutrients Generated (As Excreted)

Animal Type (Table 1)	Number of Animals		Percent Waste as Solid [a]		Average Weight (lbs.)	/	1000	x	Time Between Clean Outs/Land Applications [b] (Confinement	=	Animal Unit Days						N	P_2O_5	K_2O
Beef (all cattle and calves)	320	x	100%	x	650.0	/	1000	x	100	=	20,800	x	N	0.34	=	7,072		
													P_2O_5	0.21	=		4,368	
													K_2O	0.25	=			5,200
													N		=			
													P_2O_5		=			
		x		x		/	1000	x		=	0	x	K_2O		=			
													N		=			
													P_2O_5		=			
		x		x		/	1000	x		=	0	x	K_2O		=			

		N	P_2O_5	K_2O
Step 1 Total =		7,072	4,368	5,200
			(lbs.)	

2. Manure Generated (As Excreted)

Animal Unit Days	x	Manure/A.U.	=	Volume of Manure (cu.ft.)
20,800	x	1	=	20,800
	x		=	
	x		=	

Step 2 Total = 20,800 cu.ft.

3. Total Tons

Step 2	/	Conversion Factor	=	Total Tons
20,800	/	33	=	630
	/		=	
	/		=	

Step 3 Total = 630 tons

4. Weighted Nutrient Values Before Nutrient Losses

	N	P_2O_5	K_2O
Step 4 Total =	11.2	6.9	8.3
		(lbs./ton)	

[a] The percent of the manure that is handled as a solid.

[b] Confinement period should be adjusted for animals that are only in confinement for a portion of the day. For example if animals spend 16 hours on pasture and 8 hours in confinement, then the confinement period would be 1/3 of a day or 122 days/year.

SOLIDS WORKSHEET 2 - NUTRIENT BALANCE

Tract	Field No.	Acres
	H2	32

Soil Test P Value (Mehlich 3): **120**

		N	P_2O_5	K_2O
1.	**Crop or Crop Sequence/Rotation**	Corn Silage (Ton)		
2.	**Realistic Yield (Average from 5-10 Years on a per acre basis)**	20.0		
3.	**Plant Nutrients Needed or Allowed** (lbs/ac)	194	72	160
4.	**Adjusted P_2O_5 Application Rate According to Threshold**		0	
5.	**Fertilizer Credits** (lbs/ac)			
6.	**Plant Nutrients Needed Minus Credits** (lbs/ac)	194	72	160
7.	**Nutrients in Manure** (lbs/ton) Enter lab results in box on right to override Worksheet 1 values	11.2	6.9	8.3
8.	**Percent Nutrients Retained in System** Table 1 Enter Table 1 values **or** Enter zero if lab results are used in Step 7	80%	95%	95%
9.	**Net Retained Nutrients in Manure** (lbs./ton)	9.0	6.6	7.8
10.	**Percent of Available Nutrients** Enter Table 2 value for N Table 2	35%	80%	100%
11.	**Net Available Nutrients** (lbs./ton)	3.1	5.3	7.8
12.	**Application Rate** (tons/ac) Application limitations may apply. Enter Chosen Application Rate in box on right	10	10	10
13.	**Net Application Amount for All Nutrients** (lbs/ac)	31	53	78
14.	**Nutrient Needs (-) or Surpluses (+)** (lbs/ac)	-163	-19	-82

Tons Available 630 - **Tons Applied in Field** 320 = **Balance** 310

Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7		
N	P205	K20

Chosen Application Rate MUST ENTER
10

Go to Worksheet 3 Solids

SOLIDS WORKSHEET 2 - NUTRIENT BALANCE

Tract	Field No.	Acres
	H7	32

Soil Test P Value (Mehlich 3): **79**

		N	P_2O_5	K_2O
1.	**Crop or Crop Sequence/Rotation**	Corn Silage (Ton)		
2.	**Realistic Yield (Average from 5-10 Years on a per acre basis)**	20.0		
3.	**Plant Nutrients Needed or Allowed** (lbs/ac)	194	72	160
4.	**Adjusted P_2O_5 Application Rate According to Threshold**		0	
5.	**Fertilizer Credits** (lbs/ac)			
6.	**Plant Nutrients Needed Minus Credits** (lbs/ac)	194	72	160
7.	**Nutrients in Manure** (lbs/ton) Enter lab results in box on right to override Worksheet 1 values	11.2	6.9	8.3
8.	**Percent Nutrients Retained in System** First Worksheet 2 values are used or zero if lab results are used	80%	95%	95%
9.	**Net Retained Nutrients in Manure** (lbs./ton)	9.0	6.6	7.8
10.	**Percent of Available Nutrients** Enter Table 2 value for N	35%	80%	100%
11.	**Net Available Nutrients** (lbs./ton)	3.1	5.3	7.8
12.	**Application Rate** (tons/ac) Application limitations may apply. Enter Chosen Application Rate in box on right	10	10	10
13.	**Net Application Amount for All Nutrients** (lbs/ac)	31	53	78
14.	**Nutrient Needs (-) or Surpluses (+)** (lbs/ac)	-163	-19	-82

Table 2

Tons Available 310 - **Tons Applied in Field** 320 = **Balance** **Applied more than Available**

Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7

N	P205	K20

Chosen Application Rate MUST ENTER

10

Go to Worksheet 3 Solids

SOLIDS WORKSHEET 3 - APPLICATION RATES AND LAND REQUIREMENTS [1]

Tract No.

Field No.	Acres	Soil Test Phosphorus (STP)	Crop Rotation / Sequence	Planned Application Date or Timing	Planned Application Rate[2] (tons/ac)	Solid or Commercial Fertilizer (S or C)	Actual Application Date	Actual Application Rate[2] (tons/ac)	Weather at Time of Application[3] (Cloudy, Raining, Sunny)	
									24 Hours Before	24 Hours After
H2	32	120	Corn Silage (Ton)		10					
H7	32	79	Corn Silage (Ton)		10					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					

1. Where land application is occurring under long term lease or agreement with adjacent landowner, fields must be included in the above table.
2. Fields that have a "High" soil test phosphorus (>400) should implement Best Management Practices (BMPs) to reduce the risk of nutrient movement to sensitive waterbodies. BMPs may include, but not be limited to: installing conservation buffers, reducing P_2O_5 application rate, incorporating manure, adding chemical treatments to litter that tie up soluble P and keep it from moving over the landscape, and/or adjusting application timing.
3. It illegal to make land applications when the ground is frozen. It is recommended that land applications are not made within 48 hours of forecasted precipitation.