

Weekly Manure Storage/Lagoon Inspection Checklist and Maintenance Log

Year _____

Farm: _____ Storage/Lagoon ID: _____ Checked by: _____

Critical Storage Liquid Levels

Must Pump or Maximum Operating Level: _____ ft.

Pre-Winter Must Pump Level: _____ ft.

Stop Pumping or Minimum Operating Level: _____ ft. ^a

Max Sludge/Solids Level: _____ ft. ^b

a. Anaerobic lagoons only
b. Anaerobic lagoons and runoff holding ponds only

Manure/Effluent Level Observations

Depth remaining to sidewall low point (ft.) ² _____

Is liquid level marker available & visible? _____

Does sufficient freeboard exist? ³ _____

Other: _____

Inspection Results ¹

	Yes		No		Yes		No	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Earthen Storage Structure

Interior Liner Erosion Observed:

Due to wave action? _____

In vicinity of inlets? _____

In vicinity of outlets? _____

Due to erosion from rainfall? _____

Near agitation equipment access points? _____

Signs of berm damage due to:

Burrowing animals? _____

Presence of trees? _____

Presence of large weeds? _____

Erosion or gullies? _____

Poorly established sod? _____

Are there indications of:

Damp, soft, or slumping areas on berms? _____

Seepage near toe of berm? _____

Seepage around pipes through the berm? _____

Other: _____

Other: _____

If synthetic lined:

Any tare, holes, bubbles in liner? _____

Maintenance Log

Maintenance Performed & Initials	Date

1. Check in gray box indicates concern that may require additional attention.
2. Measured from liquid surface to lowest point on top of dam, berm, or spillway (nearest one foot interval).
3. Runoff holding pond should maintain sufficient volume for freeboard and volume for runoff from 25-year, 24-hour storm.

Maintenance Log

Inspection Results ¹

Concrete/Steel Tanks

	Yes		No		Yes		No		Yes		No		Date	Maintenance Performed & Initials
Date:														
Signs of cracks or structural damage?														
Signs of leakage or overflow?														
Signs of wet spots around base of tank?														
Other:														

Dry Storage (Long term or permanent storage)

	Yes		No		Yes		No		Yes		No		Date	Maintenance Performed & Initials
Is clean water diverted away from stockpile?														
Is the stockpile under roof or cover?														
If no, is runoff from stock pile collected?														
Other:														

Clean Water Diversion

	Yes		No		Yes		No		Yes		No		Date	Maintenance Performed & Initials
Are perimeter drains plugged or blocked?														
Is roof water entering storage?														
Is field runoff entering storage?														
Are diversions/waterways maintained?														
Other:														

Storm Water

	Yes		No		Yes		No		Yes		No		Date	Maintenance Performed & Initials
Is the storm water drainage to storage functioning properly?														
Other:														

Pumping and Transfer Equipment

	Yes		No		Yes		No		Yes		No		Date	Maintenance Performed & Initials
Security: Are gravity drains or pump power supplies locked/secure from tampering?														
Are transfer pipes/pumps functioning properly?														
Recycle pumps/transfer pumps functioning?														
Are backflow/well protection valves in place and functioning properly?														
Other:														

1. Check in gray box indicates concern that may require additional attention.

Monthly Storage Volume and Level Record

Month : _____ Structure / Basin ID: _____ Maintained By: _____

Day	Precepitation Inches	Land Application or Discharge to Waterers of the State						Pond Liquid Level - Ft.
		Time - Pumping Events		Pump Flow Rate (gpm)	Field Used for Application	Total Gallons Pumped	Check if Discharge	
		Start	Stop					
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								

Liquid level is measured from: _____ Low point at top of berm, dam, or spillway; _____ Bottom of storage;

Slurry/Liquid Manure Applicator Calibration and Maintenance

for _____ Equipment

Calibration Log		Date: _____	Calibration Completed by: _____	Calculated Application Rate (tons/acre)
Tractor Gear/RPM	Spreader Setting	Area Method		Calculations
/		Net Manure Weight on Spreader: _____ Tons		
		Width of Spread Pattern: _____ ft		
		Travel Distance to Empty Spread: _____ ft		
/		Net Manure Weight on Spreader: _____ Tons		
		Width of Spread Pattern: _____ ft		
		Travel Distance to Empty Spread: _____ ft		
/		Net Manure Weight on Spreader: _____ Tons		
		Width of Spread Pattern: _____ ft		
		Travel Distance to Empty Spread: _____ ft		

Inspection and Maintenance Log										
Inspection Date	Inspected by (initials):	Is the equipment functioning properly?						Date	Initials	Maintenance Action
		Yes	No	Yes	No	Yes	No	Yes	No	

Record will be stored permanently at _____

Slurry/Liquid Manure Applicator Calibration

From chart below, select

- Spread Capacity: _____ lbs. or gallons
- Distance traveled (length) to empty spreader: _____ feet
- Spread pattern width or distance between individual passes: _____ feet
- Intersection indicates application rate: _____

If appropriate values cannot be found in table below:

Rate per acre = $\frac{\text{Spreader Capacity} \times 43,560}{(\text{Spread Pattern Width} \times \text{Travel Length to Empty})}$

Example (circled numbers):

3000 gallon tank spreader that makes a pass every 4 - 30" corn rows (10 feet) and empties spread in 1200 feet is applying 11,000 gallons per acre.

Spread Width	2000 Gallon Tank					2500 Gallon Tank					3000 Gallon Tank					3500 Gallon Tank					4000 Gallon Tank										
	10'	15'	20'	25'	30'	35'	10'	15'	20'	25'	30'	35'	10'	15'	20'	30'	40'	50'	10'	15'	20'	30'	40'	50'	10'	15'	20'	30'	40'	50'	
	Liquid manure application rate (1000's of gallons per acre)																														
600'	15	10	7	6	5	4	18	12	9	7	6	5	4	22	15	11	7	5	4	25	17	13	8	6	5	29	19	15	10	7	6
800'	11	7	5	4	4	3	14	9	7	5	5	4	3	16	11	8	5	4	3	19	13	10	6	5	4	22	15	11	7	5	4
1000'	9	6	4	3	3	2	11	7	5	4	4	3	3	13	9	7	4	3	3	15	10	8	5	4	3	17	12	9	6	4	3
1200'	7	5	4	3	2	2	9	6	5	4	3	3	3	11	7	5	4	3	2	13	8	6	4	3	3	15	10	7	5	4	3
1400'	6	4	3	2	2	2	8	5	4	3	3	2	2	9	6	5	3	2	2	11	7	5	4	3	2	12	8	6	4	3	2
1600'	5	4	3	2	2	2	7	5	3	3	2	2	2	8	5	4	3	2	2	10	6	5	3	2	2	11	7	5	4	3	2
1800'	5	3	2	2	2	1	6	4	3	2	2	2	2	7	5	4	2	2	1	8	6	4	3	2	2	10	6	5	3	2	2
2000'	4	3	2	2	1	1	5	4	3	2	2	2	2	7	4	3	2	2	1	8	5	4	3	2	2	9	6	4	3	2	2
2500'	3	2	2	1	1	1	4	3	2	2	1	1	1	5	3	3	2	1	1	6	4	3	2	2	1	7	5	3	2	2	1
3000'	3	2	1	1	1	1	4	2	2	1	1	1	1	4	3	2	1	1	1	5	3	3	2	1	1	6	4	3	2	1	1

Spread Width	4500 Gallon Tank					5000 Gallon Tank					5500 Gallon Tank					6000 Gallon Tank					7200 Gallon Tank									
	10'	15'	20'	25'	30'	35'	10'	15'	20'	30'	40'	50'	10'	15'	20'	30'	40'	50'	10'	15'	20'	30'	40'	50'	10'	15'	20'	30'	40'	50'
	Liquid manure application rate (1000's of gallons per acre)																													
600'	33	22	16	13	11	9	36	24	18	12	9	7	40	27	20	13	10	8	44	29	22	15	11	9	52	35	26	17	13	10
800'	25	16	12	10	8	7	27	18	14	9	7	5	30	20	15	10	7	6	33	22	16	11	8	7	39	26	20	13	10	8
1000'	20	13	10	8	7	6	22	15	11	7	5	4	24	16	12	8	6	5	26	17	13	9	7	5	31	21	16	10	8	6
1200'	16	11	8	7	5	5	18	12	9	6	5	4	20	13	10	7	5	4	22	15	11	7	5	4	26	17	13	9	7	5
1400'	14	9	7	6	5	4	16	10	8	5	4	3	17	11	9	6	4	3	19	12	9	6	5	4	22	15	11	7	6	4
1600'	12	8	6	5	4	4	14	9	7	5	3	3	15	10	7	5	4	3	16	11	8	5	4	3	20	13	10	7	5	4
1800'	11	7	5	4	4	3	12	8	6	4	3	2	13	9	7	4	3	3	15	10	7	5	4	3	17	12	9	6	4	3
2000'	10	7	5	4	3	3	11	7	5	4	3	2	12	8	6	4	3	2	13	9	7	4	3	3	16	10	8	5	4	3
2500'	8	5	4	3	3	2	9	6	4	3	2	2	10	6	5	3	2	2	10	7	5	3	3	2	13	8	6	4	3	3
3000'	7	4	3	3	2	2	7	5	4	2	2	1	8	5	4	3	2	2	9	6	4	3	2	2	10	7	5	3	3	2

Travel Speeds to Achieve Proper Application Rate

Injector Size		12' Wide		16' Wide		20' Wide		23' Wide		30' Wide		34' Wide		46' Wide	
	Pumping	Travel Speed		Travel Speed		Travel Speed		Travel Speed		Travel Speed		Travel Speed		Travel Speed	
	GPM	Ft/Min	MPH	Ft/Min	MPH	Ft/Min	MPH	Ft/Min	MPH	Ft/Min	MPH	Ft/Min	MPH	Ft/Min	MPH
4,000 Gallons Per Acre	500	454	5.2	340	3.9	272	3.1	237	2.7	182	2.1	160	1.8	118	1.3
	600	545	6.2	408	4.6	327	3.7	284	3.2	218	2.5	192	2.2	142	1.6
	700	635	7.2	476	5.4	381	4.3	331	3.8	254	2.9	224	2.5	166	1.9
	800	726	8.3	545	6.2	436	5.0	379	4.3	290	3.3	256	2.9	189	2.2
0.147 Inch/Acre Coverage	900	817	9.3	613	7.0	490	5.6	426	4.8	327	3.7	288	3.3	213	2.4
	1000	908	10.3	681	7.7	545	6.2	473	5.4	363	4.1	320	3.6	237	2.7
	1100	998	11.3	749	8.5	599	6.8	521	5.9	399	4.5	352	4.0	260	3.0
	1200	1089	12.4	817	9.3	653	7.4	568	6.5	436	5.0	384	4.4	284	3.2
6,000 Gallons Per Acre	500	303	3.4	227	2.6	182	2.1	158	1.8	121	1.4	107	1.2	79	0.9
	600	363	4.1	272	3.1	218	2.5	189	2.2	145	1.7	128	1.5	95	1.1
	700	424	4.8	318	3.6	254	2.9	221	2.5	169	1.9	149	1.7	110	1.3
	800	484	5.5	363	4.1	290	3.3	253	2.9	194	2.2	171	1.9	126	1.4
0.221 Inch/Acre Coverage	900	545	6.2	408	4.6	327	3.7	284	3.2	218	2.5	192	2.2	142	1.6
	1000	605	6.9	454	5.2	363	4.1	316	3.6	242	2.8	214	2.4	158	1.8
	1100	666	7.6	499	5.7	399	4.5	347	3.9	266	3.0	235	2.7	174	2.0
	1200	726	8.3	545	6.2	436	5.0	379	4.3	290	3.3	256	2.9	189	2.2
8,000 Gallons Per Acre	500	227	2.6	170	1.9	136	1.5	118	1.3	91	1.0	80	0.9	59	0.7
	600	272	3.1	204	2.3	163	1.9	142	1.6	109	1.2	96	1.1	71	0.8
	700	318	3.6	238	2.7	191	2.2	166	1.9	127	1.4	112	1.3	83	0.9
	800	363	4.1	272	3.1	218	2.5	189	2.2	145	1.7	128	1.5	95	1.1
0.295 Inch/Acre Coverage	900	408	4.6	306	3.5	245	2.8	213	2.4	163	1.9	144	1.6	107	1.2
	1000	454	5.2	340	3.9	272	3.1	237	2.7	182	2.1	160	1.8	118	1.3
	1100	499	5.7	374	4.3	299	3.4	260	3.0	200	2.3	176	2.0	130	1.5
	1200	545	6.2	408	4.6	327	3.7	284	3.2	218	2.5	192	2.2	142	1.6
10,000 Gallons Per Acre	500	182	2.1	136	1.5	109	1.2	95	1.1	73	0.8	64	0.7	47	0.5
	600	218	2.5	163	1.9	131	1.5	114	1.3	87	1.0	77	0.9	57	0.6
	700	254	2.9	191	2.2	152	1.7	133	1.5	102	1.2	90	1.0	66	0.8
	800	290	3.3	218	2.5	174	2.0	152	1.7	116	1.3	102	1.2	76	0.9
0.368 Inch/Acre Coverage	900	327	3.7	245	2.8	196	2.2	170	1.9	131	1.5	115	1.3	85	1.0
	1000	363	4.1	272	3.1	218	2.5	189	2.2	145	1.7	128	1.5	95	1.1
	1100	399	4.5	299	3.4	240	2.7	208	2.4	160	1.8	141	1.6	104	1.2
	1200	436	5.0	327	3.7	261	3.0	227	2.6	174	2.0	154	1.7	114	1.3
12,000 Gallons Per Acre	500	151	1.7	113	1.3	91	1.0	79	0.9	61	0.7	53	0.6	39	0.4
	600	182	2.1	136	1.5	109	1.2	95	1.1	73	0.8	64	0.7	47	0.5
	700	212	2.4	159	1.8	127	1.4	110	1.3	85	1.0	75	0.8	55	0.6
	800	242	2.8	182	2.1	145	1.7	126	1.4	97	1.1	85	1.0	63	0.7
0.442 Inch/Acre Coverage	900	272	3.1	204	2.3	163	1.9	142	1.6	109	1.2	96	1.1	71	0.8
	1000	303	3.4	227	2.6	182	2.1	158	1.8	121	1.4	107	1.2	79	0.9
	1100	333	3.8	250	2.8	200	2.3	174	2.0	133	1.5	117	1.3	87	1.0
	1200	363	4.1	272	3.1	218	2.5	189	2.2	145	1.7	128	1.5	95	1.1
14,000 Gallons Per Acre	500	130	1.5	97	1.1	78	0.9	68	0.8	52	0.6	46	0.5	34	0.4
	600	156	1.8	117	1.3	93	1.1	81	0.9	62	0.7	55	0.6	41	0.5
	700	182	2.1	136	1.5	109	1.2	95	1.1	73	0.8	64	0.7	47	0.5
	800	207	2.4	156	1.8	124	1.4	108	1.2	83	0.9	73	0.8	54	0.6
0.516 Inch/Acre Coverage	900	233	2.7	175	2.0	140	1.6	122	1.4	93	1.1	82	0.9	61	0.7
	1000	259	2.9	194	2.2	156	1.8	135	1.5	104	1.2	92	1.0	68	0.8
	1100	285	3.2	214	2.4	171	1.9	149	1.7	114	1.3	101	1.1	74	0.8
	1200	311	3.5	233	2.7	187	2.1	162	1.8	124	1.4	110	1.2	81	0.9

Solid Manure Spreader Calibration

1. Spreader Capacity is Known.

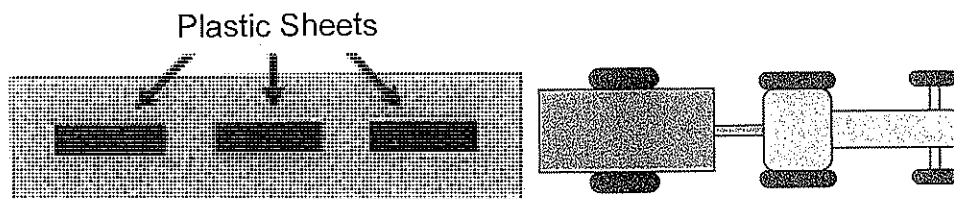
$$\text{Rate per acre} = \frac{\text{Spreader Capacity} \times 43,560}{\text{Width} \times \text{Travel Distance}}$$

Example: 20 ton manure solids spreader makes a pass every 6 30" corn rows (15 feet) and empties spreader in 2,400 feet is applying 24 tons per acre

$$\text{Rate per acre} = \frac{20 \text{ ton} \times 43,560}{15 \text{ feet} \times 2,400 \text{ feet}} = 24 \text{ ton / acre}$$

2. Spreader Capacity is Unknown.

- Cut three or more sheets of equally sized plastic. 22 square feet is preferred size (3' x 7'4" or 4' x 5'6")
- Weigh empty 5 gallon bucket plus one plastic sheet on a scale: _____ lbs.
- Lay sheets in field with edges secured by stones or other heavy objects.
- Drive tractor at normal speeds and discharge manure at typical rate over plastic sheets.
tractor gear: _____, engine RPM: _____, spreader settings: _____



- Check the sheet. Did a reasonably representative application rate fall on the plastic sheet?
- Carefully fold individual sheets without losing manure and place each sheet in separate buckets. Weigh each bucket.

Bucket 1: _____ lbs. Bucket 2: _____ lbs. Bucket 3: _____ lbs.

- Subtract weight of empty bucket and plastic (step b.) to determine net manure weight in each bucket. Net manure weight for

Bucket 1: _____ lbs. Bucket 2: _____ lbs. Bucket 3: _____ lbs.

- Calculate average weight of buckets. Average Net Manure Weight: _____ lbs.

- Calculate application rate.

$$\text{Tons per acre} = \frac{\text{net manure weight} \times 22}{\text{area of plastic sheet (ft}^2\text{)}}$$

If plastic sheet = 22 ft², then Tons per Acre = Net Manure Weight

Irrigation Equipment or Towed Hose Applicator Calibration and Maintenance

for _____ Equipment

Calibration Log Date: _____ Calibration Completed by: _____

Tractor Gear/RPM	Other Equipment Settings	Field Measurements	Calculations	Calculated Application Rate (tons/acre)
/				
/				
/				

Inspection and Maintenance Log

Inspection Date	Maintenance		Date	Initials	Action	
	Inspected by (initials):	Is the equipment functioning properly?				
List of Items Inspected:	Yes	No	Yes	No	Yes	No
	/		/		/	
	/		/		/	
	/		/		/	
	/		/		/	
	/		/		/	
	/		/		/	
	/		/		/	
	/		/		/	

Record will be stored permanently at _____