Quarterly Report 10 - Covering the third and fourth quarters of calendar 2007 (July through December)

I. PHASE I PROGRESS

Ongoing tasks for Phase 1 (evaluation of third-party assessments) include:

- Analyzing data from Minnesota Milk Producers Association (MMPA) technicians on findings of Certification Walkthroughs and Final Project Assessments at volunteer farms;
- Collecting inspection forms from County Feedlot Officers (CFOs) for final inspections of volunteers during Certification Walkthroughs or Final Project Assessments;
- Working with MMPA's Environmental Quality Assurance program coordinator on further refinement of EQA tools, and extending them to cattle operations.

Tasks completed during the reporting period:

- MMPA technicians completed a Certification Walkthrough or Final Project Assessments at all volunteers farms, and submitted reports on those visits to MPCA by the end of the MPCA/MMPA grant period (September 30).
- MMPA submitted its final invoice for grant funds.

II. PHASE 2 PROGRESS

Following is a summary of progress on Phase 2 (the self-assessment pilot) deliverables.

1. A new staff person began inspections in June and continued through October. He conducted all inspections of the 23 (of original 44) volunteers who mailed in a completed self-assessment, and 37 of the control inspections. One project co-manager completed 5 control inspections in 3 southwestern counties in October, and one other inspector completed 2 control group inspections in one north central county. Statewide snow on December 1 effectively ended the inspection season. The final control group count is expected to be 44. All volunteers and 48% of the controls were in the non-delegated counties of Otter Tail (near north west), Pine, Carlton, and Kanabec (north central). 52% of controls were in non-delegated Olmsted and newly-delegated Wabasha (south east), and in non-delegated Redwood, Lyon, and Chippewa in the south west. The following table presents the detail of this geographical distribution (with herd size as well).

CONTROLS							
4-County group	Dairy population	% Total Dairy Population for 9 counties	Controls inspected	% Total Control Inspections	Herd <100 AU	Herd 100-299 AU	Herd 300+ AU
Otter Tail	444	36.82%	13	29.55%	8	4	1
Pine	99	8.21%	5	11.36%	3	2	0
Kanabec	48	3.98%	1	2.27%	0	1	0
Carlton	37	3.07%	2	4.55%	2	0	0
subtotal	628	52.08%	21	47.73%	13	7	1
5-county group							
Wabasha	302	25.04%	8	18.18%	3	4	1
Olmsted	187	15.51%	10	22.73%	8	2	0
Redwood	40	3.32%	2	4.55%	1	0	1
Lyon	33	2.74%	2	4.55%	2	0	0
Chippewa	16	1.33%	1	2.27%	1	0	0
subtotal	578	47.94%	23	52.28%	15	6	2
TOTAL	1206	100.00%	44	100.00%	28	13	3
VOLUNTEERS							
4-County group	Dairy population	% Total Dairy Population for 4 counties	Volunteers inspected	% Total Volunteer Inspections	<100 AU	100-299 AU	300+ AU
Otter Tail	444	70.70%	15	65.22%	5	9	1
Pine	99	15.76%	4	17.39%	3	1	0
Kanabec	48	7.64%	2	8.70%	1	0	1
Carlton	37	5.89%	2	8.70%	1	1	0
	628	100.00%	23	100.00%	10	11	2

2. One of the project co-managers completed data entry, data QA, and automated data analysis for the volunteers and all 44 of the controls. A tabular summary of data entered and analyzed so far appears below.
3. One project co-manager presented on the project at the Minnesota Association of County Feedlot Officers annual conference in October, and represented the project at the Dairy Expo and Cattlemen's meetings in December. Project co-managers are beginning discussion with internal and external stakeholders now that final Round 1 data is near.
4. A no-cost extension of the Cooperative Agreement to 9/30/08 was accepted by MPCA in July.

Near-term tasks for February and beyond include:

- Gather hard-copy educational materials for interim mailing to producers
- Send follow-up letters and materials
- Connect to in-state partners: CFOs, SWCDs, MMPA, many others
- Formulate policy needs for MPCA's feedlot leadership
- MnFarm (formerly "FLEVAL") calculations of feedlot runoff
- Revise workbook
- Update inspection plan for 2008 (and revise QAPP)
- Work with Mike Crow and Region 5's Art Lubin on statistical analysis and discuss/report results to EPA OPEI.

This last task will mainly consist of finalizing core metrics (EBPIs) and determining the statistical significance (if any) of differences between groups. Presented below are one set of core metrics which includes key farm descriptors and questions which on their own provide the most insight about environmental impact or basic business practices. As an alternative approach, project staff will also be pulling together composite scores for groups of questions in topical areas such as feedlot runoff destination, liquid manure storage practices, manure application, residential septic systems, etc.). Such "roll-up" scores have been used by other ERP states, and may be a useful means of presenting summary information on MPCA's dairy project as well. The down side to using "roll-up" scores is that they will in some instances inflate performance where key impacts or practices are failing but some aspects of the topical area are more positive. Conversely, "roll-up" scores could detract from good performance on key outcomes if some practices (including less-important administrative tasks) are weak. Developing and analyzing both scores using first round data should instruct project staff on the best approach for round 2.

MPCA project staff had hoped to have statistical significance information included in this report, but upon consultation with Mike Crow's statistical team and Art Lubin (project QA officer at Region 5), it became clear that existing tools such as the Results Analyzer could not be used on project data for that purpose. This was because real-world staffing constraints dictated that control inspections be evenly split between the 4 counties housing the volunteers and 5 other counties located closer to available inspection staff. Since the 5 counties were added after control inspections began in the original 4 counties, the sample generated from those 5 counties, while by design still roughly proportional to overall distribution of dairies by county, was not drawn from a single 9-county pool. This meant that the control group became a stratified sample rather than a simple random sample, dictating that staff use different techniques for analysis of statistically significant differences between group results. Consultants to the project have agreed that an exact confidence interval test should be used, and are assisting project staff to complete that test in February.

The approach will compare the volunteers to the 4-county and to the 5-county control groups separately, and the 4-county and the 5-county groups to each other. Unfortunately, this stratification of the control sample means that confidence intervals will likely be too large to allow for any but the largest differences between groups to be "statistically significant." Nevertheless, MPCA will use best professional judgment to draw conclusions based on the data already generated.

Once the statistical significance calculation is complete, project staff will discuss the Round 2 data-gathering scheme to see if there are ways to improve it given project developments, or whether we should stick with the originally-intended approach of inspecting all the same farms again in Round 2.

Results for all assessment questions are presented on the next 6 pages. "Key metrics" are shaded and are priorities for followup, education and improvement. NOTES:

1. "Don't know" responses were treated as negative or noncompliant, the assumption being that if farmers weren't aware of a requirement or a condition on their farm, it was likely they were not following the applicable compliance requirement or beyond-compliance practice.
2. In contrast to the raw data, data in Key Metrics were rearranged to emphasize compliance and positive beyond-compliance performance rather than noncompliance.
3. Because of the whole-farm scope of FERP and the impossibility of inspectors observing all conditions, inspectors often relied on aerial photos, maps, and farmer-reported data for conditions remote to the feedlot, barns and homestead.
4. Match rates between self-assessment and inspector responses were only calculated on questions relating to compliance.

METRICS		Volunteers	Inspections	(23)			Controls	4-county	(21)		Controls	5-county	(23)	
Overall compliance score		79.0%	100% max	62% min			75.4%	89.2% max	57.5% min		73.8%	87.9% max	51.5% min	
Compliance <100 AU		77.0%					73.6%				74.4%			
Compliance 100-299 AU		80.4%					77.2%				69.8%			
Compliance 300+ AU		93.5%					86.1%				82.4%			
Match rate for vols SA/inspection		69%					NA				NA			
Return-to-compliance plans complete		16.70%					NA				NA			
Acres in crop rotation		18 farms	8,865 total	493 average			18 farms	6,978 total	388 average		20 farms	6,995 total	350 average	
Manure produced (100lbs/day/cow >1000 X 1.5 for other animals)			49,500 T/yr	2,357 T/yr				31,800 T/yr	1,674 T/yr			22,500 T/yr	1,600 T/yr	
Calculated application rate (need acres where manure applied)			Not yet known					Not yet known				Not yet known		
Herd size trend		9% even	26% increase	65% decrease				Not yet known				Not yet known		
MnFarm (lot run-off model) result			Not yet calculated					Not yet calculated				Not yet calculated		
Question content	**Com-pliance issue?**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**	**Rate of match between SA and inspector**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**
Lot, septic or manure application in shoreland			16	7	69.57%			14	7	66.67%		22	1	95.65%
Lot, septic or manure app in wellhead			23	0	100.00%			21	0	100.00%		22	1	95.65%
		# reporting	Totals	Average			# reporting	Totals	Average		# reporting	Totals	Average	
Mature cows>1000 (AU; X 0.7143=cows)		21	2532.6	120.6			19	1625.2	85.5		14	1153.6	82.4	
Mature<1000		5	126.5	25.3			4	14.0	3.5		0	0.0		
Heifer/Bull		21	436.2	20.8			19	378.8	19.9		15	289.1	19.3	
Calf		19	105.0	5.5			20	79.6	4.0		14	44.6	3.2	
Steer/Cow		0	0.0				5	33.0	6.6		6	166.0	27.7	
Feeder/Heifer		1	76.3	76.3			4	102.9	25.7		6	198.7	33.1	
Cow/Calf pair		2	192.0	96.0			6	141.6	23.6		2	48.0	24.0	
Calf		1	6.2	6.2			1	0.8	0.8		4	12.8	3.2	
Nursery pigs		0	0.0				0	0.0			0	0.0		
Wean/finish		0	0.0				0	0.0			1	450.0	450.0	
Breeder pigs		0	0.0				0	0.0			0	0.0		
Other 1		1	6.4	6.4			2	5.3	2.7		0	0.0		

		Volunteers	Inspections	(23)			Controls	4-county	(21)		Controls	5-county	(23)	
		# reporting	Totals	Average			# reporting	Totals	Average		# reporting	Totals	Average	
Other 2		1	0.6	0.6			1	0.6	0.6		0	0.0		
Other 3		0	0.0				0	0.0			0	0.0		
Other 4		0	0.0				0	0.0			0	0.0		
Other 5		0	0.0				0	0.0			0	0.0		
Total AU		23	3495.8	152.0			21	2381.8	113.4		23	2362.8	102.7	
Question content	**Com-pliance issue?**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**	**Rate of match between SA and inspector**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**
nrolled in Open Lot Agreement			14	9	60.87%			9	12	42.86%		6	17	26.09%
0% improved by 10/05			13	8	61.90%			12	9	57.14%		8	14	36.36%
o runoff by 10/10			14	7	66.67%			12	9	57.14%		3	19	13.64%
omply 100% by 10/10			12	9	57.14%			12	9	57.14%		3	19	13.64%
unoff to surface tile	Y		23	0	100.00%	100.00%		21	0	100.00%		23	0	100.00%
unoff to surf water	Y		22	1	95.65%	95.65%		19	2	90.48%		20	3	86.96%
unoff through sufficient buffer	Y		13	6	68.42%	78.95%		12	7	63.16%		14	9	60.87%
unoff to surface feature	Y		4	0	100.00%	75.00%		7	0	100.00%		5	0	100.00%
unoff to basin or pit			5	18	21.74%			3	18	14.29%		1	22	4.35%
iquid Manure Storage Area (LMSA) resent			14	9	60.87%			8	13	38.10%		4	19	17.39%
LMSA approved	Y		9	5	64.29%	71.43%		6	2	75.00%		4	1	80.00%
MSA result			NA	NA	NA			NA	NA	NA		NA	NA	NA
MSA operated with 1' of freeboard	Y		13	1	92.86%	78.57%		7	0	100.00%		5	0	100.00%
egetation cleared on LMSA sides	Y		10	3	76.92%	84.62%		4	3	57.14%		3	2	60.00%
ermanent manure stockpile is present			4	19	17.39%			1	20	4.76%		2	21	8.70%
erm pile on imperv pad	Y		4	0	100.00%	50.00%		1	0	100.00%		2	0	100.00%
erm pile upslope divert	Y		4	0	100.00%	50.00%		0	1	0.00%		2	0	100.00%
ontain pile runoff in Runoff Control tructure	Y		4	0	100.00%	50.00%		1	0	100.00%		1	1	50.00%
unoff from short-term manure storage ockpile reaches surface water	Y		10	1	90.91%	63.64%		12	1	92.31%		11	0	100.00%
istance from short-term pile to surface ater	Y		8	3	72.73%	54.55%		13	0	100.00%		6	5	54.55%
T pile is on slope <6%	Y		10	1	90.91%	72.73%		11	2	84.62%		9	2	81.82%
T pile w/ upslope divert	Y		9	2	81.82%	45.45%		6	7	46.15%		8	1	88.89%
o sand/gravel under ST pile	Y		7	4	63.64%	54.55%		12	1	92.31%		10	1	90.91%

		Volunteers	Inspections (23)				Controls 4-county (21)				Controls 5-county (23)			
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T pile recordkeeping ST pile location	Y		3	8	27.27%	27.27%		3	10	23.08%		0	10	0.00%
date established	Y		4	7	36.36%	27.27%		3	10	23.08%		0	10	0.00%
volume piled	Y		4	7	36.36%	27.27%		3	10	23.08%		0	10	0.00%
date land-applied	Y		4	7	36.36%	27.27%		3	10	23.08%		0	10	0.00%
eed storage leachate reaches surface ater	Y		23	0	100.00%	95.65%		21	0	100.00%		22	0	100.00%
lean up feed spills			22	0	100.00%			20	1	95.24%		22	0	100.00%
ilkhouse Waste-MHW reaches surface ater	Y		6	0	100.00%	50.00%		11	1	91.67%		9	0	100.00%
HW flows through an adequate buffer efore reaching surface water	Y		1	1	50.00%	0.00%		4	2	66.67%		6	0	100.00%
HW flows into LMSA			10	1	90.91%			7	0	100.00%		2	0	100.00%
HW flows to a septic system			10	0	100.00%			6	0	100.00%		7	0	100.00%
HW to septic system separate from ousehold	Y		10	0	100.00%	80.00%		6	0	100.00%		7	0	100.00%
HW pre-treated prior to septic	Y		0	10	0.00%	50.00%		1	5	16.67%		0	7	0.00%
HW surfaces after septic, but flows rough adequate buffer before reaching rface water	Y		4	4	50.00%	50.00%		2	3	40.00%		0	2	0.00%
oes MHW storage overflow	Y		9	1	90.00%	50.00%		7	0	100.00%		2	0	100.00%
arcasses- rendering service used AND you ansport off-site, is temporary storage avenger-proof	Y		14	2	87.50%	37.50%		11	2	84.62%		12	0	100.00%
se rendering service and carcasses moved within 72 hours	Y		16	2	88.89%	88.89%		13	1	92.86%		16	0	100.00%
o you compost carcasses			2	21	8.70%			2	19	9.52%		4	19	17.39%
so, smell carcasses	Y		2	0	100.00%	0.00%		2	0	100.00%		3	1	75.00%
so, does liquid flow from compost ructure	Y		2	0	100.00%	0.00%		2	0	100.00%		3	1	75.00%
so, is composting on an impervious ad	Y		0	2	0.00%	0.00%		0	2	0.00%		1	3	25.00%
so, is 7-10 day cycle with temps >130 used	Y		0	2	0.00%	0.00%		0	2	0.00%		1	3	25.00%

		Volunteers	Inspections (23)				Controls 4-county (21)				Controls 5-county (23)			
Question content	**Com-pliance issue?**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**	**Rate of match between SA and inspector**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**
f so, is finished product free of tissue	Y		1	1	50.00%	0.00%		2	0	100.00%		2	2	50.00%
o you bury carcasses			10	13	43.48%			14	7	66.67%		15	8	65.22%
f so, >5' over high water table	Y		10	3	76.92%	38.46%		5	2	71.43%		8	0	100.00%
f so, away from surface water	Y		12	1	92.31%	46.15%		7	0	100.00%		8	0	100.00%
f so, cover immediately with 3' soil	Y		10	3	76.92%	38.46%		3	4	42.86%		8	0	100.00%
f so, avoid sand/gravel soils	Y		10	3	76.92%	38.46%		6	1	85.71%		8	0	100.00%
f so, >10' over bedrock	Y		11	2	84.62%	46.15%		5	2	71.43%		8	0	100.00%
utrient/Manure Management rop total Nitrogen ≤ Univ of Minnesota recommendations			11	12	47.83%			10	11	47.62%		9	14	39.13%
ll first-year available Nitrogen ± 20% M recommendations	Y		11	12	47.83%	21.74%		8	13	38.10%		8	15	34.78%
lean up manure spills on public roads	Y		22	0	100.00%	77.27%		16	0	100.00%		21	0	100.00%
corporate manure within 24 hours ithin 300' of surface water	Y		13	4	76.47%	64.71%		4	7	36.36%		3	5	37.50%
pply manure within 25' of surface ater	Y		17	4	80.95%	85.71%		14	0	100.00%		11	1	91.67%
pply manure within 300' of water on ozen ground	Y		20	3	86.96%	91.30%		21	0	100.00%		20	3	86.96%
o you build up soil Phosphorus within 00' of surface water	Y		12	11	52.17%	52.17%		16	5	76.19%		5	18	21.74%
o you apply within 50' of sensitive atures	Y		7	0	100.00%	71.43%		5	0	100.00%		5	0	100.00%
or farms 100-299 AU- are manure pplication records current	Y		5	7	41.67%	58.33%		1	7	12.50%		2	6	25.00%
or farms 100-299 AU- 100+ in 1 pile- ,P 4 yrs	Y		6	5	54.55%	63.64%		2	4	33.33%		3	3	50.00%
or farms >300 AU – are appl records aintained for 3 years (6 yrs if by rface water)	Y		2	0	100.00%	100.00%		1	0	100.00%		2	0	100.00%
or farms >300 AU, Phos soil testing at ast once every 4 years where manure pplied	Y		2	0	100.00%	100.00%		1	0	100.00%		2	0	100.00%
or farms >300 AU, apply on extremely igh P soils w/ no permit/plan	Y		2	0	100.00%	100.00%		1	0	100.00%		2	0	100.00%

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Question content	**Com-pliance issue?**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**	**Rate of match between SA and inspector**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**
or farms >300 AU, apply on high P ils w/ no permit/plan	Y		2	0	100.00%	100.00%		1	0	100.00%		2	0	100.00%
or farms >300 AU, test new storage nually	Y		2	0	100.00%	100.00%		1	0	100.00%		2	0	100.00%
any sewage straight-piped to surface ater	Y		23	0	100.00%	95.65%		21	0	100.00%		22	1	95.65%
oes any sewage seep to ground surface	Y		19	4	82.61%	86.96%		20	1	95.24%		20	3	86.96%
oes sewage back-up into residence	Y		22	1	95.65%	95.65%		21	0	100.00%		23	0	100.00%
re well casings above ade/grouted/capped	Y		23	0	100.00%	100.00%		21	0	100.00%		22	1	95.65%
re wells upslope or protected from llutants	Y		23	0	100.00%	100.00%		21	0	100.00%		22	1	95.65%
re antibackflow devices used on ucets with hoses	Y		23	0	100.00%	82.61%		19	2	90.48%		18	2	90.00%
re unused wells properly sealed, cumented	Y		5	1	83.33%	83.33%		1	0	100.00%		4	3	57.14%
o you hire licensed pest applicator			15	7	68.18%			15	4	78.95%		15	8	65.22%
not, keep records of all applications	Y		10	1	90.91%	72.73%		5	1	83.33%		9	0	100.00%
not, triple-wash and recycle ntainers per label instructions	Y		9	0	100.00%	88.89%		6	0	100.00%		7	0	100.00%
not, do you store pesticides in original ntainer	Y		9	0	100.00%	88.89%		6	0	100.00%		7	1	87.50%
ny USTs >1100 gallons			22	1	95.65%			21	0	100.00%		22	1	95.65%
yes, coated/monitored	Y		0	1	0.00%	0.00%		0	0	#DIV/0!		0	1	0.00%
a burn barrel used routinely	Y	5 NC (Otter Tail)	16	7	69.57%	82.61%	7 NC (Otter Tail)	12	9	57.14%	6 NC (Wabasha)	5	18	21.74%
a 50-100' buffer maintained around rface water			11	11	50.00%			5	15	25.00%		2	20	9.09%
so, is visible channeling prevented			12	6	66.67%			5	3	62.50%		2	18	10.00%
otate 2+ crop/3 yr OR perennial forage 50% of rotation			21	1	95.45%			19	1	95.00%		18	5	78.26%
o target nutrients, is GPS used			4	19	17.39%			3	18	14.29%		2	21	8.70%
o target nutrients, is soil sampling used			19	4	82.61%			15	6	71.43%		14	9	60.87%
o target nutrients, are yield monitors n combines used			6	17	26.09%			2	19	9.52%		11	12	47.83%

		Volunteers	Inspections	(23)			Controls	4-county	(21)			Controls	5-county	(23)	
Question content	**Com-pliance issue?**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**	**Rate of match between SA and inspector**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**		**Positive**	**Negative (incl DK)**	**Positive/# applicable (percent)**
there 30% residue left OR use strip lage on 2/3 of rotation			17	5	77.27%			10	9	52.63%		14	9	60.87%
house septic pumped once very 3 ears	Y		8	15	34.78%	54.55%		4	17	19.05%		4	19	17.39%
re septic systems professionally valuated and visually inspect once very 3 years			0	23	0.00%			0	21	0.00%		0	23	0.00%
o you put silage leachate in liquid anure storage			21	0	100.00%			20	0	100.00%		21	0	100.00%
o you inject or incorporate manure ithin 24 hours on all lands			3	20	13.04%			2	19	9.52%		2	21	8.70%
o you clean barn floor/stalls daily			18	5	78.26%			18	3	85.71%		14	9	60.87%
oes your open-air manure storage aintain 50% crust			12	0	100.00%			5	2	71.43%		1	1	50.00%
o you manage feed for nutrients			4	18	18.18%			2	18	10.00%		3	19	13.64%

III. LEVEL OF EXPENDITURES

Financial Information removed by EPA as confidential business information.

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