B.   Collections of Information Employing Statistical Methods

*1.   Describe the potential respondent universe and any sampling or other respondent
         selection methods to be used.*

The potential respondent universe of the Dairy 2007 study is all dairy operations that are on the
NASS list frame with dairy cows, in 17 states[1]. The preliminary selection of States to be
included in the study was done in February 2006. The goal of NAHMS national studies is to
include States that account for at least 70 percent of the animals and operators/producers in the
United States. The initial review of States identified 16 major dairy States accounting for 77.6
percent of the operations with milk cows (dairy herds) and 80.9 percent of the milk cow
inventory. In addition, a response rate table showing all phases of the study is provided in
Appendix F.

A memo identifying these 16 States was provided in March 2006 to the VS Regional Directors.
Each Regional Director sought input from their respective States about being included or
excluded from the study. Virginia was included, based on the State's interest.

Examination of the NASS Statistical Service Reports, "*Cattle, January 2006*" and "*Farms, Land
in Farms and Livestock Operations, 2005 Summary*", (the latest publications of dairy cow
inventory and number of operations by state) demonstrates that the selected 17 states account for
79.3 percent of dairy operations and 82.0 percent of dairy cows in the United States (Appendix A
– Total U.S. Dairy Operations and Dairy Cow Inventory, 2005-2006.)

> Based on data from previous NAHMS dairy surveys (Appendix B – NAHMS Dairy 2002
> & 1996 Review of Response Rates), the estimated response rate for the NASS on farm
> component of the Dairy 2007 study is 70 percent (response rate calculations appear in
> Appendix G).   Almost all (96%) of the respondents from the NASS component of the
> study will be eligible to participate in the APHIS data collection phase of the study.
> Criterion for eligibility is based on January 1, 2007 inventory of at least 30 milk cows, as
> reported on the General Dairy Management Report questionnaire.

2.   Describe the procedures for the collection of information.

• **Statistical methodology for stratification and sample selection:**
> Stratification: The 17 top dairy states in the U.S. were selected for inclusion in the study
> based upon each state's contribution to the U.S. total number of milk cows and number of
> operations with milk cows (Appendix A).

---

[1] California, Idaho, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, New Mexico, New York, Ohio,
Pennsylvania, Texas, Vermont, Virginia, Washington, Wisconsin. State selection document can be found in
Background Information section.
.

Sampling methodology— Dairy 2007 study: 4,000 dairy operations will be selected from NASS' list frame of producers with one or more milk cows. Appendix C (Sample size estimates for two levels of prevalence using 95% confidence) shows sample size estimates for various response rate scenarios without adjusting for design effect. The sample will be selected as a stratified random sample with the strata being both state and operation size. Operation size is based on milk cow inventory. The state-level allocation will be based on a weighted proportion of the number of operations in the state and the cow inventory relative to the U.S. levels for dairy operations (Appendix D – Preliminary NAHMS Dairy 2007 Sample Allocation). The percentage of U.S. dairy operations in the state will get a weight of 0.4 and the percentage of dairy cows will get a weight of 0.6. For example, California has 23.8% of the dairy cows and 3.7% of operations in the 17 selected states. California will initially be assigned 15.8% (23.8*0.6+3.7*0.4=15.8) of the sample of 4,000. States with similar proportions of inventory and operations were combined for an overall calculation. The allocation will be adjusted to move some of the sample from Wisconsin, California, Minnesota, New York and Pennsylvania to other states with fewer samples. Within states the state-level sample will be allocated within size strata. Allocation will follow the same strategy as the state-level allocation since proportions of operations and proportions (ratios) of dairy cows will be estimated using the data obtained from this study.

Up to five telephone calls will be made by the NASS enumerator to set up a convenient time to introduce the study. If the enumerator cannot contact the producer via phone, the enumerator will drive to the farm to initiate contact and will either complete the interview at that time or establish another time for the interview. If the farm location cannot be established, the selected unit will be coded as inaccessible. Once contact is made, the NASS enumerator will administer NAHMS-187 (General Dairy Management Report questionnaire). Upon completion of the interview, if the respondent had 30 or more milk cows they will be asked to sign a consent form allowing NASS to turn their name over to APHIS for further consideration in the study; this will complete Phase I of the study. NASS will provide the list of producers willing to participate in the second phase of the study (additional questionnaire and biologic sampling) to NAHMS coordinators in each state immediately following Phase I. Once all the information on NAHMS-187 has been entered and validated, NASS will send a clean dataset to NCAHS along with completed questionnaires via mail. The estimated response rate based on previous NAHMS dairy studies is 70% for Phase I.

Phase II of the study consists of an on farm interview administered by an APHIS designated data collector (typically a veterinary medical officer (VMO). The data collector will contact the producer to set up a time to administer the study questionnaires and collect biological samples. Upon arrival on the premises, the data collector will present NAHMS-188 (Producer Agreement) to the producer which allows the producer to indicate what portion(s) of the Dairy 2007 study they agree to participate in. Once NAHMS-188 is completed and signed, the data collector will administer NAHMS 189 (VS Initial Visit questionnaire) to the producer. Once NAHMS-189 has been completed, a separate time will be set up for the data collector to come back and administer NAHMS-190 (Heifer Calf Blood Collection Record questionnaire) and take biologic

samples [NAHMS-191 (Blood and Fecal Collection Record), NAHMS-192 (Bulk Tank Sampling Collection Record) and NAHMS-193 (Heifer Calf Growth Collection Record)] depending on what the producer indicates on NAHMS-188). The data collector may set up to three separate times to come back to the farm (once per sample) to complete the biological sampling. Once NAHMS-190 is completed, and all of the samples indicated on NAHMS-188 have been taken, Phase II of the study is complete. The completed questionnaires will be returned to NCAHS via U.S. Mail. The estimated response rate based on previous NAHMS dairy studies is 75% for the Phase II questionnaire. Approximately 80% of operations that complete the Phase II questionnaire will participate in collection of biological samples.

- **Estimation procedure:**

  The sampling design is a stratified random sample with unequal probabilities of selection. The statistical estimation will be undertaken using either SAS survey procedures or SUDAAN. Both software packages use a Taylor series expansion to estimate appropriate variances for the stratified, weighted data.

- **Degree of accuracy needed:**

  In order to obtain an estimate of 10% +/- 2.0% (cv=10.0%) a sample size of 864 is needed when a simple random sample is taken. Similarly, to obtain a prevalence/proportion estimate of 50%+/-10% (cv=10%) would require a simple random sample of only 96. However, the complex survey design typically will result in variances that are inflated. The design effect from the Dairy 2002 study indicates the magnitude of the variance inflation that can be expected (Appendix E). Design effects ranged from less than one, up to two for the selected variables that were evaluated. Assuming a typical design effect of 1.5 and a response rate of 70%, a sample size of 1851 [(864*1.5)/0.7] would be needed to obtain the desired precision in each of two regions when the estimate is 10%. In the second phase of collection, if the response rate is again 70%, the sample size necessary would increase to 2645 (1851/0.7) in order to attain the same precision for estimates of 10%. Nationally, the sample size will be adequate to attain the desired precision but not at the regional level if the estimate is 10%.
  At the regional level there will effectively be 653 samples [(2000/1.5)*.7*.7)] which would provide a coefficient of variation of about 11.5% when the estimate is 10% or a coefficient of variation of about 5.8% when the estimate is 30%.

  The design of the Dairy 2002 study was very similar to the proposed design for the Dairy 2007 study. The initial sample size for the NASS phase was similar (n=3,876 in 2002). Estimates, standard errors and coefficients of variation (based on 2,461 completed questionnaires) presented in Appendix E indicate that the minimum degree of precision that was desired was attained and, in all cases, exceeded for the NASS component. Similarly, the estimates, standard errors, and coefficients of variation for the APHIS component (based on 1,013 completed questionnaires) met the desired accuracy goals (Appendix E).

- **Unusual problems requiring specialized sampling procedures:**

  There are no unusual problems requiring specialized sampling procedures and data collection cycles.

3.   Describe methods to maximize response rates and to deal with issues of non-response.

Study Design:

- Many questions have been repeated from previous NAHMS dairy studies conducted in 1991-92, 1996, and 2002.

- The study minimizes collection of data to that which is absolutely necessary to meet the stated objectives.

- NAHMS staff will develop a training CD for NASS enumerators that explains the purpose of the study and addresses anticipated difficulties with questions, including proper pronunciation of diseases. Each enumerator will receive a CD.

- After participating in a telephone conference call training session with NAHMS staff, each State's NAHMS coordinator (VMO) will help train NASS enumerators in their respective state.

- The NAHMS coordinator conducting training will acquaint the NASS enumerators with NCAHS, their role in the information collection, and the type of information to be reported resulting from the data collected.

- Similarly, for the APHIS component, each State NAHMS coordinator will receive three days of specialized training via NAHMS staff and in return train the APHIS field data collectors in their state.

- The Dairy specialist for NCAHS has made numerous contacts and collaborative efforts to identify the information needs of the industry and the best way to ask for that information via questionnaire.

- A sample of 4,000 dairy producers will be drawn from NASS' producer list.

- A pre-survey letter[2] will be sent along with the brochure. Once personal contact is made by the enumerator the brochure will again be presented.

- Two separate data collection efforts by two agencies within USDA have been combined. Instead of NASS conducting two separate surveys (NASS chemical usage and NAHMS – health and management) both surveys are included in the General Dairy Management Report visit.

---

[2] Sample of pre-survey letter is attached in section 6.

Contacting Respondents:

- The study has been announced and is supported by the National Milk Producers Federation (NMPF), American Association of Bovine Practitioners (AABP), and the NMC.

- Producers will be called by the NASS enumerator up to five times followed by an on farm visit before they are listed as a refused or inaccessible operation.

- The APHIS designated data collector will contact farms that have consented to continue in the study and set up a convenient time for the producer to complete the questionnaire and conduct biological sampling.

Data Collection Steps:

- Data collectors will arrive at the premises at the agreed upon time.

- The NASS enumerators will complete NAHMS 187, and ask eligible producers to sign the consent form.

- The APHIS data collectors will administer NAHMS 189-194 to the consenting producers.

Data Analysis Steps:

Response rates, given the methods described above, are expected to be approximately 70% and 75% respectively for the two phases of data collection. If the respondents differ substantially from the nonrespondents there will be the potential for bias. There are two approaches that we will use to examine for potential bias. First, NASS's control data on their list frame will be available for both respondents and non-respondents to allow for examination of potential differences in the types of responding and non-responding producers. The information will include number of milk cows for each selected unit. For the APHIS phase (Phase II) we will have the data from the completed initial survey available for comparing respondents versus nonrespondents as well as the control data from the NASS list frame. Secondly, we can compare estimates from the study with available indicators from other sources. For example, although we do not publish estimates of dairy cattle, the survey results will allow us to make estimates that we can use to compare against NASS' inventory estimates. This study is the fourth dairy study that we have conducted and we can compare current estimates with results from the previous studies (1991-92, 1996, and 2002).

The complex sampling design necessitates the use of weights which reflect the initial sample selection probabilities (the inverse of the selection interval). Weights of nonrespondents will be transferred to responding operations that are most similar based on available data. This data will be available from the NASS list frame for the NASS phase of the study. The APHIS phase weight adjustments will be based on data available from both the NASS list frame and the NASS component questionnaire results. Within categories, the sum of weights of the nonrespondents and respondents will be divided by the sum of the weights of the respondents only. This factor will be used to adjust the

weights of the respondents within the category. All weights for nonrespondents will be set to zero.

4.   Describe any test procedures or methods to be undertaken.

The proposed questionnaires will be tested during the pretest involving less than 10 respondents. Results of these pretests will be utilized to refine the questionnaires in order to reduce respondent burden and improve the usefulness of the information.

5.   Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and /or analyze the information for the agency.

The statistical aspects of the design were coordinated by Mr. George Hill, Survey Statistician, USDA: APHIS, Veterinary Services, CEAH, Fort Collins, CO, (970) 494-7250. The actual data collection will be conducted by APHIS designated data collectors. Contact persons for data collection are:

- Dr. John Clifford, Deputy Administrator, USDA: APHIS, Veterinary Services, Washington, DC (202) 447-6835.

Analysis of the data will be accomplished by NCAHS veterinarians, epidemiologists, and statisticians under the direction of:

- Dr. Nora Wineland, Co-Leader, National Center for Animal Health Surveillance, USDA: APHIS, VS, CEAH, 2150 Centre Avenue, Building B MS2E7, Fort Collins, CO 80526-8117 (970) 494-7230.

Consultants used for the Dairy 2007 study are:

Mr. John Adams, Director of Animal Health and Farm Services, National Milk Producers Federation, 2101 Wilson Blvd., Suite 400, Arlington, VA 22201, 703.243.6111

Dr. Todd Byrem, Director, Antel BioSystems, Inc., PO Box 23157, Lansing, MI 48910-3157, 517.351.3180 ext 649

Mr. Jim Carroll, Vice President of Quality Assurance and Regulatory Affairs for Fluid Operations, Dairy Farmers of America, Kansas City, MO

Dr. Michael Collins, School of Veterinary Medicine, University of Wisconsin, 2015 Linden Drive West, Madison, WI 53706, 608.262.8457

Dr. Ian Gardner, School of Veterinary Medicine, University of California, Davis, Davis, CA 95616, 530.752.6992

Dr. Frank Garry, Integrated Livestock Management, Colorado State University, 300 West Drake Rd, Fort Collins, CO 80526, 970.297.0371

Dr. Jerry Olson, Senior Veterinarian-Dairy, Pfizer Animal Health, 1808 Willow Springs Way, Fort Collins, CO 80528, 970.231.1693

Dr. Juliania Ruzante, Western Institute for Food Safety and Security, Veterinary Specialist, US-DHS Training Grant, 279 Cousteau Place Suite 100, Davis, CA 95616, 530.757.5753

Mr. William Wailes, Department Head, Department of Animal Sciences, Colorado State University, Fort Collins, CO 80526

Dr. Scott Wells, Department of Population Medicine, College of Veterinary Medicine, University of Minnesota, 136 Andrew Boss Laboratory, 1354 Eckles Ave, St. Paul, MN 55108, 612.625.8166

Dr. Robert Whitlock, New Bolton Center, University of Pennsylvania, 426 Dean Drive – Cedarcroft, Kennett Square, PA 19348, 215.444.5800 ext 2122

Appendix A: Total U.S. Dairy Operations and Dairy Cow Inventory, 2005-2006

Total Dairy Operations* and Dairy Cow Inventory**

State	Total Operations	Percent of U.S. Total	Percent of 17 States	Cow Inventory	Percent of U.S. Total	Percent of 17 States
AL	190	0.24		14,000	0.15	
AK	30	0.04		800	0.01	
AZ	210	0.27		165,000	1.82	
AR	320	0.41		21,000	0.23	
CA***	2,300	2.94	3.70	1,770,000	19.54	23.82
CO	660	0.84		105,000	1.16	
CT	230	0.29		20,000	0.22	
DE	85	0.11		7,000	0.08	
FL	480	0.61		134,000	1.48	
GA	610	0.78		78,000	0.86	
HI	30	0.04		4,600	0.05	
ID***	850	1.09	1.37	473,000	5.22	6.36
IL	1,400	1.79		104,000	1.15	
IN***	2,200	2.81	3.54	158,000	1.74	2.13
IA***	2,500	3.19	4.03	187,000	2.06	2.52
KS	900	1.15		110,000	1.21	
KY***	2,200	2.81	3.54	102,000	1.13	1.37
LA	390	0.50		32,000	0.35	
ME	470	0.60		32,000	0.35	
MD	850	1.09		70,000	0.77	
MA	250	0.32		16,000	0.18	
MI***	2,800	3.58	4.51	312,000	3.44	4.20
MN***	5,800	7.41	9.34	445,000	4.91	5.99
MS	350	0.45		24,000	0.26	
MO***	2,700	3.45	4.35	114,000	1.26	1.53
MT	650	0.83		19,000	0.21	
NE	770	0.98		60,000	0.66	
NV	110	0.14		27,000	0.30	
NH	200	0.26		16,000	0.18	
NJ	150	0.19		12,000	0.13	
NM***	450	0.57	0.72	340,000	3.75	4.57
NY***	6,700	8.56	10.79	652,000	7.20	8.77
NC	680	0.87		52,000	0.57	
ND	550	0.70		33,000	0.36	
OH***	4,400	5.62	7.08	273,000	3.01	3.67
OK	1,400	1.79		75,000	0.83	
OR	790	1.01		121,000	1.34	
PA***	8,900	11.37	14.33	558,000	6.16	7.51
RI	30	0.04		1,000	0.01	

SC	200	0.26		17,000	0.19	
SD	800	1.02		81,000	0.89	
TN	1,100	1.40		70,000	0.77	
TX***	1,500	1.92	2.42	325,000	3.59	4.37
UT	580	0.74		85,000	0.94	
VT***	1,300	1.66	2.09	143,000	1.58	1.92
VA***	1,400	1.79	2.25	103,000	1.14	1.39
WA***	810	1.03	1.30	237,000	2.62	3.19
WV	470	0.60		13,000	0.14	
WI***	15,300	19.54	24.63	1,240,000	13.69	16.68
WY	250	0.32		7,000	0.08	
Top 17 States	62,110	79.34	100.00	7,432,000	82.04	100.00
US total	78,295	100.00		9,058,400	100.00	

*NASS –   *Farms, Land in Farms, and Livestock Operations 2005 Summary*
** NASS – *Cattle Report January 2006*
***Top 17 Dairy States

Appendix B: NAHMS Dairy 2002 and 1996 Review of Response Rates

1. Dairy 2002 and 1996 sample review
Screening sample drawn in 21 NASS dairy states.

a. General Dairy Management Report (NASS) response rates:

Response category	Dairy 2002		Dairy 1996	
	No. Ops.	%	No. Ops.	%
Complete & VMO consent	1,438	37.1	1,603	35.5
Complete & refused consent	905	23.3	791	17.5
Complete & ineligible	118	3.0	148	3.3
Subtotal	*2,461*	*63.4*	*2,542*	*56.3*
No milk cows on 1/1/2002	227	5.9	646	14.3
Out of business	183	4.7	173	3.8
Out of scope	45	1.2	22	0.5
Subtotal	*2,916*	*75.2*	*3,383*	*74.9*
Refusal	821	21.2	969	21.5
Inaccessible	137	3.5	164	3.6
Unknown	2	0.1	-	-
Total	*3,876*	*100.0*	*4,516*	*100.0*

Consent for further participation in the study was asked of those with 30+ head of dairy cattle on January 1, 2002. There were 2,461 operations with good, positive, complete data or 63.4 % of the total sample (75.2 % if zeroes, out of business and out of scope are included).

The summarized complete data included 2,461 operations of which 1,438 consented (60.4%) to the APHIS phase, while 3.0 percent completed the survey but were ineligible for the APHIS phase.

b. VMO visits response rates:

Response category	2002 Initial VMO Visit		1996 Initial VMO Visit	
	No. Ops.	%	No. Ops.	%
Complete	1,013	70.4	1,219	76.0
Refusal	292	23.3	339	21.2
Ineligible	14	1.0	29	1.8
Inaccessible	76	5.3	16	1.0
Total	*1,438*	*100.0*	*1,603*	*100.0*

2. Setting total sample size for Dairy 2007
As shown above, the Dairy 2002 selected sample of 3,876 provided 2,461 good useable data from enumerator interviews. As a rough goal we should target 2,688 complete questionnaires from the enumerator interview and 1,310 from the VMO visit. Since most of the 'out of business' operations were screened out prior to the enumerator visit

it is assumed the number will increase over the 67 operations identified by enumerators. Based upon these considerations we need a total sample size of approximately 4,000 operations. Further consideration of sample size is shown in Appendix C.

Appendix C: Sample size estimates for two levels of prevalence using 95% confidence

Expected Prevalence	Percent	Sample size	50% CI (+/-)	30% CI (+/-)	Sample size	50% CI (+/-)	30% CI (+/-)	Sample size	50% CI (+/-)	30% CI (+/-)
N = 78,295										
n selected for NASS		3,500			4,000			4,500		
n NASS complete @ 75%		2,625	1.91	1.75	3,000	1.79	1.64	3,375	1.69	1.55
n NASS - per region		1,313	2.71	2.48	1,500	2.53	2.32	1,688	2.39	2.19
n NASS complete @ 70%		2,450	1.98	1.81	2,800	1.85	1.70	3,150	1.75	1.60
n NASS - per region		1,225	2.80	2.57	1,400	2.62	2.40	1,575	2.47	2.26
n NASS complete @ 65%		2,275	2.05	1.88	2,600	1.92	1.76	2,925	1.81	1.66
n NASS - per region		1,138	2.91	2.66	1,300	2.72	2.49	1,463	2.56	2.35
Target n NASS complete @ 70%	70.0%	2,450	1.98	1.81	2,800	1.85	1.70	3,150	1.75	1.60
n NASS per region		1,225	2.80	2.57	1,400	2.62	2.40	1,575	2.47	2.26
Target n eligible VMO	96.0%	2,352			2,688			3,024		
Target n consenting VMO @ 65%	65.0%	1,529			1,747			1,966		
n VMO complete @ 80%		1,223	2.80	2.57	1,398	2.62	2.40	1,572	2.47	2.27
n VMO - per region		612	3.96	3.63	699	3.71	3.40	786	3.50	3.20
n VMO complete @ 75%		1,147	2.89	2.65	1,310	2.71	2.48	1,474	2.55	2.34
n VMO - per region		573	4.09	3.75	655	3.83	3.51	737	3.61	3.31
n VMO complete @ 70%		1,070	3.00	2.75	1,223	2.80	2.57	1,376	2.64	2.42
n VMO - per region		535	4.24	3.88	612	3.96	3.63	688	3.74	3.42
Target n Complete VMO Questionnaire	75.0%	1,147	2.89	2.65	1,310	2.71	2.48	1,474	2.55	2.34
n VMO - per region		573	4.09	3.75	655	3.83	3.51	737	3.61	3.31
Target n Complete VMO Biologics	80.0%	917	3.24	2.97	1,048	3.03	2.77	1,179	2.85	2.62

Appendix D: Preliminary NAHMS Dairy 2007 Sample Allocation

											Sample sizes per State				
												NASS			Complete VMO[5]	
Grp			States				Sum	Sts/ grp	Total	Adj.	Sample[1]	Complete[2]/ (70%)	Eligible[3] (96%)	Consenting[4] (65%)	Quest. (75%)	Biologics (80%)
1		CA	WI													
	Cows	23.82	16.68				40.50	2	35.63	29.0	1,160	812	780	507	380	304
	Operations	3.70	24.63				28.33				(580)	(406)	(390)	(253)	(190)	(152)
	Wtd. %	15.77	19.86				35.63									
2		MN	NY	PA												
	Cows	5.99	8.77	7.51			22.27	3	27.15	26.0	1,040	728	699	454	341	273
	Operations	9.34	10.79	14.33			34.46				(347)	(243)	(233)	(151)	(114)	(91)
	Wtd. %	7.33	9.58	10.24			27.15									
3		ID	IA	MI	NM	OH	TX									
	Cows	6.36	2.52	4.20	4.57	3.67	4.37	25.69	6	23.47	25.0	1,000	700	672	437	328	262
	Operations	1.37	4.03	4.51	0.72	7.08	2.42	20.13				(167)	(117)	(112)	(73)	(55)	(44)
	Wtd. %	4.37	3.12	4.32	3.03	5.04	3.59	23.47								
4		IN	KY	MO	VT	VA	WA									
	Cows	2.13	1.37	1.53	1.92	1.39	3.19	11.53	6	13.75	20.0	800	560	538	349	262	210
	Operations	3.54	3.54	4.35	2.09	2.25	1.30	17.07				(133)	(93)	(90)	(58)	(44)	(35)
	Wtd. %	2.69	2.24	2.66	1.99	1.73	2.44	13.75								
	Total								17	100.00	100.0	4,000	2,800	2,688	1,747	1,310	1.048

[1] Numbers in parenthesis indicate sample allocated to each state within the group.
[2] NASS enumerator response rates are estimated at 70 percent across all states.
[3] Number of producers eligible for the APHIS phase should be very high (96%) because of the screening
[4] Of those completing the enumerator questionnaire and having 30+ dairy cows, approximately 65% will consent to have their names turned over to APHIS.
[5] VMO response rates are estimated at 75 percent and 80 percent for questionnaire and biologic sampling participation, respectively.

On January 1, 2006 there were 78,295 operations housing 9,058,000 dairy cattle in the US 50 states. An operation was any place having one or more head of dairy cattle on hand at any time during the year. The 17 states selected for the study account for 79.3% of the operations and 82.0% of the dairy cattle. The sample allocation is based on the contribution of each state to the total of the 17 states January 1, 2006 inventory estimates.

Note: In the table above, states are grouped according to their weight. The number of dairy cattle and number of operations for each state are shown as a percent of the 17 state total. These percents are shown below each state name. The percent contribution of each size group was calculated as a weighted percent with the weighted percent of dairy cattle (weight=.6) and the percent of operations (weight=.4). The adjusted percent shown was used to trim some samples from the larger size groups and move additional samples to the smaller size groups.

Appendix E: Selected estimates from Dairy 2002 with associated standard errors, coefficients of variation, and design effects

Phase I: NASS enumerator portion				
Variable	Point estimate	Standard Error	Coefficient of variation	Design effect
Percent of operations that used Dairy Herd Improvement Association record-keeping systems	44.8	1.3	2.9	1.6
Percent of operations that participated in a local milk cooperative / processor sponsored quality assurance program	35.2	1.3	3.7	1.7
Percent of dairy cows that were permanently removed from the herd during 2001 (ratio estimate)	25.5	0.3	1.2	0.3
Phase II: Veterinary medical officer visit				
Percent of operations that fed anionic salts to cows that were close to calving	19.1	1.4	7.3	1.4
Percent of lameness cases in the last 12 months that were due to digital dermatitis	53.9	2.0	3.7	0.4
Percent of operations that did not allow visitors on the operation in the last 12 months	13.5	1.5	11.1	2.0

Appendix F: Publications Using NAHMS Dairy 2002 Information

Cut her cost in half. Dairy Herd Management, March 2006, p. 30. [Dairy 2002]

Study evaluates antimicrobial use on U.S. dairy operations. Vetpractice News, January 2006, p. 47. [Dairy 2002]

Antimicrobial use highlighted. Feedstuffs, January 9, 2006, p. 12. [Dairy 2002]

NAHMS releases report on dairy nutrient management. Feedstuffs, December 6, 2004. [Dairy 2002]

U.S. Department of Agriculture's National Animal Health Monitoring System (NAHMS) releases interpretive report. Feedstuff, October 4, 2004. [Dairy 2002]

NAHMS study adds HBS. Bovine Veterinarian, February 2004. [Dairy 2002]

Milking procedures on U.S. dairy operations, NAHMS Dairy 2002 study. Western Dairy News, December 2003. [Dairy 2002]

Milking procedures and udder health management on US dairies: survey results, Udder Topics, December 2003. [Dairy 2002]

A new look at Johne's disease progression. Johne's Watch, v. 3, issue 2, 2003. [Dairy 2002]

Keep testing new arrivals. Dairy Herd Management, September 2003. [Dairy 2002]

Mycoplasma in bulk tank milk on US dairies. Western Dairy News, August 2003. [Dairy 2002]

Mycoplasma in bulk tank milk on U.S. dairies. Info sheet included in Colorado Dairy News, July 2003. [Dairy 2002]

NAHMS Dairy 2002: Vaccination practices vary greatly. DVM Newsmagazine, March 2003. [Dairy 2002]

Blau DM, McCluskey BJ, Ladely SR, Dargatz DA, Fedorka-Cray PJ, Ferris KE, Headrick ML. Salmonella on dairy operations in the U.S.: Prevalence and antimicrobial susceptibility. Journal of Food Protection 68(4):696-702, 2005.

Appendix G: Estimated response percentages for the three study phases of Dairy 2007.

Phase	Response category	Percentage in Phase	Expected counts
Phase I			
	Zero on hand or out of business	10.0	354
	Complete and agree to continue	37.4	1,325
	Complete but ineligible to continue to phase II (<30 milk cows)	2.0	71
	Complete and do not agree to continue	20.6	731
	Response to Phase I	70.0	2,481
	Refusal	29.0	1,028
	Out of scope (ineligible for phase I)	1.0	35
	Total	100.0	3,544
Phase II			
	Complete	37.4*75.0=28.0	994
	Refusal	37.4*25.0=9.4	331
	Subtotal	37.4	1,325
	Ineligble from first phase	13.0	460
	Refusal from first phase	49.6	1,759
	Total	100.0	3,544
Phase III			
	Complete	37.4*75.0*90.0=25.3	895
	Refusal	37.4*75.0*10.0=2.7	99
	Subtotal	28.0	994
	Ineligible from first phase	13.0	460
	Refusal from first two phases	59.0	2,090
	Total	100.0	3,544