Conservation Measurement Tool (CMT) Inventory Questions for FY 2013-1

Applicant _____ **Date**_____

QUESTION #	Cropland	RESPONSE				
Rotation and Adjacent Habitat Information		Rotation 1	Rotation 2	Rotation 3	Rotation 4	Rotation 5
1	Enter the length of your rotation or management system in “years”. The number of years is the time it takes to complete the entire rotation before you start with the first crop again. For example: corn-wheat-double crop soybeans-cotton is a three year rotation. Corn-soybeans-corn-soybeans-wheat is a five year rotation. Winter wheat-corn-millet-fallow would be a four year rotation. For continuous cropping or permanent crops, such as orchards, use one year as your rotation length. If your cropping system is not fixed, pick your most commonly planted crops as an example.					
2	Based on your rotation or management system, enter the number of your harvested crops that are included in each of the categories below (a-e). Crops are grouped based on residue quality and quantity. Do not include cover crops in your responses. Examples: If you have corn and wheat in your rotation, you would enter a “2” for question 2d. For a corn and soybean rotation, enter "1" in 2c (for beans) and "1" in 2d (for corn).					
	a) Enter the number of occurrences in your rotation or management system that include the following conditions: low residue fallow crop periods, idle bare fields, or harvested sod. Sod harvested for turf is differentiated from hay (which is listed under 2e).					
	b) Enter the number of harvested crops in your rotation or management system that are included in the list below (or are similar to the list below if not listed): Artichokes, Asparagus, Beans dry edible, Bedding/garden plants, Beets, Broccoli, Brussels sprouts, Bulbs/corms/rhizomes/tubers-dry, Cabbage, Carrots, Cauliflower, Celery, Cilantro, Collards, Cucumbers, Daikon, Dill for oil, Eggplant, Endive, Escarole, Fava beans, Flower seeds, Flowers cut and cut florist greens, Foliage plants, Garlic, Ginger root, Ginseng, Green peas, Greens, Horseradish, Kale, Lettuce, Lima beans, Melons, Mustard greens, Nursery crops, Okra, Onions, Parsley, Peppers, Pimientos, Potted flowering plants, Pumpkins, Radishes, Rapini, Rutabagas, Shallots, Snap beans, Spinach, Squash, Strawberries, Tomatoes, Turnips, Vegetables, Watercress.					
	c) Enter the number of harvested crops in your rotation or management system that are included in the list below (or are similar to the list below if not listed): Buckwheat, Canola, Castor beans, Chicory, Coffee and other woody perennials (orchards, vineyards) without cover in the alleys, Corn dry fodder hogged or grazed, Corn or sorghum silage, Cotton, Crambe, Flaxseed, Guar, Hops, Lentils, Mungbeans, Mustard seed, Pea type crops, Peanuts, Pineapples, Potatoes, Rapeseed, Safflower, Sage, Soybeans, Sugarbeets, Sunflower, Sweet potatoes, Tobacco, High Residue Fallow (>50% cover during the critical erosion period).					

	d) Enter the number of harvested crops in your rotation or management system that are included in the list below (or are similar to the list below if not listed): Amaranth, Chufas, Corn Grain/Popcorn, Cranberries, Desert grass, Guava, Herbs perennial, Kenaf, Maple trees for syrup, Mint all for oil, Peppermint for oil, Rice, Sesame, Small Grains, Sorghum, Sugarcane, Teff, Woody perennials with cover in the alleys including Apricots, Berry/Fruit Crops (Trees and Shrubs), Coffee, Grapes, Nut Trees, Pine trees ornamental, Temples, other orchard/vineyards crops.					
	e) Enter the number of harvested crops in your rotation or management system that are included in the list below (or are similar to the list below if not listed): Dichondra, Grass Hay/Seed, Legume Hay /Seed, Lotus root, or similar herbaceous perennial crops. This does not include grass harvested for sod.					
3	Does your rotation or management system contain a cover crop that you do not harvest?					
3.1	Enter the number of years during the rotation length you plant an cover crop not for harvest (if the crop management system is a vineyard, orchard or other similar permanent crop, answer Q#3.2)					
3.2	Enter the percent (expressed as a decimal number) of the time the management system has a cover crop maintained between the rows					
3.3	Choose the answer below (a-c) that best describes when the cover crop is terminated.					
	a) Cover crop is terminated prior to flowering for non-legumes or between 0-24% bloom for legumes or brassicas					
	b) Cover crop is terminated at or after flowering but prior to seed development for non-legumes or between 25-49% bloom for legumes or brassicas					
	c) Cover crop is terminated at or after soft dough stage for non-legumes or after 50% bloom for legumes or brassicas					
4	Enter the number of different crop species/types in your rotation or management system, including different types of cover crops. For example, a corn, soybeans, wheat rotation with a fall cover crop would be 4. A corn, corn, soybean rotation would be 2.					
5	Do you intentionally flood at least 1/3 of the cropland for wetland wildlife when crops are not growing? If "NO", skip to Question 6.					

5.1	Cropland is intentionally flooded:					
	a) Less than 2 months per year.					
	b) 2 months per year on heavy clay soils (Hydrologic group C or D).					
	c) 3 months per year on heavy clay soils (Hydrologic group C or D)					
	d) 4 months per year on heavy clay soils (Hydrologic group C or D).					
	e) More than 4 months per year on heavy clay soils (Hydrologic group C or D).					
5.2	Cropland is intentionally flooded:					
	a) Less than 2 out of 3 years.					
	b) 2 out of 3 years.					
	c) Annual flooding.					
5.3	Considering all of your cropland, what percentage is normally flooded?					
	a) Less than 33%					
	b) 33 - 50%					
	c) 51 - 75%					
	d) More than 75%					
6	Does your rotation, orchard or vineyard include hay or other grass or legume cover? If "NO," skip to Question 7.					
6.1	How many years of hay or other perennial(s) do you have in your rotation? OR How often do you grow a cover between rows in your orchard or vineyard? – include the establishment year.					
6.2	From the STATE populated look up table and the choices below (a-d), select the one that best describes the mix of plants growing in your hay fields. From the State populated look up table-Select 'Species Info' button to view lists.					
	a) Hayland is composed of species from List B.					
	b) Hayland is predominantly species from List B but one or more species from List A makes up at least 30% of the stand.					
	c) Hayland is composed of 1 or 2 species from List A that make up at least 60% of the stand.					
	d) Hayland is composed of 3 or more species from List A that make up at least 60% of the stand.					

6.3	Select the choice that best describes your schedule for mowing hay. This question assesses the impact of hay mowing practices on wildlife.					
	a) The entire field is cut during the nesting season					
	b) Up to one half of the field is cut during the nesting season (with some areas excluded for wildlife) using wildlife friendly techniques (such as minimum mowing height, flushing bars, mowing toward the outside of the field, mow only during daylight).					
	c) Hay cut after 75% of the nesting season is completed.					
	d) Hay cut not more than once per year and is cut after 75% of the nesting season using wildlife-friendly harvest techniques.					
	e) Hay cut not more than once per year and is cut after the nesting season.					
	f) Hay cut occasionally, but not each year and is cut before or after the nesting season using wildlife-friendly harvest techniques.					
7	Do you have any areas such as field borders, filter strips, buffers, odd areas, windbreaks, wetlands, brushy draws, hedgerows, seeps, shallow water areas, riparian areas, vegetated ditches, CRP land, native vegetated communities, center pivot corners or other similar areas that provide wildlife, pollinator and/or beneficial insect habitat within or adjacent to your cropland (orchards, hayland, vineyards, etc.)? You must own or control these areas.					
7.1	Select the choice that best describes the plants growing on the areas that provide wildlife, pollinator and/or beneficial insect habitat within or adjacent to the crop/hay field.					
	a) Less than 33% of the vegetation is native or introduced species that provide food and cover for wildlife, pollinators, and/or beneficial insects.					
	b) 33 – 67% of the vegetation is native or introduced species that provide food and cover for wildlife, pollinators, and/or beneficial insects.					
	c) More than 67% of the vegetation is native or introduced species that provide food and cover for wildlife, pollinators, and/or beneficial insects.					
7.2	Select the choice that best describes the AMOUNT of wildlife, pollinator and/or beneficial insect habitat within or adjacent to the crop/hay field.					
	a) Habitat is less than 1% of the crop/hay field.					
	b) Habitat is between 1% and 5% of the crop/hay field.					
	c) Habitat is between 6% and 10 % of the crop/hay field.					
	d) Habitat is more than 10% of the crop/hay field.					

7.3	Select the choice that best describes the average WIDTH of wildlife, pollinator and/or beneficial insect habitat within or adjacent to the crop/hay field.					
	a) less than 30 feet wide					
	b) 30 to 75 feet wide					
	c) 76 to 120 feet wide					
	d) more than 120 feet wide					
7.4	What is the average distance (ft.) from the center of the crop/hay field to the wildlife, pollinator and/or beneficial insect habitat?					
	a) More than 1320 feet					
	b) 660 to 1320 feet					
	c) 330 to 659 feet					
	d) Less than 330 feet					
8	Do you intentionally leave unharvested crops in the field for wildlife food/cover on an annual basis?					
	Choose the answer below (a-b) that best describes how much you leave.					
	a) 1/4 − <1 acre of food plot or unharvested grain per 40 acres of cropland (minimum 30 feet wide and next to noncrop cover).					
	b) > 1 acre of food plot or unharvested grain per 40 acres of cropland (minimum 30 feet wide and next to noncrop cover).					
Water Conservation and Residue Management						
9	Before field operations, do you check soil moisture by methods such as moisture-by-feel or more sophisticated methods to minimize soil compaction?					
10	Do you consistently use controlled traffic methods (either GPS or manual methods) to minimize soil compaction?					

11	Answer each residue management and/or tillage system question below:					
	a) Enter the number of crops in your rotation that have full width tillage, deeper than 4 inches that involves soil inversion and lifting (such as plows or deep disking). This does not include fertilizer injectors.					
	b) Enter the number of crops in your rotation that have full width tillage, deeper than 4 inches that involves soil fracturing and lifting (such as subsoilers, rippers or paraplows). In orchards and vineyards, ignore alternate year cultivation in every other alleyway during the dry season to manage moisture competition.					
	c) Enter the number of crops in your rotation that have full width tillage performed after harvest and leaves more than 30% residue cover. In orchards and vineyards, ignore alternate year cultivation in every other alleyway during dry season to manage moisture competition. Does not include seedbed preparation immediately prior to planting of a cover crop.					
	d) Enter the number of crops in your rotation for which you use conservation tillage (includes mulch tillage) and maintain greater than 30% residue cover after planting. Residue cover includes crop residues, cover crops, composts or other natural mulch materials; it does not include plastic.					
	e) Enter the number of crops in your rotation for which you use a no till system that maintains greater than 50% residue cover after planting. Residue cover includes crop residues, cover crops, composts or other natural mulch materials; it does not include plastic.					
	f) Enter the number of crops in your rotation for which you use a no till system that maintains greater than 75% residue cover after planting. Residue cover includes crop residues, cover crops, composts or other natural mulch materials; it does not include plastic. For systems using perennials with no tillage after year of establishment, include the number of years of perennials. For vineyards, orchards or other permanent crops, enter 1 here.					
12	Select the choice that best describes the average condition of crop residues left in the field during the winter for wildlife cover.					
	a) Residue is removed or buried (i.e., fall tillage, undisturbed soybean residue or any kind of harvested silage).					
	b) Crop residue chopped or shredded with no soil disturbance or grasses or legumes are included in the rotation and cover the field during winter.					
	c) Crop residues are gleaned by livestock but no mechanical disturbance of residue or soils.					
	d) Crop residue, grain stubble, hay/forage crop, or cover crop left standing overwinter. Height is less than 8 inches.					
	e) Crop residue, grain stubble, hay/forage crop, or cover crop left standing overwinter. Height is greater than 8 inches.					

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Erosion, & Runoff Information						
13	Is your cropland or hayland managed so there are no visible signs of erosion or gullies?					
14	Select any of the following practices that are applied on your cropland or hayland acres:					
	contour farming (330)					
	contour orchard or other fruit area (331)					
	contour strip cropping (585)					
	windbreaks (380)					
	terraces (600)					
	diversions (362)					
	hillside ditch (423)					
	grassed waterways (412) for erosion stabilization and concentrated flow					
	grade stabilization structure (410)					
	rock barrier (555)					
	contour buffer strips (332)					
	herbaceous wind barriers (603)					
	cross wind trap strips (589C)					
Pest Management Information						
15	Do you apply any pesticides on your crop or hayland acres? A "No" answer for a rotation does not generate a negative response for that same rotation.					
15.1	Select the choice that best describes how you manage pests on your cropland or hayland acres.					
	a) Pesticides are applied to all crops in the rotation <u>without</u> utilizing any pest prevention, avoidance, monitoring, or suppression (PAMS) strategies.					
	b) Pesticides are applied to <u>some</u> crops in the rotation using a site-specific combination of <u>each</u> pest prevention, avoidance, monitoring, and suppression (PAMS) strategies, OR pesticides are applied to <u>all</u> crops in the rotation using <u>only</u> one, two or three of the four PAMS strategies.					
	c) Pesticides are applied to all crops in the rotation utilizing a site-specific combination of each pest prevention, avoidance, monitoring, and suppression (PAMS) strategies.					
15.2	Do you use an environmental risk screening tool (such as WIN-PST or similar approved tool) to reduce pesticide risk to soil and water resources?					
Nutrient Management Information						
16	Do you apply organic or inorganic nutrients on your cropland or hayland acres? This includes irrigation water, biosolids, organic by-products, and commercial fertilizers. A "No" answer for a rotation does not generate a negative response for that same rotation.					

16.1	Do you apply nutrients from organic sources?					
16.1.1	Are the organic sources analyzed to determine nutrient content, and heavy metal content, if sewage waste/sludge is a source?					
16.1.1a	Consider the primary nutrient (i.e., N, P or K) contained in the organic source in the LEAST quantity, select the answer that best matches the planned rotation on your operation.					
	a) The organic source applied exceeds this nutrient need on all the crops.					
	b) The organic source applied exceeds this nutrient need on some of the crops.					
	c) The organic source applied meets this nutrient needs on some of the crops.					
	d) The organic source applied meets this nutrient need on all of the crops.					
16.1.1b	Consider the primary nutrient (i.e., N, P or K) contained in the organic source in the GREATEST quantity, select the answer that best matches the planned rotation on your operation.					
	a) The organic source applied exceeds this nutrient need on all the crops.					
	b) The organic source applied exceeds this nutrient need on some of the crops.					
	c) The organic source applied meets this nutrient needs on some of the crops.					
	d) The organic source applied meets this nutrient need on all of the crops.					
16.2	Do you soil test ALL crop and hayland fields (or tissue test for orchards, vineyards, or other permanent crops) following local land grant university guidance (e.g., annually, every 3 years, every 4 years, etc)?					
16.2.1	Consider the primary nutrient (i.e., N, P or K) needed the MOST for the planned crop rotation according to the soil test results, select the answer that best matches the planned rotation of your operation. The response should consider established crop yield records or state derived realistic crop yields in excess of the guidance/recommendations.					
	a) The nutrient application rate applied exceeds the soil test recommendation on all the crops.					
	b) The nutrient application rate applied exceeds the soil test recommendation on some of the crops.					
	c) The nutrient application rate applied meets the soil test recommendation on some of the crops.					
	d) The nutrient application rate applied meets the soil test recommendation on all of the crops.					

16.2.2	Consider the primary nutrient (i.e., N, P or K) needed the LEAST for the planned crop rotation according to the soil test results, select the answer that best matches the planned rotation of your operation. The response should consider established crop yield records or state derived realistic crop yields in excess of the guidance/recommendations.					
	a) The nutrient application rate applied exceeds the soil test recommendation on all the crops.					
	b) The nutrient application rate applied exceeds the soil test recommendation on some of the crops.					
	c) The nutrient application rate applied meets the soil test recommendation on some of the crops.					
	d) The nutrient application rate applied meets the soil test recommendation on all of the crops.					
16.3	Consider nutrients bound (i.e., residual nutrients) in manure, cover crops, previous crop residues, organic matter or irrigation water, select the answer that best matches the planned rotation on your operation.					
	a) Nutrients are not credited from any source to any crop.					
	b) Nutrients are credited from some sources to some of the crops.					
	c) Nutrients are credited from some sources to all of the crops.					
	d) Nutrients are credited from all sources and to all crops.					
16.4	Consider the nitrogen needs of the crops in the rotation that follow a legume crop or legume cover crop, what average percent (enter response in decimal format) of the nitrogen needs are supplied by the legume crop or cover crop?					
16.5	Consider in-season nitrogen analysis management systems (e.g., GreenSeeker®, SPAD meter, Adapt-N, PSNT, etc.), select the answer that best matches the planned rotation on your operation.					
	a) Systems are not used for the planned rotation.					
	b) Systems are used 74% or less of the crops in the planned rotation.					
	c) Systems are used on 75% or more of the crops in the planned rotation.					

16.6	Select all that apply when you apply fertilizer or manure.					
	a) incorporate (within 24 hours) or inject manure or fertilizer at least 2 inches deep.					
	b) precision agriculture techniques are used in the application of fertilizer and manure.					
	c) apply on 80% residue cover or 80% crop canopy.					
	d) None of the above					
16.7	Select the answer that best describes when you apply the majority of nutrients.					
	a) Most of the manure or fertilizer is applied more than one month prior to planting or more than one month prior to “greenup” of perennial crops.					
	b) Most of the manure or fertilizer is applied within one month prior to planting or within one month prior to “greenup” for perennial crops.					
	c) Most of the manure or fertilizer is applied after crop emergence or after annual growth begins (greenup) for perennial crops.					
	d) Most of the manure or fertilizer is applied as a split application (pre-plant & post plant), according to soil tests or crop growth stages. Application split must be at least 50% post emergence.					
Salinity, Sodicity, and Irrigation Management						
17	Do you have any salinity or sodicity (alkaline soils or seeps) concerns on your cropland or hayland? If "YES," answer Questions 17.1 – 17.2.					
17.1	Consider methods to minimize subsurface water flow to saline seep areas, do you grow high water use crops or salt tolerant crops, or do you use cropping patterns to genereate this effect?					
17.2	Do you manage nutrient application (type and rate) based on yield effects due to salinity?					
18	Do you irrigate cropland and/or hayland? If "YES," answer Questions 18.1 - 18.5. NOTE: a “YES” answer includes wastewater application from on farm waste storage facilities.					
18.1	Have you implemented an irrigation water management plan?					
18.2	Do you measure and record the amount of water you use to irrigate?					
18.3	Do you schedule your irrigations and the amount applied based on the monitoring of soil moisture and/or crop evapotranspiration?					

18.4	Has your irrigation system distribution uniformity been evaluated, and necessary changes made based on the test results?					
18.5	Do you irrigate areas where you have salinity concerns or that contribute (or may contribute) subsurface water flow to saline seeps. If “YES” answer 18.5.1					
18.5.1	Do you manage irrigations based on your crop tolerance, and salinity levels in your soil and irrigation water?					