

INSTRUCTION SHEET 2003 FARM AND RANCH IRRIGATION SURVEY

Completing the 2003 Farm and Ranch Irrigation report form

Please use a blue or black ballpoint pen.

Instructions by Section

Section 1 - Acreage in 2003

Report land owned, rented, or used by the respondent, spouse, partnership, corporation, or organization identified on the questionnaire. **Include** all land, regardless of location or use, Conservation Reserve Program (CRP) and Wetlands Reserve Program (WRP) land cropland, pastureland, rangeland, woodland, idle land, house lots, etc. **Exclude** land used under grazing permit. All responses should be rounded to whole acres. If you have an operation that is less than one acre, report it as a whole acre.

Item 1 - All land owned - land owned by the operation. Be sure to include all separate fields, and tracts of cropland, pastureland, woodland, wasteland, idle land, farmsteads, etc.

Item 2 - All land rented or leased from others - includes land worked by the respondent on shares, used rent free, in exchange for services, for taxes, etc. even if used for part of the year. Includes federal, state, and railroad land that is not BLM permit land. Do not include land used on a per head basis under a grazing permit. Include all land rented or leased from others regardless of location.

Item 3 - All land rented or leased to others - include land rented or leased to others for cash or for a share of the crops, whether the person whose name appears on the label owned the land himself/herself or rented the land and subleased it to others.

Item 4 - Total acres in this operation - should equal items 1 + 2 - 3. All answers to this questionnaire should refer only to the acres included as **this operation**. It is important to get this number correct as it is used in editing to establish consistency throughout the questionnaire. The acreage of **this operation** should equal Section 2, item 5 (column 1).

Section 2 - Land used in 2003

Distribute all acres in **this operation** in column 1 and all irrigated land in **this operation** in column 2, items 1 through 4. If the same land had more than one use in 2003, report that land only once in the first use listed that applies.

In addition to fully irrigated land, report as irrigated any land to which partial, supplemental, or semi-irrigation was applied. Also include any acreage which received only preplant irrigation (watered before planting). Hayland, pastureland or rangeland should be reported as irrigated if spring flood water was spread by canals, ditches, spreader dikes, pipes, or other water works.

Conservation Reserve Program (CRP) land should be reported where it best fits into a use for that year. If you were allowed to cut CRP land for hay, then this land should be considered cropland harvested. If it was pastured, it is cropland used for pasture. Except for emergency uses, almost all CRP should be reported in item 1c as other cropland.

Item 1a - Cropland harvested - Land from which hay was cut and land in groves and orchards should be reported as cropland harvested. If you did not double crop then item code 029 should equal the sum of acres across crops harvested, while item code 030 should equal irrigated cropland acres.

If you did double crop, all or part of your crop acreage, the sum of acres for crops harvested and irrigated crops harvested will exceed item codes 029 and 030, respectively.

For winter wheat, report the 2003 acres harvested.

Item 1b - Cropland used only for pasture or grazing - include rotation pasture and grazing land that could have been used for crops without additional improvements. **Exclude** land used under a grazing permit.

Item 1c - Other cropland - include cropland used for cover crops, cropland on which all crops failed, cropland in summer fallow, idle cropland, and cropland diverted for government programs (including CRP unless used for hay or forage or pasture). Most CRP land should be reported here in item 1c, but CRP land cut for hay or forage should be in item 1a, and CRP land that was pastured should be reported in item 1b. CRP land should be reported only once.

Some crops require more than one growing year and are not harvested during the period covered by the survey. These may include crops such as sugarcane and pineapples. Land on which a crop is being grown, but which has not been harvested, (other than short rotation woody crops) is reported as other cropland, item 1c.

Item 2 - Woodland - Short rotation woody crops are to be reported as cropland harvested regardless if the trees were cut or not and should not be reported here. Do report both woodland pastured and woodland not pastured.

Item 3 - Other pastured land and rangeland - include any pastured land other than cropland and woodland pastured. Most BLM lease land goes into this category. BLM or Forest Service land used on an AUM or fee per head basis will not be included. This is where large acreage of unallocated land should go.

Item 4 - All other land - any land that does not fit into one of the above categories. This could be roads, buildings, farmsteads, wasteland etc.

Item 5 - Total acres - this should equal the sum of all land uses listed above (in items 1-4). Also, acres in **this operation** should equal acres in Section 1, item 4.

Anyone who irrigated any land in 2003 should complete the whole report form. Anyone who did not irrigate any land in 2003 should skip to Section 20. **Note:** If none of your land was irrigated in 2003, enter zero in column 2, item 5 (acres irrigated) and skip to Section 20.

Item 6 - County and state with your largest irrigated acreage - Please report the county and state with the largest amount of irrigated land for **this operation**. If you irrigate in more than one county and the amount irrigated happens to be the same, then report the county that includes your farmstead.

Section 3 - Government programs

If you received any government payment, you should answer this section for those questions that apply.

Section 4 - Method of water distribution in 2003

This section refers to the method used to spread water over the land. Report the acres of land irrigated by each of the distribution systems listed. If the same land was irrigated by more than one method, report acres irrigated by each method used.

Remember: Do not report information for the delivery system used to convey water from the source to the field. Report only information for the field distribution system.

Item 1 - Gravity irrigation - refers to free flowing application of water across a field. The water is distributed across a field using either pipes or open ditches near the head of the field from which water is released to flow down furrows or to flood the field.

- a. Down rows or furrows - row crops are generally irrigated by water flowing down furrows.
- b. Controlled flooding between borders or within basins - some crops such as rice or cranberries are flooded across the entire field with water contained within borders or basins within or surrounding the field.
- c. Uncontrolled flooding - is often used to water pasture or rangeland. There are no furrows or borders within the field when uncontrolled flooding is used.
- d. Other - include here if not reported in any of the above categories.

Item 2 - Sprinkler irrigation - sprinkler irrigation is separated into five categories: center pivot, linear move tower, mechanical move, hand move, and solid set and permanent systems. It is important to report the pressure at the nozzle, not pump pressure.

- a. Center pivot - a center pivot system uses a boom half the width of the field. It is anchored at the center of the field and sweeps in a circle creating the familiar circular fields common in some irrigated areas.
- b. Linear move tower systems (and other linear continuous move drive systems)
- c. Solid set and permanent systems (except low-flow micro systems)
- d. Mechanical move systems - these are self-propelled systems that travel in straight lines across the field.
 - (1) - Side roll, wheel move, or other mechanical move systems (and other discrete move systems)
 - (2) - Big gun or Traveler systems- these are similar to the pulsating sprinklers used in nurseries or lawns which sweep across the area being watered.
- e. Hand move - any non-self-propelled system which must be moved manually.

Item 3 - Drip, trickle or low-flow micro irrigation - the water is distributed down the rows by tapes which meter out small amounts of water at low pressure near the plants' roots.

- a. Surface drip (on or above ground)
- b. Sub-surface drip (root zone)
- c. Low-flow micro sprinklers (sprays) (apply water at low pressure and are not self-propelled or easily moved)

Item 4 - Subirrigation - this is sometimes referred to as water seepage. It is used to maintain a water table at a predetermined depth. Normally these systems are permanently in place below the rootline. Water is usually applied by using emitters.

The total of acres, by method of water distribution, should be equal to, or greater than item code 042 (total acres irrigated). Every acre reported as irrigated in Section 2 needs to be reported by method of irrigation in Section 4.

Section 5 - Acres irrigated and estimated quantity of water used by source in 2003

If you do not keep complete records of water usage, use a best estimate. One method of calculating an estimate is to multiply the hours recorded on the pump engine by the gallons per minute (g.p.m.).

Water usage for this survey will be published in acre-feet. This is the quantity of water needed to cover one acre to the depth of one foot, or 326,000 gallons. You can report whichever value is available.

The sum of acres irrigated in Section 5 must be equal to item code 042 (total acres irrigated). If you use multiple sources of water for the same acres, this sum may be larger than item code 042 (total acres irrigated).

Item 1 - Report acres irrigated by ground water, on farm surface water, or off farm surface water.

Item 2 - Please report estimated quantity of water used on **this operation** by one of the following methods:

- a. total acre feet
- b. average acre feet per acre
- c. average inch applied per acre
- d. average gallons of water applied per minute (GPM) and duration in total no. of 24-day equivalents
- e. average flow in cubic feet per second (CFS) and duration in total no. of 24-day equivalents

Definitions for water sources

Ground water is water from a well or wells located on this farm or a neighboring farm

On farm surface water is a water supply not controlled by a water supply organization and included water from a stream, drainage ditch, lake, pond, spring, or reservoir on or adjacent to your farm.

Off farm surface water is surface or ground water from U.S. Bureau of Reclamation, etc.

Item 3 - Report total cost of off farm water in whole dollars.

Item 4 - Supplier of off-farm water

Section 6 - Water transfers in 2003

Item 1 - If you rented or leased part or all of the 2003 water allotment for the farm operation to others for use off the farm, then record a YES for item 1 and continue with items 2a and 2b. If your response to item 1 is NO, record the NO and then go to Section 7.

Item 2 - Record your best estimate of the quantity of water (in acre-feet) transferred to others in 2003 by water source (groundwater from wells, and/or surface water from a source on the farm, and/or water you normally would have received from an off-farm source).

[Be sure to include in your estimate only water you rented or leased to others for their use elsewhere (not on your farm).]

Item 3 - Water that is transferred off-farm may be put to one or more alternative uses. To the best of your knowledge, indicate the uses of the transferred water. Be sure to check only those uses that apply. Your response may include from 1 to 3 checks (for options 1 - 3).

However, some operators may not have received information on the use of the transferred water. In this case, if the use of the transferred water is "unknown" to you, check option 4 for "Unknown use of transferred water" and then check one of the reasons why the use of the transferred water was unknown. Check only one reason: a) water was part of a pool used for several purposes, or alternatively, b) water rented or leased was arranged by the district.

Section 7 - Expenditures for irrigation facilities and equipment

Please report expenditures for irrigation facilities and equipment in the following categories in column 1:

Item 1 - purchase of new and replacement irrigation equipment

Item 2 - new well construction or upgrades to existing wells

Item 3 - construction or improvement of permanent storage and distribution systems

Item 4 - land clearing and leveling for irrigation purposes

Item 5 - computers or control panels for irrigation

Section 8 - Acres harvested and crop yields

Report the acres of each crop harvested and its corresponding average yield per acre separately for irrigated acres and for dryland (non-irrigated) acres. Report acres of each crop harvested, even where multiple crops have been harvested off the same land. In addition, for each irrigated crop harvested, report the estimated average quantity of water applied per acre for the 2003 irrigation season. Report water applied in average acre-feet per acre or in inches per acre (but not both). Acre-feet per acre should be reported to the nearest tenth of a foot (for example, 1.6 or 2.3 acre-feet per acre), while acre-inches per acre should be reported to the nearest whole inch (for example, 19 or 28 inches per acre).

The sum of irrigated acres harvested should not be less than Section 2, item 5, item code 042 (total acres irrigated). The sum of irrigated and non-irrigated acres harvested should not be smaller than Section 2, item 5, item code 041 (total acres).

Any crop grown, which is not pre-listed, should be entered under item 20 "all other crops." Be sure to write-in the type of crop being reported. Report all crops irrigated on **this operation** in 2003.

Note: These crops should also be reported in the following Section 8. For winter wheat, report the acres harvested in 2003.

Section 9 - Method of water distribution, water source, and application of agricultural chemicals

For each crop with irrigated harvested acres reported in Section 8, report the primary type of irrigation system in column 1 by selecting the appropriate irrigation system ID code from the system ID code list above. Report the percent of the crop irrigated, using this system in the second column.

Then, for each irrigated crop, report the number of acres that were subjected to chemigation, that is, the application of fertilizers or pesticides through the irrigation water. Report the acres of chemigation separately for commercial fertilizer application and for pesticide application acres.

Note: For each crop, an irrigated acre harvested may be reported here in both the fertilizer and pesticide columns. Therefore, for each crop, the sum of chemigation acres may total more than the corresponding harvested irrigated acres reported for that crop in column 1 of Section 8.

Finally, there should be consistency between crops reported in Sections 8 and 9. Any crop reported as irrigated in Section 8 should have an entry in Section 9.

Section 10 - Number of irrigation wells, well depth, and pumping capacity on "this operation."

Item 1 - Please report if **this operation** irrigated any land with water from wells at any time during 2003. If no wells were used to supply water for irrigation on this operation in 2003, then check the "No" box and go to Section 11. If water from wells were used, check "Yes" and then respond to items 2-7.

Item 2 - Wells used in 2003 - this is the total number used during the 2003 growing season. Any well not used will be reported later in item 7.

- a. Report on well characteristics and use, separately, for the first 3 primary wells pumped in 2003. **Note:** The 3 primary wells should include those wells with the greatest quantity of water pumped in 2003. For each of the 3 primary wells, report the well characteristics and use even if these values are similar across wells. If less than 3 wells were pumped in 2003, then report for only those wells used.
- b. If you used more than 3 wells in 2003, then for all other wells (excluding the 3 primary wells), report only the average figure for each well characteristic and use.

Item 3 - Report the number of pumping stations for wells reported in item 2 above using backflow prevention devices (check valves) - these devices are a type of one-way valve which is installed at the well to prevent water from flowing back to the water source after the pump is shut off. Check the "none" box, if appropriate.

- a. Report the number of acres irrigated in 2003 with water pumped from backflow prevention devices which should be consistent with the acres irrigated using wells reported in item 3. If "none" was checked in item 3, then check "none" for item 3a.

Item 4 - Report the number of wells from item 2 above using flow meters or flow measuring devices (include the number of wells with any kind of flow measurement device). Check the "none" box if appropriate.

- a. Report the number of acres irrigated in 2003 with water from wells with flow measurement devices as reported in item 4. If "none" was checked for item 4, then check "none" for item 4a.

Item 5 - Change in depth to water - is defined as a change in the depth of water from the well-head to the water table level that has occurred over the last five years prior to the 2003 season.

Item 6 - Free flowing wells - this refers to artesian wells which are wells that do not require pumping. The water should be flowing to the surface under its own pressure. These are most commonly found in Florida and some western states. Pumps are used only to distribute the water from a holding pond or other type of basin to the field and /or to create sufficient pressure for the field-level irrigation system. Report the number of free-flowing (artesian) wells used in 2003. Otherwise, check the "none" box if appropriate.

Item 7 - Operational wells not used in 2003 - report the number of operational wells that could have been used in 2003 but were not used. If all operational wells were in use check the "none" box. This includes any well that was not used due to needed repairs. Any well which is not operational, for which you have no plans to ever use again, should be considered abandoned.

Section 11 - Pumps, other than well pumps, used for irrigation

These are pumps used for lifting surface water from rivers and streams, irrigation channels, ponds and other water holding systems. Tailwater pits hold water that has run off irrigated land for recycling. Some irrigation systems using water from wells may also have pumps in places other than their wells to provide additional lift, especially on farms with large distribution systems or irregular terrain. These pumps are often referred to as booster pumps. Do not include pumps here that were reported in Section 10, items 2a or 2b.

Vertical lift here refers to the average surface-level feet-of-lift the pumps must raise the water in order to distribute the water through the field irrigation system. Discharge capacity here refers to average pumping capacity in gallons per minute (GPM). Discharge operating pressure here refers to the average operating pressure in pounds per square inch at the point of pump discharge

Section 12 - Energy used on this operation for pumping irrigated water

For each energy source report the number of wells and/or pumps, the cost of the fuel used to power pumps (include the landlords share of pumping costs), and the number of acres irrigated. For acres irrigated by type of energy, report the acres irrigated separately for those using water from wells from those using water from a surface-water source. The sum of acres irrigated across all energy types may be less than the total acres irrigated for the operation reported in Section 2, item 5, item code 042. The difference should equal those acres irrigated using no pumps to supply water to the field.

Section 13 - Maintenance and repair costs

Report any expense incurred in maintaining the irrigation system. Be sure to include the landlord's share. For this section do not include payments made for expanding the system, increasing efficiency, or new construction.

Section 14 - Irrigation labor costs

Report labor cost for irrigation activities involving hired labor in item 1a and report contract labor expenses for irrigation activities in item 1b. Labor costs here should pertain only to the operation and maintenance of the irrigation system and facilities. Include the landlords share of irrigation labor costs. Exclude cost for custom work and contract labor for harvesting.

Section 15 - Irrigation practices

Item 1 requests information on the method or approach used to decide when to schedule water applications in 2003. Mark all that apply. If you mark the box for "other," be sure to write in an entry under "other." For item 2, sometimes farmers have to discontinue irrigation during an irrigation season, which may affect crop yield. Item 2 requests information on whether this has occurred for this operation in 2003, and the reason(s) irrigation was discontinued. Mark all that apply. If you mark the box for "other," be sure to write in the reason for discontinuing irrigation.

Section 16 - Other uses for irrigation water

Write-in the use when reporting "other."

Section 17 - Water management practices for gravity irrigation

If you reported gravity irrigation in Section 4a, you should respond to this section. For items a through j, report the number of gravity irrigated acres using the specific water management practice. Check the "none" box for those items which do not apply.

Section 18 - Improvements to irrigation systems

For this section, the questions are only for improvements to existing irrigation systems. Any changes to the system to increase its size and bring more acres under irrigation should not be included here except for those changes on acres already irrigated. Item 2 is only for the results of improvements on existing irrigated acres. For example, if a farmer installs new equipment on 200 acres of existing irrigated land, and at the same time increases his irrigation by another 100 acres, the responses should only be for the original 200 acres.

Section 19 - Sources of irrigation information

Mark all that apply. If the response is 'other', write in the source of information.

Section 20 - Irrigated land in 2002

Answer this section ONLY if you did not irrigate in 2003. Mark all that apply and write in any 'other' response.

Section 21 - Farm sales

Please select the appropriate farm sales class from the list in item 1. Report whole percent in items 2 and 3.

Section 22 - Person completing this form

Enter your name, date, and telephone number.