

1 Supporting Statement

IRRIGATION AND WATER MANAGEMENT SURVEY

OMB No. 0535-0234

B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS

- 1. Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g., establishments, State and local government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection has been conducted previously, include the actual response rate achieved during the last collection.**

The 2023 Irrigation and Water Management target population consists of all US operations that irrigate agricultural crops. The 2023 Irrigation and Water Management sampling frame comprises all 2022 Census of Agriculture operations – excluding institutional, experimental and research type operations and including Indian Reservation operations - that reported irrigated acreage or acreage equipped for irrigation. Based on previous Irrigation and Water Management sampling frames, the 2023 Irrigation and Water sampling frame is expected to have approximately 200,000 sampling elements.

The national level total irrigated acres target coefficient of variation is 1.5%; the state level total irrigated acres target coefficient of variation for states with at least 2.0 million irrigated acres is 4.0%, states with at least 100,000 irrigated acres and less than 2.0 million irrigated acres is 6.0%, and states with less than 100,000 irrigated acres is 10.0%.

The 2023 Irrigation and Water Management sampling frame will be grouped by State and type of crops (horticulture crops grown and not grown under protection and field crops) and stratified using irrigation acreage as a measure of size. A Neyman technique will be used to allocate the total sample size to strata; and a stratified systematic simple random sample (~35,000) will be selected after explicitly sorting the sampling frame on state and irrigation type and implicitly sorting on county.

- 2. Describe the procedures for the collection of information including:**
- **statistical methodology for stratification and sample selection,**
 - **estimation procedure,**
 - **degree of accuracy needed for the purpose described in the justification,**

- **unusual problems requiring specialized sampling procedures.**

Extensive efforts will be used to maximize the response rate to the survey, and thus reduce the extent of the nonresponse adjustment to the survey. In order to reduce costs and increase web-based response, NASS will be mailing a pressure sealed envelope on November 28, 2023, which will contain instructions for accessing and completing the questionnaire online. Following the initial mailing, packets containing a questionnaire, a cover letter, an instruction booklet, and a return envelope will be mailed on January 3, 2024 to all non-tagged records that have not already responded online. The tagged records, approximately 5,000, will be sent to either a NASS phone center or to our NASDA Field Enumerators. All questionnaires will be keyed from paper at the National Processing Center (NPC) in Jeffersonville, IN. For non-respondents, the follow up mailing will contain another copy of the questionnaire, cover letter and a return envelope. There will be phone or face to face follow-up for those who do not respond to the mail requests. The tagged records will receive a letter notifying the respondents that they have been selected for the Irrigation and Water Management Survey and they will be contacted either by phone or a personal visit from one of our Field Enumerators.

When responses cannot be obtained from Must farms, data will be imputed using data from the 2022 census report form and information from similar farms which respond to the 2023 Irrigation and Water Management Survey. To correct for nonresponse among farms in the non-Must strata, nonresponse adjustment factors will be calculated independently within each substratum and applied to the expansion factor of each respondent.

- 3. Describe methods to maximize response rates and to deal with issues of non-response. The accuracy and reliability of information collected must be shown to be adequate for intended uses. For collections based on sampling a special justification must be provided for any collection that will not yield "reliable" data that can be generalized to the universe studied.**

Extensive efforts are used to maximize response and thus reduce the extent of nonresponse imputation in the census. A public information campaign will again be used for the 2023 Irrigation and Water Management Survey. The objective is to make farmers aware of the survey, its importance to them and the Nation, and to encourage their response. This campaign will work through farm organizations, radio broadcasters, farm press, agribusinesses, and the State and Regional offices operated by NASS.

The overall response rate for the 2018 Irrigation and Water Management Survey was 64.4 percent. To ensure a high response rate and to reduce the nonresponse bias in the final 2023 Irrigation estimates, NASS will attempt to collect data from non-respondents by telephone and face to face interviews. The

telephone and personal enumeration activities will begin as early as January 3, 2024, and continue for several weeks.

The sample is designed to provide reliable estimates for total irrigated acres with an average coefficient of variation of 5 percent for each of the 50 States, and an average coefficient of variation less than 5 percent for each of the 20 Water Resources Regions and at the U.S. level.

4. Describe any tests of procedures or methods to be undertaken.

NASS conducted nine cognitive interviews of various types of operations that had some type of irrigation on their operation(s) in March, 2023. The cognitive interviews were to verify the content and the wording of the questionnaire. Findings were reported and recommendations were made for minor changes to the questionnaire.

The overall procedures and methods to be used for the 2023 Irrigation and Water Management Survey are relatively unchanged from past surveys.

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), or other person(s) who will actually collect and/or analyze the information for the agency.

NASS is conducting the 2023 Irrigation and Water Management Survey through its Census and Survey Division; the Census Planning Branch Chief is Donald Buysse, (202) 690-8747.

Specifications, sample design, and survey design were developed by Beth Schlein, (202)720-6203. They were reviewed by NASS Sampling, Editing, and Imputation Methodology Branch; Branch Chief is Mark Apodaca, (202) 720-2857.

Data collection is carried out by NASS Regional and State Field Offices, the Director of Western Field Operations is Troy Joshua (202)720-8220. The Director of Eastern Field Operations is Jody McDaniel (202)720-3638.

The NASS survey statistician in Headquarters for this survey is David Ward, (202) 690-8812 in the Census and Survey Division. He is responsible for coordination of sampling, questionnaires, data collection, data processing, and Field Office support.

The NASS commodity statistician in Headquarters is William Cumberland, (202) 690-1348 in the Environmental, Economics and Demographics Branch, Statistics Division. He is responsible for regional and national summaries and publication.

April 2023