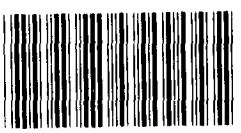
BY THE U.S. GENERAL ACCOUNTING OFFICE

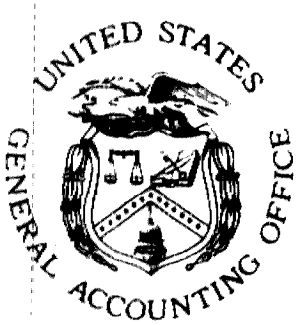
Report To The Secretary Of Agriculture

Improvements Are Needed In USDA's Soil And Water Resources Conservation Act Reports

After spending more than 2 years and $11 million, the Department of Agriculture has not fully complied with the intent of the Soil and Water Resources Conservation Act of 1977 because it has not evaluated each of its 34 soil and water conservation programs. The act intended the Secretary to periodically appraise U.S. soil and water resources and use this information to develop and update a national soil and water conservation program.

Although not required by the act, Agriculture's reports also should include additional information on the effects of water conservation. This information is needed to realistically project water savings and to assist the Congress and Federal agencies in making decisions on future water programs.





CED-80-132

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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

COMMUNITY AND ECONOMIC
DEVELOPMENT DIVISION

B-199776

The Honorable Bob Bergland
The Secretary of Agriculture

Dear Mr. Secretary:

Subject: Improvements are Needed in USDA's Soil and Water Resources Conservation Act Reports (CED-80-132)

We recently reviewed the Department of Agriculture's (USDA's) efforts to promote better water management and conservation. We focused on determining whether USDA reports required by the Soil and Water Resources Conservation Act of 1977 (RCA) will contain useful and accurate information for making future water program decisions.

After spending more than 2 years and $11 million, USDA is preparing to deliver to the Congress the reports required by the act. We found that USDA has not fully evaluated each of its 34 soil and water programs, although we believe the act intended these evaluations to be part of the reports. Also, the value and usefulness of these reports could be greatly improved by two basic changes. First, USDA should include an analysis of water conservation effects, such as reduced energy requirements for pumping water and the impact of altering streamflows. Secondly, USDA should identify the effect institutional and social constraints have on water conservation, such as water rights and traditional farming practices, to realistically project water savings.

SCOPE

Our work was conducted at USDA headquarters, Washington, D.C.; the Soil Conservation Service (SCS) and Agricultural Stabilization and Conservation Service offices; and State water offices in California, Idaho, Nebraska, and Oregon. We reviewed USDA's applicable documentation to promote better water management and conservation and its headquarters and State office procedures used to develop reports required by the act. We also interviewed USDA, State water agency, and State university officials and reviewed their water conservation reports.

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SOIL AND WATER RESOURCES CONSERVATION ACT OF 1977

To establish a mechanism for making long-range policy and to encourage the wise and orderly development of soil and water resources, the Congress enacted the Soil and Water Resources Conservation Act of 1977.

Among other things, the act directed the Secretary of Agriculture to periodically appraise the Nation's soil and water resources and periodically develop and update a national soil and water conservation program 1/ based on the appraisal. As part of the national program development, USDA was to include an evaluation of all its current soil and water conservation programs.

The President is required to report to the Congress on the soil and water appraisal as well as provide a detailed policy statement on USDA's soil and water conservation activities. These Presidential actions are required beginning in January 1980 and at 5-year intervals until termination of the act.

REPORTS WILL NOT FULLY COMPLY WITH THE ACT'S INTENT

Initial evaluations by USDA included fewer than half of its current soil and water conservation programs. A year after USDA began work, the scope was expanded to cover all programs, as required by the act. However, because of the limited time remaining and problems in gathering data, the reports will not be released until late 1980; and they will not fully comply with the intent of the act because they will not include an evaluation of each USDA soil and water conservation program.

SCS headed the RCA work from December 1977 to October 1978. During that time SCS reviewed its 15 soil and water programs. To remove possible bias in reporting and expand departmental involvement, the Secretary of Agriculture redirected the RCA work in October 1978 to include all

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1/A program developed by USDA in cooperation with the public to serve as a guide in carrying out SCS conservation activities.

USDA soil and water programs. As a result, the number of programs to be reviewed increased dramatically to 34.

The Secretary expanded the scope primarily to eliminate biased results, but the act clearly required all USDA soil and water conservation programs to be reviewed. Therefore, USDA lost a year by not reviewing non-SCS soil and water programs.

Evaluation of current programs is incomplete

In performing its RCA work, USDA accumulated a vast amount of data--most of which had already been developed--but did not use this data to evaluate each of its current programs. USDA's program manager told us that the programs were not evaluated because (1) the time frames established by the act were too stringent and (2) individual agencies within USDA had different evaluation criteria--from no criteria at all to criteria emphasizing funding and people employed. Furthermore, he told us that the draft reports were the best USDA could do in the time permitted. But, we believe sufficient time would have been available to evaluate each program if USDA had not taken a year to recognize the full scope of the RCA mandate.

Field personnel had problems developing information for RCA reports

USDA planned to gather the public's ideas on what major soil and water problems and concerns face the United States by developing questionnaires. 1/ However, the questionnaires developed by USDA headquarters were not sent to USDA State offices in the time expected. As a result, in three of the four States we visited, USDA State personnel developed their own questionnaires based on the information they expected to be included in the national questionnaires.

After the national questionnaires were sent to the States, area conservationists in the three States with their own questionnaires had difficulty interpreting and transposing the information from State questionnaires to the

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1/These questionnaires were worksheets to be completed by USDA field officials.

national questionnaire. The RCA program manager told us that some of the independently developed State questionnaire results could not be used in RCA reports because these questionnaires served only self-interest groups.

As part of their field activities, USDA officials held local public meetings to distribute the questionnaire and inform the public and solicit its views on soil and water conservation. In Idaho, local USDA officials told us that meetings were held at inconvenient times, thus inhibiting full public participation. For instance, some meetings were held during the harvesting season, which had an impact on attendance and filling out questionnaires. In Nebraska, attendance sheets show that some meetings were predominantly composed of USDA staff. In addition, only 3,004 of the 30,000 State questionnaires sent out were returned.

USEFULNESS OF RCA REPORTS CAN BE IMPROVED

Because the reports will be used as decisionmaking tools by both the Congress and USDA for future water and soil resource planning, the report data required by the act should be accurate, and additional data that is not required by the act should be included. To make wise program decisions and realistically project water savings, USDA needs to develop and quantify the many effects of water conservation, including reduced energy requirements, increased water quality, improved fish habitat, and altered streamflows. In addition, USDA should consider the institutional and social constraints that will reduce the practical application of water conservation techniques, thus reducing the amount of water that will be saved. These constraints include State water rights, laws, and practices and attitudes toward water use.

Reduced energy requirements

Implementing water conservation techniques would require less energy because the amount of water pumped to irrigate crops would be reduced. Although few studies have tried to determine how much energy would be saved, substantial energy savings would clearly result from improved irrigation practices. However, USDA has not determined what impact the additional energy savings will have on water conservation.

A 1977 Agricultural Research Service report estimated that a 10- to 15-percent improvement in irrigation efficiencies could reduce energy consumption by 25 to 35 trillion BTUs per year nationwide. This amount equals 4.3 to 6 million barrels of crude oil, or $112 to $192 million. In 1977 the Congressional Research Service estimated that improved irrigation could save about 40 to 45 billion kilowatt hours of electrical energy or, converting this amount to barrels of crude oil, about 22 to 26 million barrels per year.

In addition to the direct energy savings from improved irrigation, considerable indirect energy savings are possible. For example, overwatering removes fertilizers and pesticides that are manufactured from petroleum--a primary energy source. Therefore, reduced irrigation through water conservation would save energy because fewer fertilizer and pesticide applications would be needed.

The annual indirect energy input from petrochemicals used in manufacturing fertilizers and pesticides is estimated at 716 trillion BTUs, nearly three times the energy consumed by irrigation. Overwatering causes the nitrogen component of petrochemical products to leach from the soil. Nitrates represent more than 190 trillion BTUs of energy, or about 20 percent of the energy in fertilizers. According to an Agricultural Research Service report 1/ used by USDA in its RCA work, poor irrigation practices have caused nitrate losses of up to 50 percent.

Increased water quality

Implementing water conservation techniques would reduce agricultural water pollution problems because irrigation runoff is one of the Nation's largest pollution sources. Irrigation-related water pollution problems are significant since irrigation uses about 83 percent of the water consumed in this country. The Environmental Protection Agency estimates that agricultural sources of water pollution adversely affect 67 percent of U.S. river basins. Ground water contamination

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1/"Potential For Saving Energy In Irrigation," June 1977.

from irrigated farms also exists in most regions of the country.

Hall County, Nebraska, is an example of how overwatering degrades water supplies. Overwatering is causing the ground water on 41,600 acres and 325 farms to become contaminated. The county's water quality problems have affected both agricultural and nonagricultural users.

USDA estimated it would cost $8 to $15 billion to improve water quality on private, non-Federal agricultural lands in the United States. This estimate assumes that there would be sufficient Federal and local expenditures and maximum program participation.

Improved fish habitat

Improved water conservation practices benefit fish by improving streamflow, both in quality and quantity. Reducing stream diversions would allow more water to remain in the stream, at least between the point of diversion and point of return. Reducing the amount of water that returns to the streams as surface runoff lessens the amount of pollutants carried to the streams. More and better quality water, according to Fish and Wildlife officials, greatly enhances fish production.

Altered streamflows

Improved water conservation practices generally result in relocating the conserved water as well as altering the time it reaches the next user. Downstream users may be adversely affected depending on whether the improved conservation takes water away from those who have come to rely on it or whether it provides them with additional water.

Altered streamflows also adversely affect wildlife. When less water is used to irrigate, seepage loss and surface runoff is reduced. Therefore, water that previously made its way to drainage canals or marshy areas that supported wildlife remains in the streambed and is no longer available.

Institutional and social constraints

USDA did not determine how much of an effect certain institutional and social constraints will have on its projected water savings. These constraints, however, will greatly affect how much water can be saved; therefore, the Congress and USDA need information on the impact of these constraints to make wise decisions on water issues.

Water rights and laws

Generally, administering water rights and water laws in the 17 Western States helps create inflexibilities in water allocation and contributes to inefficient and wasteful water use. In particular, few legal provisions exist in these States that allow water rights to be temporarily transferred from one water user to another. The inability to readily transfer water rights is inefficient because it can lock water into relatively low-valued historical uses. Similarly, not using a water right may be grounds for forfeiture. The "use it or lose it" emphasis of western water law often causes some farmers to use excessive water quantities. For example, some farmers will devote water to low-value crops to avoid forfeiting their water rights.

USDA acknowledges this problem in its response to a 1976 GAO report 1/ by saying "the role of water rights and other institutional constraints affect the water users' ability to manage irrigation water." Under the RCA mandate, however, USDA made no attempt to determine the impact each of these various factors has on either estimated water savings or on the efficient use of irrigation water.

Low-priced water

Low-priced water is a major constraint on water conservation because it offers users no incentive to save. For example, we reviewed a 1979 California State report that identified irrigators in a northern California irrigation district who applied three times the required amount of water to citrus crops. When asked why they were overwatering, the farmers stated why should they conserve when water was plentiful and low in cost.

1/"Better Federal Coordination Needed to Promote More Efficient Farm Irrigation" (RED-76-116, June 22, 1976).

In California, the most irrigated State, water pricing systems are inconsistent. While prices are sometimes used to encourage municipal and industrial water conservation, they are almost never used to encourage agricultural water conservation. According to a National Water Commission report, for water prices to serve their economic function in consumption and production, they must be equal to the economic cost of the product. Pricing water below cost does little to encourage consumers to use the minimum amount of water needed.

Generally, the amount paid by agricultural ground water users is limited to the cost of the energy and facilities needed to pump and convey the water. At the present time ground water costs in many hydrologic basins in California and Nebraska average about $20 per acre-foot. Cheap ground water has contributed to serious water depletion problems, particularly in California.

Also, farmers often think of water differently then they do other resources, traditionally believing by statute that it is an unlimited birthright and infinite in supply. This concept of water has resulted in few economic incentives to conserve.

Longstanding social attitudes and customs

Longstanding social attitudes and customs about water development and use are regarded by many Federal and State water experts as major constraints to implementing water conservation practices. Long-established patterns of water use that are governed by customs and habits are not easily changed. For example, farmers are often reluctant to install improved irrigation systems because the newer systems deviate from familiar irrigation practices and can be expensive. Likewise, when water costs are low, representing only a small portion of agricultural costs, and water supplies are adequate, farmers are not apt to alter their water use.

CONCLUSIONS

The Soil and Water Resources Conservation Act clearly intended that USDA evaluate, on a continuing basis, each of its 34 current soil and water conservation programs and periodically report the results to the Congress during the term of the act. USDA's 1980 final reports, however, will not contain an evaluation of each soil and water conservation program.

This failure to comply with the act's intent is due primarily to USDA's early decision to limit the analysis to SCS programs. A year later, when the review was expanded to include all other USDA programs, little time was left to comply with the act. If USDA had started the full evaluation immediately, it should have been able to effectively evaluate all 34 soil and water conservation programs.

USDA would also significantly increase the usefulness of its reports by including additional pertinent data. This data should include the effects that conservation advantages and disadvantages and institutional and attitudinal constraints have on achievable water savings. This information would be extremely valuable for decisionmakers in designing programs to meet future water needs. Unless this information and analysis are included in USDA's reports to the Congress, we believe the reports will not be as useful as desired.

RECOMMENDATIONS

To improve USDA's efforts to promote better water management and conservation, we recommend that the Secretary of Agriculture amend USDA's continuing RCA soil and water resources appraisal process to include in the 1980 reports and all future RCA reports to the Congress the following:

--An assessment of the effects of water conservation, including both advantages and disadvantages on achievable water savings.

--A determination of the impact institutional and social constraints have on achievable water savings.

AGENCY COMMENTS

We discussed the report contents with the Assistant Chief and Deputy Chief for Planning and Evaluation, the Deputy Chief for Administration, and a soil conservationist from SCS and considered their views in preparing this report. These officials generally agreed with the findings, conclusions, and recommendations but believed we were premature in releasing the report before USDA issues its final RCA reports.

We agree that the reports have not been finalized; however, based on our review and discussions with USDA officials, the final reports will not fully address the points raised.

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This report contains recommendations to you on page 9. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We appreciate the cooperation received during our review and would like to be informed of any actions taken on our recommendations.

Sincerely yours,

Henry Eschwege

Henry Eschwege
Director

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