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WATER MANAGEMENT SYNTHESIS II  
CID/AID-DAN-4127-C-00-2086-00

4TH QUARTERLY REPORT FY86  
JULY 1, 1986 - SEPTEMBER 30, 1986

Submitted by:  
The Consortium for  
International Development

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## I. INTRODUCTION

WATER MANAGEMENT SYNTHESIS II PROJECT  
QUARTERLY REPORT COVERING PERIOD  
1 JULY, 1986 to 31 OCTOBER, 1986

A. GENERAL

This report summarizes the activities of the Water Management Synthesis II Project for the fourth quarter of FY86, covering the period 1 July, 1986 to 31 October, 1986. This report includes information relative to current activities, finished activities as well as university highlights.

The central purpose of WMSII is to develop and disseminate (in AID assisted countries) more efficient water management technologies and practices to increase agricultural production and rural equity. The WMSII Program is a joint project of S&T/AGR, S&T/RD, the Africa Bureau and the Asia and Near East Bureau of AID. These offices contribute funds and participate in the development, approval, and execution of Project activities. The Consortium for International Development (CID) is the Prime Contractor for WMSII. Cornell University, Utah State University and Colorado State University, through the Consortium for International Development, share the lead university responsibilities for the Water Management Synthesis II Project.

B. GENERATING FINANCIAL REPORTS WITH THE WMSII TRACKING SYSTEM

The financial reports in this Quarterly Report have, for the first time, been generated by the EPD office using data disks sent from the three Universities. The data disks were generated by each University using the WMSII Tracking System which was installed this past summer at each of the Universities and at the Project Washington office. Marty Jansen of Data Structures Inc. of Tucson, AZ, who developed the WMSII Tracking System, describes the purpose of this installation as follows:

"The WMSII Tracking System was installed at the Universities to change the direction of data flow. Prior to the installations, the EPD office prepared reports and sent them to the Universities for verification. Now, the Universities have the ability to enter their own data in final form directly into the system. Each University, as the authority on expenses incurred by its staff, sends data to the EPD office and the EPD office coordinates the receipt of data and generates consolidated reports." (letter from Jansen to McConnen, 20 November, 1986)

The purpose of this change was to develop a procedure for generating highly reliable financial reports for WMSII. As implied above, this was accomplished by decentralizing the reporting procedures so that the Universities gained the ability to enter their own financial information into the WMSII Tracking System.

Marty Jansen and either Dick McConnen or Jane Feldman of the EPD office visited each campus and the Project Washington office to

install the WMSII Tracking System on existing computers and to train relevant people on the use of the system. This training continued as University personnel used Electronic Mail as well as telephones to discuss issues and problems with Marty Jansen and Jane Feldman. Marty Jansen developed new sub-programs to permit the interfacing of the Tracking Systems installed at the Universities and the Tracking System located at the EPD office. Everyone involved had a good deal to learn, but as the result of a great deal of hard work and a considerable amount of goodwill, the decentralized system has become operational. As the result of the experience we've gained so far and the lessons we'll learn in the future, less effort should be required each time the system is used to generate financial reports. Marty Jansen has already suggested some procedures which should make it easier for the Universities to maintain data integrity and verification.

Information generated by the WMSII Tracking System not only ensures financial accountability, it also permits sound planning. The estimated Core Funds and Buy-in ceilings available for activities in addition to those approved through the 5th Edition of the FY86-87 Workplan which are reported below, are based in large part on information provided by the WMSII Tracking System. To insure the effective use of Project funds, this estimating procedure will be repeated each quarter during the remaining life of this Project.

C. ESTIMATED UNCOMMITTED FUNDS AVAILABLE FOR FUTURE WMSII WORK

A. Obligation and Expenditure of Funds		
1. Obligation of Funds to CID through Amend. #16	\$18,412,892	
2. Expenditures as of 30 Sept., 1986 a/	-\$14,435,013	
3. Estimated Future Expenditures-Appr. Activities	-\$ 4,012,472	
30 Sept., 1986		
a. Bud. Bal Apprv. Act. b/	\$4,701,307	
b. Est. Svng. c/	-\$ 688,835.	
c. Est. Fut. Expend.	\$4,012,472.	
4. Balance if No New Funds Obligated	\$ -34,593	
B. Additional (Core + Fee) Funds		\$ 303,000
1. Additional Core Funds to be Obligated to CID by AID in FY87 (after Nov., 1986) d/	\$ 303,000	
2. Administrative Fees to be Treated as Core Funds (see D-4 and D-5)	\$ 0.00	
C. Remaining Buy-in Ceiling after Amend. # 16		
1. Contract Ceiling	\$19,645,933	
2. Less Obligation through Amend. # 16	-\$18,412,892	
3. Remainder of Contract Ceiling	\$ 1,233,041	
4. Less Core Funds Obligated After Dec.'86	-\$ 303,000	
5. Remaining Buy-in Ceiling	\$ 930,041	

D. Total Mission Buy-ins		
1. Mission Buy-ins through Amend. # 16		\$ 5,175,699
2. Remaining Buy-in Ceiling		\$ 930,041
3. Total Buy-in Ceiling		\$ 6,105,740
4. Administrative Fees in 1. above		\$ ( 0.00 )
(Already counted in A-1. Inclusion here would result in double counting)		
5. Administrative fees in 2. above		\$ ( 0.00 )
E. Total Core Funding		
1. Core to CID through Amend #16		\$13,237,193
2. Remaining Core to be Allocated to CID		\$ 303,000
3. Total Core Ceiling		\$13,540,193
F. Calculations for Un-allocated Core		
1. (Core + Fee) Funds to be Obligated After Nov., '86	\$	303,000
2. Less (Plus?) Balance from A. - 4. above	\$	-34,593
3. Core Funds Avail. after Nov., 1986	\$	+268,407
(Row 1 - Row 2 )		
.....		
G. Est. (Core + Fee) Funds Not Alloc. & Avail. for	\$	+268,407
Activities Not Apprv. as of 5th Ed. FY86-87 WP		//////////
.....		
a/ From Exhibit A + Exhibit B + Exhibit C - 4th Quarterly Report		
FY86, 1 July, 1986 - 30 September, 1986		
b/ From Exhibit A + Exhibit B (Includes 87 act. through 5th Ed.		
c/ 1. Est. Savings Prior WP's - Exhibit B		\$413,373
CSU - \$232,700 (+ \$50,000 to Triads)		
CU - \$148,135		
USU - \$32,538		
2. Est. Savings Prior Yrs - Exhibit A		\$115,962
(pre 1986 activities )		
CSU - \$2,500		
CU - \$87,211		
USU - \$26,251		
3. Est. Savings 1986 Core funded Act. - Exhibit A		\$139,277
CSU - .....		
CU - \$103,480		
USU - \$35,797		
4. Est. Savings 1987 Core funded Act. - Table 3		.....
CSU - .....		
CU - .....		
USU - .....		
5. Est. Savings 1986 Buy-in funds - Exhibit A		\$20,223
CSU - .....		
CU - \$10,223		
USU - \$10,000		

6. Est. Savings 1987 Buy-in funds - Table 3 .....  
CSU - .....  
CU - .....  
USU - .....

d/ At least \$303,000 will be available. Additional Core funds may be added in the future.

Plans are now underway to program the \$268,407 of uncommitted Cre funds. The programming decisions will be made so as to make as great a contribution as possible to the achievement of the objectives of WMSII.

## II. SPECIAL FOCUS

In this section of the report, each university presents an in-depth report of current work undertaken by that university.

- A. Colorado State University
- B. Cornell University
- C. Utah State University

## CSU SPECIAL FOCUS

### IRRIGATION SYSTEM REHABILITATION: NEED FOR PRE-REHABILITATION STUDIES<sup>1</sup>

Numerous efforts in the past have articulated the need to rehabilitate irrigation systems. These needs are well documented in the literature (Levine, 1986) and through case studies. The purpose thesis of this paper is to indicate that since most irrigation systems operate at much less than the desired levels of performance, the best basis on which a system can be improved is from a specific knowledge of that system. This knowlege of present performance can best be obtained through pre-rehabilitation field studies conducted before the rehabilitation plan is developed.

#### Rationale for Diagnostic Studies

Rehabilitation of irrigation projects should create the conditions that improve the performance of irrigated agriculture. Increasing rehabilitation costs suggest that different approaches to rehabilitation should be considered. Thus, an important emphasis in rehabilitation is betterment. Betterment has the concept that critical improvements be made to improve performance. Reconstructing to original design specifications often is inappropriate and may add substantially to the costs of improving performance. Therefore, design should be considered.

The best basis on which to rehabilitate a system is to initiate priority improvements. These can be made only when the constraints to improved performance are understood. This includes the magnitude of the effect of each constraint and the factors which contribute to it. The understanding necessary to make priority improvements must come from a diagnostic field study of the operating irrigation system. Without systematically measuring performance of key variables and objectives of the system, understanding cannot be achieved.

These field studies should be interdisciplinary, be focused on performance of explicit and implicit system objectives and should be especially management focused. The organizations involved in irrigated agriculture should conduct the field study as an interdisciplinary team. The teams bring their professional knowledge and years of field experience to help them to understand the priority constraints. Senior personnel should be involved to provide input to the planning of the

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<sup>1</sup>This report is an edited version of a paper by Wayne Clyma and Dan Lattimore presented at the International Conference on Irrigation and Betterment in Washington, D.C., October 27-31.

study, to interpret the results of the data collection and to develop an understanding of the operation of the system and its constraints.

The understanding of the system is focused on defining system objectives and identifying constraints that prevent the attainment of the defined objectives. The constraints are viewed from a systems view with the management, organizational, socio-economic, biological and physical aspects considered. Because such a comprehensive view becomes difficult, an overview of the system is used to identify the priority constraints such that the resources to do the study are sufficient.

Management focuses on attaining the objectives of a system. Irrigated agriculture is a complex organizational arrangement for achieving the objective of food production and social well-being. A management focus, as a strategy for improving irrigated agriculture, provides an effective mechanism for dealing with priority problems. The priority problems are those that constrain performance from attaining objectives.

#### Management-Focused Rehabilitation

Rehabilitation should be focused on improving the management of irrigated agriculture. A management focus requires that the first priority be on achieving the objectives of irrigated agriculture. This focus is a strategy that resolves constraints restricting attainment of priority irrigated agriculture objectives.

Irrigation water management is defined as "... the process by which water is manipulated and used in the production of food and fiber." (Clyma, Lowdermilk and Corey, 1977). An irrigation system is the physical, biological, socio-economic and organizational activities related to the production of food and fiber. Water control is the delivery of water to farms and fields. Water control is important but is not a sufficient aspect of irrigation water management.

Management requires that the objectives of a system be defined. The purpose of irrigated agriculture is to produce food and fiber, while improving the well-being of farmers. A review of many irrigation projects in different countries, environments and operating conditions suggests that to achieve this purpose, the following generic objectives for an irrigation system (Lowdermilk, 1981 and Clyma, Lattimore and Reddy, 1982) are usually present:

1. Water control in delivery to achieve:
  - a. Reliability
  - b. Adequacy
  - c. Equity
2. Productivity of irrigated agriculture.
3. Farmer participation for improved management.

4. Resource conservation for a sustained irrigated agriculture.
5. Return on investments for farmers and government.

Water supplies must be reliable, adequate and equitable if the benefits of irrigated agriculture are to be achieved. This is the necessary but not sufficient condition. Productivity must be the focus of all efforts, if the purpose and returns to irrigated agriculture are to be achieved. Farmer participation must be an objective because if not planned, farmers will participate in less constructive activities, and performance will be less satisfactory in the delivery of water and in other activities. Erosion, waterlogging, salinity, environmental degradation and many other effects will limit productivity or destroy irrigated agriculture. More specific objectives, including subsets of the above, may be suggested for a specific irrigation project, these generic objectives are suggested for defining what must be achieved in an irrigation project if successful irrigated agriculture is to be achieved.

To determine performance related to each objective, systematic measurement of indicators of that performance must be made. The definition of a comprehensive set of indicators is beyond the scope of this paper. However, Mohammed (1986) has suggested a comprehensive set for the first objective. For example, reliability can be measured as a ratio of the designed supply to the delivered supply and can consider flow rate, time and volume. Measurement requires that flows be monitored at selected sites in a project and indices of performance be systematically determined. A data collection and analysis process is developed to provide daily information to managers such that management decisions to improve performance can be made.

Experience suggests (Jones and Clyma, 1986) that organizational conflict and inadequate coordination of activities of organizations in an irrigated area are related to the lack of consensus about purpose, objectives and roles in supporting irrigated agriculture. Lack of a management focus has also been suggested as a major factor in the limited and contradictory focuses of organizations supporting irrigated agriculture (Clyma, Lattimore and Reddy, 1982). They suggested that farmers face the following conditions in attempting to improve their performance at the farm level.

Irrigated agriculture as a business around the world allows one and usually several organizations to supply inputs; another organization to do development research; another to provide resources to purchase production inputs; and still another to provide information on knowledge and skills for production procedures (which may conflict with what inputs are supplied and/or recommended from research). The farmers (as labor) are usually inadequately and unreliably rewarded, and totally unorganized. No means or power is given to farmers (labor) to improve any of the previous inadequate conditions. Farmers are issued

instructions or directives as if they were the employees of each individual organization when by right and circumstance they are managers themselves with vested management rights to decisions. Thus, management of irrigated agriculture as a business is difficult because of the many organizations and their operating procedures.

With the conditions of production so difficult, is it unexpected that irrigated agricultural production is so low in most countries of the world? Recent industrial experience suggests that both the productivity and quality of production in a business can be increased through a participatory style of management rather than the directive style usually employed. Individuals who perceive the problem as only the farmer's problem or the farmer as the problem do not understand the lack of management in irrigated agricultural production. Further, a logical conclusion is that the laborers (farmers) in any other business could not survive. Perhaps that explains why many farmers around the world only subsist.

Management in its simplest definition is the operation of an organization to achieve a specific purpose according to a definite plan. Management requires objectives, plans, monitoring to determine when objectives are not satisfactorily achieved, and decisions to make priority improvements to improve performance. Management seems to be the most needed emphasis in water management (Clyma, Lattimore and Reddy, 1982).

A focus on management creates an effort to define agreed-upon objectives, allows organizations (public, private and farmers) to make plans to achieve those objectives, suggests that coordination of activities will be necessary where objectives are the responsibility of more than one organization, focuses on monitoring to determine performance and to make decisions that improve performance. A management focus also requires the participation of the individuals doing the activities such that knowledge of the farmers, and field and implementation level personnel are incorporated into the decision-making. Participatory management is most effective. Knowledge of the conditions of the system and understanding of the priority constraints is also important if management is to focus on priority improvements. Thus, diagnostic studies are an essential component of a management focus.

#### Methodologies for Diagnostic Field Studies

Experience with studying field irrigation systems in developing countries throughout the world has shown the immense value of understanding how irrigation systems operate through actual field studies of the systems. Even with experienced individuals involved, understanding the specific conditions of operation are critical to a proper diagnosis of the good aspects of system performance and the constraints causing low system performance.

Host country and expatriate professionals can bring important and complementary perspectives to the understanding of field irrigation systems. Experience has shown that a careful study of a field irrigation system changes the understanding of what is important about system operation. Many times a team has an understanding that the water supply delivered by a canal is not reliable. All team members will agree to the hypothesis statement, "Water supplies at the farm level are not reliable." In every instance the magnitude of the reliability was not understood and the factors which contribute to the lack of reliability are not understood. Professionals may say, "Water is not reliable." This represents their general level of understanding. They are amazed when specific data document that some farmers receive no water from the canal.

The key conclusion is that a proper understanding of how systems operate and the constraints to improved system performance can only be attained by conducting interdisciplinary field studies. Decisions about which priority improvements need to be made can only come from knowledge about the system which identifies which factors contribute the most to a particular constraint.

Interdisciplinary study of many irrigation systems has provided methodologies for both the rapid appraisal and the more detailed diagnostic studies of systems. Significant rapid appraisals can be accomplished in one to three days while diagnostic analysis studies have been completed in three weeks to a full year. Methodologies for field studies have been suggested by a number of individuals. The experiences in diagnostic analysis were used to suggest both rapid appraisal (reconnaissance) and detailed study methodologies and are the basis for this suggested methodology (Lowdermilk et al, 1983 and Podmore and Eynon, 1983). Recent experiences at developing a management focus in system improvement have suggested that a different strategy for field studies and the use of implementation planning (Jones and Clyma, 1986) based on the results of diagnostic analysis offer further insights on how to do more effective field studies.

Field studies should be conducted by individuals from those organizations involved in irrigated agriculture in the specific irrigation project. Senior, experienced professionals are necessary if the quality of the planning, implementation, analysis and synthesis that accompanies the field study are to be effective. Personnel from irrigation, extension, agricultural research, planning and other specialized agencies in irrigated agriculture should be the active participants in the diagnostic field studies. Expatriate and host country advisers with specific expertise and experience in conducting the diagnostic field studies are usually helpful. The advisers are necessary if the diagnosis is to be done by inexperienced personnel or in a training format.

A collaborative process should be used to involve selected senior personnel in the diagnostic field studies. This allows key executive level personnel to have input to the direction of the analysis and synthesis of the results of the studies, but it also provides understanding and a new perspective of the problems and contributing

factors in irrigated agriculture. Subsequent efforts to resolve these problems will be enhanced by involvement in the field studies. Depending on the availability of executive personnel, involvement near the end for an overview of the process and the data collected related to the initial findings is appropriate. Additional involvement, such as serving a team leader or discipline leader, is also appropriate.

Procedures for Diagnostic Field Studies - Conducting diagnostic field studies should follow some general steps. The following steps are appropriate for rapid appraisals or for the the longer diagnostic field studies:

1. Define the purpose and outcomes of the study, the personnel involved with their roles and responsibilities, the timeframe for implementation, and the outputs to be achieved.
2. Conduct a rapid appraisal or reconnaissance of the project area. Background information from reports about the project area and interviews with key officials provides information about the conditions of the project and the plans for how the project is managed. A reconnaissance or rapid appraisal of the project area is conducted. If this is to be a rapid appraisal, then do an even shorter overview of the project area.
3. The reconnaissance of the project area is the basis for identifying the priority problem areas where further investigations will be conducted. The interdisciplinary view of the system requires that only those problem areas for which time and resources are available to study are those which are to be studied. Plans are developed by the team that define the problems to be studied, the data to be collected and the responsibilities for data collection.
4. Detailed field studies or the rapid appraisal are conducted. Individual disciplines or joint discipline efforts collect the data according to the plan. Data analysis is also a part of the process and data are analyzed as collected. Interactions between the disciplines on the results of the studies and their implications are held daily in a formal process but informal interactions are on a continuous basis.
5. Interdisciplinary analysis and synthesis has been occurring even with the beginning of the collection of background information. This is the time when the results of the studies of the system are used by the team to synthesize an understanding of how the system operates and to determine the priority problem areas and the contributing factors to each problem. A report is the output of this effort.

The concept around which the study is conducted is that the system has certain objectives which irrigated agriculture is to attain. The operation of the system is described and compared to the planned operation of the system. The performance of the system is defined in

terms of how it achieves its objectives which require variables to be measured which measure system performance against objectives. The emphasis on identifying performance against defined objectives is the management focus in system diagnosis referred to earlier. Additional data are collected to explain the magnitude of particular problems and the factors that contribute to these problems. The complex problems of irrigated agriculture are resolved by dealing with all the important factors related to the resolution of a problem, not with just water control (water delivery) which is the common approach.

The reconnaissance may, for example, identify that water delivery is unreliable over much of the area. The detailed study would document the degree of unreliability, the factors that cause it, and the effects that unreliability have on farmer decisionmaking. Farmer cooperation may be identified through a jointly owned tubewell or other activities. This would be more carefully studied to suggest how cooperation in other activities could be facilitated. Other important aspects of system performance are identified and more carefully studied in the detailed studies.

Rapid Appraisal Procedures - The steps in rapid appraisal or reconnaissance are the same as those outlined above. The key factor is that time and resources are not available to do as complete a study. Therefore, key background information still needs to be collected. In the overview of the system, indicators are used to develop hypotheses of the priority problem areas. These might be the condition of structures to perform their function rather than a careful investigation as to the adequacy of a particular function such as accuracy of water measurement or water allocation. Evidence of farmer cooperation is obtained from random interviews or indicators of cooperation such as activities performed by farmers. Crop yields and their constraints are obtained by field visits and brief interviews with a few key farmers. Water supply adequacy is judged from observations and review of reports. Farmers are used to confirm a preliminary assessment.

The same process is used to analyze and synthesize the results of the rapid appraisal. Team member interaction during the appraisal is even more critical to ensure key data are collected and an adequate understanding of priority areas are developed. The focus on management places a priority on those areas where system performance is not satisfactory. Some important problems may be missed and some problems may not be adequately understood. However, important system constraints likely will be ignored if no rapid appraisal is conducted.

#### Applications of Diagnostic Field Studies

Diagnostic analysis was originally developed to provide a basis for systematic improvement of irrigated agriculture. This systematic improvement process is still applicable for rehabilitation of irrigation projects. Those aspects needing improvement would be dealt with -- not just the canal system or the capability to deliver water.

The recent efforts of WMSII in implementation planning in Command Water Management in Pakistan is an alternate approach to improving irrigated agriculture based on the results of a diagnostic analysis study. Management and water management consultants initiate a collaborative problem solving and planning process that encompasses the development and assessment of the solutions phase and initiates the implementation phase by developing detailed implementation plans for improvements in the system and improvements in the management of the system. Personnel of the involved organizations at the field and operational level are involved in the problem solving and planning process. Executive and policy level personnel are also directly involved. Those problems for which solutions are available are planned for direct implementation. Problems which need further study or testing to develop and refine solutions are dealt with by action research as outlined in the development model. The process and results of the effort in three provinces in Pakistan have been reviewed recently by Jones and Clyma (1986).

Rapid appraisals or reconnaissance of irrigation systems have been used in WMSII as a basis for project designs and evaluations, sector studies and in other specific applications. Rapid appraisals are used under those conditions under which time and resources are not available for the more complete study and where the quality of the understanding is considered to be adequate for planning. Effective rapid appraisals should be considered as an important component of project design and project planning for rehabilitation of irrigation projects. The more complete studies should be conducted where particularly difficult problems exist or an inadequate understanding of system management occurs. More complete studies are appropriate before the detailed planning for project implementation is conducted. The pre-rehabilitation studies, which provide the knowledge and understanding necessary for effective rehabilitation efforts, should become an integral component of the rehabilitation process.

### Conclusions and Recommendations

Pre-rehabilitation studies are important in providing the basis for understanding the priority needs for improvement of an irrigation project. A management focus in improvement provides the basis for defining areas lacking in performance to achieve project objectives and for making priority improvements. The pre-rehabilitation diagnostic studies provide the basis for developing understanding of professionals and for initiating a collaborative effort. Rapid appraisal studies for initial project planning and more careful diagnostic field studies for input to implementation planning is a recommended strategy.

The implementation planning process described by Jones and Clyma (1986) provides a basis for developing organizational coordination and management plans which provide the process for improved management. Management training in problem solving and planning in a collaborative, multi-level and multi-organizational mode provides one of the potentially effective approaches for improving the management of irrigated agriculture.

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CORNELL UNIVERSITY  
SPECIAL FOCUS

**NIGER: SMALL-SCALE IRRIGATION STUDY--SOCIAL SCIENCE COMPONENT**

Niger's ONAHA programs, designed to augment productivity of the agricultural zones of that country through the introduction of gravity irrigation systems, have enjoyed varying degrees of success. Some like Guidan-Magagi and Moulella--smaller and older systems--have been well supported by irrigators, while others like Konni have been virtually unmanageable. Over the past three years, Cornell has been carrying out a long term study at several of the ONAHA sites as well as indigenous small systems. Agricultural engineer Ray Norman has carried out data gathering activities in order to evaluate system performance and to see how traditional experiences may best be utilized in agency programs.

During the course of the research it became clear that certain social and economic issues needed to be addressed if farmer behavior and irrigation system performance were to be adequately explained. These issues may be divided roughly into two categories. The first pertains to socioeconomic characteristics of the population of irrigators. These include such household level data as migration, family structure, sources of income, land tenure, etc. The second set of issues relate to the administrative capacity of organizations charged with carrying out irrigation functions at the system and higher levels.

The social science component of the Niger study was carried out in two phases. In the first phase, Eric Arnould, an anthropologist working with IDA carried out preliminary investigations at several ONAHA sites, including Guidan Magagi, Galmi, and Moulella. Arnould's report focused primarily on administrative variables--cooperative organization, perimeter management and conflict resolution, and water management. In addition, he addressed the question of land tenure on the perimeters. Arnould drafted interview protocols designed to yield quantitative information on conflict resolution, land tenure, perimeter management, and cooperative organization. He also drafted terms-of-reference for the rural sociology component of the special study.

The second phase of the social science research was undertaken by Luin Goldring, a rural sociologist at Cornell. The data that she collected provide a socioeconomic profile of the areas served by the perimeters and a model of perimeter organization and operation. Goldring collected for two perimeters: Galmi and Moulella. Although the two perimeters are quite close to one another, they offer interesting contrasts on several axes. Moulella is one of the oldest ONAHA systems; Galmi is quite new. Moulella is rather small and isolated, while Galmi is located at the edge of a regional commercial center.

In addition, she collaborated with Souley Adji, a Nigerian sociologist, in a study of socioeconomic characteristics of the irrigators at Konni, a large ONAHA perimeter located on the edge of a major border town. The population of Konni is large and heterogenous; many irrigators derive a large portion of their income from off-farm activities. The perimeter encompasses twelve villages and is divided into seven cooperatives. The system has been an administrative nightmare.

Goldring employed a three-pronged methodology in her research. A survey was carried out, based on stratified samples of households from Galmi and Moulella. Goldring modified the Arnould protocols and added questions designed to elicit additional information. Hausa speaking informants were hired to administer the questionnaires at the three sites. Where appropriate, survey data were compared with data collected for Moulella in 1967 to assess project impacts. Second, Goldring complemented the survey data with long, key-informant interviews. Subjects included farmers, merchants, and perimeter administrators. Third, documents were examined for supplementary data.

The following key elements were found to affect perimeter management: agricultural tasks and labor requirements, the allocation of household labor to diverse productive tasks, farmers' income and access to land and other productive resources, land tenure and property rights, the role of village chiefs, crop choice and agronomic practices, ONAHA's role in perimeter management, and decision processes and information flow within the perimeter.

Because Goldring's data were gathered at the level of the household rather than the plot, they reveal that the vast majority of irrigators have other rainfed plots. In the case of Moulella, they practice recession agriculture in the reservoir bed. Labor availability is in part a function of total area cultivated per household and household size. However, the data indicate that labor allocated to fields on the perimeter is relatively constant, while that allocated to rainfed land may fall as the household labor supply contracts. Migration was found to be an important element in Moulella household production strategies, and most farmers were engaged in a range of non-agricultural secondary activities. These include petty commerce, mechanical repairs, non-agricultural wage labor, and artesanal activities.

Both Galmi and Moulella are stratified communities, whose households have differential levels of access to land, cash, and other resources. In Moulella, this stratification may be related to accumulation in agriculture, while in Galmi, it is more likely to be related to productive activities in the tertiary sector. Goldring found, however, that differential access to cash, labor, total land area, and other resources allows some farmers to complete perimeter tasks sooner and better than others. She also suggests that where perimeters are homogeneous with respect to access to resources, it may be easier to coordinate irrigation activities.

In the administrative sphere, Goldring found a wide discrepancy between ONAHA's stated objective of "auto-gestion" or perimeter self-management and its top-down management style. One impediment to self-management is the fact that property rights to irrigation infrastructure and irrigated lands remain with the state. While fee-simple property rights in all probability never existed on the perimeters, farmers enjoyed broad usufruct rights and conceived of the plots as their own. They regard perimeter parcels as government property.

Usufruct rights on the ONAHA perimeters are limited by the fact that crop choices are dictated by ONAHA. Fifty three percent of Moulella perimeter farmers and 19 percent of Galmi farmers have had "illegal" crops uprooted. Timing of planting is also dictated by the agency.

Farmers on both perimeters tend to view decisions about redevance calculations, irrigation scheduling, and other perimeter activities as made by the perimeter director, ONAHA staff, and the management committee. Information flow is top-down and only reaches farmers indirectly. Goldring cautions that effective communication channels must be developed in order to increase farmer participation in management.

Goldring's findings were presented to ONAHA and to USAID/Niamey in August. Final and preliminary reports were also filed with both agencies. The final report is being translated into French and will be made available as a WMS working paper. Souley Adjé has prepared a report on social and economic influences on Konni perimeter management. This report, written in French is available at AID/Niamey. The mission expects to translate it into English.

UTAH STATE UNIVERSITY - SPECIAL FOCUS

THAILAND OPERATION AND MAINTENANCE TRAINING  
AND APPLIED STUDY PROGRAM

There is a current recognition of the need for improved operation and maintenance plans for many of the medium- and large-scale irrigation projects in Northeast Thailand. Some of the projects have recently undergone expensive rehabilitation work, only a few years after the initial construction work was completed. Much of the required maintenance work is due to the heavy rains which occur during the summer months and it has been shown that with the execution of a well-designed maintenance plan infrastructure deterioration can be significantly reduced. The Lam Nam Oon project is an excellent example of a properly maintained conveyance, distribution, and delivery system.

Operational improvements will increase main system performance by more effectively distributing the available irrigation water and by minimizing supply and demand deviations during the growing seasons. System performance is often restricted by inflexible operation policies which tend to simplify operation at the cost of coordinating water deliveries with actual crop water needs. Main system operation can be made more flexible with the aid of hydraulic modeling and knowledge of the hydraulic characteristics of the system components. Operational improvements can thus be made without modifying or adding to the existing infrastructure, but by making more effective use of the system through performance optimizing operational policy.

Two training courses were conducted during the month of June, 1986, in Northeast Thailand for Royal Irrigation Department (RID) engineers by Utah State University through the WMS II Project. Each course consisted of classroom lecturing on hydraulic principles and theory as it applies to canal operation, and field practices for data collection. The field work involved calibration measurements for control structures (sluice gates and weirs) and turnout structures (constant head orifices), and measurement of seepage losses in main canals, laterals, and tertiary canals. The participants were shown how the field data can be used in the formulation and execution of an operations plan with and without the use of a computer.

The results from the field calibration and seepage measurements at Huai Aeng and Lam Nam Oon will be used as input data to a hydrodynamic computer model which simulates canal hydraulics and generates required control structure settings for coordinated system operation. The hydraulic model has been installed at Huai Aeng and is scheduled to be installed at Lam Nam Oon next year. Calibration and seepage measurements are currently being continued at both Huai Aeng and Lam Nam Oon.

Future work will involve "backstopping" by USU to follow through with the initiated computerized irrigation management program at Huai Aeng and at Lam Nam Oon. The backstopping will involve continued correspondence between Utah State University and RID in order to resolve implementation problems while the hydraulic model is first applied to assist in main systems operations. It is

fully expected that additional capabilities will be necessary in the hydraulic model software to maximize the model's utility in operational applications. These additions and modifications will be performed by the USU Main Systems Team in Logan, Utah and in Thailand in response to the comments and suggestions of the RID engineers who use the model.

The main purpose of the media module development part of the project was to develop and produce six 15-minute instructional video models for the Royal Irrigation Department (RID) titled as follows:

1. Water User Groups;
2. Main System Maintenance;
3. Main System Operation;
4. Computerized Irrigation System Management;
5. Irrigation Water Management in Tertiary Systems; and
6. On-Farm Irrigated Agricultural Production.

A two-week training course was conducted for fifteen RID participants on how to develop and produce instructional video modules using a single camera. In order to develop and produce six modules in only six weeks, it was stressed and decided on in meetings with RID officials before the trip that specialists in the area of the module topics would be available during the two-week training course, and that the participants would work on developing the content of the modules during the course.

The goal was to have the content for the modules 80 percent developed by the end of the course. This would be enough content information and module format to develop a video shot list in which the scenes would be located and recorded during the following three weeks. The content and design of the modules would be fully completed by the end of these three weeks and edited the following two weeks. It was also decided that six to eight of the fifteen participants would be available after the course to help with the three weeks of video recording and the two weeks of editing.

The course was held from June 9-20 at the National Agricultural Extension Training Center (NETC) of Kasetsart University at Kamphaengsaen Campus. NETC was started in 1979 with the help of the Japanese Government and is part of the Extension and Training Center at Kasetsart University, which was established in 1970. The Center is located on its own campus of 16 acres adjacent to the Kamphaengsaen Campus of 3,200 acres. It has an auditorium for 300 persons, six classrooms for seating up to 60 persons each, two amphitheaters, four conference rooms, and a cafeteria and dormitory complex that can accommodate over 300 people. They also have a fully equipped and staffed television facility, a broadcast radio production facility, a full color print shop and a slide-tape facility.

The course was very successful. It should be noted that NETC is capable of not only producing educational programs, but also training others to do so. One of the objectives of NETC is: to supply audio-visual media and materials needed for effective extension and training services and to conduct training in the production of such materials.

The Center has given over 4,500 audio visual presentations. They have produced over 60 video modules, over 50 slide-tape sets, and printed over 946,000 leaflets, bulletins or other printed matter. Their two-week training course on producing video programs has been taught so often that the textbook specifically for their course and equipment is in its fifth edition. They have trained extension agents from most of the Asian countries, and also from Kenya, Chad and Pakistan. There is no question that they have an excellent facility, staff and curriculum, and are very proud of it.

The main problem in developing the modules was getting the appropriate help and attention from specialists in the areas of the module topics. This means having someone knowledgeable in the topic help with developing the goals for the module along with content outline and script. Once a rough script is completed, the people producing the modules can make sure it sequences logically, has readability, contains all the necessary information, etc. They would then develop a visual storyboard which would be evaluated by the specialist. The specialist would then only be needed at a few of the critical steps in the recording and editing process to make sure that the content remained correct and consistent.

As mentioned, plans were to develop the content of the modules during the two-week training course. This did not happen because of lack of input from content specialists. By the time the training course was finished, there had been very little done on the six modules. The main problem was time management. The people who were scheduled to help at that time had other commitments. Instead of videorecording the following three weeks, we worked for two weeks on developing the content for the modules and only one week recording. Even during these two weeks, it was difficult to get the appropriate input from RID specialists. It ended up that Professor Skogerboe, who was at Lam Nam Oon conducting a training course, wrote the scripts for modules two, three, four and five. We had help from RID on modules one and six. The design for one and six was finished at USU after the trip of the USU team.

As was also mentioned, plans were to edit the six modules during the last two weeks. This did not happen because of the setback due to lack of content input. The last two weeks were spent polishing up the design on modules two, three, four and five, organizing one and six, and coordinating project completion procedures and budget between RID and NETC.

The six modules have been completely designed and are being submitted to RID along with a procedure list to finish the project. The procedure list includes such items as the video scenes not yet recorded, graphic scenes to be created (some are being done at USU), action to take and steps to follow to complete the project successfully.

It was recommended that when the design of the six modules are received by RID that they take the time to go over them and make sure they are what they want and to make any revisions if needed. RID officials need to not just recognize the importance of content input for process. It was also recommended that RID coordinate with Kasetsart University and use them to finish this project and any additional training and production assistance in the future. There are private professional video production houses in the major cities that are also very capable of producing educational programs, although they lack the flexibility and training support that is available through Kasetsart.

At this time we are investigating a variety of computer graphic systems that RID could use for not only video, but also 35 mm slides and overhead transparencies. They expressed a lot of interest in this area. There are systems available today that would meet their needs and possibly fit into next year's budget.

### III. STATUS OF PROGRAMMED ACTIVITIES

The activities of the WMS II originate from three sources: (1) Mission initiated technical assistance and training; (2) University initiated special studies and training programs; and (3) AID/Washington initiated activities. The following listed activities were requests received by the WMS II Project Management from the beginning of the project up to and including December 31, 1985. Activities are categorized according to lead university as well as country.

The terms listed below are used to indicate activity status:

- Preliminary - denotes a request that requires further clarification (scope of work and/or dates are incomplete or are missing) before it can become a formal request.
- Formal - denotes a request for which all major details have been clarified and formal addition to the Workplan has been requested through the Overall Administration Office.
- Approved - denotes an activity that has been approved by the CPMT and AID/Washington and added to the Workplan through a request of the Overall Administration Office as of September 30, 1985.
- Initiated - denotes an approved activity that has been initiated and is currently ongoing.
- Finished - denotes an activity for which all technical responsibilities, including report writing, have been fulfilled.
- Completed - denotes an activity for which all technical and fiscal responsibilities have been fulfilled as of September 30, 1985.
- Pending - denotes a non-approved request for which addition to the Workplan has not been sought and/or approved even though clarification of major details has been obtained.
- Postponed - denotes an approved activity to be carried out in the following fiscal year. Reasons for postponement may be lack of host country approval, inability to identify personnel, scheduling conflicts, etc. The budget of such an activity shall be removed from the current fiscal year Workplan and included in an appendix to the one in which the work is to be done and expenditures made. The monies shall not be reallocated and reapproval will not be necessary for one fiscal year.

- Dropped - denotes a non-approved request dropped from further consideration.
- Cancelled - denotes an approved, yet uninitiated activity deleted from the Workplan and dropped from further consideration in the near future.
- Terminated - denotes an activity that has been initiated (expenditures charged against it), but then for some reason the decision is made to stop and further work. A new budget covering incurred expenses shall be submitted through the Overall Administration Office to AID/Washington and the status considered the same as completed.

The source of each activity is indicated by the following designations:

- UNIV - University initiated
- USAID - Mission initiated
- AID/WASH - AID Washington initiated

Colorado State University Activities FY 83 (9-30-86)

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Bangladesh	Curricula Dev. (BAU)	1-03-030-82	Closed	USAID
	Consultant, legal	1-03-029-82	Closed	USAID
	Scope of Work	1-02-006-82	Closed	USAID
	DA Workshop	2-02-007-82	Closed	USAID
India	Watercourse Hdbks.	2-13-025-82	Closed	USAID
	Water Mgmt & Trng.	1-02-020-82a	Closed	USAID
	Meas. for Sys. Mgmt.	2-07-026-82	Closed	USAID
	Evans Proj. Prep.	1-02-033-83	Closed	USAID
	Clyma's TDY	1-02-035-83	Closed	USAID
	DA Workshop Planning	1-02-044-83	Closed	
	Development of Solutions	1-02-024-82	Closed	
Indonesia	Oad's TDY	1-02-030-83	Closed	USAID
Pakistan	WM (CWM) Meeting	1-02-029-83b	Closed	USAID
	Clyma's TDY	1-02-031-83	Closed	USAID
Sri Lanka	DA Workshop	2-02-028-83	Closed	USAID
	WID-DA Workshop	2-02-034-83	Closed	
Worldwide	Water Resource Econ.	1-02-042-83	Closed	AID/Wash
	Brochures; Newsletters, Pub.	2-12-018-83	Closed	Univ
	Survey & Str. for Trng.	2-09-019-83	Closed	Univ
	Videotape Modules	2-03-021-83	Closed	Univ
	Computer Applications	2-10-022-83	Closed	Univ
	Wkshop (Tech. & Soc.)	2-04-023-83	Closed	Univ
	Comm. for Tech. Tran.	3-04-024-83	Closed	Univ
	CSU Administration	0-02-998-83	Req. Clo.	Univ
	Irrigation Sys. Mgmt.	3-04-025-83	Closed	Univ

Colorado State University Activities FY 84 (9-30-86)

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Africa	Africa Workshop	2-14-113-84	Closed	Univ.
Dominican Rep.	Reconnaissance Team	1-02-110-84	Closed	USAID
India	DA Workshop M. P.	2-02-031-84	Closed	USAID
	Curriculum Development	1-02-094-84	Closed	
Nepal	DA Workshop Planning	2-02-003-84	Closed	USAID
Pakistan	Sr. Off. Workshop	2-04-019-84	Initiated	USAID
	Command Water Mgmt	2-14-114-84	Initiated	USAID
Sri Lanka	WM Central Support	1-02-022-84	Req. Clo.	USAID
	Design Team	1-02-102-84	Completed	USAID
	Long-Term WM Spec.	1-01-109-84	Initiated	USAID
Worldwide	Professional Visitors & Networking	2-11-039-84	Initiated	Univ.
	DA Trainers Workshop	2-08-040-84	Req. Clo.	Univ.
	Instructor's Guide DA	2-13-042-84	Initiated	Univ.
	Brochures, Newsletter, Pubs.	2-12-044-84	Completed	Univ.
	ICID Senior Off. Wkshop	2-04-048-84	Closed	USAID
	Survey & Strategy	2-09-049-84	Completed	Univ.
	Workshop; Soc. & Tech	2-04-050-84	Closed	Univ.
	Microcomputers	2-10-051-84	Req. Clo.	Univ.
	CSU Administration	0-02-998-84	Closed	Univ.
Interfacing Farm & Mgmt	3-04-045-84	Req. Clo.	Univ.	

Colorado State University Activities FY 85 (9-30-86)

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Egypt	Eval. of IMS	1-02-072-85	Completed	USAID
El Salvador	PID Preparation	1-02-059-85	Completed	USAID
India	Dev. of Handbooks	2-13-027-85	Req. Clo.	USAID
	Technology Transfer	2-06-022-85	Cancelled	USAID
	Training Materials	2-13-020-85	Cancelled	USAID
	Training of Trainers	2-14-019-85	Cancelled	USAID
	Priority Research	1-02-014-85	Cancelled	USAID
Indonesia	Cost Recovery Study	1-02-074-85	Completed	USAID
Nepal	DA Workshop	2-02-031-85	Completed	USAID
	Rapid Appraisal	1-02-087-85	Initiated	USAID
Pakistan	Mgmt Off. Trng. Planning	2-01-065-85	Initiated	USAID
	Cur. Development	1-02-071-85	Completed	USAID
	Baseline Survey	2-04-083-85	Completed	USAID
	Key Officials	2-04-080-85	Completed	USAID
Sri Lanka	Central Support - 85	1-02-003-85	Completed	USAID
	Landsat - 85	3-04-038-85	Completed	Univ.
	Interfacing OFWM	3-04-036B85	Completed	Univ.
Swaziland	Irrig. Priorities	1-02-069-85	Req. Clo.	USAID
Worldwide	Seminar on System Rehab. Phase I	2-05-033-85	Finished	Univ.
	Microcomputer Workshop	2-14-032-85	Initiated	Univ.
	Interfacing OFWM	3-04-036A85	Completed	Univ.
	CSU Administration	0-02-998-85	Completed	

Colorado State University Activities FY 86 (9-30-86)

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Egypt	Redesign	1-02-071-86	Initiated	USAID
India	Social Tech. Feasibility	1-04-059-86	Finished	USAID
Pakistan	Baluchistan DA	2-02-065-86	Initiated	USAID
Sri Lanka	Extension of Long Term	1-02-047-86	Terminated	Univ.
	Central Support	1-02-048-86	Initiated	Univ.
	Landsat - 86	3-04-011-86	Initiated	Univ.
	Interfacing OFWM	3-04-009-86	Initiated	Univ.
Thailand	Special Studies '86	3-04-008-86	Initiated	Univ.
Worldwide	Traid Synthesis #1	2-14-035-86	Initiated	Univ.
	Revision of Tr. Manuals	2-13-003-86	Initiated	Univ.
	Rev. & Dev. Videotapes	2-03-004-86	Initiated	Univ.
	Seminar on Irrig. Rehab Phase 2	2-05-006-86	Initiated	Univ.
	Interfacing/Backstopping	3-04-010-86	Initiated	Univ.
	CSU Administration	0-02-998-86	Initiated	Univ.
Zimbabwe	Small Scale Irrigation	1-02-050-86	Initiated	USAID
	JFW - Planning	3-04-500A86	Initiated	USAID
	Joint Field Study	3-04-500-86	Pending	USAID

CORNELL UNIVERSITY ACTIVITIES FY-84

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
India	SS-Community Kuhls in Himachal Pradesh	3-04-099-84	Cancelled	UNIV
Indonesia	TA-Small-Scale Irrigation and Management Project	1-02-011-84	Completed	USAID
Niger	SS-Small-Scale Irrigation in Niger, Preliminary	3-04-098-84	Completed	UNIV
	SS-Traditional and Developed Small-Scale Irrigation Study	3-04-111-84	Initiated	UNIV
Sri Lanka	TA-Farmer Organization Program	1-02-007-84	Completed	USAID
	SS-Impact of Physical and Operational Rehabilitation	3-04-097-84	Finished	UNIV
Worldwide	TR-Main System Irrig.Task Force	2-06-077-84	Completed	AID/W
	TR-FAO/AID Expert: Indonesia	2-14-067-84	Completed	AID/W
	TT-Small-Scale Irrig.Task Force	2-14-065-84	Completed	AID/W
	TT-Professional Visitors	2-11-068-84	Completed	UNIV
	TT-Current Research Seminar "Planning"	2-14-075-84	Completed	UNIV
	SS-Small-Scale Completion	3-04-069-84	Finished	UNIV
	SS-Analysis of Participation Completion (FY-83)	3-04-070-84	Finished	UNIV
	SS-Management Intensities	3-04-096-84	Initiated	UNIV

CORNELL UNIVERSITY ACTIVITIES FY-85

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Haiti	TA-Cayes Plain	1-02-084-85	Finished	USAID
India	TR-Farmer Organization Workshop	2-14-017-85	Cancelled	UNIV
Indonesia	TA-SSI Workshop	1-02-009-85	Finished	USAID
Mauritania	TA-Peace Corps Assistance	1-02-061-85	Cancelled	USAID
Niger	SS-Traditional and Developed SSI	3-04-052-85	Initiated	UNIV
Pakistan	TR-Extension Training Recon.	2-06-063-85	Cancelled	USAID
Sri Lanka	TA-Socioeconomic Studies	1-02-004-85	Initiated	USAID
Worldwide	TA-Recurrent Costs	1-02-062-85	Completed	AID/W
	TR-Rehabilitation Game	2-13-048-85	Initiated	UNIV
	TR-Lessons Learned Workshop	2-14-049-85	Cancelled	UNIV
	TR-Current Research Seminar	2-14-050-85	Completed	UNIV
	SS-Indirect Investment Phase I	3-04-053-85	Finished	UNIV
	SS-Indirect Investment Phase II	3-04-054-85	Initiated	UNIV
	SS-Rural Employment	3-04-055-85	Initiated	UNIV
	SS-Management Intensities	3-04-056-85	Initiated	UNIV

CORNELL UNIVERSITY ACTIVITIES FY-86

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Africa	SS-JFS-Comm. Mgd. Systems	3-04-502-86	Initiated	AID/W
Kenya	TA-Small-Scale Irrigation Analysis	1-02-042-86	Finished	USAID
Niger	SS-Small-Scale Irrigation	3-04-023-86	Initiated	UNIV
Sri Lanka	TA-ARTI--Continuing Support	1-02-045-86	Initiated	USAID
Worldwide	TR-Rehab Game Revision	2-13-018-86	Initiated	UNIV
	TR-Conference--Lessons Learned	2-07-019-86	Finished	UNIV
	TR-Professional Visitors	2-11-016-86	Initiated	UNIV
	TR-Triad Synthesis Phase I	2-14-037-86	Initiated	UNIV
	TR-Synthesis--Local Resource	2-14-053-86	Initiated	UNIV
	TR-Workshop--Irrig.Bureaucracies	2-14-054-86	Initiated	UNIV
	SS-Indirect Investment '86	3-04-055-86	Initiated	UNIV
	SS-Management Performance	3-04-078-86	Initiated	UNIV

Utah State University Activities

FY 83

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Africa	SS-Dev. of Social Parameters	3-04-057-83	Closed Out	UNIV
Dominican Republic	TA-Project PID	1-02-010-82	Closed Out	USAID
	TA-Project Paper (OFWM)	1-02-009-83	Closed Out	USAID
Ecuador	TT-Ecuavir Video	2-03-054-83	Completed	UNIV/USAID
Haiti	TA-Irrigation Project Eval.	1-02-039-83	Closed Out	USAID
India	TA-Water Mgmt. and Training, and Water Management CWM	1-02-020B82) 1-02-029-83)	Closed Out	USAID
	TA-Olsen's TDY	1-02-037-83	Closed Out	USAID
	TA-Institutional Analysis	1-02-053-83	Cancelled	AID/WASH
	TT-Senior Officers Workshop	2-04-007-83	Closed Out	UNIV
Jordan	TA-Review of Curriculum	1-02-041-82	Closed Out	USAID
Mali	TA-OFWM Specialist	1-02-006-82	Closed Out	USAID
Pakistan	TA-Mayfield's TDY	1-02-040-83	Closed Out	USAID
Peru	TA-Special Study	1-04-027-82A	Closed Out	USAID
West Africa	SS-Small-Scale Irrigation	3-04-036-83	Completed	UNIV
Worldwide	TT-Start-Up Workshop	2-14-055-83	Closed Out	UNIV
	TT-Short-Term Nondegree	2-08-056-83	Closed Out	UNIV
	SS-On-Farm Irr. System Sel.	3-04-058-83	Closed Out	UNIV
	SS-Main Sys. Mgmt. & Rehab., and Action Research	3-04-059-83) 3-04-060-83)	Closed Out	UNIV
	SS-Development of Handbook	3-00-000-83	Closed Out	UNIV

Utah State University Activities

FY 84

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Africa	TA-African Irrigation Overview	1-02-108-84	Initiated	AID/WASH
Chile	TT-Conference	2-14-058-84	Closed Out	AID/WASH
Dominican Republic	TA-Weed Control Specialist	1-02-091-84	Closed Out	USAID
Ecuador	TT-Finishing Original Modules	2-03-054-84	Completed	USAID
	TT-Instructional Manual	2-03-055-84	Cancelled	UNIV
Haiti	TA-Irrigation Sector Survey	1-04-017-84	Closed Out	USAID
India	TA-Short Course	1-02-100-84	Closed Out	USAID
	TA-Maharashtra MIP	1-02-018-84	Completed	USAID
	SS-Irrig. Project Monitoring	3-04-020-84	Cancelled	UNIV
	TA-Maharashtra IT&M	1-01-021-84	Finished	USAID
	TA-Soc/Tech Feas. Study	1-02-023-84	Closed Out	USAID
	TA-Madhya Pradesh MIP	1-01-025-84	Cancelled	USAID
	TT-Senior Officer's Workshop	2-04-053-84	Initiated	UNIV/USAID
	TA-Irr. Eval. & Strategy Review	1-02-103-84	Completed	USAID
Jordan	TA-Irrigation Sector Survey	1-04-013-84	Closed Out	USAID
	TA-WM Specialist (TDY)	1-02-014-84	Closed Out	USAID
	TT-On-Farm Water Management	2-01-015-84	Cancelled	USAID
Pakistan	TA-Irrigation Policies	1-02-101-84	Closed Out	USAID
	TA-Command Water Management	1-02-106-84	Closed Out	USAID
Peru	TA-Small & Med. Irri. Systems	1-02-035-84	Closed Out	USAID
	TA-Plan MERIS	1-01-112-84	Completed	USAID
Senegal	TA-Bakel Irr. Per. Assist.	1-02-033-84	Deleted	USAID
Swaziland	TA-Irri. System Monitoring	1-02-063-84	Deleted	USAID
Tanzania	TA-Irrigation Study	1-02-082-84	Closed Out	USAID
Worldwide	TT-French Language Training	2-11-059-84	Closed Out	UNIV
	TT-Irr. Sys. Mgmt. Task Force	2-14-060-84	Initiated	UNIV
	SS-Main Sys. Des. Mgmt., Rehab.	3-04-061-84	Closed Out	UNIV
	SS-Selection of Irrig. Tech.	3-04-062-84	Closed Out	UNIV

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Utah State University Activities - FY 85

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Bolivia	TT-Small-Scale Course	2-14-010-85	Closed Out	USAID
	TT-On-Farm Water Mgmt. Course	2-14-011-85	Cancelled	USAID
Dominican Republic	TT-On-Farm Water Mgmt. Course	2-14-030-85	Cancelled	USAID
Chad	TA-Irrigated Agric. Assessment	1-02-073-85	Completed	USAID
Egypt	TA-Water Use Project Evaluation	1-02-066-85	Completed	USAID
El Salvador	TA-Project Paper	1-02-077-85	Completed	USAID
Honduras	TA-Irrigation Development	1-02-060-85	Closed Out	USAID
India	TA-Water Balance	1-02-023-85	Deleted	USAID
	TA-Hydraulic Conductivity	1-02-024-85	Deleted	USAID
	TA-Reservoir Operation	1-02-025-85	Deleted	USAID
	TA-University Curricula	1-02-013-85	Closed Out	USAID
	TT-Rapid Appraisal	2-14-016-85	Deleted	USAID
	TT-Innovative Teaching	2-03-012-85	Deleted	USAID
	TT-Main Systems Training	2-14-015-85	Deleted	USAID
	TT-Computer Assisted ISM	2-14-040-85	Deleted	USAID
	TT-Video Modules	2-14-075-85	Finished	USAID
Jamaica	TA-Planning Activities	1-02-007-85	Approved	USAID
	TA-System Study	1-02-008-85	Approved	USAID
Jordan	TA-Advisory Service	1-02-028-85	Initiated	USAID
Mauritania	TA-Plan of Action	1-02-076-85	Finished	USAID
Morocco	TA-PID Development	1-02-002-85	Completed	USAID
Nepal	TA-Small & Medium-Scale Irrig.	1-02-067-85	Closed Out	USAID
Sri Lanka	TA-Model Calibration	1-02-005-85	Completed	USAID
Swaziland	TA-Irrigation Assistance	1-02-029-85	Cancelled	USAID
Thailand	TT-Maintenance Workshop	2-14-088-85	Completed	USAID
Worldwide	TT-Lessons Learned	2-14-039-85	Initiated	UNIV
	TT-French Language Training	2-11-041-85	Initiated	UNIV
	SS-Main Systems-Remote Sensing	3-04-042-85	Completed	UNIV
	SS-ISM Development	3-04-043A85	Completed	UNIV
	SS-Thailand Case Study	3-04-043B85	Completed	UNIV
	SS-Morocco Case Study	3-04-043C85	Completed	UNIV
	SS-India Case Study	3-04-043D85	Deleted	UNIV
	SS-Interdisciplinary Workshop	3-04-043E85	Completed	UNIV

Utah State University Activities

FY 86

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Africa	SS-Joint Field Study	3-04-501-86	Approved	AID/UNIV
Egypt	TA-Irrig. Sector Assessment	1-02-052-86	Completed	USAID
Guatemala	TT-Evaluation of Model	2-02-064-86	Initiated	USAID
India	TT-Demonstration Workshop	2-02-051-86	Pending	USAID
Italy	TT-Rome Consultation	2-01-063-86	Initiated	UNIV
Morocco	TT-Internat'l Irrigation Center	2-04-027-86	Initiated	UNIV
Niger	TA-Project Paper	1-02-070-86	Initiated	USAID
Pakistan	TA-Irrigation Consultation	1-02-060-86	Initiated	USAID
	TA-Scopes of Work	1-02-075-86	Formal	USAID
Paraguay	TA-Technical Assessment	1-02-067-86	Completed	USAID
Peru	TA-Finishing Plan MERIS	1-02-061-86	Completed	USAID
	TA-Project Paper Assistance	1-02-073-86	Formal	USAID
Rwanda	TA-Water Mgmt. & Drainage	1-02-062-86	Completed	USAID
Somalia	TA-Project Paper Assistance	1-02-074-86	Initiated	USAID
Thailand	TT-O&M Training	2-02-069-86	Initiated	MISSION
Worldwide	TT-Triad Synthesis Phase I	2-14-036-86	Initiated	USAID
	TT-Irrig. Experience Transfer	2-07-026-86	Initiated	UNIV
	SS-Irrig. Project Analysis	3-04-005-86	Initiated	UNIV

#### IV. ACTIVITIES

This section is a summary of the status of each activity under the WMSII Project. The review includes a synopsis of the purpose and status of each activity, the participants, and the time spent by each individual.

In order to clarify the project activities, this section has been divided into three sections, FY84, FY85 and FY86; FY84, FY85 and FY86 are divided into the following categories: Technical Assistance, Training and Technology, Special Studies and Administration.

A. FY84

A.1 Technical Assistance Activities

1. AFRICA - Irrigation Overview

Code Number: 1-02-108-84

Status: Initiated

Lead University: Utah State University

Summary of Work: Jon Moris is continuing to work on the activity on his own time while working at the Overseas Development Institute located in London, England. Due to his many other responsibilities the progress of Dr. Moris is slow. It is not clear when the report will be completed and published.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jon R. Moris	0.00 ppm	3.25 ppm	USU	Sociology
Derrick Thom	0.00 ppm	0.50 ppm	USU	Geography
Linda Fields	0.00 spm	0.10 spm	USU	Typing

2. JORDAN - Advisory Services

Code Number: 1-02-028-84

Status: Initiated

Lead University: Utah State University

Summary of Work: Jack Keller and Robert Hill have completed their visits to Jordan and studies of the Jordan Valley irrigation systems. Their debriefings were very well received by Dr. Hadadine, President of the Jordan Valley Authority and Drs. Reade and Cummings, the Director and ARDO, respectively, of USAID/Jordan. Keller and Hill were in Jordan for a little over two weeks each, with a three day overlap. The most interesting findings involved the salinity variation along the 104 kilometer length of the East Ghor Main Canal. The head-end/tail-end salinity problem was classic, and heretofore overlooked. Because of this finding, we have been asked to include a salinity routing model in the System Management Computer Assisted billing and delivery models which are being developed with German assistance. Keller and Hill are in the process of writing their report, which will include several other follow-up activities, for USAID's perusal.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jack Keller	0.50 ppm	0.50 ppm	USU	Irrig. Engineering
Robert Hill	1.00 ppm	1.00 ppm	USU	Irrig. Engineering

### 3. PAKISTAN - Command Water Management

Code Number: 1-02-114-84

Status: Initiated

Lead University: Colorado State University

#### Summary of Work:

Finalization of reports and scheduling of MTP for Baluchistan.

#### Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Mohammed Haider	ppm	16.50 ppm	CSU	Economics
Wayne Clyma	ppm	13.05 ppm	CSU	Agricultural Engr.
S. Sritharan	ppm	13.36 ppm	CSU	Civil Engr.
Ed Shinn	ppm	17.20 ppm	CSU	Sociology
M. Shafique	ppm	17.20 ppm	CSU	Agricultural Engr.
S. Karaki	ppm	.80 ppm	CSU	Civil Engr.
Ralph Luebs	ppm	8.00 ppm	Consultant	Agronomy
J. Warner	ppm	5.84 ppm	CSU	Civil Engr.
Tom Sheng	ppm	4.50 ppm	CSU	Civil Engr.
Oguz Nayman	ppm	3.84 ppm	CSU	Tech. Journalism
Max Donkor	gpm	5.67 gpm	CSU	Agricultural Engr.
Paul Wattenberger	ppm	10.00 ppm	CSU	Agricultural Engr.
Support Staff	ppm	3.65 ppm	CSU	Support Staff
Richard Tinsley	ppm	7.50 ppm	CSU	Agronomy
A. R. Robinson	ppm	1.85 ppm	CSU	Irrig. Engr.
Eugene Quenomen	ppm	6.50 ppm	Consultant	Economics
Ramchand Oad	ppm	2.70 ppm	CSU	Agricultural Engr.
Vicki Duneman	ppm	.50 ppm	CSU	Tech. Journalism
Alan Early	ppm	.25 ppm	CSU	Agricultural Engr.
Robert Mohammed	ppm	3.75 ppm	CSU	Agricultural Engr.

4. SRI LANKA - Long-Term WM Specialist

Code Number: 1-01-109-84

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Dr. Nelson coordinated studies for the 1986 Yala season. Tom Sheng assisted him with data input and analyses.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Larry Nelson	3.00 ppm	30.00 ppm	CSU	Agronomy
Tom Sheng	2.00 ppm	2.00 ppm	CSU	Civil Eng.

A. FY84

A.2 Training and Technology Transfer Activities

1. PAKISTAN - CWM Officials Workshop

Code Number: 2-04-019-84

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Pakistani Command Water Management officials toured Sri Lanka in early August. The Agrarian Research and Training Institute (ARTI) assisted in conducting the tour. Dr. Norm Evans, an engineer from CSU, led the tour group.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Ramchand Oad	ppm	2.25 ppm	CSU	Agricultural Engr.
Mohammed Haider	ppm	.50 ppm	CSU	Economics
Wayne Clyma	1.75 ppm	2.89 ppm	CSU	Agricultural Engr.
Robby Laftos	ppm	.25 ppm	CSU	Sociology
Norman Evans	.75 ppm	.75 ppm	CSU	

2. WORLDWIDE - Instructor's Guide for DA

Code Number: 2-13-042-84

Status: Initiated

Lead University: Colorado State University

Summary of Work:

No work this quarter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Larry Nelson	0 ppm	2.25 ppm	CSU	Agronomy
Robby Laitos	0 ppm	1.00 ppm	CSU	Sociologist
Ramchand Oad	0 ppm	0.88 ppm	CSU	Agricultural Engr.
Mohammed Haider	0 ppm	1.00 ppm	CSU	Economics

3. WORLDWIDE - Professional Visitors & Networking

Code Number: 2-11-039-84

Status: Initiated

Lead University: Colorado State University

Summary of Work:

No activity this quarter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Oguz Nayman	ppm	0.67 ppm	CSU	Technical Journalism

4. WORLDWIDE - Irrigation Systems Management Task Force

Code Number: 2-14-060-84

Status: Initiated

Lead University: Utah State University

Summary of Work: The introductory chapter for the Irrigation System Management manuscript, which contains the basic framework and introduces the special areas, has been reviewed by the other Task Force members, and Keller is still in the process of incorporating the comments and suggestions. Uphoff has completed a draft of Chapter Two, "The Gal Oya Case Study," and is also finalizing Chapter Four on farmer participation. The research for interfacing and management intensities should be completed within the next few months, and the Task Force plans to have a meeting in early Spring 1987 to begin synthesizing the four major Special Study areas involved, namely, Computerized System Management, Farmer Participation, Interfacing and Management Intensities.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jack Keller	0.00 ppm	1.82 ppm	USU	Irrig. Engineering

A. FY84

A.6 Summary FY84



B. FY85

B.1 Technical Assistance

1. NEPAL - Rapid Appraisal

Code Number: 1-02-087-85

Status: Initiated

Lead University: Colorado State University

Summary of Work:

No work this quarter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
William Laitos	ppm	11.00 ppm	CSU	Sociology
Darlene Fowler	ppm	5.25 ppm	CSU	Tech. Journalism
John Baxter	ppm	1.00 ppm	Consultant	Agronomy
Alan Early	ppm	2.25 ppm	CSU	Agricultural Engr.

2. SRI LANKA Socioeconomics Studies for Rehabilitation

Code Number: 1-02-004-85

Status: Initiated Lead University: Cornell University

Summary of Work: No new activities.

Staffing:

PERSON	ACTIVITY TIME	AFFILIATION	SPECIALIZATION
	Quart. Cum.		
Norman Uphoff	0 ppm 2.25 ppm	Cornell	Political Science

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B. FY85

B.2 Training and Technology Transfer

1. PAKISTAN - Mgmt. Officials Training Planning

Code Number: 2-01-065-85

Status: Initiated

Lead University: Colorado State University

Summary of Work:

No activity this quarter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Wayne Clyma	ppm	0.75 ppm	CSU	Agricultural Engr.
Ed Kirdar	ppm	1.00 ppm	Salt River	Civil Engineer

2. WORLDWIDE - IDM (Irrigation Data Management) Workshop

Code Number: 2-14-032-85

Status: Initiated

Lead University: Colorado State University

Summary of Work:

No activity this quarter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
John Webb	ppm	2.25 ppm	Consultant	Tech. Journalism
Tom Sheng	ppm	4.75 ppm	CSU	Civil Engr.
Darlene Fowler	ppm	.50 ppm	CSU	Tech. Journalism

3. WORLDWIDE - French Language Training

Code Number: 2-11-041-85

Status: Initiated

Lead University: Utah State University

Summary of Work: French training was discontinued for most of this quarter because of the heavy travel schedules of staff involved.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jean Paul Favre	0.12 gpm	1.02 gpm	USU	Tutor

B. FY85

B.3 Special Studies

1. WORLDWIDE Phase II: Comparative Analysis of Indirect Investment Strategies for Development of Small-Scale Irrigation Works

Code Number: 3-04-054-85

Status: Initiated Lead University: Cornell University

Summary of Work: Walt Coward visited Indonesia in January to plan activities to be carried out beginning in July 1986. Based on these discussions with AID/Jakarta and site visits, plans Coward and Walter planned a trip to Indonesia in July to start the study.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
E. Walter Coward, Jr.	0.25 ppm	0.50 ppm	Cornell	Rural Sociology
Chris Wensley	0.0 gsm	3.0 gsm	Cornell	Ag. Engineering
R. Barker	0.25 ppm	0.25 ppm	Cornell	Ag. Economics

2. WORLDWIDE Rural Employment and Irrigation System Performance

Code Number: 3-04-055-85

Status: Initiated Lead University: Cornell University

Summary of Work: Graduate assistant Ruth Meinzen-Dick is completing a literature search and review of materials dealing with the relationships between employment and irrigation development. In December she visited ILO offices in Geneva to collect relevant documents. A draft paper has been circulated for comment.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Ruth Meinzen-Dick	0.0 gsm	10.0 gsm	Cornell	Rural Sociology
E. Walter Coward, Jr.	0.0 ppm	0.25 ppm	Cornell	Rural Sociology

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3. WORLDWIDE Irrigation Systems Performance as Affected by Management Intensities

Code Number: 3-04-056-85 (formerly 3-04-096-84)

Status: Initiated Lead University: Cornell University

Summary of Work: Bob Yoder and Ed Martin have completed dissertations on the performance of farmer-managed irrigation in two small-scale systems with different supply constraints. Carol Ferguson is analyzing data from her research in the Philippines under the supervision of Randy Barker. The group also began work on a final report for AID distilling the research results.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Randolph Barker	0.0 ppm	3.25 ppm	Cornell	Agri. Economics
Edward Martin	0.0 gsm	16.5 gsm	Cornell	Agri. Economics
Robert Yoder	0.0 gsm	19.5 gsm	Cornell	Agri. Engineering
Fred Valera	0.0 gsm	9.0 gsm	Cornell	Agri. Engineering
Carol Ferguson	0.0 gsm	2.5 gsm	Cornell	Agri. Economics
Tammo Steenhuis	0.0 ppm	2.5 ppm	Cornell	Agri. Engineering

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B. FY85

B.6 Summary FY85

## B.6 Summary FY85

A review of the activity categories of technical assistance, training and technology, and special studies shows the following profile relative to institutional status and specialization areas of persons employed in each activity. This summary does not include administrative activities.

TABLE V. Amount of Employment Time Relative to Organizational Affiliations

AFFILIATIONS:	QUARTERLY EMPLOYMENT TIME:
Colorado State University	.00
Colorado State University Graduate Students	.00
Cornell University	.50
Cornell University Graduate Students	.00
Utah State University	.12
Utah State Graduate Students	.00

One important objective and activity of the WMSII project is that of increasing the quality and expanding the pool of expertise in water management. The universities are fulfilling this objective by involving professionals from other institutions in activities, employing persons who are not affiliated with any institutions, and by incorporating graduate students whenever appropriate.

The employment profile for the project activities of Utah State University, Colorado State University, and Cornell University is shown on Tables VI, VII, and VIII. These figures do not include administrative activities.

SOURCE OF PERSONNEL:	QUARTERLY EMPLOYMENT TIME:
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TABLE VI. Colorado State University Employment Profile

Colorado State University	.00
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TABLE VII. Cornell University Employment Profile

Cornell University	.50
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TABLE VIII. Utah State University Employment Profile

Utah State University	.12
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C. FY86

C.1 Technical Assistance Activities

1. EGYPT - Redesign

Code Number: 1-02-071-86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Dr. Bill Shaner and Fletcher Riggs completed a feasibility study for a redesign of the Egyptian Irrigation Systems Management Project.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
William Shaner	1.00 ppm	2.00 ppm	CSU	Mechanical Engr.
Fletcher Riggs	2.00 ppm	3.00 ppm	CID	Agri. Economist

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1.a EGYPT - Irrigation Sector Assessment

Code Number: 1-02-052-86

Status: Initiated

Lead University: Utah State University

Summary of Work: Several matters were taken care of to complete the Egyptian Irrigation Sector Assessment. First, Dean F. Peterson reviewed and made corrections on the final draft of the report in preparation for its printing. Secondly, the manuscript was re-formatted and edited by Barbara Stewart. Finally, the distribution of the finished report to various individuals and institutions was arranged by Dr. Peterson.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Glen Stringham	0.00 ppm	1.45 ppm	USU	Irrig. Engineering
David W. James	0.00 ppm	1.35 ppm	USU	Soil Scientist
Dean F. Peterson	0.25 ppm	1.70 ppm	Consultant	Civil Engineer
Gerald Wheelock	0.00 ppm	1.20 ppm	Alabama A & M	Sociology
Keith Roberts	0.00 ppm	1.40 ppm	USU	Ag. Economics
Linda Fields	0.00 spm	0.20 spm	USU	Support Staff
Cindy Nielsen	0.00 spm	0.15 spm	USU	Secretarial
Barbara Stewart	0.13 spm	0.13 spm	USU	Secretarial

## 2. NIGER - Project Paper

Code Number: 1-02-070-86

Status: Initiated

Lead University: Utah State University

Summary of Work: Various members of the Applied Irrigation Research and Coordination Project Paper (PP) Team were in-country the last week of June, with Eric Arnould, the Team Leader and Sociologist, leaving in late August. Other members of the Team include Tom Zalla, Economist; Willis McCuistion, Rainfed Agronomist; Owen Gwathmey, Irrigation Agronomist; and Dan Jenkins and Jack Keller, Irrigation Engineers. Keller originally went to Niger to overlap with the Team, but with the main purpose of setting up a Joint Field Study. Noting that the Team was without an engineer (since Dan Jenkins of REDSO had already been and gone before the Team arrived), Keller spent essentially all of his TDY working on the Project Paper. As it turned out, however, Keller was also able to set up the Joint Field Study, since it dovetails so nicely with the Project, and will form a bridging mechanism between the PP and when the Project actually gets started. The PP will carry the WMS imprint, as the new activities in INRAN, the Nigerian Research Agency, which will be supported by it, will contain multidisciplinary diagnostic units for both management of State constructed schemes as well as farmer constructed and managed systems.

### Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jack Keller	0.75 ppm	0.75 ppm	USU	Irrig. Engineering
Eric Arnould	2.75 ppm	2.75 ppm	Consultant	Sociology
Tom Zalla	1.50 ppm	1.50 ppm	Consultant	Economics
Willis McCuistion	1.25 ppm	1.25 ppm	Consultant	Rainfed Agronomy
Owen Gwathmey	2.00 gpm	2.00 gpm	Consultant	Irrig. Agronomy

### 3. SOMALIA - Project Paper Assistance

Code Number: 1-02-074-86

Status: Initiated

Lead University: Utah State University

Summary of Work: The Team of Jack Keller as Irrigation Engineer and Team Leader, Thomas Weaver as the Agricultural Economist and John Mayo as Civil Engineer, carried out this activity during the last two weeks of August. This turned out to be a very exciting Technical Assistance activity, as the Team uncovered some significant field information involving indigenous water user association activities which had heretofore been overlooked. This finding was very important considering the importance of farmer participation in the proposed USAID-funded Shebelli Water Management Project, which will be a \$50 million effort. The Project calls for assistance in managing the Shebelli River flows, as well as rehabilitating a subproject area in the lower Shebelli reaches and providing assistance to improve on-farm water management. The Team was charged with reviewing the situation and focusing the PID into a tighter frame for the Project Paper. This involved reviewing the available data and reports plus a rapid reconnaissance of the field situation. The Team's deliberation resulted in a draft report which was completed and sent to the Mission in good form just two weeks after the Team left Somalia. At the debriefing, in the notes left behind, and in the follow-up draft report, the Team rather carefully delineated the Project scope and the individual general scopes of work for the Project Team members.

The Team also obtained sufficient slides and quality audio tapes from field interviews to put together a professional slide tape presentation of the principal Team findings. The Mission appears quite enthused with the Team's work, as expressed in a follow-on telegram. A debriefing session for the Africa Bureau is scheduled for October 24 in Washington. Someone from the Mission, as well as from the Somalia Ministry of Agriculture, will be also present at this meeting.

We are enthused about the possibilities in Somalia, and have suggested it as a potential JFS/W site for studying large-scale system rehabilitation. We also recommend that the WMS II Project consider taking over the task of developing the Project Paper for the "Shebelli Water Management Project." This will be a \$300,000 to \$500,000 buy-in.

#### Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jack Keller	0.75 ppm	0.75 ppm	USU	Irrig. Engineering
Thomas Weaver	0.75 ppm	0.75 ppm	Consultant	Ag. Economics
John Mayo	0.75 ppm	0.75 ppm	CH2M Hill	Civil Engineering

4. SRI LANKA ARTI--Continuing Support

Code Number: 1-02-045-86

Status: Initiated Lead University: Cornell University

Summary of Work: In April and May, Norman Uphoff made a second visit to Sri Lanka to work with ARTI on finalizing its end-of-project impact appraisal and on planning two special studies to improve farmer organization performance. Uphoff met with Gal Oya administrators and Irrigation Department officials, attended a district Agricultural Committee Meeting, and met with Gal Oya IOs. Arrangements were made for Nalini Kasynathan, Sri Lankan geographer from IIMI, to work on Gal Oya issues at Cornell.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Norman Uphoff	0.0	0.75	Cornell	Political Science

5. SRI LANKA - Central Support

Code Number: 1-02-048-86

Status: Initiated Lead University: Colorado State University

Summary of Work:

Dr. Tom Sheng assisted in data analysis of Yala season data that was collected this summer.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Tom Sheng	.75	ppm 4.50 ppm	CSU	Civil Engineer
Leslie Stillwater		ppm 4.00 ppm	CSU	Agricultural Engr.

6. ZIMBABWE - Small-Scale Irrigation

Code Number: 1-02-050-86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Final approval was obtained for the Zimbabwe Report by Dr. Richard McConnen when he was there in September. It is being published.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Terry Podmore	0.94 ppm	2.94 ppm	CSU	Ag. & Chem. Engr. Economist
Richard McConnen		1.00 ppm		

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C. FY86

C.2 Training and Technology Transfer Activities

1. GUATEMALA - Evaluation of Model

Code Number: 2-02-064-86

Status: Initiated

Lead University: Utah State University

Summary of Work: The draft manuscript of the Guatemala field research was rewritten and is in the process of being finalized up for review by the Mission and S&T. Harry Wing, ADO in Guatemala has stated that he will correct the historic parts of the manuscript involving USAID's financial support of the pressurized irrigation program.

A copy of the draft summary has been reviewed by the editor of Overseas Development Institute's irrigation network newsletter. Work is now proceeding on enlarging and developing a shortened version of the main report for that audience. This will be ready shortly for clearance by the AID Project Manager, Worth Fitzgerald.

A final step should be to contact the editor of "AID Highlights" or "Frontlines" to learn if there is interest in publicizing the technology transfer of this program into Ecuador during the past 12 months.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Bryant Smith	0.00 ppm	0.25 ppm	USU	Institutional
Bertis Embry	0.00 ppm	0.25 ppm	Consultant	Irr. Engineering
Tom Tenney	0.00 gpm	4.25 gpm	USU	Ag. Economics

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## 2. ITALY - Joint USAID/FAO Rome Conference on Water Pricing

Code Number: 2-02-063-86

Status: Initiated

Lead University: Utah State University

Summary of Work: The primary portion of this activity, to preplan and help FAO staff conduct an expert consultancy on irrigation water pricing, has been completed. The actual conference was held in Rome September 22-26, 1986. USAID supported presenters of four country papers (Zimbabwe, Peru, Pakistan, Philippines), background papers from S&T/PPC, Cornell University, Utah State University and a discussion leader for reports of the working groups.

Dr. LeBaron helped with final arrangements and remained in Rome for a few days after the meetings to write part of the draft report of the consultancy's findings and recommendations. A copy of this draft was forwarded to S&T/AGR.

As part of the 50/50 cost sharing arrangement, USAID has been asked to prepare Spanish and French translations of the cited report. FAO is handling the English version and will do the publishing. It is contemplated that the existing WMS II budget carry over on this activity will be adequate to cover the translating costs. As soon as an agreed copy of the English version is available, the translations can be made. Once this task is completed, the subactivity as presently budgeted will be finished.

A final phase of the consultancy, desired by FAO personnel and the consultancy participants, is that full-scale proceedings of the conference be published. Some negotiating between the Bureau of Science and Technology and FAO's Land and Water Division would be necessary to carry out this follow-on. If WMS II personnel are to be involved, some budget arrangements will be required.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Allen LeBaron	0.50 ppm	0.50 ppm	USU	Ag. Economics
Jack Keller	0.25 ppm	0.25 ppm	USU	Irrig. Engineering

### 3. MOROCCO - International Irrigation Center/Morocco

Code Number: 2-04-027-86

Status: Initiated

Lead University: Utah State University

Summary of Work: The first international training course was given by the new Centre International de l'Irrigation (CII) located on the campus of the Institut Agronomique et Veterinaire (IAV) Hassan II. The On-Farm Water Management course was given in French from September 7 to October 11, 1986.

There are a total of twelve manuals required for this course, of which ten have been completed in English. Handout materials are available for the other two subject areas. Funds available in the International Irrigation Center at Utah State University (IIC/USU) were used to translate and produce nine manuals in French (the tenth French manual was already available) plus handout materials. This work was completed in August. IIC/USU funds were also used for the printing of brochures and the certificate to be given each participant.

WMS II supported salaries, travel, per diem and excess baggage costs (transport of 50 copies of each manual plus 35 calculators) for Gaylord Skogerboe (five weeks), Derrick Thom (five weeks) and Kurt Lonsway (three weeks). Both Thom and Lonsway speak French, so they were quite capable in working with the Moroccan professors in this course. Skogerboe gave a few lectures that were translated, participated in the field activities, and mostly handled administrative matters for the participants and the payment of bills accrued during the course.

There were a total of 27 participants representing five countries: one from Mauritania, five from Niger, two from Chad, one from Cameroon, and 18 from Morocco. Five of the Moroccans work at different Office Regional de Mise en valeur Agricole (ORMVA), which are the gnasir governmental organizations that operate the irrigation projects. One Moroccan paid the tuition himself in order to attend. Thirteen of the participants (including the individual from Cameroon) are third-level (M.S.) students at IAV. The quality of the participants was very good. All of them actively participated in the field exercises and were serious in their studies.

The Moroccan professors really took charge of the course. They were very serious in their scheduling of lectures, field exercises, etc. This was an extremely impressive group of trainers. They are very enthusiastic in their presentations and very well prepared. This demonstrated the strong capability of the IAV faculty for undertaking future activities for CII.

A significant portion of the field activities were conducted on irrigated lands administered by the ORMVA north of Rabat called Gharb. A number of their staff, including field and laboratory personnel, assisted with the work. There is a very good working relationship between the ORMVA and IAV.

The University of Minnesota Team Leader, Dr. Don Johnson, was very supportive. They had received a new 12 passenger van in June, which they made available for this course. This was particularly beneficial because transportation is a major concern for CII/IAV.

There were many people in the AID Mission who helped in many small ways throughout this course. There were documents to process, check authorization memos, going to the bank and countersigning checks, etc. Every attempt was made to minimize the work load on the Mission staff, but there were always a number of details requiring their assistance. In every case, each one of them (8 people) did everything necessary to take care of every situation.

In the oral course evaluation by the participants, and discussions among the professors, there was a great deal of satisfaction expressed about the quality of the training materials, the presentation in the classroom, and the field exercises. The course went very well, and for being their first time in giving this course in French, this was an outstanding effort. Consequently, the improvements suggested for 1987, when this course will be given in both French and English (with WMS II support), are relatively minor and will be easy to implement.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jack Keller	0.12 ppm	0.12 ppm	USU	Irrig. Engineering
Gaylord Skogerboe	1.25 ppm	1.25 ppm	USU	Irrig. Engineering
Derrick Thom	1.25 ppm	1.25 ppm	USU	History/Geography
Kurt Lonsway	1.00 gpm	1.00 gpm	USU	Irrig. Engineering

4. PAKISTAN - Baluchistan DA

Code Number: 2-04-065-86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Final draft reports were prepared and submitted to Pakistan for approval.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Wayne Clyma	.97 ppm	1.47 ppm	CSU	Agricultural Engr.
Vicki Duneman		ppm 0.50 ppm	CSU	Tech. Journ.
Tom Flack	.25 ppm	3.00 ppm	Consultant	Agronomist
Kerry Gee	.25 ppm	3.00 ppm	Consultant	
Oguz Nayman	.27 ppm	4.27 ppm	CSU	Tech. Journ.
Ramchand Oad		ppm 0.50 ppm	CSU	Ag. & Chem. Engr.
Alan Early		ppm 0.50 ppm	CSU	Ag & Chem. Engr.
Robert Mohammed	.30 ppm	2.80 ppm	CSU	Ag & Chem. Engr.
Paul Wattenburger		ppm 1.00 ppm	CSU	Ag. & Chem. Engr.
Darlene Fowler	1.00 ppm	1.00 ppm	CSU	Tech. Journ.
Mohammed Haider	1.00 ppm	1.00 ppm	CSU	Economics
Richard Tinsley		ppm .50 ppm	CSU	Agonomist

5. THAILAND - Operation and Maintenance Training and Applied Study Program

Code Number: 2-02-069-86

Status: Initiated

Lead University: Utah State University

Summary of Work: Two training courses on "Operation of Irrigation Systems" and a training course on "Design and Production of Irrigation Television Programs" were conducted during June 9 - July 3, 1986 in Thailand, with each course being two weeks.

On the last day of the training courses, the Royal Irrigation Department (RID) called 55 project engineers, most of them from Regions 4, 5 and 6 in the Northeast, to attend a business meeting at the Lam Nam Oon Irrigation Project. The new Deputy Director General (O&M) Khun Leck presided over the meeting. The Operations and Maintenance Learning Process, now available in Thai, was presented by one of the trainers, Khun Metha Hovarongkura. This process, developed under WMS II support, is now being adapted to Thailand. New guidelines were presented for planning and implementing maintenance activities. Such terms as "diagnostic" and "walk-thru," which have been stressed in all of the courses given in Thailand under WMS II support, are becoming well accepted.

Khun Leck informed the group that the Bureau of the Budget (BOB) had approved an increase of 20 percent in the O&M budget for the fiscal year beginning October 1, 1986, rather than the usual 5 percent increase. Also, the budget for improvements to existing irrigation projects has been increased 50 percent. This reflects the rapid changes that are occurring as RID has redirected its emphasis from construction to O&M during the past two years. Also, many construction personnel are being reassigned to O&M, which places a heavy burden upon RID for retraining.

During the afternoon of July 3, during a meeting of VIPs and the project engineers, the Director General, Khun Suha Thanomsingha, announced that one irrigation project in each area of Thailand would be selected for improvement similar to Lam Nam Oon. This is being done at the expense of other projects in order to demonstrate what can be accomplished with appropriate budgets. This should create a number of "visible success stories" in Thailand, which has been advocated a number of times during WMS II activities in Thailand.

The final closing ceremony for the three training courses was conducted by the Director General on July 3, 1986. Four different certificates had been printed by the International Irrigation Center (IIC/USU) which have the RID and IIC logos. A total of 94 certificates were issued. During June - July 1986, a total of 195 RID personnel were exposed to the "Operations and Maintenance Learning Process" and "Computerized Irrigation System Management."

Four Thai trainers for "On-Farm Water Management" were selected in late June and departed from Bangkok for IIC/USU on July 11, 1986. All four trainers have M.S. degrees; three in Agricultural Engineering who are RID employees, and one

woman in Agronomy who is employed by the Department of Agricultural Extension (DOAE). They completed the six-week training course on August 23 and then remained another four weeks with IIC to design the "Tertiary System Water Management" training courses to be given in Thailand during the dry season in January and February of 1987. They departed the U.S.A. on September 21 with the training materials that are to be translated into Thai prior to 1987. The first training course will be attended by Water Masters in RID and Subject Matter Specialists in DOAE. Later, the training will be directed to the RID zonemen, who control the gates to each tertiary system, and the Kaset Tambons, who are the local extension agents that work directly with farmers. This phase of the program will take a number of years to complete.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Gaylord Skogerboe	1.00 ppm	1.00 ppm	USU	Irrig. Engineering
Gary Merkley	1.00 ppm	1.00 ppm	USU	Irrig. Engineering

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6. WORLDWIDE - Irrigation Experience Transfer

Code Number: 2-07-026-86

Status: Initiated

Lead University: Utah State University

Summary of Work: The main activity during this quarter was to conduct a number of interviews with experts having long backgrounds with irrigated agriculture development. These interviews were carried out mainly in England by Bryant Smith, with some assistance from Allen LeBaron. In particular, these interviews provided a lot more Africa coverage than has been available thus far. The bulk of those interviewed have engineering backgrounds.

Some of the draft sections have been received for the proposed training manual. A thorough review was made of the methodology for preparing the manual and the outline for the document was revised. The immediate task is to obtain the draft outputs from the rest of the assigned authors and create the first version of the training manual.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jack Keller	0.00 ppm	0.82 ppm	USU	Irrig. Engineering
Allen LeBaron	0.00 ppm	2.70 ppm	USU	Ag. Economics
Bryant Smith	0.55 ppm	1.05 ppm	USU	Law/Institutions
R. Kern Stutler	0.00 ppm	0.85 ppm	USU	Irrig. Engineering
Mark Lusk	0.00 ppm	1.25 ppm	USU	Sociology
J. Perera	0.00 ppm	0.13 ppm	Sri Lanka (Honorarium)	Sociology
Keith D. Wilde	0.50 ppm	0.50 ppm	Consultant	Ag. Economics
M. Mulik	0.50 gpm	2.00 gpm	USU	Irrig. Engineering
B. Sawant	0.50 gpm	2.00 gpm	USU	Irrig. Engineering

7. WORLDWIDE Triads Synthesis I

Code Number: 2-14-037-86

Status: Initiated Lead University: Cornell University

Summary of Work: Some preliminary work on small-scale synthesis.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
E.W. Coward, Jr.	0.0 ppm	0.25 ppm	Cornell	Rural Sociology
Norman Uphoff	0.0 ppm	0.25 ppm	Cornell	Political Science

8. WORLDWIDE Conference on Lessons Learned

Code Number: 2-07-019-86

Status: Initiated Lead University: Cornell University

Summary of Work: The first annual Forum on Irrigation Systems Research and Applications was held at Cornell University, May 13-15, 1986. The Workshop was divided into three major components: Analysis of Irrigation Systems Management, Research on Irrigation in Africa, and a Workshop on Irrigation Project Design. During this quarter plans were made to publish the proceedings of the workshop on Project design and the papers from the two sessions.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Michael Walter	0.0 ppm	1.00 ppm	Cornell	Ag. Engineering
Nancy St. Julien	.25 gsm	3.25 gsm	Cornell	Planning
Randy Barker	0.0 ppm	0.25 ppm	Cornell	Ag. Economics
E.W. Coward	0.0 ppm	0.25 ppm	Cornell	Rural Sociology
B.D. Lynch	0.0 ppm	0.25 ppm	Cornell	Rural Sociology

9. WORLDWIDE - Revision of Training Manuals

Code Number: 2-13-003-86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Dr. Robby Laitos revised the sociology section of the DA Manual, Volume 2.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Darlene Fowler	2.00 ppm	6.00 ppm	CSU	Tech. Journalism
Richard Tinsley	ppm	.50 ppm	CSU	Agronomy
William Laitos	1.00 ppm	1.00 ppm	CSU	Sociology

10. WORLDWIDE - Revision and Development of Videotapes

Code Number: 2-03-004-86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Final preparation for videotapes shot in Pakistan and Nepal for the Rehabilitation Conference was done.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
John Webb	0.0 ppm	5.71 ppm	CSU	Tech. Journalism
William Laitos	2.00 ppm	2.00 ppm	CSU	Sociology
Dan Lattimore	1.00 ppm	1.00 ppm	CSU	Tech. Journalism
Dan Hilleman	1.32 ppm	1.32 ppm	CSU	Tech. Journalism

11. WORLDWIDE - Seminar on Irrigation Rehabilitation Phase #2

Code Number: 2-05-006-86

Status: Initiated                      Lead University: Colorado State University

Summary of Work:

Final preparations for the International Conference on Rehabilitation and Betterment were made. Revisions on case studies were made. Program was completed and plans for each session were made.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Mohammed Haider	2.00	ppm 3.50 ppm	CSU	Economics
David Karmell		ppm 1.50 ppm	CSU	Agricultural Engr
Tor. Sheng		ppm .50 ppm	CSU	Civil Engr.

12. WORLDWIDE - Triad Synthesis #1

Code Number: 2-14-035-86

Status: Initiated                      Lead University: Colorado State University

Summary of Work:

Dr. Ramchand Oad revised a proposal for this activity to examine project methodologies and findings from various irrigation system evaluations. Test of the methodologies was made with review of a diagnostic analysis report, a sector study, and a rapid reconnaissance.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Ramchand Oad	1.77	ppm 2.77 ppm	CSU	Agricultural Engr.

13. WORLDWIDE Rehabilitation Game Revision

Code Number: 2-13-018-86

Status: Initiated Lead University: Cornell University

Summary of Work: The Rehab Game was tested again at Cornell's Irrigation Forum in May. A hard card and a manual for its use have been designed to permit the computer control of a slide projector. A set of slides to illustrate rehabilitation problems in the Gal Oya context was produced. Roelef Sikkens has begun work on an Africa version of the Rehab Game. A final draft of the game manual was edited, the program debugged. Two manuals were sent to the printer, one for the Game and one for the Relay Adapter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Robert Oaks	3.0 gsm	8.0 gsm	Cornell	Ag. Engineering
Roelef Sikkens	1.0 gsm	3.0 gsm	Cornell	Ag. Engineering
Claudia Rullman	0.0 tpm	0.25 tpm	Cornell	Computer Graphics
Ed Vander Velde	0.0 ppm	0.75 ppm	Aquinas Coll.	Geography
Tammo Steerhuis	0.25 ppm	1.0 ppm	Cornell	Ag. Engineering

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C. FY86

C.3 Special Studies

1. NIGER Traditional and Developed Small-Scale Irrigation Study

Code Number: 3-04-023-86

Status: Initiated Lead University: Cornell University

Summary of Work: W. Ray Norman has been concentrating on data analysis. Goldring completed the social science component of the Galmi and Moulella perimeters. Adji Souley, a Nigerian social scientist, submitted a report on social problems on the Konni perimeter to AID/Niamey. Both the Galmi and Moulella and the Konni studies were presented to ONAHA with an overview of key issues by Goldring. Barbara Lynch visited Goldring in late June and early July to supervise Goldring's research activities and to draw up plans in conjunction with AID and ONAHA for the final social science product. Goldring's report was presented to AID in August and is now being translated into French and revised for publication as a WMS II working paper.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Ray Norman	3.0 gsm	21.5 gsm	Cornell	Agri. Engineering
Eric Arnould	0.0 ppm	0.5 ppm	IDA	Anthropology
Mike Walter	0.0 ppm	0.75 ppm	Cornell,	Agri. Engineering
John Wells	0.0 gsm	3.5 gsm	Cornell	"
Tammo Steenhuis	0.0 ppm	0.5 ppm	Cornell	"
Roelef Sikkens	1.5 gsm	1.5 gsm	Cornell	"
Luin Goldring	2.0 gsm	5.0 gsm	Cornell	Rural Sociology
Barbara Lynch	0.25 ppm	0.5 ppm	Cornell	"
Adji Souley	1.0 gsm	3.0 gsm	ONAHA	Sociology

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2. SRI LANKA - Interfacing OFWM

Code Number: 3-04-009-86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Data collection was completed for Yala season for the special studies team of John and Pat Wilkens-Wells and Susan Smolnick in Sri Lanka. Ms. Smolnick returned to CSU to begin data analysis in early September, and the Wilkens-Wells will return in October.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
John Wilkens-Wells	2.25 ppm	9.00 ppm	CSU	Sociology
Pat Wilkens-Wells	2.25 ppm	9.00 ppm	CSU	Sociology
Dan Lattimore	ppm	1.00 ppm	CSU	Tech. Journ.
Susan Smolnick	3.00 ppm	8.00 ppm	CSU	Civil Engr.
WJW Arambepola	3.00 ppm	10.00 ppm	Consultant	
K Chandrasekere	3.00 ppm	12.00 ppm	Consultant	
Delunghawatta	3.00 ppm	12.00 ppm	Consultant	
SR Gunasekera	3.00 ppm	9.00 ppm	Consultant	
RJ Gunawardena	3.00 ppm	12.00 ppm	Consultant	
NK Labutale	3.00 ppm	9.00 ppm	Consultant	
DM Wimalasiri	ppm	3.00 ppm	Consultant	

3. SRI LANKA - Landsat '86

Code Number: 3-04-011-86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Tim Martin finished mapping the two systems not mapped last summer during his TDY in Sri Lanka. He received digital data from Landsat for 1986 season and has begun analysis of the data.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Jan Cipra	ppm	1.00 ppm	CSU	Agronomy
Tim Martin	1.48 ppm	6.34 ppm	CSU	Agronomy

84

4. THAILAND - Special Studies

Code Number: 3-04-008-86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Dr. Dan Lattimore and Dr. Robby Laitos met with Dr. Kanda Parakian in Bangkok to set up coding schedule for survey with key informants and farmers in the Lam Chamuak irrigation system.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Al Early	ppm	1.50 ppm	CSU	Agricultural Engr.
William Laitos	ppm	.75 ppm	CSU	Sociology

5. WORLDWIDE - Interfacing/Backstopping

Code Number: 3-04-010-86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Data from Pakistan continued to be analyzed. A coding schedule for data analysis from data gathered in Thailand was developed and arrangements were made to have the data coded in Thailand.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Ramchand Oad	ppm 1.00	ppm	CSU	Ag. & Chem. Engr.
Dennis Wendell	ppm 1.50	ppm	CSU	Sociology
Al Early	ppm .25	ppm	CSU	Ag. & Chem. Engr.
Dave Freeman	ppm 2.00	ppm	CSU	Sociology
Dave Karmel	ppm 1.50	ppm	CSU	Ag. & Chem. Engr.
Dan Lattimore	.50 ppm	1.00 ppm	CSU	Tech. Journ.
Sarwat Rizwani	3.00 ppm	8.00 ppm	CSU	Sociology
Ed Shinn	3.00 ppm	7.00 ppm	CSU	Sociology

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6. WORLDWIDE - Irrigation Project Analysis and Management

Code Number: 3-04-005-86

Status: Initiated

Lead University: Utah State University

Summary of Work: The principal activity during the FY 86 fourth quarter was to visit key USAID Missions, demonstrate the microcomputer software and determine the potential for implementation in selected local irrigation projects. Using the six video programs, Professors Walker and Skogerboe visited Thailand, India, Pakistan and Egypt Missions and presented a three-hour seminar. Follow-up discussions were held with Mission personnel at each Mission. In addition, the seminars were presented at IIMI in Sri Lanka and FAO in Rome. There appeared to be considerable interest in the software, and most contacts indicated that ongoing or planned projects could utilize such analyses. However, it also became clear that substantial specialized training would be necessary. A 49-week course incorporating five existing International Irrigation Center short courses and four new short courses were designed for this purpose. A report to the Pakistan Mission outlined this program along with a view of how computerization could be incorporated within regular operations and maintenance field programs.

Work continued on the refinement and application of the UCA and Main Systems Models. Documentation is being prepared and case studies analyzed.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Wynn R. Walker	2.00 ppm	2.92 ppm	USU	Irrig. Engineering
Gary Merkley	2.50 ppm	7.00 ppm	USU	Irrig. Engineering
Willem Vlotman	0.00 ppm	1.00 ppm	USU	Irrig. Engineering
Gaylord Skogerboe	0.50 ppm	0.50 ppm	USU	Irrig. Engineering
Richard Allen	2.00 ppm	2.00 ppm	USU	Irrig. Engineering
Trevor Hughes	1.50 ppm	1.50 ppm	USU	Civil Engineering
Andy Keller	0.50 gpm	1.50 gpm	USU	Irrig. Engineering
Hubert Eisele	3.00 gpm	4.00 gpm	USU	Irrig. Engineering
Francis Gichuki	3.00 gpm	4.00 gpm	USU	Irrig. Engineering

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7. WORLDWIDE Indirect Investment Strategies--FY86 (Phase III)

Code Number: 3-04-055-86

Status: Initiated Lead University: Cornell University

Summary of Work: Walt Coward and Mike Walter visited Indonesia to negotiate a subcontract with the Centre for Agribusiness Research in Jakarta to carry out field research in Indonesia on indirect investment strategies. Dr. M. Aziz Amin was named as counterpart for the Centre. The three investigators did some preliminary field reconnaissance.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
E. W. Coward, Jr.	.50 ppm	.50 ppm	Cornell	Rural Sociology
M. F. Walter	.50 ppm	.50 ppm	Cornell	Ag. Engineering
Aziz Amin	.50 ppm	.50 ppm	Ctr for Agribusiness Research	Ag. Economimcs

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8. ZIMBABWE - Joint Field Study Planning

Code Number: 3-04-500A86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

The scope of work for the field study was approved by the Zimbabwe mission.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Terry Podmore	ppm	0.50 ppm	CSU	Agricultural Engr.

1/2

C. FY86

C.4 Administration

CSU Administration FY 86

Code Number: 0-02-998-86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Project support included assistance in various activities but particularly the Sri Lanka long-term, Rehabilitation Seminar, and Egypt Redesign.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Wayne Clyma	1.03	ppm 1.03 ppm	CSU	Ag. Eng.
Vicki Duneman	.50	ppm 2.00 ppm	CSU	Tech. Journ.
Dave Freeman		ppm 1.00 ppm	CSU	Sociology
Dan Lattimore	.61	ppm 5.11 ppm	CSU	Tech. Journ.
Mary Lindburg	2.25	ppm 9.00 ppm	CSU	Support Staff
Al Madsen		ppm 1.00 ppm	CSU	Economist
Vonni McPhaul		ppm 6.00 ppm	CSU	Support Staff
Beverly Meyer	3.00	ppm 11.50 ppm	CSU	Support Staff
W. Schmehl		ppm .92 ppm	CSU	Agronomy
Tom Sheng		ppm .50 ppm	CSU	Civil Engr.
Dan Sunada	1.00	ppm 1.00 ppm	CSU	Civil Engr.

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PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
E. Walter Coward, Jr.	1.00 ppm	2.00 ppm	Cornell	Rural Sociology
Barbara D. Lynch	2.75 ppm	7.75 ppm	Cornell	Rural Sociology
Fua M. Hazelman	0.0 ppm	6.0 ppm	Cornell	Secretarial
Andrea Fudala	3.0 ppm	5.00 ppm	Cornell	Secretarial
Beth Rose	0.0 ppm	0.5 ppm	Cornell	Editing
Betty Van Amburg	0.0 ppm	1.75 ppm	Cornell	Secretarial
Grace Saatman	1.5 ppm	4.5 ppm	Cornell	Accounts Coordinating

WORLDWIDE - Administration

Code Number: 0-02-997-86

Status: Initiated

Lead University: Utah State University

Summary of Work: Bryant Smith attended two JPMT meetings, the first was held in Washington, D.C. and a second in Park City, Utah. Dr. Keller was able to attend the second meeting where a better definition of African, Triad, and budgeting issues were considered. Problems of an unexpected budget decrease by S&T/RD were discussed and contingency plans were made to adjust to this alteration of the WMS II budget.

Team members were selected, consulting agreements were negotiated, and travel arrangements were made for a number of WMS activities. Agreements were made with Thomas Weaver, an economist at the University of Rhode Island, and CH2M Hill for the Somalia Project Paper Assistance activity. The Team made the trip to Somalia during the quarter and plans were developed for a special presentation at the project paper review in Washington, D.C. for October or November. Also, USU began preparations for a project paper team for Peru during the quarter. Due to delays in getting the project identification document approved, the Team did not make a trip to Peru. Due to the lack of adequate time to finish the economic analysis on the Niger Project Paper, Jack Keller and Bryant Smith negotiated an extension of Tom Zalla's contract to return to Niger next quarter. Zalla will complete all the economic analysis for the project paper work for the Niger AID Mission. In September, the USU IIC/Morocco training Team went to Morocco for their first short course in Rabat. Administrative preparations were made for Bryant Smith to go to England to interview British irrigation experts regarding their experiences in Africa and Asia. The Water Charges conference was carried out in September in Rome. Final arrangements for the conference were made by the administrative unit and papers forwarded to Dr. Allen LeBaron in Rome.

The following reports were prepared: (1) the USU administrative budget; (2) the Egypt Sector Survey report; (3) the Pakistan Post '87 Strategy for Irrigation; and (4) the last quarterly report. Extensive accounting issues were discussed and resolved and a large amount of correspondence for the project was carried out.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
<u>Professional:</u>				
Jack Keller	0.75 ppm	4.68 ppm	USU	Irrig. Engineering
Bryant D. Smith	2.45 ppm	9.20 ppm	USU	Institutional
<u>Support Staff:</u>				
Angie Ballam	0.00 spm	2.25 spm	USU	Secretarial/Typing
JoAnn Biery	3.00 spm	11.00 spm	USU	Secretarial/Acctg.
Linda Fields	3.00 spm	11.00 spm	USU	Secretarial/Typing
Donna Gossner	0.00 spm	2.25 spm	USU	Secretarial/Typing
<u>Students:</u>				
Dean Mathias	1.00 gpm	1.12 gpm	USU	Clerical
M. Mulik	1.00 gpm	2.00 gpm	USU	Irrig. Engineering
B. Sawant	1.00 gpm	2.00 gpm	USU	Irrig. Engineering
Camille Loveland	0.00 gpm	1.80 gpm	USU	Clerical

C. FY86

C.6 Summary FY86

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## V. FINISHED ACTIVITIES

The information contained in this section refers solely to finished activities. When activities appear in this section, the specific work has been finalized and reports have been distributed. After an activity has appeared in this section of the quarterly report, it will not be included again until a final tabulation of funding has been completed. At that time, it will appear as a completed activity in the financial section.

Country: Egypt

Title of Activity: Irrigation Sector Assessment

Code Number of Activity: 1-02-052-86

Completion Date: June 1986

Lead University: Utah State University

Description of Activity: During November an 11-member joint Egypt-U.S. Team completed field work for an irrigation sector study for Egypt, with the purpose of developing a mid-term (6-year) and longer term (15-year) strategy for irrigation development for Egypt. The U.S. Team, led by Dr. Dean F. Peterson, also included Dr. David W. James, Professor of Soils and Biometeorology, USU; Dr. Glen E. Stringham, Professor of Irrigation and Drainage Engineering, USU; Dr. Keith Roberts, Emeritus Professor of Agricultural and Irrigation Engineering, USU; and Dr. Gerald Wheelock, Professor of Rural Sociology, Alabama A&M University.

The Egyptian Team consisted of Eng. Sarwat Fahmy, Undersecretary and Director of the Water Planning Group, Ministry of Irrigation (MOI), Co-Leader; Eng. Mohamed Maher, Director of the Technical Office, Office of the Ministry (MOI); Eng. Jean Kamel abd El Sayed, Consultant, Manpower Training and Development Unit (MOI); Eng. Wadie Rafla, Undersecretary for Irrigation, Alexandria Governate; Eng. Raza Rezek El Mansawy, Director of Works, Egyptian Drainage Authority; and Dr. Mohamed El Zanaty, Chief, Agricultural Division, Water Master Plan, Water Planning Group (MOI).

During December and early January, Peterson edited and compiled the draft material into a draft report. Engineer Sarwat reviewed the draft in Logan January 9-15, 1986. Some minor revisions were made and Engineer Sarwat returned to Egypt with the revised draft. During the next 2-3 months the report was reviewed extensively in Egypt by the Ministry of Irrigation and USAID. Concurrently the report was used by the Mission. Quoting Edwin D. Stains, Director of the Office of Irrigation and Land Development, USAID,

"...we used the draft report to develop a new program and have the green light from the Mission to proceed with an amendment to the IMS (Irrigation Management Systems) project."

The Mission began preparing the project paper on June 3, utilizing an American consultant, not under WMS. This was completed in early September.

The revised draft of the sector report was received in Logan during mid June. After some minor editing, it is being produced as WMS Report No. 42, "Strategies for Irrigation Development in Egypt."

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
Glen Stringham	USU	Irrig. Engineering
David W. James	USU	Soil Science
Dean F. Peterson	Consultant	Irrig. Engineering
Gerald Wheelock	Consultant	Anthropology
Keith Roberts	Consultant	Ag. Economics
Linda Fields	USU	Typing/Editing
Cindy Nielsen	USU	Typing
Barbara Stewart	USU	Typing

Significant Findings and Results: Overall, the boundaries of Egypt's irrigated agriculture are somewhat unique. Rainfed agriculture is negligible. The traditional rich land resources of the Nile Valley and Delta are rigidly defined geographically. With multi-year storage provided by High Aswan Dam, a full water supply, and slightly more, is available for irrigating these lands, but problems of efficient and equitable distribution still remain. Egypt's population growth rate has outrun agricultural productivity during recent decades. From an export situation, Egypt now finds itself importing about 50 percent of its basic food supply needs. Its strategy is to expand its land base by reclaiming currently unproductive lands at the Delta margins and in the desert. Water supply would be provided from the Nile source by increasing efficiency of current uses and productivity on the traditional areas.

A major need is to improve irrigation water management and irrigated agricultural practices on farms. Pilot studies for improved on-farm water management were initiated in 1977 under a USAID-supported project with Colorado State as contractor. These studies laid the groundwork which Egypt would like to extend to its 6 million acres of irrigated land. It proposes to do this on larger pilot areas totaling 800,000 acres by 1991-92 in each of the 15 governorates as a next step. In doing this, Egypt faces the usual array of institutional difficulties encountered by India's Command Area Development Authorities, Pakistan's Water Systems initiative, and elsewhere. But on-farm problems are not the only ones. There are the usual set of systems problems including the need to improve delivery through the tertiary system.

Many canals and pumping stations are in need of rehabilitation and repair. With Aswan reservoir storage, sedimentation has been greatly reduced and canal maintenance must now deal with massive problems of controlling water weeds (which formerly did not grow in the sediment laden waters) instead of removing large quantities of silt. Several of the eight Nile Barrages will need replacement. These will include Hydropower generation and improved navigation locks also. Interestingly, replacement of Esna barrage is economically justified by hydropower alone.

Increased use of modern operations research type management software for improving operation of the main system including Lake Nasser and the Nile river shows great promise. Some of this has begun. A data communication system for transmitting water-level information was being installed at the time of the Teams' visit.

How to develop the marginal soil resources, of the desert, if they can be developed, is still only partly resolved. Only on the better clay type soils does farmer resettlement seem to have much prospect for success. On the more sandy soils, private development of large tracts for speciality crops for Egypt markets is currently succeeding, but markets may be limited.

Groundwater in the Nile Valley and Delta is recharged solely by the Nile River. Some of it is pumped and, along with surface drainage water, re-used for irrigation. There are some unexploited groundwater sources in the West desert and in Sinai and Egypt intends to develop Oases at these sites. By pumping groundwater in tail end reaches, the tail-ender problem could be relieved. Nearly all irrigation water is delivered to levels of up to 75 cm below field level and must be pumped by the irrigator. This is done using animal powered water wheels (sagias) or manually powered Archimedes screw type pumps (tambours). There is some shift to diesel-powered centrifugal pumps and even to gravity delivery.

Crop yields are already relatively high in Egypt, about 2.5T/ha. for food grains. Extension pilot programs have demonstrated that these can be substantially improved with only small additional input of resources, but that further higher level yields beyond these, however, will require considerable investment in modern technology including mechanization and increased research and extension. Even the first step is not being taken now, apparently because price ceilings do not permit increased profits. Instead farmers seem to be investing their savings in labor-saving devices such as diesel powered pumps. Low availability of labor at critical times is also a critical factor. Where price ceilings have been raised, farmers have intensified efforts and productivity has been raised.

There is a need for collaboration between Ministry of Irrigation and Ministry of Agriculture on research in the general areas related to evapotranspiration (water use, water fertilizer relationships, etc.). These research areas need to be pursued more vigorously.

The Team considered priorities for 19 proposed programs totaling about LE 2,655 million (roughly the same in dollars) for the short-term with a continuation valued at LE 3,722 million through the longer term. The Egyptians feel that all items are of high and equal priority. The items were in fact listed by the term in priority order based on which ones appeared most desirable for proposing international donor support. The first priority item was the irrigation improvement program, which AID supports under its IMS project. This activity provides for integrated comprehensive system and farming improvements on a selected area basis, such as might be served by a branch canal. All the common elements including channel rehabilitation, scheduling, on-farm practice and farmer organizations are in this package. In the longer term, this item accounted for LE 3,000 million of the LE 3,722 million total.

<u>Reports/Documents</u>	<u>Completion Date</u>	<u>Distribution</u>
Trip Reports	12/85	CID, AID/W, CU, CSU
WMS Report 42: Strategies for Irrigation Development in Egypt	9/86	General

1970

Country: Indonesia

Title of Activity: Small-Scale Irrigation Workshop and Other Technical Assistance

Code Number of Activity: 1-02-009-85      Finished Date: 7/30/86

Lead University: Cornell University

Description of Activity: A WMS team provided technical assistance to the Jakarta mission in three Indonesian provinces. A four person team visited Sulawesi Selatan to identify potential irrigation sites to be included in the USAID Small-Scale Irrigation Project. In addition, a three man team visited Nusa Tenggara Barat to evaluate the proposed subproject sites for the Small-Scale Irrigation Project. All of these sites had originally been identified by Canadian funded studies. In Nusa Tenggara Timur a potential groundwater development project in the Oesao and Pariti plains was evaluated.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
Loren Parks	UC (Davis)	Economics
Ramchand Oad	CSU	Engineering
Andrew Keller	USU	Engineering
Jeff Brewer	Cornell/Berger	Anthropology

Significant Findings and Results:

The team recommended that the AID Small-Scale Irrigation Project provide direct support to provincial Public Works organizations (Departemen Pekerjaan Umum). Based on the analysis of irrigation in Nusa Tenggara Barat, the team recommended that the Small Scale Irrigation project make use of catalyst agents or Irrigation Helpers (IH) to facilitate cooperation between farmers and Public Works in design and construction activities and to aid farmers in developing appropriate O&M procedures. Public Works is responsible for these activities, while the Ministry of Agriculture is charged with creation of local organizations. Therefore, the primary focus of the catalysts should be to help farmers solve irrigation problems rather than the creation of water user associations. Because the three provincial Public Works Departments lack experience with catalyst agents, it was recommended that support be given to the departments either through LP3ES or by hiring a social scientist with WUA experience and Indonesian fluency to act as adviser to the IH program.

It was found that if farmers are to adapt their irrigation systems to changed circumstances, they will need technical advice and building materials. The team recommended that one Public Works project engineer in each province be designated as a farmers' adviser. It was recommended that the SSI project include a line item for building materials to be used by farmers and that distribution of these materials to water user associations be supervised by the engineer acting as a farmers' adviser.

The team recommended that a major monitoring and evaluation effort be included in the small-scale irrigation project. For each system four areas should be investigated: water distribution, agricultural production, socioeconomic impacts; and farmer participation in design and O&M. The integration of data collection efforts and the necessity of continuing presence of researchers in the field were emphasized. It was suggested that monitoring and evaluation be carried out by interdisciplinary teams from provincial universities supplemented by an irrigation engineer from public works for each department.

<u>Reports/Documents</u>	<u>Completion Date</u>	<u>Distribution</u>
J. Brewer, ed., Small-Scale Irrigation Technical Assistance in Indonesia: Sulawesi Selatan, Nusa Tenggara Barat, Nusa Tenggara Timur. Final Report. WMS Working Paper	6/86	AID/W; CPMT; AID/Jakarta

Country: Worldwide

Title of Activity: Comparative Analysis of Farmer Participation

Code Number of Activity: 3-04-070-84      Finished Date: 8/30/86

Lead University: Cornell University

Description of Activity: A working group was assembled under the direction of Norman Uphoff to prepare a state-of-the-art paper on farmer participation in irrigation. Three graduate students, Bryan Bruns, Nancy St. Julien, and Ruth Meinzen-Dick carried out a guided literature review of 50 cases designed to yield comparative information on size, management characteristics and performance. The data from this study formed the basis for the elaboration of a model for analyzing farmer participation. St. Julien, Meinzen-Dick and Uphoff prepared a policy paper based on their findings. This paper has been issued as WMS Professional Paper No. 1. An in-depth analysis and review of the literature appeared as a WMS Working Paper entitled "Getting the Process Right: Improving Irrigation Water Management with Farmer Organization and Participation." This working paper will be published shortly by Westview Press.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
Norman Uphoff	Cornell	Government
Nancy St. Julien	Cornell	Planning
Gerard Finnan	Cornell	Government
Ruth Meinzen-Dick	Cornell	Rural Sociology
Bryan Bruns	Cornell	Rural Sociology

Significant Findings and Results:

Farmer participation in irrigation management can vary greatly in kind and degree. The working group concluded that farmer participation in irrigation management was likely to improve system management and water use. The objective should be optimum--from the farmer as well as the agency point of view--rather than maximum participation, since participation has costs as well as benefits.

The analytical framework developed by the group to study participation focuses on water, on the structures designed to control water, and on the organization that manages the structures that control water. Within each focus, the following activities can be identified:

- (a) acquisition, allocation, distribution and drainage of water;
- (b) design, construction, operation and maintenance of structures;
- (c) decisionmaking, resource mobilization, communication and conflict resolution within and between organizations responsible for water management.

These activities occur at different levels of operation within the system. The farmer participation analytical framework types system on the basis of number of levels for operation and organization rather than on command area size.

The group found some elements of a common strategy for encouraging farmer participation, although they caution that specific project efforts must be tailored to the environment and objectives at hand. It was found that support from top levels of government is needed in a form that will create space within which bottom-up capacity can be built. Agency efforts should be characterized by experimentation, phasing, and flexibility. Working with small groups at the base is more likely to be successful, and wherever possible, it is advisable to work through existing local organizations with water management related capacities. To the extent that water users feel some proprietary interest in and responsibility for the system, they will participate more actively and freely.

The analysis showed that the politicization of water user organizations will spoil cooperation among farmers. It also suggests that getting administrative personnel to work with farmers usually requires some bureaucratic reorientation. Finally, the compatibility of objectives between government and water users will affect the viability of organized farmer efforts.

On matters of program design, the following generalizations are offered:

(1) Water user associations should start with a focus on irrigation management rather than as multipurpose organizations.

(2) Organization size and structure should follow hydrological lines, and water users should be free to amalgamate and subdivide groups to suit needs.

(3) Membership should be based on field neighbors rather than residential neighbors, and vested in the household rather than the household head.

(4) Conscientious, energetic leadership is a key to success.

(5) Legal authorization and specification should be extended to buttress organizations that have their own integrity and reality.

(6) Farmer organizers or catalysts have played important roles in introducing farmer participation.

(7) A strategy of organizational development does well to start from a pilot effort, first learning to be effective, then efficient, and finally to expand to other areas.

(8) NGOs, PVOs and research institutions can make significant contributions to participation efforts.

(9) Promoting farmer participation requires strong leadership within agency or agencies carrying out programs.

<u>Reports/Documents</u>	<u>Completion Date</u>	<u>Distribution</u>
Improving Policies and Programs for Farmer Organization and Participation in Water Management	12/85	AID/W, ADOs, CPMT, other professionals
Getting the Process Right	5/86	AID/W, CPMT

Country: Worldwide

Title of Activity: Small-Scale Irrigation Systems Study Completion

Code Number of Activity: 3-04-069-84      Finished Date: 9/30/86

Lead University: Cornell University

Description of Activity: During the first phase of the small-scale irrigation special study, a working group was formed to elaborate a conceptual framework for the study of small-scale irrigation and to conduct preliminary field investigations in Sri Lanka, India, Mali, Niger, Mexico, Peru and Bolivia. The initial working group consisted of E. Walter Coward, Michael Walter, James Nickum, Ray Norman, Barbara Deutsch Lynch, Susan Turnquist, and Luin Goldring.

During the second phase of the study, Coward, Walter, Lynch, Nickum, Chris Wensley, and Turnquist examined written case materials from Africa, Asia, and Latin America. Four discussion papers were prepared on Investment in Small-Scale Systems, Design for Small-Scale Irrigation, Farmer Participation and Local Organization for Small-Scale Irrigation, and on Agency-Farmer Relations based on field work and on the literature review. These papers were discussed at a workshop held at Cornell in October 1984.

Taking into account the findings of the workshop, five members of the working group prepared WMS Reports addressing general issues of small-scale irrigation development. These reports have been widely distributed within AID.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
E. Walter Coward, Jr.	Cornell	Rural Sociology
Michael F. Walter	Cornell	Agri. Engineering
Barbara D. Lynch	Cornell	Rural Sociology
James E. Nickum	Cornell	Economics
Chris Wensley	Cornell	Agri. Engineering
Susan Turnquist	Cornell	Rural Sociology
Luin Goldring	Cornell	Rural Sociology
Ray Norman	Cornell	Agri. Engineering
Beth Rose	Cornell	Editor

Significant Findings and Results:

Small-scale irrigation development is appealing to Third World governments and to international donors for a number of reasons, including the possibility of

rapid completion, low costs, the dispersion of state funds among widely scattered sites, the potential for aiding small farmers, and the promising of eliciting local contributions to system construction and maintenance. The success of small-scale irrigation programs will depend upon arriving at some optimal mix of state and local responsibilities for building and sustaining small-scale irrigation facilities.

Four primary program elements are critically affected by this choice: the investment process, engineering and design, local organization and farmer participation, and the actions of the technical agencies charged with carrying out irrigation programs.

Investment strategies for small-scale irrigation were examined on the basis of a single characteristic--directness of investment. It was found that the success or failure of investment strategies is largely determined by parameters outside of the strategy per se. Among these the question of infrastructure ownership is critical. Direct investment leads to the assumption of ownership rights by the state, while property created by indirect investment is more likely to remain in the hands of the community. In the latter case, the community will be more likely to contribute its resources to system O&M. Where a community's share in project management is limited to labor, a community may surrender ownership rights to the state along with its obligation to assume O&M costs. Investment strategies should be tailored to local conditions, although indirect approaches which leave decision making in the hands of the community are usually preferable.

An evolutionary approach to small-scale system design is more likely to result in a sustainable farmer managed system. Investments would be made in system infrastructure only when farmers were prepared to make use of them. Technology may be rudimentary, but would generally reflect optimum economic efficiency from the farmer's point of view. Care must be exercised in determining the level of assistance that can be given to small-scale irrigation development to avoid negating the indigenous motivation that drives the local approach and to maintain a balance in the local environment. External assistance for technology transfer seems appropriate. However, the most appropriate technologies may be proven traditional technologies from other regions.

Local participation in small-scale irrigation development cannot be assumed. Participation may be empowered--involving decision making and control--or unempowered, consisting solely of a contribution of labor, cash or materials. Participation levels will be affected by the physical environment, local social structure, and the national economic and institutional context. Local organizations for sustainable small-scale systems should have three key characteristics: accountability to both users and agency, capacity to carry out irrigation tasks, ability to interact with outside agencies. If agencies are to succeed in promoting local participation, baseline studies should promote understanding of cultural and social factors relevant to project development. A service orientation on the part of the agency, a learning process approach to development are likely to promote local participation. The role of the community organizer is also a key factor in promoting local participation.

A consideration of agency roles and processes in small-scale irrigation programs should include examination of the following issues: agencies and the investment process, the choice of an implementing agency, the service role for the agency,

and the special role of private voluntary organizations in small-scale irrigation development. Project planning should include identification of the various agencies--public and private--involved in small scale irrigation, a decision on the style of project implementation, and the development of a working group to act in concert with the implementing agency.

<u>Reports/Documents</u>	<u>Completion Date</u>	<u>Distribution</u>
Coward. Improving Policies & Programs for the Development Small-Scale Irrigation Systems, WMS Report 27	9/84	AID ADOs, CPMT, other
Lynch. Community Participation and Local Organization for Small-Scale Irrigation, WMS Report 34	3/85	"
Wensley and Walter. Small-Scale Irrigation: Design Issues in Government Assisted Systems, WMS Report 39	7/85	"
Nickum. Direction, Inducement and Schemes: Investment Strategies for Small-Scale Irrigation Systems. WMS Report 44.	7/86	"
Goldring. Small-Scale Irrigation Development in Mexico	9/83	Internal
Norman. Mali, Chad trip report. Report incorporated in Prospects for Small-Scale Irrigation Development in the Sahel. WMS Report 26.	9/83	CPMT, AID/W
Lynch. Peru, Boliva trip report.	8/83	CPMT, AID/W

VI. COMMITTEES

None Reported This Quarter

## VII. ROSTER UPDATE

One contract required WMS II activity is the establishment of a human resource file or a professional roster of persons interested in water management work. The activity is part of the overall management unit of the WMS II Project.

In order to initiate the activity, a standard roster form was developed which would acquire relevant information in the areas of professional competence, education, work experience, availability for overseas assignments, language competence, geographic preferences, and other information. Approximately 400 forms were then sent through AID and the CID systems, as well as Colorado State University, Cornell University and Utah State University. In addition, approximately 100 forms were subsequently sent to persons who made inquiries about the project.

The acquired data were stored on the microcomputer data base system for general usage by the project. Thus, the data were recorded, filed, retrievable, and can be summarized. The computerized roster of water management specialists facilitates the identification and selection of professionals in agronomy, economics, engineering, sociology, Women in Development (WID), and other disciplines for WMS II assignments.

The roster has been used by DA coordinators for Bangladesh (1983), Sri Lanka (1982 and 1983), and India (1984) DA Workshops. In addition, the roster has been used to identify suitable professionals for short-term technical assistance activities overseas.

As of December 31, 1985 approximately 221 persons were listed on the roster. A total entry of 39 in agronomy, 38 in economics, 83 in engineering, and 61 in sociology and other disciplines.

VIII. FINANCIAL REPORT

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)QUARTERLY REPORT  
FOR THE PERIOD ENDING SEPTEMBER 30, 1986FISCAL YEAR 1986 WORK PLAN ACTIVITIES  
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ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/ - - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH JUN. 30, 86	CURRENT QUARTER	THROUGH SEP. 30, 86	
ADMINISTRATION:								
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WORLDWIDE								
EPD ADMINISTRATION	0-01-995-86	CID	APPR	63,157	11,121	7,449	18,570	44,587
EPD ADMINISTRATION	0-01-995-87	CID	APPR	57,554	0	0	0	57,554
EPD ADMINISTRATION	0-01-999-86	CID	FORM	191,810	183,355	-20,139	163,216	28,594
EPD ADMINISTRATION	0-01-999-87	CID	APPR	191,812	0	0	0	191,812
CU ADMINISTRATION	0-02-996-86	CU	FORM	208,124	122,202	-72,608	49,594	158,530
CU ADMINISTRATION	0-02-996-87	CU	APPR	204,549	0	0	0	204,549
USU ADMINISTRATION	0-02-997-86	USU	APPR	233,089	155,895	68,679	224,574	8,515
USU ADMINISTRATION	0-02-997-87	USU	APPR	233,688	0	0	0	233,688
CSU ADMINISTRATION	0-02-998-86	CSU	INIT	246,600	182,628	58,177	240,805	5,795
CSU ADMINISTRATION	0-02-998-87	CSU	APPR	226,553	0	0	0	226,553
CLOSED OUT CU ADMIN	0-99-996-84	CU	TERM	0	-14,326	0	-14,326	14,326
CLOSED OUT USU ADMIN	0-99-997-84	USU	TERM	0	-3,804	0	-3,804	3,804
TOTAL ADMINISTRATION \$				1,856,936	637,071	41,558	678,629	1,178,307
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TECHNICAL ASSISTANCE:								
-----								
AFRICA:								
African Irrigation Overvi	1-02-108-84	USU	INIT	169,651	176,399	0	176,399	( 6,748)
CHAD:								
Irrigated Agric. Assessme	1-02-073-85	USU	FINI	116,022	105,322	0	105,322	10,700
EGYPT:								
Irrigation Sector Assessm	1-02-052-86	USU	INIT	128,383	95,218	1,826	97,044	31,339
Egypt Redesign	1-02-071-86	CSU	APPR	60,241	16,507	16,749	33,256	26,985
EL SALVADOR:								
PP Development	1-02-077-85	USU	COMP	164,814	154,690	0	154,690	10,124
HAITI:								
Cayes Plain-Distrib. Bene	1-02-084-85	CU	FINI	10,197	10,011	0	10,011	186
INDIA:								
TA/Fld Stu/TR-Maha Irr T&	1-01-021-84	USU	FINI	415,096	414,980	1,181	416,161	( 1,065)
Socio-Technical Feas. Stu	1-04-059-86	CSU	FINI	3,183	1,343	1,620	2,963	220
INDONESIA:								
Small-scale irr. workshop	1-02-009-85	CU	FINI	200,658	58,957	568	59,525	141,133

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FISCAL YEAR 1986 WORK PLAN ACTIVITIES

ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/ - - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH JUN. 30, 86	CURRENT QUARTER	THROUGH SEP. 30, 86	
JORDAN:								
Jordan Advisory Services	1-02-028-85	USU	APPR	24,358	0	218	218	24,140
KENYA:								
Small Scale Irrig. Analy.	1-02-042-86	CU	FINI	105,516	80,985	22,949	103,934	1,582
MOROCCO:								
PID Development	1-02-002-85	USU	COMP	47,629	48,702	0	48,702 (	1,073)
NEPAL:								
Nepal Rapid Appraisal	1-02-087-85	CSU	FINI	125,690	123,498	748	124,246	1,444
NIGER:								
Niger Project Paper	1-02-070-86	USU	INIT	117,268	36,951	72,619	109,570	7,698
PAKISTAN:								
Irrigation Consultation	1-02-060-86	USU	INIT	37,986	23,963	3,218	27,181	10,805
PARAGUAY:								
Technical Assessment	1-02-067-86	USU	FINI	9,721	6,718	0	6,718	3,003
PERU:								
Plan MERIS	1-01-112-84	USU	COMP	579,000	550,470	1	550,471	28,529
Finishing Plan MERIS	1-02-061-86	USU	FINI	60,000	52,211	1,144	53,355	6,645
RWANDA:								
Water Management & Draina	1-02-062-86	USU	FINI	9,051	9,166	-58	9,108 (	57)
SOMALIA:								
Project Paper Assistance	1-02-074-86	USU	APPR	52,991	0	17,935	17,935	35,056
SRI LANKA:								
Long Term Wtr Mgmt Speci	1-01-109-84	CSU	INIT	300,051	199,634	31,119	230,753	69,298
Socioeconomic studies -	1-02-004-85	CU	INIT	82,673	33,556	368	33,924	48,749
Model Calibration	1-02-005-85	USU	INIT	37,600	43,833	0	43,833 (	6,233)
ARTI-Continuing Support	1-02-045-86	CU	INIT	72,440	13,143	0	13,143	59,297
FY 86 Central Support	1-02-048-86	CSU	INIT	66,782	43,628	21,330	64,958	1,824
WORLDWIDE:								
Meeting recurrent costs o	1-02-062-85	CU	COMP	51,345	43,611	0	43,611	7,734
Shortcourse Staff Assista	1-02-068-86	CID	APPR	11,127	5,564	12,118	17,682 (	6,555)
Thunder & Assoc.	1-03-066-86	CID	APPR	5,462	5,462	0	5,462	0
Zimbabwe:								
Small Scale Irrigation	1-02-050-86	CSU	APPR	58,000	23,641	30,266	53,907	4,093
TOTAL TECHNICAL ASSIST. \$				3,122,935	2,378,163	235,919	2,614,082	508,853

RAINING AND TECHNOLOGY TRANSFER:

BOLIVIA:								
Course - On-Farm Water Mn	2-01-011-85	USU	COMP	4,383	4,384	0	4,384 (	1)
DOMINICAN REPUBLIC:								
On-Farm Water Mngment Cou	2-14-030-85	USU	APPR	9,909	0	0	0	9,909
ECUADOR:								
Finish Original Training	2-03-054-84	USU	COMP	167,676	161,350	0	161,350	6,326

FISCAL YEAR 1986 WORK PLAN ACTIVITIES

ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/ - - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH JUN. 30, 86	CURRENT QUARTER	THROUGH SEP. 30, 86	
GUATEMALA:								
Evaluation of Guatemala M	2-02-064-86	USU	INIT	28,252	25,534	0	25,534	2,718
INDIA:								
Video Modules	2-03-075-85	USU	FINI	74,001	66,058	0	66,058	7,943
Senior Officer's Workshop	2-04-053-84	USU	INIT	74,337	50,279	0	50,279	24,058
MOROCCO:								
Internat'l Irrigation Cen	2-04-027-86	USU	INIT	58,997	1,060	12,196	13,256	45,741
PAKISTAN:								
Mngmnt Officials Trnng -	2-01-065-85	CSU	INIT	28,628	19,489	0	19,489	9,139
Baluchistan DA	2-02-065-86	CSU	APPR	164,235	101,557	25,258	126,815	37,420
Sr Officer's Workshop/Sem	2-04-019-84	CSU	INIT	85,281	32,857	17,932	50,789	34,492
Management Tr. Key Offici	2-04-080-85	CSU	COMP	14,583	14,581	-10	14,571	12
Baseline Survey	2-04-083-85	CSU	COMP	41,554	41,492	12	41,504	50
Micro Computer Workshop	2-14-032-85	CSU	INIT	44,821	44,649	175	44,824	( 3)
Command Water Management	2-14-114-84	CSU	INIT	932,410	886,140	16,836	902,976	29,434
THAILAND:								
O&M Training & Applied St	2-02-028-87	USU	APPR	47,069	0	0	0	47,069
O&M Training & Applied Study	2-02-069-86	USU	INIT	42,861	9,441	21,916	31,357	11,504
Maintenance Workshop	2-14-088-85	USU	COMP	17,129	10,766	0	10,766	6,363
WORLDWIDE:								
Expert Cons. on Water Cha	2-02-063-86	USU	INIT	18,475	879	562	1,441	17,034
Rev&Development of Videot	2-03-084-86	CSU	INIT	60,216	22,822	36,193	59,015	1,201
Seminar Irrig. System Reh	2-05-086-86	CSU	INIT	133,195	27,746	36,942	64,688	68,507
Seminar on Irrig System R	2-05-033-85	CSU	FINI	53,030	53,874	2	53,876	( 846)
Reprints of WMSII Publica	2-06-077-86	CID	APPR	5,000	0	0	0	5,000
Conference on Lessons Lea	2-07-019-86	CU	FINI	65,251	43,477	10,039	53,516	11,735
Irrig. Experience Transfe	2-07-026-86	USU	APPR	101,276	0	1,014	1,014	100,262
Irrigation Experience Tra	2-07-026-87	USU	APPR	71,772	0	0	0	71,772
Strategy for Training	2-09-049-84	CSU	FINI	27,378	25,504	0	25,504	1,874
Professional Visitors	2-11-016-86	CU	INIT	14,280	4,608	359	4,967	9,313
Professional Visitors & N	2-11-039-84	CSU	INIT	10,284	9,721	40	9,761	523
French Language Training	2-11-041-85	USU	INIT	10,650	2,251	226	2,477	8,173
Brochures, Newsletters, P	2-12-044-84	CSU	FINI	39,976	40,799	1	40,800	( 824)
Progress Report	2-12-072-86	CID	APPR	11,320	0	0	0	11,320
Revision of Training Manu	2-13-003-86	CSU	INIT	46,273	21,107	12,629	33,736	12,537
Rehabilitation Game Revis	2-13-018-86	CU	INIT	66,840	26,058	1,824	27,882	38,958
Triad Synthesis Phase I	2-14-035-86	CSU	INIT	9,998	7,361	2,535	9,896	102
Triad Synthesis Phase I	2-14-036-86	USU	INIT	10,000	840	0	840	9,160
Triad Synthesis Phase I	2-14-037-86	CU	INIT	10,000	6,300	-3,023	3,277	6,723
Lessons Learned: Irr Sys	2-14-039-85	USU	INIT	103,209	65,117	10,857	75,974	27,235
Syn-Local Resource Mob. I	2-14-053-86	CU	INIT	14,401	0	1,138	1,138	13,263
WKSP Anal. Irrig. Bureaucra	2-14-054-86	CU	INIT	63,703	0	0	0	63,703
Irr Sys Mgmt Task Force	2-14-060-84	USU	INIT	44,284	36,261	0	36,261	8,023
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$				2,826,937	1,864,362	205,653	2,070,015	756,922

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FISCAL YEAR 1986 WORK PLAN ACTIVITIES

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ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/ - - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH JUN. 30, 86	CURRENT QUARTER	THROUGH SEP. 30, 86	
<b>SPECIAL STUDIES:</b>								
<b>AFRICA:</b>								
JFS-REHAB-COUNTRY B	3-04-501-86	USU	FORM	124,700	0	4,928	4,928	119,772
JFS-Comm Mgn'd Country C	3-04-502-86	CU	INIT	149,474	0	0	0	149,474
JFS-Comm Mgn'd Country D	3-04-503-86	CID	APPR	291,380	0	0	0	291,380
AFRICA IRRIGATION WORKSHO	3-04-505-87	CID	APPR	92,600	0	0	0	92,600
<b>MOROCCO:</b>								
Moroccan Case Studies	3-04-043C85	USU	FINI	29,433	25,495	0	25,495	3,938
<b>NIGER:</b>								
Small Scale Irrigation St	3-04-023-86	CU	INIT	109,577	64,741	22,069	86,810	22,767
Trad & Devel Small-Scale	3-04-052-85	CU	INIT	108,081	43,504	0	43,504	64,577
<b>SRI LANKA:</b>								
Interfacing OF Water Mana	3-04-009-86	CSU	INIT	165,361	82,847	25,571	108,418	56,943
Landsat 86 - Remote Sensi	3-04-011-86	CSU	INIT	45,001	31,355	10,137	41,492	3,509
Phys & Oper Rehab Impact	3-04-097-84	CU	FINI	26,492	19,077	-1	19,076	7,416
<b>THAILAND:</b>								
Thailand SS Overseas 87	3-04-002-87	CSU	APPR	48,810	0	0	0	48,810
Overseas '86	3-04-008-86	CSU	INIT	50,027	41,598	7,319	48,917	1,110
Thailand Case Study	3-04-043B85	USU	FINI	44,067	44,376	0	44,376	( 309)
<b>WORLDWIDE:</b>								
Indirect Invest. Strat. 8	3-04-001-87	CU	APPR	79,565	0	0	0	79,565
Interfacing OF Mgmt. 87	3-04-003-87	CSU	APPR	76,813	0	0	0	76,813
Irrig Proj Analysis and M	3-04-005-86	USU	INIT	155,012	42,596	71,452	114,048	40,964
Irrig Proj Analysis and M	3-04-006-87	USU	APPR	155,386	0	0	0	155,386
Interfacing O.F. Water Mg	3-04-010-86	CSU	INIT	103,561	61,243	10,304	71,547	32,014
Rapid Irr. Project Apprai	3-04-042-85	USU	FINI	73,710	73,034	0	73,034	676
Irrigation System Model D	3-04-043A85	USU	FINI	87,623	87,629	0	87,629	( 6)
Interdisciplinary Mn Sys	3-04-043E85	USU	FINI	27,848	28,090	0	28,090	( 242)
Comp Anal of Fmr Partcpt	3-04-046-83	CU	INIT	17,535	25,431	3,190	28,621	( 11,086)
Comp Anal of Ind Invst St	3-04-054-85	CU	INIT	97,099	33,817	201	34,018	63,081
Rural Employment & Sys Pe	3-04-055-85	CU	INIT	16,150	16,734	0	16,734	( 584)
Indirect Invest Strat. 86	3-04-055-86	CU	INIT	171,290	62	18,300	18,362	152,928
Management Intensities -	3-04-056-85	CU	INIT	69,615	59,385	0	59,385	10,230
Sml-Scl Irr Sys Spcl Stdy	3-04-069-84	CU	FINI	57,059	57,514	0	57,514	( 455)
Management Performance	3-04-078-86	CU	INIT	68,409	0	0	0	68,409
<b>Zimbabwe:</b>								
Zimbabwe JFS	3-04-500-86	CSU	APPR	201,440	65	0	65	201,375
JFS Workshop Development	3-04-500A86	CSU	APPR	21,192	9,406	3,004	12,410	8,782
<b>TOTAL SPECIAL STUDIES \$</b>				2,764,310	847,999	176,474	1,024,473	1,739,837
<b>TOTAL FY 86 ACTIVITIES \$</b>				10,571,118	5,727,595	659,604	6,387,199	4,183,919

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986CID / EPD OFFICE  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
EPD ADMINISTRATION									
0-01-995-86	7,120	0	10,083	365	0	17,568	1,002	18,570	63,157
EPD ADMINISTRATION									
0-01-995-87	0	0	0	0	0	0	0	0	57,554
EPD ADMINISTRATION									
0-01-999-86	89,405	16,592	22,102	12,448	11,686	152,233	10,983	163,216	191,810
EPD ADMINISTRATION									
0-01-999-87	0	0	0	0	0	0	0	0	191,812
TOTAL UNIVERSITY SUPPORT \$	96,525	16,592	32,185	12,813	11,686	169,801	11,985	181,786	504,333
TECHNICAL ASSISTANCE:									
EGYPT:									
Egypt Redesign									
1-02-071-86	0	1,520	6,010	0	0	7,530	745	8,275	CSU
INDIA:									
TA/Fid Stu/TR-Maha Irr T&M Prj									
1-01-021-84	0	1,488	1,181	0	0	2,669	147	2,816	USU
KENYA:									
Small Scale Irrig. Analy.									
1-02-042-86	16,640	5,972	2,442	0	4,569	29,623	2,714	32,337	CU
NEPAL:									
Nepal Rapid Appraisal									
1-02-087-85	0	0	327	0	0	327	32	359	CSU
WORLDWIDE:									
Meeting recurrent costs of irr									
1-02-062-85	21,462	171	959	0	5,129	27,721	2,237	29,958	CU
Shortcourse Staff Assistance									
1-02-068-86	10,126	0	7,055	0	0	17,181	501	17,682	11,127
Thunder & Assoc.									
1-03-066-86	0	0	4,970	0	0	4,970	492	5,462	5,462

CID / EPD OFFICE  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
<b>Zimbabwe:</b>									
Small Scale Irrigation 1-02-050-86	11,072	3,395	4,237	0	3,045	21,749	1,852	23,601	CSU
<b>TOTAL TECHNICAL ASSIST. \$</b>	<b>59,300</b>	<b>12,546</b>	<b>27,181</b>	<b>0</b>	<b>12,743</b>	<b>111,770</b>	<b>20,705</b>	<b>120,490</b>	<b>16,589</b>
<b>TRAINING AND TECHNOLOGY TRANSFER:</b>									
<b>INDIA:</b>									
Senior Officer's Workshop 2-04-053-84	0	10,747	19,268	0	0	30,015	2,971	32,986	USU
<b>PAKISTAN:</b>									
Mngmt Officials Trngng - Pinnng 2-01-065-85	7,520	1,869	2,740	0	0	12,129	1,377	13,506	CSU
Command Water Management Prog 2-14-114-84	3,164	0	106	0	0	3,270	324	3,594	CSU
<b>WORLDWIDE:</b>									
Seminar Irrig. System Rehab 2 2-05-006-86	5,500	16,825	0	0	0	22,325	0	22,325	CSU
Reprints of WMSII Publications 2-06-077-86	0	0	0	0	0	0	0	0	5,000
Strategy for Training 2-09-049-84	0	156	780	0	0	936	93	1,029	CSU
Progress Report 2-12-072-86	0	0	0	0	0	0	0	0	11,320
<b>TOTAL TRAINING AND TECHNOLOGY TRANSFER \$</b>	<b>16,184</b>	<b>29,597</b>	<b>22,894</b>	<b>0</b>	<b>0</b>	<b>68,675</b>	<b>25,470</b>	<b>73,440</b>	<b>16,320</b>
<b>SPECIAL STUDIES:</b>									
<b>AFRICA:</b>									
JFS-Comm Mgn'd Country D 3-04-503-86	0	0	0	0	0	0	0	0	291,380
AFRICA IRRIGATION WORKSHOP 3-04-505-87	0	0	0	0	0	0	0	0	92,600
<b>THAILAND:</b>									
Overseas '86 3-04-009-86	0	1,980	11,340	0	0	13,320	1,086	14,406	CSU
Thailand Case Study 3-04-043885	0	416	1,176	0	0	1,592	157	1,749	USU
<b>TOTAL SPECIAL STUDIES \$</b>	<b>0</b>	<b>2,396</b>	<b>12,516</b>	<b>0</b>	<b>0</b>	<b>14,912</b>	<b>26,713</b>	<b>16,155</b>	<b>383,980</b>

TOTAL FY 86 ACTIVITIES \$	172,009	61,131	94,776	12,813	24,429	365,158	26,713	391,871	921,222
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## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986COLORADO STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
EPD ADMINISTRATION									
0-01-999-86	0	0	0	0	0	0	0	0	CID
COLORADO STATE UNIV.									
0-02-998-86	116,776	6,938	37,651	0	63,465	224,830	15,975	240,805	246,600
COLORADO STATE UNIV.									
0-02-998-87	0	0	0	0	0	0	0	0	226,553
TOTAL UNIVERSITY SUPPORT \$	116,776	6,938	37,651	0	63,465	224,830	15,975	240,805	473,153
TECHNICAL ASSISTANCE:									
AFRICA:									
African Irrigation Overview									
1-02-108-84	9,297	868	3,363	0	4,870	18,398	1,339	19,737	USU
EGYPT:									
Egypt Redesign									
1-02-071-86	11,127	5,156	253	0	6,598	23,134	1,847	24,981	60,241
INDIA:									
Socio-Technical Feas. Study									
1-04-059-86	1,739	210	0	0	777	2,726	237	2,963	3,183
INDONESIA:									
Small-scale irr. workshop, etc									
1-02-009-85	13,536	9,676	104	0	5,130	28,446	2,615	31,061	CU
KENYA:									
Small Scale Irrig. Analy.									
1-02-042-86	6,700	3,860	218	0	4,300	15,078	1,236	16,314	CU
NEPAL:									
Nepal Rapid Appraisal									
1-02-087-85	51,772	20,585	18,672	0	23,184	114,213	9,674	123,887	125,690
SRI LANKA:									
Long Term Wtr Mgmt Specialist									
1-01-109-84	139,728	4,049	21,545	7,590	38,818	211,730	19,023	230,753	300,051

COLORADO STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
FY 86 Central Support									
1-02-048-86	26,634	14,318	1,964	0	17,123	60,039	4,919	64,958	66,782
Zimbabwe:									
Small Scale Irrigation									
1-02-050-86	14,693	4,947	483	0	8,029	28,152	2,154	30,306	58,000
<b>TOTAL TECHNICAL ASSIST. \$</b>	<b>275,226</b>	<b>63,669</b>	<b>46,602</b>	<b>7,590</b>	<b>108,829</b>	<b>501,916</b>	<b>59,019</b>	<b>544,960</b>	<b>613,947</b>
<b>TRAINING AND TECHNOLOGY TRANSFER:</b>									
<b>PAKISTAN:</b>									
Mngmnt Officials Trnng - Plnng									
2-01-065-85	4,042	0	0	0	1,455	5,497	486	5,983	28,628
Baluchistan DA									
2-02-065-86	53,008	2,304	29,062	0	33,665	118,039	8,776	126,815	164,235
Sr Officer's Workshop/Seminar									
2-04-019-84	25,833	5,191	3,675	0	12,492	47,191	3,598	50,789	85,281
Management Tr. Key Officials									
2-04-080-85	8,292	1,565	36	0	3,562	13,455	1,116	14,571	14,583
Baseline Survey									
2-04-083-85	10,022	8,973	9,306	0	10,188	38,489	3,015	41,504	41,554
Micro Computer Workshop									
2-14-032-85	23,689	211	7,072	0	10,786	41,758	3,066	44,824	44,821
Command Water Management Prog									
2-14-114-84	481,620	61,104	102,755	3,753	181,086	831,095	69,064	899,382	932,410
<b>WORLDWIDE:</b>									
Rev&Development of Videotapes									
2-03-004-86	24,389	7,115	4,988	4,080	14,560	55,132	3,883	59,015	60,216
Seminar Irrig. System Rehab 2									
2-05-086-86	23,452	1,729	2,356	0	10,987	38,524	2,726	41,250	133,195
Seminar on Irrig System Rehab									
2-05-033-85	29,345	1,098	5,920	0	13,064	49,427	3,600	53,027	53,030
Conference on Lessons Learned									
2-07-019-86	59	2,346	0	0	959	3,364	238	3,602	CU
Strategy for Training									
2-09-049-84	14,682	492	1,745	0	5,882	22,801	1,674	24,475	27,378
Professional Visitors & Netwkg									
2-11-039-84	2,670	3,199	847	0	2,380	9,096	665	9,761	10,284
Brochures, Newsletters, Publ.									
2-12-044-84	19,565	478	7,911	0	10,064	38,018	2,767	40,785	39,976
Revision of Training Manual									
2-13-003-86	21,006	31	1,483	0	8,986	31,506	2,230	33,736	46,273
Triad Synthesis Phase I									
2-14-035-86	6,606	0	0	0	2,636	9,242	654	9,896	9,998

COLORADO STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
Triad Synthesis Phase I 2-14-036-86	0	535	0	0	213	748	53	801	USU
Triad Synthesis Phase I 2-14-037-86	0	0	0	0	0	0	0	0	CU
<b>TOTAL TRAINING AND TECHNOLOGY TRANSFER \$</b>	<b>748,280</b>	<b>96,371</b>	<b>177,156</b>	<b>7,833</b>	<b>322,965</b>	<b>1,353,382</b>	<b>166,630</b>	<b>1,460,216</b>	<b>1,691,862</b>
<b>SPECIAL STUDIES:</b>									
<b>SRI LANKA:</b>									
Interfacing OF Water Managmnt. 3-04-009-86	39,882	9,046	28,614	0	22,144	99,686	8,732	108,418	165,361
Landsat 86 - Remote Sensing 3-04-011-86	11,948	4,253	12,200	0	10,221	38,622	2,870	41,492	45,001
<b>THAILAND:</b>									
Thailand SS Overseas 87 3-04-002-87	0	0	0	0	0	0	0	0	48,810
Overseas '86 3-04-008-86	12,212	5,550	5,226	0	8,956	31,944	2,567	34,511	50,027
<b>WORLDWIDE:</b>									
Interfacing OF Mgmt. 87 3-04-003-87	0	0	0	0	0	0	0	0	76,813
Interfacing O.F. Water Mgmt. 3-04-010-86	44,296	1,332	2,506	0	18,592	66,726	4,821	71,547	103,561
<b>Zimbabwe:</b>									
Zimbabwe JFS 3-04-500-86	0	0	0	0	0	0	0	0	201,440
JFS Workshop Development 3-04-500A86	4,443	3,611	186	0	3,288	11,528	882	12,410	21,192
<b>TOTAL SPECIAL STUDIES \$</b>	<b>112,781</b>	<b>23,792</b>	<b>48,732</b>	<b>0</b>	<b>63,201</b>	<b>248,506</b>	<b>186,502</b>	<b>268,378</b>	<b>712,205</b>
<b>TOTAL FY 86 ACTIVITIES \$</b>	<b>1,253,063</b>	<b>190,770</b>	<b>310,141</b>	<b>15,423</b>	<b>558,460</b>	<b>2,328,634</b>	<b>186,502</b>	<b>2,514,359</b>	<b>3,491,167</b>

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986CORNELL UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
<b>UNIVERSITY SUPPORT ACTIVITIES:</b>									
<b>ADMINISTRATION:</b>									
CORNELL UNIVERSITY									
0-02-996-86	22,207	1,329	5,468	700	17,019	46,723	2,871	49,594	208,124
CORNELL UNIVERSITY									
0-02-996-87	0	0	0	0	0	0	0	0	204,549
CLOSED OUT CU ADMIN									
0-99-996-84	-7,553	-830	-190	0	-4,904	-13,477	-849	-14,326	0
<b>TOTAL UNIVERSITY SUPPORT \$</b>	<b>14,654</b>	<b>499</b>	<b>5,278</b>	<b>700</b>	<b>12,115</b>	<b>33,246</b>	<b>2,022</b>	<b>35,268</b>	<b>412,673</b>
<b>TECHNICAL ASSISTANCE:</b>									
<b>CHAD:</b>									
Irrigated Agric. Assessment									
1-02-073-85	7,102	4,681	0	0	7,202	18,985	1,167	20,152	USU
<b>HAITI:</b>									
Cayes Plain-Distrib. Benefits									
1-02-084-85	0	5,781	725	0	2,861	9,367	644	10,011	10,197
<b>INDONESIA:</b>									
Small-scale irr. workshop, etc									
1-02-009-85	2,394	0	10,531	0	3,642	16,567	1,280	17,847	200,658
<b>KENYA:</b>									
Small Scale Irrig. Analy.									
1-02-042-86	8,165	10,754	8,817	0	14,353	42,089	2,746	44,835	105,516
<b>PERU:</b>									
Plan MERIS									
1-01-112-84	10,094	4,346	831	0	9,094	24,365	1,512	25,877	USU
Finishing Plan MERIS									
1-02-061-86	2,766	792	57	0	2,127	5,742	358	6,100	USU
<b>SRI LANKA:</b>									
Socioeconomic studies - rehab.									
1-02-004-85	8,395	9,732	1,162	0	12,725	32,014	1,910	33,924	82,673

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CORNELL UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
-----									
ARTI-Continuing Support									
1-02-045-86	2,508	5,067	0	0	4,818	12,393	750	13,143	72,440
WORLDWIDE:									
Meeting recurrent costs of irr									
1-02-062-85	4,740	2,773	504	0	4,842	12,859	794	13,653	51,345
-----									
TOTAL TECHNICAL ASSIST. \$	46,164	43,926	22,627	0	61,664	174,381	13,183	185,542	522,829
-----									
TRAINING AND TECHNOLOGY TRANSFER:									
-----									
Seminar Irrig. System Rehab 2									
2-05-006-86	0	641	0	0	408	1,049	64	1,113	CSU
Seminar on Irrig System Rehab									
2-05-033-85	0	473	0	0	329	802	47	849	CSU
Conference on Lessons Learned									
2-07-019-86	15,184	161	11,792	0	16,638	43,775	2,687	46,462	65,251
Professional Visitors									
2-11-016-86	0	0	2,769	0	1,924	4,693	274	4,967	14,280
Brochures, Newsletters, Publ.									
2-12-044-84	0	0	8	0	6	14	1	15	CSU
Rehabilitation Game Revision									
2-13-018-86	11,035	0	5,831	0	9,346	26,212	1,670	27,882	66,840
Triad Synthesis Phase I									
2-14-037-86	1,806	0	139	0	1,139	3,084	193	3,277	10,000
Syn-Local Resource Mob. Irrig.									
2-14-053-86	688	0	0	0	382	1,070	68	1,138	14,401
WKSP Anal. Irrig. Bureaucracies									
2-14-054-86	0	0	0	0	0	0	0	0	63,703
Irr Sys Mgmt Task Force									
2-14-060-84	645	3,994	111	0	3,131	7,881	470	8,351	USU
-----									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	29,358	5,269	20,650	0	33,303	88,580	18,657	94,054	234,475
-----									
SPECIAL STUDIES:									
-----									
AFRICA:									
JFS-Comm Mgn'd Country C									
3-04-502-86	0	0	0	0	0	0	0	0	149,474
NIGER:									
Small Scale Irrigation Study									
3-04-023-86	17,123	15,207	27,792	0	20,736	80,858	5,952	86,810	109,577

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CORNELL UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
Trad & Devel Small-Scale Irr 3-04-052-85	11,696	6,951	13,996	0	7,629	40,272	3,232	43,504	108,081
SRI LANKA:									
Phys & Oper Rehab Impact 3-04-097-84	9,916	0	3,050	0	4,826	17,792	1,284	19,076	26,492
WORLDWIDE:									
Indirect Invest. Strat. 87 3-04-001-87	0	0	0	0	0	0	0	0	79,565
Comp Anal of Frmr Partcptn Exp 3-04-046-83	12,486	0	5,887	0	8,429	26,802	1,819	28,621	17,535
Comp Anal of Ind Invst Stratgy 3-04-054-85	17,038	3,971	-959	0	11,983	32,033	1,985	34,018	97,099
Rural Employment & Sys Perform 3-04-055-85	7,908	0	2,833	0	4,930	15,671	1,063	16,734	16,150
Indirect Invest Strat. 86 3-04-055-86	1,393	9,875	75	0	6,995	17,338	1,024	18,362	171,290
Management Intensities - 2 3-04-056-85	34,365	90	1,533	0	19,835	55,823	3,563	59,385	69,615
Sml-Scl Irr Sys Spcl Stdy Comp 3-04-069-84	32,086	0	5,859	0	15,812	53,757	3,757	57,514	57,059
Management Performance 3-04-078-86	0	0	0	0	0	0	0	0	68,409
Zimbabwe:									
Zimbabwe JFS 3-04-500-86	0	0	36	0	25	61	4	65	CSU
TOTAL SPECIAL STUDIES \$	144,011	35,094	60,102	0	101,200	340,407	42,340	364,089	970,346
TOTAL FY 86 ACTIVITIES \$	234,187	84,788	108,657	700	208,282	636,614	42,340	678,953	2,140,323

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYNTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986UTAH STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
UTAH STATE UNIV.									
0-02-997-86	132,413	5,850	16,815	0	54,143	209,221	15,353	224,574	233,089
UTAH STATE UNIV.									
0-02-997-87	0	0	0	0	0	0	0	0	233,688
CLOSED OUT USU ADMIN									
0-99-997-84	-2,682	0	1	0	-858	-3,539	-265	-3,804	0
TOTAL UNIVERSITY SUPPORT \$	129,731	5,850	16,816	0	53,285	205,682	15,088	220,770	466,777
TECHNICAL ASSISTANCE:									
AFRICA:									
African Irrigation Overview									
1-02-108-84	54,736	14,044	41,953	0	34,817	145,550	11,112	156,662	169,651
CHAD:									
Irrigated Agric. Assessment									
1-02-073-85	0	8,198	50,713	0	20,042	78,805	6,217	85,170	116,022
EGYPT:									
Irrigation Sector Assessment									
1-02-052-86	16,462	8,079	42,187	0	23,355	90,083	6,961	97,044	128,383
EL SALVADOR:									
PP Development									
1-02-077-85	8,700	3,230	124,176	0	13,347	148,525	5,237	154,690	164,814
INDIA:									
TA/Field Stu/TR-Maha Irr T&M Prj									
1-01-021-84	208,320	33,594	49,522	8,707	82,718	382,861	30,484	413,345	415,096
INDONESIA:									
Small-scale irr. workshop, etc									
1-02-009-85	1,640	5,756	60	0	2,386	9,842	775	10,617	CU
JORDAN:									
Jordan Advisory Services									
1-02-028-85	0	0	150	0	53	203	15	218	24,358

UTAH STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
KENYA:									
Small Scale Irrig. Analy.									
1-02-042-86	1,624	5,227	327	0	2,512	9,690	758	10,448	CU
MOROCCO:									
PID Development									
1-02-002-85	18,910	13,603	797	0	11,659	44,969	3,733	48,702	47,629
NIGER:									
Niger Project Paper									
1-02-070-86	5,707	1,863	67,958	0	26,435	101,963	7,607	109,570	117,260
PAKISTAN:									
Irrigation Consultation									
1-02-060-86	35	0	18,724	0	6,565	25,324	1,857	27,181	37,986
PARAGUAY:									
Technical Assessment									
1-02-067-86	2,637	1,573	0	0	1,608	6,203	515	6,718	9,721
PERU:									
Plan MERIS									
1-01-112-84	63,184	53,131	234,209	21,927	115,512	487,963	36,631	524,594	579,000
Finishing Plan MERIS									
1-02-061-86	19,771	12,322	213	0	11,307	43,613	3,642	47,255	60,000
RWANDA:									
Water Management & Drainage									
1-02-062-86	6,030	85	76	0	2,167	8,358	750	9,108	9,051
SOMALIA:									
Project Paper Assistance									
1-02-074-86	0	3,358	9,020	0	4,332	16,710	1,225	17,935	52,991
SRI LANKA:									
Model Calibration									
1-02-005-85	16,258	13,587	333	0	10,333	40,466	3,322	43,833	37,600
TOTAL TECHNICAL ASSIST. \$	424,014	178,035	640,418	30,634	369,148	1,641,128	135,929	1,763,090	1,969,570
TRAINING AND TECHNOLOGY TRANSFER:									
BOLIVIA:									
Course - On-Farm Water Mngmnt									
2-01-011-85	666	0	2,360	0	1,059	4,085	299	4,384	4,383
DOMINICAN REPUBLIC:									
On-Farm Water Mngment Course									
2-14-030-85	0	0	0	0	0	0	0	0	9,909
ECUADOR:									
Finish Original Training Mduls									
2-03-054-84	105,567	1,665	8,277	0	34,830	150,339	11,011	161,350	167,676

UTAH STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
-----									
GUATEMALA:									
Evaluation of Guatemala Model									
2-02-064-86	6,499	7,574	3,460	0	6,137	23,670	1,864	25,534	28,252
INDIA:									
Video Modules									
2-03-075-85	26,799	0	17,825	1,397	15,619	61,640	4,418	66,058	74,001
Senior Officer's Workshop									
2-04-053-84	0	2,186	9,926	0	3,877	15,989	1,304	17,293	74,337
MOROCCO:									
Internat'l Irrigation Center									
2-04-027-86	3,350	5,679	82	0	3,189	12,300	956	13,256	58,997
THAILAND:									
O&M Training & Applied Study									
2-02-028-87	0	0	0	0	0	0	0	0	47,069
O&M Training & Applied Study Pgrm									
2-02-069-86	13,778	7,051	595	0	7,498	28,922	2,435	31,357	42,861
Maintenance Workshop									
2-14-088-85	5,369	1,976	0	0	2,571	9,916	850	10,766	17,129
WORLDWIDE:									
Expert Cons. on Water Changes									
2-02-063-86	0	922	73	0	348	1,343	98	1,441	18,475
Conference on Lessons Learned									
2-07-019-86	0	2,382	0	0	834	3,216	236	3,452	CU
Irrig. Experience Transfer									
2-07-026-86	700	0	0	0	245	945	69	1,014	101,276
Irrigation Experience Transfer									
2-07-026-87	0	0	0	0	0	0	0	0	71,772
French Language Training									
2-11-041-85	1,680	0	44	0	582	2,306	171	2,477	10,650
Triad Synthesis Phase I									
2-14-036-86	0	0	27	0	9	36	3	39	10,000
Lessons Learned: Irr Sys Mngmt									
2-14-039-85	36,553	11,002	4,881	0	18,305	70,741	5,233	75,974	103,209
Irr Sys Mngmt Task Force									
2-14-060-84	17,090	2,292	18	0	6,589	25,989	1,921	27,910	44,284
-----									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	218,051	42,729	47,568	1,397	101,692	411,437	166,797	442,305	884,280
-----									
SOCIAL STUDIES:									
-----									
AFRICA:									
JFS-REHAB-COUNTRY B									
3-04-501-86	0	2,566	835	0	1,190	4,591	337	4,928	124,700

Best Available Document

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UTAH STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
MOROCCO:									
Moroccan Case Studies									
3-04-043085	8,655	9,073	14	0	5,968	23,710	1,785	25,495	29,433
THAILAND:									
Thailand Case Study									
3-04-043885	9,673	2,364	20,060	0	7,333	39,430	3,197	42,627	44,067
WORLDWIDE:									
Irrig Proj Analysis and Mgmt									
3-04-005-86	56,155	11,078	6,246	7,309	25,718	106,506	7,542	114,048	155,012
Irrig Proj Analysis and Mgmt									
3-04-006-87	0	0	0	0	0	0	0	0	155,386
Rapid Irr. Project Appraisal									
3-04-042-85	3,855	533	49,169	0	15,083	68,640	4,394	73,034	73,710
Irrigation System Model Devel.									
3-04-043A85	55,809	2,157	2,884	0	20,755	81,605	6,024	87,629	87,623
Interdisciplinary Mn Sys Wkshp									
3-04-043E85	14,211	0	5,175	0	6,785	26,171	1,919	28,090	27,848
TOTAL SPECIAL STUDIES \$	148,358	27,771	84,383	7,309	82,832	350,653	191,995	375,851	697,779
TOTAL FY 86 ACTIVITIES \$	920,154	254,385	789,185	39,340	606,957	2,608,900	191,995	2,802,016	4,018,406

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYNTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)QUARTERLY REPORT  
FOR THE PERIOD ENDING SEPTEMBER 30, 1986PRIOR YEARS WORK PLAN ACTIVITIES NOT CLOSED OUT  
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ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/ - - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH JUN. 30, 86	CURRENT QUARTER	THROUGH SEP. 30, 86	
<b>ADMINISTRATION:</b>								
<b>WORLDWIDE</b>								
EPD ADMINISTRATION	0-01-999-83	CID	COMP	145,937	145,772	0	145,772	165
EPD ADMINISTRATION	0-01-999-85	CID	FINI	191,810	241,094	-10,603	230,491	( 38,681)
CU ADMINISTRATION	0-02-996-85	CU	FINI	206,932	184,402	0	184,402	22,530
USU ADMINISTRATION	0-02-997-85	USU	FINI	233,126	217,116	0	217,116	16,010
CSU ADMINISTRATION	0-02-998-83	CSU	COMP	281,382	281,317	0	281,317	65
CSU ADMINISTRATION	0-02-998-85	CSU	COMP	231,641	231,638	-138	231,500	141
<b>TOTAL ADMINISTRATION \$</b>				<b>1,290,828</b>	<b>1,301,339</b>	<b>-10,741</b>	<b>1,290,598</b>	<b>230</b>
<b>TECHNICAL ASSISTANCE:</b>								
<b>EGYPT:</b>								
IIMS Evaluation Team	1-02-072-85	CSU	COMP	56,009	54,569	0	54,569	1,440
<b>EL SALVADOR:</b>								
PID Preparation	1-02-059-85	CSU	COMP	22,500	22,490	1	22,491	9
<b>INDIA:</b>								
TA/Field Stu/TR-Madhya Pr	1-01-025-84	USU	TERM	9,000	3,975	0	3,975	5,025
Maharashtra Minor Irrig	1-02-018-84	USU	FINI	171,970	160,882	0	160,882	11,088
Hill Irrig Proj Prep II	1-02-074-84	CU	COMP	61,218	111,838	0	111,838	( 50,620)
Irr Sector Eval & Strtgy	1-02-103-84	USU	FINI	227,461	216,682	17,565	234,247	( 6,786)
<b>INDONESIA:</b>								
Small Scale Irrig & Mgmt	1-02-011-84	CU	COMP	54,468	151,783	0	151,783	( 97,315)
Cost Recovery	1-02-074-85	CSU	COMP	12,611	11,957	0	11,957	654
<b>JAMAICA:</b>								
Planning Activities	1-02-007-85	USU	APPR	11,970	0	0	0	11,970
Systems Study	1-02-008-85	USU	APPR	24,822	0	0	0	24,822
<b>MAURITANIA:</b>								
River Valley - Plan of Ac	1-02-076-85	USU	FINI	45,915	20,139	0	20,139	25,776
<b>PAKISTAN:</b>								
Curriculum Development	1-02-071-85	CSU	COMP	74,443	58,664	10,603	69,267	5,176
<b>SRI LANKA:</b>								
Central Support	1-02-003-85	CSU	COMP	48,241	48,235	0	48,235	6

PRIOR YEARS WORK PLAN ACTIVITIES NOT CLOSED OUT

ACTIVITY	CODE	UNIV.	STATUS	EXPENDITURES				BUDGET BALANCE
				APPROVED BUDGET	THROUGH JUN. 30, 86	CURRENT QUARTER	THROUGH SEP. 30, 86	
Farmer Organization Progr	1-02-007-84	CU	COMP	64,466	63,647	0	63,647	819
Water Mgmt Central Suppor	1-02-022-84	CSU	FINI	67,902	67,207	0	67,207	695
Irr Sys Mgmt Proj Design	1-02-102-84	CSU	COMP	172,000	123,902	0	123,902	48,098
SWAZILAND:								
Irrigation Priorities	1-02-069-85	CSU	COMP	25,843	24,014	0	24,014	1,829
TOTAL TECHNICAL ASSIST. \$				1,150,839	1,139,984	28,169	1,168,153	( 17,314)
TRAINING AND TECHNOLOGY TRANSFER:								
BOLIVIA:								
Tarija Short Course	2-01-095-84	CU	COMP	64,995	5,228	0	5,228	59,767
ECUADOR:								
Equivar Video	2-03-054-83	USU	COMP	204,837	204,737	0	204,737	100
INDIA:								
DA Workshop - WID	2-02-090-84	CID	FINI	21,980	5,531	0	5,531	16,449
Development of Handbooks	2-13-027-85	CSU	TERM	79,956	29,729	0	29,729	50,227
NEPAL:								
Diagnostic Anal. of Irr.	2-02-031-85	CSU	COMP	126,479	125,820	0	125,820	659
WORLDWIDE:								
Main System Mgmt Task For	2-06-077-84	CU	COMP	7,557	1,087	0	1,087	6,470
DA Trainers Workshop	2-08-040-84	CSU	FINI	29,736	37,087	0	37,087	7,351
Micro Applications for DA	2-10-051-84	CSU	COMP	62,615	62,452	0	62,452	163
Increasing WM Capabilitie	2-11-020-83	CID	COMP	57,569	49,932	0	49,932	7,637
Professional Visitors	2-11-068-84	CU	COMP	9,673	1,886	0	1,886	7,787
Increasing WM Capabilitie	2-11-081-84	CID	COMP	20,847	16,244	0	16,244	4,603
Instructors Guide for DA	2-13-042-84	CSU	INIT	24,881	24,778	0	24,778	103
"Rehab.", A Game Simulati	2-13-048-85	CU	INIT	33,445	20,943	0	20,943	12,502
Jt Seminar on Current Res	2-14-050-85	CU	COMP	94,372	60,113	0	60,113	34,259
Small Scale Irrigation Wo	2-14-064-84	CU	FINI	47,163	32,756	0	32,756	14,407
Tsk Frc Sml-Sci Comm-Mgd	2-14-065-84	CU	COMP	20,741	7,685	1	7,686	13,055
Farmer Participation Wksp	2-14-066-84	CU	COMP	36,193	24,582	0	24,582	11,611
AID/FAO Expert Consul WM	2-14-067-84	CU	COMP	9,288	12,779	0	12,779	3,491
Planning for Seminar	2-14-075-84	CU	COMP	9,889	6,737	0	6,737	3,152
FAO Workshop Participants	2-14-078-84	CID	INIT	26,000	12,140	0	12,140	13,860
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$				988,216	742,246	1	742,247	245,969
SPECIAL STUDIES:								
NIGER:								
Sml-Sci Irr & Wtr Mgmt, P	3-04-098-84	CU	COMP	5,508	5,986	0	5,986	( 478)

PRIOR YEARS WORK PLAN ACTIVITIES NOT CLOSED OUT

ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	-- EXPENDITURES --			BUDGET BALANCE
					THROUGH JUN. 30, 86	CURRENT QUARTER	THROUGH SEP. 30, 86	
Traditional & Dev. SSI	3-04-111-84	CU	INIT	14,825	49,301	-31,457	17,844	( 3,019)
SRI LANKA:								
Sri Lanka Interfacing On-	3-04-036885	CSU	COMP	130,907	69,118	0	69,118	61,789
Landsat85-Remote Sensing	3-04-039-85	CSU	COMP	34,442	34,237	67	34,304	138
WORLDWIDE:								
Interfacing On-Farm Wtr M	3-04-036A85	CSU	COMP	86,390	66,728	0	66,728	19,662
Small Scale Irrigation	3-04-045-83	CU	INIT	160,697	104,179	0	104,179	56,518
Interfacing Farm & Manage	3-04-045-84	CSU	INIT	223,239	107,189	0	107,189	116,050
Comp Anal of Ind Invst St	3-04-053-85	CU	FINI	15,031	16,215	0	16,215	( 1,184)
Monitoring Projects	3-04-061-83	USU	POST	18,350	0	0	0	18,350
DA Evaluation	3-04-063-83	CID	COMP	7,163	0	0	0	7,163
Management Intensities -	3-04-076-84	CU	INIT	77,238	63,724	0	63,724	13,514
TOTAL SPECIAL STUDIES \$				773,790	516,677	-31,390	485,287	288,503
TOTAL PRIOR YEARS ACTIVITIES \$				4,203,673	3,700,246	-13,961	3,686,285	517,388

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986CID / EPD OFFICE  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
<b>UNIVERSITY SUPPORT ACTIVITIES:</b>									
<b>ADMINISTRATION:</b>									
EPD ADMINISTRATION									
0-01-999-85	78,192	26,358	42,289	518	17,225	164,582	14,399	178,981	191,810
<b>TOTAL UNIVERSITY SUPPORT \$</b>	<b>78,192</b>	<b>26,358</b>	<b>42,289</b>	<b>518</b>	<b>17,225</b>	<b>164,582</b>	<b>14,399</b>	<b>178,981</b>	<b>191,810</b>
<b>TECHNICAL ASSISTANCE:</b>									
<b>INDIA:</b>									
Maharashtra Minor Irrig									
1-02-018-84	0	21,467	23,330	0	3,309	47,806	4,735	52,841	USU
Hill Irrig Proj Prep II									
1-02-074-84	0	6,943	0	0	0	6,943	687	7,630	CU
Irr Sector Eval & Strtgy Revw									
1-02-103-84	0	0	17,565	0	0	17,565	0	17,565	USU
<b>PAKISTAN:</b>									
Curriculum Development									
1-02-071-85	7,717	4,857	31	0	2,122	14,727	1,248	15,975	CSU
<b>SRI LANKA:</b>									
Water Mgmt Central Support									
1-02-022-84	0	3,540	0	0	0	3,540	350	3,890	CSU
Irr Sys Mgmt Proj Design Team									
1-02-102-84	8,142	5,566	0	0	3,770	17,478	1,534	19,012	CSU
<b>TOTAL TECHNICAL ASSIST. \$</b>	<b>15,859</b>	<b>42,373</b>	<b>40,926</b>	<b>0</b>	<b>9,201</b>	<b>108,059</b>	<b>22,953</b>	<b>116,913</b>	<b>0</b>
<b>TRAINING AND TECHNOLOGY TRANSFER:</b>									
<b>INDIA:</b>									
DA Workshop - WID									
2-02-090-84	0	2,006	0	0	0	2,006	199	2,205	21,980

CID / EPD OFFICE  
PRIOR YEARS WORK PLAN ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
NEPAL:									
Diagnostic Anal. of Irr. Sys. 2-02-031-85	0	0	0	0	0	0	0	0	CSU
WORLDWIDE:									
DA Trainers Workshop 2-08-040-84	0	3,079	6,210	0	0	9,289	919	10,208	CSU
Increasing WM Capabilities 2-11-091-84	0	2,011	0	0	0	2,011	199	2,210	20,847
FAO Workshop Participants 2-14-078-84	0	11,046	0	0	0	11,046	1,094	12,140	26,000
<hr style="border-top: 1px dashed black;"/>									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	0	18,142	6,210	0	0	24,352	25,364	26,763	68,827
SPECIAL STUDIES:									
<hr style="border-top: 1px dashed black;"/>									
NIGER:									
Traditional & Dev. SSI 3-04-111-84	0	0	0	5,797	0	5,797	0	5,797	CU
WORLDWIDE:									
Interfacing On-Farm Wtr Mngmnt 3-04-036A85	0	0	2,197	0	0	2,197	217	2,414	CSU
DA Evaluation 3-04-063-83	0	0	0	0	0	0	0	0	7,163
<hr style="border-top: 1px dashed black;"/>									
TOTAL SPECIAL STUDIES \$	0	0	2,197	5,797	0	7,994	25,581	8,211	7,163
<hr style="border-top: 1px dashed black;"/>									
TOTAL PRIOR YEARS ACTIV. \$	94,051	86,873	91,622	6,315	26,426	304,987	25,581	330,868	267,800

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986COLORADO STATE UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES  
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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND O&A	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
EPD ADMINISTRATION									
0-01-999-83	78,404	6,173	13,267	2,964	35,224	136,032	9,740	145,772	CID
EPD ADMINISTRATION									
0-01-999-85	31,912	181	3,212	0	12,710	48,015	3,495	51,510	CID
COLORADO STATE UNIV.									
0-02-998-83	124,503	2,895	52,710	19,204	64,174	263,486	17,831	281,317	281,382
COLORADO STATE UNIV.									
0-02-998-85	118,983	7,618	32,010	0	57,187	215,384	15,702	231,500	231,641
TOTAL UNIVERSITY SUPPORT \$	353,802	16,867	101,199	22,168	169,295	662,917	46,768	710,099	513,023
TECHNICAL ASSISTANCE:									
EGYPT:									
IMS Evaluation Team									
1-02-072-85	24,528	11,445	1,077	0	13,338	50,388	4,181	54,569	56,009
EL SALVADOR:									
PID Preparation									
1-02-059-85	5,990	3,630	5,773	0	5,534	20,963	1,564	22,491	22,500
INDONESIA:									
Small Scale Irrig & Mgmt									
1-02-011-84	13,698	15,737	482	0	10,036	39,953	3,241	43,194	CU
Cost Recovery									
1-02-074-85	4,620	3,470	50	0	2,930	11,070	887	11,957	12,611
PAKISTAN:									
Curriculum Development									
1-02-071-85	18,313	8,289	524	0	9,765	36,891	3,036	39,927	74,443
SRI LANKA:									
Central Support									
1-02-003-85	28,743	6,389	153	0	9,119	44,404	3,831	48,235	48,241
Water Mgmt Central Support									
1-02-022-84	24,169	21,203	1,751	148	10,915	58,186	5,131	63,317	67,902

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COLORADO STATE UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
Irr Sys Mgmt Proj Design Team									
1-02-102-84	27,519	12,283	4,531	0	11,409	55,742	4,874	60,616	172,000
SWAZILAND:									
Irrigation Priorities									
1-02-069-85	10,740	5,310	249	0	5,868	22,167	1,847	24,014	25,843
<b>TOTAL TECHNICAL ASSIST. \$</b>	<b>158,320</b>	<b>97,756</b>	<b>14,590</b>	<b>148</b>	<b>78,914</b>	<b>339,764</b>	<b>75,360</b>	<b>368,320</b>	<b>479,549</b>
TRAINING AND TECHNOLOGY TRANSFER:									
INDIA:									
DA Workshop - WID									
2-02-090-84	783	1,572	0	0	738	3,093	233	3,326	CID
Development of Handbooks									
2-13-027-85	18,030	2,468	96	0	7,096	27,690	2,039	29,729	79,956
NEPAL:									
Diagnostic Anal. of Irr. Sys.									
2-02-031-85	55,747	21,389	15,542	0	23,134	115,812	10,008	125,820	126,479
WORLDWIDE:									
DA Trainers Workshop									
2-08-040-84	14,624	1,469	2,330	0	6,632	25,055	1,824	26,879	29,736
Micro Applications for DA Trng									
2-10-051-84	31,056	129	10,747	2,312	14,057	58,301	4,151	62,452	62,615
Increasing WM Capabilities									
2-11-020-83	4,211	8,102	2,867	0	4,878	20,058	1,558	21,616	CID
Increasing WM Capabilities									
2-11-081-84	1,301	0	0	0	468	1,769	129	1,898	CID
Instructors Guide for DA Wkshp									
2-13-042-84	16,013	0	950	0	6,107	23,070	1,708	24,778	24,881
Jt Seminar on Current Research									
2-14-050-85	1,220	1,552	0	0	610	3,382	300	3,682	CU
Tsk Frc Sml-Scl Comm-Mgd System									
2-14-065-84	0	496	0	0	179	675	49	724	CU
Farmer Participation Wksp									
2-14-066-84	0	1,943	0	0	700	2,643	192	2,835	CU
<b>TOTAL TRAINING AND TECHNOLOGY TRANSFER \$</b>	<b>142,985</b>	<b>39,120</b>	<b>32,532</b>	<b>2,312</b>	<b>64,599</b>	<b>281,548</b>	<b>97,551</b>	<b>303,739</b>	<b>323,667</b>
SPECIAL STUDIES:									
SRI LANKA:									
Sri Lanka Interfacing On-Farm									
3-04-036885	26,306	17,105	7,764	0	12,513	63,688	5,430	69,118	130,907

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COLORADO STATE UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
Landsat85-Remote Sensing Recon									
3-04-038-85	13,605	6,553	4,607	0	6,959	31,724	2,580	34,304	34,442
WORLDWIDE:									
Interfacing On-Farm Wtr Mngmnt									
3-04-036A85	39,554	0	5,656	0	14,628	59,838	4,476	64,314	86,390
Small Scale Irrigation									
3-04-045-83	0	2,341	0	0	843	3,184	232	3,416	CU
Interfacing Farm & Management									
3-04-045-84	60,556	10,090	3,166	0	25,846	99,658	7,531	107,189	223,239
<b>TOTAL SPECIAL STUDIES \$</b>	<b>140,021</b>	<b>36,089</b>	<b>21,193</b>	<b>0</b>	<b>60,789</b>	<b>258,092</b>	<b>117,800</b>	<b>278,341</b>	<b>474,978</b>
<b>TOTAL PRIOR YEARS ACTIV. \$</b>	<b>795,128</b>	<b>179,832</b>	<b>169,514</b>	<b>24,628</b>	<b>373,597</b>	<b>1,542,321</b>	<b>117,800</b>	<b>1,660,499</b>	<b>1,791,217</b>

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## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986CORNELL UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
CORNELL UNIVERSITY									
0-02-996-85	83,693	9,718	16,533	0	63,574	173,518	10,884	184,402	206,932
TOTAL UNIVERSITY SUPPORT \$	83,693	9,718	16,533	0	63,574	173,518	10,884	184,402	206,932
TECHNICAL ASSISTANCE:									
INDIA:									
Hill Irrig Proj Prep II									
1-02-074-84	12,347	7,649	287	0	8,809	29,092	2,008	31,100	61,218
Irr Sector Eval & Strtgy Revw									
1-02-103-84	6,161	4,524	10	0	6,492	17,187	1,059	18,246	USU
INDONESIA:									
Small Scale Irrig & Mgmt									
1-02-011-84	17,223	22,019	4,944	0	25,898	70,084	4,374	74,458	54,468
PAKISTAN:									
Curriculum Development									
1-02-071-85	4,937	3,515	327	0	3,717	12,496	869	13,365	CSU
SRI LANKA:									
Farmer Organization Program									
1-02-007-84	18,260	20,014	884	0	20,612	59,770	3,877	63,647	64,466
TOTAL TECHNICAL ASSIST. \$	58,928	57,721	6,452	0	65,528	188,629	23,071	200,816	180,152
TRAINING AND TECHNOLOGY TRANSFER:									
BOLIVIA:									
Tarija Short Course									
2-01-095-84	0	0	66	0	45	111	7	117	64,995
WORLDWIDE:									
Main System Mgmt Task Force									
2-06-077-84	0	609	0	0	418	1,027	60	1,087	7,557

CORNELL UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
Increasing WM Capabilities									
2-11-020-83	3,744	4,258	0	0	1,600	9,602	792	10,394	CID
Professional Visitors									
2-11-069-84	72	0	1,036	0	668	1,776	110	1,886	9,673
Increasing WM Capabilities									
2-11-081-84	3,072	0	0	0	733	3,805	304	4,109	CID
"Rehab.", A Game Simulation									
2-13-048-85	7,415	0	5,793	0	6,427	19,635	1,308	20,943	33,445
Jt Seminar on Current Research									
2-14-050-85	4,400	4,806	18,980	0	9,844	38,030	2,790	40,820	94,372
Small Scale Irrigation Works									
2-14-064-84	9,497	716	10,905	0	9,547	30,665	2,091	32,756	47,163
Tsk Frc Sml-Scl Comm-Mgd System									
2-14-065-84	2,240	591	820	0	1,761	5,412	361	5,773	20,741
Farmer Participation Wksp									
2-14-066-84	4,030	40	7,772	0	6,933	18,775	1,172	19,947	36,193
AID/FAO Expert Consul WM									
2-14-067-84	1,811	6,169	27	0	3,979	11,986	793	12,779	9,298
Planning for Seminar									
2-14-075-84	4,080	0	3	0	2,250	6,333	404	6,737	9,889
<hr style="border-top: 1px dashed black;"/>									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	40,361	17,189	45,402	0	44,205	147,157	33,263	157,348	333,316
<hr style="border-top: 1px dashed black;"/>									
SPECIAL STUDIES:									
<hr style="border-top: 1px dashed black;"/>									
NIGER:									
Sml-Scl Irr & Wtr Mgmt, Prelim									
3-04-098-84	4,237	0	2	0	1,327	5,566	420	5,986	5,508
Traditional & Dev. SSI									
3-04-111-84	3,548	0	5,662	0	1,925	11,135	912	12,047	14,825
<hr style="border-top: 1px dashed black;"/>									
WORLDWIDE:									
Small Scale Irrigation									
3-04-045-83	45,919	15,662	4,347	0	28,308	94,236	6,527	100,763	160,697
Comp Anal of Ind Invest Stratgy									
3-04-053-85	5,926	0	4,400	0	4,868	15,194	1,022	16,215	15,031
Management Intensities - 1									
3-04-096-84	38,517	415	752	0	20,111	59,795	3,929	63,724	77,238
<hr style="border-top: 1px dashed black;"/>									
TOTAL SPECIAL STUDIES \$	98,147	16,077	15,163	0	56,539	185,926	46,073	198,735	273,299
<hr style="border-top: 1px dashed black;"/>									
TOTAL PRIOR YEARS ACTIV. \$	281,129	100,705	83,550	0	229,846	695,230	46,073	741,301	993,699

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## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986UTAH STATE UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
UTAH STATE UNIV. 0-02-997-85	116,715	9,511	23,469	3,354	49,247	202,296	14,820	217,116	233,126
TOTAL UNIVERSITY SUPPORT \$	116,715	9,511	23,469	3,354	49,247	202,296	14,820	217,116	233,126
TECHNICAL ASSISTANCE:									
INDIA:									
TA/Field Stu/TR-Madhya Pr Minor 1-01-025-84	0	3,617	0	0	0	3,617	358	3,975	9,000
Maharashtra Minor Irrig 1-02-018-84	16,846	25,222	33,793	0	24,275	100,136	7,905	108,041	171,970
Hill Irrig Proj Prep II 1-02-074-84	5,315	14,751	30,945	0	16,324	67,335	5,773	73,108	CU
Irr Sector Eval & Strtgy Revw 1-02-103-84	48,380	9,915	92,590	0	35,013	185,898	12,538	198,436	227,461
INDONESIA:									
Small Scale Irrig & Mgmt 1-02-011-84	7,487	15,635	828	0	7,664	31,614	2,517	34,131	CU
JAMAICA:									
Planning Activities 1-02-007-85	0	0	0	0	0	0	0	0	11,970
Systems Study 1-02-008-85	0	0	0	0	0	0	0	0	24,822
MAURITANIA:									
River Valley - Plan of Action 1-02-076-85	9,175	4,583	19	0	4,820	18,597	1,542	20,139	45,915
SRI LANKA:									
Irr Sys Mgmt Proj Design Team 1-02-102-84	21,128	8,529	1,262	0	9,894	40,813	3,461	44,274	CSU
TOTAL TECHNICAL ASSIST. \$	108,331	82,252	159,437	0	97,990	448,010	48,914	482,104	491,138

UTAH STATE UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
<b>TRAINING AND TECHNOLOGY TRANSFER:</b>									
<b>BOLIVIA:</b>									
Tarija Short Course									
2-01-095-84	1,488	2,047	47	0	1,146	4,728	383	5,111	CU
<b>ECUADOR:</b>									
Equivar Video									
2-03-054-83	97,023	9,519	34,432	0	49,341	190,315	14,422	204,737	204,837
<b>WORLDWIDE:</b>									
Increasing WM Capabilities									
2-11-020-83	6,683	5,706	86	0	4,075	16,550	1,372	17,922	CID
Increasing WM Capabilities									
2-11-081-84	0	5,573	84	0	1,810	7,467	560	8,027	CID
Jt Seminar on Current Research									
2-14-050-85	4,783	6,051	105	0	3,501	14,440	1,171	15,611	CU
Tsk Frc Sml-Sci Comm-Mgd System									
2-14-065-84	0	820	18	0	268	1,106	83	1,189	CU
Farmer Participation Wksp									
2-14-066-84	0	1,268	0	0	406	1,674	126	1,800	CU
<b>TOTAL TRAINING AND TECHNOLOGY TRANSFER \$</b>	<b>109,977</b>	<b>30,984</b>	<b>34,772</b>	<b>0</b>	<b>60,547</b>	<b>236,280</b>	<b>67,031</b>	<b>254,397</b>	<b>204,837</b>
<b>SPECIAL STUDIES:</b>									
Monitoring Projects									
3-04-061-83	0	0	0	0	0	0	0	0	18,350
<b>TOTAL SPECIAL STUDIES \$</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>67,031</b>	<b>0</b>	<b>18,350</b>
<b>TOTAL PRIOR YEARS ACTIV. \$</b>	<b>335,023</b>	<b>122,747</b>	<b>217,678</b>	<b>3,354</b>	<b>207,784</b>	<b>886,586</b>	<b>67,031</b>	<b>953,617</b>	<b>947,451</b>

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYNTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)QUARTERLY REPORT  
FOR THE PERIOD ENDING SEPTEMBER 30, 1986CLOSED OUT ACTIVITIES  
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DESCRIPTION	CODE	UNIV.	DATE CLOSED	APPROVED AMOUNT
<b>ADMINISTRATION:</b>				
EPD OFFICE	0-01-999-84	CID	Mar. 31, 1985	151,815
CORNELL UNIVERSITY	0-02-996-83	CU	Mar. 31, 1985	191,967
CORNELL UNIVERSITY	0-02-996-84	CU	Mar. 31, 1985	201,970
UTAH STATE UNIVERSITY	0-02-997-83	USU	Mar. 31, 1985	212,734
UTAH STATE UNIVERSITY	0-02-997-84	USU	Mar. 31, 1985	228,956
COLORADO STATE UNIVERSITY	0-02-998-84	CSU	Mar. 31, 1985	237,065
<b>TOTAL ADMINISTRATION</b>				\$ 1,224,507
<b>TECHNICAL ASSISTANCE:</b>				
<b>BANGLADESH:</b>				
Scope of Work	1-02-006-82	CSU	Mar. 31, 1985	16,209
Water Management Systems	1-02-015-82	CU	Dec. 31, 1985	106,858
Water Mgmt Sys Proj Paper	1-02-072-84	CU	Jul. 30, 1986	30,343
Consultant, Legal	1-03-029-82	CSU	Mar. 31, 1985	14,664
BAU Collaboration Team	1-03-030-82	CSU	Dec. 31, 1985	66,985
<b>BURMA:</b>				
Wakema Pump Scheme Study	1-02-036-84	CU	Dec. 31, 1985	4,359
<b>CHINA:</b>				
Bell's Study Tour	1-02-038-83	CID	Mar. 31, 1985	2,617
<b>DOMINICAN REPUBLIC:</b>				
Project Paper (OFWM)	1-02-009-83	USU	Mar. 31, 1985	92,538
Project PIO	1-02-010-82	USU	Mar. 31, 1985	20,564
Weed Control Specialist	1-02-091-84	USU	Jul. 30, 1986	3,102
Water Management Spec.	1-02-110-84	CSU	Dec. 31, 1985	19,102
<b>EGYPT:</b>				
Egypt Water Use & Mngmnt	1-02-066-85	USU	Jul. 30, 1986	25,828
<b>EL SALVADOR:</b>				
Evaluation Team	1-02-107A84	CID	Aug. 6, 1986	107,088
<b>HAITI:</b>				
Irrigation Project Evalua	1-02-039-83	USU	Mar. 31, 1985	25,083
Irrigation Sector Survey	1-04-017-84	USU	Jul. 30, 1986	50,368
<b>HONDURAS:</b>				
Irrigation Development Pr	1-02-060-85	USU	Jul. 30, 1986	7,929

CLOSED OUT ACTIVITIES

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DESCRIPTION	CODE	UNIV.	DATE CLOSED	APPROVED AMOUNT
INDIA:				
Hill Area Land & Water De	1-02-013-83	CU	Dec. 31, 1985	43,004
University Curricula	1-02-013-85	USU	Jul. 30, 1986	22,005
WM & Training	1-02-014-83	CID	Mar. 31, 1985	23,710
Water Management & Traini	1-02-020A82	CSU	Mar. 31, 1985	16,887
Water Management & Traini	1-02-020B82	USU	Dec. 31, 1985	24,026
Mdya Pr Mnr Irr:Socio-Tch	1-02-023-84	USU	Jul. 30, 1986	18
Development of Solutions	1-02-024-82	CSU	Dec. 31, 1985	61,190
Evans Project Preparation	1-02-033-83	CSU	Mar. 31, 1985	12,594
Clyma's TDY	1-02-035-83	CSU	Mar. 31, 1985	2,893
Olsen's TDY	1-02-037-83	USU	Mar. 31, 1985	12,448
DA Workshop Planning	1-02-044-83	CSU	Dec. 31, 1985	31,737
Institutional Analysis	1-02-047-83	CID	Jul. 30, 1986	21,498
Curriculum Development	1-02-094-84	CSU	Jul. 30, 1986	11,007
Short Course	1-02-100-84	USU	Jul. 30, 1986	75,985
INDONESIA:				
OAD'S TDY	1-02-030-83	CSU	Dec. 31, 1985	16,200
JORDAN:				
SR. On Farm WM Advisor	1-02-014-84	USU	Jul. 30, 1986	5,844
Review of Curriculum	1-02-041-82	USU	Mar. 31, 1985	9,911
Irrigation Sector Study	1-04-013-84	USU	Jul. 30, 1986	19,186
MALI:				
OFWM Specialist	1-02-006-83	USU	Mar. 31, 1985	16,421
NEPAL:				
Sm/Med Scale Irrigation	1-02-067-85	USU	Jul. 30, 1986	62,952
PAKISTAN:				
WM (CWM) Meeting	1-02-029B83	CSU	Dec. 31, 1985	3,164
CLYMA'S TDY	1-02-031-83	CSU	Mar. 31, 1985	8,176
Mayfield's TDY	1-02-040-83	USU	Dec. 31, 1985	15,505
Long-Term Strategies	1-02-101-84	USU	Jul. 30, 1986	1,856
Command Area Management	1-02-106-84	USU	Jul. 30, 1986	14,066
PERU:				
Expansion of Irrig. Syste	1-02-035-84	USU	Aug. 6, 1986	60,073
Special Study	1-04-027-82	USU	Jul. 30, 1986	72,454
SRI LANKA:				
Various TDY's	1-02-008-82	CU	Mar. 31, 1985	67,471
TANZANIA:				
Tanzania Irrig Study	1-02-082-84	USU	Jul. 30, 1986	11,752
THAILAND:				
Equipment Engineer	1-02-005-82	CID	Mar. 31, 1985	32,012
WORLDWIDE:				
Water Resource Econ	1-02-042-83	CSU	Dec. 31, 1985	19,597
Shortcourse Staff Assista	1-02-070-85	CID	Jul. 30, 1986	10,990
Peace Corps Support	1-02-078-85	CID	Jul. 30, 1986	15,331
TOTAL TECHNICAL ASSISTANCE				\$ 1,415,600

CLOSED OUT ACTIVITIES  
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DESCRIPTION	CODE	UNIV.	DATE CLOSED	APPROVED AMOUNT
<b>RAINING AND TECHNOLOGY TRANSFER:</b> -----				
<b>AFRICA:</b>				
Africa Workshop	2-14-113-84	CSU	Jul.30,1986	14,258
<b>BANGLADESH:</b>				
DA Workshop	2-02-007-82	CSU	Dec.31,1985	234,386
<b>BOLIVIA:</b>				
Course - Small-Scale Irr	2-14-010-85	USU	Jul.30,1986	16,576
<b>INDIA:</b>				
DA Workshop Madhya Prades	2-02-031-84	CSU	Jul.30,1986	143,898
Senior Officials	2-04-007-83	USU	Jul.30,1986	1,055
Measurement for System Mg	2-07-026-82	CSU	Mar.31,1985	17,309
Watercourse Handbooks	2-13-025-82	CSU	Dec.31,1985	20,254
<b>INDONESIA:</b>				
DA Workshop	2-02-010-84	CSU	Dec.31,1985	8,257
<b>NEPAL:</b>				
DA Workshop Planning	2-02-003-84	CSU	Jul.30,1986	21,447
Small Scale Systems	2-14-050-83	CU	Mar.31,1985	41,554
<b>SRI LANKA:</b>				
DA Workshop	2-02-028-83	CSU	Dec.31,1985	120,506
DA Workshop - WID	2-02-034-83	CSU	Mar.31,1985	"
<b>THAILAND:</b>				
Improving Allocations	2-14-062-83	CID	Dec.31,1985	44,221
<b>WORLDWIDE:</b>				
DA Review	2-02-080-84	CID	Dec.31,1985	13,448
Videotape Modules	2-03-021-83	CSU	Jul.30,1986	90,799
Workshop (Tech. & Soc. AS	2-04-023-83	CSU	Mar.31,1985	63,241
ICID Conference	2-04-048-84	CSU	Jul.30,1986	20,239
Workshop (Tech & Soc ASP)	2-04-050-84	CSU	Mar.31,1985	44,999
Short Term Non-Degree	2-08-056-83	USU	Dec.31,1985	27,795
Survey & Strategy for Tra	2-09-019-83	CSU	Jul.30,1986	33,441
Computer Applications	2-10-022-83	CSU	Jul.30,1986	69,734
Increasing WM Cap. Intern	2-11-037-84	CID	Mar.31,1985	6,367
French Language Training	2-11-059-84	USU	Jul.30,1986	5,946
Brochures; Newsletters; P	2-12-018-83	CSU	Mar.31,1985	8,421
Start-Up Workshop	2-14-051-83	CU	Mar.31,1985	11,832
Start-Up Workshop	2-14-055-83	USU	Mar.31,1985	15,161
Conference	2-14-058-84	USU	Mar.31,1985	5,409
FAO/AID Workshop Planning	2-14-064-83	CU	Mar.31,1985	2,141

**TOTAL TRAINING AND TECHNOLOGY TRANSFER**

\$ 1,119,094

**SPECIAL STUDIES:**  
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CLOSED OUT ACTIVITIES

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DESCRIPTION	CODE	UNIV.	DATE CLOSED	APPROVED AMOUNT
AFRICA:				
Dev. Of Social Parameters	3-04-057-83	USU	Jul.30,1986	58,685
WORLDWIDE:				
Development of Handbook	3-00-000-83	USU	Dec.31,1985	4,616
Communication of Tech Tra	3-04-024-83	CSU	Jul.30,1986	52,759
Irrigation Systems Manage	3-04-025-83	CSU	Jul.30,1986	156,463
On-Farm Irrigation System	3-04-058-83	USU	Jul.30,1986	18,524
Main System Management	3-04-059-83	USU	Jul.30,1986	108,876
Main Sys Design, Mgmt Reh	3-04-061-84	USU	Jul.30,1986	167,844
Interdisp. Irrig. Sys. Se	3-04-062-84	USU	Jun.30,1986	34,561
				-----
TOTAL SPECIAL STUDIES				\$ 602,328
				-----
TOTAL CLOSED OUT ACTIVITIES				\$ 4,361,529
				-----

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986CID / EPD OFFICE  
CLOSED OUT ACTIVITIES  
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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
-----									
ADMINISTRATION:									
EPD ADMINISTRATION									
0-01-999-84	0	703	29	0	0	732	72	804	0
-----									
TOTAL UNIVERSITY SUPPORT \$	0	703	29	0	0	732	72	804	0
TECHNICAL ASSISTANCE:									
-----									
BANGLADESH:									
Water Management Systems									
1-02-015-82	0	0	9,641	0	0	9,641	954	10,595	154,287
Water Mgmt Sys Proj Paper									
1-02-072-84	0	0	9,011	0	0	9,011	892	9,903	20,719
CHINA:									
Bell's Study Tour									
1-02-038-83	0	0	2,381	0	0	2,381	236	2,617	0
EL SALVADOR:									
Evaluation Team									
1-02-107A84	0	0	89,888	0	0	89,888	9,827	99,715	107,449
INDIA:									
Hill Area Land & Water Dev									
1-02-013-83	0	0	1,574	0	0	1,574	156	1,730	140,949
University Curricula									
1-02-013-85	0	459	1,974	0	0	2,433	240	2,673	26,472
WM & Training									
1-02-014-83	0	0	21,574	0	0	21,574	2,136	23,710	24,398
Development of Solutions									
1-02-024-82	0	0	3,826	0	0	3,826	379	4,205	63,936
Olsen's TOY									
1-02-037-83	0	0	98	0	0	98	10	108	0
Institutional Analysis									
1-02-047-83	0	3,354	12,608	0	3,706	19,418	1,830	21,498	32,647

CID / EPD OFFICE  
CLOSED OUT ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
-----									
Short Course									
1-02-100-84	0	7,161	0	0	0	7,161	709	7,870	84,388
JORDAN:									
Irrigation Sector Study									
1-04-013-84	0	0	7,500	0	0	7,500	742	8,242	31,429
PAKISTAN:									
Long-Term Strategies									
1-02-101-84	0	749	0	0	0	749	74	823	9,369
Command Area Management									
1-02-106-84	0	2,609	0	0	0	2,609	258	2,867	16,068
PERU:									
Expansion of Irrig. Systems									
1-02-035-84	0	0	8,148	0	0	8,148	807	8,955	53,681
Special Study									
1-04-027-82	0	0	7,500	0	0	7,500	742	8,242	93,755
THAILAND:									
Equipment Engineer									
1-02-005-82	0	0	29,128	0	0	29,128	2,884	32,012	0
JORLOWIDE:									
Shortcourse Staff Assistance									
1-02-070-85	10,000	0	0	0	0	10,000	990	10,990	14,590
Peace Corps Support									
1-02-078-85	0	0	13,950	0	0	13,950	1,381	15,331	15,331
-----									
TOTAL TECHNICAL ASSIST. \$	10,000	14,332	218,801	0	3,706	246,589	25,319	272,086	889,468
-----									
TRAINING AND TECHNOLOGY TRANSFER:									
-----									
BANGLADESH:									
DA Workshop									
2-02-007-82	0	0	29,436	0	0	29,436	2,914	32,350	219,174
INDIA:									
DA Workshop Madhya Pradesh									
2-02-031-84	0	15,097	0	0	0	15,097	1,505	16,602	135,470
Measurement for System Mgmt									
2-07-026-82	0	0	3,987	0	0	3,987	395	4,382	0
Watercourse Handbooks									
2-13-025-82	0	2,530	0	0	0	2,530	250	2,780	15,188
THAILAND:									
Improving Allocations									
2-14-062-83	0	34,909	553	0	5,248	40,710	3,511	44,221	44,250
-----									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	0	52,536	33,976	0	5,248	91,760	33,894	100,335	414,082

CID / EPD OFFICE  
CLOSED OUT ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
SPECIAL STUDIES:									
WORLDWIDE:									
Main Sys Design, Mgmt Rehab 3-04-061-84	0	0	1,043	0	0	1,043	103	1,146	221,424
TOTAL SPECIAL STUDIES \$	0	0	1,043	0	0	1,043	33,997	1,146	221,424
TOTAL CLOSED OUT ACTIV. \$	10,000	67,571	253,849	0	8,954	340,124	33,997	374,371	1,524,974

CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYNTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)

EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986

COLORADO STATE UNIVERSITY  
CLOSED OUT ACTIVITIES  
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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
-----									
ADMINISTRATION:									
EPD ADMINISTRATION									
0-01-999-84	88,237	1,904	13,362	0	37,261	140,764	18,247	151,011	0
COLORADO STATE UNIV.									
0-02-998-84	126,368	5,889	30,304	0	58,410	220,971	16,094	237,065	0
TOTAL UNIVERSITY SUPPORT \$	214,605	7,793	43,666	0	95,671	361,735	26,341	388,076	0
-----									
TECHNICAL ASSISTANCE:									
-----									
BANGLADESH:									
Scope of Work									
1-02-006-82	5,212	5,750	75	0	3,974	15,128	1,198	16,209	0
Consultant, Legal									
1-03-029-82	5,868	4,135	0	0	3,601	13,604	1,060	14,664	0
BAU Collaboration Team									
1-03-030-82	20,928	10,208	9,208	0	12,600	52,944	4,217	57,161	84,243
DOMINICAN REPUBLIC:									
Water Management Spec.									
1-02-110-84	7,530	2,142	3,339	0	4,684	17,695	1,407	19,102	26,813
EL SALVADOR:									
Evaluation Team									
1-02-107A84	4,557	187	310	0	1,819	6,873	500	7,373	107,449
INDIA:									
Water Management & Training									
1-02-020A82	5,415	6,073	0	0	4,136	15,764	1,263	16,887	27,991
Development of Solutions									
1-02-024-82	27,582	12,226	1,835	0	10,625	52,268	4,717	56,985	63,936
Evans Project Preparations									
1-02-033-83	4,034	4,545	0	0	3,089	11,732	926	12,594	0
Clyma's TDY									
1-02-035-83	1,224	739	0	0	707	2,694	223	2,893	0

COLORADO STATE UNIVERSITY  
CLOSED OUT ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
DA Workshop Planning 1-02-044-83	17,523	4,002	158	0	7,806	29,489	2,248	31,737	28,149
Curriculum Development 1-02-094-84	7,114	0	312	0	2,673	10,099	908	11,007	10,682
INDONESIA: OAD'S TDY 1-02-030-83	4,527	7,360	84	0	2,951	14,922	1,278	16,200	14,408
NEPAL: Sm/Med Scale Irrigation 1-02-067-85	11,592	6,889	25	0	4,071	22,577	2,083	24,660	89,481
PAKISTAN: WM (CWM) Meeting 1-02-029883	2,143	0	0	0	772	2,915	249	3,164	9,931
CLYMA'S TDY 1-02-031-83	2,449	3,116	0	0	2,003	7,568	608	8,176	0
WORLDWIDE: Water Resource Econ 1-02-042-83	12,490	700	252	0	4,824	18,266	1,331	19,597	19,703
TOTAL TECHNICAL ASSIST. \$	140,188	68,072	15,598	0	70,335	294,538	50,557	318,409	482,786
TRAINING AND TECHNOLOGY TRANSFER:									
-----									
AFRICA:									
Africa Workshop 2-14-113-84	4,930	4,683	89	0	3,493	13,195	1,063	14,258	14,333
BANGLADESH:									
DA Workshop 2-02-007-82	91,121	38,551	13,343	790	43,310	187,115	14,921	202,036	219,174
INDIA:									
DA Workshop Madhya Pradesh 2-02-031-84	61,871	23,774	7,280	0	24,355	117,280	10,016	127,296	135,470
Measurement for System Mgmt 2-07-026-82	4,856	4,805	39	0	2,134	11,982	1,093	12,927	0
Watercourse Handbooks 2-13-025-82	9,254	2,525	57	0	4,261	16,097	1,377	17,474	15,188
INDONESIA:									
DA Workshop 2-02-010-84	2,349	890	1,955	0	1,999	7,693	564	8,257	8,736
NEPAL:									
DA Workshop Planning 2-02-003-84	7,041	6,355	1,566	0	4,970	19,962	1,515	21,447	21,842
SRI LANKA:									
DA Workshop 2-02-028-83	41,877	32,539	11,444	0	25,736	111,596	8,910	120,506	121,475

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COLORADO STATE UNIVERSITY  
CLOSED OUT ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
DA Workshop - WID 2-02-034-83	6,290	5,692	20	0	3,133	15,135	1,265	16,400	0
WORLDWIDE:									
Videotape Modules 2-03-021-83	33,483	17,850	13,525	0	19,230	84,326	6,711	90,799	90,755
Workshop (Tech. & Soc. ASP) 2-04-023-83	27,852	403	16,748	0	13,783	58,786	4,455	63,241	0
ICID Conference 2-04-048-84	13,416	0	456	0	4,994	18,866	1,373	20,239	20,678
Workshop (Tech & Soc ASP) 2-04-050-84	26,914	3,149	994	0	10,867	41,924	3,075	44,999	0
Survey & Strategy for Training 2-09-019-83	21,377	749	1,031	0	7,991	31,148	2,293	33,441	34,267
Computer Applications 2-10-022-83	33,736	455	7,589	9,475	14,343	65,598	4,136	69,734	70,020
Increasing WM Cap. Intern 1 2-11-037-84	4,827	0	0	0	1,062	5,889	478	6,367	6,367
Brochures; Newsletters; Pub. 2-12-018-83	4,921	0	851	0	2,078	7,850	571	8,421	0
<b>TOTAL TRAINING AND TECHNOLOGY TRANSFER \$</b>	<b>396,615</b>	<b>142,420</b>	<b>76,987</b>	<b>10,265</b>	<b>187,739</b>	<b>814,442</b>	<b>114,373</b>	<b>877,842</b>	<b>758,305</b>
<b>SPECIAL STUDIES:</b>									
Communication of Tech Trans 3-04-024-83	34,812	594	755	0	13,018	49,179	3,580	52,759	52,783
Irrigation Systems Management 3-04-025-83	99,136	7,208	1,019	0	38,393	145,756	10,707	156,463	156,507
Main System Management 3-04-059-83	10,006	0	0	0	3,602	13,608	1,222	14,830	146,905
Main Sys Design, Mgmt Rehab 3-04-061-84	18,524	0	82	0	6,698	25,304	1,943	27,247	221,424
<b>TOTAL SPECIAL STUDIES \$</b>	<b>162,478</b>	<b>7,802</b>	<b>1,856</b>	<b>0</b>	<b>61,711</b>	<b>233,847</b>	<b>131,825</b>	<b>251,299</b>	<b>577,619</b>
<b>TOTAL CLOSED OUT ACTIV. \$</b>	<b>913,886</b>	<b>226,087</b>	<b>138,107</b>	<b>10,265</b>	<b>415,456</b>	<b>1,704,562</b>	<b>131,825</b>	<b>1,835,626</b>	<b>1,818,710</b>

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/OAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986CORNELL UNIVERSITY  
CLOSED OUT ACTIVITIES  
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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
-----									
ADMINISTRATION:									
CORNELL UNIVERSITY									
0-02-996-83	92,116	6,625	26,376	0	54,463	179,580	12,387	191,967	0
CORNELL UNIVERSITY									
0-02-996-84	97,901	7,197	20,035	3,359	61,200	189,592	12,378	201,970	0
-----									
TOTAL UNIVERSITY SUPPORT \$	189,917	13,822	46,411	3,359	115,663	369,172	24,765	393,937	0
TECHNICAL ASSISTANCE:									
-----									
BANGLADESH:									
Water Management Systems									
1-02-015-82	27,521	22,515	12,156	1,695	26,219	99,106	6,157	96,263	154,287
Water Mgmt Sys Proj Paper									
1-02-072-84	11,966	0	1,364	545	5,245	19,120	1,320	20,440	20,719
BAU Collaboration Team									
1-03-030-82	2,779	3,561	0	0	2,856	9,196	628	9,824	84,243
BURMA:									
Wakema Pump Scheme Study									
1-02-036-84	2,914	0	1	0	1,155	4,070	289	4,359	4,759
INDIA:									
Hill Area Land & Water Dev									
1-02-013-83	7,991	3,004	7,896	0	8,099	26,990	1,870	28,860	140,949
PERU:									
Expansion of Irrig. Systems									
1-02-035-84	1,260	2,681	141	0	1,904	5,986	404	6,390	53,681
SRI LANKA:									
Various TDY's									
1-02-008-82	18,858	16,876	6,866	0	20,654	63,254	4,217	67,471	0
-----									
TOTAL TECHNICAL ASSIST. \$	73,289	48,637	28,424	2,240	66,132	218,722	39,650	233,607	458,638

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CORNELL UNIVERSITY  
CLOSED OUT ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
RAINING AND TECHNOLOGY TRANSFER:									
NEPAL:									
Small Scale Systems									
2-14-050-83	19,760	7,058	133	0	11,935	38,886	2,668	41,554	0
WORLDWIDE:									
Start-Up Workshop									
2-14-051-83	3,598	3,604	403	0	3,474	11,079	753	11,832	11,833
FAO/AID Workshop Planning									
2-14-064-93	771	615	6	0	611	2,003	138	2,141	0
<hr style="border-top: 1px dashed black;"/>									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	24,129	11,277	542	0	16,020	51,968	43,209	55,527	11,833
<hr style="border-top: 1px dashed black;"/>									
TOTAL CLOSED OUT ACTIV. \$	287,335	73,736	75,377	5,599	197,815	639,862	43,209	683,071	470,471

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2096-00)EXPENDITURE REPORT  
AS OF SEPTEMBER 30, 1986UTAH STATE UNIVERSITY  
CLOSED OUT ACTIVITIES  
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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
UTAH STATE UNIV. 0-02-977-83	100,395	11,305	11,018	34,916	42,951	200,585	12,149	212,734	0
UTAH STATE UNIV. 0-02-977-84	121,252	7,294	32,805	0	51,632	212,983	15,973	228,956	0
TOTAL UNIVERSITY SUPPORT \$	221,647	18,599	43,823	34,916	94,583	413,568	28,122	441,690	0
TECHNICAL ASSISTANCE:									
DOMINICAN REPUBLIC:									
Project Paper (OFWM) 1-02-009-83	7,287	23,221	33,236	0	22,310	86,054	6,484	92,538	0
Project PID 1-02-010-82	4,496	4,514	5,108	0	4,941	19,059	1,505	20,564	0
Weed Control Specialist 1-02-091-84	674	1,511	1	0	700	2,886	216	3,102	3,354
EGYPT:									
Egypt Water Use & Mngmnt Eval 1-02-066-85	0	97	17,506	0	5,633	23,236	2,592	25,828	41,268
HAITI:									
Irrigation Project Evaluation 1-02-039-83	5,512	5,077	6,631	0	6,027	23,247	1,836	25,083	0
Irrigation Sector Survey 1-04-017-84	26,062	8,242	892	0	11,296	46,136	3,876	50,368	50,658
HONDURAS:									
Irrigation Development Project 1-02-060-85	3,280	2,211	52	0	1,774	7,317	612	7,929	12,309
INDIA:									
Hill Area Land & Water Dev 1-02-013-83	0	841	7,726	0	2,999	11,566	848	12,414	140,949
University Curricula 1-02-013-85	10,484	2,938	59	0	4,313	17,794	1,538	19,332	26,472

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UTAH STATE UNIVERSITY  
CLOSED OUT ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
<hr/>									
Water Management & Training									
1-02-020882	0	4,121	12,460	0	5,803	22,384	1,642	24,026	22,802
Mdya Pr Mnr Irr:Socio-Tch Feas									
1-02-023-84	0	0	13	0	4	17	1	18	174,989
Olsen's TDY									
1-02-037-83	7,964	247	174	0	2,935	11,320	1,020	12,340	0
Short Course									
1-02-100-84	14,303	10,060	23,414	0	15,289	63,066	5,049	68,115	84,388
JORDAN:									
SR. On Farm WM Advisor									
1-02-014-84	1,440	360	2,318	0	1,318	5,436	408	5,844	4,767
Review of Curriculum									
1-02-041-82	2,390	4,334	77	0	2,380	9,181	730	9,911	0
Irrigation Sector Study									
1-04-013-84	6,345	982	300	0	2,440	10,067	877	10,944	31,429
MALI:									
OFWM Specialist									
1-02-006-83	6,086	4,846	323	0	3,939	15,081	1,227	16,421	0
NEPAL:									
Sm/Med Scale Irrigation									
1-02-067-85	10,730	6,297	9,717	0	8,558	35,302	2,990	38,292	89,481
PAKISTAN:									
Mayfield's TDY									
1-02-040-83	0	4,987	5,606	0	3,708	14,301	1,204	15,505	15,666
Long-Term Strategies									
1-02-101-84	0	0	728	0	233	961	72	1,033	9,369
Command Area Management									
1-02-106-84	0	1,724	6,063	0	2,492	10,415	920	11,199	16,068
PERU:									
Expansion of Irrig. Systems									
1-02-035-84	0	10,586	20,603	0	9,980	41,169	3,559	44,728	53,681
Special Study									
1-04-027-82	31,541	6,291	6,273	0	15,060	59,165	5,047	64,212	93,755
TANZANIA:									
Tanzania Irrig Study									
1-02-082-84	2,880	280	5,083	0	2,637	10,880	872	11,752	12,567
<hr/>									
AL TECHNICAL ASSIST. \$	141,474	103,767	164,363	0	136,769	546,040	73,247	591,498	883,972
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TRAINING AND TECHNOLOGY TRANSFER:									
<hr/>									
OLIVIA:									
Course - Small-Scale Irr Desgn									
2-14-010-85	5,988	348	5,180	0	3,685	15,201	1,375	16,576	41,333

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UTAH STATE UNIVERSITY  
CLOSED OUT ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
INDIA:									
Senior Officials									
2-04-007-83	0	0	728	0	255	983	72	1,055	1,054
WORLDWIDE:									
DA Review									
2-02-080-84	4,961	4,420	34	0	3,013	12,428	1,020	13,448	0
Short Term Non-Degree									
2-08-056-83	11,522	1,533	6,533	0	6,268	25,856	1,939	27,795	37,909
French Language Training									
2-11-059-84	3,211	0	1,020	0	1,296	5,527	419	5,946	10,650
Start-Up Workshop									
2-14-055-83	5,971	4,491	1	0	3,662	14,125	1,036	15,161	0
Conference									
2-14-058-84	1,955	1,824	2	0	1,210	4,991	418	5,409	0
-----									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	33,608	12,616	13,498	0	19,389	79,111	79,526	85,390	90,946
SPECIAL STUDIES:									
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AFRICA:									
Dev. Of Social Parameters									
3-04-057-83	24,650	13,578	2,736	0	13,440	54,404	4,281	58,685	67,039
WORLDWIDE:									
Development of Handbook									
3-00-000-83	3,201	-0	52	0	1,041	4,294	322	4,616	4,615
On-Farm Irrigation Systems Sel									
3-04-058-83	12,476	373	91	0	4,303	17,243	1,281	18,524	47,146
Main System Management									
3-04-059-83	34,237	22,354	8,186	0	22,672	87,449	6,597	94,046	146,905
Main Sys Design, Mgmt Rehab									
3-04-061-84	70,871	5,001	22,291	131	31,439	129,733	9,718	139,451	221,424
Interdisp. Irrig. Sys. Sel.									
3-04-062-84	22,739	873	744	0	7,794	32,150	2,411	34,561	62,430
-----									
TOTAL SPECIAL STUDIES \$	168,174	42,179	34,100	131	80,689	325,273	104,136	349,883	549,559
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TOTAL CLOSED OUT ACTIV. \$	564,903	177,161	255,784	35,047	331,430	1,363,992	104,136	1,468,461	1,524,477
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