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To : Government of the Philippines
Thru : USAID/Manila
From : Project Engineer, BuRec, Water Resources Development
Project, USAID/Manila
SUBJECT: Monthly Report, August 1971, in Accordance with PIC/T
492-233-2-90095, Amendment No. 1, dated March 24, 1971.

Significant Accomplishments:

Magat River Project - The feasibility report studies of the Magat River Project (MRP) progressed slowly during the month. Geologic data for the area were assembled and analyzed, with emphasis on the data that have been collected by the Central Luzon Cagayan Valley Authority (CLCVA). No geologist has been assigned to work on the Magat study team so the data were collected without the benefit of a geologist. It is understood that a geologist will be made available from the National Power Corporation, early in September to review the assembled data, to examine the structure sites in the field, and to inspect and log the unlogged drill cores and test pits. Following the review and appraisal by the geologist, the geologic data will be sent to the BuRec offices in Denver, Colorado, USA, for review by the BuRec geologist that will be detailed here in the near future.

An Economist reported for duty on August 2 to head the economics section. Reviews were made of economic reports on the Magat River Project area and general data on the area were collected for future use. Comments were received from the BuRec Denver office on the economic data interview form and the form was revised to accommodate the comments. The revised form was furnished to the MRP Economist who reviewed it and concluded that he wanted to collect additional data; therefore, he developed a form that will collect data on other aspects than would have been achieved by the previously developed form. The MRP Economist did some sample interviewing in the field but did not get to test his form completely. It is contemplated that

the field surveys to collect agricultural and business economic data will be initiated in September.

A power engineer reported to the MRP office on August 16 to head the MRP Power Plant Section. He has been detailed from the National Power Corporation. An engineer has also been assigned from the CLCVA to work in the section. A review of power surveys and studies for the Luzon area and Cagayan River valley was initiated during the month. Field surveys of the power installation and market in the MRP area will be commenced in September.

Alternate dam sites on the Magat River were under study during the month, to insure that the site selected in the Provisional Planning Report is the most economical. Adequate topography is available from the CLCVA surveys to permit an office analysis of costs. No geologic data are available on any site except the one selected in the Provisional Report. Design drawings of the existing Magat River Irrigation System diversion dam and main canals were obtained from the National Irrigation Administration and preliminary studies were initiated with respect to modifying the designs to adapt the structures to the new project. Field studies were commenced by reviewing the horizontal and vertical control in the area with the idea in mind of tying all existing control into the national controls as established by the Bureau of Coast and Geodetic Surveys.

Hydrologic studies were commenced, with the initial effort being towards developing the discharge of the Magat River at the Magat River damsite. The study is complicated by the lack of records of discharge of the Magat River and of the diversion of water by the Magat River Irrigation System (MRIS). Records are available of the Magat River near Oscariz until April 1965 at which time the gage was flooded out and not replaced. There are no records of diversion by the MRIS from the Magat River. The Magat River at the damsite would be a direct function of the Magat River near Oscariz plus the diversions by MRIS. Since neither record is available, the Magat River at the damsite will have to be estimated the best way possible. Other data collection were also initiated during the month for precipitation, temperature, evaporation, consumptive use of crops, etc. These data were being gathered in preparation of the flood studies, water requirement studies, reservoir operation studies, etc.

Drainage studies consisted of collecting data on existing wells in the Magat Project area from the Bureau of Public Works, National Waterworks and Sewerage Authority, and the Irrigation Service Unit.

Also work continued on the collection of equipment for the drainage studies. During an orientation trip to the project area, there was opportunity to make a limited appraisal of the outlet conditions, visit a few private wells, and note the location of some flowing artesian wells. An inspection was made of the Upper Pampanga River Project equipment being used in the drainage studies. Initiative was shown in the development of their equipment. To improve on the data being collected, it was recommended that a hole scratcher be used in each test hole, and for the pump-in test a filter be used in the water line. It was also learned that when equipment and vehicles are available, six men presently with the UPRP will be assigned to make up the three crews for the drainage field work.

The BuRec Project Engineer, Hydrologist, and Drainage and Groundwater engineer accompanied the MRP Chief and four of his staff on a tour of the Magat River Project area during the month. The damsite, river gage, and geologic cores were inspected during a trip to the CLCVA damsite study headquarters. It was concluded to expedite the installation of a cableway and an automatic recorder at the damsite discharge station and get it rated as soon as possible. The present rating curve (which should be checked) only goes up to a stage of 4 meters but there have been recent flows up to 14 meters measured from high water marks. A road into the gage would be desirable. It appears that a "jeep" road from the CLCVA house to the gage would be feasible, or a river level road from some access point downstream may be possible. If a road into the present gage site is not feasible, then consideration should be given to moving the gage downstream to an accessible point.

The river gage below the diversion dam was also inspected and found to be inadequate for the purpose. There are three staff gages driven into the right bank of the stream, but the present water surface of the river was below the lowest gage. The low gage had not been read during the last several days as the gage was covered with debris from high water and no recent tracks approached the gage. It was recommended that the gage be increased in length to include the low water flows. It is also doubtful if the high flows could be measured unless there is another higher gage that was not seen. The gages in the canal appear to be adequate for the present, but the canal must be rated to make the records usable. Readings should be made of the canal gage any time the intake gates are changed or anytime the river stage changes. An automatic recorder should be installed in the canal as soon as the work can be conveniently done.

Land classification on the MRP was also inspected during the field trip and it was learned that a very impressive amount of work has been accomplished by the land classification crews in spite of some of the handicaps encountered (see Problems) with respect to transportation and supplies. A total of over 29,000 hectares of land have been classified on the eleven 1:3,000 scale aerial photos that were made in 1965. Over 400 auger borings have been made and samples collected for laboratory analysis. The land classification survey has gone as far as possible until the new rectified aerial photos become available; however, test pits are being dug and sampled and temporarily located on the contact prints that are available.

Some discussion was held during the month between the Administrator, MIA and the Director, USAID/Manila regarding the need for a Social Scientist to work on the MRP feasibility study. During the project organization, a position was provided for an "Environmental Specialist", with the thought in mind that someone from the University of the Philippines, preferably a graduate student, would be put on the staff to study the environmental and social effects of the project. In view of the broad application of the environmental and social study to other parts of the country, it was suggested by the Director, USAID, that possibly some assistance could be obtained from the South East Asia Development Advisory Group (SEADAG). Appropriate offices of USAID were requested to study the possibility of obtaining study assistance through SEADAG, and a report on their findings is expected in the near future.

Offices of the MRP were improved during the month as most construction was completed and considerable furniture was acquired. The BuKec team of consultants has not moved to the MRP offices due to lack of file cabinets and book shelves. (See Problems.) One new Toyota Land Cruiser was acquired during the month. That vehicle along with another Land Cruiser previously assigned should temporarily provide adequate office transportation. Many more vehicles will need to be acquired to carry on the field work and at least one more should be assigned to office use in the near future.

The Region II office of MIA has commenced the construction of a building in the Regional Office compound for the MRP field office. This should work very well as the Regional Office in San Mateo will be able to provide much needed support for the field crews, and it should make an ideal center of operations for the MRP study.

The Baloc Shallow Well Groundwater Project was visited during the month to inspect the pump and engine installation for acceptance from the contractor. The installation could not be accepted because (1) the pump was obviously not producing the 300 gpm at the drawdown specified, (2) the drive shaft connecting the engine and pump was not straight, (3) the cooling system on the engine was not performing satisfactorily in the opinion of the manufacturers' representative who was present, and (4) the improvised cooling system was not installed in an adequate manner to be acceptable. Changes were to be made by the contractor, and a measuring device is to be installed to determine pump discharge; then we were to be notified of another test date.

Balog-Balog Land Classification - The Coast and Geodetic Survey advised the Bureau of Public Works that photo rectification is nearly complete and that rectified photos of parts of the project area will be delivered in September so that preliminary work of land classification can be started. Field work will commence as soon as the current fiscal year budget has been approved.

UPRP Land Classification - The final draft of the land classification report was not completed in August as had been anticipated in the previous monthly report. It is now expected that the final draft, together with maps, tables, and photos, will be ready for the printer before September 15.

Establishment of Land Classification Laboratory Capability - Hiring a soil chemist to head up the EPW land classification laboratory is still in process. The position has been approved, but actual hiring must be cleared through the Department, the Wage and Position Classification Office (WAPCO), and Civil Service. Considerable progress was made during August in remodeling the laboratory to accommodate the new equipment. Remodeling involves rewiring and plumbing, as well as major carpentry work. Attempts were made to get some training assistance in spectrophotometry; and hopefully by next month, some arrangement will be made.

Problems:

Several problems are developing on the MRP as the study gets underway. The most critical are the lack of qualified personnel; the

inability to obtain equipment, materials, and supplies on a timely basis; and the paucity of basic data.

The organization chart approved for the MKP has three main technical sections for Hydrology, Economics and Land Resources, and Engineering. The Hydrology Section is headed by an engineer detailed from the Bureau of Public Works; however, his detail is at present for only 3 days per week as he is also working on a study in the BPW. This same type of detail applies to a Supervisory Civil Engineer in the Engineering Section that heads the Dam and Spillway Section. Another problem is that the men detailed from BPW, BAE, NPC, and other places are required to return to their "home" office on paydays (4 days each month) for at least a half day. This reduction in time available for the MKP study is crippling the progress of the study. The MKP report cannot be completed on time if full time of the organization is not available.

The Chief of the Economics and Land Resources Section has left on a previously arranged assignment to the Netherlands to attend a drainage course until January 1972. The head of the Land Resources sub-section is only able to devote a small part of his time to the Magat study as he is responsible for completing the UPRP study. Hopefully, he can devote full time to the MKP study within about a month when the UPRP study is finished.

No assignment has been made to the position of Chief, Engineering Section. This is an extremely critical position and should have been filled in the very beginning by an experienced planning engineer. The incumbent of that position supervises all engineering, geology, operation and maintenance studies, power studies, field surveys, and office computations. It is the most important of the Sections, and the Section Chief is also designated the Assistant Project Chief. The position grade was approved only during August, but now that the position is cleared it is essential to the project that the most experienced and best qualified man available be hired.

No geologist has been made available to the project. It is understood that an MIA geologist may be made available in the next month or two. It has been agreed that a geologist will be furnished for a week by the National Power Corporation to go to the project area early in September to log the unlogged cores and test pits. That will be of great assistance in getting the information ready for the BuRec consulting geologist; however, there will be considerably more time required for a geologist before the report is completed so a geologist

should be assigned to the MRP. One of the major aspects of the MRP investigation is the training to be given by the consultants as to how a water resource project investigation is to be made and reported upon. That purpose of the study is defeated without having permanently assigned personnel to work closely with the BuRec assignees.

No one has been assigned to the Operation and Maintenance Section. Work in that field should be started so a contribution can be made by that section to many other phases of the study such as water requirements, design of outlet works and distribution systems, costs, etc., as well as operation, maintenance, and replacement. A man experienced in irrigation C & M work should be assigned to head the section as soon as possible.

A major factor in hiring or transferring personnel at this time is the prohibition of any actions of this kind until the elections are over in November. How much effect this rule is having on the MRP study is difficult to determine; however, if a qualified man becomes available, he cannot be hired unless he is presently employed by the NIA.

The difficulty of obtaining equipment, materials, and supplies on a timely basis is contributing to the slow rate of progress of the study. Drainage study equipment, particularly hand augers, are proving very difficult to acquire and this has retarded the commencement of field studies. The land classification crews in the field have not received their ordered materials and supplies and their work has been affected. The most severe problem for the land classification crews has been the lack of vehicles. Each crew should have a vehicle, and there are six to seven crews working. Other field crews on drainage, economics, engineering surveys, etc. are going to need 10 or more cars simultaneously so arrangements need to be made as soon as possible for that number of vehicles. Office furniture and equipment are being obtained slowly. The move of the BuRec team to the MRP office cannot be accomplished until the office is equipped for occupancy. The separation of the BuRec team from the MRP staff does not permit full utilization of the consultants. The move should be accomplished as soon as possible.

Basic data on stream discharge, irrigation system operating records, climatological data, and other hydrographic data are very minimal. Agricultural statistical data and census data seem to be more adequate, but they have not been checked. It is essential that good hydrographic data be available for final design and operation of the project; so steps should be taken immediately to start collecting good records at all points that could conceivably be of use to the project. Data on sediment

and water quality are essential for the feasibility study, but no records are being collected at this time. Sampling of the Magat River should be started immediately.

General Interest:

The estimated arrival date for Mr. Edwin Kapernick, BuRec Field Engineer, is September 13, 1971.

Mrs. Wayne V. Halliday arrived in Manila on August 27, 1971 to join her husband who is the BuRec Hydrologist.

A. L. Mitchell, BuRec Project Engineer, was USAID Duty Officer for the week - August 16 to August 23.



A. L. MITCHELL
Project Engineer

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