

4920233 (17)
PD-AAD-501-F1

MONTHLY REPORT NO. 12

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April 3, 1972

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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, March 1972, in Accordance
with PIO/T 492-233-2-90095, Amendment No. 1,
dated March 24, 1971.

Magat River Project Feasibility Study

Progress is being maintained at a fairly rapid rate with much of the lag experienced in some activities during early months having been tightened up. Weather was dry during the month which enabled field crews to move about in areas which had been inaccessible. Also, as personnel in various skills become more familiar with their particular jobs, scheduled rates of accomplishment should become easier to maintain. The attached progress chart illustrates the achievement to date with the over-all project being less than 5% behind schedule.

Administration was normal during the month, with no unusual problems.

Office Engineering personnel completed studies of spillway layout and quantity estimates for dam crest elevations 200 meters, 180 meters and 170 meters for the lower site assuming an earthfill dam, using topographic maps of scale 1:2,000 enlarged from Army Map Service quadrangles. Similar cost estimates of Alternate No. 3 (Lower Site) for crest elevations 200 meters, 180 meters and 170 meters using a composite structure consisting of a middle concrete section with end sections of earth embankment was completed. The section completed computations of quantity estimates for dam embankment of five possible dam axes at the lower site

based on profiles taken from Army Map Service maps of a scale of 1:10,000 and using BuRec estimating data curves. Also completed was a study of dam embankment volumes based on actual survey of line No. 1 (Alternate No. 1) and line No. 2 (Main Dam).

A sample area of about 1,000 hectares, on which development costs have been estimated, with similar conditions as the Magat River Project rice areas, was selected in the Upper Pampanga River Project. These costs will be examined for projection to the Magat Project:

Field survey traverse and profile for the proposed main canal for the east sub-area have been plotted. Also plotted were the profile level notes of the drainage lines.

Design criteria for the main canal and the lateral distribution system is being compiled.

Revision of the time-scaled CPM network for the Magat River Project Feasibility Study was completed.

Field Engineering personnel completed approximately 59 kilometers of main canal location surveys. This includes 24 kilometers of the North Low Line, 28 kilometers of the South Low Line, 3 kilometers of the South High Line and 4 kilometers of the East Canal.

Field level surveys were completed for 128.8 kilometers of profiles along lines of observation wells for the Ground-water and Drainage investigations.

A field level survey to produce a profile along the proposed dam axis at the Lower Damsite was also completed.

Surveys to determine river-cross-section profiles at eight locations for use in tailwater studies have been started.

Geology: The government drilling crew completed angle holes 3 and 4, located on the left bank of the river along the axis of the main dam, lower site, to a depth of 215 and 210 feet respectively. Drilling of hole No. 1-A, located at the alternate dam axis, was completed to a depth of 63 feet.

The contractor for drilling additional exploration holes, Certeza Geophysical Limited, has moved equipment into the damsite area. No drilling has been accomplished to date under the contract due to water pump difficulties.

The drilling program was modified to reflect revisions to the dam axis location resulting from recent dam layout studies.

The materials exploration program was started. Four test pits were excavated and logged downstream from the dam in a potential gravel borrow area. Four pits were also excavated in a potential earth borrow area upstream from the dam.

The Operation and Maintenance chief continued the field **investigation** of the Magat and Siffu River Irrigation Systems and the various methods used to deliver irrigation water to the farms. Investigations were continued regarding the present program of rehabilitation of the systems.

The Power market survey team was able to take advantage of prevailing dry weather in the Cagayan Valley by completing the survey of 21 towns within the provinces of Isabela, Cagayan and Nueva Vizcaya. These towns had previously been inaccessible due to the rainy weather and poor road conditions. This practically completes the field work for the market survey.

Office work was in progress to determine estimates of maximum annual demand, energy generation and load factor covering the provinces of Isabela, Cagayan and Nueva Vizcaya for the years 1975 and 1985.

The Hydrology Division completed the construction of the cableway across the Magat River below the MRIS diversion dam except for the installation of rollers and sheave headplates and stringing of the cable. Procurement of the rollers and headplates has been delayed due to there being only one machine and welding shop in Manila willing to fabricate them. This shop is the one manufacturing soil augers for the Magat Project and first priority has been given to these items.

Three sets of current meter discharge measurements and collections of water samples for sediment and chemical analyses were made at Magat River @ Oscariz, Magat River @ Barebet, Ibulao River @ Hapid, and Lamut River @ Lamut.

Two additional water samples from the Main Canal near the MRIS headworks were collected for boron determination. The water samples were submitted to the BPW laboratory for analysis.

Some concern is being felt since recent analyses of a few water samples collected from the Magat River have disclosed the presence of boron in higher than normal amounts. In connection with this concern, a limited survey of rice fields near the main canal of MRIS was conducted to look for the effect of boron toxicity. Also, inquiry was made at the Bureau of Plant Industry in San Mateo to determine whether there has been any reports of boron poisoning of rice plants in the area. At present, there does not appear to be any or at least such a condition has not been recognized.

Collection and tabulation of data relating to water rights along the Magat River system, above and below the proposed damsite was completed.

Evaluation and tabulation was made of monthly irrigation diversion records of the Siffu River Irrigation System as it relates to the water supply study of the Magat River Project.

Preliminary tailwater studies were made based on cross-sections of the Magat River obtained from Army Map Service topographic maps of scale 1:50,000. These studies will be refined after the field survey crews complete level profiles recently started.

Water requirement studies were continued for rice to determine the effect of varying the planting times. From these studies it was possible to determine preliminary drainage requirements, effective precipitation, irrigation and diversion requirements. Also, water requirement studies for diversified crops was initiated.

Additional streamflow data for various streams in the Cagayan Basin were collected and compiled and flow duration curves were computed.

Reviews of the proposal for Social and Environmental studies submitted by the Institute of Planning, University of the Philippines were completed by USAID and BuRec in Washington, D.C. Both agencies returned comments and some guidelines for possible use in the studies. It was felt that the environmental aspect of the proposal was somewhat

weak and BuRec suggested that a short term consultant in this field might be made available to assist UPIP in commencing the studies. USAID/Manila was receptive to this suggestion and felt that it could probably finance this part of the activity, although it appeared now that funds were not available to finance the entire studies as originally thought possible. The BuRec Project Engineer requested additional information from BuRec/Washington regarding when an environmental specialist could be made available for TDY and the time and cost involved.

The Drainage field crews continued the installation of observation wells, completing 46 during the month. This brings the total installed to 125. Forty three of the new wells were developed and found to function satisfactorily. An additional 14 bore holes were logged along profile lines making a total of 26.

River and creek bank sections along profile lines were logged at 11 locations and 14 reference points were established.

The Project Drainage Engineer and the BuRec advisor spent a week in the field reviewing the work in progress.

Drainage water samples were collected and stream discharges measured along with air and water temperatures at 19 locations. These samples were submitted to BPW laboratory for general analysis and determination of boron content. Two sample areas within the present service area were investigated as to the scheme of irrigation and drainage. The direction of flow of water from paddy to paddy, sizes of cuts in the dikes and dike heights were determined.

Office work included the determination of watershed limits and areas of the various streams within the project area. Hydrographs of selected BPW wells, temperature and rainfall graphs were replotted for use in the drainage appendix. Information relating to earthquakes that have occurred in or near the project area, 5-year one hour rainfall, and other climatological data were obtained from the Weather Bureau. Data on soil formation and origin of soil in Isabela Province were collected from the Bureau of Soils.

The Economic Section completed preparation of forms for compilation of Farm Management Survey information and data collected during recent surveys of warehouse and rice-mill facilities in the Magat and Siffu River areas. Editing of Farm Management Survey returns was in progress with 49 returns completely edited, 165 partially edited and 71 unedited by month's end.

The section prepared write-ups describing marketing and extension service available or required within the project area.

Continuing work in progress consisted of plotting of farms of the 285 sample farmers on aerial photographs and gathering of provincial data on education, communication and transportation facilities.

Land classification accomplished during the month was over 15,000 hectares bringing the total area thus far classified to 66,120 hectares. This amounts to about 55% of the gross area to be classified.

The field crews completed work in the area north of the Magat River and resumed work on the south side of the river. They moved their base of operations from Roxas to San Mateo.

Nine additional aerial photographs were received from Certeza, Inc. covering a strip of arable land in the southwest part of the project area between Oscariz and Cordon above the original project boundary. This additional land will be classified during the present studies.

Several thousand soil samples were taken to the field laboratory at Cabanatuan City for routine testing. Laboratory work was delayed, however, due to equipment breakdown.

The Chief, Economics and Land Resources Section and the BuRec advisor spent one week in the project area, while the sub-section chief spent three weeks.

The Reports Section completed a draft of the comparative study made of the Magat River damsite selected by the Nippon Koei Company and the site selected by the Magat River Project team. A preliminary write-up describing the selection of Alternate No. 3 (Lower Site) as the dam axis is in progress. Also, a write-up on the preliminary tailwater study downstream from the Lower Site is in progress.

Bureau of Public Works Soil and Water Laboratory

A total of 28 water samples collected from the Magat Project area were analyzed for specific conductance, pH, major cation and anion constituents and boron content.

About 140 soil samples from the Magat area were subjected to routine physical and chemical analyses. Up to 64 of these samples were subjected to more detailed physical and chemical tests.

Air drying and grinding of soil samples from the Balog-Balog Project area are still in progress. The quick lime and quick manganese tests were applied to 208 samples. Also, pH in water and specific conductivity were measured for these samples.

The repair and reconditioning of one Labline oven was completed by Botica Boie Company and accepted by the BPW. The hydraulic conductivity set-up is still under preparation.

Balog-Balog Project

Field land classification was resumed on March 20 after about 7 weeks suspension. The BuRec advisor spent one week in the field reviewing the work which had been accomplished in Part I of the project area during December and January. The field crews commenced work in Part II and classified about 750 hectares of land by the end of the month. This brings the total area covered to about 12,750 hectares or 32% accomplishment of field work for the entire project.

General

The Director, Bureau of Public Works approved the recommendation that a BPW employee assigned to the Magat River Project be considered for a USAID participant training assignment to BuRec offices in Denver, Colorado, USA. Final approval and action is now pending within the National Economic Council.

Approval by the Government of the Philippines and USAID/Manila was granted the BuRec Project Engineer for curtailment of his tour so that he may retire effective April 29, 1972. Also, the BuRec Hydrology Advisor was approved to become the new Project Engineer.

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NOTED:


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ALM/mps