

PROJECT EVALUATION SUMMARY (PES) - PART I

1. PROJECT TITLE Kurtunwaare Settlement			2. PROJECT NUMBER 649-0103	3. MISSION/AID/W OFFICE USAID/Somalia
5. KEY PROJECT IMPLEMENTATION DATES			4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) <u>FY 83-1</u>	
A. First PRO-AG or Equivalent FY <u>80</u>	B. Final Obligation FY <u>80</u>	C. Final Input Delivery FY <u>82</u>	<input checked="" type="checkbox"/> REGULAR EVALUATION <input checked="" type="checkbox"/> SPECIAL EVALUATION 7. PERIOD COVERED BY EVALUATION From (month/yr.) <u>3/79</u> To (month/yr.) <u>5/83</u> Date of Evaluation Review <u>5/31/83</u>	
6. ESTIMATED PROJECT FUNDING			8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR	
A. Total * \$ <u>4,136,000</u>				
B. U.S. \$ <u>2,100,000</u>				

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)

B. NAME OF OFFICER RESPONSIBLE FOR ACTION
C. DATE ACTION TO BE COMPLETED

8. Actions approved by Mission Director

Complete roofing of 85 houses
 Complete latrines for 250 houses
 Occupy additional 97 houses
 Supply install 3" dage valve for water system
 Complete building of primary school
 Post evaluation of housing types, construction, socio economic impact/effectiveness.
 Complete warehouse include foundation, roofing, doors, floors.
 Prepare list of materials, basic equipment replacement parts to complete original 400 houses (CIP Program)

 Prepare list of materials, replacement parts, spare parts for next 200 houses (CIP Program)

 Support Kurtunwaare medical services through plans and arrangements made for inclusion of Kurtunwaare in National Primary Health Care System.

SDA	July 83
SDA	Aug. 83
SDA	Sept 83
AID/SDA	Sept 83
SDA	Oct. 83
AID	Dec. 83
SDA	Dec. 83
SDA	June 83
SDA	June 83
AID/MOH	Dec. 83

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9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT		
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify)	A. <input type="checkbox"/> Continue Project Without Change		
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____	B. <input type="checkbox"/> Change Project Design and/or		
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify)	<input type="checkbox"/> Change Implementation Plan		
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____	C. <input type="checkbox"/> Discontinue Project		

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

A. Ashur, Project Officer

12. Mission/AID/W Office Director Approval

Signature: Gary Nelson
 Typed Name: G. Nelson, Acting DIR
 Date: 6/19/83

13. Summary: Kurtunwaare is completing its transition from a drought refugee camp to an independent settlement. The transition from a type of State Farm to private enterprise with tenant farmers and free market has resulted in increased production, sales, private shops and industry. Population is stabilizing and with the presence of secondary and agricultural schooling is beginning to attract settlers. Health care is becoming inadequate due to lack of medical supplies. The construction of the dam across the Shabelli River enables gravity fed irrigation to be supplied through the canal system. The number of family tenant farmers as well as agricultural land has continued to increase beyond 1600 families and 2600 hectares.

298 houses are occupied, 12 are awaiting occupation, 85 houses await makuki roofing. 150 latrines have been built and the design simplified. The water system to the houses suffers from the omission of a gate valve. Otherwise the generator, pump overhead tank and distribution system is adequate. A primary school is being built on site. The block producing open building will eventually become the village market. Access between the main village and housing site is complete but with some rutted areas. Access from Kurtunwaare to the Mogadishu-Kismayo road was completed some 2 years ago but has some severely rutted sections which affect transportation. Training in building skills has resulted in continued housing and building progress, dam construction and other spin offs in the Kurtunwaare region. Lack of replacement parts has resulted in the non-operation of 1 truck, 4 pickups, tractor, front end loader, 3 concrete mixers and 4 motor mixers. Lack of cement could prevent the final completion of the 400 houses and ancilliary buildings. Lack of spare parts could shut down the generator and water pump. SDA presently working by themselves after the departure of the TA team are progressing satisfactorily and are making minor modifications to the house design to better suit the settler and to cut down costs.

The revised log frame goal of a self sufficient settlement is being achieved while expansion of the settlement continues forward. The success of Kurtunwaare in transitioning from a refugee camp to an independent private enterprise has begun to accelerate and could be overwhelming in the near future.

The purpose of providing adequate socio economic housing is a little less sure without a socio survey of the inhabitants and a decrease in house costs.

14. Evaluation Methodology: The evaluation was made after completion of project inputs: T.A. & procurement. This enabled an evaluation to be made of SDA constructing and completing their own housing and infrastructure with their own work power, as well as progress in both housing and settlement. It also enabled a determination to be made as to whether AID should input into the second housing phase through the CIP program. Project evaluation mid term, final, post final has continued in terms of the whole settlement in which housing is a support component. Housing being built for the settlers at minimum cost naturally has flexibility and adaptability built into it so that refinements are to the benefit of the settler, his environment and the community. Evaluation should continue at six monthly intervals until the project is totally closed down from an AID viewpoint.
15. External Factors: A major change occurring in late 1982 was the Government decision to relax the socialistic type of farming (collective farming) with fixed price marketing in favor of tenant farming and the free enterprise system. External factors included the final settling down of nomads and semi-nomads to pastoralists, and the release of non-conforming nomads to their original habitat. The original nomadic change of life style to living in permanent type houses was the final test.
16. Inputs: Commodity procurement was a major cause of delay in the project together with the over theoretical teaching of building skills. A greater concentration on practical skills by T.A. would probably have resulted in more business, spin offs to other projects, and less internal friction in the field. Delays in procurement meant delays in builders tools and materials plus delays in transportation of materials. In Somalia, additional frustrations to normal operations can have a severe effect. Prototype housing styles and layouts were also restricted by delays in procurement house production output and occupancy by settlers. Late occupancy by settlers prevent socio analysis which in turn could further modify house design. Inputs of spares and replacement parts for plant and equipment have never been sufficient.
17. Outputs: Procurement delays resulted in house production delays, occupancy of houses and modification to house design. An overkill in T.A. training resulted in an underkill of trained workers. Production output of 400 houses has never been achieved (although close) and T.A. in production was not high. Equipment and plant break down has increased due to lack of spare parts. Production outputs were effected by erratic supply of P.O.L.

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18. Purpose: The purpose in the log frame was changed to "Provide adequate socio economic housing with supporting services". This has presently not arrived in its final stage due to delays of prototypes, limited cost data and lack of socio data. Modifications to house design were not done in the latter stages of T.A. but are being carried out by SDA with limited AID assistance.

Achievement of purpose can be achieved in early 1984 after the socio study is carried out. End of Project Status shows SDA continuing house construction, and completion proceeding with remaining procured materials. 310 houses complete, 85 await local roofing material, 150 latrine's completed. Water supply is defficient 1 main valve. Achievement could be expected in September 83 if sufficient cement exists and machines do not breakdown and need repair.

19. Goal Sub-Goal: The goal in the log frame was changed to "Provide a self sufficient refugee settlement complete with agriculture, housing, infrastructure and social needs".

The settlement should be self sufficient in late 83, and will continue to expand and attract settlers other than converted nomads. The refugee concept of temporary houding has been changed by permanent housing, provision of agricultural shcools, health care, tenant farming and the free enterprise system. The settler is no longer a refugee. He is a pioneer farmer. The government is continuing to expand irrigated farming through the provision of a river dam and controlled water. Dryland farming is also available. Expansion of irrigated land is still not keeping up with settler demands and neither is the housing. Kurtunwaare has levelled out in its goal and is proceeding steadily upwards to the extent that it could provide a model for refugee settlements in Somalia or other countries.

20. Beneficiaries: Beneficiaries are the refugee turned small farmers who tend their own land with their own efforts and sell at their own price. Apart from the irrigation system, now gravity fed, agriculture is labor intensive. The government has assisted through major education programs and the continuing expansion of the irrigation system. Experiments and advice on crops have helped to make agriculture on virgin land successful. Permanent type housing which belongs to the family while they farm in Kurtunwaare has assisted in the settling in and settling down process.

The likelihood of Kurtunwaare being used as a model of government/donor cooperation in the conversion of refugees to productive farmers in Somalia or other countries is very probable.

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21. Unplanned Effects: The project, by being successful, can have impacts in most similar type refugee camps. It also shows when can be accomplished through planned cooperation by Donor and Government as well as successful planning and thinking ahead by governments.

An unplanned effect was the productive effect of private enterprise on socialistic collective farming and parastatal marketing boards, the percentage increase of which was high. An unplanned effect, though positive was the continued house building by SDA after TA had finished and the design refinements that continued.

22. Lessons Learned: Implementation is dependent on the quality of PP design, the forethought applied and especially these practicability of implementation and procurement plans, the degree of success of implementation depends on those parameters. Lesson: Produce separate Implementation and Procurement Plans in the PP. In this project special attention was given to advance ordering of materials through a procurement agent. In this particular case AAPC destroyed the vestiges of careful planning in that it delayed to such an extent that advance planning was negated. Lesson: Choose a good and efficient procurement agent and do not limit materials to US only.

Training of settlers was on a high priced theoretical basis with limited practical mix. Lesson: For training of unskilled workers, especially refugees with low learning ability, use low cost trades people who work on the basis of on the job training together with limited school room teaching.

Kurtunwaare is a practical success. Lesson: Governments can plan and implement successful programs for rehabilitating refugees.

Low cost housing is possible. Lesson: Low cost socio economic housing can be constructed provided continuous revolving inputs/ outputs are available to modify construction and that all people involved, whether AID or government, are without pride or prejudice and have knowledge of appropriate technology and willingness to use it.

23. Special Comments: AID should continue to have an input into Kurtunwaare and its subcomponent, housing, through its CIP program. Periodic visits (monitoring) even if not evaluations should be carried out beyond EOPS.

PART II

Kurtunwaare Settlement Project

24. (Note: Item 24 contains an update on the original, final evaluation of Kurtunwaare which was carried out in November of 1982 (item 25). The item 24 analysis is based on a May, 1983 inspection carried out by: F. Denis Light, Gen. Eng. REDSO/ESA and A. Ashur, AID/Mogadishu).

AID/Mogadishu may not be remembered for all of its projects but one project that stands out is the housing support of Kurtunwaare Settlement in the transition from a drought refugee camp to a non-Government supported independent and expanding settlement. These are the views expressed by the D.C. and the farm manager who anticipate Government subsidies to end in December 1983, and the private enterprise activities to increase and take over.

Presently there are 1500 farm tenants who have their own 1 hectare irrigated plot of land, 100 families each with 9 hectares of dry land, crop rotated in plots of 3 hectares each, 600 families requesting land tenancy plus 235 families (old people or young people, 4 or 5 to a family) who are dependent on the government.

Agricultural products grown are grapefruit, rice, maize, sesame, sunflower, safflower vegetables, (onions, tomatoes, carrots), (citrus fruits, water melon, bannanas, papaya, mango, grapefruit, lemon) plus experimental crops (cashew nuts, coconuts). Irrigated land is fed from the Shebelli River, originally by pump through canal systems and, with the completion of the river dam and dates in June 1983 to control the river water for irrigation, all by gravity. It should be noted that at no time in the life of the settlement has the river run dry which in itself shows promise for the settlement. Future expansion allows for 6000 hectares of irrigated land, 6000 hectares dry land farming.

In 1982 marketing of produce from the settlement changed to private enterprise resulting in some 23% average increase of production versus a normal 11%. It is very noticeable that people voluntarily work on their own plots at all hours of the day instead of just at fixed hours as before. Six shops in the village have evolved together with two private firms (third one coming) and a private pharmacy.

Population in Kurtunwaare is 16,437 but these are now the hardcore, second generation, who are staying in Kurtunwaare and some even are now returning to Kurtunwaare because of the attraction of education, land ownership and freedom to do their own thing, on their own land.

Education in Kurtunwaare includes a Technical School (309 students in 10 classes) Agriculture and Animal Husbandry (598 students in 14 classes) Secondary School (592 students in 11 classes) plus 4 primary schools (725, 746 and 606 students, each in 24 classes and 78 students in 2 classes) totalling 3564 students in 47 classes with classes held morning or afternoon.

A small hospital exists at Kurtunwaare with beds but most treatment is done at the homes. The hospital lacks basic dispensary or surgical equipment and a refrigerator for blood samples. It also lacks basic malaria and bilarshia drugs which in the rainy seasons equal some 35% of suspect cases. This problem will expand as the settlement expands.

In the housing support sector 312 houses have been completed with 298 occupied, and 12 awaiting occupation. 85 houses are complete except for the makuti roofing which has doubled in price and is in short supply with the nearest source 56 kilometers away at Genale. The standard house is now a 3 roomed house, 2 bedrooms plus kitchen and is more suited to the Somali family. The houses by being constructed as permanent long life house give a feeling of permanency to the family as against a temporary short life camp dwelling. Access is from bulldozed tracks to the main access roads. Only 150 latrines are complete and in used. The double vault design has been replaced by permanent type one hole pit latrines, singly or in groups of 3, built in building block at both substructure and superstructure. These latrines are too expensive, and a suggestion was made to build the substructure in open jointed single block with a hessian type superstructure. Alternatively perforated drums could be used at the rate of one per house with replacement when full. Water supply is pumped from a well into an overhead storage tank and out to the distribution system. However the main 3" gate valve is missing and water is therefore temporarily taken to an on ground tank for bucket use. This must be corrected immediately from a health point of view as well as completion of pit latrines for occupied and soon to be occupied houses. Other buildings at the housing site are a 3 room occupied office building, the block making building which will become an open market and a non completed warehouse without foundation, which must be corrected and completed before it falls down of its own accord.

The access road between the main village and housing has some 400 meters of rutting and the 7 Km access road to Kurtunwaare main village which is under government guarantee has 1300 m of major ruts. Both roads should be corrected.

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Major equipment not working because of lack of replacement parts include 4 pickups, 1 truck, 2 trailers for trucks, front end loader with drill, 1 tractor, 3 concrete mixers, 4 mortar mixers.

Spare and replacement parts are needed for the water supply generator and pump.

Recommendation: Consideration should be given to preserving American visibility in Kurtunwaare continuing development through the CIP Commodity Program for building materials (lumber, cement reinforcing steel) and thorough replacement and spare parts for machinery and plant. This will enable the 400 houses plus accessories, utilities to be completed plus perhaps the next 200 houses, which would be at a different site. Present house cost is considered to be 90,000 So. Shs. or \$6000 each. CIP by eliminating the local tax could reduce this figure to \$4000. However the needed Somali Shillings for the project under the CIP Program would have to be set aside by the government. For information purposes, house costs at Sakale appear to be approximately double that of Kurtunwaare for a smaller house.

Kurtunwaare may be the Somali model for refugee transformation to landed settlers.

F. Denis Light, Gen. Eng.
REDSO/ESA
A. Ashur, AID/Mogadishu

Kurtunwaare Settlement Project

PART III

Item 25. (Note: Item 25 of the Kurtunwaare Evaluation contains the original, final evaluation performed in November of 1982 which was updated by the inspection (item 24) carried out in May of 1983.)

by: Denis Light
General Engineer
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Nairobi, Kenya

November 1982

with: Rene Daugherty
Program Economist

and

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Item 25

1. Summary

A. Background

The Kurtunwaare settlement was established by the Somali Government in June 1975 in an underdeveloped area on the Shebelli River about 150 km south - southwest of Mogadishu. The scheme is an integral part of Government's agricultural strategy to settle nomads who were displaced by the devastating droughts of 1973-1974. The decision to establish Kurtunwaare preceded the drought, but the opportunity to carry out the resettlement was enhanced by the disastrous dislocations following the drought. The settlement is supported by the International Development Association, the Arab Fund for Economic and Social Development, the African Development Fund, European Economic Community, Federal Republic of Germany, Scandinavian Countries, Work Food Program, UNICEF, UNDP, the Netherlands and USAID.

The settlers are given daily rations of food, clothing, utensils and other basic needs. Health facilities and schools also are available to the settlers. Those who work receive stipends which range from Somali Shs. 2 to 4 per day for unskilled labor to Somali Shs. 6 to 10 for professional workers So.Sh. 20 to 68 are paid for skilled outside help.

The settlers were expected to farm most of the land on a communal basis, and to ultimately share the profits. By 1982 the GSDR reversed the communal farm scheme and allocated to each of the settlers one hectare of irrigated land, and one hectare of rain fed land. The GSDR plans to allocate an additional hectare of irrigated, and one of rain fed farming land to each settler later this year. The Somali Development Agency (SDA) provides mechanized land preparation services on a reimbursable basis to the settlers.

Kurtunwaare, one of three agricultural settlements for approximately 150,000 nomadic people, is the subject of this evaluation. Estimates in 1982 indicated that approximately 60,000 people now are in these three settlements with the possibility that some will depart as weather conditions improve the range lands and water sources in the north. The evaluation team was informed that the Kurtunwaare house census, conducted in early June 1981, revealed its population at 18,000 persons. In November 1982, this figure was reduced to 17,300.

The original USAID design for the Kurtunwaare project estimated that 26,000 settlers, 5,200 family units, would be settled on 45,000 hectares, of which 15,000 ha. would be irrigated. Recent estimates have revised these figures downward, i.e., 16,000 persons, 4,200 families, would be settled on 6,000 ha. of which one-half would be irrigated.

B. Social Services

(1) Health

The project envisioned health care resources that were to include

a 140 bed temporary hospital and 420 trained community health workers. Currently, a physician and a staff of ten Ministry of Health workers are supported by 100 local community workers -- of which 40 are trained paramedics -- to operate a Maternal Child Health Center, six outpatient dispensaries, and an 80 bed hospital. Over 700 outpatients are seen daily (six days per week) in the present health facilities. Health care appears effective and is adequately supported by the Government.

(2) Education

In the education area, virtually all primary school age children -- 7,174, in ages six - fourteen -- attend regular classes in the settlement village. An additional 1,184 students attend secondary school of which 87 percent are in three year vocational or agriculture training courses. The primary schools were constructed by the settlers, and were equipped and staffed by the Government. The secondary and vocational schools were constructed, equipped, and staffed by the Government. Educational services appear well planned and efficiently implemented by the Government.

(3) Housing

The purpose of the USAID financing for the project is to develop (and prove the suitability) a socio-culturally, environmentally suitable low-cost minimum shelter housing unit for Kurtunwaare.

The evaluators saw the prototype and the advisory team houses in the present settlement. Considerable knowledge was gained from these units about foundations, roofing materials, heat protection, etc. Annex 8 of the Project Paper identifies various materials used for housing by Somalis, details the methods of construction, and estimates availability and cost of materials. Eighty units now are occupied, while the remaining units are being constructed. This plan benefits the project and has provided for testing and demonstration of its suitability. Unit 7 was adopted as a model. The majority of the houses beyond the initial 50 prototypes reflect the unit 7 model. Some adjustments were made following the occupancy of type 7 units. A modified version of type 7 now is the theme. Some of the units were found ready for occupancy but lacked sanitary facilities and water. See Annex C. The access road to the site from the main village is complete. The road permits access to hospital facilities and secondary and vocational schools in the main village. The Primary school now is ready for construction.

The second part of the purpose statement is the low cost element of housing units. Although cost data was not available to the evaluation team, the contractor (LBI) stated that full account for every item could be provided. SDA is providing cost data as it becomes available during the completion of the 400 houses. The cost of construction was not available at the previous mid-term evaluation. Section VI outlines the requirements for cost of construction data. Estimates supplied by the contractor in May 1981 indicate that the unit cost is about \$5,000 per house, of which approximately 25% is foreign exchange. The contractor's

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chief engineer has made a valid point about costs when he stated, in a letter dated July 1, 1981, that the true evaluation of "low cost" must be seen either as cost/use effectiveness including economic life or doing the job on "the cheap". Fairly realistic cost figures should be generated if the project is continued. Changes in design, materials, lowering of floor area, changing site location -- away from black cotton soils and low areas -- can substantially lower the house cost.

The conceptual design for Kurtunwaare housing appears to have been accelerated due to the emergency that existed at the time. The contractor disagrees that the conceptual design was hurried. However, no explanation was given as to why detailed working drawings were unavailable at the time of the visit, or why the design for the sanitary facilities still was being discussed in mid 1981 and in late 1982. In addition to the lack of detailed working drawings, the general lack of day-to-day supervision, and liaison with appropriate Government officials were noted as serious deficiencies in the contractor's implementation of the project.

C. Conceptual Design of Kurtunwaare

The design of the greater settlement scheme was found to be innadequate. Estimates of the available land area in 1977 varies widely when compared to the actual project area -- this was caused by the lack of water resources and to some extent a reduction of settler population. The original scenario called for up to 3,000 ha. of irrigated land, and up to 4,000 family units. Despite plans to provide rain fed land to settlers -- in addition to irrigated land -- the economic viability of the scheme depends primarily on the use of irrigation. Rainfall data in the lower Shebelli indicates that rain-fed agriculture fails in three of five years. Irrigation water for two crops per annum also fails, but with less frequency. Therefore, the permanent settlement of less than 2,000 family units appears to be more realistic in terms of water availability. Rainfall in 1981 and 1982 was higher than average.

D. Beneficiaries

The beneficiaries of the project were to be the displaced nomads who lost their animals in the 1973-1974 drought. Over 150,000 nomads were to be provided permanent settlement in several agricultural schemes in the Lower Shebelli. Over the past five years, some of the families have moved out of the areas, other families have been separated -- with adult men returning to the nomadic life in the north, migrating to urban areas, or taking jobs in Persian Gulf States. As a result, less than 60,000 persons now are in the settlement areas awaiting permanent housing and land. It is estimated that a high proportion of these are indigenous people who were included among displaced nomads and who now serve as the core of agricultural workers.

One of the underlying principles of the housing project was the employment of self-help measures under which settlers participated in the construction of their own homes. These settlers then would share their skills and help others build their shelter. The high attrition of trained personnel, and the Somali Government difficulties paying the workers have been a major problem in this area.

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E. Conclusions

(1) The project is considered to be an ambitious undertaking within the Somali context. Its timely implementation and successful completion depended on complex arrangements and the cooperation of a number of Somali Government entities. However, despite difficulties a modicum of success may evolve from the project.

(2) The overall conceptional design for Kurtunwaare is considered unrealistic -- in view of the number of families that were to be settled and available water to adequately irrigate a sufficiently large area to ensure the economic viability of small farm agriculture.

(3) The scheme was originally established as a State farm system whose socio-culture foundations are questionable based on prior performance both in Somalia and in other countries in the developing world. For all practical purposes, Government officials operated the farm enterprise with settlers providing the labor base. In late 1981, an effort was made to modify the basis of the scheme by allocating land to settlers. However, farming systems normally cannot be arbitrarily and quickly changed without in-depth analysis of the economic and environmental consequences. Nevertheless, the effects of the change in agricultural production appear to be positive.

(4) The provision of health and education services to settlers in the temporary village is an impressive demonstration of Somali Government commitment. There is virtually universal coverage for health services; and, formal and informal education opportunities are available.

(5) The USAID financed housing scheme is basically providing a modified western solution for permanent shelter at relatively high cost which is foreign exchange intensive. Without cost reduction, replication of similar schemes is questionable. However, it can be argued that Somali Government's commitment for expanding a modified type of housing is realistic due to high initial costs -- contractor, staff housing, 11 kilometers of access road, offices, workshop, warehouse, and plant -- that would not need to be repeated for a second phase. At present all initial costs are written off against the 400 houses.

(6) The US Purchasing agent has been cited by both USAID and Somali officials as an important reason for the delay in implementation.

(7) Management problems were cash flow, labor, retention of trainees, shortage of POL and Procurement.

F. Recommendations

(1) Every effort should be made to effect occupancy of project housing units as soon as they are completed.

(2) USAID should analyze project pipelines for materials, spares and funding. SDA believes that, with the exception of cement, the planned 400 units can be completed with present materials.

(3) That USAID, and SDA agree to review implementation of the engineering plan in Section VI of this report; and, that monthly reviews be held to assess progress of housing and infrastructure construction.

(4) Following harvest of the current crop, a joint evaluation of

all aspects of Kurtunwaare should be undertaken by IBRD, Arab Fund, SDA and USAID to determine the soundness of the small farm enterprises, appropriateness of housing, adequacy of social services, and the situation of the beneficiaries.

(5) USAID funding the Phase II of the project should not be considered except assistance through the CIP program.

(6) An evaluation should be scheduled after a reasonable amount of experience with habitation of the housing units to determine lessons learned from shelter design, sanitation and farming systems.

II. Basic Assumptions and USAID Design

The framework for a project of this magnitude and complexity in Somalia is difficult.

A. Nomad Sedentarization

The basic assumption in the project design is the adaptability and indeed an increased willingness of nomads to accept a sedentary life style. There is no conclusive evidence that this has been done successfully. It is clear from the project paper that the designers intended the project to be a multi phase activity. The basic assumption, therefore, was heroic and should have more properly served as the hypothesis of the undertaking (i.e., the purpose statement) and not as the basic underpinning for such an important and potentially volatile activity.

B. Future Funding

An assumption for the funding of future phases of the project was that the design developed under the project would prove sufficiently attractive to encourage other donor interest. We question whether the housing element of the project by itself is a major consideration regarding future financing, while an important element, its role is clearly overshadowed by the agricultural enterprise and social infrastructure.

C. Replicability of Housing

The assumption regarding replicability of the shelter solution overlooks the critical foreign exchange requirements, high local cost inputs, and housing suitability. Housing for the lowest income groups in Somalia depend on "free goods" or those readily available at very low costs. Imported goods are not a feasible major component of most low income housing schemes. The replicability of Kurtunwaare housing is unrealistic. Although actual costs are not currently available, each of the first 400 units is estimated to cost around five to six thousand dollars including operational costs for capital equipment, and fixed costs for roads, water systems, drainage, etc. It is improbable that Government will be financially able to provide such housing to all of the settlers under its current agricultural schemes. However, costs will decrease

with the amortization of one time costs as more units are built. In Kurtunwaare the first costs include: 11 kilometers of access road; staff housing; plant; equipment; tools; garage; warehouse; offices; and block factory. Modification to house design, floor area and materials could substantially lower the unit cost.

D. Availability of Irrigation Water

The assumption regarding availability of water in the Shebelli River to irrigate sufficiency large areas -- to ensure the economic viability of small farm enterprises -- should have been tested more thoroughly. While this element of the project is outside the purvue of the USAID financed activity, responsibility for ensuring project overall soundness must fall on the mission. Nevertheless, the dam at Kurtunwaare has been constructed which should reduce pumping costs.

III. Social Services

A. Health Services

A physician is responsible for health services in Kurtunwaare settlement. The community had a 70 bed temporary hospital, which was recently destroyed by high winds. An 80 bed Government hospital has been constructed to support other health facilities -- one maternal and child health center and six outpatient dispensaries. The staff consists of ten Ministry of Health workers supported by 100 local settlement staff. Of the later, 40 are trained paramedics. Settlement support staff received a Shs. 150 per month honorarium.

Over 700 patients are seen daily, except Friday, at health facilities in Kurtunwaare. Major health complaints as reported by the Chief Medical Officer include intestinal parasites and diarrhea, malaria, respiratory diseases, TB and schistosomiasis. The frequency of malaria varies with the advent of the rainy season while schistosomiasis is generally prevalent during most of the year when irrigation water flows through the canal network.

One sanitarian is assigned by the Ministry of Health to provide primary health education. His major focus is to inspect latrines and water supplies and to advise on improvements. He is supported by the District Medical Officer who in turn refers uncooperative cases to the District Commissioner.

There is no family planning education or information program that is either integral to or separate from the health services.

B. Education

Virtually all persons eligible for primary education are compelled to attend Kurtunwaare standards one through eight. A total of 7,174 students currently are enrolled in primary education in two shifts where the medium of instruction is Somali.

An additional 1,184 are enrolled in secondary school as follows:

<u>Number of Students</u>	<u>Animal Husbandry^{1/}</u>	<u>Agriculture*</u>	<u>Vocational Training*</u>	<u>Ordinary**</u>
	34 ^{1/}	750	240	160

* Three years' course of training following Standard 8

** Four years' course of study following Standard 8

A total of 170 teachers provide instruction of which 29 are teachers training school graduates. The latter teach in the secondary school. Specialized instruction in agriculture, animal husbandry and vocational training is provided primarily by Ministry of Education specialists assigned to Kurtunwaare District. Local community secondary school graduates who have received specialized training in Mogadishu are required to return to Kurtunwaare as teaching staff. The medium of instruction in secondary school is in Somali with the exception of vocational training where teaching is in English.

In addition to formal education, the community provides special adults literacy classes equivalent to Standards 1 through 3. Literacy is measured by the successful completion of a general knowledge examination in which a candidate demonstrates reading and writing proficiency in Somali at Standard 8 level. Unofficially, the literacy rate in Kurtunwaare is estimated at about 85 percent. The Chief Inspector of Education gives credit for this high level of literacy to the Government's literacy campaign program for nomadic people which started in 1975.

Primary school rooms at Kurtunwaare were constructed by the settlers with Government providing teachers, equipment and books. UNICEF also assists with some books and equipment. Secondary schools are constructed, equipped and staffed by the Government. A shortage of equipment for vocational and agricultural training appears to be a problem. However, settlement scheme machinery and workshops are used for practical training and demonstrations for secondary school students. The inspectorate school staff appear highly motivated and dedicated.

C. Water Supply and Waste Disposal

The ground water supply for the housing scheme has its source in a deep borehole which has been drilled and now is functioning. The Water Development Agency was slow in carrying out its responsibilities

^{1/} Animal husbandry is a new course in Kurtunwaare. While livestock has not been a major feature of the settlement, recognition of its important role is now in evidence.

regarding the establishment of an adequate water supply. As a result of these delays, the housing area did not have a potable water source in May 1981. Construction of the water reservoir is now complete and the pipe network is being laid. The well began operating satisfactorily in July 1981. The water distribution plan calls for 16 stand pipes with pressure faucets for the 400 housing units. Each standpipe location will have a catch tank to help control excess water and a concrete apron around the standpipe will help ameliorate muddy and unhygienic conditions. The main gate valve to the distribution system is missing.

Waste disposal was based on use of a double vault composting type toilet which uses no water. The composting process takes place by anaerobic digestion resulting in harmless, non-toxic humus-like ash. The process is odorless and the ash by-product, which is extracted about once a year, can be used directly as a soil fertilizer for the farming area.

The successful utilization of these toilets assumes a discipline that may not be easily achieved. The double vaulted toilet assumes that only one side will be used while the other side is in digestion. As vault No. 1, for example, fills to about three fourths capacity, several inches of sand are spread over the top of the waste to close off oxygen thus permitting it to digest. In order to preclude that side from being used while in digestion, a concrete block is placed over the squat plate for the duration. As vault No. 2 fills to three fourths capacity, assuming that Vault No. 1 has had sufficient time to properly digest (six to nine months), a rear trap door to the toilet is opened and waste from Vault No. 1 is taken out (currently, techniques and equipment are contemplated to facilitate this process). Then sand is spread over the waste in Vault No. 2, the large concrete block is moved over squat Plate No. 2 to preclude its use and vault No. 1 now is in operation again.

The digestion process takes place in the absence of water; however, Muslims and particularly Somalis, tend to use small quantities of water in carrying out their ablution requirements -- a socio-cultural detail that will have to be given additional thought as the waste disposal system is installed. However, present toilets, as constructed, are single hole concrete slab privies with brick wall surround.

IV. The Farm Enterprise

The farm manager is a Somali trained at Alemaya Agriculture College (Ethiopia). He is responsible for several assistant managers who are responsible for machinery maintenance, irrigation water management, field preparation, planting, weeding, and harvesting.

Currently 2,200 ha. of land are under cultivation of which 1,300 ha. are irrigated. During the past Gu season 1981 and Der season

1981/1982, 283 ha. of rice yielded 3,200 quintals of paddy, or 1.1 tons per ha. An average yield is estimated at 2.5+ tons per ha. Corn yields are estimated in the same range, i.e., average of 2.5+ tons per ha. need to increase to 3.5+ tons per ha. if self-sufficiency is to be realized. Corn, sesame and cow peas were lost due to drought conditions in the 1979, 80 crop season. Onions, however, did well with the result that most were sold in the open market in Mogadishu. Proceeds from the sale were returned to the settlement scheme's account for use in the scheme. See following table.

In addition to food grains, the settlement has grapefruit, mango, papaya and bananas. In addition to providing fruit to settlers, surpluses are sold in the market place. The Government presently is sub-dividing all cultivatable land in the settlement scheme among the settlers. Each family is to be given one ha. each of irrigated and one ha. each of rainfed land. While land titles per se will not be issued, each family that continuously farms a plot will be recognized as rightful occupant in perpetuity. The same is true with housing units. There was some question about disposal of surplus produce. Until recently, farmers were required to sell all produce to the Agriculture Development Corporation (ADC), a Government parastatal organization. Government now has relaxed this requirement with only large surpluses required to go to ADC. Farmers will be permitted to interest within a free market economy with ADC acting as buyer of last resort. A result of the change is that 11 kintals per hectare were produced under the state farm systems, as against 30 under the private system.

Little scientific study of climatic characteristics has been made of the Kurtunwaare area. Virtually nothing has been done to induce the Agriculture Experiment Station scientists to undertake a systematic study of the area and to set up trials as demonstrated on site. The current farm manager, District Commissioner and SDA project site manager all agree that there is a need to include the area within official activities of the Agriculture Faculty of the University and the Experiment Station.

A recent evaluation report on the settlement scheme by Somali Government's State Planning Commission ^{1/} recommended the establishment of meteorological stations equipped with instruments to determine such factors as rainfall, evaporation rates, wind direction and speed, soil and air temperatures and sunshine rates. The nearest stations are at Genale, 50 km. to the north and Brava on the coast. The quantity of rainfall, evaporation rates and sunshine availability is certain to influence the requirements for irrigation water, crop varieties and planting schedules. According to the report, current estimates are that annual rainfall at Kurtunwaare totals 550 mm. with 350 mm. in the GU season and 200 mm. in the Der season. The rains are just marginal and are probably inadequate most of the time to sustain the usual rainfed crops such as maize, sesame and cowpeas, whose optimal crop evaporation is over 400 mm.

^{1/} An evaluation of Kurtunwaare and Shebelli Settlement by Somali Democratic Republic, State Planning Commission, Technical Department, December 1979.

Der Season 1981-82

Crop	Cropped Area	Total Yeild in Qts.	Average yeild in Qts.
Rice	112	1676.45	14.97
Maize	149	968.00	6.50
c/peas	116	431.46	3.72
Sesame	508	977.73	1.92
Tomato	5	175.00	33.00
S/pepper	2	20.00	20.00
W/melon	4	80.00	20.00
pumpkin	0.5	30.00	60.00
Cucumber	0.5	7.50	15.00
Papaya	5	1500.00	300.00
	<u>902</u>		

Gu' Season 1981

Crop	Cropped ones	Total yeild in Qts.	Yeild/Ha. in Qts.
Rice	171 Ha.	1539	9.18
Maize	537 Ha.	4000	7.58
c/peas	30 Ha.	13	0.43
Tomato	15 Ha.	515	34.33
Onions	5 Ha.	125	25.00
S/pepper	3 Ha.	30	10.00
Carrot	1 Ha.	60	60.00
Pumpkin	3 Ha.	150	50.00
Okra	6 Ha.	-	-
Banana	32 Ha.	2000	65.5
Papaya	5 Ha.	2300	300.00
Mango	5.5 Ha.	-	-
	<u>813.5 Ha.</u>		

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Der rains are definitely insufficient for rainfed crops except for possible green manure crops which can be plowed under. 1981 rains were higher than normal and in 1982, the Gu gave 540 mm and Der 280 mm up to early November with estimate 400 mm.

Irrigation water at Kurtunwaare used to be pumped throughout the year when the Shebelli was not dry. However, construction of the dam in Kurtunwaare is to be completed in 1983 rendering all year round pumping unnecessary. Accordingly the Shebelli swamp, (51,800 ha.) loses about 2 mm. of water per day through evaporation or some 1.24 million cubic M. Per second. Apparently very little is known about the storage capacity of the swamp and its ability to give up water for irrigation at Sablaale - an agricultural settlement scheme 30 KM. downstream from Kurtunwaare. This relationship is important in determining the rate of off-take at Kurtunwaare, particularly the Sablaale scheme is not to be jeopardized. A report on the Shebelli River points out the potential problem with water.

"Studies conducted so far on water resources in the Shebelli River indicate that natural flows even with the Jilib off-stream storage will not be able to meet the requirements of all the areas that can be developed in the Shebelli Valley." 1/

Huntings Interriverine Agricultural Study of 1977 estimated that sufficient water is available in the Shebelli River, assuming its efficient regulation, to irrigate a total of 88,350 ha. as 1,400 million cubic meters (1,400 MCM) of water is required below Johar. Annual river flow at Mahadai (above Johar) at 75 percent reliability is 1,480 MCM with a minimum flow of 591 MCM. Based on current irrigation demands at Genale and Afgoi, the most that Kurtunwaare and Sabaale can reasonably expect to irrigate is a total of 8,000 - 9,500 ha. during a good year at 75 percent reliability. However, if competing demands from other projects in the Genale/Bulo Merarta area are taken into consideration, less than 2,000 ha. can be irrigated. Maximum development at Kurtunwaare, therefore, is possible only when the river water is fully regulated (dam now is operational).

The obverse of the irrigation coin, is of course, drainage infrastructure. Adequate drainage for irrigated areas is a sine qua non for success. Danger of salinity in the soils in Somalia in general and along the Shebelli in particular is ever present. Therefore, continuous monitoring of soil salinity levels is essential at Kurtunwaare. Canal waters should also be examined regularly for salinity levels to determine the extent to which it is effected by the leaching of lands in the neighborhood. 1/

1/ An evaluation of Kurtunwaare and Sablaale Settlement, 1979.

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Based on limited production data for one year, it has been estimated that about 1,800 ha. of irrigated land is required to supply Kurtunwaare with minimum requirements of rice, maize, meat and sugar for about one year. (Meat and sugar are calculated on the basis of rice required to purchase meat and sugar.) This assumes two normal crops per annum. Clearly more land is needed if the settlement is to become a viable economic enterprise.

V. Agriculture Settlement as Models for Nomadic Transformation

In February 1980, Rabileh Consultants Ltd., Mogadishu, completed an analytical Study of Resettlement Programs in Somalia. The study is part of an overall survey of nomadism in Somalia and its implications for socio-economic development. The first part of the report concluded that although there was an abundance of talk in Government planning to foster rural development, no significant actions were taken to ensure delivery of services to nomads.

The current study concluded that the social organization of nomadic settlers remained intact as it was prior to their displacement. The settlers in Kurtunwaare came primarily from the same area in Northern Somalia - Bureao and Erigabo. The survey also revealed that 60 percent of those interviewed reported that some of those who came with them had already left. An overwhelming majority went back to their original habitat and were not expected to return.

The total labor force in the settlements is about 39 percent of the adult population. See table. This brings into question the extent to which nomads have been or are being transformed. In addition, the settlements, including Kurtunwaare, up to late 1981 were being administered along the lines of relief camps and the farming carried out mainly by a directed work force and no production incentives being used. This has now changed to the private enterprise system with positive results. School children above the age of 12 go to school half a day, and work the other half. During school holidays they work all day.

The paper concludes that lack of policy and planning, lack of sufficient technical inputs for the agricultural enterprise, particularly regarding oil and water salinity problems and the lack of adequate manpower and administrative efficiency places the entire scheme in jeopardy. For those reasons, it appeared difficult to realize the economic objectives of self-sufficiency in food production within the period originally envisaged. However, recent change of public to private enterprise combined with above average rainfall is having its effects.

The nomads will be hard put to find solutions to their problems in a settlement like Kurtunwaare. Much still needs to be done to induce nomadic people to think of a sedentary existence as an alternative to his traditional way of life. Even if the current family remains on the land, the children will not

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be able to divide the meager land resources allotted to each family and expect to achieve economic self sufficiency. One child may be able to remain on the land, but surely the others will have to return to the grazing lands or migrate to the cities.

Labor Force Available in Kurtunwaare

<u>Age Group</u> <u>years</u>	<u>Males</u>	<u>Females</u>	<u>Total</u>
15 - 30	2175	1786	3961
31 - 45	708	1419	2127
46 - 59	293	325	618
	3176	3530	6706

Total population = 17,334

VI Housing

A. House and Site Layout

This generally tended to follow the layout shown in the Project Paper in which plots of 11 meters by 16 meters were grouped in modules of five plots, ten houses, some offset to each other and then grouped in series of 50 and 100 separated from each module by open space and from the neighboring 100 units by a rectangular road system. See figure (1). On individual plots, the house was constructed, the living space within the plot for house expansion, separate cooking facilities and separate latrine facilities away from the house. Space was also available for garden cultivation. See figures 2 and 3. Figure 3 shows the layout of the model chosen by the village committee. This model was used for the majority of the houses above the initial 50 prototype units.

B. House Models

Ten different house models were constructed, of which there are only five foundation layouts with variations occurring essentially in the super structure. Figure 4 type 7 was chosen by the village committee. Types 1 and 2 were three roomed with verandah. Types 3 and 4 are like 1 and 2 but with different roof type and no verandah. Type 5 was three roomed with covered space. Type 6 was like type 5

(2) Floor.

Six centimeter concrete floor on fill.

(3) Masonry Walls.

Cement sand clay blocks produced by Cinva Ram machines and laid by trained masons on all external and internal walls.

(4) Doors and Windows.

Simple solid plank with window tops hung for bottom opening. Lintols are of reinforced concrete. A project supplied wood working machine now makes these items.

(5) Roof Trusses

Rafters and simple roof trusses made from imported lumber tied to masonry blocks or to rc wall ring beam.

(6) Roofing.

Makuti palms fronds placed on roofing felt over purlims of palm frond spines. Now considering changing over to corrugated iron sheets because of shortage and high cost of makuti.

(7) Grading.

(8) Fencing.

Live hedge fencing planted by families.

PREVIOUS PAGE MISSING

SITE LAYOUT

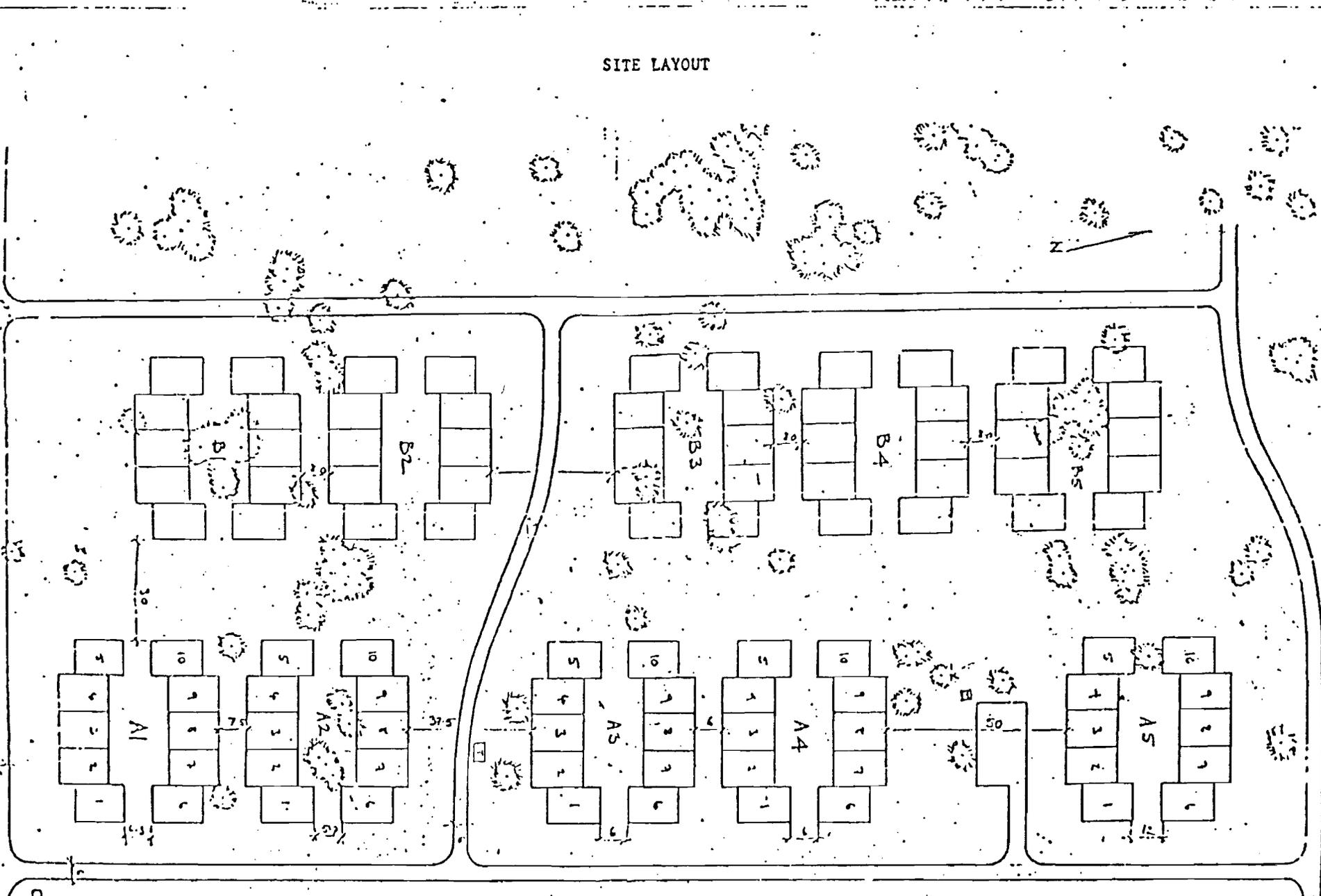


figure 1

XUBIN A5

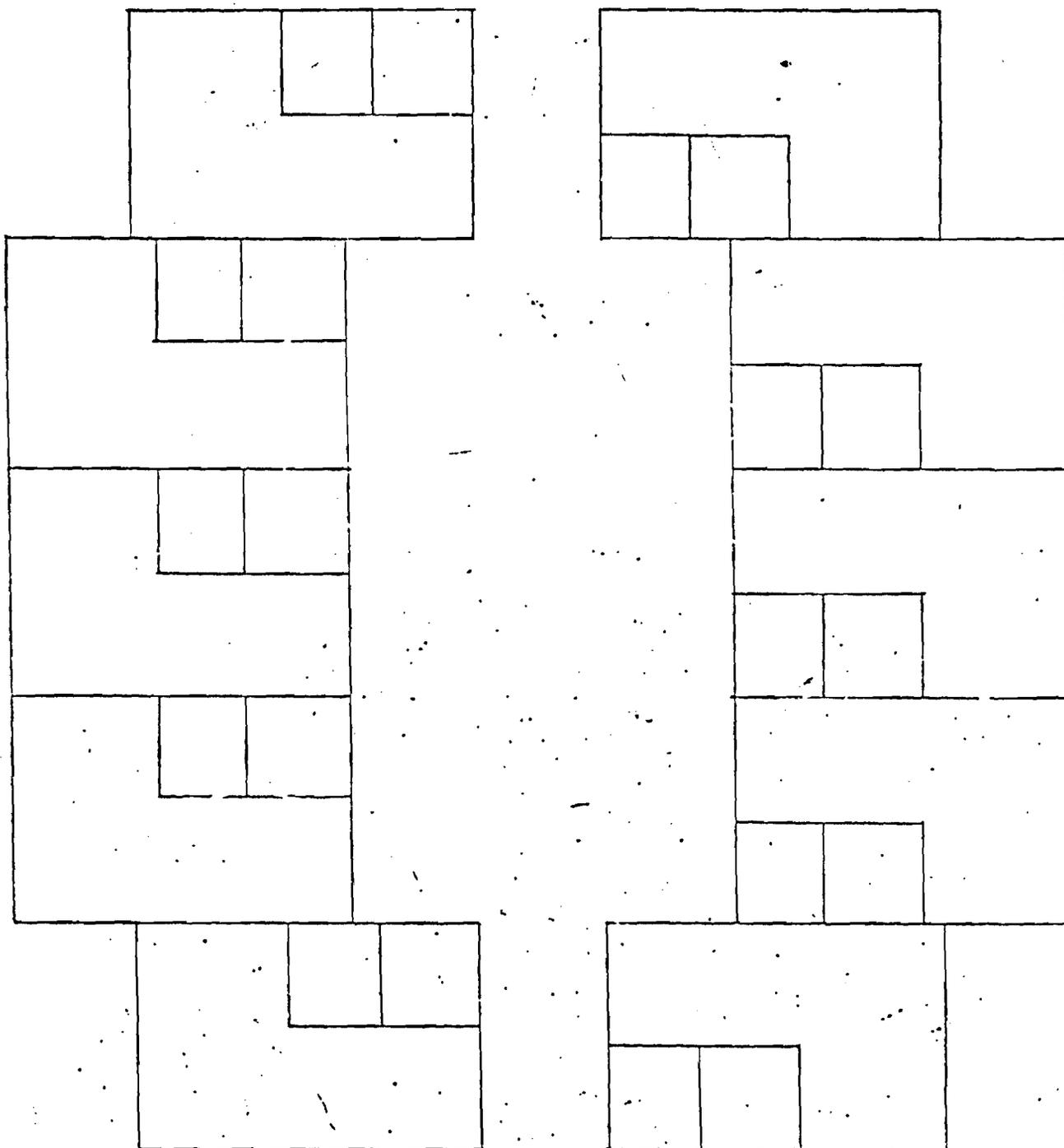
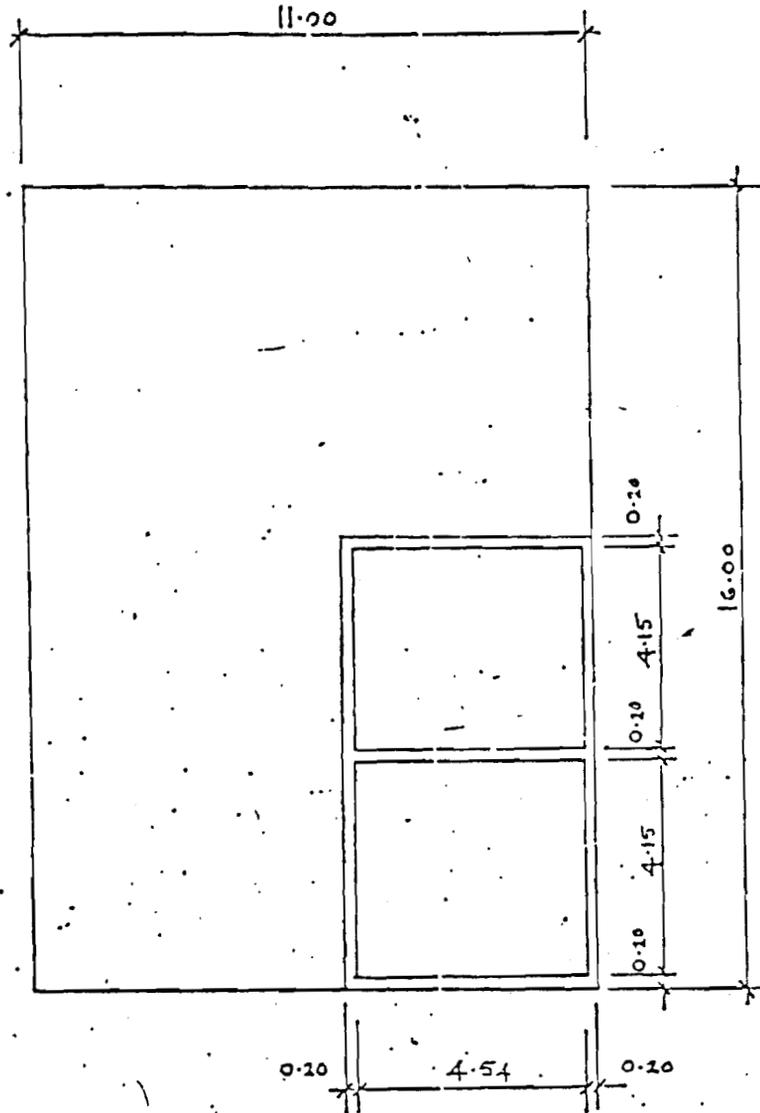


Figure 2

TYPICAL UNIT LAYOUT

A4
&
A5

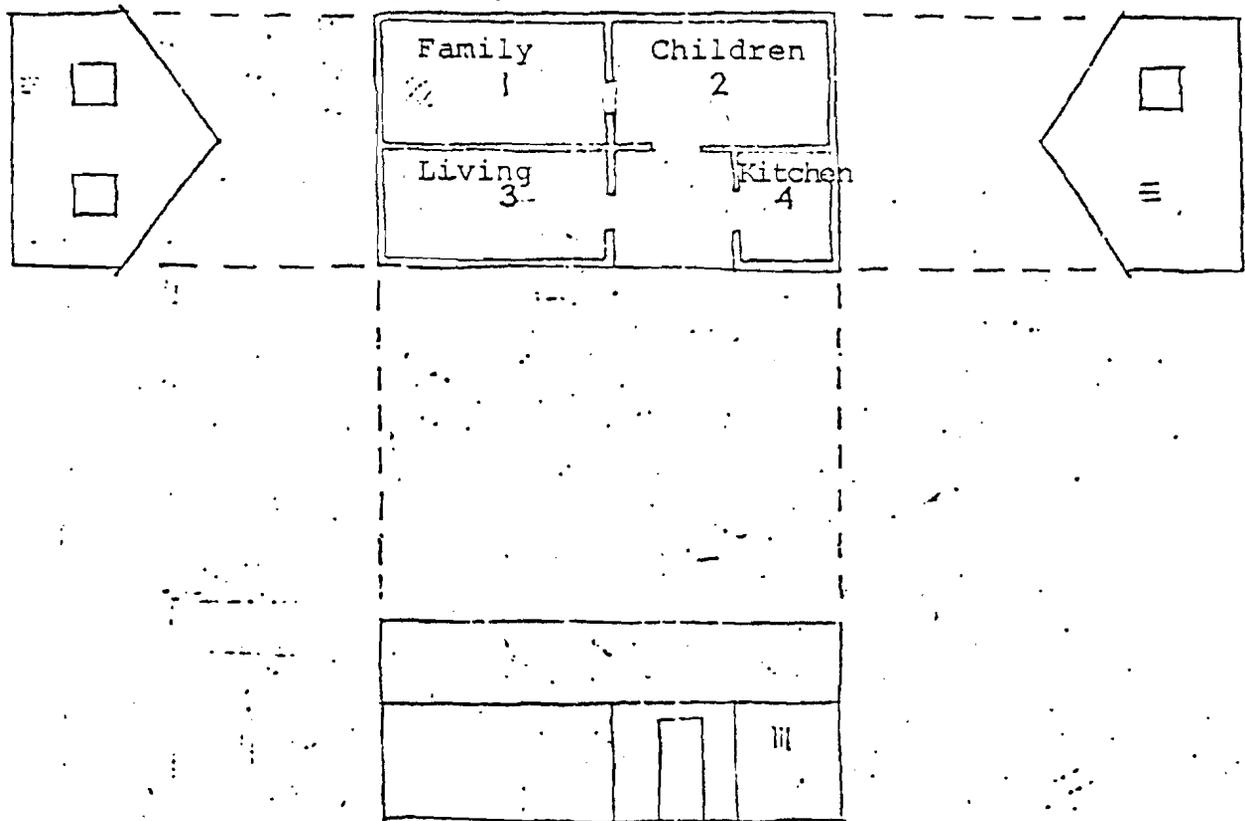


metres

Figure 3

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A4 - UNIT TYPE 7



Room 1 = 2.40 x 4.20 = 10.0 m²

Room 2 = 2.40 x 4.20 = 10.0 m²

Room 3 = 2.00 x 4.20 = 8.4 m²

Room 4 = 2.00 x 2.00 = 4.0 m²

TOTAL = 32.4 m²

+ Covered space = 4.0 m²

Gross floor area = 44.0 m²

Figure 4

Modified Unit Type 7 made rooms 1 and 3 into a single room, and has an additional wall with door at the front of the verandah.

(9) Latrine

Double vault compost latrine with eastern type slab not presently constructed and now changed to single slab with brick wall enclosure.

(10) Cooking equipment

No provision made. Cooking is normally outside in good weather inside during rains.

See tables 2 and 2A for work completed on site.

D. Infrastructure

(1) On House Plot

Sanitary disposal is single slab privy instead of individual double vault compost latrine with minimum use of water. There is no individual supply of water to the house. Solid waste is minimal.

(2) On Site

a. Water. Water supply is be well constructed by W.D.A. The well drilling has been done 70-80 m pump installed and the well is operating (July 1981). Well capacity needs to be known to determine sufficiency of distribution system, location of water tower, quality of water or if an additional well needs to be drilled. The tank is constructed. Water distribution system is being laid. Standpipes are scheduled for every 25 houses. Some gate valves are missing.

b. Electricity. Generator is operating on site but no pole lines have been installed along the streets.

c. Streets and Paths. These have been designed and laid out but not constructed.

d. Drainage. For the first 400 houses, this has been designed and from visual observation should be self drainage. The second 400 houses may require a lagoon. Drainage and grading have been completed for the first 80 units. The street drainage, however, has not been done.

e. Waste Disposal. This is proposed to be taken care of by each group of ten families, but quantity should be small.

(3) External to Site

a. Access Road To Site. A four kilometer access road between the main village and construction site has been constructed with gravel pavement.

b. Trunk Road to Kurtunwaare. A seven kilometer portion of the trunk road leading to Kurtunwaare was omitted from the highway

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Table 2
Construction November 1982

UNIT	CLEAR	STAKED	FOUNDATION	FLOOR	WALLS	ROOF	WINDOWS	DOORS	LATHING	OCCUP.
1.	10	10	10	10	10	10	10	10	10	5
2.	10	10	10	10	10	10	10	10	10	7
3.	10	10	10	10	10	10	10	10	10	8
4.	10	10	10	10	10	10	10	10	10	6
5.	10	10	10	10	10	10	10	10	10	4
6.	10	10	10	10	10	10	10	10	10	10
7.	10	10	10	10	10	10	10	10	10	10
8.	10	10	10	10	10	10	10	10	10	10
9.	10	10	10	10	10	10	10	10	10	10
10.	10	10	10	10	10	10	10	10	10	10
11.	10	10	10	10	10	10	10	10	10	10
12.	10	10	10	10	10	10	10	10	10	10
13.	10	10	10	10	10	10	10	10	10	10
14.	10	10	10	10	10	10	10	10	10	10
15.	10	10	10	10	10	10	10	10	10	10
16.	10	10	10	10	10	10	10	10	10	10
17.	10	10	10	10	10	10	10	10	10	10
18.	10	10	10	10	10	10	10	10	10	10
19.	10	10	10	10	10	10	10	10	10	10
20.	10	10	10	10	10	10	10	10	10	10
21.	10	10	10	10	10	10	10	10	10	10
22.	10	10	10	10	10	10	10	10	10	10
23.	10	10	10	10	10	10	10	10	10	10
24.	10	10	10	10	10	10	10	10	10	10
25.	10	10	10	10	10	10	10	10	10	10
26.	10	10	10	10	10	10	6	6	10	10
27.	10	10	10	10	10	10	6	4	10	10
28.	10	10	10	10	10	10	10	4	10	10
29.	10	10	8	8	8	8	-	-	10	10
30.	10	10	9	9	9	9	-	-	10	10

1.1.1

UNIT	CLEAR	STAKED	FOUNDATION	FLOOR	WALLS	ROOF	WINDOWS & DOORS	LATRINE	OCCUP.
31.	10	10	10	10	10	10	-	-	-
32.	10	10	10	10	10	10	-	-	+
33.	10	10	8	5	3	-	-	-	-
34.	10	10	8	7	4	3	-	-	-
35.	10	10	10	8	7	-	-	-	-
36.	10	10	10	8	8	-	-	-	-
37.	10	10	10	3	-	-	-	-	-
38.	10	10	10	-	-	-	-	-	-
39.	10	10	10	-	-	-	-	-	-
40	10	10	6	-	-	-	-	-	-

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Table 2

KURTUNWAARE SETTLEMENT HOUSINGCONSTRUCTION (April 1981)

	ROADS	ELEC.	WATER	SEWAGE	ROAD ACCESS	CLEAR	STAKE	FOUND.	FLOOR	WALLS	ROOF	DOORS & WINDOWS	LATRINE	FENCING	OCCUP.	MODELS	CHOSEN MODELS
A. MAIN VILLAGE																	
2 MODELS	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
6 T.A. STAFF HOUSING	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
B. FIRST VILLAGE																	
GROUP OF 10 HOUSES																	
NO. 1	-	-	-	-	-	10	10	10	10	10	10	10	-	-	-	-	-
NO. 2	-	-	-	-	-	10	10	10	10	10	10	10	-	-	-	-	-
NO. 3	-	-	-	-	-	10	10	10	10	10	10	-	-	-	-	X	-
NO. 4	-	-	-	-	-	10	10	10	10	10	10	-	-	-	-	X	-
NO. 5	-	-	-	-	-	10	10	10	10	10	10	-	-	-	-	-	X
NO. 6	-	-	-	-	-	10	10	10	10	-	-	-	-	-	-	-	X
NO. 7	-	-	-	-	-	10	10	10	7	1	1	-	-	-	-	-	X
NO. 8	-	-	-	-	-	10	10	10	10	10	-	-	-	-	-	-	X
NO. 9	-	-	-	-	-	10	10	10	10	10	7	-	-	-	-	-	X
NO.10	-	-	-	-	-	10	10	10	10	10	10	-	-	-	-	-	X
NO.11	-	-	-	-	-	10	10	5	2	-	-	-	-	-	-	-	X
12 - 40	-	-	-	-	-	290	290	-	-	-	-	-	-	-	-	-	-
TOTAL 400 HOUSES	0	0	0	0	0	400	400	105	99	81	68	20	0	0	0		
C. OTHER STRUCTURES																	

Table 2
KURTUNWAARE SETTLEMENT HOUSING

CONSTRUCTION

	ROADS	ELEC.	WATER	SEWAGE	ROAD ACCESS	CLEAR STAKE	FOUND.	FLOOR	WALLS	ROOF	DOORS & WINDOWS	LATRINE	FENCING	OCCUP.	MODELS	CHOSEN MODELS
C. OTHER STRUCTURES																
OFFICE	-	-	-	-	-	X	X	X	X	X	X	-	-	-		
BLOCK BLDG. STR.	-	-	-	-	-	X	X	X	X	NR	X	NR	-	-	X	
WAREHOUSE	-	-	-	-	-	X	X	X	X	-	-	-	-	-		
GARAGE WORKSHOP	X	X	X	X	-	X	-	X	X	-	-	-	-	-		

REMARKS

1. SEPARATE WELL, SEPARATE GENERATOR FOR 6 T.A. HOUSING .
2. WELL NO. 2 NOT OPERATING FOR HOUSES NOS. 1 - 11.
3. NO WALLS REQUIRED FOR BLOCK BUILDING STRUCTURE.
4. GARAGE WORKSHOP LOCATED IN MAIN VILLAGE

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construction. This work has been completed and charged to the project. There is no money for maintenance and the condition of the road varies from good to very bad (approx 1.5 km).

E. Other Structure

Other structures completed or part completed in connection with the project are:

(1) Three roomed spacious office building on site completed unoccupied.

(2) Concrete block factory on site. This is complete and operational with ten fixed manual Cinva Rams and cement under cover. The building is large and open sided for ease of access to sand, clay and the concrete mixers. (no concrete mixers or mortar mixers are operational). Farm tractors and field wagons (belonging to project) transport blocks and materials around the site.

(3) Warehouse on Site. This is complete up to partial roofing and has a roof truss problem. The warehouse is contained under cover and security for all materials is presently in Mogadishu, in the main village or under temporary cover. It appears that this building was erected without wall foundations.

(4) Garage/workshop. Main village. This is a 10M x 30M building adjacent to the T.A. Housing Compound, and used for maintenance, repairs and storage of parts for plant and equipment used in construction. Vehicle tool sets have been supplied.

(5) T.A. Housing. This is a six building compound complete with common kitchen, open courtyard, well, pump and generator. Buildings are constructed similar to the present house construction and style but are larger, two or three rooms have false ceilings all have electricity, 2 air conditioners and western type washing facilities and latrines and individual kitchens.

F. Materials and Equipment

(1) Imported Materials

These basically consist of cement, steel reinforcing bars, lumber, nails, roofing felt, water pipes and fittings, electrical cable, pumps, generator. Presently there is a shortage of cement. Roofing felt may also be deleted in favor of corrugated iron sheeting.

(2) Local Materials

These consist of sand and gravel from Merca, 47 kilometers away, water from wells, clay on site, makuti palm fronds, clay bricks, diesel and naphtha fuel. Makuti is now in short supply. Fuel is only in temporary short supply.

(3) Plant and Equipment

List of equipment procured by AID and currently on site are pick up trucks (4 in operation) three mack trucks, three heavy trailers, one three ton four W.D. flat bed truck (has never worked), one front end loader, one tractor and bowser (unknown), one front end loader, one water tanker, two personnel transport vehicles, one 10 ton truck with 10 ton trailer (rented), four concrete mixers (zero in operation), four mortar mixes (zero in operation). Of this equipment some are not operating through mechanical failure, lack of replacement of spare parts, tools. In addition some have not been operating because of temporary lack of fuel. Light farm tractors with box type form wagons. SDA has heavy duty farm tractors and earth moving equipment with priority use for farm purposes.

(4) Procurement of Imported Materials

Procurement of materials was ordered through Afro-American Procurement Center (AAPC). Initial purchase orders began in February 1979 and continued in May and June 1979. In addition a PSC was given instructions in February 1980 to expedite old orders. However, in spite of all this and repeated Mission cables, orders through AAPC were not completed, or where completed have taken inordinate period of time. This has resulted in staff time being spent for local ordering or improvising, or operations having to be performed inefficiently.

G. Labor

Labor in Kurtunwaare is settlement labor with basic nomadic origin who had their herds decimated or eliminated in the mid 70's drought. These families were settled in Kurtunwaare but who have, in the interim period, changed family composition by the men returning to their original homes or vacating the country. The majority of families are now women headed with a lot of children. Labor availability was limited by the small number of men and reluctance to train women. Trained labor for skilled construction crafts was also limited by the lack of incentive pay. A substantial number of labor are school children above the age of 12.

H. Training

The P. P. asked for Technical Assistance in the form of one project manager, general superintendant, four assistant superintendants, one school superintendant and one office manager/controller together with local craft instructors as well. See Table 3 for comparison of TA personnel provided and proposed. The TA personnel provided by LBI were not as responsive to the training needs as the many months provided might imply, being late, more theoretically minded, and

less competent than those originally proposed. In addition, the number of settlers made available for training by SDA was less than that envisaged. Incentives to be trained plus additional money on completion of training was less than desirable. Training was generally on surveys, concreting, constructing foundations and floors, fabricating building blocks, masonry work, preparing and installing roof trusses and roofing. Of these items, training was best on making building blocks, carpentry and roofing. It was adequate on footing and foundations and less on masonry works because more skilled masons are required for house production. The cost of training based on output was inordinately high.

I. Operations and Production Outputs

Operations are basically to produce concrete, cement sand clay blocks, fabricate wooden doors and windows, construct concrete pillasters, concrete ring beams, lintols, concrete floor, build masonry walls, and fabricate simple roof trusses.

(1) Obtain sand and gravel for concrete or cement blocks. Trucks have to be sent to Merca, a one way distance of 47 kilometers, load material, travel to the site, 47 kilometers and unload. This is a long duration travel round trip, and with the number of vehicles available limits the amount of material available for concreting operations that day. Cement is on site or brought from Mogadishu in large quantities. Sand and gravel are also used for house fill. Consideration should be given to obtaining river sand during the dry season.

(2) Concreting operations are mixing of sand, gravel with cement, and allowing a certain time for mixing in the concrete mixer, then pouring and tamping. A reasonably efficient operation. (Now mixed by hand because of non functional mixers).

(3) Fabricating cement sand clay blocks. This is done by mixing sand clay in the mixer, adding cement and placing in the Cinva Ram mold, applying manual pressure, then releasing mold which had build up to 4,500 blocks per day, and with use of 10 Cinva Rams could be up to 6,000 blocks per day (equivalent to two houses). Delays are caused in transporting blocks from factory to individual house locations. (Shortage of cement is causing deficiency of cement in blocks).

(4) Constructing Concrete Pillasters. Excavation was originally done by hand which required a large volume of excavation work, additional concrete, and backfilling. Now that the front end loader has a rear end driller, it is quicker, takes less concrete. The front end loader is used for filling operations and forms for the tie beams are set up, reinforcement laid, and concrete poured. After a certain number of days, the forms are removed. Production equals three per day.

(5) Concrete Floors. Six cm concrete on fill. This is leveling and compacting of fill, laying concrete and screeding it. Production equals two houses per day.

(6) Masonry Work. Training has produced masons but it appears that masons have to be further trained to increase laying blocks from 10 per hour up to 20 per hour. At the rate of 20 per hour, this requires 20 masons to produce one house per day. The major bottleneck on housing is masonry work.

(7) Roof trusses and roof. These are two separate operations with the production rate at three houses per day.

(8) Day to day operations. Equipment breakdown and down time is a function of workshop, tools and replacement parts. Supply of replacement parts is a necessity. Equipment output is directly proportional to fuel input. When the fuel is exhausted, the equipment stops which means that all concrete associated production stops together with all mechanical means of transportation, well water supply and generator produced electricity. Erratic daily supplies of fuel can interfere with production to a major extent. Records show that supplies of petrol and diesel up to mid 1981 had never been up to requirement. Present use of fuel storage tanks during the rainy season are helping operations.

J. Priorities

Recommended construction priorities are as shown on Table 4 with top priority being given to the water distribution system, latrines, doors and windows, completion of the warehouse, and transfer of materials from Mogadishu to site, road path and drainage works. Completion of these priorities will also enable houses to be occupied and social activities of occupants evaluated.

In addition the procurement of spare parts, fuel, the continued training of settlers into skilled craftsmen, and minimizing of imported skilled workers from Mogadishu, incentive settler pay, the insuring of skilled superintendents at the site are also essential items.

K. Costs and Unit Costs

Costs for construction of housing on the housing site are skewed by a series of factors which although required for construction start up, (first 400 houses) will not be required for the second group of 400 houses. In fact, if it is realistically assessed 100 houses were built during the LBI technical assistance period ending July 1981 and an additional 200 houses by November 1982. These factors are the seven kilometer road leading to Kurtunwaare (already constructed) garage/workshop offices, block plant warehouse (partly constructed) provision of plant and equipment, water well, generator, training of skilled labor, TA housing, TA personnel under LBI contract. All of these items are a one-time cost only.

Experimentation on construction was continued to July 1981. After September 1981 SDA has been in complete control of construction

and costs will be decreasing downward as the one time operations are completed. See Table 5. The only accurate way to work up the unit cost of a house with supporting infrastructure is to work up individual unit operations of construction. LBI did not do this.

L. Problems and Inefficiencies

Problems and inefficiencies in production have been caused individually and in combination with other agencies involved.

(1) Louis Berger Inc. (LBI)

Delayed start up by individual members of the team and substitution of proposed team members by less competent people. Emphasis on theoretical training of crafts instead of mixed on the job training.

(2) Settlement Development Agency (SDA)

Infrequent site visits by project manager, limited experience by appointed general superintendent, limited number of settlers available for training, lack of monetary incentives for trained settlers, irregularity and insufficiency of fuel from the National Petroleum Agency, non-use of SDA equipment for access road.

(3) Water Development Agency (WDA)

Delay in completion of well for water supply.

(4) American African Purchasing Center (AAPC)

Major delays in supply of commodities to the site have been caused through use of AAPC as expeditors of materials and equipment. This is in spite of early and special ordering.

Table 3

KURTUNWAARE SETTLEMENT HOUSING
COMPARISON OF PP TA AND LBI TA

ITEM

	PP		LBI	
	Schedule Man Months	Cost In \$1,000	Schedule Man Months	Cost In \$1,000
1. Project Manager	16	80	16	84
2. General Superin- tendent	12	60		25
3. Four Assistant Superintendents	32	120	39	96
4. Office Manager	8	34		
5. Comptroller	6	35	14	38
6. School Superintendents	8	50	-	22
7. Craft Instructor	0	0	-	69
8. Overhead	-	0	-	-
9. Overhead, Differen- tial, Fixed Fee	-	<u>0</u>	-	<u>300</u>
TOTAL		376		705

Table 4

KURTUNWAARE SETTLEMENT HOUSING

CONSTRUCTION PRIORITIES

<u>ITEM</u>	<u>RESPONSIBLE AGENCY</u>	<u>PRIORITY</u>
1. Water distribution	WDA	1
2. Latrines		1
3. Door and windows	SDA	1
4. Warehouse	LBI/SDA	2
5. Construction 200 - 400 houses	SDA	1
6. Construction village roads and drainage	SDA	2
7. School by others	SDA	1
8. Occupancy of 100 houses	SDA/Kurtunwaare	1
9. Occupancy of 100 - 200 houses	SDA/Kurtunwaare	1
10. Procurement of materials 200 - 300 houses	SDA/Kurtunwaare	2
11. Procurement of materials 300-400 houses	SDA	1
12. Procurement of equipment spare parts	SDA	1
13. Earth and solar stoves for cooking by others	SDA/UN	2
14. Agriculture Plots near to houses	SDA/Kurtunwaare	2
15. Energy sources for electric power and water	SDA/UN	

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Table 5
Kurtunwaare Settlement Housing
Approximate Unit Cost Low Cost Housing

In PP	Item	1000 S.Shs + 1000 \$ 0-400 Houses	Total \$ in 1000 (Nov 1982)	Completion 400 houses	400 houses \$ 1000	Cost 400-800 Houses	Cost
1. No	7 km road to main village	4900 0	773		773	0	0
2. Yes	4 km road to first village	4000 0	320		320	0	0
3. No	T.A Housing Main village	424 50	117		117	0	0
4. Yes	T.A Personnel	490 705	782		782	0	0
5. Yes	Garage/Workshop main village		60		60	0	0
6. No	Office first village	20 -	3		3	0	0
7. No	Block plant first village	100 -	16		16	0	0
8. No	Warehouse first village	328 -	52		52	0	0
9. Yes	Equipment	671 500	606		606	152	25
10. Yes	Commodities	1563 900	1025	120	1145	1145	100
11. Yes	Water well first village	240 -	38		38	0	0
12. Yes	Water distribution system		0	120	120	120	100
13. Yes	Generator first village	incl.	0		0	0	0
14. Yes	Elect Distribution first village	0 0	0		0	0	100
15. Yes	Street lightning first village	0 0	0		0	0	100
16. Yes	Streets and drainage first village	0 0	0		0	0	100
17. Yes	Equipment maintenance		0	50	50	60	100
18. Yes	Equipment operation	200	16		16	16	100
19. Yes	Skilled labor with training	2121 0	170	350	350	280	80
20. Yes	Unskilled labor	961 0	77	170	247	198	80
21. Yes	Fuel	2197 0	176	160	336	257	75
22. Yes	Transport	1736 0	139		139	70	60
23. No	Port clearance	453 0	36		36	18	50
24. No	Management Allowance	773 0	62		62	31	50
			4468	970		2347	

Total cost per housing unit = $\frac{2347}{400} = 5870$

Conversion rate upto July 81 1\$ = 6.34 So.Shs.
 Conversion rate upto July 82 1\$ = 12.5 So.Shs.
 Conversion rate after July 82 1\$ = 15.055 So.Shs.

Total cost per housing unit = $\frac{5488}{400}$

= \$13,595

Table 6

KURTUNWAARE SETTLEMENT HOUSINGLOGISTIC PROBLEMS AND SOLUTIONS

AGENCY	ITEM	PROBLEM	SOLUTION
LOUIS BERGER INC. (LBI)	Assistant General Superintendent Blockwork and Masonry 8 months	Concrete blocks affected by three Cinva Rams out of ten being located under low roof truss preventing use. Lack of field wagons hinder transport of blocks from block factory to house locations. Lack of fuel hinders block production. Slabs for double vault latrine cast once. No other tests made.	Relocate three Cinva Rams. Procure field wagons. Assure provision of fuel for mixer. Make double cast slabs for latrine and install latrines. (Done) (Single slab privies constructed under SDA)
	Assistant General Superintendent Roofing and Carpentry 8 months	Only twenty doors and windows fabricated and installed. Warehouse trusses and roofing not completed. All lumber procured through foreign exchange. Lumber for doors and windows not yet procured because not yet funded.	Fabricate and install doors and windows. Complete warehouse for under cover storage of materials. Consider local materials for roof trusses. (Fabrication of doors and windows done by SDA) (Warehouse not completed)
SETTLEMENT DEVELOPMENT AGENCY (SDA)	Project Manager Kurtunwaare	Visited site approximately once per month.	PM should visit site weekly or not less than bi-weekly.
	General Superintendent	Appointed November 1980 but activity disjointed because of lack of LBI GS and LBI PM acting as GS.	SDA GM to be considered as site PM in absence of PM so as to be counterpart to LBI PM. Should be highly experienced in construction work.
	Assistant General Superintendent	Selected by LBI from trained craftsmen and approved by SDA. Some problems.	Problems resolved on site.
	Settlers for Training	Limited number of men available due to men returning to nomad lives and/or Saudi Arabia.	Train men and women.

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Table 6

KURTUNWAARE SETTLEMENT HOUSINGLOGISTIC PROBLEMS AND SOLUTIONS

<u>AGENCY</u>	<u>ITEM</u>	<u>PROBLEM</u>	<u>SOLUTION</u>
SETTLEMENT DEVELOPMENT AGENCY (SDA)	Settlers for labor	Limited number of hours worked by settlers. Gives problems for accelerated house schedules.	LBI contract ended in Sept. 1981 before 400 houses complete.
	Fuel from National Petroleum Agency	Variation of fuel supplied to site directly affecting housing component production.	LBI realistically calculate petroleum requirements and add 10% to cover daily variation SDA to ensure delivery. Make storage facilities. (Temporary problem only)
	Equipment for Access Road	Priority need to connect main village to first village and needed before rainy season.	Construct immediately after rains and before heavy rains. (Done)
WATER DEVELOPMENT AGENCY WDA	Village water supply	Well No.2 at the First Village has been drilled but is not functioning because of mud clogging	WDA should blow out and test. Otherwise drill new well. (Done)
AMERICAN AFRICAN PURCHASING (AAPC)	Procurement of Materials, Equipment 1979, 1980, 1981	AAPC instead of expediting procurement items caused major delays to the project in spite of PIO/C's being written well in advance of requirement.	All PRC's should be updated and remaining items expedited, cancelled and/or reordered so that PRC's are cleared. Additional or future items should be ordered through agencies other than AAPC. AAPC unless substantially improved in operation should be considered as non-responsive.
AID/SOMALIA	Two model houses in Main Village. Six T.A. Houses with infrastructure	No problem. Done in correct sequence.	
	PIO/C's up to construction of 400 houses	Should have been minor problem due to ordering well in advance. AAPC delays made it a major problem.	See AAPC.

Table 6

KURTUNWAARE SETTLEMENT HOUSINGLOGISTIC PROBLEMS AND SOLUTIONS

AGENCY	ITEM	PROBLEM	SOLUTION
SETTLEMENT DEVELOPMENT AGENCY (SDA)	Settlers for labor	Limited number of hours worked by settlers. Gives problems for accelerated house schedules.	LBI contract will end before 400 houses complete. Consider PM contract extension. LBI
	Fuel from National Petroleum Agency	Variation of fuel supplied to site directly affecting housing component production.	LBI realistically calculate petroleum requirements and add 10% to cover daily variation SDA to ensure delivery. Make storage facilities.
	Equipment for Access Road	Priority need to connect main village to first village and needed before rainy season.	Construct immediately after rains and before heavy rains.
WATER DEVELOPMENT AGENCY WDA	Village water supply	Well No.2 at the First Village has been drilled but is not functioning because of mud clogging	WDA should blow out and test. Otherwise drill new well.
AMERICAN AFRICAN PURCHASING (AAPC)	Procurement of Materials, Equipment 1979,1980,1981	AAPC instead of expediting procurement items caused major delays to the project in spite of PIO/C's being written will in advance of requirement.	All PRC's should be updated and remaining items expedited, cancelled and/or reordered so that PRC's are cleared. Additional or future items should be ordered through agencies other than AAPC. AAPC unless substantially improved in operation should be considered as non-responsive.
AID/SOMALIA	Two model houses in Main Village. Six T.A. Houses with infrastructure	No problem. Done in correct sequence.	
	PIO/C's up to construction of 400 houses	Should have been minor problem due to ordering well in advance. AAPC delays made it a major problem.	See AAPC.

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Table 8

KURTUNWAARE SETTLEMENT HOUSING

CONSTRUCTION METHODS FOR SEMI SKILLED,

UNSKILLED AND SELF HELP

<u>ITEM</u>	<u>CONSTRUCTED</u>	<u>SUGGESTED</u>
1. Foundation	Concrete Pillar	Cyclopean stone
2. Tie Beam	Continuous concrete at Floor Level	Cemented cyclopean beam
3. Fill to floor level	Sand	Compacted local fill preferably not black cotton
4. Floor	Concrete	Brick or block on thin sand cushion
5. Exterior Walls	Cinva Ram Cement clay sand block	Cinva Ram Cement clay sand block or hollow block
6. Interior Walls	Thinner cement clay sand block	Stiff Hessian attached to roof timbers
7. Doors	Simple plank door	Simple plank door (1 only)
8. Windows	Simple plank window propped open	Simple plank window propped open
9. Roof framing	Lumber trusses wired to masonry blocks	Bamboo trusses wired to masonry blocks
10. Roof underside	Felt paper	Felt paper) Corrugated iron sheet
11. Roof	Thatch	Thatch
12. Grading	Grade away from building	Grade away from building and fill to prevent ponding
13. Boundaries	Fencing	Hedge type by families
14. Latrine	Double vault compost	Raised double vault compost, thinner concrete slab single door or single slab privy.

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(5) AID/S

Continuous updating of procurement orders and lack of updated cost data in relation to the P.P.

(6) LBI/SDA field Construction Problems and priorities.

See Table 6.

M. Cost Comparison Between PP and Construction

The project paper in its Financial Schedule lists specific items of materials and specific items of services.

In view of the delay in beginning house construction, problems and inefficiencies of production which will result in less than 100 houses being constructed prior to departure of LBI team in September 1981, and the remaining 300 being constructed totally by SDA, a cost update has to be made to determine when the cost ceilings will be exceeded. Checks should be made on items not included in the PP, items paid by LBI instead of SDA, items charged to the project instead of the general Kurtunwaare Settlement. See Table 7.

N. Adaptability of Housing to Other Donors or Self Help Housing

The principle of low cost housing is to keep construction simple yet suitable for local living, to minimize imported materials while maximizing local material yet maintain permanent materials. Site and plot layout can be replicated together with infrastructure. The chosen model is a good design suitable for replication in its size or smaller. Basic construction is good. The following changes are suggested:

(1) Foundations

In shallow black cotton soil or good soils, use cyclopean footings of stone or coral rock.

(2) Sub Floor Fill

Use local fill perhaps river sand but preferably not total black cotton soil. Minimize obtaining from Merca.

(3) Floor

Use local brick or cinva ram blocks on thin sand fill. Lower floor elevations but keep above flood level.

(4) Interior Walls

Use stiff hessian or termite proof hanging curtain and minimize block interior walls.

(5) Doors and Window

Use one main door only

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(6) Roof Trusses

Use bamboo trusses.

(7) Latrine

Consider use of alternative less costly types than double especially in non water logged soils. (See Table 8.)

(8) Floor Area. Reduce to 36 spare meters.

(9) Extended Family. Construct groups of 3 houses with common walls. Use common wall type of latrine.

(10) Site location. Locate houses in non black cotton low lying areas.

(11) Water. Use windmill with diesel pump back up.

O. Social Aspects Still To Be Addressed

The Social-political organization is unchanged from the PP Annex 7 that is Xubin - ten families, Udud - 50 families, Birjéex 100 families, Bulsho - 200 families, Beel - 400 families.

Evaluation of the settler socio cultural fit to the house design and site layout have not been made due to completion of water and sanitary services and hence low occupancy of houses (80). A total of 300 houses could be occupied in a short time.

Social aspects still outstanding include maintenance of non owned housing, utilization of latrines, water standpipe systems, solid waste disposal, cooking facilities, utilization of health workers, sanitarians, educators, communication with socio political organizations, the use and training of unskilled, semi-skilled labor, nomadic traditions versus cultivators, the use of communal social services.

P. Summary and Conclusions

Villages are in linear mode to the Main Village. The housing site layout is well prepared in the PP from village module to 400 units and from the 400 unit through the 200, 100, 50, 10 down to the basic five plot module unit. The layout of the first 400 units has been adapted to the flat site. Lack of overall site grading has left local ponding which gave the impression that local wet areas were better for open areas and original houses located elsewhere. House model seven was chosen by the village committee as the model to be build. It is a four roomed rectangular building with maximum covered area. Some 300 houses are practically complete.

The water system now completed has a well supply driven by diesel pump and a loop distribution system fed from an above ground water tank.

The well has been drilled and is functioning. The storage tank is completed.

Sanitary waste will be by single slab privy. No double vault compost latrine has yet been built.

Roads and paths together with drainage for the 400 houses have not been constructed.

The access road between the main village and construction site has been constructed.

Other buildings on site are a completed three room office building and a concrete block plant. A warehouse is partly completed on site and a garage/workshop completed in the main village.

Training of settlers by Louis Berger Inc. was completed.

Procurement of imported materials was delayed through actions of AAPC.

Cumulative problems by the agencies involved have slowed down the project.

Only 100 houses were completed prior to LBI departure (July 1981). 300 are practically complete now (Nov. 1982).

Priorities of work have to be established. 80 houses are occupied so limited social evaluation can be made. More houses should be occupied.

Consideration should be given to lowering the cost of houses and updating all actual costs, if the program is extended through CIP and local currency generation.

The conclusion is that house construction is slow, (ideal conditions give 1 house a day. Actual conditions, weather, material shortage, equipment breakdowns give 1/2 house per day). 82 houses are occupied and a major effort must be made by all concerned parties to increase production and have houses occupied.

Q. Recommendations

(1) Production and completion of housing has to be increased with cooperation by all parties concerned. AID/SDA.

(2) Fuel supply is critical to all operations. SDA

(3) All priority one items on Table 4 should be completed within three months. SDA

(4) Three hundred (300) houses together with supporting infrastructure should be completed so that two hundred (200) houses can be occupied and evaluated from the socio economic political viewpoint. SDA/AID

(5) Calculate expenditures on house construction materials, design,

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site layout and location, extended family housing with a view to lowering costs should be seriously considered. SDA/AID

(6) Construction operation should be streamlined and made more efficient and faster in operation. This applies especially to masonry work.

(7) Procurement and actual costs should be immediately updated so as to determine costs and products against monies and items remaining. Special notice should be given to added works or costs not shown in the project paper.

(8) Every effort should be made by SDA to insure a constant, adequate supply of fuel and incentive pay given to overcome the shortage of skilled labor.

VII. Log Frame - Revised

The logical framework in the PP has been restructured to conform to the overall Kurtunwaare Settlement Project of which housing is the only dependent component. (See Table 9).

TABLE 9

REVISED

LOGICAL FRAMEWORK

KURTUNWAARE SETTLEMENT PROJECT

NARRATIVE	OVIS	ASSUMPTIONS
<p>GOAL: To provide a self sufficient, refugee settlement complete with agriculture, housing infrastructure and social needs.</p>	<p>Suitable health and education services provided together with adequate rain-fed and irrigation agricultural land.</p>	<p>The agricultural scheme will be supported until it is self-sufficient. Social services high priority from the government.</p>
<p>PURPOSE: Provide adequate socio-economic housing with supporting services for the resettled nomads at Kurtunwaare.</p>	<p>20,000 people living in suitable housing in the village.</p>	<p>Additional donor financing will be forthcoming to finance the continuation of the construction program.</p>
<p>OUTPUTS: Final design and material recommendations, constructed houses and infrastructure Trained craftsmen Trained leaders.</p>	<p>50 units test completed with agreed design. 350 constructed to minimum of 90 trained workers. At least 15 supervisory workers on the job. 400 units constructed. Financing arranged for further units based on USAID plans.</p>	<p>Skilled and semiskilled workers will remain in Kurtunwaare. The design developed in the project will prove attractive enough to encourage other financial interest.</p>
<p>INPUTS: Test and develop a socio-culturally, environmentally suitable low cost minimum shelter unit for Kurtunwaare and prove its suitability. Technical Assistance, Training Program, Overall site and house plans, Infrastructure design, Equipment, materials, Labor.</p>	<p>See budgets.</p>	<p>Materials and tools will arrive at site in a timely manner. Initial prototypes prove validity of basic design precepts. Training will provide sufficient skilled workers.</p>