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1. Member List of the Basic Design Study Team

(1) The Basic Design Study

(At the time of field survey from 25 Jul. to 23 Aug. 1998)

Name	Title	Organization
Dr. Hikaru Niki	Team Leader	Development Specialist, Institute for International Cooperation, JICA
Mr. Yasuo Takeoka	Technical Advisor	Planning Officer of Agricultural Construction, Hokkaido Development Agency
Mr. Katsumi Yamanome	Coordinator	Staff, First Project Study Division, Grant Aid Project Study Department, JICA
Mr. Asao Yamada	Project Manager	Taiyo Consultants Co., Ltd.
Mr. Ryosuke Sakanashi	Facility Planner(1)	Taiyo Consultants Co., Ltd.
Mr. Akinori Yamamoto	Facility Planner(2)	Sanyu Consultants Inc.
Dr. Ryosaku Ishida	Agricultural Economist	Taiyo Consultants Co., Ltd.
Mr. Fusashige Sato	Estimation Planner	Taiyo Consultants Co., Ltd.

(2) Explanation of the Draft Final Report(From 21 Oct. to 30 Oct. 1998)

Name	Title	Organization
Mr. Tomiaki Ito	Team Leader	Deputy Director, First Project Study Division, Grant Aid Project Study Department, JICA
Mr. Asao Yamada	Project Manager	Taiyo Consultants Co., Ltd.
Mr. Ryosuke Sakanashi	Facility Planner(1)	Taiyo Consultants Co., Ltd.

2. Study Schedule

(1) Basic Design Study (From 25 Jul. to 23 Aug. 1998)

Date	Movement	Accommodation	Activities
Jul. 25(Sat)	Narita~Singapore~	On air	
26(Sun)	Arrive at Harare	Harare	
27(Mon)		Harare	Courtesy call on MOLA
28(Tue)		Harare	Discussion with AGRITEX and DWD
29(Wed)	To the site (via Mutare)	Nyanga	Discussion with AGRITEX in Mutare and Nyanga, and DWD in Mutare
30(Thu)		Nyanga	Site survey at Nyakomba
31(Fri)	To Harare	Harare(5 members) Nyanga(Yamamoto, Ishida)	Site survey in Nyanga Survey at site
Aug. 1(Sat)		Harare, Nyanga	Team meeting
2(Sun)		Harare, Nyanga	Team meeting
3(Mon)		Harare Nyanga	Conference with AGRITEX Site survey at Nyakomba
4(Tue)		Harare Nyanga	Conference with AGRITEX Site survey at Nyakomba
5(Wed)		Harare Nyanga	Conference at MOLA Site survey at Nyakomba
6(Thu)		Harare Nyanga	Signing of Minutes, Report to JICA Office and Embassy Site survey at Nyakomba
7(Fri)	Leave Harare for Japan (3 Members), To Nyanga (Yamada, Sakanashi, Sato)	Nyanga	Site survey at Nyakomba (Five consultants members)
8(Sat)		Nyanga	Site survey at Nyakomba
9(Sun)		Nyanga	Site survey at Nyakomba
10(Mon)		Nyanga	Site survey at Nyakomba Discussion with AGRITEX and DWD in Mutare
11(Tue)		Nyanga	Site survey at Nyakomba
12(Wed)	To Mutare(Yamada, Sakanashi)	Nyanga Mutare	Site survey at Nyakomba
13(Thu)	To Musikavanhu, Bonde, Nyanyadzi	Nyanga	Site survey at Nyakomba Investigation three similar projects
14(Fri)		Nyanga	Site survey at Nyakomba
15(Sat)		Nyanga	Office work

Date	Movement	Accommodation	Activities
16(Sun)		Nyanga	Office work
17(Mon)	To Harare(Two members)	Nyanga Harare	Public hearing with farmers
18(Tue)		Nyanga Harare	Site survey by 3 members Data collection in Harare
19(Wed)		Nyanga Harare	Site survey by 3 members Data collection in Harare
20(Thu)	To Harare,(3 members)	Harare	Discussion with AGRITEX by 2 members in Harare. Discussion with AGRITEX, DWD, ZESA in Mutare by 3 members
21(Fri)		Harare	Report to JICA, Embassy
22(Sat)	Leave Harare	On air	
23(Sun)	Arrive Narita		

(2) Explanation of the Draft Final Report (From 21 to 30 Oct. 1998)

Date	Movement	Accommodation	Activities
Oct. 21(Wed)	Narita~Singapore~	On air	
22(Thu)	Johannesburg~ Harare	Harare	
23(Fri)		Harare	Courtesy call to MOLA, AGRITEX, DWD
24(Sat)		Harare	Team meeting
25(Sun)	Move to site	Nyanga	
26(Mon)	To Harare	Harare	Site investigation, Meeting with AGRITEX at site
27(Tue)		Harare	Discussion about Minutes at MOLA
28(Wed)		Harare	Signing of Minutes, Report to JICA and Embassy
29(Thu)	Harare~ Johannesburg~	On air	
30(Fri)	Singapore~Narita		

3. List of Party Concerned in the Recipient Country

(1) Embassy of Japan

Asao Tsukahara	Ambassador of Japan (Aug. 1998)
Hironu Nitta	Ambassador of Japan (Oct. 1998)
Kazuhiko Maruyama	Counsellor

(2) JICA Zimbabwe Office

Mitsuo Nakamura	Resident Representative
Tomohiro Seki	Deputy Representative
Mandiveyi Michael	Coordinator

(3) Ministry of Lands and Agriculture(MOLA)

T. Takavarasha	Permanent Secretary
G. Sithole	Deputy Secretary
David Mfote	Principal Agricultural Economist
N. Zitsanza	Chief Agricultural Economist
Emmanuel Makiva	Economist
P. Goko	Senior Agricultural Economist
Mayayo	Agricultural Economist

(4) Department of Agricultural Technical and Extension Services(AGRITEX), MOLA

Headquarters (Harare)

L. M. Makadho	Director
R. J. Chitsiko	Deputy Director
Godfrey Nehanda	Acting Deputy Director
E. Chidenga	Chief Irrigation Specialist
Simon Madyiva	Irrigation Specialist
L. Madiri	Irrigation Specialist
Felix Dzyurumi	Irrigation Agronomist
K. E. Motsi	Irrigation Engineer
D. Tawonezwi	Irrigation Economist
A. C. Guzha	Irrigation Engineer
Shigehiro Mitoma	Long Term Expert (JICA)

Manicaland Office(Mutare)

Tipachiso	Chief Agricultural Extension Officer
F. G. Sitole	Principal Agricultural Extension Officer
Josepe B. Chivizhe	Principal Agricultural Extension Officer
George Zengeni	Executive Officer

Nyanga Office

James C. Ndona	District Agricultural Extension Officer
Chipindura Tawanda	Agricultural Extension Officer
N. Sikume	Agricultural Extension Officer
E. T. Mubvakure	Agricultural Extension Officer

(5) Department of Water Development, Ministry of Rural Resources and Water Development

Headquarters (Harare)

Varairai H. Choga	Director
D. S. Dutham	Deputy Director (Planning and Hydrology)
W. Nyarota	Chief Engineer (Operations)
Emmanuzi Makiwa	Acting Chief Engineer (Operations)

Manicaland Office (Mutare)

Thomas Murinye	Provincial Water Engineer
G. Pazvakawambwa	Acting deputy Provincial Water Engineer
Alec Chagonda	Acting Water Supplies Engineer
T. Murinye	Provincial Water Engineer

(6) Zimbabwe Electricity Supply Authority (ZESA)

Manicaland Office (Mutare)

Joseph Magadge	Senior Engineer
Barbali	Sales Officer
Chikuni Ephraim	Senior Clerk Billing

(7) Department of Physical Planning, Ministry of Local Government

Manicaland Office (Mutare)

Daisy Mwandambira	Town Planning Officer
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(8) Agricultural Financial Cooperation (AFC)

Nyanga Office

P. Magaya	Head of Nyanga Office
E. Vheriwa	Staff

(9) Cotton Company of Zimbabwe

G. Mugerezi	Head of Loans & Extension Officer, Mutare
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(10) Local Government

E. S. C. Nyagwaya	District Administrator, Nyanga
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4. Minutes of Discussion

MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY ON THE PROJECT
FOR
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)
IN
THE REPUBLIC OF ZIMBABWE

In response to the request from the Government of Zimbabwe, the Government of Japan decided to conduct a Basic Design Study on the Nyakomba Irrigation Development Project (hereinafter referred to as "the Project"), and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to the Republic of Zimbabwe a Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Dr. Hikaru Niki, Development Specialist, Institute for International Cooperation, JICA, and is scheduled to stay in the country from July 26 to August 22, 1998.

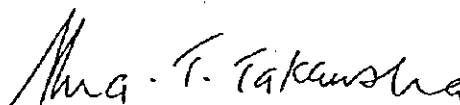
The Team held discussions with the officials concerned of the Government of Zimbabwe and conducted field surveys at the study area.

In the course of the discussions and the field surveys, both parties have confirmed the main items described on the attached sheets. The team will proceed to further work and prepare the Basic Design Study report.

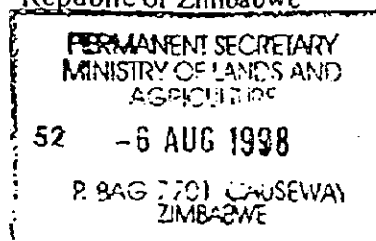
Harare, August 6, 1998



Dr. Hikaru Niki
Leader
Basic Design Study Team
JICA



Dr. Tobias Takavarasha
Permanent Secretary
Ministry of Lands and Agriculture
Republic of Zimbabwe



ATTACHMENT

1. Objective

The objective of the Project is to develop the proposed project area by the construction of the irrigation facilities so as to increase and stabilize agricultural production in the area, to upgrade the rural life of the farmers and to encourage the rural economy of the community.

2. Proposed Project Areas

The proposed project sites are Villages of Mwarazi (A block), Nyachere (D block), Choo (E block) in the Nyakomba Ward, Manicaland Province (See Annex-I).

3. Responsible Agency ; Executing Agency

Responsible and Executing agency is Department of Agricultural, Technical and Extension Services (AGRITEX), Ministry of Lands and Agriculture.

4. Items requested by the Government of Zimbabwe

The items shown in Annex II were requested by the Government of Zimbabwe.

5. Japan's Grant Aid System

(1) The Government of Zimbabwe has understood the system of Japan's Grant Aid on Annex- III as explained by the Team.

(2) The Government of Zimbabwe will take the necessary measures described in Annex- IV for the smooth implementation of the Project, on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

6. Other Relevant Issues

(1) The Team explained that it is crucially important and essential for implementing the next phase to confirm whether or not the farmers in phase 1 acquired both agronomical and financial advantages and benefit.

These could be studied from the view point of the household financial aspects such as the increased income by the Project and the associated costs.

They depend on the irrigated area, planted crops, available family labour, market system, all the running costs such as daily canal maintenance, repairing or replacement of pumps and pipelines and electricity costs .


Above items from the results of phase 1 should be thoroughly scrutinized in order to draw the lessons for the next phase.

Zimbabwean side totally understood the purpose and role of the Team as stated above.

(2) The Team stressed to the Zimbabwean side that it is very important to strengthen the present Irrigation Management Committee (IMC) to undertake the integrated operation and maintenance of overall water management system such as maintenance of irrigation facilities, operation and maintenance fee collection. The Zimbabwean side acknowledged this proposition.

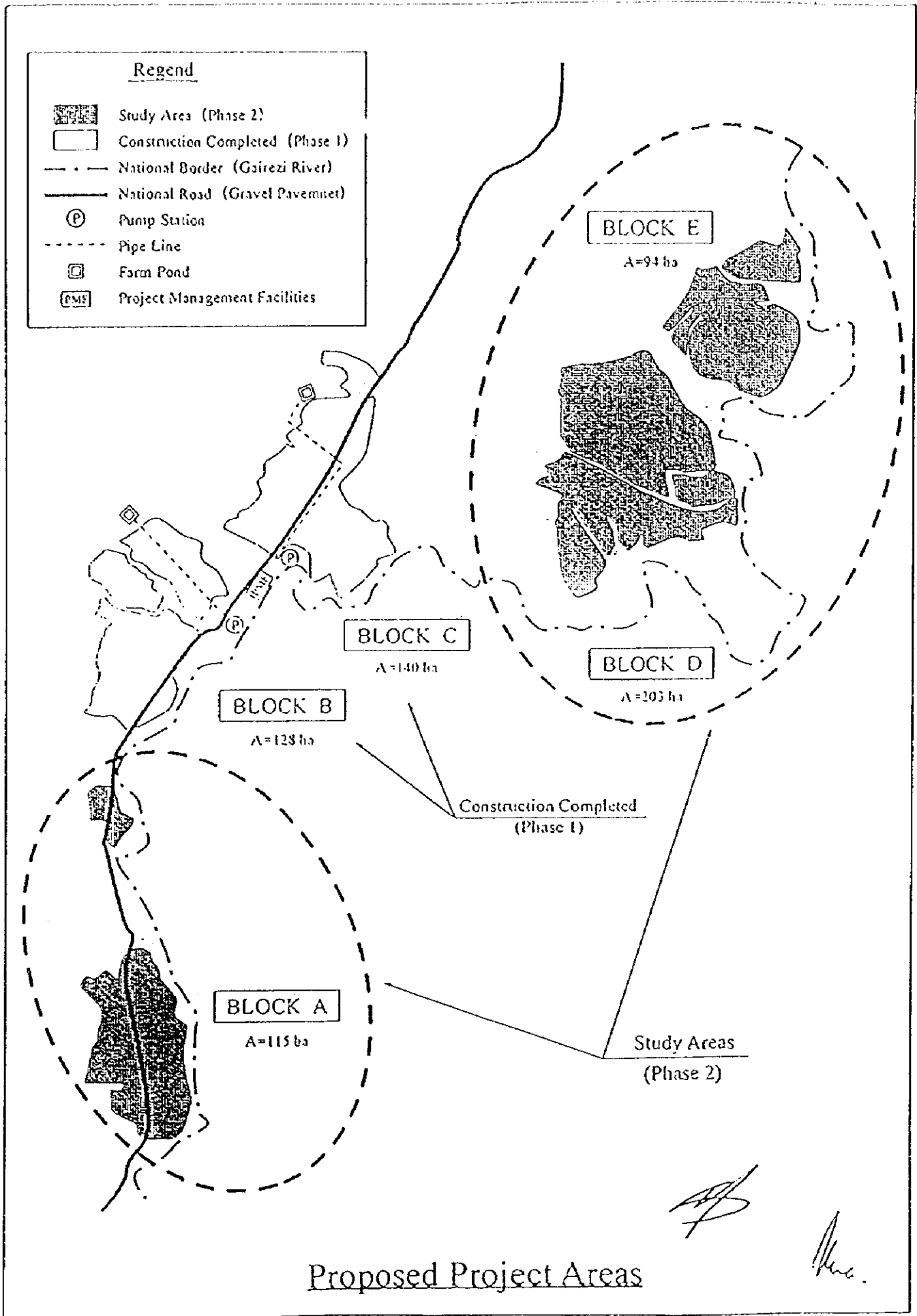
(3) The Zimbabwean side undertakes to secure the budget for compensating any damages of agricultural crops or villager's assets in phase 2.

(4) Both sides confirmed that Zimbabwean side should prepare the land needed for the Project, extend necessary infrastructure (such as roads, electricity, extension workers' houses, telephone and field latrines) to the Project sites, field leveling and site preparation and implement all the necessary administrative procedures related to the above items.



- (5) Both sides confirmed that the Zimbabwean side should arrange the budget, staff and organization relevant to the future operation of all the facilities.
- (6) The Team observed the prosperous crop operation in Block C, meanwhile, Block B has not yet been prepared for cultivation. Both sides confirmed the need to speed up the land leveling and fencing works for Block B.
- (7) The mutual expectation and the ultimate goal of both sides were confirmed to be the replication of this irrigation model in the similar communal lands in Zimbabwe. In this respect, the Team expressed the wishes to the Zimbabwean side to make efforts to disseminate this model after the completion of the Project.
- (8) Both sides confirmed that sustainability of the development in the Project areas depends on the will and skills of the farmers there. Other important factors are proper assistance from the Zimbabwean government and empowerment of the farmers by extension services.
- (9) The Team confirmed the need for irrigation in the proposed project areas through a Project Cycle Management (PCM) workshop with farmers and field observations.
- (10) The Zimbabwean side is willing to consider the alternative designs which may require minimum costs for implementing the Project in the proposed blocks.






Items requested by the Government of Zimbabwe

	Irrigation Area (ha)	Pump Station	Pipe Line (km)	Irrigation Canal (km)	Farm Pond
Block A	115	φ 250 × 3 one station	φ 500 - φ 200 3.5	300 × 400 7.1	110m ³ × 1 1,080m ³ × 1
Block D	203	φ 300 × 3 one station	φ 700 - φ 450 2.2	300 × 400 9.8	830m ³ × 1 1,260m ³ × 1
Block E	94	φ 200 × 2 one station	φ 450 - φ 350 1.4	300 × 300 4.9	450m ³ × 1 520m ³ × 1

	Trunk Road (km)	Farm Road (km)
Block A	5.4	3.0
Block D	3.3	7.3
Block E	3.0	3.0

ON JAPAN'S GRANT AID PROGRAM

1. Japan's Grant Aid Procedures

(1) The Japan's Grant Aid Program is executed by the following procedures.

- Application (request made by a recipient country)
- Study (Preliminary Study / Basic Design Study conducted by JICA)
- Appraisal & Approval (Appraisal by the Government of Japan and Approval by the Cabinet of Japan)
- Determination of Implementation (Exchange of Notes between both Governments)
- Implementation (Implementation of the Project)

(2) Firstly, an application or a request for a project made by the recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to see whether or not it is suitable for Japan's grant Aid. If the request is deemed suitable, the Government of Japan entrusts a study on the request to JICA (Japan International Cooperation Agency).

Secondly, JICA conducts the Study (Basic Design Study), using a Japanese consulting firm. If the background and objective of the requested project are not clear, a Preliminary Study is conducted prior to a Basic design Study.

Thirdly, the Government of Japan appraises to see whether or not the Project is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA and the results are then submitted for approval by the Cabinet.

Fourthly, the Project approved by the Cabinet becomes official when pledged by the Exchange of Notes signed by both Governments.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

2. Contents of the Study

(1) Contents of the Study

The purpose of the Study (preliminary Study / Basic Design Study) conducted on a project requested by JICA is to provide a basic document necessary for



appraisal of the project by the Japanese Government. The contents of the Study are as follows:

- a) to confirm background, objectives, benefits of the project and also institutional capacity of agencies concerned of the recipient country necessary for project implementation.
- b) to evaluate appropriateness of the Project for the Grant Aid Scheme from a technical, social and economical point of view,
- c) to confirm items agreed on by both parties concerning a basic concept of the project,
- d) to prepare a basic design of the project,
- e) to estimate cost involved in the project.

Final project components are subject to approval by the Government of Japan and therefore may differ from an original request.

Implementing the project, the Government of Japan requests the recipient country to take necessary measures involved which are itemized on Exchange of Notes.

(2) Selecting (a) Consulting Firm(s)

For smooth implementation of the study, JICA uses (a) consulting firm(s) registered. JICA selects (a) firm(s) through proposals submitted by firms which are interested. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference made by JICA.

The consulting firm(s) used for the study is(are) recommended by JICA to a recipient country after Exchange of Notes, in order to maintain technical consistency and also to avoid possible undue delay in implementation caused if a new selection process is repeated.

(3) Status of a Preliminary Study in the Grant Aid Program

A Preliminary Study is conducted during the second step of a project formulation & preparation as mentioned above.

A result of the study will be utilized in Japan to decide if the Project is to be suitable for a Basic Design Study.

Based on the result of the Basic Design Study, the Government would proceed to the stage of decision making process (appraisal and approval).

It is important to notice that at the stage of Preliminary Study, no commitment is made by the Japanese side concerning the realization of the Project in the scheme of Grant Aid Program.



3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non reimbursable funds needed to procure facilities, equipment and services for economic and social development of the country under the following principles in accordance with relevant laws and regulations of Japan. The Grant Aid is not in a form of donation or such.

(2) Exchange of Notes (E/N)

The Japan's Grant Aid is extended in accordance with the Exchange of Notes by both Governments, in which the objectives of the Project, period of execution, conditions and amount of the Grant, etc. are confirmed.

(3) "The period of the Grant Aid" means one Japanese fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedure such as Exchange of Notes, concluding a contract with (a) consulting firm(s) and (a) contractor(s) and a final payment to them must be completed.

(4) Under the Grant, in principle, products and services of origins of Japan or the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant may be used for the purchase of products or services of a third country origin.

However the prime contractors, namely, consulting, contractor and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means: Japanese physical persons or Japanese juridical persons controlled by Japanese physical persons.)

(5) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude into contracts in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. The "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(6) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid, the recipient country is required to undertake necessary measures such as the following:

- a) to secure land necessary for the sites of the project and to clear and level the land prior to commencement of the construction work,
- b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,



- c) to secure buildings prior to the installation work in case the Project is providing equipment,
- d) to ensure all expenses and prompt execution for unloading, customs clearance at the port disembarkation and internal transportation of the products purchased under the Grant Aid,
- e) to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- f) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(7) Proper Use

The recipient country is required to maintain and use facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for their operation and maintenance as well as to bear all expenses other than those to be borne by the Grant Aid.

(8) Re-export

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

(9) Banking Arrangement (B/A)

- a) The Government of the recipient country or its designated authority shall open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by Government of the recipient country or its designated authority under the contracts verified.
- b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay issued by the Government of the recipient country or its designated authority.



NECESSARY MEASURES TO BE TAKEN BY THE GOVERNMENT OF ZIMBABWE IN CASE JAPAN'S GRANT AID IS EXTENDED.

1. To provide data and information necessary for the Project.
2. To secure the site for the Project.
3. To bear two kinds of commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement (B/A) namely,
 - the advising commission of the "Authorization to Pay (A/P)" and
 - the payment commission.
4. To ensure prompt unloading, tax exemption, and customs clearance at the port of disembarkation in Zimbabwe and prompt internal transportation therein of the materials and equipment for the project purchased under the Grant Aid.
5. To exempt Japanese nationals or a staff from a third country engaged in the project from customs duties, internal taxes and other fiscal levies which may be imposed in Zimbabwe with respect to the supply of the products and services under the verified contracts.
6. To accord Japanese nationals or a staff from a third country whose services may be required in connection with supply of the products and services under the verified contracts, such facilities as may be necessary for their entry into Zimbabwe and stay therein for the performance of their work.
7. To provide necessary permissions, licenses, and other authorization for implementing the Project, if necessary.
8. To assign appropriate budget and staff members for proper and effective operation and maintenance of the facilities constructed under the Project.
9. To maintain and use properly and effectively the facilities constructed and equipment provided under the Project;
10. To bear all the expenses other than those to be borne by the Grant Aid within the scope of the Project.



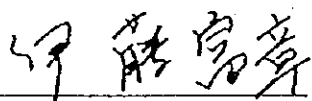
MINUTES OF DISCUSSIONS
BASIC DESIGN STUDY ON THE PROJECT
FOR
THE NYAKOMBA IRRIGATION DEVELOPMENT PROJECT (PHASE 2)
IN THE REPUBLIC OF ZIMBABWE
(CONSULTATION ON DRAFT REPORT)

In July 1998, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study Team on the Nyakomba Irrigation Development Project (hereinafter referred to as "the Project") to the Republic of Zimbabwe. After the assessment of the data and information obtained through the study, JICA has prepared the Draft Basic Design of the Project.

In order to explain and consult with the officials concerned of the Government of Zimbabwe on the components of the Draft Basic Design, JICA sent to the Republic of Zimbabwe a Study Team (hereinafter referred to as "the Team") headed by Mr. Tomiaki Ito, First Project Study Division, Grant Aid Project Study Department, JICA, which is scheduled to stay in the country from October 22 to 29, 1998.

As a result of the discussions held between the Team and the officials concerned of the Government of Zimbabwe, both parties have confirmed the main items described on the attached sheets.

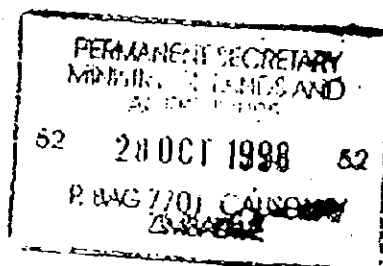
Harare, October 28, 1998



Mr. Tomiaki ITO
Team Leader,
Study Team,
JICA



Dr. Tobias TAKAVARASHA
Permanent Secretary,
Ministry of Lands and Agriculture,
The Republic of Zimbabwe



ATTACHMENT

1. Components of the Draft Report

The Government of Zimbabwe has agreed and accepted in principle the components of the Draft Report proposed by the Team.

2. Japan's Grant Aid System

- (1) The Government of Zimbabwe has understood Japan's Grant Aid System explained by the Team. (see Annex- I)
- (2) The Government of Zimbabwe will take necessary measures described in Annex- II for the smooth implementation of the Project in case Japan's Grant Aid is extended to the Project.

3. Schedule of the Study

JICA will produce the final report in accordance with the confirmed items, and send it to the Government of Zimbabwe by March, 1999.

4. Other relevant issues

- (1) The Team confirmed the following:
 - 1) The constructed irrigation facilities and provided equipment should be maintained ordinarily by farmers' organization, under the responsibility of the Department of Agricultural, Technical and Extension Services (AGRITEX), Ministry of Lands and Agriculture.
 - 2) The Department of Water Development (DWD), Ministry of Rural Resources and Water Development should maintain the major irrigation facilities such as pumping stations, pipe lines, and farm ponds.
- (2) Both sides reconfirmed that the proper operation and maintenance of the Project was needed to realize sustainable agricultural production, and therefore, the establishment of irrigation block committee and securing the budget for farmer training, staff salaries, etc., by AGRITEX and DWD were essential.
- (3) The Team explained the necessary works to be borne by the Zimbabwean side as shown in Annex-III. The Zimbabwean side understood and agreed to the matter.
- (4) The Zimbabwean side requested the Team to provide a bulldozer (11t class) to expedite the land leveling work in the Project area. The Team replied that the request would be communicated to the Government of Japan.
- (5) The Zimbabwean side also requested the Team to allow for flexibility of further discussion at the detailed design stage.

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JAPAN'S GRANT AID SYSTEM

1. Japan's Grant Aid Procedures

(1) The Japan's Grant Aid Program is executed by the following procedures.

Application (Request made by a recipient country)

Study (Preliminary Study / Basic Design Study conducted by JICA)

Appraisal & Approval (Appraisal by the Government of Japan and Approval by the Cabinet of Japan)

Determination of Implementation (Exchange of Notes between the both Governments)

Implementation (Implementation of the Project)

(2) Firstly, an application or a request for a project made by the recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to see whether or not it is suitable for Japan's Grant Aid. If the request is deemed suitable, the Government of Japan entrusts a study on the request to JICA (Japan International Cooperation Agency).

Secondly, JICA conducts the Study (Basic Design Study), using a Japanese consulting firm. If the background and objective of the requested project are not clear, a Preliminary Study is conducted prior to a Basic Design Study.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study Report prepared by JICA and the results are then submitted to the Cabinet for approval.

Fourthly, the Project approved by the Cabinet becomes official when pledged by the Exchange of Notes signed by both Governments.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

2. Contents of the Study

(1) Contents of the Study

The purpose of the Study (preliminary Study / Basic Design Study) conducted on a project requested by JICA is to provide a basic document necessary for appraisal of the project by the Japanese Government. The contents of the Study are as follows:

- a) to confirm background, objectives, benefits of the project and also institutional capacity of agencies concerned of the recipient country necessary for project implementation,
- b) to evaluate appropriateness of the Project for the Grant Aid Scheme from a technical, social and economical point of view,
- c) to confirm items agreed on by the both parties concerning a basic concept of the project,
- d) to prepare a basic design of the project,
- e) to estimate cost involved in the project.

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h.

Final project components are subject to approval by the Government of Japan and therefore may differ from an original request.
In implementing the project, the Government of Japan requests the recipient country to take necessary measures involved which are itemized in the Exchange of Notes.

(2) Selecting (a) Consulting Firm(s)

For smooth implementation of the study, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) through proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference made by JICA.

The consulting firm(s) used for the study is(are) recommended by JICA to a recipient country after the Exchange of Notes, in order to maintain technical consistency.

(3) Status of a Preliminary Study in the Grant Aid Program

A Preliminary Study is conducted during the second step of a project formulation & preparation as mentioned above.

The results of the study will be utilized in Japan to decide if the Project is suitable for a Basic Design Study.

Based on the results of the Basic Design Study, the Government would proceed to the stage of decision making process (appraisal and approval).

It is important to notice that at the stage of Preliminary Study, no commitment is made by the Japanese side concerning the realization of the Project in the scheme of Grant Aid Program.

3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non reimbursable funds needed to procure facilities, equipment and services for economic and social development of the country under the following principles in accordance with relevant laws and regulations of Japan. The Grant Aid is not in a form of donation or such.

(2) Exchange of Notes (E/N)

The Japan's Grant Aid is extended in accordance with the Exchange of Notes by both Governments, in which the objectives of the Project, period of execution, conditions and amount of the Grant, etc. are confirmed.

(3) "The period of the Grant Aid" means one Japanese fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedure such as Exchange of Notes, concluding a contract with (a) consulting firm(s) and (a) contractor(s) and a final payment to them must be completed.

(4) Under the Grant, in principle, products and services of origins of Japan or the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant may be used for the purchase of products or services of a third country of origin.

However the prime contractors, namely, consulting, contractor and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means Japanese physical persons or Japanese juridical persons controlled by Japanese physical persons.)

(5) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude contracts

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in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. The "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(6) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid, the recipient country is required to undertake necessary measures such as the following:

- a) to secure land necessary for the sites of the project and to clear and level the land prior to commencement of the construction work,
- b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
- c) to secure buildings prior to the installation work in case the Project is providing equipment,
- d) to ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,
- e) to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- f) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(7) Proper Use

The recipient country is required to maintain and use facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for their operation and maintenance as well as to bear all expenses other than those to be borne by the Grant Aid.

(8) Re-export

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

(9) Banking Arrangement (B/A)

- a) The Government of the recipient country or its designated authority shall open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.
- b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay issued by the Government of the recipient country or its designated authority.

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Necessary Measures to be taken by the Government of Zimbabwe

Following necessary measures should be taken by the Government of Zimbabwe on condition that the Grant Aid by the Government of Japan is extended to the Project:

1. To provide data and information necessary for the Project;
2. To secure the site for the Project;
3. To bear commissions to a bank of Japan for its banking services based upon the Banking Arrangement, namely the advising commission of the "Authorization to Pay " and payment commission;
4. To ensure prompt unloading, tax exemption, customs clearance before entering in Zimbabwe and prompt internal transportation therein of the materials and equipment for the Project purchased under the Grant Aid;
5. To exempt Japanese juridical and physical nationals engaged in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Zimbabwe with respect to the supply of the products and services under the verified contracts;
6. To accord Japanese nationals whose services may be required in connection with supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Zimbabwe and stay therein for the performance of their work;
7. To provide necessary permissions, licenses, and other authorizations for implementing the Project, if necessary;
8. To assign appropriate budget and staff for proper and effective use of equipment and instruments provided under the Grant Aid;
9. To maintain and use properly and effectively the equipment and instruments provided under the Project; and
10. To bear all the expenses, other than those to be borne by Japan's Grant Aid within the scope of the Project.

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The Project Cost borne by the Government of Zimbabwe

The Project cost is estimated as follows;

1) Construction in Block D, Area: 203 ha		
Land leveling work	203 ha	Z\$ 1,000,000
Fencing work	8.0 km	Z\$ 640,000
Extension of power line	3.7 km	Z\$ 1,000,000
Installation of transformer	1,000 KVA	Z\$ 500,000
	Sub-total	Z\$ 3,140,000
2) Construction in Block A, Area: 115 ha		
Land leveling work	115 ha	Z\$ 600,000
Fencing work	11.0 km	Z\$ 880,000
Extension of power line	0.5 km	Z\$ 150,000
Installation of transformer	750 KVA	Z\$ 300,000
	Sub-total	Z\$ 1,930,000
3) Construction in Block E, Area: 94 ha		
Land leveling work	94 ha	Z\$ 450,000
Fencing work	5.2 km	Z\$ 420,000
Extension of power line	4.2 km	Z\$ 1,150,000
Installation of transformer	750 KVA	Z\$ 300,000
	Sub-total	Z\$ 2,320,000
Total		Z\$ 7,390,000

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5. Cost Estimation Borne by the Recipient Country

The Project cost is estimated as follows.

(1) Construction in Block D, Area: 203ha

Land leveling work	203 ha	Z\$ 1,000,000
Fencing work	8.0 km	Z\$ 640,000
Extension of power line	3.7 km	Z\$ 1,000,000
Installation of transformer	1,000 KVA	Z\$ 500,000
Sub-total		Z\$3,140,000

(2) Construction in Block A, Area: 115ha

Land leveling work	115 ha	Z\$ 600,000
Fencing work	11.0 km	Z\$ 880,000
Extension of power line	0.5 km	Z\$ 150,000
Installation of transformer	750 KVA	Z\$ 300,000
Sub-total		Z\$ 1,930,000

(3) Construction in Block E, Area: 94ha

Land leveling work	94 ha	Z\$ 450,000
Fencing work	5.2 km	Z\$ 420,000
Extension of power line	4.2 km	Z\$ 1,150,000
Installation of transformer	750 KVA	Z\$ 300,000
Sub-total		Z\$ 2,320,000

Total **Z\$ 7,390,000**

6. Result of the Foundation Investigation

GEOTECHNICAL SERVICES (1980) (Pvt) Limited

NYAKOMBA IRRIGATION PROJECT REPORT

INTRODUCTION

Foundation Investigations at the proposed Nyakomba Irrigation Project Site which is located on the Gairezi River in Nyamaropa Communal Lands were done by Geotechnical Services (1980) (Pvt) Ltd, supervised by Engineers from Talyo Consultants Company, Tokyo, Japan.

These investigations which consisted of Rotary Core Drilling, Standard Penetration Tests and Trial Pits which commenced on 09/08/98 and were completed on the 15/08/98.

1. KEY PERSONNEL

1 -	Project Manager	-	Mr S Lord (Managing Director)
1 -	Technician	-	Mr S Mpambavachiki
1 -	Driver	-	Mr J Mtambalika
1 -	Driller	-	Mr S Chaparira
3 -	Drill Assistants		

2. DRILLING EQUIPMENT

1 No.	7 Ton Truck - Mercedes Benz 1313
1 No.	BBS18 Rotary Core Drill c/w Ancillary Equipment
1 No.	D40/BH30 Mono Pump Driven by a Diesel Engine
1 No.	Honda Water Pump (Petrol Powered) Supply Pump
1 No.	65kg Jarring hammer
	Various Drilling Crowns
30m	Black Polypipe (for water supply)
4 No.	200 litre Drums (for water supply)
1 No.	NX Core Barrel
2 No.	NXC Core Barrel (Starter)
1 No.	Delta Hut
1 No.	Tent
15m	"B" Drilling Rods

TEST EQUIPMENT

2 No.	S.P.T. Split Barrels c/w Cutting Edges
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3. SUMMARY OF OPERATIONS

A total of 6 Investigatory Boreholes were drilled on site. There were two types of drilling. Type A consisted of 3 boreholes which were drilled along the Gairezi River for the Pump Stations. Original maximum depth was 7 metres but they were drilled to 8.20m, 9.00m and 10.00m, as per the Engineers instructions. S.P.T.'s were carried out at 1m intervals as per the Engineers instructions.

Type B consisted of 3 Boreholes on the Farm Ponds. All the Type B holes were drilled to a maximum depth of 5.00m and S.P.T.'s were carried out at 1m intervals. U4 Samples could not be sampled due to ground conditions and this was confirmed with the Engineer on site.

Sampling

On each position a Trial Pit was dug to a maximum depth of 1 metre and a 5kg sealed sample and a 50kg sample were obtained from each pit. A total of 6 pits were excavated. All samples from drill holes were sealed on removal from the boreholes, labelled then packed in order in wooden Core Boxes, including S.P.T. samples. On Farm Pond E, S.P.T.'s could not be undertaken due to ground conditions. On Pump Station A at 6 metres the S.P.T. could not obtain sample recovery after a full penetration of 450mm on a total of 27 blows. At 8m there was also no recovery. It is assumed that the water level of the river caused saturated conditions hindering sample recovery.

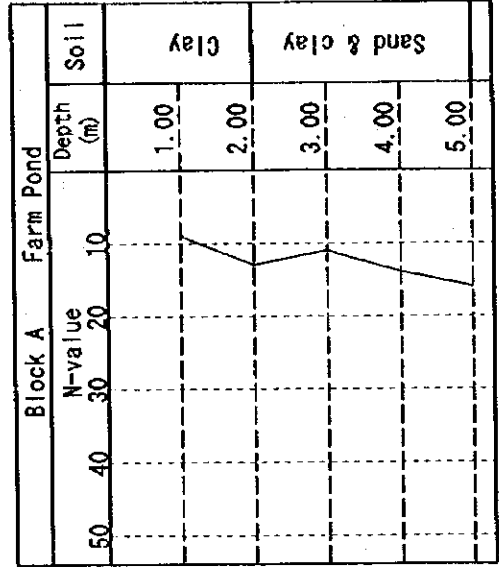
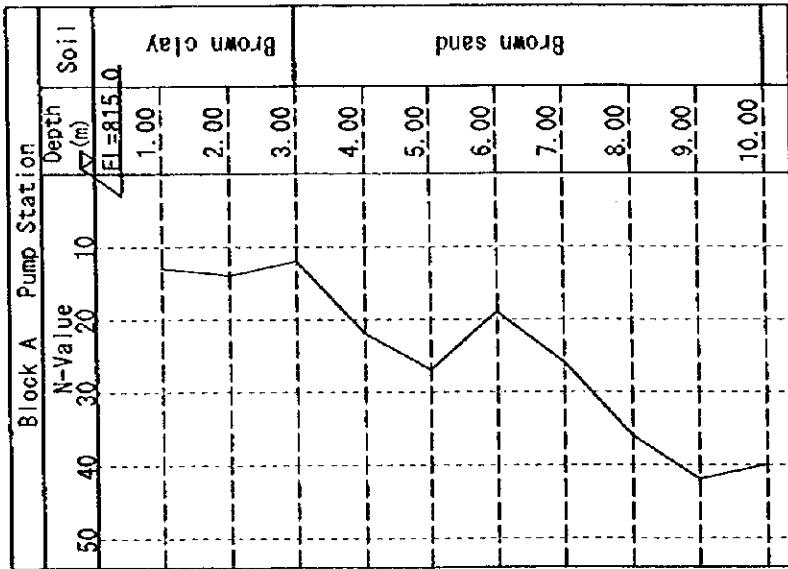
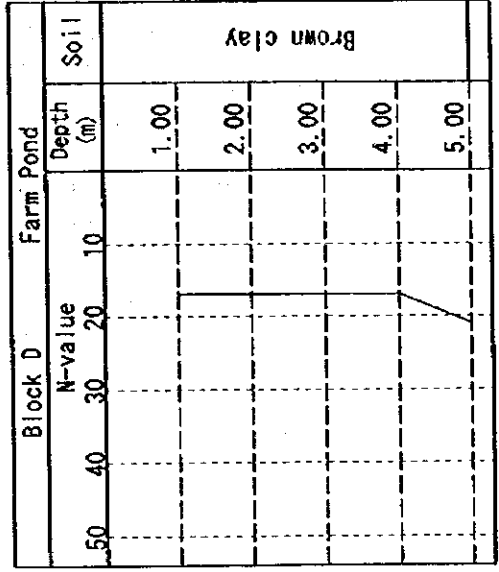
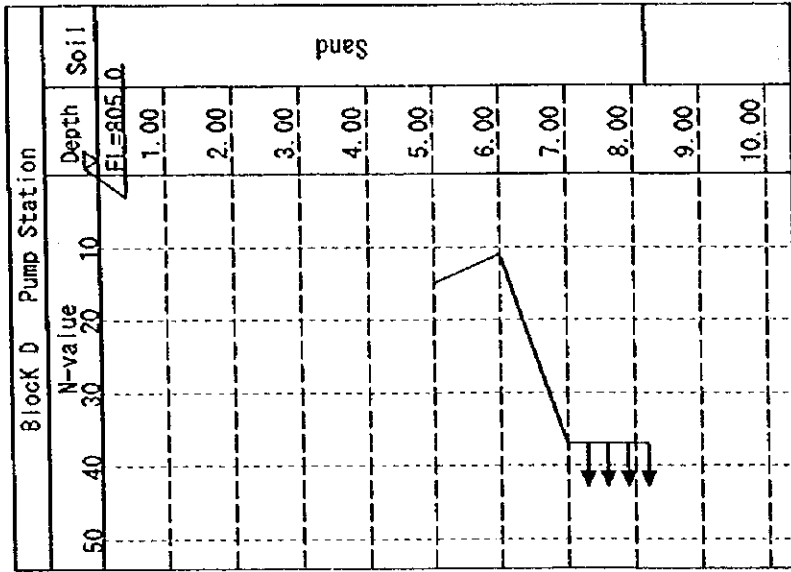
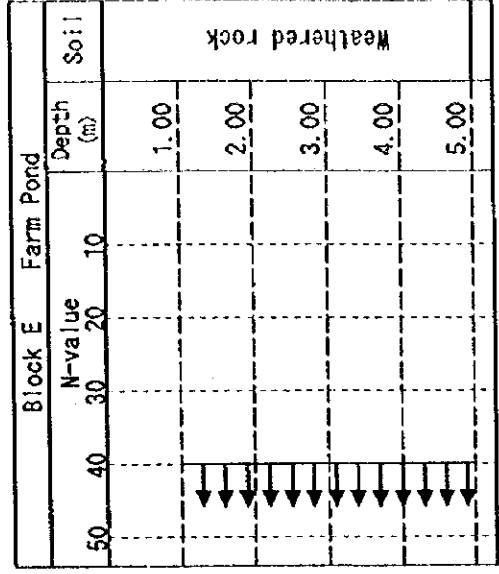
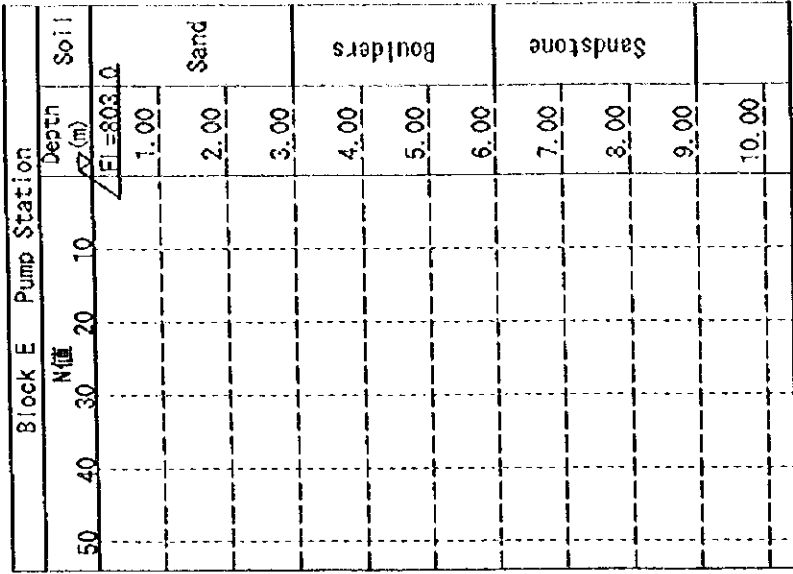
Standard Penetration Tests

These tests were done in the overburden zones. The method used is as follows ;

A Split barrel Sample Tube complete with a cutting edge was attached to the drill rods and lowered into the borehole by the drilling rig. A 65kg Hammer was then made to free fall a distance of 760mm on to an anvil attached to the drill rods thus driving the sample tube into the material at the bottom of the hole. The blows and penetration rate were recorded after every 75mm. A maximum of 40 blows for 300mm of penetration was allowed on this project.

GENERAL

All drilling and testing done on this project were in accordance with BS 5390 (1981) and the results are presented in the following pages for analysis by the Consultants TAIYO CONSULTANTS COMPANY (JAPAN) acting on behalf of Japan International Co-operative Agency (JICA).



GEOTECHNICAL SERVICES (1980) (Pvt) Ltd
BOREHOLE DRILLING/TESTING SUMMARY SHEET

Borehole No.	Metres	S.P.T.s
Pump Station A	10.00	10
Pump Station D	8.20	4
Pump Station E	9.00	Nil
Farm Pond A	5.00	5
Farm Pond D	5.00	4
Farm Pond E	5.00	4
	42.20	27

Pits	5 kg	50 kgs
Pump Station A Pit	1	1
Pump Station D Pit	1	1
Pump Station E Pit	1	1
Farm Pond A Pit	1	1
Farm Pond D Pit	1	1
Farm Pond E Pit	1	1
Total Samples	6	6

**GEOTECHNICAL SERVICES (1980) (PVT) LTD
DAILY DIAMOND DRILLING REPORT**

CONTRACT NO: Nyakomba Irrigation Project				LOCATION: Inyanga (Block A)				
DATE: 15 08 98				BOREHOLE NO: Pump Station A				
				INCLINATION: 90 degrees				
DRILL RUNNER'S SIGNATURE: S. Chaparira			HOURS 11	PRESENT DEPTH: 10 m		0 00 cm		
DAY: Day				PREVIOUS DEPTH: 0 m		0 00 cm		
AFTERNOON:				AMOUNT DRILLED: 10 m		0 00 cm		
NIGHT:				RATE OF DRILLING: 10 00 m		M.Shift/Hour		
LABOUR NO: 4								
RUN No	BIT SIZE & No	PREVIOUS TOTAL DEPTH: 0 00 m					REMARKS <small>Formation/Kind/Level or Regard/Water Table</small>	
		From	To		Advance	Core Recovery		
1	NXC Har	0 00	1 00		1 00	S.P.T.	Brown clay	
2	NXC Har	1 00	2 00		1 00	S.P.T.	Brown clay	
3	NXC Har	2 00	3 00		1 00	S.P.T.	Brown clay	
4	NXC Har	3 00	4 00		1 00	S.P.T.	Brown sand	
5	NXC Har	4 00	5 00		1 00	S.P.T.	Brown sand	
6	NXC Har	5 00	6 00		1 00	S.P.T.	Brown sand	
7	NXC Har	6 00	7 00		1 00	S.P.T.	Brown sand	
8	NXC Har	7 00	8 00		1 00	S.P.T.	Brown sand	
9	NXC Har	8 00	9 00		1 00	S.P.T.	Brown sand	
10	NXC Har	9 00	10 00		1 00	S.P.T.	Brown sand	
EOH - 10.00m								
SET		RECOVERED		LOST				
SIZE	LENGTH	SIZE	LENGTH	SIZE	DEPTH	LENGTH	M A T E R I A L S	
								TYPE
								UNIT
							STOCK	
							USED	
							BALANCE	
1. DRILLING		RE-DRILLING		CEMENT		REAMING		
2. DELAYS (with details)								
3. OTHER WORK (with details)								
CONTRACTOR'S REPRESENTATIVE: S. MBAMBAVACHI (KI)				ENGINEER'S REPRESENTATIVE:				
DATE: 15 08 98				DATE:				

GEO TECHNICAL SERVICES (1980) (PVT) LTD

PENETROMETER LOG SHEET

PROJECT :		NYAKOMBA IRRIGATION PROJECT		OPERATOR :		S. CHAPARIRA		
BH NO :		PUMP STATION A		DATE :		15.08.98		
GEOLOGY :		CLAY & SAND		WEATHER :		WINDY		
DEPTH	SLOWS / PENETRATION							REMARKS
AT								N VALUE
1.00m								
NO. OF BLOWS	3	5	3	2	3	4		
PENETRATION (mm)	75	75	75	75	75	75	13	
AT								
2.00m								
NO. OF BLOWS	2	2	5	4	3	7		
PENETRATION (mm)	75	75	75	75	75	75	14	
AT								
3.00m								
NO. OF BLOWS	3	3	3	3	3	4		
PENETRATION (mm)	75	75	75	75	75	75	12	
AT								
4.00m								
NO. OF BLOWS	9	6	5	5	6	6		
PENETRATION (mm)	75	75	75	75	75	75	22	
AT								
5.00m								
NO. OF BLOWS	6	6	5	7	8	8		
PENETRATION (mm)	75	75	75	75	75	75	27	
AT								
6.00m								
NO. OF BLOWS	3	4	5	5	5	5		
PENETRATION (mm)	75	75	75	75	75	75	19	

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GEOTECHNICAL SERVICES (1980) (PVT) LTD.

PENETROMETER LOG SHEET

PROJECT : NYAKOMBA IRRIGATION PROJECT										OPERATOR : S. CHAPARIRA				
PUMP STATION A										DATE : 15.08.98				
GEOLOGY : CLAY & SAND										WEATHER : WINDY				
DEPTH	BLOWS / PENETRATION									ADJUSTED NO OF BLOWS	PENETRATION AT ADJUSTED BLOWS	N VALUE	REMARKS	
AT 7.00m														
NO. OF BLOWS	8	8	6	6	5	6					26	300	29	
PENETRATION (mm)	75	75	75	75	75	75								
AT 8.00m														
NO. OF BLOWS	7	8	8	10	10	12					38	300	38	No Recovery
PENETRATION (mm)	75	75	75	75	75	75								
AT 9.00m														
NO. OF BLOWS	9	9	11	10	12	12					42	300	42	
PENETRATION (mm)	75	75	75	75	75	75								
AT 10.00m														
NO. OF BLOWS	9	9	10	10	11	11					40	300	40	
PENETRATION (mm)	75	75	75	75	75	75								
AT														
NO. OF BLOWS														
PENETRATION (mm)														
AT														
NO. OF BLOWS														
PENETRATION (mm)														

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**GEOTECHNICAL SERVICES (1980) (PVT) LTD
DAILY DIAMOND DRILLING REPORT**

CONTRACT NO: Nyakomba Irrigation Project				LOCATION: Inyanga (Block D)				
DATE: 09.08.98				BOREHOLE NO: Pump Station D				
				INCLINATION: 90 degrees				
DRILL RUNNER'S SIGNATURE: S. Chaparira				HOURS 11	PRESENT DEPTH: 8 m		0.20 cm	
DAY: Day					PREVIOUS DEPTH: 0 m		0.00 cm	
AFTERNOON					AMOUNT DRILLED: 8 m		0.20 cm	
NIGHT					RATE OF DRILLING: 8.20 m		M. Shift. Hole	
LABOUR NO: 4								
RUN No	BIT SIZE & No	PREVIOUS TOTAL DEPTH: 0.00 m				REMARKS		
		From	To	Advance	Core Recovery	Formation/Fluid Level or Registered Water Table		
1	NXC Har	0.00	1.00	1.00		Sand		
2	NXC Har	1.00	2.00	1.00		Sand		
3	NXC Har	2.00	3.00	1.00		Sand		
4	NXC Har	3.00	4.00	1.00		Sand		
5	NXC Har	4.00	5.00	1.00		S.P.T. - Sand		
6	NXC Har	5.00	6.00	1.00		S.P.T. - Sand		
7	NXC Har	6.00	7.00	1.00		S.P.T. - Sand		
8	NXC Har	7.00	8.20	1.20		S.P.T. - Sand E.O.H. - 8.20m		
SET		RECOVERED		LOST				
SIZE	LENGTH	SIZE	LENGTH	SIZE	DEPTH	LENGTH	M A T E R I A L S	
								TYPE
								UNIT
							STOCK	
							USED	
							BALANCE	
1. DRILLING		RE-DRILLING		CEMENT		REAMING		
2. DELAYS (with details)		From 7.00am to 10.00am Setting Up The Machine And Digging The Sump						
		From 10.00am to 6.00pm Drilling To E.O.H.						
3. OTHER WORK (with details)								
CONTRACTOR'S REPRESENTATIVE		S. MBAMBAVACHIKI		ENGINEER'S REPRESENTATIVE				
DATE: 09.08.98				DATE				

GEO TECHNICAL SERVICES (1980) (PVT) LTD
PENEIROMETER LOG SHEET

PROJECT :		NYAKOMBA IRRIGATION PROJECT		OPERATOR :		S. CHAPARRA	
BH NO :		PUMP STATION D		DATE :		09.08.98	
GEOLOGY :		SAND		WEATHER :		HOT	
DEPTH	BLOWS / PENETRATION						REMARKS
AT							
5.00m							
NO. OF BLOWS	14	8					
PENETRATION (mm)	300	150			15	300	15
AT							
6.00m							
NO. OF BLOWS	5	6	7				
PENETRATION (mm)	150	150	150		11	300	11
AT							
7.00m							
NO. OF BLOWS	17	20					
PENETRATION (mm)	150	150			37	300	37
AT							
8.00m							
NO. OF BLOWS	40						
PENETRATION (mm)	0				Bounce		R Boulders
AT							
NO. OF BLOWS							
PENETRATION (mm)							
AT							
NO. OF BLOWS							
PENETRATION (mm)							

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**GEOTECHNICAL SERVICES (1980) (PVT) LTD
DAILY DIAMOND DRILLING REPORT**

CONTRACT NO: Nyakomba Irrigation Project				LOCATION: Iryanga (Block E)				
DATE: 12 08 98				BOREHOLE NO: Pump Station E				
				INCLINATION: 90 degrees				
DRILL RUNNER'S SIGNATURE: S. Chaparira			HOURS: 10	PRESENT DEPTH: 9 m		000 cm		
DAY: Day				PREVIOUS DEPTH: 0 m		000 cm		
AFTERNOON				AMOUNT DRILLED: 9 m		000 cm		
NIGHT				RATE OF DRILLING: 9.00 m		M-SHR-Hour		
LABOUR NO: 4								
RUN No	BIT SIZE & No	PREVIOUS TOTAL DEPTH: 0.00 m				Advance	Core Recovery	REMARKS <small>Refer to Field Log or Register & Water Table</small>
		From	To					
1	NXC Har	0.00	1.00				Sand	
2	NXC Har	1.00	2.00				Sand	
3	NXC Har	2.00	3.00				Sand	
4	NXC Har	3.00	4.00				Boulders	
5	NXC Har	4.00	5.00				Boulders	
6	NXC Har	5.00	6.00				Boulders	
7	NXC Har	6.00	7.43				Sandstone	
8	NXC Har	7.43	9.00				Sandstone	
								E.O.H. - 9.00m
SET		RECOVERED		LOST				
SIZE	LENGTH	SIZE	LENGTH	SIZE	DEPTH	LENGTH	M A T E R I A L S	TYPE
								UNIT
								STOCK
								USED
								BALANCE
1. DRILLING		RE-DRILLING		CEMENT		REAMING		
2. DELAYS (with details)		From 6:00am To 10:00am Moving To The Next Borehole And Setting Up The Rig						
3. OTHER WORK (with details)								
CONTRACTOR'S REPRESENTATIVE: S. MBAMBAVACHIKI				ENGINEER'S REPRESENTATIVE:				
DATE: 12 08 98				DATE:				

**GEOTECHNICAL SERVICES (1980) (PVT) LTD
DAILY DIAMOND DRILLING REPORT**

CONTRACT NO: Nyakomba Irrigation Project		LOCATION: Inyanga (Block A)					
DATE: 14.08.98		BOREHOLE NO: Fann Pond A					
		INCLINATION: 90 degrees					
DRILL RUNNER'S SIGNATURE: S. Chaparira		HOURS: 11	PRESENT DEPTH: 5 m 0.00 cm				
DAY: Day			PREVIOUS DEPTH: 0 m 0.00 cm				
AFTERNOON			AMOUNT DRILLED: 5 m 0.00 cm				
NIGHT			RATE OF DRILLING: 5.00 m M/S/M/HR				
LABOUR NO: 4							
		PREVIOUS TOTAL DEPTH: 0.00 m	REMARKS				
RUN No	BIT SIZE & No	From	To	Advance	Core Recovery	Formation/Level of Reputed Water Table	
1	NXC Har	0.00	1.00	1.00		Clay	
2	NXC Har	1.00	2.00	1.00		Clay	
3	NXC Har	2.00	3.00	1.00		Sand & clay	
4	NXC Har	3.00	4.00	1.00		Sand & clay	
5	NXC Har	4.00	5.00	1.00		Sand & clay	
						E.O.H. - 5.00m	
						No U4 Sample Taken	
SET		RECOVERED		LOST			
SIZE	LENGTH	SIZE	LENGTH	SIZE	DEPTH	LENGTH	
						MATERIALS	
						TYPE	
						UNIT	
						STOCK	
						USED	
						BALANCE	
1. DRILLING		RE-DRILLING		CEMENT		REMAINING	
2. DELAYS (with details)		From 7.00am To 10.30am Moving To The Next Site And Setting Up					
3. OTHER WORK (with details)							
CONTRACTOR'S REPRESENTATIVE: S MBAMBAVACHIKI		ENGINEER'S REPRESENTATIVE					
DATE: 14.08.98		DATE					

GEOTECHNICAL SERVICES (1980) (PVT) LTD.
PENETROMETER LOG SHEET

PROJECT :		NYAKOMBA IRRIGATION PROJECT		OPERATOR :		S. CHAPAIRA		
BH NO :		FARM POND A		DATE :		14.08.98		
GEOLOGY :		SAND & CLAY		WEATHER :		CLEAR & COOL		
DEPTH	BLOWS / PENETRATION							REMARKS
AT								
1.00m								
NO. OF BLOWS	2	2	2	2	3	3		
PENETRATION (mm)	75	75	75	75	75	75	9	
								300
AT								
2.00m								
NO. OF BLOWS	3	3	3	3	4	4		
PENETRATION (mm)	75	75	75	75	75	75	13	
								300
AT								
3.00m								
NO. OF BLOWS	2	2	3	3	3	3		
PENETRATION (mm)	75	75	75	75	75	75	11	
								300
AT								
4.00m								
NO. OF BLOWS	3	3	3	4	4	4		
PENETRATION (mm)	75	75	75	75	75	75	14	
								300
AT								
5.00m								
NO. OF BLOWS	4	4	4	4	4	6		
PENETRATION (mm)	75	75	75	75	75	75	16	
								300
AT								
NO. OF BLOWS								
PENETRATION (mm)								

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**GEOTECHNICAL SERVICES (1980) (PVT) LTD
DAILY DIAMOND DRILLING REPORT**

CONTRACT NO: Nyakoroba Irrigation Project		LOCATION: Inyanga (Block D)					
DATE: 10 08 98		BOREHOLE NO: Farm Pond D					
		INCLINATION: 90 degrees					
DRILL RUNNER'S SIGNATURE: S.Chaparira		HOURS 10	PRESENT DEPTH: 5 m 0.00 cm				
DAY AFTERNOON Day			PREVIOUS DEPTH: 0 m 0.00 cm				
NIGHT			AMOUNT DRILLED: 5 m 0.00 cm				
LABOUR NO 4			RATE OF DRILLING: 5.00 m M:Shift/Hour				
		PREVIOUS TOTAL DEPTH: 0.00 m					
RUN No	BIT SIZE & No	PREVIOUS TOTAL DEPTH: 0.00 m				REMARKS <small>Formation, FMS Led in Register With Test Table</small>	
		From	To	Advance	Cora Recovery		
1	NXC Har	0.00	1.00	1.00		Brown clay	
2	Dry Drilling	1.00	2.00	1.00		S.P.T. - Brown clay	
3	Dry Drilling	2.00	3.00	1.00		S.P.T. - Brown clay	
4	Dry Drilling	3.00	4.00	1.00		S.P.T. - Brown clay	
5	Dry Drilling	4.00	5.00	1.00		S.P.T. - Brown clay	
						E.O.H. - 5.00m	
						No U4 Sample Taken	
SET		RECOVERED		LOST		M A T E R I A L S	
SIZE	LENGTH	SIZE	LENGTH	SIZE	DEPTH		LENGTH
1. DRILLING		RE-DRILLING		CEMENT		REAMING	
2. DELAYS (with details)		From 7.00am To 3.00pm Moving To The Next Borehole					
		Chain Broke Causing A Delay					
3. OTHER WORK (with details)							
CONTRACTOR'S REPRESENTATIVE		S.MBAMBAVACHIKI		ENGINEER'S REPRESENTATIVE			
DATE 10.08.98				DATE			

GEO TECHNICAL SERVICES (1980) (PVT) LTD
PENETROMETER LOG SHEET

PROJECT : NYAKOMBA IRRIGATION PROJECT		OPERATOR : S.CHAPARRA								
BH NO : FARM POND D		DATE : 10.08.98								
GEOLOGY : BROWN CLAY		WEATHER : MOT								
DEPTH	BLOWS / PENETRATION						ADJUSTED NO OF BLOWS	PENETRATION AT ADJUSTED BLOWS	N VALUE	REMARKS
AT 2.00m										
NO. OF BLOWS	6	3	4	5	5	4				
PENETRATION (mm)	75	75	75	75	75	75	17	300	17	
AT 3.00m										
NO. OF BLOWS	4	5	4	4	4	4				
PENETRATION (mm)	75	75	75	75	75	75	17	300	17	
AT 4.00m										
NO. OF BLOWS	3	3	4	4	6	6				
PENETRATION (mm)	75	75	75	75	75	75	17	300	17	
AT 5.00m										
NO. OF BLOWS	3	4	5	6	6	6				
PENETRATION (mm)	75	75	75	75	75	75	21	300	21	
AT										
NO. OF BLOWS										
PENETRATION (mm)										
AT										
NO. OF BLOWS										
PENETRATION (mm)										

**GEOTECHNICAL SERVICES (1980) (PVT) LTD
DAILY DIAMOND DRILLING REPORT**

CONTRACT NO: Nyakomba Irrigation Project				LOCATION: Inyanga (Block E)				
DATE: 11.08.98				BOREHOLE NO: Farm Pond E				
				INCLINATION: 90 degrees				
DRILL RUNNER'S SIGNATURE: S Chaparira			HOURS: 10		PRESENT DEPTH: 5 m 000 cm			
DAY: Day					PREVIOUS DEPTH: 0 m 000 cm			
AFTERNOON					AMOUNT DRILLED: 5 m 000 cm			
NIGHT					RATE OF DRILLING: 5.00 m M.Shift/Hour			
LABOUR NO: 4								
PREVIOUS TOTAL DEPTH: 0.00 m							REMARKS <small>Familiar/Found Lost or Regained/Water Table</small>	
RUN No	BIT SIZE & No	PREVIOUS TOTAL DEPTH		Advance	Core Recovery			
		From	To					
1	NXC Har	0.00	1.00	1.00		Weathered rock		
2	NXC Har	1.00	2.00	1.00		S.P.T. - Weathered rock		
3	NXC Har	2.00	3.00	1.00		S.P.T. - Weathered rock		
4	NXC Har	3.00	4.00	1.00		S.P.T. - Weathered rock		
5	NXC Har	4.00	5.00	1.00		S.P.T. - Weathered rock		
							E.O.H. - 5.00m	
							No U4 Sample Taken	
SET		RECOVERED		LOST				
SIZE	LENGTH	SIZE	LENGTH	SIZE	DEPTH	LENGTH		
						M A T E R I A L S		
						TYPE UNIT		
						STOCK USED BALANCE		
1. DRILLING		RE-DRILLING		CEMENT		REAMING		
2. DELAYS (with details)		From 7.00am to 11.00am Moving To The Next Site And Digging The Sump						
		Started Drilling Borehole From 0.00m to 5.00m E.O.H.						
3. OTHER WORK (with details)								
CONTRACTOR'S REPRESENTATIVE		S.MBAMBAVACHIKI			ENGINEER'S REPRESENTATIVE			
DATE		11.08.98			DATE			

GEOTECHNICAL SERVICES (1980) (PVT) LTD.
PENETROMETER LOG SHEET

PROJECT : NYAKIMBA IRRIGATION PROJECT		OPERATOR : S.CHAPARIRA			
BH NO : FARM POND E		DATE : 11.08.98			
GEOLOGY : WEATHERED ROCK		WEATHER : CLEAR & COOL			
DEPTH	BLOWS / PENETRATION	ADJUSTED NO OF BLOWS	PENETRATION AT ADJUSTED BLOWS	N VALUE	REMARKS
AT					
2.00m					
NO. OF BLOWS	40				
PENETRATION (mm)	38	+ 200	300	- 200	No Recovery
AT					
3.00m					
NO. OF BLOWS	40				
PENETRATION (mm)	25	- 200	300	- 200	No Recovery
AT					
4.00m					
NO. OF BLOWS	40				
PENETRATION (mm)	32	- 200	300	- 200	No Recovery
AT					
5.00m					
NO. OF BLOWS	40				
PENETRATION (mm)	0	- 200	300	- 200	40 Blows & Bouncing No Recovery
AT					
NO. OF BLOWS					
PENETRATION (mm)					
AT					
NO. OF BLOWS					
PENETRATION (mm)					

PENET.WVC

JICA