DESIGN REPORT FOR THE PROPOSED DAM AND 8no. OFF-TAKE WELLS

SITE AREA VISITED ON 16TH AUG.2008

Table of contents

DESIGN REPORT

1.0 INTRODUCTION

The project area is in Makueni District, Ngetha Sub-location and Mulala location.
On average, the area receives an annual rainfall of 350 mm with the stream emanating from undulating Mountain slopes. However the the stream slope greatly reduces to almost 0.1 at the point of interest.
The soils in the area are mainly clay with kunkar rock rock outcrops. The area suffers dry winds as it's on the lee ward side of the mountain.
The people in the sub location majorly rely on the scoop holes from the stream both for their domestic and livestock use. However these scoop holes goes very deep during the dry spell providing inadequate water supplies and also posing a major safety threat due to the loose sandy formation along the channel.

1.1 THE DAM

1.1.1 Site location

The dam site lies on an altitude of 773.0m above sea level.
The site on which the dam is to be located is suitable as it captures two streams; the major one emanating from the mountain heel and the tributary sourcing from the market runoff.
The banks of the channel are of clay formation.However, this will be taken care of by the wing walls of the dam.

1.2 WELL LOCATION

There are eight wells in number with seven located downstream of the dam and another one located 350m upstream, the location of the upstream well factors in the safety issue in terms of the reservoir contamination. The condition of the water is a bit saline but this will improve greatly on dilution from the water to be impounded by the dam.
The upstream well is also accessible to market as it will be located as it will be close to the market and a major road.
To achieve a safe yield from the wells all year round a depth of 40feet as indicated after sounding is appreciable.

A Legend on the terms used the Bill of Quantities is as shown:

LEGEND

C.P.M.T. - Community Project management training.
N.R.M. - Natural Resources Management.
P.H.A.S.T. - Participatory Hygiene and Sanitation Transformation.

Accessibility routes: Two alternative routes; I .Mombasa road via Emali 13km to the project site
Ii.From Machakos town via Kilala turn off to Emali
37 km from the turn off to site.

2.0 BILL OF QUANTITIES FOR DAM AND 8no.WELLS

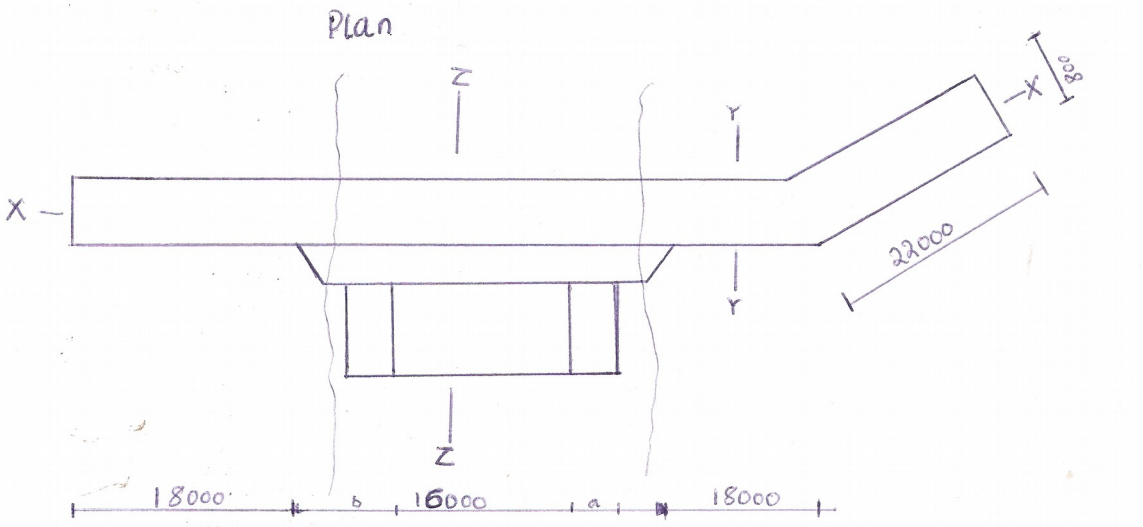
No.	Item description	Unit	Unit Rate(Kshs)	Quantity	Totals	% contribution
1.	Cement: Dam----- Wells 8no.----	50-kg Bag	800	 660 360 1020	 816,000	
2.	Reinforcement Bars-R1/2	12m-pcs	750	70	52,500	
3.	Reinforcement Bars-R1/4	12m-pcs	450	200	90,000	
4.	Nails 4 inches	Kg	130	2	260	
5.	Timber(2by2)	Foot	18.00	100	1,800	
6.	Binding wire	Kg	130	28	3,640	
7.	Hand pump	Piece	35,000	8	280,000	
8.	Site management: Mobilization Sitting Senior supervision Middle-level Supervision	 Item Item Man days Man days	 35,000 20,000 15,000 3,000	 1 1 6 12	 35,000 20,000 90,000 36,000	
9.	Artisan: Transport Subsistence	 Item Two months	 2000 28,000	 2 2	 4,000 56,000	
10.	Well sitting: Transport Fee	 Item Item	 1000 3000	 1 8	 1000 24,000	
11.	Training: C.P.M.T. N.R.M. P.H.A.S.T.	 Item Item Item	 80,000 80,000 80,000	 1 1 1	 80,000 80,000 80,000	
	12.5% overhead Administration cost	Item	218,775		218,775	
	Sub-Totals				1,968,975	79 %
	Community contribution					
1.	Hardcore	Ton	400	265	106,000	
2.	Sand	Ton	500	330	165,000	
3.	Water	Ltrs	.50	122,400	61,200	
4.	Unskilled labour	Man days	100.00	1650	165,000	
					497,200	21%
	Grand Totals				**2,466,175**	**100%**

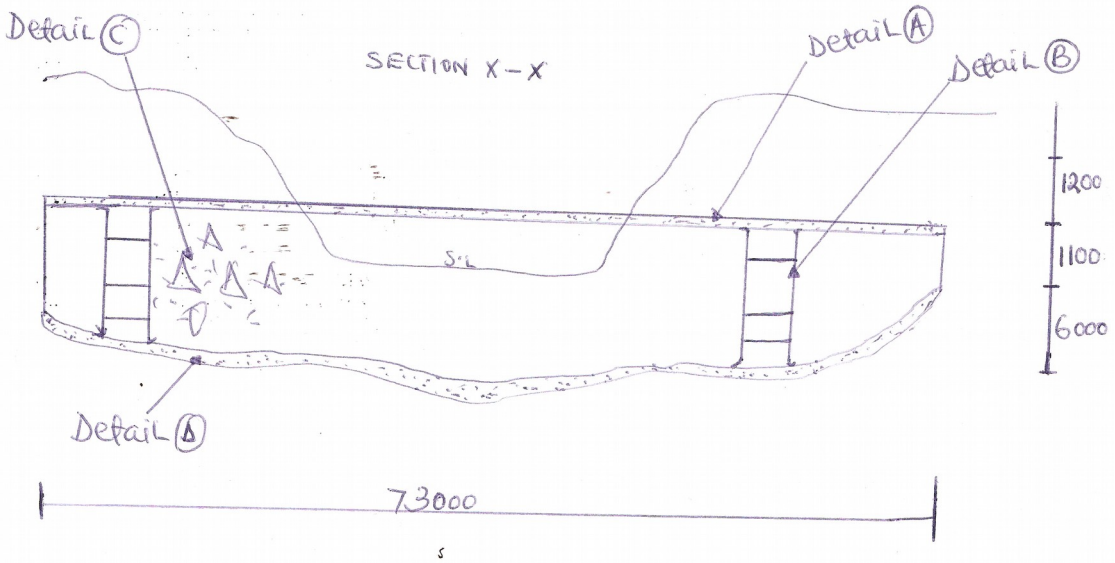
3.0 Technical drawing and design specifications

SUBJECT: TECHNICAL DRAWINGS AND SPECIFICATIONS FOR NGEITHA PILOT SAND DAM

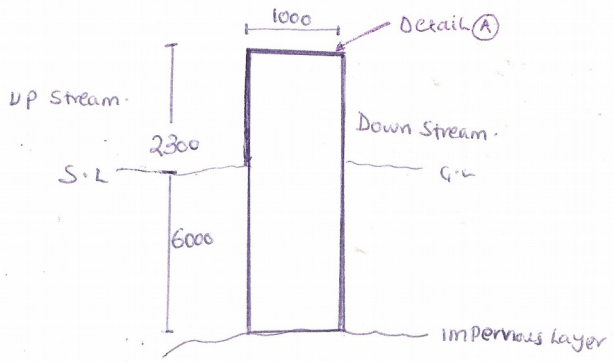
LOCATION: NGEITHA SUB LOCATION, MULALA LOCATION: KAVITI STREAM: 037°31.493'E, 02°00.109'S.

MEASUREMENTS: IN mm AND NOT TO SCALE;





SECTION Y-Y.



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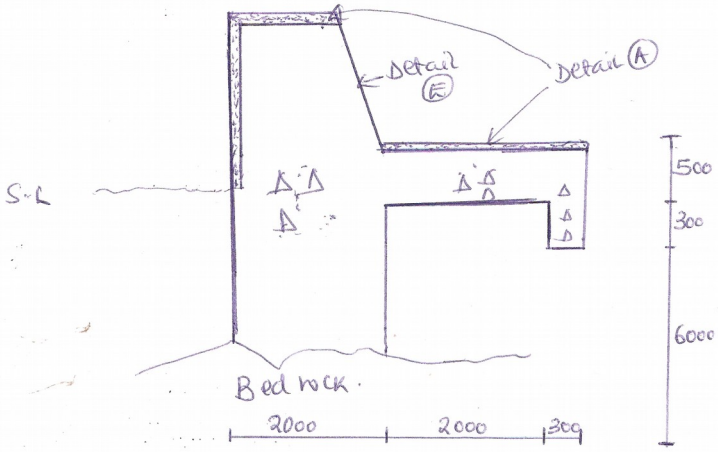


Detail	Specification
A	50mm Plaster of Mortar; Cement: Sand 1:3.
B:	R½a R½c Reinforcement bars Placed 2m C-C Embended Proper to the foundation/Bedrock.
C:	Mortar and Hard Core Masonary body Placed in interlocking manner at minimum mortar spacing of 25mm (Mortar (1:4).
D.	100mm Mortar Slab; Cement: Sand 1:3.
E	Masonary walling appealing to architectural Vawe.

S.L = Sand level.

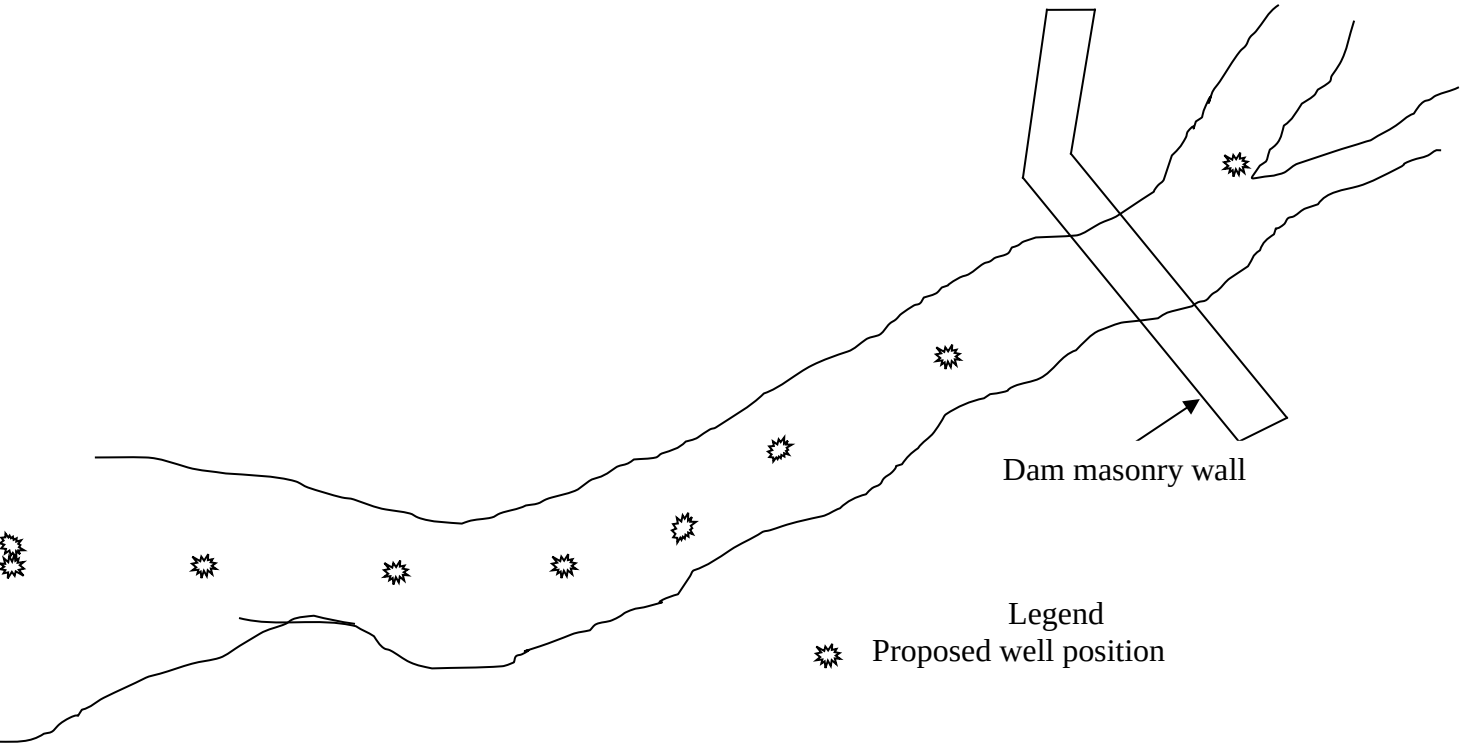
g.L = ground level.

a, b = To be decided on site by Presiding technician

By: BERNARD MUENDO

4.0 **The longitudinal profile of the stream indicating the Dam and wells position**

The general condition of the water in the river course is saline, however this will change after construction of the proposed dam as it will control the seepage of mineralized rocks upstream and dilute the water in the storage reservoir.



NB: There is a dam built by Excellent on the way to the project site before Nziu Market.GPS no.117

Prepared by:

Kennedy Mutati. 19th August 2008.