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Projet de santé et d'hygiène de la région nord, Tombouctou, Mali

Rapport Semi-Annuel
25 Septembre 25 – 31 Décembre 2000

Numéro de contrat 688-A-00-00-00353-00

Durée du projet: du 25 septembre 2000 au 30 juin 2003

Date de soumission:

Le 28 février 2001

A

Northern Region Health and Hygiene Project

Le Projet de Santé et d'Hygiène de la Région Nord (NRHHP), dans les cercles de Tombouctou et de Gourma-Rharous, a débuté le 25 Septembre, 2000. Les premiers mois du projet ont été principalement consacré à l'ouverture du bureau, l'acquisition d'équipement et fournitures, le recrutement du personnel, les introductions auprès des autorités et communauté, la planification et la collecte des données de base.

Activités

Octobre

- Ouverture du bureau et acquisition d'équipement
- Recrutement du personnel
  - 1 Coordinateur eau et assainissement (Louis Haldin)
  - 1 Educateur pour la santé (Fatty Amoye)
  - 2 Animateurs (Elmounzer Ag Jiddou, Hawa Touré)
  - 1 Administrateur (Hamadoun Haïdara)
  - 1 Comptable/logisticien (Cheick Bounama Cissé)
  - 2 Chauffeurs
  - 2 Gardiens
- Informer les services techniques et administratifs de l'ouverture du projet, y compris des buts, objectifs et stratégies prévus.
- Participation au réunion trimestriel de la Plate-forme des Partenaires de Développement du cercle de Gourma-Rharous. Les ONG et d'autres partenaires de développement actifs dans le cercle se réunissent pour discuter des activités récentes et futures, des interventions et des stratégies, des possibilités de collaboration, etc. Cette réunion a donné à MCDI l'occasion de présenter le projet aux autres partenaires du cercle et aux autorités administratives du Gourma-Rharous.
- Démarrage du processus pour l'obtention d'un accord cadre avec le Ministère de l'Administration Territoriale et des Collectivités Locales.

Novembre

- Le personnel de MCDI a effectué des visites d'introduction dans toutes les écoles publiques et communautaires dans la zone d'intervention (cercle de Tombouctou et 5 communes du Gourma-Rharous). Les directeurs des écoles, les représentants des APE, les leaders communautaires et les élus communaux ont été contactés. Le coordinateur d'eau et assainissement a également évalué la situation des infrastructures d'eau et d'hygiène auprès des écoles. Le personnel d'éducation pour la santé a rassemblé les données démographiques des écoles. Un tableau présentant les résultats de la mission se trouve ci-dessous. L'Inspection d'Education Fondamentale a participé aux visites d'introduction et d'évaluation des infrastructures.

- Participation à la réunion régionale de la plate-forme des Partenaires de Développement à laquelle ont également participé pratiquement tous les ONG locales et internationales, les grands projets ainsi que d'autres associations de développement de la région de Tombouctou. Cette deuxième réunion de la plate-forme (la première a eu lieu en Juin 2000) a donné à chaque organisation l'occasion de partager ses activités et réussites récentes, les activités futures, les contraints liées aux activités de développement dans la région, et les stratégies adoptées pour l'exécution des projets. Cette réunion a eu aussi pour but de créer des tableaux standardisés qui regrouperont par site d'intervention dans toute la région les informations trimestrielles relatives aux activités présentes et futures. Cette présentation des informations permettra aux partenaires de développement d'éviter la duplication d'efforts et les aidera dans l'identification des possibilités de collaboration. MCDI est membre du comité pour l'élaboration de cet outil.

- Visite consultative de Mr. William Hoadley, ingénieur d'eau et assainissement, du 22 Novembre au 6 Décembre 2000. Le but de cette visite a été d'évaluer la qualité de construction et les conditions actuelles des puits et des latrines construits lors du projet CEWIGAP en 1999, d'apporter des solutions pour l'amélioration ou la réhabilitation des puits et des latrines, de fournir l'appui technique au coordinateur d'eau et assainissement afin d'améliorer les documents d'appel d'offre, et de participer à l'identification des nouveaux sites de construction de puits et de latrines.

- Participation à un atelier sur la santé et l'hygiène dans les écoles, organisé à Tombouctou par le ministère de la santé et l'UNICEF. L'UNICEF prévoit de fournir un appui aux services de santé de Gourma-Rharous pour lancer un programme d'éducation pour la santé dans les écoles du cercle. Des discussions entre l'UNICEF, le ministère de la santé et MCDI ont eu pour résultat l'ébauche d'une collaboration pour mener à bien le programme d'éducation sur la santé et l'hygiène dans les écoles. L'UNICEF a indiqué aussi la possibilité de fournir à MCDI les outils nécessaires à la promotion de l'hygiène dans les écoles, tels que des seaux pour se laver les mains, du savon, des balais, des tasses, etc.

Décembre

- Formation en méthodologie IEC du GRAAP (Groupe de Recherche d'Appui pour l'Autopromotion des Populations): 2 agents du projet NRHHP, l'éducatrice pour la santé et un animateur, ainsi qu'un animateur d'ARDIL (une ONG locale) ont assisté à un atelier de formation sur la méthodologie GRAAP pour l'éducation sur la santé dans les communautés. Cinq animateurs du programme santé de HI/ANS ont également assisté à l'atelier. MCDI et HI/ANS ont collaboré avec le Centre de Formation GRAAP de Bobo-Dioulasso, Burkina Faso, qui a envoyé un formateur au Mali pour organiser et diriger la formation.

- Préparations pour l'enquête de base sur les connaissances et pratiques sur la santé et l'hygiène, en collaboration avec le chef des projets de MCDI/Bénin, Mr. Lee Yellot. MCDI compte utiliser la méthodologie LQAS (sondage par contrôle de la qualité des

lots), qui facilitera le suivi continu des indicateurs du projet. L'enquête est programmée pour la deuxième semaine de Janvier 2001.

- Préparation d'un plan de travail de six mois par l'ensemble du personnel du projet.
- Examen et révision des modules de formation de l'éducation sur la santé et l'hygiène dans les écoles.
- Discussions avec PAM à Tombouctou pour une eventuelle collaboration dans le cadre de Food For Work pour la construction des puits et latrines.

Indicateurs de l'Objectif Stratégique du Nord de USAID/Mali

Indicateur	Octobre - Décembre 2000	Janvier - Juin 2001 (prévision)
Résultat Intermédiaire 1: Existence d'un partenariat dynamique entre les organisations communautaires, d'une part, les autorités locales et les partenaires au développement, d'autre part, dans les zones ciblées		
Nombre d'organisations communautaires formées en gestion et en éducation civique	0	35
Nombre d'organisations communautaires formées qui s'engagent dans le plaidoyer et les actions civiques avec les autorités ou les partenaires locaux au développement	0	35
Résultat Intermédiaire 2: Accroissement des activités économiques dans les zones ciblées		
Superficies mises en valeur pour la production céréalière, maraîchère et forestière (par hectare)	37,5 Ha	160,0 Ha (PIV, mares, projets maraîchers)
Valeur commerciale de la production céréalière, maraîchère et forestière (en dollars ou CFA)	20.259.250 CFA	
Montant de l'épargne mobilisée	7.640.697 CFA	10.000.000 CFA
Montant des prêts octroyés	13.349.000 CFA	15.000.000 CFA
Taux de remboursement des prêts	N/A – A partir 2001	100%
Nombre d'activités génératrices de revenus créées avec l'assistance des ONG partenaires	26	60
Résultat Intermédiaire 3: Amélioration de l'accès aux services sociaux de base dans les zones ciblées		
Nombre d'écoles créées/rénovées	N/A	N/A
Nombre d'élèves inscrits dans les écoles créées/rénovés	N/A	N/A
Nombre d'auditeurs alphabétisés	0	A déterminer
Nombre de centres de santé créés/rénovés	N/A	N/A
Nombre de visites enregistrées dans les centres de santé créés/rénovés	N/A	N/A
Nombre de points d'eau réalisés/rénovés	[6 (1999-2000)]	10
Indicateurs Internes du Programme		
Construction et commission de forages ou puits de grande diamètre avec pompe	0	10
Construction et commission de latrines pour garçons et	0	15

Indicateur	Octobre - Décembre 2000	Janvier - Juin 2001 (prévision)
filles aux écoles, CSCOM et centres communautaires		
Etablir et former les Comités Communautaires d'Eau pour mener des activités d'éducation pour la santé/IEC	0	35
Etablir et former les Comités d'Eau et Assainissement dans la maintenance et gestion des puits et latrines	0	35
Produire et diffuser les messages d'éducation pour la santé/IEC pour 15.000 enfants dans les écoles dans la zone d'intervention	Assemblement et adaptation des messages est une activité continue	200 enseignants seront formés en IEC et les messages de santé/hygiène

Appui Technique et Renforcement de Capacité

- William Hoadley, ingénieur en eau et assainissement, a visité le projet du 22 Novembre au 6 Décembre 2000 afin d'évaluer la qualité et la condition des puits et latrines construits lors du projet CEWIGAP en 1999-2000. Suite aux visites sur les sites, le consultant a proposé des solutions pour l'amélioration/réhabilitation des puits et des latrines, et pour aider le coordinateur d'eau et assainissement à améliorer la rédaction des documents d'appel d'offre. Le rapport du consultant se trouve en annexe.
- MCDI et HI/ANS ont organisé une formation méthodologique GRAAP aux agents techniques des deux organisations et d'une ONG locale, ARDIL. Un formateur du centre GRAAP de Bobo-Dioulasso, Burkina Faso a été recruté pour faciliter l'atelier. La formation a eu lieu du 11 au 20 Décembre à Rharous et dans les communautés environnantes.

Difficultés Rencontrées

A part les difficultés inhérentes au Nord telles que les distances entre les communautés, la géographie du désert, la logistique et les coûts élevés, la principale difficulté rencontrée est le fait que le projet ne dispose que d'un véhicule Land Rover en très mauvais état et d'une moto. Par conséquent il faut souvent louer des véhicules pour les activités normales du projet, ce qui ajoute des coûts imprévus.

Conclusion

Ce rapport comprend une période très brève d'activités de démarrage, y compris l'ouverture d'un bureau à Tombouctou, le recrutement de personnel, l'introduction du projet aux services administratives et techniques aussi bien qu'aux directeurs d'écoles, les APE, et les leaders communaux. Le renforcement de capacité interne a été promu par la formation du personnel technique du projet, la préparation des plans de travail, et la préparation de l'enquête de base sur la santé et l'hygiène.

Annexe 1

Données Démographiques et sur l'Infrastructure d'Hygiène Aux Ecoles et CSCOM dans la Zone d'Intervention

Ecoles Couvertes par le NRHHP avec Démographiques

	ECOLE	Lieux d'implantation	Commune	Cercle	Nombre Enseignants	Effect. Garçons	Effect. Filles	Effectifs par classe de la 1ère année à la 6ème année de la gauche vers la droite						Total
								1	2	3	4	5	6	
1	Hamma N'Gardia D	Bambara M	B. Maoundé	G.-Rharous	4	166	103	107	79	15	29	31	8	**269**
2	Abaday Kouachafa	Banikan	Banikan	G.-Rharous	1	67	62	129						**129**
3	M ElmouctarM. El	Egachar	Banikan	G.-Rharous	2	100	59	76	41	25	8	6	3	**159**
4	Agali Sidali	Gourzouguey	Banikan	G.-Rharous	4	88	61	49	32	25	18	15	10	**149**
5	Azourou A Tidji	Tourchawen	Banikan	G.-Rharous	3	105	75	83	46	21	13	12	5	**180**
6	B. Ahmed Sandi	Daka fifo	H Bomo	G.-Rharous	3	77	24	11	23	5	23	32	6	**100**
7	Faran Bakay	Madjakoy	Seréré	G.-Rharous	4	125	109	60	46	60	12	22	34	**234**
8	E Minkiri	Minkiri	Hamzakoma	G.-Rharous	1	19	16	15	20					**35**
9	Houd Ag Med	Benguel	Rharous	G.-Rharous	3	109	26	52	13	30	14	18	8	**135**
10	Bawani Alassan	Gaberi	Rharous	G.-Rharous	3	155	97	70	51	61	31	27	12	**252**
11	Agali Alhousseini	Rharous	Rharous	G.-Rharous	6	172	118	81	56	41	38	40	34	**290**
12	Hamma M	Rharous	Rharous	G.-Rharous	6	199	168	63	58	59	57	102	28	**367**
13	Aly Ghani M	Kano	Seréré	G.-Rharous	3	89	70	45	33	49	32			**159**
14	E Toya	Toya	Alafia	Tombouctou	2	36	46	30	52					**82**
15	E. O. Wadidjé	Hondou.b.koyna	Alafia	Tombouctou	2	70	70	70	70					**140**
16	E. Mora	Mora	Alafia	Tombouctou	1	68	46	56	34	24				**114**
17	A. O Djirigoumo	Tassakane	Alafia	Tombouctou	4	74	60	40	11	41	20	15	7	**134**
18	Aguikoul	Tedeyni	Alafia	Tombouctou	2	77	73	24	42	55	29			**150**
19	M. Ali Ag Attaher	Tintelout	Alafia	Tombouctou	3	67	43	37	49	15	6	4		**111**
20	Elhaj Ali	Tiriken	Alafia	Tombouctou	3	53	71	49	20	34	31			**134**
21	Assadou K Touré	B Inali	B Inali	Tombouctou	6	97	101	40	32	30	27	39	29	**197**
22	Sekou	Bregoungou	B Inali	Tombouctou	2	44	38	50	32					**82**
23	Bolel	Milala	B Inali	Tombouctou	2	60	59	59	60					**119**
24	Mahamar Hakka	Arnassaye	B Inali	Tombouctou	2	49	51	59	41					**100**
25	A Abdou	Djindjina K	B Inali	Tombouctou	3	55	70	76	18	19	12			**125**
26	Moulay Aly	Assidi	Ber	Tombouctou	2	55	38	43	28	22				**93**
27	Adoumaha Ag M	Ber	Ber	Tombouctou	6	203	110	102	78	55	30	18	19	**302**

	ECOLE	Lieux d'implantation	Commune	Cercle	Nombre Enseign-ants	Effect. Garçons	Effect. Filles	Effectifs par classe de la 1ère année à la 6ème année de la gauche vers la droite						Total
								1	2	3	4	5	6	
28	Maata Ag Mamma	Erintedjeft	Ber	Tombouctou	2	22	14	4	32					**36**
29	E. Hal Docknane	Hal Docknane	Ber	Tombouctou	1	26	24	50						**50**
30	Elbakay	Teherdjé	Ber	Tombouctou	2	97	60	49	38	32	23	10		**152**
31	Souleymane Med	Aglal	Lafia	Tombouctou	5	113	85	40	27	57	31	18	15	**188**
32	M Aguissa	Bori	Lafia	Tombouctou	4	114	94	34	36	37	24	24	53	**208**
33	Banahari Bokar	Kagha	Lafia	Tombouctou	4	120	88	63	54	60	25	6		**208**
34	E. Agouni	Agouni	Salam	Tombouctou	3	39	24	32	28		3			**63**
35	S.M. El Oumrani	Nibkit El Ilk	Salam	Tombouctou	3	101	58	36	47	34	22	10	10	**159**
36	M. Elmouctar. Dit Koy	Tindjambane	Salam	Tombouctou	3	52	23	32	23	20				**75**
37	E. de la Paix	Abaradjou	Tombouctou	Tombouctou	6	255	158	126	121	98	51	20		**416**
38	M. Fondogoumo	Abaradjou	Tombouctou	Tombouctou	6	361	323	144	139	163	86	57	95	**684**
39	A. Daouna	B. farandi	Tombouctou	Tombouctou	8	225	184	60	101	99	51	50	48	**409**
40	A. Moya	B. farandi	Tombouctou	Tombouctou	7	327	275	97	139	78	70	128	90	**602**
41	S.A.B. Santao	Sanfil	Tombouctou	Tombouctou	5	196	147	89	66	105	50	33		**343**
42	A. Saloum	Sankoré	Tombouctou	Tombouctou	6	240	165	94	91	66	63	91		**405**
43	C. S. Mahmoud I	Sankoré	Tombouctou	Tombouctou	9	339	290	128	124	132	126	51	68	**629**
44	C. S. Mahmoud II	Sankoré	Tombouctou	Tombouctou	8	332	314	120	84	112	140	126	64	**646**
45	Bahadou	Sareykeyna	Tombouctou	Tombouctou	23	333	310	98	118	149	91	91	96	**643**
46	Bahadou II	Sareykeyna	Tombouctou	Tombouctou		353	357	126	130	132	132	108	82	**710**
47	Bahadou III	Sareykeyna	Tombouctou	Tombouctou		333	316	129	125	126	123	64	82	**649**
48	Baydodji	Barize	Tombouctou	Tombouctou	3	67	63	69	29	32				**130**
49	C. Nouh	Kabara	Tombouctou	Tombouctou	7	203	165	80	64	88	36	55	45	**368**
50	E.Tassinsak	Tassinsak	Tombouctou	Tombouctou	1	31	24	55						**55**
				Totaux	**199**	**6758**	**5425**	**3331**	**2681**	**2306**	**1577**	**1323**	**951**	**12169**

1. Situation d'eau potable et latrines au début du projet

	Ecoles	Pas de source d'Eau Potable	Pompe fonction-nelle	Puits fonction-nelle	Pompe en panne ou mauvaise	Puits non fonction-nelle	Latrines en bon état	Latrines abîmées	Latrines CARE ou E du Sahara	Pas de latrines
1	Hamma N'Gardia D		X							X
2	Abaday Kouachafa	X					X			
3	M Elmouctar M. El		X					X		
4	Agali Sidali		Xem	X				X		
5	Azourou A Tidji					X				X
6	B. Ahmed Sandi	X								X
7	Faran Bakay				X	X				X
8	E Minkiri					X	X			
9	Houd Ag Med			X						X
10	Bawani Alassan			X						X
11	Agali Alhousseini			Xes			X			
12	Hamma M					X	X			
13	Aly Ghani M			X			X			
14	E Toya	X							X	
15	E. O. Wadidjé		X				X			
16	E . Mora	X								X
17	A. O Djirigoumo		X				X			
18	Aguikoul		X				X			
19	M.Ali Ag Attaher	X					X			
20	Elhaj Ali	X					X			
21	Assadou K Touré		X				X			
22	Sekou	X							X	
23	Bolel	X							X	
24	Mahamar Hakka	X							X	
25	A Abdou		X				X			
26	Moulay Aly		X					X		
27	Adoumaha Ag M				X					X
28	Maata Ag Mamma	X								X
29	E. Hal Docknane	X							X	
30	Elbakay		X				X			
31	Souleymane Med		X							X
32	M Aguissa			Xes				X		
33	Banahari Bokar		X				X			
34	E. Agouni	X								X
35	S.M.EL Oumrani		XPS						X	
36	M. Elmouctar. Dit Koy		XPS						X	
37	E. de la Paix		X				X			
38	M. Fondogoumo				X	X	X			

	Ecoles	Pas de source d'Eau Potable	Pompe fonction-nelle	Puits fonction-nelle	Pompe en panne ou mauvaise	Puits non fonction-nelle	Latrines en bon état	Latrines abîmées	Latrines CARE ou E du Sahara	Pas de latrines
39	A. Daouna	X					X			
40	A. Moya		X			X	X			
41	S.A.B.Santao	X					X			
42	A. Saloum	X					X			
43	C. S. Mahmoud I				X	X	X			
44	C. S. Mahmoud II						X			
45	Bahadou		X			X	X			
46	Bahadou II		X				X			
47	Bahadou III		X				X			
48	Baydodji		X				X			
49	C. Nouh		X				X			
50	E .Tassinsak			X						X
	Total	**15**	**21**	**7**	**4**	**8**	**27**	**4**	**7**	**12**

PS = pompe solaire
em = eau mauvaise
es = eau saumâtre

L'Etat au début du projet des latrines et des points d'eau

Situation des latrines

Nombre des écoles ayant des latrines en bon état	27
Nombre des écoles ayant des latrines en très mauvais état ou abîmées	4
Nombre des écoles ayant des latrines du système CARE-population	7
Nombre des écoles n'ayant pas des latrines	12

Situation des points d'eau

Nombre des écoles ayant chacune une pompe manuelle fonctionnelle	21
Nombre des écoles ayant chacune un puits fonctionnel	7
Nombre des écoles ayant une pompe en panne ou en très mauvais état	4
Nombre des écoles ayant chacune un puits sans eau ou hors usage	8
Nombre des écoles n'ayant de source d'eau que le fleuve ou rien	15

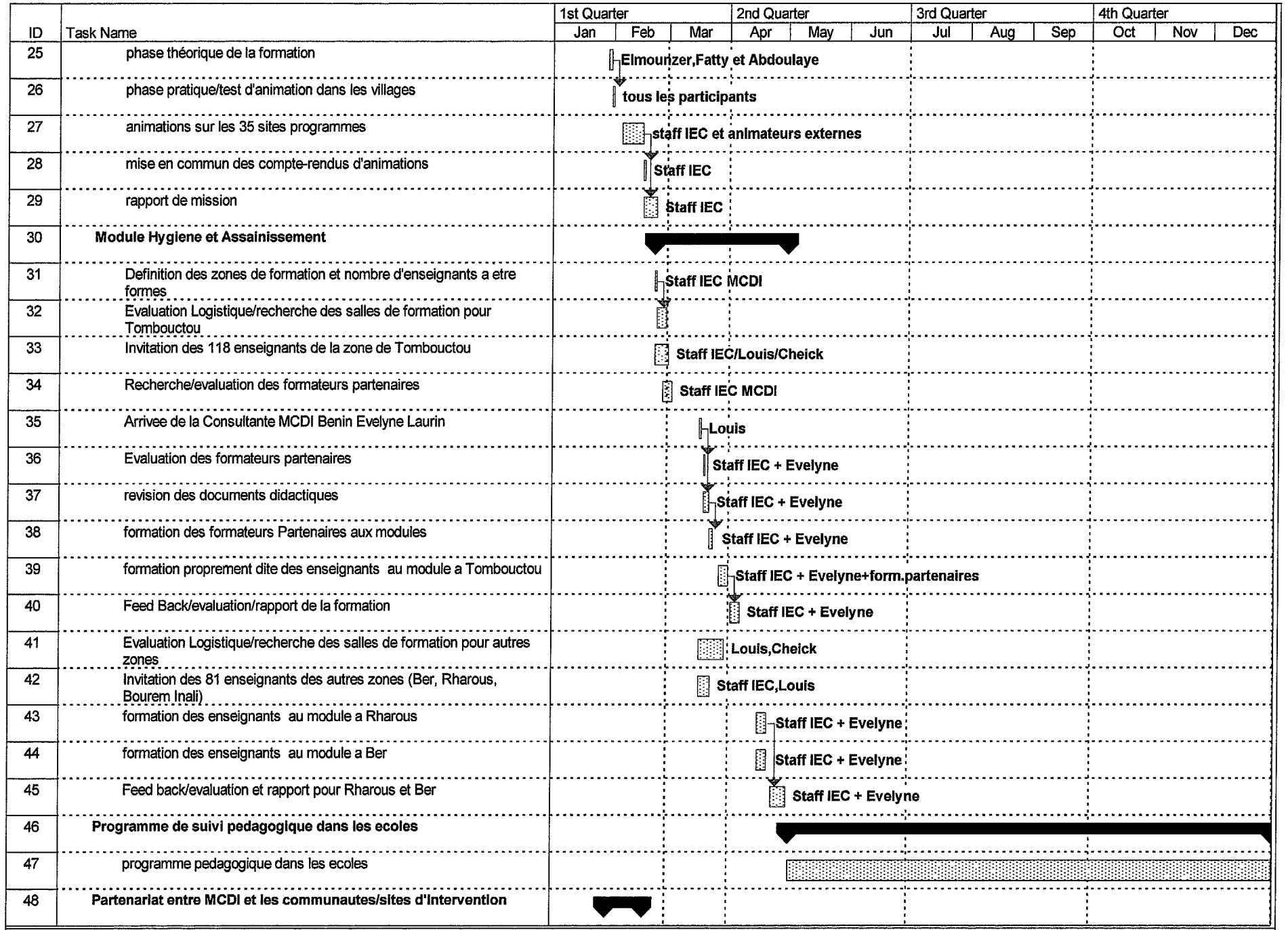
Annexe 2

Planification 2001

<u>Activités Prévues pour la Composante Eau et Assainissement</u> (Janvier – Juin 2001)

1. **Construction des Latrines**
   a. Visite des sites potentiels (50 écoles)
   b. Sélection des sites d'intervention
   c. Dimensionnement/définition des ouvrages a construire
   d. Recherche et Sélection des entreprises
   e. Préparation documents d'appel d'offres
   f. Lancement de l'appel d'offres/soumission par les entrepreneurs
   g. Ouverture des plis
   h. Dépouillement/étude des offres
   i. Sélection des entrepreneurs
   j. Signature des contrats
   k. Construction proprement dite
   l. Réception provisoire
2. **Construction des puits et forages**
   a. Visite des sites potentiels (50 écoles)
   b. Sélection des sites d'intervention
   c. Dimensionnement/définition des ouvrages a construire
   d. Recherche et Sélection des entreprises
   e. Préparation documents d'appel d'offres
   f. Lancement de l'appel d'offres/soumission par les entrepreneurs
   g. Ouverture des plis
   h. Dépouillement/étude des offres
   i. Sélection des entrepreneurs
   j. Signature des contrats
   k. Construction proprement dite
   l. Réception provisoire
3. **Education pour la santé/hygiène**
   a. Finalisation des matériels IEC
   b. Identification des animateurs (des ONG locales)
   c. Initiation des animateurs en méthodologie GRAAP
   d. Mise en disponibilité des outils et matériel pour les animations sur le terrain
   e. Mission d'information et de mobilisation des communautés concernées sur le déroulement des animations.
   f. Exécution des animations sur le terrain
   g. Formation des enseignants en éducation pour la santé/hygiène

ID	Task Name	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	**WORKPLAN NRHHP 2001**												
2	**Enquête de base CAP**												
3	Etude du formulaire	Staff IEC											
4	repartition des sites et villages en 5 zones	Staff IEC											
5	identification des enquêteurs	Staff IEC											
6	echantillonage	Michael											
7	information des autorités concernées (CAP, DRS)	Staff IEC											
8	information des enquêteurs	Staff IEC											
9	arrivée du consultant (Lee Yellot)												
10	entretien avec le consultant	Staff IEC											
11	formation théorique des enqueteurs	Staff IEC cosultant											
12	enquête test	enquêteurs,superviseurs et staff IEC											
13	enquête proprement dite	enquêteurs,Staff IEC,superviseur											
14	enquête dans la zone du Gourma	enquêteurs externes											
15	saisi des données de l'enquête	Louis,Hawa et Fatty											
16	finalisation rapport	Staff IEC/Louis/Lee											
17	**Sensibilisation des populations par la méthodologie GRAAP**												
18	elaboration d'un plan d'activité (35 sites programmes)	Staff IEC											
19	selection et coloration des dessins	staff dessinateur											
20	préparation des calendriers de formation et d'animation	Staff IEC											
21	information des ONG pour l'identification des animateurs	Staff IEC											
22	guide pour l'initiation des animateurs à la méthodologie GRAAP	Elmounzer											
23	information et préparation des communautés pour les animations	Elmounzer											
24	initiation des animateurs sur la méthode	Elmounzer,Fatty et Abdoulaye											


1st Quarter
2nd Quarter
3rd Quarter
4th Quarter
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
ID
Task Name
25 phase théorique de la formation
Elmourizer,Fatty et Abdoulaye
26 phase pratique/test d'animation dans les villages
tous les participants
27 animations sur les 35 sites programmes
staff IEC et animateurs externes
28 mise en commun des compte-rendus d'animations
Staff IEC
29 rapport de mission
Staff IEC
30 Module Hygiene et Assainissement
31 Definition des zones de formation et nombre d'enseignants a etre formes
Staff IEC MCDI
32 Evaluation Logistique/recherche des salles de formation pour Tombouctou
33 Invitation des 118 enseignants de la zone de Tombouctou
Staff IEC/Louis/Cheick
34 Recherche/evaluation des formateurs partenaires
Staff IEC MCDI
35 Arrivee de la Consultante MCDI Benin Evelyne Laurin
Louis
36 Evaluation des formateurs partenaires
Staff IEC + Evelyne
37 revision des documents didactiques
Staff IEC + Evelyne
38 formation des formateurs Partenaires aux modules
Staff IEC + Evelyne
39 formation proprement dite des enseignants au module a Tombouctou
Staff IEC + Evelyne+form.partenaires
40 Feed Back/evaluation/rapport de la formation
Staff IEC + Evelyne
41 Evaluation Logistique/recherche des salles de formation pour autres zones
Louis,Cheick
42 Invitation des 81 enseignants des autres zones (Ber, Rharous, Bourem Inali)
Staff IEC,Louis
43 formation des enseignants au module a Rharous
Staff IEC + Evelyne
44 formation des enseignants au module a Ber
Staff IEC + Evelyne
45 Feed back/evaluation et rapport pour Rharous et Ber
Staff IEC + Evelyne
46 Programme de suivi pedagogique dans les ecoles
47 programme pedagogique dans les ecoles
48 Partenariat entre MCDI et les communautes/sites d'Intervention

ID	Task Name	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
49	Information des responsables de sites	Staff IEC											
50	Signature d'un contrat de partenariat	MCDI/Partenaire											
51	**Recrutement d'un Superviseur des Constructions**												
52	Appel de candidatures, evaluation et selection/signature contrat/embauche	Staff IEC											
53	**Food for Work**												
54	Fourniture des vivres		PAM Tbt										
55	Reception des vivres et Distribution sur les sites		Chauffeurs MCDI Tbt										
56	**Construction des 6 Puits, 1 surcreusement de puits et 3 Forages**												
57	Recherche et Selection des entreprises	Louis											
58	Lancement de l'appel d'offres/soumission par les entrepreneurs	Louis											
59	Ouverture des plis		Staff MCDI										
60	Depouillement/etude des offres		Louis										
61	Selection des entrepreneurs		Louis										
62	Devis et contrat avec la DRHE pour forages		Louis/DRHE										
63	Signature des contrats		MCDI										
64	Construction proprement dite			Entrepreneurs									
65	Reception provisoire				Louis								
66	**Construction des 15 blocs de latrines**												
67	Recherche et Selection des entreprises	Louis											
68	Lancement de l'appel d'offres/soumission par les entrepreneurs	Louis											
69	Ouverture des plis		Staff MCDI										
70	Depouillement/etude des offres		Louis										
71	Selection des entrepreneurs		Louis										
72	Signature des contrats		MCDI										

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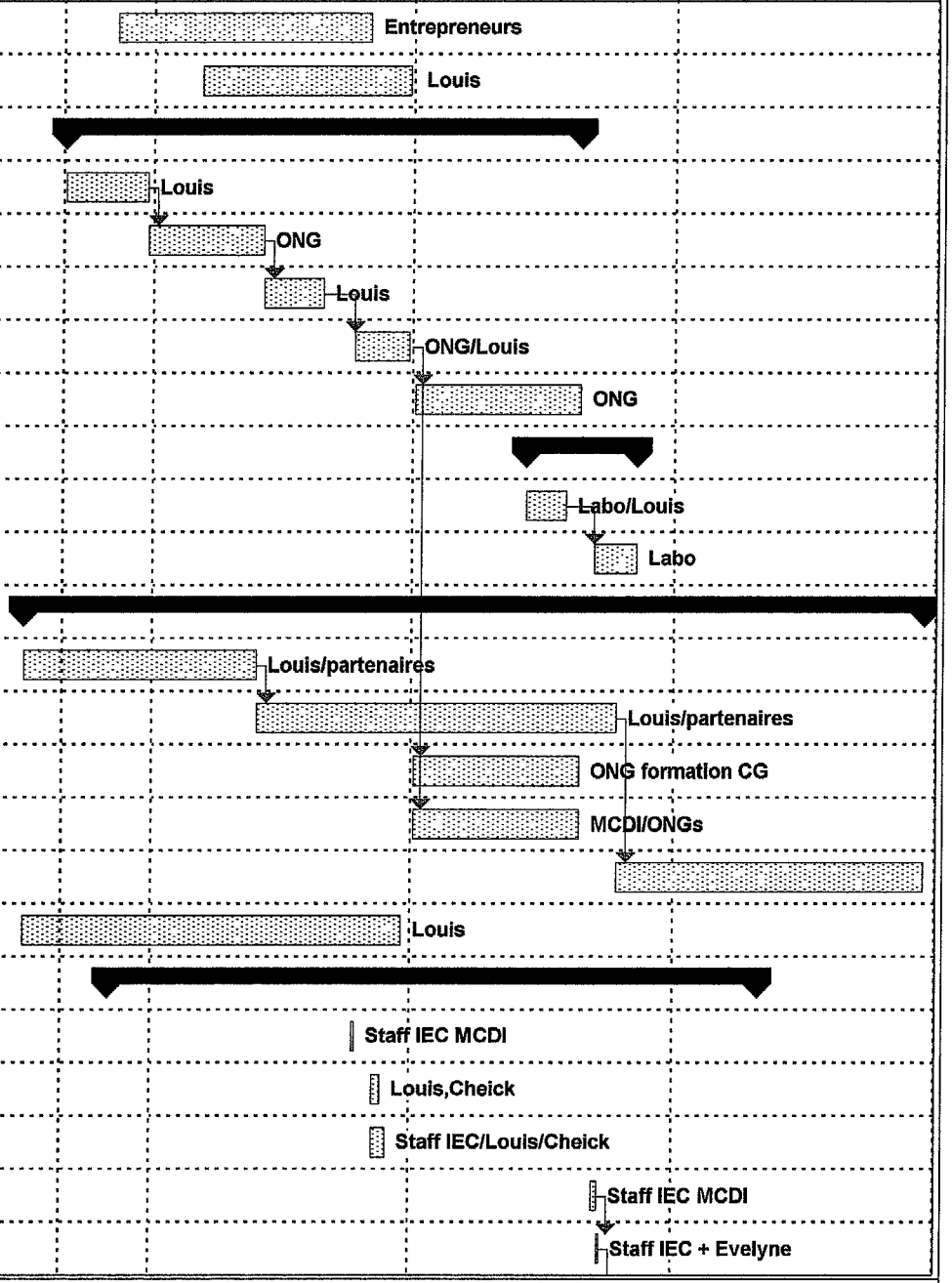
ID	Task Name	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
73	Construction proprement dite												
74	Reception provisoire												
75	**Formation de Comites de Gestion des points d'eau et des latrines**												
76	Recherche d'une ONG pour la realisation de la formation												
77	Etude, ecriture du programme de formation par l'ONG												
78	Revision du programme prevu par l'ONG												
79	Elaboration definitive du programme par l'ONG et revision conjointe/signature 'un contrat												
80	Formation proprement dite par l'ONG												
81	**Analyse de la qualite de l'Eau (labo Tombouctou ou Bamako)**												
82	Mise en place d'un programme pour les sites de 1999 et 2001												
83	Realisation de ce programme sur le terrain												
84	**Programme de maintenance des pompes**												
85	Etude de faisabilite avec les partenaires locaux (ONG, Entrepreneurs, DRHE)												
86	Etude et mise en place d'un programme												
87	Sensibilisation des communautes (lie a la Formation Comites de Gestion)												
88	Etude et mise en place eventuelle d'un fonds de roulement (lie a la formation Comites de Gestion)												
89	Signature d'un contrat avec les ONG et lancement du programme												
90	Recherche parallele d'un autre systeme de maintenance												
91	**Modules Paludisme et Diarrhee**												
92	Definition des zones de formation et nombre d'enseignants a etre formes												
93	Evaluation Logistique/recherche des salles de formation pour Tombouctou												
94	Invitation des 118 enseignants de la zone de Tombouctou												
95	Recherche/evaluation des formateurs partenaires												
96	Evaluation des formateurs partenaires												



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ID	Task Name	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
97	revision des documents didactiques									Staff IEC + Evelyne			
98	formation des formateurs Partenaires aux modules									Staff IEC + Evelyne			
99	formation proprement dite des enseignants au module a Tombouctou									Staff IEC + Evelyne+form.p			
100	Feed Back/evaluation/rapport de la formation									Staff IEC + Evelyne			
101	Evaluation Logistique/recherche des salles de formation pour autres zones			Louis,Cheick									
102	Invitation des 81 enseignants des autres zones (Ber, Rharous, Bourem Inali)			Louis,Staff IEC									
103	formation des enseignants au module a Rharous										Staff IEC		
104	formation des enseignants au module a Ber										Staff IEC		
105	Feed back/evaluation et rapport pour Rharous et Ber										Staff IEC		
106	**Identification des sites 2002**												
107	visites/evaluation de terrain/etude technique pour eau et latrines											Staff IEC,	
108	selection definitive des sites d'intervention											Staff IE	
109	Definition des actions IEC											Staff I	
110	**Construction des puits/Forages et latrines**												
111	Definition des constructions a realiser											Louis,	
112	**Workplan 2002**												
113	Elaboration du workplan 2002												

Activités Prévues pour la Composante Développement Economique

Activités	Janvier	Février	Mars	Avril	Mai	Juin
Mise en œuvre des projets qui avait été monté dans le cadre du Cewigap						
Priorisation de nouvelles demandes						
Appui au montage des projets						
Décision (CAF) et convention nouveaux projets						
Mise en œuvre projet par les promoteurs						
Suivi des projets en cours de mise en œuvre						
Formation des promoteurs						

Annexe 3

Rapport sur la Visite Technique en Eau et Assainissement Du Consultant Mr. William Hoadley

REPORT ON

TECHNICAL ASSISTANCE TO NORTHERN REGION HEALTH AND HYGIENE PROJECT (NRHHP)

Timbuktu, Mali
22 November - 6 December, 2000

PREPARED FOR

MEDICAL CARE DEVELOPMENT, INC.
International Division
1742 R Street, N.W.
Washington, D.C. 20009

I. SUMMARY OF ACTIVITIES

Day 1: 27 November - Initial Review of Program and Issues of Concern

During initial discussions, several issues of particular concern were discussed in general and in the context of the situation on the ground and in Timbuktu in particular:

1. Materials of Construction. The use of local materials (banco) was a major concern as it is vulnerable to rapid deterioration during rains. It is said that rainstorms have become increasingly intense in recent years and that this has impacted on the durability and life of banco as a building material. This has resulted in the destruction of the roofs and walls of many homes. The replacement of banco with more durable materials naturally impacts on the costs of materials used especially in the construction of latrines.

2. Costs/Prices of Construction Materials. At certain times and under conditions which make it difficult to transport materials such as cement to Timbuktu, prices can rise substantially (up to 50% in 1999). This can severely impact on the ability of small contractors to carry out their work as they do not have the resources to order materials ahead and prepare for anticipated or unanticipated fluctuations in price or local unavailability in the local market.

3. Proper Use of Handpumps. It has been observed that children, and adults as well, operate handpumps with short, rapid strokes. This is hard on the pumps and their moving parts, and can be expected to shorten the life of key parts.

4. Health Education. This is a key element of the Project and is essential to improving conditions and achieving potential benefits. This apparently has not been a component of previous latrine and water projects, perhaps because they have often been linked to emergency activities. Health education as conceived under the Project is focused on schools. Under the previous Project, 22 teachers received training to provide health education in schools receiving latrines and/or wells. However, lack of trained health educators able to plan and implement effective programs constitutes a significant constraint to development of health education support.

5. Maintenance. This is a serious concern impacting on the life of the pumps. A German company has undertaken to create a mechanism for providing maintenance, but it is very expensive. Also, skilled mechanics and other workers are not available in Timbuktu, nor are spare parts available in the local market.

6. Allocation of Latrine Stalls. The question of who uses school latrines, i.e., numbers of stalls allocated to schools (based on provision of one stall per 80 students), and their potential reallocation among students and teachers was raised, as experience shows that teachers commonly allocate a latrine stall exclusively for their own use. This, in fact, has been the experience under the Project. This must be accepted as a fact of life and accommodated in future. It is, in fact, appropriate.

Day 2: 28 November - Site Visits by Auto

TEDEINI

The school at Tedeini, located 13 km from Timbuktu, is served by a well and a latrine constructed under the Project.

The community is semi-nomadic consisting of about 1,000 people including about 150 school children. At the time of the site visit, there were about 15-20 students in class (about the capacity of the school building).

The school building itself, built end of 1999 and already suffering sever weathering damage, illustrated the vulnerability of banco construction to the ravages of the weather,

The well was a dug well constructed by Opération Puits. The water table was at a depth of about 15 meters. There was a chain and lock on the pump handle to prevent use by persons not members of the community or the school (a nearby open dug well was heavily used by people and animals, See below).

Observations:

- the concrete block wall surrounding the well was somewhat weathered. It appears that this is primarily an effect of sand and wind. Concrete block construction is necessary and MCDI must assure the quality of construction and construction materials.
- the bolts fastening the pump base to its seat in the pump platform were bent and loosened, allowing leakage into the well and in longer term could cause damage to the bolts and their seatings. Tightening of fastening bolts should be a part of routine maintenance.
- the cover of the well access was constructed to set loosely over the access hole and was easily moved. In addition, it had become chipped on one corner. The result was that sand and water could flow back into the well from the surface of the platform causing contamination of the well. Covers should be sunk in the platform and sealed. Designs call for sinking of covers, and this was the case in wells observed on the second day of site visits. It was understood that the contractor was instructed to rebuild the access according to plan, but this had not been done.
- the steps accessing the pump platform were located to the right of the handle of the pump. However, people tend to stand to the left of the handle when pumping. Steps should be placed to the left of the handle to provide easier access.

- People pump with rapid, short strokes which can stress the pump. An effort is needed to encourage people to use pumps more carefully at the time of installation. If the pump is to be used more widely by the community (see below), instruction in the use of the pump will be important. It is noted, however, that the design of the pump is not conducive to smooth operation.

- drainage from the well was directed and flowed to an area used for making banco and towards a garden. Excellent.

- there was obvious pride in the well and the latrine

The latrine, constructed by Guindo, had four stalls housing squat holes, two for boys, and two for girls. It was kept locked and, while not heavily used, it was being used and was maintained in a very clean condition. The structure, vent pipes and mosquito netting were in good condition save for minor pealing of plaster and undermining of sand around the steps.

A second open dug well, constructed by UNICEF in 1986 and later deepened by CARE, was located a short distance from the school. This well was heavily used by people and by animals and was provided with facilities for emptying buckets and troughs for use by animals. The well and ancillary structures were highly susceptible to contamination and poor hygienic practices. The Water and Sanitation Coordinator hopes that by working with the community, the well at the school will be used by the community as a whole for drinking purposes, and that the unprotected UNICEF well will be used for watering animals and for gardening. This will depend on an effective health education effort to encourage support from the community to cover maintenance costs based on an appreciation of benefits and value of the protected water supplies. This may not be possible in communities where the school is located at a considerable distance from the community (as in Kagha and Djindjina Koira). It is noted further that the UNICEF well was said to be used not only by community members. If this is the case, there will always be use for drinking purposes. The Water and Sanitation Coordinator would like to encourage community use of school wells in other communities as well

A second latrine (one stall) constructed by another NGO was located near the school. The wall was constructed of banco and was severely weathered. It was provided with a poorly constructed and designed platform. The latrine had been constructed without a roof or door, and the people had added a door. Formerly, it was pointed out, this latrine was used by teachers, but since it was in such poor condition, they asked to be provided with a new one. However, since four stalls were provided, one is in practice reserved for teachers.

BARIZE

The school at Barize, located 2 km from Timbuktu, is served by a well and latrine constructed under the Project.

The well located at the school in Barize is a dug well constructed by Opération Puits.

Observations: · Although the bidding documentation called for plastered banco walls, the contractor provided concrete walls at no increase in cost. However, the concrete block wall surrounding the well was severely weathered. Again, it appears that this is primarily an effect of sand and wind. Concrete block construction is necessary and MCDI must assure the quality of construction and construction materials.

· The pump base was not tightly bolted and seated, allowing wear and drainage into the well. Tightening of fastening bolts should be a part of routine maintenance.

· The cover to the well access, was constructed to set loosely over the access hole and was easily moved. In addition, it had become chipped on one corner. The result was that sand and water could flow back into the well from the surface of the platform causing contamination of the well. Covers should be sunk in the platform and sealed. Designs call for sinking of covers, and this was the case in wells observed on the second day of site visits. Again, the contractor was instructed to rebuild the access to conform to the design, but failed to do so.

· A soakaway was located next to the well platform and wall after MCDI left the Project. The soakaway was full of water and constructed so that water backed up filling the drains around the well platform. Furthermore, the distance from the well to the soakaway was less that 2 meters. Areas surrounding wells should be graded to allow drainage away from wells, and soakaways should be constructed as a part of projects and at a distance and in a manner to prevent back-up of runoff into the well enclosure (the top of the soakaway should be at a lower elevation than that of the platform).

The latrine at the school in Barize, constructed by Guindo, consisted of three stalls. One, separated by a wall on the outside platform, was reserved for teachers. Of the other two, one was for boys and one for girls. The overall appearance was of neglect.

Observations: · the keys to the toilets were missing and there were feces outside the stalls on the outside slab, which is protected by a wall. There needs to be work with the community to take a more active part in their latrine program.

· there was wind and sand erosion of the concrete block wall surrounding the well. Concrete block construction is necessary and MCDI must assure the quality of construction and construction

materials.

- the vent pipes, constructed on the outside of the superstructure, had been removed. It appears it is necessary to locate vent pipes inside superstructures, or perhaps more importantly, to follow-up with this community as the general situation appears to reflect a low value placed on the latrine by the community and the school teachers. Note: it is not ideal to locate vent pipes within the superstructure, as heating of the pipes by the sun aids in creating circulation of air through the pit and out the vent pipe. The wind passing over the vent pipe may be sufficient to assure circulation, however (see more further discussion of "Design Issues" under "Discussion and Recommendations").

It is noted that the 10% final payment (guaranty) has not been paid to the contractor, and unacceptable work can be repaired.

ASSIDI

The school at Assidi, located 16 km from Timbuktu, is served by a well and latrine constructed under the Project. The forage was completed and the latrine constructed prior to the termination of the first phase of the Project. However, the latrine was not accepted. The structure surrounding the well was constructed, and the pump installed, after termination of the Project, and the final payment was not made for the latrine.

The well is a borehole/forage. The platform is circular. It has a low wall and no drain. The drilling was conducted by the Direction Régionale de l'Hydraulique, and the platform, the wall, and the pump were constructed/installed by Tous Travaux Hydrauliques.

Observations:

- the quality of the construction was superior to that at the previous sites, and wind/sand erosion had not occurred.
- the low wall permits the entrance of animals into the well enclosure. The height of the walls should be increased and it should be extended around the entrance to prevent entry of animals.
- There was no drainage provided. Drainage should be provided at this well.

The latrine at Assidi was constructed by Entreprise Zeidani Services (this company has since gone out of business). It was constructed of limestone. However, its doors and partition walls had been destroyed by a storm, and the latrine had been abandoned. Even wooden door frames no longer were set in place (although they had not been removed from the site), and animal feces littered the outside platforms. It is planned that this latrine will be rehabilitated.

TIRIKENE

The school at Tirikene, located 27 km from Timbuktu, was provided with a latrine through the Project. A borehole constructed by Direction Regionale de l'Hydraulique fitted with an India Mark II pump provided previously through a German project, was located about 250 meters from the school. The well structure was in excellent condition.

The latrine constructed under the Project was in use, but the doors were locked as the school was not in session at the time of the visit.

Observations:
- the vent pipes opened horizontally, which may cause them not to function as effectively as a vent pipe opening vertically and open to the wind from all directions. Vent pipes should open vertically.
- the mosquito netting was missing from the vent pipes and should be replaced.
- the keys were missing, and as in Barize, there were feces outside the stalls on the outside slab which is protected by a wall. There needs to be follow-up with the community.

It is noted that the 10% final payment (guarantee) has not been paid to the contractor, and unacceptable work can be repaired.

Day 3: 29 November - Site Visits by Pinasse

DJINDJINA KOIRA

This community is located about 33 km from Timbuktu and must be reached by pinasse until the water recedes during the dry season. Travel time by pinasse is about 3 hrs with a motor. The difficulty of transport, especially during the wet season and until the water level drops, is clear. The window available for construction between the end of the flooding of the river during one rainy season and the start of the next rainy season lasts no more than 4 to 5 months.

The school itself serves about 125 children out of a total community population of about 850.

The well was a dug well, about 5 meters to the water table, constructed by Tous Travaux Hydrauliques. There was a chain and lock on the pump handle.

Observations:
- the wall surrounding the well platform was of a good quality concrete.
- There were no steps to the pump platform.
- Drainage was poor and the surrounding area sloped towards the well.

- Sand accumulated within the walls.

It is noted that the 10% final payment (guaranty) has not been paid to the contractor, and unfinished work should be completed and unacceptable work repaired before final payment is made.

The latrine, constructed by Sane Touré, was built of limestone. The latrine included 3 stalls and was being used.

Observations:
- The outside wall, constructed of banco with a coating of concrete, had failed and had been removed by the community. The wall should be replaced.
- The vent pipe was external and opened horizontally.

KAGHA

This community is located about 35 km from Timbuktu and as in the case of Djindjina Koira, must be reached by pinasse.

The school in Kagha serves 208 students out of a total community population of about 1,010. The school is located at a distance from the community, and is served by a well and latrine provided under the Project.

The effects of weathering of banco were evident in the community, as elsewhere. The banco wall surrounding the school grounds which had been constructed a year earlier, had disintegrated and collapsed as a result of wind and rain weathering.

The well was constructed by Le Puits Nouveau and the pump was installed by Tous Travaux Hydrauliques. It is a dug well, water table about 6 meters depth.

Observations:
- The steps to the pump platform, constructed afte the termination of the CEWIGAP Project, are located in front of the pump spout, which is inconvenient.
- The pump platform is slightly concave and retains water. Designs could call for convex slope, and perhaps a drain channel and raised plinth to support containers. (The pump at Tirikene was provided with an iron mesh stand for containers).
- There was a drain to a soakaway and the water was used for watering trees planted by the school children in the schoolyard
- The wall was well constructed.

- Sand has accumulated within the enclosed area around the pump. There should be follow-up with the community to encourage keeping area clean.

The latrine, constructed by Guindo, included 3 stalls, 1 reserved for teachers, and 2 for children.

Observations:
- Vent pipes set inside the latrine opened horizontally.
- One vent pipes were broken. There should be follow-up with the community to encourage care of the latrine.

It is noted that the 10% final payment (guaranty) has not been paid to the contractor.

TEHERDJE

This community is located about 35 km from Timbuktu..

The new school at Teherdje serves 109 children. It is served by both a well and a latrine block provided under the Project.

The well was constructed by Tous Travaux Hydrauliques. It is a dug well, water table at about 4 meters.

Observations:
- The access cover is sunk and sealed. This was well done.
- The area surrounding the well is low, and there is no soakaway. This causes drainage problems.
- Water accumulates in drains which are filled with algae and should be kept clean by the community.
- The outside entrance wall was low, allowing animals to enter the well enclosure and animal feces were observed in the enclosure. The wall should be raised.

It is noted that the 10% final payment (guaranty) has not been paid to the contractor, and unfinished work should be completed and unacceptable work repaired before final payment is made.

The latrine, constructed by Sane Touré, had four stalls and was constructed of limestone. The vent pipes were external to the structure, but opened horizontally.

Day 4: 30 November - Review of Tender Documents

The Water and Sanitation Coordinator provided two sets of draft tender documents, one for dug

25

wells, and one for latrines, and each consisting of:

1. Avis de Consultation
2. Dispositions de L'Appel d'Offre Restreint
3. Cahier des Prescriptions Générales
4. Cahiers des Prescriptions Techniques et Particulières
5. Cadre de Devis Estimatif
6. Planning d'Exécution
7. Plans
8. Liste du Personnel et des Equipements
9. Modèle de Soumission
10. Modèle de Marché

No tender documents have as yet been drafted for drilled wells. It is noted that Direction Regionale de l'Hydraulique is the only contractor able to drill in the area.

The available draft tender documents were reviewed in detail and discussed point by point with the Water and Sanitation Coordinator.

Overall, the documents are comprehensive and very well prepared, and the comments and items discussed dealt primarily with minor inconsistencies and holdovers from earlier versions overlooked during revision. The Water and Sanitation Coordinator is well experienced in the preparation of these documents and this is reflected in their quality. Questions were raised about the following, but there is little requiring change:

1. Insurance on workers. The tender documents state that insurance is required in accordance with the laws of the Republic of Mali. Proof of insurance must be provided before a contract can be signed. This requirement is qualified by a statement to the effect that should the contract be signed in the absence of such proof, the responsibility for payment of any damages rested solely with the contractor. While recognizing the realities of the situation on the ground, it is not clear that this would protect MCDI in the event of a serious accident and resultant claim. It is probably the best one can do to cover MCDI, however.

2. Slumtesting. There is reference to slumtesting in the event of doubt about the quality of concrete. Again, recognizing the situation on the ground, this would be an unlikely course of action. But it provides recourse in the event of serious dispute, which is unlikely.

II. DISCUSSION AND RECOMMENDATIONS

The resumption of the CEWIGAP project is off to a quick start and is building on the lessons derived from experience implementing the previous Project. The Project health personnel and the Water and Sanitation Coordinator have visited 47 potential sites (primary schools), 25 in Timbuktu Circle and 22 in Gourma Rharous Circle, and the Water and Sanitation Coordinator is in the process of prioritizing these on the basis of absence of existing facilities, level of interest, needs, and what

needs to be done. During year 1, it is expected that 8 wells and 25 latrines will be constructed. A total of 80 latrines will be constructed over the life of the Project.

The Water and Sanitation Coordinator has a good appreciation for what needs to be done and a good understanding of the difficulties and constraints which face not only implementation, but achievement of benefits to communities. He has put together good tender documentation which incorporates innovations based on experience and lessons learned under the previous project. Constraints are severe, ranging from logistic problems to problems faced by beneficiaries themselves. Yet, communities establish schools and support them, which suggests that they are concerned and prepared to invest in their future. Still, they depend on their children and must draw on them to contribute labor, and in nomadic communities, their movement makes attendance on a regular basis difficult.

Key issues facing the Project include the following:

1. Materials. The primary issue with regard to materials of construction is that of the use of banco as a building material. It is becoming clear that this is not a viable material and cannot be protected from the effects of the weather. It should not be used as it may be expected to fail following exposure to rain.

2. Design Issues. In relation to dug wells, the design used and selection of pumps are consistent with those commonly used in Mali and appear to have stood the test of time (although it would be good to examine pumps in use for long periods of time and to review records of performance, maintenance and repairs over time). They are designed to a high standard. Designs for latrines constructed under the project are superior to others observed and have been further adapted based on experience gained under the first Project. Design changes include the following:

    - Roof Design - The new design includes a raised roof open on all sides permitting improved ventilation within the stalls. This should reduce odors (although these were not observed to be especially bad or excessive during site visits). It is possible that the increased light in the latrine stalls will increase fly populations and reduce the effectiveness of screened vent pipes as fly traps. Toilet holes probably should be provided with covers/plugs to be inserted when not in use.

    - Vent Pipes - According to the new plans, vent pipes will be located inside the latrine structures and will be open vertically under the roof. This will have the advantage of protecting the vent pipes from vandalism where needed (although they will be exposed within latrine stalls) and will allow draw up the pipes when the wind blows across their openings. This would also make removal of mosquito netting more difficult. It is noted that vandalism does not appear to be a problem where communities take pride in their schools, school wells, and latrines, which should be linked to health education and community development efforts.

      The disadvantage of locating vent pipes within latrine structures may be that they will not

be heated by the sun and will not draw as they would if located outside the structure. This may be assessed easily using smoke.

- Seats - The new designs provide for the construction of a seat in each toilet stall. There has been expression of interest in doing so on the part of beneficiaries. I have seen owners of household latrines in Southern Africa add seats of their own accord. It may encourage use and be easier to maintain clean, but will add some to cost. Attention should be given to the size and shape of the hole, however.

- Doors - The Water and Sanitation Coordinator has raised a question as to whether to replace wooden door frames and corrugated iron doors with more substantial materials. If a reasonably priced alternative is available, this would represent an improvement, and would enhance durability. However, where quality of work has been reasonable, and extreme weather has not yet been a problem, the present design does not appear to have been a problem.

3. Construction. Construction of latrines, and indeed, well structures, is subject to from designs. For instance, although designs of access covers on wells called for their sinking in the pump platforms, this design was not always followed. Furthermore, steps might be placed in different locations, and one instance were missing. At another well, the wall preventing the entrance of animals to the well enclosure was low, so that animals could enter.

   Likewise, during construction of latrines, vent pipes were installed in a variety of ways.

   But the quality of construction materials and workmanship is also a problem. The achievement of quality and durable work will require careful and close supervision of contractors through regular and frequent visits to construction sites. The Water and Sanitation Coordinator should personally participate in all final inspections.

4. Maintenance. Maintenance is key to lasting success of the Project and achievement of benefits. The India Mark II pump is a very durable pump which has been used in Mali, as well as many other countries, for over 20 years. During 4,000 hours of endurance testing at 45 meters on the Mali pump (India Mark II pumps manufactured in Mali, but materials inferior to those manufactured elsewhere), pivot bearings were found to be in good condition, but pump rod guides were worn, as well as the chain. However, skills and tools required to service the pump do not favor village level maintenance. The pump was rated by the UNDP-WB Rural Water Supply Hand pumps Project as unsustainable with village level maintenance, but was considered amenable to maintenance, at least at shallower depths, to area maintenance. Beyond 25 meters, assistance may be required from a mobile team, especially in case of breakdown, although in India, satisfactory maintenance has been carried out by area mechanics. Experience in Africa has not been as successful, and this would be very difficult to achieve in Timbuktu and Gourma Rharous.

   There was no opportunity during the present trip to visit Mark II pumps which had been in use for many years, although they have been in use in Mali since at least 1986. This would have

been useful to review previous experience and to assess maintenance requirements. It would be useful for the Project to obtain any ex-post evaluation reports (World Bank, UNICEF, CARE etc.) and for the Water and Sanitation Coordinator to make such an assessment prior to development of a maintenance program.

Chain lubrication and tightening of fasteners constitute the primary routine maintenance operations. The manufacturers documentation recommends lubrication once per month. However, although conditions in Mali may lead to increased wear, use at schools should not be intense and less frequent servicing may be possible. The need for tightening fasteners was observed during the present visits. A visit to a pump (not a Project pump) in Terikene revealed that the head of the bolt fastening the pump head cover was severely worn, suggesting that efforts had been made to lubricate the chain. This also suggests use of inappropriate tools by inexperienced persons.

Experience during pump evaluation has shown that plunger seal replacement is the most common repair required. Use of nitrile rubber cup seals which are more abrasion resistant that leather and do not swell may reduce the need for repairs. Bearing failures do occur, but in the past, corrosion of pump rods and rising mains have occurred. A German company, Gauff Engineering, offers maintenance on a bimonthly basis with eventual replacement after 10 years. The cost, however, is very high (CFA 25,000/mo with a pump operator, or CFA 16,000/mo without an operator) although it includes replacement of the pump after 10 years.

It is strongly recommended that the Project work closely with a local NGO to develop a low cost system for providing preventive maintenance and for identifying needs for repairs that can prevent later failure. Major repairs may require assistance of contractors or the Gauff Engineering project. This should be accompanied by careful record keeping and analysis. It will also require 1) a thorough understanding and appreciation on the part of communities as well as their willingness to pay, and 2) close coordination, training, and assistance to the NGO, including provision of tool sets and a starter supply of spare parts. The latter could be replenished by drawing on a revolving fund paid into by the beneficiary communities. The objective would be an affordable maintenance system that would prolong the life of pumps and save money in the long run. It is recognized that distances are great and difficult travel represents a constraint which will impact on cost.

The Water and Sanitation Coordinator has suggested APROMORS or another local NGO as potential NGO partners. It may be desirable to seek the assistance of someone experienced in organizing, training, and managing a maintenance system for the India Mark II pump. There may be such people in Mali given the long experience with the pump in the country.

5. Health Education. Health education will be key to success of the water and sanitation program in terms of its impacts and sustainability. It will have to be carefully formulated based on the initial and planned KAP studies, and initiated at the start of Project interaction with any community. It should also include follow-up support and reinforcement. The planning of this program must be carefully carried out and initiated immediately. It is important to define what is meant by health education and design the health education component and its interventions carefully. It will be

important to provide assistance in developing KAP and other planning studies (focus groups etc.), in defining program concept, strategies, and implementation plans. It is recognized that local resources may be very limited.

6. Monitoring and Evaluation. Water quality testing should be carried out on wells as a matter of course, although the constraints if water samples are to be sent to Bamako are severe. Hach kits are a more viable option (MEL/MPN Total Coliform and E.coli Laboratory; color disk-based kits, e.g. H_2S, iron, manganese, nitrate/nitrite; drop titration kits, chloride, hardness; pH meter; conductivity meter).

   It is recognized, however, that handling of water during and after collection must inevitably contribute significantly to contamination. Water quality testing might include collected and stored water. It is common practice at public watering points to allow animals to drink and to share drinking water, but presumably not at schools. Water is collected from wells in a variety of containers, including goat skins and open pails. Use of water pumps by children at schools was never observed, so practices and impacts on behavior which could be extended to drinking practices at public wells could not be assessed, but should be a part of a monitoring program.

   It would not be easy to protect water during storage in view of the containers available. Health education activities, while developing an understanding of basic principles, must recognize limitations and the possible. To understand the appropriateness and effectiveness of health education activities, to improve them, and provide follow-up, some monitoring of practices in the home must be included in monitoring and evaluation activities. Perhaps funding could be obtained to provide 20 liter plastic containers which would improve water storage. These could be located in schools to promote proper use and protection, as well as provided to households in communities which agreed to share responsibility for, and maintenance costs of, wells provided under the Project.

Pump installed by MCDI for Community School in Tedeini

Tedeini

Louis Haldin and William Hoadley

Latrine for Community School in Teideini

ANNEX I

Itinerary

Wed.-Mon. 22-27 November	Travel U.S. to Timbuktu
Mon. 27 November	Program review with Michael Hainsworth and Louis Hardin, Document review.
Tue. 28 November	Site visits by auto: Tedeini, Barize, Assidi, Terikene
Wed. 29 November	Site visits by pinasse: Djindjina Koyra, Kagha, Teherdje
Thu. 30 November	Review of tender documents with Louis Hardin
Fri. 1 December	Report preparation
Sat. 2 December	Typing of draft report
Sun.-Tue 3-5 December	Travel Timbuktu to Bamako
Tue..-Wed. 5-6 December	Travel Bamako to U.S.