

(5) HAMTIC WD

(2004年9月末現在のデータ)

水道区名	HAMTIC WD	
地域	Antique Province, Region 6	
設立及び変遷	1987年に設立。LWUAの融資(約400万ペソ)を受けて施設が建設され1992年に運営を開始。現在GMは建設当時のGMから変わっており計画の妥当性の責任の所在は不明。	
クラス	Small & non-credit worthy WD, 4 th municipality	
人口	38,230人	
給水人口(給水率)	1,722人(4.5%)	
メーター	設置数	415
	稼働数	286
職員数	5名 *部課組織はなし。内訳:GM(1), Casher/Billing(1), Book keeper(1), Operator(1), Meter-reader& Plumber(1)	
職員一人当たりの給水栓数	57栓/人	
無収水率	送水ポンプに流量計がないため計測不能。	
料金徴収率	72%	
年間水道料金収入(2004年9月までの9ヶ月間の実績を1年間に換算したもの)	<p>当該年度請求額: 921,031ペソ(271ペソ/月栓) *ペナルティーを含む 当該年度徴収額: 812,451ペソ *過去の年度の未納分徴収を含む 総経費: 1,288,071ペソ</p> <p>経費内訳 一般管理費・運転費 853,141ペソ メンテナンス費 121,511ペソ 減価償却費 106,917ペソ 債務利子 306,501ペソ(未払い)</p> <p>純利益: -355,355ペソ</p>	
債務残高(2004年9月末現在)	3,213,618ペソ(元本) +3,840,286(利子・ペナルティー未払い累積分) =7,053,904ペソ	
水道施設の概要	<p>水源: 深井戸1本。塩素注入施設なし。 *地下水源がふみん質を含有しており水質が悪い。 請求水量: 4,789m³/月=160m³/日、16.7m³/月栓=0.55m³/日栓=92リットル/人日 送配水施設: 3箇所の高架水槽で全容量は40m³。配水管はPVC、給水管はGI。最大管径はφ150mm。</p>	
水利用の概況	<p>静閑な住宅地のまとまったブロックに給水しており効率的な配水条件下にある。しかしながら、WD設立当時は415栓あった接続栓数が、<u>個人の浅井戸から水道より水質良好な水が得られるため現在は287栓に減少している</u>。また、経済的な面から水道料金を払えない家庭もいる。</p>	
水道事業経営の概要	<p>LWUAへの元本返済はもとより、金利の支払いも滞っている。年々LWUAへの負債額が増加する一方で財務的に事実上破綻している企業体である。2004年9月末時点で約7百万ペソの債務があり再建は困難である。ここに至る原因として以下の要因が揚げられる。</p> <p>①水源の井戸の水質が、当初から「ふみん質」を含有していることが判っているにも関わらず処理施設を建設しなかった。その結果、水質が悪いため接続を拒否する顧客が続出している。WD設立時におけるLWUAの施設設計のミスであり、</p>	

	<p>水道水の水質に関するこの地域の顧客のニーズを理解していなかった。</p> <p>②処理施設を建設すると更にコスト高になり、採算が取れないため建設を見送ったとも推測されるが、この地域は従来から浅井戸で比較的良好な水を得ることができる地域である。従って、水質の悪い水道水の需要は低く採算が取れないことは事前に十分予想出来たにも関わらず、無理な水道事業を初めてしまった。</p> <p>③その背景として、1980年代末からフィリピン政府の方針でWDの設立が推進され、WDの規模に応じた適切な事業内容の検討がなされないまま、LWUAからのローンの貸付が優先された結果といえる。</p>
水道施設の問題点	<p>水源施設：</p> <ul style="list-style-type: none"> ・地下水源がふみん質を含有しており水質が悪い。 ・処理施設がなく、井戸ポンプ場の塩素注入装置も壊れている。 ・井戸に細砂が混入する。*井戸吸引部周辺の土砂崩落が始まっており、近い将来井戸陥没の恐れがある。 <p>配水施設：</p> <ul style="list-style-type: none"> ・高架タンクの容量が40m³しかなくピーク時の水需要に対応できない。 <p>水道メーターと料金徴収：</p> <ul style="list-style-type: none"> ・水質が悪いため顧客が減少し、料金支払いも滞りがちである。
水道施設改善の優先順位（WDの回答）	<p>①代替水源の開発</p> <p>②高架タンク容量の増強（110m³）</p> <p>③処理施設の建設</p>
水道施設改善計画案の内容	<p>井戸水源の悪い小規模WDは、水質改善なくして水道事業の存続はあり得ない。従って水質改善を最優先課題と位置付ける。</p> <p>オプション1：井戸の新設と処理施設の建設。</p> <p>*既存の配管網を生かしWD設立当時の接続栓数415栓の回復を目指す。予定接続回復栓数：128栓</p> <p>①井戸の新設（井戸ポンプの設置を含む。）</p> <p>②処理施設の建設（容量350m³/日、貯水タンクの建設、配水ポンプの設置を含む。）</p> <p>オプション2：Sibalom WDから供給される水道水を買う（最大1,000世帯分可能）。</p> <p>*既存の配管網を生かしWD設立当時の接続栓数415栓の回復を目指すと同時に、新しいBarangayの約500世帯に水供給を行う。</p> <p>①SibalomのBarangay Eganaまでの配水管の新設（φ150mm, L=5.5km）</p> <p>②貯水タンク（200m³）と配水ポンプの設置</p> <p>③新しいBarangayへの配水管の新設</p>
資金投入額	<p>オプション1</p> <p>1. 工事費：650万ペソ</p> <p> 上記①の工事費：300万ペソ</p> <p> 上記②の工事費：350万ペソ</p> <p>2. 調査設計・工事監理費：84万ペソ（工事費の13%）</p> <p>3. 予備費（Contingency）：110万ペソ（1.+2.の15%）</p> <p>合計予想資金投入額：844万ペソ</p> <p>*既存給水地域（最大415世帯）の水質改善を目的としたもので、拡張のためには更なる投資が必要である。費用対効果が著しく低い上、債務残高が大きいため本プロジェクトの投資による財務改善効果はほとんどなく、緊急性、必要性から有効な投資とは言い難い。</p>

	<p>オプション2</p> <p>1. 工事費:1,320 万^{ペソ}</p> <p> 上記①の工事費 : 500 万^{ペソ}</p> <p> 上記②の工事費 : 200 万^{ペソ}</p> <p> 上記③の工事費 : 210 万^{ペソ}</p> <p> (ただし、Sibalom WD における Barangay Egana までの 4.5km の配水管工事の (410 万^{ペソ}) に関する投資が前提)</p> <p>2. 調査設計・工事監理費 : 118 万^{ペソ} (工事費の 13%)</p> <p>3. 予備費 (Contingency) : 154 万^{ペソ} (1.+2. の 15%)</p> <p>合計予想資金投入額 : <u>1,182 万^{ペソ}</u></p> <p>*広域水道事業の展開という点では新しい試みとなるが、投資金額が大きく本プロジェクトの趣旨から逸脱する恐れがある。また、Sibalom WD への水卸売りに対する支払いが必要であり、実質収入はほとんど増えないものと思われる。</p>
<p>考えられるリスク</p>	<ul style="list-style-type: none"> ・ WD 設立時の 1980 年代末には接続することを合意した家庭においても、近年の経済停滞により、水質が改善しても水道料金を支払えないため再接続を望まない家庭が出る可能性がある。 ・ 浅井戸から比較的良好な水が得られるため再接続を望まない家庭が出る可能性がある。
<p>期待される効果</p>	<p>プロジェクトを実施しない場合 :</p> <ul style="list-style-type: none"> ・ 顧客数の減少により料金収入が減少し続け、財務的にも既に破綻しており WD が存続できなくなる。 ・ 近い将来井戸の崩落の恐れがあり、給水サービスができなくなる可能性がある。 <p>プロジェクトを実施した場合 :</p> <ul style="list-style-type: none"> ・ 水質改善によって顧客に良質の水を供給できるようになる。 ・ 水質改善により WD 設立時の顧客数を回復し料金収入の増加が図れる。 ・ 未給水地域に水道サービスが供給できる (オプション2 の場合のみ)。
<p>プロジェクトを実施した場合の財務改善効果の予測</p>	<p>オプション1</p> <p>予定接続回復栓数 <u>129 栓の 80%に当たる 103 栓</u>が増加した場合の試算結果は以下のとおり。</p> <p>年間料金収入の増加額 : 103 栓 x271 ^{ペソ}/月栓 x12 ヶ月=334,956 ^{ペソ}</p> <p>*投資金額に比して収入が著しく少ないことから、投資に伴う減価償却費用の負担が大きく、赤字額が増加することとなり、本投資には経済的な正当性がない。</p> <p>オプション2</p> <p>予定接続回復栓数 129 栓と予定新規接続栓数 500 栓の 80%に当たる 503 栓が増加し、仮に水道料金収入の 50%を水の買入れに対する対価として Sibalom WD に支払った場合の試算結果は以下のとおり。</p> <p>a. 接続栓数増加による増収 : 503 栓 x135 ^{ペソ}/月栓 x12 ヶ月=814,860 ^{ペソ}</p> <p>b. 既存接続栓の水買による減収 : -286 栓 x135 ^{ペソ}/月栓 x12 ヶ月=-463,320 ^{ペソ}</p> <p>c. 年間料金収入の増加額 (a.-b.) : <u>351,540 ^{ペソ}</u></p> <p>*投資に伴う減価償却費用の負担が大きいため、赤字額が増加することとなり、本投資には経済的な正当性がない。</p>

プロジェクトの有無による信用度クラスの変化		プロジェクト無	オプション1	オプション2
	DOFモデル1(財務50%、運営50%)	Non-CW	Pre-CW	Pre-CW
	DOFモデル2(財務60%、運営40%)	Non-CW	Non-CW	Pre-CW
本ケース・スタディで判明したパイロットプロジェクト対象WDの選定条件案	<p>*本ケース・スタディの結果、井戸水源の悪い小規模WDは、水質改善なくして水道事業の存続はあり得ないことが判明した。従って水質改善を最優先課題と位置付けるが、水質が悪いWDは元々採算性が悪く、本ケースの様に本プロジェクトの投資によっても経営改善が全く見込めないWDもあり、プロジェクトにおいてケース・バイ・ケースで対応する必要がある。</p> <p>*1つの考え方として、水道水源以外に浅井戸等市民が利用できる代替水源が本当にはない地域では、経営改善効果とは切り離して、Basic Human Needsの観点から対応する必要がある。しかしながら、このようなケースをそもそもプロジェクトに含めるべきかどうか、まず検討する必要がある。</p>			

Hamtic WD	Before Investment		After Investment	
Balance Sheet Items (as of 30 Sep 2004)				
a Assets	3,669,808		15,489,808	
b Long-term Assets	3,032,202		14,852,202	
c Utility Plant	4,269,842		16,725,535	
d Less Depreciation	(1,237,640)		(1,873,333)	
e Current Assets	637,606		637,606	
f Equity & Liabilities	3,669,808		15,489,808	
g Current Liabilities	4,229,803		4,229,803	
h o.w. Current Portion Debt	641,435		641,435	
i o.w. Arrears	3,198,851		3,198,851	
j Long-term Liabilities	3,213,618		3,213,618	
k Equity	(3,773,613)		8,046,387	
Paid in Capital	260,000		12,080,000	
Retained Earnings	(4,033,613)		(4,033,613)	
Income Statement Items (9months x 4/3)				
l Operating Revenues	929,419		1,280,959	
# of active connection	286		566	
Revenue per customer	3,250		2,263	
m Operating expenses	981,569		1,617,262	
n Admin. & general costs	853,141		853,141	
o Maintenance costs	21,511		21,511	
p Depreciation costs	106,917	3.5% of Long-term Assets	742,610	5% of Long-term Assets
q Other income	3,297		3,297	
r Net Income before interest	(48,853)		(333,006)	
s Interest expenses (& penalties)	306,501		306,501	
t Net Income	(355,355)		(639,507)	
Cash as of 30 Sep. 2004	17,975			

		Model 1		Model 2		Model 1		Model 2	
Credit Worthy	Financial:		50%	60%		50%	60%		
>200%	Current Ratio : e/g	15%	0 pt.	15%	25%	15%	0 pt.	15%	25%
>230%	Debt Service Ratio (1) : r/(h+i+s)	-1%	0 pt.	10%	25%	-8%	0 pt.	10%	25%
	Debt Service Ratio (2) : (p+r)/(h+i+s)	1%				10%			
< 75%	Debt / Equity Ratio : j/k	Negative Net Worth	0 pt.	15%	5%	Negative Net Worth	0 pt.	15%	5%
>25%	Profit Margin Ratio : r/l	-5%	0 pt.	10%		-26%	0 pt.	10%	
>8%	Net Profit Ratio : t/(l+q)	-38%	0 pt.		5%	-50%	0 pt.		5%
	Operational:		50%	40%		50%	40%		
>92%	Collection Efficiency	72%	0 pt.	15%		95%	10 pt.	15%	
>87%	Collection Ratio	52%	0 pt.	15%		80%	6 pt.	15%	
<25%	Non-Revenue Water		0 pt.	15%	15%	20%	10 pt.	15%	15%
>120	Service Conn / Staff Ratio	57	0 pt.	5%	10%	158	10 pt.	5%	10%
>15,000	Service Connections	286	0 pt.	10%		789	0 pt.	10%	
>24	Hours Service @ 10 psi	16	3 pt.	5%		24	10 pt.	5%	

Score	0.15	0	4	3.4
Class	Non-CW	Non-CW	Pre-CW	Pre-CW

(6) LEON WD

(2004年6月末現在のデータ)

水道区名	LEON WD													
地域	Iloilo Province, Region 6													
設立及び変遷	1996年に設立され1998年から運営を始めた新しいWDである。水道施設は設立時に新設されたもので、初期施設整備資金として、LWUAからの約4百万ペソ（借入）、Municipalityから約1.2百万ペソ（資本金）、上議員と下議員から約1.8百万ペソ（寄付）の合計7百万ペソが投入されている。GMはArchitectで初代から変わっていない。													
クラス	Small & semi-credit worthy WD, 4 rd municipality *2002年の信用度クラス分けではsemi-credit worthyに区分されている。本ケーススタディで収集した資料に基づいてクラス分けするとPre-Credit Worthyに分類される。													
人口	43,729人													
給水人口（給水率）	3,060人（7.0%）													
メーター栓数(2004年6月現在)	接続数	580栓												
	稼働数	510栓												
職員数	7名（契約職員2名を含む） *部課組織はなし。内訳：GM(1), Book keeper & accountant(1), Meter reader(1), Billing & Collection(1), Pump operator(1), Clerk(契約社員1), Plumber(契約社員1)													
職員一人当たりの給水栓数	73栓/人													
無収水率	28% *新しい配水管網であるため漏水による無収水率は比較的少ないものと思われる。頻繁に行う配水管網のフラッシングが用水が無収水率を上げている1つの要因と思われる。													
料金徴収率(当該年度請求分)	79%													
年間水道料金収入(2004年6月までの6ヶ月間の実績を1年間に換算したもの)	<p>当該年度請求額：2,503,632ペソ（408ペソ/月栓）*ハルティを含む 当該年度徴収額：2,358,192ペソ *過去の年度の未納分徴収を含む 総経費：2,718,896ペソ</p> <table style="margin-left: 40px;"> <tr> <td>経費内訳</td> <td>一般管理費・運転費</td> <td>1,822,150ペソ</td> </tr> <tr> <td></td> <td>メンテナンス費</td> <td>158,482ペソ</td> </tr> <tr> <td></td> <td>減価償却費</td> <td>274,520ペソ</td> </tr> <tr> <td></td> <td>債務利子</td> <td>463,744ペソ（未払い）</td> </tr> </table> <p>純利益：-220,516ペソ *支払いを遅延する顧客に対するサービス停止を導入したことにより、収入が減少傾向にあり、2003年からLWUAに対する利子の支払いが滞っている。2004年6月から料金を20%程度上昇させたことにより、黒字に転換すると同時に、まもなく利子の支払いが再開する予定。</p>		経費内訳	一般管理費・運転費	1,822,150ペソ		メンテナンス費	158,482ペソ		減価償却費	274,520ペソ		債務利子	463,744ペソ（未払い）
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	債務利子	463,744ペソ（未払い）												
債務残高(2004年6月末現在)	4,297,953ペソ（元本）+570,342（利子・ハルティ未払い累積分）=4,868,295ペソ													

水道施設の概要	<p>水源施設：深井戸1本（深度32m、井戸径350mm）</p> <p>*地下水源の水質は良好である。季節によって時々臭いがするという苦情があり、頻繁に配水管網のフラッシングを行っている。臭いの原因は不明である。</p> <p>揚水量：15,456m³/月=515m³/日 *井戸ポンプ場の流量計での計測値。</p> <p>揚水ポンプ：エンジンポンプで容量は16リットル/秒。貯水タンクが満杯になる毎にポンプの運転を停止している（1日約12時間運転）。給水時間は24時間。</p> <p>請求水量：11,178m³/月=373m³/日、21.9m³/月栓=0.73m³/日栓=122リットル/人日</p> <p>貯水施設：1箇所の山の上の貯水タンクで容量は150m³。地上型鉄筋コンクリート製。井戸ポンプ場からの送水管は独立しており配水管と併用されていない。送水管の管径はφ150mm。</p> <p>配水施設：配水管はPVCで最大管径φ150mm。総延長は約7km。現在の給水地域は市街地中心部のまとまった商業・住宅地域を対象としており、効率の良い配水条件下にある。今後拡張を予定している2箇所のBarangayは2箇所とも市街地中心部から約2km離れて点在している。予定新規接続栓は約200を見込んでいる。</p> <p>*既存井戸の水供給能力に余裕があり、1日24時間のポンプ運転を行えば（現在約12時間運転）更に新たに約500世帯以上への水道サービスが可能である。</p>
水利用の概況	<p>水道の地下水源の水質が良いため飲料水として使用されている。家庭の浅井戸からも水質の良い地下水が得られる。雨季には水道を使用しないが乾季には井戸の水位が下がるため水道を使用する家庭があり、季節によってメーター接続栓数の稼働栓数変動する。</p>
水道事業経営の概要	<p>開業以来順調に運営されてきたが、ここ2年は収入が減少傾向にあることから赤字に陥っている。減価償却費用を積極的に積み立てていることから（資産の27%償却済み）、2004年6月時点で140万ペソもの現金をもっている。2004年6月に料金を2割上げたことにより（140ペソ→170ペソ）、今後再び黒字になることが見込まれる。</p> <p>*拡張計画として、既に2つのBarangayへの拡張工事（約4百万ペソ）の資金をLWUAから借り入れることを検討している。</p>
水道施設の問題点	<p>水源施設：</p> <ul style="list-style-type: none"> ・水源井戸の水質は問題なし。 ・時々臭いがするという苦情があるため頻繁に配水管網のフラッシングを行っている。 <p>配水施設：</p> <ul style="list-style-type: none"> ・既存配水施設には特に問題なし。 ・拡張を予定している2つのBarangayには貯水タンクの新設が必要である。 <p>水道メーターと料金徴収：</p> <ul style="list-style-type: none"> ・水道メーターも比較的新しいため故障は少ない。故障したメーターはストックがあるため直ちに交換している。
水道施設改善の優先順位（WDの回答）	<p>①2つのBarangayへの配水管の拡張及び貯水タンクの新設</p>
水道施設改善計画案の内容	<p>①2つのBarangayへの配水管の拡張（管径φ150mm、管路総延長約4.0km）及び貯水タンクの新設（30m³×2基）</p>
資金投入額	<ol style="list-style-type: none"> 1. 工事費：400万ペソ（上記①） 2. 調査設計・工事監理費：52万ペソ（工事費の13%） 3. 予備費（Contingency）：68万ペソ（1.+2.の15%）

	合計予想資金投入額：520万 ^レ			
	* LWUAからの借入(400万 ^レ)及び自己資金によって実施することを考えている。			
考えられるリスク	<ul style="list-style-type: none"> ・ サービス区域の拡張を行っても、水道料金が支払えないため接続を望まない家庭が出る可能性がある。 ・ 追加投資分には金利を負担できるだけの採算性がないことから、再び赤字に転落する可能性が高い。 			
期待される効果	プロジェクトを実施しない場合： <ul style="list-style-type: none"> ・ 既存井戸の水量が有効に活用できない。 ・ 資金確保までに時間がかかり未給水地域への水道サービスの実施が遅れる。 			
	プロジェクトを実施した場合： <ul style="list-style-type: none"> ・ 既存井戸の水量が有効に活用できる。 ・ 未給水地域へ水道サービスが供給できる。 ・ 上記の結果新規接続栓数の増加により料金収入が増加し、更なる拡張のための資金確保が見込めるようになる(ただし、Grantの場合)。 			
プロジェクトを実施した場合の財務改善効果の予測	<p>予定新規接続栓数 200 栓の 80%に当たる 160 栓が増加した場合の試算結果は以下のとおり。</p> <p>年間料金収入の増加額：160 栓 x408^レ/月栓 x12 ヶ月=783,360^レ</p> <p>* Grantで実施した場合には、財務的に強化される。400万^レを LWUA の融資を用いた場合には、年 48 万^レもの金利負担に耐えられず、赤字に転落する可能性が高い。</p>			
プロジェクトの有無による信用度クラスの変化		プロジェクト無	Grant	LWUA 融資
	DOF モデル1(財務 50%、運営 50%)	Pre-CW	Pre-CW	Pre-CW
	DOF モデル2(財務 60%、運営 40%)	Pre-CW	Pre-CW	Pre-CW
本ケース・スタディで判明したパイロットプロジェクト対象WDの選定条件案	現在の施設内容において黒字、ないしは黒字に転換しつつあるWDは、緊急性が低いことに鑑みて、本プロジェクトの対象外とする。			

Leon WD

Before Investment

After Investment

Balance Sheet Items (as of June 30, 2004)

a	Assets	7,642,628		11,642,628
b	Long-term Assets	5,069,132		9,069,132
c	Utility Plant	6,423,151		10,602,088
d	Less Depreciation	(1,354,019)		(1,532,956)
e	Current Assets	2,573,496		2,573,496
f	Equity & Liabilities	7,642,628		11,642,628
g	Current Liabilities	1,441,492		1,441,492
h	o.w. Current Portion Debt	106,183		106,183
i	o.w. Arrears	464,159		464,159
j	Long-term Liabilities	4,297,953		8,297,953
k	Equity	1,903,183		1,903,183
	Paid in Capital	2,997,565		2,997,565
	Retained Earnings	(1,094,382)		(1,094,382)

Income Statement Items (6 month x 2)

l	Operating Revenues	2,496,688		3,280,048	
	# of active connection	510		840	
	Revenue per customer	4,895		3,905	
m	Operating expenses	2,255,152		2,590,761	
n	Admin. & general costs	1,822,150		1,978,822	20% of incremental Revenues is added
o	Maintenance costs	158,482		158,482	
p	Depreciation costs	274,520	5.4% of Long-term Assets	453,457	5% of Long-term Assets
q	Other income	1,692		1,692	
r	Net Income before interest	243,228		690,979	
s	Interest expenses (& penalties)	463,744		943,744	
t	Net Income	(220,516)		(252,765)	

Cash as of

		Model 1		Model 2		Model 1		Model 2	
Credit Worthy	Financial:			50%	60%			50%	60%
>200%	Current Ratio :e/g	179%	6 pt.	15%	25%	179%	6 pt.	15%	25%
>230%	Debt Service Ratio (1) :r/(h+i+s)	24%	0 pt.	10%	25%	46%	0 pt.	10%	25%
	Debt Service Ratio (2) :(p+r)/(h+i+s)	50%				76%			
< 75%	Debt / Equity Ratio :j/k	226%	0 pt.	15%	5%	436%	0 pt.	15%	5%
>25%	Profit Margin Ratio : r/l	10%	3 pt.	10%		21%	6 pt.	10%	
>8%	Net Profit Ratio : u/(l+q)	-9%	0 pt.		5%	-8%	0 pt.		5%
	Operational:			50%	40%			50%	40%
>92%	Collection Efficiency	79%	3 pt.	15%		79%	3 pt.	15%	
>87%	Collection Ratio	77%	3 pt.		15%	77%	3 pt.		15%
<25%	Non-Revenue Water	28%	6 pt.	15%	15%	28%	6 pt.	15%	15%
>120	Service Conn / Staff Ratio	73	0 pt.	5%	10%	96	3 pt.	5%	10%
>15,000	Service Connections	510	0 pt.	10%		670	0 pt.	10%	
>24	Hours Service @ 10 psi	24	10 pt.	5%		24	10 pt.	5%	
Score				3.05	2.85			3.5	3.15
Class				Pre-CW	Non-CW			Pre-CW	Pre-CW

(7) CALINOG WD

(2004年12月末現在のデータ)

水道区名	CALINOG WD	
地域	Iloilo Province, Region 6	
設立及び変遷	1995年に設立され1997年から運営を始めた新しいWDである。水道施設はWD設立時に新設されている。施設整備資金として、これまでにLWUAから2.9百万ペソ(借入)、Municipality及び上下員議員から約1.9百万ペソ(寄付)の資金が投入されている。	
クラス	Small & pre-credit worthy WD, 2 nd municipality	
人口	48,454人	
給水人口(給水率)	3,060人(7.0%)	
メーター栓数(2004年6月現在)	接続数	682栓
	稼働数	586栓
職員数	11名(契約職員6名を含む) *部課組織はなし。内訳:GM(1), Book keeper(1), Billing & posting clerk(1), Meter reader & plumber(1), Pump operator & worker(7),	
職員一人当たりの給水栓数	53栓/人	
無収水率	22% *水源ポンプ場の流量計の計測値と請求水量の差からの計算値。	
料金徴収率(当該年度請求分)	96%	
年間水道料金収入(2004年末の推計値)	<p>当該年度請求額:2,024,093ペソ(300ペソ/月栓)*ペナルティーを含む 当該年度徴収額:2,138,184ペソ*過去の年度の未納分徴収を含む 総経費:2,081,701ペソ</p> <p>経費内訳 一般管理費・運転費 1,717,495ペソ メンテナンス費 98,898ペソ 減価償却費 11,082ペソ 債務利子 254,226ペソ(未払い)</p> <p>純利益:-95,135ペソ</p> <p>*当WDは2004年度まではほとんど償却してこなかった。2005年はこれまでの未償却分を合わせて償却するため大きな赤字となる予定である。合わせて、料金未払いの顧客が増加傾向にあることから、2004年4月に料金を142ペソから162ペソに引き上げたにも関わらず、キャッシュが著しく不足している。</p>	
債務残高(2004年12月現在)	3,039,054ペソ(元本)+312,706(利子・ペナルティー未払い累積分)=3,351,760ペソ	
水道施設の概要	<p>水源施設:浅井戸2本(内1本は未稼働)と河川伏流水取水施設1箇所。水質は浅井戸、伏流水ともに良好。水源施設の詳細は以下のとおり。</p> <p>1本目の浅井戸(No.1):深度6m、井戸径2.5m。揚水ポンプは電動ポンプが2台あり1台は予備。ポンプ容量は5リットル/秒。ポンプ運転時間はAM4:30~PM8:00。貯水タンクがないため揚水ポンプから直接配水している。高台地域への配水は、時間を決めて地区毎にバルブの開閉とポンプ圧力を調整して行っている。</p> <p>2本目の浅井戸(No.2):深度6m、井戸径2.5m。2003年に建設されたが、資金不足によりポンプ場が建設されておらず未稼働。ここから約500m離れた高台に貯</p>	

	<p>水タンク (300m³) を建設する予定。</p> <p><u>河川伏流水取水施設</u>：河底の下に設置した集水管で取水しポンプで配水している。配水ポンプはエンジンポンプで容量は7リットル/秒。ポンプ運転時間は24時間。貯水タンクがないため配水ポンプから直接配水している。日本から持参したパッケージによる水質試験結果は以下のとおり。</p> <ul style="list-style-type: none"> ・ Ph 7.0/鉄 (Fe) 0ppm/COD 5ppm/亜硝酸 (NO₂) 0ppm/全硬度 (TH) 200 <p>CODが5ppmを示しているが亜硝酸 (Nitrate) も検出されておらず汚染されていないことが判る。</p> <p>生産水量：12,570m³/月 請求水量：9,805m³/月=327m³/日、16.7m³/月栓=0.56m³/日栓=93リットル/人日</p> <p>貯水施設：なし。</p> <p>配水施設：配水管はPVCで最大管径φ150mm。給水管もPVC。現在の給水地域は市街地中心部のまとまった商業・住宅地域を対象としている。今後拡張を予定している Barangay (300~500世帯) は市街地に隣接しており、更に隣接する田んぼの埋め立てによって新しい住宅地が計画されている。</p>
水利用の概況	<p><u>水道水の水質が良いため飲料水として使用されている</u>。家庭の浅井戸は水質がよくないものもあり、水道の需要が高い地域である。</p>
水道事業経営の概要	<p>施設建設当初は経営は比較的順調に行っていたが、顧客数が近年減少傾向にあることから (原因は主として所得の減少によるものと考えられる)、2003年頃より LWUA に対する支払い遅延を起こしている。早急に収入を回復する、ないしは、支出を削減しなければ、債務が急速に拡大して、Numancia や Hamtic のように、事実上の経営破綻へと向かう可能性が高い。</p>
水道施設の問題点	<p>水源施設：</p> <ul style="list-style-type: none"> ・ 水源の水質は問題なし。 ・ 乾季に河川伏流水の取水量が減るため対策が必要である。 ・ 乾季時の水量確保と給水地域拡張のため No.2 浅井戸の早期稼働が必要である。 <p>配水施設：</p> <ul style="list-style-type: none"> ・ 貯水タンクがないため水利用の時間別に対応が難しい。貯水タンクの建設が必要である。 <p>水道メーターと料金徴収：</p> <ul style="list-style-type: none"> ・ On-time の料金支払い率が低い (50%)。
水道施設改善の優先順位	<p>WD から優先順位の回答はなかったが、聞き取り調査では以下のとおり。</p> <ol style="list-style-type: none"> ①No.2 浅井戸ポンプ場の建設 (貯水タンクへの送水管を含む) ②高台の地上式貯水タンク (容量 300m³) の建設 ③隣接する Barangay への配水管の拡張 ④川底下の集水管の延長 (φ150mm, L=18mx3本)
水道施設改善計画案の内容	<ol style="list-style-type: none"> ①No.2 浅井戸ポンプ場の建設：揚水ポンプ (容量 8リットル/秒)、ポンプ小屋、塩素注入装置、電力接続工事、貯水タンクへの送水管 (φ100mm, L=500m) ②高台の地上式貯水タンク (容量 300m³) の建設：鉄筋コンクリート製 ③隣接する Barangay への配水管の拡張：<u>予定新規接続栓数 400 栓</u> ④川底下の集水管の延長 (φ150mm, L=18mx3本) <p>*上記①②の工事により新規に約 800 世帯への水道サービスが可能となる。</p>
資金投入額	<p>1. 工事費：530 万ペソ</p> <p>上記①の工事費：208 万ペソ</p> <p>上記②の工事費：225 万ペソ</p>

	<p>上記③の工事費：87万^ペリ 上記④の工事費：10万^ペリ 2. 調査設計・工事監理費：69万^ペリ（工事費の13%） 3. 予備費（Contingency）：90万^ペリ（1.+2.の15%） 合計予想資金投入額：689万^ペリ</p>		
考えられるリスク	<ul style="list-style-type: none"> ・サービス区域の拡張を行っても、水道料金が支払えないため接続を望まない家庭が出る可能性がある。 ・高台の貯水タンク建設予定地（約1,000m²）の土地収用に伴う補償費約30万^ペリの財源確保が出来ない可能性がある。 ・上記予定地は現在畑地になっており土地収用におけるトラブルの可能性もある。 		
期待される効果	<p>プロジェクトを実施しない場合：</p> <ul style="list-style-type: none"> ・新設井戸の水量が有効に活用できない。 ・資金確保までに時間がかかり未給水地域への水道サービスの実施が遅れる。 ・時間給水が改善されない。 ・乾季における河川伏流水の取水量が減少する。 ・LWUAへの借金返済が完全に不履行に陥り、債務が急速に拡大する。加えて、減価償却を積み立てられず、将来の施設更新が全くできなくなる。 		
	<p>プロジェクトを実施した場合：</p> <ul style="list-style-type: none"> ・新設井戸の水量が有効に活用できる。 ・未給水地域へ水道サービスが供給できる。 ・上記の結果新規接続栓数の増加により料金収入が増加し、債務返済が順調に行われるとともに、更なる拡張のための資金確保が見込めるようになる。 ・24時間給水が可能となる。 ・乾季における河川伏流水の取水量が確保できる。 		
プロジェクトを実施した場合の財務改善効果の予測	<p>予定新規接続栓数 <u>400栓の80%に当たる320栓</u>が増加した場合の試算結果は以下のとおり。 年間料金収入の増加額：320栓 x 300^ペリ/月栓 x 12ヶ月 = <u>1,152,000^ペリ</u></p> <p>*本プロジェクトの投資効率が高いため、収入の増加によって、減価償却及び利子支払いを行い、なおかつ黒字を維持することができることから、将来自己資金による拡張も可能となる。</p>		
プロジェクトの有無による信用度クラスの変化		プロジェクト無	プロジェクト有
	DOFモデル1（財務50%、運営50%）	Pre-CW	Semi-CW
	DOFモデル2（財務60%、運営40%）	Pre-CW	Semi-CW
本ケース・スタディで判明したパイロットプロジェクト対象WDの選定条件案	<p>経営破綻への道を歩み始めているものの、水道水源の水質が良好で水道水の需要が高く、本プロジェクトの投資によって経営改善が可能で、将来必要な施設の更新・拡張のための資金確保が見込めるWD。</p>		

Callnog WVD

Before Investment

After Investment

Balance Sheet Items (as of Dec 31, 2004)

a Assets	5,831,633		12,721,633
b Long-term Assets	4,543,637		11,433,637
c Utility Plant	4,556,911		12,007,511
d Less Depreciation	(13,274)		(573,874)
e Current Assets	1,287,996		1,287,996
f Equity & Liabilities	5,831,633		12,721,633
g Current Liabilities	510,419		510,419
h o.w. Current Portion Debt	67,550		67,550
i o.w. Arrears	235,156		235,156
j Long-term Liabilities	3,088,256		3,088,256
k Equity	2,232,958		9,122,958
Paid in Capital	1,875,027		8,765,027
Retained Earnings	357,931		357,931

Income Statement Items (2004)

l Operating Revenues	2,111,137		3,263,137	
# of active connection	586		906	
Revenue per customer	3,603		3,602	
m Operating expenses	1,827,475		2,618,475	
n Admin. & general costs	1,717,495		1,947,895	20% of incremental Revenues is added
o Maintenance costs	98,898		98,898	
p Depreciation costs	11,082	0.2% of Long-term Assets	571,682	5% of Long-term Assets
q Other income	65,699		65,699	
r Net Income before interest	349,361		710,361	
s Interest expenses (& penalties)	254,226		254,226	
t Net Income	95,135		456,135	

Cash as of

		Model 1		Model 2		Model 1		Model 2	
Credit Worthy	Financial:			50%	60%			50%	60%
>200%	Current Ratio :e/g	252%	10 pt.	15%	25%	252%	10 pt.	15%	25%
>230%	Debt Service Ratio (1) :r/(h+i+s)	63%	0 pt.	10%	25%	128%	6 pt.	10%	25%
	Debt Service Ratio (2) :(p+r)/(h+i+s)	65%				230%			
< 75%	Debt / Equity Ratio :j/k	138%	0 pt.	15%	5%	34%	10 pt.	15%	5%
>25%	Profit Margin Ratio : r/l	17%	6 pt.	10%		22%	6 pt.	10%	
>8%	Net Profit Ratio : v/(l+q)	4%	3 pt.		5%	14%	6 pt.		5%
	Operational:			50%	40%			50%	40%
>92%	Collection Efficiency	96%	10 pt.	15%		96%	10 pt.	15%	
>87%	Collection Ratio	84%	6 pt.		15%	84%	6 pt.		15%
<25%	Non-Revenue Water	22%	10 pt.	15%	15%	22%	10 pt.	15%	15%
>120	Service Conn / Staff Ratio	53	0 pt.	5%	10%	82	3 pt.	5%	10%
>15,000	Service Connections	586	0 pt.	10%		906	0 pt.	10%	
>24	Hours Service @ 10 psi	16	3 pt.	5%		24	10 pt.	5%	
Score				5.25	5.05			7.85	7.5
Class				Pre-CW	Pre-CW			Semi-CW	Semi-CW

添付資料 9. 住民意識調査結果

ケーススタディー水道区住民意識調査結果分析

地域プロフィール

Province: Aklan

Municipal: Numancia (2002年)	人口: 24,607	世帯: 4,892	Barangay: 17
Makato (2002年)	人口: 24,700	世帯: 4,506	Barangay: 18
Lezo (2002年)	人口: 12,410	世帯: 2,487	Barangay: 12

水道区名	Numancia WD (Numancia, Makato, Lezoに給水)		操業: 1991年	職員: 16名
主要設備:	深井戸: 4基	貯水槽: 有り	浄水設備: 1基 (Numancia;04年草の根無償)	塩素処理: 有り
サービス地域: (給水/全世帯:%)	Nuancia(978/4892:20%), Makato(316/4506:7%), Lezo(450/2487:18%)		世帯数: 11,885	人口: 61,717
給水栓数:	全体	問題	登録水栓 3092	稼働水栓 1744
	Numancia	変色	(登録累計: 1846)	(調査時) 978
	Makato	塩分	(登録累計: 670)	(調査時) 316
	Lezo		(登録累計: 576)	(調査時) 450
*04年12月データ	対象地域内給水世帯比率:	15%	対象地域内給水人口比率:	23%
	*契約減少の原因水質(塩分濃度、着色)による解約、料金滞納による切断			

住民意識調査結果(抜粋) *対象Municipalityにより水質条件などが大きく異なるため、Muni.ごとの調査が必要

サンプル数	給水世帯 121戸 (Numancia 938/1747)	非給水世帯 60戸 (Numancia 1747)
1.世帯情報		
1)職業	農水産: 3% 勤務・自営 73% その他: 24% *Aklan州の州都Kaliboに隣接し勤め人(34.7%)、自営業(38%)が多い。	
2)住宅	自己所有: 98% 賃貸: 3%	
3)生活インフラ	電気 100% トイレ: 98% 電話: 34%	
4)WD外水源 (複数回答)	自家井戸: 95% 購入水: 36% その他: 22% *115世帯が井戸有、内25は電動ポンプ。市販水購入44世帯	自家井戸: 100% 購入水: 0% その他: 5% *全世帯が自家に井戸を有し、内14世帯は電動ポンプ。
5)WD水利用 (複数回答)	飲用: 43% 調理: 84% その他: 100% *水質に起因し、飲用利用が半数以下。	*水確保の所要時間;1時間以下83%、2時間以上2%
2.水質		
1)生水飲水	Yes: 35% No: 65% *加熱/フィルター処理を含めて72%が飲料に利用。 *36%が市販の飲料水を購入	Yes: 37% No: 63% *生水飲水比率が低く、水質への不安を示す *85%が自家井戸水を飲用使用。市販水購入は17%
2)飲料水評価	良い: 29% 悪い: 71% *WDの水質に対する評価は極めて悪い	
3)水起因疾病	有る: 20% 無い: 80% 不明: 0% *下痢・寄生虫(アメーバ)・皮膚病など	有る: 7% 無い: 93% 不明: 0% *水起因の疾病は殆ど報告されていない
3.水量		
1)給水時間	24h: 68% 12h<: 26% 11h>: 6%	24h: 96% 12h<: 33% 11h>: 4%
2)水圧	高/普通: 67% 低: 33%	
4.料金		
1)月平均	月額料金: P297 使用量: 15?	
2)期間内支払	Yes: 89% No: 11%	
3)料金妥当性	Yes: 77% No: 23% 無回答: 0%	Yes: 48% No: 52% 不明: 0%
4)割高感	Yes: 37% No: 63% *料金を高く感じる傾向が強い	(WD給水契約の料金を想定した支払いの可能性) *給水希望に反して料金への割高感が強い
4)値上可能性 (サービス改善の場合)	可: 58% 不可: 37% 不明: 5% *58%が(改善されれば)料金値上げを容認	
5.サービス全般		
1)満足度	満足: 33% 不満足: 67% 無回答: 0% *不満足度が極めて高い	
2)不満足理由 (複数回答)	水質: 94% 料金: 41% その他: 59% *不満足のはほぼ全員が水質を指摘。	
3)メンテナンス	経験有り: 64% 3時間以内対応: 71%	
6.その他		
1)給水再契約	経験有り: 7% *8世帯が料金滞納による給水停止経験有り。	
2)要望	水質改善(浄水)、料金の標準化、配管メンテ、Kalibo WDとの統合、情報提供、接客態度改善など。	
7.WD給水契約を行う可能性(サービスが提供される場合)	Yes: 60% No: 30% 不明: 10% *水質改善を契約の条件にする者が多い	

<考察> WDは3Municipalityで事業を実施しているが調査はNumanciaのみで実施された。NumanciaおよびMakatoでは水質問題(塩分、変色)があり、契約世帯の減少が激しい。Numanciaでは草の根無償資金による浄施設が昨年後半より稼働し、MDは「水栓数は下げ止まった」としているが、水質に関する不満は根強い。処理水と未処理水が混在して給水されており、浄水効果が実感し難いことも考えられる。今後、浄水処理の認知が進めば給水栓数が回復する可能性はある。非給水世帯で水質改善を前提に給水を希望する世帯が多い。世帯数も多いことから、水質が改善されれば水栓数拡大の可能性もあると思われる。

ケーススタディー-水道区住民意識調査結果分析

地域プロフィール
(2000年)

Municipal: Patnongon Province: Antique

人口:	31,555	世帯:	6,381	Barangay:	36
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水道区名	Pantnongon WD, Antique Prov.		操業:	1991年	職員:	5名	
主要設備:	深井戸: 1基	貯水槽: 有り	浄水設備: 無し	塩素処理: 有り			
サービス地域: (給水/全世帯:%)	Poblacion(397/974:41%), Igbobon(23/134:17%), Padang(15/298:5%), Apgahan(30/303:10%), Aureliana(47/410:11%)			世帯数:	2,119	人口:	11,090
給水栓数:	登録水栓 628	稼働水栓 510	給水人口: 3060	(減少数) 118	(減少率) 19%		
*04年12月データ	対象Barangay内給水世帯比率: 24%		対象Brg内給水人口比率: 28%		M.給水率: 8%		
*契約減少の原区料金滞納による切断							

住民意識調査結果(抜粋)

サンプル数	給水世帯 51戸 (Poblacion 397/974, Padang 15/298, Igbobon 23/134)	非給水世帯 23戸 (Caritan:13/387, La Rioja:10/468)
1.世帯情報	*拡張を計画している未給水の周辺村落で調査	
1)職業	農水産: 16% 勤務・自営 71% その他: 14% *町の中心部・国道沿いを中心に給水しており、勤め人(39%)、自営業(16%)が多い。	
2)住宅	自己所有: 94% 賃貸: 6%	
3)生活インフラ	電気 96% トイレ: 84% 電話: 35%	
4)WD外水源 (複数回答)	自家井戸: 65% 購入水: 0% その他: 14% *33世帯が井戸有、内1世帯は電動ポンプ。11世帯はWDの	自家井戸: 100% 購入水: 0% その他: 17% *全世帯が自家に井戸を有し、内7世帯は深井戸
5)WD水利用 (複数回答)	飲用: 100% 調理: 100% その他: 100% *WDの水質に不安がなく100%が飲料水に使う	*水確保の所要時間;1時間以下65%、1~2時間30%
2.水質		
1)生水飲水	Yes: 77% No: 24% *加熱/フィルター処理を含めて100%が飲料に利用。	Yes: 35% No: 65% *生水飲水比率が低く、水質への不安を示す *100%が自家井戸水を飲用使用。市販水購入は無し
2)飲料水評価	良い: 96% 悪い: 4% *WDの水質に対する信頼度が高い。	
3)水起因疾病	有る: 14% 無い: 86% 不明: 0% *下痢・寄生虫(アメーバ)・皮膚業など	有る: 9% 無い: 91% 不明: 0% *水起因の疾病は殆ど報告されていない
3.水量		
1)給水時間	24h: 98% 12h<: 0% 11h>: 2%	24h: 96% 12h<: 33% 11h>: 4%
2)水圧	高/普通: 100% 低: 0%	
4.料金		
1)月平均	月額料金: P376 使用量: 21?	
2)期間内支払	Yes: 86% No: 14%	
3)料金妥当性	Yes: 63% No: 35% 無回答: 2%	Yes: 96% No: 27% 不明: 33%
4)割高感	Yes: 30% No: 70% *利用額が大きい分、料金を高く感じる傾向が強い	(WD給水契約の料金を想定した支払いの可能性) *現契約者に比較して料金支払いへの抵抗感が薄い
4)値上可能性 (サービス改善の場合)	可: 22% 不可: 73% 不明: 6% *料金割高感を反映し、料金値上げに対する抵抗感が強い	
5.サービス全般		
1)満足度	満足: 86% 不満足: 12% 無回答: 2%	
2)不満足理由 (複数回答)	水質: 17% 料金: 33% その他: 100% *料金にかかる不満が多い。水量関連で「水圧低」との回答はないが、不満足事由に「水圧」が8%(4世帯)ある	
3)メンテナンス	経験有り: 53% 3時間以内対応: 67%	
6.その他		
1)給水再契約	経験有り: 2% *料金滞納による給水停止経験のある世帯は1のみ。料金を支払い再給水。	
2)要望	水質改善(貯水槽清掃:錆)、滞納課徴金の低減、メータ確認の徹底。接客態度改善など。	
7.WD給水契約を行う可能性(サービスが提供される場合)	Yes: 70% No: 4% 不明: 26% *水質や、料金が安いことを条件にする者が多い	

<考察> 世帯当たりの水道利用料が多い分利用者の料金の割高感がある。
非給水世帯調査は、現給水地域内ではなく、WDが拡張を計画しているBrg.で行っているが、自家水の水質に不安を感じ、給水を希望する世帯が多い。現在の給水サービス地域の内Poblacion(給水世帯率41%)、以外の給水率は10%台と低く、この地域での給水栓数拡大の可能性もあると思われる。

ケーススタディー水道区住民意識調査結果分析

地域プロフィール

Municipal: Hamtic Province: Antique

(2002年データ) 人口: 36,162 世帯: 6,962 Barangay: 47

水道区名	Hamtic WD, Antique Prov.		操業:	1992年	職員:	5名
主要設備:	深井戸: 1基	貯水槽: 有り	浄水設備: 無し	塩素処理: 無し		
サービス地域:	Brg. Poblacion Dis.1~5 (町中心部)			世帯数:	910	人口: 4,103
給水栓数:	登録水栓 450	稼働水栓 286	給水人口: 1430	(減少数) 164	(減少率) 36%	
*04年9月データ	対象Barangay内給水世帯比率: 31%		対象Brg内給水人口比率: 35%		M.給水率: 4%	
*契約減少の原因水質(異臭、変色)の悪さによる解約、料金滞納による切断						

住民意識調査結果(抜粋)

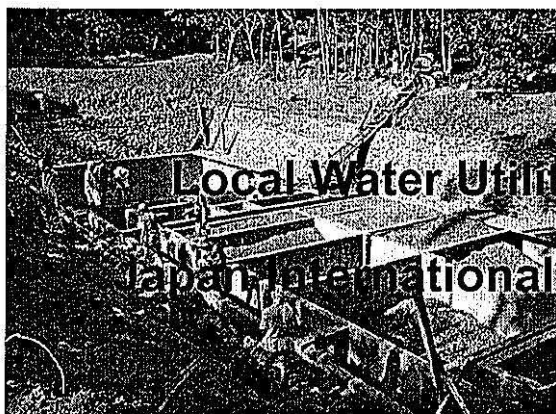
サンプル数	給水世帯 32戸 (Poblacion 286/910)	非給水世帯 15戸 (Poblacion 910)
1.世帯情報		
1)職業	農水産: 9% 勤務・自営: 47% その他: 44% *勤め人(28%)、自営業(19%)が多い。その他(44%)は回答者が主婦・年金生活者であったためとのこと。	
2)住宅	自己所有: 59% 賃貸: 41% *賃貸住宅の比率が高い	
3)生活インフラ	電気: 100% トイレ: 100% 電話: 6%	
4)WD外水源 (複数回答)	自家井戸: 88% 購入水: 6% その他: 22% *殆どの世帯が井戸を有し、内1世帯は電動ポンプ。	自家井戸: 100% 購入水: 0% その他: 0% *全世界帯が自家に井戸を有し、内2世帯は電動ポンプ
5)WD水利用 (複数回答)	飲用: 41% 調理: 81% その他: 100% *水質に起因し、飲用利用が半数以下。	*水確保の所要時間;1時間以下67%、2時間以上33%
2.水質		
1)生水飲水	Yes: 28% No: 72% *多くが異臭・変色など水質の悪さを指摘。WDの水を処理して飲んでいるのは17.3%のみ。他は自家井戸/購入水によるものが47.8%。無回答34.8%。	Yes: 47% No: 53% *WD給水世帯に対して生水飲水の比率が高い。 *93%が自家井戸水を飲用に使用。市販水購入は7%(1戸)のみ。
2)飲料水評価	良い: 69% 悪い: 31% *良いとする者が多いのはWD以外の飲用水も含むため。	
3)水起因疾病	有る: 22% 無い: 88% 不明: 0% *下痢・寄生虫(アメーバ)・皮膚業など	有る: 7% 無い: 93% 不明: 0% *水起因の疾病は殆ど報告されていない
3.水量		
1)給水時間	24h: 66% 12h<: 31% 11h>: 3%	24h: 67% 12h<: 33% 11h>: 0%
2)水圧	高/普通: 84% 低: 16%	
4.料金		
1)月平均	月額料金: P254 使用量: 19?	
2)期間内支払	Yes: 72% No: 28%	
3)料金妥当性	Yes: 72% No: 28%	Yes: 40% No: 27% 不明: 33%
4)割高感	Yes: 16% No: 84% *現在の料金に対する不満は少ない。	(WD給水契約の料金を想定した支払いの可能性)
4)値上可能性 (サービス改善の場合)	可: 69% 不可: 19% 不明: 13% *サービス改善があれば値上げを容認する傾向がある	
5.サービス全般		
1)満足度	満足: 56% 不満足: 44% 無回答: 0%	
2)不満足理由 (複数回答)	水質: 100% 料金: 14% その他: 36% *不満足とする者の全員が水質を指摘。	
3)メンテナンス	経験有り: 56% 3時間以内対応: 72%	
6.その他		
1)給水再契約	経験有り: 22% *5人に1名以上が途中で解約/(料金未払いによる)給水停止を経験。	
2)要望	水質改善、組織改善、情報提供、接客態度改善など。	
7.WD給水契約を行う可能性(サービスが提供される場合)		
		Yes: 60% No: 60% *水質改善、料金が安いことを条件にする者が多い

<考察> WDに対する不信感が強く感じられる。水質(臭い、変色)に不満を持つものが多く、契約の減少・料金不払いにより水栓の減少率が高い。他方、水質が改善されれば(ある程度の)値上げを容認するとする者が契約者の約70%、給水契約を検討したいとするものが非契約世帯の約60%程度いる。現在の給水サービス地域は町の中心部で住宅密集度も高く、水質改善による給水栓数・料金収入の増加の可能性があると思われる。

JICA-LWUA
Technical Cooperation Project
Small Water Districts Improvement Project



February 2005



JICA-LWUA
Technical Cooperation Project
Small Water Districts Improvement Project

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1. INTRODUCTION

The Japanese government received an official request for a technical cooperation project for Japan Fiscal Year 2004 from the Philippine government in March 2003 entitled “Water Supply Technology Training Center”. The project was proposed to enhance training function of LWUA.

JICA understood that the strengthening of training function of LWUA would be one of the effective ways to improve water supply services of WDs. However, JICA suggested LWUA to extend support to WDs not only human resources development in various fields but also capacity development so that water districts are able to provide water to local communities in a sustainable way.

After a series of discussions between JICA and LWUA, both parties reviewed the design of the project. Then both parties came up with the new approach, which support improvement of twenty (20) small and less financially viable water districts by improving their water supply facilities and strengthening their management capability with JICA technical assistance and necessary equipment and expense for the next five years project period.

JICA has been cooperating with LWUA for several years on the aspect of water supply development, providing assistance through a variety of technical and capacity building activities to water districts nationwide. The joint effort has already produced encouraging results and it is now the consensus of the two sides to take further steps to improve the performance of small water districts through this proposed JICA-LWUA Technical Cooperation Project scheduled from July 2005 to June 2010.

The forthcoming Technical Cooperation Project recognizes the need to refocus the priorities in order to keep up with the changing demand of the times. It is in line with Executive Order No. 279, which spells out the reorientation of LWUA’s function and the changes in its organizational structure, sector coverage, financing policies, levels of assistance, etc. With the foregoing development, the bulk of assistance will now be focused on the improvement of services and management capacity of small-scale water districts, which are classified into non-creditworthy and pre-creditworthy categories.

2. BACKGROUND INFORMATION

2-1 Overview of the Philippine Water Supply Sector

In the Philippines, the development, operation and delivery of potable water in the country's three major island areas (Luzon, Visayas and Mindanao), is the responsibility of various government agencies and water utilities. Metro Manila is being served primarily by MWSS through its two private concessionaires, the Maynilad Water Services Inc. and the Manila Water Company, and by some private companies serving subdivisions. Water Districts, Local Government Units and some private companies,

with government assistance from LWUA and DILG, are serving the provincial urban areas. The provincial rural areas meanwhile are being served primarily by the Local Government Units and Cooperative Water Associations, with government assistance from DILG and LWUA.

Based on the Medium-Term Philippine Development Plan 2001-2004, 79% of the 76.3 million Philippine populations were served with safe and reliable water. This figure is distributed as follows: 47% (6.2 million) in Metro Manila, 88% (18.3 million) in the provincial urban areas, and 85% (35.8 million) in the provincial rural areas.

In the same Plan, the Philippine government put forth its target of serving 90.5% of the total Philippine population with potable water by year 2004. The specific targets by 2004 on the three major areas are: 90% in Metro Manila, 89.6% in provincial urban areas, and 90.4% in provincial rural areas.

2-2 LWUA and Water District Concept

Thirty years ago, most of the municipal water supply systems all over the country were under the control of and were being operated, maintained and administered by Local Government Units. At that time, water supply systems were deteriorating faster than they could be replaced. Simultaneously, the ever-growing population and industry needs were imposing additional demands on these existing facilities. These led to major problems in the water supply sector such as shortages in water supply, inadequate funding for facilities improvement and expansion, inadequate skills in developing and maintaining water resources, inadequate physical infrastructure, institutional weaknesses as well as managerial and human resource inadequacies.

Due to the failure of these existing water utilities to meet the needs of the communities they were serving, the LWUA and Water District concept was conceived and operationalized in 1973 with the enactment of Presidential Decree No.198. The concept is a partnership arrangement - a partnership between LWUA as the government resource provider and the water districts as the local water service providers. The establishment of LWUA and the development of water districts provided a mechanism primarily for funding and managing the expansion and delivery of water supply services in the countryside.

LWUA, as a specialized lending institution, is to be the principal source of funding and will also provide technical and training assistance to the water districts. On the other hand, the water districts, operating as government owned or controlled corporations¹ are expected to become self-sufficient, to develop the necessary expertise and to be capable of maintaining financial viability.

¹ This implies that the hiring and firing of a WD personnel will be in accordance with the Civil Service rules; their salaries and wages will be in accordance with the civil service rules; their salaries and wages will be in accordance with the corresponding regulations for regular government employees; its financial operations will be subject to COA audit contrary to a specific provision of the enabling act (Sec. 20, PD 198); and for social insurance and pension purposes, they will be covered by GSIS instead of the SSS..

2.3 New Financing Policies for the Sector

Previously, LWUA was allowed to finance water districts that were not commercially viable by supplying 50% of the funds required as a grant. However, this practice was stopped in 1998, when the NEDA ordered that LWUA finance only projects deemed financially viable².

The Executive Order No. 279, series of 2004 ushers in a new form of financing for local water utilities development projects aimed not only at reducing the dependence of the water supply industry on government or public funds but also at rationalizing the allocation of scarce public funds through the pooling of resources of the LWUA, GFIs, water districts, local government units and private sector. The Executive Order stimulates the flow of both public and private funds into the water supply industry of the country.

To rationalize the application of funds for water supply sector, initially, the water districts will be classified into four (4) categories as described below:

- (1) Creditworthy: are financially self-sustaining water districts capable of accessing financing from government and/or private financing institutions.
- (2) Semi-Creditworthy: are water districts with the demonstrated ability to achieve creditworthiness in the short term based on relevant financial and operational indicators;
- (3) Pre-Creditworthy: are water districts which are not likely to become creditworthy in the medium-term due to performance issues but demonstrate potential for creditworthiness in the long-term, based on relevant financial and operational indicators; and
- (4) Non-Creditworthy: are water districts with potential to reach pre-creditworthy status in the medium-term based on relevant financial and operational indicators.

Creditworthy water districts have a wider option in sourcing their funds since they can source it from either private financial institutions as well as government financial institutions. Also, they have the freedom to choose the manner of implementing their projects, i.e., directly under their supervision or hire outside services if their in-house capabilities are lacking.

Less-Creditworthy (Semi & Pre) water districts are eligible to source grants and deep concessional and/or concessional funds from either LWUA, LGUs, GFIs, PFIs or international donors, whenever possible.

Non-Creditworthy water districts continue to be eligible for financing under LWUA, however; LGUs, DILG and MDFO are also encouraged to provide financial, technical and operational support to them.

² Projects that are able to recover all cost and pay back their loans.

2.4 Changes of LWUA's Role in the Sector

The World Bank Water Supply Sector Reform Study of 1993 and the USAID Water Supply Sector Privatization Study of 1996 both recommended the re-orientation of LWUA to its original corporate mission as a "specialized lending institution", financing only viable water supply projects with tariff levels formulated towards full cost recovery. This, in effect, will commercialize LWUA.

Very recently, Presidential Executive Order No. 279 was signed on February 2004, instituting reforms in the financing policies for the water supply sector as an off-shoot of the World Bank Financing Policy Reform Study of 2004. This, in effect, would actualize LWUA's commercialization. Under this Executive Order, LWUA, presently attached to the DPWH, will now be attached temporarily to the Office of the President during the transition phase of its reorganization, then finally transferring to the DOF --- that means moving from the infrastructure sector to the financial sector. The re-orientation of LWUA's operations towards development banking principles implies the need to change its organizational culture to allow it to perform its reconstituted role with greater banking expertise.

Noteworthy is the fact that LWUA will broker arrangements (coordinate for pooling of resources) between Less and Non-Creditworthy water districts and the relevant LGUs in order to source financing from LWUA, GFIs and PFIs. Also noteworthy is the fact that LWUA will refocus its financial assistance to less creditworthy water districts and will no longer be limited to financially viable projects. Furthermore, LWUA's service coverage will no longer be limited to organized water districts but would also include other water service providers in accordance with their creditworthiness classification and eligibility.

2.5 Problems Pertaining to Small Water Districts

Most small water districts are facing multiple problems, including lack of financial resources, heavy indebtedness, lack of governance, weak technical and management capability, inadequate supply, poor water quality and high Non-Revenue Water etc. The following describes the current situation as well as the problems and issues that small water districts are facing.

(1) Inadequate financing

Even if new form of financing policy for the sector is provided by Executive Order No. 279, LWUA will not be able to allocate their financial resources to less and non-creditworthy water districts without concessionary loan/grant funds from the national government and other sources. Seemingly, it will take a greater time for less and non-creditworthy water districts to be able to access financial sources. And there is a high possibility that those water districts especially, the pre and non-creditworthy, will be left behind.

(2) Lack of governance resulting from non-existence of "owners"

Although water districts were established as an independent public entity (GOCC: Government Owned or Controlled Corporation) by PD 198, the PD is silent on who are the water districts'

shareholders. Once LGUs provide capital to water districts either in cash or by handing over their water supply system, LGUs are no longer the owners of water districts, thus do not assume any direct responsibility. There are currently a considerable number of cases where non-existence of owners causes moral hazard in small water districts. For instance, once small water districts find it difficult to service the debt to LWUA due to a revenue shortfall, most of water districts simply delay repayment instead of cutting expenditures. As a result, the amount of debt quickly increases due to its high interest rate, which will eventually lead to a collapse of the WDs. In order to protect the interest of water users, a new monitoring system to ensure financial sustainability of WDs must be put in place.

(3) Lack of technical expertise and inadequate skills

This is a continuing concern of management among water districts and may be addressed by investing more attention to human resource selection, development and motivation.

(4) Water resource problems

More than 90% of all water districts derive their supply from groundwater (wells and springs). The rest utilize water from rivers and streams using treatment facilities and/or infiltration galleries.

Many water districts suffer from low quantity of supply due to low yields from their wells. Attempts to drill additional wells to meet demand are often hindered by the following:

- Lack of funds for exploratory/ production well drilling;
- The hydro-geological situation is complicated and past failures at ‘hit-and-miss’ drilling discourages further efforts of developing new sources; and
- There is lack or absence of study and/or investigation that would delineate potential sites for drilling, as well as ascertain the groundwater potential of study area;

Water districts using spring sources are few in number. Most springs exhibit wide fluctuation regimes, affected by seasonal climate changes, which bring about low discharge during periods of low rainfall. There are also situations when potential sources could not be tapped simply because of their far distance from demand areas, which entails high costs for transmission system.

(5) Water quality problems

LWUA database shows that there are many areas where water of poor quality (physical, chemical and biological) is supplied by the water districts. This may explain why people sometimes reject the supply from their utilities and instead buy their water from vendors at higher rates.

(6) Non-Revenue Water problems

The present average of Non-Revenue Water in various water districts has been recorded at 30%. The actual rate, however, is thought to be higher considering that small water districts mostly practice estimation rather than actual measurement in coming up with the figure.

In certain occasions, efforts to develop additional sources may be deferred for a considerable

period once the high Non-Revenue Water is addressed. The control and/or reduction of water loss due to leaking pipes, reservoirs and fittings and through illegal connections can translate to savings in terms of time, manpower, and financial resources.

(7) Marketing problems

Limited service area, slow growth of service connections, or situations where households have easy access to ground water sources are some of the factors that reduce demands for the water district services.

3. PROJECT OBJECTIVE

The objective of the Project is to assist small-scale and less financially viable water districts in achieving sustainable growth and self-reliance to be able to provide better access to safe and sufficient drinking water to the people. The specific objectives include:

- (1) Improvement of water quality and service coverage of the selected water districts.
- (2) Improvement of financial sustainability of the selected water districts.
- (3) Enhancement of management and O/M capacity of target water districts

4. PROJECT DESIGN

4.1 Target Water Districts

The target of the Project is those small and less financially viable water districts that have a possibility to improve services and achieve financial viability through the Project. The Project has two pillars: (1) improvement of water supply service and financial viability of selected WDs and (2) enhancement of management and O/M capacity of target WDs. Approximately twenty (20) WDs will be selected for the pillar (1), while 50 to 70 WDs will be targeted for the pillar (2).

4.2 Project Purpose

The purpose of the project is to improve the services and financial viability of selected water districts (approx. 20) by the end of the Project in 2010, so that they will be able to renew or expand their facilities from their own sources in the longer term.

4.3 Project Approach

In order to achieve the project purpose, the project will take the following approaches:

➤ **Demand-driven**

To make sure that the Project's technical and financial assistance takes maximum effect on the improvement of WDs' service and management condition and to ensure greater participation of

water districts in the Project, the Project will consider willingness of the water districts to participate in the Project in the selection of target water districts.

➤ **Greater involvement of general manager and key personnel of water districts**

To secure ownership of water districts, the Project will involve the staff of the selected water districts (general manager and key personnel) in all the activities of the Project such as on-site survey activities to understand present service and operation condition, planning, engineering work, O&M of water supply system and financial management.

➤ **Assistance for improvement and rehabilitation of existing water supply systems**

To ensure that our assistance would benefit those who receive services from our target water districts, the Project will not only strengthen technical and management capacity of water districts through the development of improvement plans, but also actually improve or rehabilitate existing water supply systems identified in the improvement plan.

➤ **Generation of savings to ensure long-term sustainability of the WDs**

In order to secure long-term sustainability and future replacement or expansion of facilities after the investment by the Project, the selected WDs must improve the accountability of its financial management while making sure that the depreciation is properly accumulated. For this purpose, increased revenues resulting from the investment by the Project must be put aside in a separate account as savings based on an agreement between the WD and the Project, instead of increasing operation expenses.

➤ **Monitoring and follow -up assistance**

To make sure that water districts are moving toward self-sufficient and financially viable entities, the Project will regularly visit water districts and provide advice on operation and management.

4.4 Scope of Work

(A) The first pillar of the project, i.e. improvement of water supply service and financial viability of selected WDs, will be conducted in the following four stages. Selected WDs will be divided into two groups, and the implementation of activities of (3) and (4) will be conducted by group in two stages during the project period.

(1) Selection of, and preparation of the profiles of, target water districts

1) Selection of “target WDs” by applying the following criteria:

- Those WDs that are classified as “small” by LWUA’s criteria;
- Those WDs that have difficulties in repaying loans from LWUA;
- Those WDs that have a possibility of achieving long-term financial viability, i.e. those WDs that are not too indebted; and
- Those WDs that are not financed by either KfW or ADB

The number of target WDs is expected to be approximately 60, as shown in attached “Tentative

Selection Flow of the WDs”.

- 2) Field survey on target WDs to identify their technical and financial needs and to roughly estimate the investment costs and future revenues. The results will be compiled as target WD profiles to enhance the knowledge of LWUA counterparts.

(2) Selection of the water districts to be improved through the Project

- 1) Based on the profiles prepared in (1), WDs (approximately 20 WDs) to be improved by the Project (“selected WDs”) will be selected by developing selection criteria including:

- Communities’ needs of piped water
- Possibility of improvement in financial viability after the investment
- Possibility of future self-financing for the replacement and/or expansion of facilities

- 2) Signing of Records of Agreement, between the selected WD and the Project, to undertake activities required.

(3) Preparation of an improvement plan for each selected WD

- 1) Conduct of a workshop for orientation and guideline for selected WDs to prepare management and facility improvement plans. The general managers and key personnel of selected WDs will be invited to this workshop.

- 2) Assistance in the assessment of their current operation, among others:

- Assessment of management, financial and technical condition of the WDs
- Assessment of existing water supply system/facilities, operation & maintenance and services
- Assessment of the needs of water supply of local communities, including their socio-economic, health and sanitation conditions

- 3) Assistance in the preparation of the improvement plan, among others:

- Population and demand projection
- Water source development plan
- Long- and short-term facility/equipment rehabilitation/development plan
- Cost estimation
- Cash flow projection
- Management and financial condition improvement plan
- Operation & maintenance plan

- 4) Assistance in the preparation of a monitoring plan to ensure long-term financial viability. An agreement to put aside savings from increased revenues for the purpose of future replacement / extension of facilities between the WD and the Project will be drafted and discussed.

(4) Implementation of facility improvement construction works

- 1) Assistance in the organization of a public hearing in order for the WDs to explain to the local community on the project outline and to ensure the signing of sufficient number of connection contracts
- 2) Designing of a small-scaled pilot water treatment plant. Construction of a cost-efficient water treatment plant will be proposed in order to demonstrate its effectiveness in improving the operation of WDs that have poor raw water quality.
- 3) Preparation of detailed design and procurement plans in consultation with WDs
- 4) Implementation of bidding
- 5) Construction of water supply facilities in collaboration with WDs. Construction is considered as completed when the construction completion reports are submitted and the facilities are inspected by the WDs and the Project.
- 6) Signing of Records of Agreement, between the selected WD and the Project, to ensure long-term financial viability of the WD, i.e. saving money for future replacement / extension of facilities

* The local consultants to be employed by the Project will prepare detailed design, procurement plans and tender documents, and supervise the construction works.

* Local contractor(s) will carry out construction works under the contract with the Project.

* The Project will procure materials such as pipes, valves and meters based on the procurement plans.

(B) As the second pillar of the Project, management and O/M capacity of the “target WDs” as well as the “selected WDs” will be enhanced. More specifically, the following activities will be conducted:

(1) Training of personnel and chairpersons of the boards of directors of target WDs on management and O/M skills

- 1) Training courses on small districts’ common problems, namely “general management”, “water supply system” and “water quality monitoring”
- 2) Case studies on the improvement of services and management of water districts by using the cases of selected WDs

(2) On-the-job training of selected WDs personnel on planning, design, construction supervision, management and O/M

- 1) Training through actual improvement of general and financial management, including proper

depreciation, reduction in operation expenses, financing, increase in collection, and review of tariff structure.

- 2) Hands-on training of operation skills, including pump operation, water pressure control, maintenance technology.
- 3) Training for water quality control

In addition to (A) and (B) described above, the Project is also aimed at enhancing LWUA staffs' capacity to support small WDs. Throughout the project period, Japanese experts will conduct field surveys together with LWUA counterparts, where LWUA counterparts will learn how to assess and improve WDs' financial and technical condition. Upon completion of each of the WDs' construction activities, inspection will be conducted jointly by JICA experts, LWUA counterparts and WD personnel, through which LWUA counterparts will learn the importance and proper methodology of inspection. Upon necessity, JICA experts will provide advice on LWUA's Water District Graduation Policy so that the policy will be able to effectively achieve its intended objectives.

4.5 Implementation Schedule

The project will be implemented in accordance with the timeframe specified below. For detailed schedule, see "PDM" attached.

Time Frame	Major Activities
2005. 7~2006. 1	Preparation of the profiles of target WDs, i.e. small and less financially viable WDs.
2006. 1~2006. 2	Selection of the water districts to be improved through the Project.
2006. 5~2007. 3 2008. 5~2009. 3	Preparation of an improvement plan for each selected WD.
2007. 4~2008. 3 2009. 4~2010. 3	Implementation of facility construction works.
2006. 8~2009.10	Training of target WDs personnel on management and O/M skills.
2006. 5~2010. 6	On-the-job training of selected WDs personnel on planning, design, construction supervision, management and O/M.

4.6 Inputs

The following inputs will be provided by JICA:

- (1) JICA Experts namely, Chief Advisor (Specialist for Water Supply System) , Coordinator, Specialist for Management & Finance, Specialist for Water Supply Facilities Design, Specialist

for Hydro Geological and Groundwater Development, Specialist for O/M of Water Treatment Plant.

- (2) Provision of equipment to selected water districts, such as water quality test kit / equipment and P/Cs for tariff collection & management and photocopy machines.
- (3) Necessary expenses for the implementation of improvement plans of selected water districts and for the training program/seminars/workshops of water districts personnel.

The Philippine side will provide the following inputs:

- (1) Philippine counterpart namely, Project Director, Project Deputy Director, Project Manager, Project Staff (Specialist for Management & Finance, Specialist for Water Supply Facilities Design, Specialist for Hydro Geological and Groundwater Development, Specialist for O/M of Water Treatment Plant, Specialist for Water Quality Monitoring, and Specialist for Training).
- (2) Office space and necessary facilities in LWUA for the project activities
- (3) Land, buildings and necessary facilities in the water districts for the project activities.

5. PROJECT ORGANIZATION

For the effective and efficient implementation of the Project, attached “the Project Organization” is established.

END

Attachment 1.

Project Design Matrix (PDM)

Project Name : Small Water Districts Improvement Project

Duration : July 2005~June 2010 (5 years)

Ver. No: 1.1

Project Area : Service area of the Water Districts Selected by the Project

Target Group : About 20 of Small⁽¹⁾ and Less Financially Viable⁽²⁾ Water Districts Selected by t

Date : February 23, 2005

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Overall Goal</p> <p>Water supply services and management of target⁽³⁾ water districts are improved.</p>	<p>1 Operation and financial indicators of target WDs are improved by the year 2015</p>	<p>1-1 Monthly data sheets and financial statements prepared by the WDs</p>	
<p>Project Purpose</p> <p>Water supply services and management of selected water districts are improved.</p>	<p>1-1 Operation and financial indicators of all of the selected WDs are improved by the year 2010</p> <p>1-2 Satisfaction of the selected WDs water user are elevated by the year 2010</p>	<p>1-1 Monthly data sheets and financial statements prepared by the WDs</p> <p>1-2 Results of Interview/questionnaires for water users</p>	<ul style="list-style-type: none"> Financial support is provided by relevant institutions to target WDs.
<p>Outputs</p> <p>1 Profiles of target WDs are prepared and the WDs to be improved by the Project are selected.</p> <p>2 Plans for improvement of management and services of selected WDs are prepared.</p> <p>3 Water supply facilities of selected WDs are improved.</p> <p>4 Management and Operation/Maintenance skills of water supply service of Target WDs are strengthened.</p> <p>5 LWUA's technical support for target WDs is enhanced.</p>	<p>1-1 Profiles of target WDs prepared by Jan. 2006</p> <p>1-2 Selection criteria of WDs to be improved prepared by Feb. 2006</p> <p>1-3 Final list of selected WDs agreed upon with LWUA by Mar. 2006</p> <p>2-1 Improvement plans of the first 10 WDs agreed upon with WDs by July. 2006 and of the second 10 WDs by July 2008</p> <p>3-1 Detailed design and tender documents for the facility improvement of the first 10 WDs prepared by Mar. 2007 and of the second 10 WDs prepared by Mar. 2009.</p> <p>3-2 Facility improvement works of the first 10 WDs completed by Mar. 2008 and of the second 10 WDs completed by Mar. 2010</p> <p>4-1 Knowledge on management and O/M of the personnel of target WDs are strengthened</p> <p>4-2 Knowledge and skills on management and O/M of the personnel of selected WDs are strengthened</p> <p>5-1 Knowledge of LWUA counterpart personnel on the financial and technical condition, and on water supply system improvement of target WDs are strengthened</p> <p>5-2 Knowledge of LWUA on the effective Improvement methodology for target WDs is enhanced</p>	<p>1-1 Profile data sheets</p> <p>1-2 Selection criteria agreed upon with LWUA</p> <p>1-3 Final list agreed upon with LWUA</p> <p>2-1 Improvement plans agreed upon with WDs</p> <p>3-1 Detailed design, Tender documents, Procurement plans, Cost estimates</p> <p>3-2 Construction completion reports, As-built drawings, Inspection records, Records of Agreement on proper management agreed upon with WDs and LWUA.</p> <p>4-1 Training records, Monthly data sheets and financial statements</p> <p>4-2 Operation and maintenance records, Water quality monitoring records, Monthly data sheets and financial statements, Interview</p> <p>5-1, Improvement strategy for target WDs prepared by LWUA. Interview.</p> <p>5-2</p>	<ul style="list-style-type: none"> Target WDs are not subject to negative political intervention.

Activities	Inputs		
1-1 Select target WDs.	《Philippines》	《Japan》	
1-2 Conduct a fact-finding survey and analysis on target WDs.	(Counterparts)	(Experts)	<ul style="list-style-type: none"> Trained General Manager and key personnel of target WDs continue working for the WDs
1-3 Develop criteria to select the WDs to be improved by the Project.	1 Project Director	1 Chief Advisor (Specialist for Water Supply System)	
1-4 Determine the selected WDs to be improved by the Project.	2 Project Deputy Director	2 Coordinator	<ul style="list-style-type: none"> Selected WDs are not subject to negative political intervention.
	3 Project Manager	3 Specialist for Management & Finance	
	4 Project Staff	4 Specialist for Water Supply Facilities Design	<ul style="list-style-type: none"> The peace and order situation in the areas of target WDs does not worsen.
2-1 Conduct a workshop for orientation and guideline for selected WDs personnel to prepare a management and facility improvement plan.		5 Specialist for Hydro Geological and Groundwater Development	
2-2 Assist selected WDs in the preparation of the improvement plan, including a monitoring plan to ensure the long-term financial viability of the WDs.		6 Specialist for O/M of Water Treatment Plant	<ul style="list-style-type: none"> Policy related to LWUA and WDs (EO 279) remains unchanged.
3-1 Supervise local consultants in the preparation of procurement plans, detailed design and bidding documents for facility improvement works	(Facilities, Equipment)	(Expenses for Project Activities)	
3-2 Conduct tender for facility improvement works.	<ul style="list-style-type: none"> Facilities such as laboratory and equipment necessary for Project activities 	<ul style="list-style-type: none"> Necessary expenses for water supply facilities improvement works in selected WDs. 	
3-3 Supervise local contractors in facility improvement works in collaboration with WDs.	<ul style="list-style-type: none"> Office space and facilities necessary for JICA Experts 	<ul style="list-style-type: none"> Necessary expenses for training, workshop and seminar 	
3-4 Inspect the facilities upon the completion of the construction.	<ul style="list-style-type: none"> Land, buildings and necessary facilities in the water districts for the project 		
4-1 Conduct training courses for personnel and chairpersons of the boards of directors of target WDs on management and O/M for water supply	(Budget)	(Equipment)	
4-2 Conduct on-the-job training for selected WDs personnel on planning, design, construction supervision, management and O/M skills of facilities.	<ul style="list-style-type: none"> Salary and travel expenses of LWUA counterpart 	<ul style="list-style-type: none"> Water quality test kit / equipment for selected WDs 	
	<ul style="list-style-type: none"> Administrative expenses 	<ul style="list-style-type: none"> P/Cs for tariff collection & management for selected WDs 	
		<ul style="list-style-type: none"> Photocopy machines 	
5-1 Transfer effective technologies to LWUA counterparts for the improvement of service and management condition of target WDs through the entire project activities.			
5-2 Advise LWUA on effective policy/program for the strengthening of target WDs.			
			Preconditions

Note: (1) "Small Water Districts (S-WDs)" are defined by LWUA up on their classification.

(2) "Less Financially Viable Water Districts (WDs)" are those WDs that have difficulties in achieving financial sustainability due to insufficient revenues and heavy loan repayment requirement.

(3) "Target Water Districts (WDs)" are the WDs that choose from the Small Water Districts based on the criteria prepared by the Project .

Plan of Operation

Ver. No.: 1.0

Project Name : Small Water Districts Improvement Project

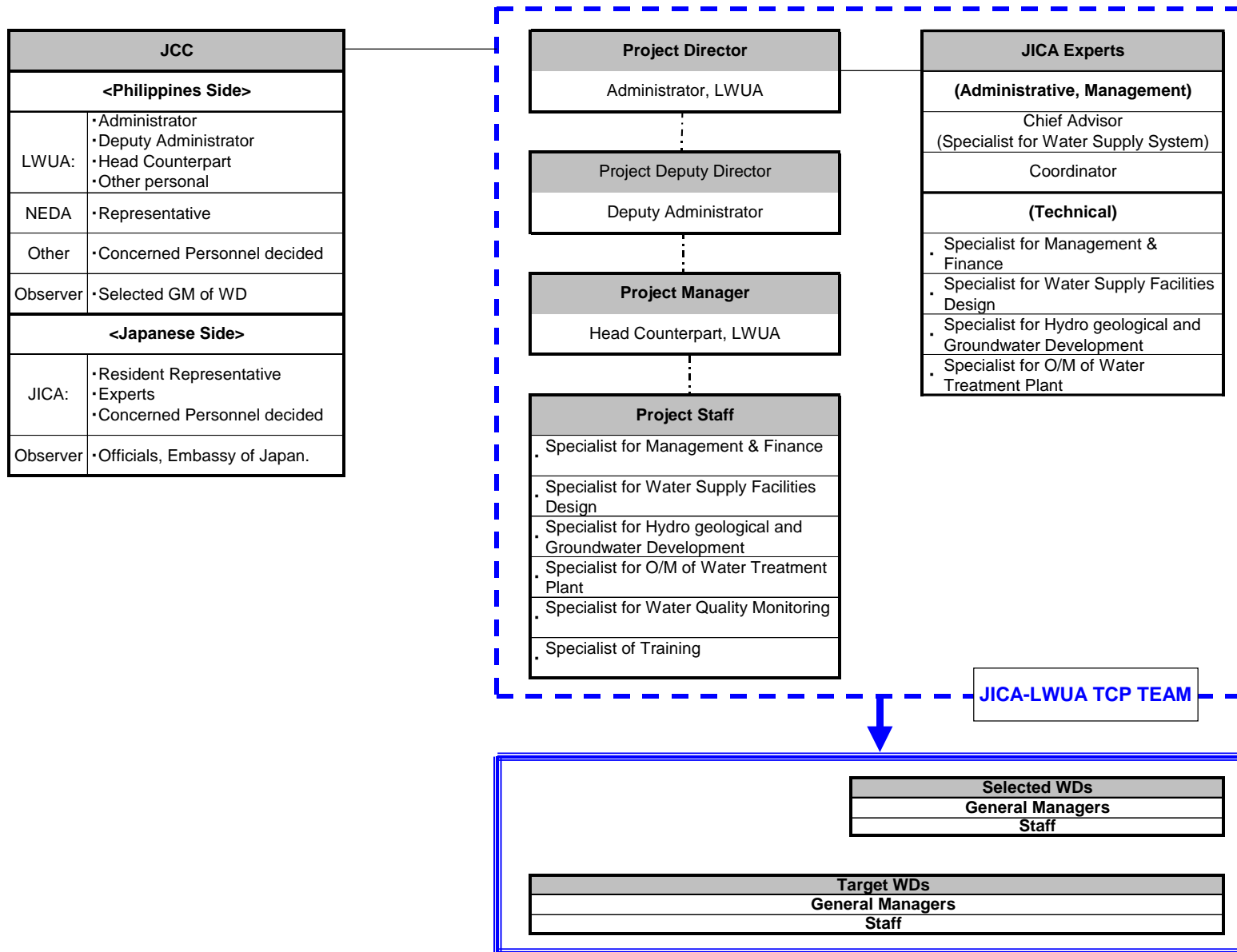
Duration : July 2005~June 2010 (5years)

Prepared on February 23, 2005

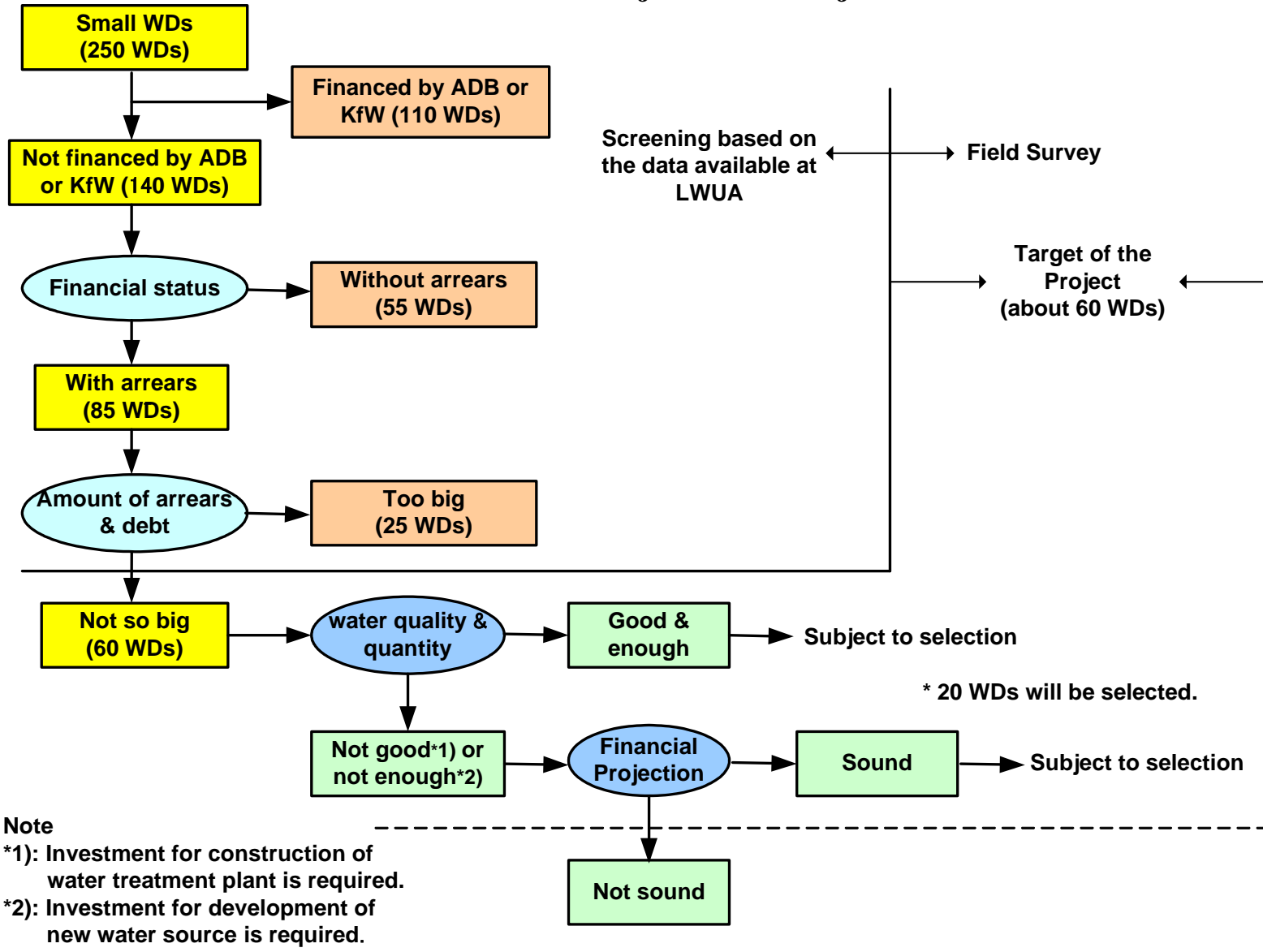
	FY 2005			FY 2006			FY 2007			FY 2008			FY 2009			FY 2010														
	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9			
1 Team Leader	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2 Specialist for Management & Finance	■	■	■	■	■	■							■	■	■										■	■	■	■	■	■
3 Specialist for Water Supply Facilities Design				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									
4 Specialist for Hydro geological and Groundwater Development				■						■			■			■														
5 Specialist for O/M of Water Treatment Plant													■		■										■					
Total: 102 M/M																														

Attachment 2.

Organization Chart of the Small Water Districts Improvement Project



TENTATIVE SELECTION FLOW of the WDs subject to the Project



Attachment 4. Result of Case Study on the Seven Less-creditworthy Small WDs

(1) NUMANCIA WD

(as of Nov. 2004)

Name of the WD	NUMANCIA WD	
Location	Aklan Province, Region 6 (LWUA Area 5)	
History	Established in 1989. Started operation in 1990 after constructing the facilities by LWUA loans (approx. 13 million Pesos). The same General Manager since the operation started. Repayment of most of WUA loans has been stopped due to insufficient revenues caused by the deteriorating water quality of the water sources at Numancia municipality and Makato municipality.	
Class	Average & pre-credit worthy WD, 4 th municipality	
Population	37,707	
Population Served (Service Coverage)	10,692 (28.4%) The WD covers three municipalities.	
No. of Connections	Total Services	2,412
	Total Active	1,782 (Numancia: 1,000, Lezo: 500, Makato: 280)
No. of Employees	16 (o.w. 9 operators, 1 engineer)	
No. of Connections per Employee	111	
Non-Revenue Water	17% * The data is not reliable because of the possibility of over-billing due to deficiency of meters.	
Collection Efficiency (collection of current year water sales / current year bills)	86%	
Annual Water Sales and Expenses (11 months' data of Year 2004 multiplied by 12/11)	<p>Current Year Billings: 7,897,277 Pesos (369 Pesos/connection) *including penalties</p> <p>Current Year Collections: 7,648,358 Pesos *including collection of past years' arrears</p> <p>Total Expenses: 10,262,864 Pesos</p> <p>o.w. Operating Expenses: 6,101,604 Pesos</p> <p>Maintenance Expenses: 1,033,708 Pesos</p> <p>Depreciation Expenses: 896,403 Pesos</p> <p><u>Interest Expenses: 2,231,148 Pesos (not paid)</u></p> <p>Net Income: -2,309,007 Pesos</p>	
Total Outstanding Debt (as of Nov. 2004)	12,266,564 (Long-term Debt Principal)+ 2,750,228 (current portion of LTD) + 18,535,272 (interests and penalties payable) = 33,552,064 Pesos (Repaid only 100,000 Pesos in 2004)	
Outline of Water Facilities	<p>Three independent water facilities by municipality. Total water billed in Nov.2004 is: $26,427\text{m}^3/\text{mon}=880\text{m}^3/\text{day}$, $14.8\text{m}^3/\text{mon}/\text{connection} = 0.49\text{m}^3/\text{day}/\text{connection}=82$ <u>liters/person/day</u></p> <p><u>Numancia municipality</u></p> <p>Water Sources: two deep wells. Water quality of one well (Laguinbanua east PS) is relatively good, while a treatment plant was constructed to remove hydrogen sulfide of the other well (Aliputos PS). Due to insufficient capacity of the treatment plant, treated water is distributed only for 4 hours (2 hours in the morning and 2 hours in the evening) out of 24 hours' service. The treated water accounts for a third of the total water used.</p>	

	<p><u>Lisa municipality</u> Water Source: one deep well. Adequate quality.</p> <p><u>Makato municipality</u> Water Source: one deep well. Not appropriate for drinking due to salt content.</p>
Water Use	<p>In accordance with the degradation of water quality, the number of customers has decreased to 1,782 from 2,417 since the beginning of operation. Although a treatment plant was constructed in Aug. 2004, financed by Japanese Grass Root Grant Aid, it has not much contributed to an increase of customers because of the limited service hours of treated water (2 hours in the morning and 2 hours in the evening). There are also households that cannot afford piped water.</p>
Outline of the Management of WD	<p>The WD has difficulties in repaying debt (principal and interests) from LWUA. As a result of increasing arrears and penalties, the WD is financially in de fact bankrupt. Its outstanding debt amounts to 36 million Pesos; financial restructuring is too difficult. The major reasons for its financial distresses is the following:</p> <p>(1) While the loans' interest rates are from 8.5% to 12.5% and their repayment period was 25 years, the WD has not been able to generate sufficient revenues to pay its interests and thus has been obliged to delay repayment to LWUA. Due to the high interest rates, interests and penalties have quickly accumulated. This is mostly caused by the Philippine Government's policy to promote establishment of WDs since the 1980s, based on which loans have been hastily extended to many small WDs without due consideration of their default risks. If there had not been interest payment for Numancia WD, the net loss after depreciation would be approximately 5% of the total revenue; Numancia WD could be turned viable by its own efforts. However, the WD is overwhelmed by the huge arrears to LWUA and has already lost its intention not only to repay the loans but also to reduce its operation costs.</p> <p>(2) Good quality ground water is available in the vicinity of the Numancia River that flows the eastern border of Numancia municipality. Aliputos PS containing hydrogen sulfide is located only 2 km away from Laguinbanua east PS that produces good quality water. Technical mistake on the location of the well at the time of construction.</p> <p>Makato municipality has decided to take over the water system within its boundary and to form Makato WD in 2005. It is agreed that 7 million Pesos equivalent of assets and liabilities of the current Numancia WD will be shifted to Makato WD. However, since the salty water of the well in Makato is not fit for drinking, Makato WD will not be able to sustain without the LGU's financial assistance.</p>
Problems of water facilities	<p>Water Sources:</p> <ul style="list-style-type: none"> • Numancia municipality: Bad quality of ground water due to hydrogen sulfide content. Although a treatment plant was established through Japan's Grass Root Grant Aid, treated water is distributed for only four hours per day • Makato municipality: Not fit for drinking due to salty ground water. As an alternative, use of good ground water at the eastern border of Numancia municipality is currently considered. <p>Distribution Facilities:</p> <ul style="list-style-type: none"> • None of the systems have a reservoir with the capacity to provide sufficient water in peak hours.

	<p>Water Meters and Collection:</p> <ul style="list-style-type: none"> Decreasing number of active connections due to low quality water: Frequent occurrence of water meter breakdown. Replacement is needed.
Priority for the Improvement of Water Facilities	<p>(1) Expansion of the distribution pipeline to the Barangays that receive no services, and construction of a new well.</p> <p>(2) Replacement of the current engine pump to an electric water pump to reduce costs. Installation of a stand-by diesel generator for the treatment plant. The operation of the plant is frequently stopped due to brown out.</p> <p>(3) Installation of interconnection pipes between Numancia, Lezo and Makato</p>
Water Facility Improvement Plan	<p>Construction of water facilities to expand the service areas, within the capacity of the current two wells in Numancia</p> <p>(1) Expansion of pipelines to Barangay Badio, Dogong East & West (Numancia municipality): <u>200 new connections</u></p> <p>(2) Expansion of pipelines to Barangay Buqasongon and Bagoto (Lezo municipality): <u>150 new connections</u></p> <p>* Additional investment of 5 million Pesos would be needed to treat the entire well water of Aliputos PS in order to remove hydrogen sulfide. Rather, it would be more economical to construct a new well in the east of the town where good quality water is available.</p>
Investment Amount	<p>1. Construction Cost: 4.27 million Pesos Construction Costs for (1): 2.37 million Pesos Construction Costs for (2): 1.90 million Pesos</p> <p>2. Design and Supervision: 0.55 million Pesos (13% of construction cost)</p> <p>3. Contingency :0.72 million Pesos (=1+2)*15%)</p> <p>Total Investment: <u>4.99 million Pesos</u></p>
Risks	<ul style="list-style-type: none"> Some low-income households may not want to connect to the water system. Some households with a shallow well may not want to connect to the water system.
Future Prospects:	<p>Without Project:</p> <p>The WD's revenue will continue decreasing due to the decrease in customers, repayment to LWUA will continue being suspended, maintenance and depreciation costs will be reduced, and finally the WD will be dissolved (to be absorbed by LGU or LWUA). Debt to LWUA will be abandoned.</p> <p>With Project:</p> <ul style="list-style-type: none"> Water will be distributed to the Barangays that is not covered by the current system. The WD's revenue will increase in accordance with the expansion of service areas. However, since the WD will not be able to repay the LWUA loans due to its large arrears and thus the outstanding amount of debt does not decrease, the project has little financial impact.
Improvement of WD's Financial status "with Project"	<p>The following is the WD's financial status when revenue is collected from 280 active connections (80% of 350 new connections):</p> <p>Increase of annual revenue: 280 connections * 369 Pesos month/connection * 12 months = <u>1,239,840 Pesos</u></p> <p>* Since the increased amount of revenue is still smaller than the annual interest amount - <u>2,231,148 Pesos</u> -, the outstanding debt does not decrease, only slowing the speed of debt accumulation. Therefore there is little impact on the WD's financial status.</p>

Change in Class w/o or w/ Project		Without Project	With Project
	DOF Model 1 (Financial 50%, Operational 50%)	Pre-CW	Pre-CW
	DOF Model 2 (Financial 60%, Operational 40%)	Non-CW	Non-CW
Conclusion	The Project should exclude the WDs of which debt repayment is not expected to improve due to its large size of outstanding debt.		

Numancia WD	Before Investment	After Investment	
Balance Sheet Items (as of 30 Nov 2004)			
a Assets	23,583,309	28,573,309	
b Long-term Assets	18,919,343	23,909,343	
c Utility Plant	26,095,491	31,384,555	
d Less Depreciation	(7,176,148)	(7,475,212)	
e Current Assets	4,663,966	4,663,966	
f Equity & Liabilities	23,530,309	28,520,309	
g Current Liabilities	23,219,736	23,219,736	
h o.w. Current Portion Debt	2,750,228	2,750,228	
i o.w. Arrears	18,535,272	18,535,272	
j Long-term Liabilities	12,266,564	12,266,564	
k Equity	(11,955,991)	(6,965,991)	
Paid in Capital	5,931,535	10,921,535	
Retained Earnings	(17,887,526)	(17,887,526)	
Income Statement Items (11 months x 12/11)			
l Operating Revenues	7,897,279	9,137,119	
# of active connection	1,782	2,062	
Revenue per customer	4,432	4,431	
m Operating expenses	8,031,716	8,578,748	
n Admin. & general costs	6,101,604	6,349,572	20% of incremental Revenues is added
o Maintenance costs	1,033,708	1,033,708	
p Depreciation costs	896,403	1,195,467	4.7% of Long-term Assets / 5% of Long-term Assets
q Other income	56,578	56,578	
r Net Income before interest	(77,859)	614,949	
s Interest expenses (& penalties)	2,231,148	2,231,148	
t Net Income	(2,309,007)	(1,616,199)	
Cash as of 30, Nov 2004	588,062		

		Model 1	Model 2	Model 1	Model 2
Credit Worthy	Financial:	50%	60%	50%	60%
>200%	Current Ratio :e/g	20% 0 pt.	15% 25%	20% 0 pt.	15% 25%
>230%	Debt Service Ratio (1) :r/(h+i+s)	0% 0 pt.	10% 25%	3% 0 pt.	10% 25%
	Debt Service Ratio (2) :(p+r)/(h+i+s)	3%		8%	
< 75%	Debt / Equity Ratio :j/k	Negative Net Worth 0 pt.	15% 5%	Negative Net Worth 0 pt.	15% 5%
>25%	Profit Margin Ratio : r/l	-1% 0 pt.	10%	7% 3 pt.	10%
>8%	Net Profit Ratio : u/(l+q)	-29% 0 pt.	5%	-18% 0 pt.	5%
	Operational:	50%	40%	50%	40%
>92%	Collection Efficiency	86% 6 pt.	15%	86% 6 pt.	15%
>87%	Collection Ratio	64% 0 pt.	15%	64% 0 pt.	15%
<25%	Non-Revenue Water	17% 10 pt.	15%	17% 10 pt.	15%
>120	Service Conn / Staff Ratio	111 6 pt.	5% 10%	129 10 pt.	5% 10%
>15,000	Service Connections	1,782 3 pt.	10%	2,062 3 pt.	10%
>24	Hours Service @ 10 psi	24 10 pt.	5%	24 10 pt.	5%

Score	3.5	2.1	4	2.5
Class	Pre-CW	Non-CW	Pre-CW	Non-CW

(2) IBAHAY WD

(as of December 2004)

Name of the WD	IBAHAY WD	
Location	Aklan Province, Region 6	
History	The WD, formed in 1990, succeeded the water system that had been operated by LGU since 1970. Although rehabilitation works have been financed twice by CDF (Country-side Development Fund), the second phase of the works, including the installation of water pipes, has been suspended due to lack of fund.	
Class	Small & pre-credit worthy WD, 4 th municipality	
Population	36,184	
Population Served (Service Coverage)	1,284 (3.5%)	
No. of Connections	Total Services	339 connections
	Total Active	214 connections
No. of Employees	7, including 2 contractual employees. Two pump operators. Only one meter-reader / plumber is responsible for repair works in the cases of leakage.	
No. of Connections per Employee	30	
Non-Revenue Water	59% The reasons for the high level of non-revenue water are: (1) Water leakage from old pipes installed in the 1970s. (2) Water theft from old pipes installed without meters.	
Collection Efficiency (collection of current year water sales / current year bills)	83%	
Annual Water Sales and Expenses (Year 2004)	<p>Current Year Billings: 634,427 Pesos (247 Pesos/connection) *including penalties</p> <p>Current Year Collections: 606,477 Pesos *including collection of past years' arrears</p> <p>Total Expenses: 806,875 Pesos</p> <p style="padding-left: 40px;">o.w. Operating Expenses 727,893 Pesos</p> <p style="padding-left: 40px;">Maintenance Expenses: 25,893 Pesos</p> <p style="padding-left: 40px;">Depreciation Expenses: 2,141 Pesos</p> <p style="padding-left: 40px;"><u>Interest Expenses: 50,948 Pesos (not paid)</u></p> <p>Net Income: -153,631 Pesos</p>	
Total Outstanding Debt (as of end 2004)	531,900 (Long-term Debt Principal)+ 18,640 (current portion of LTD) + 77,450 (interests and penalties payable) = 627,990 Pesos (no payment in 2004) * The loan from LWUA was used to pay 10% of the construction cost as an engineering fee.	
Outline of Water Facilities	<p>Water Source: one deep well (59m in depth, 250mm in diameter)</p> <p>* No treatment plant, although high values of COD (15 ppm) and color (20 degrees) were detected in the water test conducted in April 2004, showing hydrogen sulfide content. No chlorination due to the breakdown of the chlorinator.</p> <p>Pumped volume: 5,980m³/month = 199m³/day * measured by the flow meter at the</p>	

	<p>pumping station. Operating for 24 hours/day</p> <p>Billed water: $2,458\text{m}^3/\text{month} = 82\text{m}^3/\text{day}$, $11.5\text{m}^3/\text{month}/\text{connection} = 0.38\text{ m}^3/\text{day}/\text{connection}$, = 64 liters/person/day.</p> <p>Reservoir: One elevated water tank with a volume of 75 m^3. Reinforced concrete.</p> <p>Distribution pipes: The transmission pipe is PVC, 150 mm in diameter installed from the pumping station to the elevated water tank. It is also used as a distribution pipe.</p> <p>Distribution pipes are also PVC, with a diameter from 100 to 50 mm.</p>
Water Use	<p><u>The water color is brown-red due to hydrogen sulfide, not fit for drinking. This has led to a decrease in active connections from 339 at the beginning to current 214.</u></p> <p>Some people use ground water that spontaneously comes out from 60 m underground through PVC pipes at a 50mm diameter. Shallow wells with a hand pump are also used.</p>
Outline of the Management of WD	<p>Although annual expenses exceed revenues by approx. 150 thousand Pesos and the WD has so far accumulated little depreciation (only 0.5% of the long-term assets has been depreciated as of end 2004), it would be possible to attain sound management since the amount of loans from LWUA is small. The reasons of the loss are the small number of customers (214 connections) and the high level of non-revenue water (59%).</p> <p>It can be said that at least 300 connections are required to operate an urban water supply system in an efficient way. On the other hand, the current staff structure can manage a water supply system with 500 to 600 connections.</p>
Problems of water facilities	<p>Water Sources:</p> <ul style="list-style-type: none"> • Low quality ground water, containing hydrogen sulfide • No treatment facility • No chlorination due to the breakdown of the chlorinator. (water quality is judged problematic by a bacteria test) <p>Distribution Facilities:</p> <ul style="list-style-type: none"> • Water leakage from old pipes installed in the 1970s and water theft from old pipes installed without meters are causing a high level of non-revenue water (59%). • The elevated water tank is old; replacement of ladders and coating of exterior and interior surface are required. <p>Water Meters and Collection:</p> <ul style="list-style-type: none"> • The number of customers is decreasing due to low water quality. • There is a large amount of non-metered water or water theft.
Priority for the Improvement of Water Facilities	<p>(1) Replacement/installation of transmission/distribution pipes (the continuation of Phase 2 works), and rehabilitation of the existing elevated water tank.</p> <p>(2) Replacement of an engine pump of the deep well. Installation of an additional elevated water tank.</p> <p>(3) Installation of a chlorinator</p>
Water Facility Improvement Plan	<p>(1) Replacement/installation of transmission/distribution pipes (the continuation of Phase 2 works), and rehabilitation of the existing high elevated water tank.</p> <p>(2) Construction of a treatment plant to remove hydrogen sulfide, including construction of a reservoir tank, installation of a chlorinator, and replacement of the well pump.</p> <p>Treatment capacity: 300 m^3 per day (pump operation 18 hours per day)</p> <p>* The number of connections is expected to increase is:</p> <p>(1) Reconnection in the existing service area: 125 connections</p>

	(2) New connection in the new service area: 220 connections Total increase: 345 connections		
Investment Amount	1. Construction Cost: 4.37 million Pesos Construction Costs for (1) : 0.72 million Pesos Construction Costs for (2) : 3.65 million Pesos (o.w. treatment plant: 3 million Pesos; submersible pump and electric works: 0.65 million Pesos) 2. Design and Supervision: 0.57 million Pesos (13% of construction cost) 3. Contingency :0.74 million Pesos $(=(1+2)*15\%)$ Total Investment: <u>5.68 million Pesos</u>		
Risks	<ul style="list-style-type: none"> Some low-income households may not want to connect to the water system. Some households with a shallow well may not want to connect to the water system. 		
Future Prospects:	Without Project: The WD's revenue continues decreasing due to the decrease in customers, while repayment to LWUA continues being suspended. Salary payment to employees will eventually be delayed due to cash shortage, and the WD will finally suspend its operation since it cannot pay for fuel and power.		
	With Project: <ul style="list-style-type: none"> Water quality will be improved owing to the construction of the treatment plant. 24 hours operation will be enabled through the replacement of the well pump and the installation of a reservoir tank and distribution pipes. Non-revenue water will be significantly decreased owing to the replacement of the distribution pipes. Water will be distributed to the areas that are not covered by the current system. As a result of the above, the WD's revenue will increase through the reconnections in the existing service areas and the new connections in the new service areas, which will enable saving of money to be used for future rehabilitation and expansion. 		
Improvement of WD's Financial status "with Project"	The following is the WD's financial status when revenue is collected from 276 active connections (80% of 345 new connections): Increase of annual revenue: 276 connections * 252 Pesos month/connection * 12 months = <u>834,624 Pesos</u> * The total revenue increased from 0.65 million Pesos to 1.4 million Pesos will enable depreciation of fixed assets and interest payment to LWUA. The assets will be depreciated in 20 years with the current tariff level. However, since the WD will not be able to, due to its small operation size, achieve sufficient cost-effectiveness to bear high interest expenses, the WD should not avail loans even in the future. Increase in water tariffs would be a pre-requisite in order for the WD to further expand its service area.		
Change in Class w/o or w/ Project		Without Project	With Project
	DOF Model 1 (Financial 50%, Operational 50%)	Non-CW	Pre-CW
	DOF Model 2 (Financial 60%, Operational 40%)	Non-CW	Pre-CW
Conclusion	<ul style="list-style-type: none"> The WD's water supply system becomes complete by the investment of this Project The WD's financial status can to be improved without large interest payment to LWUA, and the WD will be able to generate sufficient capital to replace its facilities. The WD agrees to an increase in tariff to assure sufficient retained earnings for 		

	<p>future investment in replacement of the existing system and in expansion of its service areas. Achieving a consensus among residents through public hearings should be a pre-requisite to Japan's assistance.</p>
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Ibahay WD

Before Investment

After Investment

Balance Sheet Items (as of 31 Dec 2004)

a	Assets	5,202,594		10,882,594
b	Long-term Assets	4,551,603		10,231,603
c	Utility Plant	4,574,928		10,764,367
d	Less Depreciation	(23,325)		(532,764)
e	Current Assets	650,991		650,991
f	Equity & Liabilities	5,202,594		10,882,594
g	Current Liabilities	864,752		864,752
h	o.w. Current Portion Debt	18,640		18,640
i	o.w. Arrears	77,450		77,450
j	Long-term Liabilities	531,900		531,900
k	Equity	3,805,942		9,485,942
	Paid in Capital	4,364,317		10,044,317
	Retained Earnings	(558,375)		(558,375)

Income Statement Items (2004)

l	Operating Revenues	648,283		1,484,386 *	
	# of active connection	214		490	
	Revenue per customer	3,029		3,029	
m	Operating expenses	755,927		1,432,587	
n	Admin. & general costs	727,893		895,114	20% of incremental Revenues is added
o	Maintenance costs	25,893		25,893	
p	Depreciation costs	2,141	0.0% of Long-term Assets	511,580	5% of Long-term Assets
q	Other income	4,961		4,961	
r	Net Income before interest	(102,683)		56,760	
s	Interest expenses (& penalties)	50,948		50,948	
t	Net Income	(153,631)		5,812	

Cash as of

		Model 1		Model 2		Model 1		Model 2	
Credit Worthy	Financial:		50%	60%		50%	60%		
>200%	Current Ratio :e/g	75%	0 pt.	15%	25%	75%	0 pt.	15%	25%
>230%	Debt Service Ratio (1) :r/(h+i+s)	-70%	0 pt.	10%	25%	39%	10 pt.	10%	25%
	Debt Service Ratio (2) :(p+r)/(h+i+s)	-68%				387%			
< 75%	Debt / Equity Ratio :j/k	14%	10 pt.	15%	5%	6%	10 pt.	15%	5%
>25%	Profit Margin Ratio : r/l	-16%	0 pt.	10%		4%	0 pt.	10%	
>8%	Net Profit Ratio : u/(l+q)	-24%	0 pt.		5%	0%	0 pt.		5%
	Operational:		50%	40%		50%	40%		
>92%	Collection Efficiency	83%	3 pt.	15%		90%	6 pt.	15%	
>87%	Collection Ratio	57%	0 pt.		15%	70%	3 pt.		15%
<25%	Non-Revenue Water	59%	0 pt.	15%	15%	25%	10 pt.	15%	15%
>120	Service Conn / Staff Ratio	31	0 pt.	5%	10%	70	0 pt.	5%	10%
>15,000	Service Connections	214	0 pt.	10%		490	0 pt.	10%	
>24	Hours Service @ 10 psi	12	3 pt.	5%		24	10 pt.	5%	
Score			2.1	0.5		5.4	4.95		
Class			Non-CW	Non-CW		Pre-CW	Pre-CW		

(3) SIBALOM WD

(As of June 2004)

Name of the WD	SIBALOM WD	
Location	Antique Province, Region 6	
History	The water system in Sibalom, constructed in 1935, went out of service in 1972. People were using shallow wells when the WD was established in 1995. The initial investment was financed by LWUA (approx. 5 million Pesos) and CDF (approx. 1 million Pesos), while the second well was constructed in 2003, also by a LWUA loan. The GM is a civil engineer, who was selected in competition upon the establishment of the WD.	
Class	Small WD, 3 rd municipality (creditworthiness is not categorized) * Since the WD's financial statements were not submitted to LWUA (the reason is not known), the WD's creditworthiness was not categorized in 2002. Based on the data collected during this study, the WD would have been categorized into Semi-CW in 2002, although the WD currently falls into Pre-CW due to its decreasing profitability.	
Population	49,971	
Population Served (Service Coverage)	8,550 (17.1%)	
No. of Connections	Total Services	1,425
	Total Active	1,250
No. of Employees	13, including 3 contractual employees * GM (1), Cashier/collector (1), Book keeper (1), Office clerk (1), Operator (3), Meter-reader (2), Plumber (4)	
No. of Connections per Employee	96	
Non-Revenue Water	1% *This is the difference between the value at the flow meter and the aggregated value of billed water as of June 2004. Although the actual non-revenue water rate would be lower since there may be a time lag between these two figures, NRW of this WD is absolutely low	
Collection Efficiency (collection of current year water sales / current year bills)	87%	
Annual Water Sales and Expenses (6 months' data of Year 2004 multiplied by two)	<p>Current Year Billings: 5,073,720 Pesos (338 Pesos/connection) *including penalties</p> <p>Current Year Collections: 4,814,233 Pesos *including collection of past years' arrears</p> <p>Total Expenses: 5,278,610Pesos o.w. Operating Expenses: 2,797,244 Pesos Maintenance Expenses: 1,379,716 Pesos Depreciation Expenses: 456,550 Pesos <u>Interest Expenses: 635,100 Pesos</u></p> <p>Net Income: -143,684 Pesos</p>	

Total Outstanding Debt (as of end June)	5,167,898 (Long-term Debt Principal)+ 225,270 (current portion of LTD) = 5,393,168 Pesos (no arrears)
Outline of Water Facilities	<p>Water Sources: Two deep wells. Good quality.</p> <p>First well: Constructed in 1995 at the next to the WD office in the town center 56 m in depth, 300mm in diameter, capacity 15 liters/sec, 14 hours/day. Daily capacity is: 15 litter/sec * 3,600 sec * 14 hours = 756 m³/day (as of Jan. 2005)</p> <p>Second well: Constructed in 2004 in the east of the city. 32 m in depth, 250mm in diameter, capacity 20 liters/sec. Daily capacity is: 20 litter/sec * 3,600 sec * 1 hour = 72 m³/day (as of Jan. 2005)</p> <p>Total daily water production: 828 m³/day</p> <p>Daily water billed: 24,820 m³/month = 827 m³/day. 19.9 m³/month/connection = 0.66 me/day/connection = 110 litter/person/day.</p> <p>Reservoir: There is one water reservoir tank (75 m³) on the top of a hill. Made of reinforced concrete. The transmission line from the well to the reservoir is also used as a distribution pipe. The reservoir is filled up during night when water use is limited, while water is supplied from reservoir to the distribution pipe in peak hours. Therefore, there is only one pipe attached to the tank, which is used for both inflow and outflow.</p> <p>Distribution Facilities: The transmission pipe is PVC, at a diameter 150 mm. Distribution pipes are polyethylene pipes and GI pipes. The WD checks billed water every month in order to detect leakage. When the billed water decreases, the WD examines and repairs the pipes. Water pressure is also measured to detect possible leakage. Overall management is good; the distribution pipe network maps are properly kept in the office.</p> <p>* Water supply capacity has been increased due to the construction of the second well. If pumping is conducted for 24 hours per day (currently only one hour), additional 1,650 m³ becomes possible, which enables the connections to 1,900 households.</p>
Water Use	<p><u>The water is used for drinking due to its good quality.</u> Since water from some shallow wells in households contains hydrogen sulfide, the overall demand of piped water is large. On the other hand, good spring water is used in some areas, where households only connect piped water during dry seasons when the spring water dries out.</p>
Outline of the Management of WD	<p>From 1995 to a couple of years ago, the WD was making profits annually after deducting depreciation costs of 5% of the net assets and interest expenses to LWUA. The WD has recently expanded its office space. However, the WD made losses last two years due to the increase in fuel prices. It is forecast that the WD will use up its entire savings in a couple of years and will not be able to continue servicing its debt from LWUA unless (1) it increases its revenue base by expanding its service area, (2) raise the tariffs, and/or (3) reduce the expenses. Since the bookkeeper does not follow normal accounting practices, the WD's financial statement is not reliable and thus it cannot provide crucial financial information. Because the WD is currently modifying its financial records following the instruction of the Commissionaire of Audit, the WD has not finalized its financial statements since June 2004.</p> <p>* The WD turned down the offer of expansion of its facilities amounting 18 million Pesos under the KfW project, since the investment required the tariffs to be doubled</p>

Problems of water facilities	<p>Water Sources:</p> <ul style="list-style-type: none"> • Good quality well water • The engine pumps for the well cause high operation cost. <p>* The second well constructed in 2004 is also operated by engine. The LWUA's design criteria for well pumps must be reconsidered.</p> <p>Distribution Facilities:</p> <ul style="list-style-type: none"> • Since the diameter of the connection pipe between the second well and the town's existing distribution pipe network is small (3 mm), it should be replaced to a larger one (6 mm). This will enable water distribution to the neighboring Barangay, Catmn. • The capacity of reservoir tank must be increased in order to respond to future water demand. • Further effort to increase the collection efficiency (currently 87%) is necessary.
Priority for the Improvement of Water Facilities	<p>(1) Construction of a new reservoir tank (ground level, 500 m³)</p> <p>(2) Replacement of the connection pipe and the expansion of service to Barangay Egana</p> <p>(3) Replacement of the existing well pump to an electric submersible pump</p>
Water Facility Improvement Plan	<p>(1) Construction of a new reservoir tank (ground level, 500 m³)</p> <p>(2) Replacement of the connection pipe (150mm in diameter, 2.0km in length), 140 new connections in Barangay Catmn</p> <p>(3) Construction of transmission line to Barangay Egana (150 mm in diameter, 4.5 km in length), 500 new connections</p> <p>* Baranay Egana is located at the mid-point between Sibalom and Hamtic. Further expansion of the transmission line for 5.5 km will enable water wholesale to Hamtic WD (at most 1,000 connections), which is suffering from poor well water quality.</p>
Estimate of Investment Amount	<p>1. Construction Cost: 3.17 million Pesos</p> <p>Construction Costs for (1) : 3.50 million Pesos</p> <p>Construction Costs for (2) : 1.82 million Pesos</p> <p>+ Construction Costs for (3) : 4.10 million Pesos</p> <p>* LWUA loan will be used for the construction of (3), since the total investment considerably exceeds the Project's budget. This investment also enables future water wholesaling to Hamtic WD.</p> <p>* Since the construction of distribution pipes is usually conducted by the WD itself (procurement of materials and employment of workers), actual construction cost would be lower than this figure estimated by using LWUA's standard.</p> <p>2. Design and Supervision: 0.70 million Pesos (13% of construction cost) + 0.53 million Pesos</p> <p>3. Contingency :0.54 million Pesos (= (1+2)*15%) + 0.69 million Pesos</p> <p>Total Investment: <u>6.92 million Pesos</u> + 5,31 million Pesos (=12,21 million Pesos)</p>
Risks	<ul style="list-style-type: none"> • Some low-income households may not want to connect to the water system.

Future Prospects:	Without Project:			
	<ul style="list-style-type: none"> Capacity of the existing second well cannot be effectively utilized. Expansion of the service area does not materialize for a long time due to lack of finance. An increase of water tariffs or a reduction of expenses is needed in order to continue debt service to LWUA. 			
Improvement of WD's Financial status "with Project"	With Project:			
	<ul style="list-style-type: none"> Capacity of the existing second well can be effectively utilized. The service area will be expanded. The above outcomes will lead to an increase in revenue through increased connections, which will in turn enable further expansion of the service area, on condition that the WD uses a LWUA loan along with the Project's grant money. 			
Change in Class w/o or w/ Project	(1) Case 1: Investment is financed only by this Project (grant aid) The following is the WD's financial status when revenue is collected from 112 active connections (80% of 140 new connections): Increase of annual revenue: 112 connections * 338 Pesos month/connection * 12 months = <u>459,648 Pesos</u> * Since the increased revenue will be mostly cancelled out by the increase in general expenses (estimated at 20% of the incremental revenue) and in depreciation costs (20 years life time), the WD will continue making losses.			
	(2) Case 2: Distribution is expanded to Barangay Egana by utilizing a LWUA loan: The following is the WD's financial status when revenue is collected from 512 active connections (80% of 640 new connections): Increase of annual revenue: 512 connections * 338 Pesos month/connection * 12 months = <u>2,076,672 Pesos</u> * Since the additional investment is highly cost-effective, the revenue by far exceeds expenses even though general expenses, depreciation and interest payment (10 to 12%) are increased.			
Conclusions		w/o Project	Grant	Grant+Loan
	DOF Model 1 (Financial 50%, Operational 50%)	Pre-CW	Semi-CW	Semi-CW
	DOF Model 2 (Financial 60%, Operational 40%)	Pre-CW	Pre-CW	Semi-CW
The WD's water quality is good and thus its demand is high. Its financial status can be strengthened by combining the grant aid and a LWUA's loan; and the WD will be able accumulate capital for future replacement and expansion of facilities. This type of WDs should be selected for the Project.				

Sibalom WD

Before Investment

After Investment

Balance Sheet Items (as of 30 June 2004)

a	Assets	10,262,221		22,472,221
b	Long-term Assets	8,799,857		21,009,857
c	Utility Plant	10,574,964		23,378,907
d	Less Depreciation	(1,775,107)		(2,369,050)
e	Current Assets	1,462,364		1,462,364
f	Equity & Liabilities	10,262,221		22,492,221
g	Current Liabilities	857,731		857,731
h	o.w. Current Portion Debt	225,270		225,270
i	o.w. Arrears	0		0
j	Long-term Liabilities	5,167,898		10,477,898
k	Equity	4,236,592		11,156,592
	Paid in Capital	230,650		7,150,650
	Retained Earnings	4,005,942		4,005,942

Income Statement Items (6months x 2)

l	Operating Revenues	5,086,940		7,163,612	
	# of active connection	1,250		1,762	
	Revenue per customer	4,070		4,066	
m	Operating expenses	4,643,510		5,652,787	
n	Admin. & general costs	2,797,244		3,212,578	20% of incremental Revenues is added
o	Maintenance costs	1,389,716		1,389,716	
p	Depreciation costs	456,550	5.2% of Long-term Assets	1,050,493	5% of Long-term Assets
q	Other income	47,986		47,986	
r	Net Income before interest	491,416		1,558,811	
s	Interest expenses (& penalties)	635,100		1,232,300	
t	Net Income	(143,684)		326,511	

Cash as of

		Model 1		Model 2		Model 1		Model 2	
Credit Worthy	Financial:			50%	60%			50%	60%
>200%	Current Ratio :e/g	170%	6 pt.	15%	25%	170%	6 pt.	15%	25%
>230%	Debt Service Ratio (1) :r/(h+i+s)	57%	0 pt.	10%	25%	107%	3 pt.	10%	25%
	Debt Service Ratio (2) : (p+r)/(h+i+s)	110%				179%			
< 75%	Debt / Equity Ratio :j/k	122%	0 pt.	15%	5%	94%	3 pt.	15%	5%
>25%	Profit Margin Ratio : r/l	10%	0 pt.	10%		22%	6 pt.	10%	
>8%	Net Profit Ratio : u/(l+q)	-3%	0 pt.		5%	5%	3 pt.		5%
	Operational:			50%	40%			50%	40%
>92%	Collection Efficiency	87%	6 pt.	15%		87%	6 pt.	15%	
>87%	Collection Ratio	76%	3 pt.		15%	76%	3 pt.		15%
<25%	Non-Revenue Water	1%	10 pt.	15%	15%	1%	10 pt.	15%	15%
>120	Service Conn / Staff Ratio	96	3 pt.	5%	10%	136	10 pt.	5%	10%
>15,000	Service Connections	1,250	3 pt.	10%		1,762	3 pt.	10%	
>24	Hours Service @ 10 psi	14	3 pt.	5%		24	10 pt.	5%	

Score	3.9	3.75	5.95	5.5
Class	Pre-CW	Pre-CW	Semi-CW	Semi-CW

(4) PATNONGON WD

(As of Dec 2004)

Name of the WD	PATNONGON WD	
Location	Antique Province, Region 6	
History	Established in 1989. Started operation in 1991, after the construction of facilities financed by LWUA (approx. 4 million Pesos) and CDF (approx. 1.5 million Pesos). The current GM, an electric engineer, was assigned in 1992.	
Class	Small & non credit-worthy WD, 4 th municipality	
Population	31,555	
Population Served (Service Coverage)	3,060 (9.7%)	
No. of Connections	Total Services	628
	Total Active	510
No. of Employees	5	
No. of Connections per Employee	102 * GM (1), Cashier/ Billing clerk (1), Book-keeper (1), Operator (1), Meter-reader / Plumber (1)	
Non-Revenue Water	31%	
Collection Efficiency (collection of current year water sales / current year bills)	94%	
Annual Water Sales and Expenses (Year 2004)	<p>Current Year Billings: 1,861,613 Pesos (314 Pesos/connection) *including penalties</p> <p>Current Year Collections: 1,857,209 Pesos *including collection of past years' arrears</p> <p>Total Expenses: 2,086,753 Pesos o.w. Operating Expenses: 1,476,082 Pesos Maintenance Expenses: 70,469 Pesos Depreciation Expenses: 242,968 Pesos <u>Interest Expenses: 297,234 Pesos</u></p> <p>Net Income: -158,219Pesos</p>	
Total Outstanding Debt (as of end 2004)	3,210,883 (Long-term Debt Principal)+ 116,888 (current portion of LTD) = 3,327,771Pesos (no arrears)	
Outline of Water Facilities	<p>Water Source: One deep well. Good water quality. The capacity of pump is 40m³/h. 10 to 11 hours operation. Both engine and electric pumps are used. Chlorination by a chlorinator.</p> <p>Pumped water: 40 m³/h * 10.5 hours = 420 m³/day</p> <p>Billed water: 8,720 m³/h * 290 m³/day 17.1 m³/mon/connection = 0.57m³/day/connection = <u>95 liters/person./day</u></p> <p>* <u>Another 540m³/day water distribution is possible by operating the well for 24 hours, which enables water distribution to additional 630 households.</u></p> <p>Reservoir tank: One elevated tank (steel-made) with a capacity of 100m³. 24m height. Constructed in the open space of the pumping station. Pumping is stopped when the tank becomes full, and resumed when the water level goes down and passes the mid-point. The</p>	

	<p>operator watches the water level and switches it on and off manually.</p> <p>Distribution Facilities: Transmission pipes are PVC. Max 150 mm in diameter. Distribution pipes are GI. There are a couple of hydrants.</p>
Water Use	<ul style="list-style-type: none"> The water is used for drinking due to the good quality of the ground water. However, the water cannot be used for two hours when red water is flushed out from the steel water tank and distribution pipes (the WD is advising customers not to use water during flushing). The existing service area is a relatively densely populated area and thus is easy to distribute water. On the other hand, since neighboring Barangays are rather scattered and are not close to each other, expansion of the service area requires the installation of a several kilometers' transmission line. None of the customers of the WD use shallow well water.
Outline of the Management of WD	<ul style="list-style-type: none"> The number of customers has been decreasing since the WD was established, while some reconnections take place during summer due to the WD's good quality water. The WD is smoothly repaying debt from LWUA, while it is properly accumulating depreciation. The WD's overall management is sound for its small size. However, due to the WD's large borrowing from LWUA compared to its size of revenue and capital, the WD was ranked pre-creditworthy in 2002.
Problems of water facilities	<p>Water Sources: Good well water. Since both electric and engine pumps are installed, the WD is resilient to brown-out. Lower water level during rainy season does not cause any problem.</p> <p>Distribution Facilities: Red water comes out since the water tank is made of steel. Two hours' flushing is required everyday.</p> <p>Water Meter and Collections: Many water meters are broken, necessary to be replaced.</p>
Priority for the Improvement of Water Facilities	<ol style="list-style-type: none"> Expansion of the service area toward a neighboring Barangay. Replacement of broken water meters Rehabilitation of the elevated tank and construction of an additional tank.
Water Facility Improvement Plan	<ol style="list-style-type: none"> Construction of a transmission line to Barangay - La Rioja , 150mm in diameter, 3.0km in length. New connections: 330 (70% of 468 households) Replacement of broken meters: 200 Rehabilitation of the existing elevated tank. Construction of a new elevated tank.
Estimate of Investment Amount	<p>1. Construction Cost: 3.17 million Pesos</p> <p>Construction Costs for (1) : 2.37 million Pesos Construction Costs for (2) : 0.14 million Pesos Construction Costs for (3) : 0.30 million Pesos (Construction Costs for (4) : 4.00 million Pesos should be considered in the future)</p> <p>*Since construction of distribution pipes is usually carried out by WDs themselves, by employing workers and procuring materials, the actual construction costs will be lower than those shown above.</p> <p>2. Design and Supervision: 0.41 million Pesos (13% of construction cost)</p>

	3. Contingency :0.54 million Pesos $(=(1+2)*15\%)$ Total Investment: <u>4.12 million Pesos</u>		
Risks	<ul style="list-style-type: none"> • Some low-income households may not want to connect to the water system. • Some households with a shallow well may not want to connect to the water system, since the water quality of shallow wells is relatively good. 		
Future Prospects:	Without Project: <ul style="list-style-type: none"> • Capacity of the existing well cannot be effectively utilized. • Red water due to the rusty tank continues making loss of water from flushing. • Expansion of service areas does not materialize for a long time due to lack of finance. • However, there is a possibility of financing the project with the LWUA's new loan. 		
	With Project: <ul style="list-style-type: none"> • Capacity of the existing well will be effectively utilized. • The service area will be expanded. • The above outcomes will lead to an increase in revenue through increased connections, which will in turn enable further expansion of the service area. • Good quality water will be distributed for 24 hours without red water. • Replacement of water meter enables correct billing, while water leakage will be easily detected by the difference between metered water and produced water. 		
Improvement of WD's Financial status "with Project"	<p>The following is the WD's financial status when revenue is collected from 330 active connections (70% of 468 new connections):</p> <p>Increase of annual revenue: 230 connections * 314 Pesos month/connection * 12 months = <u>1,243,440 Pesos</u></p> <p>Since the total revenue will increase from 2 million Pesos to 3 million Pesos due to the increase in connections, the resulting net income will increase to 0.65 million Pesos. The WD can even afford interest payment if it uses LWUA's loan for this investment. However, it should be noted that there is a default risk due to the high level of interest rate, if some expenses such as fuel cost increase. Therefore, it is recommended that at least half of the investment should be financed by the Project, namely, grant aid.</p>		
Change in Class w/o or w/ Project		Without Project	With Project
	DOF Model 1 (Financial 50%, Operational 50%)	Non-CW	Pre-CW
	DOF Model 2 (Financial 60%, Operational 40%)	Non-CW	Pre-CW
Conclusions	The WD's water quality is good and thus its demand is high. Its financial status can be strengthened by combining a grant aid and LWUA's loan; and the WD will be able accumulate capital for future replacement and expansion of facilities. This type of WDs should be selected for the Project, if budget allows.		

Patnongon WD	Before Investment	After Investment
Balance Sheet Items (as of end 2004)		
a Assets	4,897,405	9,017,405
b Long-term Assets	4,337,529	8,457,529
c Utility Plant	6,391,919	10,691,827
d Less Depreciation	(2,054,590)	(2,234,298)
e Current Assets	559,876	559,876
f Equity & Liabilities	4,897,405	9,017,405
g Current Liabilities	223,239	223,239
h o.w. Current Portion Debt	116,888	116,888
i o.w. Arrears	0	0
j Long-term Liabilities	3,210,883	3,210,883
k Equity	1,463,283	5,583,283
Paid in Capital	1,684,269	5,804,269
Retained Earnings	(220,986)	(220,986)

Income Statement Items (2004)			
l Operating Revenues	1,920,564	3,164,004	
# of active connection	510	840	
Revenue per customer	3,766	3,767	
m Operating expenses	1,789,519	2,218,115	
n Admin. & general costs	1,476,082	1,724,770	20% of incremental Revenues is added
o Maintenance costs	70,469	70,469	
p Depreciation costs	242,968	422,876	5% of Long-term Assets
q Other income	7,970	7,970	
r Net Income before interest	139,015	953,859	
s Interest expenses (& penalties)	297,234	297,234	
t Net Income	(158,219)	656,625	

Cash as of

		Model 1		Model 2		Model 1		Model 2	
Credit Worthy	Financial:		50%	60%		50%	60%		
>200%	Current Ratio :e/g	251%	10 pt.	15%	25%	251%	10 pt.	15%	25%
>230%	Debt Service Ratio (1) :r/(h+i+s)	34%	0 pt.	10%	25%	230%	10 pt.	10%	25%
	Debt Service Ratio (2) :(p+r)/(h+i+s)	92%				332%			
< 75%	Debt / Equity Ratio :j/k	219%	0 pt.	15%	5%	58%	10 pt.	15%	5%
>25%	Profit Margin Ratio : r/l	7%	0 pt.	10%		30%	10 pt.	10%	
>8%	Net Profit Ratio : u/(l+g)	-8%	0 pt.	5%		21%	10 pt.	5%	
	Operational:		50%	40%		50%	40%		
>92%	Collection Efficiency	94%	10 pt.	15%		94%	10 pt.	15%	
>87%	Collection Ratio	93%	10 pt.	15%		93%	10 pt.	15%	
<25%	Non-Revenue Water	31%	6 pt.	15%	15%	20%	10 pt.	15%	15%
>120	Service Conn / Staff Ratio	102	6 pt.	5%	10%	168	10 pt.	5%	10%
>15,000	Service Connections	510	0 pt.	10%		840	0 pt.	10%	
>24	Hours Service @ 10 psi	24	10 pt.	5%		24	10 pt.	5%	

Score	4.7	5.5	9	10
Class	Pre-CW	Semi-CW	CW	CW

(5) HAMTIC WD

(As of Sep. 2004)

Name of the WD	HAMTIC WD	
Location	Antique Province, Region 6	
History	Established in 1989. Started operation in 1992 after constructing the facilities by LWUA loans (approx. 4 million Pesos). Since the former General Manager was not present at the time of this preliminary study, it is not known how the decision for the initial investment was made.	
Class	Small & non-credit worthy WD, 4 th municipality	
Population	38,230	
Population Served (Service Coverage)	1,722 (4.5%)	
No. of Connections	Total Services	415
	Total Active	286
No. of Employees	5 * GM (1), Cashier / Billing (1), Book keeper (1), Operator (1), Meter-reader & Plumber (1)	
No. of Connections per Employee	57	
Non-Revenue Water	Not measurable without a flow meter	
Collection Efficiency (collection of current year water sales / current year bills)	72%	
Annual Water Sales and Expenses (9 months' data of Year 2004 multiplied by 12/9)	<p>Current Year Billings: 921,031 Pesos (271 Pesos/connection) *including penalties</p> <p>Current Year Collections: 812,451 Pesos *including collection of past years' arrears</p> <p>Total Expenses: 1,288,071 Pesos</p> <p> o.w. Operating Expenses: 853,141 Pesos</p> <p> Maintenance Expenses: 121,511 Pesos</p> <p> Depreciation Expenses: 106,917 Pesos</p> <p> <u>Interest Expenses: 306,501 Pesos (not paid)</u></p> <p>Net Income: -355,355 Pesos</p>	
Total Outstanding Debt (as of Sep. 2004)	3,213,618 (Long-term Debt Principal)+ 3,840,286 (interests and penalties payable) = 7,053,904 Pesos	
Outline of Water Facilities	<p>Water Source: One deep well. No chlorinator.</p> <p>* Bad quality ground water, containing hydrogen sulfide</p> <p>Billed water: 4,789m³/month = 160m³/day, 16.7m³/month/connection = 0.55m³/day/connection = 92 liters /person/day</p> <p>Transmission/distribution facilities: The total capacity of the three elevated water tanks is 40 m³. Transmission pipes are PVC and distribution pipes are GI. Maximum diameter: 150 mm.</p>	
Water Use	Water distribution is relatively efficient since the houses are constructed close to each other. However, since many shallow wells provide better quality water than that of the	

	WD, the number of connections has decreased from 415 at the beginning to 287. There are also some households that cannot afford piped water.
Outline of the Management of WD	<p>The WD has difficulties in repaying debt (principal and interests) from LWUA. As a result of increasing arrears and penalties, the WD is financially in de fact bankrupt. Its outstanding debt amounts to 7 million Pesos; financial restructuring is too difficult. The major reasons for its financial distresses is the following:</p> <p>(1) Although hydrogen sulfide was detected at the design stage of the facilities, appropriate measures such as the construction of a treatment plant were not taken. As a result, many households refuse to pay for bad quality water. This was obviously LWUA's mistake, not understanding customers' needs.</p> <p>(2) A treatment plant was apparently not constructed due to its high cost for a small WD. However, the LWUA and the WD did not take into consideration the acceptable level of shallow well water in this area. As a result, water supply facilities were constructed in spite of the low demand for low quality water.</p> <p>(3) Above problems were mostly caused by the Philippine Government's policy to promote establishment of WDs since the 1980s, based on which loans have been hastily extended to many small WDs without due consideration of their default risks.</p>
Problems of water facilities	<p>Water Sources:</p> <ul style="list-style-type: none"> • Poor water quality with hydrogen sulfide content. • No treatment plant. The chlorinator of the pumping station is broken. • Fine sand gets into the well. * Erosion is observed at the pumping area; there is a risk of collapse of the well. <p>Distribution Facilities:</p> <ul style="list-style-type: none"> • The capacity of water tanks (40 m³) is too small to respond to the peak demand. <p>Water Meter and Collection:</p> <ul style="list-style-type: none"> • Number of customers is decreasing due to poor quality water, while the collection ratio is also going down.
Priority for the Improvement of Water Facilities	<p>(1) Development of an alternative water source</p> <p>(2) Construction of an elevated water tank with a large capacity</p> <p>(3) Construction of a treatment plant.</p>
Investment Amount	<p><u>Small WDs with poor water quality are not viable. Therefore, improvement of water quality should be given priority.</u></p> <p>Option 1: Construct a new well and a treatment plant. Achieve the former level of connection (415 households) in the existing service area, namely 128 reconnection.</p> <p>(1) Construction of a new well, including the installation of a pump. (2) Construction of a treatment plant (capacity 350 m³/day), including the installation of an elevated water tank and a distribution pump.</p> <p>Option 2: Purchase water from Sibalom WD (max. 1,000 households) * Achieve the former level of connection (415 households) in the existing service area, while expand service area into new Barangays (500 households)</p> <p>(1) Construction of a transmission line to Barangay Egana (Sibalom), 150 mm in diameter. (2) Installation of an elevated water tank (200m³) and a distribution pump (3) Installation of distribution pipes in new Barangays.</p>

	<p>Option 1</p> <p>1. Construction Cost: 6.50 million Pesos Construction Costs for (1): 3.00 million Pesos Construction Costs for (2): 3.50 million Pesos</p> <p>2. Design and Supervision: 0.84 million Pesos (13% of construction cost)</p> <p>3. Contingency :1.10 million Pesos $(=(1+2)*15\%)$</p> <p>Total Investment: <u>8.44 million Pesos</u></p> <p>* Since the investment will only enable the distribution of good quality water in the existing service area (max 415 households), further investment is needed for expansion. Cost-effectiveness of the Project is considerably low, and little financial impact is expected due to the WD's huge arrears to LWUA loans. Not justifiable from either urgency or necessity.</p> <p>Option 2:</p> <p>1. Construction Cost: 13,20 million Pesos Construction Costs for (1): 5.00 million Pesos Construction Costs for (2): 2.00 million Pesos Construction Costs for (3); 2.10 million Pesos</p> <p>2. Design and Supervision: 1.18 million Pesos (13% of construction cost)</p> <p>3. Contingency :1.54 million Pesos $(=(1+2)*15\%)$</p> <p>Total Investment: <u>11.82 million Pesos</u></p> <p>* Expansion of a transmission line from Sibalom WD's service area to Barangay Egana (4.5 km, 4.1 million Pesos) is a prerequisite to this Project. Although a wide-ranged water system will be established in this case, the investment amount is too large for the Project's grant scheme. Moreover, since Hamtic WD must buy water from Sibalom WD in this option, the Project will not provide much income to Hamtic WD.</p>
Risks	<ul style="list-style-type: none"> • Some low-income households that had connected to the water system in the 1980s may not want to reconnect, since the economic situation has deteriorated. • Some households with a shallow well may not want to connect to the water system.
Future Prospects:	<p>Without Project:</p> <ul style="list-style-type: none"> • The WD's revenue continues decreasing due to the decrease in the number of customers, while repayment to LWUA continues being suspended. The WD will finally have to suspend its operation. • There is a possibility that the WD will have to suspend its operation because of the collapse of the well. <p>With Project:</p> <ul style="list-style-type: none"> • Good quality water can be distributed to customers. • Revenue is increased due to an increase of customers. • Water will be distributed to the areas that are not covered by the current system. (option 2 only)
Improvement of WD's Financial status "with Project"	<p>Option 1</p> <p>The following is the WD's financial status when revenue is collected from 103 active connections (80% of 129 reconnections):</p> <p>Increase of annual revenue: 103 connections * 271 Pesos month/connection * 12 months</p>

	<p>= <u>334,956 Pesos</u></p> <p>* Since the increase in revenue is by no means sufficient to cover the depreciation cost of the investment, the loss from the operation will increase. Not justifiable due to lack of financial viability.</p> <p>Option 2</p> <p>The following is the WD's financial status when revenue is collected from 503 active connections (80% of 129 reconnections and 500 new connections) while 50% of the revenue is paid to Sibalom WD as a water wholesale price:</p> <p>a. Increase of annual revenue: 503 connections * 135 Pesos month/connection * 12 months = 814,860 Pesos</p> <p>b. Decrease of annual revenue: -286 connections * 135 Pesos month/connection * 12 months = -463,320Pesos</p> <p>c. Net increase in income (a-b): <u>351,540 Pesos</u></p> <p>* Since the increase in revenue cannot cover the depreciation cost of the investment, the loss from the operation will increase. Not justifiable due to lack of financial viability.</p>			
Change in Class w/o or w/ Project		w/o project	Option 1	Option 2
	DOF Model 1 (Financial 50%, Operational 50%)	Non-CW	Pre-CW	Pre-CW
Conclusion		Non-CW	Non-CW	Pre-CW
	<p>* It has become evident from this case study that since small WDs with poor quality water are usually not viable, improvement of water quality must be first priority. However, since many of these WDs are not servicing debt from LWUA and are accumulating arrears, investment by this Project does not always improve their financial condition. Decision on investment should be taken on a case-by-case basis.</p> <p>* If some areas have no alternative water sources but the existing water system, assistance to these areas should be discussed in the context of basic human needs, while financial viability is not questioned. The appropriateness to include this type of WDs in the Project must be first discussed.</p>			

Hamtic WD

	Before Investment	After Investment
Balance Sheet Items (as of 30 Sep 2004)		
a Assets	3,669,808	15,489,808
b Long-term Assets	3,032,202	14,852,202
c Utility Plant	4,269,842	16,725,535
d Less Depreciation	(1,237,640)	(1,873,333)
e Current Assets	637,606	637,606
f Equity & Liabilities	3,669,808	15,489,808
g Current Liabilities	4,229,803	4,229,803
h o.w. Current Portion Debt	641,435	641,435
i o.w. Arrears	3,198,851	3,198,851
j Long-term Liabilities	3,213,618	3,213,618
k Equity	(3,773,613)	8,046,387
Paid in Capital	260,000	12,080,000
Retained Earnings	(4,033,613)	(4,033,613)
Income Statement Items (9 months x 4/3)		
l Operating Revenues	929,419	1,280,959
# of active connection	286	566
Revenue per customer	3,250	2,263
m Operating expenses	981,569	1,617,262
n Admin. & general costs	853,141	853,141
o Maintenance costs	21,511	21,511
p Depreciation costs	106,917	742,610
		3.5% of Long-term Assets
q Other income	3,297	3,297
r Net Income before interest	(48,853)	(333,006)
s Interest expenses (& penalties)	306,501	306,501
t Net Income	(355,355)	(639,507)
Cash as of 30 Sep. 2004	17,975	

		Model 1	Model 2		Model 1	Model 2			
Credit Worthy	Financial:		50%	60%		50%	60%		
>200%	Current Ratio :e/g	15%	0 pt.	15%	25%	15%	0 pt.	15%	25%
>230%	Debt Service Ratio (1) :r/(h+i+s)	-1%	0 pt.	10%	25%	-8%	0 pt.	10%	25%
	Debt Service Ratio (2) :(p+r)/(h+i+s)	1%				10%			
< 75%	Debt / Equity Ratio :j/k	Negative Net Worth	0 pt.	15%	5%	Negative Net Worth	0 pt.	15%	5%
>25%	Profit Margin Ratio : r/l	-5%	0 pt.	10%		-26%	0 pt.	10%	
>8%	Net Profit Ratio : t/(l+q)	-38%	0 pt.		5%	-50%	0 pt.		5%
	Operational:		50%	40%		50%	40%		
>92%	Collection Efficiency	72%	0 pt.	15%		95%	10 pt.	15%	
>87%	Collection Ratio	52%	0 pt.		15%	80%	6 pt.		15%
<25%	Non-Revenue Water		0 pt.	15%	15%	20%	10 pt.	15%	15%
>120	Service Conn / Staff Ratio	57	0 pt.	5%	10%	158	10 pt.	5%	10%
>15,000	Service Connections	286	0 pt.	10%		789	0 pt.	10%	
>24	Hours Service @ 10 psi	16	3 pt.	5%		24	10 pt.	5%	

Score	0.15	0	4	3.4
Class	Non-CW	Non-CW	Pre-CW	Pre-CW

(6) LEON WD

(As of June 2004)

Name of the WD	LEON WD	
Location	Iloilo Province, Region 6	
History	Established in 1989. Started operation in 1991, after the construction of new facilities financed by LWUA (approx. 4 million Pesos), municipality (approx. 1.2 million Peso) and CDF (approx. 1.8 million Pesos), totaling 7 million Pesos. The same GM from the beginning.	
Class	Small & semi-credit worthy WD, 4 th municipality * Although the WD is classified as semi-creditworthy in 2002, it will be categorized into pre-creditworthy based on the date collected by the JICA.	
Population	43,729	
Population Served (Service Coverage)	3,060 (7.0%)	
No. of Connections	Total Services	580
	Total Active	510
No. of Employees	7, including 2 contractual. GM (1), Book keeper / accountant (1), Meter reader (1), Billing / Collection (1), Pump operator (1), Clerk (1 contractual), Plumber (1 contractual)	
No. of Connections per Employee	73	
Non-Revenue Water	28% * Water leakage would not be the main reason of non-revenue water since the WD's pipe network is relatively new. The major reason seems to be the frequent flushing of water pipes.	
Collection Efficiency (collection of current year water sales / current year bills)	79%	
Annual Water Sales and Expenses (6 month data multiplied by two))	<p>Current Year Billings: 2,503,632 Pesos (408 Pesos/connection) *including penalties Current Year Collections: 2,358,192 Pesos *including collection of past years' arrears</p> <p>Total Expenses: 2,718,896 Pesos o.w. Operating Expenses: 1,822,150 Pesos Maintenance Expenses: 158,482 Pesos Depreciation Expenses: 274,520 Pesos <u>Interest Expenses: 463,744 Pesos</u></p> <p>Net Income: -220,516 Pesos</p> <p>* Disconnection of the service to the customers who have delayed payment is causing a decrease in the revenue, resulting in the suspension of debt service to LWUA since 2003. Since the WD increased water tariffs in June 2004, it is expected that the net income will turn positive shortly and the WD will be able to restart servicing debt.</p>	

Total Outstanding Debt (as of June 2004)	4,297,953 (principal of long-term debt) + 570,342 (accumulated interest and penalties) =4,868,295 Pesos
Outline of Water Facilities	<p>Water source: one deep well (32 m in depth, 250 mm in diameter)</p> <p>* <u>Good quality ground water</u>. Since there are complaints on smell of water in some seasons, the WD frequently conduct flushing of distribution pipes. The reason of the smell is not known. Pumped water volume: $15,456\text{m}^3/\text{month} = 515\text{m}^3/\text{day}$ * measured by the flow meter of the pumping station.</p> <p>Pump: the capacity of the engine pump is 16 liters/sec. Stop pumping every time when the reservoir tank is filled up. The pump is operated for 12 hours, while the water is distributed for 24 hours.</p> <p>Billed water: $11,178\text{m}^3/\text{month}=373\text{m}^3/\text{day}$, $21.9\text{m}^3/\text{month}/\text{connection} = 0.73\text{m}^3/\text{day}/\text{connection} = \underline{122 \text{ liters /person/day}}$</p> <p>Reservoir facilities: One reservoir tank (ground-level, reinforced concrete) on a hill (capacity 150m^3). The Pipe from the pumping station to reservoir functions solely as a transmission line. Diameter 150mm.</p> <p>Distribution facilities: Distribution pipes are 150 mm in diameter, 7 km in length. Since the current service area is populated with commercial offices and houses, distribution of water is efficient. The two Barangays to which the WD is planning to expand its service (200 new connections) are located 2 km away from the town center.</p> <p>*The existing well has a capacity to increase water supply if the operation of the pump is conducted for 24 hours per day, which enables the provision of service to more than 500 new households.</p>
Water Use	<p>The WD's water is used for drinking due to its <u>good quality</u>. Shallow well water of households is also relatively good. Since some households use piped water only in dry seasons when the ground water level goes down, the number of active connections fluctuates between seasons.</p>
Outline of the Management of WD	<p>Although the WD had been recoding positive net profit since the beginning, the WD made losses last two years due to a decrease in revenue. Since the WD has proactively accumulated depreciation (27% of the assets have already been depreciated), it has 1.4 million Pesos cash at hand. The WD increased water tariffs by 20% in June 2004 (from 140 to 170), it is expected that the net income will turn positive shortly.</p> <p>* The WD is planning to expand the service area to two Barangays (4 million Pesos). A new loan from LWUA is under consideration</p>
Problems of water facilities	<p>Water Facilities:</p> <ul style="list-style-type: none"> To remove the smell of water, flushing of distribution pipes is conducted frequently. <p>Distribution Facilities:</p> <ul style="list-style-type: none"> New reservoir tanks must be constructed in two Barangays when the WD provides service to them. <p>Water Meter and Collection:</p> <ul style="list-style-type: none"> Water meters are new, rarely break down. Whenever they break down, they are immediately replaced (WD has a sufficient stock).

Priority for the Improvement of Water Facilities	Expansion of the service area to two Barangays, including the construction of reservoir tanks.			
Water Facility Improvement Plan	Installation of distribution pipes in two Barangays (150mm in diameter, total length 150 mm) and the construction of two reservoir tanks (30 m ³)			
Estimate of Investment Amount	1. Construction Cost: 4.12 million Pesos 2. Design and Supervision: 0.52 million Pesos (13% of construction cost) 3. Contingency :0.68 million Pesos $(=(1+2)*15\%)$ Total Investment: <u>5,20 million Pesos</u> * The WD wishes to use a LWUA loan (4 million Pesos) and self-financing.			
Risks	<ul style="list-style-type: none"> Some low-income households may not want to connect to the water system. Since the new investment would not generate a sufficient revenue to cover interest expenses, there is a risk that the WD will make losses after the investment. 			
Future Prospects:	Without Project			
	<ul style="list-style-type: none"> The existing well water cannot be effectively utilized. Expansion of service areas does not materialize for a long time due to lack of finance. 			
	With Project			
	<ul style="list-style-type: none"> Capacity of the existing well will be effectively utilized. The service area will be expanded. The above outcomes will lead to an increase in revenue through increased connections, which will in turn enable further expansion of the service area, if financed by grant aid. 			
Improvement of WD's Financial status "with Project"	The following is the WD's financial status when revenue is collected from 160 active connections (80% of 200 new connections): Increase of annual revenue: 160 connections * 408 Pesos month/connection * 12 months = <u>783,360 Pesos</u> * The WD's financial viability will be strengthened if the investment is made by a grant. If financed by a LWUA loan, the WD will not be able to generate a sufficient revenue to pay the interest, thus will start making a loss.			
Change in Class w/o or w/ Project		w/o Project	Grant	LWUA Loan
	DOF Model 1 (Financial 50%, Operational 50%)	Pre-CW	Pre-CW	Pre-CW
	DOF Model 2 (Financial 60%, Operational 40%)	Non-CW	Pre-CW	Pre-CW
Conclusions	The WD does not seem to need urgent assistance.			

Leon WD		Before Investment				After Investment			
Balance Sheet Items (as of June 30, 2004)									
a	Assets								
		7,642,628				11,642,628			
b	Long-term Assets	5,069,132				9,069,132			
c	Utility Plant	6,423,151				10,602,088			
d	Less Depreciation	(1,354,019)				(1,532,956)			
e	Current Assets	2,573,496				2,573,496			
f	Equity & Liabilities	7,642,628				11,642,628			
g	Current Liabilities	1,441,492				1,441,492			
h	o.w. Current Portion Debt	106,183				106,183			
i	o.w. Arrears	464,159				464,159			
j	Long-term Liabilities	4,297,953				8,297,953			
k	Equity	1,903,183				1,903,183			
	Paid in Capital	2,997,565				2,997,565			
	Retained Earnings	(1,094,382)				(1,094,382)			
Income Statement Items (6 month x 2)									
l	Operating Revenues	2,496,688				3,280,048			
	# of active connection	510				840			
	Revenue per customer	4,895				3,905			
m	Operating expenses	2,255,152				2,590,761			
n	Admin. & general costs	1,822,150				1,978,822		20% of incremental Revenues is added	
o	Maintenance costs	158,482				158,482			
p	Depreciation costs	274,520	5.4% of Long-term Assets			453,457	5% of Long-term Assets		
q	Other income	1,692				1,692			
r	Net Income before interest	243,228				690,979			
s	Interest expenses (& penalties)	463,744				943,744			
t	Net Income	(220,516)				(252,765)			
Cash as of									
				Model 1	Model 2			Model 1	Model 2
Credit Worthy	Financial:			50%	60%			50%	60%
>200%	Current Ratio : e/g	179%	6 pt.	15%	25%	179%	6 pt.	15%	25%
>230%	Debt Service Ratio (1) : r/(h+i+s)	24%	0 pt.	10%	25%	46%	0 pt.	10%	25%
	Debt Service Ratio (2) : (p+r)/(h+i+s)	50%				76%			
< 75%	Debt / Equity Ratio : j/k	226%	0 pt.	15%	5%	436%	0 pt.	15%	5%
>25%	Profit Margin Ratio : r/l	10%	3 pt.	10%		21%	6 pt.	10%	
>8%	Net Profit Ratio : U/(l+q)	-9%	0 pt.		5%	-8%	0 pt.		5%
	Operational:			50%	40%			50%	40%
>92%	Collection Efficiency	79%	3 pt.	15%		79%	3 pt.	15%	
>87%	Collection Ratio	77%	3 pt.		15%	77%	3 pt.		15%
<25%	Non-Revenue Water	28%	6 pt.	15%	15%	28%	6 pt.	15%	15%
>120	Service Conn / Staff Ratio	73	0 pt.	5%	10%	96	3 pt.	5%	10%
>15,000	Service Connections	510	0 pt.	10%		670	0 pt.	10%	
>24	Hours Service @ 10 psi	24	10 pt.	5%		24	10 pt.	5%	
Score				3.05	2.85			3.5	3.15
Class				Pre-CW	Non-CW			Pre-CW	Pre-CW

(7) CALINOG WD

(As of Dec 2004)

Name of the WD	CALINOG WD	
Location	Iloilo Province, Region 6	
History	Calinog WD is a relatively new water district; it was formed in 1995 and started operation in 1997 after the construction of a new water supply system. Initial investment was financed from LWUA loans (2.9 million Pesos) and grant of CDF and municipality (1.9 million Pesos in total).	
Class	Small & pre-credit worthy WD, 2 nd municipality	
Population	48,454	
Population Served (Service Coverage)	3,060 (7.0%)	
No. of Connections	Total Services	682
	Total Active	586
No. of Employees	11 (o.w. 6 are contractual) * GM (1), Book keeper (1), Billing & posting clerk (1), Meter reader & plumber (1), Pump operator & worker (7)	
No. of Connections per Employee	53	
Non-Revenue Water	22% * Estimated from the balance between flow meter at the pump station and the amount of billing	
Collection Efficiency (collection of current year water sales / current year bills)	96%	
Annual Water Sales and Expenses (Year 2004)	<p>Current Year Billings: 2,024,093 Pesos (300 Pesos/connection) *including penalties</p> <p>Current Year Collections: 2,138,184 Pesos *including collection of past years' arrears</p> <p>Total Expenses: 2,081,701 Pesos</p> <p>o.w. Operating Expenses 1,717,495 Pesos</p> <p>Maintenance Expenses: 98,898 Pesos</p> <p>Depreciation Expenses: 11,082Pesos</p> <p><u>Interest Expenses: 254,226 Pesos (not paid)</u></p> <p>Net Income: -95,135 Pesos</p> <p>* The WD has not depreciated any of its assets until 2004. Since the WD has recently decided to start depreciation, including accumulated past obligation, from 2005 fiscal year; it will record a large loss in 2005. On the other hand, since the arrears of customers are increasing, there is a shortfall in cash in spite of the increase in water tariffs (from 142 to 162) implemented in April 2004</p>	
Total Outstanding Debt (as of end 2004)	3,039,054 (Long-term Debt Principal)+ 312,706 (interests and penalties payable) = 3,351,760Pesos	

Outline of Water Facilities	<p>Water sources: 2 shallow wells (o.w. one is not in operation) and an underground river water intake pumping station. Water quality of either of these sources is good. The details of the water sources are the following:</p> <p><u>Shallow well (No.1):</u> 6 m in depth, 2.5m in diameter. 2 electric pumps, o.w. one is a stand-by. Pumping capacity is 5 liters/sec. Operating hours: 4.30 a.m. to 8:00 p.m. Without a reservoir tank, water is distributed directly from the pump. Distribution to elevated areas is conducted by opening/closing of bulbs and increasing/decreasing pumping pressure.</p> <p><u>Shallow well (No.2):</u> 6 m in depth, 2.5m in diameter. Although installed in 2003, it has never been operated because the pump house has not been constructed due to lack of fund. In addition, a reservoir tank (300 m³) must be constructed at the hillside located 500 m away from the pump.</p> <p><u>Underground river water intake station:</u> Water is taken from a pipe installed under the river and distributed. An engine pump at the capacity of 7 liters/sec is used. 24 hours operation. Water is directly distributed from the pump without a reservoir tank. The results of a water quality sample test are</p> <p>- Ph 7.0, Fe 0 ppm, COD 5 ppm, NO2 0 ppm, TH 200</p> <p>Although COD is 5 ppm, the water is not polluted since no nitrate is detected.</p> <p>Produced water : 12,570 m³/month Billed water: 9,805m³/month =327m³/day, 16.7m³/month/connection = 0.56 m³ / day / connection, = 93 liters/person/day.</p> <p>Reservoir: none</p> <p>Distribution facilities: Distribution pipes are PVC, maximum diameter 150 mm. The current service area is the center of the town where many commercial facilities and houses are located. The WD wishes to extend service to a Barangay (300 to 500 households) next to the town. There is also a development plan of a housing area by reclaiming paddy fields.</p>
Water Use	<p><u>The water is used for drinking because of its good quality.</u> Demand of piped water is high since shallow well water is not in good quality.</p>
Outline of the Management of WD	<p>Although the WD' financial condition was relatively good when it started operation, the WD has not been servicing LWUA's debt since 2003 due to the decreasing number of customers (the main reason seems to be a loss of affordability). Unless the WD immediately increases its revenue base or decreases its expenses, its debt will quickly increase, and eventually the WD's financial condition will deteriorate as are the cases of Numancia and Hamtic WDs.</p>
Problems of water facilities	<p>Water Sources:</p> <ul style="list-style-type: none"> • Good water quality • Underground river water decreases in dry seasons. Certain measures must be taken. • No.2 well should be operated in order to increase water supply in dry seasons and to expand the service area. • The WD cannot respond to the high water demand in peak hours without a reservoir. <p>Water Meters and Collection:</p> <ul style="list-style-type: none"> • On-time collection rate is low (50%)

Priority for the Improvement of Water Facilities	<p>(1) Construction of the pumping station of No.2 shallow well, including the transmission line up to the reservoir.</p> <p>(2) Construction of a reservoir tank at the hillside (capacity: 300m³)</p> <p>(3) Expansion of the service area to the neighboring Barangay</p> <p>(4) Extension of the three water intake pipes under the river (150 mm in diameter, 18 m in length)</p>
Water Facility Improvement Plan	<p>(1) Construction of the pumping station for No.2 shallow well: a pump (8 liters/sec), a pump house, a chlorinator, electric works, a transmission line (100 mm in diameter and 500 m in length)</p> <p>(2) Construction of a reservoir tank at the hillside (capacity: 300m³, reinforced concrete)</p> <p>(3) Expansion of the service area to the neighboring Barangay: 400 new connections</p> <p>(4) Extension of the three water intake pipes under the river (150 mm in diameter, 18 m in length)</p> <p>* (1) and (2) will enable 800 new connections</p>
Investment Amount	<p>1. Construction Cost: 5.30 million Pesos</p> <p>Construction Costs for (1): 2.08 million Pesos</p> <p>Construction Costs for (2): 2.25 million Pesos</p> <p>Construction Costs for (3): 0.87 million Pesos</p> <p>Construction Costs for (4): 0.10 million Pesos</p> <p>2. Design and Supervision: 0.69 million Pesos (13% of construction cost)</p> <p>3. Contingency :0.90 million Pesos $(=(1+2)*15\%)$</p> <p>Total Investment: <u>6.89 million Pesos</u></p>
Risks	<ul style="list-style-type: none"> Some low-income households may not want to connect to the water system. There is a possibility that the WD cannot raise money (0.3 million Pesos) for the acquisition of the land (1,000 m²) for the reservoir tank. Since the above land is a private agriculture field, it is critical that land acquisition is conducted in an appropriate manner.
Future Prospects:	<p>Without Project:</p> <ul style="list-style-type: none"> Water of No.2 well cannot be used. Expansion of the service area does not materialize for a long time due to lack of finance. Service hours remain limited. Water volume is not sufficient during dry seasons. Repayment to LWUA cannot be resumed and the debt will increase rapidly. In addition, depreciation cannot be accumulated and thus the WD cannot replace its facilities in the future. <p>With Project</p> <ul style="list-style-type: none"> Water of No.2 well can be effectively used. The service area will be expanded. The above outcomes will lead to an increase in revenue through increased connections, which will in turn enable not only repayment to LWUA but also further expansion of the service area. Water is distributed for 24 hours. Water supply from underground river will increase.

Improvement of WD's Financial status "with Project"	<p>The following is the WD's financial status when revenue is collected from 320 active connections (80% of 320 new connections):</p> <p>Increase of annual revenue: 320 connections * 330 Pesos month/connection * 12 months = <u>1,152,000 Pesos</u></p> <p>* Owing to the high cost-effectiveness of this investment, the WD will have sufficient revenues to cover depreciation and interest expenses, and furthermore, to pay for future replacement and/or expansion.</p>		
Change in Class w/o or w/ Project		Without Project	With Project
	DOF Model 1 (Financial 50%, Operational 50%)	Pre-CW	Semi-CW
	DOF Model 2 (Financial 60%, Operational 40%)	Pre-CW	Semi -CW
Conclusion	<p>The WD's prospect in financial condition is bad, but since its water quality is good and the demand of piped water is high, the WD's financial viability will significantly improve through the Project's investment, which will enable future replacement and expansion of facilities.</p>		

Callnog WD

Before Investment

After Investment

Balance Sheet Items (as of Dec 31, 2004)

a Assets	5,831,633	12,721,633
b Long-term Assets	4,543,637	11,433,637
c Utility Plant	4,556,911	12,007,511
d Less Depreciation	(13,274)	(573,874)
e Current Assets	1,287,996	1,287,996
f Equity & Liabilities	5,831,633	12,721,633
g Current Liabilities	510,419	510,419
h o.w. Current Portion Debt	67,550	67,550
i o.w. Arrears	235,156	235,156
j Long-term Liabilities	3,088,256	3,088,256
k Equity	2,232,958	9,122,958
Paid in Capital	1,875,027	8,765,027
Retained Earnings	357,931	357,931

Income Statement Items (2004)

l Operating Revenues	2,111,137	3,263,137	
# of active connection	586	906	
Revenue per customer	3,603	3,602	
m Operating expenses	1,827,475	2,618,475	
n Admin. & general costs	1,717,495	1,947,895	20% of incremental Revenues is added
o Maintenance costs	98,898	98,898	
p Depreciation costs	11,082	571,682	0.2% of Long-term Assets 5% of Long-term Assets
q Other income	65,699	65,699	
r Net Income before interest	349,361	710,361	
s Interest expenses (& penalties)	254,226	254,226	
t Net Income	95,135	456,135	

Cash as of

		Model 1		Model 2		Model 1		Model 2	
Credit Worthy	Financial:		50%	60%		50%	60%		
>200%	Current Ratio : e/g	252%	10 pt.	15%	25%	252%	10 pt.	15%	25%
>230%	Debt Service Ratio (1) : r/(h+i+s)	63%	0 pt.	10%	25%	128%	6 pt.	10%	25%
	Debt Service Ratio (2) : (p+r)/(h+i+s)	65%				230%			
< 75%	Debt / Equity Ratio : j/k	138%	0 pt.	15%	5%	34%	10 pt.	15%	5%
>25%	Profit Margin Ratio : r/l	17%	6 pt.	10%		22%	6 pt.	10%	
>8%	Net Profit Ratio : t/(l+q)	4%	3 pt.		5%	14%	6 pt.		5%
	Operational:		50%	40%		50%	40%		
>92%	Collection Efficiency	96%	10 pt.	15%		96%	10 pt.	15%	
>87%	Collection Ratio	84%	6 pt.		15%	84%	6 pt.		15%
<25%	Non-Revenue Water	22%	10 pt.	15%	15%	22%	10 pt.	15%	15%
>120	Service Conn / Staff Ratio	53	0 pt.	5%	10%	82	3 pt.	5%	10%
>15,000	Service Connections	586	0 pt.	10%		906	0 pt.	10%	
>24	Hours Service @ 10 psi	16	3 pt.		5%	24	10 pt.		5%

Score	5.25	5.05	7.85	7.5
Class	Pre-CW	Pre-CW	Semi-CW	Semi-CW

Attachment 5.

AWARENESS AND SATISFACTION SURVEY OF WATER USERS ON LESS CREDITWORTHY AND SMALL WATER DISTRICTS

*Final Report
February 5, 2005*

OBJECTIVES

Water Districts have been categorized into Very Large, Large, Big, Average, Small. Out of the 444 Water Districts in the Philippines 67% are categorized as Small. Information yields that only 200 water districts were given financial assistance for facilities improvement and expansion. Most of water district that have availed of financial assistance do not come from small water districts. The reason for such is because small water systems are not yet ready for full cost recovery a requirement for most international funding institutions.

The survey was focused on small water districts that fall within the pre credit worthy and semi credit worthy.

The survey was undertaken for the following purpose:

1. Gather information from households connected to water districts in three identified municipalities in the Philippines, Hamtic, Patnongon and Numancia¹ in terms of their awareness and satisfaction of the services given by the said water district;
2. Gather information from households who do not have a service connection in Hamtic, Patnongon and Numancia
3. Investigate the possibility of an expansion for the water district by gathering information from households not connected to the water district or who get their water from other sources;
4. Validate initial data gathered by the Project Preparation Team regarding the operations and maintenance of the identified water districts included in the study.

SCOPE AND LIMITATION

The survey included the following parameters in the selection of the households:

1. Located in the water district identified (Hamtic, Patnongon and Numancia;

¹ Hamtic, Patnongon and Numancia are Located in the Provinces of Antique and Aklan respectively

2. Households included both those located close to the distribution lines (strong water pressure as well as those households in located far from the distribution lines (weak water pressure);
3. The number of households included in the study was predetermined considering the time needed for the conduct of the actual survey.

FRAMEWORK OF THE STUDY

Sustainability of small water districts is hinged on several factors. One of the significant indicators of water district's sustainability is the ability to satisfy its customers through the delivery of affordable and safe drinking water. Customers who are satisfied with the quality of water they drink are more likely to stay connected to the water district. Perceived good quality of water from the water district will make them less likely to rely on other sources found in their area like those coming from private wells, water vendors, water refilling stations or even bottled water.

Availability of the sufficient and potable water to satisfy the needs of the customers will lead customers to pay their bills on time or may even encourage others to be connected to water district. Increase in connection may assure continued revenue for the district. Revenues will most likely be flowed back to the operation and maintenance of the water system and even expansion.

The study (survey) included describing the level of satisfaction and awareness of respondents in three municipalities. Level of satisfaction will measured in terms of perceptions regarding water availability and access, water quality, affordable water rates and customer service and response.

METHODOLOGY

The survey was conducted in January 2005 covering three water districts located in Panay Island. Eight days was allotted for the actual conduct of the survey in the households. The following survey protocol was observed:

1. The conduct of orientation and coordination with General Manager of the Water District regarding the purpose and the requirements of the survey;
2. Familiarization with the actual operation of the water district and data needed for the survey such as maps (zones). This was necessary to determine households who are connected and not connected to the water district;
3. Identification and training of enumerators who will do the survey²;

² See Annex 1 Enumerators Survival Tips

4. The enumerators utilized an interview guide³ which listed down the different questions related to the survey. Each enumerator goes through each question in the interview guide and writes down the answer of the respondent. There are two sets of interview guide, one for households connected to water district and the other for households not connected to water district.
5. Pretesting and actual conduct of the survey. Only household heads were the actual respondents to the survey.

SELECTION CRITERIA OF HOUSEHOLDS INCLUDED IN THE SURVEY

Hamtic

- Survey was conducted covering areas in Poblacion 1, Poblacion 2, Poblacion 3, Poblacion 4 and Poblacion 5. The respondents included both those that are connected to the water district and those that are not yet connected. The respondents who are not connected came from the same zones because there are still areas in the zones where there are still no water service lines from the water district.
- A total of 4 Enumerators did the survey for Hamtic. They randomly selected the households. This means that if a household has already been chosen as part of the survey, the adjacent household is not interviewed. The enumerator skips one to two houses and interviews the subsequent household in the map.

Patnongon

- Respondents found in barangays Poblacion, Igbobon and Padang (found in Zone 1, 5A, 2, 5B, 3 and 4 of the Patnongon Water District) formed part of the households included in survey of those who are connected to the water district
- Respondents found in barangays La Rioja and Carit-an formed part of the households in the survey not connected to the water district.
- A total of 4 Enumerators did the survey for Patnongon. They randomly selected the households. This means that if a household has already been chosen as part of the survey, the adjacent household is not interviewed. The enumerator skips one to two houses and interviews the subsequent household in the map.

Numancia⁴

- Respondents found in barangays Laguinbanua West, Marainos, Poblacion, Joyao-Joyao, Albasan, Badio, Navitas, Albasan, Bobog, Bulwang and Laguinbanua

³ See Annex 2 Interview Guide for HH Connected to Water District; Interview Guide for HH NOT Connected to Water District

⁴ Numancia Water District services three municipalities. The Municipality of Numancia, Makato and Lezo all of the HH surveyed are located in Numancia

East (found in Zones 1-10 of Numancia Water District) formed part of the households connected to the water district.

- Respondents in barangays Bubog, Laguinbanua East, Bulwang, Navitas, Albasan, Badio, Joyao-Joyao, Marianos, and Laguinbanua West formed part of the households in the survey not connected to the water district. Most of the HH surveyed are also located in barangays connected to water district. They were chosen because service/distribution lines have not reached their places yet.
- A total of 5 Enumerators did the survey for Numancia. They randomly selected the households. This means that if a household has already been chosen as part of the survey, the adjacent household is not interviewed. The enumerator skips one to two houses and interviews the subsequent household in the map.

RESULTS OF THE SURVEY

HAMTIC WATER DISTRICT

Survey for households connected and not connected to water district was done for two days. There were 32 respondents for household connected and 15 respondents for households not connected to water district.

Below is a representation of the survey results in tables.

Survey Results for Households Connected to Hamtic Water District

Barangays Included in the Survey

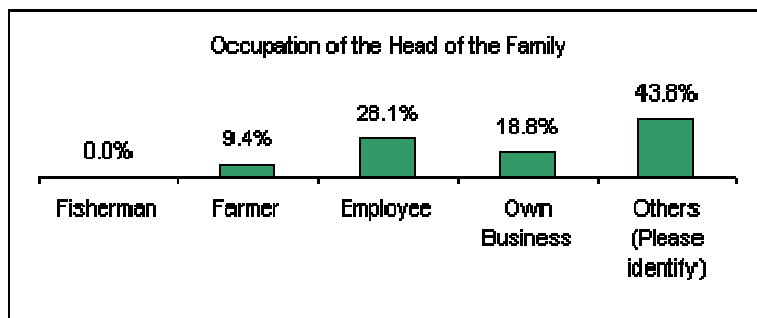
- Poblacion 1
- Poblacion 2
- Poblacion 3
- Poblacion 4
- Poblacion 5

Average Household Member:

5.125

Occupation of Head of the Family	Number	Percentage (%)
Fisherman	0	0.0%
Farmer	3	9.4%
Employee	9	28.1%
Own Business	6	18.8%
Others	14	43.8%
	32	100.0%

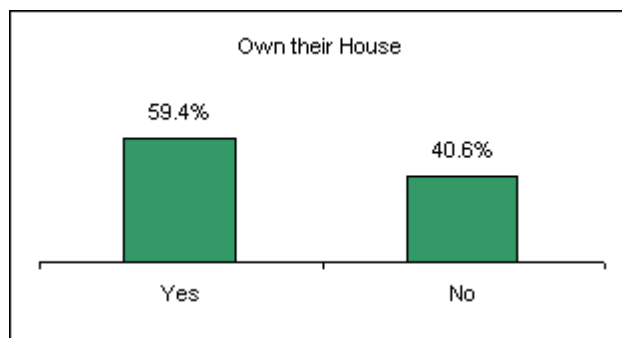
TABLE 1



Note :The percentages according to type of occupation fall in the "Others"category. This means that most of the respondents are housekeepers and retired employees.

Own Their House	32	100.0%
Yes	19	59.4%
No	13	40.6%

TABLE 2

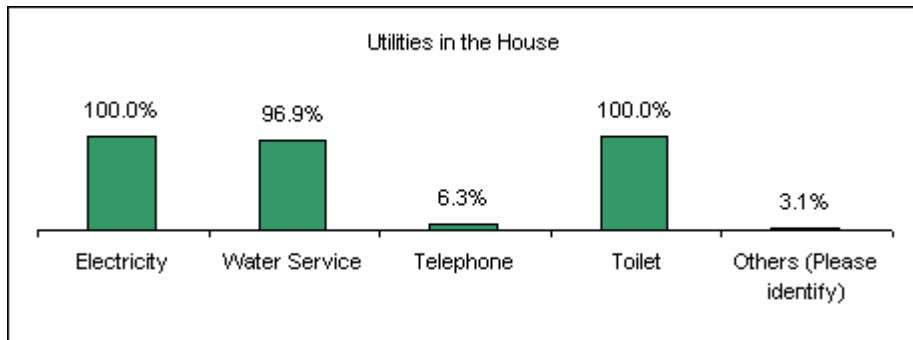


The survey data shows that 19 out of the 32 respondents or about 59% own the houses where they live

Utilities in the House

1	Electricity	32	100.0%
2	Water Service	31	96.9%
3	Telephone	2	6.3%
4	Toilet	32	100.0%
5	Others	1	3.1%

TABLE 3

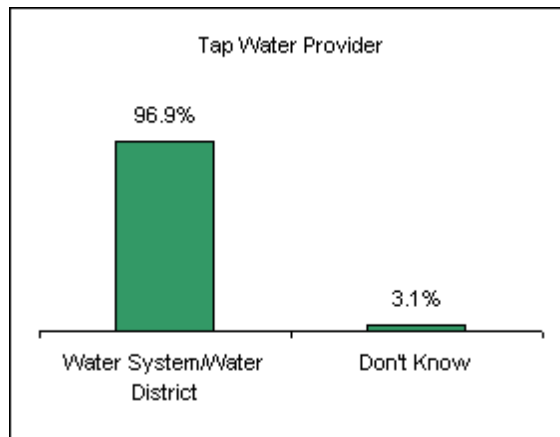


Note: Percentages total exceed owing to the fact that the respondents have more than one utility in their house.

A. Do you know your tap water provider?

Awareness of Tap Water Provider		32	100.0%
1	Water System/Water District	31	96.9%
2	Don't Know	1	3.1%
3	Others (Please identify)	0	

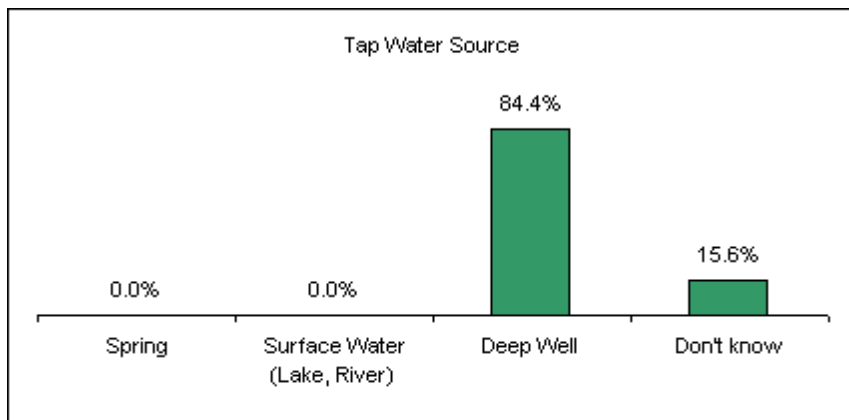
TABLE 4



B. Do you know the source of your tap water?

Tap Water Source		32	100.0%
1 Spring		0	0.0%
2 Surface Water (Lake, River)		0	0.0%
3 Deep Well		27	84.4%
4 Don't know		5	15.6%

TABLE 5



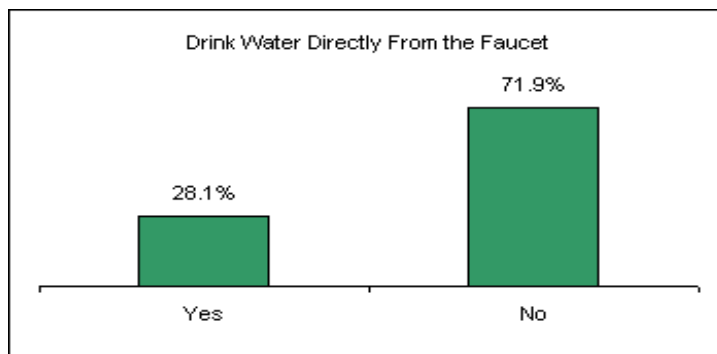
97% (or 31 respondents know that their water is delivered by the Hamtic Water District), However only 84% are able to identify the source

1. Do you drink tap water?

WATER QUALITY

Drink Tap Water		32	100.0%
Yes		9	28.1%
No		23	71.9%

TABLE 6



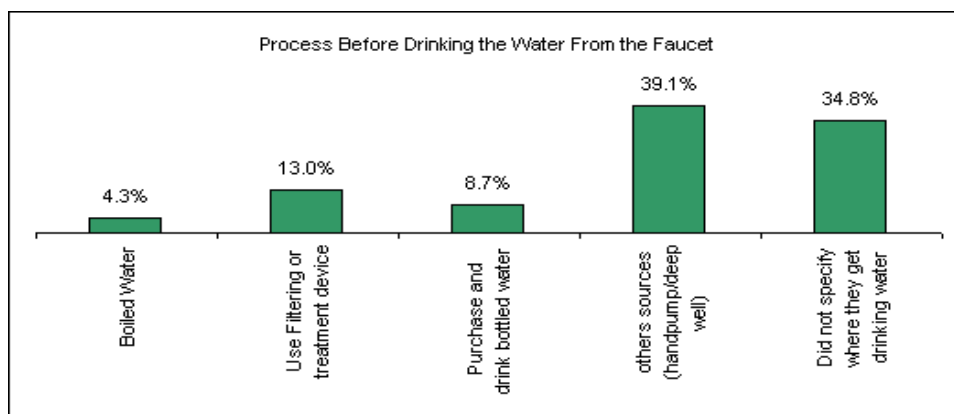
Only 28% of the respondents think it is safe to drink the water although there are few of them who experienced taste and odor and yet they still drink the water Majority of the respondents (72% or 23 respondents out of the total of 32) do not drink water directly from the faucet due to the following reason:

- Bad Odor (especially in the morning)
- The water is not clear (cloudy/muddy/turbid)
- Has smell
- Has taste (High iron content)
- High chlorine dosage

1.1 What do you do before drinking water? (for respondents who don't drink from the tap)

<i>Process Before Drinking the Water From the Faucet</i>		100.0%
<i>Boiled Water</i>	1	4.3%
<i>Use Filtering or treatment device</i>	3	13.0%
<i>Purchase and drink bottled water</i>	2	8.7%
<i>Others sources (handpump/deepwell)</i>	9	39.1%
<i>Did not specify where they get drinking water</i>	8	34.8%

TABLE 7

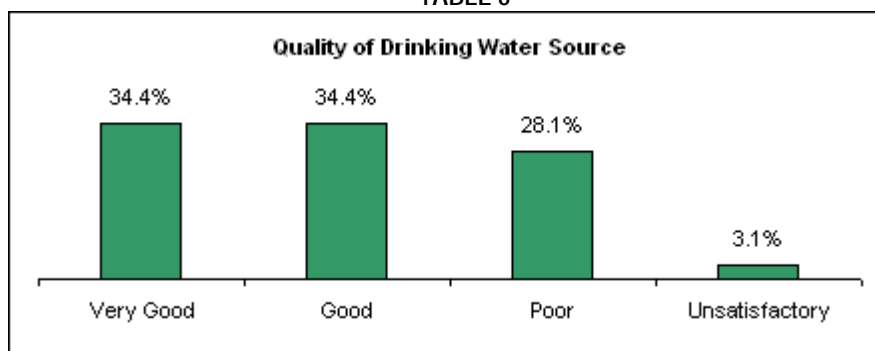


Of the 32 respondents WHO DO NOT DRINK THE WATER directly from the faucet has provided other measures to eradicate or minimize the harmful effect of the water provided by the Water District (WD) which they think is not safe to drink. However, majority of the respondent opt to get their drinking water from other sources like from the hand pump or deepwell. Very few boiled, purchased bottled water or have a filtering device. Common filtering device used by the respondents is just plain cloth that serves as a strainer

2. How do you rate the quality of your drinking water?

Quality of Drinking Water	32	100.0%
Very Good	11	34.4%
Good	11	34.4%
Poor	9	28.1%
Unsatisfactory	1	3.1%

TABLE 8



The respondents are confident with there drinking water source with 68% responded to good to very good while only 31% poorly rated or unsatisfied - these are those who get their drinking water directly from the faucet

NOTE: Source of drinking water comes mostly from handpumps (56%) and shallow wells often referred to as “ deepwells” (28%) not from tap water coming from Water District (Refer to table for other sources of water)

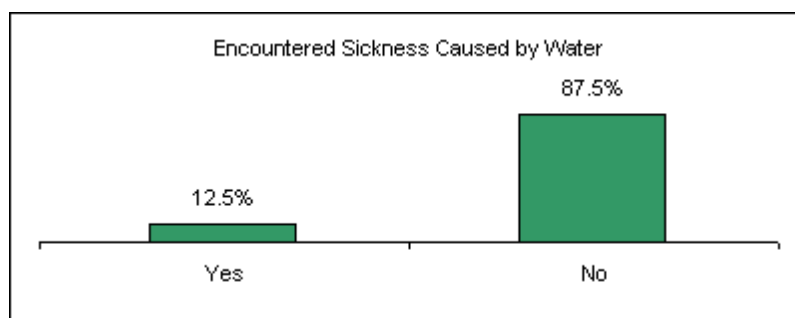
Respondents suggestions for the WD Improvement on Water Quality.

- Look for another source
- add reservoir (to address shortage of water esp. at night)
- clean existing facilities
- proper notification during maintenance schedule (during reservoir cleaning)
- apply new technologies on water treatment
- Improve quality on management services
- reduction in water tariff

3. Did any of your family members encounter illness due to drinking water from Water District?

Encountered Sickness		32	100.0%
Yes	(Diarrhea, Amoebiasis, skin diseases & stomach discomfort)	4	12.5%
No		28	87.5%

TABLE 9



Only four respondents or 13% encountered or experienced illness. Respondents perceive that drinking water lead to a particular sickness (amoebiasis, diarrhea, skin disease and stomach discomfort).

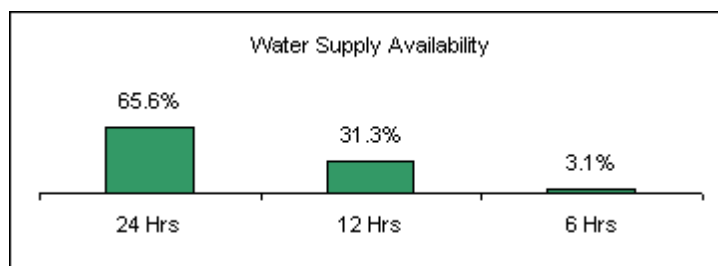
WATER DISTRIBUTION AND AVAILABILITY

1. Availability of water supply in a day?

WATER DISTRIBUTION AND AVAILABILITY

Water Supply Availability		32	100.0%
1	24 Hrs	21	65.6%
2	12 Hrs	10	31.3%
3	6 Hrs	1	3.1%
4	< 3 Hrs	0	0.0%

TABLE 10



Although water supply is available 24 hrs a day and 7 days a week, other respondents noted that there are few times in a week that the water is only available at night till dawn. While respondents on the other section of the service area do not have water in the evening till dawn.

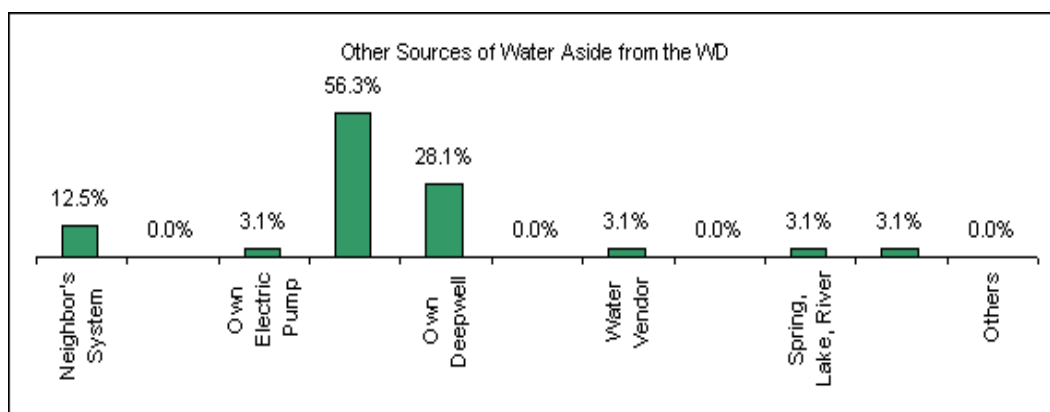
3. Aside from the Water District, do you have other sources of water?

Other Source of Water aside from WD 109.4%

1	Neighbor's System	4	12.5%
2	Barangay System	0	0.0%
3	Own Electric Pump	1	3.1%
4	Own Hand Pump	18	56.3%
5	Own "Deepwell" (shallow or dug well)	9	28.1%
6	Public faucet/Well	0	0.0%
7	Water Vendor	1	3.1%
8	Rainfall	0	0.0%
9	Spring, Lake, River	1	3.1%
10	Bottled Water'	1	3.1%
11	Others	0	0.0%

Note: Households commonly use the word "deepwell" for shallow or dug well

TABLE 11



The respondents aside from being connected with the water district has its own "deep well" or hand pump which is used regularly for household consumption such as for laundry, watering of plants and even for drinking. Others buy bottled water for drinking purposes

Those who do not have their own hand pump or "deep well" opt to fetch water from their neighbor.

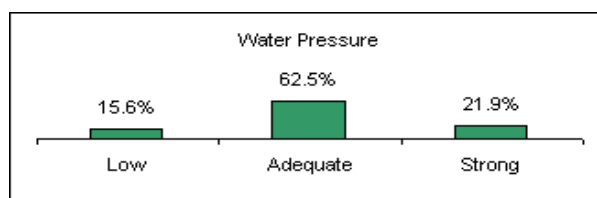
There are cases reported by the residents that the water supplied by the WD could not be used even for laundry because of the color and smell. They even noted where a toad and other foreign objects come out from the faucet.

Note: Percentages total of 109% exceeds owing to the fact that they are getting water from more than one source

4. How do you rate your water pressure?

Water Pressure	Count	Percentage
1 Low	5	15.6%
2 Adequate	20	62.5%
3 Strong	7	21.9%
Total	32	100.0%

TABLE 12



Although most of the respondents think that the water pressure is adequate, they noted there are times that they experience varying level of water availability (low supply of water at night or in the morning)

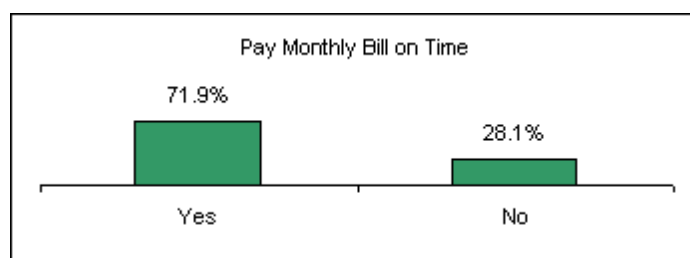
WATER BILLING AND STATEMENT OF ACCOUNTS

1. How much is your monthly average water bill?

Average Monthly water bill (Pesos)	253.78125
Average Monthly water consumption (m ³)	19.25 m ³ /month/HH

Pay Monthly Bill on Time	Count	Percentage
Yes	23	71.9%
No	9	28.1%
Total	32	100.0%

TABLE 13

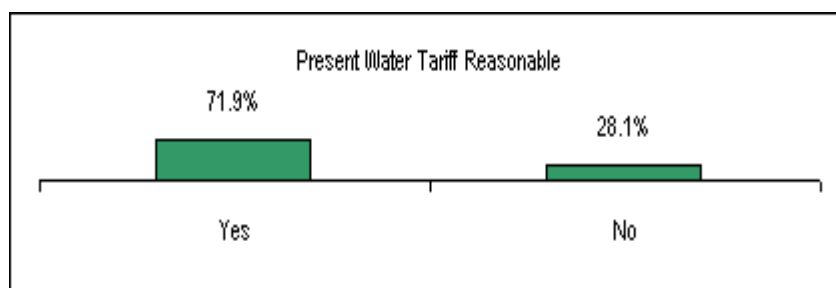


72% or 23 respondents pay their water bill on time

3. Is the present tariff rate reasonable?

Present Tariff Rate Reasonable	Count	Percentage
Yes	23	71.9%
No	9	28.1%
Total	32	100.0%

TABLE 14



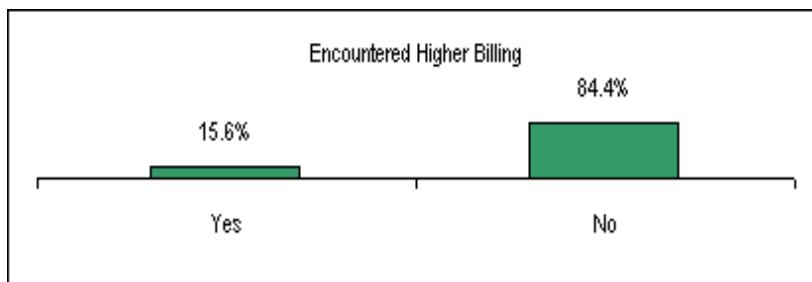
Those who pay their bill on time think that they pay for what has been consumed and that the present water charges are reasonable.

The respondents who do not pay their bill regularly reason out that the water being supplied is not adequate for their needs often times not potable. They used other sources and that the bill the WD is charging is very expensive.

4. Have you encountered any billing much higher than what you actually think you consumed?

Encountered billing much higher than what the consumer think they only consumed		
Yes	5	15.6%
No	27	84.4%

TABLE 15



Majority of the respondents did not encounter being charged higher than what they consumed. Although there are respondents who think there were bills higher than what they actually consumed but could not remember when and how much.

The respondents also reported that additional water requirements range from 1 to 8 m³ are needed for them to satisfy their water needs. Those specified low additional water requirements have other source of water like a hand pump and deep well.

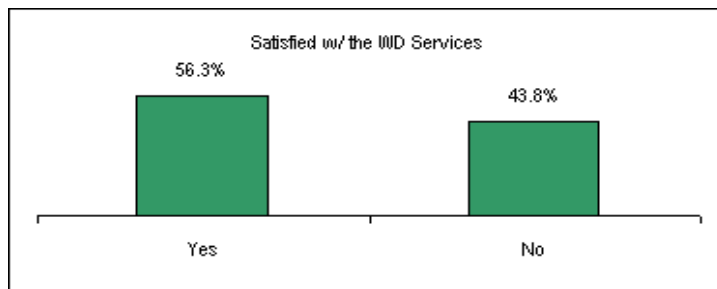
Customer Service

1. Are you satisfied with Water District Services?

CUSTOMER SERVICE

Satisfied with the WD services		
Yes	18	56.3%
No	14	43.8%
1 quality of water	14	
2 present water rates	2	
3 pressure of water	2	
4 maintenance of water supply (repairs, leaks, etc.) (such as repair of leaks, water cuts, etc.)	3	
5 did not specify	0	

TABLE 16



Although 56% are satisfied with the WD services, they are still hopeful that the services will be improve as well as the quality and quantity of water

Most of the unsatisfied is due to the quality of services and the water being delivered.

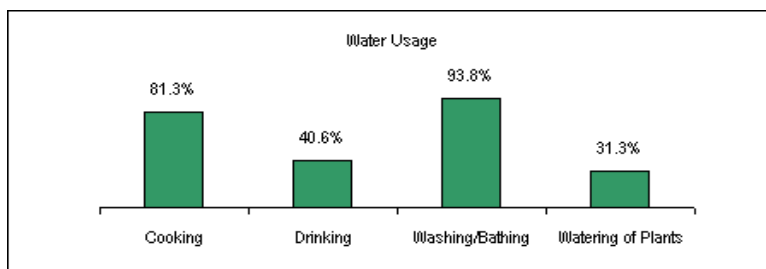
Others did not specify on why they are not satisfied with WD services

Note: Percentages total of the reasons of the unsatisfied exceeds owing to the fact that they have lots of complain with the water being supplied

2. What do you use the water for?

1	Cooking	26	81.3%
2	Drinking	13	40.6%
3	Washing/Bathing	30	93.8%
4	Watering of Plants	10	31.3%

TABLE 17



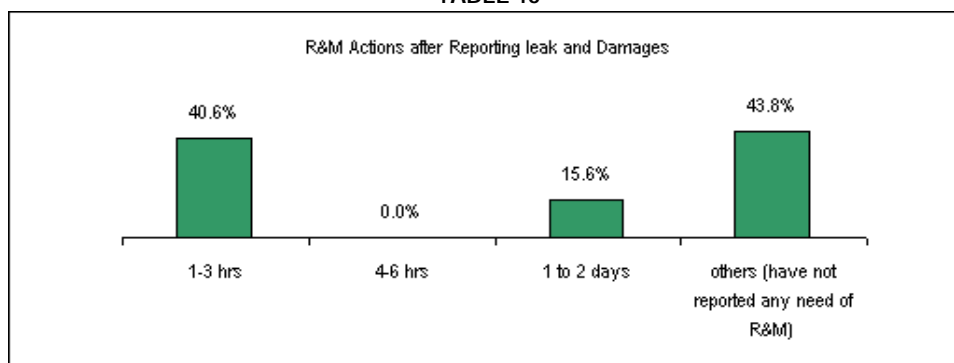
Only 40% or 13 respondents use water from WD for drinking while the majority uses t water for washing/bathing or cooking and even for watering of plants

Note: Percentages total exceeds owing to the fact that they used water for different purposes

3. In reporting leaking pipes, malfunctioning meters how long does it take for the water district to repair?

Repair & Maintenance Actions after reporting leak and damages	Count	Percentage
1 1-3 hrs	13	40.6%
2 4-6 hrs	0	0.0%
3 1 to 2 days	5	15.6%
4 others (have not reported any need of R&M)	14	43.8%

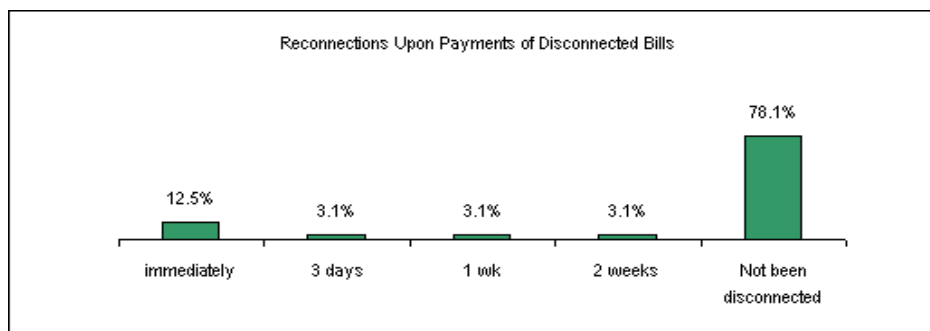
TABLE 18



4. Upon payment of disconnected water bills, how long does it take for reconnection?

Reconnection upon payments of disconnected bills	No.	Percentage
immediately	4	12.5%
3 days	1	3.1%
1 wk	1	3.1%
2 weeks	1	3.1%
Not been disconnected	25	78.1%

TABLE 19



Majority of the respondents did not encounter being disconnected. About 12% experienced to have reconnected immediately upon payment of bills while others took 1 to 3 weeks and did not specify the reason why it took longer

5. Any suggestion how the Water District can improve services.

Suggested Measures/Comments by the Respondents on the WD Services

Particular	No.	Percentage
1.0 Water Quality	32	100.0%
1.1 Cleaning/Checking of Reservoir on regular basis (To eradicate the odor, taste and turbidity)	5	15.6%
1.2 Improve/ Modernize Water Treatment Facilities (to ensure the latest technology is applied for water potability)	10	31.3%
1.3 Provision of Filter/Purifier at the Source (Noted the metallic content, yellowish color and fishy smell of water)	3	9.4%
1.4 Additional/Correct Chlorine dosage	2	6.3%
1.5 Proper announcement of cleaning of the facilities including closure of distribution lines during the said activities (I.e. mainlines, reservoir, etc.)	1	3.1%
1.6 Regular cleaning of water system facilities (I.e. mainlines, reservoir, etc.)	2	6.3%
1.7 Clean the Well (Water Source)	4	12.5%
1.8 Confident w/ the Water Quality/Satisfied	2	6.3%
2.0 Water Rates Affordability	32	100.00%
2.1		

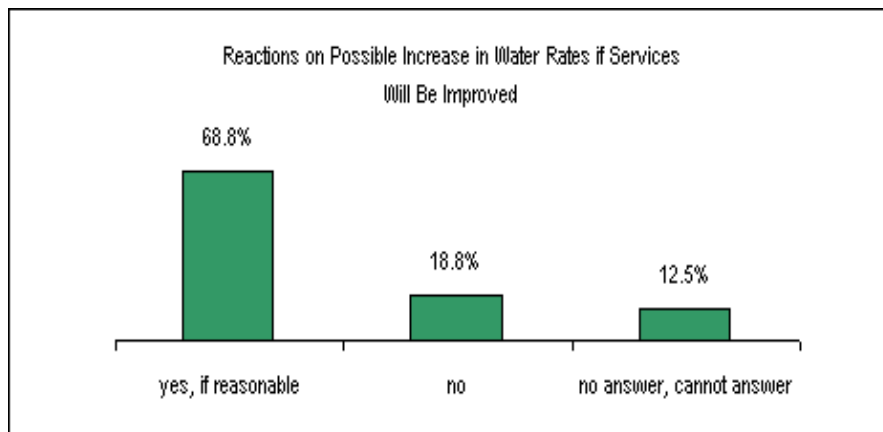
2.2

3.0	Water Distribution and Availability	32	100.00%
3.1	Tap Other Source (Due to poor quality of water of the existing source)	6	18.75%
3.2	Additional Reservoir (to address sufficient supply of water)	2	6.25%
3.3	Satisfied	14	43.75%
3.4	Address the shortage of water supply at certain hr of the day	10	31.25%
4.0	Customer Services	32	100.00%
4.1	Immediate Reconnection upon payments of arrears	3	9.38%
4.2	Participatory Approach (Open to all - acceptable) (All informed - the good of majority is primary concern)	2	6.25%
4.3	Re-organization of entire WD	1	3.13%
4.4	Observe on time distribution of statement of accounts	1	3.13%
4.5	Attend to consumer complaint	2	6.25%
4.6	Patient WD employees Improve Services for especially for ensuring quality of water	1	3.13%
4.7	being delivered	22	68.75%

6. Will you agree to an increase in water rates if services are improved?

Agree on possible increase in water rates if services are improved	32	100.0%
yes, if reasonable	22	68.8%
No	6	18.8%
no answer, cannot answer	4	12.5%

TABLE 20



Analysis of Survey for Households Connected to Water District

GENERAL PROFILE OF HH

1. Average household size is 5 and a little less than half of the respondents have other work not related to farming or fishing. This could be being employed in a small office or government offices found in the municipality. A small number of the respondent are engaged in a business.
2. More than half of the respondents own the house where they live and have electricity and water service, while a small number have telephone in their homes.

KNOWLEDGE OF WATER DISTRICT

1. A big number (over 90%) of the respondents know that their tap water comes from Hamtic Water District and that the source comes from a deep well.

PERCEPTIONS REGARDING WATER QUALITY

1. A big number of respondents (72%) said that water coming from the water district is of poor quality. Some of the reasons point to the odor and taste especially during the morning and the appearance of the water which becomes cloudy, murky or turbid. As such these respondents do not drink water coming from the tap and use a filtering device like a cloth before drinking it.
2. Since they perceive water coming from water district of poor quality there are other mechanisms for accessing drinking water for respondents connected to water district. These are own hand pumps or deep wells (39%) located in their backyard. Apart from considering these alternative sources of drinking water respondents have access to the water from these sources 24 hours a day.
3. A small number of respondents (13%) experience illness when drinking water coming from the water district and these are related to stomach disorders and even skin irritations.

WATER SUPPLY AVAILABILTY

1. Water coming from water district is adequate for most of the respondents (66%) interviewed, however for some respondents (31%) water is available only for 12 hours from night until dawn.
2. More respondents use water coming from water district for bathing and washing (94%) than for drinking.
3. The average water consumption is 19.25 m³ /mm/hh billed at P 253.78. comparing this to the rural average consumption per day at 80- 90 liters per capita day⁵, the respondents who get their water from the water district consume water higher than this at an average of 125.203 liters per capita day.⁶ This does not include consumption from other sources of water identified by the respondents.

⁵ NCSO average consumption per day/person

CUSTOMER SATISFACTION/SERVICE

1. A little over than half (56%) of the respondents are satisfied with the services of the water district while less than half (44%) are not satisfied. Most of the respondents pay their water bills on time and have not experienced leaks. For those who reported leaks, the water district did repairs within an hour to three hours notice. These responses are indicative that there are very few leaks and repairs in the water supply system or that the consumers are not aware of the presence of leaks.
2. Respondents who are connected to the water district suggest the improvement of water quality as a significant area in water district operation that must be addressed. Specifically, these are related to finding a source that would adequately provide the current demand, installing a treatment facility (perceived poor water quality, and reduction of tariff rates (for respondents not satisfied with present service).

Survey Results for Households Not Connected To Hamtic Water District

Barangays Included in the Survey

- Poblacion 1
- Poblacion 2
- Poblacion 3
- Poblacion 4
- Poblacion 5

Fifteen households were part of the survey. The survey took 2 days to be finished.

Average Household Member:

5.13

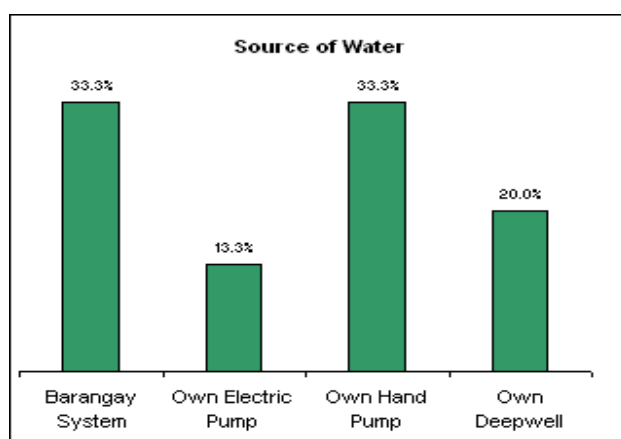
⁶ Some respondents consume very high which affected the general consumption pattern of the respondents as indicated in the results of the survey

4. What are your water sources?

Water Sources	Number	Percentage (%)
	15	100.0%
1 Municipal Waterworks (Connection inside the house)		
2 Barangay Waterworks (Connection inside the house)		
3 Water District Network		
4 Neighbor's Connection		
5 Barangay System	5	33.3%
6 Own Electric Pump	2	13.3%
7 Own Hand Pump Own "Deepwell"	5	33.3%
8 (shallow and dug well)	3	20.0%
9 Public faucet/Well		
10 Water Vendor		
11 Rainfall		
12 Spring, Lake, River		
13 Bottled Water'		

Note: Households commonly use the word "deepwell" for shallow and dug wells

TABLE 21

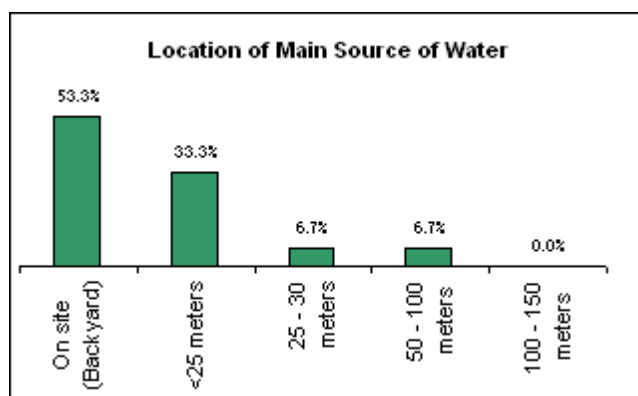


Unit Cost of Water: Households not connected to water district get their sources for free or do not pay anything for the cost of getting water except for those who own electric pumps for the use of electricity. Survey did not include questions regarding the cost of electricity used for getting water from electric pumps.

5. How far is your main source of water?

Location of Main Source of Water		15	100.0%
1	On site (Backyard)	8	53.3%
2	<25 meters	5	33.3%
3	25 - 30 meters	1	6.7%
4	50 - 100 meters	1	6.7%
5	100 - 150 meters		

TABLE 22

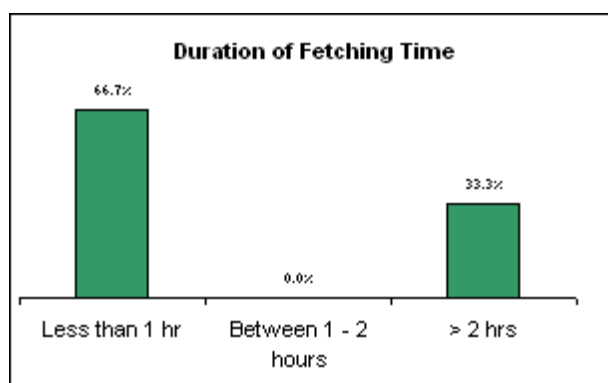


Most of the respondents have their water source in their backyard

6. Time spent to fetch water

Duration of Fetching Time		15	100.0%
1	Less than 1 hr	10	66.7%
2	Between 1 - 2 hours		
	> 2 hrs	5	33.3%

TABLE 23

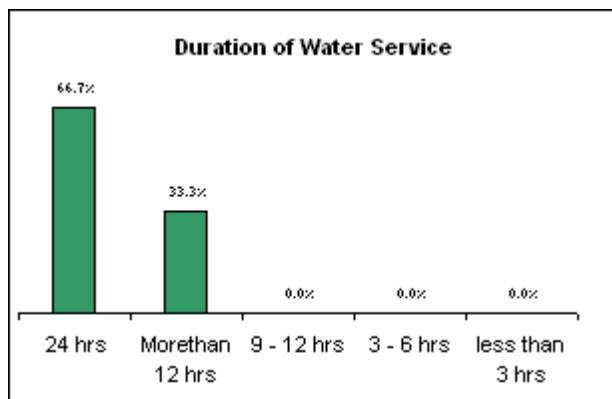


Most take less than an hour to fetch water from their source

7. Duration of water service?

Duration of water service		15	100.0%
1 24 hrs		10	66.7%
2 More than 12 hrs		5	33.3%
3 9 – 12 hrs			
4 3 - 6 hrs			
5 less than 3 hrs			

TABLE 24

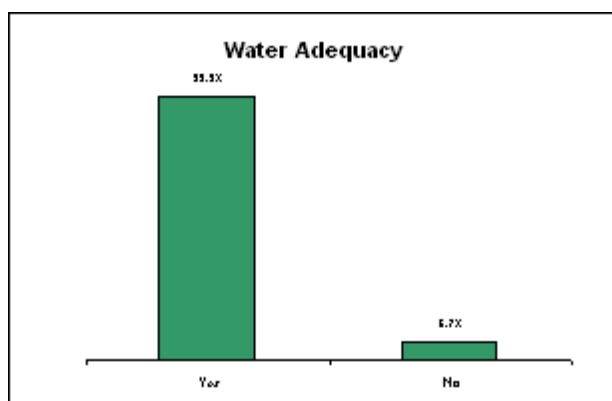


Majority of the respondents have water 24 hours a day

Is your adequate or not?

Water Adequacy		15	100.0%
Yes		14	93.3%
No		1	6.7%

TABLE 25



For most respondents water supply is perceived as adequate

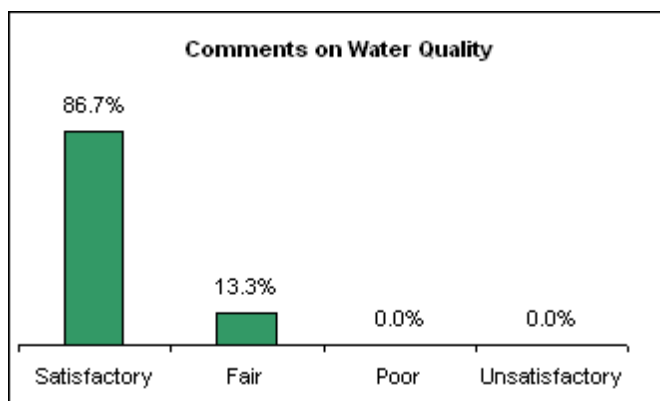
Average Daily water consumption

31.65m³/month/HH

8. Comments on water quality?

Comments on Water Quality	15	100.0%
1 Satisfactory	13	86.7%
2 Fair	2	13.3%
3 Poor		0.0%
4 Unsatisfactory		0.0%

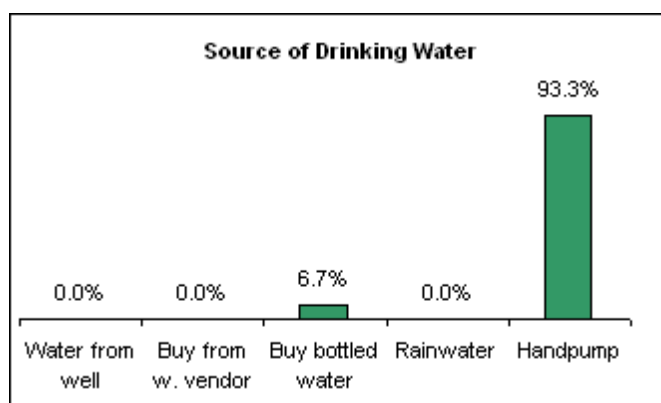
TABLE 26



9. Sources of drinking water

Sources of Drinking Water	15	100.0%
1 Water from well		
2 Buy from w. vendor		
3 Buy bottled water	1	6.7%
4 Rainwater		
5 Handpump	14	93.3%

TABLE 27

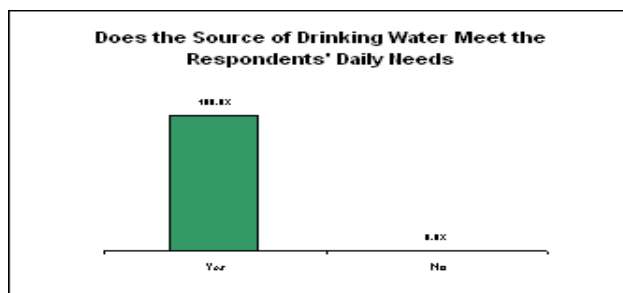


Drinking water sources come from hand pumps for majority of respondents

Is your source of drinking water enough to meeting daily needs?

Does the source of drinking water meet the respondents daily needs	15	100.0%
Yes	15	100.0%
No		

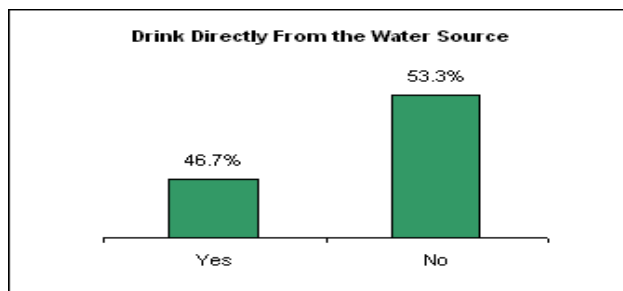
TABLE 28



Do you drink directly from your water source?

Drink directly from the water source	15	100.0%
Yes	7	46.7%
No	8	53.3%

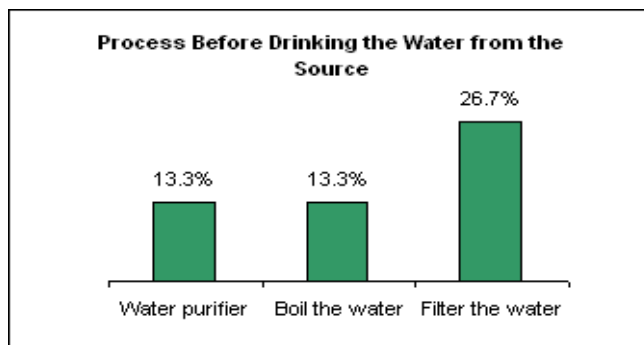
TABLE 29



10.What do you do before drinking the water?

<i>Process before drinking</i>	8	53.3%
1 <i>Water purifier</i>	2	13.3%
2 <i>Boil the water</i>	2	13.3%
3 <i>Filter the water</i>	4	26.7%

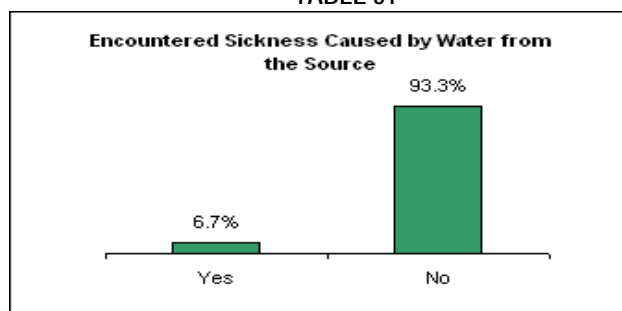
TABLE 30



11. Experienced illness and discomfort for drinking water directly from source?

Encountered Sickness	15	100.0%
Yes	1	6.7%
1 Skin irritation		
2 Stomach discomfort	1	
3 Others		
No	14	93.3%

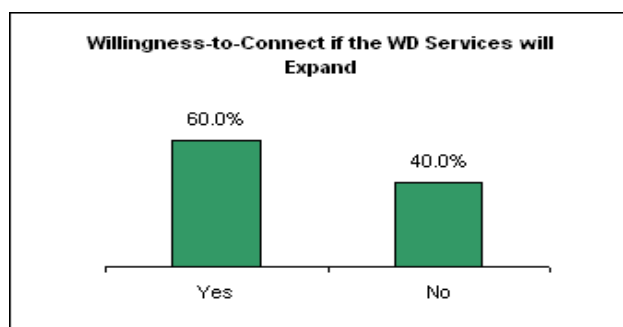
TABLE 31



Would you be willing to connect if water district will expand?

Willingness-to-Connect if the WD services will expand	15	100.0%
Yes	9	60.0%
No	6	40.0%

TABLE 32



Reasons respondents are willing to connect

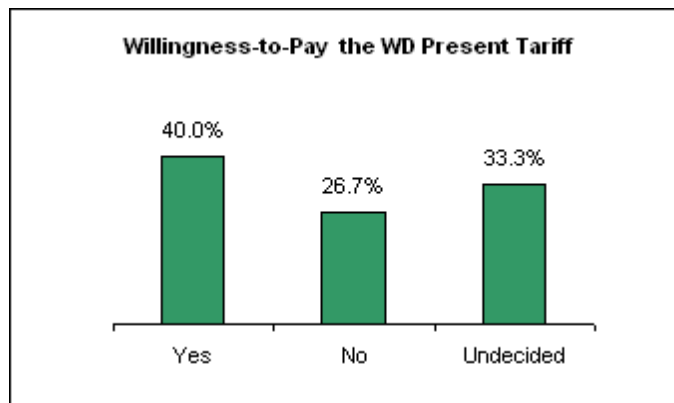
Particular	No.	Percentage
Willingness-to-Connect if the WD Services Will Expand		
1.0 Yes	9	60.00%
• PotabilityReasons (Safe, Clean and Chlorinated)	2	
• Economic Reasons (lessen burden of fetching water)	1	
• Affordability	3	
• Did not indicate reasons	3	

60% of the respondents they were willing to be connected to the water district provided certain conditions are met such as those provided in the table above

Are you willing to pay present tariff rate of the Water District?

Willingness to Pay the Present Tariff Rate of the WD	15	100.0%
Yes	6	40.0%
No	4	26.7%
Undecided	5	33.3%

TABLE 33



Analysis of Survey Results for Households Not Connected to Water District

WATER SUPPLY AND ACCESS MECHANISMS

1. Most of the respondents (67%) who are not connected to the water district, get their water either from the water supplied by the barangay or by private owned hand pumps.⁷
2. Respondents take less than an hour to fetch water and the water source is located inside their backyard or less than 25 meters from their houses. The water can be sourced 24 hours day and is perceived to be adequate to answer the needs of the respondents. The average consumption per person/day is at 205.67 liters which is quite high compared to average rural (Philippine) consumption. Thus, all of the respondents said that water is adequate.
3. Drinking water comes mostly from hand pumps (93%) while a small number buy bottled water (7%).

WATER QUALITY

1. Most of the respondents (87%) indicated that they are satisfied with the quality of water they have.
2. More than half (53%) do not drink water directly from the source of water and they filter water before they drink it. Some who do not drink either boil or purify their water.
3. A big number of the respondents (93%) who drink directly from the source do not experience illness.

POSSIBILITY FOR FUTURE EXPANSION OF WATER DISTRICT

1. More than half of the respondents (60%) are willing to connect to water district if services are expanded to cover their area. Out of this 60% who are willing to connect only 40% are willing to pay present tariff rates while 33% are undecided and 27% said they are not willing to pay the present tariff rates. This may have implication on the possibility of expansion of the water district.

PATNONGON WATER DISTRICT

Survey Results for Households Connected to Patnongon Water District

Barangays Included in the Survey

- Poblacion
- Igbobon
- Padang

There are 51 respondents included in the survey. The survey took 2 days to complete.

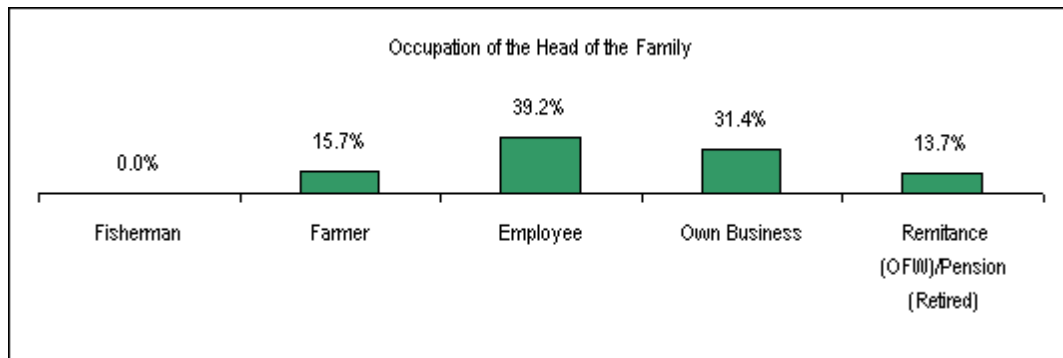
⁷ Barangay water systems are either Level 1 or Level 2 facilities

Average Household Member:

5.18

Occupation of Head of the Family	Number	Percentage (%)
Fisherman	0	0.0%
Farmer	8	15.7%
Employee	20	39.2%
Own Business	16	31.4%
Remittance (OFW)/Pension (Retired)	7	13.7%
	51	100.0%

TABLE 34

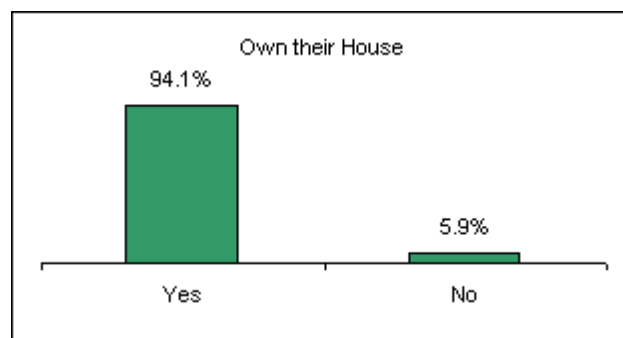


The percentages distribution according to sources of income as tabulated above shows that most of the respondents is either employed or own businesses

Note: OFW means Overseas Filipino Worker. The household income earners are working abroad and the housewife or housekeeper was interviewed

Own Their House	51	100.0%
Yes	48	94.1%
No	3	5.9%

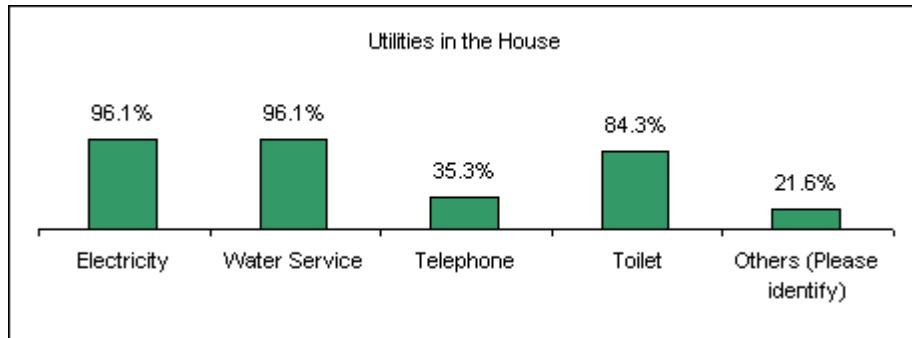
TABLE 35



The survey data shows that almost all the respondents (48 out of the 51 respondents) own the house where they live.

Utilities in the House		333.3%
Electricity	49	96.1%
Water Service	49	96.1%
Telephone	18	35.3%
Toilet	43	84.3%
Others (Please identify)	11	21.6%

TABLE 36



Note: Percentages total exceed owing to the fact that they have more than one utility in their house

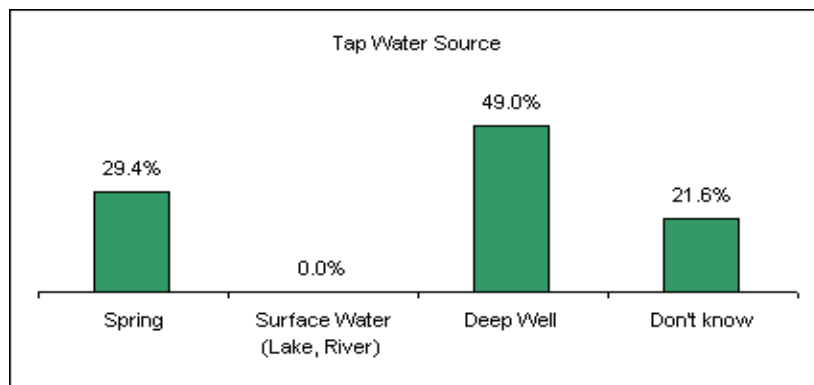
A. Do you know your tap water provider?

Awareness of Tap Water Provider		100.0%
1 Water System/Water District	51	100.0%
2 Don't Know	0	0.0%
3 Others (Please identify)	0	0.0%

B. What is the source of your tap water?

Tap Water Source		100.0%
1 Spring	15	29.4%
2 Surface Water (Lake, River)	0	0.0%
3 Deep Well	25	49.0%
4 Don't know	11	21.6%

TABLE 37



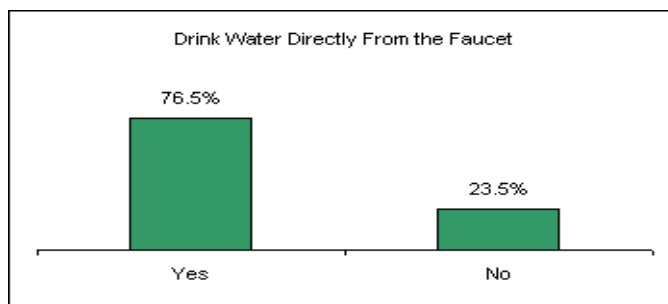
Although all respondents could identify their water supply provider, however, not all could identify where their tap water came from.

1. Do you drink tap water?

WATER QUALITY

Drink Tap Water	51	100.0%
Yes	39	76.5%
No	12	23.5%

TABLE 38



Survey data result shows that 23% of the respondents think it is not safe to drink the water and they take safety precaution before drinking the water like boiling, filtering and or purifying because sometimes they noted particles like rust in the water. Majority of the respondents (77% or 39 respondents out of the total of 51), however drink water from the tap.

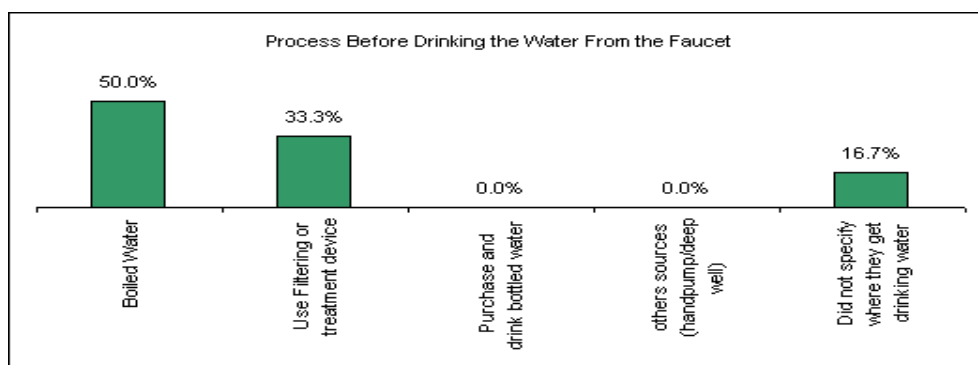
Majority of the respondents (77% or 39 respondents out of the total of 51) are very confident to drink water directly from the faucet due to the following reason

- they are aware that the WD is conducting testing for bacteria on monthly basis
- confident that the water is clean, chlorinated/treated
- LWUA
- Have not experienced any water borne diseases

1.1 What do you do before drinking water? (for respondents who did not drink directly from the tap)

Process Before Drinking the Water From the Faucet	12	100.0%
Boiled Water	6	50.0%
Use Filtering or treatment device	4	33.3%
Purchase and drink bottled water		0.0%
others sources (hand pump/deep well)		0.0%
Did not specify where they get drinking water	2	16.7%

TABLE 39

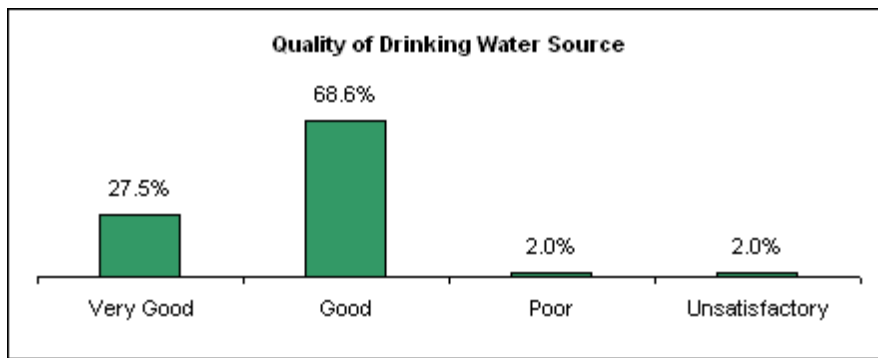


Of the 12 respondents WHO DO NOT DRINK THE WATER directly from the faucet provided measures to ensure potability water. 6 respondent or 50% of the 12 respondents opt to boil water and 33% or 4 respondents use filtering device

2. How do you rate the quality of your drinking water?

Quality of Drinking Water	51	100.0%
1 Very Good	14	27.5%
2 Good	35	68.6%
3 Poor	1	2.0%
4 Unsatisfactory	1	2.0%

TABLE 40

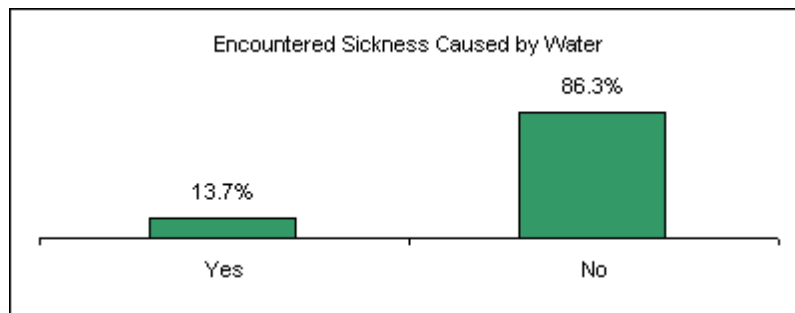


The respondents are confident with their drinking water source with 96% responses in the "good" to "very good" category while only 4% poorly rated or unsatisfied - these are those who are not used to the taste of chlorine.

3. Did any of your family members encounter illness due to drinking water coming from Water District?

Encountered Sickness	51	100.0%
Yes (Diarrhea, Amoebiasis & stomach discomfort)	7	13.7%
No	44	86.3%

TABLE 41



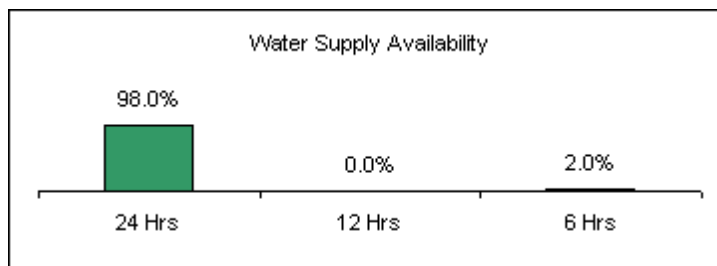
Only 7 respondents or 14% experienced illness they think caused by drinking water such as (amoebiasis, diarrhea and stomach discomfort)

WATER DISTRIBUTION AND AVAILABILITY

1. Availability of water supply in a day?

Water Supply Availability	51	100.0%
1 24 Hrs	50	98.0%
2 12 Hrs	0	0.0%
3 6 Hrs	1	2.0%
4 < 3 Hrs	0	0.0%

TABLE 42



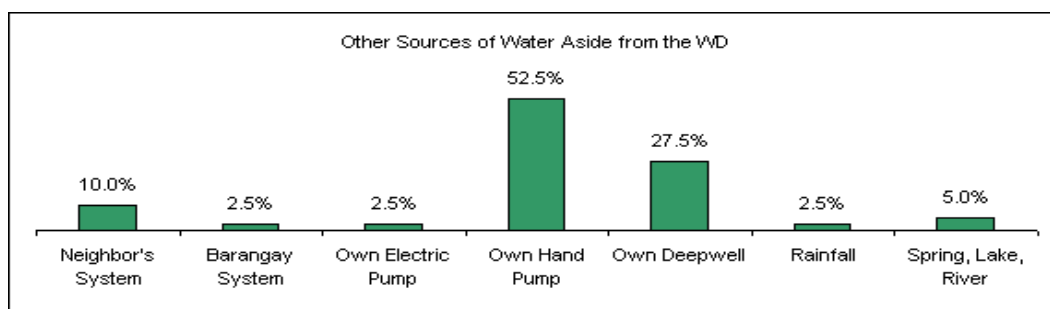
Water supply is available 24 hrs a day and 7 days a week, Only during maintenance work that the supply is being interrupted

3. Aside from Water District, do you have other sources of water?

Other Source of Water aside from WD	40	102.5%
1. Neighbor's System	4	10.0%
2. Barangay System	1	2.5%
3. Own Electric Pump	1	2.5%
4. Own Hand Pump	21	52.5%
5. Own "deepwell" (shallow or dug wells)	11	27.5%
6. Public faucet/Well	0	0.0%
7. Water Vendor	0	0.0%
8. Rainfall	1	2.5%
9. Spring, Lake, River	2	5.0%
10. Bottled Water'	0	0.0%
11. No other Source (WD only)	11	

Note: Households commonly refer to "deepwells" as shallow or dug wells

TABLE 43



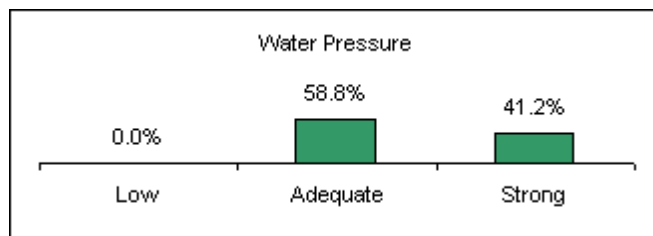
Of the 51 respondents, 40 utilized other sources of water aside from being connected with the water district. Either they own hand pump or deep well. These other sources are being used for watering plants, washing, piggery and laundry.

Note: Percentages total of 102% exceeds owing to the fact that they are getting water from more than one source

How do you rate your water pressure?

Water Pressure	51	100.0%
1 Low	0	0.0%
2 Adequate	30	58.8%
3 Strong	21	41.2%

TABLE 44



All the respondents are very confident of the water pressure of their water supply. 59% or 30 respondents said the pressure is adequate while 41% find it strong.

WATER BILLING AND STATEMENT OF ACCOUNTS

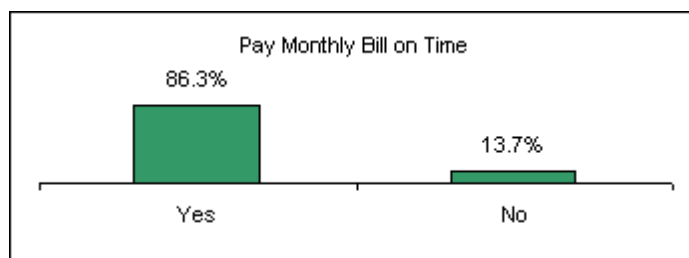
1. How much is your monthly average water bill?

Average Monthly water bill (Pesos)	376.27
Average Monthly water consumption (m ³)	20.56 m ³ /month/HH

2. Are you able to pay water bill on time?

Pay Monthly Bill on Time	51	100.0%
Yes	44	86.3%
No	7	13.7%

TABLE 45

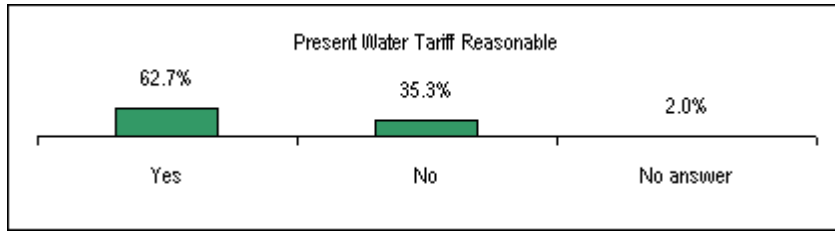


86% or 44 out of the 51 respondents pay their water bill on time

3. Is the present tariff rate reasonable?

Present Tariff Rate Reasonable	51	98.0%
Yes	32	62.7%
No	18	35.3%
No answer	1	2.0%

TABLE 46



Those who pay their bill on time think that they pay for what the consumed and that the present water charges is reasonable

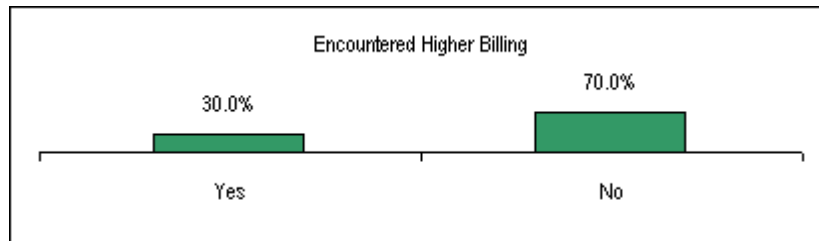
Respondents has the following reasons of not paying their bills on time

- The WD charges interest on late payments
- Different rate from other LWUA Services
- tariff is expensive based on the affordability of the consumers
- financial constraint

4. Have you encountered any billing much higher than what you actually think you consumed?

Encountered billing much higher than what the consumer think they only consumed	Count	Percentage
Yes	15	30.0%
No	35	70.0%
Total	50	100.0%

TABLE 47



Majority of the respondents did not encounter being charged higher than what they consumed. Although there are respondents who think there were bills higher than they think they consumed but could not remember when and how much and the reason behind the increase. Only one respondent reported that her water bills increased after changing the water meter

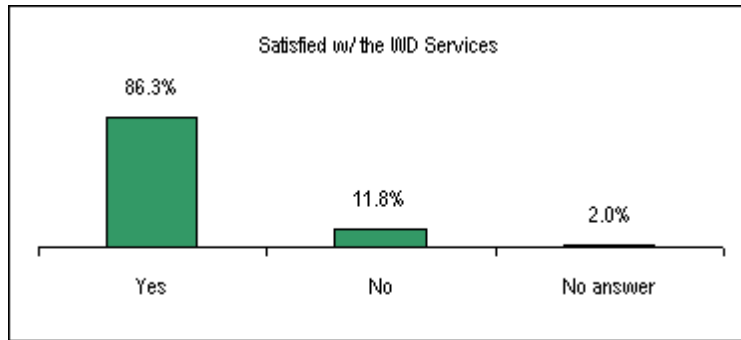
Very few reported for additional water requirement. Most of them think that the current supply is enough for the demand of the community.

CUSTOMER SERVICE

1. Are you satisfied with water district's services?

Satisfied with the WD services	51	100.0%
Yes	44	86.3%
No	6	11.8%
No answer	1	2.0%

TABLE 48



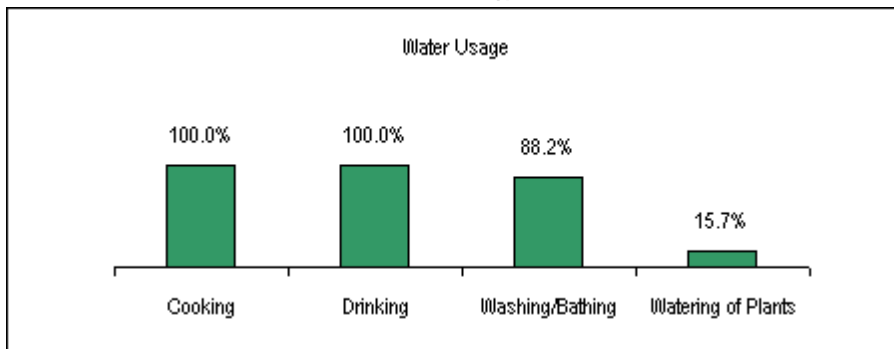
Most of the residents, about 86% or 44 respondents are satisfied with the WD Services
Very few are unsatisfied of the quality, pressure of water being delivered

2. Where do you use your tap water?

Water Usage

1	Cooking	51	100.0%
2	Drinking	51	100.0%
3	Washing/Bathing	45	88.2%
4	Watering of Plants	8	15.7%

TABLE 49

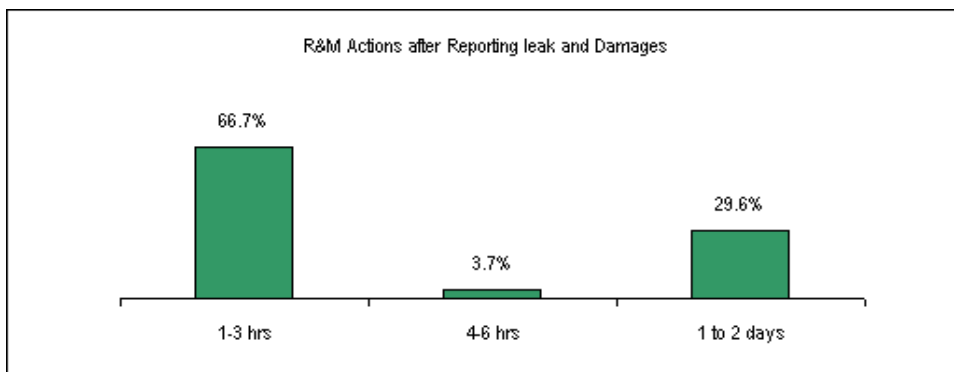


About 16% of the respondents used the water for watering plants
Note: Percentages total exceeds owing to the fact that they used water for different purposes

3. In reporting leaking pipes, malfunctioning meters, how long does it take for the water district to repair?

Repair & Maintenance Actions after reporting leak and damages	27	100.0%
1 1-3 hrs	18	66.7%
2 4-6 hrs	1	3.7%
3 1 to 2 days	8	29.6%
4 others (have not reported any need of R&M)	24	

TABLE 50



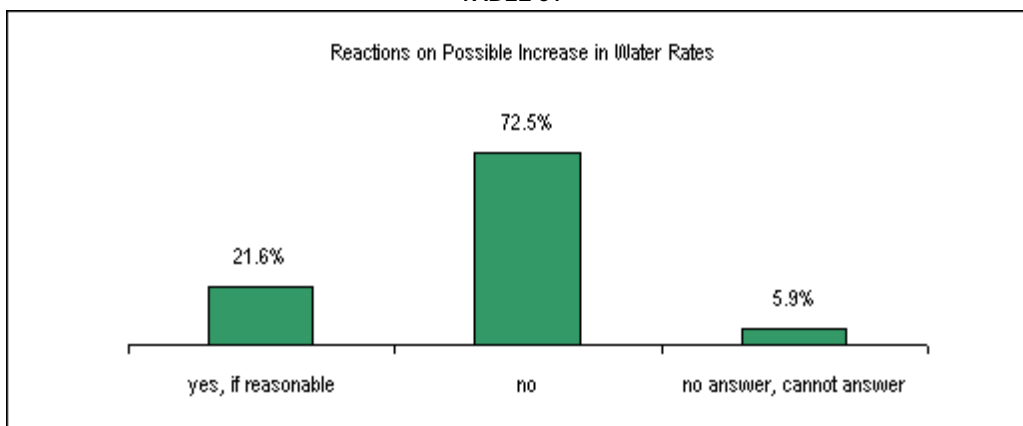
Only 27 respondents 53% of the total 51 respondents have reported a need of R&M. And 18 of them or 67% experienced that it only took 1 to 3 hrs for the WD personnel to take actions and 30% only says it took 1 to 3 days

Reconnection upon payments of disconnected bills

Only one respondent reported to have been disconnected and have been reconnected immediately upon payments

Agree on possible increase in water rates if services are improved	51	100.0%
1 yes, if reasonable	11	21.6%
2 No	37	72.5%
3 no answer, cannot answer	3	5.9%

TABLE 51



5. Any suggestion how Water District can improve their services?

Suggested Measures/Comments by the Respondents on the WD Services

Particular	No.	Percentage
1.0 Water Quality	51	100.0%
1.1 Cleaning/Checking of Reservoir on regular basis	6	11.8%
1.2 Modernize Facilities (to ensure the latest technology is applied for water potability)	3	5.9%
1.2 Provision of Filter (Noted particles such as rust sometimes)	1	2.0%
1.3 Periodic Water Quality Test	2	3.9%
1.4 Proper announcement of cleaning of the facilities including closure of distribution lines during cleaning of facilities (I.e. mainlines, reservoir, etc.)	3	5.9%
1.5 Regular cleaning of water system facilities (I.e. mainlines, reservoir, etc.)	4	7.8%
1.6 Application of Chlorine (suggested to do it at night because student get their drinking directly from the faucet)	1	2.0%
1.7 Confident w/ the Water Quality/Satisfied	5	9.8%
1.8 No comments/suggestions	26	51.0%
2.0 Water Rates Affordability	51	100.00%
2.1		
2.2		
3.0 Customer Services		
Very minimal has complaint about the customer services provided by the WD employee		
3.1 Oversee future problems to provide timely solution on problems w/c may arise	1	1.96%
3.2 Expansion to other barangays	1	1.96%
3.3 For the consumer to pay inside WD premises or at least at more convenient place	1	1.96%
3.4 Attend to consumer complaint/ additional maintenance crew	2	3.92%
3.5 Patient employees		

Analysis of Survey Results for Households Connected to Water District

GENERAL PROFILE

1. The average household member is 5. Most of the respondents are employed or owns a business.
2. More than half of the respondents own the houses where they live and majority have their own electricity and have water supply as well as toilets.

KNOWLEDGE OF WATER DISTRICT

1. All of the respondents know that their water comes from the water district and quite a number are aware where their source comes from. Although all respondents could identify their water supply provider, however they could not pinpoint the exact source of their tap water.

PERCEPTION REGARDING WATER QUALITY

1. Some respondents perceive that drinking water from water district is not safe and thus take precaution before drinking it such as boiling, filtering or purifying. On the other hand, majority drink water directly from the tap.
2. Water coming from the water district is used for cooking and drinking (51%)
3. A few of the respondents experience illness caused by drinking water. Some have identified amoebiasis, diarrhea and stomach discomfort.

WATER SUPPLY AVAILABILITY

1. Most respondents (98%) said that they have water 24 hours a day while only 2% indicated that they only have it 6 hours a day. They have indicated that water pressure is strong and adequate.
2. Average daily consumption per person/day is 132.30 liters for households connected to water districts. This is bigger than the average rural consumption at 80-90 liters per person/day.
3. Over half of the respondents have their own hand pumps and deep wells.

CUSTOMER SATISFACTION/SERVICE

1. Most respondents agree that present tariff rate of the water district is reasonable (62.7%) while some say it is quite high.
2. Majority of the respondents pay are able to pay on time and water consumption as billed is accurate.
3. Most of the respondents (67%) perceive the water district to be efficient since repairs and maintenance work is done within 1 to 3 hours upon report to the water district. On the other hand some respondents say it takes the water district 1 to 3

days before repair and maintenance work is done. This indicates some inefficiency and must be addressed by the water district.

4. A big number of the respondents (72.5%) do not agree to a water rate increase in case there will be one.

Survey Results for Households Not Connected to Patnongon Water District

Barangays Included in the Survey

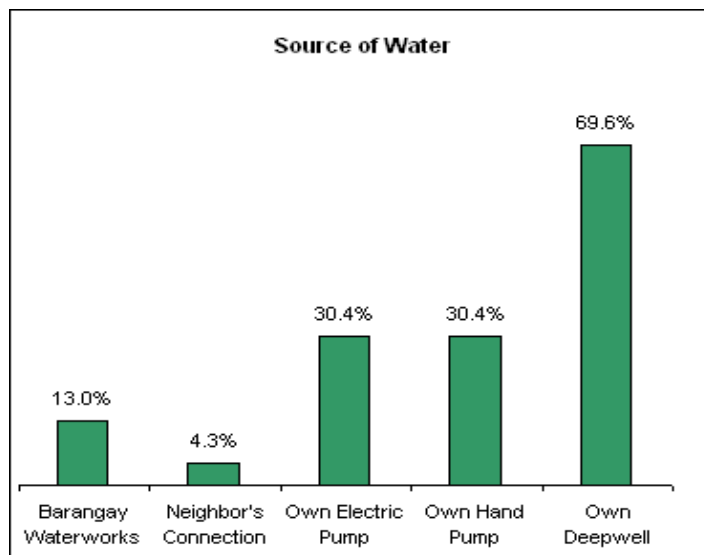
- La Rioja
- Carit-an

Twenty three respondents were part of the survey. The survey was undertaken in two days.

	Number	Percentage (%)
Water Sources	23	147.8%
1 Municipal Waterworks (Connection inside the house)		
2 Barangay Waterworks (Connection inside the house)	3	13.0%
3 Water District Network		
4 Neighbor's Connection	1	4.3%
5 Barangay System		
6 Own Electric Pump	7	30.4%
7 Own Hand Pump	7	30.4%
8 Own Deepwell	16	69.6%
9 Public faucet/Well		
10 Water Vendor		
11 Rainfall		
12 Spring, Lake, River		
13 Bottled Water'		

Note: Percentages total 148% overlap owing to the fact that the respondents get water from different sources

TABLE 52



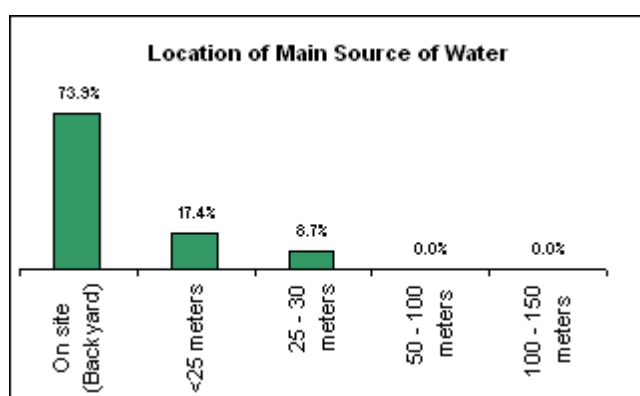
Unit Cost of Water

Only one respondent pays 20 pesos per day/drum

5. How far is your main source of water?

Location of Main Source of Water		23	100.0%
1	On site (Backyard)	17	73.9%
2	<25 meters	4	17.4%
3	25 - 30 meters	2	8.7%
4	50 - 100 meters		0.0%
5	100 - 150 meters		0.0%

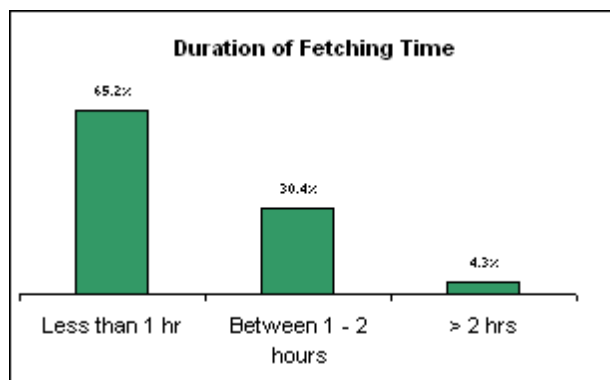
TABLE 53



6. How long does it take you to fetch water?

Duration of Fetching Time		23	100.0%
1	Less than 1 hr	15	65.2%
2	Between 1 - 2 hours	7	30.4%
3	> 2 hrs	1	4.3%

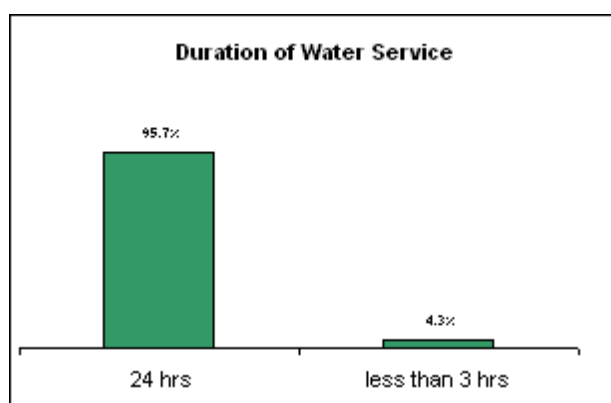
TABLE 54



7. Duration of water service?

Duration of water service		23	100.0%
1	24 hrs	22	95.7%
2	More than 12 hrs		
3	9 - 12 hrs		
4	3 - 6 hrs		
5	less than 3 hrs	1	4.3%

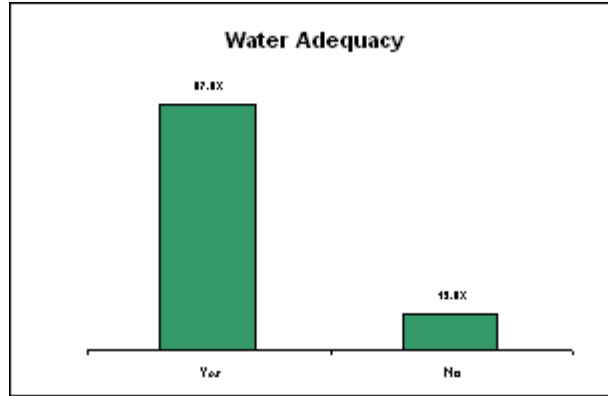
TABLE 55



Is your water adequate?

Water Adequacy	23	100.0%
Yes	20	87.0%
No	3	13.0%

TABLE 56



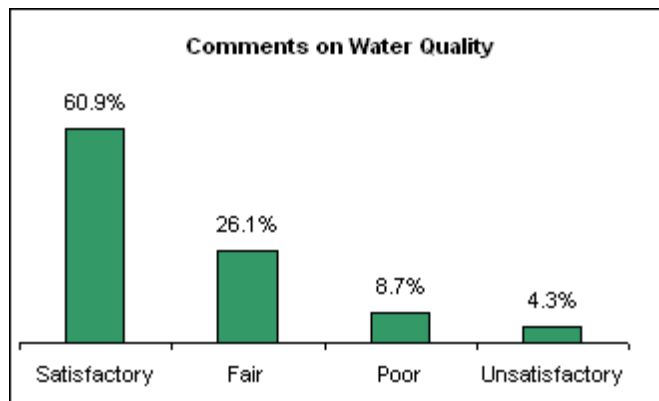
What is your daily water consumption?

Average Daily water consumption	.539	M³/day/HH
--	-------------	-----------------------------

8. Comments on water quality

Comments on Water Quality	23	100.0%
1 Satisfactory	14	60.9%
2 Fair	6	26.1%
3 Poor	2	8.7%
4 Unsatisfactory	1	4.3%

TABLE 57

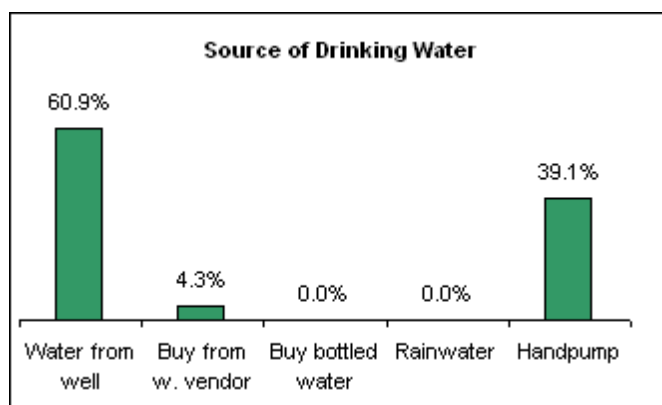


9. What are your sources of drinking water?

Sources of Drinking Water	23	104.3%
1 Water from well	14	60.9%
2 Buy from w. vendor	1	4.3%
3 Buy bottled water		0.0%
4 Rainwater		0.0%
5 Handpump	9	39.1%

Note: Percentages total 104% overlap owing to the fact that the respondents get drinking water from different sources

TABLE 58

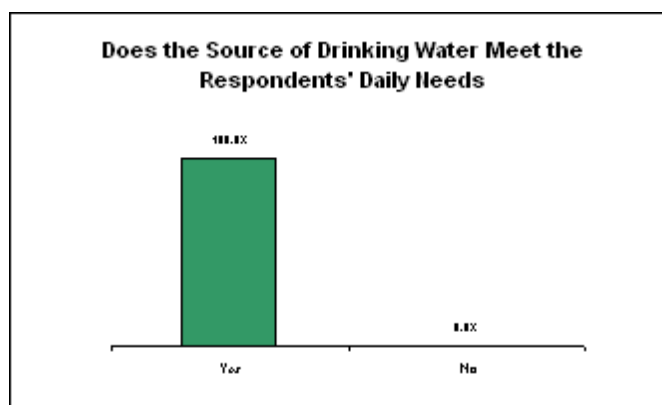


Unit Cost of Drinking Water: *One respondent spends 60 pesos for 5 gallons per day*

Is your source of drinking water enough to meeting daily needs?

	23	100.0%
Yes	23	100.0%
No		

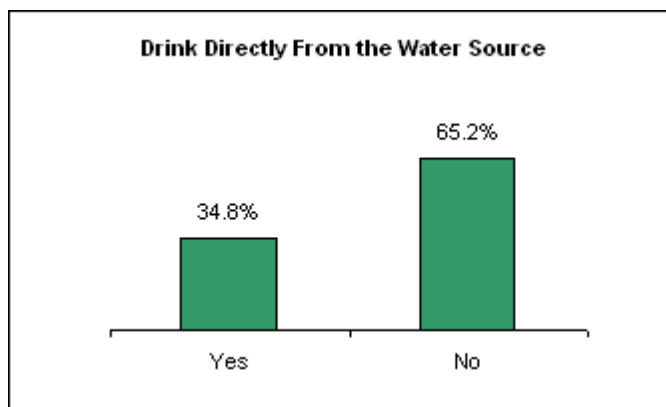
TABLE 59



Do you drink directly from your source?

Drink directly from the water source	23	100.0%
Yes	8	34.8%
No	15	65.2%

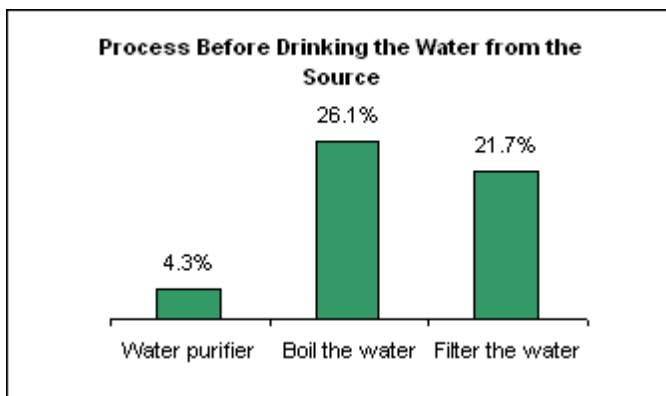
TABLE 60



10. What do you do before drinking water?

<i>Process before drinking</i>	15	65.2%
1 <i>Water purifier</i>	1	4.3%
2 <i>Boil the water</i>	6	26.1%
3 <i>Filter the water</i>	5	21.7%
4 <i>Without any reason they just don't drink</i>	3	13.0%

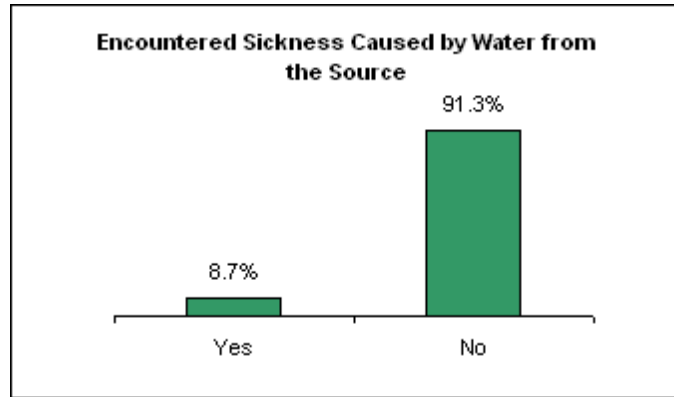
TABLE 61



Did you experience illness from drinking directly from your water source?

Encountered Sickness	23	100.0%
Yes	2	8.7%
1 Skin irritation		
2 Stomach discomfort	2	
3 Others, pls specify		
No	21	91.3%

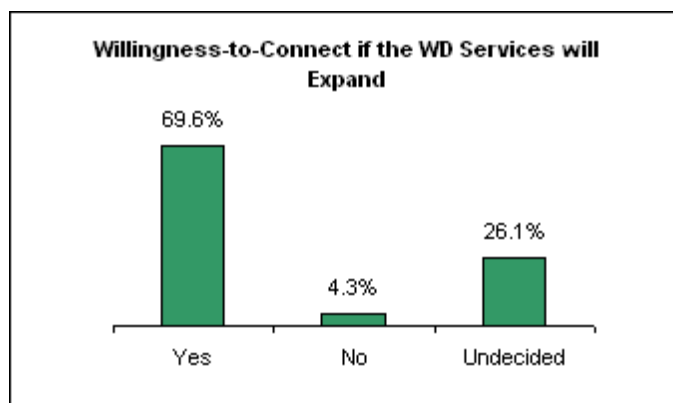
TABLE 62



Would you be willing to connect if water services will expand?

Willingness-to-Connect if the WD services will expand	23	100.0%
Yes	16	69.6%
No	1	4.3%
Undecided	6	26.1%

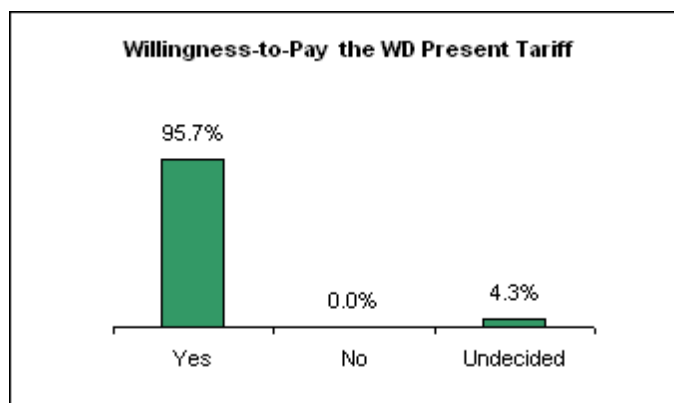
TABLE 63



70% are willing to connect with WD if it expands its services while 26% are not sure

Willingness to Pay the Present Tariff Rate of the WD	23	100.0%
Yes	22	95.7%
No		
Undecided	1	4.3%

TABLE 64



REASONS RESPONDENTS ARE WILLING TO CONNECT:

Particular	No.	Percentage
Willingness-to-Connect if the WD Services Will Expand		
1.0 Yes	16	69.57%
1.1 Potability Reasons (Safe, Clean and Chlorinated)	4	
1.2 Economic Reasons (lessen burden of fetching water)	4	
1.3 Sufficient Water Source (Present Source is not sufficient during dry season)	4	
1.4 Convenience	4	

Analysis of Survey Results for Households Not Connected to Water District

WATER SUPPLY AND ACCESS MECHANISM

1. A large number of respondents (70%) have their own deep wells. Some have handpumps and even electric pumps. Respondents (87%) also said that water from these sources is adequate
2. Most of the sources are located on site or in their backyard while a few have water sources within 25 meters from their houses. It takes most of the households less than an hour to fetch water while the rest takes between 1 to 2 hours.
3. Duration of water service for most (96%) is for 24 hours while a small number 4% have less than 3 hours of water.

4. Average daily consumption per person is 94.58 liters this is a little over the average rural consumption of 80-90 liters per day/person.

WATER QUALITY

1. Over half of the respondents (61%) said that they are satisfied with the water from their sources while over 30% of the respondents said they were not satisfied with the quality of the water from the sources they have identified.
2. The above perception is consistent as to why most of the respondents (65%) do not drink water directly from the source. Of those who indicated that water is not safe to drink, they either boil or filter it.
3. 91% have manifested that they do not experience any illness when drinking water from their water source.

POSSIBILITY OF FUTURE EXPANSION OF WATER DISTRICT

1. A substantial number of the respondents (67%) are willing to be connected to the water district in case expansion is undertaken. Of this percentage, 96% will be able to pay its current tariff rate. This is indicative of the success for the rate of connection once the water district decides to expand.

NUMANCIA WATER DISTRICT

Survey Results for Households Connected to Water District

Barangays Included in the Survey

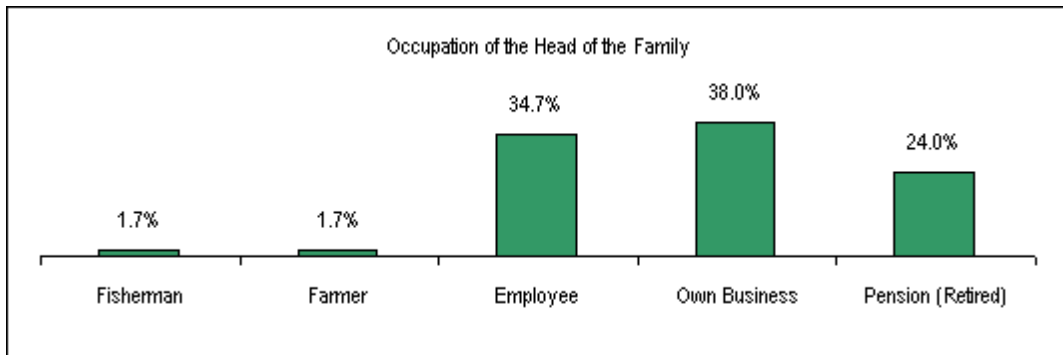
- Laguinbanua West,
- Marainos,
- Poblacion,
- Joyao-Joyao,
- Albasan,
- Badio,
- Navitas,
- Albasan,
- Bobog,
- Bulwang
- Laguinbanua East

A total of 121 households were part of the survey and it took 3 days to finish the survey. Only households in Numancia were included in the survey, no households from Makato and Lezo were included in the survey.

Average Household Member: 4.72

Occupation of Head of the Family	Number	Percentage (%)
1 Fisherman	2	1.7%
2 Farmer	2	1.7%
3 Employee	42	34.7%
4 Own Business	46	38.0%
5 Pension (Retired)	29	24.0%
	121	100.0%

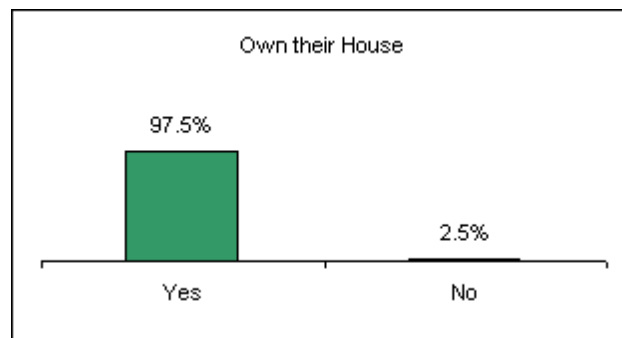
TABLE 65



The percentages distribution according to sources of income as tabulated above shows that most of the respondents are either employed or own businesses

Own Their House	121	100.0%
Yes	118	97.5%
No	3	2.5%

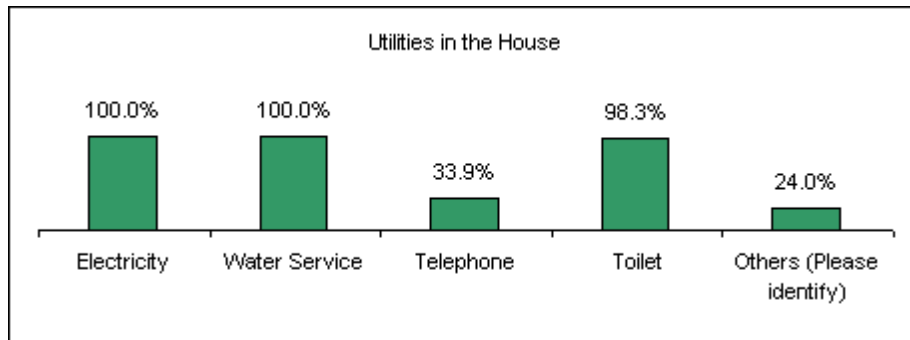
TABLE 66



The survey data shows that almost all the respondents (118 out of the 121 respondents) own the house they live in

Utilities in the House		356.2%
1	Electricity	121 100.0%
2	Water Service	121 100.0%
3	Telephone	41 33.9%
4	Toilet	119 98.3%
5	Others (Please identify)	29 24.0%

TABLE 67



Note: Percentages total exceed owing to the fact that they have more than one utility in their house

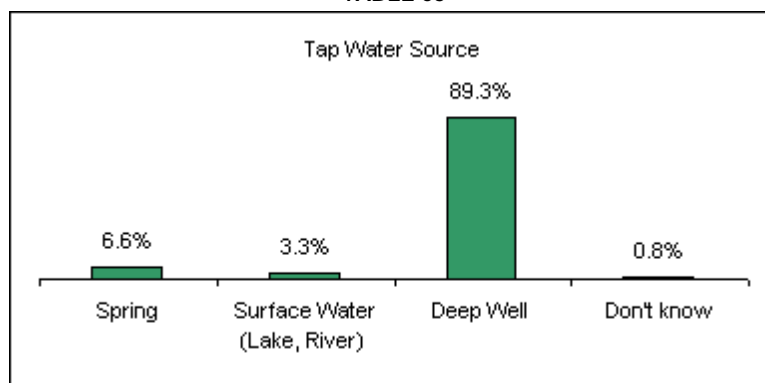
A. Do you know your tap water provider?

Awareness of Tap Water Provider		121	100.0%
1	Water System/Water District	121	100.0%
2	Don't Know	0	0.0%
3	Others (Please identify)	0	0.0%

B. Do you know the water source of the water district?

Tap Water Source		121	100.0%
1	Spring	8	6.6%
2	Surface Water (Lake, River)	4	3.3%
3	Deep Well	108	89.3%
4	Don't know	1	0.8%

TABLE 68



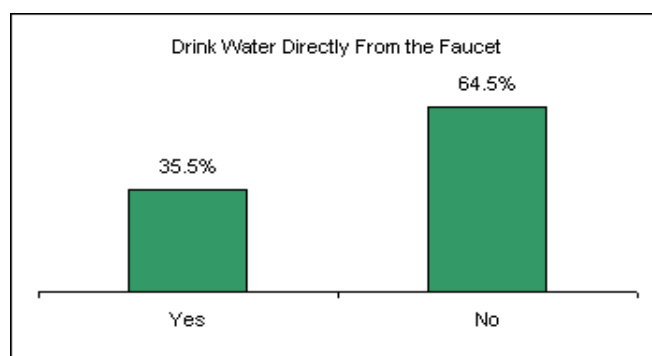
Although all the respondents could identify their water supply provider, about 11% are not aware where their tap water came from

WATER QUALITY

1. Do you drink water from the tap?

Drink Tap Water	121	100.0%
Yes	43	35.5%
No	78	64.5%

TABLE 69



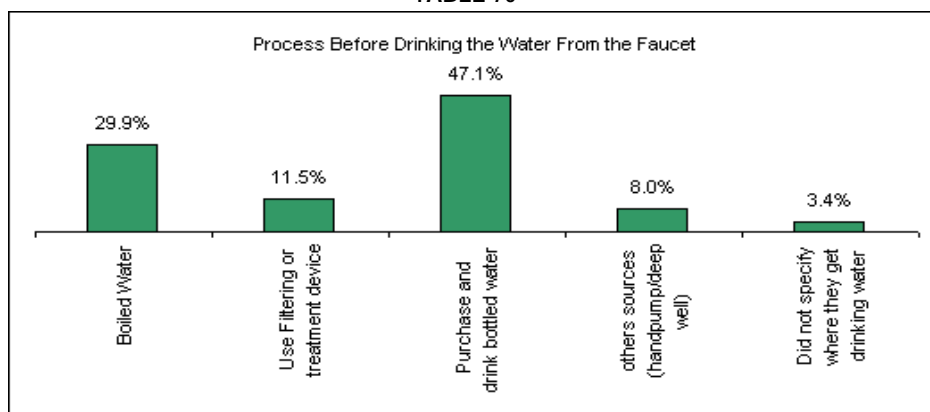
Survey data result shows that only 36% of the respondents think it is safe to drink the water although others are hesitant to drink it because of the turbid color of the water, but they have no choice or no other source for drinking water. Others think it is safe because it is chlorinated and that they are aware that the WD has a treatment plant to ensure potability of the water

Majority of the respondent (64% or 78 respondents out of the total of 121) are not confident to drink water directly from the faucet because of the noted unpleasant odor and mostly because of the color of the water (yellowish, at times sandy/turbid)

1.1 What do you do before you drink water? (for respondents who don't drink water directly from the faucet?)

<i>Process Before Drinking the Water From the Faucet</i>	87	100.0%
<i>Boiled Water</i>	26	29.9%
<i>Use Filtering or treatment device</i>	10	11.5%
<i>Purchase and drink bottled water</i>	41	47.1%
<i>others sources (hand pump/deep well)</i>	7	8.0%
<i>Did not specify where they get drinking water</i>	3	3.4%

TABLE 70

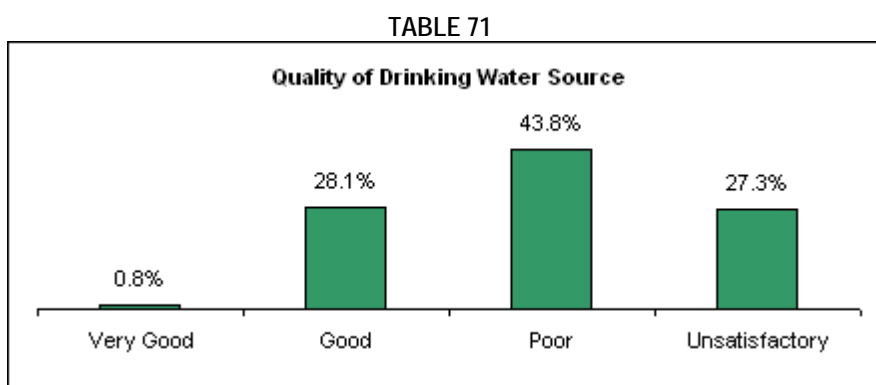


Of the 78 respondents WHO DO NOT DRINK THE WATER directly from the faucet has provided measures to ensure potability of the drinking water. 26 respondents or 36% of the 78 respondents opt to boil water but majority or about 47% purchase bottled water for drinking.

Note: Percentages total of the precautionary measures to ensure potability of the drinking water exceed because the other respondents aside from boiling water sometimes, buy bottled water or fetch from water sources (deep well)

2. How do you rate the quality of your drinking water?

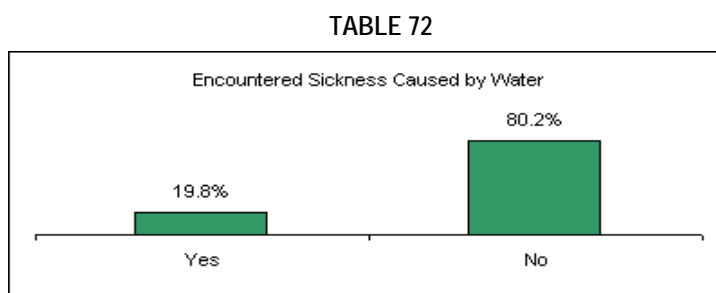
Quality of Drinking Water	121	100.0%
1 Very Good	1	0.8%
2 Good	34	28.1%
3 Poor	53	43.8%
4 Unsatisfactory	33	27.3%



Majority of the respondents poorly rated and are not confident with their drinking water source with 71% indicated "poor" or "unsatisfied" - mostly because of the quality of water being delivered which is (turbid, with sediments and unpleasant odor)

3. Did any of your family members encounter any illness due to drinking water coming from the Water District?

Encountered Sickness	121	100.0%
Yes (Diarrhea, Amoebiasis & stomach discomfort)	24	19.8%
No	97	80.2%



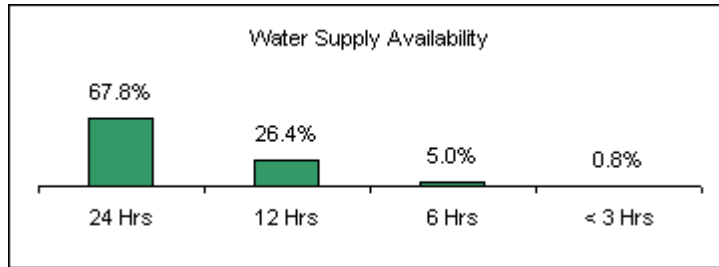
24 respondents or 20% encounter or have experienced illness caused by drinking from their source of water such as (amoebiasis, diarrhea and stomach discomfort)

WATER DISTRIBUTION AND AVAILABILITY

1. Availability of water supply in a day?

Water Supply Availability	121	100.0%
1 24 Hrs	82	67.8%
2 12 Hrs	32	26.4%
3 6 Hrs	6	5.0%
4 < 3 Hrs	1	0.8%

TABLE 73



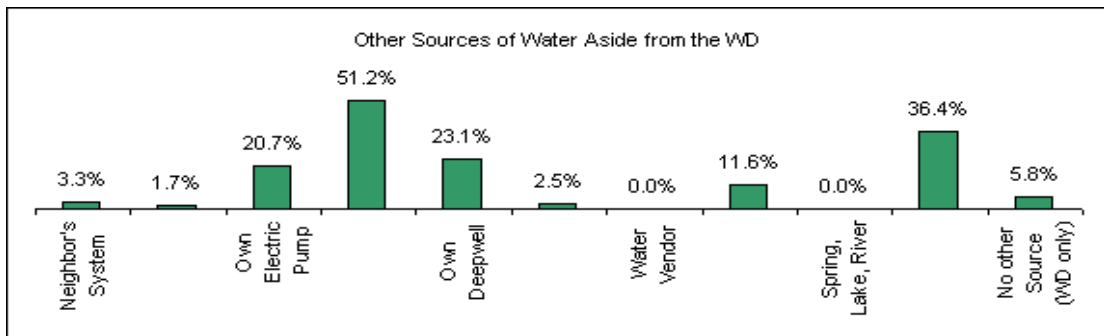
Water supply is available 24 hrs a day and 7 days a week, however there are portions of the service area which experience low pressure or no water at all during peak hour (evening 5-7 and 6-8 in the morning)

3. Aside from Water District, do you have other sources of water?

Other Source of Water aside from WD	121	156.2%
1 Neighbor's System	4	3.3%
2 Barangay System	2	1.7%
3 Own Electric Pump	25	20.7%
4 Own Hand Pump	62	51.2%
5 Own Deepwell (shallow and dug well)	28	23.1%
6 Public faucet/Well	3	2.5%
7 Water Vendor	0	0.0%
8 Rainfall	14	11.6%
9 Spring, Lake, River	0	0.0%
10 Bottled Water'	44	36.4%
11 No other Source (WD only)	7	5.8%

Note: Households use the word "deepwell" to refer to shallow and dug wells

TABLE 74



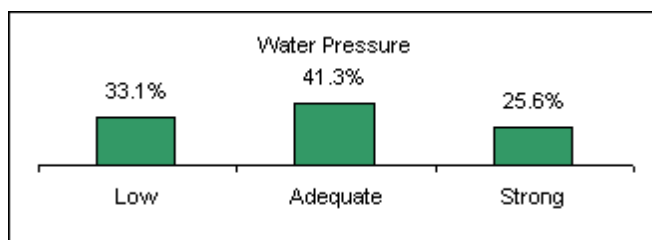
Of the 121 respondents, only 7 do not have other sources of water aside from being connected with the water district. Because of the quality of water most of the respondents have to resort to other sources. A marginal number of the respondents have their own hand pump, electric pump and bottled water for drinking

Note: Percentages total of 156% exceeds owing to the fact that they are getting water from more than one source

3. How do you rate your water pressure?

Water Pressure	121	100.0%
1 Low	40	33.1%
2 Adequate	50	41.3%
3 Strong	31	25.6%

TABLE 75



Water pressure in the area is not consistent all through the day. As can be noted in the survey results, there are portions with noted strong pressure while about 33% experienced low pressure to non-flow of water at all mostly during peak hour between 6 to 8 in the morning and 5 to 7 in the evening

WATER BILLING AND STATEMENT OF ACCOUNTS

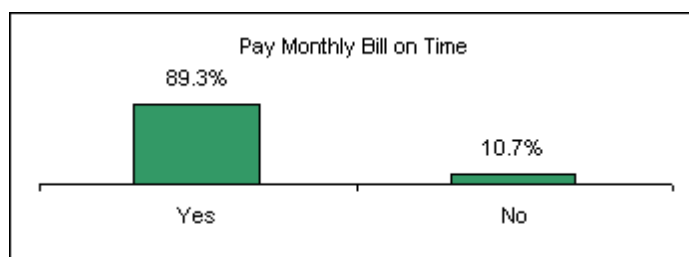
1. How much is your monthly average water bill?

Average Monthly water bill (Pesos)	297.14
Average Monthly water consumption (m ³)	14.91 m ³ /month/HH

2. Are you able to pay this on time?

Pay Monthly Bill on Time	121	100.0%
Yes	108	89.3%
No	13	10.7%

TABLE 76

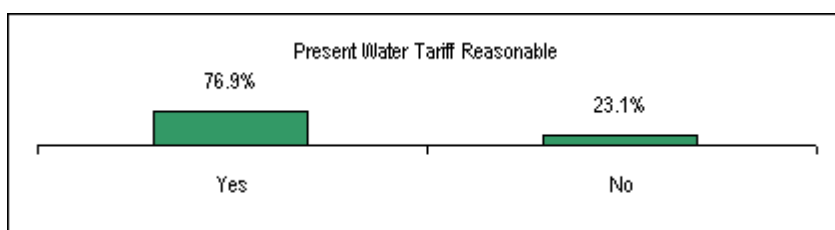


89% or 108 out of the 121 respondents pay their water bill on time

3. Is the present tariff rate reasonable?

Present Tariff Rate Reasonable	121	100.0%
Yes	93	76.9%
No	28	23.1%
No answer	0	0.0%

TABLE 77



Those who pay their bill on time think that they pay for what the consumed and that the present water charges is reasonable and still it is the old tariff and no increase yet has been made

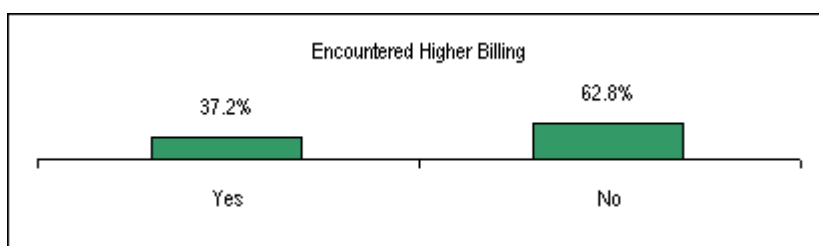
Respondents has the following reasons of not paying their bills on time

- water charges is not reasonable with the kind of quality of water being delivered
- high water rates

4. Have encountered any billing much higher than what you actually think you consumed?

Encountered billing much higher than what the consumer think they only consumed	121	100.0%
Yes	45	37.2%
No	76	62.8%

TABLE 78



Majority of the respondents did not encounter being charged higher than what they consumed. Although there are respondents who think there were bills higher than they think they consumed but DID not specify the reason behind the increase.

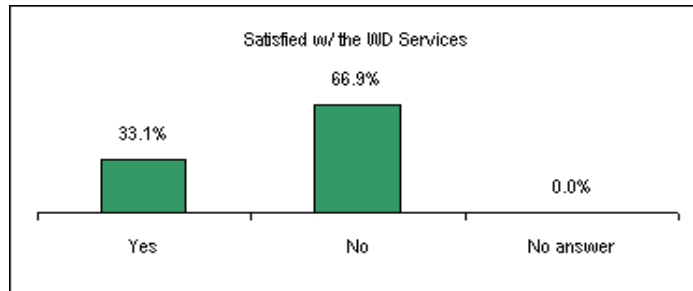
Almost all the respondent think that current supply is enough for the demand of the community. Others commented that maybe if the water quality and service is improved probably the consumer will opt to use more of the water.

CUSTOMER SERVICE

1. Are you satisfied with Water District’s services?

Satisfied with the WD services	121	100.0%
Yes	40	33.1%
No	81	66.9%

TABLE 79



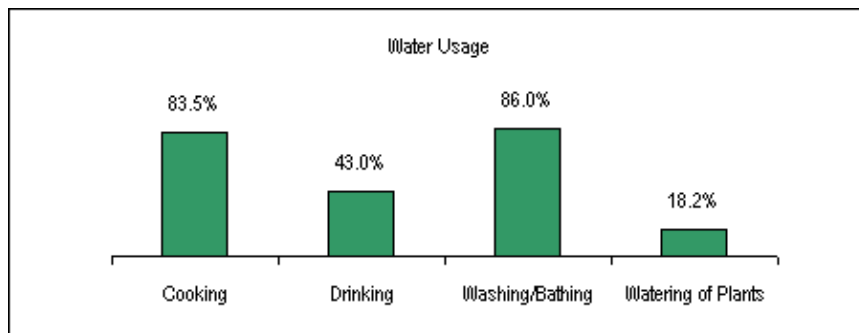
Most of the residents, about 67% or 81 respondents are not satisfied with the WD Services About 93% of the 81 unsatisfied respondents cited the water quality as the main reason followed by water pressure and water rates

Note: Respondents' reasons of dissatisfaction exceeds because they give more than one answer of why they are not satisfied

2. Where do you use your water?

Water Usage			
1	Cooking	101	83.5%
2	Drinking	52	43.0%
3	Washing/Bathing	104	86.0%
4	Watering of Plants	22	18.2%

TABLE 80



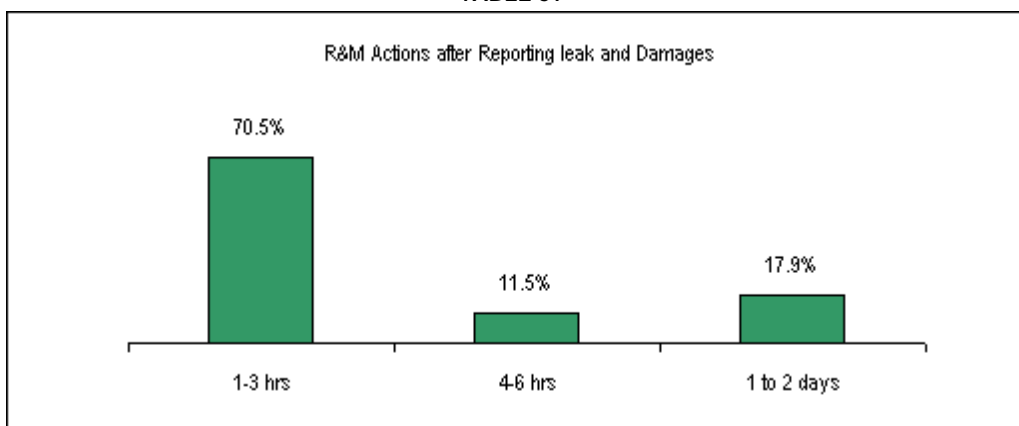
Cooking and Washing/Bathing are the main usage of the water supplied by the WD.

Note: Percentages total exceeds owing to the fact that they used water for different purposes

3. In reporting leaking pipes and malfunctioning meters, how long does it take for the Water District to repair?

Repair & Maintenance Actions after reporting leak and damages	No.	Percentage
1 1-3 hrs	55	70.5%
2 4-6 hrs	9	11.5%
3 1 to 2 days	14	17.9%
4 others (have not reported any need of R&M)	43	

TABLE 81



Only 78 respondents 64% of the total 121 respondents have reported a need of R&M. And 55 of them or 70% experienced that it only took 1 to 3 hrs for the WD personnel to take actions and 18% says it took 1 to 2 days for the WD to take actions on the reported repair and maintenance problem.

Reconnection upon payments of disconnected bills:

Very few of the respondents encountered disconnection and upon payment of the outstanding balance the water district reported to reconnect it immediately or within the day.

5. Any suggestion how the Water District can improve their services?

Suggested Measures/Comments by the Respondents on the WD Services

Particular	No.	Percentage
1.0 Water Quality	121	100.0%
1.1 Cleaning/Checking of Reservoir on regular basis (To eradicate the odor, taste and turbidity)	4	3.3%
1.2 Improve/ Modernize Water Treatment Facilities (to ensure the latest technology is applied for water potability)	35	28.9%
1.3 Provision of Filter/Purifier at the Source (Noted residue in the water)	6	5.0%
1.4 Regular Water Quality Test	1	0.8%
1.5 Proper announcement of cleaning of the facilities including closure of distribution lines during the said activities (I.e. mainlines, reservoir, etc.)	1	0.8%
1.6 Regular cleaning of water system facilities (I.e. mainlines, reservoir, etc.)		0.0%
1.7 Water Source Improvement	40	33.1%
1.8 No comments/suggestions	34	28.1%
2.0 Water Rates Affordability		

2.1

2.2

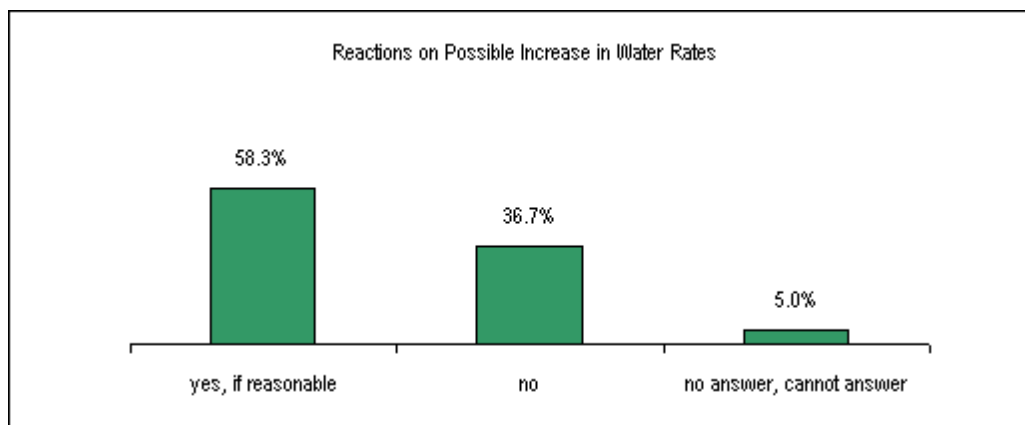
3.0 Water Distribution and Availability	142	117.36%
3.1 Tap Other Source (Due to poor quality of water of the existing source)	47	38.84%
3.2 Satisfied (except for the quality of water being delivered)	55	45.45%
3.3 Address the shortage of water supply at certain hr of the day (low pressure) <i>*percentage total exceeds owing to the fact that the respondents suggested more than one mitigation to address the problem on water distribution</i>	40	33.06%
4.0 Customer Services	121	100.00%
4.1 Well Trained Personnel	3	2.48%
4.2 Participatory Approach (Open to all - acceptable) (All informed - the good of majority is primary concern) Inform consumer of the quality of water	6	4.96%
4.3 Tie-up with nearby Kalibo WD which proven to have better services	4	3.31%
4.4 Water Rates should be Per Cubic Meter used (no minimum)/Standardization	2	1.65%
4.5 Collectors should be observed regular distribution of statement of accounts	1	0.83%
4.6 Patient and Friendly (Approachable) WD employees	4	3.31%
4.7 Immediate actions on consumer complaints	7	5.79%
4.8 Improve Services for especially for ensuring quality of water being delivered (Operation and Maintenance Plan and Implementation)	94	77.69%

6. Will you agree to an increase in water rates if services are improved?

Agree on possible increase in water rates if services are improved

	120	100.0%
1 yes, if reasonable	70	58.3%
2 No	44	36.7%
3 no answer, cannot answer	6	5.0%

TABLE 82



Analysis of Survey Results for Households Connected to Water District

GENERAL PROFILE OF HOUSEHOLDS

1. Most of the household heads are engaged in a business while others are employed. 97.5% own their houses while all of the households have electricity and most have their own toilets.

KNOWLEDGE OF WATER DISTRICT

1. All of the respondents know that the water from the tap is delivered by Numancia Water District but not all of them know where the water comes from. Only 89.3 know that source of the water district is a deep well.

PERCEPTIONS RE WATER QUALITY

1. Most of the respondents (64.5%) do not drink the water from the tap (turbid, color) while some feel safe to drink it because they know it is chlorinated .
2. Of the respondents who do not drink directly from the tap they have mechanisms for accessing drinking water such as boiling water or buying bottled water.
3. A little less than half of the respondents (47.1%) perceive water delivered by the water district to be of poor quality on the other hand most of the respondents have not encountered water related diseases while drinking water from the water district.
4. Water delivered by water district is used for cooking by majority of the respondents (83.5%) and washing (66%). On the other hand fewer than this respondents drink water (43%).

WATER SUPPLY AVAILABILITY

1. 67.8% of the respondents said that water from the water district is available 24 hours while the rest (26.4%) indicated that water is available only for 12 hours. A little less than half (41.3%) said water pressure is adequate while a few perceive that water pressure is low.
2. Water consumption is 105 liters/day/person. This is higher than the average rural consumption in the Philippines which is 80-90 liters/day/person

CUSTOMER SATISFACTION AND SERVICE

1. More than half of the respondents (76%) say that tariff rate is reasonable but in terms of level of satisfaction most of the respondents (66.9%) said that they are not satisfied with the water district. They mentioned water quality, water rates and water pressure as the reason for their dissatisfaction.

Survey Results for Households Not Connected to Numancia Water District

Barangays Included in the Survey

- Bubog
- Laguinbanua East
- Bulwang
- Navitas
- Albasan
- Badio
- Joyao-Joyao
- Marianos
- Laguinbanua West

Sixty households were part of the survey. It took 3 days to complete the survey. Households located in Numancia were included in the survey. No households from Makato and Lezo were interviewed.

Average Household Member:

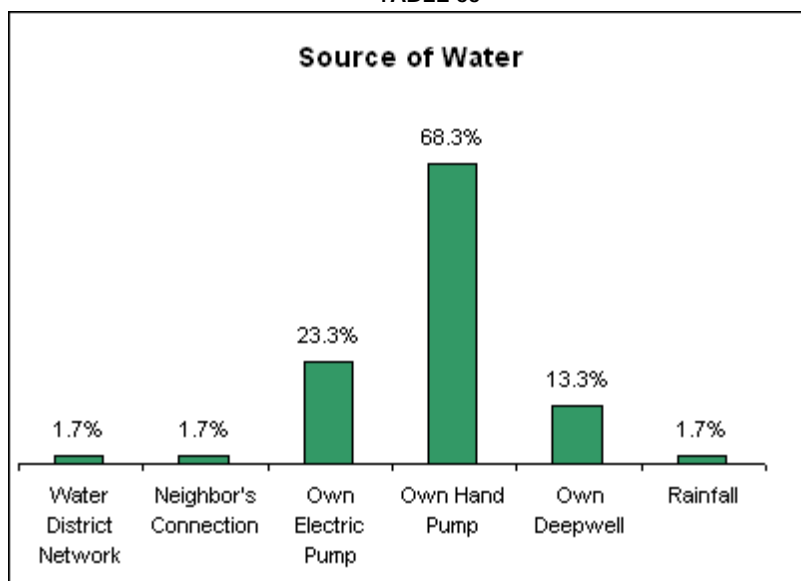
5.40

4. What are your water sources?

Water Sources	Number	Percentage
	60	110.0%
1 Municipal Waterworks (Connection inside the house)		
2 Barangay Waterworks (Connection inside the house)		
3 Water District Network	1	1.7%
4 Neighbor's Connection	1	1.7%
5 Barangay System		
6 Own Electric Pump	14	23.3%
7 Own Hand Pump	41	68.3%
8 Own Deepwell (shallow or dug well)	8	13.3%
9 Public faucet/Well		
10 Water Vendor		
11 Rainfall	1	1.7%
12 Spring, Lake, River		
13 Bottled Water'		

Note: Households usually use "deepwell" to refer to shallow or dug wells as "deepwell"

TABLE 83



Note: Percentages total 110% overlap owing to the fact that the respondents get their water from different sources

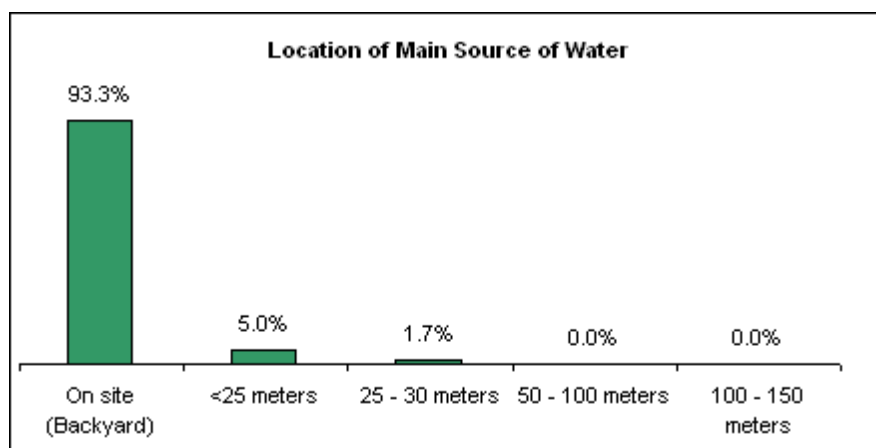
Unit Cost of Water:

The surveys says that the respondent spend as much as P300 for water while others only spend from P23 to P30

5. How far is your source of water?

Location of Main Source of Water	60	100.0%
1 On site (Backyard)	56	93.3%
2 <25 meters	3	5.0%
3 25 - 30 meters	1	1.7%
4 50 – 100 meters		
5 100 - 150 meters		

TABLE 84

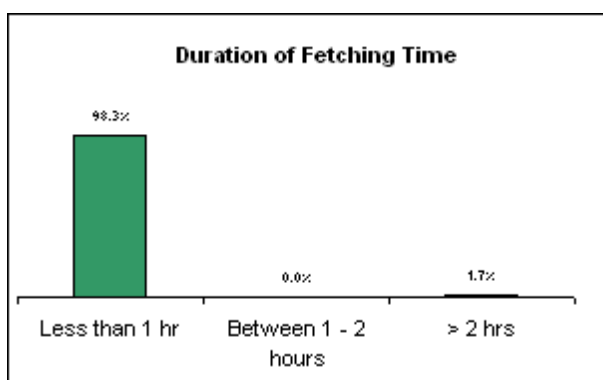


Majority of the respondents have their own hand pump which is usually located at their own backyard

6. How long does it take you to fetch water from your source?

Duration of Fetching Time	60	100.0%
1 Less than 1 hr	59	98.3%
2 Between 1 - 2 hours		
3 > 2 hrs	1	1.7%

TABLE 85

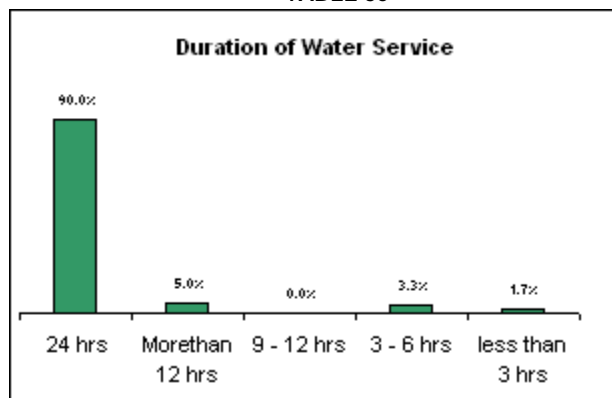


Due to proximity of respondents source of water, average fetching time only takes less than an hour

7. Duration of water service

Duration of water service	Count	Percentage
1 24 hrs	54	90.0%
2 More than 12 hrs	3	5.0%
3 9 - 12 hrs	0	0.0%
4 3 - 6 hrs	2	3.3%
5 less than 3 hrs	1	1.7%

TABLE 86

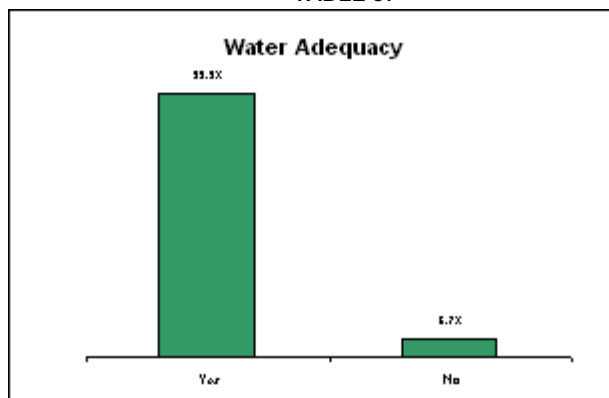


Majority of the respondent's source of water (about 90%) is available 24 hours a day. Only those who fetch water from neighbors' connection or system do not access the water for 24 hours.

Is your source of water adequate?

Water Adequacy	Count	Percentage
Yes	56	93.3%
No	4	6.7%

TABLE 87



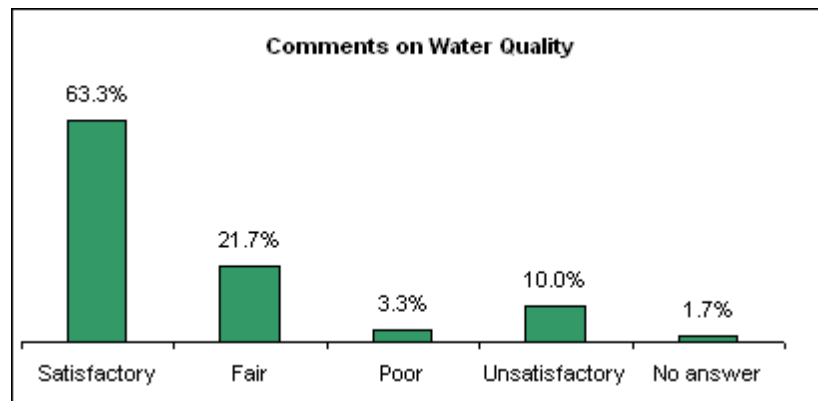
Majority of the respondents find their source of water adequate for their daily needs. Very minimal or only 7% or only those who fetch water from neighbors who are connected with the WD services or those w/ hand pump sources (with minimal yield) find their source of water inadequate.

Average Daily water consumption

21.67 m3/month/HH

Comments on Water Quality	60	98.3%
1 Satisfactory	38	63.3%
2 Fair	13	21.7%
3 Poor	2	3.3%
4 Unsatisfactory	6	10.0%
5 No answer	1	1.7%

TABLE 88



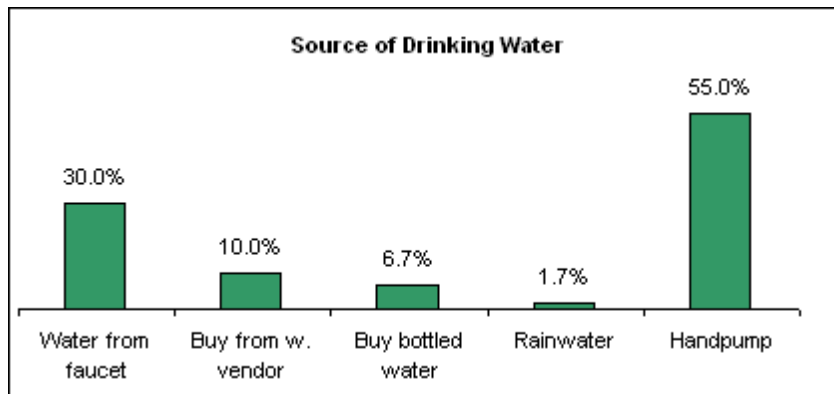
Only about 13% or 6 respondents are dissatisfied with regards to the quality of their water, while 63% or 38 respondents are fully satisfied

9. What are your sources of drinking water?

Sources of Drinking Water	60	103.3%
1 Water from faucet	18	30.0%
2 Buy from w. vendor	6	10.0%
3 Buy bottled water	4	6.7%
4 Rainwater	1	1.7%
5 Handpump	33	55.0%

Note: Water from faucet means that HH get their water from another HH connected to a water district

TABLE 89



Majority of the respondents get their drinking water from the hand pump others fetch water from their neighbors who are connected to the WD, or buy from vendors or buy bottled water⁸

Note: Percentages total 103% overlap owing to the fact that the respondents get drinking water from different sources

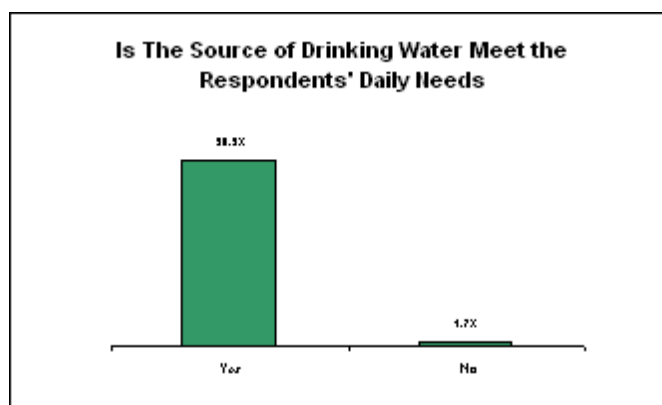
Unit Cost of Drinking Water: Respondents who buy from water vendor. spend about P6.50/gallon for their drinking water.

Others who regularly fetch water from their neighbors connection usually pay a fixed amount every month ranging from P50 to P300 depending if the water is used for drinking only or for other domestic water needs.

Is your source of drinking water enough to meeting daily needs?

	60	100.0%
Yes	59	98.3%
No	1	1.7%

TABLE 90



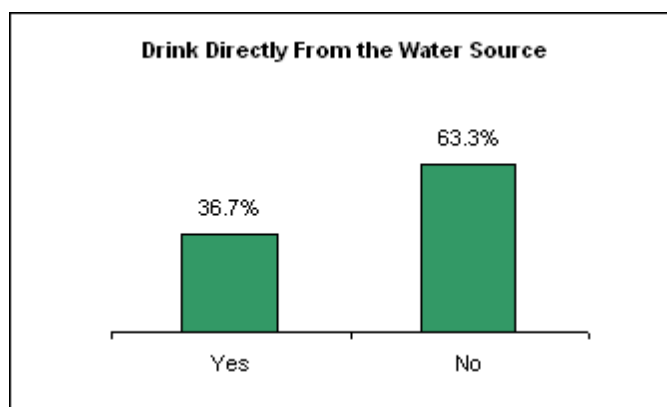
Almost all respondents (98.3%) are confident that their present source of drinking water meets their daily needs

⁸ Water Vendors refer to people who go around the barangays and sell water by the drum or bucket; Water Refilling Station sell bottled water that undergoes a purification process

Do you drink directly from your water source?

Drink directly from the water source	60	100.0%
	22	36.7%
	38	63.3%

TABLE 91

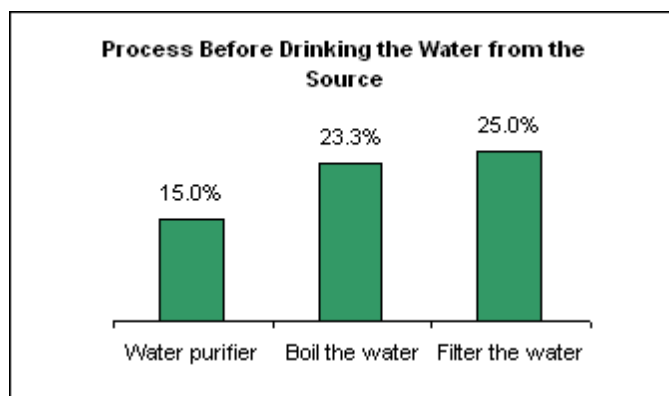


About 63% do not drink directly from their water source. Of the 37% who responded to have drank directly from their source were most likely confident with their existing system which is either a hand pump, deep well or an electric pump

10. What do you do before drinking the water?

<i>Process before drinking</i>	38	63.3%
1 <i>Water purifier</i>	9	15.0%
2 <i>Boil the water</i>	14	23.3%
3 <i>Filter the water</i>	15	25.0%

TABLE 92

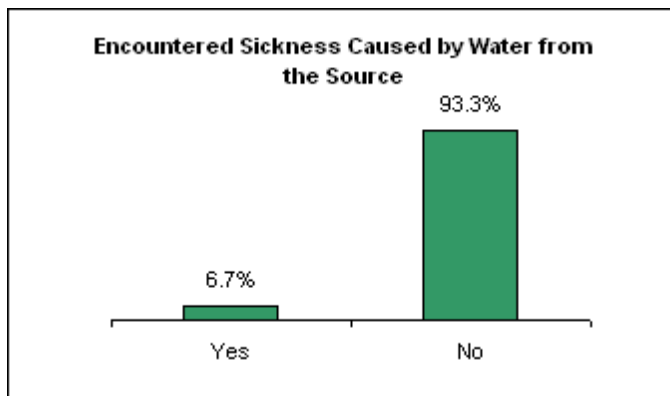


The 63% who do not drink directly from the source usually boil or filter the water through the use of cloth and others who can afford to have water purifier device. It was also noted that the respondents who fetch water from the neighbor's connection (WD) still has to boil the water before drinking.

Did you experience any illness for drinking water directly from the present system?

Encountered Sickness	60	100.0%
Yes	4	6.7%
1 Skin irritation		
2 Stomach discomfort	4	
3 Others, pls specify		
No	56	93.3%

TABLE 93

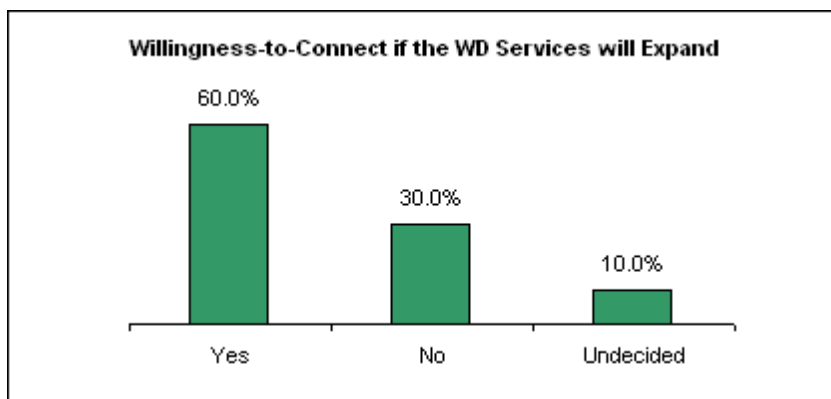


No water borne diseases were reported by the respondents except for minor stomach discomfort

Would you be willing to connect if Water District services will expand?

Willingness-to-Connect if the WD services will expand	60	100.0%
Yes	36	60.0%
No	18	30.0%
Undecided	6	10.0%

TABLE 94



Reasons Respondents Are Willing To Connect:

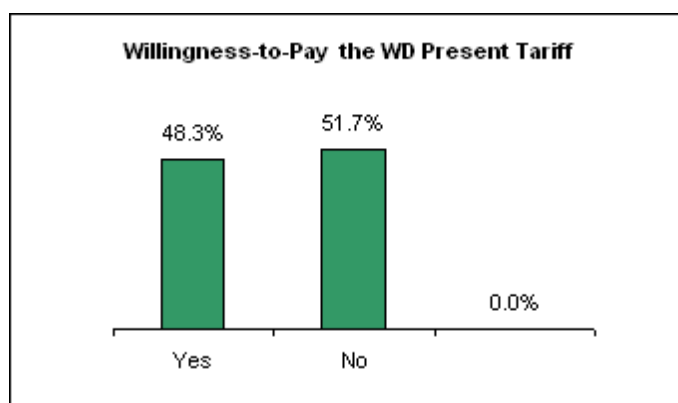
Particular	No.	Percentage
Willingness-to-Connect if the WD Services Will Expand	36	60.00%
<ul style="list-style-type: none"> • Water Source Reliability and Dependability • (Safe, Clean, Sufficient and Chlorinated) • Affordability • Better Quality of Services • Did not indicate reasons 	14 5 4 13	

Note: 60% of the respondents said they were willing to be connected to the water district and indicated conditions That has to be met before they would be connected

Are you willing to pay the present tariff rate of the Water District?

Willingness to Pay the Present Tariff Rate of the WD	60	100.0%
Yes	29	48.3%
No	31	51.7%

TABLE 95



Not all respondents who signified interest in the WD services is willing to pay the present water tariff because they think it is too expensive. The above figures shows that 36 respondents are willing to connect, however only 29 are willing to pay the current tariff of the WD.

Analysis of Survey Results of Households Not Connected to Water District

WATER SUPPLY AND ACCESS MECHANISM

- Most of the HH not connected to the water district get their water from handpumps they own. These pumps are located in their backyard hence for most of them it takes less than an hour to fetch water and water is available 24 hours a day. 93% said that water is adequate and average daily HH consumption is 722 liters per day or 133.75 liters/day/person. This is higher than the average rural consumption which is 80-90 liters/day/ person.

2. Drinking water mostly comes from their handpumps (55%) while some get it from other households that are connected to the water district. They pay the household where they get the water. Some respondents said that water can be bought at P6.50 gallon. They may pay as low as P50 to as high as 300 daily for water.
3. Most say that their source for drinking water is adequate.

WATER QUALITY

1. 63.3% indicated that their water is satisfactory in terms of quality but they do not drink directly from their sources. Households in Numancia who are not connected to the water district filter, boil or purify it before drinking the water. Most have not encountered water related diseases while drinking their water.

POSSIBILITY FOR FUTURE EXPANSION OF WATER DISTRICT

1. 60% of the respondents said that they would want to be connected to the water district on the other hand more than 50% of those who wanted to be connected indicated they were not willing to pay its present tariff rates.