To develop the best water source for water supply

- Necessary to know how groundwater is distributing in the area
  - Analyzing the Existing Data (well log, pumping test result, water quality, etc.)
    - Existing Data Gathering & Compilation
    - Forming Inventory Format
    - Making out Inventory
    - Selecting Good Data
    - Checking Location (Coordinates, Latitude and Longitude) → GPS
    - Plotting them on Topo-Map and Geological (Hydro-geological) Map
    - Consideration of Hydrogeology and Groundwater distribution and Mapping

To develop the best water source for water supply

- Necessary to find out the best location for groundwater development
  - Analyzing groundwater potential and zooming in an area for investigation
  - Planning of investigation & test, design and construction
- Appropriate Investigation
  - Deciding the best location
- Appropriate Implementation

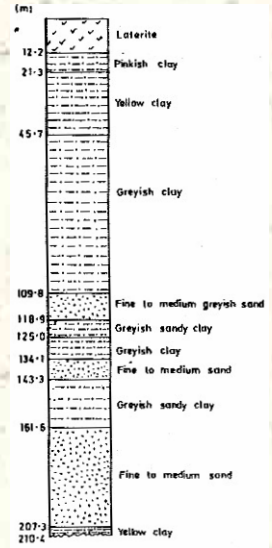
Investigation & Test

- Site Reconnaissance
- Geophysical Exploration and Borehole Logging
  - Geoelectrical Resistivity Prospecting
    - Vertical and Horizontal Prospecting
  - Borehole Logging (Resistivity, Water temperature, Specific potential, etc.)
- Pumping Test after Setting Screen and Casing into borehole
  - Stage-up Pumping test, Constant Pumping test and Recovery condition check
    - Optimum Pumping Rate, Transmissivity, Hydraulic Conductivity, Specific Yield and Coef. of Storage
- Water Quality Test

Inventory

Deep Well

No. or Name of Water Source	Date		Location		
	Construction	Renewal	Coordinates	Barangay	Municipality



Depth	Diameter		Elevation		Screen		Formation			
	Borehole	Casing	Top	Bottom	Top	Bottom	Overburden	Cap Layer	Aquifer	Bedrock

Type of Aquifer	Pumping Test (Aquifer Parameter)				
	Optimum Pumping Rate	Transmissivity	Hydraulic Conductivity	Specific Yield	Coef. of Storage
Unconfined Confined (Artesian)					

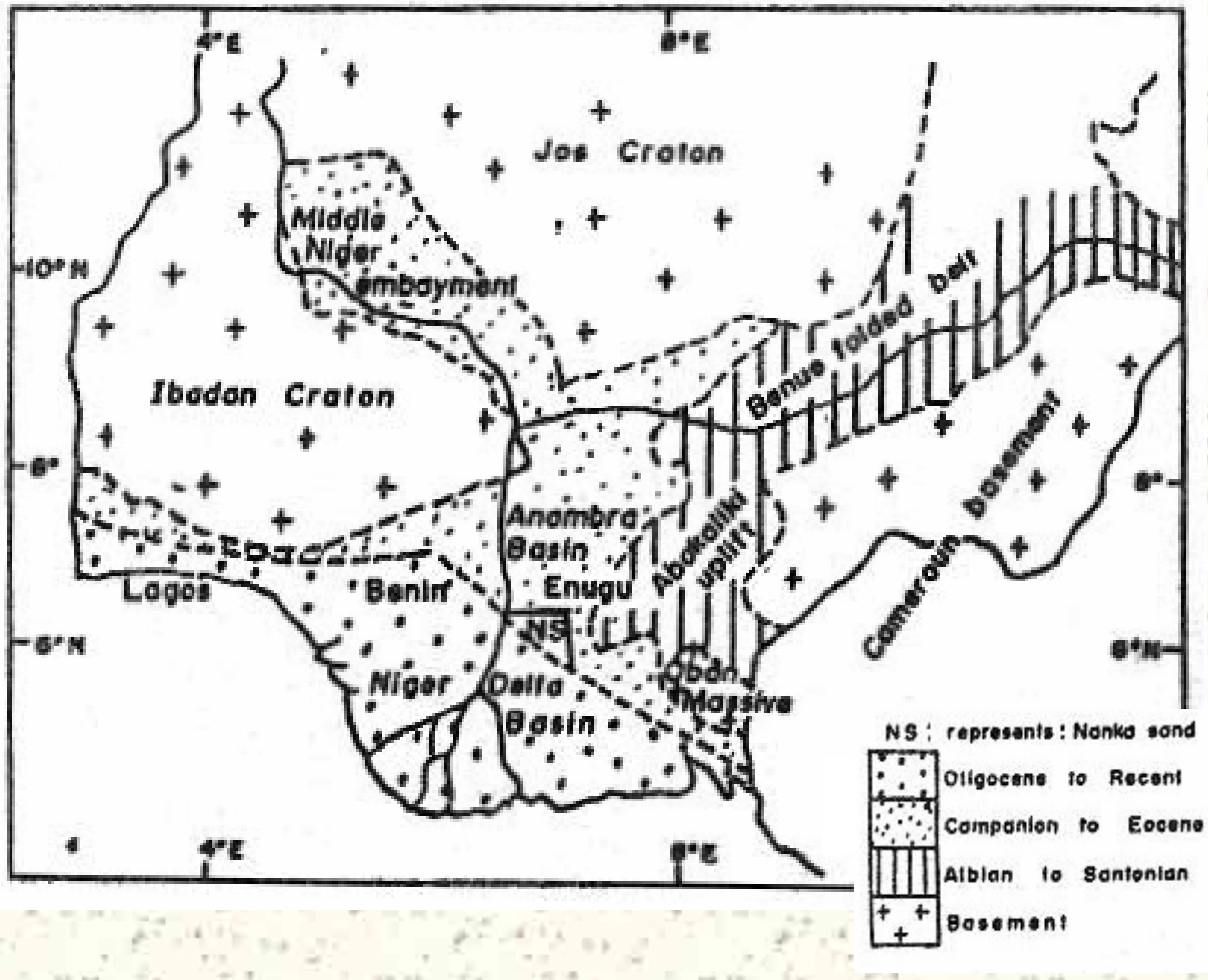
Groundwater Level Monitoring	9-Oct-03	8-Nov-03	5-Dec-03	7-Jan-04		

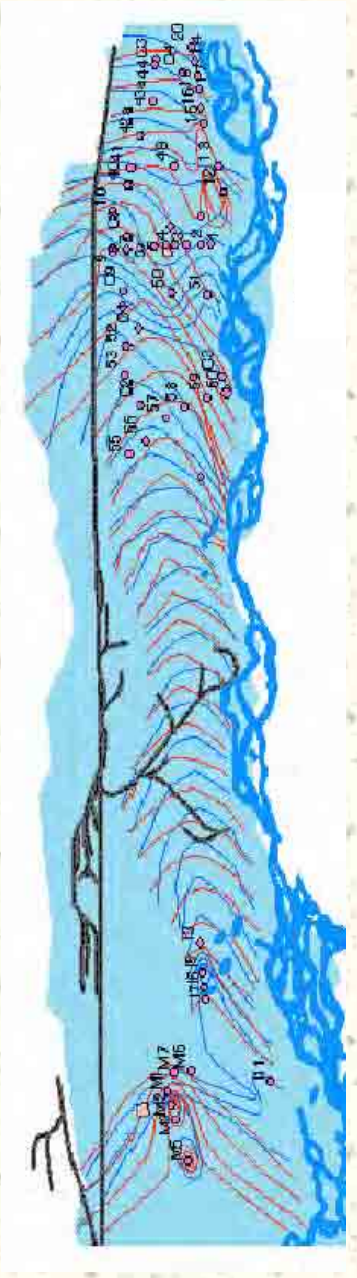
Water Quality	
Bacteria	Chemical

Shallow Well

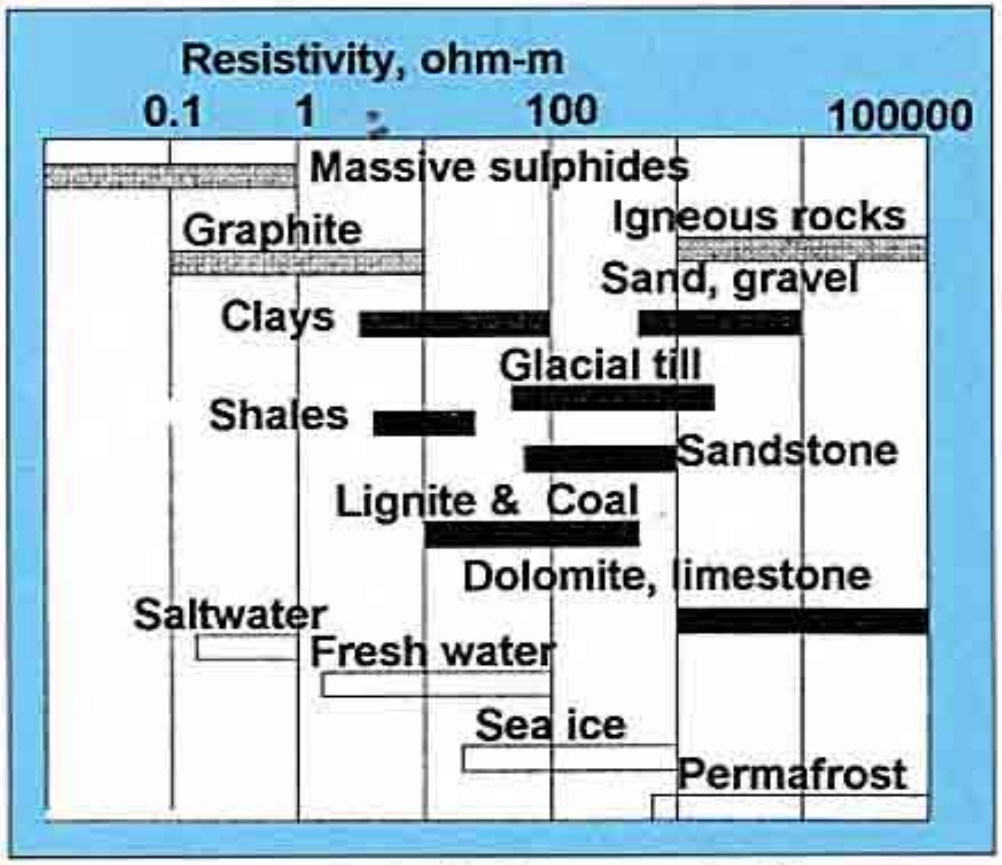
Spring

Mapping


4°E
8°E
Jos Craton
Middle Niger embayment
10°N
Ibadan Craton
Benue folded belt
Anambra Basin
Abakaliki uplift
Cameroun basement
Lagos
Benin
Enugu
NS
6°N
Niger Delta Basin
Oban Massive
NS : represents : Nanka sand
Oligocene to Recent
Campanian to Eocene
Albian to Santonian
Basement

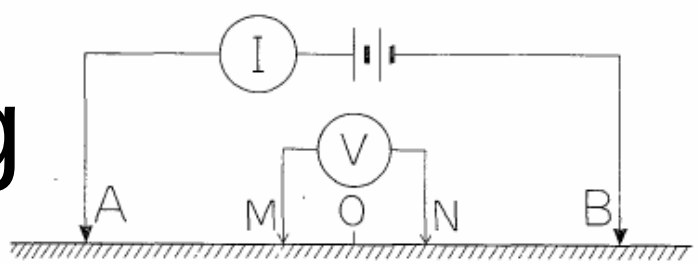


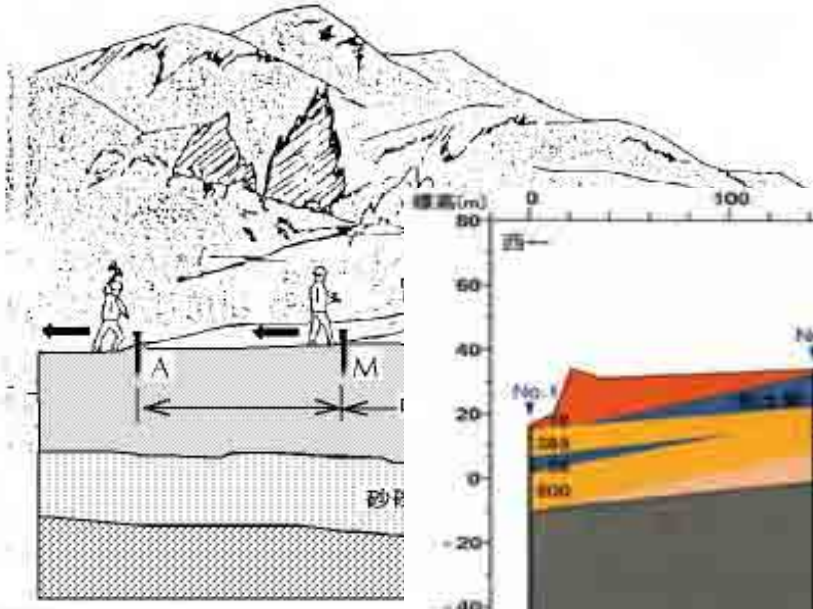
Geoelectrical Resistivity

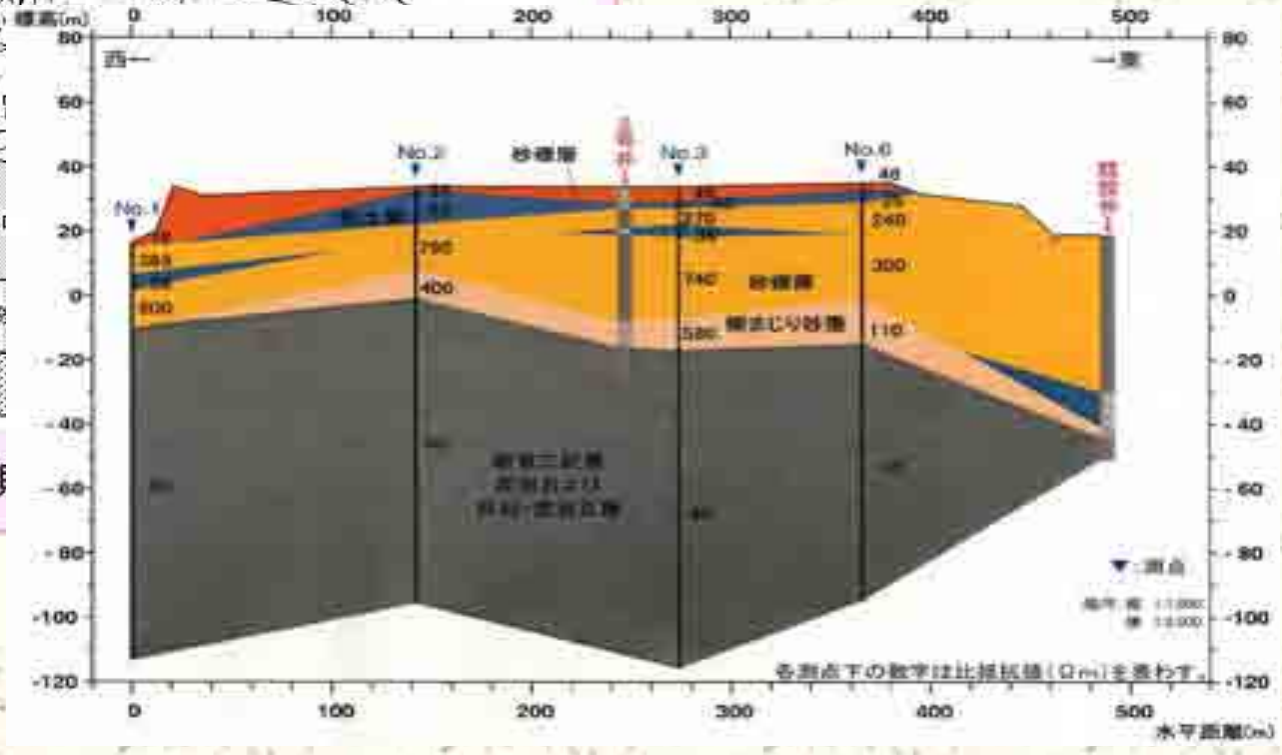


Approximate electrical resistivity ranges for different types of rock, soil and water

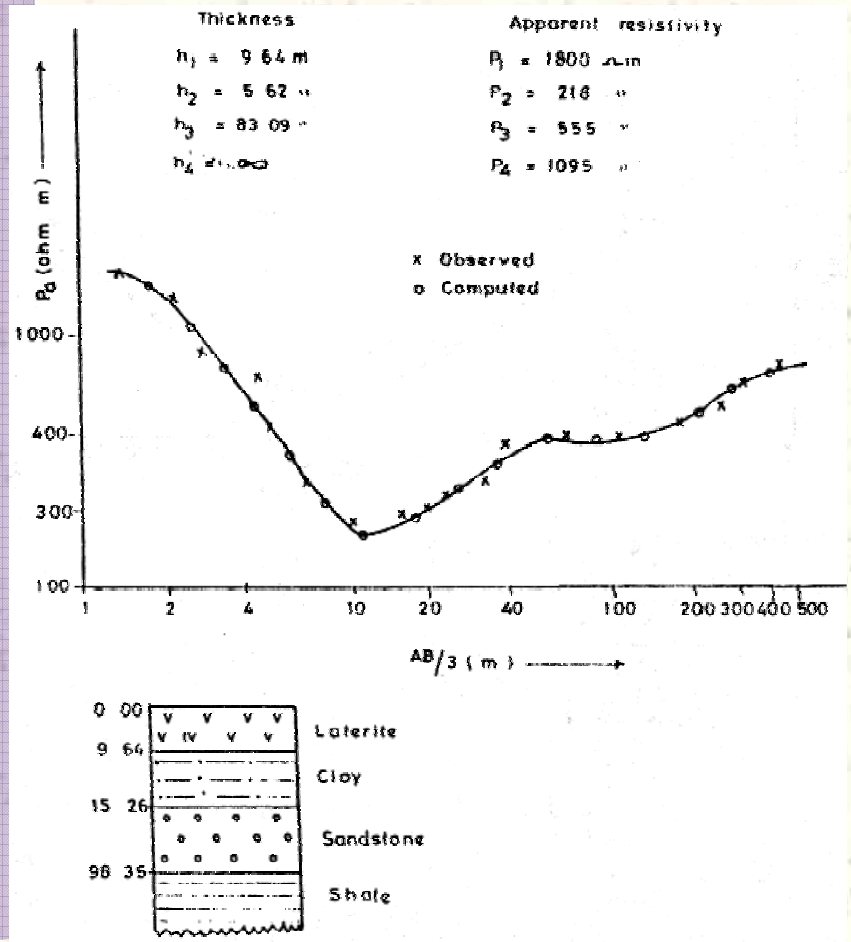
Vertical Prospecting

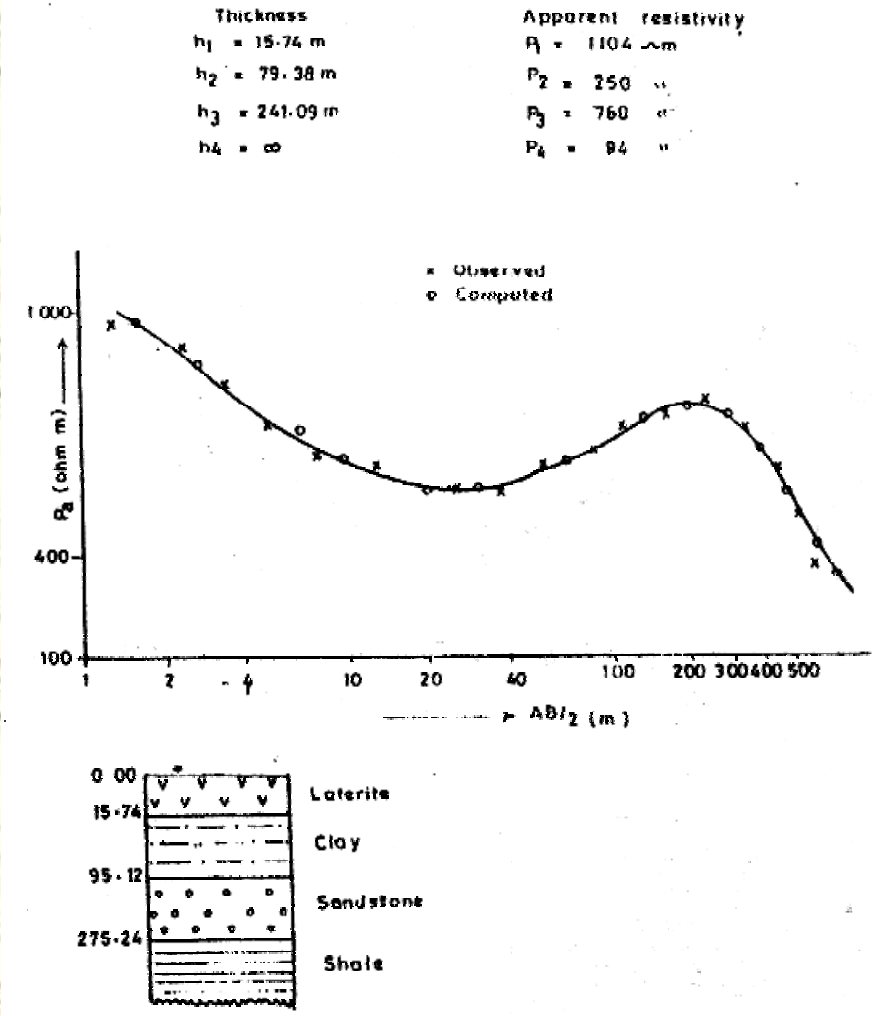




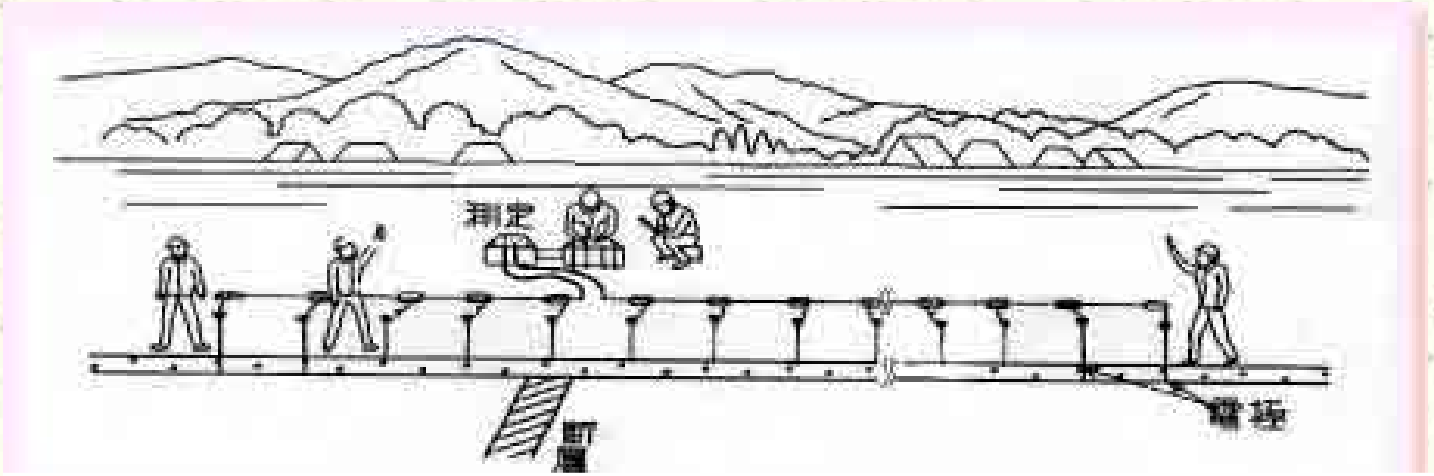


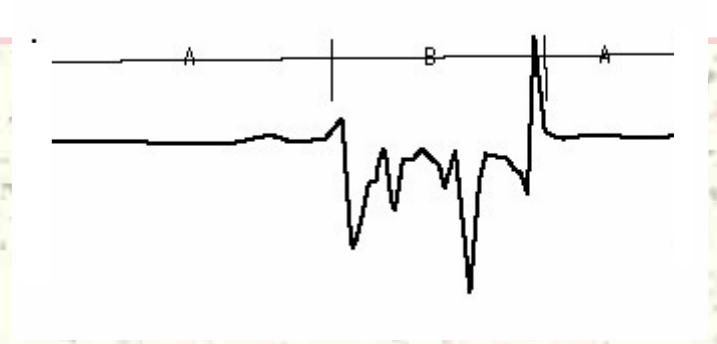
VES Curve


Thickness
Apparent resistivity
h_1 = 9.64 m
h_2 = 5.62 "
h_3 = 83.09 "
h_4 = ∞
P_1 = 1800 Ω-m
P_2 = 216 "
P_3 = 555 "
P_4 = 1095 "
x Observed
o Computed
P_a (ohm m)
1000
400
300
100
1 2 4 10 20 40 100 200 300 400 500
AB/3 (m)
0.00 Laterite
9.64 Clay
15.26 Sandstone
98.35 Shale

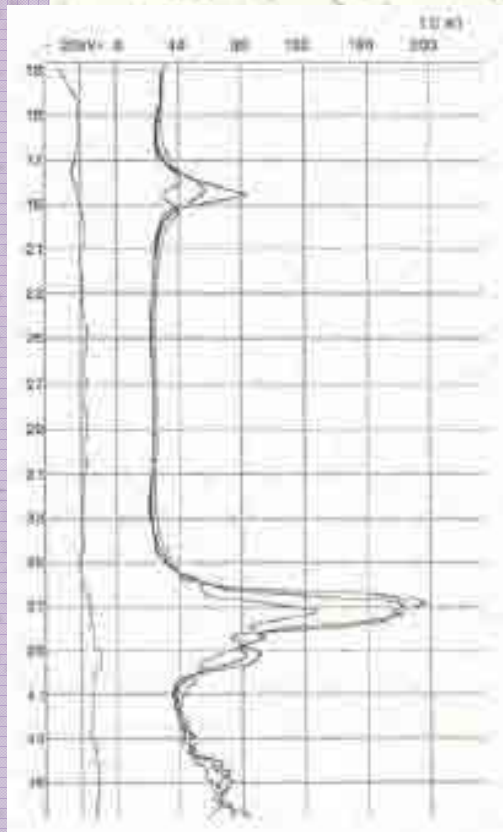

Thickness
Apparent resistivity
h_1 = 15.74 m
h_2 = 79.38 m
h_3 = 241.09 m
h_4 = ∞
P_1 = 1104 Ω-m
P_2 = 250 "
P_3 = 760 "
P_4 = 94 "
x Observed
o Computed
P_a (ohm m)
1000
400
100
1 2 4 10 20 40 100 200 300 400 500
AB/2 (m)
0.00 Laterite
15.74 Clay
95.12 Sandstone
275.24 Shale

Horizontal Prospecting

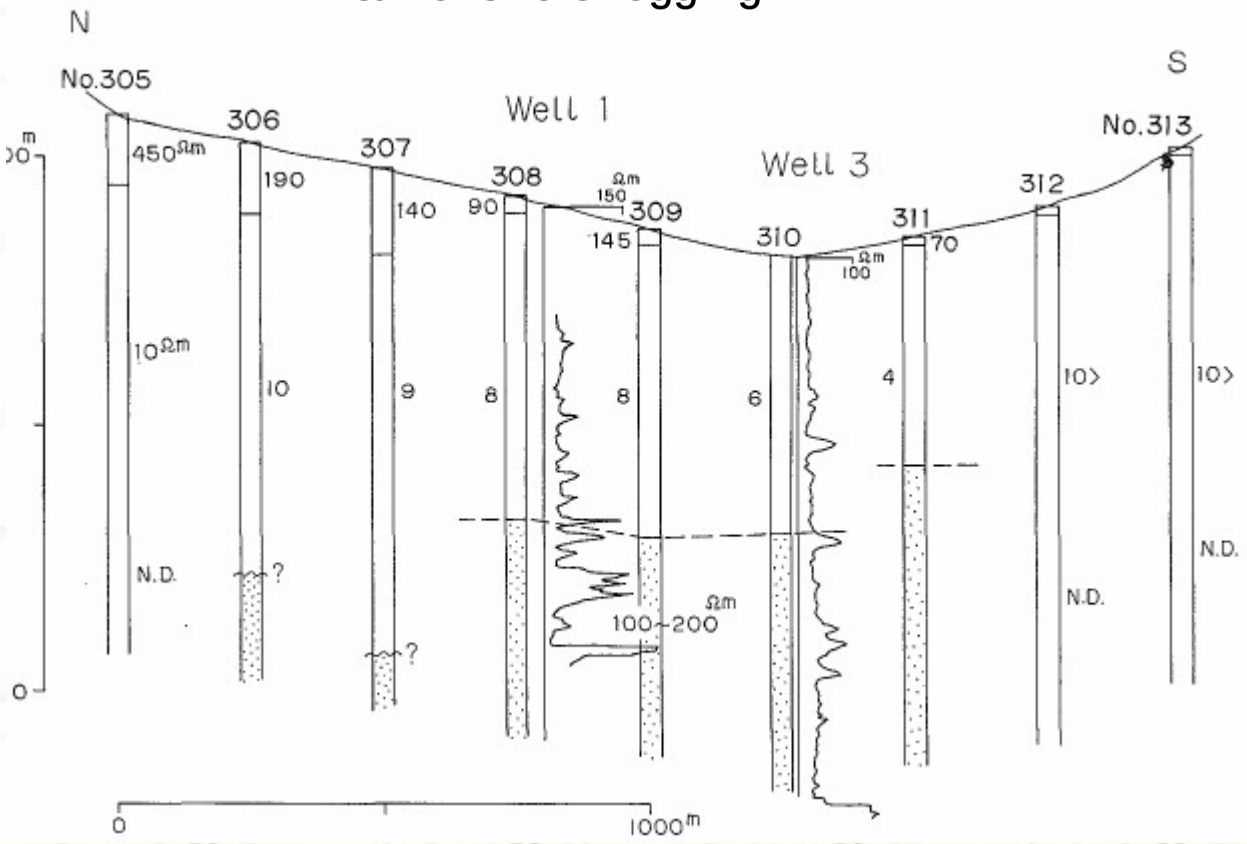




Borehole Logging



Combining of Vertical Prospecting
& Borehole logging



FINAL REPORT

Local Technical Support Services for JICA's Pre-Evaluation Mission of the TCP on Local Governance and Rural Empowerment Project for Davao Region

30 September 2006

Dr. Irvin Generalao
Alain Origenes
Consultants

shinfield consultancy philippines inc.

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ABBREVIATIONS AND ACRONYMS

ARCDP	Agrarian Reform Communities Development Program
BDC	Barangay Development Council
BDP	Barangay Development Plan
BESP	Barangay Environmental & Sanitation Project
BOD	Board of Directors
BWASA	Barangay Water and Sanitation Association
BWP	Barangay Water Program
CDA	Cooperative Development Agency
CDF	Congressional Development Fund
CEO	City Engineer's Office
CHO	City Health Office
DIDP	Davao Integrated Development Program
DLR	Department of Land Reform
DPWH	Department of Public Works & Highways
DOH	Department of Health
EDF	Economic Development Fund
EU	European Union
GA	General Assembly
IRA	Internal Revenue Allotment
IRAP	Integrated Rural Appraisal Project
JICA	Japanese International Cooperation Agency
LGU	Local Government Unit
MBN	Minimum Basic Needs
MOA	Memorandum of Agreement
OCPDC	Office of the City Planning & Development Coordinator
OPPDC	Office of the Provincial Planning & Development. Coordinator
PEO	Provincial Engineer's Office
PHO	Provincial Health Office
PMO	Project Management Office
RWASA	Rural Waterworks and Sanitation Association
SEC	Securities and Exchange Commission
USAID	United States Agency for International Development
WB	World Bank
WHO	World Health Organization

<table>
<tr><td colspan="2">Assignment Name:
Local Technical Support Services for JICA's Pre-Evaluation Mission of the TCP on Local Governance and Rural Empowerment Project for Davao Region</td><td>Country:
Philippines</td></tr>
<tr><td colspan="2">Location within Country:
ARMM, Philippines</td><td>Professional Staff Provided Your Firm/entity (profiles):</td></tr>
<tr><td colspan="2">Name of Employer:
Japan International Cooperation Agency (JICA)</td><td>No. of Staff: 4</td></tr>
<tr><td colspan="2">Address:
Makati City, Metro Manila</td><td>No. of Person-Months: 3</td></tr>
<tr><td>Start Date
(Month/Year)
August 2006</td><td>Completion Date
(Month/Year)
September 2006</td><td>Approximate Value of Services:
(in PhP)
750,000.00</td></tr>
<tr><td colspan="2">Name of Associated Consultants, if any:
n/a</td><td>No. of Months of Professional Staff Provided by Associated Consultants:
n/a</td></tr>
<tr><td colspan="3">Name of Senior Staff (Project Director/Coordinator, Team Leader) involved and functions performed:

Eric Edmund P. Benedicto – Project Director
Irvin Generalao, PhD – Rural Water Planning / Data Management and Monitoring Expert
Alain Origenes – Local Governance / Community Development Expert
Josie C. Ilao-Bonilla / Jhet M. Abrenica – Project Coordinator</td></tr>
<tr><td colspan="3">Narrative Description of Project:

Davao Integrated Development Program-Project Management Office (DIDP-PMO) serves as an assistance window for the Davao LGUs (4 provinces and 5 cities) though the various donors' programs. In the DIDP area, 58% of total water supplied population depends on level 1 and 2 water supply, and 40% of total population does not have access to safe water (1998). In particular, 64% of the population in the province of Davao Oriental does not have access to safe water supply. Many of the level 1 and 2 water supply sources need to be managed more effectively in order to extend the reach of the safe water supply services. In view of this, the DIDP requested for assistance for LGUs capacity development and improvement of water supply services in Davao region, in order to fulfill their mandate of administering water supply as part of the basic services devolved by the central agencies. In response to the request, JICA is organizing a Preliminary Evaluation Mission to further clarify the proposed project and the design.</td></tr>
<tr><td colspan="3">Description of Actual Services Provided by your Company:

The consultants will assist the Japanese mission team to collect relevant data or information from the DIDP-PMO, DIDP member LGUs and other related institutions. To clarify the present situation of community management small water supply, the services of the consultants shall include the conduct and facilitate workshops. Interviews with sample community to analyze the situation and needs/problems of small water supply (mainly level 1 to 2) and community management.

The survey will cover the area of 4 provinces in Davao region (Region XI). The survey activities will be cover DIDP-PMO, member LGUs (Province of Davao del Norte, Davao del Sur, Davao Oriental, Compostela Valley, Davao City, Digos City, Panabo City, Tagum City, and Islands Garden City of Samal), and a sample field site (maximum 9) in member LGUs.</td></tr>
</table>

1. INTRODUCTION

1.1. Project Background

It has been 15 years since Decentralization has been implemented in the Philippines. Nonetheless, the Local Government Units (LGUs) are still struggling to optimize their limited resources and capabilities in order to perform the functions and responsibilities devolved by the central agencies. The LGU cluster development approach, which entails clustering of LGUs, is one of the strategies identified to address this issue. This approach is being adopted by the Davao Integrated Development Program (DIDP) in Davao Region (Region XI) which covers 4 provinces and 5 cities. By sharing information and resources, the DIDP LGU cluster cooperates with local stakeholders, including all LGUs, central agencies, economic world, and NGOs/Pos in the region.

The operations and activities of the project management office (PMO) of DIDP are bound by a Memorandum of Agreement (MOA) with member LGUs. Through the use of pooled resources, the DIDP-PMO has been working as PMO for a wide area of administration for more than 10 years in order to address the problems and needs of the local stakeholders. The DIDP manages information/data and resources in the region, and coordinates technology assistance from central agencies and private sectors to the member LGUs. As part of its activities, the DIDP-PMO serves as an assistance window for the LGUs through the various donors' programs, such as, "Davao Integrated Development Master Plan" of JICA (1997-1999), " Integrated Food Security Program (1999-present)" of the Department of Agriculture, and the "Upland Farming Model Villages Project" of the Philippines-Canada Development Fund (PCDF).

In the basic service of LGUs, the Department of Public Works and Highways has devolved basic water supply to the LGUs (1994 NEDA Resolution No.4) As such, the LGUs were mandated to administer all the levels of water supply and may coordinate roles of stakeholders in the area including the central agencies and the NGOs. The LGUs do service in the construction, planning, implementation and monitoring of water sources such as minimum well and common water sources in the remote area especially for levels 1 and 2 water supply. These water supply sources are operated through collaboration with POs such as the Rural Waterworks and Sanitation Association (RWASA) and the Barangay Waterworks and Sanitation Association (BWASA). In the DIDP area, 58% of total water supplied population depends on level 1 and 2 water supplies, and 40% of total population does not have access to safe water (1998). In particular, 64% of the population in the province of Davao Oriental do not have access to safe water supply.

Each LGU is trying to solve this problem by setting up taskforces and by responding to the request from the people and lower LGUs. However, the LGUs lack the scientific data, the effective technology and equipment, and the capacity to plan and monitor the effective and efficient operation of the

activities along with the communities. As a result, many of the level 1 and 2 water supply sources need to be managed more effectively in order to extend the reach of the safe water supply services.

In view of this, the DIDP requested for assistance for LGUs capacity development and improvement of water supply services in Davao region, in order to fulfil their mandate of administering water supply as part of the basic services devolved by the central agencies. In response to the request, JICA is organizing a Preliminary Evaluation Mission to further clarify the proposed project and the design. The mission, who is composed of members of JICA, Japanese experts in rural water supply planning and hydrogeology, will conduct the site survey and discussions with relevant stakeholders in August and September 2006. The local consultants will support and coordinate with the mission's activities during the period of the dispatch of the Japanese mission.

1.2. Objective

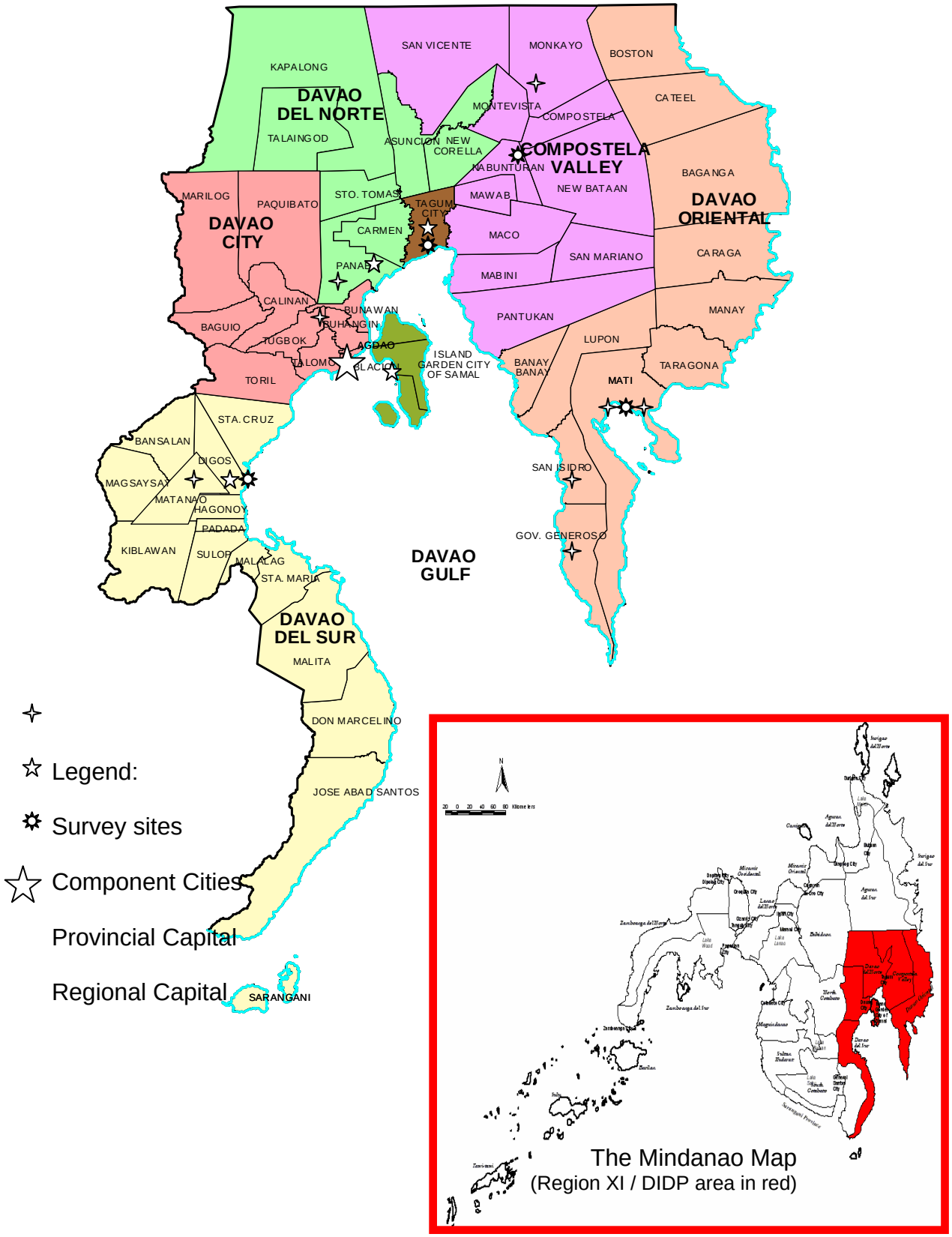
The objective of hiring the local technical services is to provide support to the activities of the JICA pre-evaluation mission such as, data collection and analysis, concretization of the project framework such as identifying project activities from the point of view of local governance and in the preparation of project documents.

1.3. Survey Site

The survey covered the 4 provinces in Davao Region (Region XI) and identified the DIDP-PMO, member LGUs (Provinces of Davao del Norte, Davao del Sur, Davao Oriental, Compostela Valley; the Cities of Davao, Digos, Island Garden City of Samal, Panabo and Tagum) as respondents. The JICA mission team was based in the DIDP-PMO in Davao City.

During the DIDP meeting on August 22, 2006 the representatives of the member LGUs and JICA's survey team agreed on the initial category in the selection of the sample sites. The group agreed that the current water facility (both level 1 and 2) must either be operational or non-operational brought about by good or bad management and/or engineering design and manner of construction.

Map of Region XI covering the DIDP area



Other than the survey sites, the local consultants also covered the 4 component cities of the region namely; Digos, IGaCOS, Panabo and Tagum to compare their respective water services planning and management system.

Table 1. Agreed Survey Areas in Region XI

DIDP member LGUs	Actual Sites	Water facility	Present Condition
Davao City	Sitio Fatima and Brgy. Proper, Brgy. Biao Guianga, Tugbok District	Level 1 deep well Magsaysay-type hand pump; Level 2 deep well with overhead reservoir, submersible pump, distribution pipes and individual meters	Non – operational Operational
Davao del Norte	Brgy. Magupising, Braulio E. Dujali	Level 2 dugwell with pressurized tank, centrifugal pump and communal faucets	Operational
Panabo City	Brgy. Kiotoy	Level 2 deep well with overhead reservoir, distribution pipes and individual meters	Operational
Davao Oriental	Brgy. La Union, San Isidro Brgy. Tibanban, Gov. Generoso Brgy. Mayo, Mati Sitio Maitum, Brgy. Dahican, Mati	Level 1 shallow well with Magsaysay-type hand pump Level 1 deep well free flowing Level 2 spring with reservoir, distribution pipes and communal faucets Level 2 deep well with overhead reservoir, submersible pump, distribution pipes with communal faucets	Operational Operational Operational Non – operational
Davao del Sur	Brgy. Bangkal, Matanao	Level 2 spring with intake box, distribution pipes and communal faucets	Non – operational
Compostela Valley	Purok 6, Brgy. Olaycon, Monkayo	Level 1 spring with spring box, distribution pipe and jetmatic hand pump	Operational

1.4. Components

The survey also collected relevant data or information from the DIDP-PMO, DIDP member LGUs and other related institutions intended to further clarify the present situation and the problems concerning community-managed small scale water supply system in the nine (9) sample sites from the DIDP member LGUs.

1.5. Team Composition

The team composed of two local consultants Dr. Irvin C. Generalao, Ph.D. – Rural Water Planning / Data Management and Monitoring (Hydrology Expert) and Mr. Alain S. Origenes – Local Governance and Community Development Expert initially participated in a briefing conducted in the JICA Philippines Office. Afterwards, they performed the services in line with the responsibilities stated above and the instructions from JICA. The team also supported the survey and activities of the Japanese consultants Mr. Suginaga – HR Expert and Mr. Makoto Suga - Hydrogeology Expert.

1.6. Management Arrangement

The consultant team was stationed at the DIDP office and worked closely with the DIDP-PMO. The consultant team also made constant contact with all the LGUs and related organizations in the area for the duration of the survey.

1.7. Schedule

The two local consultants provided services to the JICA survey team for the duration of 1.46 month, which started on August 18, 2006 up to September 29, 2006.

Japanese Fiscal Year 2006

Consultant Duration	August 2006			September 2006		
Consultant for Local Governance/Community Development						
Consultant for Rural Water Planning/Data Management and Monitoring						

1.8. Reports

The team prepared and submitted the following documents and all relevant electronic data to the JICA Philippine Office. A digital copy of the said data was also furnished to DIDP as well as JICA Philippine Office and the related organization through email. All documents were produced in English and proofread prior to submission.

Japanese Fiscal Year 2006

Report	Specifications and Deadlines
Workplan (3 copies)	August 22, finalized after the meeting in Davao City. The plan included proposed methods of survey.
Draft Final Report (3 copies)	September 22, content based on the accomplishment of the survey and analysis
Final Report (5 copies)	September 29, end of the assignment, content based on the accomplishment of the survey analysis as well as the comment from the draft report
Compiled / collected reference materials (1 copy each)	September 29, end of the assignment

1.9. Methodology

The local consultants upon instruction of the Japanese consultant and team leader conducted an extensive key informant interview (KII) for the whole survey duration. The target audience were key personnel of the DIDP-PMO, key officials of the DIDP member LGUs and technical staff from the various LGU departments such as but not necessarily limited to the Offices of the Provincial/City Planning and Development Coordinator and Provincial/City Engineer.

The survey questionnaire was developed by the Japanese team leader. Other than the developed tool, the local consultants further agreed to focus on the following aspects of small-scale community projects such as:

a) Management – including plan and policy preparation, supervision, reporting, monitoring & implementation
b) Operations – including billing, collection, recording, internal control practices, maintenance and repair;
c) Facility Design – detailed engineering design, relevant engineering data (well-log, soil formation, aquifer characterization, etc.);
d) Planning – project basis anchored on existing Barangay Development Plan or as a result of the Minimum Basic Needs (MBN) or Integrated Rural Appraisal Project (IRAP); basis for site selection;

2. WATER RELATED DATA MANAGEMENT AND PLANNING

2.1. Existing water related data in DIDP-PMO and Member LGUs

Existing water related data in DIDP are those submitted by nine (9) member LGUs and most of which are not updated. Such data are: personnel, skills, equipment budget for software and hardware, planning and monitoring activities. The DIDP Master plan contains hard and softcopies of GIS maps of which other member LGUs were furnished such as the top view of Tagum City. The DIDP-PMO was also given continuously hard data by member LGUs and NEDA. These include: LGU annual reports, socio-economic profile, Annual Investment Programs and Comprehensive plans, complete provincial water supply, sewerage and sanitation sector plan, NEDA report on the assessment of water supply and sanitation facilitiesin Region XI, a project funded by UNICEF. The other soft data are: maps of water-related information such as geologic maps, surface water utilization ratio, ground water utilization ratio and present water supply coverage. All these data are part of the old DIDP master plan.

The DIDP- PMO on the other hand can hire personnel for a given project. As soon as the project terminates, the hired personnel are not automatically terminated from working with the project for as long as funds are still available at DIDP-PMO. The funds from DIDP-PMO supporting the continuous services of the personnel come from the contribution of the member LGUs. Skills enhancement of personnel utilizes funds from the project and augmented from the DIDP-PMO regular fund for training. This means that the training of personnel is supported by the budget from DIDP-PMO and the project itself , follow-through capacity building interventions are not included in the project costing. Continuing education and training sessions must be incorporated in the regular funds of LGU members. Moreover, DIDP-PMO has software, hardware and expertise on GIS, unfortunately inadequate budget limits the conduct of efficient planning and monitoring activities for all member LGUs.

2.2. Present situation of data management in DIDP-PMO and member LGUs

Aside from the data mentioned above in the preceding paragraph, there are no other available information related to water supply projects. Obviously, they need to establish a web-based information and database management system for the following: updating of water supply sector profile, institutionalization of data collection and collation from the level of the DIDP-PMO down to the community including monitoring mechanism for completed projects, production of thematic maps on water related data using GIS, and design of networking system for data sharing and updating.

In the absence of an efficient system, LGUs and DIDP –PMO find it hard to generate systematic project prioritization for water supply development and obtaining ideal water source for potable water supply. Adding up to these inadequacies is poor operational management of community water supply facilities by community organizations.

2.3. Strengths/weaknesses of present situation of the data in DIDP-PMO and member LGUs

The local survey team came up with several weak and strong points of data management as shown in the table below.

Table 2. The strength, weaknesses, desired situation and responsible offices of sampled sites in Davao Region

Location	Strength	Weaknesses	Desired Situation	Responsible Person/ Office
All member LGUS of DIDP	Member LGUs have water supply development plan through PW3 . Davao del Norte has the Integrated Water Resources Development Project by ADB	• Wider dissemination of the plan to the concerned actors • Absence of technical monitoring of projects funded by LGUs	Creation of plantilla position for hydrologist, agricultural and civil engineers. They are responsible to characterize the aguifer (lithological and hydraulic properties), water balance between safe yield and water demand, water	Engineering and planning offices
		No existing LGU policy that regulate drilling.	A regulatory policy must be adopted region-wide to regulate water drilling	Chief executives & local Sanggunian of member LGUs

Location	Strength	Weaknesses	Desired Situation	Responsible Person/ Office
		Problems such as lowering water table and seawater intrusion were observed in some LGUs. Very few, and if there are data on aquifer characteristics, they have not been used to generate information for proper guidance in engineering design of water system facilities.	• LGUs must collect and demand drilling and well development report from contractor/driller to support decision-making. • Hiring/Deployment of skilled personnel/agricultural engineer on GIS and database management	• Engineering Planning Office • Human Resources and Development Office
		Less experts on aquifer characterization	• Tap training provider institutions such as Academe, State Universities and Colleges, which have capabilities on aquifer characterization • Counterpart allocation from LGU to put up water services unit. This unit shall be responsible in planning and implementing capacity building, training	• Planning and Engineering Offices • Chief Executive and Local Sanggunian

Location	Strength	Weaknesses	Desired Situation	Responsible Person/ Office
		Barangay LGUs are often provided with water infrastructure facilities but without technically capacitating them to operate the system.	Adoption of ordinance on rain water catchment system at the household level in DIDP member LGUs	Chief Executive and Local Sanggunian
	Davao City has already drafted the ordinance for RWCS	Absences of rain water catchments systems (RWCS) at the household level to minimize water competition between drinking and other domestic uses	Conduct massive education and advocacy sessions at the barangay levels for people's appreciation and adoption	DIDP-PMO with Planning Offices and Barangay LGUs
		Absence of LGU and regional –based management information system for water related data	Adoption of Regional Water Information and Technology Program	DIDP board, Local Sanggunian, Academe
	Water and other community related problems are generated out of the MBN or IRAP surveys periodically done by LGUs	Absence of criteria in the selection of areas for water supply development programs and projects implementation in some areas. And continuity of using IRAP or MBN results in executive decision	Defined selection criteria based on the needs highlighted in the MBN or IRAP results	DIDP Board, PMO, Local Sanggunian

Location	Strength	Weaknesses	Desired Situation	Responsible Person/ Office
	There is high communication accessibility between DIDP-PMO and its member LGUs because of strong commitment, rapport and partnership		This strong bond and commitment must be used as vantage point for regular sharing of experiences and pressure points in generating common advocacy	DIDP Board, Municipal LCEs and Sanggunians, PMO
Davao del Norte Province	Data on well logs are available and compiled	Data on well logs are not processed to generate new information such as identification of potable water supply, depth of aquifer, thickness of impermeable layer, and the like.	Existence of processed and stored data using GIS	Engineering Office, DIDP-PMO, partner Academe
DIDP-PMO, Davao and Tagum City	Available hardware such as computer, digitizer and plotter. Available software such as Arc View GIS latest edition. Trained personnel on GIS.	Non-optimization of available resources for data management such as hard and soft ware facilities in DIDP and those in some LGUS because of lack of regular technical sharing sessions	Enhancement of GIS experts' knowledge on water resource management through periodic technical training / sharing sessions between DIDP members and PMO and even including region-based academic institutions	DIDP member LGUs, PMO/partner Academe

At present, data sharing is through routine submission of reports as required by DIDP from its member LGUs and the modality is more of per request basis. In terms of data from other from other government agencies, the DIDP-PMO as well as its member LGUs find some difficulty in accessing such information except for those agencies (i.e. DA, DPWH, DILG and NEDA) represented in the Technical Advisory Group (TAG) of the core DIDP programs.

Apparently the present problems besetting the management of water facilities and services are due to lack of information and efficient database system. Paucity of information often leads to wrong decision consequently leading to waste of already meager resources.

The present situation in data management at DIDP and the LGUs need immediate attention. As a rule of thumb, local executives can only deliver sound actions and decisions if they are provided with the necessary and accurate information. Clearly this is weak in the region.

2.3.1. Recommendation

LGUs must organize a database management system run by a technically proficient personnel. Common software among all 9 LGUs must be developed to contain all the necessary data that will be useful in all aspects of planning, monitoring and evaluation. If this system is developed at the LGU level, then it would be easier to later upload this initially as a stand alone system in the internet facility of the LGU. This way, the data can now be accessed by users and stakeholders and can hardly be affected by leadership changes at the LGUs. DIDP-PMO can act as the central point of convergence of this database that will eventually be web-enabled.

As soon as the LGUs have functional internet - connected database, data sharing and harmonization can be a lot efficient and easy and consequently improve services. For one thing, overlapping of activities can now be avoided, programs become focused leading to easier identification of criteria for water development projects and other relevant information that local executives need.

2.4. The mechanism of data sharing and collaboration of the data in the DIDP area

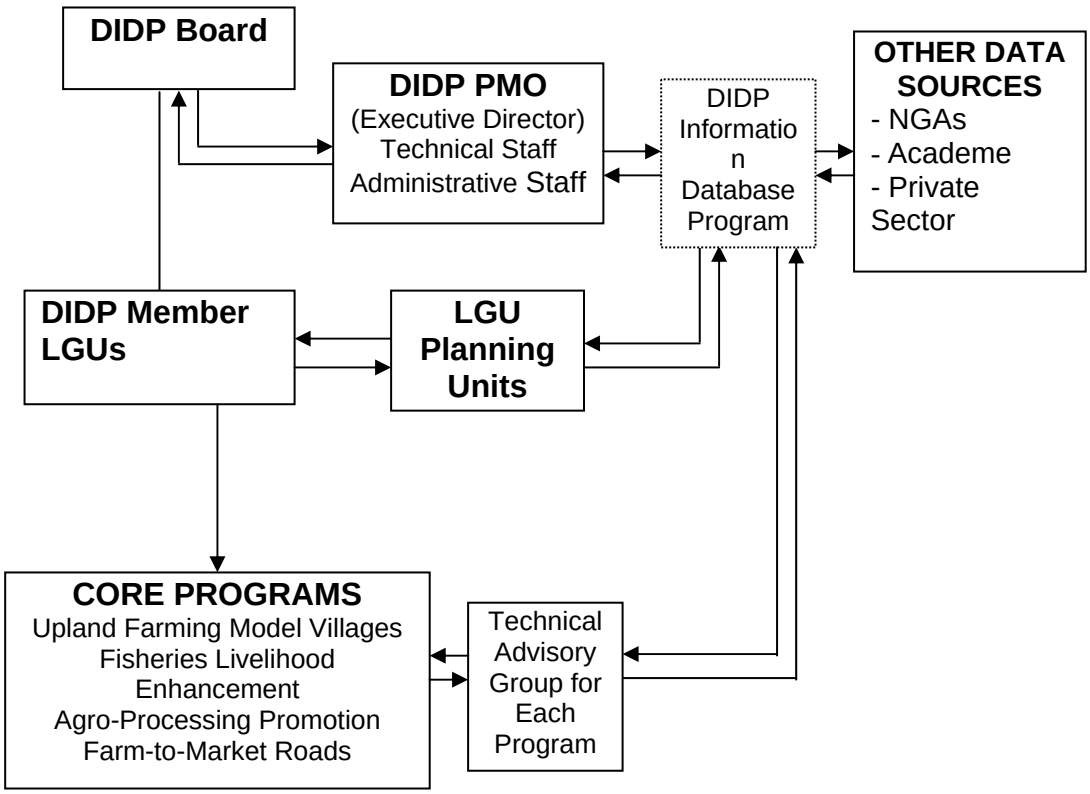
Data sharing is through routine submission of reports as required by DIDP from its member LGUs and the modality is more of per request basis. In terms of data from other government agencies, the DIDP-PMO as well as its member LGUs find some difficulty in accessing such information except for those agencies (i.e. DA, DPWH, DILG and NEDA) represented in the Technical Advisory Group (TAG) of the core DIDP programs.

There is no unified and common data management system and due to its current state, sharing of information is limited and more difficult.

Thus it is suggested that out of the structure of the DIDP, a functional relationship must be defined in terms of information generation and exchange wherein on a periodic basis (Figure 1). The PMO will lead the data management and the LGUs will lead data gathering and together they can perform data analysis. This functional relationship will provide timely input to the DIDP Board for policy directions, the DIDP member LGUs for policy directions and adoption, DIDP-PMO for policy execution and the TAG for policy guidance in relation to the core programs. Other data and information sources (National Government Agencies, Academe, Private Sector can also be accessed and contributed to enrich the said database depending on the official arrangement with DIDP-PMO.

Figure 1. Data Sharing and Collaboration Mechanism within the DIDP

Organizational Framework



2.5. Analysis of possible method of updating and harmonization of the data in the DIDP area.

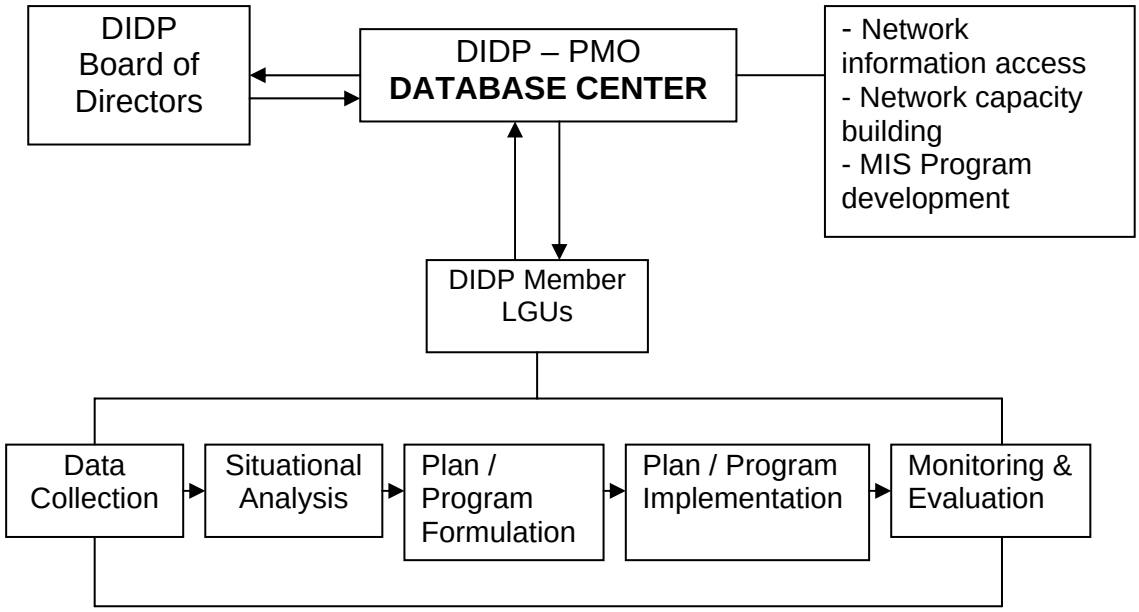
There is a current need for a reliable data exchange for the member LGUs of the DIDP area or in Region XI in general. This need is shown in the table below outlining the present situation and problem in relation to data management as well as the ideal situation required.

Table 3. Present Data Management Situation and Ideal Situation

PRESENT SITUATION AND PROBLEM	IDEAL SITUATION
Modality of report submission is on a per request basis	There is a need for the member LGUs to always provide the DIDP-PMO with all forms of reports on water-related projects for planning, monitoring and evaluation purposes. Report submission should be in hard and electronic format and ideally should be internet accessible. DIDP-PMO on the other hand should provide technical assistance on the nature, format and modality of report submission.
No unified and common data management system that causes limited and difficult sharing of information	LGUs must create database management system run by technically proficient personnel. Common software must be developed to contain all the necessary data that will be useful in all aspects of planning, implementation, monitoring and evaluation. DIDP shall act as the point of convergence of the database and shall spearhead the creation of the web-enabled database system for easy access, updating and monitoring.
No integrated information system at the DIDP region	Establish the Water Information and Technology Network Program. (Please see diagram for explanation)

Next is a diagram suggesting a model known as the Regional Water Information and Technology Networking Program (WITNeP) as proposed by the local consultants

Figure 2. Proposed Regional Water Information & Technology Networking Program Framework



Roles and Functions of the Member LGUs and DIDP-PMO under the suggested Regional Water Information and Technology Network Program

I. DIDP-PMO shall:

a. lead on program management
b. manage program funds
c. provide technical assistance like capacity building (training, personnel skills upgrading, facilities upgrading like hard and software, maintenance of the database system)
d. analyze and consolidate LGU project reports
e. develop the MIS program

II. Member-LGUs shall:

a. develop, test, and evaluate e-learning modules for water information system (basic water supply design, construction methods, operations and maintenance of water system, aquifer characterization, and other learning strategies)
b. coordinate development of web-based courseware
c. organize knowledge databases out of its research outputs to support services by consolidating and packaging all research and development outputs related to water in the region. These packages of information will be uploaded into the database.
d. establish, manage and maintain the water information system and infrastructure at the LGUs in close coordination with DIDP-PMO
e. establish feedback mechanism by constant needs assessment, field monitoring and through periodic reporting

f. make available, equip and train its Research and development personnel by providing skills training, knowledge updating through capacity building
g. submit project reports to DIDP-PMO

Basic Feature of Program Framework of the suggested Water Information and Technology Networking Program

1. Connecting the LGU water information system
2. Strengthening the structural capital
3. Translating information system into social capital
4. Establishing feedback mechanism

3. GENERAL WATER SUPPLY AND COMMUNITY MANAGEMENT

3.1. Existing community management system in small water supply

The nine (9) sample sites have varying management structures as observed by the survey team. In the case of level 1, the management set-up is undefined and oftentimes the barangay captain will just assign the purok leaders or the lot donor as the facility caretaker. Levels 2 and 3 management is defined and presented in *Figure 3-A.* Subsequently, the current management structure lacks appropriate structures and functions that would have ensured proper management of the said facilities.

Figure 3-A. Set-up of Water Association-managed facility (Levels 2 & 3)

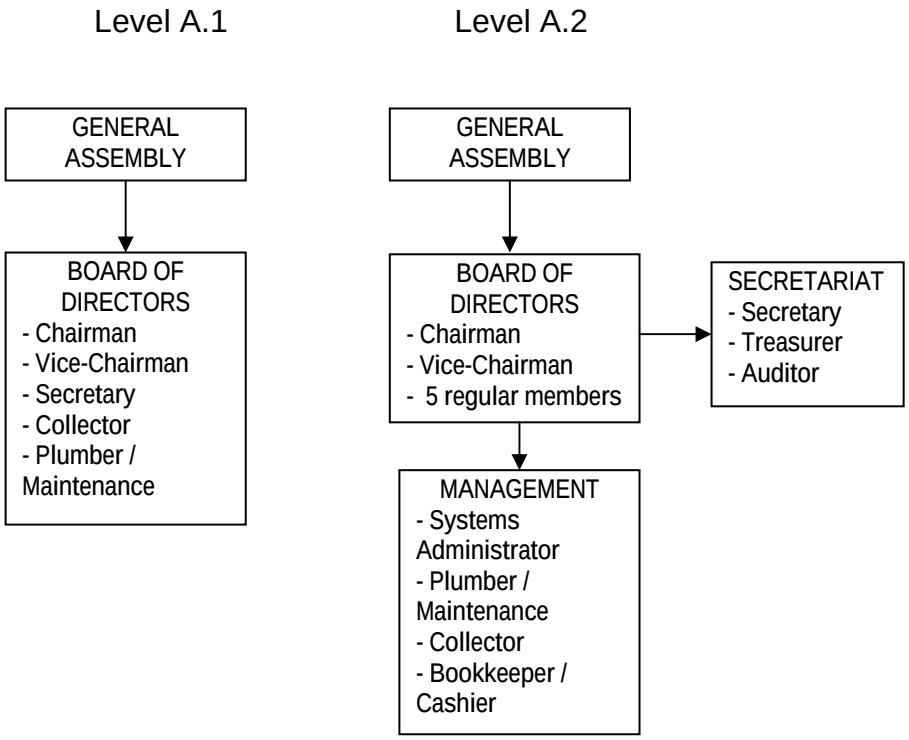
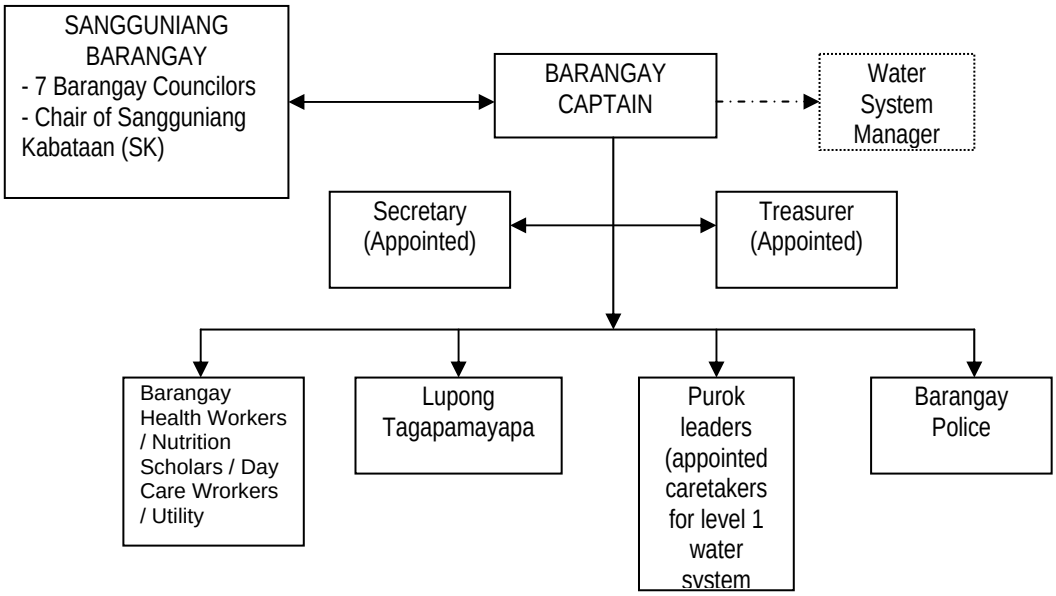


Figure 3-B. Set-up of a Barangay Council – Managed Facility (Levels 1,2,3)



The survey also found out overlapping of functions due to undefined roles and tasking. This mix-up becomes another limiting factor to the association itself since the arrangement lacks management accountability due to absence of system of check and balance and operations are subject to indiscretions of persons in authority.

In terms of predictability of policy enforcement, the survey team observed that association-managed is more reliable than the barangay council-managed facility. Often times, political considerations get in the way undermining the reliability of policy enforcement especially on the aspect of disconnection wherein barangay council-managed facility often fail to enforce despite the delinquency of end user and growing collectibles for fear of political backlash or loss of popular support. Another policy often taken for granted is connection policy wherein the management would accommodate as many clients as possible since it has no concrete basis on the exact water distribution capacity of the current water system or its projected supply.

The current water facility management have several advantages and disadvantages as shown in the table below.

Table 4. Comparison Between Government & Private Managed Water System

Management	Advantage	Disadvantage
Barangay Council (Government)	• Collaboration with higher LGUs is institutional and very easy • Fund for maintenance of the facility could be easily drawn from the barangay coffers • Honorarium for management can be built in the regular funding of the barangay government • Administratively-sanctioned discipline	• Institutional collaboration can suffer setback in case of political differences • Decision-making is often centralized and dominated by the barangay captain; leader-centered • Implementation of policies is often unpredictable due to political influences and pressures • Limited participation of individual or community
Local Water Association (Private)	• Collective leadership; group centered • Open feedback mechanism • Participatory role of individual members and community represented • Management is free from political influence • Barangay-based private organizations are given the opportunity to become LGU partners in basic service delivery	• If not formally organized and duly registered, the association cannot be accredited to the local development councils • If case of mismanagement, the association cannot generate funds for the operation and maintenance of the facility

The varying management structure also encountered some common and distinct problems and issues that undermine the effective and efficient operation of the said facilities. These problems and issues also are outlined in the table below along with several proposed remedial measures to help improve the current situation.

Table 5. Summary of Management Problems and Proposed Interventions

Management	Summary of Gaps & Problems	Proposed Interventions
Site donor or purok leader as caretaker for level 1 water system	• No proper turnover of management from the barangay to the lot owner • Undefined roles and responsibilities between LGU – donor and recipient (residents) • No regular monitoring and evaluation of operation • Formal management set-up is not required	• Barangay government must formally designate the lot owner as caretaker to define his accountability • There must be prior information and education of all actors to level-off with each expectations and roles • Joint periodic monitoring should be done by the barangay and higher LGUs • The management must be integrated into the BDP with proper tasking
Water association managed level 2 water system	• Absence of an organizational plan and budget • Weak organizational control and coordination - no proper tasking and roles are undelineated - no agreement on schedule of regular meetings and its purpose - minutes of meeting are not properly taken and process documentation is weak - no regular group-sharing and coordination activities • Organization is informal and not duly registered and no juridical personality No proper monitoring and evaluation of the operation	• The association must have strategic management plan wherein its vision, mission, goals and strategies will be defined. It must also have an operations plan • Organizational control and coordination must be strengthened by defining the roles & responsibilities (functional relationships) of all actors (BOD, Secretariat, Management, General Assembly); setting of regular meetings and proper documentation of proceedings • The structure may be further defined with the creation of functional committees (e.g. membership, grievance, finance, education) • The water association must be duly registered with approved constitution & by-laws for legal purposes • Monitoring and evaluation must be done periodically to effect better operation

Management	Summary of Gaps & Problems	Proposed Interventions
Barangay Council - managed level 2 water system	• Management is not lodged in a distinct and separate unit within the barangay organization • Operations plan is absent and not incorporated in the barangay development plan • Operation of facilities are currently at subsistence level (i.e. income is insufficient for a stand alone operation) • No regular monitoring and evaluation of operation	• The barangay must appoint a separate management team (with competent personnel) under the barangay structure to attend to the facility operation; Barangay officials must inhibit themselves in running the said enterprise • The management plan of a barangay-managed water system must be defined and reflected in the **BDP** to ensure proper implementation, monitoring and evaluation • The barangay must exercise its corporate power and consolidate the operation of the facilities as an economic enterprise (for levels 2 & 3) • Monitoring and evaluation must be done periodically to effect better operation

In terms of access to potable water, the survey sites had 100% access to potable water as indicated in table 6. Water is accessed from the various facilities operating within the barangays, majority of which are funded out of government funds (LGU/Congress/ NGA). While access to potable water is not a problem, delivery of quality and safe water is not absolutely guaranteed. Most of the facilities have not or have yet to test water quality against existing standards as set by the World Health Organization (WHO) and prescribed by Department of Health (DOH).

Table 6. Barangay Profile with % access to potable water

Barangay	Population	HH	No. of Water Facility			% Access to water	Water Quality Test
			Level 1	Level 2	Level 3		
Brgy. Biao Guinga, Davao City	2,911	637	5	5*	1	100%	Bacterio-logical *
Brgy. Magupising, B.E. Dujali, Davao del Norte	1,736	374	10	2		100%	Bacterio-logical *
Brgy. Kiotoy, Panabo City, Davao del	1.033	212	6	1*	1	100%	Bacterio-logical*

Barangay	Population	HH	No. of Water Facility			% Access to water	Water Quality Test
			Level 1	Level 2	Level 3		
Norte							
Brgy. La Union, San Isidro, Davao Oriental	4,101	941	28	5		100%	No test
Brgy. Tibanban, Gov. Generoso, Davao Oriental	8,500	2000	8	8	3	100%	No test
Brgy. Mayo, Mati, Davao Oriental	2,848	584	16	6		100%	No test
Brgy. Dahican, Mati, Davao Oriental	5,200	1100	16	1		100%	No test
Brgy. Bangkal, Matanao, Davao del Sur	2,922	600	12	1		100%	Bacterio-Logical
Brgy. Olaycon, Monkayo, Compostela Valley	2,363	485	8	1		100%	No test

* - only bacteriological water test is conducted

Below outlines the summary of problems, its causes & effects and notable interventions from the government or other sources:

Table 7. Problem Analysis on Water Supply Condition

Problem	Cause	Effect	Existing Intervention
Low probability of getting underground water	Absence of geologic data (well log, lithological and hydrological properties)	High cost of drilling due to trial & error method and inadequate supply of ground water	DIDP provided some LGUs with maps of ground water areas classified difficult but were not used
Documentary requirement (lot donation) not accomplished	No collective involvement of the community in the preparation and implementation	Arbitrary control of lot owner over the management of the water system	None

Problem	Cause	Effect	Existing Intervention
prior to turnover			
No water meter at the reservoir prior and even some at household levels	No fund for the installation of meter base	Efficiency of water distribution cannot be determined resulting to high power cost	None
Non-operational water systems (Brgy. Bangkal, Brgy. Magupising, Brgy. Dahican)	Unauthorized conversion from communal stands to individual water connections Conversion of use from domestic to irrigation purposes	Breakdown of current system due over usage Frequent conflict among users due to inadequate water for drinking	None Inter-government agency and community dialogue but nothing substantial happened until the system shut down
Non-payment of water fees (levels 2 & 3)	Fear of political backlash for barangay council-managed facility	Increased delinquency in collectibles and difficulty to pay for the power cost	Some barangay-managed systems plan to turnover management to private organization
Unsafe water source for level 1 system	Water collection boxes from spring not properly sealed Use of dug well close to homes as potable water source	Surface infiltration of foreign substances is frequent	Rehabilitation of collection box Barangays are looking for other water sources other than mentioned
No chlorinator for the water system	Technical assistance on the use of chlorine from DOH not well understood by the water caretaker	Poor water treatment practices	Barangays requested DOH to re-train caretaker
Unclear water or sometimes with odor	No mandatory water quality testing	People would sometimes buy from far sources to get clear / odor-free water	None
Inadequate	Limited capacity of	Inconvenience to	Some barangays

Problem	Cause	Effect	Existing Intervention
water supply	water system.	drinking public.	had planned expansion of water source and storage capacity
No regular monitoring and evaluation of operation	Lack of personnel to oversee monitoring / Absence of plan	Delivery performance cannot be measured resulting to low satisfaction of users	None; except for water facilities funded out of special program like the BESP, ARCDP

The current management systems were also reviewed on the following considerations:

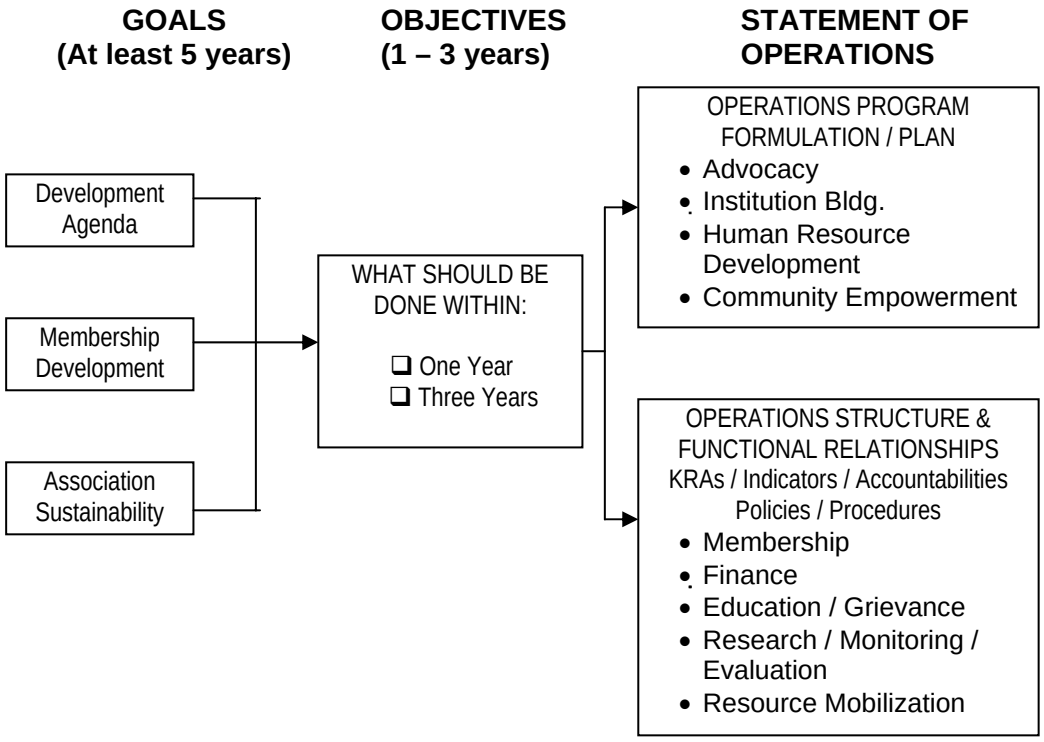
3.1.1. Planning

Most of the association - managed or Barangay - managed water systems have not done an operations planning and so these organizations do not have a detailed Facility Management Plan or Operations Plan (at least on an annual basis) that will guide them on the various aspects of managing the water facilities. While some informal policies are identified and carried out still these organizations have no solid basis or means for monitoring the progress of its operation. So naturally, it cannot internally assess whether it had improved its services or not.

Also, associations attribute their failure to lack of proper orientation by higher LGUs and training (project planners) and simply due to lack of organizational foresight. This could also be attributed to the piece-meal approach not integrated wherein related documents and information such as engineering design, operation / maintenance and capacity development plans must be prepared and turned over to recipient organizations. Without such approach, these organizations often go back to the planners (municipality, city, province, congressional office) for information as the case may be. Also LGUs for that matter fail to take advantage of the situation in gathering and consolidating related water management data that it can use for future planning and decision references. Thus the chances of a higher LGU not knowing the exact status or progress of water facility operation at the barangay level or having a comprehensive water management plan, is really not unusual.

With the said scenario, this study proposes that a comprehensive approach with a suggested framework (*Figure 4*) that can be adopted for the comprehensive water management operations planning for each DIDP LGU members to start improving the situation.

Figure 4. Suggested Framework for Operations Planning



Overall, once plans are vague, there would be no concrete basis for running and assessing the performance of the operation and naturally the question of transparency pops up due to absence of plan and other relative data or information.

3.1.2. Operations

For level 1 facility a formal management structure is not required and traditionally the role of taking care of the facility may be agreed from among the residents-beneficiaries. Meanwhile, level 2 also require a more formal management wherein it has and 3 facilities require a more structured and complicated management especially when the water is power-drawn (deep well) as compared to gravitational (spring) source. However, the management organizations were found to be not duly accredited by the existing local water districts and in addition, association-managed facilities are not duly registered in any government regulatory body such as the Securities and Exchange Commission (SEC), the Cooperative Development Agency (CDA), etc. Since these associations are informal, the management and operational systems are not properly defined and it has no juridical personality. This situation is more often a limiting factor since LGUs for that matter prefer to deal with bona fide and registered private organizations.

- **Membership**

  Currently, the water facilities often cater to all residents within a community and even expand its operation to reach out to other residents not served without the benefit of relevant information that would determine if such facility could still sufficiently supply. The water associations require potential end-users to be a regular member with a corresponding fee. This arrangement often legitimises the service that the association has to render to its member. However, in the absence of relative water data (aquifer volume, characterization, etc.), the association do not have basis to judiciously scheme the water distribution or plan mitigating measures vis-à-vis the capacity of the facility and its water source;

- **Meeting**

  Most of the local water associations do not adhere to regular meetings rather is mostly reactive and done as the need arises. This experience is also true in barangay council managed facilities. Critical management grievances and issues are also not responded to on a timely manner since critical decision points and agreements are not properly documented. Further, there is no process documentation of activities conducted by the management so there is no clear and critical information that can be used for future planning and decision making.

Table 8. Present Management Situationer

Organizational Levels	Current Schedule	Minutes of Meeting	Process Documentation
Association – managed - General Assembly - Secretariat / Management - Board - Functional Committees	 - Annual - Monthly - No regular schedule - None	 - documented - undocumented - documented - undocumented	 - No process documentation on the activities implemented
Barangay – managed - Brgy Assembly - BDC - Management	- Semi-Annual - Quarterly - No regular schedule	- documented - documented - undocumented	- No process documentation on the activities implemented

Ideally, each level of management, *the board, secretariat, functional committees* and *the general assembly* must pre-set the time and place of their meetings. Usually among the items to

be discussed during the meetings is the *overall status of operations*, i.e. billing, collection, recording, maintenance, etc., and *facilitate performance measurement*. Each organizational level must also ensure that minutes of meetings are available to enable participants to ensure the clarity of agreements and to follow-up decision points. Furthermore, process documentation of conducted activities must be observed to provide the different actors of critical information for future assessment and planning. These documents will also serve as *basis for learning*, especially when formalized in book or manual form. Process documentation will also highlight organizational dynamics that could be a used as a critical management input.

Table 9. Suggested Management Situationer

Organizational Levels	Prescribed Schedule	Minutes of Meeting	Process Documentation
Association – managed - General Assembly - Secretariat / Management - Board - Functional Committees	- Semi-Annual or Quarterly - Monthly or Weekly - Monthly or Weekly - Quarterly or monthly	- All meetings must be properly documented duly certified by the secretary and attested by the presiding officer	- Process documentation on the activities implemented is a must
Barangay – managed - Brgy Assembly - BDC - Management	- Semi-Annual - Quarterly - Monthly or weekly	- documented - documented - Highlights and agreements arrived at during management meetings must be documented.	- Process documentation on the activities implemented is a must

- **Water Rates**

Water rates vary depending on the water system category as reflected in the table.

Table 10. Prevailing Water Rates in the Survey Sites

LGU Sample Site	Water System	Minimum Rate / consumption
Brgy. Biao Guianga, Davao City	1	Free
	2	P 40.00 / 10 cu.m

LGU Sample Site	Water System	Minimum Rate / consumption
	3	P 40.00 / 10 cu.m / household (water association) P 80.00 / 10 cu.m / household (Davao City Water District)
Brgy. Magupising, B. E. Dujali, Davao del Norte	1	Free (government owned) / P 5.00 / container (private owned)
	2	P 50.00 / month / household
Brgy. Kiotoy, Panabo City, Davao del Norte	1	Free
	2	P 30.00 / month / household
	3	P 40.00 / 10 cu. m
Brgy. La Union, San Isidro, Davao Oriental	1	Free
	2	P 20.00 / month / household
Brgy. Tibanban, Gov. Generoso, Davao Oriental	1	Free
	2	P 30.00 / month / household
	3	P 120.00 – 180.00 / 10 cu. m
Brgy. Mayo, Mati, Davao Oriental	1	Free
	2	P 10.00 / month / household
Brgy. Dahican, Mati, Davao Oriental	1	Free (government owned) / P 5.00 / container (private owned)
	2	P 10.00 / month / household
Brgy. Bangkal, Matanao, Davao del Sur	1	Free (government owned) / P 5.00 / container (private owned)
	2	P 40.00 / household / month
Brgy. Olaycon, Monkayo, Compostela Valley	1	Free
	2	P 30.00 / household / month

There were sample sites wherein within single water facility the operation is both level 2 & 3 where members have or have no individual meter base (like in Brgy. Biao Guianga, Davao City and Brgy. Kiotoy, Panabo City, Davao del Norte) so the rates vary. Often times this situation becomes a potential conflict point wherein individual households with meter base cry foul and unfairness against those who have meter base.

- **Connection / Disconnection**
  Water connection is one of the operational services that a water association or the barangay renders to its clients. Upon payment of required dues and accomplishment of prior documentary requirements, a new member may tap potable water through communal faucet (level 2) or individual tap connections (level 3). Currently, water connection for level 2 is often distributed at a ratio of 1 communal faucet per 10 households below the standard of 1 faucet for 6 households as prescribed in the National Standards for Drinking Water Manual. There are some

level 2 facilities that maintain this condition but also cater to individual water distribution.

Disconnection is another operational system wherein the management may cause the temporary or permanent disconnection of water distribution to clients. This situation is often warranted after failure of users (individual / communal) to pay the water association or barangay council for 2 consecutive months. Usually, a notice of disconnection must first be served, duly received by end user and disconnection will follow within the next 48 hours. Most often than not, this particular policy is poorly exercised and not strictly followed especially with barangay council managed water facility due to conflicting issue between sustaining the economic viability of the facility versus the social responsibility of the barangay government to provide potable water to its constituents. Further, barangay officials are often stymied from rendering appropriate sanction on delinquent users for fear of political backlash ranging from waning popularity to less chances of winning during election.

- **Preventive Maintenance**
  One important management practice in operating a water system is to subject the said facility to a regular preventive maintenance from monthly to quarterly periods. This operational aspect often includes regular check-up and cleaning of distribution pipes and reservoir often ranges from monthly to quarterly periods to ensure cleanliness of the system as well as get rid of accumulated particles such as sand within the distribution pipes and reservoir. Another preventive maintenance aspect is to strictly follow the operational requirements of the equipment such as the water pump as prescribed by the manufacturer to prevent early damage and frequent breakdown.

- **Financial System**
  Other than the common and simplified policies above-mentioned, the survey team also observed that the facilities often operated without having a sound financial system. The simplified income and expense statements are not recorded on a daily basis. Bookkeeping and recording and even disbursement is often done by a single individual (usually the collector) especially for barangay managed facility. This weak and flawed set-up resulted to unaccounted expenses and increased delinquency of members and even to fund misuse by officials and other responsible individuals. In the absence of internal control measures (periodic audit, cash count, aging of delinquent accounts) financial transparency may be compromised.

3.2. Community needs/problem assessment in the present situation

The need for potable water system is one of the top 5 unmet community needs based on the IRAP or MBN surveys conducted by the LGUs.

The barangays are mandated to prepare a development plan and oftentimes it is updated every 5 years to highlight the community needs and assess the problem of the barangay. Despite the importance of such plan, only 3 of the 9 survey sites have their BDPs updated as of 2006.

Based on the survey conducted, the consultants highlight the common community needs and concerns along with the assessment of the perceived problem.

Table 11. Common Community Needs and Problem Assessment

Community Needs	Problem Assessment
Food	Water supply services are often planned but often devoid of long term goals
Potable water	Water supply services are often planned but often devoid of long term goals
Income / Livelihood	Meager source of income especially in rural barangays brought about by lack of employment opportunity and low educational attainment
Clothing	Subsistence family income deny opportunity for decent clothing
Health services	Preventive health services less costly than curative services. Access to such services are also limited at the barangay levels
Tenurial security	Landholdings for community folks is very limited and often are working as long time caretakers of landholders

3.3. Mechanisms of collaboration between community and LGUs

The community as represented by the water associations or the barangay regularly collaborates with the higher LGUs (municipal, city, province) mostly through cost-sharing of projects implemented in the barangay. This cost-sharing or counter parting scheme is the most commonly adopted collaboration mechanism but it is rather project-based and not institutional in nature. This is often observable and required in various project implementations including water system. On the institutional aspect of collaboration, the community often participates in the barangay assembly or represent in the barangay development council. Other mandatory mechanisms are not maximized.

Another critical collaboration mechanism often missed by the community is to participate in the progress monitoring and evaluation of projects. This

aspect would not only cover the engineering aspect of project implementation but more on the delivery of appropriate capacity building interventions for the project partners (barangay / community). In most cases, projects funded out of congressional fund do not facilitate this collaboration. including other municipal, city and provincial governments but there are observable opportunities as provided by the Cities of Davao and Tagum and also in Panabo with respect to its World Bank – funded BES Project. Even in barangay funded facilities (level 1) implementation, the community is not involved. This current impasse may be attributed to the following considerations; a) lack of awareness of such mandatory collaboration mechanism, b) community is disorganized as a political unit; c) lack of capacity; and d) opportunity to engage with higher LGUs and NGAs are not facilitated by LGUs and NGAs despite mandatory guarantees.

There are several collaborative mechanisms and venues that facilitate meeting and joint undertaking between the community and LGUs as mandated or inspired by the Local Government Code of 1991(R.A. 7160) Mandated mechanisms are called as such since it is spelled out in the law (LGC) while inspired mechanisms are those which are not spelled out in the law but is accepted in consonance with the principles of local autonomy.

Table 12. Mandatory Mechanism for Community Collaboration

Mandatory Mechanism	Required Community Representation	Function
Barangay Development Council	At least ¼ of the total representation must be from the bona fide NGOs/POs	• Formulate development plan
Local Special Bodies • Barangay Pre-Qualification, Bids and Awards Committee	At least two representatives from the NGOs/POs	• Do prequalification of bidders, bid out contracts and award such contract to winning bidders
• Barangay Peace & Order Council	At least 3 respected members of the community	• Recommendatory body on peace and order matters
Local Sectoral Representation	Any of the three dominant sectoral groupings in an LGU	• Representation, advocacy and resource mobilization
Establishment of NGOs/Pos	Sectoral representatives (farmers, fisherfolks, women, elderly, etc.) can organize themselves for representation purposes	• Representation, advocacy and resource mobilization
Mandatory Consultations	All bona fide and actual community residents	• Prior information and education campaign on critical programs and

Mandatory Mechanism	Required Community Representation	Function
		issues affecting the community
Mandatory Hearings	All bona fide and actual community residents	• Public hearings for relevant issues affecting communities
Initiative & Referendum	All registered voters	• Propose, enact, recall or approve local ordinances through signature campaign
Recall	All registered voters	• Subject public officials to recall process in case of lack of voters confidence
Project Monitoring Committee	Any bona fide resident or local organization	• Monitoring and evaluation of projects
Project Management Unit (City of Panabo)	A representative from the local water association	• Oversee the management of the Barangay Environment and Sanitation Project funded by World Bank

3.4. Barangay and or NGOs in the present situation

In a typical barangay, only a handful of private organizations can be found and mostly organized representations of the different sectors in the barangay. By strict definition, one can seldom find a non-government organization (NGO) in the barangay but mostly are cooperatives and peoples' organization (sectoral representation). On the survey sites, the team outlined in the table below the common organizations found at the barangay:

Table 13. Typical Sectoral Organizations Present in the Barangays

Sectors	Sectoral Organization	Status
Youth	• Youth Association • 4 H Club	• Active but not necessarily registered
Elderly / Senior Citizens	• Senior Citizens Association • Veterans Association	• Active and registered • Active and registered
Disabled	• Persons with Disability Association	• Active and registered
Women	• Women Association or Cooperative • Rural Improvement Club	• Active but not necessarily registered • Active and registered
Farmers	• Farmers Association or Cooperative • Irrigators Association	• Active and registered • Active and registered

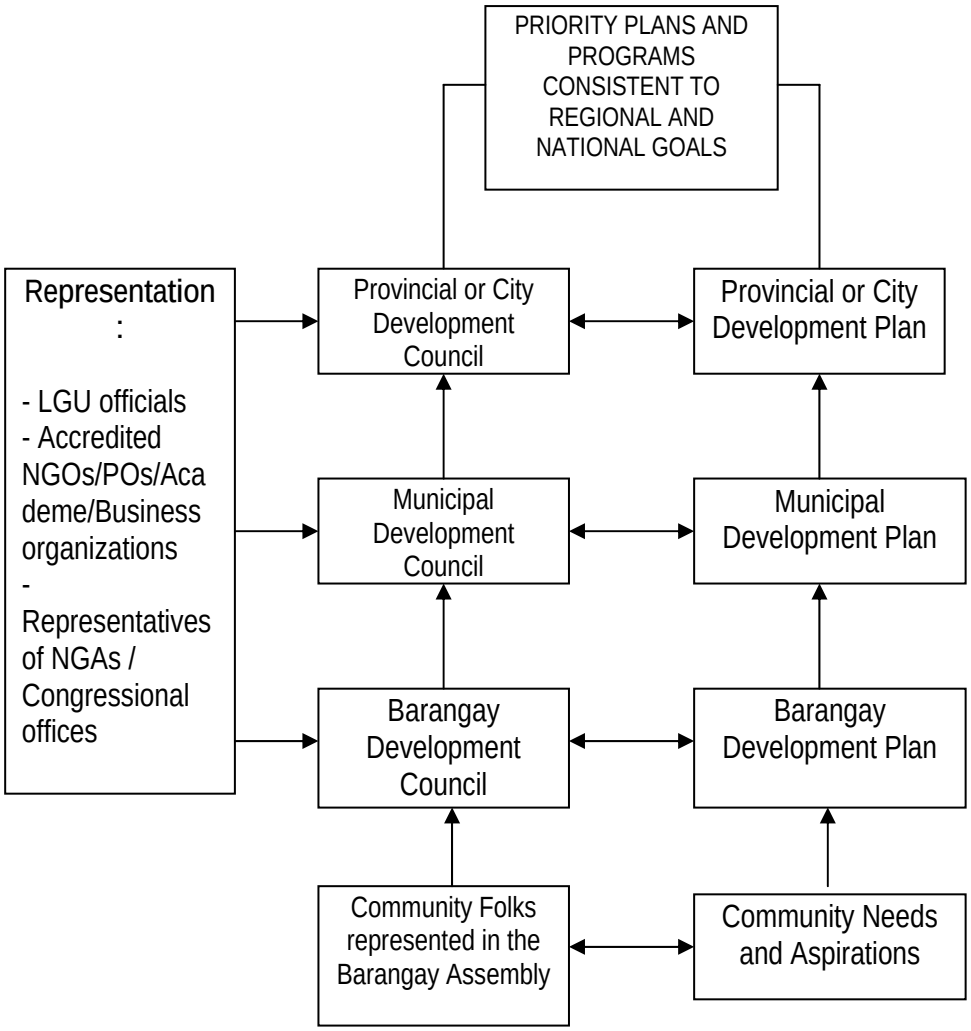
	• Agrarian Reform Beneficiaries Association or Cooperative	• Active and registered
Fisherfolks	• Fisherfoks Association or Cooperative • Bantay Dagat	• Active and registered • Active but not necessarily registered

Small water facility often ends up being managed by the barangay council or a water association organized for the said purpose. In the case of the barangay council, management of a water facility is just one of its many functions so the said entity is still performs its other functions. In the case of water association, once the facility becomes non-operational, chances are the association also cease to exist.

Therefore it is suggested that prior to entry, the implementing agencies must first do a rapid inventory of existing local organizations that can be tapped as partners rather than organized another one. Incidentally, it is not surprising that many organizations have the same membership and even to some extent leadership especially in a relatively small barangay or community.

Further, the most appropriate approach is to institutionalize the participation of associations in barangay governance through regular membership in the barangay development councils (BDC) as exemplified by Tagum City.

Figure 5. Typical Hierarchy of Local Development Councils



4. POSSIBLE INDICATORS FOR THE SELECTION OF DEMO SITE

The indicators for the selection of pilot site is such that it shall address the institutionalization and sustainability of the project. These indicators are geared towards attaining socio-economic upliftment, technical efficiency and sustainability, and institutional collaboration.

4.1. Socio-economic Status considerations in terms of family income, source of livelihood, household size, level of education, access to basic services like health, education, water and electricity

- Felt need of the area based on needs assessment (MBN,IRAP,BDP)
  - Following the demand driven concept, the need for water must be highlighted by a validated reliable data.

- High poverty incidence
  - Water projects must be implemented in high poverty incidence areas to help alleviate the current condition and respond to the needy constituents

- High incidence of diseases due to unavailability of potable water
  - Water projects must be concentrated on areas with high incidence of water borne diseases to quickly address the health condition especially the vulnerable people (children, elderly)

4.2. The Area should be accessible and possesses good water source

- Good source of potable water
  - Through proper aquifer characterization, the planners must take into consideration a good water source having completed and passed the entire necessary chemical, bacteriological and other tests.

- Facility must be in areas accessible to stakeholders
  - One of the major issues of potable water distribution is access, planners has got to design systems in close proximity especially to end-users to minimize inconvenience

4.3. The Community is organized and willing to take responsibility in the operations of the water supply sys tem

- Organized community
  - Planners had to consider the existing inventory of organizations operating within a community. It the presence of such organizations, the planners had to decide whom to partner with and only in the absence of such organizations that the planners will organize or cause the organization for the purpose of managing the water facility.

- Organized communities under several foreign –funded water supply projects can be rich ground for learning for new communities engaged in water supply services. For example, the Barangay Water Program funded by USAID in Davao del Sur and Barangay Environment and Sanitation Program in Panabo City.

- Improve management system
  - The local water association must be required to have a regular operations plan and must be subjected by the LGU to regular and periodic monitoring and evaluation to enable it to become more efficient and effective. Simplified operational procedures must be adopted but benchmarked from existing standard procedures.

- Willing to take responsibility (payment of water services)
  - This is a very critical indicator wherein planners should not only gauge the capacity to pay but most especially the willingness of the end-users to pay. This requires a lot of education and values formation sessions and constant practice to take effect.

  - Willing to take responsibility (payment of water services). The water association and Barangay Council provide counterpart such as shouldering cost of repair of pump, motor, meter and others.

4.4. The Local Government Units should include water systems plan in their respective development plans indicating provision of counterpart support for resources. They shall also integrate programs for capacity building, technical services, networking among LGUs, NGOs, POs.

Inclusion in the development plans of LGUs for water systems development are the provision of counterpart funds, willingness to capacitate local residents to run the water system, willingness to provide technical personnel in less literate areas, and existing networking among LGUs, NGOs, POs

- Inclusion in the development plans of LGUs for water systems development
  - Critical aspect of local development plan is the identification of water sources within the LGU and characterization of its aquifer. This has got to be integrated into the plan along with an updated inventory of existing wells and other water facilities within the LGU territory;

- Provision of counter parting of resources

- An important element to a community based water system project is to get as many stakeholders to agree, participate and provide resources in the implementation of the project. Through counter parting scheme, the bulk of resources can be evenly distributed between and among participating stakeholders;

- Integrated capacity building program
  - The higher LGUs and national government agencies (NGAs) for that matter must adopt as a policy for an integrated capacity building program for community folks especially those managing community water projects based on needs assessment. Education and organization will be helpful in capacitating the community to ensure their engagement and eventual empowerment.

- Integrated technical services program
  - Water facility management requires both management and technical skills and so the higher LGUs must formulate an integrated technical services program designed to minimize LGU dependence of water associations and enhance and update their technical skills.

- Networking among LGUs, NGOs, POs
  - LGUs must initiate regular networking with the civil society, private sector organizations, academic institutions, research institutions and community-based organizations to effectively implement water projects. It must provide venue for organizations to share resources and participate.

4.5. Security Conditions

- Away from areas of conflict between government and insurgents
  - Water facility must be placed on a neutral site where all residents and users can make use of whether these are in conflict areas.

4.6. Sustainable Process and Mechanism

Table 14. Present Situation and Recommendation for Sustainable Water Supply Projects

PRESENT SITUATION	RECOMMENDATION
Water supply projects (levels 2 and 3) of LGU do not contain capability building of associations' BOD and management staff of the project.	Like Barangay Water Program funded by USAID and BESP funded by World bank, the LGU must have water service unit to look into the installation, operation and maintenance of water supply project funded by LGU and congressional fund.
Motor is powered by electricity in all sampled areas	In the absence of electricity, motor may be powered by fuel (gasoline or diesel) for

PRESENT SITUATION	RECOMMENDATION
in the region. Areas without electricity are up to level 1 system only.	levels 2 and 3.
All government-funded projects focused only on installation of wells, pumps and piping systems. There is no capacity building plan included resulting in poor management and abandonment of the system.	A detailed capacity development plan must be prepared during project implementation based on the needs assessment of the target community. This plan must be allocated with corresponding budget and be made prerequisite in all government and even private-initiated water projects.
Poor database Management system	Database management must be required for DIDP areas for monitoring and evaluation of water related projects.
Weak Policies on Water Project Development	The LGU must update water sector profile and cause the formulation of important criteria in choosing and prioritizing water facility development
Absence of Potable ground water in the Area	The LGUs shall install overhead tanks and fill water through truck deliveries

The narrative discussion of the table above is shown below.

- Alternative energy source in pumping water
  - Other than the common electric driven water pump widely-used nowadays, the LGU or DIDP-PMO for that matter must also explore the possibility of tapping alternative energy sources to deliver water services to its constitutes such as wind energy or solar power driven facilities.

- Capacity building especially for government –funded projects
  - A detailed capacity development plan must be prepared during project implementation based on the needs assessment of the target community. This plan must be allocated with corresponding budget and be made pre-requisite in all government and even private initiated water projects;

- Efficient database management system
  - Updated and real-time data is a critical ingredient for a well-executed decision and well-implemented plan. Database management must be required for the DIDP areas. Consequently, regular monitoring and evaluation of projects must be done;

- Policy reforms
  - The LGUs must have an updated water sector profile and cause the formulation of important criteria in choosing and prioritizing water facilities development;

- Alternative design

- In the absence of potable ground water in the area, water may be delivered through installation of water tanks accessible to the community.

- The LGU must adopt other optional design such as rain water catchments system to minimize community dependence on ground water for domestic use other than for drinking.

ANNEXES

ANNEX 1

INDICATIVE WORKPLAN

LOCAL TECHNICAL SUPPORT SERVICES FOR JICA's PRE-EVALUATION MISSION OF THE TCP ON LOCAL GOVERNANCE AND RURAL EMPOWERMENT PROJECT FOR DAVAO REGION

August 18 – September 29, 2006

INDICATIVE WORKPLAN

Date	Location	Activity	Responsible Group
August 18	JICA Office - Manila	Orientation meeting	JICA officials, Japanese & Local Consultants
August 21	DIDP - Davao	Initial meeting with DIDP	Survey team, DIDP
August 22	DIDP - Davao	Initial meeting with DIDP member LGUs; Identification & scheduling of survey sites	Survey team, DIDP, DIDP member LGUs
August 23	DIDP - Davao	Meeting with Japanese consultants; Finalization of survey instruments	Survey team
August 24	Brgy. Biao Guianga, Davao City	Survey on level 1 & 2 facilities	Local consultants, CPDC, CEO representatives
August 25	Provincial Engineers Office – Davao Norte Brgy. Magupising, B.E. Dujali, Davao Norte Brgy. Kiotoy, Panabo City, Davao Norte	Brief meeting and orientation Survey on level 2 facility Survey on level 2 facility	PEO, survey team Local survey team, PEO representative - do -
August 26	Brgy. Magupising & Brgy. Kiotoy	Follow-up visits for data gaps	Survey team
August 28	Brgy. La Union, San Isidro, Davao Oriental Brgy. Tibanban, Gov. Generoso, Davao Oriental	Survey on level 1 facility Survey on level 1 facility	Survey team, PEO representative - do -
August 29	Brgy. Mayo, Mati, Davao Oriental Brgy. Dahican, Mati, Davao Oriental	Survey on level 2 facility Survey on level 2 facility	Local survey team, PEO representative - do -
August 30	Provincial Engineers Office – Davao del Sur	Brief meeting and orientation	PPDC, Local survey team

Date	Location	Activity	Responsible Group
	Brgy. Bangkal, Matanao, Davao del Sur	Survey on level 2 facility	Local survey team, PPDC representatives
	Sitio Punta Biao, Brgy. Cogon, Digos City, Davao del Sur	Survey on level 2 facility	- do -
August 31	Brgy. Bangkal & Sitio Punta Biao	Follow-up visits for data gaps	Local survey team
September 1	Nabunturan	Brief meeting and orientation	PPDC, survey team
	Brgy. Olaycon, Monkayo, Compostela Valley	Survey on level 1 facility	Local survey team, PPDC representatives
September 2	Brgy. Olaycon	Follow-up visit for data gaps	Local Survey team
September 4-6	DIDP – PMO	Processing of data, generation of reports; Meeting with Japanese consultants	DIDP, Survey team
September 7	Panabo City and Tagum City	Meeting with CEO and CPPDC on water management systems	Local survey team
September 8	IGACOS	Meeting with CA, CEO, CPPDC, water district on water management systems	Local survey team
September 11	DIDP-PMO	Briefing on the Stakeholders workshop process	DIDP, JICA, Survey team
September 12	Yellow Fin Restaurant	Stakeholders Workshop	DIDP, JICA, DIDP member LGUs
September 13	DIDP-PMO	Meeting with Japanese consultants	DIDP, Survey team
September 14	Digos City	Meeting with CEO and CPDC representative on water management systems	Local survey team
September 15	DPWH Region XI	Meeting with Planning & Materials Testing Division heads on water management systems	Local survey team
September 16	DIDP-PMO	Preparation of report on component city visits	Local survey team
September	DIDP-PMO	Submission of reports on	Local survey team

Date	Location	Activity	Responsible Group
18 - 22		component city visits / preparation and submission of draft final report	
September 25 - 29	Homebase	Submission of final report	Local survey team

ANNEX 2

Site Survey Report

Barangay Biao Guianga, Davao City

1-A -- Proper, Barangay Biao Guianga
1-B -- Purok 4, Sitio Fatima

Site Survey No. : 1-A
Level : I
Condition : Bad, Non-operational
Location : Purok 4, Sitio Fatima, Barangay Biao Guianga
Total Project Cost : P 200,000.00 (approximate)

I. General Information of Barangay

- ***Name of Barangay:*** *Sitio Fatima*, *Brgy. Biao Guianga, Davao City*
- ***Established year:*** June 19, 1965 by virtue of Republic Act 4354
- ***No. of Population:*** 2,911 distributed in 9 puroks or sitios as of 2006
- ***No. of Household:*** 637 as of 2006
- ***Total revenue in 2005:*** P 978,685.00
- ***The percentage of IRA:*** 82% (P 802,501.70)
- ***Total number of Barangay Officials*:** 18

Elected:	**Appointed:**
1 Barangay Captain	1 Brgy. Secretary
7 Barangay Councilors	1 Brgy. Treasurer
1 Sangguniang Kabataan Chair	
7 Sangguniang Kabataan Councilors	

- ***Barangay activities for 2005: (short description)***
  - Health and Social services (immunization, supplemental feeding, Vitamin distribution, family planning, day care, Elementary / High School volunteer teachers' allowance)
  - Katarungang Pambarangay (barangay police operation, lupong tagapamayapa)
  - Infrastructure (road maintenance, barangay facilities)
  - Administrative services (Araw ng Biao Guinga)

- The number of population / households that don't have any access to reliable water supply.

Purok	**Population**	**Access to water system**
Proper Biao Guianga	495	Levels I & II
Sitio Cutson	858	Levels I & II
Campo 7	324	Level II
Fatima	142	Level II
New Demiao	324	Levels II & III
Bagsak	226	Levels I & II
Patriota	185	Level II
Egay	110	Level II
Ayon Village	247	Level II
TOTAL	**2911**	**100%** of residents have access to potable water

Level I – Artesian deep well w/ Magsaysay-type pump
Level II – Deep well w/ submersible pump & overhead reservoir
Level III – Davao City Water District

- Any required facilities to improve the livelihood of residents apart from water supply facilities:
  A barangay councilor rationalized the need for solar driers per purok to help the farmers in drying their harvested coconut and rice being the main crops of the barangay. Another resident of Sitio Fatima also suggested the need for the City Agriculture to help them find a stable market for their fruit produce which are currently being controlled by middle men.

- Free Comments
  - NONE

II. Water Supply Facility

- The description of the water supply facility

  - **The year of construction:** Jan. 25, 1992
  - **The number of beneficiaries:** 93 residents
  - **The number of benefited households:** 20 hh
  - **Description of current situation:**
    The first project site was a level I deep well, Magsaysay-type pump was 211 feet deep situated in Sitio Fatima, a kilometer away from the barangay site. The facility operated for 3 years from 1992 up to 1995 then afterwards the residents abandoned the facility and opted for rainwater stored in a water tank while others bought drinking water from private source at P5.00/container (*10 gallon capacity = 38 liters*).

    In 1996, Davao City Water District served Sitio Fatima residents but since the area is slightly uphill (1 km) from the highway where the DCWD main distribution line was located, the pressure was inadequate to regularly supply the area with drinking water and so residents had to again endure water rationing for 2 hours in the morning (5 – 7 am) then 2 hours in the evening (5 – 7 pm). With that predicament, the residents opted to disconnect from the DCWD 3 months after installation due to the unreliable water supply and the high minimum rate charged against them. And so the residents again turned back to buy drinking water from private source or store rainwater for drinking up to year 2003.

- The process of introducing the present water supply facility

  - *The background / reason for barangay/site selection*
    In 1992 the barangay council forwarded a resolution to the city government for water facility assistance and in return received four (4) deep well, Magsaysay-type pumps. The sites were the pumps were installed was selected by the barangay captain.

- *The role of community or barangay in the process of introducing the facility*
  A private resident named Manceonito Pinaso donated a 20 square meter lot in Sitio Fatima for the artesian hand pump and volunteered to take care of the maintenance of the said facility without official designation by the barangay government Aside from that, the local residents and the barangay government also provided food support for detailed government workers that assisted the private drilling contractor during the construction period.

- *The problems of introducing the facility or required improvement*
  The drilling for the artesian hand pump took a year to finish since the impermeable layer dividing the unconfined and confined aquifer was made of solid rock. The drilling (averaged 1 inch per day) slowly broke along the two layers and caused the contractor more time and money than what was stipulated in the contract.

  During its 3-year operation, the residents agreed to pay P 1.00 / household for the maintenance of the facility, however majority of the residents failed to comply with the agreement. Worse, the facility often broke down since it was often played with by children and oftentimes foreign bodies (i.e. stones, play marbles, banana sticks, straw) were inserted in the shaft where the connecting rod of the handle and the foot valve was located. These irresponsible practices required frequent repairs. In fact, Engr. Yro-irog of the City Engineer's Office complained that in July 1993 alone, the engineering crew had to repair the facility six (6) times. From that time on, the engineer had second thoughts of repairing the facility.

➢ Maintenance
- *Description of a responsible organization for the maintenance*
  There was no organization that took care of the maintenance. Only the lot donor handled the initial repairs then coordinated with the City Engineer's Office when the facility needed major repairs.

- *Regular activities for the maintenance*
  In front of the pump was a laundry and bathing area constructed by the residents which was regularly cleaned by those using the facility together with the volunteer caretaker.

- *Concrete activities conducted in 2005*
  NONE

- *Main sources of the expenditure for the maintenance*
  The P 1.00 / household contribution used to be the source of minor maintenance expenditure but during major repairs, the

City Engineer's Office spent for it. The residents just contribute food for the maintenance crew.

- *Present maintenance difficulties*
  NONE

- *Present problems or required improvements related to the facility*
  NONE

- *Any required facilities to improve the livelihood of residents apart from the water supply facilities*
  NONE

➢ Free comments
The donor complained that the residents lost interest in repairing the facility due to frequent break down and with the subsequent installation of level II from the barangay and III from Davao City Water District water systems. This was further complicated by the fact that the engineering crew lost interest of repairing the facility since the residents failed miserably to guard it against irresponsible users.

- Another resident wished that if only the City Engineer's Office would repair the facility this year, he promised to take charge of the maintenance together with the lot donor since he said the water quality was far better than the level II they are using now.

- Engr. Yrog-irog on his part assured the 2 wary residents that by the 1st week of September 2006, he will schedule the engineering crew to repair the damaged facility so that it can be used again as an alternative source of water.

III. Beneficiaries' perception (3 beneficiaries)

➢ The evaluation on the facility
Two residents of Purok Fatima where the artesian pump is situated agreed that the level II facility from the barangay site provided easier access to water for their household. They admitted however that the artesian well is still important and must be repaired as an alternative source for those who can hardly pay the regular monthly fee for the level II facility.

➢ The problems or required improvements of the facility
The residents expressed optimism and were reassured by Engr. Yrog-irog that the engineering crew will repair the said facility by the first week of September 2006.

➢ The contribution for maintaining the facility

The lot donor agreed to continue volunteering as caretaker should the facility be repaired indeed this year.

- Any required facilities to improve the livelihood of residents apart from the water supply facilities
  NONE

- Free comments
  - Engr. Yrog-irog assured the residents of repairing the damaged facility but asked for a guarantee from the residents that once the pump will be damaged again and will be caused by the same old problem (jammed shafting), he will never ever cause the repair of the said facility thereafter;

  - The lot donor and another resident assured the engineer that they will abide by the agreement and promised to guard the facility against irresponsible users.

Interviewees:

Ruben Bibat, Manceonito Pinaso (lot owner of Sitio Fatima), Alfredo Bacalso - end-users
Engr. Dodong Yrog-irog - City Engineers Office / drilling in-charge

Team:

Engr. Dino Armentano – City Planning & Development Coordinator's Office
Dr. Irvin C. Generalao – Local Hydrology Consultant
Alain S. Origenes – Local Governance Consultant

Site Survey No. : 1-B
Level : II
Condition : Good, Operational
Location : Proper, Barangay Biao Guianga
Total Project Cost : P 1,000,000.00 (approximate)

I. General Information of Barangay

- ***Name of Barangay:*** *Brgy. Biao Guianga , Davao City*
- ***Established year:*** June 19, 1965 by virtue of Republic Act 4354
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  - Infrastructure (road maintenance, barangay facilities)
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- The number of population / households that don't have any access to reliable water supply.

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Level III – Davao City Water District

- Any required facilities to improve the livelihood of residents apart from water supply facilities:
  A barangay councilor rationalized the need for solar driers per purok to help the farmers in drying their harvested coconut and rice being the main crops of the barangay. Another resident of Sitio Fatima also suggested the need for the City Agriculture to help them find a stable market for their fruit produce which are currently being controlled by middle men.

- Free Comments
  In the case of Sitio Demiao residents, their facility was initially communal faucets from the level II water system then sometime in 2003 the water district served the area. Today, majority of the sitio residents are served by the water district while a few still opt to use the still operational level II water system.

II. Water Supply Facility

- The description of the water supply facility
  - **The year of construction:** 2004
  - **The number of beneficiaries:** 1,110 residents
  - **The number of benefited households:** 242 (only 130 have meter base or 53%)
  - **Description of current situation:**
    The level 2 deep well water facility operated in 2004. It is 192 feet deep, powered by a 2 HP submersible pump with a 26,000 liter-capacity overhead reservoir currently serving 4 out of the 9 puroks. The original design was intended as a level 2 facility with communal faucets but it was converted during construction to accommodate individual distribution lines upon consultation and technical advice of the City Engineer's Office. Currently, the barangay government is again constructing another overhead reservoir which is up for completion by the end of year 2006 intended to further improve and expand its current services.

- The process of introducing the present water supply facility

  - *The background / reason for barangay/site selection*
    In 2004, the barangay council passed a resolution addressed to the city government and the district 3 congressional office for a barangay water facility. The offices then mobilized and pooled their funds for a level 2 water system. The cost was approximately P 1M of which P 700,000.00 was contributed by the city government for the distribution pipes, overhead reservoir, pump and electrical system and implemented by the CEO while another P300,000.00 was contributed by the congressional office through the DPWH then contracted to a private contractor for the deep well drilling.

- *The role of community or barangay in the process of introducing the facility*
  The barangay government donated the lot area for the level 2 water system within the barangay site. It also provided some food support for detailed government workers involved during the construction period.

- *The problems of introducing the facility or required improvement*
  The drilling of the level II facility was easy but the current depth of the submersible pump sits along clay zone causing regular build up of clay particles deposited in the pump and along the distribution lines thereby necessitating regular clean-up every 3 months. There was also no industrial meter base installed at below the reservoir to monitor the water use efficiency. Further, the distribution system has no blow off valve connected to each main and sub-main pipes causing particle build up.

➢ Maintenance

- *Description of a responsible organization for the maintenance*
  Proper Biao Guianga Water System Association is in charge of the management and maintenance of the level II water system organized prior to the completion and operation of the facility.

- *Regular activities for the maintenance*
  The submersible pump is regularly checked and cleaned-up for clay deposits every 3 months and the association would just call the private technician for the said service. If not, the engineering crew under Engr. Yrog-irog will do the maintenance job only upon official request by the association. Cleaning of the distribution lines is done simultaneously.

- *Concrete activities conducted in 2005*
  In mid 2005, the association called for a general assembly and presented to its members the financial report (income and expenditure) as well as the proposed increase of water rate from P30.00 to P40.00 a month, which was subsequently approved by the general assembly and implemented thereafter by the board/management.

  In addition, the association conducted regular check-up and cleaning of the facility every quarter.

- *Main sources of the expenditure for the maintenance*
  The association generates a monthly average net income of P500.00 out of the monthly water bill collected. It also generated a hefty income from membership fund and connection charges which they use to pay for the regular pump maintenance as well as the electric bill.

- *Present maintenance difficulties* NONE

- *Present problems or required improvements related to the facility*
  The president of the association lamented that the current water rate of P40.00 / 10 cubic meter minimum consumption is way below to generate enough income not only for the maintenance but also to finance future plans to improve the water distribution services and existing water facilities.

  There are still member households that do not have meter base and are often paying the minimum rate which in return becomes unfair for those residents who already have meter base. This concern is up to now not acted upon by the BOD, the body at the same time failed to come up with concrete policy over this matter.

- *Any required facilities to improve the livelihood of residents apart from the water supply facilities*
  NONE

➢ Free comments
- The association president complained of the absence of an office space where the transactions (payment, connection or disconnection) can be properly done and recorded at the same time. Presently, the end-users transact at the residence of the president, which he said had caused some inconvenience to his family and to their clients.
- The president also acknowledged the unclear delineation of roles and functions between the Board of Directors (BOD) and the management. He actually backed the proposal of separate the two entities and do away from the current practice of which the BOD is also doing the management. Further, he said that the current situation resulted to conflict of interest and strongly undermined the decision-making of the BOD as well as the management execution. Furthermore, this was complicated by the fact that the president is also a member of the barangay council and more often than not, the council had strong influence in the management of the water facility;
- Another resident, consumer and a friend of the caretaker mentioned that the water is not regularly chlorinated and no regular pipe clean-up is done that should coincide with the pump clean-up every quarter. He also admitted that the absence of blow-off pipes at the end of the distribution line where sediments and other foreign body can be properly discharged during clean-up period hamper the cleaning process.

III. Beneficiaries' perception (3 beneficiaries)

➢ The evaluation on the facility

An elder resident in barangay proper expressed her big relief over the operation of the water system when it was converted to level III. This facilitated convenient distribution per household and accordingly at her age, 60 years old, she did not want to go through the inconvenience of fetching water on communal faucets and had to wait in line to fetch water.

Another resident expressed satisfaction over the new water system that made the distribution more reliable and more convenient.

The association president claimed that gone are the days when they had to fetch water outdoors and this brought greater convenience to the residents.

- The problems or required improvements of the facility
  Two barangay proper resident-consumers residing complained that association had no clear management team to oversee the day-to-day operation and had poor operational systems (i.e. billing, collection and financial recording, interconnection /disconnection schemes). They also cited the failure of the BOD members especially the president in implementing the cut-off policy to consumers within 2 successive months of non-payment. Further they complained of the uncollected amount, which is actually causing the declining income of the association.

- The contribution for maintaining the facility
  The proposed rate increase from P40.00 to P60.00 per minimum consumption can best help ensure the regular appropriation of fund for the maintenance as well as to later finance the future plans for the association. In fact, compared to the water district minimum rate, the association rate is still lower by 50%. For the meantime, the association regularly receives assistance from concerned individuals as well as from the City Engineering Office to help in the regular maintenance and periodic repairs of the water facility.

- Any required facilities to improve the livelihood of residents apart from the water supply facilities
  NONE

- Free comments
  - A resident-end user suggested that the management must be improved and be more transparent and accountable to the members especially on financial matters.

  - The association president/barangay councilor added that a continuing education must be done by the association to remind the users of their obligation to pay their water bill and at the same time inculcate in their minds that the facility

initiated by the barangay government and currently managed by the association is not for free.

Interviewees:

Isidro Remotique - Barangay Councilor (president of water association)
Maricel Doronila, Manuel Soria, Lito Ubas - residents / consumers
Engr. Dodong Yrog-irog - City Engineers Office / drilling in-charge

Team:

Engr. Dino Armentano – City Planning & Development Coordinator's Office
Dr. Irvin C. Generalao – Local Hydrology Consultant
Alain S. Origenes – Local Governance Consultant

ANNEX 3

Site Survey Report

Barangay Magupising, Braulio E. Dujali, Davao del Norte

Site Survey No. : 2
Level : II
Condition : Bad, Non Operational
Location : Purok 3, Lower Magupising, Brgy. Magupising
Total Project Cost : P 100,000.00 (approximate)

I. General Information of Barangay

- ***Name of Barangay:*** Brgy. Magupising, Braulio E. Dujali, Davao Norte
- ***Established year:*** 1966 by virtue of Republic Act 4567
- ***No. of Population:*** 1,736 distributed in 10 puroks or sitios as of 2006
- ***No. of Household:*** 374 as of 2006
- ***Total revenue in 2005:*** P 674,700.33
- ***The percentage of IRA:*** 95.68% (P 645,577.00)
- ***Total number of Barangay Officials*:** 18

Elected:	**Appointed:**
1 Barangay Captain	1 Brgy. Secretary
7 Barangay Councilors	1 Brgy. Treasurer
1 Sangguniang Kabataan Chair	
7 Sangguniang Kabataan Councilors	

- ***Barangay activities for 2005: (short description)***
  - Health and Social services (immunization, supplemental feeding, Vitamin distribution, family planning, day care, Elementary / High School volunteer teachers' allowance)
  - Katarungang Pambarangay (barangay police operation, lupong tagapamayapa)
  - Infrastructure (road maintenance, barangay facilities)
  - Administrative services (Araw ng Biao Guinga)

- The number of population / households that don't have any access to reliable water supply.

Purok	Population	Access to water system
1	173	Level I
2	200	Levels I & II
3	300	Levels I & II
4	100	Levels I & II
5	212	Levels I & II
6	115	Level I
7	130	Level I
8	126	Level I
9	120	Level I
10	60	Level I
TOTAL	**1,736**	**100%** of residents have access to potable water

Level I – shallow dug well, pitcher pump or jet-matic pump
Level II – shallow well with reservoir, centrifugal pump and communal faucets

- Any required facilities to improve the livelihood of residents apart from water supply facilities:
  A resident identified the need for post-harvest facilities (i.e. solar drier, rice thresher, warehouse) to support the rice production of majority of the farmers.

- Free Comments
  - The barangay captain mentioned that since most of the land area of the barangay is devoted to rice production. He also mentioned that there are no deep wells in the vicinity but mostly dug wells or shallow wells for that matter since the water table (unconfined aquifer) is very shallow.
  - According to a barangay health worker, other than the dugwell and shallow well water sources, residents prefer to buy fresh water from private distributors. The freshwater is transported by mobile water tankers to B.E. Dujali from Brgy. Dumoy, Davao City.

II. Water Supply Facility

- The description of the water supply facility
  - **The year of construction:** June 1, 2000
  - **The number of beneficiaries:** 100 residents
  - **The number of benefited households:** 21 hh
  - **Description of current situation:**
    The level 2 water facility was sourced from a dug well located in a lot of one of the members of the water association. It is 25 feet deep and boxed by concrete hollow blocks with top cover. It has a 2" suction pipe where water was suctioned by a 1.5 hp centrifugal pump from the source to the pressurized tank (100 liter-capacity). The water is then distributed to the 4-faucet tap stand by a 1" discharge pipe. It operated for four years up to year 2004 when the centrifugal pump was damaged due to over pumping because instead of distributing through the tap stand, the officers of the association started individual connection to their homes. In doing so, the pump which normally operated for 6 hours a day then operated for full 24 hours and that caused the burn-out.

- The process of introducing the present water supply facility
  - *The background / reason for barangay/site selection*
    The barangay forwarded a barangay council resolution to the municipal government in year 2000 requesting a water facility project. At that time the municipal government was a recipient of a level II barangay water project from the Department of Social Welfare & Development – National Office (DSWD – NO) through its Comprehensive & Integrated Delivery of Social Services (CIDSS) program. Also the municipal government accessed fund from the congressional office, which it used to complement the CIDSS fund.

Barangay Magupising was allocated with 4 shallow well, level II water system each valued at approximately P 100,000.00. P 40,000.00 from CIDSS fund was spent for shallow well digging, purchase of centrifugal pump and pressurized water tank. Another P 60,000.00 from the congressional office was spent for the purchase and installation of distribution pipes, tap stand with faucets, and construction of pump house.

- *The role of community or barangay in the process of introducing the facility*
  Lower Magupising (Purok 3) was one of the recipients of the four allocated facilities (in addition Puroks 2, 4 & 5). A member of water association donated the area for pump house and tap stand to the association.

  The barangay government assisted in the construction period by giving food support and it was the barangay council who decided where to distribute the four (4) allocated water facilities.

- *The problems of introducing the facility or required improvement*
  The association as well as the barangay overlooked the donation process and failed to include in the donation the lot where the dug well was situated. During the construction, the concrete hollow blocks that covered the dug well was not properly sealed resulting to surface water infiltration. The worst thing that the association did was when its officers decided to have individual water supply connection without proper consultation with the members and the municipal engineer's office. The found out later that what they did resulted to less water pressure and over pumping of the centrifugal pump which was eventually damaged.

➢ Maintenance
- *Description of a responsible organization for the maintenance*
  The project was turned over to the Lower Magupising Greenland Water System Association (LMagWAS). It was organized prior to the operation of the water facility. The management routinely assigned the members to help the lot owner in maintaining the cleanliness of the faucets, distribution pipes, pressurized tank and monitor the pumping.

- *Regular activities for the maintenance*
  The pump house was cleaned every week together with the pressurized tank. Faucets were cleaned daily.

- *Concrete activities conducted in 2005*
  NONE

- *Main sources of the expenditure for the maintenance*

The money generated from the water income at the rate of P 0.25 / gallon (4 liter – capacity) or P 1.00 / container (40 liter capacity) for the non-members while a flat rate of P30.00 / month was collected
for the members. 20% of the income was saved for the maintenance expenditure.

- *Present maintenance difficulties*
  NONE

- *Present problems or required improvements related to the facility*
  NONE

- *Any required facilities to improve the livelihood of residents apart from the water supply facilities*
  NONE

➢ Free comments
- The lot owner was bitter over what happened to the facility and blamed the officers for being indifferent and selfish and for starting the individual water connection which was against the design;
- On the other hand, another barangay health worker complained that while the officers were initially to be blamed for the mess, he pointed the lot owner for also being selfish and shrewd since he only donated the lot for the pump house but not the lot where the dug well was situated. He added that the lot owner used that leverage against the organization when their conflict started;

- According to the 2 association members and even the lot owner, there was no incidence of water-borne diseases out of using the facility when it was still operational;

III. Beneficiaries' perception (3 beneficiaries)

➢ The evaluation on the facility
A resident of Lower Magupising and once a user of the facility mentioned that the facility provided a big relief to the residents and not only to the association members since water was affordable than " Dumoy water".

Another resident expressed big relief on the operation of the level II water system but was disappointed with the association officers when it was converted to level III without proper consultation with the municipal engineering office.

An elder resident commented that before the facility operated, residents lived harmoniously but during the operation especially

towards the year 2004, conflict arose between and among residents due to mismanagement of the precious water resource. She added that even up to now, the association officers and the lot owner are still at odds with each other.

- The problems or required improvements of the facility
  NONE

- The contribution for maintaining the facility
  NONE

- Any required facilities to improve the livelihood of residents apart from the water supply facilities

  NONE

- Free comments

  - The association officers (president & treasurer) admitted to have learned their lessons over the experience and they had decided to abandon all hopes of reviving the facility. Instead, the association decided to start anew with a similar water facility and even bought a parcel of lot within their purok early this year out of membership contribution. The association plans to dig a well in the said lot and they already approached the provincial government for assistance;

  - The barangay captain mentioned that the association had an operational system in place, they had complete financial records and had been very consistent in implementing their rules and regulations except of course when they decided to do household connections without the proper technical advice.

Interviewees:

Isidro Remotique - Barangay Councilor (president of water association)
Maricel Doronila, Manuel Soria, Lito Ubas - residents / consumers
Engr. Dodong Yrog-irog - City Engineers Office / drilling in-charge

Team:

Engr. Dino Armentano – City Planning & Development Coordinator's Office
Dr. Irvin C. Generalao – Local Hydrology Consultant
Alain S. Origenes – Local Governance Consultant

ANNEX 4

Site Survey Report

Barangay Kiotoy, Panabo City, Davao del Norte

Site Survey No. : 3
Level : II (original design) - level III (operation)
Condition : Good, Operational
Location : Barangay Proper, Brgy. Kiotoy
Total Project Cost : P 1,000,000.00 (approximate)

I. General Information of Barangay

- ***Name of Barangay:*** Brgy. Kiotoy, Panabo City, Davao del Norte
- ***Established year:*** January 10, 1964
- ***No. of Population:*** 1,033 distributed in 6 puroks or sitios as of 2006
- ***No. of Household:*** 212 as of 2006
- ***Total revenue in 2005:*** P 700,000.00
- ***The percentage of IRA:*** 81.71% (P 572,000.00)
- ***Total number of Barangay Officials*:** 18

Elected:	**Appointed:**
1 Barangay Captain	1 Brgy. Secretary
7 Barangay Councilors	1 Brgy. Treasurer
1 Sangguniang Kabataan Chair	
7 Sangguniang Kabataan Councilors	

- ***Barangay activities for 2005: (short description)***
  - Health and Social services (immunization, supplemental feeding, Vitamin distribution, family planning, day care, Elementary / High School volunteer teachers' allowance)
  - Katarungang Pambarangay (barangay police operation, lupong tagapamayapa)
  - Infrastructure (road maintenance, barangay facilities)
  - Administrative services (Araw ng Biao Guinga)

- The number of population / households that don't have any access to reliable water supply.

Purok	Population	Access to water system
1	70	Levels I & II
2	33	Levels I & II
3	25	Levels I & II
4	42	Levels I & II
5	20	Level I
6	22	Level I
TOTAL	**212**	**100%** of residents have access to potable water

Level I – shallow dug well, pitcher pump or jet-matic pump
Level II – shallow well with reservoir, centrifugal pump and communal faucets

- Any required facilities to improve the livelihood of residents apart from water supply facilities:

A resident identified the need for the barangay to access marketing support to mango produce since price is very unstable and controlled by middlemen-businessmen.

- Free Comments

  - A coconut farmer also expressed the need for the barangay to advocate to the city government and to its residents to strictly limit land conversion from coconut farming to banana plantation. He explained that this practice has been slowly creeping in adjacent barangays where their water supply were significantly reduced due to competition for banana irrigation and he even feared of chemical contamination of water sources brought about by the aerial spraying along these plantations. He further resolved that he feared that if no concrete action is done, Brgy. Kiotoy would experience the same fate sooner or later;

  - The barangay councilor agreed that the presence of banana plantations in nearby barangays affected their water supply and affirmed the farmer's comment that it is not impossible that Brgy. Kiotoy would also experience a similar fate in case.

II. Water Supply Facility

- The description of the water supply facility

  - **The year of construction:** 1999 start of construction
    2003 completion and operation
  - **The number of beneficiaries:** 777 residents
  - **The number of benefited households:** 170 hh

  - **Description of current situation:**

    The level 2 deep well water facility is 392 feet deep, operated by a 3 HP submersible pump with a 25,000 liter-capacity overhead reservoir currently serving 4 out of the 6 puroks. The remaining two purok are upland puroks which at present cannot be served due to inadequate water pressure to reach their areas. The design was intended as a level 2 facility with communal faucets per purok but later on its operation the facility was converted to individual distribution upon authorization by the Barangay Council. The communal faucets were still retained in the 4 puroks. The barangay captain who is the chair of the said council acts as the manager of the facility.

  - The process of introducing the present water supply facility

    - *The background / reason for barangay/site selection*

The barangay forwarded a barangay council resolution to the provincial government and the congressional office for water facility assistance in 1999 and immediately the provincial government allocated P 300,000.00 for the drilling. The congressional office also allocated an additional P 700,000.00 for the distribution pipes, overhead reservoir, pump and electrical system, which was implemented by the DPWH.

- *The role of community or barangay in the process of introducing the facility*

  The Barangay Council donated a 30 square meter lot within the barangay site for the elevated reservoir and pump house. This counterpart scheme also involved the local residents and the barangay government by providing food support and temporary shelter for detailed government workers helping during the construction period.

- *The problems of introducing the facility or required improvement*

  The construction took 4 years to completion since the fund allocation was not disbursed at once. The release was staggered according to the barangay councilor. On the other hand, this system currently cannot supply water to the two (2) upland puroks so the barangay council is again lobbying for fund support from the congressional office and the city government for another elevated reservoir enough to supply household water to the upland puroks and in anticipation for its distribution expansion.

➢ Maintenance

- *Description of a responsible organization for the maintenance*

  The Barangay Council of Kiotoy is in charge of the management and maintenance of the level II water system situated in the barangay proper. The barangay also maintains one (1) collector and one (1) plumber/maintenance personnel for its operation.

- *Regular activities for the maintenance*

  The pump house is regularly cleaned together with the overhead reservoir and the distribution lines at least every end of the month. The first submersible pump was damaged and replaced with a new one after about six months of operation due to over pumping. Currently, the submersible pump would operate from 5 am up to 7 pm to avoid over usage. Further, chlorination is done once a month.

- *Concrete activities conducted in 2005*

The barangay council had facilitated expansion of services to individual household bringing the current number to 130 from 100 last year. It also does regular check up of the facility on a monthly basis.

- *Main sources of the expenditure for the maintenance*

  The money generated from the water bill at the rate of P80.00 minimum charge for 10 cu. m. consumption (additional of P8.00 / cu.m.) is the source for expenditure. Maintenance eats at least 20% of the fund while 80% goes to electric consumption.

- *Present maintenance difficulties*

  This year the collection is experiencing a growing percentage of delinquency so the barangay council at times will pay the electric bill then gets reimbursed upon payment of end-users. This problem undermines the issue of regular maintenance if not now then in the immediate future as explained by the barangay councilor. He added that fund used to replace the damaged submersible pump was sourced from the coffers of the barangay government.

- *Present problems or required improvements related to the facility*

  The 2 barangay councilors complained that the operation of the facility is not properly executed. The barangay captain acting as the manager often failed to impose agreed policies especially on disconnection of delinquent users. The council as of the moment is also hard up to pass a policy of installation of mandatory meter base to all users due to indifferent mentality of majority of its members. Right now only 24 of the 130 registered users have meter base.

- *Any required facilities to improve the livelihood of residents apart from the water supply facilities*

  NONE

➢ Free comments

- The maintenance crew/plumber complained of the difficulty to disconnect household distribution due to undue consideration being extended by the barangay captain who is also the manager of the water system. He also admitted that the water is not chlorinated as required and no regular pipe clean-up is done. He even mentioned about the absence of blow-off pipes at the

end of the distribution line where sediments and other foreign body can be properly discharged during clean-up period;

- On the other hand, an end-user complained that since only less than 20% of the users have meter base, the current minimum water rate is unfair especially for the majority who have no meter base. Another end-user complained that the barangay council especially the barangay captain always extends favour even to delinquent end-users resulting to non-payment of accounts and growing collectible by the barangay council and eventually in some instance causing the barangay to pay for the electric bill;

- The collector admitted that the fund collected out of the operation is not deposited to the barangay safe or a depository bank. She added that she keeps it to ensure timely payment of electric bills but never denied that in some cases the money can be used for some other personal purspose;

- The no. 1 barangay councilor mentioned that during the barangay assembly held early this year, the body had decided to turnover the management of the facility to a community-based cooperative management to improve its efficiency and effectiveness;

- The no. 2 barangay councilor countered the idea and suggested that the council must create a management team instead of privatizing the operation so that the BOD cum Barangay Council will just focus on policy not on management but also at the same time ensure an affordable water rate and timely maintenance.

III. Beneficiaries' perception (3 beneficiaries)

- The evaluation on the facility

An upland resident complained on the daily inconvenience of fetching water in a lowland purok then bringing it up in their area. He mentioned though that there was no incidence of water-borne gastro-intestinal problems. He also hoped that the next reservoir will be completed next year so that water will be available to the two upland puroks and ease their difficulty.
Another resident in barangay proper expressed big relief on the operation of the level II water system when it was converted to level III usage and made the distribution per household.
Two other residents with meter base complained on unfairness of the current situation wherein 80% of the users don't have meter base and therefore there is no limit to their water usage unlike for those who have meter base. They also added that there is no industrial meter at the pump house to determine the water distribution efficiency of the facility.

- The problems or required improvements of the facility

The two barangay councilors identified the need to push for a policy of mandatory meter base to all users within the year to avoid unfairness and wastage of water resources especially of those without meter base. They also mentioned on the need for the barangay assembly to agree within the immediate future who will best manage the facility to make it more efficient and effective.

- The contribution for maintaining the facility

The current rate is more than enough to meet the regular maintenance requirement of the water facility according to the collector. The maintenance/plumber also mentioned that during regular clean-up schedule, he receives assistance from other 2 barangay utility workers helping clean-up of the pump house, the reservoir or clearing of the distribution lines from tall grasses and other debris.

- Any required facilities to improve the livelihood of residents apart from the water supply facilities

  NONE

- Free comments

  - The barangay council must set the example to pay their bills promptly and cause the installation of meter base for each of the members so that other residents will be encouraged to follow according to the no. 1 barangay council. As of the moment only 2 of 8 members of the barangay council have meter base;

  - The barangay council must continue to educate the end-users to take part of the responsibility of properly using water and not to waste it especially for those who have no meter base as of the moment according to the caretaker.

Interviewees:

Macario Cepada & Godofredo Comaling - Barangay Councilors
Alma Absin - Barangay Secretary
Felicitas Eribias - Water bill collector
Apolinario Pantonial - Plumber/maintenance crew
Teodoro Alba, Randy Gumtang, Zaldy Orbeta - Purok residents / end-users
(2 with meter base / 1 upland resident)

Team:

Engr. Disocoro B. Cepada – drilling rig supervisor - PEO
Dr. Irvin C. Generalao – Local Hydrology Consultant

Alain S. Origenes – Local Governance Consultant

ANNEX 5

Site Survey Report

Barangay La Union, San Isidro, Davao Oriental

Site Survey No. : 4

Level : I
Condition : Bad, Operational
Location : Sitio Aroma, Purok Mananagat, Brgy. La Union
Total Project Cost : P 120,000.00

I. General Information of Barangay

- ***Name of Barangay:*** Brgy. La Union, San Isidro, Davao Oriental
- ***Established year:*** 1922
- ***No. of Population:*** 4,101 distributed in 28 puroks or sitios as of 2006
- ***No. of Household:*** 941 hh as of 2006
- ***Total revenue in 2005:*** P 1,982,000.00
- ***The percentage of IRA:*** 94.60% (P 1,875,000.00)
- ***Total number of Barangay Officials*:** 18

Elected:	**Appointed:**
1 Barangay Captain	1 Brgy. Secretary
7 Barangay Councilors	1 Brgy. Treasurer
1 Sangguniang Kabataan Chair	
7 Sangguniang Kabataan Councilors	

- ***Barangay activities for 2005: (short description)***
  - Health and Social services (immunization, supplemental feeding, Vitamin distribution, family planning, day care, Elementary / High School volunteer teachers' allowance)
  - Katarungang Pambarangay (barangay police operation, lupong tagapamayapa)
  - Infrastructure (road maintenance, barangay facilities)
  - Administrative services (Araw ng Biao Guinga)

- The number of population / households that don't have any access to reliable water supply.

Purok	Population	Access to water system
10 (lowland)	471	Levels I &II
12 (coastal)	376	Level I
8 (upland)	94	Level I
TOTAL	**941**	**100%** of residents have access to potable water

Level I – shallow well with pitcher /jet-matic / Magsaysay-type pumps
I. spring with intake box and faucet at source

Level II – spring w/ intake box, distribution lines & communal faucets,
- spring w/ pressurized tank, centrifugal pump & faucets
- deep well w/ overhead reservoir, submersible pump and communal faucets

- Any required facilities to improve the livelihood of residents apart from water supply facilities:

  NONE

- Free Comments

  - The barangay captain mentioned that the barangay government is regularly assisted by the provincial government especially on its water development program.

  - The barangay secretary mentioned that their barangay was established before the war and farmers traditionally grow coconut and plant corn while the fishermen benefit from the rich fishing grounds. In fact, she said that fish traders from as far as Tagum City in Davao del Norte (80 kilometers approximately) get their daily fish volume requirement here in the barangay.

  - A barangay health worker added that their area is an alternative source of fish traders and wholesalers coming from Davao del Norte and Compostela Valley.

II. Water Supply Facility

- The description of the water supply facility

  The year of construction: April 2006
  - **The number of beneficiaries:** 165 residents
  - **The number of benefited households:** 38 hh

  - **Description of current situation:**

    The level 1 shallow well, Magsaysay-type pump water facility was around 20 feet deep. The current facility is operational but it pumps out salty water so it is used for laundry, bathing and other domestic usage but not for drinking.

- The process of introducing the present water supply facility

  - *The background / reason for barangay/site selection*

    The Barangay , specifically the sitio was chosen by the provincial government as a recipient of provincial water program funded out of a grant from the U.S. Public Law section 416 (USPL 416).

  - *The role of community or barangay in the process of introducing the facility*

A resident of the sitio (Mr. Antonio Tapinit) donated his lot in favour of the barangay government for the installation of the hand pump. In the course of the construction, the barangay government provided food support to supervising government employees monitoring the drilling activity of the private contractor.

- *The problems of introducing the facility or required improvement*

  Salt water intruded in the current water facility that made it only useful for laundry and bathing but not for drinking.

➢ Maintenance

- *Description of a responsible organization for the maintenance*

  The barangay government appointed the purok leader to take charge of the regular maintenance and cleaning of the immediate surrounding of the water facility. The lot donor also volunteered to help in the maintenance.

- *Regular activities for the maintenance*

  The residents clean the surrounding area on a daily basis.

- *Concrete activities conducted in 2005*

  NONE

- *Main sources of the expenditure for the maintenance*

  The residents contribute their time for the daily clean up. So far no repair is done to the facility since its operation last April 2006.

- *Present maintenance difficulties*

  NONE

- *Present problems or required improvements related to the facility*

  NONE

- *Any required facilities to improve the livelihood of residents apart from the water supply facilities*

  NONE

➢ Free comments

- A resident mentioned that there was no water quality analysis after the well was installed but mentioned that no water-borne diseases was observed so far;

- The lot donor mentioned that while the new facility is mostly used for laundry and bathing, the residents still use the old pitcher pump that was installed by the barangay government in 1995 as their source of drinking water;

- The lot donor for the old pitcher pump mentioned that with the installation of the new hand pump, the residents agreed that the old facility will be exclusively used for drinking and the new one will be for laundry and bathing;

- The purok leader also mentioned that the residents willingly contribute money and time in case their pumps needed repair.

III. Beneficiaries' perception (3 beneficiaries)

➢ The evaluation on the facility

The purok leader admitted that it while he is disappointed on the water quality drawn from the current hand pump, he is still thankful for the provincial government's help.

The fisherman, end user from the same sitio was discouraged that the current project failed to provide them an alternative source of drinking water.

Another resident expressed relief that somehow the old facility will not be used extensively unlike before since after the completion of the new facility the old one will be exclusively used for drinking and the new will be used for laundry and bathing.

➢ The problems or required improvements of the facility

NONE

➢ The contribution for maintaining the facility

Residents find it easy to contribute money in case of repair.

➢ Any required facilities to improve the livelihood of residents apart from the water supply facilities

NONE

➢ Free comments

NONE

Interviewees:

Wilfredo I. Destajo - Barangay Captain
Myrna Villamor – Barangay Secretary
Jocelyn Benaldo – Barangay health worker
Candido Salang – fisherman, resident of Sitio Aroma
Teofila Arbasa – resident of Sitio Aroma / lot donor for pitcher pump site
Antonio Tapinit – resident of Sitio Aroma / lot donor for Magsaysay-type pump site
Dale Managad – resident of Sitio Aroma

Team:

Engr. Jonathan Rodriguez – PDO II, Provincial Engineer's Office
Dr. Irvin C. Generalao – Local Hydrology Consultant
Alain S. Origenes – Local Governance Consultant

ANNEX 6

Site Survey Report

Barangay Tibanban, Gov. Generoso, Davao Oriental

Site Survey No. : 5
Level : I
Condition : Good , Operational
Location : Cielo Village, Brgy. Tibanban
Total Project Cost : P 100,000.00 (approximate)

I. General Information of Barangay

- ***Name of Barangay:*** Brgy. Tibanban, Gov. Generoso, Davao Oriental
- ***Established year:*** 1948
- ***No. of Population:*** 8,500 distributed in 8 puroks or sitios as of 2006
- ***No. of Household:*** 2,000 as of 2006
- ***Total revenue in 2005:*** P 2,400,000.00
- ***The percentage of IRA:*** 79.16% (P1, 900,000.00)
- ***Total number of Barangay Officials*:** 18

Elected:	**Appointed:**
1 Barangay Captain	1 Brgy. Secretary
7 Barangay Councilors	1 Brgy. Treasurer
1 Sangguniang Kabataan Chair	
7 Sangguniang Kabataan Councilors	

- ***Barangay activities for 2005: (short description)***
  - Health and Social services (immunization, supplemental feeding, Vitamin distribution, family planning, day care, Elementary / High School volunteer teachers' allowance)
  - Katarungang Pambarangay (barangay police operation, lupong tagapamayapa)
  - Infrastructure (road maintenance, barangay facilities)
  - Administrative services (Araw ng Biao Guinga)

- The number of population / households that don't have any access to reliable water supply.

Purok	Population	Access to water system
5 (lowland)	1200	Levels I, II & III
2 (coastal)	700	Levels I & II
1 (upland)	100	Level I & II
TOTAL	**2000**	**100%** of residents have access to potable water

Level I – shallow well with pitcher pump or jet-matic pump
- free-flowing deep well

Level II – spring w/ intake box, distribution lines & communal faucets
- deep well w/ pressurized tank w/ centrifugal pump & communal faucets

Level III - deep well w/ overhead reservoir w/ submersible pump / household connection with meter base

- Any required facilities to improve the livelihood of residents apart from water supply facilities:

  NONE

- Free Comments

  - The barangay captain mentioned that Barangay Tibanban is the biggest local revenue earner of the entire municipality since this is the site for commercial fish trading.

  - A barangay councilor mentioned that water accessibility is not a problem in the barangay since the residents had many options from levels I – III and that so far the water quality is good since there have been no known water-borne diseases recorded for a period of 10 years.

II. Water Supply Facility

- The description of the water supply facility

  The year of construction: December 2005
  - **The number of beneficiaries:** 1,481 residents
  - **The number of benefited households:** 324 hh in Cielo Village

  - **Description of current situation:**

    The level I free flowing water facility is 120 feet deep. The contractor built a 3 x 5 meter of impounding box (tub) to store the free flowing water which the residents used for bathing and laundry. For drinking, the residents directly fetch water at the edge of the overflow pipe by removing the 2" PVC pipe that the residents temporarily attached to the overflow pipe so that water will be impounded in the box.

- The process of introducing the present water supply facility

  - *The background / reason for barangay/site selection*

    The Barangay , specifically the sitio was chosen by the provincial government as a recipient of provincial water program funded out of a grant from the U.S. Public Law section 416 (USPL 416).

  - *The role of community or barangay in the process of introducing the facility*

    The barangay government requested several male residents to assist the local contractor during the construction peiod. The

Vice-Mayor of the Municipality of Gov. Generoso, whose family owns the entire Cielo Village, donated a parcel of lot for the deep well site.

- *The problems of introducing the facility or required improvement*

  NONE

➢ Maintenance

- *Description of a responsible organization for the maintenance*

  The barangay government assigned the purok leader to supervise the regular clean up of the impounding box (tub) as well as the immediate vicinity of the free-flowing well.

- *Regular activities for the maintenance*

  The residents do the daily clean-up of the immediate vicinity and weekly clean-up of the tub.

- *Concrete activities conducted in 2005*

  NONE

- *Main sources of the expenditure for the maintenance*

  Voluntary contribution of members of the Cielo Village Association

- *Present maintenance difficulties*

  NONE

- *Present problems or required improvements related to the facility*

  NONE

- *Any required facilities to improve the livelihood of residents apart from the water supply facilities*

  NONE

➢ Free comments

- A barangay health worker assigned at Cielo Village mentioned that aside from village residents, the free-flowing well also caters to visiting fishermen coming from as far as Davao del Sur, Davao City and Davao del Norte who bath, laundry and get

drinking water for their fishing crew once they drop anchor and trade fish in Brgy. Tibanban;

- A resident claimed that the water taste is sweet, it is odourless and at the same time very clear (without sediments);

- A barangay councilor added that the nearby purok residents access water from private water concessionaire distributed per household for a mimimum fee of P 100.00 / 10 cu.m. of consumed water.

- Another barangay health worker and a resident of another purok mentioned that to date there are at least 8 major water concessionaires serving the barangay serving at least a minimum of 100 households clients per concession.

III. Beneficiaries' perception (3 beneficiaries)

➢ The evaluation on the facility

A resident expressed satisfaction of the current water service at Cielo Village since it is good-tasting and residents don't have to pay compared to other barangay residents which are being served by private water concessionaires.

Another resident reported that since December 2005 there was no incidence of gastro-intestinal cases reported out of drinking from the free-flowing water facility. He thanked the barangay for the decision to place the project in their village.

Another resident expressed thanks to the donor of the lot for the water facility and said that their benefactor had always been helpful to the residents. In fact he added that all the households in Cielo Village only pay P5.00/household for their lot rental to the family of Vice-Mayor Cielo.

➢ The problems or required improvements of the facility

NONE

➢ The contribution for maintaining the facility

The members of the Cielo Village Association help their purok leader in maintaining the facility and ensuring that the free-flowing is protected and taken cared of.

➢ Any required facilities to improve the livelihood of residents apart from the water supply facilities

NONE

- Free comments

  NONE

Interviewees:

Perfecto Orencia - Barangay Captain
Romie Almacin, Teodorico Sanches, Agustina Fuentes – Barangay Councilors
Elizabeth Umbing, Roselia Erana, Eliza Verdeflor - Barangay Health Worker
Josie Quintana, Alfred Manzueto, Crispin Villafuerte, Claire Acebedo – Cielo
Village residents

Team:

Engr. Jonathan Rodriguez – PDO II, Provincial Engineer's Office
Dr. Irvin C. Generalao – Local Hydrology Consultant
Alain S. Origenes – Local Governance Consultant

ANNEX 7

Site Survey Report

Barangay Mayo, Mati, Davao Oriental

Site Survey No. : 6

Level : II
Condition : Good , Operational
Location : Barangay Proper, Brgy. Mayo
Total Project Cost : P 100,000.00 (approximate)

I. General Information of Barangay

- ***Name of Barangay:*** Brgy. Mayo, Mati, Davao Oriental
- ***Established year:*** August 31, 1970
- ***No. of Population:*** 2,848 distributed in 16 puroks or sitios as of 2006
- ***No. of Household:*** 584 as of 2006
- ***Total revenue in 2005:*** P 990,000.00
- ***The percentage of IRA:*** 89.9% (890,000.00)
- ***Total number of Barangay Officials*:** 18

Elected:	**Appointed:**
1 Barangay Captain	1 Brgy. Secretary
7 Barangay Councilors	1 Brgy. Treasurer
1 Sangguniang Kabataan Chair	
7 Sangguniang Kabataan Councilors	

- ***Barangay activities for 2005: (short description)***
  - Health and Social services (immunization, supplemental feeding, Vitamin distribution, family planning, day care, Elementary / High School volunteer teachers' allowance)
  - Katarungang Pambarangay (barangay police operation, lupong tagapamayapa)
  - Infrastructure (road maintenance, barangay facilities)
  - Administrative services (Araw ng Biao Guinga)

- The number of population / households that don't have any access to reliable water supply.

Purok	Population	Access to water system
1 – 8 (lowland)	324	Level II
9 – 12 (coastal)	157	Level I
13 – 16 (upland)	103	Level II
TOTAL	**584**	**100%** of residents have access to potable water

Level I – pitcher pump or jet-matic pump
Level II – spring w/ intake box, distribution lines & communal faucets

- Any required facilities to improve the livelihood of residents apart from water supply facilities:

  The barangay captain identified the need for a fish land facility since fishing is a major alternative livelihood of this barangay. Post-harvest facilities such as warehouse with solar drier were also identified as

livelihood support infrastructure since farming is the main livelihood of the residents and 50% of its land area is under the comprehensive agrarian reform program (CARP) of the Department of Land Reform (DLR).

- Free Comments

  - According to a barangay resident, half of the land area of the barangay is covered by Mayo Hacienda Inc., therefore when it was subjected to agrarian reform coverage, many residents of the barangay became agrarian reform beneficiaries according to 2 barangay councilors. The average land ownership of beneficiaries is 1.2 hectare derived from the hacienda which is owned by the family of District. I Congressman Mayo Almario. Since its subdivision, many farmers have planted their areas with other crops other than the originally-grown citrus and cacao thus farmer-beneficiaries alternatively rely on their produce other than fishing and employment;

  - The barangay captain mentioned that prior to the subdivision of the hacienda (a large tract of land owned by a landlord), the barangay government earned an average of P300,000.00 out of the annual real property tax share but sadly thereafter, many agrarian beneficiaries failed to pay their real property taxes that significantly reduced the revenue share of the barangay by approximately 67%. Worse, the municipal government of Mati through the Assessors and Treasury Offices failed to institute civil remedy measures to force the farmer-beneficiaries pay their real property tax annually.

II. Water Supply Facility

- The description of the water supply facility

  - **The year of construction:** 2003 for level 2 spring water system sourced at Sitio Slide (Purok 14
  - **The number of beneficiaries:** 1,481 residents
  - **The number of benefited households:** 324 hh in 8 lowland puroks

  - **Description of current situation:**

    The level 2 spring water facility is sourced via gravitational pull from an upland purok about a kilometer away from the barangay site. The provincial government spent P100,000.00 for the construction of an intake box near the source as well as the distribution pipe to the cylindrical reservoir at the barangay site. The system is still using the existing pipes from the reservoir towards the 15 communal faucets or tap stands currently

serving 8 out of the 16 puroks. The residents are required to pay P10.00 / month for the usage.

- The process of introducing the present water supply facility

  - *The background / reason for barangay/site selection*

    The barangay passed a council resolution to the provincial government and in 2003 for assistance in their new spring water facility. The barangay reported a new site within its territory and so the provincial government transferred P100,000.00 to the barangay to fund the construction of new intake box and laying of pipeline from the new source to the reservoir. The construction was done by administration (i.e. the barangay government did the job).

  - *The role of community or barangay in the process of introducing the facility*

    The barangay government requested several male residents to help in the laying of the pipeline from the source to the intake box then to the reservoir for a minimal fee. It also administered the construction of an intake box at the spring site with supervision from the provincial engineer's office. The barangay also provided the food for all the workers during the month-long construction period.

  - *The problems of introducing the facility or required improvement*

    The barangay captain mentioned that the LGU did not encounter any problem in the implementation since many residents participated in the construction and since they made use of the existing distribution system especially from the reservoir to the tap stands.

- Maintenance
  - *Description of a responsible organization for the maintenance*

    The barangay government employs a maintenance staff to oversee the regular cleaning and clearing of the intake box, reservoir and distribution pipes for P600.00 / month. The 8 purok leaders served by the water facility are in charge of the regular cleaning and clearing of the 15 tap stands on orders of the barangay council without fee.

  - *Regular activities for the maintenance*

    The intake box, reservoir and tap stands are cleaned every month and application of chlorine is also on a monthly basis. These are done by the caretaker himself.

- *Concrete activities conducted in 2005*

  Aside from the monthly maintenance, minor line repairs and monthly collection, the barangay council reported no other peculiar activities conducted in relation the operation of its water facility.

- *Main sources of the expenditure for the maintenance*

  The barangay government charges the maintenance expenditure against the monthly water bill collection. The monthly income is said to be more than enough to pay for the maintenance crew and for the expenditure on repairs, clean up and chlorination.

- *Present maintenance difficulties*

  NONE

- *Present problems or required improvements related to the facility*

  The barangay council noted that during dry months, the supply from the spring is reduced and so some sort of water rationing is done. They noted that the council intends to purchase a new and bigger centrifugal pump to be used for the spring in Mayo Hacienda as an alternative source of water for the barangay. Incidentally, the spring source in the Hacienda is more reliable but its more economical to use the gravitational spring source from Sitio Slide.

- *Any required facilities to improve the livelihood of residents apart from the water supply facilities*

  NONE

➢ Free comments

- A lady barangay councilor mentioned that the collection of monthly bills is assigned to 8 purok treasurers who will then remit the collection to the barangay treasurer;

- The barangay captain mentioned that the first level 2 spring water
- system was sourced in an adjacent barangay and made operational in 1986. It was sourced out by the Provincial Government from the National Government fund. It was used for the construction of an intake box and main line, a reservoir

situated in the barangay site and communal tap stands. It only operated for a year due since it created a controversy and inter-barangay conflict brought about by the failure of the barangay officials from Brgy.Tagubakid (spring source) and Brgy. Mayo (user) to agree on water distribution scheme. Eventually, the source barangay used the said system by now while Mayo abandoned it as the source and looked for another;

- Another councilor added that in 1987 after the first water system failed
- to operate, the congressional office funded a second level 2 spring water system that was sourced along the coastal portion of Mayo Hacienda, about 1.2 km from the barangay site. The fund of the congressman was used to build an intake box, purchased a 0.6 hp centrifugal pump and a new distribution line connected from the intake box toward the old reservoir located at the barangay site. While the source was more abundant and reliable than the first, the said facility failed to provide a reliable source of water since the pump frequently broke down due to over-pumping. The power of the pump was not enough to supply water a kilometer away from the source. Worse, the pump operated for 24 hours and there was no one assigned by the water association to monitor if the pump was properly working or not;

- According to a resident it was during this same period (1987) that the Barangay Mayo Water and Sanitation Association was organized to manage the second water system project of the barangay. A member lamented that their organization failed to institute proper management system that resulted to its failure. First, he said that the organization failed to replace the 0.6 hp pump with a higher power version, this resulted to frequent pump break down and lots of money was spent for its repair more than what the association earned. Consequently, due to the unstable water supply, association members and other end-users did not pay their regular fee of P10.00/month. So there came a point when the association had no money to operate the facility much more to spend for the frequent repair of the pump. Eventually, the association simply decided to quit.

III. Beneficiaries' perception (3 beneficiaries)

- The evaluation on the facility

A resident and end-user expressed satisfaction of the current water service of the barangay. She quipped that under the management of the barangay captain, many residents – end users now regularly pay their monthly bills unlike the previous barangay captain. She further explained that the elementary school beside the barangay

site also has a tap stand for its students to have reliable and accessible drinking water.

Another resident, end-user expressed satisfaction over the water facility and said that there was no incidence of gastro-intestinal cases reported out of drinking from the water facility. He also noted the firm decision of the barangay council that the tap stand water will be primarily used for drinking. Laundry and bathing was restricted especially during the dry season when the supply is significantly reduced. Residents had to do laundry and bathe in the pitcher and jetmatic pumps situated just across the barangay road. This observation was seconded by the 4 other barangay councilors present during the interview.

- The problems or required improvements of the facility

The 4 barangay councilors agreed with the earlier statement of the barangay captain that the previous source in Mayo Hacienda had to be re-installed so that the barangay will have a stable supply of water and it can expand its coverage to include the 4 coastal puroks currently served by level 1 shallow well hand pumps.

- The contribution for maintaining the facility

The current water rate is enough to ensure the appropriation of fund for the regular maintenance and clean-up of the water facility according the barangay treasurer. The barangay captain also assured that the council has even allocated a portion of their 20% economic development fund for the maintenance of the water facility just in case. Further, during regular clean-up of the spring, the intake box, the reservoir or clearing of the distribution lines from tall grasses and other debris, the barangay government can easily mobilize volunteers to help the lone maintenance personnel.

- Any required facilities to improve the livelihood of residents apart from the water supply facilities

  NONE

- Free comments

- A barangay councilor suggested that it should look at the option of running the water facility as a barangay enterprise so that the barangay government can generate other source of local income to fund its development efforts.

- Another councilor suggested that aside from that, the barangay council should not stop educating the residents on the value of co-ownership of the water source and that it is doesn't come for free. Further he said that users must be responsible for

the water resource they used and there must be a mode repayment to finance the future expansion or improvement of the water service.

Interviewees:

Zaldy C. Javier - Barangay Captain
Manuel F. Tiago, Paquito Bomboc, Anecito Jubac, Azarinas Liguez & Cathylyn Sampiri - Barangay Councilors
Ernesto Maganiong - Barangay Utility / water system maintenance
Alfred Basinisa, Teodora Matiao, Bernardo Clarete - residents / end-users

Team:

Engr. Jonathan Rodriguez – PDO II, Provincial Engineer's Office
Dr. Irvin C. Generalao – Local Hydrology Consultant
Alain S. Origenes – Local Governance Consultant

ANNEX 8

Site Survey Report

Barangay Dahican, Mati, Davao Oriental

Site Survey No. : **7**
Level : **II**
Condition : Bad , Operational
Location : Sitio Maitum, Brgy. Dahican
Total Project Cost : P 200,000.00 (approximate)

I. General Information of Barangay

- ***Name of Barangay:*** Brgy. Dahican, Mati, Davao Oriental
- ***Established year:*** 1981 through Sangguniang Bayan resolution
- ***No. of Population:*** 5,200 distributed in 8 puroks or sitios as of 2006
- ***No. of Household:*** 1,100hh as of 2006
- ***Total revenue in 2005:*** P 1,982,000.00
- ***The percentage of IRA:*** 94.60% (P 1,875,000.00))
- ***Total number of Barangay Officials*:** 18

Elected:	**Appointed:**
1 Barangay Captain	1 Brgy. Secretary
7 Barangay Councilors	1 Brgy. Treasurer
1 Sangguniang Kabataan Chair	
7 Sangguniang Kabataan Councilors	

- ***Barangay activities for 2005: (short description)***
  - Health and Social services (immunization, supplemental feeding, Vitamin distribution, family planning, day care, Elementary / High School volunteer teachers' allowance)
  - Katarungang Pambarangay (barangay police operation, lupong tagapamayapa)
  - Infrastructure (road maintenance, barangay facilities)
  - Administrative services (Araw ng Biao Guinga)

- The number of population / households that don't have any access to reliable water supply.

Purok	Household	Access to Water System
1	138	Level I
2	100	Level I
3 (Sitio Guang-guang	110	Level I
4 (Sitio Maitum)	170	Level I
5	142	Level I
6	165	Level I
7	125	Level I
8	150	Level I
TOTAL	**1100**	**100%** of households have access to potable water

Level I – shallow dug well, shallow well with pitcher or jetmatic pumps

- Any required facilities to improve the livelihood of residents apart from water supply facilities:

  NONE

- Free Comments

  - The barangay captain mentioned that he did not interfere over the situation in Sitio Maitum, the said though that the barangay government maintains several hand pumps strategically installed within the sitio to mitigate the situation;

  - Another barangay councilor mentioned that since their income is not that much compared to other barangays in Mati, the council can only afford to finance the installation of level I shallow well water pumps but not the repair of the damaged level 2 water system;

II. Water Supply Facility

- The description of the water supply facility

  - **The year of construction:** 2002 construction and operation of level 2 deep well water system
  - **The number of beneficiaries:** 1,308 residents (514 in Sitio Guang-guang Purok 3 and 794 in Sitio Maitum Purok 4)
  - **The number of benefited households:** 280 hh

  - **Description of current situation:**

    The no-operational level 2 deep well water facility was around 200 feet deep, operated by a 2 HP submersible pump (reconditioned) with a 10,000 liter-capacity overhead reservoir mainly serving Sitio Maitum but was extended to neighboring Sitio Guang-Guang upon the instruction of the congressional office. There were several communal faucets installed in the two sitios. It only operated for 9 months after completion in 2002.

- The process of introducing the present water supply facility

  - *The background / reason for barangay/site selection*

    The barangay and specifically the sitio were chosen by the congressional office as a political strategy since it was not a strong bailiwick of the congressman. The funding was coursed through the DPWH and the construction was carried out by its certified private contractor.

  - *The role of community or barangay in the process of introducing the facility*

A resident of the sitio permitted the construction of a reservoir and drilling his lot without executing a deed of donation in favour of the Sitio Maitum Water and Sanitation Association. The association was formed upon the instruction of the congressional staff that hired a professional to assist in the election of its officers and organized a management team.

The barangay government especially the barangay captain which was then not allied with the congressman was not informed of the project from the selection up to the formal turnover.

- *The problems of introducing the facility or required improvement*

  There were serious problems encountered. One was the non-involvement of the barangay during the implementation which during the interview became the excuse of the barangay captain not to intervene with the project.

  Second, the SMWASA was not properly organized and there was no real education and information campaign given to its members thus many end-users were not responsible users and often do not pay the agreed monthly water rate. Delineation of function between the BOD and the management was not clearly defined resulting to frequent clashes and ultimate disintegration;

  Third, there was no deed of donation executed by the donor to the donee (SMWASA) that further complicated the use of the facility.

➢ Maintenance
  - *Description of a responsible organization for the maintenance*

    The Sitio Maitum Water and Sanitation Association took charge of the clean up of communal faucets for the short period of operation but without a clear income, it failed to replace the damaged submersible pump.

    To complicate the matter, the barangay government did not extend assistance brought about by the incident and the congressional office that financed the construction just months before was unheard of since then.

  - *Regular activities for the maintenance*

    The management implemented a strict 4 hour distribution schedule every day to limit the use of the reconditioned submersible pump. It assigned a guardian household that will

maintain the cleanliness of the communal faucets where it is erected.

- *Concrete activities conducted in 2005*

  NONE

- *Main sources of the expenditure for the maintenance*

  The money generated from the water bill at the rate of P10.00 per household member was the source for expenditure.

- *Present maintenance difficulties*

  NONE

- *Present problems or required improvements related to the facility*

  NONE

- *Any required facilities to improve the livelihood of residents apart from the water supply facilities*

  NONE

➢ Free comments

- Four years after it ceased operation, the residents of Sitio Maitum rely on pitcher pumps operated by private individuals within the area and have to pay P 4.00 / container (20 liter capacity).

- After four years, the barangay captain is still sour over the past incident and still did not extend any form of assistance to the sitio residents on their water supply problem other than of course the pre-existing hand pumps erected out of barangay funds.

- The former BMWASA manager told the interviewer that the association honestly had nothing to do with the political differences of their barangay captain and the congressman and felt really upset on the vindictive and narrow-minded attitude of the barangay captain;

- The purok leader complained that during their organization as an association, their roles were not clarified and there was no constitution and by-laws so to speak of.

- The collector admitted that the fund collected was kept by the treasure himself to timely payment of electric bills and that there was no proper accounting of the expenditure despite repeated management demand;

- The no. 1 barangay councilor mentioned that the quick organizing the association failed to clarify the roles of the end users, the BOD and management team as well as their responsibility in running the facility. This resulted to a chaotic relation between the management and the BOD and eventually the end-users suffered.

- The management team had a clash with its BOD since the former implemented a strict water distribution time from 6 – 8 am and 2-4 pm which ironically emanated from the decision of the general assembly. Some BOD members were not happy of the rationing strategy, overruled the policy and even caused the 24-hour distribution that resulted to burn-out of the submersible pump. The organization disintegrated shortly afterwards.

III. Beneficiaries' perception (3 beneficiaries)

➢ The evaluation on the facility

The purok leader admitted that it was a big relief to have a water facility at that time due to convenience and affordability but expressed disappointment of the failure of the management and the BOD to settle their difference resulting to difficult situation nowadays.
The purok secretary, another resident expressed big satisfaction at the time the water facility was operation but now felt dejected by the mentality of their political leaders to penalize them for a rift that they are not a part of. She said they just happen to benefit from the water facility, plain and simple.
The fisherman, end user from the same sitio was discouraged that the barangay government failed to provide them assistance in the repair of their facility despite the fact that it benefited a lot of households. He said that the facility provided affordable and convenient source of water at that time.

➢ The problems or required improvements of the facility

The two barangay councilors identified the need to find a more lasting solution to the present plight of the Sitio Maitum residents and that is to source out fund for a level III water system.

The former manager expressed reservation over the consummation of the deed of donation between the lot owner and the association especially so that now the facility is unserviceable and that the lot owner alleged that he intend to use the lot for other purpose.

- The contribution for maintaining the facility

NOT APPLICABLE

- Any required facilities to improve the livelihood of residents apart from the water supply facilities

NONE

- Free comments

- The purok leader told the interviewer that the barangay captain is childish and very proud of himself and uses the barangay government to coerce the households of Sitio Maitum which allied with the congressman last election;

- The former secretary of the SMWASA commented that they had a good management team at that time but the some members of the BOD were greedy and used the facility to advance their personal agenda despite the agreements derived from the general assembly.

- The reservoir is still present and in good condition but the pump is unserviceable and some of the pipes according to a member-end user were stolen.

- The former manager mentioned that they re-organized their SMWASA just this year and had submitted a proposal to the provincial government for funding of a new facility. She mentioned that another end-user is willing to donate lot for the association should the proposal materialize.

Interviewees:

Danilo R. Acera - Barangay Captain
Antonieto B. Antonio & Panfilo B. Valencia – Barangay Councilors
Carmelita S. Diano – Barangay Secretary
Braulio Eco - Water bill collector
Purificacion del Rosario - Purok leader – Sitio Maitum
Thelma Cunado – Purok leader – Sitio Charity Blue
Mrs. Alice Bautos - Former manager of SMWASA
Rocel Buen – resident / purok secretary
Filipinia Acera - resident
Edwin Acera – resident / lot owner

Team:

Engr. Jonathan Rodriguez – PDO II, Provincial Engineer's Office
Dr. Irvin C. Generalao – Local Hydrology Consultant
Alain S. Origenes – Local Governance Consultant

ANNEX 9

Site Survey Report

Barangay Bangkal, Matanao, Davao del Sur

Site Survey No. : 8
Level : II
Condition : Bad , Non-Operational
Location : Barangay Proper, Brgy. Bangkal
Total Project Cost : P 2,500,000.00 (approximate)

I. General Information of Barangay

- ***Name of Barangay:*** Brgy. Bangkal, Matanao, Davao del Sur
- ***Established year:*** 1958
- ***No. of Population:*** 2,922 distributed in 6 puroks or sitios as of 2006
- ***No. of Household:*** 600 hh as of 2006
- ***Total revenue in 2005:*** P 1,200,000.00
- ***The percentage of IRA:*** 83.33% (P 1,000,000.00)
- ***Total number of Barangay Officials*****:** 18

Elected:	**Appointed:**
1 Barangay Captain	1 Brgy. Secretary
7 Barangay Councilors	1 Brgy. Treasurer
1 Sangguniang Kabataan Chair	
7 Sangguniang Kabataan Councilors	

- ***Barangay activities for 2005: (short description)***
  - Health and Social services (immunization, supplemental feeding, Vitamin distribution, family planning, day care, Elementary / High School volunteer teachers' allowance)
  - Katarungang Pambarangay (barangay police operation, lupong tagapamayapa)
  - Infrastructure (road maintenance, barangay facilities)
  - Administrative services (Araw ng Biao Guinga)

- The number of population / households that don't have any access to reliable water supply.

Purok	Household	Access to Water System
1 (Proper)	150	Level II
2	123	Level I
3	92	Level I
4	89	Level I
5	66	Level I
6	80	Level I
TOTAL	**600**	**100%** of households have access to potable water

Level I – shallow well pitcher pump or jet-matic pump
Level II – deep well with pressured tank and centrifugal pump

- Any required facilities to improve the livelihood of residents apart from water supply facilities:

Post-harvest facilities such as solar drier and warehouse are among the facilities identified since the area is mostly planted to rice.

- Free Comments

  - The barangay captain mentioned that currently, residents in 5 puroks outside the barangay proper are served by level 1 hand pumps while in the barangay proper residents are served by a level II deep well powered by a centrifugal pump with pressurized tank ;

  - Another resident mentioned that since this is the biggest barangay in the municipality, the barangay government can afford to finance the installation of another level II deep well water facility similar to that currently operated by a private water concessionaire wherein the barangay residents are buying water.

II. Water Supply Facility

- The description of the water supply facility

  - **The year of construction:** 1987 construction and operation of level 2 spring water system
  - **The number of beneficiaries:** 900 residents from 2 barangays
  - **The number of benefited households:** 150 hh (Brgy. Bangkal) 50 hh (Brgy. Asbang)

  - **Description of current situation:**

    The non-operational level 2 spring water facility was sourced from Brgy. Asbang in a lot owned and donated by the barangay captain. It has 10,000 liter-capacity overhead reservoir mainly serving Bangkal poblacion and Barangay Asbang. There were several communal faucets installed in the 2 barangays during its operation. However, as the operation progressed, some residents of Brgy. Bangkal opted for individual connections without the benefit of technical advice from the provincial government's technical personnel for water system operations. The decision of some residents (usually mango farm owners) was tolerated by the water association.

- The process of introducing the present water supply facility

  - *The background / reason for barangay/site selection*

    Barangay Bangkal submitted a resolution to the Provincial Government which immediately acted on their request and caused the construction of the water system. The residents and barangay officials together with the provincial engineers decided

to opt for a spring water source instead of drilling there has been no known deep well water source in the barangay.

- *The role of community or barangay in the process of introducing the facility*

  The adjacent Brgy. Asbang was at that time the nearest source of spring water which Brgy. Bangkal will use thus the two barangay councils passed a joint resolution to support the project. The barangay captain of Asbang who also owns the lot where spring water was sourced donated the said portion to the Asbang – Bangkal Rural Waterworks and Sanitation Association, Inc. (ABARWASA).

  Some residents from the two barangays volunteered to help the engineering team construct the intake box, lay the main distribution line as well as the overhead reservoir.

- *The problems of introducing the facility or required improvement*

  The project went on smoothly in the first half of its operation due to the well-organized water association, the support of the two barangay LGUs and the support of the end-users. In fact, the association was able to construct their office building located just a few hundred meters from the Bangkal barangay site.

➢ Maintenance

- *Description of a responsible organization for the maintenance*

  The ABARWASA took charge of the clean up of communal faucets as well as the distribution lines. The association has a management team composed of a systems superintendent (manager), a bookkeeper/cashier and two maintenance personnel. It was also governed by a 7-man BOD who was under the general assembly of all members.

- *Regular activities for the maintenance*

  The management had implemented regular monthly clean-up of the intake box, the reservoir, distribution lines and communal faucets.

- *Concrete activities conducted in 2005*

  NONE

- *Main sources of the expenditure for the maintenance*

The association at that time of operation (1987 – 2000) had enough generated money from the water bill at the rate of P10.00 per household member.

- *Present maintenance difficulties*

  NONE

- *Present problems or required improvements related to the facility*

  NONE

- *Any required facilities to improve the livelihood of residents apart from the water supply facilities*

  NONE

➢ Free comments

- Since it ceased operation in year 2000, the residents of Barangay Bangkal poblacion fetched water from the local Catholic church compound that operates a deep well water system. The residents donate P3.00/container (10 gallon capacity) according to the brgy. health worker.

- The fund at the initial years of operation was enough to support the maintenance expenses and generated income for the association but the indiscretions of some BOD as well as the intrusion of barangay officials in the management resulted to chaos and eventual loss of income according to the provincial water resource analyst who incidentally helped organize the association;

- According to the barangay captain, the problem started when some users in Barangay Asbang (owners of mango farms) started individual connections with the approval of the water association which was used for mango farm irrigation instead of drinking water. The consent of the board of directors of water association was an indication that it lost track of its policy of supplying drinking water and worse, the board even defended the mango farm owners since the big clients were up to date in paying and pay more than the agreed average rate;

- The barangay captain further stated that the intrusion of the barangay captain of Asbang in the management and his dictatorial tendencies in controlling the distribution of water which was then sourced in his farm resulted to unfair water distribution and loss of income. Eventually, residents of two

barangays did not pay their bills which then forced the association to stop running the facility;

III. Beneficiaries' perception (3 beneficiaries)

- The evaluation on the facility

A resident expressed his satisfaction over the ABARWASA management and the facility itself. Way back, the water rate was affordable and the distribution was more convenient than today where they have to pay as they use it;

Another resident said that the operation before was totally independent but due to political interference, the management and the BOD were divided and resulted to infighting and differences. He said the organization lost focus on its objective to provide accessible and affordable water to the residents.

The barangay captain agreed that the water was no doubt tasty and accessible to residents. Further the rate was affordable as compared today.

- The problems or required improvements of the facility

The barangay captain mentioned that due to the harrowing experience, he thought of allocating fund for another water system project and at the same time ask for support from the provincial government. Only this time he said, the source will be within Barangay Bangkal and they intend to copy the experience and make use of the information of the diggers of the current deep well water system which is operated by the local parish.

- The contribution for maintaining the facility

NOT APPLICABLE

- Any required facilities to improve the livelihood of residents apart from the water supply facilities

NONE

- Free comments

- The barangay captain said that he will try another approach to re-operate the level II water facility but it should be sourced within the barangay; He even favour the operation of the future facility by the already existing water association but had to be renamed it to purely represent Brgy. Bangkal;

- A resident agreed on the proposal that the source of the next water system must be within the barangay to avoid potential conflict.

- Another resident mentioned that during the time of ABARWASA operation and even up to now, there was no incidence of gastro-intestinal disease recorded by the barangay proving that their water source was and is still safe.

Interviewees:

Alfredo Cayanong - Barangay Captain
Mrs. Cayanong – Brgy. Health worker / wife of brgy. captain
Mario Abastar & Rommel dela Rosa - residents
Evangeline S. Abajero – Provincial water resource analyst / PPDC

Team:

Mrs. Agnes Reynal – Provincial Planning & Development Coordinator
Engr. Gina Razote – PDO II, Provincial Planning & Development Office
Dr. Irvin C. Generalao – Local Hydrology Consultant
Alain S. Origenes – Local Governance Consultant

ANNEX 10

Site Survey Report

Barangay Olaycon, Monkayo, Compostela Valley

Site Survey No. : 9
Level : I
Condition : Good , Operational
Location : Barangay Proper, Brgy. Bangkal
Total Project Cost : P 10,000.00 (approximate)

I. General Information of Barangay

- ***Name of Barangay:*** Olaycon, Monkayo, Compostela Valley
- ***Established year:*** August 5, 1954
- ***No. of Population:*** 2,362 distributed in 8 puroks or sitios as of 2006
- ***No. of Household:*** 485 hh as of 2006
- ***Total revenue in 2005:*** P 786,419.00
- ***The percentage of IRA:*** 82.58% (P 649,419.00)
- ***Total number of Barangay Officials*:** 18

Elected:	**Appointed:**
1 Barangay Captain	1 Brgy. Secretary
7 Barangay Councilors	1 Brgy. Treasurer
1 Sangguniang Kabataan Chair	
7 Sangguniang Kabataan Councilors	

- ***Barangay activities for 2005: (short description)***
  - Health and Social services (immunization, supplemental feeding, Vitamin distribution, family planning, day care, Elementary / High School volunteer teachers' allowance)
  - Katarungang Pambarangay (barangay police operation, lupong tagapamayapa)
  - Infrastructure (road maintenance, barangay facilities)
  - Administrative services (Araw ng Biao Guinga)

- The number of population / households that don't have any access to reliable water supply.

Purok	Household	Access to Water System
1	110	Levels I & II
2	72	Levels I & II
3	57	Levels I & II
4	49	Levels I & II
5	43	Levels I & II
6	38	Level I
7	47	Levels I & II
8	69	Levels I & II
TOTAL	**485**	**100%** of households have access to potable water

Level I – shallow dug well, pitcher pump, jet-matic pump
- spring source attached with jet-matic pump

Level II – spring with overhead reservoir, centrifugal pump and communal faucets

- Any required facilities to improve the livelihood of residents apart from water supply facilities:

  The barangay is mostly planted to rice, corn and high value crops so harvest facilities like solar drier and warehouse were identified.

- Free Comments

  - A rice farmer expressed the need for the barangay to extend assistance on farm inputs since traders often prey on hapless farmers especially during planting season;

  - On the other hand, the barangay treasurer mentioned that their fluctuating local income especially derived out of residence tax is often due to frequent turnover of personnel of a gold processing plant located within the barangay.

II. Water Supply Facility

- The description of the water supply facility

  - **The year of construction:** 1998 level 1 spring water of purok 6
  - **The number of beneficiaries:** 171 residents of Purok 6 & 90 residents from other puroks
  - **The number of benefited households:** 38 hh (Purok 6) & 20 hh approximately (other puroks)

  - **Description of current situation:**

    The level 1 spring water facility is sourced from a public land about 200 meters from the highway. Since the source was quite far from the residents mostly residing along the highway, the sitio residents installed a pipe from the small impounding box and ran it traversing the national highway to the fetching area. Since the water pressure is less, the residents installed a jet-matic pump at the end of the distribution line right at the fetching area. It is currently used for drinking and other domestic purposes. A purok 6 resident even mentioned that residents from nearby Purok 3 fetch water here often since their supply is rationed along with 6 other puroks from a level II source situated at Purok 5.

- The process of introducing the present water supply facility

  - *The background / reason for barangay/site selection*

    The water system in purok 6 was requested by the residents and accessed from the municipal government. The residents at

that time agreed to construct the small impounding box within the source and laid the pipe towards the highway with minimal supervision from the municipal engineer's office.

- *The role of community or barangay in the process of introducing the facility*

  The barangay council extended food support during the construction while some purok 6 residents volunteered to do the work that took 2 weeks to complete.

- *The problems of introducing the facility or required improvement*

  With the fund and manpower availability, the construction went on smoothly. However since there was minimal supervision from the engineer's office, the constructed impounding box was not water sealed so a big portion of water from the spring is wasted in the process and not distributed through the pipes. No remedial measures were introduced up to now.

➢ Maintenance

- *Description of a responsible organization for the maintenance*

  There is no organization that handles the maintenance of the water system. The son of the purok leader regularly cleans the intake box and the distribution pipes.

- *Regular activities for the maintenance*

  Every month, the volunteer caretaker cleans the water facility and repairs the jet-matic pump when it breaks down. The residents easily contribute money and time to replace broken parts and don't ask for support from any government agency for the repair of their facility.

- *Concrete activities conducted in 2005*

  The residents replaced the pitcher pump last year.

- *Main sources of the expenditure for the maintenance*

  Residents' money contribution

- *Present maintenance difficulties*

  NONE

- *Present problems or required improvements related to the facility*

The residents planned to rehabilitate the impounding box to prevent leakage at the very source and to prevent contamination of their water source.

- *Any required facilities to improve the livelihood of residents apart from the water supply facilities*

  NONE

➢ Free comments

- The caretaker mentioned that the residents are very supportive especially during the regular maintenance schedule. He said his neighbors have no problem contributing money and other resources for the maintenance.

- A female elder resident wished that they have water connections per household but since the supply is not enough and they would have to spend more, she expressed contentment with their current facility.

- Another female resident said that their hand pump is very easy to use and do not require much energy to draw water. Besides, she said fetching water is a good exercise.

- The barangay councilor mentioned that while the facility is good enough, the risk of residents traversing the highway to fetch water sends some shiver. There was however no case of road accident along the water facility so far but residents encountered several near-accident situations.

- Another barangay councilor mentioned that the other facility, a level II spring water system from Purok 5, is currently rationing water to 7 other puroks in the barangay (except in Purok 6 where the level 1 spring is situated). Due to water rationing, some residents of Purok 3 and even at the barangay proper (Purok 1) fetch water in Purok 6 more often.

III. Beneficiaries' perception (3 beneficiaries)

➢ The evaluation on the facility

It is a good facility but it can still be improved to serve the purok by repairing the intake box to prevent water leakage and potential contamination. However, it should not be converted to level 2 or level 3 since the spring source is not that much to support a higher level of water facility according to the municipal engineer.

The elder resident mentioned that since its completion, there was no incidence of water-borne diseases or outbreak. The water facility

also never failed to provide water to the purok residents even during long dry periods.

Another resident mentioned that the water from the facility tastes sweet and best of all she said that Purok 3 residents have access to it at all times unlike the level II water system that is currently rationing water in the severn (7) other puroks.

- The problems or required improvements of the facility

The barangay councilor confirmed the plan of Purok 6 residents to rehabilitate the small impounding box and in fact the barangay government is willing to spend a portion of its 20% economic development fund should the plan materialize.

- The contribution for maintaining the facility

The purok residents contribute for the operation and maintenance of their water facility.

- Any required facilities to improve the livelihood of residents apart from the water supply facilities

NONE

- Free comments

- The barangay treasurer mentioned that the purok residents are very simple and supportive especially in ensuring the proper maintenance of their water facility. Further, she said that there was never an instance that the residents requested financial assistance from the barangay for their facility;
- The elder resident was proud to say that the facility was a unifying factor of residents and she said that there was never an incident of in-fighting and intrigue among residents in the use of the said facility.

Interviewees:

Ruel Maitem & Richel Lagarit - Barangay Councilors
Barry Gina Labrigas - Barangay Treasurer
Noel Benimerito – volunteer caretaker
Primitiva Cordero, Erlinda Silvosa, Fe Udronia – residents / end-users

Team:

Dr. Irvin C. Generalao – Local Hydrology Consultant
Engr. Joel Calipusan – Planning Officer – PPDC
Rey Adulfo – Statistican – PPDC
Florentino Go – Proj. Evaluation Officer – PPDC
Josie Anino – Computer Operator - PPDC
Alain S. Origenes – Local Governance Consultant

ANNEX 11

Site Survey Report

Davao Del Norte

PROVINCE OF DAVAO NORTE

(Water Supply- Sample I)

I. NAME OF THE SAMPLED WATER SYSTEM: LOWER MAGUPISING GREENLAND WATER SYSTEM ASSOCIATION (LMAGWAS)

Level: II
Condition: Bad, Not operational
Location: Barangay Magupising, BE Dujali, Davao Norte
Total Project Cost: P 100,000.00 (Approx)
Date Constructed: June 1, 2000

II. PRESENT CONDITION OF THE RURAL WATER SUPPLY

1. Water Source and Pumping Facilities

The source of water for this water system is the dug well. It has a depth of about 21 feet. It was observed that beyond this depth yields salty water. The dug well was developed up to 25 feet deep and was lined with concrete hollow blocks. The suction pipe diameter is 2 inches, discharge pipe size is 1 inch distributed to 21 households. Figure 1 shows the sealed dug well located at the home lot of Mr. Leonardo Secuya who is also a member of the Board of Directors (BOD) of LMaGWAS.

Figure 1. The dug well as source of water of LoMaGWaSA

2. Storage Tank

Water drawn from the dug well is placed inside the pressurized tank for distribution. The pump house stored the centrifugal pump with pressurized tank (Figure 2)

Figure 2. The pressurized tank located inside the pump house of LMaGWAS.

3. Water Treatment

From interview, water quality analysis was done after system installation but no records can be found at the barangay office..

4. Distribution System

The distribution of water from the pressurized tank is done through public faucets (Figure 3). The four faucets were protected by grills made of steel. It is open during the day and closed with steel gate at night.

Figure 3. Faucets to distribute water to all members of LMaGWAS with steel fence.

5. Organization and Management System

When the system was still operational, it had the following set of officers to wit:

President: Ma E. Libres
Vice President: Ma. J. Gonzales
Secretary: M. Dela Cruz
Treasurer: A. Luganio
Auditor: C. Moises
Board of Directors: L. Secuya, L. Loja, L. Carillas, I. Pagangpang, M. Moises

Mr. Leonardo Secuya who is a BOD also acted as caretaker. He was responsible to put off and on the motor, clean the distribution area and other functions given to him by the BOD. They conducted meeting once a month and even disconnected some delinquent user for not paying their water bill. There was an assembly called every December of each year. The BOD often met and formulated policies for system efficiency, effectiveness and sustainability.

The total number of members of LMaGWAS before the motor and pump were destroyed reached 21 households. Membership fee of P25 pesos, caretaker honorarium of P150/month were approved in one of BOD meetings.

The system operated effectively and independently as level II water supply because CIDDS project incorporated the capability building of the officers of the association.

The problem encountered by them is the adjustment of engineering design when converted to level III system.

6. Water Fee System

The water fee was fixed at P50.00 per month-household. The treasurer was responsible to collect the fee.

7. Project Cost

The cost of developing the well, purchases and installation of pipes and pumps is approximately P40,000.00 from the Comprehensive and Integrated Delivery of Social Services (CIDDS) project. The erection of the pump house, the purchases and installation of pipes and faucets worth P 60,000.00 were donated by Congressman Tony Boy Floriendo.

8. Data Management

There are no available technical/engineering records found in the system. However, financial records, constitution and by laws, minutes of the meetings and other related non-technical documents are available from the house of the association secretary

III. SITUATIONAL ANALYSIS

1. Problems Encountered

a. Lining is made of hollow blocks. No platform to seal the well from surface water infiltration.

b. The centrifugal motor and pump were destroyed because of over pumping. The conversion of level II to level III system without consultation with the engineering office for appropriate adjustment of the design triggered the problem. It was also coupled with the connection of water directly to the houses (level III) without water meter. The caretaker did not put off the motor anymore as scheduled because of the conflict with other members.. Figure 4 shows the defective centrifugal pump and left unattended inside the pump house. Figure 5 displays the broken distribution pipes directly connected to the household respectively.

Figure 4. The dismantled centrifugal pump and motor at the pump station.

Figure 5. The one- inch pipes distributed to the different households.

c. The Board of Directors has no technical skills in managing the water association. They could not design appropriate sizes of pipes, and the safe yield of the well.

2. Analysis of the Problems

a. Dug well should be lined with permanent materials such as masonry, brickwork, or reinforced concrete. This would serve as

protection during construction against caving in and collapse. Also a seal should be constructed to prevent polluted surface water from entering the well. The lining also acts as a foundation and support for the well top and any pump or other mechanism which maybe fitted upon well completion.

b. The Board of Directors has knowledge how to manage the system except technical skills. They were not trained how to determine the maximum number of users based on the available water source. The effect of ‘no water meter” at some household was not evidently known by them.

PROVINCE OF DAVAO NORTE
(Water Supply- Sample 2)

I. NAME OF THE SAMPLED WATER SYSTEM: BARANGAY KIOTOY WATER SYSTEM

Level: II
Condition: Good (Operational)
Location: Barangay Kiotoy, Panabo City, Davao Norte
Number of benefited household: 130
Total Project Cost: P 1,000,000.00 (Approx)
Year Constructed: 1999
Year Completed: 2003

II. PRESENT CONDITION OF THE RURAL WATER SUPPLY

1. Water Source and Pumping Facilities

Deep well is the source of water for this water system (Figure 6). It has a depth of 370 feet with 4 inch diameter well casing GI schedule 40 and gravel packed. Three -horsepower submersible pump is used.

Figure 6. The deep well as source of water for Kiotoy Water System.

The submersible pump is controlled by the control panel circuit. It would shut off automatically during brown out to protect the pump and motor from surge current. The pumping time is from 5 am up to 7 pm or equivalently 14 hours a day.
Figure 7 shows the control panel located inside the pump house that protects the pump and motor from surge current.

Figure 7. The control panel that controls the operation of the submersible pump and motor

2. Reservoir

Figure 8 shows the elevated tank made of concrete. It has a dimension of 3 meters by 3 meters by 3 meters or an estimated capacity of 25,000 liters. Adjacent to the tank is the pump house.

Figure 8. The reservoir is fed by 2 inch PE pipe from the pump house.

3. Water Treatment

After well drilling and development, water quality analysis was done by the City Health Office of Panabo City. But the records cannot be found from the association.

At the well, no chlorinator can be found to disinfect the well and the distribution pipes. The 1.5 kg chlorine was wrongly used to clean the reservoir once every quarter and not to mix it with water before distribution. There were no reported water-related diseases in the community though since its development according to the Mr. Apolinario Pantonial, the plumber and barangay police, and Mr. Macario Sepada, a Kagawad.

4. Water Distribution System

Water is distributed from the well to the reservoir to the end users. It has no water meter at the source to measure total volume of water drawn from the well. The old level II system had been changed to level III because of the consensus from the members and officers of the association. Some households don't have water meter.

Figure 9 shows distribution pipe from the reservoir to the end users.

Figure 9. The discharge pipe from the reservoir

5. Organization and Management System

The system was given to the Barangay officials by the City government of Panabo and the Provincial Government of Davao Norte after its development. There are about 150 users of this system. There are 15 households with water meter while 135 houses don't have. They organized themselves to manage the system although it is not yet registered with the Local Water Utilities Administration (LUWA). They don't have office for the users to transact with. Only one table inside the barangay office.

The barangay officials served as the policy making body of the water system. Under the barangay council are the collector, Ms Felicitas Erebias and caretaker, Mr. Apolinario Pantonial. The collector is responsible to collect, keep the amount and pay the electric bill of the system. She is given free use of water and P200 per month incentive. The caretaker on the other hand, is responsible to put off and on the motor, clean the reservoir once every quarter. He is given free use of water and a P250 per month incentive. He also works as barangay police and driver at the same time.

The General Assembly is the overall head. Next to the general assembly is the Board of Directors (BOD) composed of 10 persons. The BOD is the policy making body of the system. Ironically, the BODs are also the implementers of the system policies such as collection of water fee, disconnection and others. The treasurer is the collector, and is responsible to pay the electric bills. Three BODs served as meter reader.

6. Water Fee System

The BODs approved the water fee of P80.00 per month-household as minimum rate for the first 10 cubic meters. In excess to the minimum, an P8/ cubic meter is charged. But those who used the water without limit, that is, those without meters, pay only the minimum.

7. Project Cost

The cost of drilling, purchase of pumps and pipes of the well is about P 500,000 pesos from the provincial government. Additional amount of 500,000 pesos was appropriated from the congressional fund. The congressional project was done by the Department of Public Works and Highway (DPWH). A total of one million pesos was allocated to the water system. This amount was granted because of a barangay resolution submitted to the donors for allocation and implementation of the project.

8. Data Management

Barangay Kiotoy has financial data based on report presented during assembly. It was noted that attendance and minutes of their meetings were recorded. The provincial engineering office has data on well logs and estimates of well drilling, construction and development.

III. SITUATIONAL ANALYSIS

1. Problems encountered

a. Low collection rate of water fees

b. Barangay officials failed to disconnect lines to delinquent members because of fear of losing in the next election.

c. Pumping is almost 24 hours a day that caused the destruction of the motor.

d. Not all members have water meter which would mean that energy and water are not conserved.

e. Collected amount from the water fee was kept by the treasurer.

2. Analysis of the Problem

The Kiotoy water system is considered good because the Barangay officials allocated fund specifically the amount of P40,000 pesos for the purchase of new motor as replacement of the burned one. The burning incident of the motor is due to the uncontrolled pumping time that would even reach to 24 hours a day. But subsidizing the replacement again and again would diminish the Barangay Development Fund (BDF). The suggested remedy is to organize themselves as an association or an economic enterprise unit of the Barangay. This would free the Barangay officials from using their BDF for the operational cost of the system. Corollary to this is the strict implementation of policies on disconnection to improve low collection rate. Pumping hours must be regulated.

The use of un-metered water by some users would not conserve water. Water that reaches the individual household requires energy cost. There is a need to review this policy for water conservation and profitability in the operation.

Financial management should be strengthened. The system is prone to corruption.

There is also a need to review the management structure. Barangay officials should not be the implementers of the policies as they are constrained with disconnecting delinquent members for fear of losing in the elections.

Interviewees:

- Macario Cepada and Godofredo Comaling – Barangay Councilors
- Alma Absin – Barangay Secretary
- Felicitas Eribias – Water bill collector
- Apolinario Pantonial – Plumber/maintenance crew
- Teodoro Alba, Randy Gumtang and Zaldy Orbeta –Users

Team

- Irvin C. Generalao –local hydrology consultant
- Alain S. Origenes – local governance consultant
- Engr. Dioscoro B. Cepada – Drilling rig supervisor

ANNEX 12

Site Survey Report

Davao City

DAVAO CITY
(First Sampled Water Supply)

I. NAME OF THE SAMPLED WATER SYSTEM: BIAO WATER SYSTEM

Level: I
Condition: Bad, Not operational
Location: Purok 4, Sitio Fatima, Barangay Biao, Guinga, Davao City
Total Project Cost: P 200,000.00 (Approx)
Date Constructed: January 25, 1992

II. PRESENT CONDITION OF THE RURAL WATER SUPPLY

9. Water Source and Pumping Facilities

The source of water for this water system is the deep well. It has a depth of 211 feet with 4- inch diameter casing. The unconfined aquifer was discovered by the driller at a depth of 80 feet but drilled deeper to confined aquifer at a depth of 211 feet for sustainable supply when tapped properly.

Below is the non-functional Magsaysay type hand pump situated in Purok 4 of Barangay Biao, Guinga, Davao City.

Figure 1. The non-operational hand pump in Purok 4, Barangay Biao, Guinga, Davao City.

In an interview, Mr. Mansionito Pinaso, the donor of the well site as well as the Purok Leader, said that he used to take care of the system (Figure 2). But several years after, he encountered problems on how to repair the defective parts since some members were unable to pay their one-peso monthly obligation.

Figure 2. The JICA Local Consultant Dr. Irvin C. Generalao interviewed the Purok Leader as well as the members of the system.

10. Water Treatment

After well drilling and development, there was a water quality analysis done by the City Health Office of Davao City according to Engr Yrogirog but the barangay was not furnished. The analysis was limited to biological examination.

11. Organization and Management System

The management of the water system was verbally coursed through the Purok Leader by the City government. There are no documents to show authorizing the Purok Leader to run or operate the system. The only available document kept at the Barangay Captain's office is the deed of donation of the site.

12. Water Fee System

The agreed water fee is P1 per month per household. It is the purok leader who would collect the amount.

13. Data Management

There are no records or data kept except the deed of donation of Mr. Pinaso's lot.

III. SITUATIONAL ANALYSIS

3. Problems Encountered

a. The impermeable layer that divides the unconfined and confined aquifer is made of rock. Therefore the rate of drilling while crossing this layer is very slow, averagely 1 inch per day. This discouraged the drillers and oftentimes they stopped drilling.

b. The beneficiaries were discouraged to repair the old non-functional hand pump because there are already existing Levels II and III water system at the Biao proper.

c. There is no defined organizational structure at the Purok level to effectively operate the system.

d. Some of the beneficiaries believed that all government projects are given free.

4. Analysis of the Problems

The taste of water from the confined aquifer is very satisfactory. However, the use of Balrig type of drilling in this site, where the layer is hard rock, prevents the installation of Level I type of water system. This is the reason why small scale drillers shy away from using this method of drilling. Consequently, this posed constraints in the installation of hand pump type of water system in the place depriving about 20 households of potable water supply. It is suggested that the City government procure rotary type or cable tool rig attached to a truck for easy drilling.

Although the lot was already donated by the purok leader, there is reason to believe that the discontinuance of water services is due to improper management of the system. Leaving the management to the purok leader who is also an elected official posed problems on collection of water fees. Disconnecting non-paying households from the water system is politically unfavorable for the Purok Leader who at the same time is the water system manager.

The management of the water system should not be left to elected political officials for efficiency and effectiveness. This means that the association once organized can implement freely policies without being beholden to voting constituents. The mind set of the community that all government projects are dole-out must be changed also through values orientation. Some of the barangay officials may act only as policy makers and not implementers if ever they get elected in the board of directors.

There is a need to institutionalize water supply data at the barangay level especially well logs. The maps of aquifer characteristics would increase the probability of getting water underground. Design of rural water supply must be documented to predict its appropriateness in the design and the evaluation of safe yield.

DAVAO CITY
(Second Sampled Water Supply)

I. Name of the Water System: Biao Guinga Proper Water System Association

Level: II to III
Condition: Good, Operational
Location: Barangay Biao Guinga, Tugbok District, Davao City
No. of beneficiaries: 100 households (level 2) and 130 hh (level 3)
Total Project Cost: P 1,000,000.00 (Approx)
Year Completed: 2004

II. PRESENT CONDITION OF THE RURAL WATER SUPPLY

1. Water Source and Pumping Facilities

Deep well is the source of water for this system (Figure 3). It has a depth of 197 feet with 4 inch diameter well casing schedule 40. Two horsepower Gould submersible pump is used and the setting is approximately at 192 feet. This well is located about 15 meters from the septic of the barangay hall. This contributes the possibility of bacterial contamination even if perforation is found 180 feet depth.

Figure 3. The location of the well of Biao Guinga Proper Water System Association

Below shows the two- horsepower Gould submersible pump. It is used to pump water from the depth of 192 feet to the reservoir with

a capacity of 26,000 liters. According to Engr. Yrog-irog, the cost of this pump would range from P45,000.00 to P55,000.00.

Figure 4. The two hp Gould submersible pump.

The submersible pump is controlled by the control panel circuit. It would shut off automatically during brown out to protect the pump and motor from surge current. Figure 5 shows the control panel located below the elevated tank that protects the pump and motor of submersible pump from surge current.

Figure 5. The control panel that controls and protects the submersible pump from surge current.

2. Reservoir

Figure 6 shows the elevated tank made of concrete. It has a dimension of 3 meters by 3 meters by 3 meters or an approximate capacity of 25,000 liters with overflowing pipe installed 1 foot below its top. Adjacent to the old tank is a newly constructed tank to augment the current storage volume.

Figure 6. The reservoir of Biao-Guinga proper water system.

3. Water Treatment

After well drilling and development, there was a water quality analysis done by the City Health Office but then again records cannot be found. There is danger here in the bacterial contamination because of proximity of the septic tank of the barangay hall and the well.

At the well, no chlorinator can be found to disinfect the well and the distribution pipes. There were no reported water-related diseases in the community since its establishment according to the President Mr. Isidro Remotige.

4. Water Distribution System

Water is distributed from the well and reservoir to the end users. It has no water meter at the source to measure water use efficiency.

The old level II system had been changed to level III but some households don't have water meter.

5. Organization and Management System

The system was given to the Barangay officials by the City government after its development. There were 100 households that availed the services when it is in level 1 and consequently increases to 130 households when it is now in level 3.. They organized themselves to manage the system although it is not registered in Local Water Utilities Administration (LUWA). They don't have office for the users to transact with. The General Assembly is the overall head. Next to the general assembly is the 10 Board of Directors (BOD), the policy making body of the system. Ironically, the BODs are also the implementers of the system policies such as collection of water fee, disconnection and others. The treasurer is the collector, and is responsible to pay the electric bills. Three BODs served as meter reader.

6. Water Fee System

The BODs approved the water fee of P30.00 per month-household during the first year of operation as level II classification. When the system was converted to level III, they have increased the rate to P 40.00 per month-household as minimum rate. This rate also applies to those without water meter. An additional charge of P4.00 per cubic meter in excess to the minimum is applied to users with water meter.

7. Project Cost

The cost of developing the well, purchases and installation of pipes and pumps is approximately P600,000.00 from the City government. For the erection of the reservoir, the purchases and installation of pipes to the different households cost approximately P300,000.00 from the Congressional Development fund through the Department of Public Works and Highways (DPWH). The barangay gave also an amount of P100,000.00 as counterpart from Barangay Development Fund.

8. Data Management

The Biao-Guinga Proper Water System Association has records but kept at the house of the BOD secretary and the treasurer. It has no office nor a single table at the barangay hall.

Technical data such as well logs, location and inventory of wells, design of rural water supply are not available in the association.

III. SITUATIONAL ANALYSIS

1. Problems Encountered

a. Water quality analysis was not regularly done. Chlorinator is not also present
b. There is presence of clay particles in the water as seen in the tank and distribution pipes.
c. No water meter at the source for measuring water use efficiency
d. Not all users have water meter. Their water fees are more cheaper than those with water meter.
e. The BOD cannot enforce the policy of disconnection because of their being barangay councilors.
f. Perforation of well casing was suspiciously placed at the clay formation of the well because of the presence of clay particles in the tank and distribution pipes.
g. The distribution system has no blow off connected at the end of each main and sub main pipes.
h. The presence of this system disabled the level I water supply located at Purok 4, Barangay Biao.
i. Some of the beneficiaries believed that all government projects are dole out.

2. Analysis of the Problems

The taste of water from the confined aquifer is very satisfactory. But the entry of possible contaminants and pollutants along the distribution pipes was not monitored because of the absence of water quality analysis at the household faucets. Some distribution pipes were placed in the flooded area where connection to the household was done.

The tolerance of “no water meter” connection to some users would jeopardize the operation of the system. They were billed at the minimum of P40 per month with unlimited use of water while those with water meter pay often times the excess of 10 cubic meters. This would discourage the purchase and installation of water meter at the household level. Similarly, the efficiency of water use cannot be measured for policy making. Thus, it would hamper the entire operation.

The common cause of burned motor of the submersible pump is due to 24 hr pumping. This happens because of continued supply of unmetered water. The association always depends on the government for the repair cost thru the fund from the congressman or from the city government.

When the management of the system is shouldered by the BODs who are mostly barangay officials, there can be problems of the enforcement of the policies such as disconnection of water supply. Again, there are political implications why disconnection policies could not be strictly implemented.

The area where well and tanks are located must be owned by the government to avoid conflict of water use and protection of government investment.

There is a need to institutionalize water supply data at the barangay level especially well logs. The maps of aquifer characteristics would increase the probability of getting water underground. Design of rural water supply must be documented to predict its appropriateness in the design and the evaluation of safe yield.

Interviewees:

- Mr. Mansionito Pinaso (Lot owner and Purok Leader)
- Isidro Remotique (Barangay Councilor and President of Level III association)
- Engr. Dodong Yrog-irog (City Engineer's Office and drilling incharge

Team:

- Irvin C. Generalao –local hydrology consultant
- Alain S. Origenes – local governance consultant
- Engr. Dino Armentano – City Planning and Devt Coordinator's Office

ANNEX 13

Site Survey Report

Compostela Valley

PROVINCE OF COMPOSTELA VALLEY

I. NAME OF THE PROJECT: BARANGAY OLAYCON WATER SYSTEM

Level : I
Condition: Good
Location: Barangay Olaycon, Monkayo, Comval
No of benefited households: 38
Cost: 10,000.00
Date Completed: 1999

II. PRESENT SITUATION

1. Water Source and Pumping Facilities

The source of the water is spring. The community enclosed it with a spring box as shown in Figure 1. It was developed in 1999 with a flowing discharge of approximately 0.8 gal/min. The funding source is the Mayor's Office. This water system is operational since 1999.

Figure 1. The spring inbox lined with hollow blocks as source of Olaycon Water System (Level I).

The water from the source is drawn by jetmatic pump (Figure 2) at a distance of about 200 meters. The energy of pumping is less because the elevation of the pump is lower than the elevation from the source. Even without pumping, the water in the jetmatic pump would flow freely.

The residents thought that they can conserve water by stopping the free flow using the jetmatic pump. It happens but there are few discharges observed outside the spring box. Scientifically, flowing water can not be stopped as long as the discharge point is below the water table.

Figure 2. The jetmatic pump of the Olaycon Water System.

2. Water Treatment

There was no water quality analysis made after developing the spring. According to Mr. Noel Benimerito who is the son of the Purok leader, there was no incidence of diseases that are related to water such as diarrhea.

3. Organization and Management System

There are about 30 household members who are beneficiaries of the system. Per interview with the users, even with their numbers, they have not encountered any problem on water quantity and quality.

The purok leader is the system's caretaker and the manager at the same time. Frequent minor repairs are being shouldered by the members through contribution. The Mayor's office would sometimes share for the repair.

4. Water Fee System

Each household is required to pay P10/month for unlimited water use. So far the maintenance cost is low for this facility.

III. SITUATIONAL ANALYSIS

1. Problems Encountered

a. Placement of jetmatic pump is inappropriate.
b. Considering the source of water from an unconfined aquifer, flowing water from the spring is not safe for drinking. Much more that there is no periodic evaluation on water quality.
c. The design of the spring box is susceptible to contamination because it has no screen that prevents the entry of small animals such as small rats or snakes and the like.
d. With time, as the number of users increase, the quantity of water becomes limited.

2. Problem Analysis

a. The system is still operational and may be sustainable with the present number of users. Since the flow of water is through by gravity, the members are already free from paying energy cost.

b. Level 1 is appropriate in this site because of the proliferation of springs and the clustering of communities in the area averaging to 30 households..

c. As population increases, tapping the other spring source of water is inevitable. Accurate design is needed.

Interviewees:

- Ruel Maitem and Richel Lagarit – Barangay Councilors
- Barry Gina Labrigas – Barangay Treasurer
- Noel Benimerito – Volunteer caretaker
- Primitiva Cordero, Erlinda Silvosa, Fe Udronia -Users

Team:

- Irvin C. Generalao –local hydrology consultant
- Alain S. Origenes – local governance consultant
- Engr. Joel Calipusan – Planning Officer-PPDC
- Rey Adulfo – Statistician – PPDC
- Florentino Go – Project Evaluation Officer (PPDC)
- Josie Anino – Computer Operator PPDC

ANNEX 14

Site Survey Report

Davao Oriental

PROVINCE OF DAVAO ORIENTAL
(Water Supply System-Sample 1)

I. Name of the Sampled Water System: Aroma WATER SYSTEM

Level: I
Condition: Good (Operational)
Location: AROMA, Barangay La Union, San Isidro, Davao Oriental
Total Project Cost: P 120,000
Year Completed: April 2006

II. PRESENT CONDITION OF THE RURAL WATER SUPPLY

14. Water Source and Pumping Facilities

The source of water is from the deep well drawn up using Masaysay type hand pump (Figure 1). It was drilled by ABA Construction and Supply using percussion type drilling. The driller tried 6 different nearby areas before getting finally this well. The 6 drilled wells contained a high level of salinity in the area. But the well that was developed contained low to moderate level of salinity. The community used it for washing and bathing but not for drinking. About 38 households use this water. The well lot is owned by the government.

Figure 1. The Magsaysay Type Hand Pump in AROMA Sitio, Barangay La Union.

The well depth is approximately 20 feet because drilling beyond this depth would yield salty water since the distance from the seashore to the well site is less than a kilometer.

15. Water Treatment

There was no water quality analysis after the development of the well. According to Mrs. Teofila Arbasa, the community did not experience water-related diseases.

16. Organization and Management System

The purok community was given the responsibility to operate the hand pump by the Barangay council through the captain. The users were organized and shouldered some repair cost of smaller amount. Bigger repair cost was elevated to the barangay council for allocation of funds.

17. Water Fee

The hand pump is guarded by the caretaker without a fee.

18. Project Cost

The cost of the project is approximately 120,000 pesos from the provincial government through the office of the governor under the USPL 416 program (Figure 2).

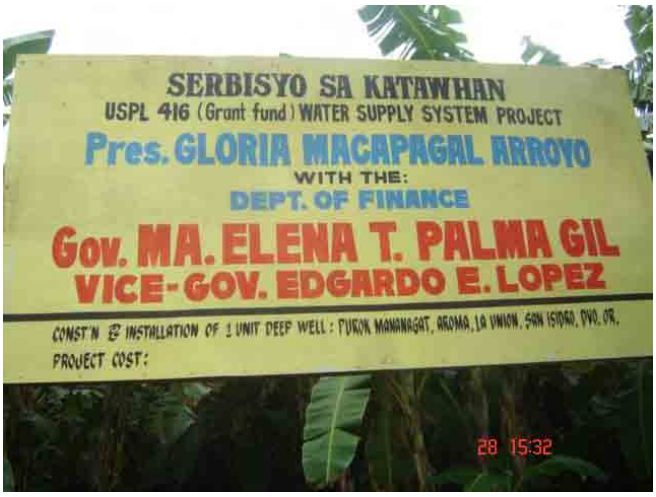

Figure 2. The Signage of Water Supply System Project.

II. SITUATIONAL ANALYSIS

1. Problems encountered

a. Sea water intrusion

2. Problem Analysis

The proximity of the well to the shore and small recharge area are the reasons for sea water intrusion. The water is not safe for drinking as the water is charged from the infiltration of the immediate surface water. There was no hard pan crossed when drilled as they reached 20 feet.

Interviewees:

- Wilfredo Destajo – Barangay Captain
- Teofila Arbasa - member

Team

- Irvin C. Generalao –local hydrology consultant
- Alain S. Origenes – local governance consultant
- Engr. Jonathan Rodriguez – PDO II, PEO

PROVINCE OF DAVAO ORIENTAL
(Sample 2)

NAME OF THE PROJECT: BARANGAY MAYO WATER SYSTEM

Level : II
Condition: Good
Location: Sitio Slide, Barangay Mayo, Mati Davao Oriental
Cost: P100,000.00
Date Completed: 2003

PRESENT SITUATION

1. Water Source and Pumping Facilities

There are three sources of water for this system. The first source was developed in 1987 at Sitio Bugacan where the discharge is approximately 8 gal/min. The funding source is the Governor's Office through the DPWH. The operation was stopped due to mismanagement of Barangay council in 1993.

The second well was developed in 1995 at Barangay Mayo. It formed a spring box with overflow pipe of 2 inches. But the elevation of the source is below the elevation of the users that required centrifugal pump to pump water to the storage tank. From the tank, water from the reservoir is distributed to the public faucets and individual houses through gravity. But because of inaccurate design of the system having smaller horsepower of the motor to pump water at a distance of 1500 meters with an elevation difference of 30 meters, the motor was burned. There was no watcher of the motor in the area. The designed flow cannot supply the target 300 household. Figure 1 shows the spring box of second source.

Figure 1. The spring box of the second source of water for Barangay Mayo Water System.

The third source of flowing water was then developed whose elevation is located above reservoir elevation. The spring box was constructed using lined concrete. It delivers water to the reservoir by gravity with a 1.5 inch diameter pipe. Figure 2 shows the pipe flow from the third source conveyed by gravity.

Figure 2. Pipe flow from the third source.

2. Reservoir

The storage tank was made of reinforced concrete of cylindrical shape. Figure 3 shows the reservoir. It has a radius of 1.5 meters with an altitude of 2.5 meters. The estimated volume is 17,000 liters.

Figure 3. The reservoir at Barangay Mayo.

3. Water Treatment

Water quality analysis was made after developing each source of water but no periodic evaluation done. The barangay captain is concerned about buying the chlorine once every quarter. But the application of 1.5 kg was wrong. They applied it for 2 hours only.

According to Barangay Health worker, no water-related diseases were recorded for the last 5 years.

4. Water Distribution System

The water from the tank is distributed to the faucets and individual household by gravity.

5. Organizational Structure and Management System

The barangay is responsible in the management of the water system. The Barangay Captain is the head of the system with one caretaker who does the cleaning, monitoring, and collecting water fees. He is given an honorarium of 600 pesos per month for serving 300 households.

6. Water Fee System

Each household is required to pay P10/month for unlimited water use.

III. SITUATIONAL ANALYSIS

3. Problems Encountered

a. Flowing water from the spring is not safe for drinking.
b. Second source of water has bigger discharge but untapped because they are not technically equipped in designing water pumping system.
c. Budgetary constraint from Barangay

2. Problem Analysis

a. It is still operational because it has no energy cost to bring the water from the source to the individual dweller. It is done by gravity.
b. Level 1 is also appropriate to this site because the depth of water table is very shallow (20-25 ft).
c. As population increases, tapping the second source of water is inevitable. Accurate design is needed.

PROVINCE OF DAVAO ORIENTAL
(Water Supply System – Sample 3)

I. NAME OF THE SYSTEM: SHILO VILLAGE ASSOCIATION

Level: I
Condition: Good (Operational)
Location: Purok Boguinbella, Tibanban, Sigaboy, Davao Oriental
Date Constructed: October 2005
Date Completed: December 2005
Project Cost: P 140, 000. 00
Source of fund: 90% USPL, 10% LGU
Driller: ABA Construction & Supply
No of Households served: 60

II. PRESENT CONDITION OF THE RURAL WATER SUPPLY

1. Water Source and Pumping Facilities

The source of water is the flowing well. It was developed in December 2005. The well depth is 120 feet with 4-inch diameter pipe well casing. The discharge pipe is 1.25 inch diameter. The flowing discharge is approximately 5 gallons per minute. Figure 1 shows the source of water which is the flowing and an adjacent reservoir to store water when not in use.

Figure 1. The free flowing water of the Level I facility

Adjacent to the discharge point is the storage tank made of concrete. The dimension of the box is approximately 2ft x 8ft x 12ft.

The taste of water is pleasant although the distance from the well to the seashore is closed to 30ft. Other users are from other purok because of the pleasant quality.

2. Water Treatment

There was no water quality analysis for bacteria done after installation. Some members of the association reported that there was no water related diseases happened in the area since its establishments.

3. Organization

After the installation of the well, the users did not organize themselves because of sufficiency and adequacy of water. It has no electric bill and minimum repair cost. The well is not only serving the immediate community but also the neighboring purok.

III. Problem Analysis

The present level 1 facility is an appropriate source of the community because it is free flowing and the quality is good. The problem is the rapid spread of residential houses near the well that can possibly pollute the well water.

The facility has very minimal cost of repair.

Interviewees:

- Perfecto Orencia – Barangay Captain
- Atiliana Almacin - Kagawad

Team

- Irvin C. Generalao –local hydrology consultant
- Alain S. Origenes – local governance consultant
- Engr. Jonathan Rodriguez – PDO II, PEO

PROVINCE OF DAVAO ORIENTAL
(Fourth Sampled Water Supply)

I. Name of the Water System: MAITUM GUANGGUANG Water Association

Level: II
Condition: Bad (Not Operational)
Location: Barangay Maitum Guangguang, Dahican, Mati Davo Oriental
Total Project Cost: P 200,000.00 (Approx)
Year Constructed: 2002

II. PRESENT CONDITION OF THE RURAL WATER SUPPLY

9. Water Source and Pumping Facilities

The source of water is the deep well whose depth is approximately 60 feet. A 1.5 horsepower submersible pump was used to pump water to the reservoir. It served water to almost 500 households. It has a depth of 60 feet with 4 inch diameter well casing schedule 40.

The system operates only for less than one year. The pumping time is scheduled for two hours each in the morning and in the afternoon.

10. Reservoir

Figure 1 shows the elevated tank made of concrete. It has a dimension of 2.5 meters by 2.5 meters by 3 meters. Adjacent to the old tank is the abandoned reservoir that is not elevated.

Figure 1. The reservoir of Maitum Guangguang Water System.

The elevated tank has an approximate capacity of 20,000 liters. It delivered water through a 2 inch diameter pipe.

11. Water Treatment

There was record about water quality analysis done after installation.

At the well, no chlorinator can be found to disinfect the well and the distribution pipes. There were no reported water-related diseases in the community since its establishment.

12. Water Distribution System

Water is distributed from the well and reservoir to the end users through communal faucets. It has no water meter at the source to measure water use efficiency.

13. Organization and Management System

The system was given to the water association by the contractor from DPWH named Mr. Dominguez. There are about 500 users of this system. They organized themselves to manage the system although it is not registered in Local Water Utilities Administration (LUWA). They don't have office for the users to transact with.

The General Assembly is the overall head. Next to the general assembly is the 10 Board of Directors (BOD), the policy making body of the system. Below the BOD is the management staff composed of the manager Ms. Alice Baulos. Figure 2 shows the team interviewing the users and the manager.

Figure 2. The team is interviewing the association manager and the purok leader.

14. Water Fee System

The BODs approved the water fee of P30.00 per month-household during the first year of operation as level II water facility.

15. Project Cost

The total amount of the system development is P200,000.00 drawn from the congressional fund thru DPWH.

III. SITUATIONAL ANALYSIS

3. Problems Encountered

a. The BOD and management staffs were not trained to operate the system technically after the turnover.
b. The BOD and Management staff did not collaborate the Barangay council in the operation.
c. The lot where the well is located was not donated.
d. The water quantity is not enough to serve the household that destroyed the pump.
d. Low collection efficiency.

4. Analysis of the Problems

The project was developed by certain Mr Dominguez of DPWH without informing the barangay council. It was turned over to the association through Ms Alice Baulos. Some BOD and the management staffs have no knowledge in bookkeeping, basic maintenance and water management. This causes the project to be not viable. The barangay council is also hesitant to help the association because of poor coordination with the association.

Interviewees:

- Danilo Acera – Barangay Captain
- Panfilo Valencia – Barangay Councilor
- Carmelita Diano – Barangay Secretary
- Purificacion del Rosario – Purok Leader Sitio Maitum
- Thelma Cunado – Purok Leader Sitio Charity Blue
- Alicia Baulos – Farmer Association Manager
- Edwin Acera – lot owner

Team

- Irvin C. Generalao –local hydrology consultant

- Alain S. Origenes – local governance consultant
- Engr. Jonathan Rodriguez – PDO II, PEO

ANNEX 15

Site Survey Report

Davao del Sur

PROVINCE OF DAVAO DEL SUR

I. **NAME OF THE SAMPLED WATER SYSTEM: ASBANG-BANGKAL RURAL WATERWORKS AND SANITATION ASSOCIATION INC**

Level: II
Condition: Bad(Non-Operational)
Location: Barangay Asbang-Bangkal, Matanao, Davao Sur
No. of benefited household (hh): 300 (Level 2), 434 (level 3)
Total Project Cost: P 2,500,000.00 (Approx)
Funding Source: Barangay Water Program (USAID)
Year Completed: 1987

II. PRESENT CONDITION OF THE RURAL WATER SUPPLY

9. Water Source and Pumping Facilities

Spring is the source of water for this water system. It delivers free - flowing water of approximately 28 gal/min serving the 434 households. The locations of the source are in Barangay Asbang but are serving the adjacent barangay Bangkal. It is owned and donated by the Captain of Asbang. The distance from the source to the reservoir is 2 kilometers with delivery GI pipe of size 4 inches diameter.

10. Water Treatment

After the development of the spring box, water quality analysis was done by the Provincial Health Office of Davao Sur. But the records cannot be found from the association.

At the spring, no chlorinator can be found to disinfect the spring and the distribution pipes. Despite this however, there were no reported water-related diseases in the community.

11. Water Distribution System

Water is distributed from the spring to the reservoir to the communal faucets before its conversion to level III. The conversion happened without the technical advise of Provincial Engineering Office. It has no water meter at the source to measure total volume of water drawn by gravity. Some households don’t have water meter.

12. Organization and Management System

The system was given to the Barangay officials of Asbang from the Provincial government after its development. There are about 434 users of this system when converted to level III water facility.

Figure 1. The abandoned office of the system.

The General Assembly is the overall head of the facility. Next to the general assembly is the Board of Directors (BOD) composed of 10 persons. The BOD is the policy making body of the system while the management staff implemented the policies approved by the BOD and the general assembly. The management staff is composed of system superintendent, bookkeeper/clerk, and two maintenance workers. Their salaries are P600/month for the superintendent, P500/month for bookkeeper/clerk and P500/month for the maintenance worker. It operated satisfactorily because water is enough for household use.

Figure 2 shows the team interviewing the Bangkal Barangay Captain Mr. Alfredo Cayanong and his wife.

Figure 2. Interview with the Barangay Captain Alfredo Cayanong of Bangkal.

13. Water Fee System

No data

14. Project Cost

The total project cost is P2,000,000.00 from USAID under the Barangay Water Program .

III. SITUATIONAL ANALYSIS

1. Problems encountered

a. Low collection rate
b. Barangay officials of Asbang where water is drawn allowed the use of water for irrigation of the farm situated in that barangay. This reduced the water quantity and did not reach anymore to the adjacent barangay.
c. The BOD of the association cannot enforce approved resolution of disallowing the use of water for irrigation. The barangay captain of Asbang blocked the BOD resolution of water scheduling and allocation.

2. Analysis of the Problem

The Asbang-Bangkal water system is good for domestic use only and not for irrigation. The free flowing condition of the source is very potential for sustainability of the potable water system operation.

There is a need to review the contract between two barangays on water uses and allocation before government intervention. The

provincial government should look into the legal aspect of the project.

Interviewees:

- Alfredo Cayanong – Barangay Captain
- Mrs. Cayanong – Barangay Health Worker
- Mario Abastar and Rommel dela Rosa – residents
- Evangeline S. Abajero – Provincial Water Resource Analyst/PPDC

Team:

- Dr. Irvin C. Generalao- Local Hydrology Consultant
- Alain S. Oringenes- Local Governance Consultant
- Mrs. Agnes Reynal – Provincial Planning and Development Coordinator
- Engr. Gina Razote – PDO II, Provincial Planning Office