INTEGRATION OF PUBLIC AND PRIVATE RESOURCES AT THE SOLUTION OF A PUBLIC
HEALTH PROBLEM: THE PPW EXPERIENCE IN PUERTO RICO

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SUMMARY

This paper describes the experience of the Partnership for Pure Water, Inc. (PPW), a public-private partnership established by the U.S. Environmental Protection Agency and the Pharmaceutical Industry Association of Puerto Rico, Inc., to bring safe drinking water to over 50,000 people in rural communities in Puerto Rico. By means of a public health education program, the installation and training of disinfection equipment and the coordination of governmental and private resources, the partnership for the past four years has played a significant role providing compliance assistance to regulatory agencies in Puerto Rico. The experience is solid evidence that public-private initiatives are effective complements to traditional law enforcement. Furthermore it is an innovative example on how to capitalize on the private sector expertise and gain benefits for all the parties involved, the government, the private sector and the public. The paper identifies the key factors responsible for the success already attained and the difficulties that have been observed during its operation. The study of these, are an excellent guide for similar initiatives at other environmental problems and/or countries.

Key Words
public-private partnership
drinking water,
compliance assistance
public health education

RESUMEN

Este trabajo describe la experiencia de Partnership For Pure Water, Inc., (PPW), un consorcio público - privado establecido por la Agencia Federal para la Protección Ambiental (U.S. EPA por sus siglas en inglés) y la Asociación de Industrias Farmacéuticas de Puerto Rico, Inc., para proveer agua potable segura a más de 50,000 personas en las comunidades rurales de Puerto Rico. A través de un programa de educación en salud pública, la instalación de equipos de desinfección, el adiestramiento en su uso y la coordinación de recursos gubernamentales y privados, por los últimos cuatro años, el consorcio ha desempeñado un rol importante al proveer asistencia a las agencias fisclaizadoras en Puerto Rico. La experiencia obtenida es evidencia sólida de que las iniciativas público-privadas son complementos eficaces a la ejecución de ley tradicional. Más aún es un ejemplo innovador de como capitalizar en el peritaje del sector privado y obtener beneficios para todas las partes concernientes, el gobierno, el sector privado, y las comunidades. El trabajo identifica los factores principales que han propiciado el éxito hasta ahora alcanzado y las dificultades que se han observado durante su operación. El estudio de estos son una guía excelente para iniciativas similares en otros problemas ambientales y/o países.
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I. Introduction

Puerto Rico has a total population of approximately 3.7 million, 97% of these are served by the government utility, the Puerto Rico Aqueduct and Sewer Authority (PRASA). The remaining 3% (more than 100,000 people) relies on their own rudimentary water systems for drinking water and water of general use. Most of these water systems originated because PRASA lacks the capacity to provide the service to some rural areas due to the extremely difficult access (high altitude and mountainous topography) and the high cost of providing it. In other cases, the nearest PRASA system is working over its design capacity.

These systems, commonly called Non-PRASA systems are subject to compliance with the same laws and regulations that govern the design, operation and maintenance of PRASA systems. Nevertheless their users and operators, mostly rural, isolated and poor communities, barely have the technical, economic and organizational resources necessary to achieve and maintain compliance. Moreover these communities are continually exposed to serious health risk of contracting water borne diseases.

The Puerto Rico Public Water Supply Supervision Program under the Puerto Rico Department of Health Assistant Secretariat of Environmental Health, has the primary enforcement authority (primacy) under the Safe Drinking Water Act (SDWA), Puerto Rico’s Law # 5 of 1976 and their respective regulations. This primacy was granted by the U.S. Environmental Protection Agency to the Puerto Rico’s Department of Health (PRDOH) in March, 1980. Nevertheless in new regulations in which the PRDOH has not acquired the primacy, the U.S.EPA keeps its responsibility and also provides regulatory and enforcement oversight to the state program.

The Puerto Rico Public Water Supply Supervision Program has inventoried 284 of these systems but it is estimated that the real number exceeds the 300 since in almost every field visit new systems under construction are observed. Out of these 284 systems, the majority (231) are community systems as defined by the Safe Drinking Water Act (SDWA)\(^1\) The remaining 50 systems are administered by public entities. The SDWA and Puerto Rico’s Law Number 5 of 1976 define a public water system as any system that has 15 or more service connections or regularly serves an average of at least 25 individuals daily at least 60 days each year. All systems including PRASA systems fall under this definition. Both laws and their respective regulations\(^2\) apply to any system defined as such, therefore these 231

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1 SDWA, 42 U.S.C. 300f et seq.
2 National Primary Drinking Water Regualtions 42 CFR 300g 1-4 and Rule # 50 of the Puerto Rico Secretary of Health
community systems (94,519 people) localized mostly in the interior mountain range of Puerto Rico, with an average scholar level of a 5th grade school, many of them unemployed or occasionally working in agriculture are forced to comply with all the O&M requirements expected from PRASA. Non-compliance with the regulations is considered a violation to both laws and the penalty includes daily fines of $25,000.00 and the close-out of the system. (Millán, Rabell, 1996)

Until 1991 both agencies were employing conventional enforcement actions, i.e. inspections, sanitary surveys, letters, notice of violations, fines etc. and no substantial improvements were obtained. In 1991, the U.S.EPA Region II asked the Puerto Rico’s Pharmaceutical Industry Association (PIA) to join both agencies in a public-private effort to help solve the compliance problem in the Non-PRASA Community systems. The technical and financial expertise of the pharmaceutical companies were believed to be assets that somehow could be transmitted to the communities. Negotiation among the parties resulted in what is currently known as Partnership For Pure Water, Inc. (PPW) a public private partnership that has become extremely successful providing benefits to the agencies and to the people served. PPW has served as a complement to traditional enforcement and the objective of this paper is to provide a summary of how it was developed and what lessons it has to offer.

II. The formation

In October 1991, U.S.EPA Region II proposed PIA to create a public-private partnership to administer a revolving fund to be used by the communities in rehabilitation projects of their drinking water systems. The communities would take low interest loans for buying materials and equipment needed. The money would come from donations of the 30 pharmaceutical companies that at the time were members of PIA. PIA’s executive committee got interested and a PIA / EPA committee got established. The committee held a series of meetings in which resources from each of the parties were identified, tasks and responsibilities were defined. The committee decided to hold publicity until the project was furthered along. As a result, PIA sent a proposal to EPA applying for a $50,000 grant as seed money.

On December 1991, the PIA / EPA committee meets at the P.R.DOH offices and officially invites P.R.DOH to become a member of the steering committee. By the time PIA had made the commitment to raise $500,000.00 by requesting a $16,000.00 assessment to each of the member-companies and EPA approved the $50,000.00 grant. An evaluation-technical subcommittee was established to analyze and determine priorities for systems corrections and or improvements and to evaluate best available technology or solutions. Other subcommittees such as Finance, Administration and Executive were also proposed. A brainstorm of ideas went on and the following demonstration projects were suggested:

a) **The distribution of chlorinating equipment:** To buy tablet chlorinators to be distributed to Non-PRASA systems that had not established the mechanisms or did not have the funds to purchase disinfection equipment. Tablet chlorinators were recommended by EPA for their simplicity in operation and maintenance for their low cost and their inherent safety. The donation would include the tablet chlorinator with the installation kit, a 45 pound tablets pail and chlorine testing kit.

b) **A circuit rider program:** One of the great needs of the Non-PRASA is the need for technical assistance. In general there is not technical expertise residing within the Non-PRASA communities. Take for example that even simple equipment like the tablet chlorinator needs to be properly installed and operated, other wise its purpose, disinfecting the water would be defeated. Circuit riders would ride or travel from system to system providing this much needed technical assistance. EPA and PRDOH would provide training to these circuit riders. Among their responsibilities would be to provide health education, drinking water regulations information and financial assistance information among others.

c) **The creation of typical treatment plans:** A contract with a local engineering consulting firm could be procured to prepare typical treatment plans that can apply to groups of Non-PRASA systems. For example a ground water supply could be indicated to install a given chlorinator at a pre-selected site; this same type of arrangement would be recommended to all ground water supplies. For a surface water system a given filter with its related disinfection system could be applicable for a significant number of systems.
d) **A public education program**: Facilitators or health educators would be hired to provide for education about drinking water and health throughout the Non-PRASA communities. Education material would be available either through the PRDOH or the School of Public Health.

e) **Testing of commercially available filters**: Water filters that are normally available to be used in swimming pools, such as Diatomaceous Earth filters, as well as other innovative commercially available filtration devices would be examined and field tested to determine their applicability in the Non-PRASA systems in Puerto Rico. The project would be awarded to an institution such as the university of Puerto Rico, who would be in a position to share part of the funding. Presently only costly solutions such as conventional slow and rapid sand filters are available.

Out of these, the Chlorinators Distribution and the Public Education Program were selected. The PIA / EPA committee kept meeting, priority criteria were discussed and it was decided that ground water systems supplying at least 400 people, without disinfection and without possibilities of Connection to PRASA were to be the top priority.

In January, 1992, with the EPA grant of $50,000.00 and a PIA raised fund of $300,000.00 the partnership got incorporated as Partnership for Pure Water, Inc. (PPW) as a non-profit corporation under the laws of the Commonwealth of Puerto Rico. The steering Committee evolved into a Board of directors and advisors that approved its own Bylaws and proceedings. The mission was defined as to help Non-PRASA communities improve the quality of their drinking water and safeguard their health by bringing their drinking water systems into compliance with Puerto Rico’s Department of Health and EPA water regulations. This would be achieved through the lending of low interest loans, health education lectures and the technical support from a group of volunteers from PIA member companies. In addition PPW would support scientific research on potable water treatment, provide technical and educational support to government agencies and act as a liaison among them.

The evaluation-technical committee recommended the board to start with the Chlorinator Distribution project and Tablet chlorinators were chosen as the most appropriate technology for these systems. The tablet chlorinator is a box-like structure that connects into the water source line. As the water to be treated flows through the box or housing, it contacts the tablets through the slots in the vertical feed tubes. Once in contact with the water, the water will release small amounts of chlorine as they dissolve. (See Fig. 1 and Fig. 2)

**FIG. 1 Acquaward chorinator (Martínez, 1992)**

![Acquaward Chorinator Diagram](image)
As the tablets dissolve, the remaining tablets will slide down the feed tube to allow for continuous chlorinating. In operation, all that needs to be done is to refill the feed tubes with the tablets when required. In some cases, the time before refilling the feed tubes may be week or even months, depending on the required levels of chlorine and the flow rate of the particular installation.

At the outlet (downstream) end of the housing, a slotted weir plate automatically compensates for changes in the flow rate of the water entering the housing. As the flow increases, there is a need for more chlorine; this weir causes the water level to increase whereby more tablets will be in contact with the water releasing more chlorine. As the flow decreases, there is need for less chlorine; this weir causes the water level in the housing to decrease whereby less tablets will be in contact with the water releasing less chlorine.

At the inlet (upstream) end of the housing, there is a baffle plate. The purpose of this plate is to slow down the initial velocity of the water flow so that there is a smooth even flow within the housing for contact with the tablets. This reduces the amount of splashing and protects tablets in the upper stack from being wetted. The baffle plate in necessary in order to control the amount of tablets that contact the water and therefore allows for more control on the amount of chlorine released into the stream.

Tablet chlorinators for drinking water treatment is a very simple and reliable technology. there are no moving parts to breakdown. Electricity is not needed to operate the tablet feeder, making it ideal for remote or isolated applications.

The ideal location for the tablet chlorinator is just before the storage tank that provides water into the distribution system. Chlorinating is required to kill any bacterial organisms, if present, which cause waterborne diseases. In order to provide adequate chlorinating to these organisms, the U.S.EPA requires a detention time of 30 -45 minutes. (Martinez, 1992)
III. Evolution of Operations:

Initial funding for PPW came from a U.S. EPA grant of $50,000 and donations from fourteen (14) PIA member companies providing $16,000 each. Nine (9) companies provided a total of thirteen (13) volunteers. By the end of the first year, seventeen (17) companies had paid the $16,000 assessment and seventeen (17) companies were active, providing a total of thirty three (33) volunteers. With the funds from EPA and PIA members a revolving fund was established to provide low interest (3.65%) loans to the communities, and pay for PPW operational expenses.

Many companies were extremely committed to this venture and even went beyond the minimum expectancies of their participation at PPW. For example, a Caguas company adopted six Non-PRASA systems in the municipality of Caguas and one in the municipality of Aguas Buenas; they provided all of them with chlorinators, construction materials and educational activities. A year later they were still helping communities to defray operation & maintenance costs (bacteriological sampling and chlorine tablets). For this effort they received an award from their parent company which they kindly reimbursed to PPW's revolving fund to provide assistance to other communities. Another example is a company in Western Puerto Rico which joined PPW working with communities in Añasco, Maricao and Jayuya, although it is not a member of PIA.

The first year of PPW was dedicated to developing the organization and establishing a communication network among PIA coordinators, PRDOH and EPA officers, technical consultants such as C&L Industrial Sales and other government agencies such as PRRDC. An extensive sanitary survey program was performed. It included visits to communities, inspections to their systems and educational meetings. Field and administrative data was gathered and organized into individual files.

Thirty five (35) tablet chlorinator-kits were purchased. By the end of the first year, PPW staff and coordinators visited 83 communities, delivered 15 chlorinators, and provided orientation, after which two communities began disinfection and helped organize 10 communities. Also, two communities received loans from PPW and one grant for scientific research was approved.

In July, 1993, PPW hired two administrators: one specialized in public health education, the other in environmental science. Since then educational interventions were strengthened. Community meetings were more concise and effective. The average conference time was reduced to 30 minutes and the language was carefully selected for it to be as much elementary as possible. Everyday examples were used and whenever possible audiovisual resources were employed. PPW's educational efforts have been well reflected in PRDOH statistics. Since 1992 PRDOH has reported increases in disinfection activity. For example, in 1986 only 10% of all Non PRASA systems were chlorinating. By 1994 this had increased to 46%, partly due to PPW's direct and indirect interventions and by 1996 it increased to 53%.

By March, 1994, forty eight communities were visited. Of these, 14 were new inspections and 34 were follow-up re-inspections. The technical information gathered through these allowed the Puerto Rico Rural Development Corporation (PRRDC) to submit and approve 31 proposals for Non-PRASA rehabilitation projects. Most of these projects included complete reconstruction of the system and change of superficial water source for ground water from newly drilled wells. By June, 1994 PRRDC submitted an additional 31 proposals, for a total of 62. By the end of 1994, 64 approved proposals resulted in 64 new complete systems including the drilling of deep wells and the construction of tanks and distribution systems.

A strong working liaison was established with PRASA's Water Resources Division. They provided hydrogeological evaluations to potential sites for well drilling. His reports were extremely helpful to both the communities and PRRDC, since they assured the best possible location and adequate water supply for rehabilitation projects.

Currently, twenty two (22) chlorinators have been delivered to communities, of which thirteen (13) have been installed by PPW coordinators and officers. The first two communities that received loans from PPW returned their unused loans, since PRRDC offered complete rehabilitation of the system at no cost.
Field work suffered several changes that led to a systematic administrative procedure. In order to get results at a faster rate, on April, 1994 the board decided to stop visits to new communities and focus all efforts on a limited number of systems requiring minimal improvements to attain compliance. To identify these, a complete inventory of all Non-PRASA systems intervened by PPW was prepared. The inventory provides useful information such as interventions, results and future plans for each visited system; also it is on a D-base format for easy updating.

A workplan and a prioritized list of systems was prepared. The new distribution allowed PPW Co-Administrators to have a well defined and manageable workload, 10 to 15 systems. For each of these high priority systems, a project schedule was requested from each volunteer coordinator. The schedule, defined specific tasks, responsible persons, agencies or company, and the expected timetable.

In addition to this new work strategy, a standard form of sanitary survey was designed. It is based on PRDOH sanitary survey and is currently being used. The advantage of this is that it enables officers to gather all relevant technical and socio-economic data needed for proper recommendations.

A follow up training seminar for volunteer coordinators was conducted. It included an evaluation of PPW by coordinators. One of their suggestions for improvement, the regional meetings, was implemented. In these meetings coordinators exchange information on the progress and or difficulties they experience while working with communities. This activities promoted sense of belonging to the partnership plus group motivation and cooperation. The best example is the North Region Coordinator’s Committee; in this group volunteer coordinators from companies located in the northern region and representatives from PRDOH and PRRDC share experiences and coordinate efforts.

PPW officers envisioned the idea of an Interagency Committee formed by all agencies concerned with Non-PRASA systems and sold the concept to P.R.DOH. The Non-PRASA Interagency Committee (NPIC) is a working group officially adopted by Puerto Rico's Department of Health. It has three subcommittees, namely Policy, Technology and Education. Each of these groups has established its objectives and all of them have the common goal of achieving a coordinated and efficient procedure for Non PRASA systems management. The committee is about to publish standard handbooks for health educators working with Non-PRASA communities, a standard guide for the Operation & Maintenance of Non-PRASA systems and an assessment of all available technology for communities to select the most appropriate to their needs and circumstance.

At a smaller scale and in a more active mode, in the municipality of Comerio a similar strategy was developed even before the NPIC, the Comerio’s Non-PRASA Interagency Committee, and it is still showing results. PPW officers and its advisors developed an intervention protocol defining short term and long term strategies. PRASA provided the expected completion time and geographical limits for future projects. The municipality and other agencies have been very cooperative and coordinators are working with the communities in specific tasks of rehabilitation. This committee expects to bring into compliance all systems in Comerio. Its ultimate objective is to serve as a model for other municipalities to follow and motivate the commonwealth government to join our efforts.

IV. Results

PPW is now formed by four official partners, the U.S.EPA, PIA, P.R.DOH and the P.R.RDC. Its Board of Directors has five members and a group of five advisors. It has two officers as employees and a group of 20 volunteer coordinators from 15 pharmaceutical companies.

During the past four years PPW officers have visited 113 communities providing sanitary surveys to their drinking water systems and health risk lectures. Thanks to joint efforts between the PPW partners, i.e. the U.S.EPA, the P.R.DOH, the P.R.RDC and the PPW officers, seventy seven drinking water systems have been

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3 See appendix for the original workplan.
rehabilitated and 48 others are disinfecting. These efforts have led to a significant increase in disinfection activity (See Fig. 3); right now 54% of all communal Non-PRASA systems are applying disinfection which means that approximately 70,000 people are enjoying bacteriologically safe drinking water. (U.S.EPA/P.R.DOH, 1996).

Fig. 3 Non-PRASA Systems with Treatment
FY-91 to FY-96

PPW has gained credibility and recognition as a useful vehicle for advancing public health protection. Numerous letters recognizing PPW’s contribution have been received from both communities and government agencies. It has also been selected by the Caribbean Environment and Development Institute (CEDI) a Non-governmental organization promoting sustained development in Caribbean countries, as a model to be replicated. CEDI has selected Trinidad and Tobago as the first country in which to explore the possibility of establishing a similar effort. On September, 1996 PPW evaluated two possible sites to be used as demonstration projects. One of these was chosen and concrete recommendations are under study by CEDI and Trinidad officers.

V. Analysis

Positive factors have contributed to PPW’s success so far. Among these are the stature and commitment of the partners, specially the Directors during its formation. The steering Committee was formed by people well known in the Industry and the Government with enough credibility and a record of entrepreneur performance. This attributes allowed the partnership to get funds both from the pharmaceutical companies and the U.S.EPA.

The second success factor has been a focused and achievable mission. This has enabled the partnership to select goals and objectives that are appropriately matched to the resources and capabilities of the organization. The regular meetings of the Board of Directors, every two months and the continuous monitoring and surveillance of the work being done assured that main efforts devoted to the original goal. If this have not been kept in mind too much time and effort would have been misused in a myriad of objectives.

The measurability of success, in this case the disinfection rates and the rehabilitation projects, also account for the positive results. It would be extremely hard for any organization to keep itself motivated...
if it has no means of measuring its progress. (Management Institute for Environment and Business, 1992).

The Partnership was thoroughly planned for early success. During the first year the money, the people, the clear objectives were carefully chosen. The formation of advisory committees in the financial, technical and educational area was a wise and productive decision. Allowing experts to give recommendations to the decision makers imparted objectivity and caution in the decision making process.

Another positive factor is that the partnership provides clear benefits to its stakeholders. PPW could be described as what is commonly known in the U.S. as a win-win situation, meaning that all the parties involved get substantial benefits.

The recipients of PPW services, the Non-PRASA communities obtain disinfection equipment at manufacturing costs. This equipment, if purchased in the market, would easily cost around $600.00, while PPW makes it available for $421.00. Payment plans are made for each community and in some cases, when the community is extremely impoverished, it is given as a donation. The low interest loans although not a successful strategy (see analysis) is still a great benefit for the communities since it is nearly impossible to get interest as low as 3.68%. The technical assistance to the system operators is given at no cost and at the site, costs by a private consulting firm would be extremely high. Probably the most valued benefit for the communities is the coordination of all the efforts from the agencies and private companies, to make them comply with the SDWA and other laws.

The government, both federal and local, has gained an increase in compliance activity as evidenced in the FY-96 Non-PRASA Enforcement & Compliance Achievement Report. PPW volunteers and officers have provided the much needed technical expertise for carrying on rehabilitation projects and for making sound decisions as to fund distribution. Also they benefit from the coordination of efforts since effort and funding duplicity is avoided.

The private sector also gets its share of benefits. Companies that participate in PPW make a valuable contribution to communities that surround them. This improves the relations with the community as well as the company’s public image, which is often blemished with unfair misconceptions of being just “profiters and polluters”. In many instances, some of the company employees are residents of these communities, when this is the case, the company gets the special satisfaction of having a different way to express their commitment and gratitude to both their customers and associates. By helping these communities, the companies help government agencies achieve part of their goal. This improves relations with government and opens possibilities of mutual assistance.

PPW has also learned from negative factors that have limited its success. The decision of holding the publicity until solid achievements were attained has been detrimental. The net effect is that PPW’s main contributors the companies are not as eager to contribute as we would expect because they feel that a lot has been done but too little credit has been given to them. Publicity should have been a simultaneous activity together with the accomplishments. By doing this we would have assured more availability of funds.

Another negative factor has been the lack of recognition to the volunteers from their own companies. PPW has recognized its volunteers once a year for their sacrifices and good work, this has been done in activities at hotels or other public places. Even though this personally motivates the volunteers, it is not enough when we consider that no one else in the company knows about it, neither his or her supervisors nor his or her peers. Even though at some companies an article has been written on the company paper, a formal mechanism of motivation should have been established with the companies’ management.

The sources of funding should have been more diversified or at least not to have the majority of funds from a single source. In Puerto Rico recent changes in the Tax benefits allowed to pharmaceutical companies, have significantly hindered the capacity of these companies of supporting this and other similar projects.
All efforts should be made to assure that all partners are informed, understand and agree in the mission, objectives and procedures for achieving these. PPW faced some resistance from the P.R.DOH at the beginning because it did not fully understand the partnership scope and intent. Assuring this since the beginning saves time and effort that could otherwise be used toward achieving the established goals.

VI. Conclusion

Partnership For Pure Water, Inc. owes its success to the careful planning of objectives, fund raising and organization. The reputation and the commitment of its early planners certainly assured the allotment of funds and the cooperation from partners. The selection of a simple objective rather than a large group of them and the measurability of achievement are other key factors. Probably the most significant reason for its success is that each party involved gets clear benefits. Certain pitfalls should be avoided if a similar partnership is to be developed. Since the beginning all efforts should be made as to guarantee that each of the members understands and agrees to participate in the partnership. Publicity should be an ongoing activity together with achievements. Mechanisms for continuous motivation to volunteers and contributors should be well planned and established since the project’s inception. Also all efforts should be made as to have a diversified group of sponsors as possible.

The history Partnership For Pure Water, Inc. demonstrates that public-private partnerships are a feasible and efficient complement to sole traditional law enforcement. More similar efforts should be made and the y should be closely studied in order to better ascertain ways of improving their functioning and results.
APPENDIX

PPW work plan:

Phase I: Selection and Inspection

1. Together with the volunteer coordinator from the company we select a community, taking in consideration the community’s organization, the seriousness of its deficiencies and its proximity to the company, among others.

2. The volunteer coordinator and the co-administrator visit the community and perform a sanitary survey in which all technical and operational deficiencies are identified.

Phase II: Project planning

1. PPW co-administrators prepare a report on deficiencies and recommendations. The report is submitted to Puerto Rico’s Department of Health, and the company coordinator.

2. Once we have P.R.DOH approval, we meet with the company’s management, the proposed project is discussed and the extent of the company’s contribution is defined.

3. PPW co-administrators schedule a meeting with the community. At the meeting a standard educational lecture is given, deficiencies and recommendations are presented and tasks and responsibilities are assigned. Dates for project works are scheduled.

Phase III: Project works

1. If necessary, the tablet chlorinator is installed by community members, the company coordinator(s) and PPW co-administrators. Chlorine tablets and a residual chlorine test kit are delivered. PPW co-administrators train the community operator(s) in the operation and maintenance of the chlorinator and in the use of the residual chlorine test kit.

2. The remaining works are done according to the previously agreed schedule

3. A final evaluation is requested to P.R.DOH.

Note: At all stages PPW co-administrators coordinate efforts and exchange information with P.R.DOH officials. Whenever possible a P.R.DOH official will be present at inspections, meetings etc.
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