MINUTES OF MEETINGS

BETWEEN

JICA PROJECT TEAM AND JICA MONITORING MISSION

AND

MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES

THE REPUBLIC OF GUATEMALA

ON

THE THIRD JOINT COORDINATING COMMITTEE MEETING

FOR

THE PROJECT FOR CAPACITY DEVELOPMENT FOR WATER ENVIRONMENT CONSERVATION IN THE METROPOLITAN AREA

Guatemala City, November 2nd, 2006

Mr. Masami Katayama
Leader
JICA Project Team

Mr. Juan Mario Dary Fuentes
Minister
Ministry of Environment and Natural Resources(MARN)

Witnessed by

Mr. Yoshitaka Misawa
Resident Representative
JICA Guatemala Office

Done in duplicate in Spanish and English languages, each text being equally authentic. In case of any divergence of interpretation, the English text shall prevail.

1. Introduction

With the presence of the Vice Minister of Environment and Natural Resources Lic. Federico Franco respectively, the 3rd Joint Coordinating Committee (hereinafter referred to as "JCC") meeting was held on November 2nd, 2006 at the meeting room (Los Bosques) of the Ministry of Environment and Natural Resources (hereinafter referred to as "MARN") with thirty five (35) participants including MARN officials, representatives from related governmental organizations, municipalities and donors as listed in the Annex-1.

Main issues confirmed in the JCC meeting are summarized as below:

2. Main Issues

1) Activities until March 2007

Mr. Katayama, the Leader of the JICA Project Team explained about proposed activities until March 2007 for the Project, which focus on the enforcement of the Wastewater Regulation enacted in May 2006. Slides that ware used for his presentation are attached in the Annex-2.

The JCC accepted generally the proposal.

2) Agreement on Collaboration among the related Organizations

The nine municipalities, AMSA, INFOM, the Industry Chamber, the Laboratory of National Health are expected to make agreements with MARN soon for collaboration for dissemination of the Wastewater Regulation, exchange of data/information, or commission of wastewater quality analysis. It is confirmed that MARN would take the initiative in realizing the agreements.

3) Necessity of Participation of MARN Counterparts

Dynamic participation of the counterpart personnel of MARN in the Project is a must for the success of this capacity development project. MARN promised to make efforts to fulfill the requests of the Project Team.

4) Presentation by Mr. Kageyama on Pollution and Environmental Restoration in Japan

Mr. Kageyama, the expert on wastewater control of the JICA Project Team, presented a lecture titled "Pollution and Environmental Restoration in Japan". He introduced four major cases of pollution disease in Japan that broke out in a period of mass industrial production from 1950s to 1960s, and explained some lessons from the bitter experiences in Japan.

Annex-1 Participants List of the second JCC

Annex-2 Meeting Material (Presentation Slides)

ANNEX-1

THE PROJECT FOR CAPACITY DEVELOPMENT FOR WATER ENVIRONMENT CONSERVATION IN THE METROPOLITAN AREA

3rd. Jcc Meeting (Attendance List) **Place: Los Bosques Rooms I and II**

November 2nd. 2006

No.	Name	Institution	Duty
1	Masami Katayama	Jica Project Team	Leader
2	Kazuyoshi Kageyama	Jica Project Team	Member
3	Reiko Sasaki	Jica Project Team	Coordinator
4	Sebastian Jara	Jica Project Team	Member
5	Mario Gándara	Jica	Interpreter
6	César Cantoral	Municipality of Villa Canales	1st. Advisor
7	Alejandro Pineda	OGA/MINECO	Office Chief
8	Olivia Orellana	URHC/MARN	Consultant
9	Erick Ardón Morales	URHC/MARN	Support
10	Flor de Maria Solorzano	URHC/MARN	Consultant
11	Ligia Yesenia Pol	Legal Fulfillmentl/MARN	Officer
12	Nobuaki Hanana	SEGEPLAN/JICA	Consultant
13	Antonio Ovalle	JICA	Consultant
14	Heser Cruz Méndez	Municipality of Villa Nueva	Urban Construction Control
15	José Mariano Gatica	SEGEPLAN	Consultant
16	Guillermina Cortéz	MARN	Consultant
17	Walter Salazar	INFOM	Engineer
18	Carlos Tetzagüic	Ministry of Health	Coordinator
19	Luis Felipe Cotero	Municipality of Guatemala	Environment Consultant
20	Mario A. Isaacs	Policies and StrategiesMARN	Consultant
21	Erick Falla Marroquín	Computer Science/MARN	Network Manager
22	Byron González	Computer Science/MARN	Sub - director
23	Ana Luisa de León	FOPAS/MARN	Assistent
24	Julia Flores	FOPAS/MARN	Assistent
25	Alfonso González	Municipality de Amatitlán	Environment Office Director
26	Pedro Tax	INSIVUMEH	Hidrology Chief
27	Juan Pablo Barreda M	National Health Laboratory	FQ Water Chief
28	Guillermo García Ovalle	ERIS/USAC	Coordinator
29	Saul Oliva	Protocolo/MARN	Director
30	Federico Franco	MARN	Vice-Minister
31	Nadia Mijangos López	URHC/MARN	Coordinator
32	Mario R. Cordón	MARN	Minister Advisor
33	Fernando Castañaza R.	Policies and Strategies/MARN	Advisor
34	Takahiro Yamauchi	Japan Embassy	First Secretary
35	Oscar Hernández V	MAGA	Water Technician

ANNEX-2

JICA

MARN

The Project for Capacity Development for Water Environment Conservation in the Metropolitan Area

3rd Joint Coordinating Comittee Meeting

November 2, 2006

CTI Engineering International Co., Ltd.

Overall Goal and Project Purpose

Overall Goal: · Public policy and regulation on water environment conservation in the metropolitan area is effective.

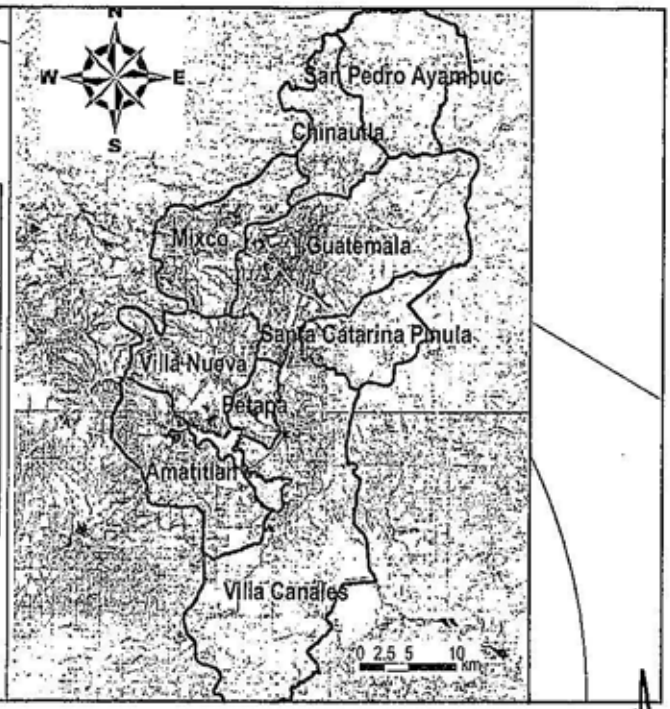
Project Purpose : MARN's implementation capacity of the wastewater regulation for water environment conservation in the metropolitan area is reinforced.

Outputs of Project

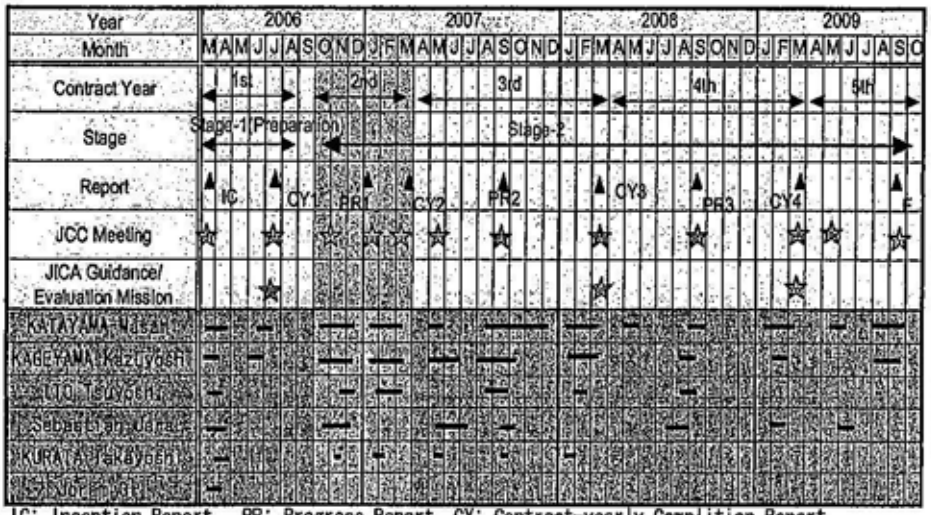
1. Strategy formulation capacity for effective enforcement of the wastewater regulation is reinforced.
2. Activities for the implementation of the wastewater regulation is commenced.
3. Sustainable system of compilation and administration for water environmental information is established.
4. Environmental education and dissemination related to the wastewater regulation is implemented by MARN, based on the collaboration with related organizations.

Project Area

Nine (9) Municipalities in the Metropolitan Area of Guatemala(Guatemala, Mixico, Villa Nueva, Villa Canales, Chinautla, San Miguel Petapa, San Pedro Ayampuc, Santa Catarina Pinula and Amatitlan



Tentative Project Schedule



IC: Inception Report, PR: Progress Report CY: Contract-yearly Compilition Report
FR: Final Report

Common Activities to the Project Team

- 3rd JCC Meeting (November 2)
- Survey of Indicators (Baseline)
- Training in Mexico and Colombia
- 4th JCC Meeting (January 2007)
- Seminar with IMTA experts
- Monitoring of Indicators
- 5th JCC Meeting (March 2007)

Training in Mexico and Colombia

Mexico:

- Period: November 5 to 11, 2006
- Trainees: 4 staff of MARN
- Receiving Organization: CAN, Mexico
- Contents of Training: Monitoring of Wastewater, Manual of Wastewater Control, Database System, etc.

Colombia:

- Period: November 26 to December 2, 2006
- Trainees: 4 staff of MARN
- Receiving Organization: MAVDT, Colombia
- Contents of Training: Monitoring of Wastewater, Manual of Wastewater Control, Database System, etc.

The trainees are requested to report results of the training in a seminar in December.

Technical Seminar on Mexican Practices and Experiences for Water Quality Management

Date: February 7 to 9, 2007

Lectures: IMTA(Instituto Mexicano de Tecnologia del Agua)

Participants: 30 at the maximum.

Program:

Date	Time	Subject
Day 1 (7/2/2007)	9:00 – 14:00 15:00 - 17:00	Background, antecedents and legal basis regarding water quality regulation. Sources of water, uses and water
Day 2 (8/2/2007)	9:00 – 14:00 15:00 - 17:00	Economical inducements to achieve the accomplishment of the regulation and mechanisms of collaboration among institutions of the Central and Regional Governments.
Day 3 (9/2/2007)	9:00 – 14:00 15:00 - 17:00	Environmental education

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4

Activities for Output-1

1. Study on Financial Framework for Municipalities to construct, operate and maintain Treatment Plants:

-Selection of two model municipalities
-Information Collection (Financial Conditions, Sewerage system plans, etc..)
-Public Awareness Survey
-Cost Study
-Financial Analyses
-Proposition of Financial Framework

Study on Collaboration Mechanism between MARN and Municipalities for Monitoring of Wastewater:

-Clarifications of responsibilities of MARN and Municipalities (Legal bases)
-Workshops for discussions on possiblity of collaboration between MARN and Municipalities)
-Consideration of the progress of DANIDA Project for decentralization.

Activities for Output-2

1.Confirmation of the proposed activities for the implementation of wastewater regulation.

2. Inventory survey for industrial factories. .

3. Preparation of legal guidance on wastewater regulation.

4. Study on rational way for the water quality analysis.

5. Preparation of draft manual for wastewater control

-Water pollution sources.
-Sampling methodologies
-Flow measurement and techniques
-Water quality parameters
-Method of Evaluation

6. Establishment of partnership with the competent agency for water quality analysis.

7. Training for the evaluation of the technical study.

Activities for Output-3

1. **Agreement with AMSA for Data/Information Exchange**

2. **Collection and Compilation of Data/Information**

3. **Design of Database system for Wastewater Control**

-Basic information of database shall be (1) water quality monitoring data by AMSA, (2) and wastewater control data produced by inventory, technical study and wastewater monitoring

-SIA (Environmental Information System), the GIS database owned by MARN, will be used.

-It should be designed for information being accessible to MARN, relevant organizations and also to the general public. However, available information may vary depending on the user.

Activities for Output-4

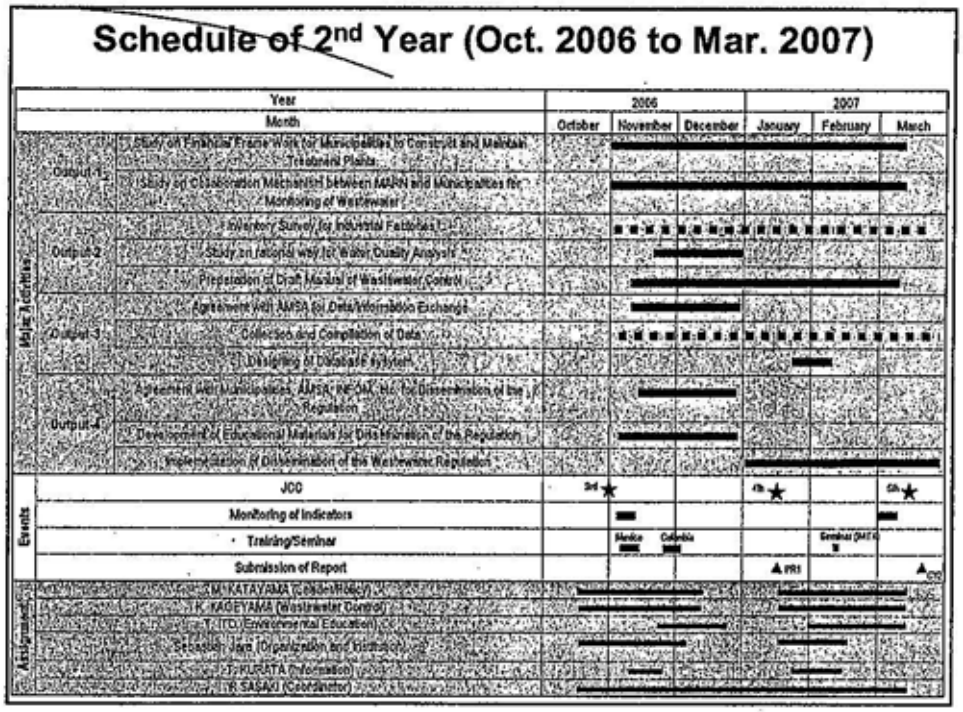
1. **Consideration of Necessary Dissemination Activities based on Guidance for Wastewater Regulation by MARN**

2. **Set up of Collaboration System for Dissemination Activities related to Wastewater Regulation**

3. **Preparation of Action Plan for Dissemination/Environmental Education related to the Wastewater Regulation.**

4. **Implementation of Dissemination/Environmental Education Activities for Industries, Municipalities, and the Residents related to the Wastewater Regulation**

Schedule of 2nd Year (Oct. 2006 to Mar. 2007)



A-8

MINUTES OF MEETINGS

BETWEEN

JICA PROJECT TEAM

AND

MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES

THE REPUBLIC OF GUATEMALA

ON

THE FOURTH JOINT COORDINATING COMMITTEE MEETING

FOR

THE PROJECT FOR CAPACITY DEVELOPMENT FOR WATER ENVIRONMENT CONSERVATION IN THE METROPOLITAN AREA

Guatemala City, January 23rd, 2007

Mr. Masami Katayama
Leader
JICA Project Team

Mr. Juan Mario Dary Fuentes
Minister
Ministry of Environment and
Natural Resources(MARN)

Witnessed by

Mr. Yoshitaka Misawa
Resident Representative
JICA Guatemala Office

Done in duplicate in Spanish and English languages, each text being equally authentic. In case of any divergence of interpretation, the English text shall prevail.

1. Introduction

With the presence of the Minister of Environment and Natural Resources, Mr. Juan Mario Dary Fuentes, the 4th Joint Coordinating Committee (hereinafter referred to as "JCC") meeting was held on January 23rd, 2007 at the meeting room (Los Bosques) of the Ministry of Environment and Natural Resources (hereinafter referred to as "MARN") with thirty nine (39) participants including MARN officials, representatives from related governmental organizations as listed in the Annex-1.

2. Main Topics

1) Opening by the Minister

The Minister opened the 4th JCC Meeting, emphasizing the importance of the Wastewater Regulation and expressing MARN's continuous supports to this project as follows:

- He mentioned the importance of improvement of the water quality in the Metropolitan Area, also he told that this is possible only if the Wastewater Regulation is implemented appropriately.
- He pointed out that the process for the Regulation enactment was hard and also with some oppositions from the business sector in Guatemala. But today in the morning, he met with the directors of that sector and they gave him a proposal for the implementation of the Regulation in their sector, he was surprised at the way they are so aware of accomplishment of the Regulation.
- He mentioned that it is very notorious that this sector is working in a Technical Guideline regarding the smooth way to comply with the Regulation. Also he mentioned that more than 100 industries have a Reduction Technical Program related to the Regulation. This regulation generates the creation of new businesses and more capacity development in the business sector.
- Also he mentioned that MARN is going through a process of empowerment of the MARN personnel and also is struggling to obtain the leadership in the social-environmental sector with capacity development projects like this.
- MARN committed itself to this project and is supporting it because is an on-going project and also is part of one of the main lines of the National Environmental Policies of this Ministry, everyone supports this Project, the Direction of Policies and Strategies, FOPAS (Social Participation), Environmental Management, Water Resources and Basins, all together participate actively in this project and MARN will continue supporting this project due to its importance.
- He thanks the attendance for their attention.

2) Presentation of Progress of the Project by Mr. Katayama

Mr. Katayama, the Leader of the JICA Project Team explained about the progress of the Project. His presentation slides are given in Annex-2. In this presentation he also proposed minor modifications of the PDM and PO (Annex-3), which were generally accepted by the JCC. After his presentation following questions and discussions were made:

Question 1

- Have the technical working group 2 considered the INFOM-UNEPAR Laboratory for wastewater analysis? Why did you decide to make an alliance with MSAySA? (by Mr. Guillermo Garcia Ovalle, USAC)

Answer 1

- As for the Laboratory of INFOM, it has good equipment but its experiences for wastewater quality analysis and sludge analysis are less because it is focusing on potable water. Before taking the decision, many laboratories (private and government owned) were visited and this decision was taken by taking into consideration technical and financial capabilities for the

realization of the wastewater-monitoring program. The National Health Laboratory of MSPyAS was the one who offered the most favorable conditions. (by Mr. Kageyama, JICA Project Team)

Question 2

- Does the financial plan consider how the general population is going to accept to pay some tariff for wastewater treatment? Will they sooner or later have to make some payment for this matter? (by Ms. Elisa Colom, SEGEPLAN)

Answer 2

- One of the components of the project is the environmental education that aims to raise the awareness of the people on the necessity of treatment of wastewater, which would demand the payment for the service of sewerage, and wastewater treatment. In this project everything is contemplated as an integral plan or package and the Municipalities has 9 years to construct at least a primary treatment to accomplish with the Regulation (by Ms Nadia Mijangos, MARN)

3) Presentation of Training Programs in Mexico and Colombia by Ms Flor Solorzano

Ms Flor Solorzano, MARN presented the training programs in Mexico and Colombia. Her presentation slides are given in Annex-4. After her presentation, following discussions are made:

- How do Colombia and Mexico define the payment for wastewater discharges? How do you consider establishing a payment for wastewater discharges? (The Minister of MARN)
- The tariff system must consider an amount that includes operation and maintenance of the system, and also the investment that will be made. The population must be informed why they are going to pay for a service, they have to be instructed that this is not an expense, is a public service. (Ms Flor Solorzano, MARN)
- In the mentioned countries they use a formula to calculate the payment quota. They follow the principle "Who the more contaminates, pay the more". For example, industries. If the pollution level decreases, also the payment will do so. (Mr. Byron Gonzalez, MARN)
- Another advantages is the re-use of water (water if internal re-circulation). Almost the majority of industries in Colombia and Mexico have reduced their consumption using recirculation. The reuse charge is included in the water supply service payment bill and the most important thing is that is fully legally supported. (Mr. Ricardo Serrano, MARN)

4) Closing by the Minister

The JCC Meeting was closed by the following speech of the Minister:

- The Minister mentioned that the water issue is important for the Minister but also for individuals and businesses. The Regulation is a key element to preserve our baseline in the Ministry, it is important to disseminate the Regulation at all levels, and also to institutionalize it by means of environmental education and seeking the support of other governmental institutions in order to expect the best results from this Regulation.
- He pointed out that MARN is not surprised at the results obtained from the interview survey of the Project, he quoted: "We are not going to disguise those results, we will work hard to improve them with the help of this Project", there are more institutions with the same results. The issue is important and we are concerned; however, we are trying to reinforce our capacities and with the cooperation of projects like this we will improve. We do not expect the results to go up to a 100%, the percentages projected by the JICA Project are realistic and accomplishable.

- Also the Minister said that the Regulation has to be seen as a wide-spectrum instrument, because it trends to apply the Clean Production in the Industry, the benefits of rationalizing the water consumption or to reuse treated wastewater, generates huge cost savings to the industry.
- He mentioned that this Regulation motivates the entrepreneurship, energetic efficiency, development level and productivity. This Regulation promotes a better production, and is necessary for the industry to be certified by ISO (9000 – 14000, etc.) So this regulation promotes the conditions for that certification.
- This project is very important for the Metropolitan Area, because it can retake what was planned by JICA in 1995-96 (Master Plan for Sewerage in the Metropolitan), now is time to rescue the main issues of this Project, with the cooperation of MARN and other institutions. It is time to implement the most part of this Master Plan.
- He also mentioned that the cost related to the accomplishment of this Regulation is high, but the time to implement is long and feasible. He quoted: "MARN responsibility is not to calculate the cost of implementation, is our responsibility to calculate the cost of not implementing". "We are not second class citizens, we live in a country rich in biodiversity and natural resources, and we have to let know the population that their conservation include a cost and we have to absorb it for future generations". "If we do not implement the Regulation, the country will not have productivity and its development could be threatened".
- Of course – he said – the cost is a concern but this Regulation has an accomplishment period until 2028.
- He mentioned also that part of the processes of the International Agenda of MARN was his visit to Colombia, they are very concerned about their wastewater discharges and so are we. He mentioned that in Colombia and other countries, potable water has to be paid no matter where it comes from, can be from a well, river or public-private services, and in the tariff goes also the charge for wastewater treatment, he pointed out that the cost of wastewater discharge is higher than the potable water supply cost.
- He closed his speech inviting all the attendance and friends to the inauguration of the Dissemination Campaign on January 31st. and asked them to participate in the project activities with more enthusiasm.

Annex-1 Participants List of the fourth JCC Meeting

Annex-2 Presentation Slides of Mr. Masami KATAYAMA

Annex-3 Revised PDM and PO

Annex-4 Presentation Slides of Flor Solorzano

ANNEX-1

The Project for Capacity Development for Water Conservation In the Metropolitan Area

Attendance List

4th. JCC Meeting **Place: Los Bosques Rooms I and II**
January 23, 2007

No.	Name	Institution	Duty
1	Ing. Masami Katayama	JICA PROJECT TEAM	Leader
2	Ing. Kazuyoshi Kageyama	JICA PROJECT TEAM	Team Member
3	Ing. Reiko Sasaki	JICA PROJECT TEAM	Coordinator
4	Ing. Sebastian Jara	JICA PROJECT TEAM	Member
5	Dr. Takayoshi Kurata	JICA PROJECT TEAM	Member
6	Lic. Mario Gándara	JICA PROJECT TEAM	Interpreter
7	Lic. Takenori Tanaka	JICA Guatemala Office	Advisor
8	Lic. Juan Mario Dary Fuentes	MARN	Minister
9	Ing. Manuel Urrutia	France Ex - Schoolarship Association	President
10	Lic. Nadia Mijangos López	MARN	Water Resources Unit Coordinator
11	Leticia Ramírez	SEGEPLAN	Cooperation Consultant
12	Lic. Olivia Orellana	MARN	Advisor
13	Ing. Flor de María Solórzano	MARN	Advisor
14	Erick Ardon	MARN	Advisor
15	Ing. Carlos Mazariegos	MARN	Advisor
16	Ing. Julio Escoto	EMPAGUA	Project´s Executive Director
17	José Mariano Gatica H.	SEGEPLAN	Consusltant
18	Ana Luisa De León	MARN - FOPAS	Asistent
19	Arq. José Luis Menéndez	MARN	Policies and Strategies Unit Director
20	Licda. Elisa Colom	SEGEPLAN	Advisor
21	Ing. Julio Guillermo García	ERIS/USAC	Teacher
22	Lic. Saúl E. Oliva	MARN	Protocol Unit Director
23	Arq. Luis F. Cotero	Municipalidad de Guatemala	Environment Unit
24	Héctor Ávila	Municipalidad de Guatemala	CEM Executive Coordinator
25	Ligia Pol Betancourt	MARN	Advisor
26	Julia Flores	MARN - FOPAS	Asistent
27	Byron González	MARN-SIA	Sub-Director
28	Arq. Rina Girón	AMSA	Inter-Institutional Relationships Unit
29	Lic. Mario Isaacs	MARN/DGPEA	Advisor
30	Ricardo Serrano	MARN/URHC	Advisor
31	Licda. Luisa María Fernández	DGARN/MARN	Environment Advisor
32	Ing. Pedro Tax	INSIVUMEH	Hidrology
33	Lic. Juan Pablo Barreda	LNS/MSPAS	Water FQ Unit
34	Dinorah de Franco	Municipalidad de Villa Nueva	General Services
35	Erick Alvarado	OGA-MINECO	Quality Coordinator
36	Alfonso González	Municipalidad de Amatitlán	Environment and Natural Resources Coordinator
37	Ing. Fernando Castañaza	DGPA/MARN	Consultant
38	Noé Barillas	Municipalidad de Santa Catarina Pinula	Councilman
39	Erick Falla Marroquín	DI/MARN	Network Manager

ANNEX-2

MARN

JICA

EL PROYECTO SOBRE FORTALECIMIENTO DE LA CAPACIDAD PARA LA CONSERVACION DEL AMBIENTE ACUATICO EN EL AREA METROPOLITANA

4ª. Reunión del Comité de Coordinación Conjunta

23 DE Enero de 2007

CTI Engineering International Co., Ltd.

Meta Global y Propósito del Proyecto

Meta Global: Efectivizar la Política Pública y la Reglamentación sobre la conservación de los Recursos Hídricos en el Área Metropolitana.

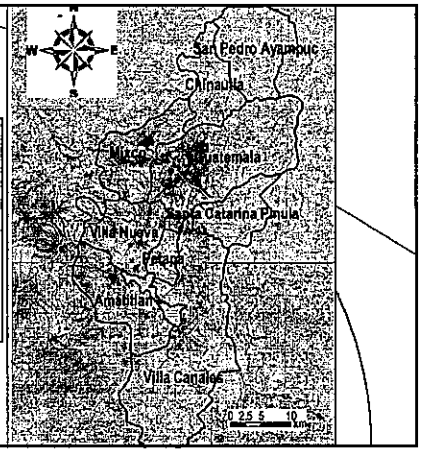
Propósito del Proyecto : · Fortalecer la capacidad de implementación por parte del MARN, del Reglamento de Aguas Residuales para la conservación del Recurso Hídrico en el área metropolitana.

Resultados del Proyecto

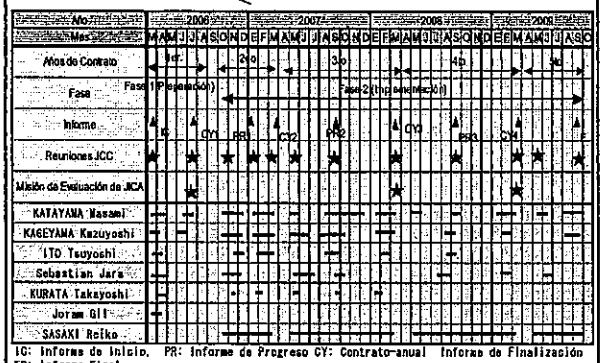
1. Se fortalecerá la capacidad para la formulación de estrategias para lograr una efectiva aplicación del Reglamento de Aguas Residuales.
2. Actividades para la implementación del Reglamento de Aguas Residuales han dado inicio.
3. Se establecerá un sistema sostenible para la recolección y administración de información sobre Recursos Hídricos.
4. La Educación Ambiental y diseminación de aspectos relacionados al Reglamento de Aguas Residuales serán implementadas por el MARN, con la colaboración de organizaciones relacionadas.

Área del Proyecto

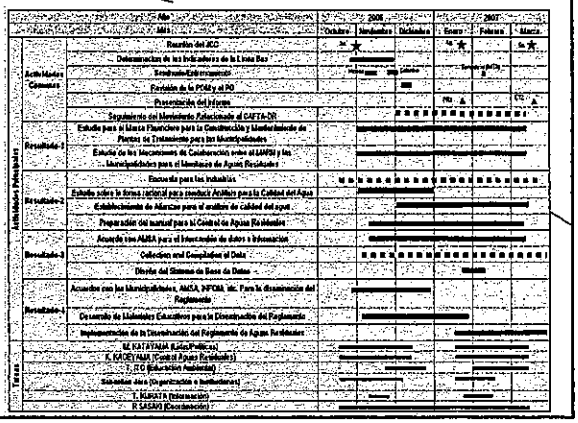
Nueve (9) Municipios en el Área Metropolitana de Guatemala (Guatemala, Mixco, Villa Nueva, Villa Canales, Chinautla, San Miguel Petapa, San Pedro Ayampuc, Santa Catarina Pinula y Amatitlán



Cronograma Tentativo del Proyecto



Cronograma para el 2º. Año (Oct. 2006 a Mar. 2007)



Progreso del Actividades Comunes

1. **Determinación de los Indicadores de la Línea Base.**
   - **Evaluación de la capacidad de la contraparte sobre el Reglamento de Aguas Residuales**
   - **Porcentaje de Percepción del MARN**
   - **Porcentaje de Percepción y conocimiento del Reglamento de Aguas Residuales**
2. **Capacitación de la Contraparte en México y Colombia**
3. **Revisión de la PDM y el PO**
4. **Seguimiento al Movimiento Relacionado al CAFTA-DR**

Resumen de los Resultados de la Evaluación de Capacidad

Clasificación	Ítem	Calificación
Colaboración con Organizaciones Relacionadas	Con Municipalidades	1
	Con AMSA	1
	Con la Cámara de Industria	1
	Con el Laboratorio del Ministerio de Salud Pública y Asistencia	1
	Promedio	1
Entendimiento y Utilización de Propiedades Intelectuales	Entendimiento del Reg… duales entre la	2
	Diseminación de las P… Estrategias para el cumplimiento efectivo … Residuales	1
	Uso del Manual de Cd… s	1
	Uso de la Guía Legal pa… Aguas Residuales	1
	Uso de la Guía para la Eval… ón Técnico	1
	Uso del Sistema de Base de Datos	1
	Uso de los Materiales Ambientales para la … y diseminació n relacionada con el reglamento de aguas residuales	1
	Uso de Materiales para la Educación Ambiental … ctica para Secundaria	1
	Con Municipalidades	1
	Promedio	1.11
Promedio		1.08

3.5 Casi Auto-Suficiente

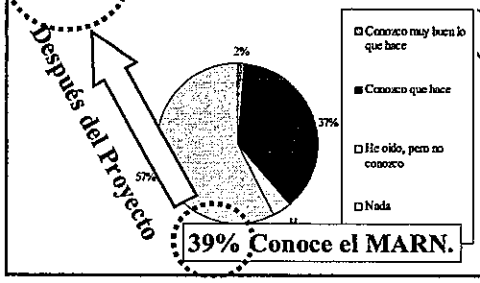
Después del Proyecto

Percepción del MARN a los habitantes

A: ¿ Conoce sobre el MARN ?
(200 muestras)

60%

Después del Proyecto



39% Conoce el MARN.

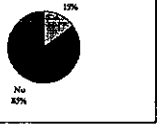
Percepción del Reglamento

Después del Proyecto

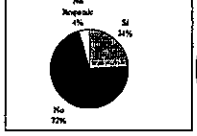
50%

Solo 15% Conoce el Reglamento de Aguas Residuales

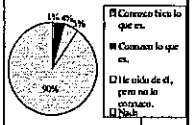
24 Oficiales Municipales



Gerentes de 142 Industrias



Para Los habitantes (200 Muestras)



Entrenamiento en México y Colombia

México:

- Fecha: Noviembre 5 al 11, 2006
- Candidatos: 4 miembros del staff del MARN
- Organización Huésped: CNA, México
- Contenido del Entrenamiento: Monitoreo de Aguas Residuales, Manual para el Control del Agua Residual, Sistema de Base de Datos, entre otros.

Colombia:

- Fecha: Noviembre 26 al 2 de Diciembre de 2006
- Candidatos: 4 miembros del staff del MARN
- Organización Huésped: MAVDT, Colombia
- Contenido del Entrenamiento: Monitoreo de Aguas Residuales, Manual para el Control del Agua Residual, Sistema de Base de Datos, entre otros.

Revisión de la PDM y el PO

- **Determinación de los indicadores cuantitativos basados en los estudios de línea base;**
- **Especificación de las organizaciones relacionadas para enfatizar la importancia de la colaboración;**
- **Para plasmar los resultados del Resultado 1, una nueva actividad denominada 1-2-3 fue adicionada, a efecto de establecer sistemas de colaboración entre el MARN y las Municipalidades para la implementación del Reglamento de Aguas Residuales; y**
- **Al confirmarse que la cooperación de las municipalidades podría asegurarse, aun sin un acuerdo, para la diseminación de las actividades del Reglamento, la palabra "Acuerdo" para la actividad 4-1-2 del PO del Resultado 4 fue reemplazada por "Hacer partícipes a las agencias en el proceso de diseminación".**

Movimiento Relacionado al CAFTA-DR

- **la USAID establecerá una oficina de Ambiente y Comercio para la implementación del CAFTA (Oficina de Comercio y Ambiente – CAFTA),**
- **El plan de trabajo con un costo de USD $1.8 millones, supone iniciará su ejecución en el año 2007.**

Plan de Trabajo de Acuerdos de Cooperación Ambiental CAFTA-DR 2006

No.	Proyecto	Presupuesto (USD)
1	Mejoramiento y armonizaci ó n del reglamentos, pol í ticas y procedimientos ambientales	$.250,000.00
2	Logro de la Legislación Ambiental Mejorada (Destrezas y Redes)	$.275,000.00
3	Sistemas de estandarización para el Manejo Ambiental	$.110,000.00
4	Revisión de la Evaluación Ambiental Estratégica (Para permitir la toma de decisión)	$.200,000.00
5	Apoyo a la Unidad de denuncias P ú blicas de CAFTA-DR a nivel nacional y la capacidad de participación de organizaciones no gubernamentales.	$.200,000.00
6	Protección y Conservación de la flora y fauna	$.100,000.00
7	Turismo sostenible y alternativas de estilos de vida en y alrededor de áreas protegidas	$.175,000.00
8	Promoción de productos agrarios y forestales para el manejo de las Fuentes Naturales Mejoradas	$.200,000.00
9	Promoción de la Competitividad Industrial y Producción más limpia	$.300,000.00
	Total	$.1,810,000.00

Progreso del Actividades del GRUPO No.1

1-1-1 Proponer un Marco Financiero para las Municipalidades para la construcción y mantenimiento de plantas de tratamiento.
Determinación de los Indicadores de la Línea Base.

1-1-2 Proponer mecanismos de colaboración con las Municipalidades para efectos de monitoreo de las aguas residuales.

Estudio Financiero para las Municipalidades

Desarrollo de Sistemas de Drenaje con Plantas de Tratamiento

Para cumplir con los límites máximos de los parámetros para la calidad del agua del Reglamento de Aguas Residuales, las municipalidades están obligadas a desarrollar sistemas del drenaje para aguas residuales con plantas del tratamiento de forma muy inteligente. Por ejemplo, el Reglamento dice que todo las municipalidades deben tener en operación, plantas de tratamiento de aguas residuales por lo menos con sistemas de tratamiento primario no más tarde de la fecha tope para la primera fase, 12 de Mayo de 2015.

Límites Máximos de DBO y SS de los Sistemas de Drenaje

Parámetros	1st Fase Mayo 12, 2015	2nd Fase Mayo 12, 2020	3rd Fase Mayo 12, 2024	4th Fase Mayo 12, 2029
DBO (mg/l)	250	100	100	100
SS (mg/l)	275	200	100	100

Estudio Financiero para las Municipalidades

Municipio de Guatemala (población de 924,000)

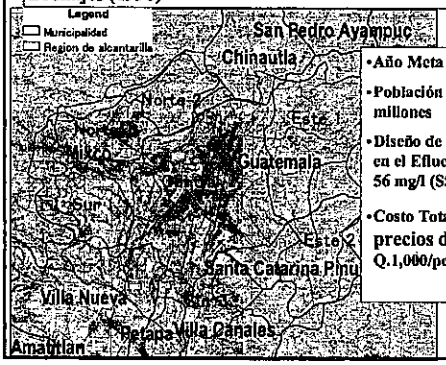
- **EMPAGUA es responsable del desarrollo y mantenimiento de los sistemas de agua potable y drenajes.**
- **El Presupuesto de EMPAGUA para el 2005 fue cercano a Q.320 millones.**
- **85% de la población está cubierta ya sea por sistemas de drenaje público (70%) o privado (15%), pero solo entre el 2 a 3% están cubiertos por plantas de tratamiento en operación.**
- **Las tarifas actuales de EMPAGUA dependen del consumo de agua potable. El cargo por alcantarillado y drenaje es un 20% del cargo de agua potable. Los habitantes no se les hace cargos por concepto de tratamiento de aguas residuales.**

Municipio de Santa Catarina Pinula (población de 64,000)

- **El presupuesto de la Municipalidad para el año 2005 fue de Q.77.5 millones.**
- **El sistema de drenaje cubre cerca del 20% de la población del Municipio, 20 % del cual está cubierto por 7 plantas de tratamiento de aguas residuales.**
- **La Municipalidad de Santa Catarina Pinula cobra tarifas fijas para agua potable y drenajes. El cargo por agua potable es de Q.20/mes y el cargo por drenaje y alcantarillado es de Q.5/mes. A los habitantes no se les hacen cargos por tratamiento de aguas residuales**

Estudio Financiero para las Municipalidades

Plan Maestro de JICA para el Desarrollo de Sistemas de Drenajes (1996)



- **Año Meta : 2015**
- **Población Atendida: 2.7 millones**
- **Diseño de la Calidad del Agua en el Efluente : 56 mg/l (DBO), 56 mg/l (SS)**
- **Costo Total: Q. 3 billones (a precios de 2002) ⇒ Q.1,000/persona**

Colaboración entre el MARN y las Municipalidades

Principales Responsabilidades Municipales para el Control de Aguas Residuales

- **Informal al MARN de cualquier acción contraria a las disposiciones del Reglamento para la aplicación de la Ley de Protección y Mejoramiento del Medio Ambiente (Decreto 68-86).**
- **Preparación de un "Estudio Técnico" sobre el manejo de las Aguas Residuales para el 16 de Mayo de 2007.**
- **Desarrollar sistemas de Drenaje con Plantas de Tratamiento.**
- **Disposición apropiada de los lodos provenientes de las Plantas de Tratamiento municipales.**
- **Tomar 2 muestras de aguas residuales o lodos de los servicios municipales por año como mínimo y realizar su respectivo análisis a su costo.**
- **Coordinar acciones para el monitoreo de las Aguas Residuales y lodos con el MARN**

Progreso del Actividades del GRUPO No. 2

- **2-1-1** Determinar planes y programas para la aplicación del control de aguas residuales
- **2-1-2** Conducir un estudio de inventario de industrias en del área de estudio.
- **2-1-3** Proveer y modificar los lineamientos legales para la implementación del Reglamento de Aguas Residuales.
- **2-1-4** Estudiar la forma racional para la conducir el análisis de calidad del agua.
- **2-1-5** Recopilar información para la preparación del manual y lineamientos

Inventario de Industrias

Número de Industrias Seleccionadas

Municipalidad	Número de Industrias	(%)	Versión (año)
Amatitlán	37	2.7	2005
Chinautla	3	0.2	2005
Guatemala	1,030	75.7	2004
Mixco	122	9	2005
San Miguel Petapa	40	2.9	2005
San Pedro Ayampúc	1	0.1	2006
Santa Catarina Pinula	5	0.4	2005
Villa Nueva	98	7.2	2005
Villa Canales	25	1.8	2006
Total	1,361	100	

Actividades de todo tipo puede observarse en la Ciudad Capital, pero también debe prestarse atención a Mixco y Villa Nueva pues en estos lugares hay varias industrias que fabrican productos químicos, alimenticios, no-metálicos y productos minerales (plástico, cemento, etc)

Estudio para la Forma más Racional para el Análisis de Calidad del Agua

3 Opciones para el análisis de Calidad de Agua y Lodos por el MARN

Opción No.	Descripción	Costo de 350 muestras al año	Evaluación
1	Laboratorio Central del MARN (MARN desea tener su propio laborntorio)	Inversión Inicial: Q.3,450,000, Coso Anual de O y M: Q.793,000	Es necesaria la Asistencia Financiera por alguna entidad donante.
2	Contratación del Servicios del Laboratorio del MSPAS	Q.913,000 solo para análisis de calidad del agua	El costo puede reducirse dado el nivel no-comercial de laboratorio con un acuerdo. El más realista
3	Contratación de Ecosistemas (Laboratorio privado con alta confiabilidad)	Q.872,000 para análisis de calidad del agua Q. 382,000 para análisis de lodos	La capacidad operacional es cuestionable.

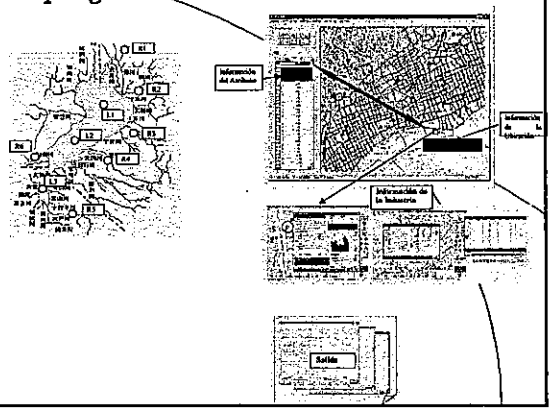
Progreso del Actividades del GRUPO No. 3

- **3-1-1** Realizar acuerdos con AMSA para el suministro de datos relacionados al monitoreo de la calidad del agua.
- **3-1-2** Adquirir información sobre monitoreo de la calidad del agua de AMSA.
- **3-1-3** Adquirir Mapa con información digital de MAGA.
- **3-1-4** Digitalizar el Inventario de las Industrias.
- **3-2-1** Diseñar el sistema de base de datos para la información del recurso hídrico.

Sistema de Base de Datos del Ambiente Hídrico

- El Sistema de Base de Datos trata con dos tipos de datos, tales como información sobre calidad del agua observada por AMSA e información sobre el manejo de aguas residuales.
- El Sistema de Base de Datos estará basado en tecnología GIS.
- La información del Sistema será compartida entre las Municipalidades y organizaciones relacionadas a través de Internet.

Despliegues del Sistema de Base de Datos



Progreso del Actividades del GRUPO No. 4

4-1-1 Realizar orientación sobre el Estudio técnico a las industrias y municipalidades.

4-1-2 Establecer un sistema de colaboración con las organizaciones relacionadas.

4-1-3 Preparar un plan de acción para el componente de Educación Ambiental.

4-1-4 Conducir la diseminación de la importancia del Reglamento de Aguas Residuales a las municipalidades, industrias y residentes locales.

Inauguración de la "Campaña de Diseminación del Reglamento de Aguas Residuales"

Fecha y Hora: 9:00 a 11:30, Miércoles, 31 de Enero de 2007

Lugar: Instituto Técnico de Capacitación y Productividad (INTECAP)

Participantes esperados: Personeros del Gobierno Central, Organizaciones y Municipalidades, Representantes de ONGs e Industrias

Programa Tentativo:

9:00	Discurso de apertura por el Excelentísimo Señor Presidente de Guatemala
9:10	Discurso por el Señor Ministro de Ambiente y Recursos Naturales
9:20	Discurso de Bienvenida por el Presidente de la ANAM
9:30	Discurso por Representante del Gobierno de Japón
	Refacción
10:00	"Contenido General del Proyecto MARN/JICA", por el Líder del Equipo de Proyecto de JICA
10:30	Información sobre el Reglamento, por la Coordinadora de la Unidad de Recursos Hídricos y Cuencas del MARN,
11:00	Preguntas y Respuestas
11:20	Cierre por el Señor Viceministro de Ambiente, MARN

ANNEX-3

Project Design Matrix (PDM) Revised on January 23, 2007

Project Title: The Project for Capacity Development for Water Environment Conservation in the Metropolitan Area
Project Period: March 2006 to September 2009 (42 months)
Target Area: Nine (9) Municipalities in the Metropolitan Area of Guatemala(Guatemala, Mixco, Villa Nueva, Villa Canales, Chinautla, San Miguel Petapa, San Pedro Ayampuc, Santa Catarina Pinula and Amatitlan
Target Group: Staff of the Ministry of Environment and Natural resources

Narrative summary	Objectively verifiable indicators	Means of verification	Important assumptions
<Overall Goal> • Public policy and regulation on water environment conservation in the metropolitan area is effective.	• 50 % of the 9 municipalities and selected industries accomplish the first stage reduction schedule of the wastewater regulation (for the municipalities in 2015 and for industries in 2011).	• Monitoring results by MARN	• Water environment-oriented policy of the Guatemalan government does not change.
<Project Purpose> • MARN's implementation capacity of the wastewater regulation for water environment conservation in the metropolitan area is reinforced.	• The results of the Capacity Assessment regarding the wastewater regulation are improved from 1.08 points in November 2006 to 3.5 points in September 2009. • Perception of MARN is improved from 39% in November 2006 to 60% in September 2009. • The staff number of the Unit of Watershed and Water Resources of MARN is increased from 8 (7 permanent and 1 temporal) in July 2006 to 16 (8 permanent and 8 temporal) in September 2009.	• Results of Capacity Assessment • Questionnaire survey • Annual Report of MARN	• Budget of MARN does not decrease drastically. • Mandates of MARN regarding water environment conservation are not changed.
<Output> **Output 0:** PDM_1 and PO_1 to be implemented in Stage2 are elaborated.	• PDM_1 and PO_1 are elaborated.	• PDM_1 and PO_1	
Output 1: Strategy formulation capacity for effective enforcement of the wastewater regulation is reinforced.	• By December 2007 strategies for effective enforcement of the wastewater regulation (financial frameworks for municipalities, collaboration mechanism with municipalities, incentives for industries, procedures of setup of environmental standards for water bodies) are proposed. • The proposed four strategies are approved by the Minister of MARN. • The proposed strategies are revised based on comments from the municipalities and the industrial chamber, etc.. • A collaboration system is established between MARN and municipalities for the implementation of the wastewater regulation.	• Proposed four strategies • Approval by the Minister • Comments from the municipalities and the industrial chamber, etc. • Revised four strategies • Agreement for collaboration	• Participation of counterpart personnel is ensured. • Transfer of counterparts is less. • The progress of the technical studies by industrial and agro-industrial wastewater generators is conducted on schedule. • Budget for water quality analysis by MARN is ensured. • Necessary information is provided in time.
Output 2: Activities for the implementation of the wastewater regulation are commenced.	• By November 2006 rational way of water quality analysis is studied. • By September 2009 manuals for wastewater monitoring and legal process for wastewater control are furnished. • By May 2007 an inventory of industrial and agro-industrial effluents is prepared. • By August 2009 sampling and quality analysis of wastewater is conducted for 400 industrial and agro-industrial wastewater generators (200 under the pilot project and the rest 200 by MARN).	• Manuals or guidelines • Inventory • Map of sampling sites • Results of water quality analysis	
Output 3: Sustainable system of compilation and administration for water environmental information is established.	• Digital map data are collected from MAGA by September 2006. • Water quality monitoring data are continuously collected from AMSA. • By September 2008 database system of water environmental information is established. • By September 2008 training for management of the database system is provided to more than 30 staff of MARN. • Between September 2008 and August 2009 updating of the database is made appropriately by the staff of MARN.	• Agreement with AMSA • Database system • Training records	
Output 4: Environmental education and dissemination related to the wastewater regulation is implemented by MARN, based on the collaboration with the municipalities, AMSA, MINEDUC, etc..	• Perception and knowledge on the wastewater regulation among the municipalities, industries and local residents is improved from average 15 % in November 2006 to average 50 % in September 2009. • Materials for dissemination of the wastewater regulation are developed by March 2007. • Materials of formal education are developed by December 2007. • Trainer's training is provided to 30 staff of the Ministry of Education by September 2008. • Monitoring of the teachers' training is conducted between October 2008 and August 2009.	• Questionnaire survey • Materials for dissemination • Materials of formal education • Training records • Monitoring report	
<Activities> 0-1 : To review MARN's present condition regarding water environment conservation (legislation, strategies, activities, etc.). 0-2 : To examine feasibility of Activities 1-1 to1-3, 2-1 to 2-3, 3-1 to 3-5, 4-1 to 4-3. 0-3 : To review and finalize PDM and PO for Stage 2 based on the 0-2 activity. 1-1 : To propose policies and strategies for effective enforcement of the wastewater regulation. 1-2: To revise the proposed strategies based on comments from related organizations. 1-3: To implement training for the staff of MARN, the municipalities, AMSA, INFOM, MSPyAS, etc. on water environment conservation policies and strategies. 2-1 : To prepare guideline for the implementation of wastewater control. 2-2 : To implement training for the staff of MARN, the municipalities, AMSA, INFOM, MSPyAS etc. on wastewater control. 3-1 : To collect data on water environment information. 3-2 : To develop and manage water environmental information database. 3-3 : To implement training for the staff of MARN, the municipalities, AMSA, INFOM, MSPyAS, etc. on data administration of water environment. 4-1 : To conduct environmental education/dissemination related to the wastewater regulation to the municipalities, industries and local residents. 4-2 : To develop environmental education materials, and provide trainer's training for water environmental education 4-3 : To implement training for the staff of MARN, the municipalities, AMSA, INFOM, MSPyAS, etc. on environmental education.	**<Input>** **Japanese side** 1. Experts : Stage 1: Policy and Strategy Water Quality Management, PCM, Organization and Institution, Water Quality Analysis and Laboratory, Pollution Sources (6 persons). Stage2: Policy and Strategy, Wastewater Control, Environmental Education, Water Quality Information, Organization and Institution (5 persons). 2. Training Programs 3. Expenses (1) Pilot projects (2) Database system preparation (3) Others **Guatemala side** - For Stage 1 and Stage 2 1. Counterpart personnel • Chairman of Joint Coordinating Committee and Project Director (1 person) • Deputy Project Director (1 Person) • Project Manager (1 Person) • Working Group Members 2. Facilities for Japanese side The Gatemalan side provides office space under the secure conditions. The facilities will be equipped with desks, meeting tables, communication equipment, etc. 3. Equipment and materials The Gatemalan side provides other necessary equipment and materials necessary for project implementation. 4. Budget for project operation The Gatemalan side provides salary and allowance for the staff of the Guatemalan side, including budget for travel expenses and operation expenses required under the project.		**<Preconditions>** • Staff of MARN and other associated functions are assigned to the Project by an official instruction.

Plan of Operations (Output-1) Revised on January 23, 2007

Output-1: Strategy formulation capacity for effective enforcement of the wastewater regulation will be reinforced.

Activities	Expected Results	Schedule																Person in Charge	Implementer	Materials and Equipment	Cost	Remarks
		2006				2007				2008				2009								
		3	6	9	12	3	6	9	12	3	6	9	12	3	6	9	12					
1-1:To propose policies and strategies for effective enforcement of the wastewater regulation.																						
1-1-1: To propose financial frameworks for municipalities to construct and maintain treatment plants.	Proposed financial mechanism				■	■	■	■										To be named	Working group 1	None	Cost for interview survey (Input by JICA)	
1-1-2: To propose a collaboration mechanism with municipalities for monitoring of wastewater	Proposed collaboration mechanism				■	■	■	■	■									To be named	Working group 1	None	Minimal	
1-1-3: To propose incentives for industries to comply with the wastewater regulation.	Proposed Incentive measures						■	■	■									To be named	Working group 1	None	Minimal	
1-1-4: To propose procedures for setup of water quality standards for public water bodies (classification of water bodies).	Proposed Procedures						■	■	■									To be named	Working group 1	None	Minimal	
1-1-5: To obtain an official approval from the Minister of MARN	Approval								■									Nadia	Working group 1	None	Minimal	
1-2: To revise the proposed strategies based on comments from the municipalities and the industrial chamber, etc.																						
1-2-1: To collect comments from **the municipalities and the industrial chamber, etc.**	Collected comments									▩	▩	▩	▩					To be named	Working group 1	None	Cost for seminars, materials (JICA Input)	
1-2-2: To revise the strategies based on the collected comments	Revised strategies												■	■	■			To be named	Working group 1	None	Minimal	
1-2-3: To establish a collaboration mechanism between MARN and municipalities revise the strategies based on the collected comments	Agreement												■	■	■			To be named	Working group 1	None	Minimal	
1-3:To implement training for the staff of MARN, the municipalities, AMSA, INFOM, MSPyAS, etc. on water environment conservation policies and strategies.																						
1-3-1: To organize a technology transfer seminar with Mexican expert invited as a lecturer.	3-day seminar					▮												Katayama	JICA Project Team	Text, Seminar Place	Input by JICA	

■ Activities under the Project, ▩ Activities under the responsibility of MARN

Plan of Operations (Output-2) Revised on January 23, 2007

Output-2: Activities for the implementation of the wastewater regulation is commenced.

Activities	Expected Results	Schedule 2006 3	6	9	12	2007 3	6	9	12	2008 3	6	9	12	2009 3	6	9	12	Person in Charge	Implementer	Materials and Equipment	Cost	Remarks
2-1: To prepare guideline for the implementation of wastewater control.																						
2-1-1: To determine plan and program for the implementation of wastewater control	Implementation plan for wastewater control				■													Nadia	Working group 2	None	Minimal	
2-1-2: To conduct an inventory survey for industrial factories in the study area.	Inventory of industrial factories				■	■												Flor	Working group 2	None	Minimal	
2-1-3: To provide and modify legal guidance for the implementation of wastewater regulation and	Legal guidance				▩											■		Serrano	Working group 2	None	Minimal	
2-1-4: To study rational way for water quality analysis	Study results				■													Flor	Working group 2	None	Minimal	
2-1-5: To collect information necessary for manual or guideline preparation.	Collected information				■													Nadia	Working group 2	None	Cost for traveling (Input by JICA)	
2-1-6: To prepare a draft manual (1st.edition) of the wastewater control.	Draft Manual				■	■												Flor & Eric	Working group 2	None	Minimal	
2-1-7: To prepare 2nd. and 3rd.editions of the manual for the wastewater control.	Manual for wastewater control.						■	■	■							■		Flor & Eric	Working group 2	None	Minimal	
2-1-8: To establish cooperation system with the competent agencies for water quality analysis	Agreement.					■	■											Nadia	Working group 2	None	Minimal	
2-1-9: To implement monitoring and legal process as pilot project	Report of pilot project for wastewater control						■	■	■	■								Eric	Working group 2	Sampling Equipment	Input by JICA	
2-1-10: To continue monitoring work for wastewater control										▩	▩	▩	▩	▩	▩	▩		Eric	Working group 2	Sampling Equipment	Input by MARN	
2-1-11: To evaluate monitoring work	Monitoring report															■		Kageyama	Working group 2	None	Minimal	
2-1-12: To publish summary report of the wastewater monitoring results.	Summary report															■		Flor	Working group 2	None	Minimal	
2-2: To implement training for the staff of MARN, the municipalities, AMSA, INFOM, MSPyAS etc. on wastewater control																						
2-2-1: To organize a technology transfer seminar with Mexican expert invited as a lecturer.	3-day seminar					■												Katayama	JICA Project Team	Text, Seminar Place	Input by JICA	
2-2-2: To prepare guidance for the evaluation of the technical study				▩														Nadia &Flor	Working group 2	None	Minimal	
2-2-3: To organize workshop for the evaluation of the technical study (30 trainees)	5-day seminar					■												Nadia & Flor	Working group 2	Materials, Seminar place	Cost for Seminar (Input by JICA)	
2-2-4: To provide training for the evaluation of technical study (5 trainees)	5-day training					■												Flor	Working group 2	None	Minimal	
2-2-5: To dispatch the staff of MARN and related organizations to Mexico for technical training on sampling and water quality analysis.	Dispatch of person(s) of MARN and/or related organization(s)						■											Kageyama	JICA Project Team	None	Input by JICA	

■ Activities under the Project, ▩ Activities under the responsibility of MARN

Plan of Operations (Output-3) Revised on January 23, 2007

Output-3: Compilation and administration of water environment information will be systematized

Activities	Expected Results	Schedule																Person in Charge	Implementer	Materials and Equipment	Cost	Remarks
		2006				2007				2008				2009								
		3	6	9	12	3	6	9	12	3	6	9	12	3	6	9	12					
3-1:To collect data on water environmental information.																						
3-1-1: To make an agreement with AMSA for acquiring of water quality monitoring data	Agreements				▒	▒												Nadia	Working group 3	None	Minimal	
3-1-2: To collect water quality monitoring data from AMSA	Collected Data			■	■	■	■	■	■	■	■	■	■	■	■	■		Alejandro	Working group 3	None	Minimal	
3-1-3: To collect digital map data from MAGA	Digital map				▒	▒												Alejandro	Working group 3	None	Minimal	
3-1-4: To digitize the inventory of industries	Digital data				■	■	■											Bayron	Working group 3	None	Minimal	
3-1-5: To digitize the technical study results	Digital data						■	■	■	■	■	■	■	■	■	■	■	Bayron	Working group 3	None	Minimal	
3-1-6: To digitize the wastewater monitoring results	Digital data						■	■	■	■	■	■	■	■	■	■	■	Bayron	Working group 3	None	Minimal	
3-2: To develop and manage water environmental information database.																						
3-2-1: To design the database system for water environmental information.	Specification of database system.					■												Bayron	Working group 3	None	Minimal	
3-2-2: To establish the database system for water environmental information.	Database system						■	■	■	■	■	■	■					Bayron	Working 3	Software	Cost required (Input by JICA)	
3-2-3: To implement training on the database system for water environmental information.	Report of training											■						Bayron	Working group 3	Computers	Minimal	
3-2-4: To operate and update the database system by MARN	Updating of system												▒	▒	▒	▒	▒	Bayron	Working group 3	None	Minimal	
3-2-5: To evaluate operation and updating of the database system by MARN	Evaluation															■		Katayama	Working group 3	None	Minimal	
3-3:To implement training for the staff of MARN, the municipalities, AMSA, INFOM, MSPyAS etc. on data administration of water environment																						
3-3-1: To organize a technology transfer seminar with Mexican expert invited as a lecturer.	3-day seminar					■												Katayama	JICA Project Team	Text, Seminar Place	Input by JICA	

■ Activities under the Project, ▒ Activities under the responsibility of MARN

Plan of Operations (Group-4) Revised on January 23, 2007

Output-4: Environmental education and dissemination related to the wastewater regulation is implemented by MARN, based on the collaboration with related organizations.

Activities	Expected Results	Schedule	Person in Charge	Implementer	Materials and Equipment	Cost	Remarks
		2006: 3 6 9 12 / 2007: 3 6 9 12 / 2008: 3 6 9 12 / 2009: 3 6 9 12					
4-1: To conduct environmental education/dissemination related to the wastewater regulation to the municipalities, industries and local residents.							
4-1-1: To conduct Technical Workshops of the Wastewater Regulation (W.R.) to the industries and the municipalities	Industries and municipalities with technical knowledge of the W.R		Nadia	MARN	None	Minimal	
4-1-2: To present this Project among the related organizations in order to promote their collaboration for the dissemination of the W.R	Involvement of related agencies in the dissemination process		Nadia & Jara	WG 4	None	Minimal	
4-1-3: To prepare an environmental education/dissemination action plan	Action Plan (Preparation of dissemination materials, etc.)		Julia	WG 4	None		
4-1-4: To conduct dissemination of importance of the wastewater regulation to the municipalities, industries and local residents.	Dissemination activities (Dissemination Workshops, etc.)		Julia & Ana, Nadia	WG 4	Dissemination materials, Promotion video/radio/ newspaper	Cost required (Input by JICA)	
4-2: To develop environmental education materials, and provide trainer's training for water environmental education for junior high school.							
4-2-1: To establish collaboration system with related organizations for water environmental formal education.	Agreement		To be named	WG 4	None	Minimal	
4-2-2: To prepare an action plan for trainer's training	Action plan		To be named	WG 4	None	Minimal	
4-2-3: To develop materials for water environmental formal education	Materials		To be named	WG 4	Video, Booklet, etc.	Cost required (Input by JICA)	
4-2-4: To provide training to school teachers' trainers	Training		To be named	WG 4	Developed Materials	Minimal	
4-2-5: To monitor training to school teachers by the trainers	Monitoring results		To be named	WG 4	None	Minimal	
4-2-6: To evaluate the above process	Evaluation results		Ito	WG 4	None	Minimal	
4-3: To implement training for the staff of MARN, the municipalities, AMSA, INFOM, MSPyAS etc. on environmental education							
4-3-1: To organize a technology transfer seminar with Mexican expert invited as a lecturer.	One-week seminar		Katayama	JICA Project Team	Text, Seminar Place	Input by JICA	
4-3-2: To dispatch the staff of MARN to Mexico for technical training on environmental education	Dispatch of MARN counterpart(s)		Jara	JICA Project Team	None	Input by JICA	

WG: Working Group

: Activities under the Project, : Activities under the responsibility of MARN

A-11

A-2-46

ANNEX-4

EXPERIENCIAS DE LAS VISITAS REALIZADAS A LA COMISIÓN NACIONAL DEL AGUA (CNA) EN MEXICO Y AL MINISTERIO DE AMBIENTE, VIVIENDA Y DESARROLLO TERRITORIAL (MAVDT) EN COLOMBIA

23 DE ENERO DE 2007

Como parte de las actividades planificadas para la ejecución del proyecto "Fortalecimiento de la Capacidad para la conservación de ambientes acuáticos en el Área metropolitana" específicamente en el resultado 2 y 3 de este proyecto, fue la visita a la CNA en México, y al MAVDT, en Colombia.

En estos países tienen experiencia en la aplicación de la normatividad en el control de la contaminación por descargas de aguas residuales industriales y Municipales.

Objetivos de la visita

-Conocer el Marco Legal e institucional en materia de prevención y control de la contaminación hídrica tanto en México como en Colombia, así como el sistema de sanciones y acciones legales aplicadas, para el cumplimiento de la norma de descargas de aguas residuales.

-Conocer las acciones que se llevan a cabo para la implementación de la norma Mexicana y Colombiana de descargas de aguas residuales.

-Conocer los programas de incentivos que se tiene para el cumplimiento de Industrias y Municipalidades.

- Visitar diferentes tipos de industrias para conocer el manejo de las aguas residuales.

Desarrollo de la actividad CNA, México

La actividad se desarrolló en las instalaciones de la Comisión Nacional del Agua, en la Ciudad de México, D.F.

En donde nos expusieron el Panorama del agua en México y a continuación cada una de las Dependencias de CNA realizó una presentación de las actividades que realiza, los programas que tienen, el material bibliográfico, etc. También se realizaron visitas a la oficina de CONAGUA en Toluca (para ver el sistema de inspección y control) y visitamos dos empresas: Emsambladora de autos Chrysler y RECICLAGUA.

Desarrollo de la actividad CNA, México

Los temas que se abordaron en las presentaciones fueron:

•Los otorgamientos de concesiones, Registro Publico de derechos de Agua (REPDA)
•Permisos de descarga
•Programas para el cumplimiento de las Municipalidades
•Actividades para la realización de las inspecciones y mediciones
•Las sanciones tanto de tipo económico como administrativas
•La división de los laboratorios a través de las redes (primarias, secundarias y especiales)

Desarrollo de la actividad CNA, México

•Los formatos de la orden de inspección, título de concesión y otorgamiento de permiso de descarga, registro de campo para toma de muestras en visitas de verificación y el acta de inspección, la cadena de custodia.

Desarrollo de la actividad CNA, México

Planta RECICLAGUA

Desarrollo de la actividad CNA, México

Visitamos el área donde estuvo el Lago Texcoco, en dicha área a través de un proyecto se tiene actualmente dos plantas de tratamiento de aguas residuales, un relleno sanitario, programas de educación ambiental a todo nivel.

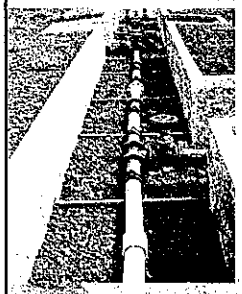
Desarrollo de la actividad CNA, México

PTAR, Ex Lago Texcoco

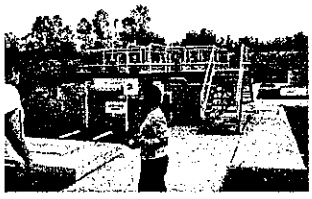
Desarrollo de la actividad CNA, México

Como parte de las actividades programadas, se visitó también el Centro Mexicano de Capacitación en Agua y Saneamiento (CEMCAS), en el cual se capacitan a los técnicos de la CNA, y quienes imparten cursos durante todo el año en diferentes temas, cuentan con instalaciones adecuadas para la realización de practicas y nos comentaban que la mayor parte del tiempo lo dedican a la parte practica.

Desarrollo de la actividad CNA, México



Desarrollo de la actividad CNA, México



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Desarrollo de la actividad MAVDT

En Colombia la actividad fue desarrollada en las instalaciones del MAVDT, en el Departamento Administrativo del Medio Ambiente (DAMA), en el Instituto de Hidrología, Meteorología, y Estudios Ambientales (IDEAM), diferentes industrias y el Área Metropolitana del Valle de Áburra y las Empresas Publicas de Medellín (EEPPM).

Desarrollo de la actividad MAVDT

En las instalaciones del MAVDT se realizó la presentación del Sistema Nacional Ambiental SINA, que tiene como componentes a entidades responsables de la gestión ambiental como lo son el MAVDT; políticas, normas y regulaciones; sociedad civil organizada, comunidad, gremios; recursos financieros, y las entidades de Investigación (IDEAM) y Universidades.

Desarrollo de la actividad MAVDT

En relación a la ordenación del recurso agua sobre el control de la contaminación hídrica tienen los instrumentos de comando y control como los permisos de vertimiento (plan del manejo de vertimientos), los instrumentos de planificación que van hacia unos objetivos de calidad (estándares y metas) y que es tarea de los prestadores del servicio y los instrumentos económicos como la tasa retributiva que es parte de otros usuarios.

Desarrollo de la actividad IDEAM

Luego visitamos el Instituto de Hidrología, Meteorología y Estudios Ambientales IDEAM, en donde nos comentaron sobre los procesos de sistemas de acreditación de laboratorios ambientales, en este aspecto los laboratorios son sometidos a un sistema de acreditación e intercalibración, de acuerdo a la norma ISO/IEC/17025.

En la parte del monitoreo y vigilancia de la calidad del agua le corresponde al IDEAM efectuar el seguimiento de los recursos biofísicos de la nación especialmente en lo referente a su contaminación y degradación, necesarios para la toma de decisiones de las autoridades ambientales.

Desarrollo de la actividad DAMA

Luego se visito el Departamento Técnico Administrativo del Medio Ambiente DAMA, que es la autoridad ambiental que ejecuta las acciones de inspección en el área de Bogotá, quienes nos explicaron las acciones que tomaron en un principio para implementar la normativa, entre las cuales mencionaron la separación de redes de alcantarillado pluvial y sanitario (para evitar la dilución), la caracterización y que los usuarios tengan su caja de inspección, para que se pueda tomar la muestra de forma adecuada y que no ponga en riesgo al inspector.

Desarrollo de la actividad DAMA

El DAMA tiene un programa de seguimiento y monitoreo de efluentes líquidos, el cual tiene 8 fases. Estas fases comprenden un periodo desde el año 2000 hasta el año 2007.
La octava fase implica el monitoreo al sector industrial, cuerpos de agua: quebradas, descargas de fuentes superficiales a río Bogotá, interior perímetro: vertimientos, principales afluentes y calidad hídrica; pozos subterráneos, humedales, modelación de los tres (3) ríos principales (2005-2007).

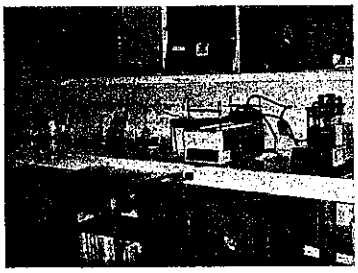
Desarrollo de la actividad DAMA

El DAMA cuenta con programas para el cumplimiento de la normatividad como la ventanilla de asistencia técnica ambiental para las MiPyMes, (micro, pequeña y mediana empresa) – ACERCAR industria, que es un proyecto orientado a mejorar el desempeño ambiental y la competitividad de las MiPyMes de los sectores industriales de Bogota.
También como parte de los incentivos esta el programa de excelencia ambiental distrital (PREAD), fue creado por el DAMA el 27 de febrero de 2001, como mecanismo de reconocimiento.

Desarrollo de la actividad AMVA y EEPPM

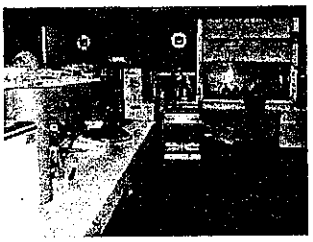
En la Ciudad de Medellín conocimos el Área Metropolitana del Valle de Aburrá AMVA, quien es la autoridad ambiental competente, en la realización del control y vigilancia de los vertimientos al río Medellín.

Y la experiencia de Empresas Publicas de Medellín (EEPP), en cuanto al control y vigilancia de los vertimientos industriales al río Medellín, y realizamos una visita a la planta de tratamiento de aguas residuales San Fernando.



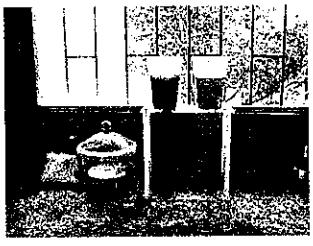
Laboratorio IDEAM

Laboratorio IDEAM

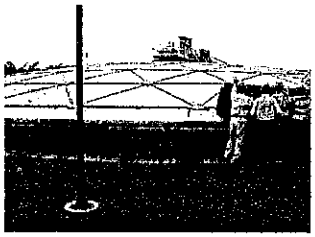


Aguas residuales de la industria KOMAYAD

Aguas residuales frigorífico Guadalupe

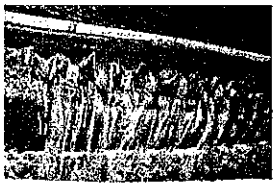


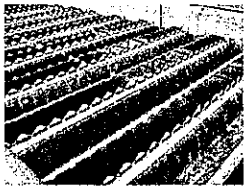
PTAR San Fernando, en Medellín



PTAR San Fernando, en Medellín

PTAR San Fernando, en Medellín





GRACIAS POR SU ATENCION

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