CHAPTER 5

Implementation and Evaluation of Pilot Projects

CHAPTER 5 IMPLEMENTATION AND EVALUATION OF PILOT PROJECTS

5.1 Purpose of Implementing Pilot Projects

5.1.1 Position of Pilot Projects

In this Study, pilot projects of model areas for the four groups are implemented in the process of formulating a Master Plan (see the figure below). Pilot projects are short-term, high-priority projects proposed in the four Model Area Development Plans, which are formulated from the Framework of the Master Plan. In each model area, the Area Development Plan is formulated after the analysis of current natural and socioeconomic conditions and conduct of participatory planning workshops. These Area Development Plans are the basis for the Master Plan. Pilot projects in each Model Area aims to bring about development impact to people by achieving the project purpose. At the same time, through the implementation process, it is important to learn lessons for formulating an implementation plan for the Master Plan where the IAD and people collaborate to implement similar rural development projects.

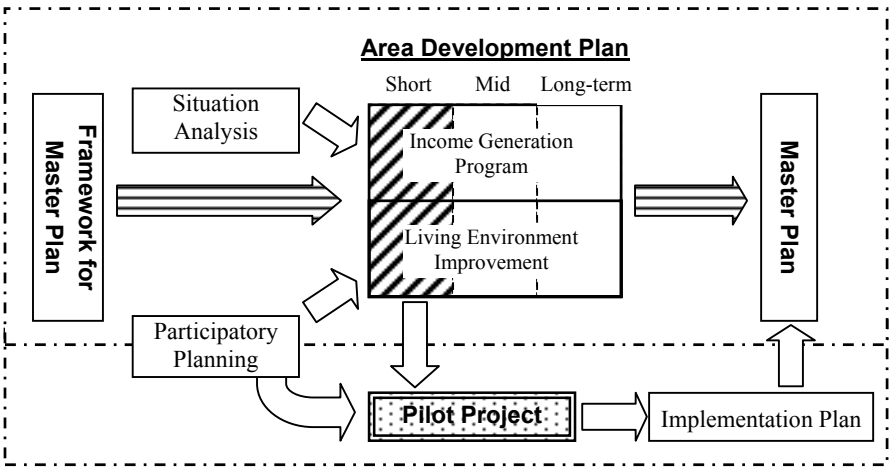


Figure 5.1 Position of Pilot Projects

5.1.2 Purposes of Pilot Project

The purpose of pilot projects is to gain lessons and recommendation through the process of planning, implementation, monitoring and evaluation and reflect them to the Master Plan. More specifically, their purpose is to verify strategies, methods, organizations, and mechanisms for implementing the Master Plan.

As a basic view of the Study, it is unrealistic to assume a scenario where the IAD carries out all the projects in the Master Plan. Inherently, various stakeholders are involved in rural development, and it should be considered that these stakeholders collaborate to realize the Master Plan. The IAD, responsible for development of the settlement areas, and direct beneficiaries play particularly important roles.

In the Study, the pilot projects are implemented to verify the following hypotheses.

As a strategy for realizing the Master Plan, it is important that a project extends "vertically" and "horizontally." "Vertical extension" is that direct beneficiaries use the lessons learned in a project to launch another project or a new development process (Hypothesis No.1). "Horizontal extension" is that people from the same area or another see a project and start a similar project with their own initiative (Hypothesis No.2).

By examining these hypotheses, the following four-point scenario for realizing the Master Plan can be verified as well. The Study believes that in order to realize the Master Plan, it is necessary that vertical and horizontal extensions must take place step by step. Pilot projects are carried out to verify this idea.

1) A certain (or a few) project is implemented as an entry point (See the corresponding number in the figure below).

2) Those involved in this project use the experience and launch a new development (vertical extension).

3) Fellows who have seen the project attempt to start a similar project by their own (horizontal extension within the area).

4) A similar project also extends and develops in another area with the participation of those who have seen the project (horizontal extension between areas).

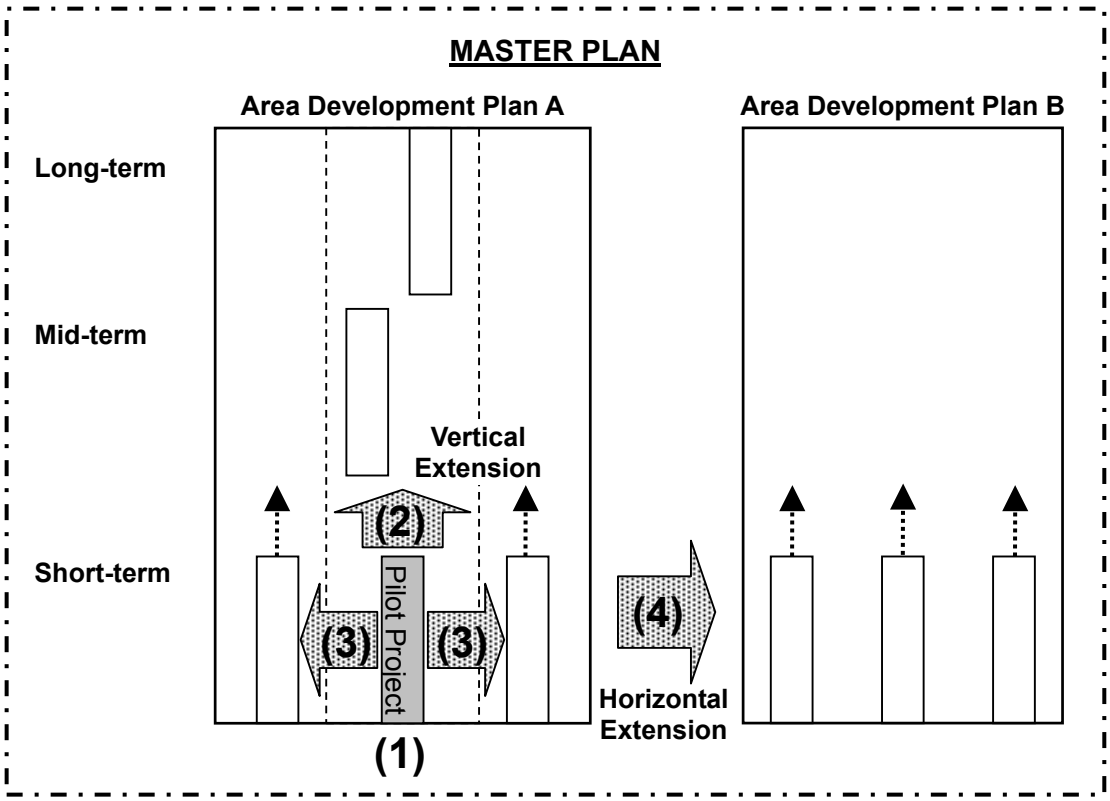


Figure 5.2 Scenario for Master Plan: from Pilot Project to Vertical and Horizontal Extension

In addition to verifying these hypotheses on vertical and horizontal extensions, it is important to clarify and recommend specific strategies, methods, organizations, and mechanisms. Various stakeholders have been involved in the process of planning, implemention, monitoring and evaluation of the pilot projects and learned important lessons. The verification purpose of the pilot projects is, therefore, to use the lessons learned and make recommendations for vertical and horizontal extensions.

5.1.3 Participatory Development by Committed Involvement of the Stakeholders

1) Definition of participatory development

Participatory development in this Study does not only mean participation of the farmers, the final beneficiaries, but means committed involvement of all the stakeholders who need to act in the development process of the farmers. Farmers are definitely the main actors of rural development, but officers of IAD and other government organizations, NGO members, consultants and many others are also involved in rural development. Rural development cannot be realized without committed involvement of these stakeholders.

2) Development process and capacity building of the stakeholders

Then, what is the development process where various stakeholders are involved with commitment? In conventional concept of development, the word "develop" is a transitive verb and means to develop undeveloped areas or undeveloped people of the target area. Then the development process is only the development process of the target group.

However, in social development, the word "develop" is an intransitive verb and means to learn lessons, to build the capacity by all the actors involved with commitment. Therefore, we need to consider all the different development processes of all the stakeholders. Through the project, all the stakeholders are expected to find something, to learn lessons and to develop their capacity.

For that purpose, it is not possible to use one and only criteria for monitoring and evaluation, and to monitor and evaluate only the development process of the target group. Monitoring and evaluation is also a part of the learning system for each stakeholder, and by that way a project can be an opportunity for the stakeholders to learn lessons.

3) Sustainable development

A project is usually defined by three elements; 1) certain period of time, 2) pre-determined objectives, and 3) certain inputs (people, material and money). Therefore, by definition, a project is to be completed when 1) certain period of time has passed, 2) pre-set objectives have been fulfilled, and 3) certain inputs have been consumed. That means sustainability is not in the project itself, but in the development process of each stakeholder who is involved in the project with commitment. Sustainability depends on how the

project has been incorporated in the development process of each stakeholder and how each stakeholder will act in the future. Beyond operation and maintenance of a certain project, how the outcome of the project expands through farmer-to-farmer extension and how the stakeholders involved reflect the lessons learned from the project are the key for the real sustainable development.

4) Institutional setup

If participatory development in this Study is defined as committed involvement of various stakeholders, and if the Study itself is considered as a learning and evolving system for the stakeholders to find, learn and act, the relation between the master plan and the pilot projects are also totally different from that of conventional master plan type development studies.

It is not good enough to implement several pilot projects independently and to feed back to the master plan. Not only all the pilot projects need to be planned, implemented, monitored and evaluated in an integrated manner, but also the formulation of the master plan and the Study itself need to be composed as a process to realize the capacity building of the stakeholders and institutional setup for the implementation of the master plan.

The master plan in this Study is not a static drawing or paper, but a dynamic system including people, organizations and institutions. For this purpose, following institutional setups are necessary.

(a) Institutional setup to realize participatory planning, implementation, monitoring and evaluation of projects according to the master plan.

(b) Institutional setup to feed back the lessons learned from the projects to the master plan, and

(c) Institutional setup for each stakeholder to build his or her capacity through the activities under (a) and (b).

Accordingly, the verification purpose of the Study was defined as “capacity building of stakeholders and institutional setup for implementation of the master plan,” four model areas were selected as the sites to verify a mini-scale master plan as a learning and evolving system, and the Study Team have tried to realize (a) to (c) through participatory planning, implementation, monitoring and evaluation.

5) Evolving process of workshop management

In this Study, workshop management also follows the concept of learning and evolving system. Since studies or projects are initiated by direct intervention from outside, it is inevitable for the Study Team and IAD to become the main actors at the earlier stage. However, if the Team or IAD are at the center till the end of the projects, there will be no sustainability. Hence, workshop management was aimed to evolve as follows:

(a) Analytical Workshops (mainly from March to June 2001, Progress II)

The Study Team and Social Development Division of IAD were the main actors of the workshops.

(b) Prioritization Workshops (mainly from October to December 2001, Progress III)

The Study Team became directors, and Social Development Division did the main actors.

(c) Kick-off Workshops (mainly from May to June 2002, Progress IV)

Officers of IAD regional offices became the main actors, Social Development Division became the Directors and the Study Team tried to act as the Producers.

(d) Monitoring and Evaluation Workshops (mainly from July 2002)

Trying more sustainable management for the future where the Study Team phase out by the leaders of the farmers as the main actors, officers of IAD regional offices as the directors, and Social Development Division as the producers. (refer to Figure 5.3 and Figure 5.4)

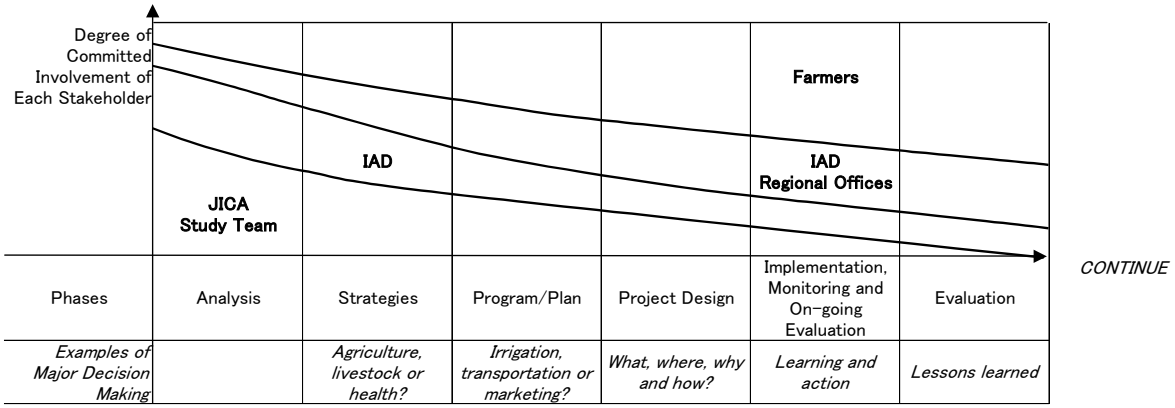


Figure 5.3 Degree of Committed Involvement and Project Cycle

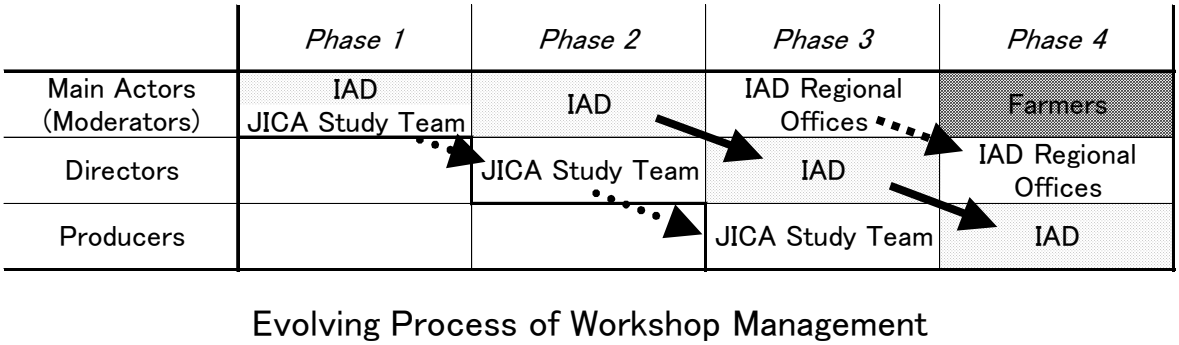


Figure 5.4 Evolving Process of Workshop Management

5.1.4 Implementation Mechanism of Pilot Projects

Despite the recognition in this Study that IAD Headquarter and Gerencia are the ones that provide public services in the settlement areas and facilitate capacity building among settlers to be self-reliant, IAD had had little experience in operating and managing development projects where settlers and other stakeholders individually make their own commitments to produce results as a whole. Figure 5.5 below shows the mechanism for pilot project implementation led by IAD, which are being tested during this Study.

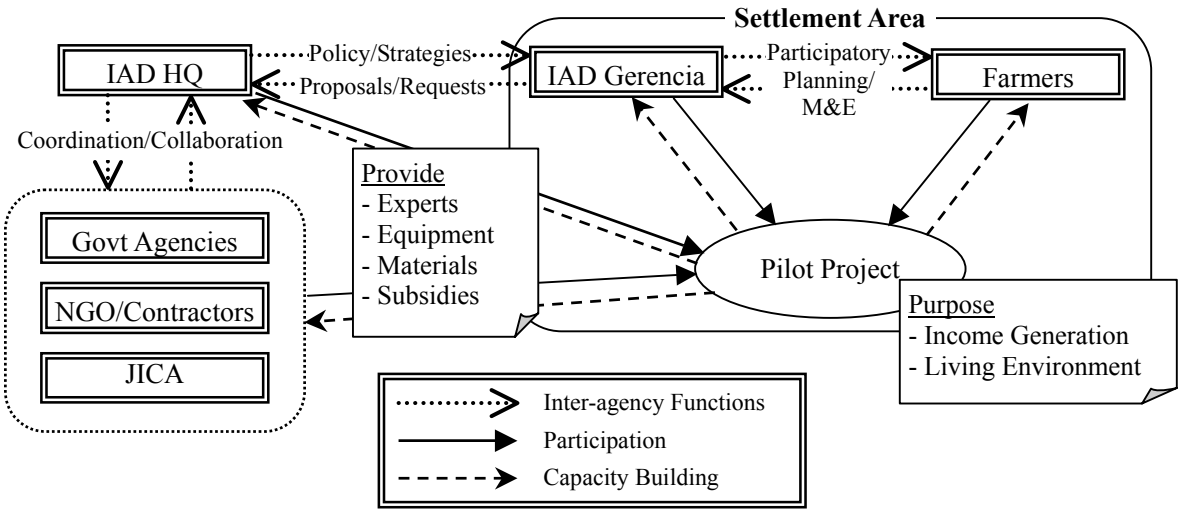


Figure 5.5 Prototype of Implementation Mechanism of Pilot Projects led by IAD

5.2 Model Area of Group A : La Luisa Area

5.2.1 Natural Conditions

(1) Topography and Geology

La Luisa Area is situated 30km north of Santo Domingo, the capital of the Dominican Republic, and is located at longitude 69°54′ W and latitude 18°43′ N. National Road No.11 is running through the west of the area. The area is bounded on the south and southeast by Ozama River and on the east by Mijo River. The farmland at the north of the Caoba River which flows through the area gets narrow gradually and then verges on the domiciles of La Luisa Blanca.

Three communities - El Laurel, La Luisa Blanca and La Luisa Prieta - are located along the Route 11 at an order of north to south. The community of Batey La Luisa lies to the southeast of La Luisa Prieta and along the fringe of the farmlands which are former sugarcane plantation areas extending to the southern area of La Luisa. No residents are living in the farmland areas.

The altitude of the area approximately ranges about 15m and 30m. In general, the area gradually inclines from

northwest to southeast. Creeks were formed as natural drainage in the farmland areas. Catchment areas of the creeks are extended to the inside of the farmlands and the northeast area of La Luisa. In the farmland of La Luisa Area, the northwestern and the central parts are undulated but the southeastern parts are flat. The clayey soil of river deposits in the Quaternary overlaid base rock composed of shale covers the northwest to the middle of the hilly terrain. The soil deposits are estimated from 25m to 60m in depth. The flat land at the southeast of the area consists of the alluvial clay conveyed by Ozama and Mijo rivers. The depressions along creeks were formed by erosion and the bottoms of creeks are silted up by relatively soft clay.

The base rock composed of shale was confirmed 6m deep at El Laurel and 24m at the northern part of the farmland areas. However, the base rock was not appeared at the southern part of the farmland areas because the alluvial clay was thicker than 60m in depth. This alluvium consists of the alternation of clay and sand layers. Total thickness of clayey layers is thicker than sand layers.

(2) Meteorology

Data of Monte Plata Meteorological Station (1946-1990), which is about 20 km north of La Luisa, were analyzed. Based on the analysis, the area is classified into a humid area with abundant rainfall - 2000-mm annual rainfall with 138 rainy days. From May to October, each month has more than 200-mm rainfall. Even during dry season (November to April), each month has more than 5 rainy days. Extreme 24-hour precipitation, 313.7 mm, was recorded in March 1983. The survey done by JAD (March 1999) indicated that the maximum daily hours of sunshine was more than 8-hour in February, and the seasonal change of humidity was relatively small (72.2 % in February while 79.3 % in September) with less windy conditions.

Table 5.1 Climate Data - Monte Plata (1946-1990)

Month		1	2	3	4	5	6	7	8	9	10	11	12	Total
Rainfall	(mm)	59.5	81.9	88.7	125.4	273.7	250.6	235.7	297.9	237.1	202.2	111.5	72.7	2030.8
Rainy days	(days)	7.0	6.5	6.8	8.5	15.0	15.6	15.4	16.4	15.2	13.5	9.7	8.4	137.8
Temp.-Max	(degree)	29.5	30.2	31.4	32.4	32.6	33.0	33.1	33.0	32.8	32.2	31.1	29.7	-
Temp.-Min.	(degree)	18.8	19.0	20.1	20.7	21.7	22.2	22.3	22.3	22.1	21.7	20.6	19.4	-

Source: Oficina Nacional de Meteorologia

In the area, radiation is considered to influence potential evapo-transpiration (ETP), which is an important factor to decide water consumption of farmland, more than other factors because both wind and humidity conditions have fewer effects on the ETP in La Luisa. According to the JAD report, the average daily ETP ranges 3.8 to 5.2 mm in the area. In consideration of the rainfall data shown above, precipitation excesses ETP from May to October, which means that the excess rainfall becomes surface water that is necessary to be drained.

(3) Water Resources and Groundwater

La Luisa area is bounded on the south and southeast by Ozama River and on the east by Mijo River. Caoba River passes inside of the area. Mijo River and Caoba River join Ozama River at the east of the farmland

areas. Finally Ozama River empties into Caribbean Sea at Santo Domingo. Ozama River has one of the largest basin in the country, so that runoff of the river has enough discharge for irrigation. Runoff of Mijo River, which impounded at Mijo Dam, is utilized for paddy irrigation in La Estrella located in the east side of Mijo River. Further utilization of water from Mijo River, therefore, is rather difficult. The catchment area of Caoba River is only 19 sq.km, so that the quantity of river discharge in the dry season is little and not enough for irrigation.

According to the borehole investigation in the area, water level in the holes ranges from 2.3m to 10.8m in deep from the surface. Since the capable yield of existing wells in the farmland area is approximately from 200 to 780 lit/min and also quality of underground water is potable, the area has enough potential to develop for domestic water.

There is no irrigation system in the farmland area because the area has much rainfall so that sugarcane was cultivated by rainwater. In future, it is considered that groundwater and river water is applied to water resources for irrigation, however, it is not suitable to utilize groundwater for irrigation in the area considering its reservoir capacity. It is estimated that pumping irrigation system for utilization of river water is appropriated, however, there could be some problems considering operation costs.

(4) Soils

According to the survey for farmland zoning (9 parameters - rainfall, temperature, humidity, wind, elevation, daily hours of sunshine, soil, pH, organic contents) done by SEA in September 1999, the area around La Luisa is classified into Class II (productive and suitable for irrigation but undulating) and V (relatively low productivity and poor drainage but possible to increase productivity).

Another survey conducted by JAD in March 1999, reveals that the soils in La Luisa are generally composed of Inceptisol and sub-classified into three sub-types (III, IV and V). The features of each soil type are described in Table 5. 2 and the distribution is shown Figure 5.6.

Table 5.2 Characteristics of Soils in La Luisa

Soil Type	Features
III	Mainly distributed in lowlands (slope:0-3%). Generally deep soil structure (0-150 cm). The soil pH of upper two layers ranges 5.5 - 6.8. Also the upper two layers have high biological activity due to their highly porous and permeable structures. The contents of potassium, phosphorus and zinc are low but calcium, iron and manganese are relatively high. Generally soil fertility is high.
IV	Most clayey soil in La Luisa (36-72%). Distributed in undulated land (3-15%) and have deep soil structure (0-150 cm). Natural drainage is low but not serious erosion. Soil surface is porous but biological activity is not high. Soil pH and organic matter content ranges 5.5 - 5.9 and 0.6 - 3.5%, respectively. While abundant iron content, low potassium, phosphorus, calcium and magnesium contents. Generally soil fertility is moderate.
V	The worst soil physical conditions among the three types. Although there is 35-cm depth soil, it contains 42 - 66% clay and it increases as deepens. Mainly distributed in lowlands (slope:0-1%). Although very low drainage ability, there is no erosion. Organic content is not low (2.8%) but phosphorus, potassium, calcium, magnesium and zinc contents are low. Both iron and manganese are abundant. Soil fertility is low.

(5) Flood and Drainage

There are two specific conditions for La Luisa. Firstly, the soil conditions are not good because excess water held in soils stays behind due to low permeability of soils. Secondly, the area often suffers from flooding caused by Ozama River, Mijo River and Caoba River. Drainage was considered to be important when sugarcane was cultivated in the area. Trenches for drainage that connected to creeks were constructed along the farm roads and in the lowland together with drainage culverts. These structures seemed to function as a drainage system of the rainwater and excess water in the past.It is judged that farmland inundation is caused by the 1) backwater from surrounding rivers, and 2) poor function of the drainage system due to wear and tear. It is assumed that the backwater caused by interference of river flows aggravated the flood level during Hurricane George in 1998, in the same flood mechanism described above.

Although the inundation of the farmland ceases if the flooding from the surrounding rivers subsides, existing drainage canals and culverts are buried or broken, which leads to prolong the inundation period. With the rehabilitation of existing drainage systems, the inundation period could be shortened and obstacle for farming will be reduced. Ozama River, which flows into Santo Domingo, generally have relatively small cross section in comparison with its catchment area and annual rainfall observed. The river also repeats meandering through mid-stream to downstream. These facts indicate that inundation occurs along all stretch of the mid-stream that includes La Luisa and it simultaneously alleviates the flood intensity as the floodwater flows down. Accordingly, several engineering measures such as construction of levees and polder dikes and partial improvement of narrow parts of river cross sections are not recommended because the effects of the structure construction may exaggerate flood damages on both upstream and downstream. The levee construction and river improvement should be considered within a flood control plan for the whole Ozama River Basin.

Floodwater management in La Luisa should be studied from two sides – drainage improvement and flood protection. However the effects of the construction of flood protection facilities only in La Luisa to both up- and downstream will be immeasurable as mentioned above. Therefore land use plan should be receptive to floodwater and improvement of present drainage system based on the land use plan should be studied.Based on the site interviews to the local persons regarding to the previously occurred flood and inundations and the flood discharge analysis of the Ozama River, inundation hazard map (Figure 5.7) was made. The table in Figure 5.7 shows the rainfall data and the computed flood discharge of the Ozama River and the inundating level of floods in La Luisa.

The surface of National Road No. 11 is higher than the flood water level so the inundated area is divided into two parts by the road - upstream and downstream. The floodwater passes the bridge on the national road and flows down spreading inundation areas to both sides of river. The bottleneck of floodwater flow of the Ozama River is the 1.2 km downstream point from the conjunction with Mijo and Caoba Rivers that corresponds to the South-East end of the project area. The concrete bridge of local road crossing the Ozama River is located at this point. Upstream area from this bottleneck point is under inundation.

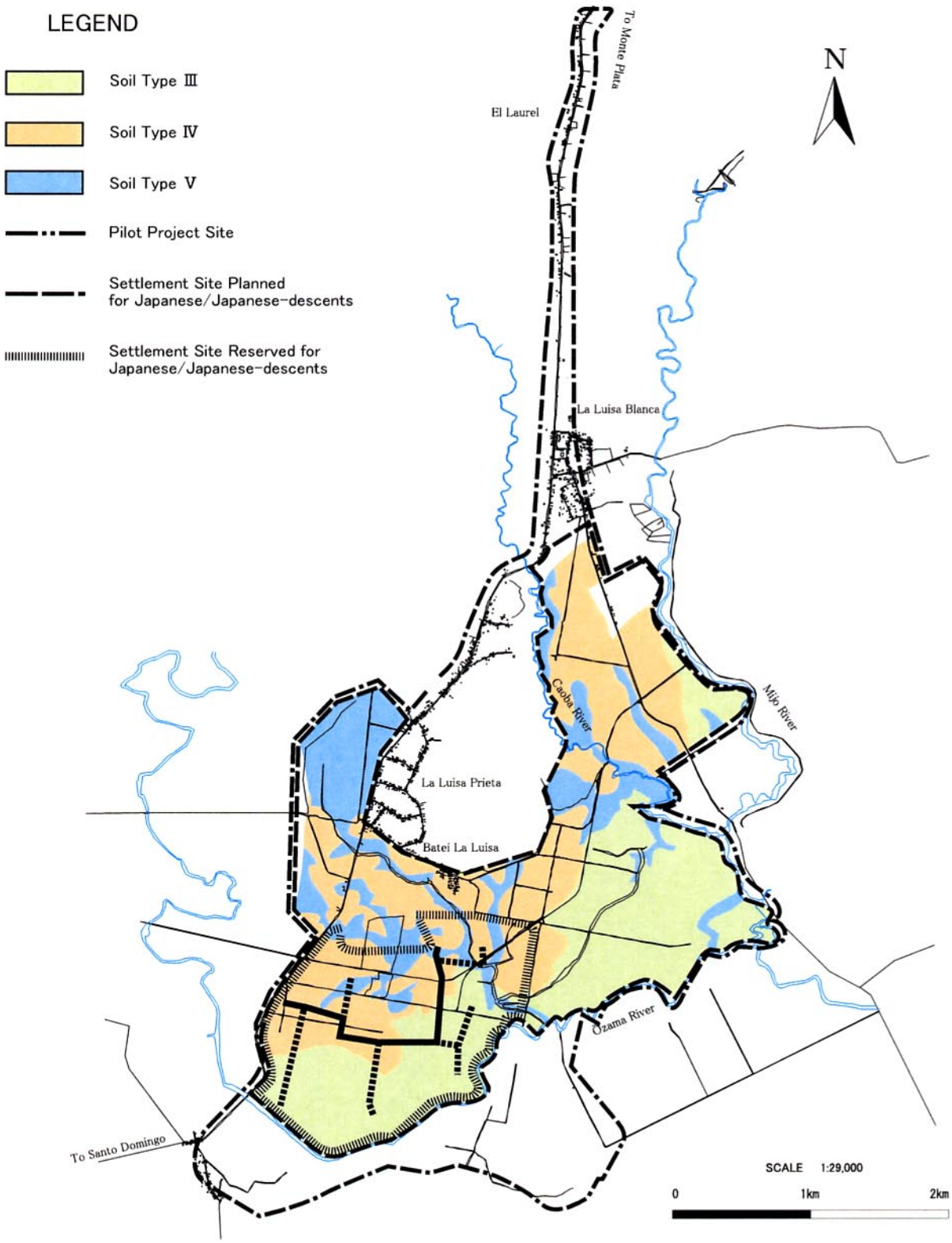
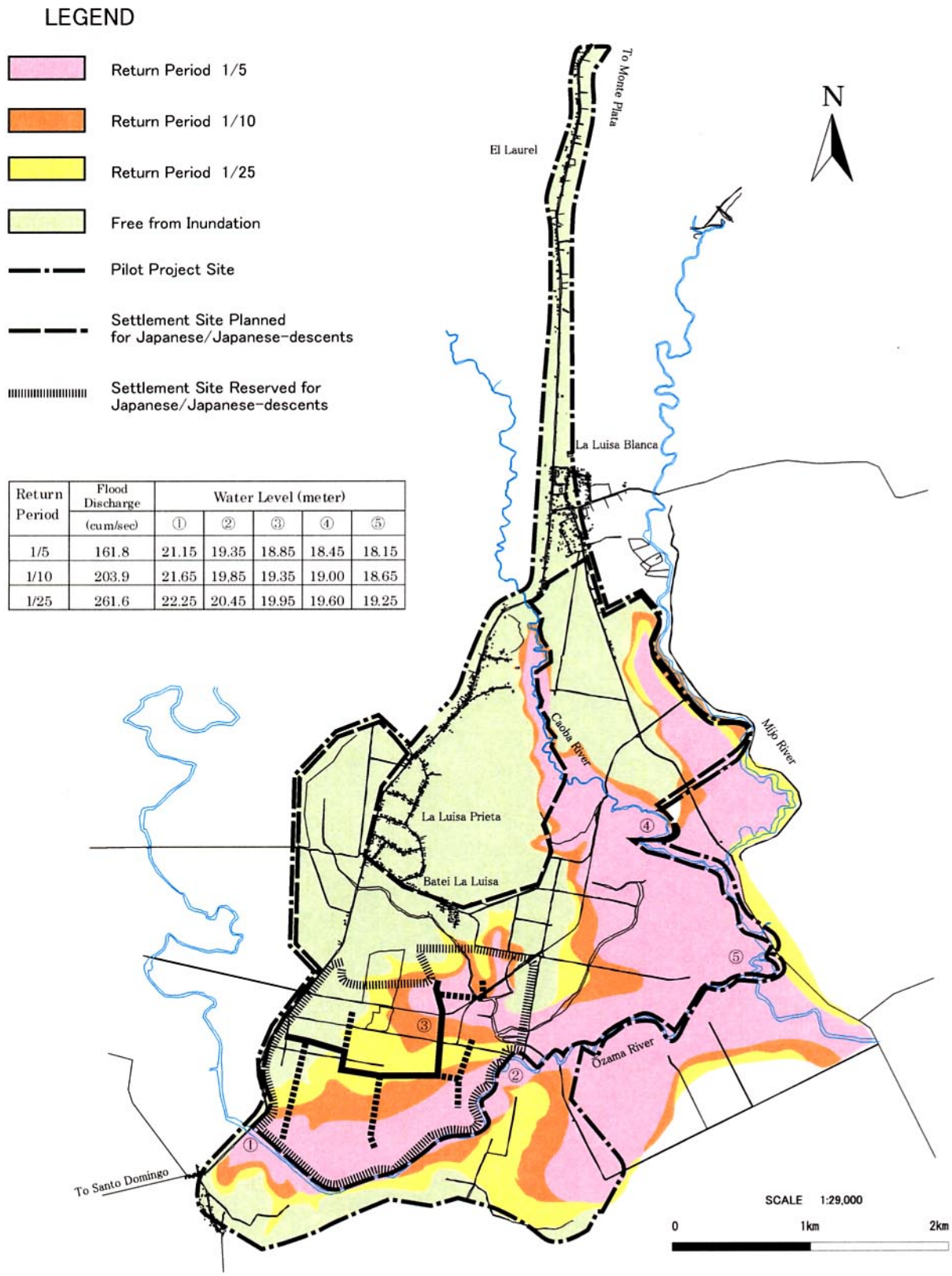


Figure 5.6 Soil Map, La Luisa Area



Return Period	Flood Discharge	Water Level (meter)				
	(cum/sec)	①	②	③	④	⑤
1/5	161.8	21.15	19.35	18.85	18.45	18.15
1/10	203.9	21.65	19.85	19.35	19.00	18.65
1/25	261.6	22.25	20.45	19.95	19.60	19.25

Figure 5.7 Hazard Map of Inundation, La Luisa Area

Inundation level of floodwater is estimated at 23.35m at the National Road No.11 Bridge and at 20.35m at the downstream local bridge respectively when the maximum flood was occurred in 1998. The estimated floodwater levels of 10-year return period are 21.65m and 18.15m at the same points respectively. The low and eastern area along the Mijo and Caoba Rivers is also inundated by floodwater. The main cause of the inundation along the Mijo and Caoba Rivers is considered as the backwater from the Ozama River that checked up at the downstream local bridge. Inundated water level of the lowland along the Mijo and Caoba Rivers would be little higher than the level of downstream local bridge. Annually occurred inundation water level would be low with less than 18m along the Ozama River and the lowland area along the Mijo and Caoba Rivers would be also flooded. The hazard map shows the boundaries of inundation area of each return period of flood considering the discussed points above.

5.2.2 Socio-Economic Conditions

(1) Population

The population of La Luisa was, according to the 1993 Census, 1,263. This Study has conducted a field survey, counted the number of houses, and estimated the population. The population breakdown of the communities in 2001 is presented in Table 5.3.

Table 5.3 Estimated Population of La Luisa in 2001

Community	El Batey La Luisa	La Luisa Prieta	La Luisa Blanca	El Laurel	Total
Population	475	1,394	1,097	356	3,322

Note: The population of El Batey La Luisa belongs to La Luisa Prieta.

(2) Income and Expenditure

The ONAPLAN conducted a study focusing on poverty in 1997 and analyzed the share of poor households in units of municipality. They used indicators as physical conditions of houses, availability of domestic water, education of household heads, and so forth. The study concluded that the share of poor households in La Jagua to which La Luisa belongs was 93.4% and 84.4% in Monte Plata as a whole. A survey conducted by the Study team showed an average monthly income in La Luisa of RD$3,020 per person. This is not very different from the household income of RD$3,786. The minimum wage is now officially set and ranges from RD$2,075 to RD$3,415. Thus, the income of La Luisa is a little higher that the minimum wage.According to the ONE, the unemployment rate in Monte Plata is 29.0%, which is the 11th highest among the provinces in the country. The household survey conducted also showed that only 38.8% among respondents are actually employed. The employment rate of female is especially low, at 14.0%, compared to 63% for male.

(3) Industry Structure

1) Agriculture and Animal Husbandry

After the cancellation of CEA's operation in La Luisa in the late 1990s, most farmlands extended in south

of the study area were abandoned. Some local people are cultivating the abandoned land or using it as grazing land. According to the agricultural statistics of SEA, crops such as maize, pigeon peas, cassava, field pumpkin and rice are cultivated in La Luisa and its surrounding areas. Majority of rice is cultivated in La Estrella located in the east of the study area utilizing irrigation water from Mijo Dam. La Estrella is one of the beneficial villages of agrarian reforms (AC-40) conducted by IAD in 1960s and some farmers in La Luisa own farmlands there. Some other crops including sweet potato, banana, plantain, mango, coconuts, cacao, taro and passion fruits were observed during field surveys.

In the study area, there are few people who own farmlands and most local people do small-scale farming for self-consumption around their homesteads. In El Laurel and La Luisa Blanca, there seems to be more land-owned farmers than in La Luisa Prieta and Batey La Luisa. Some landless rent farmlands outside the study area (e.g. La Estrella) or work as a casual labor for other farmers.

Because subsistence agriculture generally dominates the area, mixed cropping (eg. plantain + pigeon peas, cassava + field pumpkin + pigeon peas) is common and there is no technologically advanced agriculture. Some commercial farmers use chemical fertilizers (15-15-15, 15-10-10), pesticides and herbicides but these chemical materials are not popularly used. Only few farmers avail agricultural extension services. There are no available agricultural credit systems except for Banco Agrícola. In La Luisa Blanca, Ozama Cooperative provides various services (distribution of rice seeds and input materials, tractor plowing, transportation and sales of rice) but users are not many.

In La Luisa, there are no large-scale livestock farmers but many people keep small animals. In particular, chickens and pigs are widely kept among many families, and some keep rabbits. These small animals are important not only for self-consumption but also for alternative income sources. In La Luisa Prieta, there is a cheese factory that buys milk from small farmers around the study area.

2) Other Industries

In the municipality of Monte Plata, there are only three private companies with more than 100 employees, Induspalma (edible oil), Protenas Nacionales (animal feed), Procesadorea de Palma (edible oil), all of which are related to agriculture. No Free Zones have been founded in surrounding areas in recent years. One of the main reasons that Monte Plata has one of the highest unemployment rates in the country is that it has no major industry in the area. The household survey in La Luisa shows that the employment structure of the area consists of 36% in agriculture, 16% in transport, 12% in construction, and 11% in commerce. The industrial structure indicates that La Luisa cannot be characterized as a typical rural area.There are following shops and business in the area for the service to the community and others. There are no manufacturing plants or factory in La Luisa except small cheese maker and a block maker.

Village	Shop (grocery store)	Lottery	Cafeteria	Billiard	Barber	Rice mill	Cheese	Block maker	Agricultural material shop	Bee-keeper
Prieta-Batey	9			1	1					1
Blanca-Laurel	10	2	1	2	1	1	1	1	1	
Total	19	2	1	3	2	1	1	1	1	1

About half of farmers sell the products to middlemen at farm, while more than half of farmers sell to the local community and market including Guanuma Market. Direct sales to Santo Domingo are 7% (multiple channel). Self-consumption was 9%. 70% of pigeon peas are sold to the community. One quarter of plantain is sold to middlemen and one quarter is brought to Santo Domingo. Most of deals are by cash and about 10% by credit.

Most farmers cannot afford to possess or to rend vehicles to carry, and are obliged to rely on middlemen, who buy crops at farm by cash. Many of the middlemen to La Luisa come from Mercado Nuevo, Santo Domingo and some from Monte Plata, Cotui and Feria Ganadera (Livestock market) for animal husbandry dealing.

(4) Social Infrastructure

1) Road

The trunk road of Santo Domingo - La Bomba - La Luisa - Monte Plata (National Road No.11) extends south - north of the study area of La Luisa. It has 2 lanes of asphalt-paved surface of good condition with the width of 9.3 m. The local road between La Luisa Blanca and Estrella is not paved with the width of 4-7 m. The part to La Luisa is passable but the condition of east part is poor and eroded. There are community access roads in the 4 communities in the study area.

2) Domestic Water Supply

In La Luisa Prieta, water is available for about 100 households along the National Road No.11 from piped water supply system of INAPA. The source of water supply is only one well near the Ozama River, pumped up by submergible pump to an elevated tank with a capacity of 10,000 gallons. But the quality and quantity of water is not reliable, therefore, inhabitants use the water only for washing and showering. In El Laurel and La Luisa Blanca, there is another water supply system that takes water from the Mijo River. The system provides water to the some households along the National Road No.11, but during the dry season it is not operated because runoff of the river is too little to pump up water. People use the water only for washing and showering because of poor water quality. Batey La Luisa has no piped water supply system. Most houses in La Luisa rely on shallow wells for drinking water and 18 existing wells exist in the La Luisa Area. The details of wells in each community are shown i n the table below.

Table 5.4 Existing Wells in Each Community

Community	Hand-dug well		Well drilled by machine			Total
	Handpump (member)	Handpump (public)	Handpump (public)	Submergible Pump (individual)	Windmill Type (public)	
El Laurel	1	1				2
La Luisa Blanca	4			3		7
La Luisa Prieta	4	1**	1(1)*			6(1)
Batey La Luisa			2(1)*		1	3(1)
Total	9	2	3(2)	3	1	18(2)

Notes: *; ( ) shows number of out of order, **; for Prieta school, equipped motor pump

Each membership well is utilized with 30 to 50 families, and quantity of water supplied is approximately 100 to 120 lit/day/family. Each member pays RD$5/month/family for maintenance costs.

3) Electricity

The transmission line of AES is installed along the National Road No.11 with 25/35 kVA transformers at 500 ~ 1,500 m interval. Most houses do not have formal connection with AES.

4) Telephone

Telephone system (wired) is not provided in the study area. A public telephone of CODETEL is located in front of the Rural Clinic of La Luisa Blanca.

5) Housing

The houses are mainly distributed along the National Road No.11. In La Luisa Prieta, housing lots are located on the access road. El Batey La Luisa is around the wind mill well. La Luisa Blanca is developed around the crossing of the road to Estrella. The settlement of El Laurel is near the school.

Many of La Luisa Prieta are detached houses of block structure constructed by CEA, but most houses are simple wooden structure using many second use materials. The condition of houses in El Batey La Luisa is worst. A housing unit of the terrace houses in El Batey La Luisa is very small.

Hurricane George brought serious damages to the houses, and many houses were rehabilitated with cooperation of NGOs with financial aid from USAID etc. However there still left houses not recovered completely.

6) Public Health

In La Luisa Blanca, there is a rural clinic managed by State Secretariat of Public Health and Social Assistance (SESPAS: Secretaría de Estado de Salud Pública y Asistencia Social). The clinic has been established as a primary health care facility. There are no facilities for hospitalization or specialized treatments with high level of technology. Patients necessary for hospitalization or specialized treatments

are sent to hospitals in Monte Plata or Santo Domingo. Two doctors and one nurse work in at the clinic. The clinic has two rooms for consultation, and a treatment room for first aids. Although the clinic has a pharmacy, medicines are inadequate. No charges are imposed for consultations, treatments or medicines. The clinic covers not only the Section of La Luisa but also adjacent villages. Around 40 persons come to the clinic every day, roughly 10% of who come from Batey La Luisa according to the interviewed doctor. Types of diseases for consultation are 1) flu (35%), 2) diarrhea (25%), 3) ETS (25%) and 4) anemia. The doctor point outs no serious problems except occasional insufficiency in medicines. According to interviews with residents held by the Study Team water borne diseases, such as parasitosis, diarrhia, vaginisis, uterine inflammation are common and sexually transmitted diseases are not frequent. Malnutritiuon prevails among the children, especially those in Batey La Luisa.

The most important problem in la Luisa Area might be that preventive activities or health promotion activities, such as guidance or education, are not well developed or well organized. Activities of doctors and nurses in the rural clinic and heath promoters, whether official or volunteer, are hardly coordinated or consolidated. According to the doctor, they meet two to three times held by the municipality.

7) Education

Outlines of schools in the area are as follows.

School in El Laurel

- Number of Students

Grade	1st	2nd	3rd	4th	5th	Total
Students	23	19	20	4	15	81

- Two classrooms, two teachers, both working two shifts a day.
- School building appears new, having been constructed in 1999.
- Classes in the morning are given during 8:00-12:00 for 2nd and 4th/5th grade pupils, and afternoon classes are hold during 14:00-17:00 for 1st and 3rd grade pupils.

School in La Luisa Blanca

- Number of Students

Grade	Pre-primary	1st	2nd	3rd	4th	5th	6th	7th	8th	Total
Class 1	28	35	28	34	34	37	33	37	34	-
Class 2	-	36	28	36	29	29	29	30	-	-
Total	28	71	56	70	63	66	66	67	34	521

- 14 teachers. Eight morning classes and eight afternoon classes. Twelve teachers work two shifts a day. Teachers change according to subjects at 6th to 8th grade.
- Morning classes are given during 8:00-12:00, while afternoon ones during 14:00-17:30. Classes for 6th to 8th grade are given in the morning when longer time can be secured.
- Three school buildings. One with three classrooms and an office for teachers. Another one with two classrooms, one of which is used as two with temporary partition, and a small kitchen. The other with two classrooms. Two toilets house with two booths for each and the one is abandoned.

School in La Luisa Prieta

- Number of Students

Grade	Pre-primary	1st	2nd	3rd	4th	Total
Class 1	35	27	28	29	12	-
Class 2	-	26	27	-	-	-
Total	35	53	55	29	12	184

- Six teachers. Four teachers work in the morning for pre-primary, 1st and 3rd classes and three teachers work in the afternoon for 2nd and 4th classes.
- School buildings were constructed in 1999 with German financial assistance by KFW, and start its operation in September 2000, moving from old building located between la Luisa Prieta and Batey La Luisa.
- The school building has four classrooms and an office for teachers. Toilet house has two rooms, each with two booths and a washstand. Boys' room has a urinal. Toilets are flash-type and those for girls are out of order. Those for boys are used in turn.
- Sophisticated water supply system has been established, with a pump house and an underground cistern, providing water to toilets and a tap with two faucets.

School in Batey La Luisa

- This school is not registered in the list of schools provided by the State Secretariat, using a school building formerly used as Educational Center of la Luisa Prieta. Most chairs and desks are broken.
- One volunteer teacher works in the school.
- There are classes for pre-primary, 1st and 2nd grade and 40 pupils are registered according to the teacher.

Formal education of basic level (Nivel Básica) in la Luisa Area is provided in the four schools listed above. Out of the four, the two in Laurel and la Luisa Prieta has serious problems in terms of facilities and operations. The two schools do not have enough number of classrooms and pupils over 4th or 5th grade have to go to the school in la Luisa Blanca. In Laurel pupils over 5th grade have to commute 4Km way to the school in la Luisa Blanca and the transportation costs of RD$20/day/pupil. The school in Laurel does not have class for pre-primary grade. The school has no water supply and electricity connection.

Only one teacher out of the six in school of Luisa Prieta has title for teaching and salary payment for untitled five teachers has been suspended since September 2000. Textbooks distributed at the beginning of this term to the two are far from enough, no textbooks to la Luisa Prieta and five to ten copies or nothing to Laurel and less than half of the number of the pupils. A teacher in Laurel said that they have to collect them from pupils who studied last to distribute pupils of this term. Attendance rate in the two schools is quite low. No foods are supplied in the school in Laurel, causing low attendance rate, and resulted in low performance.

Education for Batey la Luisa by the volunteer teacher does not seem to keep proper level, and it could be called a kind of childcare. Some pupils go to the school in la Luisa Prieta. Despite the low level

education, 1km commuting to might decrease willingness to go to school for pupils at pre-primary, 1st, 2nd grade.

As for middle-level (Nivel Medio) education, there is no high school in la Luisa Area and students in la Luisa have to go to the school in Guanuma or Monte Plata, about 7km from La Luisa. Although State Secretariat of Education provides an adult education scheme, utilizing educational centers of basic level, there are no adult education courses applied in la Luisa Area.

As for informal education, a literacy education course is provided with assistance of an NGO, called "Social Eture Dominicane" by a teacher of the school in La Luisa Prieta. The course does not employ any textbooks and books available at hands are used.

5.2.3 Development Plan

(1) Income Generation Approach

1) Agricultural Development Plan

For La Luisa Area, there are three approaches for agricultural development: (1) rehabilitation or development of agricultural infrastructures, (2) utilization of unused land and (3) strengthening of agricultural extension services. The first approach intends to increase the production amount and the components mainly include farm roads and drainage system improvement. The second one intends to increase farm production by effective utilization of the uncultivated land that extended in the southern part of La Luisa. The third approach includes two purposes, namely, the increment of production amount through better farming practices and the improvement of agricultural produce quality. For the agricultural development plan in La Luisa, several points should be considered in relation to the approaches mentioned above.

Specific Conditions	Related Approaches	Reasons
The farmland area is next to the Ozama River, which often causes flooding. Moreover, drainage system in the area is not working effectively because it is very old.	(1)	Considering the situation that there is no plans for flood protection of Capital District and river improvement of the Ozama River, rehabilitation of existing old drainage system is very important.
There are large former sugarcane plantation areas in the south but there are no good access roads.	(1), (2), (3)	With the improvement of access road system in the farmland area, utilization of former sugarcane plantation areas can be promoted.
In the area, low productive extensive farming is dominant .	(3)	More intensive agriculture that utilizes the good geographical and social conditions of the area (near the Capital) is possible.

The details of plans on agricultural development are described below.

(a) Land Use Plan

For the formulation of land use plan in the La Luisa Area, following matters were considered.

- Present land use conditions
- Inundation frequency by flooding
- Topographical conditions

As shown in Figure 5.8, most of farmland area – former sugarcane fields – distributed in the south is not being utilized and the present land utilization rate is estimated at less than 10%. It is assumed that the land use patterns for the village areas distributed from central to north and their adjacent areas would not change drastically. This assumption comes from the two facts. Firstly, for El Laurel, this study only covers the area with houses and homesteads along the trunk road. Secondly, the central areas where La Luisa Blanca, La Luisa Prieta and Batey La Luisa are located have already been populated and private lands are distributed.Accordingly, the land use plan will be made for the 880-ha farmland areas in the south in accordance with the inundation frequency by flooding and topographical conditions. (refer to Figure 5.9)

Table 5.5 Land Use Classification

Flooding risks	Topography	Symbol	Major land use patterns	Major crops
Less	Flat	A	Upland field	Vegetables, Food crops
	Undulating	B	Upland field / Orchard	Food crops, Fruit trees
	Hilly	C	Orchard / Pasture	Fruit trees, Pasture
More	Flat	D	Pasture / Woodland	Pasture, Trees

(b) Crop Cultivation Plan

Agriculture and animal husbandry development in La Luisa should follow the above mentioned land use plan. Basic strategies and main land use classification for development are shown below.

Basic strategies	Main land use classification
1. Expansion of food production	A (rainfed), B, C, D
2. Introduction of commercial crops	A (irrigated), D (some parts)
3. Productivity improvement through the strengthening of extension services	A, B, C, D

Land Use Classification A:

This land type is flat with relatively low inundation frequency by flooding so the area is available for farming throughout the year. Therefore intensive agriculture for food crops and vegetables is possible. However, the availability of irrigation water is an important factor to decide the crops to be planted. For the areas without irrigation water, traditional food crops like cassava and pigeon peas that can grow with only rainfall are recommended. For the areas with irrigation water, some labor-intensive commercial crops such as melon and tomato are possible to be introduced. In La Luisa, the right bank of the Ozama River (the most southern part of the study area) is the probable area for commercial crop cultivation without new irrigation structures development. In the area, pump irrigation is possible from the Ozama River. For other two areas – next to La Luisa Blanca and La Luisa Prieta, development plan should be

based on rainfed farming because there are no appropriate irrigation water resources in the surrounding areas.

Land Use Classification B:

In this area, the inundation frequency is low but the land is undulating to some extent. Accordingly, farming here is based on food crops like cassava and pigeon peas and fruit trees like banana and plantain. There are some creeks in the area where soil erosion is observed so careful cultivation and soil conservation that includes construction of hedges and drainage are necessary not to accelerate soil erosion. Within the creeks, some crops such as taros are possible to be planted.

Land Use Classification C:

For the area of land use symbol C distributed in southwestern part of the study area, inundation frequency is less but its terrain is hilly. Thus the area should be used as orchards or pastureland for animal husbandry rather than as field croplands from the viewpoint of soil conservation.

Land Use Classification D:

Although the area surrounded by three rivers – Ozama, Caoba and Mijo – is flat, inundation frequency is higher than other areas since elevation of the land is relatively low. Without considering the inundation frequency, it is impossible to make a farming plan. To avoid the damage risks by flooding, it is recommended to develop the area as forest area or pastureland. However some commercial crops like melon, eggplant, tomato and rice are possible to be cultivated with pump irrigation during non-flooding season.

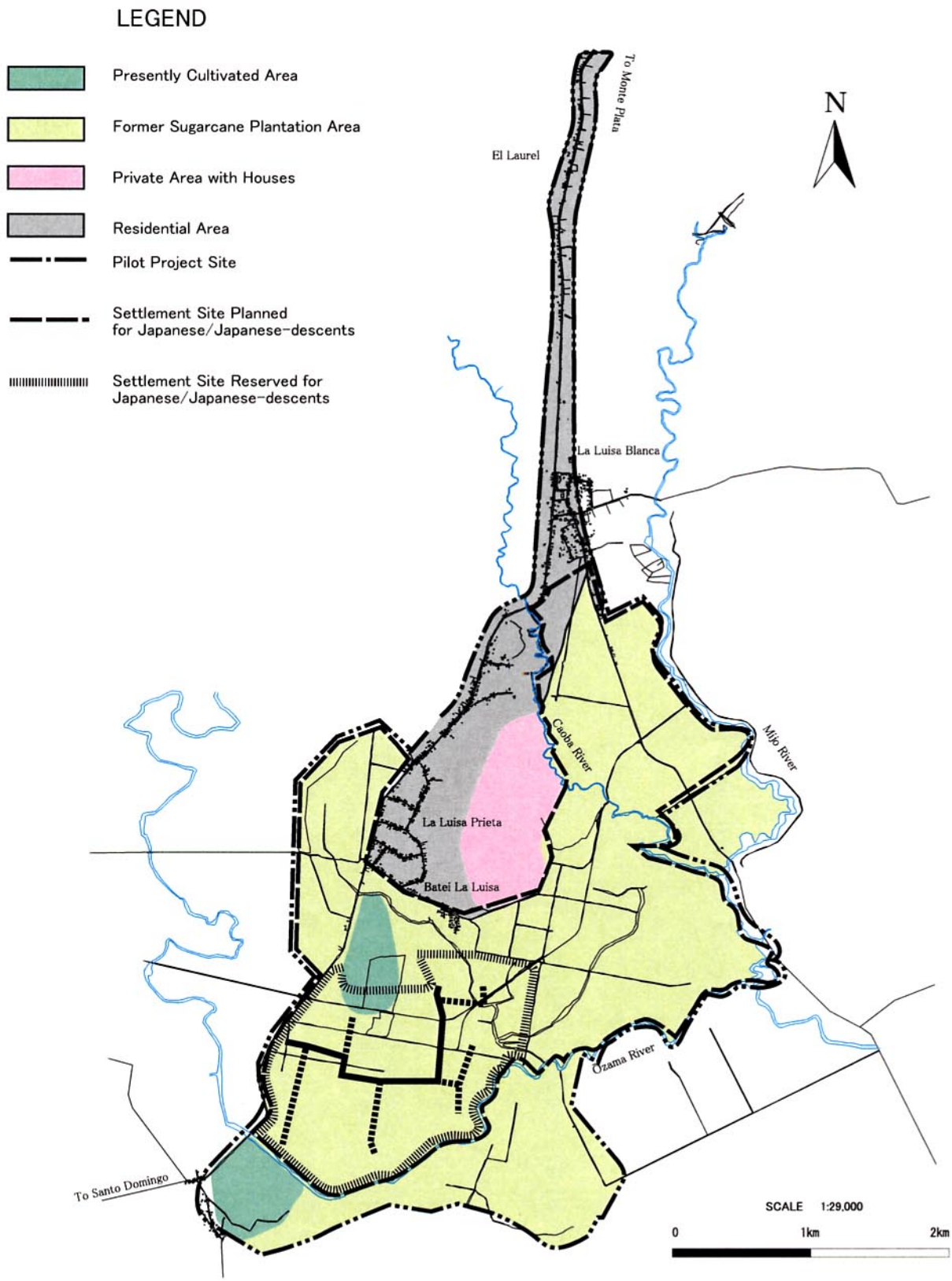


Figure 5.8 Present Land Use , La Luisa Area

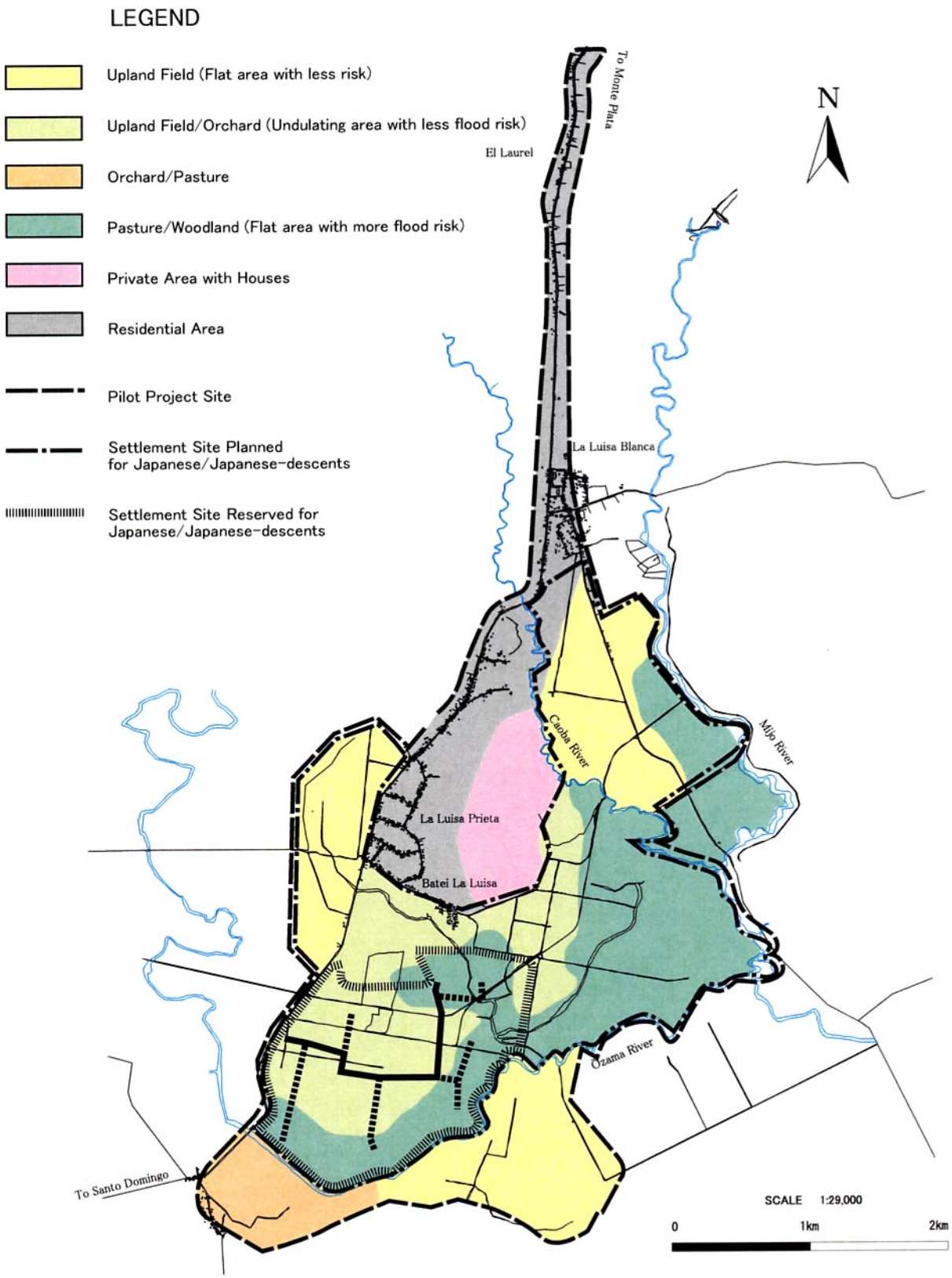


Figure 5.9 Proposed Land Use , La Luisa Area

(c) Agricultural Infrastructure Development

The plan for the agricultural infrastructure development and land consolidations provides the conditions possible to start some kinds of cultivation or breeding of livestock in La Luisa.The agricultural lands, former sugarcane plantation areas, were abandoned in the late 1990s and are presently covered with many weeds. With the present condition the area can only be used as pastureland as crop cultivation is impossible under these conditions. Weeds and the remains of sugarcane stems and roots should be removed from the area. In addition, soil/drainage conditions and accessibility of the area have worsened or deteriorated. Therefore some infrastructures should be renewed or rehabilitated. About 277ha (4,405 tareas) of farm lands extended in the southern area were already divided into plots and were distributed to settlers. Other northern, eastern and western areas remain the features of former sugarcane areas even though some of the facilities and structures of sugarcane plantations were destroyed or aged. Agricultural infrastructure development plan was formulated considering the above conditions. Particularly, the development plan should be made considering that the area is flood-prone area and some low-flat lands are easily submerged by occasional floodwater.

In the farmlands in the south, main farm roads that connect from north to south and from east to west are planned. Also some farm access roads are planned to reach each farm plot from the main roads. The road alignment basically follows (1) the plot arrangement in the southern area where lands were already distributed to beneficiaries and (2) the former farm arrangement for sugarcane plantation in the area where lands are not yet distributed.

The agricultural infrastructure development plan is formulated as shown below.

a) Construction of farm roads	Main Farm Roads :	1,986 m
	Farm Access Roads :	3,102 m
b) Clearing and Dredging of Existing Drainage:		850 m
c) Provision of Drainage Culverts :	Construction of New Culverts	17 places

2) Micro-Industry Development

To raise income level of the inhabitants, job opportunities other than agriculture should be generated. Since there are no outstanding industries other than agriculture, assistance to start businesses or attraction of enterprises will be necessary. Sustainable income generation can be attained only when people start to find needs, to identify suitable type of industry to local conditions, to acquire necessary skills and to be responsible by themselves. Government or other organizations can only assist the activities that will be identified by the people. Local communities, at present, seem to be relying on or demanding to men of influence or the government. Some triggering chances are necessary for the people to start the movements.

In order to start businesses as well as to attract enterprises, vocational training to improve the quality of labor force will be essential and have to be introduced. Currently most of the women do not have job

opportunity. Vocational training for women would be preferable. Promotion of local business generally contributes more to increase income of the inhabitants. Policies and plans for income generation, however, will be formulated after evaluation of pilot projects.

(2) Living Conditions Improvement Approach

1) Road

Serious traffic accidents have occurred many times at National Road No.11 because vehicles run in high speed. As local people use the road frequently, road safety measures should be undertaken. In particular the 3 elementary school are located along the road. Traffic signs, markings, pedestrian crossing, and humps should be prepared in front of the schools while traffic signs and markings are to be provided at other risky places such as crossings and sharp curves.

The road extending to the northeast through El Batey La Luisa from the National Road is planned as a secondary local trunk road. The part up to El Batey La Luisa should be improved in the first step. The part between El Batey La Luisa and the road to Estrella is in bad condition at present and the work will be same as new construction rather than improvement. Embankment and new bridge will be required in the part crossing Caoba River. The condition of local access road is poor. There is a need to apply compaction and gravel paving in the long run. The work will be implemented basically by SEOCP, however appeals and cooperation of local people will be required on traffic safety and access/transport security.

On the National Road, there are microbus service between Santo Domingo and Monte Plata every 20 minutes. Efforts should be taken to improve the services such as preparation of bus stops and new bus route provision to the center of Santo Domingo and Free Zones, as the transportation is the basis for those who work or study to Santo Domingo.

2) Domestic Water Supply

In the present water supply conditions in La Luisa Area, inhabitants except Batey La Luisa is provided less than 20 lit/day/capita of potable water from existing wells. Since water supply criterion for well equipped with hand pump in rural area by INAPA is 40 lit/day/capita, actual water supply condition in the area is less than half of the standard. Therefore, they strongly requested to construct wells for improvement of water supply condition during workshops. It is essential for human life to supply safe potable water since it is one of basic human needs.

In consideration of requests of the inhabitants, the plan for domestic water supply will provide 40 lit/day/capita to all inhabitants as same as the standard of INAPA. Existing membership wells have been well maintained by beneficiaries for several years and maintenance cost for wells is only RD$ 5 per month. For this reason it is justified that construction of wells equipped with hand pump is applied for the plan. Deep wells are recommended because they prevent surface water contamination into the well and to secure

enough quantity of water. For the supply of 40 lit/day/capita to all inhabitants in La Luisa, the numbers of wells in the Table 5.6 are required in each community. Since some houses are located 200m to 300m away from well, it is also considered to shorten the distance between houses and the nearest well.

Table 5.6 Number of Wells Planned in Each Community in La Luisa Area

Community	Household	Inhabitant	Water demand (lit/day)	No of well	Existing well*	No of shortage
El Laurel	78	356	14,240	2.2	1	2
La Luisa Blanca	240	1,097	43,880	6.8	4	3
La Luisa Prieta	305	1,394	55,760	8.6	5	4
Batey La Luisa	104	475	19,000	2.0	3	0
Total	727	3,322	132,880	19.6	13	9

Note: Excluded individual wells, well for school, one well in El Laurel because it dries up during dry season. Capacity of hand pump assumes 6,480 lit/day, pump of windmill type assumes 16,000 lit/day

There are no existing wells in the farmland area. However, settlers will dwell in the area in the near future. Therefore, one deep well facility in the area is planned for settlers and various farm works. As mentioned above, the plan for water supply in La Luisa Area includes construction of total 10 deep wells equipped with hand pump. Submergible pumps, elevated tanks and public faucets are installed instead of hand pumps for reduction of burden of fetching water in the medium-term plan, however, maintenance system for the facilities should be established. The long-term plan is aimed to supply potable water to all the houses at all time through improvement and extension of existing INAPA's water supply facilities.

3) Public Health

In La Luisa area, joint operations for health promotion activities by the rural clinic, health promoters and village committees seem to fall behind other villages. To strengthen linkage among these three organizations will be a priority task to activate health promotion of the area. At first, to establish or strength health committees in all of the four villages will be necessary. Then, to develop linkages for joint activity should follow. Joint activities should start to respond to frequent occurrence of diarrhea, venereal diseases and anemia. In short term, education as well as health promotion activities should be implemented to expand hygienic knowledge of inhabitants on water and foods, on prevention of venereal diseases and on nutrition, and to improve behaviors of inhabitants. Further, joint operation should be enhanced to expand their activities to family planning and pre-maternal and maternal cares through education and consultation for women of first pregnancy.

Construction of a new rural clinic in the area is not recommendable even in long-term viewpoints unless the standard of SESPAS changes. Instead, improvement in medicine stock and medical equipment of the clinic will be necessary. Grade-up of the stock and equipment to fulfill the standards of SESPAS is required in the short term, and to respond to higher demands of future as a primary medical care center, in the long term. Establishment of a new "*botica popular*" in El Laurel is recommendable. However to

build a new pharmacy might be too costly for a small number of households in the village. To develop a system where a health promoter or a shop sells medicine after they learn necessary knowledge on medicine. The medicine could be bought in from the *botica popular* in La Luisa Blanca and be sold with the same price in the *botica popular*.

At the time when almost all children are enrolled and attend to schools, some health activities can be carried out in schools. Vaccination programs targeted to school-aged children and parasite testing and elimination program can be implemented in schools effectively and efficiently, by dispatching health promoters of SESPAS or doctors of the clinic. The health promoters can implement further, periodical physical examinations of children in schools. In case some problems are detected, health promoter can provide consultation with the parents. Needless to say, out of school children or drop out should also be provided with the same service.

4) Education

Primary education is essential for socioeconomic development of the area. Sustainable development should accompany human resource development. Individuals or local communities can study, learn, and be responsible during the process of the development only after they get primary education. Further, to get better employment opportunity, vocational training and medium level education are necessary. Currently, general courses prevail in the medium level education in the region. Practical and technical education at medium level should be introduced to the area.

In Batey la Luisa, where no formal school is operating, three classrooms should be constructed according to the standards of SEE. The distance from Batey to the school in La Luisa Prieta is more than 500 m, maximum distance of walking commuting for pupils at initial level of education, and almost same as 1 km, maximum distance of walking commuting for pupils at primary cycle of the basic level. Classes to cover from the initial level to the primary cycle of the basic level with five shifts of teachers should be established in the Batey. The existing building, used formerly as primary school, was constructed as an ordinary house and not suitable for schooling. For a while, however, it can be used as a classroom for the initial level. A building with two classrooms should be constructed soon. When the population of the Batey grows to 550 persons, or 110 households, another same building should be constructed. In La Luisa Prieta, 18 classes should be operated by 2010, with increase of 11 shifts of teachers and five classrooms. Same number of classes should be operated in La Luisa Blanca by 2010, with additional two classrooms and two shifts of teachers. In El Laurel, one class for each grade from the initial level to eighth grade of the basic level should be established by 2010, with increase of four shifts of teachers and three classrooms.

Besides construction of classrooms, employment of good quality teachers is the most important. In service training for teachers, especially for those without title, is inevitable. Recruit of teachers who live in the area are preferable for better performance at primary level education. Applying distance leaning for

teachers and granting scholarship, including loans, will be necessary. In order to improve skills performance of the teachers or school management, information exchange, workshops or other joint operation among schools in La Luisa area, should be encouraged, placing Educational Center of La Luisa Blanca as a core and leading school.

To respond to various requirements for medium level education, supports for the access is necessary. In addition to the provision of a measure for bus commuting, measures, such as rent of motorcycles or bicycles with helmets, scholarship (grants or loans) are to be taken for further access to medium level education. Construction or expansion of dormitories is also to be encouraged, especially in Monte Plata. Although general courses are dominant in the schools of this level in Guanuma and Monte Plata, establishment and enhancement practical courses, such as those for agriculture, industry and commerce are inevitable to meet various needs for human resources development in order to promote agriculture and industrial production and to generate income of the people in the area.

In La Luisa area, participation of parents to school management seems to fall behind the level of other villages. Involvement of parents will help to raise attendance rate of the pupils and improve the performance and management of schools. First, parents and teachers associations should be organized. For the start of activities, the associations can assist children to cross the road. Gradually, activities of the associations should be enhanced to solve the problems in schools. The association can help teachers to develop teaching materials suitable to local environment.

5) Sewerage

The latrines used have remarkably increased owing to the recent cooperation of NGOs. However they are not provided in all houses. Each house should have a latrine. When the pit hole is full, construction of new latrine will be requited using the old material. From environmental point of view, flush toilet and septic tanks are to be equipped in houses in the area where piped water supply system is completed. They are to be spread as much as possible in the long run.

6) Solid Waste Management

There are places where solid waste is scattered and it is reported that the smoke of burning refuse in schools damaged pupils' health. It is forecast that solid waste management would serious problem from environmental point of view. Solid waste management largely consists of collection service and disposal. Collection service is possible by local people with tractor, carts and simple materials. However it would be difficult to have disposal site and to manage environmentally cared sanitary landfill practice.

Recycling should be promoted in order to decrease discharged amount of solid waste and to utilize resources efficiently. Recycling can be profitable business selling metals, glass etc. It is indispensable to have cooperation of residents and separation of waste. In the first step, someone or NGOs should guide and

educate local people to understand importance and way of recycling.

7) Electricity

Electricity is necessary to live civilized life. The distribution line is running along the National Road, however formal connection is few. Group negotiation with the electricity company (AES) may be effective rather than individual dealing. In remote reas, solar system might be good in terms of environment and easiness for installation.

8) Telephone

Telephone system will be basically prepared by private sector. Only it is profitable, the work will be implemented. According to improvement of standard of living, necessity for telephone will increase. At present service of cellular phone is very weak. Improvement of condition of cellular phone seems to be first easy step. On the other hand, emergency communication system should be established in case of sudden illness and accidents.

9) Culture

Sports, recreation and community/cultural activities are very important and necessary facilities should also be prepared as much as possible. The existing baseball fields have no surrounding fence and leveling of ground is necessary. A building with dugout, changing-rooms, toilet, storage and spectators seats would be useful. Community centers are necessary. A library would enhance cultural life. These facilities would increase the value of the land. However due to limited financial source, they will be constructed in a long period.

10) Housing

Housing is the place for basic life and is basically of individual responsibility. Public sector should promote and guide people to be able to have safe and sanitary houses. Among housing policies, provision of housing loan and enforcement of standard building regulation will be effective.In Japan, there has been a traditional system that villagers thatch roofs with straw in rotation basis. Many villagers work for one house and the other by turns. In the community most people have enough financial basis for building or repairing houses, this mutual cooperation system might work. To support the activity, vocational training for carpentry and wood works is considered helpful.

In case many people would settle near their distributed land, it might be required that public sector should plan and construct a village with road, housing lots, water supply, sewerage and other public facilities. And in some cases public sector provide housing facilities.

5.2.4 Selection of Pilot Projects

(1) Pilot Projects of Income Generation Approach

The necessity of pilot projects on agricultural infrastructure development, which include farm roads construction and establishment of experimental farms, was recognized before the commencement of this Study. These projects were implemented in the southern areas where lands were already distributed to settlers. The establishment of experimental farms was planned to collect basic data on the alternative crops for sugarcane in La Luisa. The main purpose of the experimental farms was to support and strengthen the demonstration farm in Plot No. 59 conducted by a JICA expert dispatched to IAD (in charge of settlers' farming planning) and a senior volunteer (in charge of tropical fruits). By this pilot project, the experimental fields was developed on other two plots and the counterpart agencies of the experts and settlers should operate and maintain the crops on the fields after the initial development of the farms.

Important considerations taken into account in examining and designing vocational education and training (VET) are the following.

- People's demands and opinions
- Prospects of gaining jobs after the completion
- Locations of jobs obtained

In the workshops, all the four communities have recognized the importance of VET. As explained in the previous section of participatory analysis, their expectations for VET were rooted in the hope that new skills would bring them employment opportunities. So many people in La Luisa are out of job at present. As a result of workshops in each community, many types of VET have been identified for possible pilot projects. In the workshops, the participants were asked to state their ideas of VET programs, and the Study Team also proposed theirs. In each community, the participants expressed their opinions about types of VET program and examined and compared them in detail. Examples of VET programs included sewing, bakery, carpentry, barber, poultry farming, shoe making and repair, English, computer, and others.

The participants compared the proposed ideas according to several criteria, including social, cultural, institutional, organizational aspects. For example, close attention was paid to examine whether or not a VET program would create any social tensions within a community or among communities. All the communities but one expressed no anxieties. It was El Batey La Luisa, and many participants from the community said that they would not wish to have any pilot projects jointly with La Luisa Prieta. Residents of el Batey are Haitians or Haitian descendents who have once or more experienced some types of discrimination. Disputes between these two communities seemed to arise fairly constantly although La Luisa Prieta did not mention it. The followings are some of the other important observations that need to be taken into account in designing pilot projects.

- The existing community organizations are generally willing to cooperate and coordinate in implementing pilot projects.

- No negative impacts on women or the poor were found in the workshops as a result of any VET programs examined. Many of the beneficiaries were actually the women and the poor themselves.
- No negative impacts on the culture or tradition of the communities were identified.

Among the proposed ideas on VET programs, the Study Team examined their feasibility and desirability from different angles. As stated in the Model Area Development Plan, a VET program needs to provide good prospects for gaining jobs after completing the courses. Moreover, in La Luisa, a strategy to create a local industry is very important and needs to be incorporated in formulating a VET pilot project.

(2) Pilot Projects of Improvement of Living Conditions Approach

There were two important rationales for selecting the provision of wells for domestic water as one of the pilot projects in La Luisa in the participatory project planning.

- The current level of service does not meet the requirements.
- Participatory planning identifies the needs.

The quantity of domestic water currently falls short of the required level and makes the lives of the residents difficult. Many people spend much time in collecting water for daily uses. In the workshops, two communities actually identified clean, reliable domestic water as one of the high priorities. It was also found that people's willingness to pay was relatively high for their income level. Some even said that they would be willing to pay up to RD$500 for an initial investment to start a new well and up to RD$5 per month for maintenance. These monetary values were what others were paying for constructing a new well and monthly fees for being a member of a well association.

In the workshops, important socio-cultural and organizational elements were identified in formulating strategies and designing Pilot projects. The following strategies are proposed to be included in the project design.

- The existing well association can be used as a model for managing new wells.
- Local labor should be employed to construct wells.
- Users themselves need to contribute to the project either financially or physically to increase project ownership.
- Continuous community participation is also necessary for the same purpose.
- Health promoters should be included in the project to ensure health safety.
- IAD's Department of Social Development should be involved in organizing beneficiaries to operate and manage the facility.
- Users should pay at least for the service and routine maintenance. RD$5 would probably be reasonable for a monthly user fee to be consistent with the existing wells.

Under this recognition the component of health education with the following objectives has been added in the water supply project. Target communities include all four communities in the area of La Luisa, namely, El Laurel, La Luisa Blanca, La Luisa Prieta, and Batey La Luisa.

- Conservation of Wells (Prevention of artificial contamination, such as livestock breeding, good drainage to avoid sanitary problems)

- Spread of Water Treatment in Individual Houses (Chlorination, Boiling or Filtering)
- Health Promotion of Hygienic Use of Water (Hand washing, bathing with safe water, etc., to prevent diarrhea, inflammation or diseases caused by parasites)

5.2.5 Pilot Project for Micro Industry

(1) Workshop on Set-up of the Project

About 15 participatory workshops corresponding to the development projects of the Micro Industry in La Luisa area were carried out with participants coming from members of the community, personal counterpart of IAD HQ and IAD Monte Plata Regional Office, members of the JICA Study Team and the Mayor the community.

(2) Outline of the Project

The pilot project has three courses as three project components.

- Dressmaking
- Cooking
- Personal Computer Operation

Each course has two phases. First phase is to learn basic technique. Second phase is to learn more advanced technique in order to earn opportunity of employment or creation of a micro-enterprise of graduates. The places and target people of the training area as follows:

- Dressmaking: Batey La Luisa and La Luisa Prieta (each course 15 trainee)
- Cooking: Batey La Luisa and El Laurel (each course 15 trainee)
- Personal Computer Operation: La Luisa Community Center (10 trainee from all over La Luisa)

Community	Dressmaking	Cooking	Computer
El Laurel		O	O
Blanca			O
Prieta	O		O
Batey	O	O	O

Note: Symbol O means where the courses are being done.

The management of the dressmaking course and cooking course was subcontracted with one NGO (PROMAPEC) which has various vocational training courses for women in Santo Domingo. The management of the computer was subcontracted with another NGO (Boston Institute) which has various language and training courses in Santo Domingo.

(3) Progress of the Project

The dressmaking, cooking and computer training courses are three components of the project of vocational training and creation of micro-enterprise in La Luisa.

1) Dressmaking

The first phase of the dressmaking course already terminated in March of 2002. The second phase began in June and finished in September of 2002. The second course includes not only skills on dressmaking but also the lessons of marketing, accounting, human relationship and the investigation tour on examples of micro-enterprises. The dressmaking course has been conducted in Batey de La Luisa and La Luisa Prieta. In Batey 16 women participated in the course and in Prieta 17 women participated. As the result of the implementation of this course, some participants in Prieta could get jobs in the Villa Mella free zone. Some of the participants of La Luisa Prieta began the production of dresses that had been eventually sold. Three women was able to avail credit from PROMAPEC to get sewing machines. Almost all of them have the intention to create micro-enterprise or their own business, but there are many obstacles to overcome.

2) Cooking

The course of cooking began in July and terminated in November of 2002. The course was divided into first and second phase same as dressmaking. In the second phase the lessons of marketing, accounting, human relationship and investigation tour also included. The cooking course has been conducted in Batey La Luisa and El Laurel. In Batey 12 women and three men participated in the course, and in El Laurel 14 women and a man participated. Some of the participants of Batey tried to create the cooking business individually, but there is only one successful example and other cases are still trial stages. The participants of El Laurel began to work together as a group. They make cookies and sell them in El Laurel and other communities. In future they want to begin a small restaurant or a cafeteria.

3) Computer

The computer course began in July and finished in December of 2002. The course was divided into first and second phase same as dressmaking. In the second phase the lessons of marketing, accounting, human relationship and investigation tour also included. The 10 participants of the computer course were selected from whole area of La Luisa such as two from Batey La Luisa, three from La Luisa Prieta, three from La Luisa Blanca and two from El Laurel. The participants of this course had intention to begin their own business or to teach the community people what they learned, but creation of the business using computers is difficult. Some of the participants tried to start the computer class for the young people in March of 2003. Now the computer class has three courses and 21 participants.

(4) Encountered Difficulties and the Related Actions

Since basic infrastructure such as water supply, electricity and telephone line has not been developed well in La Luisa, some counter measures are introduced, but still some problems remain.

(a) Water

Clean and safe water supply is essential for cooking. Because there is no piped water supply around the cooking course classroom, water tanks were installed and water was carried by hand, then water was treated

by chlorine.

(b) Electricity

In every vocational course the electricity supply is essential, but in La Luisa electricity condition is extremely bad. Though two handy diesel power generators were prepared, the maintenance and operation of the machines is expensive.

(c) Telephone line

One of the important lessons of the computer course is to learn communication technique, but in La Luisa the Internet communication is not able because of no telephone line installation. The engineers of CODETEL visited La Luisa and investigated, but the result was that it is difficult to communicate with the Internet through existing infrastructure. The lesson on the Internet was done in Santo Domingo.

(d) Fund resources for creation of micro-enterprises

Almost all of the participants wish to begin their business, but it is very difficult to secure fund to commence business. Some of the participants are collecting small money to prepare the business.

(e) Credit system

There is no adequate credit system for women in rural area to create micro-enterprise. PROMAPEC has some credit system for urban women to create and operate micro-enterprises. Some participants secured credit from PROMAPEC, however other have not yet availed of credit.

(f) An integrated community organization for whole La Luisa area

There is no organization that could cover whole La Luisa. When the selection of participants for the computer course, community people began to need some organization for whole La Luisa. After several meeting they organized " Comite de Desarrollo Dominico-Japonese en La Luisa". The committee had not been active for five months, but in January 2003 the committee was reorganized and became more active.Since the committee will have an important role to develop the community, all equipment and facilities of the courses will be maintained and controlled by the committee together with the association concerned.

5.2.6 Pilot Project for Domestic Water Supply

(1) Workshop on Set-up of the Project

To set-up the project, 2 workshops were carried out related to domestic water supply project in July 7th and 8th 2002 in the communities of El Laurel and La Luisa Blanca, respectively. The workshops objectives are as follows:

- To explain the components of the project and well design
- To confirm the directive of the committee that had been chosen in March 2002
- To confirm the site where the well will be constructed

- To inform the date for the payment of the quota
- To make the PDM and PO to clarify the objectives and activities for the implementation of the project

(2) Outline of the Project

1) Construction of Deepwells

The project is aimed to improve the existing water supply conditions in La Luisa from 20 lit/day/capita to 40 lit/day/capita, which is the same as INAPA's standard in rural area through construction of 8 deepwells equipped with hand pump. After the construction of water supply facilities, it is essential for sustainable maintenance to establish well user's committees by beneficiaries. Therefore, Department of Social Development of IAD supported the committees to establish organization to operate and maintain the facilities. Also health and hygiene education for the inhabitants by NGO was carried out to protect the contamination of water source and to reduce the incidence rates of water-related diseases.For the enhancement of ownership of the facilities by beneficiaries, each member of the committee paid RD$500 for cost-sharing of construction of well and hand pump houses were constructed by beneficiaries themselves with materials supplied by the Study Team. Deep well facilities were constructed as follows (refer to Figure 5.10).

Table 5.7 Number of Wells in La Luisa area

Community	Number of wells		Total
	2001	2002	
El Laurel	1	1	2
La Luisa Blanca	2	1	3
La Luisa Prieta	2	0	2
Farmlands	1	0	1
Total	6	2	8

2) Health Education

During project set-up workshops, participants point out that spread of flies, mosquitoes, etc., is also large problems for the heal of the people. In the workshops, it is agreed that countermeasures for the problems should be included in the scope of the Project.To provide practical knowledge and skills as well as to develop, promote and diffuse the health promotion activities effectively and soundly, educations on specific skills, in addition to general and one-way educations on health and water, were planned after focusing important and priority fields of health promotion activities. Implementation of health promotion activities in the focused fields, as well as subsequent monitoring and evaluation, were also planed in project as listed below.

- Progress Diagnostic Analysis (Confirmation of results of set-up workshops) and Identification of Priority Fields of Health Promotion Activities.
- General Health Education and Formulation of Action Plans

(3) Progress of the Project

1) Construction of Deepwell Facilities

Well user's committees in El Laurel and La Luisa Blanca were established through workshops during March 2002.

Kickoff workshops for construction of deep well facilities were held in each community on 7 and 8 July 2002. A member of the JICA study team explained contents of the construction plan to the participants in the workshops, then PDM and PO were made by themselves. Responsibilities of the committee in each construction work progress, for example preparation of access road to a drilling site, construction of handpump house, collection of maintenance fee (minimum RD$5 per household) and maintenance plan of the facilities, was decided with all the participants

Proposed two and/or three construction sites of deep well where were donated by the members were examined by the study team. Finally the drilling site was decided after consultation between the study team and each committee. Before commencement of the drilling work all the selected sites had completed preparation of access roads such as removal of fences and leveling of drilling site. Following PO made by the members of the committee, all the members had completely paid RD$500 as cost-sharing to the committee by 6 August 2002. It took only one month since they had made PO. This indicated that members of committee showed deep interests in this water supply project.

Since IAD has no drilling-rig, a local contractor carried out the construction of deep wells. Therefore, IAD did not directly participate in the construction work, however, two members of the Department of Social Development, IAD, assisted in the establishment of the well user's committees. Also they participated in the consultation workshops for the water supply project as moderators.

An average of 40m in depth, had been drilled and aquifer test of the wells, water quality analysis, installation of handpump and construction of pump house was conducted in August 2002.

2) Health Education

In project set-up workshops, current conditions were analyzed and necessities and possible solutions were discussed. An implementing organization for each of the four communities was also established or nominated in the workshops.

Based on the results of the set-up workshops, implementation plan was revised and technical specification was prepared and explained to NGOs. After the submission of quotations from NGOs, an NGO named CEDEE (Centro Dominicano de Estudio de la Educación) was selected. A contract was concluded with the NGO for the implementation of the project under the supervision of the Study Team and the participation of IAD counterparts.

- El Laurel: A new team was set up whose members were composed of the members of health promoters of SESPAS, Women's Association, Padre y Amigos de la Escuela.
- La Luisa Blanca: The team was comprised of members of the Committee for Development of La Luisa and associations of wells.
- La Luisa Prieta: The team was composed of members of the Women's Associations of La Luisa Prieta.
- Batey La Luisa: A new team was set up whose members were elected by vote at the meeting.

The component was implemented as follows:

July, 2002 – Introduction of CEDEE to the four communities and members of the implementing teams.

August – Diagnostic Study through interviews with focal groups and with individuals, water quality analysis (14 samples of water from wells and containers in houses of the four communities), and medical examination of vaginal diseases: Bacteria (Pseudomonad SP.) was detected in almost half of the water samples. Most of women had vaginal infections mainly caused by bad quality of bathing water.

September – Socialization of the results of the diagnostic study and workshops for planning and organization strengthening: Action plans were formulated for hygienic use of water and improvement of sanitation environment. The team members learned how to work in group and motivated for group work.

October – Seminars and workshops on hygienic use of water and improvement of sanitation environment: Through the seminar, not only the team members but also many residents of the four communities recognize the relation of water and health. In the workshops, team members leaned how to treat and manage water in houses and how to eliminate plagues (mosquitoes, flies, etc.), and discussed on how to implement campaign for promotion of good water use.

November – Implementation of the campaign and elimination of plagues: In the campaign, the team members and volunteers distributed handouts and stickers to almost all houses in the four communities. Demonstration of spraying pesticides of natural origin (ACE-NIM 0.5 EC) was made to eliminate plagues. After distribution of hand pumps and pesticide, the members eliminated plagues in their own communities.

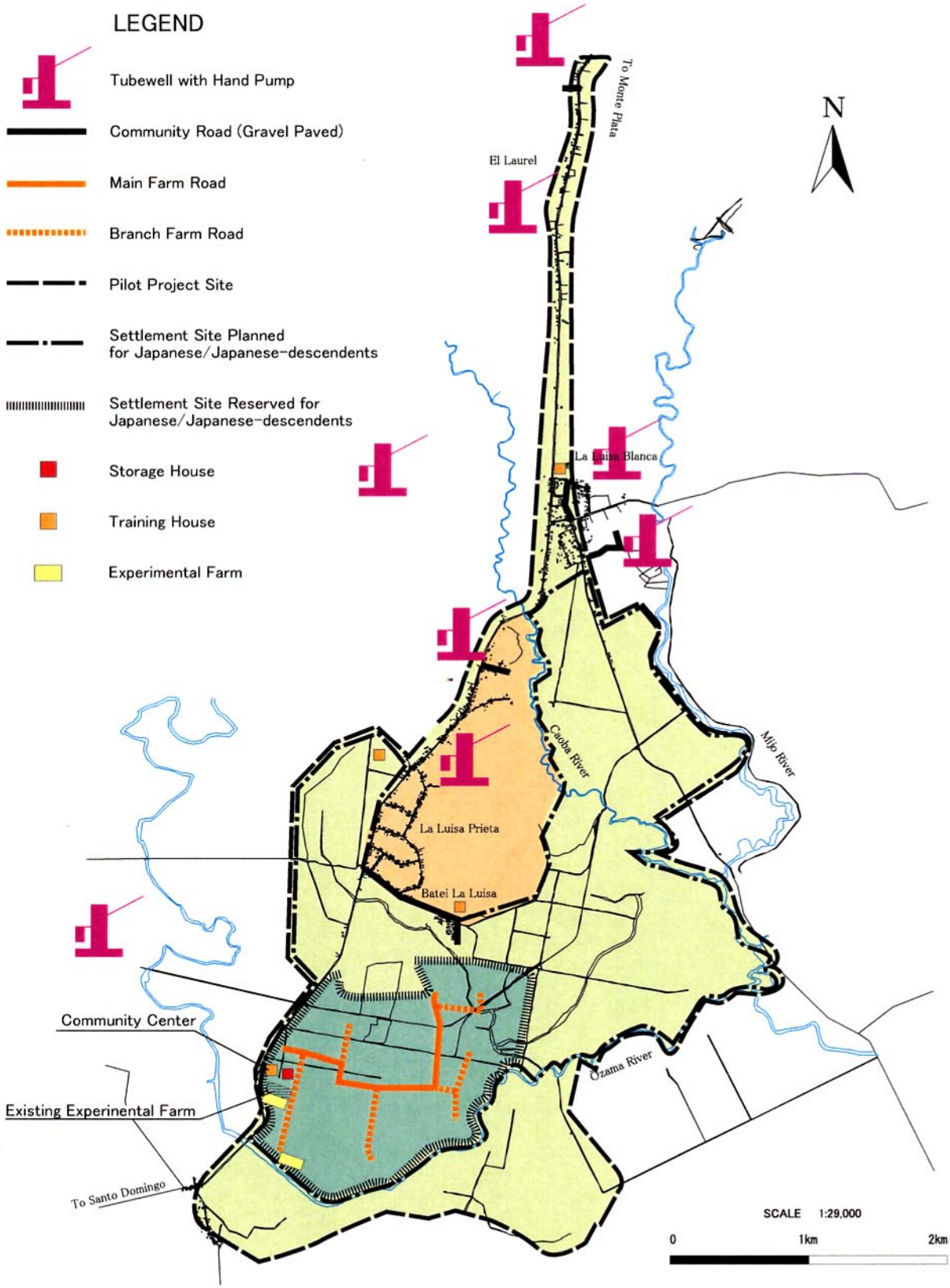


Figure 5.10 Location Map of Pilot Projects in La Luisa Area