An Opportunity to Invest in Puerto Galera, Mindoro Oriental Sabang Sewerage System and Wastewater Treatment Facility

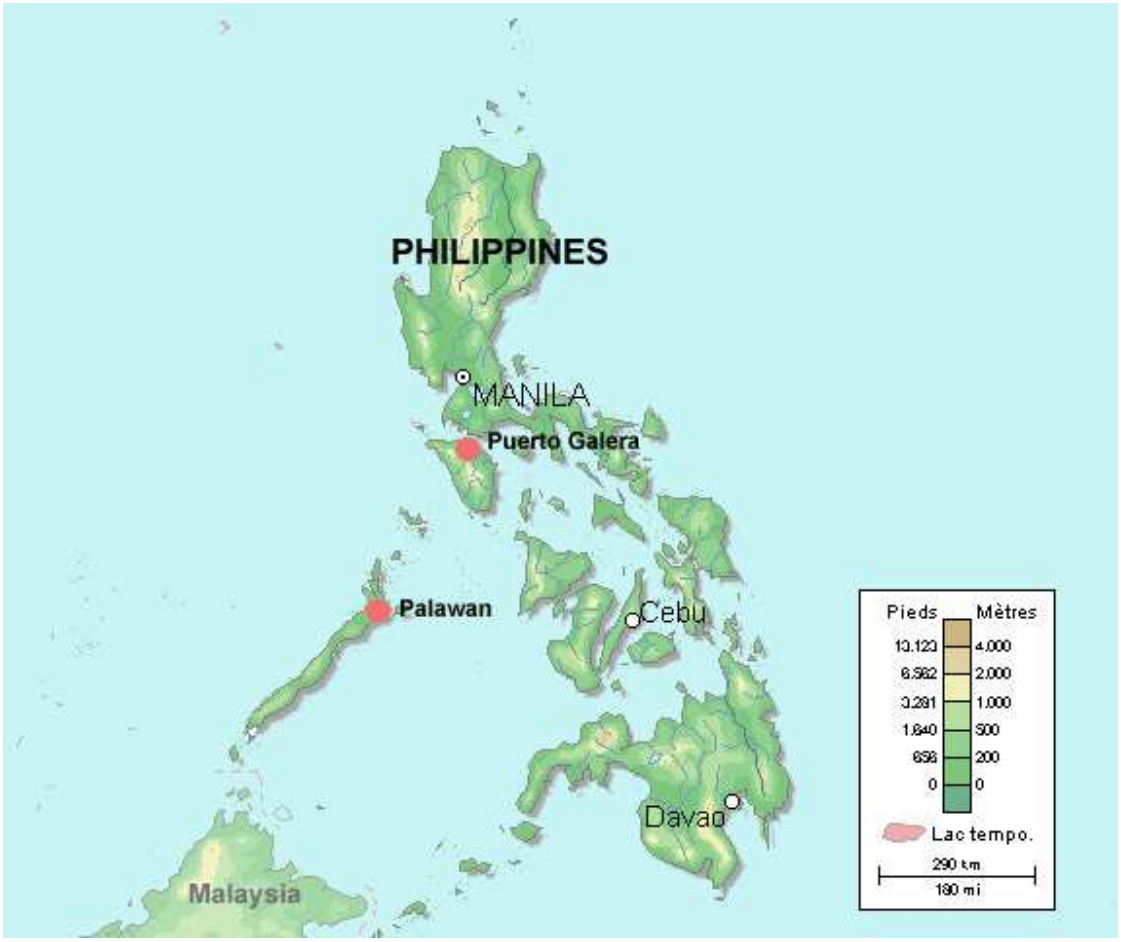
A Priority Project of the Local Government of Puerto Galera with support from the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) in collaboration with the Sustainable Coastal Tourism in Asia (SCOTIA)

TABLE OF CONTENTS

VIII. Annexes

A. Pre-feasibility Study
B. Technical Study
C. Site Mapping
D. Fiscal Position Tables
E. LGU Organizational Charts
F. Executive Order 533

MAP OF THE PHILIPPINES SHOWING THE LOCATION OF PUERTO GALERA



I. EXECUTIVE SUMMARY

This document pertains to the construction of a Wastewater Management System ("the project") for Barangay Sabang, Puerto Galera in the Province of Oriental Mindoro. Puerto Galera is one of the Philippines's main tourist destination due to its attractive coral reefs, diverse marine life and its historical significance as a natural harbor during the time when the Philippines was still a colony of Spain. In recent years, tourist arrival in the Municipality has reached over a million. Along with the growth of commercial activities, the town is now faced with the challenge of making the ongoing tourism boom a sustainable activity by limiting the damage that tourism brings to the environment. As the communities in Puerto Galera deem that having sustainable tourism is urgent and important, the Office of the Mayor and the Sangguniang Bayan of Puerto Galera have identified wastewater management as a priority project of the Municipality.

The present project consists of designing, constructing and operating of a sewerage system and wastewater treatment plant for Barangay Sabang and neighboring areas that have an area of 4.8 square kilometers. This area has 17,000 local permanent residents, 775 room accommodations with 301 commercial establishments devoted to the local tourism industry. Annually, the area accounts for at least half of the total tourism activity in Puerto Galera. The details of the project are as follows:

Project Details	
I. Sewerage Collection System	
Area Coverage	Baranggay Sabang and adjacent areas
Total Area	4.8 square kilometers
Total Wastewater Catchment Area	127,697 square meters
Current Wastewater Flowrate	3,135 cubic meters per day
20 Year Maximum Wastewater Flow Rate	7,163 cubic meters per day
II. Wastewater Treatment Plant	
Proposed Wastewater Treatment Capacity	3,500 cubic meters per day
Technology	To be determined.
Effluent Requirements	At the minimum, compliant with DENR Standards.
Recycling and Reuse Options	To be determined.
Site of Plant	To be determined based on 4 identified options.

The Municipality of Puerto Galera intends to seek a Private Sector Partner to undertake the sanitation project. The proposed project will be financed from Environmental User Fees (EUFs) to be imposed on tourists. The Municipal Government will impose a user fee of Php 50 per tourist on a conservatively estimated 1.0 million visitors per year starting November 2006. Based on estimates made by PEMSEA using reasonable assumptions, the present value of the EUFs to be collected for the next 10 years is equivalent to at least Php 647 million. This amount is more than sufficient to cover the capital expenditures and operating and maintenance costs of the said project for the same period.

Given that the town's livelihood is dependent on tourism, the project has the support of various sectors of the economy in Puerto Galera. Moreover, the project is perceived as essential in order to preserve the town's natural environment and sustain the current growth of the local tourism industry.

II. PROJECT BACKGROUND

A. Local Government Initiative on the Environment

The Sabang Sewerage and Wastewater Treatment project is an initiative of the Office of the Mayor of Puerto Galera. On December 2005, the Mayor invited PEMSEA and SCOTIA to evaluate the town's sanitation problem in response to growing clamor from residents and resort owners for a more lasting solution to the issue. In 2004, total tourist arrivals in Puerto Galera reached 1.072 million from only 637 thousand in 2003 and 138 thousand in 2002 (Tourist Information Center, Puerto Galera). The rapid influx of tourist has led to fears of coliform contamination in the beaches which could potentially undermine the town's tourist economy. The pollution of Puerto Galera's coastal areas has also become a source of concern to environmental groups particularly as Puerto Galera is very close to the sensitive marine biodiversity areas (i.e., Verde Passage).

B. Steps Taken by the Local Government of Puerto Galera

Since the first meeting of the local government leaders with PEMSEA and SCOTIA, a number of activities have taken place in the development of a sanitation system for the Municipality.

In December 2006, the Mayor sent a letter to PEMSEA requesting for further discussions on a possible assistance on the town's pollution problems. The said letter was endorsed by several leaders of local associations and organizations.

1. Mandate to PEMSEA and SCOTIA.

In rthe first week of March 2005, the Sangguniang Bayan (SB) of Puerto Galera passed a resolution authorizing the Mayor to sign an agreement with PEMSEA and SCOTIA to undertake activities that are necessary to develop a sanitation project for the whole of Puerto Galera. This was immediately followed by a signing of a tripartite MOA among the Local Government of Puerto Galera, PEMSEA and SCOTIA on 30 March 2006.

2. Pre Feasibility Study on Wastewater Treatment Facility.

On December 5-6 2005, upon invitation from Mayor Aristeo Atienza, a team of Environmental and Investment Specialists from PEMSEA, along with Sanitation Engineers from SCOTIA, conducted a site visit on Barangays Sabang, Poblacion, San Isidro and Balatero in order to assess the need for environmental infrastructure services. The result of this visit was a pre-feasibility study outlining the magnitude of the problem of wastewater, cost of investment and possible funding solution including the imposition of an environmental management fee. Said document was distributed during the signing of the tripartite MOA on 30 March 2006.

3. Information and Education Campaign (IEC) Activities.

A number of IEC activities have already been initiated including meetings and workshops on the wastewater treatment project. For instance, on 5 April 2006, PEMSEA conducted a series of briefings and consultations with various stakeholders, e.g., municipal council, municipal government officers, tourist resort owners, WWF, and barangay officials of Sabang. Then on 19 April 2006, a stakeholders' consensus-building and action planning workshop was conducted with with the local government, barangays, private sector (resort owners and managers), boat, jeepney and tricycle operators and drivers, NGOs, and other stakeholders. Further, SCOTIA has also conducted briefings to the Municipality's Coastal Resource Management Board, and has facilitated the access to funding by TOSCA (an NGO) from USAID for the IEC campaign.

4. Willingness-to-Pay Survey.

In July - August 2006, PEMSEA, SCOTIA - Philippines and World Wide Fund for Nature (WWF) - Philippines conducted a WTP survey in order to determine the appropriate level of fees to be imposed on tourists, households and establishments. The said survey indicates that the proposed EUF of PhP50 per visitor or tourist is acceptable, and both local and foreign tourists are willing to pay a higher amount.

5. Technical Study on Sewerage Planning and Wastewater Treatment for Sabang.

PEMSEA has commissioned a more detailed study to further evaluate the cost of setting up a sewerage and wastewater treatment system in Barangay Sabang. Barangay Sabang is one of the main areas in Puerto Galera where tourist activity is concentrated. The study covers the capital and operating cost of the sewerage system and wastewater treatment plant. It also explores the four alternative sites for the proposed wastewater treatment plant.

6. Environmental Users Fee Ordinance

In order to support the Local Government's environmental initiatives, the Municipality is passing an ordinance entitled "An Ordinance Establishing an Environmental User Fee System in the Municipality of Puerto Galera, Oriental Mindoro". The ordinance is intended to establish an Environmental Users Fee System, which will effectively charge an amount for the use and/or enjoyment of Puerto Galera's environment and natural resources. The amount to be charged will be imposed on all incoming tourists and visitors to Puerto Galera. Other relevant features of the ordinance include:

i. *Environmental Trust Fund*. A trust fund shall be established to receive EUF collection and to finance approved projects or activities, *provided*, a certain percentage of the net EUF collection shall be deposited in an endowment fund. The endowment fund can be used only for emergency relief actions such as natural hazards.

ii. *Use of EUF Funds.* EU Funds shall be used strictly to finance the following activities:
   - Environmental infrastructure projects, such as, but not limited to, wastewater collection and treatment system, sanitation and solid waste management
   - Environmental and natural resources protection, conservation and management
   - IEC, research and capacity building related to environmental and natural resource management
   - Sustainable tourism development, including tourist safety and security

iii. *Barangay Allocation.* A certain percentage of the net collection shall be allocated to fund projects at the barangay level, *pro rata* based on the population. The proportionate funds shall be disbursed to the concerned barangay upon submission of project proposals, subject to the endorsement of the CRMB and approval by the SB.

iv. *Checks and Balance*. The EUF Funds shall be disbursed by the Municipal Treasurer and undergo regular external auditing procedures, including audit by the Commission on Audit.

The amount of EUF to be imposed on travelers is estimated to be PhP50 per tourist per visit. The said amount is based on a Willingness-To-Pay Survey conducted by PEMSEA, SCOTIA-Philippines and the WWF - Philippines.

7. Environmental Trust Fund

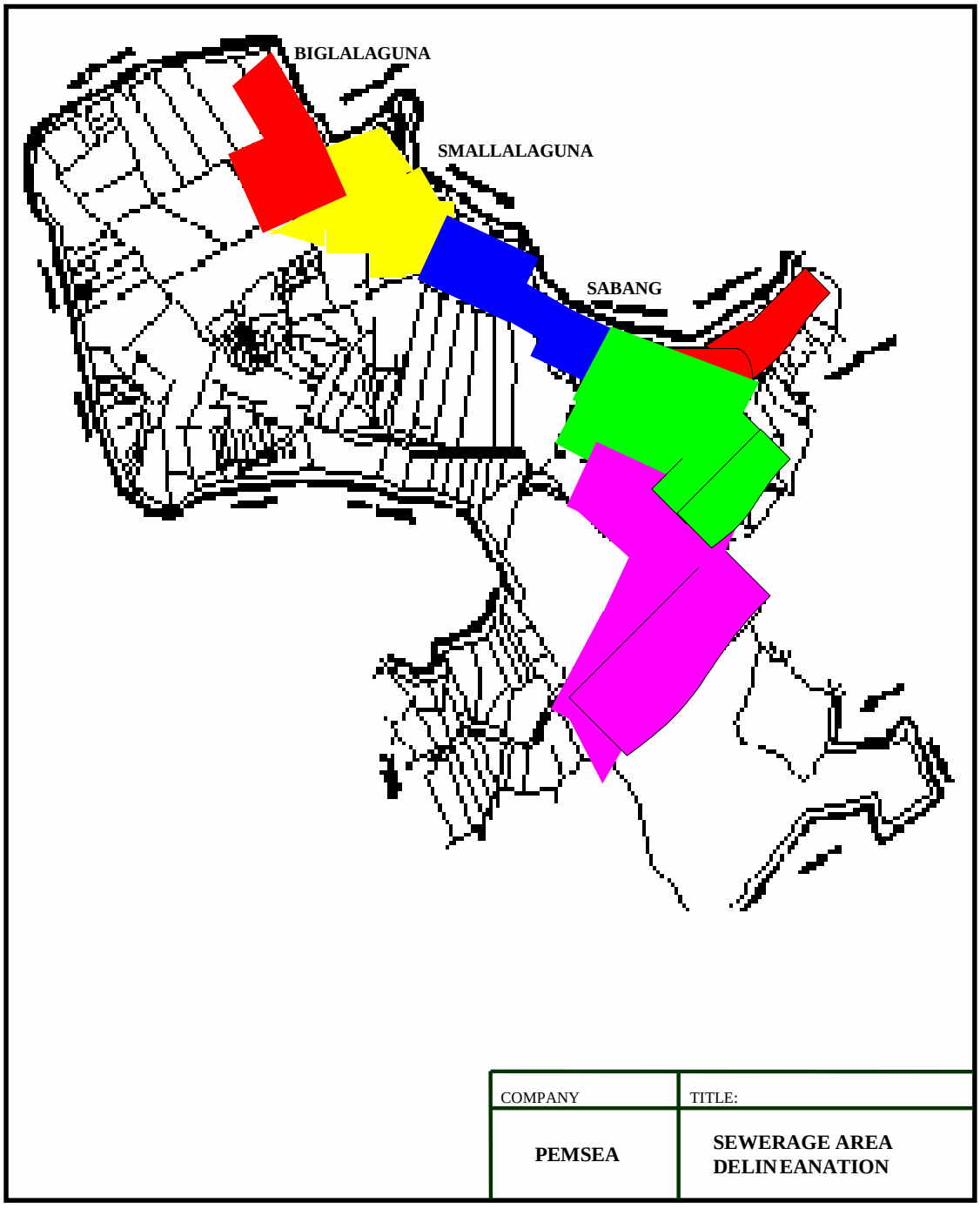
In addition to the EUF Ordinance, the Municipality of Puerto Galera will set up an Environmental Trust Fund where all the funds collected from the EUF will be deposited. This trust fund shall be

used to finance environmental projects, among which is the Sabang Sewerage System and Wastewater Treatment Facility. Other environmental projects shall be identified by the Municipality in the future.

III. PROJECT DESCRIPTION

A. Coverage Area

The project consist of design, construction and operation of a sewerage system and wastewater treatment plant for Barangay Sabang and adjacent areas namely Big Lalaguna and Small Lalaguna in Puerto Galera. The total catchment coverage for the sewerage collection is 127,697 square meters. The map of this area is shown below:



The current wastewater generation for the catchment area is estimated to be at 3,135 cubic meters per day. The estimate of the flow rate and assumptions are shown below:

Estimate of Current Wastewater Flowrate in Sabang

	Persons	Wastewater (Liters)
I. 850 Households X 5 Pax per Household (120 liters per capita per day	4,250	510,000
II. 800 Guest Rooms X 5 Pax per Room (200 liters per capita per day)	4,000	800,000
III. 800 Guest Rooms 1 Resort employee per guest room (120 liters per capita per day)	800	96,000
IV. 269 Non- Resort Establishments 5 Employees / establishment (120 liters per capita per day)	1,345	161,400
Subtotal		1,567.4 cu m/ day
Infiltration	X 2	
Total		**3,134.8 cu m/ day**

B. Site Characteristics

Sabang is one of the thirteen barangays in the Municipality of Puerto Galera. It is located at the northern tip of the island of Mindoro. White beaches and proximity to dive sites has made this area as a prime tourist destination.

The development of Sabang shows very little evidence of proper urban planning. The streets and alleys are narrow. Open drains are visible in many pedestrian paths. The property limits are many times marked by very narrow alleys to allow for passage of people. Houses are very close to each other. The haphazard manner of development has led to cramp conditions.

	Total	***Sabang***
Land area (sq. km.)	252.47	4.48
Population (2000)	21,925	2,752
Population density	87	614
Number of households (2000)	4,424	603
Number of resort establishments	131	62
Number of non-resort establishments	623	239
Number of tourist arrivals (average, estimate)	1 million	

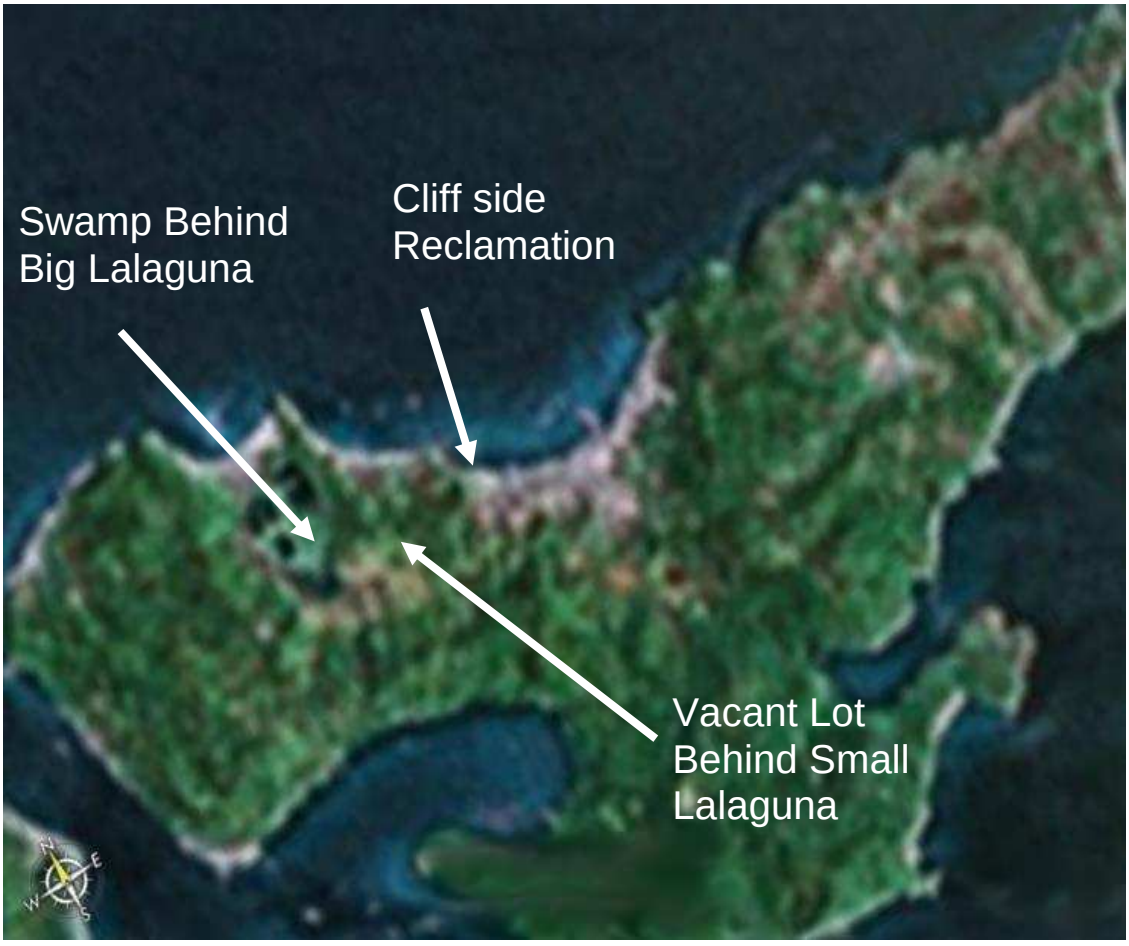
Source: Municipal Profile, Municipal Government of Puerto Galera, 2006
Tourism Office, Municipal Government of Puerto Galera

C. Site of Wastewater Treatment Plant

Based on a study commissioned by PEMSEA, four candidate sites for the wastewater treatment facility were identified:

Option 1 – Ridge top Small Lalaguna
Option 2 – Cliffside of Possible Reclamation Area in Small Lalaguna
Option 3 – Empty Lot Behind Small Lalaguna
Option 4 – Behind Big Lalaguna

These options are shown in the map below:



Option 1 and 3 – Small Lalaguna.

These sites present options for locating a compact wastewater treatment facility. As seen in the map, the site starts out as flat land, then slopes towards an inclination reaching about 30 meters.

Option 1 has the treatment facility located at the top of the ridge shown in the picture. The option would have the wastewater pumped up to 30 meters. The treated effluent will flow by gravity over the ridge to a larger area and discharge into the area behind Big Lalaguna.

Option 3 will use the flat area before the ridge. This option is also feasible with proper odor mitigation. This area is close to some resorts and households and will therefore have to be much stringent in terms of odor control. Aeration tanks and sumps will have to be fully enclosed to prevent emanation of odor and to facilitate collection and treatment of off gases. The treatment facility may be located on the slope of this site. Excavation of the slope may be done and the tanks embedded in the earth.

Option 2 – Cliff Side in Small Lalaguna.

This option presents savings in terms of sewerage pipe construction and operating costs due to its proximity to the sources of wastewater. Its location also reduces the need to provide pump wastewater over the natural ridges of the area. The pathway may be reconstructed to hide the sewage collection pipes. This site though would require higher construction costs for the wastewater treatment facility. First of all, reclamation of the site would have to be carried out prior to construction. The structures would also have to be built to withstand possible wave action during extreme storm events. This option would also present a minimal risk of complaints due to odor because of its distance from existing resorts and the continuous wind action in the area.

Option 4 – Swamp Behind Big Lalaguna.

There is a large undeveloped area behind Big Lalaguna which is perennially flooded. The wastewater treatment options for such an area may provide possibilities to use some low cost options such as lagoons, polishing ponds and engineered reed beds. This will lower the cost of treatment. There is substantial distance though from Sabang. This area is also separated from Sabang and Small Lalaguna by a high 30 meters ridge. A higher operating cost will be incurred due to the pumping of the wastewater over the ridge. But this may be offset by lower operating cost of the wastewater treatment facility due to the larger available area.

D. Wastewater Characteristics

The sources of wastewater in Sabang are a mix of domestic and commercial wastewater. Typically, the contaminants will include toilet waste, grey water and restaurant wastewater. There are a few laundry operations which contribute to substantial surfactant load. Data from similar areas such as Boracay and Metro Manila can be used as indicators. The following parameters characterize the wastewater generated by Sabang:

BOD5 = 100 – 300 ppm
TSS = 50 - 200 ppm
pH = 6.0 – 7.5

The BOD5 values will approach the maximum values during the dry season when dilution due to rainwater is minimal.

IV. FINANCIAL CONSIDERATIONS

A. ESTIMATE OF COSTS

A preliminary estimate of the cost of construction and operation and maintenance of the sewerage system and wastewater treatment plant was commissioned by PEMSEA (See Annex 1). Based on this study, the cost of the project is estimated as follows:

Cost of Alternative Options for Sabang, Puerto Galera (Php millions)

	Sewerage System a	Treatment Facilities b	Land^ c	Total Capital Cost* (a+b+c)
Option 1 (Small Lalaguna 1)	39.83	52.50	6.00	98.33
Option 2 (Cliffside Reclamation)	36.34	57.50	-	93.84
Option 3 (Small Lalaguna 2)	37.49	52.50	6.00	95.99
Option 4 (Big Lalaguna)	41.86	52.50	6.00	100.36

^indicative figures only, for further validation.

** Total cost of sewerage system and wastewater treatment facility.*

It must be noted that the cost of land is still subject to further validation. The estimate used is this study is based on indicative prices based on informal interview. On the option of locating the plant at the cliffside reclamation, there is no incremental cost in obtaining the land as it is already owned by the Municipal government.

In terms of operating cost, an estimate of the annual cost of operation and maintenance (O&M) was computed. Based on the estimates, the cost of O&M is between Php10.9 million – Php 12.7 million depending on the chosen site.

Annual Operation and Maintenance

	Item Description	option 1	option 2	option 3	option 4
1	Personnel Cost	1,945,658	1,945,658	1,945,658	1,945,658
2	WWTP Treatment Chemicals	153,300	153,300	153,300	153,300
3	Power, Light and Water	8,462,879	8,484,138	9,110,300	10,233,500
4	Maintenance, Materials and Hardware	85,243	85,243	85,243	85,243
5	Fuel	93,600	93,600	93,600	93,600
5.1	Vehicle and Equipment	18,540	18,540	18,540	18,540
5.2	Genset (optional only)	-	-	-	-
6	Overhead	19,457	19,457	19,457	19,457
7	Sludge Disposal	124,221	124,221	124,221	124,221
9	**Total**	**10,902,897**	**10,924,156**	**11,550,319**	**12,673,519**

In order to show the total costs of having the sanitation project, the present value of future O&M costs for the next 10 years are estimated. Total capital and O&M costs amount to between Php214.37 million to Php240.20 million using a 6% discount rate and a 7% annual escalation in operating costs.

Further, in order to show some indications on cost of the project to take into account the cost of capital (or the return to the private investors and creditors), the total present value of capital

costs, O&M costs and private return is estimated. Based on the table shown below, the project will cost between Php332.05 million to Php366.05 million.

Cost of Alternative Options for Sabang, Puerto Galera (Php millions)

	Total Capital Cost* (a+b+c)	Capital Cost + O&M** in first 10 yrs	Capital Cost + Return*** in first 10 yrs
Option 1 (Small Lalaguna 1)	98.33	218.63	341.95
Option 2 (Cliffside Reclamation)	93.84	214.37	332.05
Option 3 (Small Lalaguna 2)	95.99	223.44	343.82
Option 4 (Big Lalaguna)	100.36	240.20	366.05

^indicative figures only, for further validation.

** Total cost of sewerage system and wastewater treatment facility.*

*** Present Value of capital and O&M costs in years 0 -10) using 6% discount rate.*

****Assuming 15% private rate of return to investor.*

Source: PEMSEA estimates.

B. ENVIRONMENTAL USER FEE COLLECTIONS

In order to show the capacity to pay of the Local Government, the present value of future EUF collection is estimated using Php50 per tourist fee and reasonable assumptions on the efficiency of fee collection. Assuming only 80% collection efficiency, the present value of EUF collections is estimated at Php647.49 million for the next 10 years. The base assumption for tourist arrival is 1.046 million in the initial year. Given that the present value of the EUF collection is greater than the cost of constructing and operating the sanitation project, the project is therefore a very feasible one from an investment standpoint.

Environmental User Fee Collection

Year	0	1	2	3	4	5	6	7	8	9	10
Annual Tourists ('000)	1,046	1,151	1,266	1,393	1,532	1,685	1,854	2,039	2,243	2,468	2,714
Growth in Tourists	-	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Fee per Tourist (Php)	50	50	50	50	50	50	50	50	50	50	50
Efficiency Rate (%)	60%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Amount of Fees Collected	31,395	46,046	50,650	55,715	61,287	67,416	74,157	81,573	89,730	98,703	108,574
Present Value of Fees	31,395	43,439	45,079	46,780	48,545	50,377	52,278	54,251	56,298	58,422	60,627
Present Value of Fees (10 Years)	**547,491**										
Present Value of Fees (20 Years)	**1,294,969**										

To show the sensitivity of EUF collection to the collection efficiency rate, the present value of collection is computed using alternative efficiencies. At 60% efficiency, the value is Php418 million. At 50% efficiency and Php50 fee, the present value is Php349 million, still higher than the total costs presented in the earlier section.

EUFs versus Collection Efficiency Rate (in Php million)*

Present Value of EUFs (10 Years)					
Environment Fees/ Collection Efficiency Rate	40%	50%	60%	80%	90%
Php 50	279	349	418	547	628
Php60	335	418	502	670	753
Php70	391	488	586	781	879

Source: PEMSEA.

*assuming 1.0 million tourists in year 0.

C. CASH FLOW PROJECTIONS

To show the change in cash position of the municipality with the implementation of the EUF Ordinance and the construction and operation of the sanitation project, an annual cash flow statement is shown. As can be seen below, the net cash outflow of Php81.98m incurred from the construction of the project and initial O&M costs (amounting to Php113.38 million), can be recovered in as short as four years. In Year 1, the net increase in cash amounts to P20.28 million.

Cashflow Forecasts in First 10 Years (Php million)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Cash Outflows	113.38	25.76	26.58	27.46	28.40	29.40	30.47	31.62	32.85	34.16	35.57
Capital Expenditures	93.84										
Operating and Maintenance	5.46	11.69	12.51	13.38	14.32	15.32	16.39	17.54	18.77	20.08	21.49
PrivateRate of Return	14.08	14.08	14.08	14.08	14.08	14.08	14.08	14.08	14.08	14.08	14.08
Cash Inflows											
EUF Collections*	31.39	46.05	50.65	55.72	61.29	67.42	74.16	81.57	89.73	98.70	108.57
Net Cash	(81.98)	20.28	24.07	28.26	32.89	38.02	43.69	49.96	56.88	64.54	73.01

**Php 50 per tourist at 80% efficiency rate; Tourist arrivals at 1.0 million in Year 0.*
Private rate of return is 15%.

The table below shows the cash flow forecasts assuming that the project is fully financed by a bank loan carrying an interest rate of 15% per annum, for conservative purposes (actual lending rates presently at 11% - 13%, depending on the risk profile of a project). The term of the loan is seven years with two years grace period. As can be seen, the project is capable of repaying amortization by Year 2, even producing additional cash flows for the Municipality.

Cashflow Forecasts in First 10 Years (Php million) with Principal Repayments

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Cash Outflows	113.38	25.76	45.35	46.23	47.16	48.17	49.24	31.62	32.85	34.16	35.57
Capital Expenditures	93.84										
Operating and Maintenance	5.46	11.69	12.51	13.38	14.32	15.32	16.39	17.54	18.77	20.08	21.49
PrivateRate of Return	14.08	14.08	14.08	14.08	14.08	14.08	14.08	14.08	14.08	14.08	14.08
Principal Repayments^			18.77	18.77	18.77	18.77	18.77				
Cash Inflows											
EUF Collections*	31.39	46.05	50.65	55.72	61.29	67.42	74.16	81.57	89.73	98.70	108.57
Net Change in Cash	(81.98)	20.28	5.30	9.49	14.12	19.25	24.92	49.96	56.88	64.54	73.01

**Php 50 per tourist at 80% efficiency rate; Tourist arrivals at 1.0 million in Year 0.*
Private rate of return is 15%.
^Assuming 7 Year Loan with 2 years grace period.

D. MUNICIPALITY'S FISCAL POSITION

The implementation of the EUF Ordinance will significantly improve the Municipality's fiscal position. In fact, the EUF will double the LGU's revenue base which is presently Php48 million per year.

The table shows the breakdown of revenues collected by the Municipality. As can be seen, the main source of revenue for the municipality is the business, community and real estate taxes which account for 18% of total. The local revenues from its water distribution system are also one of the town's biggest source of income, accounting for 14% of total. Total annual internal revenue allotment from the National Government amounts to PhP28 million.

Puerto Galera Municipality

Revenue Breakdown (Php '000)

	2000	2001	2002	2003	2004
Business Tax	4,435	4,625	4,530	4,924	5,158
Community Tax	337	325	331	349	424
Real Property Tax	911	961	1,121	1,600	1,340
Other Local Taxes	1,766	2,015	1,825	2,435	2,295
Income from Waterfalls					71
Fees on Weighs and Measures	0	1	1	1	1
Permit Fees	1,244	1,216	1,422	1,402	1,657
Certification/Clearances	350	375	358	377	570
Garbage Fees	107	105	111	153	156
Inspection Fees	48	53	77	71	133
Medical Dental and Laboratory Fees	-	-	791	802	851
Other Service Income (Hospital Services)	616	858	201	244	260
Income from Markets	48	252	62	333	376
Income from Slaughterhouses	100	114	133	153	135
Income from Waterworks Systems	4,748	4,803	5,727	5,562	6,596
Income from Grants and Donations	-	1,105	14	26	17
Internal Revenue Allotment	21,119	22,224	26,236	28,029	28,013
Borrowings	15,000	-	-	-	-
Interfund Transfer					
Fines and Penalties	40	39	23	33	58
Total	50,870	39,071	42,965	46,495	48,113

source: Municipality of Puerto Galera.

The Local Government has limited liabilities with its loan payables at the end of 2005 amounting to PhP7.27 million versus its assets of PhP72.43 million.

III. ATTRACTIVENESS OF THE PROJECT

A. Puerto as a Major Tourist Attraction

The Sabang Sewerage System and Wastewater Treatment Facility is an attractive project both from a commercial and environmental point of view. In recent years, a tourism boom has resulted into solid waste and wastewater pollution problems for the town. However, this problem has also presented an opportunity for the Local Government. Starting November 2006 the Municipal Government of Puerto Galera will collect Environmental User Fes (EUFs) from its visitors. The proceeds from the fees shall be used in order to ensure that tourism activities do not damage the natural environment.

1. Tourist Traffic

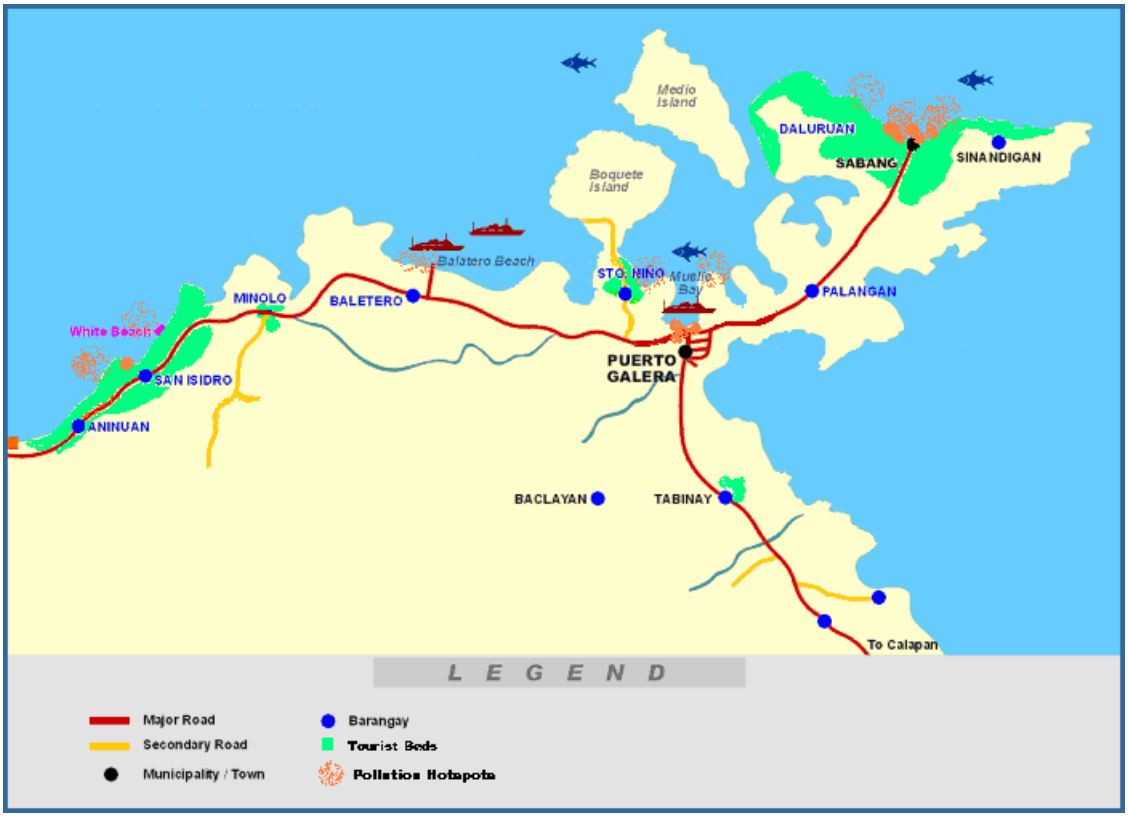
The data below indicates the rapid transformation of Puerto Galera as a sleepy town for scuba diving to one that is bustling with economic activity. From 2002 to 2004, tourist arrival has grown almost eightfold. Total tourist arrival recorded reached 1.072 million in 2004. Of this figure, 1.046 million is local while 26.3 thousand is foreign.

Puerto Galera Tourism Indicators
Tourist Arrivals

	2002	2003	2004
Local Travelers	97,896	613,929	1,046,496
Foreign Travelers	39,832	23,171	26,377
Total Tourists	137,728	637,100	1,072,873
Average Daily Local Tourist Arrival	268	1,682	2,867
Average Daily Foreign Tourist Arrival	109	63	72

Source : Puerto Galera Tourism Office, PEMSEA.

The chart shows the concentration of tourist resorts based on room accommodations. As can be seen in the map, the main tourist areas are: 1) Sabang-Sinandigan, 2) San Isidro-Aninuan and 3) Sto Nino-Muelle Bay areas. The red spray areas indicate the bodies of water that are potential environmental hotspots or where contamination have been reported and observed.



2. Tourist Facilities

Puerto Galera has 136 resort establishments which offer accommodations to local and foreign tourists. These establishments have a total capacity of around 1,621 rooms. Almost half (48%) of these rooms can be found in Sabang while 30% of these can be found in Barangay San Isidro, where the popular White Beach is located. The remaining 22% of the room accommodation can be found scattered in Sinandigan, Aninuan, Talipanan, Sto Nino and Tabinay.

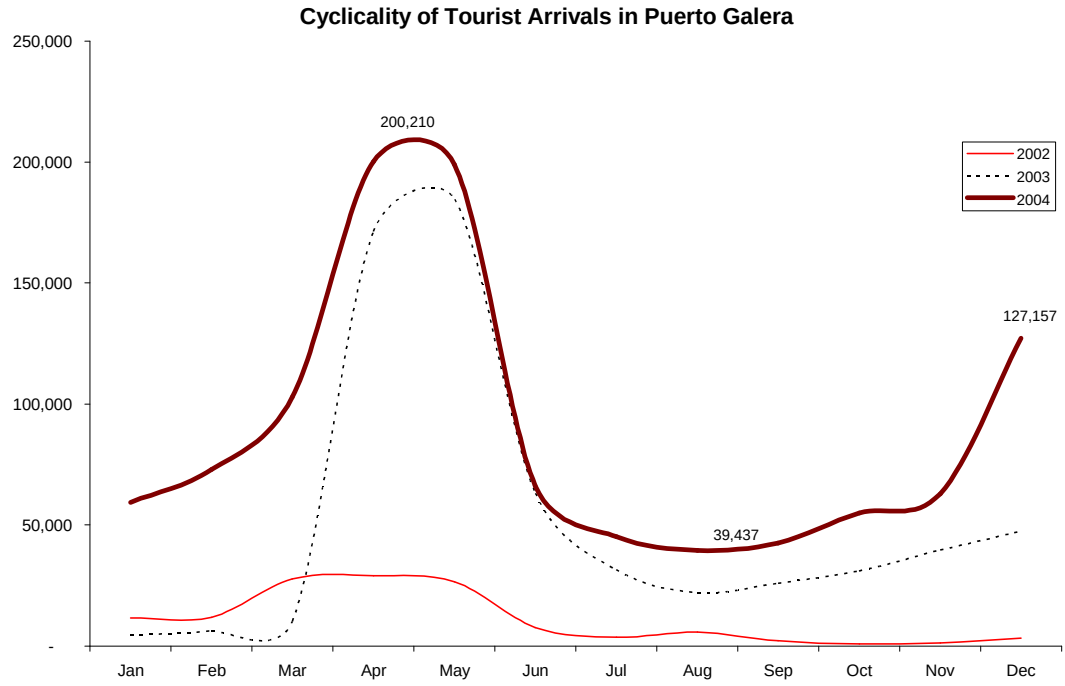
Puerto Galera Tourism Infrastructure
Resorts and Number of Rooms

	Number of Resorts/Inns	Number of Rooms	% of total
Sabang	62	775	48%
San Isidro (White Beach and Minolo)	38	491	30%
Sinandigan	10	112	7%
Aninuan	15	109	7%
Talipanan	5	65	4%
Sto Nino	4	54	3%
Tabinay	2	15	1%
Total	**136**	**1,621**	**100%**

3. Seasonality of Tourism Activities

Tourist arrivals in Puerto Galera exhibit a very strong seasonality. The July-August period represents the lean months (39 thousand per month), while the April- May period represents the peak months with monthly tourist arrivals reaching 200 thousand per month. In recent years, the

second quarter (April – June) arrivals account for between 43% - 66% of total visitors, while October-December account for 21% of total annual arrivals.



4. Apparent Occupancy Rate in Resorts

Puerto Galera is experiencing an unprecedented real estate and construction boom as indicated by newly built houses and lodges and ongoing construction particularly in Sabang, San Isidro and Talipanan. In the table below, we show **apparent occupancy/vacancy rate** between 2003 and 2004 using room capacity data from the tourism office. During peak season, demand for accommodation is between 2.4 - 2.7 times the existing rooms available. This excess demand is absorbed by room rentals from the local households as well as tent pitching along the beaches.

Cyclicality of Tourism Activities
Estimated Average Occupancy Rate

	2003				2004			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Number of Tourists	20,793	418,912	79,385	118,221	235,269	465,325	127,165	245,198
Days Stay	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Tourist Days	*51,983*	*1,047,280*	*198,463*	*295,553*	*588,173*	*1,163,313*	*317,913*	*612,995*
No. of Rooms	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621
Persons/room	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Person Capacity	4,863	4,863	4,863	4,863	4,863	4,863	4,863	4,863
Days Capacity	*437,670*	*437,670*	*437,670*	*437,670*	*437,670*	*437,670*	*437,670*	*437,670*
Average Occupancy Rate	12%	239%	45%	68%	134%	266%	73%	140%

5. Population and Estimated Tourist Density

Poblacion, Sabang and San Antonio are the most densely population barangays with average population density of between 500 to 750 heads per square kilometer, 2 to 3 times the national average of 228 persons per sq. km.

Puerto Galera
Land Area, Population and Density

	Area Sq Km	Population	Popn. Per Sq Km.
Poblacion	3.76	2,805	746.8
Sabang	4.48	2,752	613.7
San Antonio	1.13	585	517.8
Sto. Nino	5.32	1,278	240.3
Palangan	3.87	918	237.4
San Isidro	8.53	1,977	231.8
Balatero	14.32	3,210	224.1
Sinandigan	4.56	931	204.2
Dulangan	12.94	2,282	176.3
Aninuan	21.73	1,501	69.1
Tabinay	97.68	2,161	22.1
Villaflor	46.77	1,025	21.9
Baclayan	27.38	500	18.3
Total	252.47	21,925	86.84

Source of raw data: Municipality of Puerto Galera, NSO.

Compared with Boracay which has a land area of 10.8 square kilometers, Sabang's land area is smaller with only 4.48 square kilometers. San Isidro's size of 8.53 square kilometers is closer to that of Boracay.

Noting that the tourist resorts and households occupy only a small fraction of land, mostly beachfront areas, population density near the beaches rises significantly during peak seasons. In Sabang, for instance, population density in April-June period could go as high as 40,269 per square kilometer. Along the White Beach Area (Barangay San Isidro), density could go as high as 13,961 per square kilometer. Note that the population densities of key Philippine cities are: Makati – 17,229; Quezon City – 13,080; Mandaue City – 9,102 and Lapu-Lapu City – 3,318.

Puerto Galera Municipality
Estimated Population Density in Selected Coves

	Area in sq Km	5% of Land Area	Household Population	Average Tourist Popn. during Peak	Population Density in Coves
Sabang	4.48	0.22	2,752	6,278	40,269
San Isidro	8.53	0.43	1,977	3,977	13,961
Sinandigan	4.56	0.23	931	907	8,063
Aninuan	21.73	1.09	1,501	1,409	2,679
Total	39.30	1.97	7,161	12,571	

source of Raw Data: Municipality of Puerto Galera.

6. Supporting Commercial Establishments

While tourism is the main source of income of Puerto Galera, the town also hosts other economic activities that support the tourist sector. These include fishing retailing, transport, healthcare and boat building among others.

Puerto Galera Commerce
Commercial Activities Supporting Local Residents and Tourists

Sari-sari Stores	Parlor	Ice Dealer
Restaurants	Barber Shop	Theatre
Groceries	Repair Shop	Boat Building
Dry Goods Store	Auto Supplies	Gasoline Station
Rice Dealer	Photo Studio	Cockpit
Transport	Medical Clinic	Small Scale Mining
Drugstore	Copra Dealer	Livestock and Poultry

Source: Municipality of Puerto Galera.

Based on data from the Local Water District, there are 754 commercial establishments operating in Puerto Galera, 131 of which are resorts or lodges. Based on this data, there are roughly 623 commercial establishments which provide support to the local residents and the tourism industry. As the table below indicates, the bulk of the non-resort establishments are located in Poblacion and Sabang, accounting for 76% of all listed non-resort commercial establishments.

Commercial Activity in Puerto Galera
Resort and Non-Resort Establisments

	Commercial	Tourist Resort Inns/Lodges	Non-Tourist Resort Establisments*	Percent of Total
Poblacion	239	0	239	38%
Palangan	39	0	39	6%
Sabang	301	62	239	38%
Sinandigan	40	10	30	5%
San Antonio	3	0	3	0%
Sto. Nino	43	4	39	6%
Balatero	29	0	29	5%
San Isidro	34	38	0	0%
Aninuan	9	15	0	0%
Small Tabinay	17	2	15	2%
TOTAL	754	131	623	100%

*Source: Local Water District, Tourism Office. *estimate.*

VI. BACKGROUND ON PUERTO GALERA

Puerto Galera is one of the municipalities that comprise the Province of Oriental Mindoro. It is a Y- shaped peninsula located on the northshores of Mindoro Island, 130 km South of Manila. It is also 16 nautical miles from Batangas City. Its land area is 25,247 hectares. It is bounded by the Verde Island Passages in the North and Mt. Malasimbo in the South.

Puerto Galera's land is mountainous. Three mountain ranges covering a total of 11.755 sq-km rise above Puerto Galera's coastal barangays: Mt. Alimbayan in Barangay Balatero, Mt. Talipanan in Barangay Aninuan and San Isidro and Mt. Malasimbo in Barangay Aninuan. These mountains reach peak elevations of 1,400 meters above sea level and are home to rare animals such as deers, wild boars, monkeys and even the endangered tamaraw (a local buffalo endemic to Mindoro). Likewise, its numerous mountain springs provide natural habitats to a variety of orchids.

Puerto Galera's coast is 42 km long, consisting of irregular shorelines rimmed with white beaches and coconut plantations. At the eastern side of the coast, crescents of white beaches are interspersed with limestone cliffs and escarpments that are penetrated by inland bays and coves. These numerous coves and water channels support a rich marine life, forming "non-reef coral communities. Its tube-like harbor with two natural entrances provides shelter to dozens of ships seeking safe anchorage.

Mindoro Island is separated from Luzon by the Verde Island Passage. Waters are flushed by the current of the South China Sea, resulting in strong currents of up to 6 knots. This makes the area well known for its spectacular, exhilarating drift dives. The Verde Island Passage is very deep so

clear water is very common to the dive sites of Puerto Galera, along with a variety of underwater flora and fauna.

The diversity of hard and soft corals, along with hundreds of species of tropical fish life has made Puerto Galera a popular dive site. The 5 km foreshore of world class dive sites is a protected area and marine sanctuary. Visibility varies from 10m/30ft to 30m/100ft, sometimes even better depending on water temperature, current strength and wind direction. The best diving conditions are usually from April to September, as water temperature reaches 29 C, the seas are at their calmest and visibility is at its clearest. In December, water temperature can drop to as low as 22 C on the deeper dives due to thermo clines caused by upwelling of clear, cooler water. However, conditions remain good enough for year round diving.

A 1990 study revealed that more than 50% of the total area in Puerto Galera is occupied by forest, 29% by grasslands (some serving as pasture lands), the 14% are tapped for agriculture and crop production.