

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

**THE DETAILED DESIGN
ON
PORT REACTIVATION PROJECT IN LA UNION PROVINCE
OF
THE REPUBLIC OF EL SALVADOR**

FINAL REPORT

ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

THE DETAILED DESIGN ON
PORT REACTIVATION PROJECT IN LA UNION PROVINCE
OF THE REPUBLIC OF EL SALVADOR

FINAL REPORT

ENVIRONMENTAL MANAGEMENT
AND MONITORING PLAN

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ABBREVIATIONS TABLE

ANDA	National Administration of Water Supply and Sewerage
API	American Petroleum Institute
BOD	Biochemical Oxygen Demand
CENDEPESCA	National Fisheries Development Center
CEPA	Autonomous Executive Port Commission
COD	Chemical Oxygen Demand
CONACYT	National Council of Science and Technology
CORSAIN	Salvadorean Investment Corporation
DE	In Danger of Extinction
ECW	Environmental Clerk of Works
EIA	Environmental Impact Assessment
EMP	Environmental Management and Monitoring Plan
EMS	Environmental Management System
GPS	Global Positioning System
HP	Horse Power
JICA	Japan International Cooperation Agency
MARN	Ministry of the Environment and Natural Resources
MOP	Ministry of Public Works, Transport, Housing and Urban Development
OHS	Occupational Health and Safety
O&M	Operation and Maintenance
PEU	Port Environmental Unit
POM	Ports Operation Manual
RASA	Acajutla Petroleum Refinery
SEDPLUME	Numerical Model of Hydraulics Research Wallingford
SS	Suspended Solids
T	Threatened
TSS	Total Suspended Solids
UFC	Unit of Fecal Coliform
UK	United Kingdom
US or USA	United States of America
WMP	Waste Management Plan
WWTP	Waste Water Treatment Plant

Abbreviation of Common Weights Measures and Technical Terms

C	Celsius (Centigrade)
Ha	Hectare(s)
Km	kilometers(s)
mg	Miligram(s)
mg/l . mg l ⁻¹	Miligram per Liter
m ³	Cubic Meter
pH	Hydrogen Ion Potential

MEASUREMENT UNITS TABLE

Extent	
km ²	Square-kilometers (1.0 Km x 1.0 Km)
ha.	Hectares (10,000 m ²)
Length	
cm	Centimeters (10 mm)
m	Meters (100 cm)
km	Kilometers (1,000 m)
Weight	
mg	Miligram (s)

CHAPTER 1 INTRODUCTION

CHAPTER 1 INTRODUCTION

1.1 Background

El Salvador law requires proponents of major projects to obtain a number of approvals and permits before the development can be constructed. In the case of environmental matters, the impacts of the project have to be assessed and measures devised to mitigate (reduce to acceptable levels) any impacts likely to be significantly adverse. The report of the Environmental Impact Assessment is then reviewed by the Ministry of Environment and Natural Resources (MARN), who decide whether to issue an Environmental Permit.

For the present project, the Environmental Impact Assessment (CEPA EIA 2000) was approved by MARN prior to the design stage, and the Environmental Permit was granted on 21 December 2000 (Resolution MARN-N 400-2000). This confers official Government approval, subject to the fulfilment of conditions specified in the Permit.

Table 1.1.1 Conditions Specified in Environmental Permit

1)	Implementation of 14 of the 17 Mitigation Measures recommended by the EIA 2000 report;
2)	Receipt of a Security Guarantee from CEPA of ¢16,050,000, this being the required sum to carry out the 14 Mitigation Measures;
3)	Implementation of 18 other Environmental Conditions listed in the permit;
4)	Confirmation by audits carried out by MARN during the construction period, that all of the actions required by the permit are carried out.

The environmental study carried out during the design stage consisted of seven activities, aimed at determining how the various conditions of the Environmental Permit would be accommodated within the project. The activities were as follows:

- i) Review of the conditions imposed by the Environmental Permit to confirm their justification and feasibility;
- ii) Completion of eight (8) environmental surveys to collect data on the existing environment of the study area, in addition to that already available in the EIA;
- iii) Completion of an interview survey with artisanal fishermen to determine the fisheries importance of the study area;
- iv) Numerical modeling to predict the dispersion of suspended sediment in the water as a result of the dredging, disposal and reclamation operations;
- v) Assessment of the environmental impacts of dredging, disposal and reclamation to take into account changes in the approach to these aspects;
- vi) Discussions with the Technical Committee and MARN regarding the impacts of the changes in the project, and proposals to amend certain conditions of the

Environmental Permit to reflect the increased understanding of the sensitivity of the area;

- vii) Preparation of the Environmental Management and Monitoring Plan for the project, which describes how the environment will be managed and monitored throughout the construction and operational phases to minimize impacts.

The results of these activities are summarized in this report, and all of the environmental data collected are contained in the appendix to this report.

This document is the Environmental Management and Monitoring Plan (EMP), which is the main output from the environmental study. This is the document that describes how the mitigation will be achieved, and in practical terms how each measure has been included in the port design, together with any remaining action that needs to be taken in the future. It also describes the monitoring that will be carried out to ensure that the mitigation is implemented and that it reduces the environmental impacts of the project as intended. It thus contains all of the information describing how the environment is to be managed and protected during both construction and operation of the port, and should be referred to by all parties throughout the project, whenever issues related to the environment are considered.

The EMP is divided into an Environmental Mitigation Plan and an Environmental Monitoring Plan. The Mitigation Plan considers each of the 14 approved Mitigation Measures and additional Environmental Permit Conditions in turn, and describes in detail:

- The measure, it's objectives, rationale and main aspects (in a summary table);
- The approach, that is how the measure will be engineered;
- Action taken to include the mitigation in the port design, and action required in the future, together with the agencies responsible.

The Mitigation Plan also considers the measures in turn, and describes:

- The measure and the monitoring to be conducted to ensure that it is implemented and that it reduces impacts as planned (in a summary table);
- The rationale, that is the reasons for conducting the monitoring;
- The monitoring requirements: action that needs to be taken by the various parties, to ensure that the monitoring is conducted as required.

The results of the other environmental studies and surveys are referred to in the text wherever appropriate.