



Environmental and Social Due Diligence Report for the CMSA Manzanillo, Mexico Container Port and Logistic Facility



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Acronyms and Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
APIMAN	<i>Administración Portuaria Integral de Manzanillo S.A. de C.V.</i>
BEI®	Biological Exposure Indices
CCCC	China Communications Construction Company Ltd.
CHEC	China Harbour Engineering Company
CICESE	<i>Centro de Investigación Científica y EDUCACIÓN Superior de Ensenada</i> (Ensenada Scientific Research and Higher Education Center)
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CONABIO	<i>La Comisión Nacional para el Conocimiento y uso de la Biodiversidad</i> (National Commission for Understanding and Use of Biodiversity)
CONANP	<i>Comisión Nacional de Áreas Naturales Protegidas</i> (National Commission on Protected Natural Areas)
CROM	<i>Estibadores y Jornaleros del Pacífico</i> (CMSA employee union)
dB	decibel(s)
DGGFS	<i>Dirección General de Gestión Forestal y de Suelos</i> (Bureau of Forest and Land Management)
DGIRA	<i>Dirección General de Impacto y Riesgo Ambiental</i> (Environmental Impact and Risk Bureau)
EHS	environment, health, and safety
ESDD	environmental and social due diligence
ESDR	Environmental and Social Due Diligence Report
ESMS	Environmental and Social Management System
ETJ	<i>Estudio Técnico Justificativo</i> (Supporting Technical Study)
GDP	Gross Domestic Product
H&S	health and safety
HSMS	Health and Safety Management System
ICTSI	International Container Terminal Services, Inc.
IDB	Inter-American Development Bank
IFC	International Finance Corporation, Inc.
IMDG	International Maritime Dangerous Goods
INE	<i>Instituto Nacional de Ecología</i> (National Ecology Institute)
INEGI	Instituto Nacional de Estadística, Geografía e Informática
IUCN	International Union for Conservation of Nature
ISSTE	<i>Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado</i> (Institute of Social Security and Services for State Workers)
km	kilometers
KPI	Key Performance Indicator(s)
LGDFS	<i>Ley General de Desarrollo Forestal Sustentable</i> (Law on Sustainable Forest Development)
LGEEPA	<i>Ley General del Equilibrio Ecológico y la Protección al Ambiente</i> (Law on Ecological Balance and Environmental Protection)

m	meter(s)
m ² /ha	square meters/hectare
m ³	cubic meters
MAP	Mangrove Action Project
masl	meters above sea level
MIA	<i>Manifestación de Impacto Ambiental</i> (Environmental Impact Statement)
MIA-R	<i>Manifestación de Impacto Ambiental Modalidad Regional</i> (Regional Environmental Impact Statement)
IMO	International Maritime Organization
NGO	nongovernmental organization
NIOSH	United States National Institute for Occupational Health and Safety
NOM	Official Mexican Rules
OSHA	Occupational Safety and Health Administration of the United States
PEL	permissible exposure limits
PPE	personal protection equipment
PROFEPA	<i>Procuraduría Federal de Protección al Ambiente</i> (Federal Environmental Protection Agency)
PSPF	preliminary summary of principal findings
REIA	<i>Reglamento en material de Evaluación del Impacto Ambiental</i> (Environmental Impact Study)
RIA	State Environmental Impact Resolution
SCF	structured and corporate financing
SCT	<i>Secretaría de Comunicaciones y Transportes de México</i> (Ministry of Communication and Transportatio)
SEDUR	<i>Secretaria de Desarrollo Urbano</i> (Secretary of Urban Development)
SEMAR	<i>Secretaría de la Marina de México</i> (Ministry of the Navy)
SEMARNAT	Secretaría de Medio Ambiente y Recursos Naturales (Ministry of the Environment and Social Services)
SIA	Social Impact Analysis
SNIB	<i>Sistema Nacional de Información sobre Biodiversidad</i> (National Biodiversity Information System)
STPS	<i>Secretaria de Trabajo y Prevención Social</i> (Secretariat of Labour and Social Prevention)
TEU	twenty foot equivalent units
TGNL	<i>Terminal de Almacenamiento y Regasificación de GNL</i> (GNL Storage and Regasification Terminal)
TLV®	Threshold Limit Value
TOR	terms of reference

Introduction

1.1 Project Overview

The Structured and Corporate Financing (SCF) Department of the Inter-American Development Bank (IDB) and the International Finance Corporation (IFC) require an Environmental and Social Due Diligence (ESDD) of the Contecon Manzanillo, S.A. (CMSA) container terminal (the “Project”) proposed for financing by the IDB, the IFC and possibly other banks. The shareholder for this Project is the International Container Terminal Services, Inc. (ICTSI).

The Project consists of the design, development, construction, operation, and maintenance of a terminal capable of handling Super Post Panamax ships.¹ The CMSA Terminal is located in the existing Port of Manzanillo in the state of Colima, Mexico (Figures 1-1 and 1-2). The CMSA Terminal represents an expansion of the Port’s container capacity by 650,000 twenty foot equivalent units (TEU) per year. Per IDB’s OP 703, Environment and Safeguards Compliance Policy and IFC Policy on Environmental and Social Sustainability, the Project has been classified as a Category A operation, indicating the potential for significant adverse environmental impacts and the need for a comprehensive environmental assessment.

¹ Super-Post Panamax vessels are 22 or more containers wide and can handle up to 12,000 TEU. The vessels are about 1,200 feet or 366 meters long.

FIGURE 1-1

Project Location

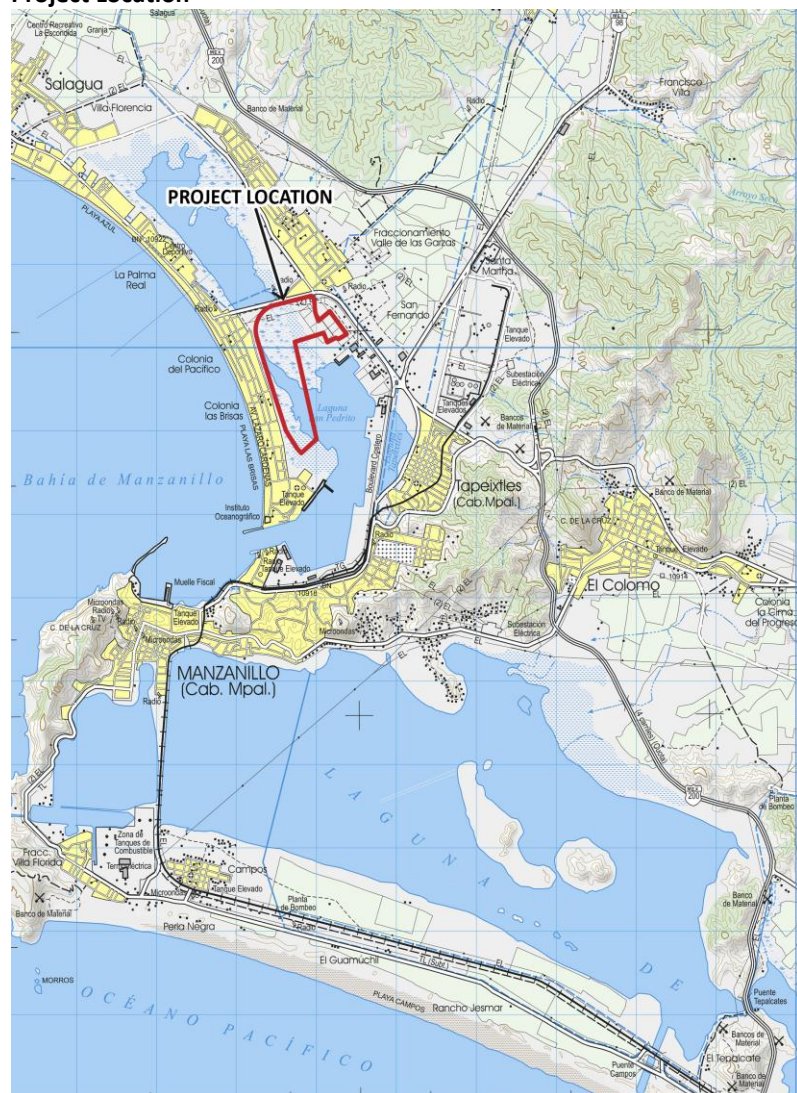


FIGURE 1-2
Port of Manzanillo



Source: Manzanillo Port Handbook. 2012.

1.2 Scope of Work

The ESDD Scope of Work for the Project addresses the objectives stated in the Terms of Reference (TOR) to complete a due diligence to evaluate compliance with the IDB's applicable environmental and social safeguards, Operational Policies, IFC Performance Standards, Equator Principles, and applicable Mexican federal, state, and local regulations and laws.

The scope of work for the ESDD involved the execution of the following three tasks.

Task 1 - Information Review — This initial task included the review of relevant environmental, social, and health and safety Project documents and information that were made available by CMSA and the IDB prior to the site reconnaissance. The document review provided an initial understanding of the Project and identified data gaps and issues that were discussed in more detail during the site reconnaissance.

Task 2 - Site Reconnaissance — A site reconnaissance was conducted to allow visual observation of relevant areas both directly and indirectly affected by the Project. In addition, meetings with relevant individuals/entities associated with the Project were held to discuss environmental and social issues. At the end of the site reconnaissance, additional information and data were requested by CH2M HILL personnel.

Task 3 - Report Preparation — Two documents are required upon completion of the site reconnaissance: (1) Preliminary Summary of Principal Findings (PSPF), and (2) Environmental and Social Due Diligence Report (ESDR).

CH2M HILL environmental and social specialists visited the Port of Manzanillo, Mexico, between 7 and 10 October 2013, to perform the ESDD of the CMSA container terminal. CH2M HILL performed the due diligence under contract to the IDB in coordination with the IFC. The following CH2M HILL staff performed the site reconnaissance: Patti Murphy (port specialist and lead auditor), Gabriela Lara (safety and environmental compliance), Sara Vivas (social impacts specialist), and Rogelio Felipe Pérez (biologist).

At the time of the mission, the construction of the CMSA container terminal was approximately 90 percent complete. This due diligence report addresses the CMSA terminal project which includes the wharf, berth, cranes, intermodal yard, and associated facilities (the Project). The report also addresses the project context including the relationship between CMSA and the *Administración Portuaria Integral de Manzanillo S.A. de C.V.* (APIMAN; Port Administration), acting on behalf of the SCT.

1.3 Sources of Information

Pertinent sources of reviewed information included documentation provided by CMSA, observations made during the site reconnaissance, and information obtained during meetings with the CMSA's representatives, agencies, environmental consultants, and community representatives. Audit and monitoring reports prepared by both APIMAN and CMSA's consultant CONSULTEC were also reviewed.

During the due diligence audit, the CH2M HILL team met with representatives from CMSA, the port terminal operator; ICTSI, the terminal developer/owner; APIMAN, which owns the port and is leasing the property to ICTSI; CONSULTEC, staff from the consulting firm that monitored the CMSA construction project; as well as IDB and IFC staff. In addition, our team reviewed environmental and social documents related to the permitting processes, health and safety and emergency response, as well as project general operations measures. A list of the documentation provided by CMSA and a list of the meetings that were held during the site reconnaissance are presented Appendix A.

Following the site reconnaissance, representatives from CMSA provided additional data and documents requested by CH2M HILL personnel.

Project Description

2.1 Site Location

The CMSA Terminal is located within the existing Port of Manzanillo on the western coast of the State of Colima, Mexico. The Terminal is specifically located between 104° 15' and 104° 22' longitude west and 19° 00' to 19° 07' latitude north, with an altitude of 4 meters above sea level (masl). The total Port area is about 437-hectares including water, wharves, and storage areas.

Manzanillo is the second-largest city in the state after Colima, with a 2010 population of 161,420. The Port of Manzanillo ranks first in Mexico and fifth in Latin America for container handling. It has 19 mooring locations, three of which are dedicated to oil products, two to cruise ships, and 14 to commercial shipping.

2.2 Project Components and Facilities

2.2.1 Development of Manzanillo Port

The Port of Manzanillo began formally operating under a federal decree in the early 1970s and was subsequently chartered in 1993. It is responsible for managing, promoting developing, and maintaining the Port² and for developing appropriate infrastructure to facilitate international trade. A history of Manzanillo Port development is discussed, with respect to the mangrove habitat, in Section 4 of this report.

A Master Plan (for 2000 to 2010) and an environmental evaluation *Manifestación de Impacto Ambiental*³(MIA) (2004) was prepared for the port expansion in the north sector of the port area, including the CMSA terminal location. In 2009 a revision to the original Master Plan and MIA was completed that addressed an increase in the amount of dredge material that could be removed from the shipping channels inside the Port. The amount of allowable dredged material removal was increased from 4,743,600 to 7,743,600 cubic meters⁴ to be removed to accommodate the draft of vessels.

As part of the initial development of the Port of Manzanillo, the natural shoreline and local hydrology was modified, as a result, part of the newly formed port area, including the current project site was colonized with mangrove habitat. When the existing port ship channel was deepened in 2005 through 2006, the mangrove habitat at the project site was removed and the area filled with dredged material as part of the CMSA terminal construction process. Therefore, when CMSA began construction of the Project in 2012, the ship channel had already been deepened and the dredged material used as fill for the project site.

2.2.2 Terminal Layout and Facilities

The CMSA terminal is a shipping facility that will be capable of handling 650,000 TEU containers. The Project site is approximately 72.4 hectares of landside facilities and 5.4 hectares of maritime facilities including:

- **Wharf:** 1,080 meter wharf with 16 meter draft capable of handling Super Post Panamax ships
- **Container Storage:** yard facilities with approximately 2,900 container slots
- **Intermodal Yard:** truck and rail access inside the storage yard

2 APIMAN. 2012. Manzanillo Port Handbook 2012-2013.

3 2009 SCT Manifestación de Impacto Ambiental Puerto de Manzanillo Programa Maestro 2000-2010.

- **Cranes and Other Equipment:** four ship-to-shore cranes (or transtainers), ten rubber tire gantries and a variety of terminal tractors, reach stackers, fork-lifts and other essential equipment
- **Support Buildings and Facilities:** facilities for security, maintenance and hazardous materials storage, customs, emergency response, and on-site medical activities

2.2.2.1 Wharf, Container Storage, and Intermodal Yard

A 1,080 meter wharf serves as a vessel berth with a water depth of 16 meters below mean sea level. The wharf is made of concrete and extends the land area to the edge of the container berth. A culvert underneath the wharf provides a connection between the port and the mangrove habitat behind the container yard area. This mangrove strip is about 5 hectares in width and is located between the container yard and the community of Las Brisas.

The wharf connects directly to the 72.4-acre container yard where containers are stored in stacks. Runoff from the container yard drains to a wastewater treatment plant located at the Terminal (see Section 2.2.3.3).

The intermodal yard supports both truck and train transport for containers. Trucks drive onto the yard and the containers are taken from the stacks of containers by a loader and placed onto the truck beds. The containers are also loaded directly from the stacks in the yard onto the train beds since the railroad tracks extend into the container storage yard. The terminal is designed to provide direct loading onto both trucks and trains thereby avoiding the need to truck containers between the terminal and the railroad yard.

2.2.2.2 Cranes and Equipment to Move Containers

Containers are transferred to and from ships by four rail mounted ship-to-shore cranes which are designed to move along the length of the berth. The ship-to-shore cranes transfer the containers between the ships and land side vehicles and yard tractors. Rubber tired gantry cranes are the main equipment used to transfer containers between trucks and the yard, reach stackers, which are smaller vehicles with a long arm, are used as auxiliary equipment to lift and transport containers on land. Using the rubber tired gantry cranes and the reach stackers, containers can be stacked for storage or can be loaded on and off of trucks and rail cars.

2.2.2.3 Auxiliary Buildings and Facilities

The intermodal yard facilitates transportation of containers. It contains a variety of buildings that accommodate terminal activities, including an office building, vehicle maintenance area, temporary hazardous materials storage facility (to be relocated in the future), a small medical and emergency response facility, and a wastewater treatment plant. Each building is small in comparison to the overall container storage yard.

An on-site wastewater treatment plant will treat all runoff from the yard, including rainwater, but it will not handle any domestic wastewater from the terminal or ship-related waste. The port contracts with separate concessions for disposal of ship wastes including sanitary and oil wastes. Treated effluent from the on-site wastewater treatment plant will be discharged to the municipal sanitary sewer system for further treatment.

During the October 2013 site reconnaissance, the maintenance building and temporary hazardous materials storage area were still under construction; however the temporary hazardous materials storage area was already in use and receiving low volumes of hazardous materials. According to workers in the building interviewed during the site reconnaissance, drains from the temporary hazardous materials storage area were routed directly to the municipal sanitary treatment facility.

2.2.2.4 Sound Attenuation Barrier

There is a remaining strip of mangrove habitat between the CMSA terminal and the Las Brisas neighborhood that will be maintained as both a habitat and to serve as a buffer between the terminal and the neighborhood. A noise attenuation wall also is partially completed between the neighborhood and terminal.

APIMAN has committed to complete this noise wall during the third quarter of 2014 to provide a sound barrier between the Terminal and the Las Brisas community.

2.2.3 Operations

The terminal was constructed and is being operated by CMSA under a long-term lease with APIMAN. In October 2013, the terminal was operating at 10 percent capacity. General operations at the CMSA terminal include loading and unloading of container ships and other land site operations. Container terminal operations are similar in ports around the world and consist of a ship docking alongside the berth and cranes that unload containers from the vessel onto a yard tractor. The yard tractor moves a container for storage into the container yard. Once the crane has lifted the container from a ship it will either be directly loaded onto trucks or railway wagons or will be stored, by stacking, for later delivery.

Customers will be notified of a container's arrival and the customer's truck will enter the container terminal through the gate and drive over to the container yard where the yard crane will place the container on the truck. That truck departs the terminal with the container. Alternatively, if there are several containers that are destined for a single location, such as a city, a commercial market, or manufacturing plant located more than 400 miles away, it is usually more economical to ship these containers to their final destination on a special "dedicated, double-stack" train. This train would be loaded adjacent to the container yard in the container terminal. According to CMSA, approximately 20 percent of the containers would be transported by railroad.

These operations are consistent with container ports throughout the world. Similarly, the relationship between a port operator and the owner of the port land or the port authority also is consistent.

2.2.4 Future Expansion and Associated Facilities

The CMSA Terminal is the first phase of a two-phase project. It is anticipated that a similar facility will be built adjacent to the CMSA Terminal with a wharf length of approximately 700 meters. Port authorities are also considering other developments to improve the port, including new road and rail infrastructure.

Although there may be future infrastructure upgrades to the regional rail system to handle port traffic, it is understood that these would not be essential to handle terminal operations. In the Port area, highways and roads that support Port truck traffic have been elevated over the past few years to separate the truck traffic from neighborhoods. Based on Port maps and the site reconnaissance, because of the separation of the port traffic routes and traffic routing around instead of through neighborhoods, it appears that there is little impact from Port truck traffic in neighborhoods surrounding the Port.

Because the CMSA terminal can operate at full capacity with the existing transportation infrastructure, no associated facilities have been evaluated as part of this due diligence report.

2.3 Project Workforce

During Construction, CMSA hired a specialized company for the construction of the port named the China Harbour Engineering Company (CHEC), which had a workforce of 150 Chinese nationals temporarily located in a trailer park on the construction site. An external consultant firm named Consultoría Técnica performed environmental compliance during construction activities. CH2M HILL was not able to obtain information about health and safety monitoring during construction. However, based on our verbal communications with CMSA staff, there are no outstanding complaints or issues related to health and safety monitoring during construction.

During operations, CMSA will have a total of about 487 employees. It is anticipated that of this total, 265 would be unionized employees and 222 would be non-unionized employees. However, estimates provided by CMSA show that full employment may ultimately reach 544 employees. The following bullets summarize the workforce categories anticipated for the Terminal:

- Direct employees or *Empleados de confianza*: Personnel hired directly by CMSA, including housekeeping/cleaning staff, security staff, and upper- and mid-level managers
 - Administrative staff work 8 hours a day from 9:00 a.m. to 6:00 p.m., from Monday through Friday
 - Field supervisors and security staff work a turn-around shift of 8 hours
- Union laborers: Unionized employees are members of the *Unión de Estibadores y Jornaleros del Pacífico* (CROM). Designated for the work at the port, CMSA hired the union laborers directly under a collective agreement, which specified the benefits, salaries, and work force levels.
 - Union laborers are divided into 4 shifts of 8 hours each

2.4 Project Schedule and Costs

Construction of the project was 90 percent complete and operating at a 10 percent capacity in October 2013, during the ESDD site reconnaissance. Construction of the last 10 percent was being completed and the site was in the process of being handed over to the operator by the contractor.

Based on our communications with CMSA staff, it was understood that the CMSA Terminal would be complete and ready to operate at full capacity in early 2014. Total project cost is estimated at approximately US\$350 million.

2.5 Project Alternative Analysis

Section 2.3.2.2 of the 2004 MIA prepared for the expansion of Manzanillo Port, including the CMSA Terminal, states that there are no reasonable alternatives to the port infrastructure proposed at the CMSA Terminal location. Construction of the container terminal in association with an existing port facility offered a number of significant advantages to another location along the coast including:

- Minimizing environmental and social impacts
- Joint use of existing infrastructure and transportation facilities
- Joint use of existing emergency response systems including equipment and personnel
- Minimizing new dredge areas for channel
- Reducing overall cost because of infrastructure sharing

Institutional and Legal Framework

3.1 Institutional

3.1.1 Ports

3.1.1.1 APIMAN

APIMAN is a decentralized entity of the Federal Government, which was formed in December 1993 and began operation in February 1994. APIMAN has a 50 year Concession Contract to manage, promote, construct, develop, and maintain infrastructure within the Port of Manzanillo, Colima. This Concession was granted by the Ministry of Communication and Transportation (SCT).

APIMAN is also charged with obtaining and/or maintaining the Certification of Clean Industry or Environmental Compliance for the Port area and for ensuring that the port leaseholders and service providers within the port implement actions to prevent contamination and the preserve Port of Manzanillo environment. In addition, APIMAN is charged with monitoring regulatory compliance within the port and for compliance with agreements issued through the partial concession contract, regarding the rights and obligations for the operation and provision of port services that it issued to CMSA.

3.1.1.2 SCT

SCT, *Secretaría de Comunicaciones y Transportes de México* (Ministry of Communication and Transportation) formed in November 1821, is the Federal Government agency whose principal function, according to the Organic Law of Federal Public Administration (Article 36), is to regulate activities, norms, and procedures related to Mexican transportation and communication.

The agency's principal objective is to promote safe, efficient, and competitive transportation and communication systems through a strengthened legal framework; to define public policy and design strategies that contribute to the sustained economic growth and balanced social development of the country; and to expand the coverage and accessibility of services, achieving the integration of the population and respecting the environment.

With regard to maritime development, the agency is responsible for constructing, reconstructing, and conserving maritime, port, and dredging activities, installing maritime signage, and providing information and security services for ocean navigation.

SCT is charged with granting authorization for the expansion of Manzanillo Port, as well as issuing the permits required for the execution of construction works and operations led by APIMAN and CMSA. SCT also approved the partial concession contract for the provision of port services, which is led by APIMAN.

3.1.1.3 SEMAR

La Secretaría de la Marina de México (SEMAR; Ministry of the Navy), is the Federal Government Ministry, formed in December 1994, charged with *inter alia* organizing for the Mexican Navy and with protecting Mexican waters, under the Organic Law of Federal Public Administration.

The Ministry's main objective is to serve as the military body charged with surveillance and safeguarding of the coastline, territorial waters, the Exclusive Economic Zone, and the Mexican air-ocean space, as well as the interior water bodies, canals, and navigable lakes. The Ministry performs topographic and hydrographic surveys along the coastline, islands, ports, and navigable channels, and manages the portfolio of ocean charts and relevant statistics.

Regarding the Port of Manzanillo project, SEMAR was charged with supervising and issuing authorizations and permits for dredging and landfill activities at the port. Dredging works were led by a private enterprise

HDK México S. de R.L. de C.V., which was contracted by CMSA and is authorized by APIMAN to carry out these activities.

3.1.1.4 CMSA

CMSA is a subsidiary of ICTSI. Founded in December 1987 in The Philippines, ICTSI is a private enterprise dedicated to the management, acquisition, development, operation, and functioning of container ports throughout the world. In January 2010, ICTSI signed a 34-year concession contract for the development and operation of the container terminal in the Port of Manzanillo.

3.1.1.5 CHEC

CHEC is an international contractor and a subsidiary of China Communications Construction Company Ltd (CCCC). CHEC has 50 foreign branches and business offices covering more than 80 countries and regions. Founded in 1980, CHEC is a business specializing in construction and basic infrastructure, such as naval engineering, dredging and recuperation, highways and bridges, railroads, airports, and other works. In September 2011, CHEC and CMSA signed a contract to develop the container terminal at the Port of Manzanillo.

3.1.2 Environment

3.1.2.1 Secretaría de Medio Ambiente y Recursos Naturales

The Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT; Secretary of the Environment and Natural Resources) is the branch of the federal government charged with, among other things, the following duties:

- Encouraging the protection, restoration, and conservation of ecosystems, natural resources, and environmental goods and services, for the purpose of fostering their use and sustainable development.
- Formulating and guiding national policy on natural resource matters, as well as matters involving ecology, environmental cleanup, water, environmental regulation of urban development, and fishing, with participation from other pertinent branches and offices, as long as the matters are not expressly under the direction of another branch.
- Administering and regulating the use, and encourage the sustainable development, of Mexico's natural resources
- Establishing, with participation from other branches and the state and municipal authorities, Official Mexican Regulations on the preservation and restoration of the quality of the environment.
- Monitoring and encouraging compliance with laws, Official Mexican Regulations, and programs regarding natural resources, environment, water, forests, wild, land-based, and aquatic flora and fauna, and fish; and other matters under the authority of the Secretary's office; and imposing the appropriate sanctions when needed.
- Evaluating and reporting on the environmental impact statements for development projects presented by the public, social, and private sectors; deciding on environmental risk studies, as well as on programs for ecological accident prevention programs.

SEMARNAT includes the *Dirección General de Impacto y Riesgo Ambiental* (DGIRA; Environmental Impact and Risk Bureau) that is in charge of evaluating and deciding on environmental impact projects, and the *Dirección General de Gestión Forestal y de Suelos* (DGGFS; Forest and Soil Management Bureau) in charge of evaluating the change in soil use in forested lands. The Federal SEMARNAT Delegation in the State of Colima can also conduct this task and did so for this project.

3.1.2.2 PROFEPA

Procuraduría Federal de Protección al Ambiente (PROFEPA; Federal Environmental Protection Agency) is the office of the federal government in charge of enforcing compliance with regulations for five fundamental

programs: (1) inspection and monitoring for compliance with environmental legislation on the use of natural resources; (2) inspection and monitoring for compliance with environmental legislation on pollution sources covered by federal laws; (3) voluntary means and mechanisms for compliance with environmental standards; (4) environmental Justice, in its administrative, civil, and criminal aspects; and (5) addressing public complaints on environmental matters. The first program is responsible for supervision of the project.

3.1.2.3 La Comisión Nacional para el Conocimiento y Uso de la Biodiversidad

La Comisión Nacional para el Conocimiento y uso de la Biodiversidad (CONABIO; National Commission for Understanding and Use of Biodiversity) is in charge of coordinating, supporting, and carrying out activities aimed at understanding Mexico's biological diversity, as well as its conservation and use for the benefit of society. In addition CONABIO's charge includes establishing and operating the *Sistema Nacional de Información sobre Biodiversidad* (SNIB; National Biodiversity Information System) to supply data, information, and consulting to various users as well as to establish national and global biodiversity information networks, comply with international biodiversity commitments made by Mexico that may be assigned to the agency, and carry out actions aimed at the conservation and sustainable use of Mexico's biodiversity.

3.1.3 State of Colima

The Project is located in the state of Colima. Colima's *Secretaría de Desarrollo Urbano* (SEDUR; Secretary of Urban Development) is responsible for issuing permits, licenses, and authorizations for the CMSA Terminal including Uso del Suelo. SEDUR also is responsible for land use and regulating construction in accordance with building codes.

3.1.4 Municipality of Manzanillo

Manzanillo is a municipality in the State of Colima, with the City of Manzanillo as the municipal seat. The highest municipal official is the Mayor of Manzanillo. The municipal government also includes delegations from the outlying neighborhoods or "colonias" of the municipality. These include the Colonia del Pacífico, which also includes Las Brisas; Valle de las Garzas; Campos; Jalipa; Tapeixtles; El Colomo, which also includes Miguel de la Madrid; Salagua; Santiago, which also includes Pedro Núñez; and other smaller colonias. The Municipality of Manzanillo is responsible for issuing permits, authorizations, and licenses with regard to construction and operation of the Manzanillo Container Port within the municipal area.

3.1.5 Health and Safety

3.1.5.1 The Ministry of Labor

The Ministry of Labor is the institution responsible for overseeing compliance with and implementation of the provisions contained in Article 123 et al. of the Federal Constitution, as well as in the Federal Labor Act and its regulations. Its powers include: seeking a balance between production factors, intervening in employment contracts of any nationals who provide services abroad, promoting the development of training and education in and for employment, as well as conducting investigations, providing consulting services, and offering training courses for increasing productivity at work, studying, and ordering and overseeing the compliance of occupational safety and health measures to protect workers.

3.2 Legal

3.2.1 Environment

3.2.1.1 Environmental Impact Assessment

The *Ley General del Equilibrio Ecológico y la Protección al Ambiente* (LGEEPA; Law on Ecological Balance and Environmental Protection), published in 1988, is the overarching environmental law in Mexico. Article 28 refers to the Environmental Impact legal instrument and its application to public works projects under federal jurisdiction.

Regulations of the LGEEPA on matters of *Reglamento en material de Evaluación del Impacto Ambiental* (REIA; Environmental Impact Study), published on May 30, 2000, describe in detail the procedure for an environmental impact study. Section R of Chapter II provides that the work projects and activities in wetlands, mangrove swamps, ponds, rivers, lakes, and estuaries connected to the sea, as well as on their coasts or in federal zones, require authorization based on an environmental impact evaluation.

Due to environmental conditions of the CMSA terminal site which is located in an estuary with mangroves and other types of natural forest vegetation, APIMAN was required to obtain two environmental authorizations: the authorization regarding environmental impact set forth in Article 28 of the LGEEPA and its regulations on matters regarding REIA, and the authorization for the change of land use in forested areas established in the *Ley General de Desarrollo Forestal Sustentable* (LGDFS; Law on Sustainable Forest Development) in its Articles 117 and 118, and Articles 120 and 121 of its Regulations. These authorizations are processed by presenting a *Manifestación de Impacto Ambiental Modalidad Regional* (MIA-R; Regional Environmental Impact Statement) which the DGIRA-SEMARNAT evaluated, and a *Estudio Técnico Justificativo* (ETJ; Supporting Technical Study) that can be evaluated by the Dirección General de Gestión Forestal y de Suelos (DGGFS; Bureau of Forest and Land Management) or by the Federal SEMARNAT Delegation in the State of Colima (SEMARNAT Colima Delegation). In this instance, the Federal Delegation was chosen for review.

The first authorization obtained was for a change in land use for forested areas issued by the SEMARNAT Colima Delegation through official letter number SGPARN.-1914/04 dated September 8, 2004. The environmental impact authorization was obtained a year later, through official letter number S.G.P.A./DGIRA.DDT.1382.05 dated November 22, 2005.

The reason that the authorization on environmental impact matters was obtained more than a year after the receipt of the change in land use permit was that, of the project's 98.05 hectares, approximately 30.0 hectares (later revised to 15.7 hectares) had mangrove vegetation, an ecosystem that is protected by Mexican regulations, in particular by Official Mexican Regulation NOM-022-SEMARNAT-2003.

It is important to mention that during the Environmental Impact Study Procedure and prior to approval of the project, that the DGIRA requested the technical opinion of other departments, namely: The Instituto Nacional de Ecología (INE; National Ecology Institute), the Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (National Commission for the Understanding and Use of Biodiversity), and the Dirección General de Vida Silvestre (Wildlife Bureau), regarding the removal of mangroves.

In May of 2009, APIMAN modified the original MIA approved in 2005 and submitted to SEMARNAT, the modification covering changes in the Project design. These changes included: (i) an increase in the amount of material to be dredged, from the originally anticipated 4,743,600 to 7,743,600 cubic meters; (ii) an increase in the width of the mangrove border between the Project and the community of Las Brisas from 10 m to 60 m; (iii) the construction of four channels to improve hydrological flow to this border; (iv) the construction of a channel between the Valle de las Garzas and San Pedrito lakes; (v) the construction of a noise barrier between the patio and Las Brisas and a fence surrounding the Port. This MIA was authorized by SEMARNAT on June 12, 2009 (Oficio No. S.G.P.A./DGIRA/DG/3467/09).

On December 7, 2011 through the official letter no. S.G.P.A./DGIRA/DG/9296/11⁵, SEMARNAT authorized another modification to the original MIA of 2005. This modification considered changes in the development by adding a new custom agency in the north zone. SEMARNAT concluded that this modification did not significantly change the original evaluation.

Another entity that participates in following up on the project once the environmental authorization is determined is PROFEPA, since they are in charge of inspecting and monitoring compliance with the terms

⁵ Document Reference 1

and conditions established in the authorizations and, if necessary, sanctioning the infractions that have been committed. According to available information, in the case of this project, the PROFEPA Federal Delegation in the State of Colima (Manzanillo) made an inspection visit on August 8, 2012, for the purpose of verifying compliance with Condition No. 3 regarding the Restoration Program of Valle de Las Garzas Lagoon, from the environmental impact authorization that generated Inspection Record No. 0052/2012. Under the inspection order number PFFA/13.3/2C.27.5/0260/2012 it was documented by PROFEPA that the project was in compliance with Conditional No. 3 if the MIA Authorization No. S.G.P.A/DGIRA.DDT.1383.05, this conditional is regarding the evaluation of the approved restoration program of Valle de Las Garzas Lagoon.

According to the Inspection Record No. 0052/2012⁶, the final restoration program of the laguna valle de las Garzas was shown to the authorities, this program consist in the implementation of at least 10 subprograms. Compliance is discussed further in Section 3.3 of this report.

For disposal of dredge material at sea, a series of four authorizations were granted to HKD Mexico S. de R.L. de C.V. by SEMAR in 2012 (Oficios No. 290/2012, No. 419/2012, No. 579/2012, and No. 1749/2012).

3.2.1.2 Legislation on the Protection of Mangroves

The Regulation, NOM-022-SEMARNAT-2003, issued on April 10, 2003, establishes specifications for the preservation, conservation, sustainable use and restoration of the coastal wetlands in mangrove zones. The regulation was issued for the purpose of protecting mangroves in light of the loss of habitat that had been observed in the coastal zones in previous years, particularly from aquatic activities and tourist developments. On May 3, 2004, an additional specification, 4.43, was published, through which it became possible to obtain an environmental impact authorization for infrastructure works in mangrove areas, as long as the works and activities were carried out included the restoration of those ecosystems as transcribed below:

Sole Article. - Specification 4.43 is hereby added to the Official Mexican Regulation NOM-022-SEMARNAT-2003, which establishes the specifications for the preservation, conservation, sustainable use and restoration of the coastal wetlands in mangrove zones, to remain as follows:

“4.43 There can be an exception to the prohibition on works and activities stipulated in Items 4.4 and 4.22, and the limits established in Items 4.14 and 4.16, as long as the preventive report or the environmental impact statement, as the case may be, establishes compensation measures to benefit the wetlands, and the corresponding authorization for a change in land use is obtained.”

The official Mexican regulation, NOM-059-SEMARNAT-2001, is responsible for: Environmental protection; Mexican native species of wild flora and fauna, categories of risk and specifications for their inclusion, exclusion, or change; and lists of species at risk. The regulation was published in the Official Federal Journal on March 6, 2002. Issued on December 30, 2010, this regulation's goal is to identify the species or populations of wild flora and fauna in Mexico that are at risk through the integration of the corresponding lists, as well as to establish the criteria for inclusion, exclusion, or change of risk category for the species or populations, through a method for evaluating their risk of extinction. This must be observed throughout the National Territory by individuals or legal entities that promote the inclusion, exclusion, or change of the wild species or populations in any of the risk categories established by this Regulation.

According to the National Mangrove Inventory⁷, there is only one Natural Protected Mangrove Area in the state of Colima, namely the Laguna de Cuyutlán, which is a designated Ramsar site and also an approved location for some of the compensatory mangrove mitigation for the Terminal Project. The Laguna de

⁶ Document Reference 2

⁷ <http://www.biodiversidad.gob.mx/ecosistemas/manglares/inventarioNal2.html>

Cuyutlán contains 270 hectares of mangroves.⁸ The mangrove ecosystem is highlighted among Mexican vegetation types because of its ecological value, which in Mexico is considered an ecosystem with conservation and protection status since 2003, when the Mexican regulation NOM-022-SEMARNAT-2003⁹ was published. This regulation describes at great length the characteristics that explain the importance of mangroves at the local and global levels, which include:

- 0.19 - The appropriate use and valuation of the environmental services that these ecosystems provide shall exist, whose ecological, direct and indirect economic, cultural, scientific, and recreational value shall be maintained.
- 0.20 - The coastal wetlands are characterized by their hydrologic, contiguity, climatic regulation, and coastal stabilization functions, and the primary production function that maintains the marine and land-based biodiversity that depends on them.
- 0.21 - The mangrove and coastal wetlands serve an important role in purifying water, and eliminating high concentrations of nitrogen and phosphorus, as well as toxic chemicals in some cases.
- 0.22 - The coastal wetlands contribute to recharging groundwater aquifers that store 97 percent of non-frozen freshwater in the world and in Mexico, where the problem of overuse of the water table is severe.
- 0.23 - The primary production is the process that governs the estuaries and the percentage of detritus, and organic material is produced by the mangrove, marshes, and seagrass community. This production is significant for maintaining the tropic chain of the estuary, the neighboring marine area, the coral reefs, and the population dynamics of the pelagic marine species.
- 0.25 - The coastal wetlands reduce the flow of water originating from the watershed and stimulate the deposition of sediments and assimilation of nutrients brought in through the flow. The retention of nutrients in these ecosystems makes them some of the most productive ecosystems in the biosphere, comparable even to intensive agricultural systems (sugar cane, rice) and reduces the eutrophication of the adjacent lagoon and ocean area.

In addition, the four most common mangrove species in Mexico (*Laguncularia racemosa*, *Rhizophora mangle*, *Avicennia germinans*, and *Conocarpus erectus*) were listed in the NOM-059-SEMARNAT-2001¹⁰ as a species under special protection. However, the risk category of these four mangrove species was upgraded so that they are now considered a threatened species in Mexico (NOM-059-SEMARNAT-2010¹¹). Despite being considered as a species of less concern¹² (LC) in the International Union for Conservation of Nature Red List, due to their wide global distribution and relative abundance around the world, internationally botanists and ecologists recognize that mangrove habitats/communities are significantly declining at the global level.

⁸ http://www.biodiversidad.gob.mx/ecosistemas/manglares/pdf/lista_sitios.pdf

⁹ SEMARNAT, 2003. Norma Oficial Mexicana NOM-022-SEMARNAT-2003, Que establece las especificaciones para la preservación, conservación, aprovechamiento sustentable y restauración de los humedales costeros en zonas de manglar. Publicada en el Diario Oficial de la Federación el 10 de abril de 2003.

¹⁰ SEMARNAT. 2001. Norma Oficial Mexicana NOM-059-SEMARNAT-2001, Protección ambiental-Especies nativas de México de flora y fauna silvestres-Categorías de riesgo y especificaciones para su inclusión, exclusión o cambio-Lista de especies en riesgo. Publicada en el Diario Oficial de la Federación el 30 de diciembre de 2010.

¹¹ SEMARNAT. 2010. Norma Oficial Mexicana NOM-059-SEMARNAT-2010, Protección ambiental-Especies nativas de México de flora y fauna silvestres-Categorías de riesgo y especificaciones para su inclusión, exclusión o cambio-Lista de especies en riesgo. Publicada en el Diario Oficial de la Federación el 6 de marzo de 2012.

¹² <http://www.iucnredlist.org/search>.

3.2.1.3 Sustainability and Environmental Protection

A number of legal instruments have been promulgated in Mexico to promote sustainability, control emissions, and protect people and the environment. The main instruments relevant to the proposed project are summarized in Table 3-1. The General Law for Ecological Equilibrium and Protection of the Environment (1988) provides the over-arching framework for sustainable development, with a number of Regulations governing environmental impact assessment, protected natural areas, environmental auditing, and air pollution. The General Law for Waste Prevention and Integral Management (2006) and its Regulation controls the generation and disposal of waste.

3.2.1.4 International Conventions

International Convention for the Prevention of Pollution from Ships (MARPOL).¹³ Ratified by Mexico on July 23, 1992, the MARPOL was developed by the International Maritime Organization (IMO), a specialized body of the United Nations, based on the matrix created in 1978; however, it has been modified on various occasions, and consists of a collection of international standards with the goal of preventing pollution of the ocean environment by hydrocarbons and other damaging substances, as well as minimizing accidental discharges. The Convention includes six annexes: (I) Regulations for the Prevention of Pollution by Oil; (II) Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk; (III) Regulations for the Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form. (This regards an optional annex, since the transport of dangerous goods is regulated by the International Maritime Dangerous Goods Code.); (IV) Regulations for the Prevention of Pollution by Sewage from Ships; (V) Regulations for the Prevention of Pollution by Garbage from Ships; (VI) Regulations for the Prevention of Air Pollution from Ships. Currently 119 countries have ratified this convention. Mexico has signed Annexes I, II, III, IV, and V; it has not signed Annex VI.¹⁴

International Ship and Port Facility Security (ISPS) Code. Executive Decree PCM-014-2003. The Code establishes an international framework for cooperation between governments, local administrations, and naval and port sectors, in order to detect and evaluate the threats to maritime security and to take preventive steps against events that could affect the protection of ships and port facilities used for international trade, which could have their origin or be associated with acts of terrorism, drug trafficking, illegal arms trafficking, illegal human trafficking, etc.; develops safety measures in case an event arises that could affect the safety of the port and even the country.

The Convention for the Protection of Flora, Fauna, and Natural Scenic Beauty of the Americas. The Convention's objective is to save all species of flora and fauna native to the Americas from extinction, and to preserve the spectacular geological formations and places of extraordinary beauty or aesthetic, historical, or scientific value. This convention relates to the protected species of flora and fauna that are found within the project area. For example, *Iguana iguana*, which is listed in NOM-059-SEMARNAT-2010 in the special protection category; *Rhizophora mangle* is among the plant listings within the endangered species category.

3.2.2 Health and Safety

3.2.2.1 Social Security Act 1995 (as amended)

The Social Security Act was published in the Official Gazette on December 21, 1995, with its last amendment added in May 28, 2012. This law applies generally to the entire Republic, through the manner and terms it establishes. Its provisions concern the public order and social interest. The purpose of this Act is for means assistance, the protection of subsistence means and social services necessary for individual and collective well-being, as well as the granting of a pension guaranteed by the State.

¹³ <http://www.marpol.net/convenio1.htm>.

¹⁴ <http://www.sct.gob.mx/fileadmin/CGPMM/biblioteca/BV04/BV0401/BV040112A.pdf>.

The Social Security Act has both a mandatory and voluntary system, with the mandatory system including any person who provides permanent or casual, personal or subordinate, or remunerated service, regardless of the act that gives rise to it, and regardless of the legal character or the economic nature of the employer.

3.2.2.2 Federal Labor Act 1970 (as amended)

The Federal Labor Act was published in the Official Gazette on April 1, 1970, with the last amendment included on November 30, 2012. The purpose of the Act is to obtain a balance between productivity and social justice, as well as to promote worthy or decent work for all employees, and to ensure that human dignity is fully respected, discrimination does not occur, social security access is available, wage remuneration is received, on-going productivity training with shared benefits is provided, and optimal health and safety conditions exist to help prevent occupational risks.

Federal Occupational Safety, Health, and Environment Regulations were published in the Official Gazette on January 21, 1997. These regulations are to establish the means necessary to prevent occupational accidents and illnesses. They are intended to allow work to be performed under safety, health, and environmental conditions suitable for workers, pursuant to the provisions of the Federal Labor Act and international treaties entered into and ratified by the United Mexican States.

Internal Labor Regulations are the set of mandatory provisions for workers and employees performing work for a company or establishment; the technical and administrative rules established directly for work performance are not the subject of these regulations. These regulations establish the workday schedule, payment methods, rules for preventing occupational risks, and instructions for providing first aid, frequency of medical examinations, permits, disciplinary provisions, etc.

3.2.2.3 Official Mexican Rules

Official Mexican rules (NOM) are the mandatory rules that contain information, requirements, specifications, procedures, and methodology to be applied to a product, process, or service. The following NOMs are relevant to the construction and operation of the Terminal.

- NOM-002-STPS-1999. Safety conditions - prevention and protection against fires at workplaces.
- NOM-004-STPS-1999. Systems for protection and safety devices in machinery and equipment used at workplaces.
- NOM-005-STPS-1998. Related to safety and health conditions at workplaces for handling, transporting, and storing hazardous chemical substances.
- NOM-006-STPS-2000. Handling and storage of materials - safety conditions and procedures.
- NOM-009-STPS-2011. Safety conditions for performing work at heights.
- NOM-001-STPS-2001. Safety and health conditions at workplaces where noise is created.
- NOM-015-STPS-2001. High or low thermal conditions - safety and health conditions
- NOM-017-STPS-2008. Personal protective equipment - selection, use, and handling at the workplace.
- NOM-018-STPS-2000. System for identifying and communicating dangers and risks due to hazardous chemical substances at workplaces.
- NOM-019-STPS-2011. Creation, integration, organization, and functioning of safety and health committees.
- NOM-024-STPS-2001. Vibration - safety and health conditions at the workplace.
- NOM-025-STPS-2008. Lighting conditions at the workplace.
- NOM-026-STPS-2008. Safety and health colors and signals, and identification of risks due to fluids conducted through pipes.

- NOM-027-STPS-2008. Welding and cutting activities - safety and health conditions.
- NOM-029-STPS-2011. Maintenance of electrical installations at workplaces - safety conditions
- NOM-030-STPS-2009. Preventive safety and health services at work - functions and activities - risk analysis
- NOM-116-STPS-2009. Safety - personal protective equipment - air-purifying respirators with negative air pressure against harmful particles - specifications and testing methods.

3.3 Project Compliance Status

3.3.1 Concession Agreement

On June 4, 2010, SCT/APIMAN granted CMSA a concession to operate a terminal within the Port of Manzanillo. The thirty-fifth provision of the concession agreement addresses CMSA's responsibilities with respect to preserving the environment. The agreement requires CMSA to comply with applicable laws, regulations, policies, and international treaties related to environmental protection. The concession has language requiring CMSA to declare that they are aware of and understand all environmental conditions and regulations that apply to terminal and surrounding area and that they comply with all applicable conditions. Specifically mentioned in the applicable conditions are those related to the MIA, the Port remediation plan, and the development plan for the Port's north zone. The concession prohibits CMSA from taking any action that would impede APIMAN from complying with applicable regulations and conditions. The concession confers responsibility on CMSA for actions taken by CMSA that result in environmental damage. The concession states that APIMAN is responsible for environmental conditions prior to the effective date of the agreement and CMSA is responsible for conditions after that date. The agreement requires CMSA to contribute to the success of APIMAN's environmental policies in general, specifically by starting the process to becoming certified with ISO 9001:2000 and ISO 14001:1996 within 18 months of initiating terminal operations. Our understanding is that CMSA initiated operations in August of 2013 and therefore would have to obtain certification by February 2015.

As APIMAN's tenant, CMSA is responsible for complying with laws and regulations as well as provisions of their concession agreement with APIMAN. Specifically this means that APIMAN has the responsibility for executing the conditions that were a part of the MIA and the permits issued for terminal development. CMSA is effectively responsible for constructing the terminal facilities and the operation of the terminal. There are many areas that relate to environmental and social issues on which the two entities will have to coordinate. For example, coordination is required in the area of emergency response. CMSA is responsible for managing the Terminal but APIMAN is responsible for providing services to ships such as fueling and waste oil disposal. Since APIMAN is responsible for hiring contractors to handle these activities, they are also responsible for responding to spills. It was noted on our site visit that CMSA did not keep spill control equipment at the facility and they depend on APIMAN to provide spill response and cleanup services for spills related to ships.

3.3.2 Compliance with Environmental and Health and Safety Legislation

Table 3-1 summarizes the overall compliance status of the terminal with applicable Environmental, Health and Safety legislation. The compliance status is further documented in Table 3-2 which lists compliance with the major conditions contained in the MIA and the land use permit. In a meeting between SEMARNAT and CH2M HILL staff on October 18, 2013, SEMARNAT stated that APIMAN was up to date in their compliance with all of the relevant MIA measures. The meeting was held at SEMARNAT's offices in Mexico City, during this meeting Ma. Del Carmen Caracheo Rangel (Director for Governmental Projects) and Lic. Raúl de Jesús Contreras Cejas (Director of Normative Instruments) stated that the project is in compliance with all environmental regulations and that the project has delivered compliance reports on time. They also stated that they were not aware of any pending issues with the community.

As part of the compliance process, APIMAN is required to present an annual compliance report to SEMARNAT. APIMAN's 2012 compliance report submitted to SEMARNAT is entitled: Informe Final, Cumplimiento de las Condicionantes Relativas a los Oficios de Autorización No. SGPARN.-1914/04 y No. SGPARN.UARRN.-2128/07 y de las Medidas de Mitigación (December 2012). Realizado por la Administración del Puerto de Manzanillo. Based on this report and interviews with SEMARNAT staff, Table 3-2 below documents compliance with specific conditions for the land use permit and the MIA. In accordance with the final report, APIMAN is in compliance with the conditions listed in Table 3-2. Further, PROFEPA has inspected the operations to check the compliance of the authorization for the Land change use the site several times, the inspections are documented in the audit reports numbered: No. 0181/2008, 037/2009, 071/2009, 0257/2009, 034/2010, 0038/2012, 022/2012. Although these documents were not available for review, verbal confirmation that the inspection results showed full compliance with the permit and the MIA conditions were obtained from SEMARNAT staff.

TABLE 3-1
Overview of Compliance with Environmental Legislation

Regulation	Year	Description	Compliance	Evidence
General Law for Ecological Equilibrium and Protection of the Environment	1988	This is a national law that refers to preservation and restoration of ecological equilibrium, in addition to environment protection, within national land and areas in which the nation applies sovereignty and jurisdiction. The objective of the law is to promote sustainable development.	Yes	Based on the review of the Environmental Impact Resolution No. SGPA/DGIRA.DDT.1383.05, APIMAN is complying with Article 28 of the Law.
Regulation of the General Law for Ecological Equilibrium and Protection of the Environment in the Subject of Environmental Impact Assessment	2000	This is a national regulation. The objective of the regulation is to regulate the activities included within the General Law for Ecological Equilibrium and Protection of the Environment, regarding environmental impact assessment.	Yes	Based on the review of the Environmental Impact Resolution No. SGPA/DGIRA.DDT.1383.05, APIMAN is complying with chapters II, III, and VII of the regulation.
Regulation of the General Law for Ecological Equilibrium and Protection of the Environment in the Subject of Protected Natural Areas	2000	This is a national regulation. The objective of the regulation is to regulate the activities included within the General Law for Ecological Equilibrium and Protection of the Environment, for establishing, administering, and managing protected natural areas.	Yes	Based on the review of the documents of the Change of Soil usage in Forested lands No. SGPARN.1914.04, CMSA has complied with the chapters I, II, and III of this regulation.
Regulation of the General Law for Ecological Equilibrium and Protection of the Environment in the Subject of Self-Regulation and Environmental Audits	2010	This is a national regulation established to regulate the General Law for Ecological Equilibrium and Protection of the Environment Chapter IV, Section VII, for self-regulation and environmental audits, implemented in throughout the country by the Federal Environmental Protection Regulatory Agency (PROFEPA). The objective of the regulation is to promote performance of environmental audits in organizations whose operations could cause environmental impact.	Yes	The terminal is in compliance with this regulation because they have an open policy of for auditing. According to conversation with the site EH&S Director, they had not received any formal audit yet. CMSA will subscribe to the self regulatory program, and will reach the certification "Industria Limpia," according to CMSA, by June 2014. With this they will be in compliance with the national regulation and as well with the Constrict between CMSA and APIMAN.
Regulation of the General Law for Ecological Equilibrium and Protection of the Environment in the Subject of Prevention and Control of Atmospheric Pollution	1988	This is a national regulation. The objective is to regulate the General Law for Ecological Equilibrium and Protection of the Environment, regarding prevention and control of atmospheric pollution by substances discharged to the atmosphere from industrial, commercial, and service activities.	Yes	APIMAN has not performed emissions analysis of the mobile sources according to the general Law.
General Law for Waste Prevention and Integral Management	2003	This is a national law referring to the protection of the environment in regard to waste prevention and integral management on national lands. Its objective is to promote sustainable development through valuation and integral management, and to prevent urban solid waste generation and site contamination by waste, and to undertake remediation efforts.	Yes	Based on the review of the Registry of Hazardous Waste Generators before SEMARNAT with Document No. 06/EV-0146/05/13 APIMAN is complying with Article 47 of the Law.
Regulation of the General Law for Waste Prevention and Integral Management	2006	This is a national regulation. The objective of this regulation is to regulate the General Law for Waste Prevention and Integral Management.	Yes	Based on the review of the Registry of Hazardous Waste Generator before SEMARNAT, with Document No. 06/EV-0146/05/13, APIMAN is complying with the First Heading, Chapters II and III and the Fourth Heading, Chapters I, II and III of the Regulation.
Federal Law for Environmental Responsibility	2013	This is a national law established to regulate the environmental responsibility derived from damage caused to the environment, in addition to reparation and compensation when applicable.	Yes	Based on the review of the Environmental Documents No. SGPA/DGIRA.DDT.1383.05 and SGPA/DGIRA.DDT.1383.05, APIMAN is complying with Chapter II of the Law.
Federal Law of Transparency and Access to Governmental Public Information	2003	This is a national law and guarantees the right of any person to access information in possession of the Union’s Powers, Autonomous Constitutional bodies, and any other federal entity. In addition, the objective of the law is to promote public management transparency by disseminating information that the above mentioned bodies generate.	Yes	Based on the review of the Environmental Documents No. SGPA/DGIRA.DDT.1383.05 and SGPA/DGIRA.DDT.1383.05, APIMAN is complying with Chapters II and III of the Law.
Organic Law for Public Federal Administration	1976	This is a national law which establishes the foundation for organizing the centralized and semi-official Public Federal Administration.	Yes	Based on the review of the Authorizations issued by SEMARNAT, SCT, and SEMAR, APIMAN is complying with Articles 26, 32 Bis, 36 of the Law.
Law for Ports	1993	This is a national law with an objective to regulate ports, terminals, marinas and port installations, and their construction, use, exploitation, operation and administration, in addition to port services.	Yes	Based on the review of the Authorizations issued by the SCT for commencement of operations, No. API/DG/245/2013, APIMAN is complying with Articles 1, 11 and 16 of the Law.
Regulation of the Law for Ports	1994	This is a national regulation established to regulate the activities included in the Law for Ports.	Yes	Based on the review of the Authorization issued by the SCT for the commencement of operations, No. API/DG/245/2013, APIMAN is complying with Articles 3, 9, 10, and 11 of the Regulation.

TABLE 3-2

Compliance with Specific Land Use and MIA Conditions			
Regulation	Conditionants	Compliance	Evidence
Authorization of the change of Land Use No. SGPARN.-1914/04 September 8, 2004 It was approved to modify the area of San Pedrito, un Manzanillo Colima a total area of 98.05 ha that includes 30 Ha of Mangroves.	1° The activities should be at the Developed Area No.2	Yes	The activities started in 2007 and concluded in 2012 according to the aerial photograph ¹⁵ presented on the final report to SEMARNAT
	2° The Technician responsible for compliance is Saúl Moreno Gomez	yes	Saul Moreno was responsible for the ETJ and confirmed in the letter DG-196/2010 submitted to SEMARNAT on April 30, 2010.
	3° Maintain a Mangrove Belt of 10 meters of width at the area next to las Brisas community	yes	During the visit it was observed that the mangrove zone was increased from 10m to 60m. A perimeter canal and an ecological drain were constructed to maintain the hydrological balance into the mangrove area.
	4° Flora Program for the following species categorized on the NOM-059-SEMARNAT-2001 : culebro <i>Astronium graveolens</i> , primavera <i>Tabebuia chrysantha</i> , granadillo <i>Dalbergia granadillo</i>	yes	<p>During the site visit the following mangrove species were observed: <i>Laguncularia racemosa</i> y <i>Rhizophora mangle</i>.</p> <p>The program has the target of 3000 <i>Astronium graveolens</i>, 3000 <i>Tabebuia chrisantha</i> and 3000 <i>Dalbergia granadillo</i> , for a total area of reforestation of 11.25 Ha</p> <p>From 2009-2012 APIMAN compliance report a total of 6.7 Ha has been reforested for a 59.6% of completion, the areas that has been reforested are : Laguna de San Pedrito, Laguna Valle de las Garzas and Ejido Ciruelito de la Marina</p>
	5° Fauna Program to protect/ chase away or relocate species named on the NOM-059-SEMARNAT-2001	Yes	<p>According to the Report of the Fauna Program, 369 Species were relocated, from that group 52% is in a Special Protection category. 14% threatened category and 34% was not listed on the NOM-059-SEMARNAT-2001</p> <p>In addition, some physical barriers were installed to prevent return by these species.</p>
	6° Previous to the execution of the Fauna Program, performed the studies that verify that Laguna Valle de las Garzas has the capacity to receive the species, in the case the Laguna Valle de las Garzas do not have the capacity relocate the species in another area.	yes	<p>Of the 639 species that were captured 67% were reptiles,</p> <p>19% were mammals and 14% amphibian.</p>
	7° The vegetable wastes can to be disposed in the adjacent water bodies	yes	The wood was donated to some organizations and other waste is located in storage yards.
	8° APIMAN Rescue, Protection and Reforestation Mangrove program at the Laguna Valle de las Garzas	Yes	<p>Formal letter No. SGPARN/UARR/2400/12 SEMARNAT documented the receipt of the Rescue, Protection and Reforestation Mangrove program.</p> <p>According to the Final Compliance Report a total of 10.3 ha has been reforested/rehabilitated. Additionally during the visit in an interview with APIMAN (Alejandro Abundis) mention that 6.5Ha will be reforested in the artificial islands created in the last year.</p>
	9° Other mitigations measures: a)Generate the necessary studies to declare Laguna Valle de las Garza Protected natural Area, the program of management and operation with the system of the Laguna de San pedrito and the Laguna Tapeixtles b) Studies for the knowledge and handling go the cost humeral of Colima c) Donation of a plant for the treatment of mangrove wood d) Actions that guarantee the stability of the system e) Possible financial aids for APIMAN in order to execute environmental proyects in Colima	yes	<p>a) APIMAN made a Management Plan for Laguna Valle de las Garzas, this is under SEMARNAT evaluation. Status: the land has to be modified depending on the category provided by the state or the municipality</p> <p>b) APIMAN submitted the Technical Justificative Studies to establish that the estuary El Chupadero is a Protected Natural Zone, this is under SEMARNAT evaluation. As part of the subsequent work for this Dr. Ignacio Valdéz Hernandez led a workshop about the characterization and management of the mangrove ecosystems</p> <p>- C) APIMAN donated for the equipment for the processsing wood compost to the city, as mentioned in the fotmal letter SGPARN/UARRN/3368/08 SEMARNAT section C was completed and in compliance.</p> <p>D) In order to imporve the survival at the lagoon body, an inter-lagoon drain was built. Since 2010 IMTA (Instituto Mexicano del tratamiento de agua) made a water quality monitoring program to map the lagoon</p> <p>- The creation of mangrove islands was observed during the site visit</p> <p>E) APIMAN signed an agreement with Colima SEMARNAT to work toguether in order to make El Chm, a natural protected area.</p>

¹⁵ Informe Final, Cumplimiento de las Condicionantes Relativas a los Oficios de Autorización No. SGPARN.-1914/04 y No. SGPARN.UARRN.-2128/07 y de las Medidas de Mitigación propuestas en el estudio Técnico Justificativo. Realziado por la Administración del Puerto de Manzanillo.

TABLE 3-2

Compliance with Specific Land Use and MIA Conditions			
Regulation	Conditionants	Compliance	Evidence
	10° Hydrdinamic studies to define the work needed to improve the hydriaulic communication between Laguna Valle de las Garzas and San Pedrito	Yes	APIMAN completed the studies according to the official letter No. SGPARN/URRN/1432/10 SEMARNAT mention that this condition is partially completed
	11° APIMAN Activity program for the mantainance and cleaning program for the Tapeixtles Lagoon	Yes	There is an annual program and the Environmental Diagnostic for the area
	12° Made an contribution to the Forest National Founs of 10,400,000 pesos	Yes	The contribution was made, and according to the official letter no. SGPARN.UARRN.-2128/07 SEMARNAT states that this condition is comleted
	13° It is forbidden the use of fir for management the wates or the project activities	Yes	This condition has been followed and the compliance report states the wastes were handled correctly.
	14ª Compliance with the norms NOM-060-SEMARNAT-1994, NOM-061-SEMARNAT-1994, NOM-062-SEMARNAT-1994, NOM-022-SEMARNAT-2003 and others that applies	Yes	According to the final report they are in comliance, PROFEPA has inspected the operations to check the compliance for the authorization of land change use, the inspections are: No. 0181/2008, 037/2009, 071/2009, 0257/2009, 034/2010, 0038/2012, 022/2012.
	15ª Support the State Reforestation program Apoyo al Programa , sending 50kg of seed to the CONAFOR	Yes	In compliance, APIMAN sent to CONAFOR the seed as is mentioned in the letters DG-510/09, DG-197/08 DG-379/2010, DG-215/11, DG-459/11 and API/DG/592/2012
	16ª Actively participate on the Fire prevention Program and being in compliance with the NOM-015-SEMARNAT7SAGAR-	Yes	In compliance as stated in the letter number DG-171/2008 there is an agreement and colaboration plan between the CONAFOR and the APIMAN
	17ª Semi-annual reports and a final report Submital	Yes	Stamped copy of the cover letters were reviwed to be In compliance with the semi-annual reports and final report
	18ª API Manzanillo shall comply with the preventive and mitigation measures outlined in the Technical Justification Study and those imposed in matter of enviromental impact and applicable NOMs	Yes	Complete - evidence in thet audit reports
	19ª A daily logbook shall be established	Yes	Is in compliance the logbook from July 2012 to December 2012 was reviewed
	20ª Shall pay the Registration in the National Register of Forest released by the change in land use in forest properties (CUSTF)	Yes	The payment was made , and they are in compliance
	21ª In the case of transport of roundwood and remove material according to Article 59 of the Forest Regulation assigning the C-06-007-PED-001 code	Yes	Acoording to the following format letter from the SEMARNAT they are in compliance. SGPARN/UARRN/618/09 from March 8, 2009 SGPARN/UARRN/3290/10 from November 23, 2010 SGPARN/UARRN/0817/11 from March11, 2011
Number S.G.P.A./DGIRA/DDT.1383.05 from November 22, 2005 issued by the General Directorate of environmental Impact and Risk Management of the Secretariat for Enviromental Protection (SGPA) of the Ministry of enviroment and Natural Resources (SEMARNAT	1 Term°. Works and activities for the expansion of the Port of Manzanillo area designated as Potential Development, 2 (APD2) Northwestern with an area of 98.05 hectares which includes permitted are: 1. Opening of the North Channel 2. Construction of positions 16-22, container terminal and 2 multipurpose terminals 3. Fill and construction yards in 86.21 hectares. 4. Acces roads to the north of the port (including an ecological belt 10 m wide) 5. Conservation of mangrove area in the northwest corner of the port for germplasm	Yes	Acoording to the annual report: “informe annual de cumplimiento de terminos y condicionantes, Autorización en Materia de Impacto Ambiental “They are in progress to complete the activities and has meet the agreements and the plans. During the site visit it was possible to confirm some of the progress in this activities, details of the percentage of prograss of each of the points can be review at the reference
	CONDITIONS 1° Submit an economic technical study for the fulfillment of the conditions	Yes	In compliance and complete, by the oficial letter no. S.G.P.A./DGIRA/DDT.2178.06 SEMARNAT validates the Economic technical study
	2. Acquire and provide insurance or a guarantee for the fulfillment of the conditions	Yes	In compliance and complete, by the oficial letter S.G.P.A./DGIRA/ DDT.2178.06. According to SEMARNAT APIMAN shoul mantian this instrument valid as long as the poryect is in construction. Evidence of the last insurance was presented: MAPFRE FIANZAS S. A. No. 0031200006862

TABLE 3-2

Compliance with Specific Land Use and MIA Conditions			
Regulation	Conditionants	Compliance	Evidence
	3. Definitive restoration program laguna Valle de las Garzas with technical justification including: Improving hydrological and pumping to retrieve salinity condition considering technical feasibility	Yes	In compliance, the program was validated by SEMARNAT by the official letter No. SGPA/DGIRA.DDT.1119.06. This program started on 2008. The progress on 5 years of this program could be consult on the Reference 5_ ¹⁶
	4. Submit proposal for restoring a mangrove ecosystem located in the state of colima which can be Cuyutlán Lagoon.	Yes	As Part of the Definitive program of restoration of the Laguna Valle de las Garzas that was already approved by SEMARNAT, it is included the subprogram of the restoration of the laguna de Cuyutlan. The original activity schedule was modified and approved by SEMARNAT on November 2007 by the official letter no. S.G.PA./DGIRA.DG/2757/07. According to this calendar the activities in Laguna de cuyutal should be started in 2011, but APIMAN mention that in the lagoon a project for LP gas was in construction and this could modify the hidrological conditions of the laggons, they will started the works once the LP gas project has finished
	5. Submit a Monitoring Program for the Laguna de San Pedrito and the Laguna Valle de las Garzas and the Mangrove Ecosystem of the conditionant which shall include the indicators identified in the resolution (pp. 127 and Table 128)	Yes	APIMAN has an agreement with the IMTA (Instituto Mexicano de Tecnologías del Agua) to performed the analisis. There are annual programs that were revised during the visit to APIMAN facilities
	6. Include a diagnosis of the trend in environmental quality based on monitoring and the appropriate corrective action for all three areas: Lagoon Las Garzas, Laguna San Pedrito and restore mangrove wetland.	Yes	There is a Monitoring Program in 2010 with the participation of IMTA and Ecofor but they do not include an ecosystem diagnosis. Only mentioned variation in water quality in the lagoons of San Pedrito and Las Garzas. It was stated that the diagnosis will be added as the data are available.
	7. Define precisely the execution times so that you can keep track of PROFEPA	Yes	The annual report is presented to a Schedule of monitoring conducted in 2012 IMTA water, soil, fauna, flora and CRETIB analysis for Laguna San Pedrito Lagoon Valley and Las Garzas. But you do not have a calendar for consequents years.
	8. Accrediting authorities and responsibilities of actors involved	Yes	APIMAN mentioned that they acknowledge it is their responsibility, but there is no document that mentions that or delegate to an authorities or actors involved.
	9. Once the program is approved develop the actions until reach the environmental goals	Yes	The programs is approved as it was mentioned before and APIMAN has engagement to continue the activities, It is anticipated that the IMTA periodic studies will be provided when the project reaches the goal.

¹⁶ Reference 5_ Tablas del estado actual y avance acumulado de las obras y actividades recalendarizadas.

Environmental and Social Conditions

4.1 Environmental Conditions

4.1.1 General Environmental Baseline

The study area has a tropical subhumid climate with summer rains and an average annual temperature of 26.4 degrees Celsius. The relatively short Colima coastline is 160 kilometers (km) long, running from Boca de Apiza to Cerro de San Francisco, facing the town of Barra de Navidad in Jalisco. The tide in the Port of Manzanillo is classified as mixed semidiurnal.

According to the MIA (2004), there are cyclones in the area on average of every four years, occurring in a west-northwesterly direction. These occur with greater frequency from the second half of May to the first half of November, with winds reaching speeds up to 180 km/hour.

In September 1995 and January 2003, seismic events occurred in the State of Coloma with an intensity greater than 8.0 degrees on the Richter scale. Epicenters in this region face the Manzanillo coast.

The Colima Volcano is considered one of the most active on a national scale, capable of creating a violent eruption; however, the only volcanic product that could affect the project location is falling ash, if dominant winds were from south to north during the time of eruption.

According to the information from the MIA, the port area is in a low-risk zone for most natural disasters. However, the risk of floods in the region is high. Table 4-1 indicates the level of natural disaster risks for the Port of Manzanillo.

TABLE 4-1
Level of Risk of Natural Disasters in the Port Manzanillo Area

Natural Disaster	Level of Risk
Seismicity	High (subduction zone)
Landslides	Low
Collapses	Low
Floods	High (due to hydrometeorological phenomena)
Movements of earth or rock	None
Volcanic activity	None

4.1.2 Biological Resources

4.1.2.1 Historical Origin and Expansion of the Converted Manzanillo Mangrove Ecosystem

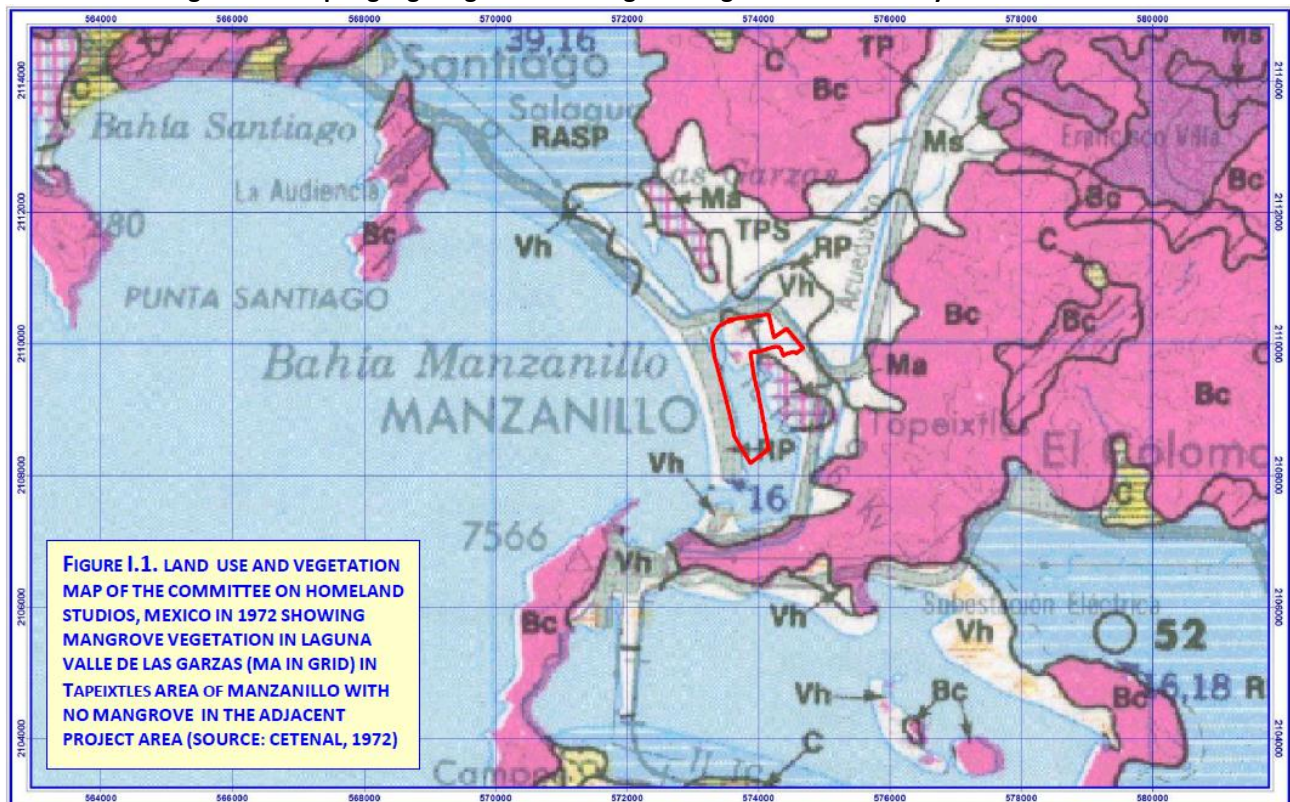
Available photographs of the project site and reported field observations conducted prior to the early stages of port development (early 1970s) indicate that the recently converted mangroves did not exist prior to development of the original port. As seen in the 1972 Charter Land Use and Vegetation map presented in Figure 4-1, which was prepared by CENA (1972) at a 1:250,000 scale using aerial photographs from 1971 and 1972, there were no mangroves in the immediate project area. Rather, the natural mangrove vegetation at that time was confined to the eastern shoreline of the port/lagoon.

Taken together, Figure 4-1 and the pre-1970 aerial photograph in Figure 4-2 confirm that the recently converted mangroves at the project site had colonized this area sometime after 1972. According to first-hand accounts (Technical Consulting S.C. personal communication, 2013), the only other mangroves found

within the lagoon/port area in the 1970s, before the widening of the originally narrow channel to the open ocean, had consisted of small patches of native mangrove at the mouth of the port area. This is not easily visible in the pre-1970 black and white Figure 4-2 aerial photograph. At that time, much of the lagoon was a shallow, seasonally drought-prone depression that collected and conveyed fresh water runoff into the ocean. Drought-tolerant, halophytic vegetation was more abundant than the mangrove communities before 1972.

FIGURE 4-1

Land Use and Vegetation Map Highlighting Natural Mangrove Vegetation in the early 1970s.



After 1972, when the ocean outlet channel was widened, an increased, diurnal influx of tidal marine waters into the lagoon enhanced hydrologic and salinity conditions needed for mangrove survival, growth, reproduction, and expansion, thus accelerating the northward colonization and expansion of the original native mangrove patches found at the mouth of the lagoon. This led to rapid colonization of the more deeply flooded, saline lagoon/port area and establishment of a larger, denser, and apparently healthy, and diverse mangrove community (as seen in the 2005 Google Earth aerial photo presented in Figure 4-3). The expanded mangroves in the project area appeared to be intact, dense, and healthy in February 2007 based on other aerial and ground/water-level photographs. It was evident in other aerial photographs that half of the mangroves had been removed as of June 2009, indicating that their conversion started after 2007.

Habitat information available for the project site is primarily from the Project ETJ and MIA, both of which describe the environmental conditions that existed prior to development of the project. The vegetation types present in the project area as presented in the ETJ and MIA are described in Table 4-2. It is important to note that the data presented in the table below is from two different documents and that the overall area addressed in the ETJ included additional areas of open water and port services.

TABLE 4-2
Vegetation Types in the Area Affected by the Project

Type of Vegetation			Type of Vegetation		
In the MIA	Hectares	Percent	In the ETJ	Hectares	Percent
Cohune palms (rain tree)	24.9047	25.40	Palm - Spiny brush	26.0000	6.40
Spiny forest of <i>Pithecellobium dulce</i> (Madras thorn) or low spiny semi-evergreen forest	41.5732	42.40	Spiny shrubland - Mangrove	27.2700	6.71
Rhizophora mangle (red mangrove) and Laguncularia racemosa (white mangrove)	29.1209	29.70	Mangrove	30.0000	7.38
Tule vegetation with <i>Typha domingensis</i> and coastal dunes with <i>Batis maritima</i> (saltwort)	2.4513	2.50	Shrubland - Marsh	14.7800	3.64
			Bodies of water	193.4600	47.60
			Port services	114.8800	28.27
	98.0500	100.00		406.3900	100.00

1. It is important to note that the overall area addressed in the ETJ included areas of open water and port services.

Source: API Manzanillo, 2004. Technical Study Supporting the Change of Land Use in Forested Areas from the "Master Development Program 2000--2010," published by Administración Portuaria Integral de Manzanillo, S.A. de C.V., p. 28; and page 283 of the MIA-R

4.1.3 Protected Natural Areas

In Mexico, there are various kinds of protected (natural) areas: federal, state, municipal, community, communal, and private. The protected natural areas under federal jurisdiction are managed by the *Comisión Nacional de Áreas Naturales Protegidas* (CONANP; National Commission on Protected Natural Areas).

Although there are four protected natural areas within the State of Colima (see Table 4-3 below), there are no protected natural areas within the project site.

TABLE 4-3

State of Colima Protected Areas

Category	Name	Decree year	Surface area (hectares)
Biosphere Reserve	Revillagigedo Archipelago	1994	636,685
National Park	Nevado de Colima	1935	9,600
Flora and Fauna Protection Area	El Jabalib	1981/2000 recategorization	179
Natural Resources Protection Area	Las Huertas	1988	167

Source: National Commission on Protected Natural Areas, 2013.

There are three Ramsar sites or wetlands of international importance located within the state of Colima (see Table 4-4). Of these, only Laguna de Cuyutlán, Basins III and IV have mangrove vegetation. None of these sites have been or will be impacted by the project.

TABLE 4-4

State of Colima Ramsar Sites

Name	Municipality	Surface area (hectares)	Designation (year)
Revillagigedo Archipelago Biosphere Reserve		636,685	2004
Playa Boca de Apiza-El Cupadero-El Tecuanillo Sanctuary	Tecom B	40	2008
Laguna de Cuyutlán (Cuyutlán Lagoon), Basins III and IV	Manzanillo, Armerme	4,051	2011

Notes: 1 Laguna de Cuyutlán Ramsar site has a total of 270 ha of mangroves and a total area, including open water of 4,051 ha.

4.2 Social-Economic Baseline

4.2.1 Regional and Local Context

The Municipality of Manzanillo is located in the southeastern region of the State of Colima on the west coast of Mexico. Manzanillo is bordered by the municipality of Armería to the southwest, the Pacific Ocean to the south, the municipality of Coquimatlán to the northeast, the municipality of Minatitlán to the north, and the state of Jalisco to the northeast and west. Manzanillo is the most populated municipality with 161,420 inhabitants, which comprises 24.3 percent of the state's population.¹⁷

The municipality of Manzanillo contains the city of Manzanillo and outlying communities ("colonias") such as El Colomo, Las Brisas, and many other smaller communities.

¹⁷ Ayuntamiento de Manzanillo. Plan Municipal 2009-2012 del H. Ayuntamiento de Manzanillo. Accessed on February 13, 2010. <http://148.235.70.104/periodico/peri/13022010/sup08/80021301.pdf>. Accessed on October 29, 2013.

Due to its strategic geographical location on the Pacific coast, Manzanillo offers important logistical and economic support for the entire state and various regions of the country. In particular, its port and tourism activities make it the driving economic force in Colima. The Port of Manzanillo is the national leader in the management and transport of containers and the municipality is the principal tourism destination in the state.

The existing port is in close geographic proximity to the urban footprint of Manzanillo and the smaller settlements within the municipality. Of particular note, the community of Las Brisas, identified, is located immediately adjacent to the Phase 1A development area of the port (Figure 1-1). According to documentation provided by CMSA and reviewed prior to the site visit along with interviews conducted during the site visit, there were no known human settlements located within the Phase 1A development area prior to construction of the terminal.

4.2.2 Demographics

Manzanillo's population is mostly young and urban. According to data obtained from the 2005 *Instituto Nacional de Estadística, Geografía e Informática* (INEGI; Population and Housing Census by the National Institute of Statistics, Geography, and Computing),¹⁸ 55.7 percent of the population is less than 30 years of age, and 86.8 percent live in an urban setting. This concentration of population leads to a high coverage and efficiency of public services and contributes to the low level of marginalization in Manzanillo. The significant proportion of youth indicates continuous growth of available labor. The variety of economic activities in the municipality constitutes a strong attraction for migrants from other municipalities or states in the region, increasing the local population and creating pressure on the provision of public services and infrastructure.

The gender distribution of the population in Manzanillo is almost equally distributed with nearly 50 percent of inhabitants corresponding to each gender category. By age group, the number of women in the 0 to 14 years old category is slightly greater. In the 20 to 34 year old age group, the number of men is slightly higher than the number of women. This age group distribution may correspond to the economic dynamics of the municipality, which attract a greater number of male workers and expand the 20 to 34 age category.

During the last three decades, the population growth of Manzanillo has been the highest in the state, with the urban population steadily increasing in proportion to the total population. The municipality also has a large influx of people from around the region due to the municipality's robust economy from port activity, tourism, and commerce.

4.2.3 Indigenous Populations and Cultural Heritage Sites

According to the MIA there are no indigenous populations residing in or around the Port of Manzanillo. The closest location of indigenous population is in the city of Colima, which is 100 km east-northeast of the port. Maps viewed during the site visit as well as an interview conducted with the APIMAN environmental director confirmed the distance from the port to the closest indigenous population. In addition, according to the MIA there are no cultural heritage sites associated with the footprint of the Phase 1A project, nor with the affected communities surrounding the port.

4.2.4 Health

There are a number of endemic diseases in the area, including a high reported incidence of dengue fever in the municipality of Manzanillo and Colima. According to data provided by the University of Colima in 2009, 4,982 cases of dengue were reported; 3,935 of these reported incidents were classified as dengue fever and 1,047 as hemorrhagic fever, resulting in 6 reported deaths. This positioned the state among the top three

¹⁸ Instituto Nacional de Estadística, Geografía e Informática. <http://www.inegi.org.mx/>. Accessed on October 29, 2013.

states in the country with the highest number of reported cases of dengue. Manzanillo is also considered a medium-risk area for the incidence of cholera.¹⁹

4.2.5 Economic Context

According to the MIA, the Port of Manzanillo is the principal commercial port in the Mexican Pacific. It receives a significant percentage of products from the western regions, Bajío, and the center of the country. This production represents more than 60 percent of the country's Gross Domestic Product (GDP). During the site visit, it was noted that the Manuel Álvarez Thermoelectric Plant (run by the Federal Electricity Commission) is located here. This plant supplies electricity to the entire State of Colima. Excess capacity is transferred to the national network.

In addition to the intense activities associated with the port and tourism, the economy of Manzanillo is composed of agriculture, fishing, minerals processing, and electrical energy generation. The local economy is diversified, providing stable economic growth for the municipality and its tax base.

The manufacturing sector provides 5.3 percent of the municipal GDP. Primary economic activities, cattle ranching, forest use, fishing, and hunting contribute 1.7 percent of the GDP, and construction provides 1.3 percent. Although fishing activity constitutes a relatively small contribution to the municipal GDP, the practice of artisanal fishing is an important activity for the subsistence and generation of income for low-skilled socio-economic groups in the municipality, particularly in the area of Las Brisas and areas like Cuyutlán. These impacts are provided in further detail in Section 5.

4.2.5.1 Employment

With regard to the port, activities that include manual labor, terminal and installation operations, industry operating at the port, provision of services, officials, shipping agencies, customs, transportation services, and the continuous investment in infrastructure constitute the current total of 8,000 jobs at the port. This represents 30 percent of the labor force in Manzanillo and 8 percent of the state's labor force.

4.2.5.2 Tourism

Tourism associated with sport fishing and beach activities are a significant contributor to the municipal GDP, since Manzanillo is positioned as the main tourist destination within the State of Colima. From 2007 to 2008, 70.9 percent of visitor influx to hotels in the area generated 2,963.8 million Mexican pesos (approximately US \$225 million). In 2008 the state received 842,966 visitors, 73 percent from Manzanillo alone. It is important to note that one of every two lodging establishments are located in this municipality. In 2008 there were 88 tourism establishments, including hotels, villas, and condominiums. The community of Las Brisas supports tourism in the municipality due to its proximity to the coast. Several small hotels and other lodging facilities are located along the main coastal boulevard in Las Brisas. The major resort hotels are located outside of the Las Brisas community along the coast.

There is also a significant influx of tourist activity into the Municipality of Manzanillo with the arrival of cruise ships. During 2008, 28 cruise ships docked in the Port of Manzanillo, with 56,346 disembarking passengers positively impacting the city's economy by touring the city's historical center and beaches, and regional cultural attractions located outside of the municipality. According to the MIA, expansion of the existing cruise ship terminal is anticipated as part of the Municipal Development Plan with the goal of increasing tourism activity in the region.

¹⁹ Secretaría de Salud de Colima. Resumen de Atención a Epidemias. http://www.colima-estado.gob.mx/transparencia/pagina_preview.php?idPagina=NDYw. Accessed on October 29, 2013.

4.2.5.3 Artisanal Fishing

Artisanal fishing is a source of economic livelihood in the smaller colonias of the municipality, such as Las Brisas and Cuyutlán. There is an active Association of Traditional Fishermen from the Playa de San Pedrito. Some fishermen still use the port navigation channel although it is an exclusion area established by APIMAN due to the safety risks posed by the large vessels. No survey data were included in the MIA addressing artisanal fishing within the port because of the fishing restrictions imposed by APIMAN. However, small fishing vessels are still present within the restricted area from time to time. It is APIMAN's responsibility for enforcing the exclusion area. Fishing also takes place from the Port's shoreline such as along the port breakwater where informal interviews were conducted during the ESDD. Because fishing is prohibited within the Port it can be assumed that the level of fishing prior to Terminal development and currently is very limited.

During the community of Las Brisa site visit, informal interviews with five local fishermen were conducted. Three of the fishermen were recreationally fishing for self-consumption, and said that they did not depend on their catch for economic livelihood. The remaining two fishermen were catching octopus and shells, the former to sell to restaurants, and the latter to use for artisanal crafts. These two fishermen voiced the complaint that the catch in the local area has significantly decreased in the past 10 years as a result of the overall port expansion activity. Neither fisherman had registered their complaints through APIMAN's grievance mechanism. Although there is a lack of data on the level of artisanal fishing activity in and around the Port, the exclusion zone within the Port area would have likely kept the level of fishing activity low prior to terminal development as well as on an ongoing basis during terminal operations. The fact that documentation of the public outreach and grievance program does not show a record of complaints from fishermen supports the conclusion that fishing within the Port was very limited.

4.2.6 Infrastructure and Basic Services

Infrastructure and basic services are adequate within the urban area and are discussed below.

4.2.6.1 Drainage

Adequate drainage systems for the municipality is a critical aspect of maintaining public health. The drainage network coverage is generally considered good in the municipality and at the port.

4.2.6.2 Potable Water

The availability of potable water is a determining factor in the marginalization of populations because of its effect on domestic sanitary conditions. According to the 2009 to 2012 Municipal Development Plan for Manzanillo, provision of potable water to the entire municipality must be improved by the municipal government. The municipal coverage of piped water is currently 91 percent of occupied dwellings. There are several neighborhoods in which some households do not have access to the municipal potable water network.

In 2008 the municipality had 59 sources of water storage with an average daily extraction volume of 72,800 cubic meters. During this year 37 potable water systems with 50,196 domestic, commercial, and industrial water intakes were documented.

4.2.6.3 Electricity

The municipal indicator for electricity coverage is 94.2 percent of inhabited dwellings. During 2008, there were 63,647 domestic and non-domestic electrical connections installed in 44 neighborhoods. In Manzanillo, the General Manuel Álvarez Thermoelectric Plant was built between 1982 and 1988. The plant consists of four 300-MW units and two 35-MW units, with a total generating capacity of 1,900 MW. The plant is located in the Barra de Cuyutlán, to the east of canal de ventanas. The energy generated by the plant is mostly used in the national supply system, with Manzanillo using 10 MW of this capacity and the rest transmitted for the central and western parts of the country.

4.2.6.4 Public Safety

Manzanillo is located within the State of Colima, which according to recent U.S. Department of State advisories, is considered a “medium-risk” state in Mexico; however, it is bordered by Michoacán and Jalisco states, both of which are considered “high-risk” states. Manzanillo did record an increase in the number of robberies and attempted robberies, from 622 to 1,187 incidents from 2006 through 2009 respectively. These robberies include domestic break-ins, robberies of businesses, and vehicle break-ins. According to government sources, homicides throughout the state of Colima also rose sharply from 113 in 2011 to 179 in 2012.

4.2.6.5 Transportation Network

According to the MIA, the principal roadways in the state of Colima are: México 110, Colima-Río Naranjo; Colima-Tecomán, Tecomán-Cerro de Ortega; México 200, Costera del Pacífico, Tecomán-Río Cihuatlán; México 054, Colima-Tonila and Manzanillo-Minatitlán, and Guadalajara-Manzanillo Highway. Manzanillo has a total of 346.5 km of highway. The strategic location of Manzanillo along the Pacific coast and the existing transportation infrastructure including the Playa de Oro International Airport, the highway and railway networks that link Manzanillo to principal destinations within Mexico and to the U.S., have facilitated significant development at the Port Manzanillo. There also is an extensive road network in the region that experiences a high level of congestion unrelated to port activity. Roads surrounding the immediate port area lead directly to national transportation corridors and were constructed to allow vehicular traffic from the port to avoid the congested municipal road network.

Environmental and Social Impacts

5.1 Construction Phase

5.1.1 Environmental Impacts in the Construction Phase

According to the information that was presented in the MIA, the ETJ, and the project modification request, the main construction activities for the project are:

- Dredging for the construction of the inner harbor and navigation channel
- Construction of berth positions (16 to 22)
- Filling and construction of yards and roadways

5.1.1.1 Impact from Removal of Mangrove Habitat

The main impact associated with the construction of the project was the removal of the natural forest vegetation, which included 15.7 hectares of mangrove habitat 41.6 of spiny forest and 24.9 of palm grove.²⁰ Special emphasis was placed on the mangrove vegetation due to the protected status that mangrove systems have under Mexican standard NOM-022-SEMARNAT-2003.²¹

The 15.7 hectares of natural mangrove ecosystem removed was primarily composed of red mangrove (*Rhizophora mangle*), white mangrove (*Laguncularia racemosa*), and other native species commonly found in Mexican mangrove communities. Although the MIA originally indicated an impact of 30 hectares of mangrove habitat during the environmental impact assessment, the Manzanillo Port Authority proposed conserving an additional 5.0 hectares as a germplasm bank, which was approved in Authorization Letter S.G.P.A./DGIRA.DDT.1383.05 dated November 22, 2005.

On June 12, 2009, the Manzanillo Port Authority obtained authorization from the DGIRA-SEMARNAT to modify its project,²² wherein it was proposed to expand the width of the mangrove buffer strip from 10 to 60 meters, which reduced the impact on the mangrove habitat by 9.34 additional hectares to a total of 15.7 hectares of habitat removed. While the actual area of impact to mangroves was reduced to 15.7 hectares, the final authorization maintained the condition stipulated in the original authorization which established that 25 hectares of mangrove habitat would be affected and were to be compensated with habitat restoration at a ratio of 3: 1, which translates into a restoration area of 75 hectares of mangrove habitat (even though the actual impact was to remove only 15.7 acres).

In order to evaluate the impact of the mangrove habitat removal, the MIA and other relevant literature were reviewed. Forest biometric (floristic) parameters estimated for *R. mangle* and *L. racemosa* within the 15.7 hectares of converted mangrove habitat on the project site were presented in the ETJ as a possible indicator of a degraded mangrove habitat. It was noted in the ETJ, that over the years, port industrialization in the urban area of Manzanillo had degraded the mangrove community to a forest structure inferior to that considered typical for healthy mangrove forests dominated by these two mangrove species, resulting in more numerous trees with smaller trunk breast-height diameters.

Lists of flora, fauna, and protected species previously inhabiting the impacted mangrove community and aquatic fauna of associated marine habitats, compiled from the 2004 MIA, the ETJ filed to obtain

²⁰ Page 283 of the Regional MIA for the Project.

²¹ SEMARNAT. 2003. Official Mexican Standard NOM-022-SEMARNAT-2003, which establishes the specifications for preservation, conservation, sustainable management and restoration of the coastal wetlands in mangrove swamp areas. Ministry of the Environment and Natural Resources, published in the Official Gazette of Mexico on April 20, 2003.

²² DGIRA-SEMARNAT. 2009. Official Resolution Letter No. S.G.P.A./DGIRA/DG/3467/09 dated June 12, 2009.

authorization for a Change in Use of Forest Lands (Ecofor, 2004), provided the following summary data for biodiversity and protected species of the lost mangrove habitat.

Vegetation. Tables 57 to 60 of the MIA identified dominant plant species from four different survey sites within the project area, two of which were reported as having only one or two species and the other three sites having between 13 species (Site 5) and 16 species (Site 2), with only two sites inhabited by white and/or red mangroves. Although Table 63 of the MIA (see Table 5-1 below) reported 15 species of aquatic and semi-aquatic vegetation for the study area, several of them were misclassified as aquatic or semi-aquatic, raising doubts about the accuracy and quality of that botanical information for the site. Table 62 of the MIA listed 14 exotic tree species and 4 exotic shrub species, but their abundance or frequency were not assessed ecologically.

TABLE 5-1

Aquatic and Semi-Aquatic Vegetation from the Project Area

Listed Species	Aquatic to Semi-Aquatic Condition
<i>Pistia statiotes</i> L. Araceae	Yes, floating aquatic
<i>Asclepias curassavica</i> L. Asclepiadaceae	No, terrestrial
<i>Melauthera nivea</i> (L.) Small. Compositae	No, terrestrial
<i>Pluchea symphytifolia</i> (Mill.) Gillis Compositae	No, terrestrial
<i>Pseudoconiza viscosa</i> (Mill.) D'Arcy Compositae	No, terrestrial
<i>Merremia umbellata</i> (L.) Hallier f. Convolvulaceae	No, terrestrial
<i>Hydrolea spinosa</i> L. Hydrophyllaceae	No, terrestrial
<i>Mimosa pigra</i> L. Leguminosae	No, terrestrial
<i>Eichhornia crassipes</i> (C. Martius) Solms-Laub Pontederiaceae.	Yes, floating aquatic
<i>Salix humboldtiana</i> Willd. Salicaceae	Terrestrial at water bodies
<i>Solanum madrense</i> Fernald. Solanaceae	No, terrestrial
<i>Solanum tepiense</i> L. Solanaceae	No, terrestrial
<i>Solanum</i> sp. Solanaceae	No, terrestrial
<i>Typha domingensis</i> Pers. Typhaceae	Yes, aquatic emergent
<i>Lantana camara</i> L.	No, terrestrial

The only wildlife biodiversity data for the Manzanillo mangrove habitat described in the MIA and ETJ are information annexes with lists of species, presumably most of which were compiled from a literature review, with minimal site specific surveys of plant, fish, or wildlife communities.

Birds. The MIA reported 165 bird species for the region, including 48 migratory and 117 resident species. As summarized in Table 67 of the MIA, a high diversity of resident birds also was seen in the (subsequently converted) mangroves at the project site, including 28 species as shown in Table 5-2.

TABLE 5-2

Bird Species Reported from the Project Area

No.	Bird Species Seen Onsite	Common Name
1	<i>Podilymbos podiceps</i>	Zambullidor picopinto
2	<i>Pelecanus erythrorhynchos</i>	Pelicano blanco
3	<i>Pelecanus occidentalis</i>	Pelicano café
4	<i>Phalacrocorax auritus</i>	Cormorán
5	<i>Phalacrocorax olivaceus</i>	Cormorán

TABLE 5-2
Bird Species Reported from the Project Area

No.	Bird Species Seen Onsite	Common Name
6	<i>Fregata magnificens</i>	Fregata
7	<i>Ardea Herodias</i>	Garza morena
8	<i>Casmerodius albus</i>	Garza blanca
9	<i>Egretta thula</i>	Garcita blanca
10	<i>Bubulcus ibis</i>	Garza garrapatera
11	<i>Cathartes aura</i>	Aura
12	<i>Buteo jamaicensis</i>	Aguililla cola roja
13	<i>Fulica Americana</i>	Gallareta
14	<i>Himantopus mexicanus</i>	Monjita
15	<i>Larus atricilla</i>	Gaviota
16	<i>Columba livia</i>	Paloma común
17	<i>Zenaida macroura</i>	Huilota
18	<i>Scardafella inca</i>	Tortolita
19	<i>Columbina passerine</i>	Tortolita
20	<i>Aratinga canicularis</i>	Perico común
21	<i>Crotophaga sulcirostris</i>	Pijui
22	<i>Pitangus sulphuratus</i>	Luis
23	<i>Hirundo rustica</i>	Golondrina común
24	<i>Tachycineta albilinea</i>	Golondrina de manglar
25	<i>Passer domesticus</i>	Gorrión común
26	<i>Molothrus aeneus</i>	Tordo ojorojo
27	<i>Cassidix mexicanus</i>	Zanate
28	<i>Icterus pectoralis</i>	Chorcha

Based on the literature and field observations in Table 70 of the MIA, the dominant migratory bird populations found in the Manzanillo mangroves included 48 species. Table 5-3 provides a list of these species.

TABLE 5-3
Dominant Migratory Bird Populations Found in Manzanillo

No.	Species	Common Name
1	<i>Sula leucogaster</i>	Bobo de vientre blanco
2	<i>Dichromanassa rufescens</i>	Garza rojiza
3	<i>Anas platyrhynchos</i>	Pato de collar
4	<i>Anas strepera</i>	Pato pinto

TABLE 5-3

Dominant Migratory Bird Populations Found in Manzanillo

No.	Species	Common Name
5	<i>Anas acuta</i>	Pato golondrino
6	<i>Anas crecca</i>	Cerceta verde
7	<i>Anas discors</i>	Cerceta azul
8	<i>Anas cyanoptera</i>	Pato café,
9	<i>Anas Americana</i>	Pato chalcuán
10	<i>Anas clypeata</i>	Pato cucharón
11	<i>Oxyura jamaicensis</i>	Pato tepalcate
12	<i>Accipiter cooperi</i>	Gavilán palomero
13	<i>Buteo albicaudatus</i>	Aguililla cola blanca
14	<i>Buteo swainsoni</i>	Gavilán chapulinero
15	<i>Falco columbarius</i>	Halcón palomero
16	<i>Falco sparverius</i>	Cernícalo
17	<i>Rallus limicola</i>	Gallineta
18	<i>Pluvialis squatarola</i>	Chorolito
19	<i>Charadrius alexandrinus</i>	Chichicuilete
20	<i>Charadrius vociferous</i>	Chichicuilete
21	<i>Numenius phaeopus</i>	Chorlo
22	<i>Numenius americanus</i>	Zarapico
23	<i>Limosa fedoa</i>	Agachona
24	<i>Tringa solitaria</i>	Arenero
25	<i>Actitis macularia</i>	Alzacolita
26	<i>Catoptrophorus semipalmatus</i>	Zarapico
27	<i>Arenaria interpres</i>	Chorlete
28	<i>Limnodromus griseus</i>	Agachona
29	<i>Calidris alba</i>	Playero
30	<i>Calidris mauri</i>	Playero
31	<i>Calidris melanotos</i>	Playero
32	<i>Recurvirostra Americana</i>	Monjita
33	<i>Steganopus tricolor</i>	Chorlillo
34	<i>Lobipes lobatus</i>	Chorlillo
35	<i>Larus argentatus</i>	Gaviota
36	<i>Larus atricilla</i>	Gaviota
37	<i>Larus pipixcan</i>	Gaviota

TABLE 5-3
Dominant Migratory Bird Populations Found in Manzanillo

No.	Species	Common Name
38	<i>Dendroica erithachorides</i>	Verdín manglero
39	<i>Dendroica dominica</i>	Verdín cejiblanco
40	<i>Geothlypis trichas</i>	Tapajito
41	<i>Icterus galbula</i>	Calandria cañera
42	<i>Spiza Americana</i>	Sabañero
43	<i>Sterna hirundo</i>	Golondrina marina
44	<i>Tyrannus vociferans</i>	Picacuervo
45	<i>Hirundo rustica</i>	Golondrina tijerina
46	<i>Riparia riparia</i>	Golondrina ribereña
47	<i>Tachycineta bicolor</i>	Golondrina invernál
48	<i>Mniotilta varia</i>	Reinita

Mammals. Of 44 species reported for the region, the most common mammals are the six species listed in Table 65 of the MIA, while only three species were reported from the Manzanillo mangroves, prior to their conversion, as listed in Table 69 of the MIA. These lists of species are provided in Tables 5-4 and 5-5, respectively.

TABLE 5-4
Most Common Mammals Reported for the Region

No.	Species (MIA Table 65)	Common Name
1	<i>Didelphis virginiana</i>	Tlacuache
2	<i>Mus musculus</i>	Ratón
3	<i>Rattus norvegicus</i>	Rata gris
4	<i>Bassariscus astutus</i>	Cacomixtle
5	<i>Nasua nasua</i>	Coati
6	<i>Procyon lotor</i>	Tejón

TABLE 5-5
Mammals Reported from the Manzanillo Mangroves

No.	Species (MIA Table 69)	Common Name
1	<i>Rattus norvegicus</i>	Rata gris
2	<i>Nasua nasua</i>	Coati
3	<i>Conepatus mesoleucus</i>	Zorrillo espalda blanca

Reptiles. Amphibians and reptiles together total 40 species known in the region, 3 of which are dominant species. Of the five species and genera of reptiles found in the lost mangroves, the first three were dominant (data compiled from Tables 67 and 68 of the MIA). Table 5-6 provides this list of species.

TABLE 5-6
Species and Genera of Reptiles found in the Manzanillo Mangroves

No.	Species	Common Name
1	<i>Basiliscus vitatus</i>	Lagartija
2	<i>Ctenosaura pectinata</i>	Iguana negra
3	<i>Sceloporus aeneus</i>	Lagartija común
4	<i>Iguana iguana</i>	Iguana verde
5	<i>Cnemidophorus deppii</i>	Lagartija

Although the preceding tables from the MIA document most of the fauna found inhabiting the Manzanillo mangroves before their removal, several additional species of wildlife that used or lived in the mangroves were rescued from the project site. The following list of wildlife rescued from the project site appeared in Table 1 of the "Rescue Program, Capture and Wildlife Relocation" report, prepared by APIMAN and catalogued by the NOM-059-SEMARNAT-2001 in project PROGRESS REPORT 2007-2012. Information from the report is provided in Table 5-7.

TABLE 5-7
Summary of Fauna Rescued from the Manzanillo Mangrove Habitats and Areas of Release

Taxonomic Group	Species (Scientific Name)	Common Name	Number of Individuals	Risk Category (NOM-059-SEMARNAT-2010)
Amphibia	<i>Syrrophus modestus</i>	Ranita	83	Pr (Endangered)
Amphibia	<i>Ptemophyla modiensi</i>	Rana de casquito	2	
Amphibia	<i>Smilisca baudinii</i>	Rana trepadora	1	
Amphibia	<i>Leotodactylus melanonotus</i>	Ranita del Sabinal	2	
Mammalia	<i>Didelphis virginiana</i>	Tlacuache	71	
Mammalia	<i>Rattus rattus</i>	Rata	9	
Mammalia	<i>Procyon lotor</i>	Mapache	28	
Mammalia	<i>Felis domesticus</i>	Gato	7	
Mammalia	<i>Dasyus novemcinctus</i>	Armadillo	4	
Mammalia	<i>Tlacuatzin canescen</i>	Tlacuachin	3	
Reptilia	<i>Iguana iguana</i>	Iguana verde	250	Pr (Endangered)
Reptilia	<i>Ctenosaura pectinata</i>	Iguana negra	80	A (Threatened)
Reptilia	<i>Boa constrictor</i>	Malcoa	9	A (Threatened)
Reptilia	<i>Anolis nebulosus</i>	Anolis	2	
Reptilia	<i>Crocodylus acutus</i>	Cocodrilo	1	Pr (Endangered)
Reptilia	<i>Urosaurus bicarinatus</i>	Lagartija de árbol tropical	3	
Reptilia	<i>Drymobius margaritiferus</i>	Alicante	15	
Reptilia	<i>Aspidoscelis lineatissima</i>	Cuije cola azul	28	Pr (Endangered)
Reptilia	<i>Ameiva undulate</i>	Cuije cola oscura	1	

TABLE 5-7

Summary of Fauna Rescued from the Manzanillo Mangrove Habitats and Areas of Release

Taxonomic Group	Species (Scientific Name)	Common Name	Number of Individuals	Risk Category (NOM-059-SEMARNAT-2010)
Reptilia	<i>Lempropeltis triangulum</i>	Falsa coralillo	3	
Reptilia	<i>Cnemidophorus</i>	Lagartija cuije	16	
Reptilia	<i>Phyllodactylus lanei</i>	Pata de res	2	
Reptilia	<i>Sceloporus melanorhinus</i>	Roño de árbol	5	
Reptilia	<i>Eumeces parvulus</i>	Salamanquesa de cola azul	10	
Reptilia	<i>Rhamphotyphlops braminus</i>	Serpiente ciega	1	
Reptilia	<i>Anolis sp.</i>	Roño de paño	3	
Total Individuals Rescued from Impact Area			639	

The faunal biodiversity data submitted for environmental impact authorizations and land use change through the MIA and ETJ were incomplete since aquatic fauna were not described. This is a gap in the MIA baseline study, impact analyses, and evaluation of the project's ecological impacts to aquatic biota and to the support of local, artisanal, and commercial fisheries. Marine fish recorded in the region were not mentioned in the MIA, however, the ETJ identified 30 species of marine fish as the most commercially important of the 109 species found along the Colima coast.

Fish species most vulnerable to the loss of mangrove are those estuarine residents that reside permanently in the estuary and use the mangroves breeding and feeding areas. There are other less vulnerable, but no less important aquatic biota in mangrove ecosystems, including diadromous fish species that are found occasionally or permanently in the estuary, use the mangrove habitat as food and/or shelter during sensitive life stages (mainly larvae or juveniles), or as a migratory route.

5.1.2 Occurrences of Protected Species

In addition to their key ecosystem functions, the affected mangrove habitat had provided habitat and food for various organisms, including some which are considered protected by the Official Mexican Regulations NOM-059-SEMARNAT-2001 and NOM-059-SEMARNAT-2010. The Mangrove species found at the site were designated as Mexican special protection status in 2004, then became classified as threatened species in Mexico in 2010. Table 5-8 shows individuals of protected species that were rescued and relocated from the project site during the process of vegetation clearing.²³ Please note that none of these are considered as EN or CE by the IUCN,

TABLE 5-8

List of Protective Species Relocated from the Cleared Mangrove Site

Protected Species	Common Name	Number of Individuals Relocated	Protection Status – Mexico ¹ and IUCN
<i>Syrhophus modestus</i>	Blunt-toed chirping frog	83	Endemic with Special Protection in Mexico; Not yet assessed for inclusion on International Union for Conservation of Nature (IUCN) Red List

²³ API-Manzanillo S.A. de C.V. 2012. Programa de Rescate, Captura y Reubicación de Fauna Silvestre catalogadas por la NOM-059-SEMARNAT-2001. México, 27 págs.

TABLE 5-8
List of Protective Species Relocated from the Cleared Mangrove Site

Protected Species	Common Name	Number of Individuals Relocated	Protection Status – Mexico ¹ and IUCN
<i>Iguana iguana</i>	Green iguana	250	Non-endemic with Special Protection in Mexico; Not yet assessed for inclusion on IUCN Red List
<i>Ctenosaura pectinata</i>	Spiny-tailed Mexican iguana	80	Endemic and Threatened in Mexico; Not yet assessed for inclusion on IUCN Red List
<i>Boa constrictor</i>	Boa	9	Non-endemic but Threatened in Mexico; Not yet assessed for inclusion on IUCN Red List
<i>Crocodylus acutus</i>	American crocodile	1	Non-endemic but Special Protection in Mexico; Considered a Vulnerable species in the IUCN Red List
<i>Aspidoscelis lineatissimus</i>	Colima whip-tail lizard	28	Endemic with Special Protection in Mexico; Not yet assessed for inclusion on IUCN Red List

¹ NOM-059-SEMARNAT-2001 and NOM-059-SEMARNAT-2010

5.1.2.1 Habitat Classification of the Converted Mangrove Areas - IDB Criteria and Definitions

An evaluation of the impacted Manzanillo mangrove habitat based on relevant criteria from the IDB definitions for *Critical Natural Habitat* versus *Natural Habitat* is presented in the Table 5-9.

TABLE 5-9
Evaluation of Manzanillo Mangrove Area with IDB Habitat Categories and Criteria

IDB Habitat Categories and Criteria for Lost Mangroves	Criteria Met?	Ecological Rationale for Inter-American Development Bank (IDB) Critical Natural versus Natural Habitat Determinations
Critical natural habitats are (i) existing protected areas, areas officially proposed by governments for protection or sites that maintain conditions that are vital for the viability of the aforementioned areas; and (ii) unprotected areas of known high conservation value. Existing protected areas may include reserves that meet the criteria of the IUCN Protected Area Management Categories I through VI; World Heritage Sites; areas protected under the Ramsar Convention on Wetlands; core areas of World Biosphere Reserves; and areas in the UN List of National Parks and Protected Areas. Areas of known high conservation value are sites that, in the Bank's opinion, may be: (a) highly suitable for biodiversity conservation; (b) crucial for critically endangered, endangered, vulnerable or near threatened species listed as such in the IUCN Red List of Endangered Species; or (c) critical for the viability of migratory routes of migratory species.		
(i) existing protected areas, areas officially proposed by governments for protection or sites that maintain conditions that are vital for the viability of the aforementioned areas	No	There are no officially protected areas within the project boundary that meet the criteria of the IUCN Protected Area Management Categories I through VI; World Heritage Sites; areas protected under the Ramsar Convention on Wetlands; core areas of World Biosphere Reserves; and areas in the UN List of National Parks and Protected Areas
(iia) unprotected areas of known high conservation value that may be highly suitable for biodiversity conservation	No	The existing mangrove area is not considered to have been highly suitable for conservation due to: (i) its small size, even when combined with the mangroves in the Laguna del Valle de las Garzas; (ii) its isolation from any other mangrove systems; (iii) its non-inclusion in a list of mangrove priority conservation sites compiled by the Government of Mexico as part of a detailed prioritization program
(iib) unprotected areas of known high conservation value that may be crucial for critically endangered, endangered, vulnerable or near threatened species listed as such in the IUCN Red List of Endangered Species	No	The MIA Documented the mangrove area as high biodiversity habitat for the American crocodile (<i>Crocodylus acutus</i>), a Mexican Special Protection and IUCN Red Listed Vulnerable Faunal Species. However, because of the overall size of the mangrove area and the relative abundance of similar habitat in the region, it is unlikely that the mangrove area was crucial for the above listed species.

TABLE 5-9

Evaluation of Manzanillo Mangrove Area with IDB Habitat Categories and Criteria

IDB Habitat Categories and Criteria for Lost Mangroves	Criteria Met?	Ecological Rationale for Inter-American Development Bank (IDB) Critical Natural versus Natural Habitat Determinations
(iic) unprotected areas of known high conservation value that may be critical for the viability of migratory routes of migratory species.	No	Site is located along the Pacific flyway and had been used by migratory species. However, because of the overall size and relative abundance of similar habitat in the region, the mangrove area would not be considered critical for the viability of migratory routes of migratory species.
Natural Habitats are biophysical environments where: (i) the ecosystems' biological communities are formed largely by native plant and animal species; and (ii) human activity has not essentially modified the area's primary ecological functions. Natural habitats may be sites that (a) provide critical ecological services required for sustainable human development (e.g., aquifer recharge areas, areas that sustain fisheries, mangrove or other ecosystems that help to prevent or mitigate natural hazards); (b) are vital to ensure the functional integrity of ecosystems (e.g., biological corridors, natural springs); and (c) have high levels of endemism. Natural habitats may occur in tropical humid, dry, and cloud forests; temperate and boreal forests; Mediterranean-type shrub lands; natural arid and semi-arid lands; mangrove swamps, coastal marshes, and other wetlands; estuaries; seagrass beds; coral reefs; underwater vents; freshwater lakes and rivers; alpine and sub-alpine environments, including herb fields, grasslands, and páramos; and tropical and temperate grasslands.		
(i) the ecosystems' biological communities are formed largely by native plant and animal species	Yes	The mangrove area was a natural mangrove plant community dominated by native mangrove plant species (<i>Rhizophora mangle</i> , and <i>Laguncularia racemosa</i>) and inhabited by diverse native fauna. Species lists and historical photos, including the MIA and ETJ reports show the mangroves had been healthy and dominated by native flora and fauna, with very few exotic or invasive plant species.
(iia) human activity has not essentially modified the area's primary ecological functions.	Yes	While present within the overall port complex, the mangroves were found to be surviving and providing many of the ecosystem services typically associated with Mangrove habitats. Human activity had not significantly modified or damaged the primary ecological functions of the mangrove area, which colonized the expanded lagoon after widening of the ocean inlet and dredging resulting in an increase in the size, depth, and salinity of the lagoon. This ocean inlet widening thus had a beneficial human impact that enhanced the size, health, biodiversity and ecological functions of the mangrove ecosystem. The mangrove area was providing fisheries resources to some local fishermen

While the mangroves were inhabited by the American crocodile, an IUCN Red Listed Vulnerable Species, because of the overall size and location of the mangrove area, it is not likely that this specific area of mangroves would be considered as crucial for the survival of this species. The mangrove area removed was not unique in the region nor did it represent a significant proportion of the overall available mangrove habitat. The impacted mangrove habitat is classified as "Natural Habitat" according to the IDB criteria and definitions presented in the IDB Environmental and Safeguards Compliance Policy (2006)

5.1.2.2 Habitat Classification of the Converted Manzanillo Mangroves - IFC Performance Standard 6 (Biodiversity) Criteria

Based on the ecological profile of the Manzanillo mangroves presented in the MIA, ETJ, and published floristic data for other mangrove habitats in Mexico and the Americas, the Manzanillo mangroves were evaluated using criteria and definitions included in *the IFC Performance Standard 6* regarding the conservation of biodiversity and sustainable management of living natural resources (see Table 5-10).

Based on available evidence, the Manzanillo mangroves were dominated by native rather than exotic or invasive species, supporting a high level of biodiversity of flora and fauna and functioning as a rapidly expanding pioneer plant community after the widening of the inlet to the ocean at the mouth of the lagoon. The mangroves were providing ecosystem services including fish and wildlife habitat, water quality enhancement, sedimentation and nutrient cycling, as well as support of fisheries and artisanal fishing in the

immediate area. Regulation through the storage and capture of carbon and by contributing to the regulation of the micro-climate and support services for nutrient cycling and primary production were also being provided.

According to our review of the specific criteria presented in PS6, the Manzanillo mangrove area is considered to be natural habitat. Thus, the mangrove area does not qualify as *Critical Habitat* under the IFC criteria of PS 6. A detailed evaluation is presented in the Table 5-10.

TABLE 5-10

Evaluation of Manzanillo Mangrove Area with IFC Habitat Categories and Criteria

IFC Habitat Categories and Criteria for Lost Mangroves	Criterion is Met?	Ecological Rationale and Interpretation of IFC Criteria for Critical, Natural, or Modified Mangrove Habitat
Critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.		
(i) Areas with high biodiversity including habitat of significant importance to Critically Endangered and/or Endangered species	No	The mangrove area was habitat for the Mexican Special Protection and IUCN Red List-Vulnerable American crocodile (<i>Crocodylus acutus</i>), but not for Critically Endangered or Endangered Red List Fauna. The Mexican listed Endangered Flora - Granadillo (<i>Dalbergia granadillo</i>) was found in the mangrove area. This area is likely not of significant importance to this species because of the relatively small size and location of the area lost.
(ii) Areas with high biodiversity including habitat of significant importance to endemic and/or restricted-range species	No	Habitat of Mexican (not IUCN) Endemic and Threatened or Special Protection Species, listed in part due to their restricted geographic range that were present in the mangrove area included the spiny-tailed Mexican iguana (<i>Ctenosaura pectinata</i>); Blunt-toed chirping frog (<i>Syrhophus modestus</i>) and Colima whip-tail lizard (<i>Aspidoscelis lineatissimus</i>). While mangroves in general represent habitat of significant importance to the above species, the relative size and isolated nature of the mangrove area impacted by the project is not considered to be a habitat of significant importance to endemic and or restricted-range species.
(iii) Areas with high biodiversity including Habitat supporting globally significant concentrations of migratory species and/or congregatory species	No	The site is located along the Pacific flyway and had been used by migratory and congregatory birds as part of the original mosaic of mangroves, adjacent estuarine habitats (open water, tidal flats), and lagoons with wetlands located north and south of the port. Likely not Critical for route viability due to healthy mangroves of large adjacent lagoons north and south of the port, incl. Laguna de Cuyutlán Ramsar wetland.
(iv) Areas with high biodiversity including highly threatened and/or unique ecosystems	No	Native Mangrove Habitats and Plant Species are listed in Mexico as Threatened (NOM-059-SEMARNAT-2010), including <i>Rhizophora mangle</i> , <i>Avicennia germinans</i> , <i>Laguncularia racemosa</i> and <i>Conocarpus erectus</i> . While these species are considered as threatened in Mexico, it is doubtful that the area of mangroves associated with the current project would be classified as critical habitat under this criterion because of their relatively small size, relative isolation, and adjacent land use activities.
(v) Areas with high biodiversity including areas associated with key evolutionary processes	No	Mangrove ecosystems, including the area impacted by the project, do demonstrate a number of evolutionary processes such as providing environmental gradients, also known as ecotones, which produce transitional habitat that has been

TABLE 5-10

Evaluation of Manzanillo Mangrove Area with IFC Habitat Categories and Criteria

IFC Habitat Categories and Criteria for Lost Mangroves	Criterion is Met?	Ecological Rationale and Interpretation of IFC Criteria for Critical, Natural, or Modified Mangrove Habitat
		associated with the process of speciation and high species and genetic diversity. However, because of the relatively small area of mangroves impacted, relative to the overall distribution of mangroves in the area, the mangrove area in question is not considered to be a specific area associated with key evolutionary processes.
Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.		
Viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition	Yes	The mangrove area was composed of viable assemblages of plant and/or animal species of largely native origin, however, the area has been subject to modification due to human activity associated with initial construction and operation of the port facility.
Modified habitats are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition. Modified habitats may include areas managed for agriculture, forest plantations, reclaimed coastal zones, and reclaimed wetlands.		
Areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition.	No	The mangrove area was composed of viable assemblages of plant and/or animal species of largely native origin. The resulting natural mangrove community was dominated by 4 native mangrove plant species, which had colonized the perimeter of an expanded, human-altered lagoon. This action resulted in the formation of a dense, healthy mangrove community. Species lists in the MIA and ETJ indicate a very low incidence of non-native flora and fauna in the area. Initial construction of the port resulted in a significant enhancement of the mangrove area and their immediately surrounding habitat. It is also likely that operation of the port has also had both direct and indirect impacts on the mangrove area.

5.1.2.3 Dredging Impacts Including Fill Quality

The original project considered dredging of 4,743,600 m³ at a depth of 16.0 meters to allow for the transit of fourth generation large vessels; however, the authorization to modify the project was granted for a final dredging of 7,743,600 m³. The site for final disposal of dredging material was not modified and the entire amount of dredged material was used for fill on the terminal yard.

In addition to the dredging performed by APIMAN to deepen the Port channel to a depth of 16 meters below mean sea level, the CMSA Terminal applied for and obtained permits to dredge their berth and construct the wharf. On February 3, 2012, the SEMAR issued CHEC a permit for discharge of water from depositing 378,715.84 cubic meters of dredged material at the CMSA Terminal (wharves 18 and 19).²⁴ The authorization required monitoring for suspended solids and other chemical parameters. On October 30, 2012, the SEMAR issued CHEC another permit to dredge an additional 275,179.50 cubic meters of material from the berth and wharf area and place it on the landside of the CMSA Terminal (wharves 18 and 19).²⁵

24 3 de febrero 2012. Secretaria de la Marina Sexta Región Naval. Se Autoriza Vertimiento a la Empresa HKD México.

25 30 de octubre 2012. Secretaria de la Marina Sexta Región Naval. Se Autoriza Vertimiento a la Empresa HKD México.

Based on the chemical analysis of dredge material in a sample report dated August of 2005, prepared by Laboratorios ABC²⁶ *there were no constituents that would categorize the material as hazardous according to Mexican norms.*

Based on conversations with Port staff, there are few existing industries that dispose of effluent in the Port. The two sources of pollutants cited were the existing sewage plant and urban runoff. The new terminal has been designed and constructed not to discharge any wastes to the port waters. Additionally, the MIA (2004) states on page 309 that the channel dredging was evaluated in accordance with NOM 052 SEMARNAT 1993 and was not considered hazardous.

Impacts associated with dredging activities typically resulted in short term impacts to benthic fauna and fish species. Benthic invertebrates typically recolonize dredged habitats relatively quickly and fish species return to impacted areas once dredging activities are completed.

5.1.2.4 Impact on the Flora and Fauna

Mangrove habitat is a protected ecosystem in Mexico pursuant to Official Mexican Standard NOM-022-SEMARNAT-2003. Mangrove habitat has been diminishing as a result of various activities carried out in the coastal regions. Moreover, the mangrove habitat species that were affected, *Rhizophora mangle* (red mangrove) and *Laguncularia racemosa* (white mangrove) are protected under Official Mexican Standard NOM-059-SEMARNAT-2001 and the 2010 update to NOM-059, which designates the species of wild flora and fauna that are currently at risk due to the decrease in their populations. It is important to note that in the standard published in 2001, all mangrove species in Mexico were placed in a “special protection” risk category, which is considered to be a lower risk category, in the 2010 update, a higher risk category was assigned to the mangrove species, classifying them as “threatened”. Nevertheless, it is important to note that the mangrove species (*Rhizophora mangle* and *Laguncularia racemosa*) are included on the IUCN red list in a low risk category (Least concern, LC).

An impact that was not analyzed in depth in the MIA was the effect on wildlife, which was abundant in the mangrove area as was apparent during the rescue of various individual species of wild animals conducted as one of the project mitigation measures; 639 individuals were rescued, predominantly iguanas. Eighty black iguanas (*Ctenosaura pectinata*) were rescued, a species considered to be endemic and endangered, as well as 9 *Boa constrictor*, which is also listed in Standard NOM-059-SEMARNAT-2001²⁷ as an endangered species. These species are not found on the IUCN red list. However, *Boa constrictor* is included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Finally, the MIA did not consider the evaluation of aquatic fauna, including fish that were potentially affected by the removal of mangrove swamps, even though it is known that this habitat is important in coastal regions, since many fish species use mangrove areas as a place of refuge, egg-laying, or breeding. Impacts associated with dredging activities typically resulted in short term impacts to benthic fauna and fish species. Benthic invertebrates typically recolonize dredged habitats relatively quickly and fish species return to impacted areas once dredging activities are completed.

5.1.3 Social

Since the construction phase of the Project was completed prior to the ESDD site visit, the focus of the social impact review consists primarily of an audit. The potential adverse social impacts that were identified related to Project construction phase in the MIA and observed during the site visit included:

26 Agosto, 2005. Laboratorios ABC Química Investigación Análisis S.A. de C.V. “Protocolo de Muestreo de Sedimento de Intersección Canal de Acceso Para la Determinación de su Peligrosidad” Cliente: APIMAN.

27 SEMARNAT. 2001. *Norma Oficial Mexicana NOM-059-SEMARNAT-2001, Protección ambiental-Especies nativas de México de flora y fauna silvestres-Categorías de riesgo y especificaciones para su inclusión, exclusión o cambio-Lista de especies en riesgo*. Publicada en el Diario Oficial de la Federación el 30 de diciembre de 2010.

- Impacts to the Las Brisas community from construction activities
- Health and safety issues related to inappropriate solid waste disposal and wastewater transport and treatment during construction
- Health and safety risks to the local community from construction vehicle traffic passing through Manzanillo.

To adequately assess the impact of the construction activities, IDB operational guidelines, and IFC performance standards were evaluated against findings and observations from the site visit, interviews with personnel and community members, and information provided in the MIA. The results are presented in the following sections.

5.1.3.1 Noise and visual Impacts to the Las Brisas community from construction activities

There was a negative noise impact during construction that had been partially mitigated prior to the start of construction associated with pile driving activities. Although noise monitoring was referred to in the Consultec monitoring reports, no specific data were presented. CMSA verbally told the audit team during the site visit that complaints were referred to their insurance company and it was determined by the insurance company that the noise impacts were not physically affecting the community.

5.1.3.2 Improper Solid Waste Disposal and Wastewater Transport and Treatment during Construction

During the construction phase of the project, the Chinese workforce (consisting of 150 workers) lived on site at the construction area in an on-site housing unit. According to information obtained from interviews at the site with the construction supervisor (PREDESA), the wastewater and solid waste generated at the CHEC on-site housing unit was not handled adequately, and a complaint was made to CHEC and communicated to CMSA by APIMAN. Subsequently, CHEC constructed a wastewater treatment plant for domestic waste at their on-site housing unit, but did not obtain the legal permits until after the housing unit had been abandoned and the workers had left the site. According to the source interviewed at the site (CMSA's construction supervisor), the plant remains in place on the site. Consultec monitoring reports also documented the effective response to controlling construction waste discharges.

5.1.3.3 Vehicle Traffic to the Port and through Manzanillo During Construction

There was an increase in vehicular traffic from construction related traffic. Through CMSA site interviews, it was determined that during construction, all trucks and heavy equipment belonging to CHEC remained within the port and did not enter Manzanillo. Construction traffic was not measured and documented in the environmental monitoring reports. However, the impacts of the increased construction traffic were kept mainly on site and outside of neighborhoods due to the separation of port traffic facilitated by recent infrastructure upgrades.

5.1.3.4 Impacts Associated with Removal of Mangrove Area

A minor negative economic impact would have likely resulted from clearing the 15.7 hectares of mangroves within the port due to the removal of a resource for the community. The community of Las Brisas, which is located immediately adjacent to the north of the port, experienced an impact to artisanal fishing and collection of mangrove wood for crafts and household uses. All indications are that the level of economic impact was very low due to the exclusion of fishing from the port and the use of the mangrove area for small-scale wood collection. There was also anecdotal evidence that some residences bordering the mangroves had an increase in animals entering their yards due to lost native habitat. As a compensatory measure, APIMAN was asked by the Municipality of Manzanillo to repave, illuminate, and add green space for walking along Lázaro Cárdenas Avenue.

During the site visit to the community of Las Brisas, five interviews with local fishermen were conducted. Three of the fishermen were recreationally fishing for self-consumption, and said that they do not depend on their catch for economic livelihood. The remaining two fishermen were catching octopus and shells, the

former to sell to restaurants, and the latter to use for artisanal crafts. These two fishermen voiced the complaint that the catch has significantly decreased since the latest port expansion activity. Neither had registered their complaints through APIMAN's grievance mechanism. In addition, these issues were not raised during the EIA public comment period.

5.1.3.5 Impacts of Terminal Development on Coastal Resources and Economics Outside the Port Area

One of the advantages of locating the new terminal within the existing Port of Manzanillo is that impacts to coastal resources and economics outside of the port were minimized. The impact on coastal resources and economics of removing 15.7 ha of mangroves within the port was never quantified in the MIA. The removal of the mangroves may have affected recruitment of aquatic organisms both within and outside of the port. However, the required creation of 75 ha of new mangrove habitat would more than offset the potential loss to aquatic biodiversity outside of the port area. Given the limited area of mangroves removed and their location inside the port, the impact would likely have been minimal and thus the terminal development would not have adversely affected the long-term economic benefit of fishing resources in the coastal area. Increased economic benefits outside of the port is addressed in section 5.4, Positive Impacts Directed by the Port.

5.1.4 Health and Safety

Occupational hazards associated with the construction of the Project are typical of medium scale construction work. Health and safety concerns during construction include the following hazards:

- Transportation of equipment and materials to and within the site
- Handling and storage of materials onsite
- Use of cranes and other heavy equipment
- Work on scaffolding, platforms, and other heights
- Welding
- Excavations and trenching
- Confined-space work
- Electrical work
- Hydraulic work
- Fire, explosion, spill, and other emergencies
- Hygiene and general sanitary conditions

Although requested, the Project Sponsor has not provided health and safety documents that present general policies and guidelines implemented during the construction of the Project to minimize the potential for occupational health and safety hazards and injuries to the workers. Based on interviews conducted during the site visit, it was determined that CMSA had hired an external consultant to supervise the health and safety aspects during the construction of the Project, however details of their activities have not been provided to date.

5.2 Operation Phase

5.2.1 Environmental Impacts during the Operations Phase

Impacts associated with the operation of the new container terminal will represent an incremental increase to the overall impacts associated with the Port of Manzanillo. These will include an incremental increase in dredging to maintain adequate water depth, increased air emissions from additional ship traffic, and an increased possibility for accidental pollutant releases from ships. The incremental increase in dredging will impact both benthic fauna and fish. These impacts are expected to be periodic and of relatively short duration. Potential impacts associated with additional pollutant releases from the increased number of ships will be addressed through adherence to on-going health and safety requirements implemented through APIMAN. Operations will produce additional solid and sanitary waste, which must be managed properly, in

accordance with the General Law for the Prevention and Comprehensive Management of Waste in Mexico. Overall, it is believed that impacts to the environment during operations can be effectively mitigated and will therefore be minor.

None of the documents reviewed by CH2M HILL, including the MIA (2009) addressed greenhouse gas emissions from the CMSA Terminal or the Port of Manzanillo. The additional local shipping traffic facilitated by the CMSA Terminal will not in itself increase shipping on a global basis and will likely not have much of a measurable effect of global greenhouse emissions. Engines used to power the container ships contribute to greenhouse gas emissions through the combustion of fuel. This can include bunker oil and the release of CO₂ and other contaminants. It has been estimated that global shipping contributes about 3 percent of the world's total greenhouse gas emissions.²⁸ The International Maritime Organization has published the most comprehensive study of the release of greenhouse gases from ships.²⁹ An International Maritime Organization (IMO) study contains policy recommendations that address technological and fuel selection measures to reduce greenhouse gas emissions from ships. These recommendations focus on changes that the ships' owners should make to ship design, fuel choices, and operational changes to reduce their greenhouse gas emissions.

Although the CMSA Terminal would berth container ships in Manzanillo, it would be difficult to require that they work with shipping companies to encourage greenhouse gas reduction. However, it would be possible for CMSA to provide educational materials to shipping lines that inform them of IMO policies and changes that may be required in the future, such as documenting fuel efficiency.

5.2.2 Social

A summary of the potential social impacts presented in the MIA and observed during the site visit are presented in the following sections.

5.2.2.1 Increased Vehicular Traffic, Risk of Accidents, and Pollutant Emissions Due to Port Expansion Activities

The MIA states that the increased vehicular traffic to and from the port will be compensated for by the improved interior road network inside the port and increased parking and on- and off-loading areas for cargo. The loading and unloading times will be decreased so that the traffic "bottlenecks" will be decreased in and out of the port. In addition, the *"Puerto-Ciudad"* agreement with the municipality will carry out road infrastructure improvements within the municipality to ease the traffic around the port footprint in the areas of influence of the port facilities. It appeared during the October site visit that the road network had been improved to separate the port traffic from the neighborhoods.

5.2.2.2 Impact of Terminal Development on Fishing

Although there is a lack of data on the level of artisanal fishing activity in and around the Port, the exclusion zone with the Port area would have kept the level of fishing activity low prior to terminal development as well as on an ongoing basis during terminal operations. The fact that documentation of the public outreach and grievance program does not show a record of complaints from fishermen supports the conclusion that fishing within the Port area was very limited and therefore the impact on fishing would be minimal.

5.2.3 Health and Safety

According to the document IFC Environmental, Health, and Safety Guidelines for Ports, Harbors, and Terminals – April 30, 2007, the following health and safety impacts in general are of particular concern during operation of ports:

²⁸ European Commission. http://ec.europa.eu/clima/policies/transport/shipping/index_en.htm

²⁹ IMO. 2009. Second IMO GHG Study.

- Physical hazards
- Chemical hazards
- Confined spaces
- Exposure to organic and inorganic dust
- Exposure to noise

After reviewing the information provided by CMSA as well the site visit of the terminal facilities, the written health and safety plan based on a potential risk analysis of the terminal is being developed. There are a number of health and safety procedures developed, and a comprehensive health and safety plan or system will be required as part of the Financing. A number of risks were identified during the site visit, and proposed management / mitigation measures will be discussed in section 6 and the Action Plan. The CMSA must prepare appropriate health and safety plans to comply with in country requirements as well as with 2007 IFC EHS General and Industry Specific Guidelines, and the Lenders requirements

Relevant health and safety issues/risks identified during the site visit or identified due to the lack of procedure to identify and manage risk, include:

- **Risk of fire and explosion.** This is linked to “hot work” operations (welding, oxy-cutting, grinding, etc.) within or near potentially explosive atmospheres, the storage of hazardous waste where rags are stored impregnated with lubricants or oils, used oils, etc., located next to a maintenance shop where hot work is conducted. A written procedure, “Manual for Cutting and Welding Work,” though available on-site, is not implemented in daily activities. Activities observed during the site visit did not follow the safety measures described in the manual nor in NOM-027-STPS-2008. With respect to firefighting equipment, during the facility visit a cabinet with firefighting equipment for the onsite firefighting brigade was noted. However the equipment is not easily accessible.
- Subsequent to the site visit, information has been obtained from Contecon that hot work is no longer carried out in close proximity to the storage of hazardous waste and that the risk of fire and explosion noted above has been addressed.
- **Risk of handling hazardous substances.** The handling of potentially hazardous substances can involve risk to human health as well as risk of fire and explosion. It is recommended that the International Maritime Dangerous Goods (IMDG) code be followed, as well as procedures that contemplate these risks and required safeguards.
- **Mechanical risks (falls from a different level, falling objects, trapping, blows, lifting loads, flying particles in mechanical processes, etc.).** This type of risk is associated with the handling of loads mechanically (hoisting loads and placing containers). There is not a clear separation between areas that are designated for the exclusive use of pedestrians where operating equipment is prohibited and vice versa. There is no clear visual delineation between these areas or signaling that prohibits entry. The flow of vehicles within the terminal also is not signaled. This is a major risk, because though today the terminal is just beginning operations, when it reaches operating maturity there will be a significant flow of vehicles and the risk will increase.
- **Auditory risk.** This risk is associated with continuous work in an environment with high noise levels (usually higher than 80 dB(A)), especially in places near heavy machinery operation and continuous movement of trucks.
- **Risk due to caloric stress.** This type of risk is associated with the performance of tasks in excessively warm environments, during which the the body cannot dissipate the amount of heat necessary to maintain an adequate internal temperature. Extreme cases usually occur in cases of dehydration when there is exhaustion of the sweat glands. For this situation, we suggest incorporating and following NOM-015-STPS-2001 recommendations and mitigation measures.

5.2.4 Natural Disasters

CMSA contingency planning includes preparation for natural disasters. Additionally, IDB/IFC review of the terminal engineering will address the adequacy of design for contingencies.

5.3 Cumulative Impacts

Potential cumulative impacts of terminal development include contributions to a regional reduction in mangrove acreage, air emissions including greenhouse gas constituents and discharges into the marine environment that could affect overall water quality. The removal of 15.7 ha of mangrove habitat is being offset by in kind mitigation at a ratio of approximately 4.8 to 1 and is not expected to result in a net adverse impact to biodiversity in the general area of the project. Therefore, the project should not result in a significant contribution to the cumulative reduction of mangrove habitat. Air quality emissions would be increased due to the increased ship traffic locally. The terminal would not however cause an increase in ship traffic in the overall region since the number of ships visiting the Mexican coast would be related to economic demand. Therefore, the terminal would not result in a contribution to a significant cumulative increase in air quality contaminants. Discharge of contaminants into the marine environment could occur from terminal yard stormwater runoff or during maintenance dredging activities. The degree to which the terminal contributes to cumulative water quality degradation is going to be minimal due to the design of the terminal which has incorporated treatment of stormwater prior to discharge to the municipal waste water treatment system. Off discharge of wastes from ships at the port will be collected and properly treated. The maintenance of the port channel and the terminal berth to accommodate post-Panamex ships is regulated by APIMAN and SEMAR (La Secretaría de la Marina de México). There are regulations for testing the quality of the maintenance dredge material and specific offshore locations for discharging the material. These measures minimize the potential impacts of terminal operations on water quality to a minimal level. Therefore, the project's contribution to cumulative impacts is minimal due to the compensation and mitigation measures incorporated into the project's design. In addition, the construction of the new terminal within an existing port facility allows for the use of existing infrastructure and facilities, thus minimizes overall impacts compared to the development of a completely new port facility.

5.4 Positive Impacts Generated by the Project

Positive impacts resulting from the project include:

1. Increase in regional economic potential resulting from the increased cargo handling capabilities
2. Increased capacity to move manufactured goods in and out of Mexico
3. Increased employment at the terminal
4. Creation of indirect employment in Manzanillo to conduct Terminal support activities
5. Increased capacity for Post-Panamex ships along the coast of Mexico.

Environmental, Social and Health, and Safety Management

6.1 Environmental and Social Mitigation Measures

6.1.1 Planning, Design, and Construction Phases

Locating the new container terminal at an existing port served to mitigate/offset many of the impacts associated with green field port development. Locating the terminal at the existing Manzanillo port reduced the overall need for dredging and impacts to natural vegetation as well as concentrating the port activities in a single area. Ships using the new terminal will be able to use existing navigation channels and aids to navigation. Co-locating the new terminal at the existing port also facilitated the ability of both facilities to share infrastructure and land-based transportation facilities.

As discussed in the preceeding chapters, APIMAN obtained the permits to develop the shoreline in preparation for construction of the terminal. A concession agreement between APIMAN and the terminal operator, CMSA, documents that APIMAN is responsible for compliance with the specific MIA and land use permits. The agreement requires CMSA to cooperate with APIMAN to comply with the MIA and land use permit conditions. Once the shoreline was modified through filling to provide a location for terminal improvements, CMSA took over construction. The construction of terminal facilities was the responsibility of CMSA. CMSA hired CHEC as the general contractor to build the wharf, the yard and other related terminal improvements. At the suggestion of APIMAN, CMSA hired Consultec to provide environmental monitoring services to document whether CHEC was complying with permit conditions. CH2M HILL reviewed four monthly audit reports (2012) prepared by Consultec and the compliance information is discussed in this section.

6.1.2 Construction Phase

Major mitigation measures carried out during the construction phase include: rescue and relocation of wild fauna, reforestation and restoration activities, offset of adverse impacts from increased traffic, implementation of visual and noise environmental barrier and construction of an onsite package wastewater treatment plant.

6.1.2.1 Rescue and Relocation of Wild Fauna

Rescue and relocation of wild fauna was carried out for a total of 639 organisms, including the following species due to their abundance at the site and their inclusion in NOM-059-SEMARNAT-2001 and NOM-059-SEMARNAT-2010: green iguana (*Iguana iguana*) under special protection with 250 individuals; the black iguana (*Ctenosaura pectinata*) endangered, with 80 individuals; boa (*Boa constrictor*), endangered, with 9 individuals, the twelve-lined whiptail (*Aspidoscelis lineatissima*) with 28 individuals under special protection, and the crocodile (*Crocodylus acutus*) under special protection, 1 individual. The individuals were relocated in the vicinity of Laguna del Valle de Las Garzas.³⁰

During construction of the wharf, numerous pelicans were caught in depressions at the top of the pilings and were unable to escape. CHEC worked with local fishermen to rescue as many pelicans as possible and those that were not released due to injury were delivered to a local wildlife rescue organization.

30 Manzanillo Port Authority. 2013. 2007-2012 Progress Report on the Program for the Rescue, Capture and Relocation of Wild Fauna catalogued by NOM-059-SEMARNAT-2001. Project: "Manzanillo Port, Master Development Program for 2000-2010". Mexico, 27 pp.

6.1.2.2 Reforestation and Restoration Activities

Reforestation and restoration activities were initiated in Laguna del Valle de Las Garzas, using red mangrove and white mangrove seedlings. A total of 10.3 hectares have been reforested, with 0.8 hectares in Laguna de San Pedrito Lagoon and 9.5 hectares in Laguna del Valle de Las Garzas. The environmental impact authorization established that restoration activities were to take place in Laguna del Valle de Las Garzas, in Laguna de Cuyutlán or in another mangrove area. The distribution of the revegetation activities between the two areras will be dependent upon the availability of suitable habitat for mangrove revegetation. An area for mangrove mitigation in Laguna de Cuyutlán had not been initiated as of the time of the ESDD. This area has been identified as a potential location for a new port facility, and a new revegetation area may need to be located.

Laguna del Valle de Las Garzas was demarcated with concrete posts and barbed wire, which allows for better control of urban sprawl. There has been collaboration with the Municipality as part of the Port-City link to perform infrastructure works such as roadways and transportation, sanitation drainage, storm water collectors, street paving, breakwater remodeling, rehabilitation of green areas, among others.³¹

There is a native vegetation buffer area of approximately 5 hectares in the northwest side and a 60 meter-wide buffer strip on the perimeter bordering the town of Las Brisas. Canals were built to supply the water needed for survival of the mangroves. In addition to the native vegetation barrier, a perimeter wall was built for noise mitigation.

APIMAN signed an agreement with SEMARNAT in Colima for the performance of the necessary studies to declare El Chupadero Estuary as a Protected Natural Area. The technical justification studies to declare El Chupadero Estuary an ANP have been prepared and are under evaluation by SEMARNAT.

Support was given to a Non-Governmental Organization (NGO) *campamento tortuguero* (turtle camp) through civil engineering work delivered in November 2011.³² Campamento Tortuguero is a NGO whose mission is to foster the protection of sea turtles and improve their reproduction success in Mexico.

6.1.2.3 Mitigation Measures to Offset Adverse Impacts from Increased Traffic

Mitigation measures have been implemented to offset adverse impacts to the community from increased traffic and resultant safety hazards. Through their Puerto-Ciudad Program with the municipality, APIMAN has built several raised roads and railroad lines that do not cross municipal roads, but instead function entirely outside of the municipal environment. APIMAN staff provided information indicating that roads had been built by APIMAN that lead directly from the port to the highway to circumvent the municipal area and associated traffic. Because of this effort, the community of Manzanillo bore minimal impact from operation of trucks and heavy machinery during construction.

6.1.2.4 Noise and Visual Impact Mitigation Efforts

Mitigation of noise and visual Impacts to the Las Brisas community was provided. The adjacent community of Las Brisas approached APIMAN as intermediary to hold discussions with CHEC about the adverse noise impact during construction activities. As a result, APIMAN negotiated the construction of a visual and noise environmental barrier along the strip of mangroves between the Las Brisas and the Phase 1A construction site at the port. According to the visual inspection conducted during the site visit, it appeared that the wall did not conform to structural requirements that would effectively mitigate noise from increased vehicular traffic or drilling activities related to the port expansion. APIMAN has subsequently agreed to complete construction of the wall during the third quarter of 2014.

31 Idem, pp. 75-78.

32 Idem., 81.

6.1.2.5 Disposal of Solid Waste and Wastewater Mitigation Efforts

From interviews conducted at the site with CMSA's construction supervisor (Consultec/PREDESA) and confirmed in Consultec's monthly monitoring reports, it was learned that the improper disposal and handling of solid waste and wastewater at the site during construction was mitigated through the installation of a small wastewater treatment system. Waste was treated before it was discharged in accordance with municipal requirements.

6.1.3 Operation Phase

A number of mitigation measures for the operation phase have been developed that are intended to reduce the potential for impacts to water quality in the harbor. Identified operational phase mitigation measures include:

- Establishing within the rules of operation of the APIMAN the prohibition on dumping burned oil and hydrocarbons in general, or liquid chemicals of any type, into the ocean or drainage system in order to prevent contamination of these bodies of water.
- Establishing within the rules of operation of the APIMAN the prohibition on discharging bilge water into the ocean, as set forth in the Regulations of the National Water Act.
- Preventing materials from falling into the inner harbor during the loading, unloading, and handling of bulk materials using piers, tarps, and/or nets.
- Prohibiting the maintenance of ship hulls in the port, unless this activity is carried out at authorized port facilities designed for such purpose.
- Offsetting impacts of increased vehicular traffic to and from the port.

A number of mitigation measures are being implemented to offset potential impacts associated with operational phase transportation activities associated with the new terminal. The MIA reported that the increase in vehicular traffic to and from the port during operation will be mitigated through road network activities within and outside of the port. The MIA reported that under the Puerto-Ciudad program, APIMAN plans to undertake road infrastructure improvement works that will ease traffic outside of the port and in the areas influenced by port facilities.

As a compensatory measure and part of the Puerto-Ciudad agreement, APIMAN was asked by the municipality of Manzanillo to repave, illuminate, and add green space for walking along Lázaro Cárdenas Avenue. This is the main avenue running along the Pacific coast in Las Brisas, and is the site of many tourist activities and hotels, villas, and condominiums.

6.2 Environmental and Social Monitoring Programs

6.2.1 Construction Phase

The following environmental monitoring and inspection programs were implemented during construction of the new terminal are shown in Table 6-1. The CMSA's contractor, CHEC, hired the environmental firm, Consultec to perform environmental monitoring during construction of the terminal.

TABLE 6-1

Environmental Monitoring and Inspection Programs

Monitoring Activity	Frequency
Global Activities CHEC	
Monthly environmental meetings CHEC	Monthly
Monthly environmental report CHEC	Monthly
Water Quality	
Inspection of dredge area	Daily

TABLE 6-1
Environmental Monitoring and Inspection Programs

Monitoring Activity	Frequency
Wastewater treatment plant inspections	Daily
WWTP testing and water sampling	Bi-Weekly
WWTP water analysis	Bi-Weekly
Water front sampling and testing (2 locations)	Monthly
Water front analysis	Monthly
Ecological and Perimeter Drains	
Salinity and contaminants sampling and analysis (2 locations)	Monthly
Ecological drains analysis	Monthly
Mangrove photographic record	Monthly
Perimeter drains maintenance	3 Months
Mangrove drains visual inspection	Daily
Temporary roads dust control	Daily
Water cistern truck inspection	Daily
Earth Works	
Earthworks inspection	Daily
Stockpiles	
Stockpiles inspections	Weekly
Waste Management	
Non Hazardous Waste Deposits 5 sites	
Waste deposits inspections	Daily
Waste materials disposal for recycling	3 Months
Waste disposal certificate	Weekly
Waste material, reused, recycled and disposed records	Monthly
Hazardous Waste Depot HWD	
Hazardous waste deposit HWD inspections	Daily
HWD log and manifests/certificate	Daily
Liquid Waste	
Fuel Tank or deposit inspections	Daily
Oily water sampling, testing and reporting	Monthly
Noise Control	
Noise levels sampling and measurement	Weekly
Noise levels report	Weekly
General Activities	
General housekeeping inspections	Daily
Camp and offices housekeeping control	Daily
Housekeeping site control	Weekly
HSE indoctrination (by work front)	Weekly
Environmental awareness training	Monthly
Temporary sanitary conveniences inspection	Weekly
Temporary signaling inspections	Daily
CHEC internal audits and report	6 Months

In addition to the monitoring and inspection activities listed above, a mangrove monitoring plan was initiated for the restoration area, this plan included the following activities:

- Monitoring growth, survival, and environmental parameters at ten sampling points
- Monitoring of growth of the base area in m²/ha of the mangrove forest at four stations
- Forest growth (dendrometer coloration or diameter tape of the base area)

Other parameters that were monitored in the restoration area were: the physiochemical parameters, nutrients, chlorophyll, coliform, and particulate organic material. A continuous record was also kept of the interstitial salinity in order to identify any change that took place in the vegetation.

According to the 2011 monitoring results, it was concluded that the lagoon system appears to be in good condition with natural habitat functions. However, it would be helpful to develop and implement a monitoring program that included species diversity and population abundance measures of the fauna associated with this environment. This would allow for monitoring the changes in fauna over at least two seasons of the year (dry and rainy) to generate a broader knowledge on the fauna of the ecosystem as a whole.

CMSA did not have a social monitoring program in place during construction, however, APIMAN conducted ongoing social monitoring including liaising with community members and hosting public forums. According to interviews with APIMAN staff, these programs served to monitor impacts to the community of Las Brisas after grievances were presented by the Las Brisas delegation concerning noise impacts from construction activities. APIMAN has an existing grievance process for the community. APIMAN works with all of its tenants, including CMSA to respond to grievances. APIMAN will remain the leader of the grievance process.

6.2.2 Operation Phase

The CMSA Environmental and Social Management Plan,²⁷ calls for the following monitoring programs:

- **Effluent monitoring program.** CMSA will monitor the quality of the waste water that will be discharged to the municipal sewerage system following initial pre-treatment. Additional details regarding the monitoring program are being developed, including the procedures and technical specifications for sampling, analysis and reporting. The available information indicates that samples will be taken from the water treatment plant.
- **Emission monitoring program.** CMSA indicates that a study of contaminants will be done.
- **Noise monitoring program.** Indicates that monitoring will be done according to standard NOM-STPS-011. This can be applied to occupational noise, and environmental noise not considered as a fixed source under standard NOM0081-SEMARNAT-1994.

In general, we have observed that the information from CMSA is illustrative, and therefore each of the programs indicated should be developed formally, adding to that any additional information indicated in the recommendations presented in Chapter 8 of this report as well as the Action Plan.

In an interview with the Social Director of APIMAN during the site visit, the director stated that there are designated staff and budgetary resources for social performance monitoring and for liaising with the communities of Manzanillo and Las Brisas. A request for specific data on the number of staff employed for this purpose, the precise budgetary amount allotted per year, and the types of programs implemented for social monitoring has been requested. CMSA does not have staff designated to conduct social performance monitoring or liaise with the community. However, APIMAN does address grievances voiced by the community; though no mechanism or tracking process was presented during due diligence (after request

²⁷ Contecon Manzanillo, 2013 Environmental Plan, Contecon Manzanillo, S.A. de C.V., Mexico, 9 pages.

was made). In our interview with the Social Director she stated that she expected APIMAN to work within their outreach program along with the Ports' other tenants.

APIMAN and municipal officials form a committee, "IMPLAN," that serves to review and discuss the impacts of all activities around port expansion and its effect on the community. APIMAN is the intermediary through which all communication with port leaseholders is conducted. According to APIMAN, monthly meetings are held with the port leaseholders to discuss community issues. Municipal officials also are present at these meetings.

6.3 Contingency Plan and Procedures

CMSA has developed an emergency response plan that contains a vulnerability assessment, an inventory of resources that are available for deployment in case of an emergency, a risk analysis, and general procedures for different emergency scenarios. The emergency response plan also contains a description of the relationship and command structure with the APIMAN emergency response services.

The Terminal is served by a fire brigade which is composed of a number of elements distributed over four shifts. Available equipment includes 12 complete firefighting suits in conformance with NFPA requirements, 8 HAZMAT level "A" suits for chemical releases, absorbent material, 20 hydrants distributed throughout the container yard, maintenance shop and administrative offices. A trained paramedic or doctor is available to attend to medical needs during each of the shifts. The risk evaluation document states that an ambulance is available with a 10-minute travel time to the Terminal.

The Emergency Response Plan considers the following scenarios: earthquakes, tsunamis, fire, explosions, bomb disposal, demonstrations, heavy rains, flooding, and hurricanes.

The central emergency response center building has been completed and contained all of the necessary equipment and qualified personal to attend and support emergencies throughout the port.

6.4 Health and Safety

Although requested, the Project Sponsor has not provided health and safety documents that present general policies and guidelines implemented during the construction of the Project to minimize the potential for occupational health and safety hazards and injuries to the workers. Based on interviews conducted during the site visit, it was determined that CMSA had hired an external consultant to supervise the health and safety aspects during the construction of the Project, however details of their activities have not been provided to date. The construction was almost completed when the site visit occurred and according to numerous interviews with CMSA and APIMAN, there are no outstanding grievances or complaints regarding health and safety. A basic review of publicly available media confirmed that there are no known outstanding health and safety complaints.

Health and Safety plans for the operations phase are currently being developed and will be finalized by the first quarter of 2014. Specific health and safety plans for operations are dictated by Mexican norms. The health and safety procedures and standards to be adopted are those that attend the Mexican Norms and World Bank Environment, Health, and Safety (EHS) Guidelines - General EHS Guidelines: Occupational Health and Safety.

In addition to the limits stated in Mexican regulations, occupational health and safety performance should be evaluated against internationally published exposure guidelines, including:

- The Threshold Limit Value (TLV®) occupational exposure guidelines and Biological Exposure Indices (BEI®) published by the American Conference of Governmental Industrial Hygienists (ACGIH)
- The Pocket Guide to Chemical Hazards published by the United States National Institute for Occupational Health and Safety (NIOSH)

- Permissible Exposure Limits (PEL) published by the Occupational Safety and Health Administration of the United States (OSHA)
- Indicative Occupational Exposure Limit Values published by European Union member states
- Other relevant similar sources

CMSA is beginning to develop standard operational procedures for environmental, health, and safety management. The company plans to develop an integrated management system based on ISO standards such as 14001, OSHA 18001 and 9001.

CMSA is currently developing, as part of its integrated management plan, policies for health, safety, and security of personnel at the port site. It was observed onsite that CMSA has a small emergency operations center with medical personnel on staff 24 hours and day, 7 days per week. The medical officer at the operations center attends all accident-related injuries at the terminal. If an injury is grave, the patient is transported to the hospital in Manzanillo.

The emergency operations center, run by CMSA, is linked to the community through vaccination campaigns they conduct while the public health department conducts these campaigns in surrounding communities. The medical staff at the operations center also distributes condoms and other preventative measures to any operations employees who request them.

A larger emergency operations center located just outside of the port gate is staffed and run by APIMAN. This operations center maintains full fire-fighting and medical equipment to address full-scale emergencies. This center also operates 24 hours a day, 7 days per week and serves local community needs as well as port emergencies.

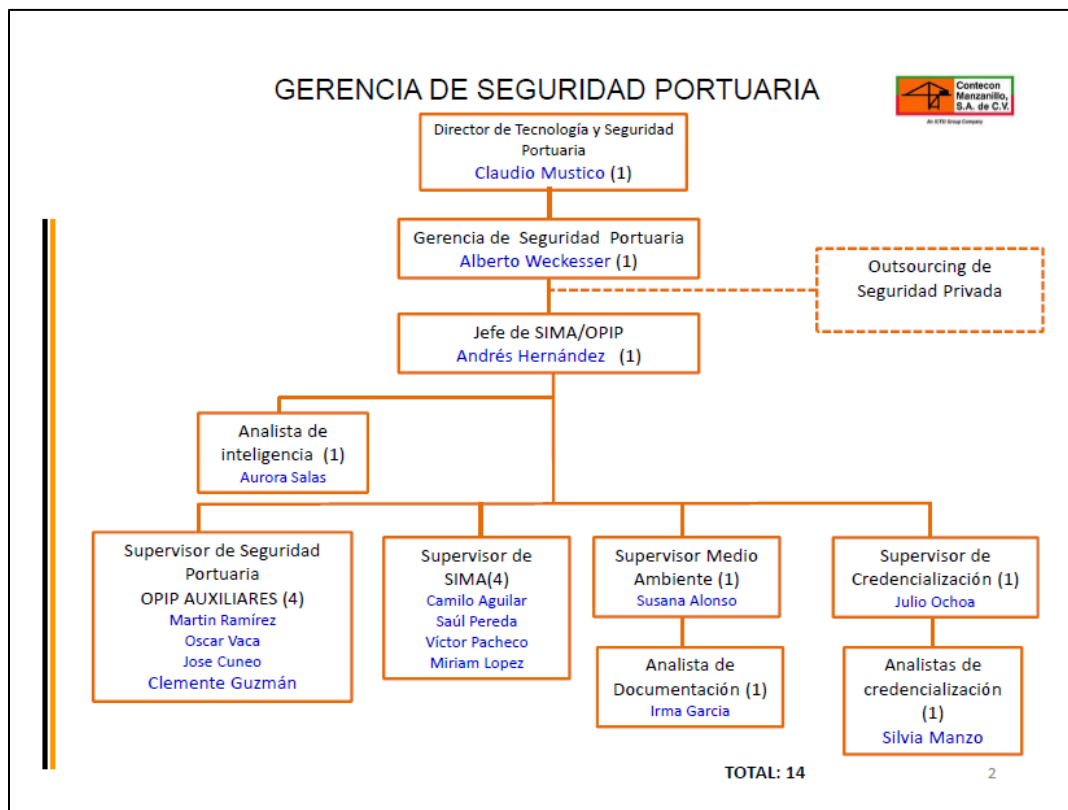
CMSA began operation of the new container terminal in August 2013. At the same time, they started working on preparing operational procedures and training plans for the terminal, initiating compliance with the legal requirements for operation, and developing the Environmental and Social Management System (ESMS), including an Environmental and Social Management Plan (ESMP) as required by the lenders. The ESMS is what and how compliance is achieved within the organization and the ESMP documents the steps that procedures for the system. Therefore, at the time of the ESDD, these requirements were under development.

An ESMP includes a presentation of the key direct and indirect impacts and risks of a proposed operation as well as the design of the proposed social/environmental measures to avoid, minimize, compensate and/or mitigate the key direct and indirect impacts and risks. The ESMP also includes the institutional responsibilities to implement these measures, including, where necessary, institutional development, capacity building and training; the schedule and budget allocated for the implementation and management of such measures; the consultation or participation program agreed for the operation; and the framework for the monitoring of social and environmental impacts and risks throughout the execution of the project. The ESMP clearly defined indicators, monitoring schedules, responsibilities and costs.

As stated in PS2, an effective ESMS is a dynamic and continuous process initiated and supported by management, and involves engagement between the client, its workers, local communities directly affected by the project (the Affected Communities) and, where appropriate, other stakeholders. An ESMS should include a computer automated process for effectively tracking and managing the responsibilities for implementing the ESMP.

Health and Safety at the new container terminal is the responsibility of CMSA. There are a total of 16 persons who are part of the health and safety management team, divided in 4 different sections. Port Security (*Seguridad Portuaria*) is responsible for the security of the container terminal and has one manager and one supervisor per shift. Safety, Hygiene and Environment (SIMA) also has one manager and one supervisor per shift.

The manager of SIMA and the supervisor of Environmental together are responsible for the preparation, implementation, and training for the EHS Management system. The organization shown in the chart below will evolve to facilitate environmental and health and safety management. Recently, according to CMSA, there has been a split between the Safety and Environmental and Port Security Positions.



CMSA Health and Safety Organization

6.5 Environmental, Health and Safety Management

According to the Agreement³³ signed between CMSA and APIMAN, the Concessionaire is required to comply with APIMAN's Quality and Environmental Policy and obtain certification for the quality management standard ISO 9001:2000, environmental management system standard ISO 14001:1996, and the Mexican legislation compliance certification *Industria Limpia*. The Concessionaire also is required to obtain accreditation no longer than 18 months after the start of operations at the Terminal.

CMSA started operations in August 2013 and would be required to become accredited to the Quality and EMS standards by February 2015, under the terms of the Agreement. CMSA has developed a master plan to implement the three management systems and will seek to become accredited to the Quality and EMS by June 2014.

The Lenders will require that CMSA develop an ESMS and ESMP for the Project. These would be developed in line with Lender's requirements including good International Industry Practice (GIIP) and national regulations, and taking into account the principles of international standards applicable to management systems, such as the ISO 14001 for environmental management, and OHSAS 18001 for health and safety management.

³³ Contrato de Cesión Parcial de Derechos y Obligaciones, 35 clause page 22.

- The ESMS and ESHP shall integrate and/or include at least the following programs or plans for the operation phase:
- Relevant environmental quality monitoring (e.g. terrestrial and aquatic ecological monitoring)
- Contingency Plan (including: Emergency Action Plan - PAE; Risk Management Plan - PGR; and Spill Prevention, Control, and Countermeasure Plan)
- Health and Safety Plan (HSP)
- Solid Waste Management Plan
- Greenhouse Gas Emission Assessment and Control Plan
- Liquid Effluent and wastewater Discharge amangement and Monitoring Program
- Ground and Surface Water management and Monitoring Program
- Noise abatement management and Monitoring Program
- Stakeholder Engagement and Communication Program
- Responsibilities and schedule for implementing the above requirements
- Automated tracking, reporting and management program for the above requirements

The HSP shall integrate and/or include at least the following programs or plans for the operation phase (and it it should be noted the HSP could be combined with the ESMS/ESMP:

- Health and Safety Management Plan, including but not limited to:
 - Occupational Health Risk Identification Program (e.g. OHS risk per most relevant tasks)
 - OHS Qualification, Training and Prevention Program (including qualifications / training requirements, limitation, use of PEP) OHS performance indicators, targets, and supervision and monitoring program (e.g including internal and external audits and corrective measures)
 - Medical Admission Assessment and Occupational Health Medical Control Program
- Internal Commission for Prevention of Accidents (instructions, guidelines and standards)

Information Disclosure and Public Participation

7.1 Community Outreach Resources and Planning

All community involvement and outreach has been and will continue to be conducted by APIMAN for all Port and Terminal activities. APIMAN was responsible for the community outreach activities for the project and did conduct public engagement activities associated with the development of the project. CMSA has no project specific public consultation plan or stakeholder engagement program associated with their construction or operation activities. CMSA has no communication staff to liaise with the surrounding community during the construction or operations phase, nor are they required to engage with the public according to their concession agreement. CMSA will however, work cooperatively with APIMAN and their on-going port specific community outreach activities. The information below was obtained from interviews conducted at the site and from research of publicly available information.

7.2 Public Consultation

The MIA was issued to SEMARNAT in September 2004. As required according to MIA Resolutions, on September 15, 2004, SEMARNAT published the request for MIA authorization in their *Gaceta Ecológica* and on their website (www.semarnat.gob.mx). On September 29, 2004, DGIRA made the MIA available for public review in the Central Document Repository in Mexico City. On November 4, 2004, a public meeting to address issues regarding the MIA was advertised in the *Gaceta Ecológica*.

According to information obtained during an interview with the APIMAN Social Director, the meeting was advertised in several media outlets (via internet, web portal, circulars, and in *La Guardian*, a local newspaper). At the public meeting, participants were allowed to voice their concerns and hear responses from the APIMAN and the environmental authorities involved (SEMARNAT, and DGIRA). The official public record of this meeting was requested and is pending receipt from SEMARNAT. However, a transcript of the proceedings was obtained, wherein local representatives and other community groups were provided a time and place to voice their project issues and concerns. Meeting participants included local residents of Manzanillo and Las Brisas, representatives from Universidad de la Colima, and a local environmental NGO (*Bios Iguana*), international environmental NGO (*Campaña de Bosques y Selvas* of Greenpeace), community organization from Tapehixtle, member of *Pro-Ecología de Colima*, and others.

According to an interview with APIMAN's social director, meetings have been routinely held since 2010 with the affected community regarding the expansion of the port. No details were obtained as to who attends the meetings, how many meetings per year are conducted, or any follow-up or actions taken as a result of the meetings. The APIMAN social director presented information about their facilitation of community member and educational school group visits to the port. More information is necessary regarding specific details of the public meetings held by APIMAN. This was requested but not received as of the date of this report.

7.3 Grievance Mechanism

APIMAN assumes responsibility for addressing port development and operations activity grievances from the community. CMSA is not contractually responsible for this activity and does not have a separate grievance mechanism in place with the community. However, CMSA does work closely with APIMAN in addressing grievances that relate to the terminal projects that are submitted as part of the overall port grievance mechanism.

Conclusions and Recommendations

8.1 Conclusions

This section summarizes the main regulatory compliance, environmental, and social conclusions and provides a review of the project's conformance with IDB policies and IFC performance Standards.

8.1.1 Regulatory Compliance with National Legislation and Permitting

The project is in compliance with federal laws and regulations related to the environment and project execution authorizations. Although there are ongoing compliance activities, CMSA is working with APIMAN to execute required measures. The project has gained overall environmental and social approval through the MIA process administered by SEMARNAT and the change of land use permit. Compliance with the MIA compensation and mitigation measures is the responsibility of APIMAN although CMSA is required to facilitate APIMAN's compliance measures when necessary.

Documentation of compliance with the MIA was confirmed through a meeting with SEMARNAT on October 18, 2013, as well as through review of compliance reports prepared by APIMAN. Construction monitoring reports prepared by Consultec on behalf of CMSA were reviewed and overall compliance with the required measures and regulations was confirmed.

8.1.2 Environmental Impacts

8.1.2.1 Construction Phase

Primary environmental impacts during the construction phase are described in Section 5. The following impacts occurred during the construction phase of the project:

- Removal of 15.7 hectares of mangrove habitat
- Dredging of 7,743,600 m³ of material from the port channel as well as the additional 275,179.50 m³ of material from the berth used for fill in the terminal shoreline area
- Impact on the flora and fauna through habitat destruction
- Noise and vibration disturbed residences in the nearby residential community.

Section 5 of this report describes the removal of about 15.7 hectares of mangrove habitat. This area is considered Natural Habitat per IFC PS6 criteria and IDB OP-703 Directive B.9 definitions, and Natural Habitat per IDB Operational Policies. Dredged material removed from the channel and berth locations was placed on the shoreline to fill the terminal area. During dredging, an increase in turbidity and removal of substrate within the local marine environment would have impacted benthic habitat. Removal of the habitat resulted in direct mortality of flora and fauna including mollusks, crustaceans and other benthic invertebrates. Recolonization of the benthic habitat is expected to take place following completion of the dredging activities.

During construction of the wharf, numerous pelicans were caught in depressions at the top of the pilings and were unable to escape. CHEC worked with local fishermen to rescue as many pelicans as possible and those that were not released due to injury were delivered to a local wildlife rescue organization.

To compensate for the primary impact of removing 15.7 hectares of mangrove habitat during construction, APIMAN was required to create a restoration area of 75 hectares of mangrove habitat by the year 2016 (SEMARNAT 2013). To date, 10.3 hectares of mangrove habitat have been created. From information gathered during site visit interviews, even though APIMAN proposed program is good and compliant with the requirements under the Lenders Environmental & Social Safeguard Policies and Performance Standards, it appears doubtful that full habitat development of the remaining hectares of mangrove will be completed by

the deadline of 2016, due to the initial learning curve during the restoration process. Based on conversations with representatives of APIMAN, a request to extend the compliance deadline will likely be requested from SEMARNAT.

8.1.2.2 Operations Phase

Primary environmental impacts that typically occur during port operations include localized air quality degradation from an increase in truck, rail, and vessel traffic and potential fuel and oil spills that can occur during vessel and vehicle fueling and maintenance. Periodic maintenance dredging also impacts both benthic habitat and water quality within the port. However, best management practices incorporated into a terminal's operations serve to minimize these impacts. Based on the site visit, CMSA has done a comprehensive job incorporating these practices into their operations procedures. The Environmental Management System being prepared by CMSA will facilitate application of these practices.

At the terminal, the potential for storm runoff to carry pollutants into the marine environment is expected to be very minimal since it was reported that all the drains on the yard lead to the terminal's wastewater treatment system. Discharges from ships directly into the harbor is prohibited, facilities for the removal of contaminated bilge and sanitary waste as well as solid waste disposal is provided through APIMAN.

Overall it was observed during the site visit that facilities and staff were in place to comply with environmental, health and social issues although there was no overarching systematic environmental management system and plan in place to track environmental requirements, plans, and implementation including training. Because CMSA is a tenant of APIMAN's and CMSA is only responsible for operating the terminal, there are many environmental compliance measures for which APIMAN is responsible, including those associated with the MIA. According to the concession with APIMAN, CMSA is responsible for environmental conditions at the terminal after the lease is implemented. Because APIMAN is responsible for the environmental conditions associated with terminal site development particularly compliance with the MIA, they are responsible for compensation of the mangrove habitat removal as well as other conditions stipulated in the MIA and other associated permits.

The temporary hazardous materials storage site observed during the site visit was located adjacent to a workshop where welding activities were occurring. This situation has been appropriately addressed and a permanent hazardous waste storage facility has been constructed.

8.1.3 Social Impacts

8.1.3.1 Construction Phase

Since construction activities had been completed by the time of the site visit, no social impacts to the population of the municipality of Manzanillo were observed during the October audit. Based on interviews with CMSA staff and informal interviews with community members during the October site visit, the following was concluded:

1. There were negative impacts on the community regarding noise generated during installation of the wharf pilings, health and safety risks related to inappropriate solid waste disposal and wastewater transport and treatment during the construction phase, and risks to the health and safety of the local community from increased construction vehicle and rail traffic. Noise impacts were mitigated as was the inappropriate solid waste disposal and wastewater transport and treatment. Traffic impacts to the road network and neighborhoods also were minimized as a result of the overall port upgrades that elevated roads that support Port truck traffic from truck traffic from neighborhood.
2. Mitigation measures during the construction phase were implemented by APIMAN, as described in Section 6.1.2, in collaboration with the municipal government. To date, the noise wall in the Las Brisas community is only 50 percent constructed; APIMAN has committed to completing the wall by the third quarter of 2014.

3. Construction of the terminal and removal of the 15.7 ha of mangrove habitat had a negative impact on some of the local fisherman through the removal of the habitat and its associated fishing opportunities. Because of safety considerations, operation of small non-authorized boats is prohibited in the port area, enforcement of this is the requirement of APIMAN.
4. The borrower, CMSA, had no direct contact with the community during the construction phase; it was learned during the site visit that APIMAN handles all public communication and information disclosure. A public meeting was held with regard to the authorization and conditions of the MIA approval by SEMARNAT in November 2004. The meeting was advertised and facilitated by APIMAN.

8.1.3.2 Operations Phase

The following impacts were determined after completing the social impact evaluation of the operations phase:

1. The social impacts to the local population of Manzanillo and other settlements affected by the port expansion project were categorized as negative with regard to increased commercial truck and rail traffic and impact on traditional fishing areas due to increased ship traffic. Mitigation measures have been implemented to minimize conflicts between port associated transportation activities and the surrounding communities. Operation of small fishing craft within the port area is and has been prohibited by APIMAN for safety reasons.
2. According to the MIA, 2,000 additional jobs will be generated for local residents due to the increase in employment opportunities from the port expansion.
3. According to interviews with APIMAN's Social Director, the port authority is actively involved with the community and holds regular meetings to inform them about port activities and to monitor and manage impacts on the affected community. CMSA has no direct involvement with the affected community. No precise data about these social monitoring and management systems or the budgetary allocation to develop and maintain these systems were obtained.
4. A grievance mechanism is employed by APIMAN to receive complaints from the affected communities during port operation. The process was not obtained for evaluation during the site visit nor in prior documentation received and reviewed. CMSA has no involvement in APIMAN's grievance mechanism or direct involvement with the affected community.

8.1.4 Health and Safety

8.1.4.1 Construction Phase

Due to the lack of information provided, it was not possible to determine if health and safety measures and plans were properly developed and implemented during construction in compliance with applicable Mexican legislation, IFC Performance Standards, or the IDB Safety Compliance Policy. CMSA had hired an independent health and safety contractor, but this person was not available during the site visit conducted in October.

8.1.4.2 Operations Phase

The following conclusions were developed based on the documentation review, the site visit, and personal interviews:

- CMSA does not have a fully completed Health and Safety Management program/plan in place. They do however have a plan and schedule for finishing program development and implementation by June 2014.
- CMSA has a procedure *Procedimiento General Operativo para la Identificación de Peligros y la evaluación de riesgos*) which establishes the methodology for risk identification and for the creation of control measures and risk mitigation. During the site visit, several risk analysis examples were reviewed and found to be incomplete, i.e., the mitigation actions were missing from the analysis. CMSA must

perform a risk identification analysis for all of the tasks performed at the terminal. The ESMP must contain a list of procedures to regulate the safe movement of containers, protect the general public from dangers arising from marine activities at the harbor, and prevent events that may result in injury to workers, the public, and the environment. Currently, CMSA has good emergency response procedures that are supported by a fully staffed and equipped fire brigade and small emergency operations center with fire and medical personnel staff available 24 hours and day, 7 days per week. However, training and inspection of emergency equipment should be incorporated into the Environmental Health and Safety management system and plan.

- The terminal is certified by the International Code IPBP to enhance the security of ships and port facilities, provide a standardized, consistent framework for evaluating risk, enabling Governments to respond to changes in threat levels with changes in protection of ships and port facilities through modifications of appropriate security levels and corresponding security measures.

8.2 Action Plan

As part of the financing process, the Lenders require that an Environmental, Health, and Safety Action Plan be prepared, if necessary, to address non-compliance with GIIP and their E&S policies and performance standards. The Action plan to be prepared for the Project must also include the recommendations presented in this ESDR and must be submitted to the lenders. The Draft Action Plan for Social, Environmental, and Occupational Health and Safety is presented as Appendix B of this document.

8.3 IDB Environmental and Social Safeguards

The purpose of this section is to evaluate compliance of the project during both construction and operation with the IDB's Environment and social Safeguard Compliance Policy (OP-703). Table 8-1 presents the results of the evaluation.

TABLE 8-1

Summary of Conformance with IDB Environmental and Social Safeguards

Policy	Compliance Status
B.4 - Other Risk Factors	CMSA is in the process of developing an overall management system to ensure compliance with environmental and social policies including Mexican regulations. Additionally APIMAN is responsible for implementing MIA measures to compensate for terminal construction impacts and therefore CMSA does not have control over effective compliance with the MIA and related permits.
B.5 – Environmental Assessment Requirements	An environmental impact assessment was prepared in 2004 for the port expansion in the north sector including the CMSA terminal location. In 2009 a modification to the original master plan and MIA was completed. This environmental impact assessment was approved by SEMARNAT and thereby was deemed in compliance with the Mexican legal requirements. The environmental impact assessment was a programmatic assessment addressing port improvements, including CMSA's terminal. It was a comprehensive evaluation that identified the primary impacts of the port improvements. Therefore, the evaluation and its subsequent revision was sufficient to address potential risks and impacts and their proposed mitigation for both construction and operation of the project.
B6 – Consultations	Sufficient community consultation was conducted during the environmental evaluation process. As a tenant, CMSA participates in APIMAN's on going public consultation and grievance mechanism processes. This approach is consistent with the IDB requirements for information disclosure and public consultation.
B.9- Natural Habitats and Cultural Sites	Overall construction of the new terminal within an existing port served to minimize impacts to natural habitats and cultural sites. A total of 15.7 hectares of mangrove habitat were removed along the shoreline prior to filling of the terminal site. The removal of the mangroves was conducted according to applicable Mexican Regulations. APIMAN is in the process of mitigating this loss through the establishment of 75 ha of new mangrove habitat.

TABLE 8-1

Summary of Conformance with IDB Environmental and Social Safeguards

Policy	Compliance Status
	The mitigation is consistent with paragraph B.9 of OP-703. Since the terminal is formed with material dredged from the canal there were no cultural resources identified prior to terminal development. The mangrove habitat is considered to be non-critical natural habitat.
B.10 – Hazardous Materials	CMSA has a written procedure for handling hazardous materials; a waste storage facility had not been completed during our October, 2013, site visit. A permanent waste facility was under construction and has been completed. The location of the new facility is separated from activities that conflict with flammable waste storage. The temporary facility, although it had secondary containment did not provide for the separation of incompatible wastes. According to an interview conducted during the site visit the permanent facility will provide for waste separation.
B.11 – Pollution Prevention and Abatement	The terminal handles all of its stormwater runoff by discharge thorough its waste water treatment plant. One pollution issue not addressed in any of the documents reviewed was emissions of greenhouse gases. CMSA should quantify its annual GHG emissions following the first year of operation. However, construction of the new terminal would not lead to an increase in ship traffic worldwide and its associated emissions of greenhouse gases. CMSA should quantify its annual GHG emissions following the first year of operation. The IDB is developing a technical cooperation approach to assist CMSA in evaluating GHG emissions at the port level.
OP 761 Gender and Equality	CMSA has no policy that limits employment of both women and men. To confirm compliance with this policy CMSA should submit a formalized written human resources policy to reflect the specific requirements of both the IDB and the IFC.
Disaster Risk Management Policy	CMSA has a written emergency response plan that covers the risks of and responses to disasters.

A discussion the Project's status with the IDB's Environment and social Safeguard Compliance Policy (OP-703) is presented below.

B.4 – Other Risk Factors

In addition to risks posed by environmental impacts, the CMSA Terminal may be subject to risk factors that affect the environmental sustainability of its operations. As discussed previously, APIMAN is the owner of the port area and entered into a concession with CMSA to construct and operate the terminal. Although the concession requires that CMSA adhere to environmental laws and regulations, it is our understanding that it is the responsibility of APIMAN to comply with the conditions and mitigation measures in the MIA (2004 and 2009). Although a legal requirement of the environmental permit for the terminal, should APIMAN not fully comply with all permit conditions within the allotted time, particularly the requirement that 75 hectares of mangrove restoration area be developed to compensate for habitat loss, the habitat impact caused by constructing the CMSA Terminal would not be fully mitigated.

B.5 – Environmental Assessment Requirements

An environmental impact assessment was prepared in 2004 for the port expansion in the north sector, including the CMSA terminal location. In 2009, a modification to the original master plan was completed that mainly addressed an increase in the amount of dredge material to be removed from shipping channels inside the Port to accommodate the draft of vessels using the CMSA Terminal.

The 2004 MIA was prepared in accordance with the *Ley General del Equilibrio Ecológico y la Protección al Ambiente de Mexico* (1988) and its *Reglamento en Materia de Evaluación del Impacto Ambiental* (2000), which established the requirement for MIA in Mexico. This report discussed in detail the data and conclusions included in the MIA. Although there were issues that the MIA did not cover adequately, such as

the existing condition of the mangrove habitat, it was a broad document that covered the important potential impacts related to port expansion and terminal development.

B6 – Consultations

Section 7.2 of this document describes the specific public consultation that occurred during the MIA process and the ongoing Port public outreach efforts. While CMSA does not have its own public consultation program, as a tenant, CMSA participates in APIMAN's on going public consultation and grievance mechanism processes. This approach is consistent with the IDB requirements for information disclosure and public consultation.

B.9 – Natural Habitats and Cultural Sites

The terminal site was constructed on recently filled land and therefore there are no cultural sites present nor were any in existence prior to shoreline filling activities. However, as discussed in this report, natural mangrove habitat was removed prior to the filling activities. This report discusses at length the categorization of this habitat and the requirement of the MIA to produce compensatory mangrove habitat of 75 ha. APIMAN is responsible for developing this habitat and in October 2013 had completed one-third of the required 75 hectares of mangrove compensation habitat. The mitigation being implemented by APIMAN is sufficient to comply with IDB requirements.

B.10 – Hazardous Materials

As discussed in Section 6.3 of this report, there is a written procedure for the storage and handling of chemicals used for the terminal operations. A temporary hazardous waste storage area with secondary containment was operational. A permanent storage facility is being completed. The permanent storage facility was under construction at the time of the site visit and information available indicated that it will comply with IDB requirements.

B.11 – Pollution Prevention and Abatement

None of the documents reviewed by CH2M HILL addressed greenhouse gas emissions from the CMSA Terminal or the Port of Manzanillo, including the MIA. The additional local shipping traffic facilitated by the CMSA Terminal will not necessarily increase shipping on a global basis and will likely not have much of an effect of global greenhouse emissions. Diesel engines used to power the container ships contribute to greenhouse gas emissions through the combustion of fuel. This can include bunker oil and the release of CO₂ and other contaminants. It has been estimated that global shipping contributes about 3 percent of the world's total greenhouse gas emissions.³⁴ The International Maritime Organization has published the most comprehensive study of the release of greenhouse gases from ships.³⁵ An IMO study contains policy recommendations that address technological and fuel selection measures to reduce greenhouse gas emissions from ships. These recommendations focus on changes that the ships' owners should make to ship design, fuel choices, and operational changes to reduce their greenhouse gas emissions.

Although the CMSA Terminal would berth container ships in Manzanillo, it would be difficult to require that they work with shipping companies to encourage greenhouse gas reduction. However, it would be possible for CMSA to provide educational materials to shipping lines that inform them of IMO policies and changes that may be required in the future, such as documenting fuel efficiency. Technical assistance is going to be provided by IDB to the Port to evaluate and potentially provide options for encouraging the reduction of greenhouse gases.

³⁴ European Commission. http://ec.europa.eu/clima/policies/transport/shipping/index_en.htm. Accessed on November 6, 2013.

³⁵ IMO. 2009. Second IMO GHG Study.

OP710 Involuntary Resettlement

The objective stated in IDB's OP-710 (Involuntary Resettlement) is to:

"Minimize the disruption of the livelihood of people living in the project's area of influence, by avoiding or minimizing the need for physical displacement, ensuring that when people must be displaced they are treated equitably and, where feasible, can share in the benefits of the project that requires their resettlement."

The MIA did not contain any information regarding the physical displacement of any people within the project's area of influence. Documents provided by CMSA prior to the site visit did indicate that there would be no physical displacement or involuntary resettlement of people within the project's area of influence due to construction or operation of the project. This statement was confirmed during interviews with CMSA representatives during the site visit.

OP765 Indigenous Peoples

The objective stated in IDB's OP-765 (Indigenous Peoples) is to:

"...enhance the IDB's contribution to the development of indigenous peoples by supporting the region's national governments and indigenous peoples in achieving the following objectives:

- a) Support the development with identity of indigenous peoples, including strengthening their capacities for government.
- b) Safeguard indigenous peoples and their rights against adverse impacts and exclusion in IDB-funded development projects."

The documents provided by CMSA prior to the site visit indicated that the nearest indigenous population settlements are 100 km from the port, in the City of Colima. This statement was confirmed during interviews with CMSA representatives during the site visit.

Operational Policy on Gender Quality in Development

The objective of Operational Policy on Gender Quality in Development (2010) is to:

"...strengthen the Bank's response to the goals and commitments of its member countries in Latin America and the Caribbean to promote gender equality and the empowerment of women. By strengthening its response, the Bank expects to contribute to meeting international agreements on the topic of this Policy. Moreover, the actions in fulfillment of this Policy will help to further the Bank's institutional priorities and its mission to accelerate economic and social development in its regional member countries."

A technical co-operation agreement is being developed between the IDB/IFC and CMSA with participation from APIMAN to address this issue. Currently, although there are no stated barriers to women in specific jobs that require union membership, there are no female union members.

8.3.1.1 IFC Performance Standards

The Project's Compliance with the IFC Performance Standards is summarized in the tables in Appendix B.

8.4 Recommendations

Recommendation for future actions are presented in this section based on the findings of the ESDD review of the Manzanillo container terminal project.

8.4.1 Regulatory Compliance

The following recommendations are made regarding regulatory compliance.

- Provide copies to the IDB/IFC of the permits and authorizations that were processed through the SCT for the execution of construction and operation activities at the terminal.

- Provide copies to the IDB/IFC of Environmental Impact (Regional), in order to review the conditions and compliance regarding the handling of special wastes generated by construction at the port.
- Provide copies to the IDB/IFC of the construction permits processed with the Municipality of Manzanillo to comply with current local regulations.
- Provide copies to the IDB/IFC of service contracts with the Potable Water, Drainage, and Sewer Commission of Manzanillo to show evidence that the sewer and storm water systems are connected to the municipal service.
- Coordinate with APIMAN to help ensure compliance with all conditions established in the MIA process.

8.4.2 Environmental

8.4.2.1 Biological Resources

As part of the overall approval process for the port project, SEMARNAT has required the implementation of a mitigation program consisting of a replacement 75 hectares for the 15.7 hectares of mangrove habitat removed to facilitate construction of the project. APIMAN is responsible for implementing the mangrove restoration program as required in the conditions for project approval from SEMARNAT. This is being implemented through an on-going compensation program that includes establishing a total of 75 hectares of new mangrove areas, with 8 hectares located in the Laguna del Las Garzas area and 67 hectares in Laguna Cuyutlán. Restoration activities are currently ongoing at a site at Laguna del Las Garzas. Following an initial learning curve, this restoration site is well underway. Work at the second restoration site, at Laguna Cuyutlán, has not yet been initiated. This site has been identified by the government as a possible location for another port expansion and thus the second restoration area might need to be relocated. This issue must be resolved and a second restoration area identified if necessary and restoration activities initiated within the 10-year schedule for the restoration activities which ends in 2016.

In the event that APIMAN does not implement all required restoration activities within the required time frame, the CMSA should take steps to initiate appropriate mitigation activities based on the level of required mitigation remaining to be completed. The funds committed for the mitigation will depend upon the acres of mangrove restoration that are outstanding and a defensible mechanism for determining a dollar value for their restoration. Based on interviews with APIMAN staff during the site visit, an extension in the allowable time to complete the mangrove restoration activities may be requested from SEMARNAT. In the event that an extension in the schedule for completion of the restoration activities is denied by SEMARNAT, possible alternatives that could be implemented by CMSA are discussed below.

Alternatives that involve enhancement/restoration of mangroves on public lands or land acquisition for the purpose of mangrove protection, restoration, or creation should target mangrove ecosystems identified by CONABIO in the National Mangrove Inventory as priority sites, such as Laguna Barra de Navidad. Optional mitigation concepts include:

1. Purchasing and protection of land with existing high quality mangrove habitat in areas under greatest risk of anthropogenic damage and develop a protection, management, and monitoring plan for local implementation.
2. Identify appropriate conservation organization and make donations to planned or on-going mangrove protection and or revegetation.

As a separate monitoring requirement, an appropriate water quality and biological monitoring plan for areas within the port should be developed and implemented as part of the ESMP. The initial monitoring activities will in effect, establish the post construction baseline conditions upon which subsequent monitoring results can be compared. The water quality monitoring plan should include a number of sampling stations to be located throughout the port and include both physical and chemical parameters appropriate for the local environment and activities to be conducted at the new terminal. A sampling schedule should be developed that addresses seasonal and tidal variations within the port. The biological monitoring plan should address

appropriate aquatic biota including benthic invertebrates, phytoplankton, zooplankton, Ichthyoplankton and fish. The number and location of sampling stations, sampling methodology, number of replicate samples and sampling frequency should be developed to provide a scientifically defensible monitoring plan to characterize the marine biota in the port.

8.4.3 Social

Social recommendations are provided below.

- The noise wall that has been partially installed for the Las Brisas community should be fully constructed. APIMAN is responsible for completion of the wall, which will be completed by the end of the third quarter of 2014.
- CMSA does not have a social impact monitoring and mitigation program, public information disclosure program or grievance mechanism in place during the project operations. Therefore, CMSA should work with APIMAN's ongoing social programs for the overall port to ensure effective community relations with the new container terminal operations. CMSA should dedicate the funds and staff necessary to accomplish this integration. CMSA should submit an annual report to the IDB/IFC to document that they have successfully integrated with APIMAN's existing outreach program. The report should document the public events and or meetings they have attended; the way they have participated in APIMAN's program to provide public information as well as how they have participated in the grievance process to facilitate public participation.

8.4.4 Health and Safety

- It is recommended that CMSA provide a description of the Health and Safety plans and practices used during construction as well as confirmation that there are no outstanding claims.
- CMSA should hire a Senior Environmental Health and Safety (EHS) consultant/company with experience with ports, implementation of management systems, and Mexican legislation to assist with preparation with the the Health and Safety (H&S) plan for the operations phase.
 - This senior consultant should train the actual H&S personnel who will be responsible for the terminal's management systems implementation. Starting with performing a complete risk identification of terminal activities, based on the mitigation measures, CMSA should make a detailed implementation plan, prioritizing the activities that represent a life-threatening risk and activities in which no layer of protection is currently available. Additionally, high-high risk gaps should be closed within a week, high risk gaps in one month, medium risk within 3 months, and low risk gaps within 6 months.
- The detailed implementation plan should include the creation, training, and follow up of policies, regulations and procedures, formats, and visual aids. This plan should also include the additional work load necessary to develop this plan according the time frame recommended. The plan should be reviewed by the CMSA management team and then the necessary personal should be hired to implement plan.
- As some important legal requirements are not met yet, it is highly recommended that CMSA subscribe to the Labour Secretariat's Health and Safety self-management program and should obtain the certification of "*Empresa Segura*." This will facilitate compliance with the applicable Mexican legislation and Norms regarding Health and Safety matters. This also will help guide the implementation of a Health and Safety management system.

Appendix A

Reference Documents and Meetings

A.1 List of Documents Reviewed

TABLE A-1
CMSA Shared Documents Site Inventory

Sub Folders	Documents
APIMAN Environmental Presentation	On May 02 Meeting APIMAN.pdf
Authorization to Operate	SCT Compliance Certificate
Authorization to Operate	SCT_APIMAN Authorization to Commence Operations
Authorization to Operate	SHCP-Authorization to Commence Operations
CMSA Amended Articles of Incorporation	Concession Contract
Engineering	CMSA-MCW Signed Contract
Engineering	General Layout
Engineering	Geotechnical report
Engineering	Main Civil Works
Engineering	Monthly Reports ICTSI
Engineering	Quay
Engineering	China Harbour Engineering
Engineering	Design Vessel Specs
Engineering	Detailed Facility Description
Engineering	Grupo MI_Canteen Building
Engineering	Sea Charts, navigation channel, turning basin
Engineering	Presentation Obras Civiles
Engineering	Quay - Tech Specs
Engineering	WP Master Development Plan
Engineering	
Environmental	Annex -- Environmental and Social Considerations
Environmental	API
Environmental	<i>Informe Annual 2012</i>
Environmental	<i>Informe FINAL CUS</i>
Environmental	<i>Respuesta no procedimientos abiertos</i>
Environmental	APIMAN EIA
Environmental	
Equipment and IT	
Financial	
HR and ICTSI Support	
Insurance	
Market	
Monthly Environmental Reports	CMSA Financial Model Sept_2013
Monthly Environmental Reports	CMS Teaser Sept_2013
Monthly Environmental Reports	Due Diligence Operations
Monthly Environmental Reports	Summary of Construction IT equipment leasing contracts

TABLE A-2
Google Drive Shared Documents Site Inventory

Sub Folders	Documents
Cambio de uso de suelo	<i>Cambio de Uso de Suelo - Estudio Técnico Justificativo</i>
Cambio de uso de suelo	<i>Cambio de Uso de Suelo - Autorización</i>
Dredging MIA and Permits	<i>Autorización relleno zona transición arena</i>
Dredging MIA and Permits	<i>Autorización SEMAR dragado muelle 19 y 18</i>
Dredging MIA and Permits	<i>Oficio SEMAR Autorización Vertimiento HDK Mexico S. de RL CV</i>
Dredging MIA and Permits	<i>Permiso Vertimiento Roca</i>
EMPs	<i>03 Plan ambiental CONTECON Manzanillo</i>
EMPs	<i>04 Operational Procedures</i>
EMPs	<i>14 PGO-GSP SI-05-r00 Manejo de residuos</i>
EMPs	<i>18 PGO-GSP SI-01-r01 Investigación accidentes Lesiones y daños</i>
EMPs	<i>19 PLA-GSP SI-01-r00 Plan de emergencias</i>
EMPs	<i>CMSA Container Terminal EMP</i>
Master Plan MIA-R	<i>APIMAN Manifestación de Impacto Ambiental</i>
Master Plan MIA-R	<i>Updates to REIA – 2009</i>
Master Plan MIA-R / Authorizations	<i>REIA APIMAN -EIA 1/7</i>
Master Plan MIA-R / Authorizations	<i>REIA APIMAN -EIA 2/7</i>
Master Plan MIA-R / Authorizations	<i>REIA APIMAN -EIA 3/7</i>
Master Plan MIA-R / Authorizations	<i>REIA APIMAN -EIA 4/7</i>
Master Plan MIA-R / Authorizations	<i>REIA APIMAN -EIA 5/7</i>
Master Plan MIA-R / Authorizations	<i>REIA APIMAN -EIA 6/7</i>
Master Plan MIA-R / Authorizations	<i>REIA APIMAN -EIA 7/7</i>
Master Plan MIA-R / Authorizations	<i>Autorization- updates to REIA 2009</i>
Misc Permits	<i>13 Tramite Generador de Residuos Peligrosos</i>
Policies	<i>02 Política Integral</i>
Policies	<i>20 Reglamento de Salud, Seguridad y Medio Ambiente</i>
Policies	<i>22 Política PBIP</i>
Presentations-general	<i>Presentaciones Obras Civiles 21FEB13 _ PPT</i>
Puerto Manzanillo_GE Historica	<i>Google Maps Historical pictures</i>
Rail	<i>Proyecto Ferroviario</i>
Reporting	<i>06 Analisis, estudios</i>
Reporting	<i>06b_ Safety KPIS</i>

TABLE A-2
Google Drive Shared Documents Site Inventory

Sub Folders	Documents
Reporting	<i>E&S Status Report 4-15-2013 -clean</i>
Reporting / Annual Report on Compliance with MIA-R Authotization	<i>Anexo II Entrega Informe IA 2011</i>
Reporting / Annual Report on Compliance with MIA-R Authotization	<i>Anexo II Acta PROFEPA</i>
Reporting / Annual Report on Compliance with MIA-R Authotization	<i>Anexo IV Oficio entrega Fianza 2012-2013</i>
Reporting / Annual Report on Compliance with MIA-R Authotization	<i>Anexos</i>
Reporting / Annual Report on Compliance with MIA-R Authotization	<i>Impacto Anual 2012</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo V Avance de Actividades	<i>Anexo tabla de cumplimiento</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo V Avance de Actividades	<i>Avance de actividades al año 5</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo I Oficio DG-410-11 y resolutivo	<i>Modificación Aduana</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo I Oficio DG-410-11 y resolutivo	<i>Resolutivo aduana zona norte</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo IX Programa de Fauna	<i>Anexo I Formato Rescate</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo IX Programa de Fauna	<i>Anexo II Fprmato acta liberación</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo IX Programa de Fauna	<i>Caratula Anexos</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo IX Programa de Fauna	<i>Informe Fauna 2012</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo IX Programa de Fauna	<i>Oficio de traslado de Fauna Semarnat 01</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo IX Programa de Fauna	<i>Oficio de traslado de Fauna Semarnat 02</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo IX Programa de Fauna	<i>Oficio de traslado de Fauna Semarnat 03</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo IX Programa de Fauna	<i>Oficio de traslado de Fauna Semarnat 04</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo IX Programa de Fauna	<i>Oficio de traslado de Fauna Semarnat 05</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo IX Programa de Fauna	<i>Resgistro captura de fauna enero 2012</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo IX Programa de Fauna	<i>Reporte de traslado de Fauna final 2012</i>

TABLE A-2
Google Drive Shared Documents Site Inventory

Sub Folders	Documents
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VI Monitoreo Año Tres	<i>Informe Preliminar año 3 IMTA</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VII Constancia RSU y control de residuos	<i>Bitacora control de aridos</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VII Constancia RSU y control de residuos	<i>Bitácora de limpieza de sanitarios_1</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VII Constancia RSU y control de residuos	<i>Bitácora de limpieza de sanitarios_2</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VII Constancia RSU y control de residuos	<i>Bitácora de recolección RSU_1</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VII Constancia RSU y control de residuos	<i>Bitácora de recolección RSU_2</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VII Constancia RSU y control de residuos	<i>Constacia de disposición de RSU_1</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VII Constancia RSU y control de residuos	<i>Constacia de disposición de RSU_2</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VIII Manejo RP	<i>Plan de Manejo de RP_1</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VIII Manejo RP	<i>Bitácora de Generación de RP_1</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VIII Manejo RP	<i>Constancias de Retiro de RP_1</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo VIII Manejo RP	<i>Control de Mantenimeinto de Maquinaria</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo X Programa de RP y R de mangle	<i>Anexo I Oficio de actualización del programa 2012</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo X Programa de RP y R de mangle	<i>Anexo II Coordenadas Poligono 2012</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo X Programa de RP y R de mangle	<i>Carátula anexos</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo X Programa de RP y R de mangle	<i>Programa de RP y R de Mangle avances al 2012</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo X Programa de RP y R de mangle / Anexo III Planos de reforestación	<i>Mangle Garzas_ .jpg</i>
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo X Programa de RP y R de mangle /	<i>Mangle y SB San pedrito .jpg</i>

TABLE A-2
Google Drive Shared Documents Site Inventory

Sub Folders	Documents
Anexo III Planos de reforestación	
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo X Programa de RP y R de mangle / Anexo IV Rehabilitación	Coordenadas poligono rehabilitación 2012
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo X Programa de RP y R de mangle / Anexo IV Rehabilitación	Mangle garzas rehabilitación .jpg
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo XI Oficios APIDG141_12 y oficio Respuesta	Oficio de entrega
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo XI Oficios APIDG141_12 y oficio Respuesta	Oficio de respuestas
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo XII Programa especies NOM059	Anexo II Ficha Técnica culebro
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo XII Programa especies NOM059	Anexo III Registro UMA
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo XII Programa especies NOM059	Anexo IV Reprogramación granadillo
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo XII Programa especies NOM059	Anexo V Plano area reforestadas Ciruelito de la Marina
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo XII Programa especies NOM059	Anexo VI Coordenadas de áreas reforestadas
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo XII Programa especies NOM059	Carátula Anexos
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo XII Programa especies NOM059	PFF NOM-059 Avances 2012
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo XII Programa especies NOM059/Anexo I Planos reforestación SB Garzas-S Pedrito	Mangle y SB San pedrito .jpg
Reporting / Annual Report on Compliance with MIA-R Authotization / Anexo XII Programa especies NOM059/Anexo I Planos reforestación SB Garzas-S Pedrito	Selva Baja Garzas
Reporting / Final Report- compliance with Land use change permit	Informe Final Cus
Reporting / Final Report- compliance with Land use change permit / Anexos Informe Final	Anexo I
Reporting / Final Report- compliance with Land use change permit / Anexos Informe Final	Anexo II
Reporting / Final Report- compliance with Land use change permit / Anexos Informe Final	Anexo III
Reporting / Final Report- compliance with Land use change permit / Anexos Informe Final	Anexo IV

TABLE A-2
Google Drive Shared Documents Site Inventory

Sub Folders	Documents
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Anexo V</i>
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Anexo VI</i>
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Anexo VII</i>
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Anexo VIII</i>
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Anexo IX</i>
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Anexo X</i>
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Anexo XI</i>
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Anexo XII</i>
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Anexo XIII</i>
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Anexo XIX</i>
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Anexo XX</i>
Reporting / Final Report- compliance with Land use change permit / <i>Anexos Informe Final</i>	<i>Memoria fotográfica de actividades realizadas CUS</i>
Reporting / Monthly Env Supervision Reports	<i>CMSA:ST1A-EIA_General_Monitoring_ 2012 y 2013</i>
Training	<i>Inducción Seguridad Portuaria Empleados Rev 2</i>

A.2 List of Meetings Held

As part of the ESDD process, a series of meetings was held with the Sponsor, APIMAN, and SEMARNAT. A listing of the meetings and a summary of topics discussed are presented in Table A-3.

TABLE A-3
List of Meetings and Summary of Topics Discussed as Part of the ESDD Process

Date	Participants	Description of Activities
10/07/13	CMSA, ICTSI, IDB, IFC, CH2M HILL, APIMAN, PREDESA (Consultec)	Kickoff meeting in Manzanillo CMSA Terminal Office. Discussion of project with input from APIMAN Environmental Director Rosa Aurora Quiroz Dahas.
10/08/13 (a.m.)	CMSA, ICTSI, IDB, IFC, CH2M HILL, APIMAN, PREDESA (Consultec)	Continuation of meetings in Manzanillo CMSA Terminal Office.
10/08/13 (p.m.)	APIMAN, PREDESA (Consultec), CH2M HILL	Visit to seedbank for mangroves compensation project. Visit to Valle de las Garzas mangrove restoration site.

TABLE A-3
List of Meetings and Summary of Topics Discussed as Part of the ESDD Process

Date	Participants	Description of Activities
10/08/13 (p.m.)	CMSA and CH2M HILL	Interview with CMSA HR employee who performs socioeconomic studies of applicants (“de confianza” or non-unionized). Interview with CMSA HR Director, Marigel Zardain to discuss labor and working conditions of CMSA port employees.
10/08/13 (p.m.)	PREDESA (Consultec) and CH2M HILL	Interview with Construction Supervisors contracted by CMSA for Phase 1A development to discuss CHEC workforce during construction phase and noise, visual impacts on surrounding communities.
10/09/13 (a.m.)	CMSA and CH2M HILL	Visit to CMSA emergency operations and medical centers at the port. Interviewed medical officer, paramedics, and firefighters.
10/09/13 (a.m.)	CMSA and CH2M HILL	Visit to CMSA equipment shop. Tour of installation facilities, dashboard tour of cranes, containers, berths, and interior transportation routes.
10/09/13 (p.m.)	APIMAN and CH2M HILL	Interview with APIMAN Social Director, Dalia Paulina Garcia Campos. Discussed community involvement and social communication issues.
10/10/13 (a.m.)	APIMAN and CH2M HILL	Interview with APIMAN Environmental Director, Rosa Aurora Quiroz Dahas. Asked questions regarding public consultation, community involvement, and grievance mechanism.
10/10/13 (p.m.)	PREDESA, CH2M HILL, and Community Members of Las Brisas	Visit to the community of Las Brisas. Interviewed two residents who live immediately adjacent to the noise wall constructed by APIMAN and the strip of mangroves separating the community from the port. Took dashboard tour of residential and commercial (tourism) areas of the community. Interviewed five local fishermen encountered fishing along the beach of Las Brisas. Interviewed family of fisherman who lives in town. Sought to interview Las Brisas Municipal Delegate, but office was closed.

A.3 List of People Met for ESDD

TABLE A-4
List of People Met for the Manzanillo Container Port ESDD

Organization	Name, Role	Contact Details
International Container Terminal Services, Inc.	Arthur Quintana R. Tabuena <i>Treasury Director and Head of Investor Relations</i>	Telephone: +63 (2) 245 4101 ext. 2525 Email: atabuena@ictsi.com
International Container Terminal Services, Inc.	Arnie D. Tablante <i>Cash and Risk Manager</i>	Telephone: +63 (2) 245 4101 ext. 8037 Email: atablante@ictsi.com
Contecon Manzanillo, S.A. de C.V.	Enrique Gutiérrez <i>CEO</i>	Telephone: +52 (314) 138 2009 Email: egutierrez@contecon.mx
Contecon Manzanillo, S.A. de C.V.	Claudio Mustico <i>IT and Services Director</i>	Telephone: +52 (314) 138 2009 Email: cmustico@contecon.mx

Appendix B

IFC Performance Standards

IFC Performance Standards

TABLE B-1

Summary of IFC Performance Standards

IFC PS Ref	IFC PS Title	Applicable to the Project
1	Assessment and Management of Social and Environmental Risks and Impacts	Yes
2	Labour and Working Conditions	Yes
3	Resource Efficiency and Pollution Prevention	Yes
4	Community Health, Safety and Security	Yes
5	Land Acquisition and Involuntary Settlement	No
6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	Yes
7	Indigenous People	No
8	Cultural Heritage	No

TABLE B-2 SUMMARY OF CONFORMANCE WITH IFC PERFORMANCE STANDARDS	
IFC PS 1: Assessment and Management of Social and Environmental Risks and Impacts	
Aspect	Project Status
Environmental and Social Assessment and Management System	<p>An Environmental and Social Impact Assessment (MIA) was prepared for the port expansion in 2004 for the north sector of the port area including the CMSA terminal location. In 2009 a modification to the original master plan and MIA were completed that mainly addressed an increase in the amount of dredge material considered in the original MIA.</p> <p>Although the MIAs had a number of weaknesses regarding the development of baseline data, the independent consultants found that the document has adequately addressed the relevant environmental and social risks and impact associated with the proposed terminal.</p>
Policy	An overarching policy defining environmental and social objectives and their guiding policies for the project will be prepared and implemented by CMSA
Identification of Risks and Impacts	Risks and impacts associated with construction and operation of the project were identified in the MIA. These risks and impacts were associated with activities including dredging of the port area, removal of 15.7 ha of mangrove habitat, housing of construction workers and impacts to local communities due to increased car, truck and train traffic entering and exiting the port. Mitigation measures were put in place to address the major risks/impacts associated with the construction and operation of the project.
Management Programs	<p>The completed Environmental Health and Safety Management Plan and system for construction were not available for review during the audit although it was apparent from our interviews that development of the system was in progress.</p> <p>Operation of the new container terminal began in August 2013, at the same time, CMSA began preparing operational procedures and training plans, initiating compliance with the legal requirements for operation, and developing the ESMP and overall ESMS. At the time of the ESDD, these requirements were under development and not fully implemented or available for review. These plans will be completed and will be implemented by CMSA.</p> <p>CMSA reports that the company will finalize and implement the plans and the management system by June 2014.</p> <p>A training program will be prepared that follows the legal requirements and procedures established the STPS (Secretariat of labor and social prevention / Secretaria de Trabajo y Prevención Social).</p> <p>A risk evaluation and mitigation action plan for the terminal operations will be prepared. It was noted during the site visit that a better awareness of the risks associated with daily terminal operations should be developed. For example, no areas are clearly designated for the exclusive use of either pedestrians or vehicles inside the terminal. CMSA has a procedure (Procedimiento General Operativo para la Identificación de Peligros y la evaluación de riesgos) which establishes the methodology for risk identification and for the creation of control measures and risk mitigation. During the site visit, several risk analysis examples were reviewed and found to be incomplete, i.e., the mitigation actions of were missing from the analysis. The risk analyses will be completed by June 2014, along with the complete ESMP and ESMS.</p>
Organizational Capacity and Competency	CMSA is in the process of developing its organizational structure that defines roles, responsibilities, and authority to implement the ESMS. Currently, CMSA has a small staff (two people) who are working on preparing the ESMP and ESMS, overall, this group will be increased as necessary. All community involvement and outreach for the Port of Manzanillo, including the new container terminal, is solely the responsibility of APIMAN. Therefore, CMSA has been coordinating with APIMAN staff for addressing stakeholder engagement and disclosure of information during construction and initial operation.
Emergency Preparedness and Response	While as APIMAN's tenant, CMSA is responsible for complying with laws and regulations as well as provisions of their concession, there are many areas that relate to environmental and social issues on which the two entities will have to coordinate. Coordination is required in the area of emergency preparedness and response. CMSA is responsible for managing the Terminal but APIMAN is responsible for providing services to ships such as fueling and waste oil disposal. Since APIMAN is responsible for hiring contractors to handle these

TABLE B-2 SUMMARY OF CONFORMANCE WITH IFC PERFORMANCE STANDARDS**IFC PS 1: Assessment and Management of Social and Environmental Risks and Impacts**

Aspect	Project Status
	<p>activities, they are also responsible for responding to spills. It was noted on our site visit that CMSA did not keep spill control equipment at the facility and they depend on APIMAN to provide spill response and cleanup services for spills related to ships.</p> <p>CMSA has developed an emergency response plan that contains a vulnerability assessment, an inventory of resources that are available for deployment in case of an emergency, a risk analysis, and general procedures for different emergency scenarios. The emergency response plan also contains a description of the relationship and command structure within the APIMAN emergency response services.</p> <p>The Emergency Response Plan considers the following scenarios: earthquakes, tsunamis, fire, explosions, bomb disposal, demonstrations, heavy rains, flooding, and hurricanes.</p> <p>The central emergency response center building has been completed and contained all of the necessary equipment and qualified personal to attend and support emergencies throughout the port.</p>
Monitoring and Review	<p>Required monitoring was conducted during construction.</p> <p>The CMSA operational Environmental Plan, calls for effluent monitoring, emission monitoring and noise monitoring. In general, it was observed that the information from CMSA is only illustrative, and therefore each of the programs indicated should be developed formally.</p> <p>Since an adequate water quality and biological baseline characterization was not performed as part of the MIA process, a monitoring plan will be developed and implemented to address physicochemical water quality parameters and aquatic ecology resources within the port.</p>
Stakeholder Analysis and Engagement Planning	<p>APIMAN is responsible for all stakeholder engagement and public disclosure for all activities within the port, including the new container terminal. Stakeholder analysis and planning was conducted by APIMAN as part of their on-going consultation and engagement program for the overall port. The overall engagement process included identification of stakeholders, public meetings and other engagement activities.</p>
Disclosure of information	<p>As part of the regulatory process, a copy of the MIA was made available to members of the public and a public hearing was held at which time members of the public were given an opportunity to voice their opinions on the proposed port expansion. Public meetings addressing the new terminal were also held as part of the port's on-going public engagement activities.</p>
Consultation	<p>All community involvement and outreach for the Port of Manzanillo, including the new container terminal, is solely the responsibility of APIMAN. CMSA participated in these consultation activities to discuss issues associated with their construction or operation activities. CMSA has no communication or staff to liaise directly with the surrounding community during the construction or operations phase, nor are they required to engage with the public according to their concession agreement. APIMAN does have designated staff and budgetary resources for social performance monitoring and for liaising with the communities of Manzanillo and Las Brisas. Discussions with APIMAN's social director showed that regular meetings have been held since 2010 with the affected community regarding the expansion of the port. APIMAN does address grievances voiced by the community. APIMAN and municipal officials have formed a committee, "IMPLAN," that serves to monitor the impacts of all activities associated with the port expansion and their potential effects on the surrounding community. APIMAN is the intermediary through which all communication with port leaseholders is conducted. According to APIMAN, monthly meetings are held with the port leaseholders to discuss community issues. Municipal officials also are present at these meetings.</p>
Informed Consultation and Participation	<p>Consultation with the fishermen who used the mangrove area for fishing and could be directly impacted by the project was conducted as part of the public meetings that were held for the port expansion. These stakeholders have access to the on-going APIMAN</p>

TABLE B-2 SUMMARY OF CONFORMANCE WITH IFC PERFORMANCE STANDARDS**IFC PS 1: Assessment and Management of Social and Environmental Risks and Impacts**

Aspect	Project Status
	grievance mechanism. CMSA will work with APIMAN to monitor future grievances by the fisherman and respond appropriately to any grievances received. It is important to note that the mangrove area was and still is within the exclusion zone and thus fishing was prohibited by the port.
Indigenous peoples	According to the MIA there are no indigenous populations residing in or around the Port of Manzanillo. The closest location of indigenous population is in the city of Colima, which is 100 km east-northeast of the port.
Private sector responsibilities under government-led stakeholder engagement	All community involvement and outreach for the Port of Manzanillo, including the new container terminal, is solely the responsibility of APIMAN. APIMAN is a decentralized entity of the Mexican Federal Government, which was formed in December 1993 and began operation in February 1994. APIMAN has a 50 year Concession Contract to manage, promote, construct, develop, and maintain infrastructure within the Port of Manzanillo, Colima. CMSA did participate in the public engagement process implemented by APIMAN during construction of the project. CMSA should continue to participate in the APIMAN public engagement process during operation as well.
External communications Grievance mechanism for affected communities	APIMAN does address grievances voiced by the community. APIMAN is the intermediary through which all communication with port leaseholders is conducted. According to APIMAN, monthly meetings are held with the port leaseholders to discuss community issues. CMSA should closely coordinate with APIMAN to effectively respond to community grievances directed at its operations.
Ongoing reporting to affected communities	APIMAN's ongoing public engagement process can be used to report on the results of environmental and social mitigation and monitoring programs such as the compensation of mangroves, water quality, noise and air quality monitoring. CMSA should develop a process with APIMAN through which this reporting can be carried out.

IFC PS 2: Labour and Working Conditions

Aspect	Project Status
HR policies and procedures	Human resources policies and procedures during construction were not available for review during the ESDD. As part of the concession with APIMAN, CMSA is committed to comply with all applicable national laws and regulations. Mexico is a signatory to numerous international conventions and treaties. Those relevant to labor rights include: the International Labor Organization (ILO) Convention 87 on Freedom of Association and Protection of the Right to Organize; the International Covenant on Civil and Political Rights; the American Convention on Human Rights; and the International Covenant on Economic, Social and Cultural Rights. Mexican laws require that the employer take all measures necessary to effectively protect the lives and health of workers, maintain adequate safety and health conditions, and provide the necessary tools to prevent occupational accidents and diseases. Environmental, health and safety plans for construction and operation must be prepared and implemented by the Company/EPCM/operator to demonstrate compliance with Mexican labor laws. CMSA will revise the written human resources policy to be aligned with IFC requirements.
Working conditions and terms of employment	The project will have both union and non-union workers, the office staff is non-union and all workers at the cargo terminal itself are union. Direct employees or Empleados de confianza are those personnel hired directly by CMSA, including upper- and mid-level managers and supporting staff such administrative staff, security staff, and janitorial staff. The HR policy will be revised to include specific terms related to employment conditions such as wages and benefits, hours of work, overtime arrangements and overtime compensation, annual and sick leave, maternity leave, vacation and

IFC PS 2: Labour and Working Conditions	
Aspect	Project Status
	<p>holiday, as established by national labor regulations.</p> <p>A Code of Conduct should be prepared as part of the HR Policy.</p>
Non-discrimination and equal opportunity	CMSA hires both men and woman for non-union position. CSMA has a policy against discrimination in hiring and against harassment of employees. CSMA will develop a written HR policy in alignment with the Mexican requirements and IFC PS2.
Retrenchment	Operation of the new terminal has just begun and it is anticipated to continue operation for the duration of the concession. Estimates show that full employment is projected to reach 544 employees. The nature of the terminal facility is one that does not anticipate termination of operations in the short to middle term time frame. In the event that CMSA's operational plans result in the need to reduce the workforce, the company will develop and implement a retrenchment plan, in consultation with the trade unions, and in alignment with IFC PS2 requirements. In this event, CMSA will also prepare a management report documenting how the retrenchment process was implemented consistent with the requirements of PS2.
Grievance mechanism	A grievance mechanism between CMSA and CROM has been established as part of the existing union contract. Grievances for non-union workers must be provided personally to the head of human resources.
Child labour	<p>CMSA has a legal obligation in accordance with the Federal Labour Law and through their contract with APIMAN against hiring candidates under 18 year of age. CMSA is required to comply with federal labour laws which set a minimum age for employment at 18 years. No employees under the age of 18 were observed during the site visit.</p> <p>All CMSA employees and contractors must have a workers social security number with is only available to persons over 18 years of age.</p> <p>CMSA will formalize this requirement in a written HR policy.</p>
Forced labour	Federal law does not allow the use of forced labour. No evidence of forced labour was found during the ESDD. CMSA will formalize this requirement in a written HR policy.
Occupational Health and Safety	CMSA has implemented a number of plans and procedures addressing occupational health and safety, and is working to complete a comprehensive occupational health and safety plan and management system by June 2014.
Workers engaged by third parties	CMSA requires that contractors be in compliance with applicable Mexican labour laws. CMSA will include terms and conditions in the contracts signed with all contractors.
Supply chain	No information on the supply chain during construction was available for review during the ESDD. CMSA has a minimal supply chain during operation, consisting of electricity, fuel, maintenance and office supplies. These products are purchased through major commercial vendors.

IFC PS 3: Resource Efficiency and Pollution Prevention	
Aspect	Project Status
Resource efficiency	Because of the nature of the container terminal, resource utilization is limited primarily to the use of gasoline and diesel for the surface transport of containers to and from the intermodal yard and electricity to run the ship to shore cranes. All equipment installed is appropriate for the intended use and efficiency.
GHG Emissions	<p>Location of the new container terminal at the existing port of Manzanillo increases overall efficiency by providing for the joint use of a number of facilities including port area, emergency response, and other functions. The two primary direct sources of GHG emissions are the ship to shore cranes and the tractors used to move the cargo containers to and from the intermodal yard. The cranes have electric motors which get their electricity from the grid. The tractors will use either gasoline or diesel fuel. Direct emissions of GHG from the new terminal will be calculated by CMSA.</p> <p>Although the CMSA Terminal would berth container ships in Manzanillo, it would be difficult to require that they work with shipping companies to encourage greenhouse gas reduction. However, it would be possible for CMSA to provide educational materials to shipping lines that inform them of IMO policies and changes that may be required in the future, such as documenting fuel efficiency.</p>
Water consumption	The project will only use water for sanitary purposes and washing deck areas.
Pollution prevention	<p>The potential for storm runoff to carry pollutants into the marine environment is expected to be very minimal since it was reported that all the drains on the yard lead to the terminal's wastewater treatment system. Discharges from ships directly into the harbor is prohibited, facilities for the removal of contaminated bilge and sanitary waste as well as solid waste disposal is provided through APIMAN.</p> <p>A number of mitigation measures for the operation phase have been developed that are intended to reduce the potential for impacts to water quality in the harbor. Identified operational phase mitigation measures include:</p> <ul style="list-style-type: none"> • Establishing within the rules of operation of the APIMAN the prohibition on dumping burned oil and hydrocarbons in general, or liquid chemicals of any type, into the ocean or drainage system in order to prevent contamination of these bodies of water. • Establishing within the rules of operation of the APIMAN the prohibition on discharging bilge water into the ocean, as set forth in the Regulations of the National Water Act. • Preventing materials from falling into the inner harbor during the loading, unloading, and handling of bulk materials using piers, tarps, and/or nets. • Prohibiting the maintenance of ship hulls in the port, unless this activity is carried out at authorized port facilities designed for such purpose. • Offsetting impacts of increased vehicular traffic to and from the port.
Wastes	The project has been designed to minimize the generation of both hazardous and non-hazardous wastes. CMSA reports that Proper disposal of all wastes will be implemented as part of operation procedures.
Hazardous materials management	As discussed in Section 6.3 of this report, there is a written procedure for the storage and handling of chemicals used for the terminal operations. A temporary hazardous waste storage area with secondary containment was operational at the time of the site audit. The permanent storage facility was not complete and, therefore, not ready for inspection during our October 2013 audit. The hazardous materials handling procedures will be included in the ESMP.
Pesticide use and management	CMSA will develop an integrated pest management (IPM) and/or integrated vector management plan as part of the ESMP.

IFC PS 4: Community Health, Safety and Security	
Aspect	Project Status
Community H&S general requirements	CMSA has evaluated potential risks and impacts to the surrounding communities and has developed and implemented appropriate mitigation to address these risks and impacts through the emergency response plan. In the MIA, APIMAN identified the increase in truck and rail traffic resulting from the increased throughput of cargo containers as an impact to surrounding communities. Modifications to the existing transport system were made to effectively separate the increased traffic from the surrounding community.
Infrastructure and equipment design and safety	Construction of the new container terminal within the existing Port of Manzanillo was effective in minimizing potential infrastructure and equipment design and safety impacts to the adjoining community. Because of the nature of the container terminal and safety policies of the overall port facility, primarily only those individuals with specific business activities will visit the port, most of these will be restricted to the office building. Drivers of trucks delivering and picking up cargo must comply with safety requirements while in the intermodal facility. Appropriate changes have been made to the existing roads and rail lines that are used for transport of cargo containers to and from the port.
Hazardous Materials Management and Safety	The project will use only minimal amounts of hazardous materials, none of which will present a danger to the public. CMSA has developed a written procedure for the storage and handling of chemicals used for the terminal operations.
Ecosystem services	Construction of the new container terminal within the existing Port of Manzanillo minimized impacts to ecosystem services. The primary impacts to ecosystem services is associated with the loss of 15.7 ha of mangrove habitat. This specific area, which was located within the port area was created as a result of initial modifications made to the port area prior to construction of the new container terminal. Ecosystem services provided by this area included serving as a nursery area of marine life and it was used by local fisherman. Because of the abundance of other mangrove habitats in the general area of the port and the fact that unauthorized boats, including fishing boats, were and still are prohibited from operating with the port, the impact to ecosystem services were found to be relatively low. In addition, these impacts have been offset through the requirements for 75 ha new mangrove habitat in the general region.
Community exposure to disease	CMSA will minimize the potential for community exposure to water-borne, water based, waste related and vector-borne diseases and communicable diseases. Discharges from ships directly into the harbor is prohibited, facilities for the removal of contaminated bilge and sanitary waste as well as solid waste disposal is provided through APIMAN.
Emergency preparedness and response	Emergency preparedness and response is the responsibility of APIMAN who has established emergency preparedness and response capabilities for the overall port of Manzanillo.
Security Personnel	Security of the overall port is the responsibility of APIMAN. If additional armed security personnel are hired directly by CMSA, a plan will be developed that is consistent with the requirements of IFC PS4.

IFC PS 5: Land Acquisition and Involuntary Settlement	
Aspect	Project Status
	The project was constructed with the existing boundary of the Port of Manzanillo. Land Acquisition and Involuntary Resettlement were not required as part of the project. PS5 does not apply.

IFC PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	
Aspect	Project Status
Protection and conservation of biodiversity	Overall impacts to biodiversity were minimized through locating the new container terminal within an existing port facility. Impacts associated with dredging activities resulted in short term impacts to benthic fauna and fish species. Benthic invertebrates typically recolonize in dredged habitats relatively quickly and fish species return to impacted areas once dredging activities are completed. The primary impact to biodiversity was the removal of 15.7 ha of mangrove habitat which was originally formed following initial construction of the Port of Manzanillo. This loss of mangrove habitat is being replaced on a like-for-like basis through the creation of 75 ha of mangrove habitat within the region. CMSA will coordinate with APIMAN regarding the required mitigation for the loss of 15.7 ha of mangrove habitat. CMSA will also provide progress reports to the Lenders on a regular basis.
Natural Habitat	The 15.7 ha mangrove habitat is classified as non-critical natural habitat based on its characteristic (see Section 5.1.2.2 of this report)
Legally Protected and Internationally Recognized Areas	The project is not located in a protected area. According to the National Mangrove Inventory, there is only one Natural Protected Area in the state of Colima, namely the Laguna de Cuyutlán, which is a designated RAMSAR site and also an approved location for some of the compensatory mangrove mitigation for the Project.
Invasive Species	Invasive species derived from bilge water will be controlled at the container terminal. Discharges from ships directly into the harbor is prohibited, facilities for the removal of contaminated bilge and sanitary waste as well as solid waste disposal is provided through APIMAN.
Management of Ecosystem Services	Impacts to the mangrove habitat are being mitigated through a revegetation program resulting in the creation of 75 ha of new mangrove habitat.
Sustainable Management of Living Natural Resources	Not Applicable
Supply Chain	Does not apply

IFC PS 7: Indigenous People	
Aspect	Project Status
	No indigenous people were affected by the project. PS 7 does not apply

IFC PS 8: Cultural Heritage	
Aspect	Project Status
	According to the MIA, there are no cultural heritage sites associated with the footprint of the project, nor with the affected communities surrounding the port. PS8 does not apply.

Appendix C

Equator Principles

TABLE C-1
Compliance with the Equator Principles

Equator Principle	Project Compliance
1) Review and Categorization	According to Equator Principles, the project has been classified as Category A primarily based on potential to impact mangrove habitat and a number of protected species.
2) Social and Environmental Assessment	<p>Category A and B projects require a Social and Environmental Assessment. The Equator Principles intend for the social and environmental assessment to address impacts and risks as a means of managing, improving, and mitigating them. A MIA was prepared for the port expansion in 2004 for the north sector of the port area including the CMSA terminal location. In 2009 a modification to the original master plan and MIA were completed that mainly addressed an increase in the amount of dredge material considered in the original MIA.</p> <p>Although the MIA had a number of weaknesses regarding the development of baseline data, the document was found to have adequately addressed the relevant environmental and social risks and impact associated with the proposed terminal.</p>
3) Applicable Social and Environmental Standards	<p>Information obtained during the ESDD indicates that the Project will be designed to comply with applicable Mexican standards and regulations as well as the applicable IFC Performance Standards on Environmental and Social Sustainability and the IFC's Environmental, Health and Safety Guidelines. Approval of the MIA was granted by SEMARNAT, indicating compliance with Mexican requirements for a comprehensive environmental and social impact analysis for the project. CMSA must prepare a site-specific environmental and health and safety plan for the operational phase. CMSA presented documents that outline the standards and procedures that will be adopted when the site-specific plans are prepared.</p> <p>The terminal handles all of its stormwater runoff by discharge thorough its waste water treatment plant. All wastes from ships in the port are collected and treated/disposed of on shore.</p>
4) Action Plan and Management System	<p>The IFC requires that an Environmental, Health, and Safety Action Plan be prepared, if necessary, to correct any non-compliance, liability, or deficiency identified in the Environmental, Health and Safety Audit or to correct any deficiency in the existing environmental, health, and safety management system. Based on the finding of the ESDD, an Action Plan will be necessary.</p> <p>The Action Plan for Social, Environmental, Occupational Health and Safety that must be prepared by the CMSA Sponsors should address the following items:</p> <ul style="list-style-type: none"> • Environmental and Social Management System (include all measures for the implementation of an integrated management system) • Environmental, Health and Safety Conditions at the Work Place (include all plans, procedures, training and protocols to be adopted at the workplace, construction, and operations. • Pollution Reduction and Prevention (this contemplates the implementation of measures to minimize potential environmental contamination). • Community Health and Safety (this includes various forms of community engagement programs) • Responsibilities for implementing the various required actions and their timing.

TABLE C-1

Compliance with the Equator Principles

Equator Principle	Project Compliance
5) Consultation and Disclosure	<p>As part of the regulatory process, a copy of the MIA was made available to members of the public and a public hearing was held at which time members of the public were given an opportunity to voice their opinions on the proposed port expansion.</p> <p>All community involvement and outreach for the Port of Manzanillo, including the new container terminal, is solely the responsibility of APIMAN. As a result, CMSA has no public consultation plan or stakeholder engagement program associated with their construction or operation activities. CMSA has no communication or staff to liaise directly with the surrounding community during the construction or operations phase, nor are they required to engage with the public according to their concession agreement. Discussions with APIMAN's social director showed that regular meetings have been held that since 2010 with the affected community regarding the expansion of the port.</p>
6) Grievance Mechanism	<p>APIMAN has an on-going grievance mechanism that covers tenants at the port including CMSA. APIMAN assumes responsibility for addressing all port development and operations activity grievances by the community. CMSA is not contractually responsible for this activity and does not have a grievance mechanism in place with the community. Close coordination between APIMAN and CMSA should be conducted to ensure the effect functioning of the grievance mechanism during operation.</p>
7) Independent Review	This ESADD review complies with the requirement for an independent review.
8) Covenants. Incorporation of covenants linked to compliance	Covenants will be determined by the Lender(s) as required.
9) Independent Monitoring and Reporting	This role will be fulfilled by the Lender(s) or their consultant.
10) Equator Principle Finance Institution Reporting	This role will be fulfilled by the Lender(s)

Appendix D

Action Plan

APPENDIX D - ACTION PLAN			
Nº	Actions	Deliverable/Indicator	Deadline
1	Sustainability Policy – develop and implement an overarching policy defining environmental and social objectives and their guiding policies for the CMSA Terminal consistent with the requirements and objectives of PS1	Formal written sustainability policy	1Q 2014
2	Organizational Capacity and Competency – Evaluate the current staff to determine if adequate organizational capacity is available to effectively implement all environmental, social, health and safety operational plans and systems. Develop a staffing plan for all environmental and social activities.	Submit staffing plan to the Lenders.	1Q 2014
3	<p>Monitoring and Review –The CMSA operational Environmental and social management Plan calls for effluent monitoring, emission monitoring and noise monitoring. SMSA should prepare a detailed monitoring plan for the project to add the above three monitoring requirements. In addition, since an adequate water quality and biological baseline characterization was not performed as part of the MIA process, a monitoring plan should be developed and implemented to address physicochemical water quality parameters and aquatic ecology resources within the port.</p> <p>An appropriate water quality and biological monitoring program for areas within the port should be developed and implemented. The initial monitoring activities will in effect, establish the post construction baseline conditions upon which subsequent monitoring results can be compared. The water quality monitoring plan should include a number of sampling stations to be located throughout the port and include both physical and chemical parameters appropriate for the local environment and activities to be conducted at the new terminal. A sampling schedule should be developed that addresses seasonal and tidal variations within the port. The biological monitoring plan should address appropriate aquatic biota including benthic invertebrates, phytoplankton, zooplankton, Ichthyoplankton and fish. The number and location of sampling stations, sampling methodology, number of replicate samples and sampling frequency should be developed to provide a scientifically defensible monitoring plan to characterize the marine biota in the port.</p>	Written monitoring plans and periodic monitoring reports.	1Q 2014
4	Non-discrimination and equal opportunity – CMSA will encourage non-discrimination by all contractors and unions employed at the terminal and will revise the written human resources policy to include terms for non-discrimination and equal opportunity.	Written Human Resources policy that includes terms related to non-discrimination and equal opportunity	1Q 2014
5	Grievance mechanism – CMSA will develop an employee grievance mechanism consistent with the requirements of the IFC that includes procedures for anonymous feedback.	Written grievance policy in accordance to IFC PS2	1Q 2014
6	Child and forced labour - CMSA to revise the written human resources policy to include terms and provisions that clearly prevent child and forced labour in accordance with Mexican Labour laws. .	Written HR policy	1Q 2014
7	Hazardous materials management – Include hazardous materials management in the ESMP	<p>Present hazardous materials management plan in the ESMP.</p> <p>Provide evidence of the completion report of the hazardous materials storage area/facility.</p>	1Q 2014
8	Pesticide Use and Management – CMSA should develop an integrated pest management (IPM) and/or integrated vector management plan as	Present ESMP that includes procedures for pesticide use	1Q 2014

APPENDIX D - ACTION PLAN			
Nº	Actions	Deliverable/Indicator	Deadline
	part of the ESMP.	and pest management plan.	
9	Environmental and Social Management plan and System – Complete the ESMP and ESMS that was underway during the ESDD. The ESMP and ESMS should be consistent with IFC PS requirements, including independent certification and audit.	Submittal of the completed ESMP and ESMS	2Q 2014
10	Management Program – Complete the EHS plan to meet the requirements of IFC Performance Standards and revise plans, as needed, to ensure alignment with good international industry practices	Submit completed EHS to the Lenders for review and comment.	2Q 2014
11	Identification of Risks and Impacts – A risk evaluation and mitigation action plan for the terminal operations should be prepared. CMSA has a procedure (Procedimiento General Operativo para la Identificación de Peligros y la evaluación de riesgos) which establishes the methodology for risk identification and for the creation of control measures and risk mitigation. This procedure must meet the requirements of PS1 and other applicable international good industry management practices. The results of the risks and impacts identification assessment should also be reflected in the EHS plan	A risk evaluation and mitigation action plan report should be submitted to the Lenders.	2Q 2014
12	Occupational Health and Safety - Develop and implement a comprehensive Occupational Health and Safety Plan consistent with IFC PS2.	Written Environmental Health and Safety Plan	2Q 2014
13	Non-Employee Workers – Develop and implement a program to ensure that the requirements set out in Performance Standard 2, paragraphs 24 through 26 are applied to workers engaged by third parties.	Written policy to ensure compliance with Performance Standard 2, paragraphs 24 through 26 for Non-Employee Workers	2Q 2014
14	Informed Consultation and Participation - CMSA will work with APIMAN to monitor future grievances by the fisherman and respond appropriately to any grievances received.	Report on results of grievance mechanism input from impacted fisherman.	2Q 2014
15	External Communication and Grievance Mechanisms - CMSA should closely coordinate with APIMAN and develop a mechanism to effectively respond to community grievances directed at its operations to ensure effective compliance with IFC Performance Standard requirements.	Written coordination plan and mechanism procedure consistent with IFC requirements	2Q 2014
16	Emergency preparedness and response – Review and monitor the APIMAN emergency and preparedness capabilities on an on-going basis.	On-going communications between CMSA and APIMAN regarding emergency preparedness and response planning and implementation.	2Q 2014
17	GHG Emissions – Conduct an inventory of GHG emissions	GHG emissions inventory	4Q 2014
18	Protection and conservation of biodiversity – CMSA should track APIMAN's progress in completing the required 75 ha mangrove revegetation. If the required mitigation is not completed according to the mitigation plan established by APIMAN and SEMARNAT, CMSA will implement one of the two mitigation measures listed below. <ol style="list-style-type: none"> 1. Purchase and protect land with existing high quality mangrove habitat in areas under greatest risk of anthropogenic damage and develop a protection, management, and monitoring plan for local implementation. 2. Identify an appropriate conservation organization and make donation to planned or on-going mangrove protection and or revegetation. 	Periodic progress reports on re revegetation progress to the Lenders. If APIMAN mitigation process does not comply with mitigation agreement with SEMARNAT, CMSA to prepare a separate mitigation plan to address the uncompleted portion of the required revegetation process.	4Q 2014 through 4Q 2016