DP WORLD

Puerto Caucedo Multimodal Terminal

Andrés, Boca Chica

República Dominicana

Appendix G
Construction of Multipurpose Berth

Prepared by:

Security Deparment

DP World Caucedo

Atemar, S.A.

Julio 2008, República Dominicana

Document Control Sheet

Company DP World Caucedo

Document Title Construction of Multipurpose Berth

Revision 01

Status Final

Control Date July 2008

Issue Registry

Copy	Status	Author	Date	Revision	Date	Authorized	Date
01	**Final**	ATEMAR S.A.		José Antonio Rodríguez		Glen Hilton	

Distribution

Organization	Contact	Copies
DPW General Manager	Glen Hilton	1
DPW Security Manager	José Antonio Rodríguez M.	1
DPW Operations Manager	Ricardo Álvarez	1
DPW Financial Manager	Luís Terrero	1
DPW Administrative Manager	José Nelton González	1
DPW Environmental Team	Oswaldo Vásquez.	1

1 Introduction

1.1. Purpose of Programme for Environmental Management and Adjustment

This Programme for Environmental Management and Adjustment (Construction - PEMA) has been prepared to provide clear mechanisms for the **Marine Works** Contractor of the Multipurpose Feeder Berth to ensure that all mitigation measures recommended in the Environmental Impact Study (EIS) are implemented. It describes procedures to ensure close scrutiny over the actual environmental performance of the Contractor and to ensure prompt action to rectify any practices that adversely affect the quality of the surrounding environment.

This Construction – PEMA is to be read in conjunction with the Operations – PEMA which is maintained and implemented by the Port.

The Construction - PEMA is intended as a working reference document. Its primary purpose is to consolidate the environmental management and control requirements identified in the Environmental Permit conditions issued in accordance with the General Law on Environment and Natural Resources. It sets down clear auditable mechanisms to ensure that these are implemented in full.

The Construction - PEMA deals strictly with managing impacts to the environment. Health and Safety issues are addressed in a stand alone Project Safety, Environment and Security Management Plan which is to be prepared by the Marine Works Contractor and which will be reproduced as an Appendix to this document.

The principal features of the Construction - PEMA are summarised below:

1. Clear identification and implementation of all environmental mitigation measures to be controlled through design and working methods.

2. Clear identification and implementation of good site working practices to keep the environmental impact of construction works to a practical minimum.

3. Monitoring of ambient environmental conditions to verify predictions presented in the EIS and promptly identify any unacceptable adverse impacts.

4. Efficient and transparent reporting systems.

1.2. Background

Preparation of an Environmental Impact Statement for this project was required by the General Law on Environment and Natural Resources and by Resolution No. 168-99 of the National District. The EIS was prepared in accordance with the Terms of Reference issued by the SEMARENA in November 2000.

The Terms of Reference also required a Program for Environmental Management and Adjustment (PEMA). Environmental Permit no. 0013-01 was granted on the 14th of December 2001 by Secretariat de Estado de Medio Ambiente y Recursos Naturales (SEMARENA). The Environmental Permit makes reference to a number of conditions for development of the Operational – PEMA and Construction – PEMA.

This document provides the PEMA for the project and represents a response to the conditions of the Environmental Permit.

Construction of a Feeder Berth, originally termed the 'multipurpose dock', was contemplated in the original Environmental Impact Statement (EIS) and was explicitly covered by the original Environmental License which stated that:

"*The project consists in the construction, in two phases, of a container port and basic infrastructure for a free zone. In the first phase the marine works include a multipurpose dock and a breakwater both 460 meters long and a 600 meters berth. The terminal works consist in a container yard, circulation and parking areas, buildings and others. The second phase contemplates the extension of the berth and breakwaters*."

It is considered therefore that the Feeder Berth is covered by the existing EIS and original license. This decision was confirmed by SEMARENA in March 2007 and no additional requirements are needed to the existing license.

1.3. Organisation

1.3.3 Structure

The relationship between the various parties responsible for management of the environmental impact at the Port, and implementation of the PEMA are shown in Figure 1.

1.3.4 Environmental Management Working Group

To ensure effective implementation of PEMA an Environmental Management Working Group (EMWG) for the construction of the Multipurpose Berth shall be set up to regularly review all aspects of the Construction - PEMA and the findings of

the auditing and monitoring work. The EMWG shall be chaired by the Employer's Representative, who will have the authority to direct the ET to focus on any emerging key issues.

SEMARENA will be invited to attend the meetings of the EMWG as either a regular member or on an ad-hoc basis to ensure that it has the opportunity to be kept fully informed of conditions of the construction and to voice its concerns as appropriate.

The proposed composition and Terms of Reference of the EMWG are summarised below:

Composition:

- Security and Environment Manager (SEM)
- Employer's Representative
- Environmental Team Leader
- Marine Works Contractor
- SEMARENA (as required)

Terms of Reference:

- Discuss monthly audit report
- Discuss monthly monitoring report
- Identify any necessary additional mitigation
- Identify need to amend the Construction - PEMA and associated monitoring programme as construction progresses or environmental issues arise
- Chase progress of previously identified mitigatory measures and monitoring effort

The EMWG shall meet at intervals of not less than one month to discuss the monthly audit and monitoring report prepared by the ET.

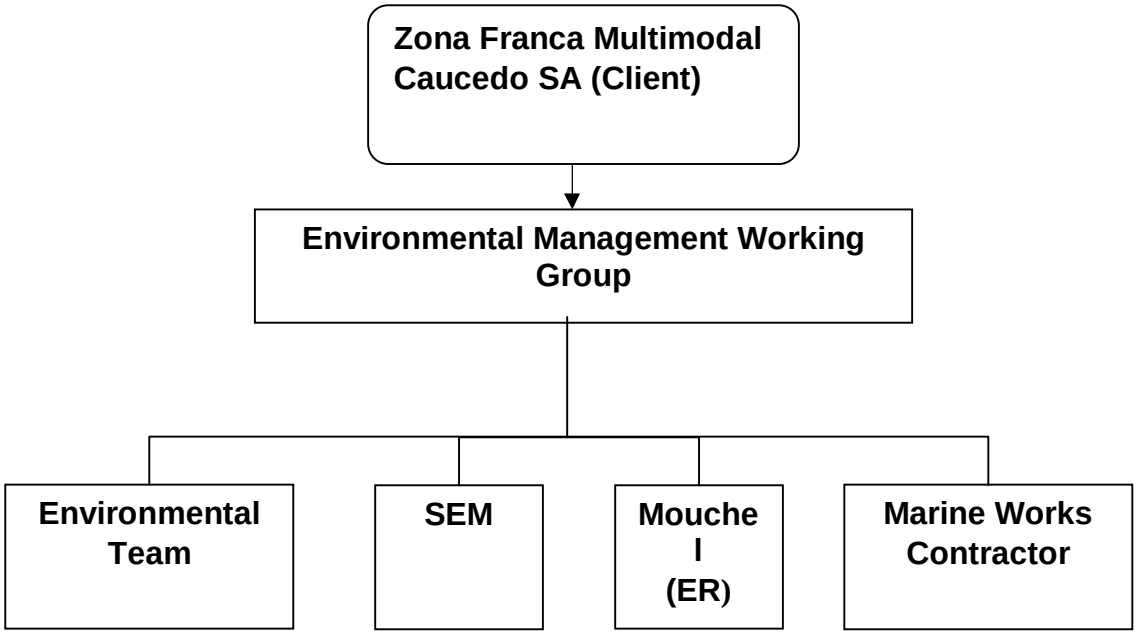

Figure 1.1 Organization of the Environmental Management Structure for Construction

1.3.5 Environmental Team

The Environmental Team (ET) functions entirely independently of all works contractors and the Port management.

The duties of the ET are:

- To investigate and audit equipment and working methods with respect to pollution control and environmental mitigation and to anticipate environmental issues for proactive action before problems arise.
- To audit environmental monitoring reports relating to the project.
- To undertake ad-hoc supplementary monitoring of ambient environmental quality as required.
- To assess compliance with regulatory criteria and PEMA action criteria.
- To report on the status of Construction - PEMA implementation and environmental conditions.

- To investigate any environmental incidents and complaints and recommend appropriate mitigation to resolve the problem and prevent reoccurrence.

1.4. Outline of the Construction – PEMA

Chapter 2 of this document provides a comprehensive listing of all environmental mitigation measures recommended in the EIS or otherwise identified during the environmental impact assessment process, including all specific environmental control requirements instructed by SEMARENA in association with the issue of the Environmental Permit for the project.

Chapter 3 sets out the scope of the Site Environmental Audit undertaken to ensure that site workers adhere to the environmental management requirements spelled out in the EIS and good working practices on a day to day basis. This chapter describes the routine site audit and inspection process and introduces the audit checklists and corrective action procedures to be established by the ET. It includes details of environmental management training for site staff.

Chapter 4 provides details of the environmental monitoring programmes to be established by the Marine Works Contractor to provide up to date information on ambient conditions and the actual extent of any environmental impacts. It also describes the environmental quality criteria to be adopted and the action steps to be followed in the event that additional mitigation or adjustment is necessary to bring impacts back to within acceptable bounds.

Chapter 5 describes the reporting process to be followed during construction of the Multipurpose Berth.

A comprehensive set of appendices is attached to be developed by the Contractor:

- Marine Works Contractor's Programme for the Works - Appendix 1
- Marine Works Contractor's Health, Safety, Environment and Security Plan - Appendix 2

3 2 Implementation of Environmental Mitigation Measures for the Construction Issues

2.1 Introduction

The EIS made numerous recommendations for environmental mitigation measures to reduce the extent of any adverse impacts that works activities may have on the environment during the construction period. They are related especially to the measures which affect the project's design, the programming, and the construction methods. This process includes reviewing processes and procedures, before approval to proceed, as well as the verification of the progress of the construction. Other controls will be by routine intervention on the site by the Environmental Team.

The following tables provide a comprehensive listing of all environmental mitigation measures that have been identified during the EIA process. These include the project client's own management requirements, recommendations of the EIS, the previous Environmental Management Plan, conditions specifically appended to the Environmental Permit and other related requirements from SEMARENA.

The tables identify the agent responsible for implementing each of the mitigation requirements and also the mechanism proposed to ensure that these are actioned.

2.2 Water Quality

Mitigation Measure	EIS/ EMP SEMARENA/ PA ref.	Implementation Agent
Prior to undertaking piling, filling or reclamation work, the contractor is to submit method statements or other information demonstrating to the satisfaction of the Employer's Representative that the proposed methods will ensure that specified suspended sediment concentrations are not exceeded.	*EIS 13.2.1*	*Contractor*
The construction sequence will be designed to minimise losses of fine material. The construction methods will utilise silt screens if high levels of turbidity are experienced when fill material is tipped behind the pile wall.	*Client requirement*	*Contractor*
Fuels and hydraulic fluids etc. from plant maintenance and refuelling areas will be covered and protected by earth mounds or equivalent. Drainage will be via a petrol / oil interceptor. Oil spill kits will be provided in all servicing areas, lubrication bays and any other areas as appropriate. Waste oils, engine and hydraulic fluids should be stored in containers clearly labelled in English and Spanish, in a covered, bunded area, prior to collection by a SEMARENA approved contractor for recycling or disposal. All bunded areas will have a volume of 110% the capacity of the tank they contain.	*EIS Table 27*	*Contractor*
Storage facilities for hazardous materials shall be provided with sufficient fire protection systems to control fires and/or the release of hazardous materials to the environment.	*Client requirement*	*Contractor*
The contractor will ensure that slopes of material and temporary topography of works areas prevent water from flowing directly to the sea. Surface water shall be directed to sedimentation pools. Silt screens shall be provided at the egress points.	*EIS 13.2.2 SEMARENA mod. no. 18. PA 6(3)*	*Contractor*
Staging areas, spoil storage areas, and other additional work areas shall be located at least 15 metres away from the edge of water-bodies or wetlands as far as possible. If topographic conditions prevent a setback of 15m, then these areas shall be located a minimum of 3m away from the water edge.	*Client requirement*	*Contractor*

Facilities such as oil interceptors and sewage tanks on the Feeder Berth breakwater must be protected from overflowing into the sea, due to overtopping of the breakwater by storms.	*Feeder Berth Stage 1 Concept Study*	*Contractor*

2.3 Waste

Mitigation Measure	*EIS/ EMP SEMARENA/ PA ref.*	*Implementation Agent*
Concrete casting should as far as practicable be carried out using standardised re-useable steel formwork.	*EMP 6.3.1*	*Contractor*
Timber can be re-used on site for a number of purposes including construction of temporary ramps, platforms, barriers etc.	*EMP 6.3.2*	*Contractor*
All working areas and site roads will be kept clear of mud, water, silt and other materials at all times. If earth, mud or other debris is deposited on roads they will be immediately removed.	*EIS 17.4.1*	*Contractor*
Waste generated during the construction process should be separated and recycled where possible	*EIS 17.4.1*	*Contractor*
Any waste materials that can not be re-used shall be disposed of to approved official waste disposal sites. All waste management contractors shall be authorised by SEMARENA. Waste materials destined for landfill will be transported by truck	*EIS 17.4.1 SEMARENA mod. No. 3*	*Contractor*
Burning of waste on the site will not be permitted.	*EIS 17.4.1*	*Contractor*
Garbage containers will be provided in sufficient numbers to ensure adequate storage capability and prevent accumulation of litter. Garbage containers shall be stored in a secure area inside the perimeter fence to prevent scavenging. Garbage shall be collected and disposed of daily to prevent attracting rodents and predators.	*Client requirement*	*Contractor*
Materials disposed of offshore will be loaded into a hopper barge and disposed of at an approved disposal site. The Contractor will be required to obtain all necessary license and permits for any such disposal.	*EMP 6.3.4*	*Contractor*
A service boat shall be provided for collection of windblown rubbish within the sea or harbour basin.	*EIS 17.4.1*	*Contractor*

2.4 Ecology

Mitigation Measure	EIS/ EMP SEMARENA/ PA ref.	Implementation Agent
The loss of armoured revetment on the breakwater will mean less habitat for aquatic fauna including places of shelter for fish. The health of the marine ecology will need to be monitored.	*EIS 10.1.3*	*CII*
The area of fill material to be removed from the Free Trade Zone should be inspected by an ecologist prior to works to ensure it has not been re-colonised by any rare species.	*Client requirement*	*Contractor*
The deposit of fine material can lead to the damage of coral therefore the construction sequence will be designed to minimise losses of fine material. The construction methods will utilise silt screens if high levels of turbidity are experienced when fill material is tipped behind the pile wall.	*Client requirement*	*Contractor*
Litter will not be permitted on the work site and associated areas	*Client requirement*	*Contractor*
Wildlife will not be harassed or fed on the work site and associated areas. *Unsanctioned recreational use of project vehicles will not be permitted throughout the work site and associated areas.*	*Client requirement*	*Contractor*
Vessels will not be permitted to anchor directly to the reef in locations outside of the area of works.	*EMP 3.2 SEMARENA mod. No. 8*	*Contractor*
Use of underwater explosives for activities such as 'pile line clearance' will only be permitted if there are no alternative methods and where permitted will be tightly controlled to minimise impact.	*EMP 3.2 PA 11*	*Contractor*
Safe levels of exposure of marine mammals to acoustic energy have been proposed in the order of 130-160dB at 1uPa. These level must be achieved by the Contractor.	*EIS 10.1.4*	*Contractor*

During any piling or blasting operations only, there should be a requirement for all employees to keep a general look-out, to check for whales or dolphins in the immediate vicinity. If either are identified then the construction activity should cease until they have left the area.	*Client Requirment*	*Contractor*
Consultation with dive operators will be initiated to discuss the impact on their business of the project, in particular the piling operations and its impact on local aquatic fauna.	*SEMARENA mod no. 30*	*CII*

2.5 Air Quality

Mitigation Measure	EIS/ EMP SEMARENA/ PA ref.	Implementation Agent
Although construction activities are contained entirely within the terminal site, some additional external vehicle movements will be generated. The crossing of Puerto AndrÈs by truck is forbidden. Traffic of heavy vehicles shall be done preferably on tarmac roads.	*EIS 13.2.2*	*Contractor*
Vehicles carrying fill material, aggregates and any other loose material will be sheeted at all times both on and off site.	*EIS 11.2.1*	*Contractor*
Vehicle speeds should be maintained at a level appropriate to the local conditions for pedestrian safety.	*EIS 16.2*	*Contractor*
On site traffic routes will be damped down at regular intervals as necessary to minimise the re-suspension of dust from paved and unpaved surfaces by vehicle movements.	*EIS 11.2.1 SEMARENA mod. no. 13*	*Contractor*
Stockpiles of easily eroded material on site will be covered with a weighted tarpaulin, or similar, to prevent windblown losses.	*EIS 11.2.1*	*Contractor*
Where necessary vehicles will be required to pass through a wheel wash prior to leaving the site. The bodywork, chassis, and underframes of vehicles will also be hosed where necessary.	*EIS 11.2.1*	*Contractor*
All static and mobile diesel-powered plant will be maintained in accordance with the manufacturer's specification to minimise emissions.	*EIS 11.2.1*	*Contractor*
Any vehicle or machinery whose exhaust exceeds 5000ppm of CO_2 shall be refused. Measurements shall be made randomly on site using a Bruel and Elkjer (or equivalent) atmosphere analyser previously calibrated on site.	*Client requirement*	*Contractor*

2.6 Noise

Mitigation Measure	EIS/ EMP SEMARENA/ PA ref.	Implementation Agent
Mechanical plant to be maintained to manufacturers' specification and appropriately silenced to fulfil requirements of local authorities and current editions of all acts and regulations applicable to noise control on construction sites.	*EMP 5.2*	*Contractor*
Work scheduled to minimise as far as practicable the numbers of plant concurrently operating.	*EMP 5.2*	*Contractor*
Heavy vehicle access to the site on public roads to be limited to 06.00 to 20.00 hours unless specifically authorised for safety reasons. Heavy vehicle access on public holidays and Sundays will be further limited to 08:00 to 16:00 hours except where unavoidable.	*EMP 5.2*	*Contractor*
If bed materials along the pile line cannot be cleared without pre-treatment, full details of proposals for pre-treatment, by drilling, blasting or other means, shall be submitted to SEMARENA for comment and approval. Charge sizes will be minimised to reduce potential impacts and for underwater blasting will not exceed 130 – 160 dB at 1 μPa.	*EMP 5.2 PA 11*	*Mouchel Parkman / Contractor*
Appropriate mitigatory measures must be specified within the method statement to ensure that excessive noise and vibration levels, particularly from piling operations would not affect any nearby structures or dwellings and that inconvenience to members of the public and others who may be affected by the works is reduced to an absolute minimum.	*EMP 5.2 PA11*	*Contractor*
Before commencing any piling operations, the contractors will be required to undertake testing to adapt the operating of equipment to ensure that neighbouring sensitive receivers will not be adversely affected. Measures must be defined for the control of low frequency sound.	*EMP 5.2 SEMARENA mod. No. 7*	*Mouchel Parkman/ Contractor*
A separate report on the necessity of underwater blasting and a technical report on underwater blasting including an assessment of environmental impacts to be submitted to SEMARENA.	*PA 11*	*Mouchel Parkman/ Contractor*

2.7 Human Environment

Mitigation Measure	EIS/ EMP SEMARENA/ PA ref.	Implementation Agent
Given the scale of the Multipurpose Berth Construction and its location within the existing developed area of the Terminal it not envisaged that this work will have any significant impacts on the human environment.		

3 Site Environmental Audit

3.1 Site inspections

The PEMA requires implementation of well defined pollution control and mitigation specifications. These will be enforced by means of a rigorous site inspection, deficiency and action reporting system.

Responsibility for implementing the various pollution control and mitigation measures identified in the Construction - PEMA rests with the Marine Works Contractor as identified in the mitigation tables in Chapter 2.

The implementation of all of these measures will be independently verified by the time Environmental Team (ET) to be employed by the port. This section of the Construction - PEMA describes the auditing activities of the ET.

Site inspections shall be undertaken routinely by the ET to observe that appropriate environmental protection and pollution control mitigation measures are being properly implemented by the Marine Works Contractor.

During the Multipurpose Berth construction the ET will liaise with the Marine Works Contractor's Environmental Manager on at least a weekly basis and schedule inspection visits to coincide with works activities of most environmental concern. The site visit frequency will be increased if necessary to properly keep track of major new activities.

The weekly site audit checklists to be used by the ET are provided in Section 3.5, below. These will be reviewed continually by the ET.

The scope of inspection is not limited to the environmental situation or pollution control and mitigation measures within the site; it also extends to surrounding areas outside the site which are affected by the construction activities either directly or indirectly.

The ET shall make reference to the following information in conducting the inspections:

- Environmental protection and pollution control mitigation measures identified in the - PEMA.
- Works progress and programme.
- Works method statements.
- The Environmental protection and pollution control laws of the Dominican Republic.

- Recognised international best practice environmental management for construction sites
- Previous site inspection results.

The Marine Works Contractor, on request, shall update the ET with relevant information from the construction contract for him to carry out the site audit inspections. Significant adverse findings from all inspection visits shall be submitted to the Employer's Representative and to the contractor immediately. The ET shall make recommendations on improvements to environmental protection and pollution control aspects of works practice.

Environmental incidents should be logged using the forms provided in Section 3.3, below.

Follow up site inspections shall also be carried out, on an *ad-hoc* basis, if significant environmental problems are identified. Inspections shall also be required after receipt of an environmental complaint (Section 3.3), or as part of the investigation work, as specified in the Action Plan for environmental monitoring and audit (Section 4).

3.2 Compliance with legislative and other requirements

The Marine Works Contractor is responsible for ensuring that the construction activities always conform to the specific requirements given in the relevant sections of the Environmental Permit and the laws of the Dominican Republic.

To help ensure that proposed construction works are in compliance with all appropriate requirements, all method statements submitted by the Contractor will be vetted by the Employer's Representative (ER). The ER may, when he considers it necessary, consult with the ET to determine if sufficient environmental protection and pollution measures have been included.

The ET will review the progress and programme of the works against all relevant permits, licences and regulations, so that he can advise the ER appropriately of any actual or potential non-compliance. The ER will notify the Contractor who will be responsible for immediate implementation of any actions required; the ER will then verify that appropriate action has be taken in order to ensure that environmental protection and pollution control requirements are fulfilled.

3.3 Environmental incidents and complaints

Complaints shall be referred to the ET for investigation. The complaint will be addressed by means of the procedures outlined in Figure 3.1.

The steps to be followed are described below :

a) ET to log details of the complaint and date of receipt onto a complaint database using a Environmental Incidents and Complaints Log (form B)

b) The ET shall investigate the complaint to determine its validity and to assess whether the source of the problem is due to works activities.

c) If a complaint is valid and due to works on-site the ET shall identify the necessity for mitigation measures to prevent re-occurrence.

d) If mitigation measures are required the ET shall advise the Employer's Representative using a Corrective Action Request (CAR) (form C). The ET will make recommendations to the Employer's Representative on the necessity and scope of any additional mitigation.

e) The Employer's Representative will review and then forward the CAR to the Contractor as a formal request for action.

f) The Employer's Representative shall review the Contractor's response on the identified mitigation measures and forward this to the ET as a status report.

g) The ET shall arrange a repeat inspection to confirm that the problem has been effectively mitigated.

h) If the problem has been resolved the ET shall close off the CAR procedure and advise the Employer's Representative and the Contractor accordingly. If the problem persists the ET shall append a new CAR sheet and re-refer this to the Employer's Representative. (i.e. re-start the procedure at Step (d), above).

i) On resolution of the problem the ET shall report the results of the investigation and the subsequent actions to the author of the complaint. Draft replies shall be reviewed by the Employer's Representative prior to issue.

If the complaint is transferred from SEMARENA, the ET shall modify the above procedure and follow all specific instructions issued by SEMARENA relating to handling of the case. The ET shall submit any interim reports to SEMARENA as necessary on the status of the complaint investigation and follow-up action within the time frame required by SEMARENA. Draft replies shall be reviewed by the Employer's Representative prior to issue.

The ET shall specifically return to all activities that have been the subject of environmental incidents or complaints as part of the routine site environmental audit activity to identify any future re-occurrence.

The ET shall routinely report the status of all complaints, investigation, subsequent actions and results including the status of all active CAR items in the monthly PEMA reports.

During the investigation of the complaint the Contractor and Employer's Representative shall co-operate with the ET to provide all necessary information

and assistance for completion of the investigation. If mitigation measures are required, the Contractor shall promptly implement any required mitigation measures and the Employer's Representative shall ensure that the measures have been carried out.

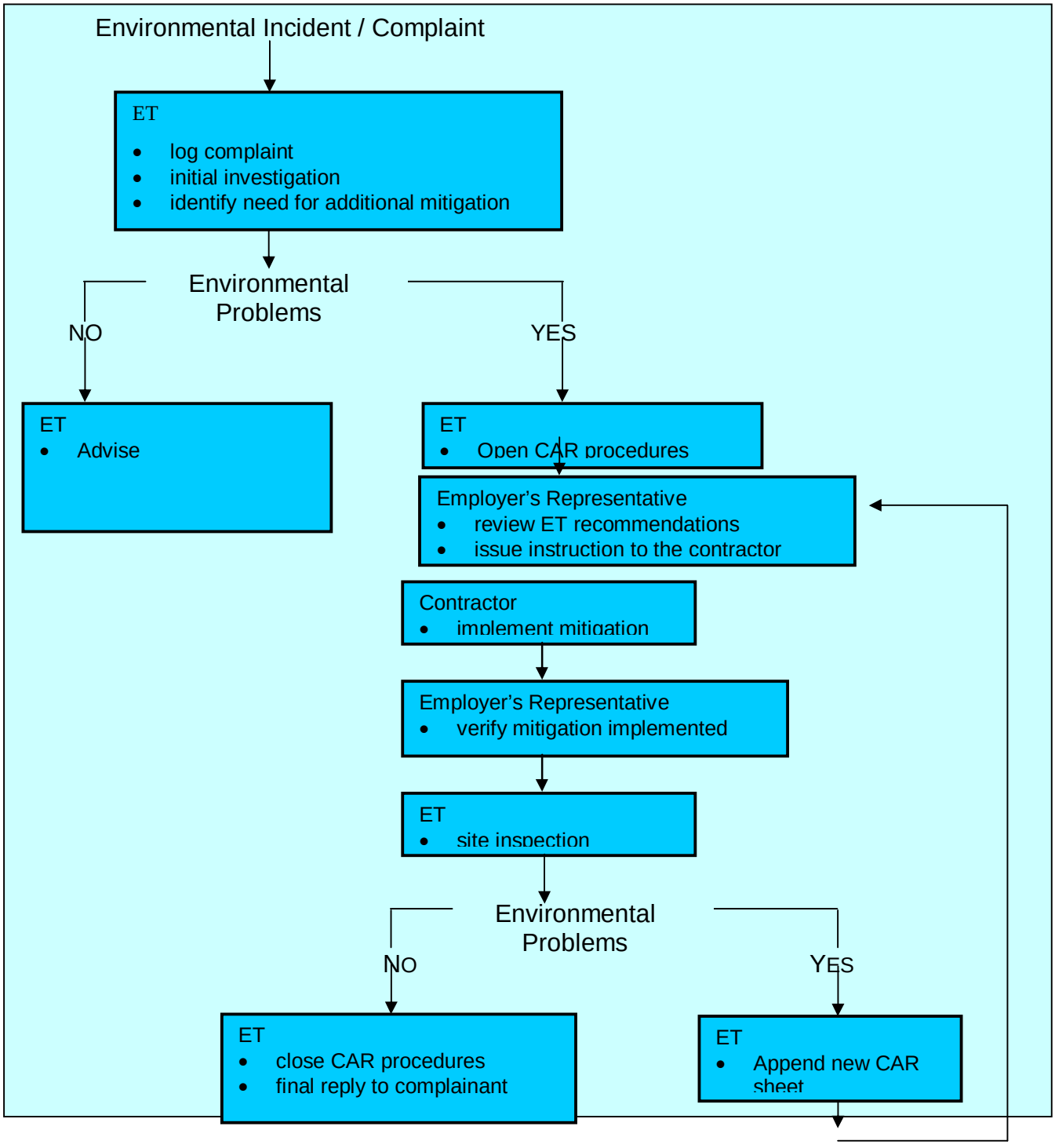

Figure 3.1 Environmental Incident and Complaint Procedures

.

3.4 Employee Training

The Marine Works Contractor will submit a plan to the Employer's Representative detailing his system for induction and training of staff and will take responsibility for its implementation.

All employees will receive environmental training both on first appointment and throughout the period of their employment as they are required to undertake potentially environmentally damaging activities.

All employees will be required to undergo general environmental induction training on how to identify and minimise environmental risks.

Upon completion of this training all employees will be required to sign a statement acknowledging that non-compliance with the Port's environmental policies will be grounds for immediate dismissal.

Formal training programs will be provided in Spanish, English and other languages if necessary to ensure that the workforce has good awareness of environmental hazards and the key elements of the Construction - PEMA including relevant mitigation measures. Three principal categories of training shall be organised as follows:

- Work post training courses - all newly appointed persons will be trained on the specific environmental issues associated with their role before starting work in a new post.
- Hazardous products training – staff will receive an environmental briefing before using hazardous products.
- High environmental risk work - staff will receive additional environmental briefing before staring work on specific tasks where there is a high level of risk to the environment.

Training sessions will be organised for groups of staff sharing a common job classification where this group would use the same materials in the course of their work. In addition, focussed training to address specific hazards will be provided across the workforce for all staff handling widely used hazardous materials (e.g. acids, bases, solvents, etc). Employees will be trained before initial assignment, at least yearly thereafter and any time after the exposure to toxic substances of an existing employee changes. The yearly retraining sessions will include a short review lasting 10-15 minutes to confirm that the group is aware all of the safety and environmental precautions for the substances they are exposed to. In addition,

practical information such as the availability and location of material safety data sheets shall be emphasised.

Newly assigned employees require more comprehensive training. Every hazardous substance the employee is required to handle at work will be reviewed during the induction process to ensure that appropriate training is provided.

All training sessions must be documented and records kept of contents covered and employees attending.

3.5 Environmental Audit Checklist Sheets

This section contains the various checklists and documentation forms to be used by the ET in the course of the routine auditing work and in response to any environmental incidents or complaints. These include :

Form a) The checklist for weekly inspection of Multipurpose Berth Construction Activities

Form b) The Environmental Incidents and Complaints Log

Form c) Corrective Action Request forms

The scope and presentation of these forms may be amended from time to time in the light of developments and experience gained on site.

a) Weekly Audit of Multipurpose Berth Construction Activities

Date		*Period covered*	
Auditors			
Audited parties			

ENVIRONMENTAL AUDIT OF MULTIPURPOSE BERTH CONSTRUCTION

ENVIRONMENTAL MANAGEMENT SYSTEMS

MODULE : Weekly site audit *Location :*

Any comments should be included on a separate sheet. Reference numbers should coincide with those in the module and a tick (🗐) should be placed in the comments box to indicate that comments have been made.

No.	***Question***	***Yes***	***No***	***N/A***	***Comment (🗐)***
1. Piling and back filling					
	a) Is a silt curtain being used and is it correctly positioned? *b) Is there any visible evidence of a sediment plume or increased turbidity* *c) Are there any vessels anchored directly to the reef in locations outside of the area to be dredged?* *d) Is there monitoring for marine mammals entering the area during piling.*				
2. Blasting (if used)					
	a) Is blasting carried out within normal working hours and with the prior consent of the Employer's Representative *b) Are all vessels under way more than 1,500 feet from the blasting area?* *c) Have those on board vessels anchored within 1,500 feet been notified before a blast is fired?* *d) Is the blasting vicinity cleared of swimmers or diving operations?* *e) Is a mini charge released prior to the main blast to warn fish?* *f) Is monitoring undertaken on the blast wave in accordance with the Tender Specification?* *g) Is there a bubble curtain in place during blasting?* *h) Are there any dead fish present after blasting? (If yes, comment on numbers and type).* *i) Is there any visible damage to existing buildings, quay or other structure resulting from the blasting?*				
3. Site Drainage					

	a) *Are channels, earth mounds, or sandbag barriers provided on site to direct stormwater to silt removal facilities such as sand or silt traps and sediment basins? (Comment on condition).* b) *Are easily eroded stockpiles covered e.g. by tarpaulin?* c) *Are interception channels provided (e.g. along the crest/edge of excavation) to prevent storm runoff washing across exposed soil surfaces?* d) *Are manholes (including newly constructed ones) adequately covered and temporarily sealed to prevent silt, construction materials or debris from entering the drainage system?*				
4. Plant Maintenance and Refuelling					
	a) *Is there any evidence of spillage (oil on water, stained ground etc)?* b) *Are oils, fuels and hydraulic fluids etc. from plant maintenance and refuelling, areas covered and protected by earth mounds?* c) *Do bunded areas have a volume of 110% the capacity of the tank they contain?* d) *Are mounds which can't be covered and drip trays used for mobile plant emptied after periods of rain?* e) *Is drainage of the refuelling area provided via a petrol / oil interceptor?* f) *Are oil spill kits provided in all servicing areas, lubrication bays and any other areas as appropriate? (Ask staff where nearest kit is and to describe its use).* g) *Have any vehicles inspected exceeded the exhaust limits of 5000ppm of CO_2?*				
5. Wheel Washing					
	a) *Are vehicles required to pass through a wheel wash prior to leaving the site?* b) *Are the bodywork, chassis, and underframes of vehicles hosed where necessary?* c) *Is there any mud on the roads beyond the wheel washes?* d) *Is wastewater generated from washing down mixer trucks, drum mixers and similar equipment drained to sedimentation basins?*				
6. Casting Yard					
	a) *Is run off and wash water from the concrete batching plant or casting yard settled before discharge?* b) *Is pH adjustment (to within a pH range of 6 – 10) implemented on surplus wastewater from the batching plant prior to discharge into sewers?*				

	c) *Is surface run-off segregated from the concrete batching plant and casting area, and diverted to the stormwater drainage system?*				
7. Water Pollution					
	a) *Have there been any known pollution incidents affecting groundwater or surface water since the last inspection?* b) *Is there any evidence of spills or leaks which have not been reported?*				
8. Noise					
	a) *Has noise monitoring been undertaken in line with the requirements of the PEMA ?* b) *Is mechanical plant maintained to manufacturers specification? (Comment on inspection regime).* c) *Is mechanical plant effectively sound reduced by means of silencers, mufflers, acoustic linings or shields, acoustic sheds or screens as necessary to meet all regulatory requirements and standards ? (Comment on systems in place.)* d) *Is heavy vehicle access to the site on public roads limited to between 06.00 to 20.00 hours except when authorised for safety reasons ?* e) *Is heavy vehicle access on public holidays and Sundays further limited to between 08:00 to 16:00 hours except where unavoidable ?*				
9. Air Quality					
	a) *Have there been any complaints about unpleasant odours? (Check Complaints Log).* b) *Have there been any complaints about dust? (Check Complaints Log).* c) *Are vehicles on site adhering to the 20km/h speed limit?* d) *Are road vehicles carrying aggregates, armour, and any other loose material sheeted at all times when on public roads?* e) *Have any road damping activities been undertaken?* f) *Are wheel washers in use at site entrances when necessary?*				
10. Traffic					
	a) *Are all port vehicles avoiding Boca Chica and the central and residential part of Andres?* b) *Do access routes make use of the roads presently serving the port?*				
11. Waste Management					
	a) *Are waste containers correctly labelled as*				

	specified in the Contractor's Waste Management Plan – see Construction - PEMA appendix. *b) Is waste segregated into appropriate containers and stored on hard standings?* *c) Are hazardous waste skips locked and the waste double bagged?* *d) Are liquid wastes stored in bunded area?* *e) Are the storage areas kept secure from the general public?* *f) Is the waste inventory file* • *Available for inspection?* • *Completed correctly?* • *Up to date?* *(Check sample of documentation)* *f) Are all waste contractors (carriers/receivers/brokers) approved by SEMARENA?* *g) Are all waste disposal facilities authorised by SEMARENA?* *h) Are staff aware of the procedures for storage, handling and disposal of hazardous waste?* *If so* • *is the procedure being followed? (Interview staff, check waste skips)* • *are staff aware of those wastes that are deemed hazardous?* *i) Are waste minimisation / recycling initiatives in place for the following materials :* • *oily waste?* • *Cement and concrete waste?* • *Scrap metal?* • *Glass?* • *Plastics?* • *grit blasting?* • *Batteries?* • *Tyres?* • *Office consumables?* • *Domestic waste?* • *Others?* *j) Is there any evidence of burning of waste on site?* *k) Is there any evidence of windblown rubbish in the sea or harbour basin?*				
12. Emergency Incidents					
	a) Have there been any emergency incidents? *b) If there were any emergency incidents, were the correct contingency procedures followed? (see Construction - PEMA appendices).* *c) Are emergency planning and training procedures in place?*				

Date		Period covered	
Auditors			
Auditees			

Comments	
No.	Comment
	Page of

b) ENVIRONMENTAL INCIDENTS AND COMPLAINTS LOG

Section 1: Incident/complaint description (to be completed by Environmental Team) Date: Recorded by: Location and nature of incident or complaint:
Severity of Incident **Tick all that apply:** Death or Injury to People Threat of Death or Injury to People Pollution of the environment Non-compliance with PEMA or Method Statement Complaint from public Damage to or loss or property, assets or equipment Other (state)
Complaints Only: Name of correspondent: Address: Telephone number: Date Received: Nature of complaint: Response made to correspondent
Section 2: Actions recommended (to be completed by the Environmental Team) Remedial Actions Recommended: Initials: **AT THIS STAGE A COPY OF THE FORM MUST BE PASSED TO THE *EMPLOYER'S REPRESENTATIVE* AND SECTION 1 OF THE CAR FORM COMPLETED**
Section 3: Action on the incident or complaint (to be completed by the *Employer's Representative*)

Corrective Action Request issued? Yes / No

If not state reason and file form in complaints and incidents log.

Corrective Action Request Closed

Signed (*Employer's Representative*) Date

Attach copy of CAR to this form and file in Environmental incidents/complaints log.

Complainant informed of action?

c) CORRECTIVE ACTION REQUEST

Authorities involved: *Employer's Representative* (*ER*) Marine Works Contractor's Representative (*CR*) *Environmental Team (ET),*
Section 1: CAR background (to be completed by the ET) Date: Requested by: Nature of Problem: Origin of Request (Complaint, Inspection, Monitoring, Audit etc.)
Section 2: CAR Task (To be completed by the *ER*) Action Required: Request to be implemented by: Person: by (date)
Section 3: CAR closure (to be signed and dated). Signed Dated CAR implemented *CEM* ……

…….. Verification *ER* …… …….. Site inspection confirmed ET …… ……..
Comments: File in closed CAR file with copy attached to original environmental incident/complaint notice as appropriate.

d) Weekly Audit of Multipurpose Berth Operation Activities

a) WEEKLY AUDIT OF PORT OPERATIONS

Date		Period Covered	
Auditors			
Audited Parties/Elements			

ENVIRONMENTAL AUDIT OF PORT OPERATIONS

†ENVIRONMENTAL MANAGEMENT SYSTEM

†

MODULE : Weekly Audit of Operations †	Locality:

All comments must be included on a separate sheet. The reference numbers must coincide with those in the module and a check (✓) must be placed in the box for comments to indicate that comments have been made.

No.	Question	Yes	No	N/D	Comment(✓)
	✓🗁 **Maintenance and supply Plant**				
†	a) Is there any evidence of spills (oil on the water, stained dirt, etc.)? b) Are the oils, fuels, and hydraulic fluids, etc., for maintenance of the plant and re-supply covered and protected by earthworks? c) Do the earthwork areas have a volume of 110% of the capacity of the tank they contain? d) After rainy periods, have they emptied the earthworks that cannot be covered and the drip pans used for the mobile plant? e) Is the drainage from the re-supply area placed through an oil interceptor ? f) Are the kits against spills available in all service areas, lubrication pits, and any other place appropriate? (Ask the personnel where the closest one is and have them describe its use). g) Have any of the vehicles inspected exceeded the emissions limits of 5000ppm of CO_2?	†	†	†	†
	✓ **Water Contamination**				
†	a) Has there been any contaminating incident known to have affected the underground water or surface water since the last	†	†	†	†

	inspection? b) Is there any evidence of spills or leaks which have not been reported?				
✓🗁 **Noise**					
†	a) Has noise monitoring been done? b) Is the plant maintained according to the manufacturer's specifications? (Comment on the inspection system). c) Is the sound of the mechanical plant reduced effectively by silencers, mufflers, acoustic linings or shields, acoustic sheds or meshes necessary to comply with the regulations and standards required? (Comment on the systems in place.)	†	†	†	†
✓🗎 **Air Quality**					
†	a) Has there been any complaint about disagreeable odors? (Check the Complaints Notebook). b) Has there been any complaint about dust? (Check the Complaints Notebook). c) Are the vehicles in operation respecting the speed limit of 20km/h?	†	†	†	†
✓🗎 **Traffic**					

	a) Are all of the Port¥s vehicles avoiding Boca Chica and the central and residential part of AndrÈs?	†	†	†	†

✓	**Handling of Residues**				
	a) Are containers of waste correctly labelled as specified in the Waste Handling Plan?– see Appendix PEMA. b) Are the wastes segregated in containers and stored on hard surfaces? c) Are the containers of dangerous waste closed and do they have double packaging? d) Are the liquid wastes in pond areas? e) Are the storage areas kept safe for the general public? f) Is the file of inventory of wastes, • available for inspection? • Up to date? (*Check sample of the documentation)* g) Are the Contractors for Handling Wastes (transporters/receivers/brokers) approved by SEMARENA? h) Are all the facilities for disposal of wastes authorized by SEMARENA? i) Are personnel informed of the procedures for, handling, and disposal of dangerous waste? If so: • Are the procedures being followed? (Interview the personnel, check the containers of wastes) • Are personnel aware of those wastes classified as dangerous? j) Are the initiatives for recycling being used for the following materials? • Oily residues? • Residues of cement and concrete? • Scrap metal? • Glass? • Plastics? • Batteries? • Tires? • Office articles? • Domestic Residues? • Others?	†	†	†	†

	a) Is there evidence of the burning of garbage in the terminal? b) Is there evidence of the discharging of garbage into the ocean or the bay?				
✓ **Emergency Incidents**					
†	a) Has there been any emergency incident? b) If there was, were the correct procedures taken? (see the appendices of the PEMA). c) Are the emergency training and planning procedures established?	†	†	†	†

Date	†	Period covered	†
Auditors	†		
Audited Parties/Elements	†		

†

† Comments †	
No.	Comment
†	†
†	†
†	†
†	†
†	†
†	†
†	†
†	†
†	†
†	†
†	†
†	†

†	†
†	†
†	†

b) ENVIRONMENTAL INCIDENTS AND COMPLAINTS LOG

Section 1: Incident/complaint description (to be completed by Environmental Team) Date: Recorded by: Location and nature of incident or complaint:
Severity of Incident **Tick all that apply:** Death or Injury to People Threat of Death or Injury to People Pollution of the environment Non-compliance with Operations PEMA or Method Statement Complaint from public Damage to or loss or property, assets or equipment Other (state)
Complaints Only: Name of correspondent: Address: Telephone number: Date Received: Nature of complaint: Response made to correspondent
Section 2: Actions recommended (to be completed by the Environmental Team) Remedial Actions Recommended: Initials: **AT THIS STAGE A COPY OF THE FORM MUST BE PASSED TO THE SEM AND SECTION 1 OF THE CAR FORM COMPLETED**
Section 3: Action on the incident or complaint (to be completed by the SEM)

Corrective Action Request issued? Yes / No

If not state reason and file form in complaints and incidents log.

Corrective Action Request Closed

Signed (SEM) Date

Attach copy of CAR to this form and file in Environmental incidents/complaints log.

Complainant informed of action?

C) CORRECTIVE ACTION REQUEST

Authorities involved: Security and Environment Manager (SEM) Operations Team (OT) Environmental Team (ET),
Section 1: CAR background (to be completed by the ET) Date: Requested by: Nature of Problem: Origin of Request (Complaint, Inspection, Monitoring, Audit etc.)
Section 2: CAR Task (To be completed by the SEM) Action Required: Request to be implemented by: Person: by (date)
Section 3: CAR closure (to be signed and dated). Signed Dated CAR implemented OT ……. ……..

Verification SEM …… …….. Site inspection confirmed ET …… ……..
Comments: File in closed CAR file with copy attached to original environmental incident/complaint notice as appropriate.

4 Environmental Monitoring Plan

4.1 Objective and scope

The Environmental Monitoring Plan is related to the gathering of data *in situ* in order to describe the conditions of the receiving environment adjacent to the Port of the operations. This implies the routine noting of environmental conditions throughout the period of operations.

The implementation of the monitoring program will provide a mechanism for the quantitative comparison of the environmental conditions with the limits of conformance established. This will facilitate the immediate identification of any environmental deterioration caused by the activities of the operations and the implementation of any other mitigation and adjustment necessary.

4.2 Monitoring overview

4.2.1 Water Quality Monitoring

The key objective in the monitoring program is to show that the Construction activities do not lead to excessive suspended solids and turbidity.

The sampling of the seawater turbidity will be via a visual check supported by combination of monitoring techniques if a potential problem is identified.

4.2.3 Noise monitoring

The levels of noise from construction activities will be monitored on the limits of the site and near sensitive receptors, during construction working hours.

4.2.4 Coral and marine ecological monitoring

A comprehensive marine environmental survey was commissioned during preparation of the Environmental Impact Statement. This provides a baseline for future ecological survey.

Post construction, dive surveys will be made using the same AGGRA-RAP methodologies to monitor the impact on marine fauna from the loss of the armour revetment as a marine habitat.

4.3 Monitoring Programme Summary Matrix

Medium and Activity	Impact	Parameters to be monitored	Sample point	Frequency	Duration	Compliance criteria	Equipment details	Responsibility and contract ref.
General	*At same time as measuring the key parameters specified in the matrix below, relevant supporting data such as monitoring location, time, water depth, weather conditions, sea state, tidal stage and any other special construction activity underway should be recorded. Ad hoc monitoring of all parameters may be required if significant environmental problems are identified.*							*Contractor*
Construction Period								
WATER *- Disturbance of fines in sea.*	*Increased suspended solids.*	*Turbidity (NTU)*	*In the vicinity of the Feeder Berth*	*Continuous*	*Throughout period of piling, filling and reclamation*	*Visual inspection for signs of significant turbidity*	*Visual check only*	*Contractor*
AIR *– Dust production*	*Disturbance of local population and wildlife. Health and safety issues.*	*Regular site inspections will enforce mitigation measures, identify potential air quality problems and address them in their early stages.*	*Site and surrounds covered by the site audits.*	*Weekly.*	*Inspection throughout construction phase*	*N/A*	*N/A*	*Contractor*
NOISE *- Operation of equipment including the piling equipment and general construction equipment*	*Disturbance of local population and wildlife. Health and safety issues.*	*The Leq (30 min) shall be used as the monitoring parameter for the time period between 07:00 and 22:00 on normal weekdays.*	*Construction site noise levels from sensitive receptors will be monitored at the site boundary.*	*Monthly*	*Throughout construction period*	*Latest statutory criteria applicable to DR and also World Bank criteria.*		*Contractor*
ECOLOGY *- Change of*	*Loss of habitat for*	*The general health of the marine*	*Detailed methodology to be determined.*	*Quarterly*	*During rock armour*	*Evidence of deterioratio*	*Photographic or video*	*Mouchel Parkman to appoint marine*

rock armour to sheet piles	*marine fauna.*	*habitat.*	*At least one monitoring location should be the same as one of those surveyed during the baseline assessment.*		*removal and back filling.*	*n of fish numbers*	*methods*	*biologist.*
***ECOLOGY** – Piling or Blasting*	*Impact on marine mammals*	*Presence of marine mammals in the vicinity*	*The water close to the Construction site.*	*On-going*	*On-going*	*Presence of dolphins or whales*	*N/A*	*Contractor*
Post-construction								
		The general health of the marine habitat using the AGGRA-RAP protocol. Reef fish and sea urchin counts will also be made.	*Monitoring to determine the health of fauna and the estimated recovery of the fish population*	*To be addressed in operational phase PEMA.*	*Post construction*		*Photographic or video methods*	*ET*

4.4 Noise Limits and Action Plan

Notwithstanding the specific mitigation and monitoring measures specified in this Construction - PEMA the Marine Works Contractor is required to ensure full compliance with all requirements of statutory requirements and standards applicable in the Dominican Republic.

In addition, the World Bank Guidelinesmust be complied with. The World Bank guidelines state that noise abatement measures should achieve either the levels given in Table 4.3 or a maximum increase in background levels of 3dB(A) shown in Table 4.4. These two standards will be invoked depending upon the baseline levels using the following criteria.

Conditions	Standard to use
Baseline noise level < maximum ambient noise levels	maximum ambient noise levels
Baseline noise level > maximum ambient noise levels	baseline plus 3 dB(A)

Should non-compliance occur then actions in accordance with the action plan given in Table 4.4 shall be carried out.

Table 4.1. Maximum instantaneous acoustic pressure for workers on site.
(Beyond this limit appropriate acoustic protection must be provided for the workers).

	Maximum instantaneous acoustic pressure dB(A).	
	Limit	***Daily exposure***
Site staff	*90*	*85*

Table 4.2. Maximum ambient noise levels

	Maximum allowable log equivalent (hourly measurements) in dB(A)	
	Day (07:00 – 22:00)	***Night (22:00 – 07:00)***
Residential, institutional,	*55*	*45*

educational		
Industrial, commercial	*70*	*70*

Table 4.3. World Bank Limit Levels for Noise based on baseline conditions

Time period	***Limit (dB(A))***
07:00 – 22:00 hrs on normal weekdays	*Baseline plus 3 dB(A)*
07:00 – 22:00 hrs on holidays	*Baseline plus 3 dB(A)*
22:00 – 07:00 hrs of next day	*Baseline plus 3 dB(A)*

Table 4.4. Event / Action Plan for Noise for exceedence of World Bank Standards.

ET Leader	***Contractor***
Notify Contractor *Identify source* *Require Contractor to implement mitigation measures* *Increase monitoring frequency to assess effectiveness of mitigation*	*Submit noise mitigation measures to ET Leader and ER* *Implement agreed measures* *Prove to ET Leader / ER effectiveness of measures applied.*

4 Reporting

5.1 General

The ET will be responsible for preparation of two regular reports:

a) A Monthly Report., to be submitted to the Environmental Management Working Group for use by Port Managers

b) Quarterly Report, to be submitted to SEMARENA in compliance with the terms of the Environmental Remit.

The two main activities which are central to the philosophy of the Operations PEMA and which require regular disclosure are

a) Site Audit Inspection

b) Monitoring of the environment

c) Monitoring of Processing

These aspects will be covered by each of the two reports.

The SEM will monitor reports submitted by the ET.

Three copies of the Monthly Report will be provided to the SEM. The report is conceived as a tool to assist in following up the jobs of mitigation, work experiences, and monitoring practices required by the Operations PEMA. The report will be discussed once a month by the Environmental Management Working Group presided over by the SEM.

Three copies of the formal Quarterly report in compliance with this Operations PEMA will be submitted quarterly to SEMARENA,

The content of the Quarterly Report to be submitted to SEMARENA is described below. The contents of the Monthly Report prepared by the ET for the Environmental Management Work Group will be based initially on the formal Quarterly Report to SEMARENA.

5.2 Specific Reporting Requirements for Water Quality Data Management

The data will be processed such that by consulting the data base it will be possible to prompt evaluation of:

1 Present levels and instantaneous averages of turbidity and the concentrations of suspended solids for each station

2 A comparison of the Control Stations data with data from Reference Stations

3 A comparison of the Control Stations data with data from the base line period

4 Present profiles of the currents in time

5 Present profiles of the winds in time

6 Present profiles of the tides in time

5.3 SEMARENA Quarterly Reports

The results of all the work required in this Operations PEMA shall be recorded in the Quarterly Reports to SEMARENA. The reports will be prepared and submitted within ten working days the end of each reporting period.

The Quarterly Operations PEMA Reports will include the following:

a) 1-2 Pages. Executive Summary.

- Action events/limit levels.
- Record of complaints
- Report of Changes.
- Future key topics.

b) Environmental Status

- Drawings showing the Port area, any sensitive receiver, and the locations of monitoring and control stations.
- Summary of noncompliance with the environmental quality limits.
- Summary of the inspection results and of the site audits.

c) Environmental Topics and Actions

- Implementation status of the mitigation measures and the corresponding efficiency of such measures.

- Description of the actions taken during the occurrence of non-compliances or deficiencies.
- Review of topics brought from previous reports including any follow up actions

d) Summary of complaints and environmental incidents

e) Summary of future key questions

f) Appendices……..

- Graphs of tendencies of monitored parameters in the reported period for the representative monitoring stations with the following identifiable factors:
- Important activities realized in situ during the time period.
- Atmospheric conditions during the time period
- Any other factor that may affect the monitoring results.
- Monitoring program for the present and next reporting period.
- Cumulative statistics of complaints.
- Details of any complaints, exceptional questions and/or deficiencies.

5.4 Maintenance of Data

Site documentation such as field monitoring records, laboratory analysis dossiers, site inspection forms, etc. do not need to be included in the Operations PEMA Monthly or Quarterly Reports. However, the documents shall be kept by the ET with all pertinent information clearly and systematically recorded, and shall be ready for inspection when needed. All documents and data shall be retained for at least one year after collection.

5 Appendix 1 - Marine Works Contractor's Program for the Works

6 Appendix 2 - Marine Works Contractor's Health, Safety, Environment and Security Plan

- Marine Works Contractor's Health and Safety Plan
- Marine Works Contractor's Security Plan
- Marine Works Contractor's Emergency Contingency Plan