

## **4.0 ENVIRONMENTAL CONSEQUENCES**

***This chapter describes the potential environmental impacts that the construction and the operation of the Port of the Americas may have on the existing environment within the project area.***

### **4.1 Introduction**

This chapter describes the potential environmental impacts of the PTA to the existing natural resources within the project area. Potential impacts that represent relevant issues as identified in Section 1.7.2, are discussed for the three (3) alternatives considered for the PTA as follows: No-Action, Ponce and Guayanilla with a main terminal at Ponce, and Ponce as the only element of the Project (Applicant's Preferred Alternative: Ponce Bay Only).

### **4.2 General Environmental Effects**

The following topics are discussed under this section: Impacts to land use and zoning, and impacts on soils and earth crust.

#### **4.2.1 Land Use and Zoning**

The impacts of a project on land uses can be considered significant and subject to mitigation if the proposed action is not compatible with current land use plans, municipal ordinance plans, existing policy or current government regulations. The alternatives considered are compatible with the current land uses and zoning characteristics as discussed in the sections below.

##### **4.2.1.1 No-Action Alternative**

Under the No-Action Alternative, there would be no impacts on the land use or zoning of the area. The areas would remain as they currently exist and the opportunity of revitalizing abandoned areas would be lost.

##### **4.2.1.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

This alternative includes a main terminal at Ponce, including fill of approximately 76 acres within the Ponce Bay and a terminal at the Guayanilla Bay. The area to be filled at the Ponce Bay would become land part of the Municipality of Ponce, since it would be an extension of the existing facilities. Aside from this change, the alternative would not result in other changes to the land uses or zoning at either of the two proposed terminals. Both the Ponce and Guayanilla-Peñuelas sites have been extensively used for industrial purposes for the past decades and are zoned as such.

For the reasons explained above, the development of the PTA under this alternative is compatible with current land uses and zoning in the areas within the municipalities of Ponce, Guayanilla, and Peñuelas, where the project components under this alternative would be developed.

- In the Ponce area, the land proposed for the development of the PTA is part of the Port of Ponce and it has been in use since the beginning of the 20<sup>th</sup> century. Parcels adjacent to the port identified for value-added activities and port expansion are either in use for industrial activities or vacant. As a result, there would be no impacts to the current land use, since the proposed use is essentially the same as the current use. These areas are

currently vacant and zoned under the classification of urban soil as Industrial Building (*EI*, by the Spanish acronyms), according to the Soils Classification Map of the Ponce Municipal Territorial Plan. This classification is established to provide the parameters required to regulate the installation of offices, warehouses and manufacturing facilities within isolated buildings or as part of industrial parks. Therefore, it is expected that no rezoning of the selected lots would be required to accommodate the proposed project, since the current zoning of the area proposed for port expansion is in harmony with the proposed action.

- The Territorial Plan for Ponce is currently under revision, including rezoning a 267-acre area proposed for the expansion of the existing port facilities under the category Industrial Development 1 (*DI.1*, by the Spanish acronym). According to the revisions proposed by the Municipality of Ponce (*Reglamento de Ordenación de junio de 2002*), this classification will be established to encourage the development of industries such as the PTA and the value-added industries associated with it.
- Under this alternative, in the Guayanilla-Peñuelas zone, where most of the land proposed for development housed activities classified as “heavy industrial” by the Planning Board, it is improbable that the parcels can accommodate other uses in the nearby future, such as for tourism, agriculture, recreation or residential. The proposed piers and terminal under this alternative would maintain the same industrial land use classification.

Therefore, under this alternative, there would not be any adverse impacts from the proposed land uses, since these are compatible or similar to the current zoning classifications.

#### **4.2.1.3 Applicant’s Preferred Alternative: Ponce Bay Only**

The Applicant’s Preferred Alternative: Ponce Bay Only proposes to develop all the elements of the PTA at the Ponce Bay. Under this alternative, a docking channel would be excavated inland, transforming approximately 45 acres of land into maritime waters. Also, approximately 59 acres of wetlands would be filled adjacent to the docking channel for the storage of containers in transit. Rezoning of these two areas to the Industrial Development 1 category would be required under the Ponce Municipal Territorial Plan.

Also, the parcels proposed for mitigation at the “Finca La Esperanza” east of the Port of Ponce, which are now zoned “*Suelo Rustico Comun*”, or Common Rustic Soil, would be acquired by the Commonwealth and rezoned under the Ponce Territorial Plan as “*Suelo Rustico Especialmente Protegido-Natural*” (SREP-N), or Specially Protected Rustic Soil (Plan de Ordenamiento Territorial de Ponce, Sheets 12J-14J, 12K-14K).

#### **4.2.2 Impacts on Topography**

##### **4.2.2.1 No-Action Alternative**

There would be no impacts on the topographic setting of the area under the No-Action Alternative. All areas proposed for development would remain in their current condition under this scenario.

##### **4.2.2.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

The site for the proposed project in the Port of Ponce includes marine and coastal lands whose topography would be altered under this alternative. A 76-acre area of submerged land within the Ponce Bay and 41 acres of arboreal wetlands adjacent to the port would be filled, raising their elevation a minimum of two (2) meters above coastal flood levels. The material required for these fills would be obtained from quarries near Ponce that have the required extraction

permits from the DNER. The topography of these quarries would change from the extraction of the required fill material. No significant impacts would occur in the Guayanilla Bay, as the development strategy at this location is based on the reutilization of plots outside of flood zones of land formerly belonging to the Union Carbide-Dow Chemical petrochemical complex, which have been filled above flood levels.

Other impacts to the topographic setting of this alternative are related to the compliance with the Puerto Rico Planning Board Regulation Number 13 (2001) for construction on areas classified as flood zones (Zone 1M and Zone 2). Design criteria for construction on such sites require filling to raise the ground over the flood level. At both the Ponce and Guayanilla-Peñuelas locations, project areas are classified as flood zones (Zone 1M and Zone 2) in which construction is proposed for the container staging areas, port expansion, and industrial areas.

#### **4.2.2.3 Preferred Alternative: Ponce Bay Only**

The impacts of the Applicant's Preferred Alternative: Ponce Bay Only on the topography of the area would include:

- Lowering of the land surface on the area (45 acres) to be excavated for the docking channel from its current elevation to mean sea level (about 3 meters).
- Increasing the land surface elevation of the 59-acre wetland that would be filled and of the Percon parcel, to elevate both areas above the regulatory flood levels. Approximately 1.9 MM m<sup>3</sup> of the 3.4 MM m<sup>3</sup> to be excavated would be reused for the fill of the wetland and other upland areas near the port. The balance would be used as surcharge to consolidate the soils at the Percon parcel and wetland to be filled, or disposed at the Ponce Landfill. Once soil consolidation has been achieved, the [portion used for surcharge would also be disposed of at the Ponce Landfill. The remaining material would be employed as surcharge for the construction works and later disposed of at the Ponce Landfill.
- Removing the cement spoil materials from a portion of the parcels proposed for mitigation at the "Finca La Esperanza", lowering its elevation below mean sea level, for the purpose of wetland restoration.

#### **4.2.3 Impacts on Soils and Earth Crust**

##### **4.2.3.1 Terrestrial Impacts**

###### **4.2.3.1.1 No-Action Alternative**

There would be no impacts on terrestrial soils and earth crust of the area under the No-Action Alternative. Project areas would remain as they currently exist.

###### **4.2.3.1.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

The terrestrial impacts of this alternative would result primarily from the rehabilitation of the existing port facilities, placing of fill at the Ponce site, and development of the parcels for value-added activities.

- At the Ponce site, the material to fill the 41 acres of wetlands and elevate the 132 acres of the Percon parcel would be obtained from existing quarries operating near Ponce, impacting the soils and earth crust at these sites.

- The soils at the areas to be filled would be covered and modified to the characteristics of the fill material.
- Some of the activities that would disturb the soil condition at both locations include excavations for structure foundations, installation of piles, leveling and elevation of the site, cleaning and weeding of parcels and landscaping. Both sites have been used historically for ports and industrial activities, except for the open area that would be used for value-added facilities in Ponce.
- The areas within the project site have limited agricultural value, and there are no major geological or mineral resources located in the zone. The construction of the Project would not require the use of explosives.

The main impact of the Project on the soils would be the potential erosion that may result from the runoff over the fill and construction areas during the construction period. Lack of erosion controls would result in the transport of sediments into the nearby streams and coastal waters, and degradation of the quality of these waters. Prevention of erosion and sedimentation would be achieved through the development of Sediment and Erosion Control Plans, in accordance with the Federal and local requirements established by the EPA and the EQB.

- An NPDES Permit and Sediment and Erosion Control Plans would be prepared as required by the EPA under the Stormwater Amendments of the Clean Water Act (CWA, 1989).
- A similar permit is required by the EQB to comply with the local requirements (CES Permit and Plan).

These permits require the preparation of specific plans showing the location and characteristics of the erosion and sedimentation control measures during each construction phase.

- During construction, stormwater would be collected by a drainage channel and conveyed to a retention lagoon for evaporation. After completion of each phase of the Project, stormwater would be collected by permanent pluvial systems. Barriers to control mud sediment transport to nearby areas would be installed on the embankments of the access roads to the project areas. Once the construction is completed, the slopes would be stabilized to permanently avoid erosion.
- The preparation of the site would include the areas identified on the permit applications, prior to the start of the construction activities. Temporary systems would be installed to control the erosion and sedimentation around the entire project area before construction begins. Draining dikes and temporary retention lagoons would be built to facilitate draining control inside and outside the project area, until permanent drainage systems can be installed. Temporary and permanent drainage structures would be designed to control runoff from rain events with frequencies of 25 to 100-year recurrence intervals, as required by the area and the nature of the activities. In areas where electric lines and other utilities may be affected, temporary erosion control systems would be installed on the work areas and any nearby wetlands or surface bodies of water.
- Permanent erosion and sedimentation control of the exposed areas during the construction of the Project would be achieved by paving and reforestation with appropriate vegetation. Prior to the planting of this vegetation, nets and mud control barriers or other appropriate measures to control the flow of sediments would be installed. Periodic inspections would be performed to verify the net installation, to

ensure that there is no excess of accumulated material or sediments. Any excess sediment would be removed to maintain the efficiency of the system.

- A landscape architect would plan the reforestation, according to the recommendations, suggestions and requirements established by the DNER, and it would be executed and supervised by a certified tree expert or landscaping professionals.
- An Environmental Inspector would be present at the sites during all the construction phases. The inspector would have the primary responsibility for ensuring that the construction is in compliance with applicable environmental laws and regulations.

#### **4.2.3.1.3 Applicant's Preferred Alternative: Ponce Bay Only**

The impacts of the Applicant's Preferred Alternative: Ponce Bay Only with regards to the terrestrial soils and earth crust consist of the impacts discussed for the Ponce component, as described in the previous sections. In this case, no fill of 76 acres would be placed next to the proposed pier at the Ponce Bay. Impacts of this alternative with regards to this issue would not occur.

- Instead, the main impact associated to this alternative would result from the construction of an inland docking channel to serve incoming ship traffic. Development of this component would transform approximately 45 acres of land into maritime waters, resulting in the removal of approximately 1.9 MM m<sup>3</sup> 3.4 MM m<sup>3</sup> to be excavated would be reused for the fill of the wetland and other upland areas near the port. This material would be reused at the construction site, to fill approximately 59 acres of wetlands and elevate the Percon parcel above flood levels. As previously mentioned, implementation of erosion and sedimentation control measures would be exercised during all construction phases of the Project.
- In the parcels proposed for mitigation at the "Finca La Esperanza", earth crust will be partially removed from some of the acreage to remove cement spoils and refill the area with material suitable for the proposed wetlands restoration.

#### **4.2.3.2 Marine Soils**

##### **4.2.3.2.1 No-Action Alternative**

There would be no impacts on marine soils of the area under the No-Action Alternative. The areas would remain as they currently exist.

##### **4.2.3.2.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

In the Port of Ponce, development of the Project would require the dredging, disposal and/or reuse of a maximum 5.5 MM m<sup>3</sup> of bottom material from the navigation channel and turning basin. The potential impacts of the proposed fill and dredging on the water quality and aquatic habitats of the Ponce Bay and marine areas are discussed in Section 4.16.

The filling of approximately 76 acres of marine bottom adjoining the proposed pier would require approximately 4.3 MM m<sup>3</sup> of material. The material would be obtained from limestone quarries operating near Ponce that have the required DNER permits for extraction of material. Best management practices (BMPs) would be implemented to avoid dispersion of earth material during transportation. These practices would include covering the trucks loads and providing tires washing areas at the entrance of the project sites, among others. These practices would be specifically delineated in the Sediment and Erosion Control Plans. The location and capacity

of the quarries in the project area was summarized in Chapter 3. The data shows that the listed quarries can produce approximately 37,774 cubic yards (28,880 m<sup>3</sup>) of fill material per day. Assuming the material is suitable for the proposed fill, the required volume can be produced in less than 150 days.

In Guayanilla-Peñuelas, as well as in Ponce, construction of the piers, docks and areas for storage of containers requires the installation of piles, sheet pilings, and filling of small areas of the marine bottom. The cranes that would be used for loading and unloading of the containers would be one of the most important pieces of equipment of the Project. They would be located on the dock, resting on tracks attached to a deck on cement piles. The buildings and other operation-related structures would be located on the reclaimed area in Ponce and adjoining the pier at Guayanilla.

#### **4.2.3.2.3 Applicant's Preferred Alternative: Ponce Bay Only**

The impacts of the Applicant's Preferred Alternative with regards to marine soils consist of the impacts discussed for the Ponce component, as described in the previous section.

- The main impact would be from the dredging of the navigation channel and turning basin at the Ponce Harbor, and disposal of approximately 5.5 MM m<sup>3</sup> of material in the designated ODMDS in the Caribbean Sea.
- The construction of an inland docking channel to serve incoming ship traffic would result in the transformation of approximately 45 acres of land into maritime waters, increasing marine soil areas at the Ponce Harbor.

#### **4.2.4 Ground Water Resources**

Significant impacts that are associated to ground-water resources need to meet the following criteria:

- Substantially degrade ground-water quality;
- Contaminate a public water supply; or
- Substantially deplete ground-water resources;
- Substantially interfere with ground-water recharge.

These criteria are discussed in the following paragraphs with regards to the alternatives to the Project.

##### **4.2.4.1 No-Action Alternative**

There would be no impacts on the groundwater resources of the project area under the No-Action Alternative.

##### **4.2.4.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

There would be no impacts to the groundwater resources of the project areas under this alternative.

- Water supplies for the Project would be obtained from surface sources in the Ponce area, or from the EcoEléctrica desalination plant in the Guayanilla Bay. A potential alternative to provide potable water to the Guayanilla-Peñuelas project site is the activation of existing water wells located north of the Guayanilla-Peñuelas industrial

complex, beyond Road PR-2, as discussed in Section 3.11.2. The Project would not interfere with ground-water recharge since development would take place in open water or otherwise areas already impacted by construction activities.

- Under this alternative, development is proposed of segments of the parcel formerly occupied by UCC for value-added activities. Most of the groundwater resources in the Guayanilla-Peñuelas area have been severely impacted by a variety of pollutants, particularly petroleum products and other organic compounds as result of accidental spills and decades of poor environmental management practices from industrial entities that once comprised the Peñuelas petrochemical complex, now abandoned. Additionally, the Guayanilla-Peñuelas area has been affected by an increase in the intrusion of saline water from the sea. This phenomenon has adversely affected the fresh water supply from deep wells located south of State Road PR-127 and to the east and west of the Río Tallaboa. Portions of this property are currently being cleaned and monitored by UCC under the supervision of USEPA. This cleanup effort includes the removal of hydrocarbons and other petrochemical products from the soil and groundwaters.
- The elements of the Project under this alternative would not interfere with groundwater recharge. None of the areas that would be used are within the recharge zones of the aquifers of the zone.

#### **4.2.4.3 Applicant's Preferred Alternative: Ponce Bay Only**

The Applicant's Preferred Alternative would not have any adverse impacts on the groundwater resources of the Ponce Bay area.

- Water supplies for the Project would be supplied from the aqueducts servicing Ponce, which obtain water primarily from the Cerrillos and Toa Vaca reservoirs. Although PRASA supplements these surface-water supplies with ground water from wells north of the Port of Ponce, these are operated at the maximum safe yield, and there are no additional ground water supplies available in the area that could be utilized for the PTA needs.
- The elements of the PTA proposed at the Ponce Bay area would be located in zones where ground water is affected by saline intrusion. This is due to the proximity of these areas to the bay, where the fresh water lens is thin and does not constitute a significant ground water resource. There are no active wells of importance near the areas where the PTA would be developed, since ground water is generally mixed with seawater.
- The excavation of the docking channel would intersect the water table in the vicinity of the Port of Ponce, where saline water occurs. Potentially, the zone of saline water intrusion could augment temporarily inland in proportion to the penetration of the excavation north of the proposed port. However, studies conducted by the USGS (USGS, 1977) show that the flow of groundwater in the vicinity of the port is towards the bay. Once the saline-fresh water interphase reaches equilibrium, the area of saline intrusion would return to nearly the previous condition of a zone of discharge towards the bay. The net effect of this change will not be significant.

### **4.3 Fish and Wildlife Resources**

This section analyzes the potential impacts of the Project on the aquatic and terrestrial flora and fauna resources in the proposed sites, their vicinity, and the prospective sites where fill material would be extracted for the marine reclamation areas. Potential impacts to wetlands are discussed in a separate section.

#### **4.3.1 Terrestrial Flora**

The main impact on the terrestrial flora would be the removal of the vegetation from the areas designated for the construction of elements of the Project for the two development alternatives. Any unavoidable direct impacts on the vegetation would be compensated by reforestation and restoration, or creation of new habitats, as determined by the regulatory agencies responsible for the approval of the permits required for the Project.

##### **4.3.1.1 No-Action Alternative**

The No-Action Alternative would not result in the elimination of any vegetation at the Project site or its vicinity. As previously indicated, most of the areas proposed for the Project were disturbed by prior and current industrial activities. The existing vegetation that survived these industrial developments is now recovering its vitality and diversity, as evidenced by the presence of early secondary stages of growth. This is common in disturbed areas, where the vegetation spreads quickly, adapting under stressful circumstances.

Also, undisturbed areas of ecological value would not be subject to impacts of any sort. Under this alternative, the vegetation within the proposed sites would continue their recovery process at the present rate.

##### **4.3.1.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Development of the key elements of the PTA for the Port of Ponce alternative requires the fill of approximately 41 acres of mangrove wetlands east of the Ponce Harbor to expand this facility; the extraction of fill material at a separate location for the fill of the area in the Ponce Bay adjacent to the proposed extension of Pier 8; and removal of the vegetation cover during construction, particularly in most of the approximately 132 acres in the Percon parcel proposed for value-added and import-export activities.

In the Port of Ponce area the vegetation consists of species typical of impacted areas and secondary coastal forests.

- There are approximately 59 acres of jurisdictional wetlands near the port, of which 41 would be filled as previously indicated.
- No critical plant species were identified in these areas. Therefore, removal of the vegetation in the areas for development would not result in an environmental impact to the already identified critical elements in the area. Wetland mitigation measures will be implemented where palliative measures are deemed necessary.
- Regarding the proposed extraction of fill material from nearby quarries, under this alternative, the Applicant would employ fill material extracted from areas already impacted at quarries already in operation and in compliance with the applicable local and Federal regulations.

In the Guayanilla area:

- The principal potential environmental impact on the terrestrial flora in the Guayanilla-Peñuelas area would result from the removal of the limited existent vegetation at the areas within the UCC parcel proposed for value-added activities.
- The flora subject to potential removal consists mostly of coastal vegetation, including mangrove trees, and thorny pasture-shrub vegetation. The coastal vegetation at Punta Guayanilla consists of secondary coastal forests and wetlands. This vegetation is typical of the southwest coastal region that has been disturbed by industrial activities during several decades.
- With the exception of wetlands, this vegetation has limited ecological value from its functional perspective, and its value, as wildlife habitat, is marginal. Within the UCC parcel, most of the vegetation was already removed while the petrochemical complex was built or operated.
- Three (3) species of plants considered as critical elements by DNER have been identified in the Guayanilla-Peñuelas area that could potentially be impacted if this alternative was chosen: These species are: hollyhock lignum vitae (*Guaicum sanctum*), escoba babosa (*Bastardia bivalvis*), and gray nicker (*Caesalpinia bonduc*). The first two species were located at the eastern portion of the UCC site, which is not scheduled for development. *C. bonduc* was identified along the southern coast of Punta Guayanilla, and it is not likely to be impacted by the infrastructure development or construction activities of the Project. Nevertheless, any plant species categorized as critical elements by the DNER Natural Heritage program would be treated in a special way to prevent any impacts from the construction activities. One potential prevention measure would be the installation of temporary barriers to limit the impact area, to minimize the contact between the construction works and the critical elements, as well as the relocation of individuals when impacts are unavoidable.
- Under this alternative, removal of any trees would be limited to the absolute minimum at both locations. Any removal of trees would be in compliance with the Puerto Rico DNER Regulation Number 25 (1999), which regulates the removal of trees. Before construction of the elements of the Project begins, a detailed survey of the trees in the area would be completed, and a reforestation plan would be prepared in coordination with the DNER, to mitigate impacts and to comply with the permit requirements established under Regulation Number 25.

#### **4.3.1.3 Applicant's Preferred Alternative: Ponce Bay Only**

The impacts of the Applicant's Preferred Alternative on the terrestrial flora would be associated to the Ponce component, as discussed above, albeit with the following modifications:

- The vegetation would be removed from an area of about 45 acres east of Pier 8 for the excavation of the inland docking channel. There are no endangered or critical species of plants or trees in this area. The required permits for this activity would have to be obtained from the DNER, and appropriate mitigation implemented under current Commonwealth guidelines and regulations.
- The vegetation would be removed from approximately 59 acres of forested wetlands adjacent to the Port of Ponce, for the storage of containers and cargo. Mangrove species predominate in this parcel. The required Federal permits and appropriate mitigation, as required by the USACE, would be provided if the fill of the wetland is authorized.

## **4.3.2 Aquatic Flora**

### **4.3.2.1 No-Action Alternative**

Under the No-Action alternative, there would not be any direct or indirect impacts to the aquatic flora in the Ponce or Guayanilla bays. Construction of the piers would not happen. Fill of the bay or dredging of the Ponce Harbor would not take place. The construction of the docking channel would not happen either.

### **4.3.2.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under the Ponce-Guayanilla alternative, impacts to the aquatic flora of both bays would occur. These impacts would include:

- Ponce Bay
  - The sparse bottom flora present in the, mostly muddy, bottoms of the Ponce Harbor would be destroyed in the area of about 76 acres adjacent to Pier 8 where fill would be discharged.
  - Also, the proposed action would affect approximately 248 acres of areas of the navigation channel and turning basin that require dredging. Since the sea bottom of the navigation channel is already devoid of significant marine communities due to previous dredging activities and vessel traffic, the associated impacts to marine communities would be temporary and minimal.
  - Dredging activities will incorporate BMPs to minimize consequences of dredging and disposal on bottom communities. Please refer to Appendix L for a summary of these measures.
  - Sediments would also be resuspended as a result of filling and dredging activities, and from additional navigation, probably spreading outside of the limits of the dredged areas. Increases in the water turbidity resulting from the dredging would reduce temporarily the light penetration and the productivity of nearby seagrass beds. No corals, seagrass or marine communities are present in these shallow areas.
  - Filling of wetlands would be necessary as part of the improvements and expansion to the Port of Ponce, including the development of approximately 41 acres of wetland for additional container storage areas. Adverse impacts on the nearby ecosystems will be mitigated by the Applicant as required by the regulatory authority.
- Guayanilla Bay:
  - Approximately 12 acres of dispersed patches of seagrasses occur within the submerged land where the proposed pier would be constructed, requiring its removal.
  - Resuspension of bottom sediments in the navigation channel would result in their dispersal outside of the navigation areas, impacting the flora away from the channel.

It is expected that any adverse effects would be mitigated with habitat restoration and/or creation. The mitigation of the direct and indirect impacts on these systems, and any adverse effect from the loss of fish habitats would be required and are addressed in Section 4.5.

The conceptual design of the Project is directed to avoid, as much as possible, impacts to the most sensitive areas, in compliance with Section 404(b)(1) of the CWA. The design of the Project includes avoidance as much as possible of impacts to habitats, either because they would be minimized, or through the implementation of a Mitigation Plan as directed by the regulatory authority:

- Any increase in the water turbidity that results from the construction would reduce temporarily the productivity of nearby seagrass beds. However, these impacts are temporary and these systems would recover once the construction is completed. Compensation for the net loss of seagrass beds would be provided as directed by the regulatory authority. Stands of seagrass from the fill areas, if detected, can be relocated to other existing seagrass beds in shallow waters near the Project.
- The turbidity and sedimentation that would be generated as a result of the construction of the Project would be minimized by the use of techniques such as the installation of piles, instead of dredging. In addition, curtains would be used against turbidity, and sheet pilings would be installed prior to the filling activities.
- Impacts to mangroves that cannot be avoided or minimized would be mitigated. Wetland potential mitigation strategies include, among others, the restoration and creation of these mangrove areas, and would favor the establishment of species that prefer this type of habitat. Refer to Section 4.8 for details on these potential strategies.

#### **4.3.2.3 Applicant's Preferred Alternative: Ponce Bay Only**

Impacts associated to the Applicant's Preferred Alternative on the aquatic flora of the Ponce Bay include following:

- The proposed action would affect approximately 248 acres of areas of the navigation channel and turning basin that require dredging. These marine bottoms have been characterized as being predominately composed of mud. Since the sea bottom of the navigation channel is already devoid of significant marine communities and this area has already been impacted by the previous dredging activity, the associated impacts to marine communities would be temporary and minimal.
- Sediments would also be resuspended as a result of filling and dredging activities, and from additional navigation, probably spreading outside of the limits of the dredged areas. Increases in the water turbidity resulting from the dredging would reduce temporarily the light penetration and the productivity of nearby seagrass beds. No corals, seagrass or marine communities are present in these shallow areas.
- Dredging activities will incorporate a host of BMP's to minimize consequences of dredging and disposal on bottom communities. Please refer to Appendix L for a summary of these measures.
- Filling of wetlands would be necessary as part of the improvements and expansion to the Port of Ponce, including the development of approximately 59 acres of wetland for additional container storage areas. Adverse impacts on the nearby ecosystems will be mitigated by the Applicant as required by the regulatory authority. A positive impact of

this alternative would take place at the 45 acres of submerged areas where the docking channel is proposed, which would become populated with bottom flora.

### **4.3.3 Terrestrial Fauna**

The potential impacts over the terrestrial fauna would result primarily from the construction activities, including the removal of vegetation and soil from the upland parcels and the fill of wetlands. These potential impacts would result in the elimination, alteration or fragmentation of habitats, and the potential migration of wildlife to nearby areas. Impacts on threatened and endangered species are considered in Section 4.6.

#### **4.3.3.1 No-Action Alternative**

The No-Action Alternative implies that there would not be any alteration or impacts to the fauna present within the proposed sites. The terrestrial fauna species now present would continue using the habitats within the sites.

#### **4.3.3.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Prior and current industrial developments near the Ponce and Guayanilla bays have disturbed the terrestrial animal population habitats in most of the parcels proposed for the Project under this alternative. The principal adverse impacts to the terrestrial fauna under this alternative are related to the following actions:

- Birds also are the predominant species in the areas near both bays, although some reptiles and mammals were observed. The nesting areas of the birds extend inland away from the areas considered for the Project. Development of the areas for port expansion and value-added activities would result in the permanent loss of roosting, feeding and nesting areas for some of the birds, reptiles and mammals. These impacts would not change the existing population structures or affect the local diversity of species, or interfere with their survival, growth or reproduction.
- It is not anticipated that the Project would change, modify or interfere with the free movement of migrating bird species.
- Construction of the dock in Punta Guayanilla would permanently eliminate part of the habitat for some of these species. Similarly, development of the areas for added-value activities would result in the permanent loss of resting, feeding and nesting areas of other species.
- The impacts to terrestrial fauna, composed of amphibious, reptiles, and mammals would be temporary during the construction phase. Some of these animals would migrate to nearby areas as result of alterations to their habitat. This effect is expected only for common species, which could colonize the habitats within the project areas once the construction is completed.
- In both locations, and after completion of the construction phase, birds would not suffer any additional disturbances. The docks would serve as resting areas for many of the birds, particularly seagulls, and terns. Similarly, the open areas that currently exist in and out of the perimeter of the Project would remain essentially undisturbed, thus maintaining the existing habitats. Additional habitats for aquatic birds would be created through the design of the infrastructure for the collection of stormwaters within the Project, which would include retention lagoons that can serve as habitats for certain species.

- The impacts to terrestrial fauna, composed of amphibious, reptiles, and mammals would be temporary during the construction phase. Some of these animals would migrate to nearby areas as result of alterations to their habitat. This effect is expected only for common species, which could colonize the habitats within the project areas once the construction is completed.

#### **4.3.3.3 Applicant's Preferred Alternative: Ponce Bay Only**

Impacts associated to the Applicant's Preferred Alternative on terrestrial fauna consist of the following:

- Removal of habitats within the 59 acres of wetlands adjacent to the Port of Ponce proposed for filling to develop storage areas for containers.
- Removal of vegetation and habitats from approximately 45 acres of uplands adjacent to Pier 8, where the docking channel would be excavated. At this location, impacts to terrestrial fauna, composed of amphibious, reptiles, and mammals would be permanent during the construction and operation phases. Some of these animals would migrate to nearby areas as result of the elimination of their habitat.
- Removal of habitats from the Percon parcel, now partially covered with bushes and grasses, where value-added and import-export activities would be developed.

#### **4.3.4 Aquatic Fauna**

##### **4.3.4.1 No-Action Alternative**

Under the No-Action alternative, none of the elements of the PTA would be developed. The potential adverse environmental impacts from the development of the Project to terrestrial or aquatic fauna would not occur.

##### **4.3.4.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

At the Ponce Bay, the main impacts to the aquatic fauna would be as follows:

- Cover of bottom habitats by the fill of 76 acres of the bay to provide anchorage and storage areas, eliminating the existing fauna. Although the field studies established a low species diversity in the area, the species would be destroyed or would have to migrate. The fill would also eliminate the water column over the bottom area, reducing the aquatic habitat to fish and other mobile species.
- Temporary removal of bottom habitats from the 248 acres within the navigation channel and turning basin that would be dredged. Bottom organisms within these areas would be destroyed or would have to migrate to other areas, although once the dredging is completed, repopulation of these areas is possible.
- Dredging activities will incorporate a host of BMP's to minimize consequences of dredging and disposal on bottom communities. Please refer to Appendix L for a summary of these measures.
- Disturbance of habitats of fish and other mobile species within the water column above the dredged area, due to marine activity and temporary increases in turbidity.
- Temporary increases in turbidity to the marine water column at the ODMS where the dredged material would be discharged.

At the Guayanilla-Peñuelas area, the impacts would be as follows:

- Cover of the bottom habitats in an area of about 12 acres where the piers would be built, destroying the fauna of the area or forcing it to migrate.
- Temporary increases in turbidity by stormwater runoff from shore areas under development, and from construction equipment and vessels operating in the water column above the area to be filled during the construction of the pier, forcing pelagic species to migrate. Species movement would resume to its normal state once construction and dredging activities are completed.

At both locations, it is expected that any adverse effects would be mitigated with habitat restoration and/or creation. The mitigation of the direct and indirect impacts on these systems, and any adverse effect from the loss of fish habitats, would be required and are addressed in Section 4.5. Nevertheless, potential mitigation measures are discussed in general terms in this section.

- The conceptual design of the Project must be directed to avoid, as much as possible, impacts to the most sensitive areas, in compliance with Section 404(b)(1) of the CWA. Unavoidable impacts would be compensated by the implementation of a proposed mitigation plan submitted to the resource agencies.
- Potential mitigation strategies include creation, restoration or enhancement of aquatic habitats in the coastal corridor between Punta Verraco and Ponce Harbor.

#### **4.3.4.3 Applicant's Preferred Alternative: Ponce Bay Only**

Impacts to the aquatic fauna at the Ponce Bay from the Applicant's Preferred Alternative include:

- Removal of bottom habitats in the 248 acres of the Ponce Harbor that would be dredged, forcing the fauna to migrate or be destroyed.
- Temporary increases in turbidity in the water column of the area to be dredged and of the ODMDS where the dredged material would be discharged, forcing pelagic species to migrate to other areas.
- Dredging activities will incorporate a host of BMPs to minimize consequences of dredging and disposal on bottom communities. Please refer to Appendix L for a summary of these measures.
- Temporary increases in turbidity in the water column in the navigation channels from increased marine traffic, forcing pelagic species to migrate to other areas.
- A positive impact of this alternative would be the creation of 45 acres of marine bottoms and the associated water column in the docking channel, where marine habitats would develop.

#### **4.4 Marine Resources and Special Aquatic Sites**

This section analyzes the potential impacts of the Project on the marine resources and special aquatic sites. Potential impacts were determined for the following marine habitats: muddy bottoms, seagrass beds, coral reefs, shelf-edge, water column and mangroves.

**4.4.1 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

A wide-area survey of the project areas in the Ponce and Guayanilla bays was completed by Garcia (2001,2002). The combined Ponce-Guayanilla alternative would impact the marine resources as described in this section. A summary of the benthic communities in the areas that could be potentially impacted by this alternative is included in Table 4-1 and Table 4-2.

**Table 4-1: Ponce and Guayanilla: Benthic Communities Potentially Affected at the Ponce Harbor Site**

<b>BENTHOS</b>	<b>AREA (M<sup>2</sup>)</b>	<b>AREA (ACRES)</b>	<b>% TOTAL</b>
Mud	892,327	220.5	61.4%
Mud- <i>Halophila</i>	503,975	124.5	34.6%
<i>Halodule</i>	33,853	8.4	2.3%
Mixed algae and seagrasses	24,643	6.1	1.7%
<b>Total</b>	<b>1,454,727</b>	<b>359.4</b>	<b>100.0%</b>

**Table 4-2: Ponce and Guayanilla: Benthic Communities Potentially Affected at the Guayanilla Bay Site**

<b>BENTHOS</b>	<b>AREA (M<sup>2</sup>)</b>	<b>AREA (ACRES)</b>	<b>% TOTAL</b>
Deep mud	53,188	13.1	93.0%
Shallow mud	3,736	0.9	7.0%
<b>Total</b>	<b>56,975</b>	<b>14.0</b>	<b>100.0%</b>

**4.4.2 Applicant's Preferred Alternative: Ponce Bay Only**

The Applicant's Preferred Alternative does not include development of any elements in the area of the Guayanilla Bay, and therefore no potential impacts to these resources are anticipated at this location. A summary of the benthic communities in the areas that could be potentially impacted by this alternative at the Ponce Harbor, its sole component, is summarized in Table 4-3.

**Table 4-3: Applicant’s Preferred Alternative: Ponce Bay Only: Benthic Communities Potentially Affected**

BENTHOS	AREA (M <sup>2</sup> )	AREA (ACRES)	% TOTAL
Mud	609,016	150.5	60.62%
Mud- <i>Halophila</i>	392,177	96.9	39.04%
Mixed algae and seagrasses	3,444	0.9	0.34%
<b>Total</b>	<b>1,004,637</b>	<b>248.3</b>	<b>100.0%</b>

### 4.4.3 Muddy Bottoms

#### 4.4.3.1 No-Action Alternative

Under the No-Action Alternative, there would not be any adverse impacts to the muddy bottoms that make up most of the marine areas in both bays. Therefore, no direct, indirect or cumulative impacts to marine ecosystems and marine conditions at the Ponce and the Guayanilla bays would occur.

#### 4.4.3.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

The elements of the Project at the Ponce Bay under this alternative would impact approximately 220 acres of muddy bottoms that would be filled to develop the anchorage and storage areas adjacent to Pier 8, as well as those marine bottoms removed as part of the proposed dredging of the navigation channel. An additional 124 acres of mixed mud and *Halophila decipiens* (less than 10% per area) would be also impacted as part of the actions previously described

- These muddy bottoms are mixed with macroalgae (less than 10%). Most organisms that would be impacted are burrowing invertebrates and small fish. Few finfish species use the muddy bottoms and only white grunts and snappers (*Lutjanus* spp.) are included in the managed species list of the Caribbean Fishery Management Council (CFMC). These species would lose a portion of their feeding grounds and would have to modify their natural behavior.
- The seafloor along the navigation channel and turning basin at the Ponce Bay is also composed of muddy bottoms (García, 2001). Few fish or other bottom organisms are present in such areas. The proposed dredging would not only remove part of the bottom, but it would also increase, although temporarily, the turbidity of the water. This habitat should recover in a short period of time, including the fish that usually feed in these bottoms.
- A temporary loss of marine habitat in the water column associated with the navigation channel and turning basin would occur during the dredging operations, which would not only affect areas already impacted, but also additional sections of the Ponce Harbor turning basin not previously subjected to dredging. Once dredging is complete, this habitat within the water column would return to near normal conditions.

- In comparison, similar impacts at the Guayanilla Bay under this alternative would be limited to approximately 12 acres that would be filled for the construction of the pier. No dredging is needed at the Guayanilla Bay, since it exceeds the minimum depth required for Post-Panamax ships.

During operations of the terminals at Ponce and Guayanilla under this alternative, increased vessel traffic would potentially result in impacts to marine resources or special aquatic sites. Post-Panamax ship traffic through the navigation channels would disturb bottom sediments and increase temporarily water turbidity. Any significant increment in turbidity would reduce water transparency and productivity, and thus result in added stress to special aquatic ecosystems. To assess the potential effects of these temporary increases in turbidity in the water column, field tests were conducted in 2002 by the Applicant in the Guayanilla Bay (García, 2002). The concentration and dispersion of the resuspended sediments was determined during the actual passage and docking of a ship transporting liquefied natural gas (LNG) to the EcoEléctrica Power Plant at the bay. These cargo ships are equivalent in size and draft to a Post-Panamax ship. The results of these tests show that the resuspended sediments is mostly from the tugboats assisting the vessels to mooring piers, rather than from the vessels themselves. The tests also showed that suspended-sediment concentrations in the navigation channel returned to near background conditions within two hours after the passage of a ship. Since a maximum of two Post-Panamax ships per day would enter any of the two bays at the peak of the operations of the Project, the Applicant concluded that the increases in turbidity in the water column would not be cumulative and would dissipate between trips by individual ships.

#### **4.4.3.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, the impacts to the muddy bottoms at the Ponce Bay would be limited to the areas to be dredged within the navigation channel and turning basin, estimated at about 248 acres.

Most probable, the 45 acres of the bottom of the docking channel to be excavated would become an additional muddy bottom habitat at the Ponce Harbor.

#### **4.4.4 Seagrass Beds**

##### **4.4.4.1 No-Action Alternative**

Under a No-Action alternative, seagrasses would not be affected. There would be no direct, indirect or cumulative impacts to marine ecosystems and marine conditions at both locations would remain as present.

##### **4.4.4.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under this alternative, impacts to seagrass beds would be minimal.

- At the areas to be impacted by the Project within the Ponce Bay, the sea bottom consists of fine sticky mud completely devoid of vegetation or reef structures, including sea grasses (García, 2001). Therefore, no impacts are expected to this type of aquatic habitat. Nevertheless, a temporary loss of marine habitat associated with the navigation channel and turning basin would occur during the dredging operations, which would not only affect areas already impacted, but also additional sections of the Ponce Harbor turning basin not previously subjected to dredging. Once dredging is complete, this habitat would return to near normal conditions.

- At the Guayanilla Bay it is not anticipated that the construction of the pier in the Guayanilla Bay would affect portions of seagrass patches. The port would be built at a depth in excess of 45 feet. No seagrasses are expected to occur at this depth. Therefore the anticipated impacts associated with this activity are considered negligible. Where possible, the location of all pilings within any seagrass patch would be marked and the seagrass removed and replanted at an appropriate site. Additional mitigation for the loss of seagrass habitat resulting from the proposed fill would be provided according to the recommendations of the resource agencies.

During operation of the Project under this alternative, increased vessel traffic at both bays would potentially result in impacts to marine resources or special aquatic sites. Post-Panamax ship traffic through the navigation channels would disturb bottom sediments and increase water turbidity. Any significant increment in turbidity would reduce water transparency and productivity, and thus result in added stress to special aquatic ecosystems. As indicated in the previous section, field studies demonstrated that any increase in turbidity associated with ship traffic in the Ponce and Guayanilla bays would dissipate rapidly,

Nevertheless, any increases in the water turbidity that could result from the construction activities would reduce temporarily the productivity of nearby seagrass patches; however, these impacts are temporary and these systems would recover once the construction is completed. The turbidity and sedimentation that would be generated as a result of the construction of the Project would be minimized by the use of techniques such as the installation of piles, instead of dredging. In addition, curtains would be used against turbidity, and sheet pilings would be installed prior to the filling activities.

#### **4.4.4.3 Applicant's Preferred Alternative: Ponce Bay Only**

No impacts on seagrass beds are anticipated for this scenario.

#### **4.4.5 Coral Reefs**

No coral reefs, identified in the Ponce or Guayanilla-Peñuelas project locations, are associated with the proposed fill and pier. Therefore, no impacts to this type of aquatic habitat are anticipated by any of the three alternatives considered.

#### **4.4.6 Insular Shelf-edge**

The insular shelf-edge of Ponce Harbor or Guayanilla Bay area would not be impacted by any of the alternatives considered for the Project.

#### **4.4.7 Water Column**

##### **4.4.7.1 No-Action Alternative**

Under the No-Action alternative, the water column and associated marine ecosystems at the Ponce and Guayanilla bays would not be subject to any direct, indirect or cumulative impacts, and marine conditions at these locations would remain as present.

##### **4.4.7.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under this alternative, permanent and temporary impacts to the water column would occur at both bays. These are related to the proposed fill and dredging activities in this alternative.

- The main activity related to the Project in the Port of Ponce would be a proposed reclamation by fill of 76 acres of submerged lands in the Ponce Harbor, and dredging of

248 acres of the existing navigation channel. The filling activity would impact the connectivity between habitats, not only by the addition of materials, but also by the resuspension and increase in turbidity associated to these activities. However, the updated study of the ocean currents within Ponce Harbor conducted by the USACE concludes that the overall water flow through would not change significantly with the new pier facilities (Scheffner et al., 2001, 2003).

- Dredging of the navigation channel and turning basin at the Ponce Harbor would result in temporary increases in turbidity within the water column, as well as deter some of the fish from using their normal feeding areas (CFMC, 1998). It is expected that these fish species should reestablish their foraging patterns after the construction activities are finished.
- At the Guayanilla Bay, construction of the pier would disturb the water column above approximately 12 acres of bottom areas, due to piling and support structures. Also, temporary increases in turbidity and sediments resuspension would occur in the water column, impacting the habitat of pelagic species, albeit temporarily.
- Impacts from the construction of piers and container storage area at both locations, mainly due to increases in turbidity would not have a permanent impact on the water column quality. Any increases in turbidity and resuspension of sediments induced by the construction would be minimized using pile-driving techniques instead of dredging to install pilings, and would return to background levels once construction is finished.

#### **4.4.7.3 Applicant's Preferred Alternative: Ponce Bay Only**

Impacts associated to the Applicant's Preferred Alternative on the water column at the Ponce Bay would include:

- Temporary increases in turbidity in the navigation channel and turning basin due to the proposed dredging.
- Recurrent, but not cumulative, increases in turbidity in the navigation channel and turning basin due to resuspension of sediments caused by increased marine traffic.
- Temporary increases in turbidity in the water column at the ODMDS in the Caribbean Sea, where the dredged material would be discarded.
- Temporary increases in turbidity in the docking channel as the excavation progresses. Once the channel is finalized and begins operations, there would be recurring, non-cumulative events of increases in turbidity from marine traffic.

#### **4.4.8 Mangroves**

As part of the analysis of alternatives with respect to this issue, the Applicant has performed an appropriate inquiry under 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material pursuant to 40 CFR Part 230.

##### **4.4.8.1 No-Action Alternative**

Under the No-Action alternative, wetlands in the vicinity of the Guayanilla and Ponce bays where mangroves predominate would not be affected. There would be no direct, indirect or cumulative impacts to marine ecosystems and marine conditions at both harbors, and conditions would remain as present.

#### **4.4.8.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Approximately 41 acres of wetlands composed of mangroves would be filled adjacent to the Port of Ponce to provide expanded areas for container storage. Wetland vegetation within the project site at Ponce consists of five main vegetative communities: herbaceous (17.7 acres), forested (7.1 acres), open water (0.5 acres), salt flats (24.2 acres), and mangroves (8.6 acres). This classification is based on the dominant wetland vegetation community that was present during the wetland delineation activities and in the employment of photo-interpretation analyses using Geographic Information System (GIS) software.

No mangroves would be impacted in the Guayanilla-Peñuelas area as part of this alternative.

#### **4.4.8.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, approximately 59 acres of wetlands composed primarily of mangroves would be filled adjacent to the Port of Ponce, to provide expanded areas for storage of containers. As previously stated, wetland vegetation within the project site consists of five main vegetative communities: herbaceous (17.7 acres), forested (7.1 acres), open water (0.5 acres), salt flats (24.2 acres), and mangroves (8.6 acres). This classification is based on the dominant wetland vegetation community that was present during the wetland delineation activities and in the employment of photo-interpretation analyses using Geographic Information System (GIS) software.

All wetlands within the Project will be assessed during the preparation of a Conceptual Wetland Mitigation Plan (CWMP) using a rapid assessment procedure. This procedure will be applied to provide an accurate and consistent evaluation of the ecological value of wetlands within the proposed project area, and to pursue an adaptive approach regarding the CWMP. The results of the assessment will also contribute to the evaluation of the success of the mitigation sites in terms of wetland functions and values. There are two main mitigation sites where wetland reestablishment activities would take place. The sites are located within the parcel known as "Finca La Esperanza", approximately 3 kilometers east of the project site.

Conservation easements, comprising the proposed wetland mitigation actions, will be established throughout these areas and adjoining existing wetlands including salt flats, mangroves, and channels. The overall concept of the planned wetland mitigation is to reestablish and enhance wetlands in areas where filling activities have taken place within salt flats. Also, adjoining wetlands, including mangroves, channels, and salt flats will be designated as conservation easements.

### **4.5 Essential Fish Habitat**

Section 305 of the Magnuson-Stevens Fishery Conservation and Management Act (Act) requires the NMFS to coordinate with and provide information to other Federal agencies on Essential Fish Habitat (EFH) defined in the Act as those waters and substrate necessary to the fish for spawning, breeding, feeding, or growth to maturity. According to the CFMC, in Puerto Rico and the US Caribbean, EFH includes virtually all marine waters and substrates from the shoreline to the seaward limit of the US Exclusive Economic Zone (EEZ). Appendix E presents an analysis of the impacts to the EFH. Additionally, there are no records of the presence of eggs, larvae, juveniles or spawners of the managed finfish species in muddy bottoms. Similarly, the spiny lobster and queen conch, and each of their life stages, are absent from muddy bottoms.

#### 4.5.1 No-Action Alternative

Under the No-Action alternative, the dredging of the Ponce Harbor would not occur. This would eliminate the potential impacts to the bottom flora and fauna, and pelagic species in the water column within the bay. Also, there would not be any impacts to the ODMDS in the Caribbean Sea south of Ponce, since disposal of dredged material would not be required. No wetland habitat would be affected under this alternative.

#### 4.5.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

Under this alternative, permanent and temporary impacts to EFH would occur at the Ponce and Guayanilla bays:

- At the Ponce Bay, the fill of 76 acres would eliminate permanently the bottom and water-column fish habitats within this area. This impact would be permanent and unavoidable and would adversely affect designated Essential Fish Habitat (EFH) for adult individuals *Haemulon plumieri* and *Lutjanus vivanus*. The water column has been identified as EFH for the planktonic life stages of all of the 15 managed finfish species identified by the CFMC. All of the managed species have planktonic eggs and larvae, but their distribution is unknown. Except for general descriptions, there is little information on the distribution of eggs and the development of larvae, let alone information on the settling of fish larvae and subsequent development (CFMC, 1998). Most of the information available for these stages is only known at the Family level.
- Also, the dredging of the navigation channel and turning basin at the Ponce Harbor would eliminate temporarily the bottom habitats in an area of 248 acres, and impact temporarily through increases in turbidity the water column over this area. The increased navigation would cause temporary recurrent increases in turbidity in the water column and deposition of suspended sediments by the engines of ships and tugboats. Bottoms where mud is the main inorganic component tend to be less diverse, usually because of a lack of photosynthetic organisms. This limit in productivity hampers the maintenance a diverse ecosystem. Nevertheless it can be considered as an EFH for juvenile snappers (*Lutjanus apodus*, and *L. griseus*), and adult grunts, which feed upon the infauna. The water column, associated to these bottoms, is used as a corridor between habitats by many of the managed species. Therefore, the lack of diversity in muddy bottoms cannot undermine their importance as a corridor between habitats.
- The water column has been identified as EFH for the planktonic life stages of all of the 15 managed finfish species identified by the CFMC (1998). Eggs and planktonic larvae are driven by currents and dispersed through the water column. A high diversity of drifting eggs and larvae can be found associated to the shelf-edge of the marine platform. García et al. (1996) identified larvae from 81 fish families, mostly near the shelf-edge. Larvae of Engraulidae, Clupeidae, Gobiidae, and blennies of the families Bleniidae, Clinidae and Tripteriidae dominated these samples. Except for general descriptions, there is little information on the distribution of eggs and the development of larvae, or information on the settling of fish larvae and subsequent development (CFMC, 1998). Most of the information available, regarding planktonic larvae distribution, remains at the Family level.
- At the Guayanilla Bay, about 12 acres of bottom habitats would be eliminated by the construction of the pier, also disturbing temporarily through increases in turbidity the water column. Increased navigation would result in resuspension of sediments and temporary recurrent events of increased turbidity. The impacts to the muddy bottoms

associated to the construction of the pier at Guayanilla Bay would be permanent and would adversely affect designated EFH for juvenile *Lutjanus apodus* (schoolmasters), *Lutjanus griseus* (gray snapper), and adult *Haemulon plumieri* (white grunt). The foreseeable impacts associated to the proposed pier include the temporary and localized effect on EFH from increased sedimentation and minor habitat displacement (CFMC, 1998). Pier pilings may contain chemicals that could be released into the water, but overall these structures are not perceived as a significant problem as pilings usually sustain a diverse community of encrusting organisms. Several patches of seagrass would be impacted by the construction of the pier. Shading may be the greatest threat associated with piers as they limit the amount of light necessary for optimal growth of submerged aquatic vegetation. Potential impacts to seagrass patches, associated to the pier at Punta Gotay, could be minimized by careful selection of the location of pilings. The coral reef and shelf-edge habitats would not be impacted by the proposed construction of the pier at Guayanilla Bay.

- The proposed facilities may also present the following threats to EFH within the project sites. Water quality degradation may occur from point and non-point-source runoffs associated to chemicals commonly discarded, even unintentionally, such as oils from paved roads and parking lots, vehicle fuel, and substances used for the maintenance of roads and other industrial facilities, including paints, grease, and solvents. Also, spills and discharges of hazardous materials are a constant concern in this type of facilities. These are rare events but their immediate impact can be severe. Another concern is the discharges of marine debris, trash and organic wastes made by the shipping vessels. Such byproducts can adversely affect fish and, both, marine birds and mammals. Another possible threat is the introduction of exotic species. Commercial vessels visit a large number of international destinations, which provide an excellent and rapid dispersal mechanism for exotic, and potentially harmful, species.

#### **4.5.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Preferred Alternative proposed by the Applicant, approximately 248 acres of shallow sea floors to be dredged in the Ponce Harbor and considered EFH would be impacted temporarily. These areas consist primarily of soft, muddy bottom habitat and a mix of seagrasses and macroalgae.

- The impacts to the muddy bottoms associated to the dredging activities at Ponce Bay would temporary affect designated EFH for mutton snapper, silk snapper, and adults of white grunt as these fish may not use the area due to the presence of machinery and the increase in turbidity associated to the resuspension of sediments. The dredge sediments would be disposed in the Environmental Protection Agency approved designated ocean dredged material disposal site for Ponce (EPA, 1988).
- Pier construction should not affect any EFH as it would be done inland. Seawater would be allowed to enter the proposed pier after all inland construction of the pier and holding facilities are finished. The foreseeable impacts associated to the proposed pier during operation include the release of chemicals into the water from the pilings, but this is not perceived as a major concern, as pilings usually sustain a diverse community of encrusting organisms.
- On the positive side, the excavation of the docking channel would result in a gain of 45 acres of bottom habitats and water column.

- The increased shipping traffic that would be related to the PTA may result in an increase in turbidity by resuspension of sediments. However, a study of the ocean currents within Ponce Bay concluded that the overall water flow through this bay would not change significantly with the new pier facilities (Scheffner et al., 2001).

The proposed facilities in the Ponce Bay and immediate area may also present the following threats to EFH:

- Water quality degradation may occur from point and non-point-source runoffs associated to chemicals commonly discarded, even unintentionally, such as oils from paved roads and parking lots, vehicle fuel, and substances used for the maintenance of roads and other industrial facilities, including paints, grease, and solvents.
- Also, spills and discharges of hazardous materials are a constant concern at port sites. These are rare events but their immediate impact can be severe. Another concern is the discharges of marine debris, trash and organic wastes made by the shipping vessels. Although strictly regulated by Federal and local authorities, the discharge of such byproduct can adversely affect fish and both marine birds and mammals.
- A further potential effect is the introduction of exotic species. Commercial vessels visit a large number of international destinations, which provide an excellent and rapid dispersal mechanism for exotic, and potentially harmful, species.

#### **4.6 Threatened and Endangered Species**

This Section describes the potential impacts of the different alternatives on threatened and endangered species that occur or are transient through the sites proposed for the elements of the Project. The species considered include those observed during field surveys conducted by PAA as part of the investigations for the DEIS of the PTA, or described in other investigations in the area. Also considered are species of interest identified by the USFWS and the NMFS in written correspondence to the USACE and during the scoping process, in meetings held on April 4, 2001, October 3, 2001 and November 1, 2001.

Federal regulations require the preparation of a biological assessment if listed species or critical habitat may be present in an area to be impacted by a “*major construction activity*”, defined as a construction project which involves a major Federal action significantly affecting the quality of the human environment as referred to in the National Environmental Policy Act (NEPA). An amended Biological Assessment was performed in compliance with Section 7 of the Endangered Species Act of 1973 and is included in Appendix D.

##### **4.6.1 No-Action Alternative**

Under the No-Action Alternative, the Project would not occur and there would be no construction in the Guayanilla-Peñuelas areas, nor construction, fill or dredging at the Ponce Harbor. The No-Action Alternative would prevent any direct, indirect or potential impacts to endangered species or their habitats. Terrestrial and marine habitats within the proposed project sites would continue providing the same level of support to endangered species in terms of food, shelter and reproductive capability. The marine and terrestrial habitats in the region impacted for decades by prior and existing industrial and port activities would remain as present. The No-Action Alternative would eliminate the potential for enhancement and/or habitat restoration in these impacted areas.

## **4.6.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

### **4.6.2.1 Reptiles**

#### **4.6.2.1.1 Loggerhead sea turtle (*Caretta caretta*)**

This marine turtle is rare in Puerto Rico and not known to nest in the area of the Project. Therefore, the proposed construction of the piers and fill would not affect this species.

#### **4.6.2.1.2 Green sea turtle (*Chelonia mydas*)**

The construction of the proposed piers may have a temporary effect on the normal green sea turtle breeding, foraging, and migratory activities. Although construction of the piers would not include linear barriers that would restrict the movement of individuals in the construction area, construction-related activities including the filling, equipment and noise would cause most green turtles to temporarily avoid shallow water breeding and foraging areas and migratory routes near the pier. On the other hand, the proposed fill in Ponce, would permanently affect some seagrasses, which may serve as feeding areas for these turtles.

The Project would not adversely affect green sea turtle nesting habitat or nesting activities. Dredging of the Ponce Harbor would render unavailable the vicinity of the navigation channel for this species during the duration of the dredging activity.

The expected increase in ship operations resulting from the Project would increase the potential of collisions with green sea turtles. However, the probability of such collisions would remain at minimum levels given the relatively low traffic increase anticipated and the mitigation measures that would be implemented to avoid them. Although the Project would impact seagrasses within the habitat of the species, it would not impact nesting areas.

According to the available information, it is anticipated that the Project may affect, not likely to adversely affect this species.

#### **4.6.2.1.3 Hawksbill sea turtle (*Eretmochelys imbricata*)**

The Project would not affect any known nesting habitat for hawksbill sea turtles, since no nesting habitat exists in the region. The nearest known nesting area is Caja de Muertos Island, located about 8 miles (12.9 kilometers) from the Port of Ponce. There would be little or no impact on foraging habitats used by this species, which usually feeds on sponges and other marine invertebrates on coral reefs or reef-like habitats. Although rare sightings of the hawksbill sea turtles have been reported in the Guayanilla and Tallaboa bays, it is unlikely that the activities such as construction or navigation would result in a direct impact or death of individuals of this species.

The expected increase in vessel traffic resulting from the Project, both at Ponce and Guayanilla, would increase the potential for collisions with sea turtles, including hawksbill sea turtles. However, with the implementation of the proposed mitigation measures the probability of collisions would be reduced.

According to the available information it is anticipated that the Project may affect, not likely to adversely affect this species.

#### **4.6.2.1.4 Leatherback sea turtle (*Dermochelys coriacea*)**

The leatherback sea turtle was identified as a species of concern based on claims of sightings of specimens in the Guayanilla Bay area. However, as is the case for all sea turtles, the Project

would not affect any known nesting areas for this species. No nesting habitat of this species is reported in the zone. The Project would have little or no impact on foraging habitats used by the leatherback sea turtle, which typically feeds on pelagic jellyfish.

According to the available information available information, it is anticipated that the Project would not affect this species.

#### **4.6.2.2 Marine Mammals**

##### **4.6.2.2.1 Humpback whale (*Megaptera novaeangliae*)**

The NMFS recently reported that during the period from 1994 to 1998, death and severe lesions to humpback whales due to human activity averaged 3.65 per year (NMFS, September 2000). The main causes for these incidents are collisions with ships and entanglements with pelagic fishing nets. None of these incidents occurred in waters near the proposed sites, being located the nearest incident at the Florida Keys.

The projected increase in marine traffic to and from the PTA would potentially represent a higher risk of collisions between ships and whales, particularly during the winter months when the whales are more frequent in the Caribbean. Nevertheless, the probability of such collisions would remain at minimum levels given the relatively low traffic increase anticipated and the mitigation measures that would be implemented to avoid them.

According to the available information, the Project would not affect this species.

##### **4.6.2.2.2 Blue whale (*Balaenoptera musculus*)**

Its presence in the project area is unlikely. Moreover, because its presence in the US Exclusive Economic Zone (EEZ) is sporadic, it is also anticipated that any increase in marine traffic destined to the PTA would not result in an increased risk of collisions with these whales.

The Project would not affect this species.

##### **4.6.2.2.3 Finback whale (*Balaenoptera physalus*)**

In Puerto Rico, this specimen has only been observed in deep waters. Between 1984 and 1988, the NMFS reported only three deaths of finbacks attributed to collisions with ships, none of these in the Caribbean. It is unlikely that finback whales may be found in the project areas.

The Project would not affect this species.

##### **4.6.2.2.4 Sei whale (*Balaenoptera borealis*)**

No deaths or severe lesions to this species due to human actions, including collisions with ships, were reported between 1991 and 1997. The New England Aquarium documented a sei whale carcass hung on the bow of a container ship as it docked in Boston on November 17, 1994. Although its presence has been recorded in Cuba and the Virgin Islands, the presence of this species in the project area is unlikely, but still possible.

The Project would not affect this species.

##### **4.6.2.2.5 Sperm whale (*Physeter macrocephalus*)**

According to the NMFS (2000), only one accident was reported for the time period between 1994 and 1998. In May 1994, a ship-struck sperm whale was observed south of Nova Scotia. The presence of sperm whales in the project's vicinity is not likely, but possible.

The Project would not affect this species.

#### **4.6.2.2.6 Antillean manatee (*Trichechus manatus*)**

The manatee is probably the most conspicuous of the endangered species known to occur within the Guayanilla-Peñuelas project site. It has also been sighted west of the Ponce Bay, at the Rio Matilde area, but with less frequency that at the Guayanilla-Peñuelas site.

- In the Ponce Bay, the main impacts during construction to the manatee would be those associated with the increase in noise levels and presence of construction machinery, especially within the proposed inland channel. Manatees are known to feed in Ponce Bay but most sightings have occurred near the Rio Matilde estuary, west of the proposed action. The inland channel would be opened only after construction of the pier would have concluded, reducing the effects of sedimentation.
- Construction activities, related noise, and the presence of construction equipment would cause most manatees to temporarily avoid the immediate project area and any shallow foraging sites nearby at both sites. Construction activities may also disrupt essential behavioral patterns such as feeding and socializing and may lead to the separation of mothers and calves. These actions constitute a form of “unintentional harassment” (as described in the Federal regulations) and have the potential, albeit slight, to disturb manatees to such an extent as to disrupt their normal behavioral patterns.
- Construction of piers and boating activities associated with these operations commonly result in bottom scraping, propeller scouring and anchor dragging. These activities may increase turbidity, which might temporarily reduce light penetration and decrease submerged plant productivity.
- Work vessels and the additional shipping traffic resulting from the Project could also affect manatees. These increases in marine traffic would interfere with the free movement of manatees in both bays, as well as increase the probability of collisions with ships.
- A principal threat is the risk of manatee mortality, injury or harassment caused by ships and construction equipment. According to the USFWS (1989), large slow-moving vessels, such as tug boats and cargo ships are known to kill manatees. Manatees are often injured by propellers or are pulled into the propellers by the sheer power-generated water currents, while others may be pinned down between the hull and the ocean bottom. When moored, large vessels may pin manatees between their hulls and the adjacent wharves.
- Development of elements of the PTA in the Ponce Bay would result in an increase in large vessel traffic of the order of 600 to 1,200 ships per year. This increase in marine traffic in the bay raises the question about the probability of collisions of manatees with ships. Manatee aerial surveys conducted by USFWS show that as many as three (3) manatees may be present in Ponce Bay area at any given time.

The effects of the temporary siltation and turbidity resulting from construction activities would be mitigated by the use erosion control measures, such as silt curtains or other silt retention barriers. Other measures that can be implemented to protect the manatee include:

- Installation of permanent signs near the pier area to identify marine zones designated for the protection of manatees.

- Coordination with the Ports Authority (PA) and the Coast Guard to increase the enforcement of the speed limit regulations in the port, with the DNER to control the use of recreational vehicles in the bay including water bikes and jet skis, where applicable.
- Development of a training program to educate employees about the presence of federally protected species in the port area and the importance of presenting them.

Provided the impact analysis outlined above, it is determined that the proposed PTA would affect, not likely to adversely affect the Antillean manatees at Ponce Bay. Construction at Ponce Bay could disrupt current manatees' behavioral patterns and result in partial habitat modification.

#### **4.6.2.2.7 Caribbean monk seal**

The occurrence of this species in the project area is unlikely and there have been no confirmed sightings since 1952. The Project would not affect this species.

#### **4.6.2.3 Birds**

##### **4.6.2.3.1 Brown pelican (*Pelecanus occidentalis*)**

The Project would not significantly impact the local brown pelican population. There is no suitable nesting or roosting habitat in the Ponce area, or within the parcels proposed for added value activities. Although brown pelicans reportedly roost on the María Langa and Palomas shoals in Guayanilla Bay (EcoEléctrica, 1996), these areas would not be affected by the Project. Brown pelicans forage throughout Guayanilla Bay and the Port of Ponce. An impact on the brown pelican's foraging habitat is expected as a result of the modification of the shallow water habitat where they feed although in Ponce the proposed actions relate to the dredging of the existing channel.

It is anticipated that normal behavioral patterns of brown pelicans would be disrupted during construction. Construction equipment and associated noise would cause pelicans to temporarily avoid the project site and look for alternate sites for feeding and roosting.

According to the available information, the Project may affect, not likely to adversely affect the brown pelicans.

##### **4.6.2.3.2 Roseate tern (*Sterna dougallii*)**

Roseate terns usually nest in a sand or coral scrape, or in rock depressions, usually in colonies on offshore cays. The nearest known nesting area is more than a mile west of Guayanilla. Hence, the PTA would not affect nesting colonies.

Considering these conditions, the Project would not affect the roseate tern.

##### **4.6.2.3.3 Puerto Rican nightjar (*Caprimulgus noctitherus*)**

There are no reported habitats for this species within the overall project areas. The proposed action would not affect Puerto Rican nightjar or its habitat. On the other hand, suitable Puerto Rican nightjar habitat may be affected by developments indirectly associated to the PTA. The conservation of this habitat would rely on the State and Federal regulating agencies.

#### **4.6.2.3.4 Yellow-shouldered blackbird (*Agelaius xanthomus*)**

The nearest site with a record of occurrence of this species is about two miles (3.2 kilometers) northwest of the Guayanilla Bay. No specimens were observed during the field surveys. Consequently, the Project would not affect the yellow-shouldered blackbird or its habitat.

#### **4.6.2.4 Plants**

##### **4.6.2.4.1 Vahl's boxwood (*Buxus vahlii*), palo de rosa (*Ottoschulzia rhodoxylon*) and bariaco (*Trichilia triacantha*)**

These species of plants do not occur within the areas of the Project. Their presence in the region is most likely to occur in the hills north of Highway PR-2, near Guayanilla. No adverse impacts to these species are anticipated.

#### **4.6.3 Applicant's Preferred Alternative: Ponce Bay Only**

Please refer to Appendix C for further details on the information summarized in the following sections.

##### **4.6.3.1 Reptiles**

###### **4.6.3.1.1 Loggerhead sea turtle (*Caretta caretta*)**

The proposed construction and operation of the Project would not affect this species.

###### **4.6.3.1.2 Green sea turtle (*Chelonia mydas*)**

The proposed construction and operation of the Project would not affect this species..

###### **4.6.3.1.3 Hawksbill sea turtle (*Eretmochelys imbricata*)**

The proposed construction and operation of the Project would not affect this species.

###### **4.6.3.1.4 Leatherback sea turtle (*Dermochelys coriacea*)**

The proposed construction and operation of the Project would not affect this species.

##### **4.6.3.2 Marine Mammals**

###### **4.6.3.2.1 Humpback whale (*Megaptera novaeangliae*)**

The proposed construction and operation of the Project would not affect this species.

###### **4.6.3.2.2 Blue whale (*Balaenoptera musculus*)**

The proposed construction and operation of the Project would not affect this species.

###### **4.6.3.2.3 Finback whale (*Balaenoptera physalus*)**

The proposed construction and operation of the Project would not affect this species.

###### **4.6.3.2.4 Sei whale (*Balaenoptera borealis*)**

The proposed construction and operation of the Project would not affect this species.

#### **4.6.3.2.5 Sperm whale (*Physeter macrocephalus*)**

The proposed construction and operation of the Project would not affect this species.

#### **4.6.3.2.6 Antillean manatee (*Trichechus manatus*)**

It is determined that the proposed PTA would affect, not likely to adversely affect the Antillean manatees at Ponce Bay. Construction at the Ponce Bay could disrupt current behavioral patterns of the manatee, and result in partial modifications of its habitat. The Applicant will ensure the protection of this species by the implementation of various conservation measures aimed at avoiding collisions with incoming ship traffic and preserving the water quality at the project area.

#### **4.6.3.2.7 Caribbean monk seal**

The occurrence of this species in the project area is unlikely and there have been no confirmed sightings since 1952. The Project would not affect this species.

#### **4.6.3.3 Birds**

##### **4.6.3.3.1 Brown pelican (*Pelecanus occidentalis*)**

The Project would not significantly impact the local brown pelican population. There are no suitable nesting or roosting habitats in the Ponce area, or within the parcels proposed for added value activities. Brown pelicans forage throughout the Port of Ponce area. It is anticipated that normal behavioral patterns of brown pelicans would be disrupted during construction. The birds are expected to renew their regular behavioral patterns once the construction activities are finished.

According to the available information, the Project may affect, not likely to adversely affect the brown pelican.

##### **4.6.3.3.2 Roseate tern (*Sterna dougallii*)**

The proposed construction and operation of the Project would not affect this species.

##### **4.6.3.3.3 Puerto Rican nightjar (*Caprimulgus noctitherus*)**

The proposed construction and operation of the Project would not affect this species.

##### **4.6.3.3.4 Yellow-shouldered blackbird (*Agelaius xanthomus*)**

The proposed construction and operation of the Project would not affect this species.

#### **4.6.3.4 Plants**

##### **4.6.3.4.1 Vahl's boxwood (*Buxus vahlii*), palo de rosa (*Ottoschulzi rhodoxylon*) and bariaco (*Trichilia triacantha*)**

The proposed construction and operation of the Project would not affect these species.

## **4.7 Ecologically Sensitive Areas**

### **4.7.1 No-Action Alternative**

Under the No-Action alternative, no development would occur in the project sites. None of the ecologically sensitive areas mentioned, including the coastal uplands and higher grounds between Punta Verraco and Ponce Harbor, would be subject to indirect and/or cumulative impacts resulting from additional port-promoted developments.

### **4.7.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

The south coast of Puerto Rico, where the proposed PTA would be developed, contains numerous ecologically sensitive areas that are outside the jurisdiction of the USACE. These sensitive areas include coastal uplands and higher grounds between Punta Verraco and Ponce Harbor, which would be subject to indirect and/or cumulative impacts resulting from additional port-promoted developments. High on this list of sensitive areas are Punta Verraco, and the hills north of State Road PR-2 near Peñuelas.

Federal and local conservation experts have recognized Punta Verraco as an area of high ecological value. Punta Verraco is a high headland with well-developed dry forest underlain by highly erosional soils. According to the USFWS, the point is fringed with red mangroves and has a basin mangrove forest in its western end. The area was slated for port development some time ago, but to date remains reasonably intact. An access road leading to the site has partially cut off hydrology to the basin mangrove forest and has resulted in a mangrove die off. This site offers an excellent opportunity for mangrove restoration. The Federally listed Puerto Rican nightjar, a ground nesting bird restricted to southwestern Puerto Rico, is known to occur in the Punta Verraco area.

Although the proposed PTA would not infringe into Punta Verraco, there is the potential for other direct and indirect port-related development in the area. At least one reasonably foreseeable future action has been identified for Punta Verraco. WindMar RE, S.E., is proposing to install a wind farm on an 80-acre site at Punta Verraco to the east of the proposed Port of the Americas in Guayanilla. The purpose of this project is to provide a port-related value-added industrial activity using wind energy to grind blast furnace slag into cementitious slag. Development of this project would require the construction of one or more docks with conveyor systems to load and unload deep draft ships, which would deliver bulk materials to be ground and mixed using wind power. This project, however, is on its very early stages of development and its construction is not anticipated to occur within the same time frame as the Port of the Americas.

The forested hills to the north of State Highway PR-2 are considered ecologically sensitive areas because of the high probability of serving as habitat for the federally listed Puerto Rican nightjar. In addition, these hills are likely candidates to contain Federally listed endangered plants such as *Buxus vahli*, *Ottoschultzia rhodoxylon* and *Trichilia triacantha*. Concerns stem from the possibility of that the extraction of earth material for the reclamation activity in Guayanilla may destroy sensitive habitat, thus jeopardizing the continued existence of endangered species.

It is anticipated that the Project would not cause adverse impacts to nightjar populations. There are no reported habitats for this species within the overall project areas. The nearest documented occurrences of this species include Punta Verraco, about 1 mile (1.6 kilometers) west of the Guayanilla site, and the hills north of Highway PR-2.

Under this alternative, the Applicant had previously agreed, after consulting with the USFWS, to perform the extraction of fill material for the proposed marine reclamation activities from areas already impacted in existing quarries, and previously authorized by the DNER.

#### **4.7.3 Applicant's Preferred Alternative: Ponce Bay Only**

No impacts to ecologically sensitive areas are foreseen as part of the Applicant's Preferred Alternative to develop the Project only at the Ponce Bay and its immediate areas.

### **4.8 Wetlands**

#### **4.8.1 No-Action Alternative**

Under the No-Action Alternative, there would be no impacts to US waters and no wetlands would be affected. There would be no fill, dredging or ocean disposal of dredged material and no need for any permits under the Clean Water Act or the Marine Protection, Research and Sanctuaries Act.

#### **4.8.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

A jurisdictional determination study conducted in the areas adjoining the Port of Ponce and identified approximately 59 acres of jurisdictional wetlands. This alternative contemplates the filling of approximately 41 acres of these jurisdictional wetlands to provide additional storage space for containers.

Wetlands are fairly common along the coast in the Guayanilla area primarily because of the geographic, topographic and hydrologic conditions of the region. Field surveys conducted for the Project show that approximately 93 acres of jurisdictional wetlands occur in the Guayanilla-Peñuelas area. None of these areas would be impacted as part of this alternative.

Under this alternative, any potential impacts to the adjoining wetlands resulting from port improvements would be prevented or minimized by implementing conservation measures such as the following:

- Training of construction personnel and heavy equipment operators on the correct procedures to avoid adverse impacts to sensitive areas.
- Establishment of a 16.4 ft. (5 meter) buffer zone between wetlands and construction areas by placing protection barriers to prevent mechanical damage from machinery, vehicles or people.
- Preparation of an Erosion and Sedimentation Control Plan indicating the use of silt curtains and retention ponds to control sedimentation.

The Commonwealth would compensate through a mitigation plan for unavoidable impacts to US waters as part of this alternative. There are a number of mitigation opportunities available to compensate for unavoidable impacts to US waters and wetlands resulting from this alternative. The coastal corridor between Punta Verraco and Ponce Harbor contain important wetland habitats that have the potential of being restored or enhanced to provide additional fish and wildlife value. The areas showing most potential for restoration include an old shrimp farm east of Tallaboa Bay and Laguna Las Salinas just to the east of Punta Cucharas. The lagoon functions as a nursery area and its associated wetlands provide habitat for a variety of wading birds, shorebirds and other coastal avifauna. Additional mitigation measures could be

implemented near Punta Verraco, where some mangrove areas have been destroyed. The existing La Guancha area in Ponce contains some wetlands that were impacted by previous port development activities, which can also be restored.

#### **4.8.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, the 59 acres of jurisdictional wetlands identified adjacent to the Port of Ponce would be filled to provide additional storage space for containers. The Applicant has indicated that it would provide adequate compensation for the fill of the indicated wetlands as determined by the regulatory authority. The Project complies with the 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material pursuant to 40 CFR Part 230. Please refer to Appendix K for more details on this evaluation.

All wetlands within the Project will be assessed during the preparation of a Conceptual Wetland Mitigation Plan (CWMP) using a rapid assessment procedure. This procedure will be applied to provide an accurate and consistent evaluation of the ecological value of wetlands within the proposed project area, and to pursue an adaptive approach regarding the CWMP. The results of the assessment will also contribute to the evaluation of the success of the mitigation sites in terms of wetland functions and values. There are two main mitigation sites where wetland reestablishment activities would take place. The sites are located within the parcel known as "Finca La Esperanza", approximately 3 kilometers east of the project site (Figure 4-1).

Conservation Easements, comprising the proposed wetland mitigation actions, will be established throughout these areas and adjoining existing wetlands including salt flats, mangroves, and channels. The overall concept of the planned wetland mitigation is to reestablish and enhance wetlands in areas where filling activities have taken place within salt flats. Also, adjoining wetlands, including mangroves, channels, and salt flats will be designated as conservation easements.

The final mitigation area needed to compensate the impacts of approximately 59 acres of jurisdictional wetlands will be determined after a comprehensive assessment of the impact areas is performed. This action is essential in order to follow the no-net-loss policy of wetland acreage, functions, and values. This will be discussed in the CWMP for this project.

#### **4.9 Coastal Zone**

In response to the intense pressures for development in the coastal zone, and its importance of the welfare of the US, Congress passed in 1972 the Coastal Zone Management Act (CZMA). The Act affirms a national interest in the effective protection and development of the coastal zone by providing assistance and encouragement to coastal states and territories to develop and implement regional programs for managing their coastal zones. The purpose of the CZMA was to establish a national policy and develop a national program for the management, beneficial use, protection and development of the land and water resources of the Nation's coastal zone. The Puerto Rico Coastal Zone Management Program (PRCZMP) was approved in September 1976.

The term "*Federal Consistency*" refers to the requirement in Section 307(c) of the CMZA that identifies several types of Federal actions that must be consistent with the approved Coastal Zone Management Program. In Puerto Rico, the Planning Board is the agency designated to administer Federal consistency procedures.

All Federal projects to be carried out in the coastal zone are subject to consistency review. The Act also requires that any non-Federal applicant for a Federal license or permit to furnish a consistency certification that the proposed activity would comply with the local Coastal Zone Management Program. Generally, no permit would be issued until the Planning Board has concurred with the non-Federal applicant's certification.

The CZMP acknowledges that there are certain projects that are critical to the economic development of Puerto Rico, and that some of these projects need to be located on or near the coast. Ports, for example, need to be located on the coast in order to function properly. In view of the coastline configuration and water depth characteristics in Puerto Rico, the areas where some of these water-dependent industries can be located are limited. The most suitable areas for port development are located along the south and west coasts, between Yabucoa on the east and Rincón to the west. The Commonwealth identified potential coastal sites where these industries can be established and developed. The Ponce and Guayanilla bays are included among these sites.

Also, Coastal Barrier Units designated by the Secretary of the Interior are located in the vicinity of the sites analyzed in detail as potential alternatives for the development of the Project. The closest Coastal Barrier Units are Punta Cabullones (PR-56), Punta Cucharas (PR-57) and Punta Ballena (PR-59). However, none of these units would be affected by the proposed action under any of the final alternatives.

#### **4.9.1 No-Action Alternative**

Under the No-Action alternative, dredging or filling of coastal areas would not occur, and there would be no development in the coastal zone. A CSMP Federal consistency certification would not be required.

#### **4.9.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under this alternative, fill and dredge activities would occur within the coastal zone, requiring a CZMP Federal Consistency Certification.

- At the main terminal within the Ponce , impacts to the coastal zone would include fill of 76 acres adjacent to Pier 8, which would be extended by adding 3,000 feet; dredging of 248 acres of the navigation channel and turning basin; and fill of 41 acres of wetlands adjacent to the Port of Ponce.
- At the Guayanilla Bay, fill of 12 acres of the bay would occur for the construction of the pier.

#### **4.9.3 Applicant's Preferred Alternative: Ponce Bay Only**

The Applicant's Preferred Alternative involves dredging of 248 acres of the Ponce Harbor and excavation of 45 acres of uplands for the docking channel.

The PRCZMP (p.105) established the following criteria for permitting and filling dredging activities:

- *"Dredging of coastal waters shall to the maximum extent practicable...be limited to port...facilities, navigational channels, turning basins, vessel berthing and mooring areas..."*

- *“...filling of coastal waters...shall, to the maximum extent practicable, be permitted only where necessary and where there is no less environmentally damaging alternative for port or airport expansion...or coastal-dependent facilities;”*

In view of the above, and the site location criteria set forth in the last paragraph of the introduction to this section, minimal impacts to the coastal zone would occur under the Applicant's Preferred Alternative. This would be consistent with the PRCZMP and in full compliance with the CZMA.

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Figure 4-1. Proposed Mitigation: Finca La Esperanza Parcel

Port of the Americas



## **4.10 Flooding**

### **4.10.1 No-Action Alternative**

Under the No-Action Alternative, there would be no impact on the flood levels inland or in coastal areas, since there would be no construction.

### **4.10.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under this alternative, construction activities would take place in the coastal area at the Ponce and Guayanilla bays. The site at the Port of Ponce includes areas classified as Zone 1M and Zone 2 in the flood maps published by the Puerto Rico Planning Board, and as Zone A, Zone VE and Zone AE according to the FEMA flood maps. In Guayanilla-Peñuelas, the site includes areas that are classified as Zone 1M and Zone 2 in the Puerto Rico Planning Board flood maps, corresponding to zones classified as Zone VE, Zone AE and a small area of Zone X by FMA. No construction is planned on areas classified as Zone 1.

The construction on areas that are classified as Zone 1M and Zone 2 would comply with the design criteria for this type of zoning as established in the Puerto Rico Planning Board Regulation Number 13 (2001). Development of the value-added parcels would not affect potential flood levels at any of the sites.

- At the Ponce Bay site, the construction of the proposed dock and container staging area would take place over an area of 76 acres that would be reclaimed by fill from submerged lands. The fill would be elevated above the flood stages for the appropriate flood zones (Zones 1M and 2), and in compliance with the PB Regulation No. 13 (as amended in 2001). Eventually, the area would be incorporated to the flood maps of the zone.
- At the Guayanilla Bay site, the proposed pier would be constructed on pilings, with the pier platform elevated above the Zone 1M elevations, and in compliance with the PB regulations.

In summary, under this alternative, the elements at the Ponce and Guayanilla bays would be elevated above the 100-year flood levels, and would not have a direct impact on the flood levels inland or in coastal areas.

### **4.10.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, there would not be any impacts to flood levels. The 59 acres of wetlands proposed to be filled, and the Percon parcel, where fill on uplands would be placed, are outside of the regulated flood zones. The fill would not impact flood levels in the Port of Ponce area and nearby communities. The excavation of the docking channel and the dredging of the Ponce Harbor would have no impact on flood levels.

## **4.11 Water and Sediment Quality**

### **4.11.1 Water Quality**

#### **4.11.1.1 Surface Water**

##### **4.11.1.1.1 No-Action Alternative**

Under the No-Action Alternative, there would be no impact on the quality of marine or inland waters, since there would be no construction activities. Furthermore, this alternative would have no additional impacts on the current operation activities of the Port of Ponce.

##### **4.11.1.1.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under this alternative, impacts to marine and inland waters would occur from construction, fill and dredging activities the Ponce Bay, and construction activities at the Guayanilla Bay.

At the Ponce Bay:

- Sediments would be suspended temporarily in the water column at the bay from the fill of 76 acres of marine waters; dredging of the navigation channel and turning basin; construction of the extension of Pier 8 while piles are driven; and from storm runoff from the fill of 41 acres of wetlands adjacent to the port and the Percon parcel.
- Sediments would also be suspended temporarily in the water column from additional marine traffic during operations of the Project. It is expected that any increase in turbidity associated with ship traffic in the PTA would be marginal, since ships would be traveling in deep navigation channels of over 53 feet in Guayanilla-Peñuelas, and a minimum of 50 bmsl feet in Ponce. Any increase in resuspended sediments directly resulting from ship traffic is most likely to be insignificant when compared to sediment loads from other sources such as, runoff after heavy rains and natural coastal erosion (USGS, 2002).
- The suspension of these sediments would increase turbidity, and reduce dissolved oxygen concentrations in the water column, due to increased biological and chemical oxygen demand.
- Except for marine resuspension of sediments from increased marine traffic, these impacts are expected to be temporary, with turbidity levels in the water column returning to preproject conditions shortly after the fill, dredging and construction activities are completed.
- The Applicant proposes to implement BMPs to reduce and minimize the temporary effects of the indicated activities on the environment. These measures could include the placement of barriers or curtains to lessen sediment diffusion during filling activities. Sheet piles would also be installed prior to the filling activities. Sheet piling consist of a series of panels with interlocking connections driven into the ground with impact or vibratory hammers to form an impermeable barrier. Sheet piling can be made from a variety of materials such as: steel, vinyl, plastic, wood, recast concrete and fiberglass. Similarly, measures would be taken to assure that the fill material is adequate, not only in terms of its structural utility but in its quality of being free of hazardous substances or heavy metals as well. Any turbidity and sedimentation produced by the Project would be reduced using pile-driving techniques instead dredging to install pilings. Turbidity and sedimentation impacts would be reduced in the fill area with the use of turbidity

curtains and the previous installation of sheet piling, to minimize the extent of the area affected by turbidity and sedimentation. A Stormwater Pollution Prevention Plan and a Sedimentation and Erosion Control Plan would be prepared to comply with the permit requirements of the EQB.

- It is estimated that dredging of the navigation channel and the inner Ponce Harbor would take as approximately six (6) months. The adverse impacts of the dredging would last at least the same period, with potential negative impacts to the transient and permanent marine life in the bay.
- Port-related activities during operation of the Project could also have an impact on the quality of marine waters. Incidents related to port activities, such as accidental discharges from ships of raw or partially treated sanitary waters, fuels and lubricants, and solid wastes would degrade water quality. As with the construction phase, BMPs would be implemented, and compliance with regulatory requirements would be strictly enforced to avoid or minimize these potential impacts during operation of the port.
  - Accidental spills of raw or partially treated sewage from ships could increase pathogen counts in the water and increase the biochemical oxygen demand (BOD), depriving the water column of dissolved oxygen. In addition, these nutrient rich discharges could stimulate phytoplankton and algal blooms with similar consequences. The Federal Clean Water Act (33 USC 1322) requires that vessels traveling in waters under the jurisdiction of the US have "Marine Sanitation Devices (MSD)" that are certified by the United States Coast Guard (USCG), to prevent wastewater with no treatment or with an inappropriate treatment, to be discharged into US waters. The MSD are required while the vessels are sailing within territorial US waters, the Great Lakes, and any navigable waters.
  - Water pollution could occur from hydrocarbon compounds and other pollutants resulting from accidental spills, stormwater discharges, bilge drainage, and ship refueling operations. This also includes the operations of the inland port areas and value-added parcels. BMPs would be applied for the handling, storage and disposal of hydrocarbon or hazardous products that may be used during port operations, as well as the implementation of measures for the control and management of stormwaters. The Applicant would have to comply with the requirements of the National Pollution Discharge Elimination System (NPDES) as required by the USEPA. This permit program controls water pollution by regulating point sources that discharge pollutants into US waters. The permit provides two levels of control: technology-based limits (based on the ability of dischargers in the same industrial category to treat wastewater) and water quality-based limits (if technology-based limits are not sufficient to provide protection of the water body). The Applicant would address contingencies and control measures to prevent discharge of these substances into US waters in accordance with the NPDES permit and other pertinent local and Federal regulations.
  - Inadequate disposal of solid wastes produced during port operations would have adverse effects on water quality in the project's vicinity. All solid wastes generated during port operations would be adequately managed to avoid disposal in or near the water. Section 4.18.5 of this DEIS presents a detailed

discussion of the measures that would be implemented to safely manage and dispose of solid wastes.

- The introduction of exotic organisms and contaminants through ship's ballast water discharges. Ballast waters are used to maintain a ship's balance and stability depending on the weight of its cargo. Water ballast may be taken to make a ship heavier or discharged to make it lighter. Ballast water from ships is one of the largest pathways for the intercontinental introduction and spread of aquatic nuisance species (ANS). The National Invasive Species Act of 1996 established both regulations and guidelines to control the invasion of ANS. The existing rule establishes voluntary water management guidelines for ballast in US waters (except the Great Lakes), and establishes mandatory reporting and sampling procedures for nearly all vessels entering US waters. Under this rule, a self-policing program was established where ballast water management is initially voluntary for a period of 24-30 months. However, if the rate of compliance is found to be inadequate, or if the vessel operators fail to submit mandatory ballast water reports to the Coast Guard during this time frame, the voluntary guidelines may become mandatory and civil and criminal penalties could be imposed.

#### **4.11.1.1.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, impacts to water quality would occur from the excavation of the docking channel, dredging of the Ponce Harbor, fill of wetlands and storage areas, and increased navigation. The principal impact would be from temporary increases in turbidity resulting from resuspension of sediments in navigation areas and discharges of storm runoff from construction areas.

- Sediments would be suspended in the water column within the excavated area for the docking channel. Once the channel is open to the Ponce Bay, circulation of seawater would return turbidities to background conditions in the bay.
- Sediments would be resuspended during the dredging of the navigation channel and turning basin, increasing turbidity and oxygen demands. These increases would be temporary and in areas where dredging is taking place for a period of about six (6) months.
- Dredging activities will incorporate BMPs to minimize consequences of dredging and disposal on marine water quality. Please refer to Appendix L for a summary of these measures.
- Temporary increases in turbidity would occur at the ODMDS in the Caribbean Sea during discharge of the material dredged from the Ponce Harbor.
- Sediments would be resuspended in storm runoff from areas to be filled, including 59 acres of wetlands adjacent to the Port of Ponce, and 132 acres of uplands within the Percon parcel and its vicinity. BMPs to control storm runoff are required by the local EQB permits and the NPDES stormwater regulations and permits for construction activities.
- Port-related activities during operation of the Project could also have an impact on the quality of marine waters. Incidents related to port activities, such as accidental discharges from ships of raw or partially treated sanitary waters, fuels and lubricants, and solid wastes would degrade water quality. As with the construction phase, BMPs

would be implemented, and compliance with regulatory requirements would be strictly enforced to avoid or minimize these potential impacts during operation of the port.

- Accidental spills of raw or partially treated sewage from ships could increase pathogen counts in the water and increase the biochemical oxygen demand (BOD), depriving the water column of dissolved oxygen. In addition, these nutrient rich discharges could stimulate phytoplankton and algal blooms with similar consequences. The Federal Clean Water Act (33 USC 1322) requires that vessels traveling in waters under the jurisdiction of the US have “Marine Sanitation Devices (MSD)” that are certified by the USCG to prevent wastewater with no treatment or with an inappropriate treatment, to be discharged into US waters. The MSD are required while the vessels are sailing within territorial US waters, the Great Lakes, and any navigable waters.
- Water pollution could occur from hydrocarbon compounds and other pollutants resulting from accidental spills, stormwater discharges, bilge drainage, and ship refueling operations. This also includes the operations of the inland port areas and value-added parcels. BMPs would be applied for the handling, storage and disposal of hydrocarbon or hazardous products that may be used during port operations, as well as the implementation of measures for the control and management of stormwaters. The Applicant would have to comply with the requirements of the National Pollution Discharge Elimination System (NPDES) as required by the USEPA. This permit program controls water pollution by regulating point sources that discharge pollutants into US waters. The permit provides two levels of control: technology-based limits (based on the ability of dischargers in the same industrial category to treat wastewater) and water quality-based limits (if technology-based limits are not sufficient to provide protection of the water body). The Applicant would address contingencies and control measures to prevent discharge of these substances into US waters in accordance with the NPDES permit and other pertinent local and Federal regulations.
- Inadequate disposal of solid wastes produced during port operations would have adverse effects on water quality in the project’s vicinity. All solid wastes generated during port operations would be adequately managed to avoid disposal in or near the water. Section 4.18.5 of this DEIS presents a detailed discussion of the measures that would be implemented to safely manage and dispose of solid wastes.
- The introduction of exotic organisms and contaminants through ship’s ballast water discharges. Ballast waters are used to maintain a ship’s balance and stability depending on the weight of its cargo. Water ballast may be taken to make a ship heavier or discharged to make it lighter. Ballast water from ships is one of the largest pathways for the intercontinental introduction and spread of aquatic nuisance species (ANS). The National Invasive Species Act of 1996 established both regulations and guidelines to control the invasion of ANS. The existing rule establishes voluntary water management guidelines for ballast in US waters (except the Great Lakes), and establishes mandatory reporting and sampling procedures for nearly all vessels entering US waters. Under this rule, a self-policing program was established where ballast water management is initially voluntary for a period of 24-30 months. However, if the rate of compliance is found to be inadequate, or if the vessel operators fail to submit mandatory ballast water reports to

the Coast Guard during this time frame, the voluntary guidelines may become mandatory and civil and criminal penalties could be imposed.

#### **4.11.1.2 Groundwater Resources**

The areas in the vicinity of the Project are not a significant source of groundwater for any uses. At the Guayanilla-Peñuelas area, ground waters within the Union Carbide property are limited and contaminated with hydrocarbon products from the prior petrochemical complex that operated in the zone. In the vicinity of the Port of Ponce, groundwaters are saline due to natural seawater encroachment. Also, under the alternatives considered by the Applicant, ground water would not be used to meet the needs of the Project. Accordingly, there would not be any impact to ground waters in the areas of the Project from the three alternatives considered by the Applicant.

#### **4.11.2 Sediment Quality**

Under the alternatives considered by the Applicant, the Project includes fill, dredging and excavation activities that would require the removal and disposal or reuse of large volumes of soil and sediments. The fill of wetlands or marine waters with soils from uplands or dredged sediments requires ascertaining that the fill material is free of potential pollutants. The reuse or disposal of excavated or dredged materials must ascertain that their quality meets the appropriate land and marine criteria and regulations.

##### **4.11.2.1 No-Action Alternative**

Under the No-Action alternative, no construction would take place at the Ponce or Guayanilla bays. There would not be any impacts from the reuse or disposal of sediments, or the placement of fill from uplands.

##### **4.11.2.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under this alternative, at the Ponce Bay:

- Fill of approximately 76 acres at the Ponce Bay for the storage area and the extension of Pier 8 would require approximately 4.3 MM m<sup>3</sup> of soil. Also, fill of 41 acres of wetlands adjacent to the Port of Ponce would require about 500,000 m<sup>3</sup> of soil.
- Although dredging of the Ponce Harbor would generate about 5.5 MM m<sup>3</sup> of sediments, their structural properties are not suitable for fill of areas where construction would take place. Accordingly, these materials would be disposed at the designated ODMDS, and other soil from uplands near Ponce would be utilized for the fill of marine waters and wetlands previously described. The Applicant proposes to utilize soils from existing quarries in the vicinity of Ponce where appropriate permits have been issued by the DNER and the EQB, and ascertaining that there are no contaminants that would migrate from the fill areas.
- Since the Applicant proposed to dispose the sediments to be dredged from the Ponce Harbor at the ocean, it conducted a detailed analysis of their quality as part of the USEPA and USACE requirements for the Section 103 permit. Testing was performed during February of 2003 utilizing the criteria established in the "Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual, or Green Book", issued by USEPA for these actions. USEPA reviewed the analytical data which concluded that the sediments to be dredged are free of any contaminants that would prevent disposal at the ocean as proposed. The USEPA, jointly with USACE, approved during July 2003 a draft

of the "Site Management and Monitoring Plan for the Ponce Harbor, Puerto Rico: Ocean Dredged Material Disposal Site" for the proposed disposal of the material at the designated ODMDS. A public notice of the availability of the plan was published by USEPA on August 20, 2003, providing 30 days for comments to the intent to approve the plan for the eventual disposal of the dredged material at the ODMDS. The USEPA, approved on November 4, 2003 the "Final Site Management and Monitoring Plan for the Ponce Harbor, Puerto Rico: Ocean Dredged Material Disposal Site".

Under this alternative, at both the Ponce and Guayanilla sites, increased marine traffic would resuspend sediments from the bottom of the navigation channels. The Applicant conducted investigations of the quality of the bottom sediments at both harbors. The results of these studies show that there are no contaminants in the sediments that would result in adverse effects to the quality of water in the harbors

#### **4.11.2.3 Applicant's Preferred Alternative: Ponce Bay Only**

Impacts associated to the Applicant's Preferred Alternative on sediment quality would be limited to the Ponce Harbor as follows:

- Approximately 3.4 MM m<sup>3</sup> of soils would be excavated from the area of 45 acres where the docking channel is planned. Analyses of the chemical and physical characteristics of these soils were conducted in two separate studies.
  - A preliminary geotechnical study of the area near the Port of Ponce was performed by ERTEC in April 2001, including the drilling of seven preliminary boreholes, four of them in the ocean portion of the Port of Ponce, drilled to depths ranging between 15 and 40 feet. Samples were analyzed for the RCRA pollutant list. Results indicated that the subsurface soils in that area could be characterized as non-hazardous.
  - The Applicant conducted in 2003 a detailed study of the chemical and physical characteristics of the soils in the parcel where the excavation for the docking channel is proposed. Thirty (30) samples were collected from cores drilled in the area, and analyses utilizing the RCRA pollutants list were completed. The results of the study (Appendix G) show that there are no contaminants in the soils that would prevent their reuse for fill of wetlands or uplands within the project area.

As indicated in the previous section, the sediments to be dredged from the Ponce Harbor were examined by the Applicant and found suitable for ocean disposal. There would not be any impacts on the water column within the dredged areas or the approved ODMDS.

#### **4.12 Air Quality**

Potential impacts on the quality of the air from the development of the PTA alternatives were assessed as part of this SDEIS. Air emissions at any of the alternative project sites would increase from the current levels due to four different activities:

- Temporary generation of fugitive dust from construction of the docks, piers, parking areas and value-added sites (i.e., clearing, grading earth movement, excavation, etc.), and volatile organic compounds emitted during paving and painting activities.
- Intermittent generation of exhaust gases from heavy equipment, vehicles and other equipment during construction and operation of the ports.

- Generation of exhaust gases from operation equipment, such as gantry cranes, container lift cranes and tractors, and emergency power generators that operate with diesel fuel.
- Generation of exhaust gases during maneuvering and harboring of additional vessels at both ports.

#### **4.12.1 No - Action Alternative**

Under the No-Action Alternative, there would be no new air emission sources on the proposed project areas. The air quality regime would remain as described in Chapter 3.

#### **4.12.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under this alternative, air emissions would increase in the project areas from current levels:

Additional emissions that would be generated from construction and operation of this alternative were divided as follows:

##### Construction

- Fugitive Dust Emissions from heavy construction and vehicular traffic
- Volatile Organic Emissions Associated to Paint Solvent and Paving Emissions
- Construction Equipment Emissions

##### Operation

- Emissions from Stationary Sources during Operation
- Emissions from Additional Vessels (Mobile Sources) during Operation

Estimates of emissions were based on the USEPA AP-42 Air Pollutant Emission Factors for Stationary Point and Area Sources (<http://www.epa.gov/ttn/chief/ap42/>). Please refer to Appendix H for quantitative details on this assessment.

Under this alternative, and based on the potential emissions calculations, the emergency generators at both the port zone at Ponce and Guayanilla-Peñuelas would be considered minor sources of air pollution for the purpose of construction and operating permits. Also, emissions from increased ship traffic are considered negligible, and therefore, not expected to have a negative impact on air quality. Nevertheless, each port terminal would require a construction and operating permit of air emissions sources under Rules 203 and 204 of the Air Quality Regulations from the EQB.

#### **4.12.3 Applicant's Preferred Alternative: Ponce Bay Only**

The Applicant's Preferred Alternative would result in additional emissions to the air. A determination was made by the Applicant of the additional emissions that would be generated in the Ponce Port area for the following elements:

Emissions that would be generated from the Applicant's Preferred Alternative were divided as follows:

### Construction

- Fugitive Dust Emissions from heavy construction and vehicular traffic
- Volatile Organic Emissions Associated to Paint Solvent and Paving Emissions
- Construction Equipment Emissions

### Operation

- Emissions from Stationary Sources during Operation
- Emissions from Additional Vessels (Mobile Sources) during Operation

Estimates of emissions were based on the USEPA AP-42 Air Pollutant Emission Factors for Stationary Point and Area Sources (<http://www.epa.gov/ttn/chief/ap42/>). Please refer to Appendix H for quantitative details on this assessment.

Except for the nitrogen oxides emissions, the potential emissions of criteria pollutants will be less than 250 tons per year. The nitrogen oxides potential emissions for full operation are estimated at 648.7 tons per year.

It should be noted that the emission factor for nitrogen oxides (0.0240 lb/hp-hr) does not consider control measures. According to EPA (USEPA 1997), there are control measures capable of reducing NO<sub>x</sub> emissions up to 95 percent. After initial operation, and before installing additional gantry cranes units, available emission control measures for NO<sub>x</sub> should be analyzed to determine its applicability and capability to maintain potential NO<sub>x</sub> emissions below the 250 tons per year level.

The implementation of effective control measures would allow the Ponce port facility to maintain its classification as a minor air emission source from a construction-permitting standpoint. The Ponce port facility would then be required to apply and obtain a construction permit under Rule 203 of the Regulation for the Control of Atmospheric Pollution from EQB.

If after initial operations effective control measures for NO<sub>x</sub> emissions capable of maintaining the facility's potential emissions less than 250 tons per year could not be implemented, the Ponce port facility would then be considered as a major stationary source for the purpose of construction. Installation of additional gantry cranes would first require to a construction permit under EPA's 40 CFR Part 52 Prevention of Significant Deterioration Rules and compliance with Rule 201 from the EQB.

From an operating standpoint, and assuming that no effective control measures for NO<sub>x</sub> are implemented for the initial operation of the Ponce Port, the facility would be required to obtain a Title V operating permit before start of operation since the estimated potential emissions for NO<sub>x</sub> would be above the 100 tons per year regulatory level.

The construction of the PTA would not induce the construction of new electrical power generating facilities that would represent emission sources. The Costa Sur power plant, operated by the Puerto Rico Power and Energy Authority (PREPA) located in Guayanilla, is adequate to provide the project needs for the foreseeable future, subject to the construction of a power substation in the Ponce area. The existing infrastructure would not have the capacity to supply the additional electrical power demand for the Project. For this reason, the 38 KV radial line should be upgraded to increase its capacity. However, such improvements would not become air emission sources. It is expected that companies to be located in the value-added

areas would be classified as light industries and not be considered as mayor sources of air pollution as defined in Rule 102 of EQB's Regulation for the Control of Air Pollutants and USEPA's Regulations.

Based on the assessment performed for this alternative, the emissions from increased ship traffic are considered negligible, and therefore, not expected to have a negative impact on air quality.

Additionally, the Applicant has indicated that industries that would be established on the value-added zone include:

1. Electronic appliance/computer assembly, customizing, packaging, technology adaptation, etc.
2. Automotive part and component manufacturing and supply chain activities to support Caribbean, Central and South American assembly plant networks, and distribution. Customizing automobiles for the Caribbean and Latin America Market.
3. Food processing and packaging.
4. Biotechnological processing of food, feed and medications.
5. Heavy equipment assembly, construction, such as cargo handling, materials transfer, agricultural, power plant, etc. Equipment assembly testing and delivery.
6. Energy efficiency equipment assembly, such as solar power generation, fuel cells, etc., for delivery and installation in Caribbean and Latin America.
7. Water processing treatment and recovery equipment assembly and delivery.
8. Telecommunications/information systems equipment assembly and installation, transmission equipment, etc.
9. Logistic activities (FedEx, UPS, DHL, etc.) supply chain management.

The industries to be established in the value-added zones of the Project must obtain the necessary permits including the permit for the construction and operation of air emissions sources as required on EQB's Regulation for the Control of Air Pollutants.

#### **4.13 Cultural Resources**

No impacts on Cultural Resources are anticipated as part of the Applicant's Preferred Alternative. The field terrestrial and aquatic studies demonstrated that there are no known cultural resources within the areas to be impacted by the elements of the Project within the Ponce Port area.

##### **4.13.1 No-Action Alternative**

Under the No-Action Alternative, development of the Project would not occur and no potential impacts to existing cultural and archaeological resources would happen.

##### **4.13.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

The archaeological studies established that there are no cultural resources within the terrestrial and marine parcels that would be impacted by the elements of the Project under this alternative. These studies, which included terrestrial Phases IA at Guayanilla and Ponce, and aquatic Phases IA, IB and II at the Ponce site, are included as Appendix J of this SDEIS.

The historical records of the area and its vicinity show the potential for occurrence of other historical and cultural resources, which deserves special attention regarding potential indirect effects during the development of the Project. In view of this, the Applicant has indicated that contractors to the Project would be instructed to stop any construction work and notify PAA if any historical or cultural artifacts are detected during construction. The PAA would in turn notify the State Historic Preservation Office and the Institute of Puerto Rican Culture for appropriate action.

#### **4.13.3 Applicant's Preferred Alternative: Ponce Bay Only**

No impacts on Cultural Resources are anticipated as part of the Applicant's Preferred Alternative. The field terrestrial and aquatic studies demonstrated that there are no known cultural resources within the areas to be impacted by the elements of the Project within the Ponce Port area.

#### **4.14 Socioeconomic and Environmental Justice**

An analysis of the socioeconomic impact of the development of the PTA was prepared as part of the DEIS (USACE, 2002). The socioeconomic analysis included a comprehensive Environmental Justice (EJ) determination as required by Executive Order Number 12898 of February 1994.

The socioeconomic analysis addresses the overall impact of the Project in the municipalities of Guayanilla, Peñuelas and Ponce, and adjacent south coast municipalities at the ward level. The EJ study considers the socioeconomic condition of the municipalities and wards directly impacted by the Project, to determine whether the proposed location of any of its components represents an unfair or excessive impact any particular group because of their economic, social, religious, or race standing. No relocation of people or communities would be required as part of the Project for any of the alternatives discussed herein.

A Cost/Benefit Analysis was performed with the purpose of measuring the costs and benefits of Port of the Americas. The Port would be developed in the Ponce region and would concentrate on export-import and transshipment activities.

- The study was divided into four main components: Demand Analysis, Supply Analysis, Impacts Analysis, and Social Profitability Analyses. The results can be summarized as follows:
  - Internal rate of return calculations suggest a very profitable activity, reflecting rates of return of 19.8% in the Base Case down to 12.6% in the Low Case. A 6.5% social discount rate was applied.
  - Payback period (PRI) is estimated to be close to five years in the Base Case, but close to ten years in the Very Low Case.
  - Profitability index (IR) reflects high values for the Base Case, acceptable values for the Low Case, but not acceptable results for the Very Low Case.
  - Other social benefits like value-added activities and clusters activity are not included in the computations. When included, even the Low Case would reflect a very profitability alternative.

**4.14.1 No-Action Alternative**

The No-Action Alternative eliminates the opportunity that represents the Applicant's Preferred Alternative for economic growth. The Applicant's Preferred Alternative would provide employment, income and economic activity to the municipalities in the immediate area, the southern region and the entire island of Puerto Rico. As indicated before, the Applicant's Preferred Alternative would impact the employment rate and the income in the municipalities in the south region of the Island, creating approximately 3,833 direct indirect and induced jobs with an income of approximately \$17.7 million dollars for the first year. This impact would be recurrent and would increase according to TEU traffic in successive years.

The No-Action Alternative would not have any effects on the environmental justice issue.

**4.14.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

**4.14.2.1 Socioeconomic Analysis**

The economic impact of a project has two main components: (1) the effects of the required construction investment, including capital investment; and (2) the impact of the regular operations of the Project. The first is a non-recurring effect and would impact the employment rate and the income in the municipalities where the Project would be developed and the south region of the Island. The second is a recurrent effect that would remain as long as the project is operating. The construction and the operation impacts can be further divided between two general categories. The first is the direct economic impact on employment rate and income. The other represents the indirect and induced effect of the Project on employment rates and income.

- The analysis included a compilation of data pertinent to the direct economic impact of the Project. These data consist of the total investments for the construction phase and the direct jobs and wages for the regular operations phase. The interindustrial multipliers developed by the Puerto Rico Planning Board were applied to these data to determine the direct jobs and income, and the indirect and induced jobs and income during the construction, as well as the indirect and induced effects during the operation. These multipliers are widely used to determine the relations among diverse industrial sectors of the economy, since they calculate the impact of the economic activity of one sector over other sectors of the economy.
- The economic impact study, in addition to estimating the jobs and income that would be generated from these jobs, also estimated the fiscal revenue from income taxes paid by employees. The results are shown in Table 4-4.

**Table 4-4: Construction Income and Employment Estimates**

<b>Jobs</b>	Direct (Number)	5,588
	Direct and Indirect (Number)	7,373
	Direct, Indirect and Induced (Number)	11,995
<b>Income</b>	Direct (Millions)	\$ 76.2

	Direct and Indirect (Millions)	\$ 116.3
	Direct, Indirect and Induced (Millions)	\$ 192.5

Source: Estudios Técnicos, 2001.

- The construction of the PTA would generate approximately 5,600 direct jobs and a direct income of \$76.2 million per year (Frankel Associates, 2000). The direct, indirect and induced impacts would be about 12,000 jobs and \$192.5 million in income. This impact is non-recurring.
- The benefits from the regular operations of the Project are recurring and depend upon projected ship traffic, since this would determine the number of jobs created by the Project and the payroll generated. The economic impact analysis was based on traffic projections from the marine traffic study prepared by Frankel and Associates (Frankel, 2000). Frankel estimated a need of approximately 528 full-time employees for a traffic level of 600,000 TEU per year. These estimates do not include the staff needed in the free zones or the industrial zones of the ports.
- The number of jobs and the indirect and induced income are estimated from multipliers provided by the Planning Board. The analysis of the economic impact uses the values of median salaries provided by the Puerto Rico Department of Labor and Human Resources for each type of job required to estimate the income to be generated by the port. The estimated economic impacts of the operational phase for the first and the tenth year of operation of the PTA are summarized in Table 4-5 and Table 4-6.
  - The data show that with a total traffic of 600,000 TEU during the first year (300,000 TEU in Ponce and 300,000 TEU in Guayanilla), the PTA would create 528 direct jobs, and would generate direct income of \$9.27 million per year.
  - The combined direct, indirect and induced impact would be of 3,833 jobs, with a total income of \$17.70 million. This impact is recurrent and would increase as a function of the ports' yearly TEU traffic. This does not include the staff required for the industrial or free zones at the port. Table 4-5 summarizes this information.

**Table 4-5: Employment and Income Estimates: First Operation Year**

<b>Jobs</b>	Direct (Number)	528
	Direct and Indirect (Number)	1,484
	Direct, Indirect and Induced (Number)	3,833
<b>Income</b>	Direct (Millions)	\$9.27
	Direct and Indirect (Millions)	\$11.4

	Direct, Indirect and Induced (Millions)	\$17.7
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Source: Estudios Técnicos, 2001.

- With traffic of 2,300,000 TEU during the tenth year (projected scenario), the PTA would generate approximately 1,511 direct jobs and a direct income of \$25.6 million per year. The direct, indirect and induced impacts are estimated at 10,970 jobs and income of \$49.1 million. This impact is recurrent and would increase until the yearly traffic at the port is stabilized. These results are summarized in Table 4-6.

**Table 4-6: Income and Employment Estimates: Tenth Year of Operation**

<b>Jobs</b>	Direct (Number)	1,511
	Direct and Indirect (Number)	4,246
	Direct, Indirect and Induced (Number)	10,970
<b>Income</b>	Direct (Millions)	\$25.6
	Direct and Indirect (Millions)	\$31.6
	Direct, Indirect and Induced (Millions)	\$49.1

Source: Estudios Técnicos, 2001

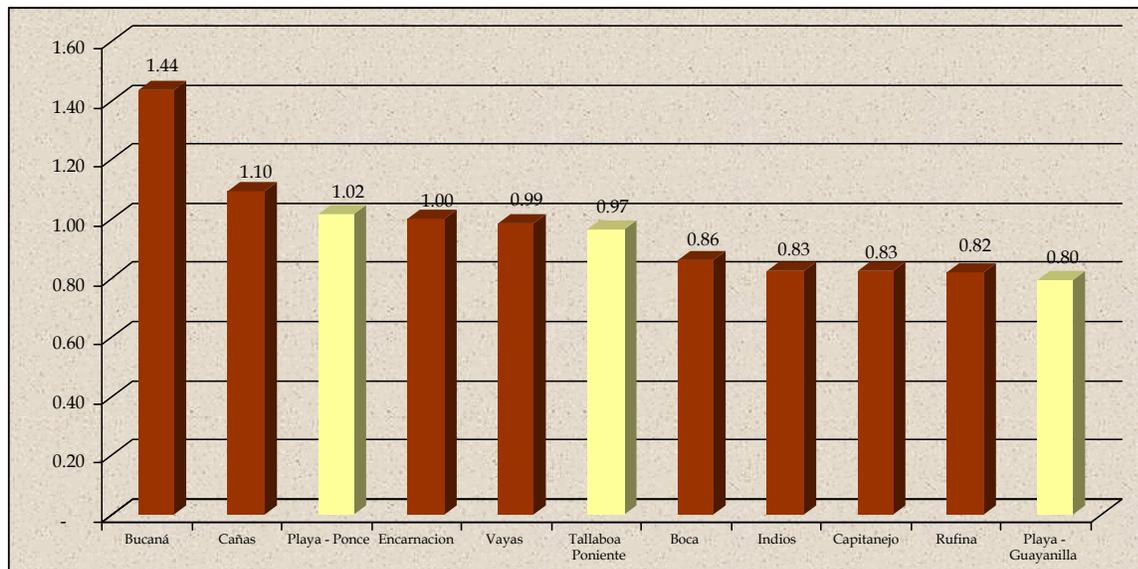
- The construction and operation of the PTA would positively impact the fiscal income of the municipalities of Ponce, Peñuelas and Guayanilla, as well as the entire region and the Island. This impact would be associated to taxes for municipal construction permits; municipal taxes; internal revenue receipt charges; fees required by the Engineering and Surveyors Association of Puerto Rico for stamping plans and specifications; and personal income taxes. The impact of the construction phase on the fiscal income would benefit the local government of the towns where the Project would be developed, in a non-recurrent way, as well as the Commonwealth government, in approximately \$16 and \$34 million, respectively.
- Within a 10-year period, the operation of the PTA would generate \$8 to \$23 million to the Commonwealth treasury in personal income taxes. This impact is recurrent and variable according to employment.

#### **4.14.2.2 Environmental Justice Study**

Presidential Executive Order Number 12898 (White House, 1994) requires that for any project that involves the Federal interest, the DEIS must include an Environmental Justice study to demonstrate that the adverse environmental impacts of the proposed action do not represent a disproportionate burden on minority or low-income populations.

- The basis of the Environmental Justice study was the evaluation of the social and economic variables of the municipalities of the region. The evaluation included the Municipalities of Ponce, Yauco, Juana Díaz, Guayanilla, Peñuelas, Santa Isabel, and Guánica, as well as the coastal wards of Guayanilla (Boca, Indios, Playa, and Rufina), Peñuelas (Encarnación and Tallaboa Poniente), and Ponce (Bucaná, Cañas, Capitanejo, Playa and Vayas). The data from these sites were compared to the sites where the original elements of the Project were planned, including: Playa Ward in Ponce and Playa Ward in Guayanilla, together with Tallaboa Poniente Ward in Peñuelas.
- The comparative analysis includes two different levels of socioeconomic and geographical groupings: (1) Guayanilla, Peñuelas and Ponce, compared to the municipalities of Yauco, Juana Díaz, Santa Isabel, and Guánica; and (2) Playa Ward in Ponce, Playa Ward in Guayanilla, and Tallaboa Poniente Ward in Peñuelas, compared to the Boca, Indios and Rufina wards in Guayanilla; Encarnación Ward in Peñuelas; and Bucaná, Cañas, Capitanejo and Vayas Wards in Ponce. The socioeconomic analysis evaluated the following variables:
  - Median family income;
  - Per capita income;
  - Unemployment rate;
  - Households that receive governmental income assistance;
  - Households that receive Social Security benefits;
  - Scholarship (people 25 years or older that have a high-school degree)
  - Housing conditions (houses classified as in good condition);
  - Literacy (people 10 years or older that can read and write);
  - Housing median value;
  - Housing ownership index; and
  - Population growth 1990-2000
- The sources of information used in the analysis were the 1990 and 2000 Population Census and data provided by the Statistics Bureau of the Puerto Rico Department of Labor and Human Resources. The variables studied present a comparative picture of the socioeconomic conditions within the municipalities of Guayanilla, Peñuelas, and Ponce, as well as the Playa Ward in Guayanilla, Tallaboa Poniente Ward in Peñuelas, and Playa Ward in Ponce. The data from these sites were compared to other municipalities and adjacent coastal wards in these and nearby municipalities. Each one of the variables was used individually and grouped as a socioeconomic index, to allow an appreciation of the prevailing conditions in each municipality and ward. The analysis produced the following results:
  - The municipalities of Ponce, Guayanilla and Peñuelas are in the first, fourth and fifth rank among the seven municipalities within the region, as shown in Figure 4-2. Ponce has a socioeconomic index of 1.06; Guayanilla: 0.92; Peñuelas: 0.92; Yauco: 0.95, Juana Díaz: 0.94; Santa Isabel: 0.91 and Guánica: 0.89.

- At the ward level, Playa Ward in Ponce ranks higher than the average of the study area, while Tallaboa Poniente Ward in Ponce is close to the average. In comparison, Playa Ward in Guayanilla reflects an apparent disadvantaged socioeconomic condition in comparison with the other wards of the study area.



Source: Estudios Técnicos, 2001

**Figure 4-2: Socioeconomic Index: Study Area**

- The results of the Environmental Justice study show that, based on the data for the municipalities and wards evaluated:
  - The Municipality of Ponce exhibits the highest socioeconomic index among the seven municipalities in the region, while the Guayanilla and Peñuelas municipalities ranked as number 4 and 5.
  - Playa Ward in Ponce exceeded the average for the study area average, ranking third among all the wards compared in the region.
  - Playa Ward in Guayanilla exhibits the lowest socioeconomic index of the study area; Tallaboa Poniente Ward in Peñuelas shows a socioeconomic index value of close to one, ranking fourth among the 11 wards compared.
- The conclusions from the Environmental Justice analysis establish that, development of the elements of the PTA at the proposed sites in Ponce, Guayanilla and Peñuelas (Playa Ward in Ponce, Tallaboa Poniente Ward in Peñuelas, and Playa Ward in Guayanilla), does not represent a disproportionate environmental impact to these communities. Therefore, the Project complies with the mandate of Executive Order number 12898.
  - Although the Playa Ward in Guayanilla exhibits the lowest socioeconomic index among the 11 wards compared, the evidence shows that the site selection

criteria depend on many factors such as the existence of port facilities, physical conditions including tides and sea depth, and land availability. The proposed location of the elements of the Project is the result of a detailed analysis of alternatives (Chapter 2), in which potential sites throughout the entire Island was considered.

- The proposed action would represent an opportunity for economic growth that would provide employment, income and economic activity to the municipalities in the immediate area, the southern region and the entire island of Puerto Rico.

#### **4.14.3 Applicant's Preferred Alternative: Ponce Bay Only**

Impacts associated with the Applicant's Preferred Alternative on Socioeconomic and Environmental Justice issues are the same as those applicable for the Ponce component of the combined Ponce and Guayanilla alternative, as described in the previous section. However, the Applicant recognizes the potential beneficial socioeconomic impacts of the Proposed Action to be extensive to the whole Southern Region of Puerto Rico.

### **4.15 Hazardous, Toxic and Radioactive Wastes**

#### **4.15.1 No-Action Alternative**

Under the No-Action Alternative, there would not be any potential impacts from hazardous, toxic or radioactive wastes, since there would not be any activities that could require the use or generation of such wastes.

#### **4.15.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under this alternative, the Project would be developed in the Port of Ponce area and a selected site in the Guayanilla-Peñuelas area.

- The Ponce site is an industrial area where various handlers of regulated substances have been identified, operating in compliance with EQB and USEPA regulations. No portions of land at this site have been identified as requiring corrective action by USEPA or EQB. It is not anticipated that the construction and operation of the port would alter or impact, nor rehabilitate any of the parcels selected for the proposed action.
- In the Guayanilla-Peñuelas site, this alternative includes potential reutilization of a portion of the Union Carbide Caribe (UCC, now Dow Chemicals) petrochemical complex property (currently out of use) for industrial activities. The UCC property has an area of approximately 650 acres, of which approximately 93 acres are wetlands. Segments of the property are under an environmental cleanup supervised by the USEPA. The environmental cleanup includes the removal of hydrocarbons and other petrochemical materials from soil and groundwater that accumulated in the property after years of operations. The Project would try to maximize the reuse of those portions of the UCC property currently subject to environmental corrective action, in accordance with such actions and taking into consideration the physical and environmental characteristics of the parcel. It is anticipated that approximately 300 acres of this property would be developed for this project.

### **4.15.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, the Project would be developed in the Port of Ponce area. This is an industrial zone where various handlers of regulated substances have been identified, operating in compliance with EQB and USEPA regulations. No portions of land at this site have been identified as requiring corrective action by USEPA or EQB. It is not anticipated that the construction and operation of the port would alter or impact, nor rehabilitate any of the parcels selected for the proposed action.

The elements of the Project proposed by the Applicant, including the type of industries that would be located at the value-added and import-export areas, could result in the generation of regulated substances. These industries would have to comply with the pertinent local and Federal regulations for the handling and disposal of any hazardous or toxic substances. The Applicant has indicated that hazardous or radioactive wastes would not be generated at the site.

## **4.16 Dredging and Disposal of Dredged Material**

### **4.16.1 No-Action Alternative**

Under the No-Action alternative there would be no immediate dredging of the Ponce Harbor, and the navigation channel and inner harbor would maintain their current depth of 36-38 feet. The Port of Ponce would not be able to handle Post-Panamax vessels and transshipment operations would be limited to Panamax vessels.

Eventually, as the Ponce Harbor and navigation channel shoal due to sediment accumulation, there would be the need to provide maintenance dredging to keep the port operational. This would entail the preparation of a separate Environmental Impact Statement, compliance with all permit requirements under Section 103 of the Marine Protection, Research and Sanctuaries Act, and the development and approval of a Site Management and Monitoring Plan.

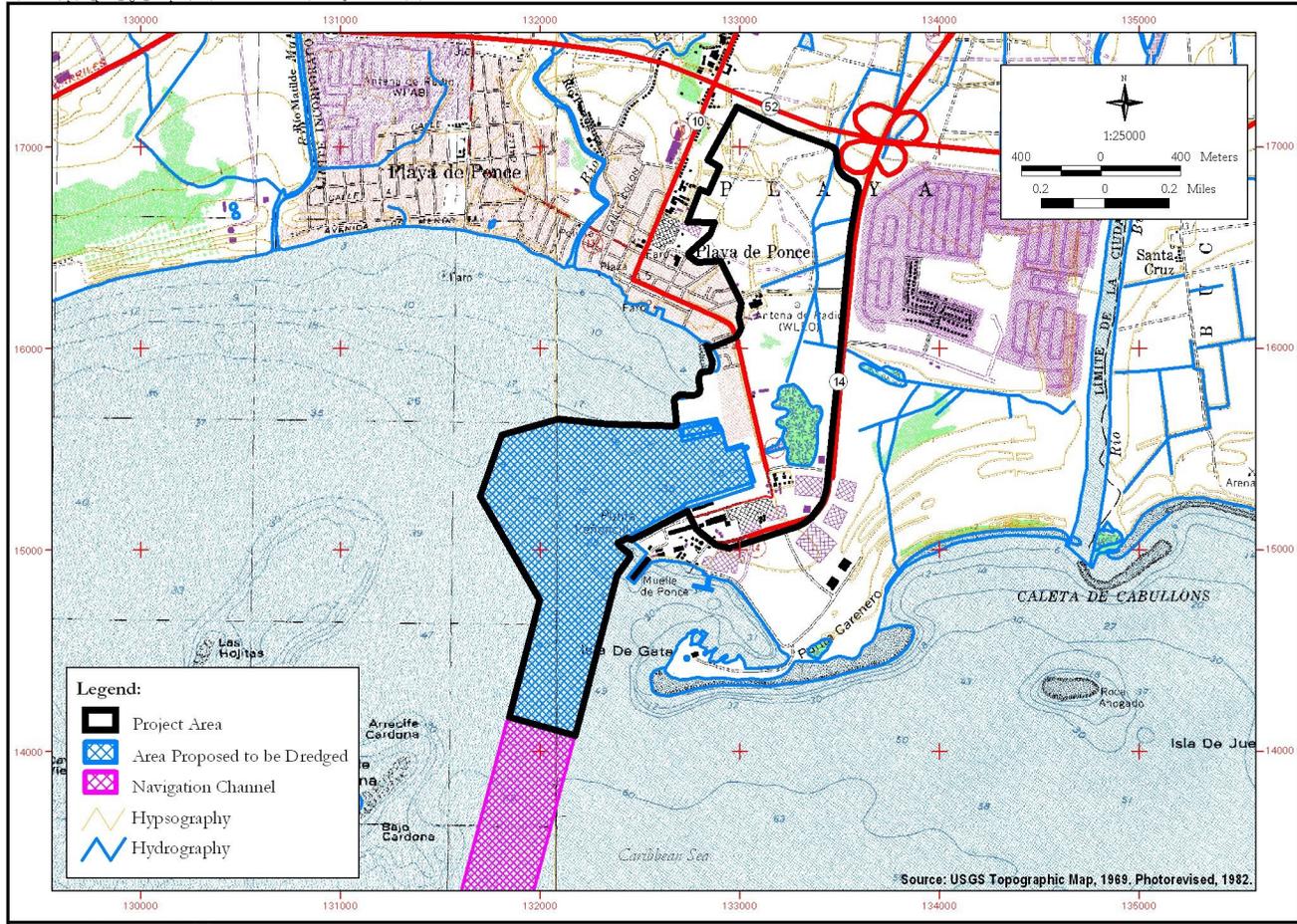
### **4.16.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

The Ponce element of this Alternative proposes the immediate dredging of Ponce Harbor and its navigation channel to a depth of 50 feet bmsl to accommodate Post-Panamax vessels. It is estimated that approximately 5.5 MM m<sup>3</sup> of material would have to be excavated along the wharves and turning basin to reach the desired depth of 50 feet. Figure 4-3 shows the proposed dredging layout at the Ponce Federal Navigation Channel.

The proposed dredging would imply the following impacts:

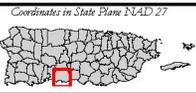
- The dredging activity would eliminate the existing benthic habitat of various macro invertebrate species, including sea feathers, gorgonians and polychaete worms. However, it is expected that upon completion of the dredging activity these populations would become reestablished by recruitment from nearby areas. Some temporary changes in water quality are expected to bring short-term adverse effects on aquatic life, but these effects would diminish as the dredging is completed.
- The dredging operations would result in increased turbidity in the water column of the navigations channel and turning basin, impacting temporarily pelagic species.
- The disruption of accumulated organic deposits during dredging would place organic material in suspension; increasing their oxidation rate and decreasing dissolved oxygen in the water column. These effects are also temporary and water quality should return to

normal levels once the dredging operation is terminated. To prevent additional environmental degradation during the excavation and loading operations, silt barriers would enclose the loading area.



**Legend:**

-  Project Area
-  Area Proposed to be Dredged
-  Navigation Channel
-  Hypsography
-  Hydrography



**Figure 4-3. Ponce Harbor Proposed Dredging Layout**

**Port of The Americas**



- Endangered marine turtles and the Antillean manatee are common visitors to the shallow coastal areas of the south coast of Puerto Rico, including the Ponce and Guayanilla bays. Endangered sea turtles, manatees and other sensitive coastal marine species are most active in the near-shore coastal environment and are only transients in oceanic environments. Consequently, offshore disposal of dredged material is not expected to adversely impact these species.
  - No adverse impacts to these species or their habitats are expected as a result of the proposed dredging in the Ponce Bay. As indicated earlier in this Section, Ponce Bay does not support any abundant development of seagrasses, and none are present in the proposed dredge areas. In this respect, no direct impacts to manatee's foraging areas are anticipated. Construction activities, related noise and the presence of construction equipment, barges and support vessels would cause any manatee in the vicinity to temporarily avoid the immediate area and seek shelter elsewhere. As with the manatee, and essentially because of the same reasons, no adverse impacts are expected on endangered sea turtles. There are no known turtle nesting sites within the project's boundaries.
  - At the Guayanilla Bay site, construction of the proposed pier would disrupt an area of about 12 acres near Punta Gotay where manatees are known to transit and potentially forage. Additional marine traffic in the bay would also increase the potential for collisions of ships with manatees.
- The potential for beneficial reuse of the sediments to be dredged from the Ponce Harbor was investigated by the Applicant. Soils analyses demonstrated that these sediments have a large percent of silts and clays that make them unsuitable for reuse as fill for the Project or other activities at the Guayanilla or Ponce sites. Disposal at the designated offshore dumping site was deemed to cause no significant environmental impacts to the approved ODMDS. The studies performed by the Applicant of the sediments and the ODMDS demonstrate that no adverse effects are expected on living, mineral, socioeconomic or cultural resources from the future use of the Ponce Offshore Disposal Site. This USEPA-approved site has no unique ecological or environmental characteristics, and is similar in sediment types and benthic composition to the proposed dredging areas.
- Dredging activities will incorporate BMP's to minimize consequences of dredging and disposal on water quality. Please refer to Appendix L for a summary of these measures.
- Disposal of dredged material at the designated offshore disposal site would be widely distributed over the sea floor, which varies in depth from 960 to 1,752 feet.
  - The designated Ponce ODMDS site is located in deep ocean waters well flushed by marine currents. Because of this, any nuisance plant or animal species or pathogens that might be present in the dredged material are unlikely to survive or reproduce at the disposal site or adjacent perimeter of the site where dredged material may settle. The dredged material to be disposed of would be similar in nature to that existing at the site and adjacent areas, and would result in a similar fauna at the site and at nearby areas.
  - Deep-water (100 to 300 meters) currents of the order of 5 to 10 centimeters per second (cm/sec) are characteristic of the ocean waters at the Ponce ODMDS site (USEPA, 1988). These currents generally move in a west-northwesterly

direction. Since most of the material to be dredged is composed primarily of fine clays and silts, it is expected that these sediments would be transported over considerable distances before settling to the bottom. The studies by USEPA and USACE have concluded that sediment transport in the direction of the coastline would be limited because significant transport only occurs below 300 meters.

- If sediment transport toward the coastline were to occur, the dredged material would settle on the bottom as shallower depths are encountered. This is particularly important because it represents the least potential for dispersion affecting near-shore areas that may contain coral reefs or other important benthic communities. According to USEPA (1988), modeling of the fate of dumped material at the Ponce site indicated that dredged material would not be transported to the shoreline, and consequently there would be no impacts to the shoreline or recreational areas along the coast.
- Although the dredged material would be dispersed over a wide area inside the ODMDS, it is not expected that any sediments disposed of at the Ponce site would damage or adversely impact coral reefs or their associated fish or shellfish components, on which local fisheries are based. There would be no interference with shipping lanes, as there are no designated shipping lanes in the area. No cultural or historical resources of significance would be affected.
- Since the dredged materials would be widely dispersed, only thin layers would be deposited at a given sea floor location. It is anticipated that the effects of deposition of this material on the benthic flora and fauna and associated marine communities would be negligible. Bottom organisms at the Ponce ODMDS are primarily deposit feeders, which are generally well adapted to live in environments of high turbidity similar to what may be caused by dredged material disposal. Accordingly, the Applicant has concluded that, since the dredged material would be dispersed over a large area, it is unlikely that the use of the Ponce ODMDS site would have an adverse impact on benthic communities.
- Dredging is not necessary at the Guayanilla-Peñuelas site, since the navigation channel exceeds 53 feet in depth; therefore, there would not be any significant environmental impacts associated with this activity.

#### **4.16.3 Applicant's Preferred Alternative: Ponce Bay Only**

Impacts associated to the Applicant's Preferred Alternative on dredging and disposal of dredged material would be similar to those associated to the Ponce site in the Ponce-Guayanilla alternative described in the previous section. Under this alternative, the total area to be dredged is approximately 248 acres.

#### **4.17 Navigation**

This section discusses the impacts to the navigation setting at the proposed and alternate sites resulting from the development of the PTA. These impacts were evaluated in terms of the need for navigation channel and turning basin improvements associated with the alternatives considered; the ensuing risk of accidents and groundings if no channel improvements are performed, the net increase in vessel traffic in both Ponce and Guayanilla harbors; and the general environmental effects of this increase. It also examines the effect of port operations in

relation to current safety requirements, and the effects of construction and operation activities of large-size berthing and/or container staging facilities.

#### **4.17.1 No-Action Alternative**

Under the No-Action alternative, the Project would not be developed, and no berthing facilities or container staging areas would be built. Post-Panamax vessels would not arrive to the Ponce or Guayanilla bays. Dredging of the navigation channel and turning basin at the Ponce Harbor would be limited to a periodic maintenance operation to preserve it to a draft of 36-foot, and with a recurrence akin to the current conditions.

#### **4.17.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

There is no statutory or regulatory prohibition against the Corps issuing regulatory permits authorizing structures or other work in Federal Navigation Projects (FNP). However, the Corps permit regulations require District Engineers to consider the extent to which that proposed work might be in conflict with the uses at issue when the FNP was authorized.

Regulatory Guidance Letter (RGL) number 84-17 establishes that proposed activities which may result in modifications of, or encroachment, on constructed Congressionally authorized Federal projects require careful and thorough review at all stages of the permitting process. Applications should be reviewed for the potential impact on the authorized purpose(s) for which the Federal project was constructed. This review will include reference to the authorizing legislation, the Chief of Engineers' report to Congress, and any other historical documentation necessary to define fully the project's purpose, as well as any special direction given by Congress at the time of authorization. Limitations and/or restrictions identified that would limit the scope of the proposed permit activity or that would prohibit it entirely must be identified.

A review of the historical documentation shows that the purpose of the FNP was to deepen the Ponce Harbor to accommodate large vessels currently using the port at less than optimum drafts, and to facilitate the movements of other deep-draft vessels, cargo vessels and cruise ships entering and departing the port. It is evident that since 1925, as time changed and deep draft vessels evolved, the Congress has authorized the deepening of the harbor to allow for the deep vessels to access the Ponce Harbor.

Therefore, it has been determined that the proposed activity is compatible with the existing Congressionally authorized project, it is in the public interest, and does not otherwise significantly interfere with authorized project purposes and intent. The FNP establishes the prohibition that the erection of any structure within 100 feet of the authorized federal channel remains in effects. The proposed project complies with this requirement. Also, work to perform maintenance dredging to the newly proposed depths would remain with the Applicant, if a permit is issued, unless the Congress in the future authorizes maintenance dredging below 36 feet deep in the federal channel.

With regards to navigation safety and under this alternative, increases in navigation would occur at the Ponce and Guayanilla harbors. Preliminary estimates project a total increase of approximately 1,200 additional ships per year between the two terminals, with two thirds going to the Guayanilla Bay. These increases in navigation would have the following potential impacts at both bays:

- Increases in the potential for spills of oil, gasoline and lubricants at the Ponce and Guayanilla ports during refueling operations, in comparison to current activities at both ports.

- Increases in the potential for collisions among ships, and of ships with manatees, due to increased traffic. An accident could result in the grounding of a vessel and spills of fuels or products being transported in and out of the bays.

A quantitative assessment of the environmental risks from increased vessel traffic and port operations in the PTA site, including the risk of groundings or related accidents was examined in a Marine Safety and Risk Assessment (USACE, 2002). The resulting density and composition of vessel traffic for the future Port of the Americas is expected to be drastically different from existing situation:

- The overall number of sailings would increase threefold and reach 2.7 daily sailings on average for Ponce. In vessel composition containerships would predominate, including main line container vessels as large as 130,000 tons of displacement (dwt), and feeder vessels as small as 8,000 dead weight tons (dwt).
- The overall number of sailings would increase threefold and reach 4.95 daily sailings on average for Guayanilla. In vessel composition, containerships would predominate, including main line container vessels as large as 130,000 dwt., and feeder vessels as small as 8,000 dwt.

This overall conclusion is that, even with projected traffic increase in containership vessels, marine risks with potentially serious environmental impacts would remain exceptionally low. A number of factors support this conclusion for the components of the Project:

- Approach to Ponce is relatively short and straight. Environmental conditions (wind, current) in the area are mild most of the time (except of hurricanes, when regular navigation is not allowed) and highly constant. The navigation conditions are primarily affected by the steady wind, blowing almost without exception from an easterly direction, between north-northeast and south-southeast.
- Approach to Guayanilla is wide with only a few restrictions. It was, for example, expert's opinion that a marine accident in the future Port of the Americas would be three times less likely than for San Juan Harbor. Environmental conditions in the area are similar to Ponce.
- The majority of vessels calling to the PTA would be containers. These are highly maneuverable ships with, judging by worldwide experience, excellent safety records.

Based on these analyses, the probabilities for any type of marine accidents were estimated for both components:

- Probability of once in 5.5 years, or annual probability of 18% for Ponce Bay. Probability of a serious accident, such as fire or oil spill, is even much lower. Such occurrence is expected to be as low as on average once in 18 years, or 6% on annual basis.
- Probability of once in 15 years, or annual probability of 7% for Guayanilla Harbor. Probability of a serious accident, such as fire or oil spill, is even much lower. Such occurrence is expected to be as low as on average once in 18 years, or 6% on annual basis.

The USCG and the Puerto Rico Ports Authority have the primary responsibility for enforcing public safety regulations applicable to marine port operations. Currently, safety measures for the marine traffic are being implemented effectively at both ports. The proposed action is not

expected to result in substantial changes to the security and safety requirements already in effect at these facilities.

The effect of the proposed structures to navigation was evaluated in terms of whether the proposed infrastructure would alter or significantly modify the current vessel traffic regime in Ponce and Guayanilla bays.

- It is anticipated that the construction of the piers and reclamation works would require the installation of piles, and other structural components. Barge-mounted pile drivers and other support small vessels would be present during the construction stage of the berthing facilities at both bays. The space required for this operation is relatively limited. It is also anticipated that most of this equipment would be located in a relatively fixed location through the construction process. In general terms, the construction of the berthing facilities would not result in significant impacts to the navigation in both bays.
- The proposed layout for the berthing facilities at Ponce Harbor follows the existing channel configuration. The proposed operation of this facility would occur at the northwestern end of the authorized channel with no hindering of vessel traffic in the area.
- The development of the terminal at the Guayanilla Bay would not require improvements to the existing navigation channel or turning basin. The depth of the entrance to the navigation channel ranges from 66 to more than 100 feet (NOAA, 2001) and sediment accumulation in the bay is minimal. Since port operations began at the bay more than 50 years ago, the harbor has not required maintenance dredging. Dredging of the bay or its navigation channels to allow passage of Post-Panamax vessels would not be required.

Although it is not anticipated the operation of the proposed port at Guayanilla Bay would not represent a public safety risk, the proximity of the proposed new pier to the EcoEléctrica pier would require the implementation of additional safety measures to ensure public safety during LNG transfer activities. Currently, safety measures for the marine traffic are being implemented effectively at the Guayanilla Bay. The proposed action is not expected to result in substantial changes to the security and safety requirements already in effect at this facility.

#### **4.17.3 Applicant's Preferred Alternative: Ponce Bay Only**

Similar to the combined Ponce-Guayanilla Alternative discussed in the previous section, the same comments apply to the Applicant's Preferred Alternative related to statutory or regulatory prohibition against the Corps issuing regulatory permits authorizing structures or other work in Federal Navigation Projects (FNP). Therefore, it has been determined that the Project as proposed by the Applicant's Preferred Alternative is compatible with the existing Congressionally authorized project, it is in the public interest, and does not otherwise significantly interfere with authorized project purposes and intent.

With regards to navigation safety, impacts to navigation of the Applicant's Preferred Alternative: Ponce Bay Only are similar to the impacts associated to the Ponce component in the combined Ponce-Guayanilla alternative, as discussed in the previous section. Under this alternative, however, the following differences apply:

- The fill of 76 acres would not take place in the Ponce Harbor to provide additional storage space for containers. Hence, impacts to navigation by the reclamation works would not occur.

- Construction of an inland docking channel to provide anchoring space would modify the docking procedures and would require additional assistance from tugboats during arrivals and departures. However, and as concluded in the previous section, even with the projected increase in traffic of containership vessels, the potential for an accident with significant environmental impacts resulting from this activity are exceptionally low.

#### 4.18 Infrastructure

##### 4.18.1 Drinking Water

###### 4.18.1.1 No-Action Alternative

Under the No-Action alternative, there would be no need to supply additional potable water to support the operations of the PTA at the Ponce of Guayanilla bays and the value-added areas. The water supply needs would be due to the growth of the ports and nearby business and industries.

###### 4.18.1.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative

Under the alternative that includes terminals at the Ponce and Guayanilla bays, additional fresh water supplies would be needed at both sites (Table 4-7). Additional water would be needed to satisfy the increases in demands shore operations, resupplying the ships that would arrive at the port facility and serve the industries located at the value-added areas.

Potable water supplies in the Municipality of Ponce are adequate to meet the needs of the terminal at the Ponce Bay area. PRASA is designing a new filtration plant at Ponce, with an intake at the Cerrillos Reservoir. PRASA indicates that it would be necessary to install a 20-inch pipeline to conduct the water from the plant to a 5 million gallon storage tank at Sabanetas Parcels near Ponce to the port area.

**Table 4-7: Estimates of Water Demand During the PTA Operation at Ponce and Guayanilla-Peñuelas for the Tenth Year**

Project Component		MGD	
		Ponce	Guayanilla
Ports Operation	Arriving Ships (Year 10) Optimistic Traffic Scenario	--	0.124
	Port Operation (Year 10)	--	0.177
Value Added	Water Demand Value Added (Industrial Processes) Year 10	--	0.634
	Water Demand Value Added (Personal Uses) Based on jobs range for Year 10 (Range)	0.702	1.170
<b>Total</b>		<b>1.636</b>	<b>2.104</b>

Additional water demands in the Ponce and Guayanilla-Peñuelas project areas were estimated based on the following assumptions:

- Water demand estimates for port operations were based on the job projections estimated by Frankel (2000) and Estudios Técnicos as well as the vessel arrival forecasts for the first and tenth years of operation, respectively. Jobs were calculated for the project locations were based on the percent of vessels traffic that they would attend for these years. Water demand was based on the water consumption estimates for Puerto Rico (PRASA, 1996), with a per capita value of 117 gallons per day per person. It is estimated that the real demand would be lower than 117 gallons per day per person. However, a more conservative approach was preferred, thus the use of 117 gallons per day per person was justified.
- The vessels would need to fill their water storage tanks from the port facility. Estimates were based on projected vessel traffic for the first and tenth years of operation. According to a vessels manufacturer, Odense Steelyard LTD, the capacity of the storage tanks would vary depending on the size of the vessel. The storage tanks of the ships of less than 6,000 TEU have a capacity of approximately 75,000 gallons, while the ships of more than 6,000 TEU have storage tanks with a capacity of approximately 100,000 gallons.
- At the value-added areas, estimates of water demand assumed that no value-added operations would occur during the first year of operation. Jobs estimates projected for the tenth year of operations were based on a range provided by Frankel (2000); 6,000 to 10,000 jobs. Jobs were proportionally segregated for the Ponce and Guayanilla-Peñuelas sites based on the area to be dedicated to value-added activities, respectively. The water demand for industrial processes was based on Frankel estimates (E.G. Frankel and Associates, 2001). The author indicates that 5 m<sup>3</sup> (1,321 gallons) per acre per day are consumed for industrial uses.
- The EcoEléctrica desalination plant would be a potential source of potable water for the PTA. This alternative would not require the capital investments and operational efforts and costs. The EcoEléctrica Cogeneration plant produces potable water from a desalination plant that uses excess heat energy from the steam turbine portion of the power plant. The desalination plant is a multistage flash (MSF) distillation plant supplied with low-pressure steam from the combined cycle power plant. According to the Final Environmental Impact Statement of EcoEléctrica (1996) this facility would require approximately 1 MGD of potable and high quality water per day for its own use. EcoEléctrica can produce up to 2 MGD at present (Personal Communication). EcoEléctrica is permitted to extract up to 4 MGD of seawater, however an expansion of the desalination plant would be necessary. A 750,000 MG water tank, property of PRASA, which is connected to the desalination plant, is located in Magas Ward in Guayanilla. This tank is intended to receive water from EcoEléctrica for distribution, but it is not currently in operation. A separate water tank could be constructed in the project site to receive water from EcoEléctrica.
- Other potential sources of water to meet the demands of the Project under this alternative include the use of groundwater from the activation of existing water wells located north of the Guayanilla-Peñuelas industrial complex, beyond Road PR-2. Groundwater north of Route 2, beneath the Macaná and Tallaboa River valleys, is fresh water (as opposed to brackish and saline groundwater south of Route 2). In selected local saturated lithologic formations in the valley, additional wells could be developed

meeting the quantity and quality needs of the Project. Several wells (identified as Guaypao, La Chala and Valdivieso) were used by CORCO for their industrial processes. Field inventories established that there are several inactive wells in the zone that are not currently under the administration of CORCO.

- Other alternatives to meet the demands of water for the Project under this alternative include:
  - The USACE proposed the construction of a reservoir at the Río Portugués in Ponce. This reservoir is intended for flood control, but it is being designed with provisions to be used as a water supply. This would represent a new raw water source for the Municipality of Ponce. However, this is an alternative that would be available in the long term (Personal Conversation, USACE).
  - Another potential raw water source is the redistribution of water from the Yauco area reservoirs system. Water resources in the Yauco area serve a variety of users within a complex system of reservoirs, interbasin water transfers, hydroelectric power plants, and irrigation canals. Water use is regulated by the operation of five reservoirs, including Lago Luchetti and Lago Loco, water intakes, hydroelectric power plants, and an irrigation district. The Yauco Water System Improvements Project proposes to increase the capacity of the existing Urban Filter Plant, as previously indicated, from 1.6 MM gallons per day (MGD) to 8.0 MGD maximum, by connecting to a penstock, which connects Lago Luchetti and Lago Loco, as the source of raw water. A water allocation study for the Yauco area was conducted to determine the existing yield of the reservoir system both at Lago Luchetti and at Lago Loco; to evaluate the existing water uses in the region; and to allocate potential water resources to satisfy the water needs of the proposed filter plant.

#### **4.18.1.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, additional water supplies would be needed only for the Ponce Bay area, to resupply ships arriving at the port, service demands of the port operations, and satisfy increases in demand from the value-added and import-export activities. Estimated demand would be about 1.6 mgd after ten (10) years of operation. As indicated in the previous section, PRASA plans construction of a new 10 mgd plant in the Ponce area to be supplied from the Cerrillos Reservoir. Additional water supplies would be available in the Ponce area once the Portugués Reservoir, whose construction is planned by USACE, is completed within the next five years. The Ponce Port area also has the potential for development and operation of a desalination plant, since abundant brackish ground water occurs in the area.

#### **4.18.2 Wastewater Treatment Facilities**

##### **4.18.2.1 No-Action Alternative**

Under the No-Action alternative, there would be no additional generation of wastewater due to the construction or operation of the Project, and therefore there would be no need to treat additional wastewater generated from the Project. The wastewater treatment needs would be due to the expected increases in population in the region, which are currently adequate.

#### **4.18.2.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under this alternative, additional wastewater would be generated in the Ponce and Guayanilla sites. Most of the wastewaters would be associated the port operation and the industries located value-added areas at both sites.

- Although modern ships operate their own on-board treatment plants that allow discharge of treated sewage to the ocean, small volumes of partially treated sewage is expected to be generated from ships traffic. The Federal Clean Water Act (33 USC 1322) requires vessels to have Marine Sanitation Devices (MSD) that are certified by the USCG, to prevent discharge of wastewaters with no treatment, or with an inappropriate treatment, into US waters. The MSD's are required while the vessels are sailing within territorial US waters, the Great Lakes, and other restricted US navigable waters. According to the USCG, there are three types of MSD's based on the quality of the effluent. The Type III devices are the only ones that prevent treated or untreated wastewater discharges. Type III devices consist on retention tanks, incineration systems and circulation systems, being the first two the most popular ones. It is expected that most of the vessels arriving at the PTA would manage their wastewaters in retention tanks. Grey waters, defined as the waters generated from dishwashing, showers, and laundries; can be discharged to the sea without having to go through the MSD. However, as a conservative approach, is assumed that the volume of wastewaters that would be received at the PTA from the vessels would be 100 % of the potable water demand.
- Wastewater generation was assumed to be 75% of the water demand per person per day. Please refer to Section 4.20.1 for specific assumptions on water demand. It was assumed that the generation of wastewater from vessels arriving at the PTA would be limited due to the relatively small crew in each vessel.
- Wastewater generation for areas designated for value-added activities was based on the water demand for this project component, similarly to the assumption considered for the port operations component. Wastewater generation was assumed to be 75% of the water demand per person per day. Please refer to Section 4.18.1 for specific assumptions on water demand.
- Estimates of wastewater that would be generated during the PTA operation at both Ponce and Guayanilla-Peñuelas are included in Table 4-8.

**Table 4-8: Estimates of Wastewater Generation during Operation at Guayanilla-Peñuelas**

PROJECT COMPONENT		MGD	
Ports Operation	Arriving Ships (Year 10) Optimistic Traffic Scenario	--	0.039
	Port Operation (Year 10)	--	0.049
Value Added	Value Added (Industrial Processes)	--	0.119
	Value Added (Personal Uses) (Range)	0.099	0.165
<b>Total</b>		<b>0.305</b>	<b>0.371</b>

The project site in the Ponce Bay is connected to PRASA's sanitary sewer system, which conveys the wastewaters to Ponce Regional Wastewater Treatment Plant. This is a primary treatment plant that operates under a Section 301H waiver from the USEPA to the minimum requirement of secondary treatment of wastewaters. The plant has a capacity to treat 18 MGD and is currently treating 14 MGD (AFI, 2003). This excess capacity is adequate to meet the foreseeable needs of the value-added and import-export industries planned for the Ponce Bay area under this alternative.

The project site in the Guayanilla-Peñuelas area does not have any trunk sewers. The closest pipelines are located at the Playa Ward in Guayanilla. Potential alternatives for the treatment of wastewaters from this site include:

- Initial connection to the existing Guayanilla Wastewater Treatment Plant. At present this plant has an available capacity of 300,000 gallons per day, according to PRASA's Regional Office at Yauco. This would require the construction of trunk sewers from the project site to the closest existing trunk sewers.
- PRASA plans de construction of a new 7 mgd capacity wastewater treatment plant in the Guayanilla area in the near future. The construction of a 24-inch diameter trunk pipeline that would run along the Muñoz Rivera Street in the Guayanilla Town is among the proposed improvements for the wastewater infrastructure in Guayanilla, as well as the connection of new users, such as the proposed project.
- An existing wastewater treatment plant currently out of service is located in the Guayanilla-Peñuelas industrial complex, at the former Caribe Olefins facility. Reactivation of this plant is feasible.

#### **4.18.2.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, wastewater treatment and disposal would be limited to the Ponce Bay area. Since, as indicated in the previous section, the Ponce Regional Wastewater Treatment Plant has ample capacity to treat the effluent from the components of the Project, there is no need to provide any additional treatment capacity. Local trunk sewers within the Port of Ponce area, and the value-added and import-export zones would be required to convey the wastewaters to the regional plant.

### **4.18.3 Stormwater**

#### **4.18.3.1 No-Action Alternative**

Under the No-Action Alternative, there would be no construction activities at either the Ponce site or the Guayanilla-Peñuelas site. There would not be any increases in the generation of stormwaters, and no impacts from this activity.

#### **4.18.3.2 Ponce and Guayanilla Alternative: Main Terminal at Ponce Alternative**

Under this alternative, additional stormwaters would be generated at the Ponce and Guayanilla sites related to construction and operation activities of the port components, development of value-added and import-export areas, improvements to roads and sewers, and fill of wetlands and marine lands.

- At the Ponce Bay area, stormwaters are collected by a channel that runs from north to south, discharging at the bay near the port. Stormwater collection sewers that operate throughout most of the Ponce Port area and its vicinity, discharge to this channel. Improvements to this channel would be required to handle the additional volumes of stormwaters in accordance with the local and Federal regulations.
- In the Guayanilla-Peñuelas site, stormwaters from the port area and the proposed value-added areas within the UCC property are collected in existing storm sewers and discharged to the Tallaboa and Guayanilla bays through two large artificial and a natural drainage channel.
- As required by Federal regulations, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented for the construction activities, and the current plan at Ponce would be updated for the operation of the proposed project. Likewise, a CES Permit would be obtained from EQB. The CES Permit includes the development of a CES Plan, which establishes specific measures that must be used to protect bodies of water during construction activities. These plans and permits would include control and mitigation measures such as:
  - The exposed areas would be kept to a minimum and would remain in this condition for the least amount of time.
  - Silt fences would be used as an erosion control measure. These fences typically retain 75% of the transported sediment, and would let the water continue flowing. With the implementation of fences and soil stabilization measures, the water turbidity would be reduced up to 70%.
  - In all cases, the erosion control measures would be carefully observed during the construction activity in order to ensure their efficiency. Once the soil is stable after the construction activities, the erosion control measures would not be necessary anymore.
  - Improvements to the existing drainage system would be made as part of the Project. These improvements would follow the BMPs and would comply with the design parameters of the Puerto Rico Planning Board.

#### **4.18.3.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, impacts from stormwaters generated in the Ponce Bay area would be similar to those discussed in the previous section for the Ponce component of the Project.

#### **4.18.4 Traffic Impact**

##### **4.18.4.1 No-Action Alternative**

Under the No-Action alternative, there would be no impact on traffic due to the development of the proposed project, either at Guayanilla-Peñuelas or at Ponce.

##### **4.18.4.2 Ponce and Guayanilla Alternative: Main Terminal at Ponce**

Under this alternative, traffic would increase in and out of the Ponce and Guayanilla project sites. Increases in traffic would be due mostly to containers being transported from the sites to other places in the island, and from one site to the other. Also contributing to traffic increases would be personal vehicles of employees at both sites.

The impacts of these increases in traffic at both sites were assessed through an updated Traffic Study of the roads and main highways that provide access to the Ponce and Guayanilla-Peñuelas sites. The study included the evaluation of available roads and intersections to determine their capacity to handle existing and future traffic generated by the port activity.

- The results from the traffic study show that the construction of the PTA elements, and the operation of the expanded facilities, would have an adverse impact on the vehicular patterns on the roads that provide access to both ports. The Project would result in a significant increase in vehicular traffic generated by the ports activities on its several phases. This impact would be associated to the additional jobs that would be created, and to the increase in heavy traffic due to the movement of cargo within Puerto Rico as its origin, interim destiny or final destiny.
- The impacts to traffic during the construction period would be temporary. It is expected that traffic would be temporarily blocked or detoured at times. A plan for traffic management during these critical periods would be developed in coordination with the HTA. In the areas that surround the Project, structural and management measures would be implemented to minimize the impact on the traffic flow. A construction program would be developed and traffic control devices would be installed to reduce the inconveniences to drivers of adjoining roads. Heavy equipment would be used for work on the roads during normal working hours. This would have a short-term impact on the traffic flow, causing delays. Warnings such as signs, pavement marks, intermittent lighting, arrow signs and warning lights would be placed at the entrance of the project site to warn drivers of the construction.
- In the Ponce area the main accesses to the Project through roads PR-52 and PR-14 would be affected. The study shows that the service levels would be favorable until year 2005. For years 2010 and 2020, and because of the increase in the number of light and heavy vehicles, and the economic activity, the calculated service levels in the port entrance area were not favorable (levels E and F). To make the state, municipal and port road system operate to an acceptable service level, it would be necessary to improve the road system. Some of these improvements are:

- Between years 2005 and 2007, the substitution of the leveled intersection of road PR-14 and Caribe Avenue for an unleveled intersection with direct port entrance and exit ramps, must be considered. The port's main road would consist of a four-lane road with median strip, crosswalks and marginal roads that would allow two-way traffic on both sides of the road.
- The Comercio, Virtud (PR-585), Puerto Viejo and Avenida de Hostos (PR-10) streets must provide access to the different port areas. This would facilitate the distribution of traffic to the different entrance roads through individual assignments.
- The implementation new traffic light systems, in addition to the installation of adequate signs and pavement marks, are necessary measures to mitigate the traffic conditions.
- Addition of a traffic light and geometric improvements to the intersection of road PR-14 and Comercio Street.
- In the Guayanilla-Peñuelas area, roads PR-2, PR-385, PR-127 and PR-337, as well as the main accesses to the proposed project, would be affected. The results of the study show that the service levels would remain acceptable until the year 2010. For years 2010 and 2020, and due to the increase in vehicular traffic and economic activity, the calculated service levels in the port entrance area and adjoining streets would not be acceptable (service levels E and F). To mitigate the effects that the Project would have on the area traffic, and to achieve an acceptable service level in the road system adjoining the Project, it would be necessary to improve the road system. Some of these improvements are:
  - Between the years 2009 and 2011, consideration should be given to the widening of roads PR-127 and PR-385 from two to four lanes with median strip, crosswalks, and marginal roads (in the area immediately adjoining the project site to allow two-way traffic.
  - The entrance and the port's main street must be a four-lane road with median strip, crosswalks and marginal roads.
  - Traffic control devices must be installed, particularly at traffic lights at the intersection of road PR-127 with roads PR-337 and PR-385.
  - Between the years 2011 and 2016 several direct entrances must be provided from the port area to road PR-127, between roads PR-337 and Río Tallaboa.
  - For year 2015 the existing half cloverleaf intersection between road PR-2 and PR-385, must be changed to a complete cloverleaf intersection with two-lane ramps. This includes widening road PR-2 between PR-127 and PR-385, and road PR-385 between the ramps.

However, it is important to note that the Highway and Transportation Authority (HTA) is currently improving the road infrastructure in the south region, and is working in the following projects:

- Project AC-012710, which consists of the replacement of bridge number 80 over the Río Guayanilla at PR-127 kilometer 8.60. The construction of this project was scheduled for completion in August 2003, but the Contractor filed for bankruptcy and the construction

has come to a standstill. As of November 2003, the HTA could not provide the Applicant an amended itinerary for the delivery of this project.

- Project AC-012715, which consists of the replacement of bridge number 83 over the Río Tallaboa at PR-127 kilometer 18.1, is currently being designed. The bidding process for this project has not been scheduled as of November 2003.
- Project AC-520055, which consists of improvements to the toll collection booths in PR-52, Ponce and Salinas, to implement an electronic toll collection system, is currently being designed. The bidding process for this project has not been scheduled as of November 2003.
- Projects AC-200186, AC-2000194 and AC-200195, which consist of the conversion of PR-2 from Mayagüez to Ponce to an expressway, are currently being built.

#### **4.18.4.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, traffic impacts would be those discussed for the Ponce component of the combined Ponce-Guayanilla alternative, as discussed in the previous section.

#### **4.18.5 Solid Wastes**

Non-hazardous solid wastes would be generated during the construction and operation phases of the Project. During construction, the solid wastes would include mostly debris from construction, including wood, cement, asphalt, metals and cardboard. During the operation phase, solid wastes would be generated mostly from the value-added and import-export activities, including cardboard, wood, paper, scrap metals and domestic wastes.

Estimates of the amount of solid wastes for each alternative were made based on existing data about solid wastes generation for varied activities, estimates of the number of employees that would be at each of the sites and projections of the industrial activities at each site for different time periods.

##### **4.18.5.1 No-Action Alternative**

Under the No-Action Alternative, additional solid wastes would not be generated, and no impacts from this activity would occur.

##### **4.18.5.2 Ponce and Guayanilla Alternative: Main Terminal at Ponce**

Under this alternative, non-hazardous solid wastes would be generated at both project sites. The amount of solid wastes from each site would be proportional to the extent and timing of development of the value-added and import-export zones, increasing with time.

In the Ponce Bay site:

- It is estimated that approximately 18,000 tons of construction debris would be generated during the construction phase of the elements of the Project. From this total amount, it is estimated that between 14% and 17%, or between 2,520 and 3,060 tons can be recycled. The solid waste that cannot be recycled would be sent to the Ponce landfill. This facility currently receives the solid waste generated in Ponce, Guayanilla, Peñuelas, and other area municipalities, for final disposal.

- Once the proposed project operation begins, non-hazardous solid waste would be generated from port operations, ships arriving to the port, and industrial activities. The impacts of the three alternatives on the solid waste generation cannot be broken down, since they were calculated using the estimated number of employees at the port and value-added activities generated by Frankel (Frankel, 2000) and Estudios Técnicos (Estudios Técnicos, 2001), and the expected number of vessels arriving at both the Ponce and Guayanilla ports. These numbers were calculated and provided for the two components of the Project combined.
  - The contribution of the incoming ships to the total amount of solid waste that would be generated during the operation phase of the PTA was calculated by using the estimated number of ships arriving to the port (based on TEU traffic as projected by Frankel), and the amount of solid waste to be generated per ship. It is estimated that 141 ships would arrive to the PTA during the first year of operation, and 538 would arrive by the tenth year. According to Frankel (Frankel, 2001), each ship would generate 7.8 tons of solid waste.
  - The calculation of the amount of solid waste generated from port operations was based on the estimated number of port employees. Frankel estimates that during the first year of operation, the PTA would employ 528 people. Furthermore, the results of the socioeconomic study that was completed as a supporting document to this SDEIS (Estudios Técnicos, 2001) show that during the tenth year of operation, the PTA would employ 1,511 people.
  - According to the prior “Regional Infrastructure Plan for the Recycling and Disposal of Solid Waste” (Solid Waste Management Authority, 1995, and currently not accepted as the public policy document by the Commonwealth), the per-capita amount of solid wastes generated in the municipalities of Ponce, Guayanilla and Peñuelas is 3.3 pound per person per day. Using this generation rate, the total solid waste generation from port employees can be estimated.
  - The amount of solid waste from the value-added industrial areas was estimated by two different methods:
    - In the first method (Scenario A), the amount of industrial solid waste to be generated by the municipalities of Ponce, Guayanilla and Peñuelas, was calculated by using data from the Regional Infrastructure Plan for the Recycling and Disposal of Solid Waste. A formula was developed to express the amount of industrial solid waste generated by these municipalities, as the difference between the per capita waste generation, the total amount of solid waste generated by the municipalities, and the amount of hazardous waste generated by the municipalities.
    - In the second method (Scenario B), a generic waste-generation index for industrial waste was obtained from the California Waste Management Board (CWMB, Estimated Solid Waste Management Board, 1995, 2000). This index uses as a basis the number of industrial employees.
- The results of these calculations indicate that the amount of solid waste that would be generated as a result of the operation of the PTA would fluctuate from 1,418 tons per year during the first year of operation, to a maximum of 81,026 tons per year during the tenth year. Since during the first year it is expected that there would be no value-added industries

established, no solid waste generation is expected from this source. Therefore, only one scenario is presented for the first year. The results of these calculations are shown in Table 4-9, Table 4-10 and Table 4-11.

- The municipalities of Ponce, Guayanilla and Peñuelas dispose their solid waste in the Ponce landfill. Thus, the Ponce Landfill is also the Applicant's Preferred Alternative for the disposal of the solid waste generated from the operation of the PTA. The Ponce Landfill currently receives 1,200 tons per day of solid waste (SWMA, telephone communication) from the municipalities of Ponce, Adjuntas, Peñuelas, Guayanilla, and sometimes Aguas Buenas and Cidra (SWMA, 2001). The useful life of the Ponce Landfill is estimated at 20 years, although space for a lateral expansion that would last another 20 years is available adjacent to the site.

**4.18.5.3 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, solid wastes would be generated only in the Ponce Bay area. This would include non-hazardous wastes generated during construction of the elements of the Project at the Port of Ponce, operations of the port, and from industrial and commercial activities at the value-added and import-export areas. The generation rates and disposal strategy would be the same as for the Ponce element of the combined Ponce-Guayanilla Alternative in the previous section.

**Table 4-9: Solid Waste Generation, Year 1, Scenario A**

<b>Element</b>	<b>Estimated Generation</b>	<b>Total</b>
Ships arriving to port (141 ships /year)	7.8 tons /ship	1100 tons per year
Port: Port employees (528)	3.3 pounds/employee/day	318 tons per year
Industrial Zone: Scenario A (0 industries):	0 tons	0 tons per year
<b>Totals</b>	<b>N/A</b>	<b>1,418 tons per year</b>

**Table 4-10: Solid Waste Generation, Year 10, Scenario A**

<b>Element</b>	<b>Estimated Generation</b>	<b>Total</b>
Ships arriving to port (538)	7.8 tons /ship	4,196 tons per year
Port: Port employees (1,511)	3.3 pounds/employee/day	910 tons per year
Industrial Zone: Scenario A:	10,394-51,970 tons per year	10,394-51,970 tons per year
<b>Totals</b>	<b>N/A</b>	<b>15,500-57,076 tons per year</b>

**Table 4-11: Solid Waste Generation, Year 10, Scenario B**

<b>Element</b>	<b>Estimated Generation</b>	<b>Total</b>
Ships arriving to port (538)	7.8 tons /ship	4,196 tons per year
Port: Port employees (1,511)	3.3 pounds/employee/day	910 tons per year
Industrial Zone: Scenario B (6,000-10,000 employees):	41.64 pounds/employee/day	45,625-75,920 tons per year
<b>Totals</b>	<b>N/A</b>	<b>50,731-81,026 tons per year</b>

**4.18.6 Energy Requirements and Conservation**

**4.18.7 No-Action Alternative**

Under the No-Action Alternative, there would be no additional demand for electric power due to the development of the Project. Increases in the electric power demand would be due to the expected increases in population in the area.

**4.18.8 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under this alternative, energy demand would increase at the Ponce and Guayanilla sites in proportion to the rate of development of the terminals at each site.

- At the Ponce Bay site, total electrical power demand would increase to approximately 16,000 KVA. This potential demand is conservative and includes an estimate of the needs of the expanded pier-related activities, such as the use of cranes for containers loading and unloading, the operation of offices, and estimates based on potential areas to be developed for value-added activities. The power demand estimate for the Port of Ponce is presented in Table 4-12. A 38 KV radial line that crosses the pier and the proposed area for the value-added activities serves the Port of Ponce. It is anticipated that this infrastructure would not have the capacity to supply the additional electrical power demand of the Project. For this reason, the 38 KV radial line should be upgraded to increase its capacity. PAA would coordinate with PREPA and the Municipality of Ponce to program the needed improvements for the existing electrical power infrastructure, which are included in the current PREPA Capital Improvement Program.

**Table 4-12: Electrical Power Demand for Ponce Project Site**

<b>Element</b>	<b>Electrical Power Demand Estimate</b>
Cranes and Wharf Equipment	3,000 KVA
Containers Storage Area and Offices	1,000KVA
Industrial Area	12,000 KVA

Source: Frankel, 2001

It is estimated that the total electric power demand for the project operations in Guayanilla-Peñuelas would be about 52,000 KVA (Table 4-13). A previously described, a 115 KV transmission line supplies the Guayanilla-Peñuelas project area. This transmission line was used to supply the UCC plant. This energy source is adequate to provide the needs of the Project for the foreseeable future, subject to the construction of a power substation. The construction of a power substation would be coordinated with the PREPA as part of the development of the Project

This demand includes pier activities, such as the use of cranes for containers loading and unloading, the operation of offices, and mainly, the operation of the value-added activities. The potential energy demand of the value-added activities is a conservative estimate using the maximum area of construction that would be available at the UCC parcel. As indicated in Section 3.18.5, a 115 KV transmission line supplies the Guayanilla-Peñuelas project area. This transmission line was used to supply the UCC plant. This energy source is adequate to provide the needs of the Project for the foreseeable future, subject to the construction of a power substation. The construction of a power substation would be coordinated with the PREPA as part of the development of the Project.

**Table 4-13: Electrical Power Demand for Guayanilla-Peñuelas Project Site**

<b>Element</b>	<b>Electrical Power Demand Estimate</b>
Cranes and Wharf Equipment	9,000 KVA
Containers Storage Area and Offices	7,000 KVA
Industrial Area	52,000 KVA

Source: Frankel, 2001

#### **4.18.9 Applicant's Preferred Alternative: Ponce Bay Only**

Under the Applicant's Preferred Alternative, impacts on energy requirements include those discussed for the Ponce component in the previous section.

#### **4.19 Marine Currents**

The Ponce and Guayanilla bays are partially protected from southern winds and currents by offshore islands and shallow seas. Offshore, depths exceed 600 meters within 5-10 km of the entrance to either harbor. Because of the limited exposure and a relatively wide insular shelf, tides and storm surges are not of considerable magnitude, and thus remain small. For example, spring tides (without wind) in either harbor are less than 0.2 m in amplitude, and the maximum storm surge for Hurricane Georges was less than 0.4 m. Therefore, impacts of marine currents and surf on both harbors are small.

- Wind driven currents induced by the passage of tropical or extratropical atmospheric disturbances represent the most potential long-wave threat to the coastal infrastructures in the bays. For this reason, change in hurricane surge currents as a result of construction of the harbor expansions was identified as the best measure of construction impact. Pre and postconstruction differences in current magnitudes were computed as a means of demonstrating reductions or increases in current as a result of changes in the bays, such as fill of marine areas.
- An assessment of potential impacts on currents from the proposed construction at the Ponce and Guayanilla bays was completed by the USACE. An initial study of the currents in both bays for the existing conditions, and potential changes due to the proposed construction and reclamation works was completed in 2002 and included in the DEIS. This study was updated for this SDEIS to reflect proposed changes at the Ponce Bay, including the elimination of the fill of 76 acres near Pier 8 and the excavation of the docking channel (Appendix B). Conclusions of these studies are twofold:
  - Simulations show that the ports of Ponce and Guayanilla do not experience large tides or tropical and extratropical storm surges.
  - Pre and postproject simulations of severe tropical events show that project impacts are small (less than 1.0 m/sec) and would cause localized reductions in storm circulation currents, which do not affect regions further than approximately 1 km from the proposed project sites.

Therefore, impacts from the proposed action, related to the flow and direction of marine currents are considered negligible for all the proposed alternatives, with the exception of the No-Action Alternative, where conditions would remain in the present state.

#### **4.20 Noise**

##### **4.20.1 No-Action Alternative**

Under the No Action Alternative, development of the Project would not occur. Associated construction and operation activities would occur, and noise levels at the Ponce and Guayanilla sites would remain as present.

**4.20.2 Ponce and Guayanilla: Main Terminal at Ponce Alternative**

Under this alternative, temporary increases in the noise levels would occur at areas adjacent to the project sites at the Ponce and Guayanilla bays. These increases in noise levels would be generated by typical construction activities, including the operation of stationary-equipment engines, general earthwork equipment and material hauling, as well as the interaction between the equipments and the materials. Examples of typical noise levels for selected construction equipments are shown in the Table 4-14. These levels are expressed in decibels (dB) units, which measure noise intensity. Several measures would be implemented to mitigate the noise levels generated by the construction activities.

- Construction would be limited to the daytime to control the noise levels.
- The stationary equipment would be located in non-sensitive areas or in areas provided with noise buffer/sound absorbing structures. These structures would be used at all times during the operation of the construction equipment.

**Table 4-14: Typical Noise Levels for Construction Equipment**

Equipment	Noise Level Range [dB(A)]	Average [dB(A)]
Front Loader	72 - 84	81
Backhoes	72 - 93	90
Tractors	77 - 96	93
Grader	80 - 93	90
Paver	86 - 88	87
Trucks	82 - 94	91
Concrete Mixer	75 - 88	85
Cranes	75 - 87	84
Pumps	69 -71	70
Power Generators	71 - 82	79
Compressors	74 - 87	84

Source: EPA, 1971

Several measures would be implemented to mitigate the noise levels generated by the construction activities at the project sites:

- Construction would be limited to the daytime to control the noise levels.

- The stationary equipment would be located in non-sensitive areas or in areas provided with noise buffer/sound absorbing structures. These structures would be used at all times during the operation of the construction equipment.
- Other proposed uses, which are not expected to generate significant noise levels, would include the operations of warehouses, offices, and industries. Noise from these sources would be primarily generated by the limited vehicular traffic of trucks and employees vehicles. A crane may generate up to 96 dBA during loading of cargo, and 80 dBA when it is turned on but not in use. Therefore, the combined sound pressure level that would be generated by these cranes is estimated at approximately 96 dBA (American Federation of Labor and Congress of Industrial Organizations, 2001).
- It is expected that the majority of the noise generated from the Project would come from the crane operations components. The proposed operations would be considered as an industrial noise source (Zone III).
- The combined sound levels that would be experienced by the selected receptors were calculated using values of 88 dB(A) for Ponce. The sound level generated by the proposed sources, combined with the background ambient noise experienced by each receptor, as measured; results in the noise impact associated to the proposed project. Results are summarized in Table 4-15.
- In addition to the impacts to the receptors previously identified, noise levels were also determined for the boundary of the proposed project sites. Sampling Points S1, S2, S3 and S6 describe the proposed north and east boundaries for the Guayanilla-Peñuelas project area. These proposed boundaries are located in the maritime area and are part of the proposed reclamation area. These points have no limits or actual boundaries, thus it was not possible to determine the existing noise levels. However, the noise levels associated to the proposed project for these points along the boundary were evaluated to determine if the standards established by the EQB were met. For the Ponce component, sampling points along the boundary of the Project, S1, S2, S3, S4 and S5, corresponds to receptors R1, R2, R3, R4 and R5. The current background noise levels for these receptors were determined and analyzed to determine if the projected noise levels meet the standards established by the EQB. Results of these calculations are summarized in Table 4-16 and Table 4-17.

Based on the results of the calculations included in the aforementioned tables, in terms of the noise impacts associated to the Project operation under this alternative, the following was concluded:

- The potential increase of the noise above the background levels at the designated receptors for the operational phase of the project site in Ponce varies between 0.001 dB (A) to 0.022 dB(A). This increase is less than the increment level that can be normally perceived by a human being, which is 3 dB(A). Expected noise levels which would result from the operation at the site boundary would not exceed the limits established by the EQB.

**Table 4-15: Projections of  $L_{eq}$  Change for the Ponce Project Component**

Receptor Description	Receptor Designation	Daytime			Nighttime		
		Background Levels [dB(A)]	Noise Levels with Project [dB(A)]	Change	Background Levels [dB(A)]	Noise Levels with Project [dB(A)]	Change
Residential	R1	74.166	74.170	0.004	66.115	66.130	0.015
Industrial	R2	70.001	70.002	0.001	54.409	54.431	0.022
Residential and/or Commercial	R3	68.648	68.653	0.005	59.268	59.298	0.030
Residential (School)	R4	71.457	71.460	0.003	66.924	66.930	0.006
Tranquility	R5	67.899	67.903	0.004	67.170	67.174	0.004

**Table 4-16: Comparison of the Noise Levels  $L_{10}$  Projected for the Ponce Project Component with the EQB Noise Limits for Daytime**

Site Boundary Designation	Background Levels $L_{10}$ [dB(A)]	EQB Limits $L_{10}$ [dB(A)]	EQB Limits, Adjusted $L_{10}$ [dB(A)]	Projected Levels with Project $L_{10}$ [dB(A)]
Industrial/Residential (S1)	76.7	65	70	76.7
Industrial/Industrial (S2)	71.4	75	80	71.4
Industrial/Commercial (S3)	69.3	70	73	69.3
Industrial/Residential(S4)	72.8	65	70	72.8
Industrial/Tranquility (S5)	70.1	50	50	70.1

**Table 4-17: Comparison of the Noise Levels L<sub>10</sub> Projected for the Ponce Project Component with the EQB Noise Limits for Nighttime**

Site Boundary Designation	Background Levels L <sub>10</sub> [dB(A)]	EQB Limits L <sub>10</sub> [dB(A)]	EQB Limits, Adjusted L <sub>10</sub> [dB(A)]	Projected Levels with Project L <sub>10</sub> [dB(A)]
Industrial/Residential (S1)	69.4	50	55	69.5
Industrial/Industrial (S2)	55.7	75	75	55.7
Industrial/Commercial (S3)	60.7	65	68	60.7
Industrial/Residential (S4)	69.7	50	55	69.7
Industrial/Tranquility (S5)	71.2	45	50	71.2

The following impact evaluation for the proposed project operations are based on the Noise Study results for the Guayanilla-Peñuelas site:

- During the operation phase in the Guayanilla-Peñuelas area, it is expected that most of the noise of the proposed facilities would be generated from loading and unloading operations, specifically from the cranes used in these operations. The proposed operations would be considered as an industrial noise source (Zone III).
- Other proposed uses, which are not expected to generate significant noise levels, would include the operations of warehouses, offices, and industries. Noise from these sources would be primarily generated by the limited vehicular traffic of trucks and employees vehicles. A crane may generate up to 96 dBA during cargo loading, and 80 dBA when it is turned on but not in use. Therefore, the combined sound pressure level that would be generated by these cranes is estimated at approximately 96 dBA (American Federation of Labor and Congress of Industrial Organizations, 2001).
- The combined sound levels that would be experienced by the selected receptors were calculated using values of 96 dB (A) for Guayanilla-Peñuelas for Ponce. (Section 3.20) The sound level generated by the proposed sources, combined with the background ambient noise experienced by each receptor, as measured; results in the noise impact associated to the proposed project. The results of these calculations are summarized in Table 4-18.
- In addition to the impacts to the receptors previously identified, noise levels were also determined for the boundary of the proposed project sites (Sampling Points S1, S2, S3, S4, S5 and S6, refer to the locations specified in Section 3.20). Sampling Points S1, S2, S3 and S6 describe the proposed north and east boundaries for the Guayanilla-Peñuelas project area. These proposed boundaries are located in the maritime area and are part of the proposed reclamation area. These points have no limits or actual boundaries, thus it was not possible to determine the existing noise levels. However, the

noise levels associated to the proposed project for these points along the boundary were evaluated to determine if the standards established by the EQB were met. The current background noise levels for these receptors were determined and analyzed to determine if the projected noise levels meet the standards established by the EQB. The results of these calculations are summarized in Table 4-19 and Table 4-20.

Based on the results of the calculations included in the referenced tables, in terms of the noise impacts associated to the project operation, the following was concluded:

- The increase of the noise levels above the background level at the designated receptors for the operational phase of the project site in the Guayanilla-Peñuelas area, varies between zero (0) dB(A) to 0.751 dB(A). This increase is less than the increment level that can be normally perceived by a human being, which is three (3) dB(A). Expected noise levels, which would result from the operation, at the site boundary would not exceed the limits established by EQB.

**Table 4-18: Projections of  $L_{eq}$  Change for the Guayanilla-Peñuelas Project Component**

Receptor Description	Receptor Designation	Daytime			Nighttime		
		Background Levels [dB(A)]	Noise Levels with Project [dB(A)]	Change	Background Levels [dB(A)]	Noise Levels with Project [dB(A)]	Change
Residential	R1	62.596	62.591	0.005	57.260	57.273	0.0128
Industrial	R2	69.155	69.156	0.001	58.416	58.424	0.008
Industrial	R3	63.021	63.031	0.010	58.443	58.465	0.022
Industrial	R4	65.665	65.753	0.088	53.692	53.443	0.751
Residential (School)	R5	76.520	76.520	0.000	55.398	55.407	0.009
Industrial	R6	65.006	65.006	0.0004	63.910	63.911	0.001

**Table 4-19: Comparison of the Noise Levels L<sub>10</sub> Projected for the Guayanilla-Peñuelas Project Component with the EQB Noise Limits for Daytime**

Site Boundary Designation	Background Levels L <sub>10</sub> [dB(A)]	EQB Limits L <sub>10</sub> [dB(A)]	EQB Limits, Adjusted L <sub>10</sub> [dB(A)]	Projected Levels with Project L <sub>10</sub> [dB(A)]
Industrial/Residential (S1)	N/A	65	65	40.0
Industrial/Industrial (S2)	N/A	75	75	45.5
Industrial/Industrial (S3)	N/A	75	75	46.4
Industrial/Industrial (S4)	63.7	75	75	63.6
Industrial/Industrial (S5)	63.4	75	75	63.5
Industrial/Industrial (S6)	N/A	75	75	41.3

**Table 4-20: Comparison of the Noise Levels L<sub>10</sub> Projected for the Guayanilla-Peñuelas Project Component with the EQB Noise Limits for Nighttime**

Site Boundary Designation	Background Levels L <sub>10</sub> [dB(A)]	EQB Limits L <sub>10</sub> [dB(A)]	EQB Limits, Adjusted L <sub>10</sub> [dB(A)]	Projected Levels with Project L <sub>10</sub> [dB(A)]
Industrial/Residential (S1)	N/A	50	50	40.0
Industrial/Industrial (S2)	N/A	75	75	45.5
Industrial/Industrial (S3)	N/A	75	75	46.4
Industrial/Industrial (S4)	56.0	75	75	57.1
Industrial/Industrial (S5)	57.2	75	75	57.6
Industrial/Industrial (S6)	N/A	75	75	41.3

The overall conclusions of the Noise Study show that the elements of the Project as proposed for the Ponce or Guayanilla-Peñuelas alternative are not a significant source of noise and would not result in a significant increase in noise emissions during the operation phase.

**4.20.3 Applicant's Preferred Alternative: Ponce Bay Only**

An amended Noise Survey (Appendix F) was completed by the Applicant as part of this SDEIS to assess the impact of the Preferred Alternative as compared to the conditions in the noise study included in the DEIS. In this case, the modified project sits closer to residential areas in the vicinity of the Ponce Harbor, increasing the probability of adverse effects to the population with regards to this issue. The amended noise survey considered these project site modifications to assess impacts during construction and operation on existing noise levels.

Construction impacts for this alternative are similar to those described in the previous section. The existing wharf loading and unloading operations at the Port of Ponce would be rehabilitated, and a new industrial zone is proposed nearby with lots for offices, warehouses, and value-added activities.

As for impacts during operation,

**Table 4-21. Applicant's Preferred Alternative: Noise Level Impacts**

Receptors	Sound Level dB(A)		
	Operation of the PTA	Existing Conditions	Adjusted Limits
<b>Diurnal Period</b>			
R1	76.8	76.7	70.0
R2	71.1	70.7	78.0
R3	70.4	70.1	70.0/75.0
R4	72.2	72.2	70.0
R5	72.0	72.0	55.0
<b>Nocturnal Period</b>			
R1	69.6	69.4	55.0
R2	60.3	57.9	75.0
R3	61.4	60.0	55.0/65.0
R4	68.3	68.2	55.0
R5	64.6	64.5	50.0

The results obtained from this evaluation are the following:

- Diurnal and nocturnal background noise levels exceed regulatory limits at Receptors 1, 3, 4, and 5.

- The operation of the Project is not expected to cause significant increases in noise levels during daytime hours at any receptor. This is especially true for Receptor 4 and 5 due to the high background noise conditions already existing at these receptors and the distance between the receptors and the source of noise generation within the Project.

It can be concluded from these results that the operation of the Port of the Americas is not expected to significantly increase noise conditions in the neighboring areas in light of the already high background noise levels. Impact assessment figures were estimated assuming a worst case scenario of the operation of six closest cranes to each receptor. In addition, it is assumed, and recommended, that a sound attenuation power module is used for the electric generators.

Sound levels might increase significantly in areas surrounding the Project during the construction phase. Various methods for noise mitigation should be used during this phase. Mitigation of construction noise can be accomplished by source control, path controls, or a combination of both. Source control should be highly prioritized because it is generally a more effective form of noise control. If source control measures are not enough to avoid noise impact, path control measures should be implemented in addition to source controls. For mitigation purposes, special attention should be given to Receptors 1 and 3 because of their proximity to the PTA and their nature (residential).

Some examples of source controls to be implemented during the construction of the Project are:

- Prohibiting work during late afternoon and evening hours
- Using quieter methods/equipment when possible
- Ensuring equipments have quality mufflers installed
- Ensuring equipment is lubricated and well maintained
- Use only the necessary size and power of equipment
- Having only necessary equipment on site

The following presents some examples of path controls that may be implemented during the construction of the Project:

- Installing noise barriers or noise curtains
- Performing noisy activities farther away from receptors when possible

Implementation of these mitigation methods minimized the noise impact to surrounding areas during the construction of the Project. When properly installed, such that there is no line-of-sight between the receptors and the equipment, a noise barrier system is capable of reducing noise by 10 to 15 dB(A).

#### **4.21 Indirect Impacts**

Indirect impacts include those that are not a direct result of a project, often produced distant from a project site, or as a result of a complex pathway. Indirect impacts are caused by the activities or actions at a project, and can occur later in time, or at another location, but are still reasonably foreseeable. These impacts may include growth inducing and other effects related to changes in the patterns of land use, population density or growth rate, and related effects on land, air, water, and other natural systems or ecosystems. Indirect impacts from the alternatives considered by the Applicant for the Project have been discussed in the corresponding sections of this chapter. However, Table 4-22 summarizes such impacts.

**Table 4-22: Summary of Indirect Impacts**

Alternative Environmental Factor	No-action Status Quo	Ponce and Guayanilla: Main Terminal at Ponce	Applicant's Preferred Alternative
PROTECTED SPECIES	None	<ul style="list-style-type: none"> <li>• Increased boat traffic would adversely affect the manatee.</li> <li>• Puerto Rican nightjar if fill material is obtained from new quarries as demand for new construction increases due to induced industrial activity.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased boat traffic would affect, but not likely to adversely affect manatee populations.</li> <li>• Puerto Rican nightjar if fill material is obtained from new quarries as demand for new construction increases due to induced industrial activity.</li> </ul>
SHORELINE EROSION	None	<ul style="list-style-type: none"> <li>• None, provided erosion control measures are taken on anticipated increased industrial and construction activity,</li> </ul>	<ul style="list-style-type: none"> <li>• None, provided erosion control measures are taken on anticipated increased industrial and construction activity,</li> </ul>
VEGETATION	None	<ul style="list-style-type: none"> <li>• Some vegetation may be affected during construction of new industrial areas nearby.</li> </ul>	<ul style="list-style-type: none"> <li>• Some vegetation may be affected during construction of new industrial areas nearby.</li> </ul>
WATER QUALITY	None	<ul style="list-style-type: none"> <li>• Water quality may be degraded by increased construction activity as a result of the project operation.</li> </ul>	<ul style="list-style-type: none"> <li>• Water quality may be degraded by increased construction activity as a result of the project operation.</li> </ul>

Alternative Environmental Factor	No-action Status Quo	Ponce and Guayanilla: Main Terminal at Ponce	Applicant's Preferred Alternative
RECREATION	None	<ul style="list-style-type: none"> <li>Increased economic activity would initially increase the usage of the existing recreational facilities, impacting adversely the quality of life in the area. It is expected that over time, the increase in economic activity would induce construction of new recreational facilities.</li> </ul>	<ul style="list-style-type: none"> <li>Increased economic activity would initially increase the usage of the existing recreational facilities, impacting adversely the quality of life in the area. It is expected that over time, the increase in economic activity would induce construction of new recreational facilities.</li> </ul>
AESTHETICS	None	<ul style="list-style-type: none"> <li>Industrial port zone aesthetics would not be affected.</li> </ul>	<ul style="list-style-type: none"> <li>Industrial port zone aesthetics would not be affected.</li> </ul>
ECONOMICS	Economy would remain at current levels. Projected revenues would be lost. No new jobs would be added to the economy	<ul style="list-style-type: none"> <li>At least 5,000 indirect and induced jobs would be created within 5 years.</li> </ul>	<ul style="list-style-type: none"> <li>At least 5,000 indirect and induced jobs would be created within 5 years.</li> </ul>
ENERGY REQUIREMENTS AND CONSERVATION	None	<ul style="list-style-type: none"> <li>Increased energy and infrastructure requirements would be brought about by increased industrial activity as a result of the project operation.</li> </ul>	<ul style="list-style-type: none"> <li>Increased energy and infrastructure requirements would be brought about by increased industrial activity as a result of the project operation.</li> </ul>

#### **4.22 Cumulative Impacts**

Cumulative impact is the "*impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions*" (40 CFR 1508.7).

The potential cumulative impacts of the alternatives considered by the Applicant for the Project are summarized in Table 4-23. These include past, present, and reasonably foreseeable future condition of the various resources, which are directly or indirectly impacted by the proposed action and its alternatives. The table also illustrates the conditions with the Project and without the Project (the difference being the incremental impact of the Project). Also illustrated is the future condition with any reasonable alternatives (or range of alternatives). Appendix I to this SDEIS includes more detailed information of how the cumulative impacts were examined using the 11 steps identified by the Council on Environmental Quality, 1997. [*Considering Cumulative Effects Under the National Environmental Policy Act* January, 1997, Executive Office of the President, Washington, D.C.]

**Table 4-23: Summary of Cumulative Impacts**

Issue	Boundary (time and space)	Past (baseline condition)	Future without Project	Future with Ponce and Guayanilla: Main Terminal at Ponce Alternative	Future with Proposed Action
Fish and Wildlife Resources	Predevelopment to 2010, Playa Ward and Ponce Bay at Ponce and/or Playa Ward and Guayanilla Bay, Tallaboa Ward at Guayanilla and Peñuelas, respectively.	Ponce: Limited wildlife resources at Playa Ward, sparse benthic development at inner Ponce Bay, pelagic resources abundant. Guayanilla-Peñuelas: Significant wildlife resources identified, diverse benthic development at Guayanilla Bay, pelagic resources abundant.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Potential habitat fragmentation from multiple land-clearing events for industrial, commercial, and residential developments.</li> <li>• Incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic.</li> </ul>	<ul style="list-style-type: none"> <li>• Potential habitat fragmentation from multiple land-clearing events for industrial, commercial, and residential developments.</li> <li>• Incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic.</li> </ul>
Marine Resources/Special Aquatic Sites	Predevelopment to 2010, Ponce Bay and/or Guayanilla Bay.	Ponce: Sparse benthic development at inner Ponce Bay due to maintenance dredging and ship transit, pelagic resources abundant. Guayanilla-Peñuelas: Diverse benthic development including significant seagrass component at Guayanilla Bay, pelagic resources abundant.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Potential latent habitat fragmentation impacts caused by permanent removal of ocean bottom for reclamation purposes.</li> <li>• Water quality degradation from increased stormwater discharges from industrial developments.</li> <li>• Increased sediment delivery to major water bodies from soil erosion and displacement.</li> <li>• Incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic.</li> </ul>	<ul style="list-style-type: none"> <li>• Water quality degradation from increased stormwater discharges from industrial developments.</li> <li>• Increased sediment delivery to major water bodies from soil erosion and displacement.</li> <li>• Incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic.</li> </ul>
Essential Fish Habitat	Predevelopment to 2010, Ponce Bay and/or Guayanilla Bay.	Ponce: Mixed muddy bottoms with <10% seagrasses, no hardbottoms or coral reefs in proposed project vicinity. Guayanilla-Peñuelas: Diverse seagrass component, muddy bottoms abundant, no hardbottoms or coral reefs in proposed project vicinity.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Potential latent habitat fragmentation impacts to designated EFH for adult individuals of white grunt and silk snapper caused by permanent elimination of ocean bottom and water column for reclamation purposes.</li> </ul>	<ul style="list-style-type: none"> <li>• Potential latent habitat fragmentation impacts to designated EFH for adult individuals of white grunt and silk snapper caused by temporary elimination of ocean bottom for dredging purposes.</li> </ul>

Issue	Boundary (time and space)	Past (baseline condition)	Future without Project	Future with Ponce and Guayanilla: Main Terminal at Ponce Alternative	Future with Proposed Action
Threatened or Endangered Species	Predevelopment to 2010, Playa Ward and Ponce Bay at Ponce and/or Playa Ward and Guayanilla Bay, Tallaboa Ward at Guayanilla and Peñuelas, respectively. All authorized fill extraction areas in the south coast from Guayanilla to Juana Díaz.	Ponce: None identified. Antillean manatee individuals occasionally visit Ponce Bay. Guayanilla-Peñuelas: Known habitat for the Antillean manatee and brown pelican. Fringe of some fill extraction areas are known habitats of the Puerto Rican nightjar.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Potential degradation of sensitive Puerto Rican nightjar habitat due to stresses caused by added industrial, commercial, and residential developments.</li> <li>• Potential incremental degradation of Antillean manatee habitat due to increased boat traffic.</li> <li>• Potential incremental degradation of brown pelican habitat due to increased industrial and construction activity.</li> </ul>	<ul style="list-style-type: none"> <li>• Potential degradation of sensitive Puerto Rican nightjar habitat due to stresses caused by added industrial, commercial, and residential developments.</li> </ul>
Ecologically Sensitive Areas	Predevelopment to 2010, Playa Ward and Ponce Bay at Ponce and/or Playa Ward and Guayanilla Bay, Tallaboa Ward at Guayanilla and Peñuelas, respectively.	None existent.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
Wetlands	Predevelopment to 2010, Playa Ward and Ponce Bay at Ponce and/or Playa Ward and Guayanilla Bay, Tallaboa Ward at Guayanilla and Peñuelas, respectively.	Ponce: Limited extent of wetlands Guayanilla-Peñuelas: Known habitat for the Antillean manatee and brown pelican. Fringe of some fill extraction areas are known habitats of the Puerto Rican nightjar.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Potential habitat loss and diminished flood control capacity from dredging and filling individual tracts of wetland.</li> <li>• Reduction in wetland function capacity due to increased runoff uptake on remaining wetlands.</li> </ul>	<ul style="list-style-type: none"> <li>• Potential habitat loss and diminished flood control capacity from filling individual tracts of wetland.</li> <li>• Reduction in wetland function capacity due to increased runoff uptake on remaining wetlands.</li> </ul>
Coastal Zone	Predevelopment to 2010, Playa Ward and Ponce Bay at Ponce and/or Playa Ward and Guayanilla Bay, Tallaboa Ward at Guayanilla and Peñuelas, respectively.	Coastal regime characterized by industrial and residential activity form Ponce and Guayanilla harbors.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
Flooding	Predevelopment to 2010, Playa Ward and Ponce Bay at Ponce and/or Playa Ward and Guayanilla Bay, Tallaboa Ward at Guayanilla and Peñuelas, respectively	Most areas classified as Zone 1 and 1M.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• None. No construction activities would take place in Zone 1. Construction in areas classified as Zone 1M and 2 would adhere to the PB regulations.</li> </ul>	<ul style="list-style-type: none"> <li>• None. No construction activities would take place in Zone 1. Construction in areas classified as Zone 1M and 2 would adhere to the PB regulations.</li> </ul>

Issue	Boundary (time and space)	Past (baseline condition)	Future without Project	Future with Ponce and Guayanilla: Main Terminal at Ponce Alternative	Future with Proposed Action
Water and Sediment Quality	Predevelopment to 2010, Playa Ward and Ponce Bay at Ponce and/or Playa Ward and Guayanilla Bay, Tallaboa Ward at Guayanilla and Peñuelas, respectively.	Ponce: Water and sediment quality in the vicinity of the Project fall within greater Ponce Bay background concentrations. Guayanilla-Peñuelas: Known habitat for the Antillean manatee and brown pelican.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Water quality degradation from increased stormwater discharges from industrial developments.</li> <li>• Increased sediment delivery to major water bodies from soil erosion and displacement.</li> <li>• Incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic.</li> <li>• Water quality degradation from land uses that may result in non-point source pollution within industrial areas.</li> <li>• Potential deterioration of recreational uses from non-point source pollution.</li> </ul>	<ul style="list-style-type: none"> <li>• Water quality degradation from increased stormwater discharges from industrial developments.</li> <li>• Increased sediment delivery to major water bodies from soil erosion and displacement.</li> <li>• Incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic.</li> <li>• Water quality degradation from land uses that may result in non-point source pollution within industrial areas.</li> <li>• Potential deterioration of recreational uses from non-point source pollution.</li> </ul>
Air Quality	Predevelopment to 2010, Municipality of Ponce and/or Municipality of Guayanilla and Peñuelas.	Area complies with air quality standards.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in emissions caused by incremental industrial activity may lower ambient air quality to non-compliance levels.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in emissions caused by incremental industrial activity may lower ambient air quality to non-compliance levels.</li> </ul>
Cultural Resources	Predevelopment to 2010, south coast from Municipality of Ponce to Municipality of Guayanilla.	Several archaeological deposits and cultural resources identified throughout the region.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
Socioeconomic	Predevelopment to 2010, south coast from Municipality of Ponce to Municipality of Guayanilla.	Ponce: Booming economy and developing infrastructure Guayanilla-Peñuelas: Economically depressed area still under recovery from the industrial complex closure, high unemployment rates.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Generation of jobs and overall contribution in increasing the economic level of the area through incremental industrial activity.</li> </ul>	<ul style="list-style-type: none"> <li>• Generation of jobs and overall contribution in increasing the economic level of the area through incremental industrial activity.</li> </ul>
Hazardous, Toxic, and Radioactive Wastes	Predevelopment to 2010, Playa Ward and Ponce Bay at Ponce and/or Playa Ward and Guayanilla Bay, Tallaboa Ward at Guayanilla and Peñuelas, respectively.	Ponce: No latent issues. Some small quantity generators located near the project site. Guayanilla-Peñuelas: Some areas under RCRA remediation actions after closure of the industrial complex. Numerous environmental concerns.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Potential cleanup and reuse of previously-impacted lands on PR-127 corridor due to incremental industrial activity.</li> </ul>	<ul style="list-style-type: none"> <li>• None.</li> </ul>

Issue	Boundary (time and space)	Past (baseline condition)	Future without Project	Future with Ponce and Guayanilla: Main Terminal at Ponce Alternative	Future with Proposed Action
Dredging and Disposal Of Dredged Material	Predevelopment to 2010, Ponce Bay and/or Guayanilla Bay.	Ponce: Maintenance dredging of the navigation channel has been performed in the past. Guayanilla-Peñuelas: Limited dredging in the inner bay performed for the construction of small piers in the past. Main navigation channel has never been dredged.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
Navigation	Predevelopment to 2010, Ponce Bay and/or Guayanilla Bay.	Ponce: Navigation channel and turning basin support industrial activity at the port, active for more than 80 years. Guayanilla-Peñuelas: Ample navigation resources but decreased activity when compared with levels at the height of the industrial complex operation.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in maritime accident risk resulting in spill, loss of material or life due to incremental vessel movement.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in maritime accident risk resulting in spill, loss of material or life due to incremental vessel movement.</li> </ul>
Infrastructure	Predevelopment to 2010, south coast from Municipality of Ponce to Municipality of Guayanilla.	Ponce: Adequate resources supporting an ongoing thriving industrial and business hub. Guayanilla-Peñuelas: Adequate capacity, but mostly abandoned after the industrial complex ceased operations in the late 70's.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in demand for basic infrastructure services and waste generation due to incremental industrial activity.</li> <li>• Temporary disruption of community mobility and access due to infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in demand for basic infrastructure services and waste generation due to incremental industrial activity.</li> <li>• Temporary disruption of community mobility and access due to infrastructure development.</li> </ul>
Marine Currents	Predevelopment to 2010, Ponce Bay and/or Guayanilla Bay.	Adequate flush regime at both bays.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
Noise	Predevelopment to 2010, Ponce Harbor at Ponce and/or Port of Guayanilla.	Noise levels characteristic of maritime port industrial settings. Recorded levels do not exceed local regulatory limits.	<ul style="list-style-type: none"> <li>• Same as Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Potential Increase in ambient noise levels from incremental vessel traffic, industrial operations, port machinery and vehicular traffic.</li> </ul>	<ul style="list-style-type: none"> <li>• Potential Increase in ambient noise levels from incremental vessel traffic, industrial operations, port machinery and vehicular traffic.</li> </ul>

Cumulative impacts, whether beneficial, adverse or indifferent, can occur when the effects from a project are added to the effects from other existing projects or facilities. They are caused by the aggregate of past, present and reasonably foreseeable future actions, and represent the total effect, both direct and indirect, on a resource, ecosystem or human community of all actions taken regardless who has taken the action.

The analysis of the cumulative effects from the development of the PTA indicates that there are three potential sources of cumulative environmental impacts:

1. The continued or expanded operation of existing facilities at the ports of Ponce and Guayanilla-Peñuelas;
2. The resumption of operations of facilities presently inactive in the areas near the indicated ports, such as industries; and
3. The construction of new projects in the same vicinities and within the same time frame as the schedule for development of the PTA.

The following sections describe in detail cumulative impacts associated with past, present or reasonably foreseeable future projects in the general area from Ponce to Guayanilla with regards to various environmental resources, first presented in Chapter 1 of this document. The analysis that follows considers specific design features, construction techniques, operational criteria, and mitigation measures that would reduce or avoid potential environmental impacts associated with the construction and operation of the PTA. Unless otherwise specified, the impacts described herein apply to the proposed action as well as the Ponce and Guayanilla: Main Terminal at Ponce Alternative, except the No-Action Alternative.

#### **4.22.1 Cumulative Impacts on Fish and Wildlife Resources**

- The most significant cumulative impact with regards to fish and wildlife resources are the potential habitat fragmentation caused by multiple land-clearing events for industrial, commercial, and residential developments that could be induced by the Project in Ponce and the nearby municipalities. However, the areas where such developments would occur have been classified for such uses and no actions that would jeopardize terrestrial species in the region are anticipated.
- Also, there is expected an incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic. These events and their associated risks are discussed in 4.22.15.

#### **4.22.2 Cumulative Impacts on Marine Resources/Special Aquatic Sites**

- Cumulative impacts with regards to marine resources/special aquatic sites would be caused mainly by a rise in industrial activity in the area. This construction-related surge in stormwater discharges may induce increases in turbidity and sedimentation that would temporarily reduce productivity in the adjacent areas, near shore sea grass beds. These impacts would be of short duration with a rapid recovery after the termination of construction activities. It is anticipated that some degree of turbidity would be caused by the increased vessel traffic induced by the proposed action.
- Permanent removal of ocean bottom for dredging or filling purposes, described as part of the alternatives discussed in this document, may trigger latent habitat fragmentation impacts on the aquatic flora and fauna in the vicinity of the Project. The long-term effects and duration of these impacts are unknown.

- Also, Port operations may result in an increased sediment delivery to major water bodies from soil erosion and displacement in nearby lots used for industrial operations. These impacts would be evaluated on a case-by-case basis by the local regulatory agencies when granting operation permits to those applicants.
- Finally, there is expected an incremental potential for impacts to marine resources due to spills caused by a general rise in vessel traffic. These events and their associated risks are discussed in Section 4.22.15.

#### **4.22.3 Cumulative Impacts on Essential Fish Habitat**

Permanent removal of ocean bottom for dredging or filling purposes, described as part of the alternatives discussed in this document, may trigger latent habitat fragmentation impacts on the aquatic flora and fauna in the vicinity of the Project. In the Ponce area, the water column serves as essential fish habitat for adult individuals of white grunt and silk snapper. Permanent elimination of a portion of the marine bottom would eliminate the sparse diversity identified at these locations. Nevertheless, the long-term effects and duration of these impacts are unknown.

#### **4.22.4 Cumulative Impacts on Threatened or Endangered Species**

- In the Port of Ponce, endangered species occur less frequently than in other sectors of the south coast. Manatees have been sighted sporadically in the periphery of the port and the bay, and brown pelicans often fish and rest in the area. There are no current or reasonably foreseeable marine construction projects in the Ponce area. Hence, no cumulative impacts on any other threatened or endangered species, terrestrial or marine life is expected from the proposed action.
- Nevertheless, it is expected that the Project would result in an increase in the number of ships arriving at the port of as much as 1,200 ships over current shipping levels. This increase in shipping activity would increase the potential for collisions with manatees traversing the Ponce Bay.
- Finally, cumulative impacts to the Puerto Rican nightjar populations may arise in time as additional quarries are authorized in the region to cope with the demand for extraction material for industrial developments. Local and Federal authorities would coordinate with each individual proponent specific measures to be implemented to preserve nightjar habitat when the need arises.

#### **4.22.5 Cumulative Impacts on Ecologically Sensitive Areas**

No cumulative impacts on ecologically sensitive areas are expected as a result of proposed action or the alternatives considered.

#### **4.22.6 Cumulative Impacts on Wetlands**

Cumulative impacts on wetlands in the area would most likely arise from the incremental industrial activities in Ponce, and could result in potential loss of habitat to plant and animal species that populate coastal and inland wetlands alike. Impacts to this resource could occur by partial filling for construction of areas near existing wetlands; degradation by exposure to increased runoff rich in sediments eroded from construction areas; and overall reduced flood control capacity and runoff handling in the project area.

#### **4.22.7 Cumulative Impacts on Coastal Zone**

Indirect cumulative impacts to the coastal zone could occur from increased navigation and its generation of wakes, which could induce erosion along the shoreline. Potential adverse impacts to the shoreline could occur in the eventuality of a spill from a ship. Other projects along the coastal areas in the vicinity of the Ponce Bay could be proposed, impacting elements of the coastal zone.

#### **4.22.8 Cumulative Impacts on Flooding**

No cumulative impacts with regards to flooding are expected as a result of proposed action or the alternatives considered. Construction activities in Zone 1M and 2 would adhere to local Planning Board regulations. No construction is anticipated to take place in Zone 1.

#### **4.22.9 Cumulative Impacts on Water and Sediment Quality**

The operation of the PTA would contribute to the cumulative impacts of other industries and activities in the region, although these impacts would be minimal. There are no significant industrial activities in the immediate vicinity of the Port of Ponce.

- The marine and port activities of the PTA would induce additional discharges of water pollutants to the Ponce Bay, albeit under controlled conditions that meets current maximum local and Federal standards. The design of the elements of the Project includes measures to comply with the existing environmental regulations, which take into account cumulative levels of contamination and environmental impacts from other sources in the region.
- The construction activities of additional industrial operations in the surrounding project area would cause temporary impacts in the water quality. The principal impacts to the water quality would be the increased delivery of sediments to major water bodies resulting in increased turbidity. Some water quality degradation is expected as a result of non-point runoff from industrial facilities over time and may impact recreational resources within the region.
- Additional wastewaters generated at the Ponce site would be discharged by the Ponce Regional Wastewater Treatment Plant to the Caribbean Sea. These discharges, containing solids and chlorine, may have a long-term impact on pelagic species within the diffusion area of the sanitary outfall.

#### **4.22.10 Cumulative Impacts on Air Quality**

- Port-related activities would result in cumulative impacts brought about by expected rise in air emissions from increased vehicular traffic, industrial operations, emergency power generators, and increased ship traffic. These impacts may decrease ambient air quality over time to non-compliance levels. Cumulative indirect impacts to the quality of the air from fugitive dust would occur from incremental development of the land for commercial and industrial uses particularly in the areas proposed for value-added activities.
- Major existing air pollution sources include the Central Mercedita, Puerto Rico Cement, Serrallés Distillery in Ponce. Individual air quality permits issued by EQB, in compliance with the National Ambient Air Quality Standards, govern the emissions and air quality impacts from these facilities. Since the proposed project as such would not require the issuance of an air quality permit, and because its contribution to air pollution would be insignificant, no adverse cumulative impacts to air quality are anticipated.

#### **4.22.11 Cumulative Impacts on Cultural Resources**

No cumulative impacts on cultural resources are expected as a result of proposed action or the alternatives considered.

#### **4.22.12 Cumulative Impacts on Socioeconomic Issues**

- The Port of the Americas is expected to have a positive socioeconomic cumulative impact in the south coast. The Project has been designed to stimulate the regional economy during its construction and operation phases. This economic stimulus would result from direct project expenditures on goods, services, salaries, indirect and induced spending, and multiplier effects. Economic impacts differ between the construction and operation phases of the Project in both quantity and tenure.
- Temporary or permanent socioeconomic impacts include level of regional economic activity, employment and increase in government tax revenue. The Municipality of Ponce would receive most of the benefits associated with the construction and operation of the PTA.
- The Project would have a beneficial cumulative impact on the local and regional economy as well as on the quality of life of neighboring communities. Eventually, the elements of the PTA, including potential value-added activities, would generate as many as 20,000 permanent new jobs in the region. The direct and indirect revenues associated with these workers would have a positive effect on the area, where the unemployment rate currently approximates 13%.
- Similar to the construction activities, the operation of the PTA would generate additional tax revenues to the local and overall economy of Puerto Rico. This economic stimulus from the Project, when combined with the benefits from the value-added industries and related operations, would energize the economy of the region, creating jobs and reducing unemployment, thereby increasing the economic index in the south coast municipalities.

#### **4.22.13 Cumulative Impacts on Hazardous, Toxic and Radioactive Waste**

No cumulative impacts on hazardous, toxic, and radioactive waste are expected as a result of the proposed action and the alternatives considered.

#### **4.22.14 Cumulative Impacts on Dredging and Disposal of Dredged Material**

No cumulative impacts on dredging and disposal of dredged material are expected as a result of proposed action or the alternatives considered.

#### **4.22.15 Cumulative Impacts on Navigation**

- The Project is expected to cause cumulative impacts on navigation as a result of proposed action or the alternatives considered. Incremental volume of traffic induced by the industrial and trade activity surrounding the port terminals would increase the maritime risks of accidents involving material damages, spills, fires, and loss of human lives.
- Although the maritime risks associated to the transshipment operation, discussed in previous sections, have been quantified deemed small, the incremental volume of

maritime activity stemming from the maritime terminal activity would nevertheless increase the probability of collisions and navigation accidents in the Ponce Harbor.

#### **4.22.16 Cumulative Impacts on Infrastructure**

The Project would cause cumulative impacts on the infrastructure of the region, mostly induced by a rise in the demand for services, utilities and transportation facilities.

- The development of the PTA would induce cumulative impacts on the demand for potable water in the region, mostly driven by an increase in the demand for industrial applications and an expected increase in the residential developments in the area surrounding the Project. Demand surges would become more noticeable during times of high water demand or periods of prolonged drought. However, the water supplies in the region are ample for the current need, and several projects now under development would provide additional water to meet the future demands, including the PTA and its facilities.
- A corresponding increase in wastewater handling capacity is expected as well. However, as previously discussed, the regional waste water treatment facility in the vicinity of the Ponce Harbor has sufficient capacity to handle the increase in treated volume brought about by the Project as well as the cumulative flows caused by the increase in industrial activity and residential developments.
- With regards to the road network, the existing roads and accesses to the Ponce terminal can handle the induced vehicular traffic without major delays in the initial periods of port operation. Nevertheless, the Puerto Rico Highway and Transportation Authority is developing several highway projects along the south coast of the Island. The projects have been designed to provide capacity to not only the traffic levels caused by the anticipated maritime transshipment operations, but to handle the cumulative volumes of traffic caused by the industrial activities and domestic users in the region.
- Additional power would be required to meet the initial and long-term demands of the Ponce Bay area. Industrial and commercial activities would require improvements to the existing electric infrastructure and additional electric power, which would not be available for other potential users in the region.
- Finally, an increase in domestic solid wastes generation and handling capacity is expected due to the nature of the Project. However, as previously discussed, the solid waste landfill facility in the vicinity of Ponce, including the Yauco and Ponce landfills have sufficient capacity to handle the increase in solid waste volume induced by the Project as well as the cumulative flows caused by the increase in industrial activity and residential developments in the region.

#### **4.22.17 Cumulative Impacts on Marine Currents**

No cumulative impacts on marine currents are expected as a result of proposed action or the alternatives considered.

#### **4.22.18 Cumulative Impacts on Noise**

Cumulative impacts on noise are expected as part of the proposed action. Port-related activities would result in a rise in ambient noise caused by increased vehicular traffic, industrial operations, emergency power generators, and ship traffic among other sources. Although current and expected noise levels would be within regulatory limits, noises would be closer to

residential areas at Villa del Carmen and Playa de Ponce, requiring management and mitigation measures.

It is expected that noise levels would increase as the industrial activities flourish in the Ponce value-added industrial parks. It is expected however, that these levels would fall within regulatory limits for industrial generators and appropriate measures would be established to deter excessive ambient noise generation and propagation at this facilities.

#### **4.23 Unavoidable Adverse Environmental Impacts**

The analyses of the Applicant's Preferred Alternative (Ponce Bay only) show that the following impacts are considered unavoidable:

- The elimination of a portion of coastal lands for the construction of the docking channel and container parking area would be permanent and irreversible. This action would unavoidably result in the destruction of the flora and fauna within the approximately 45 acres to be excavated, but would create Essential Fish Habitat.
- Temporary increases in turbidity and resuspension of sediments from the construction of the proposed docks and piers, the dredging of the Ponce Harbor, and increased marine traffic.
- Removal and disposal of at least 5.5 MM m<sup>3</sup> of dredged material from the Ponce Harbor at the authorized Ponce ODMDS. As stated in the previous entry, this operation would cause temporary increases in turbidity and resuspension of sediments in selected areas at the Ponce Harbor.
- Irreversible utilization of fill material for the wetland reclamation near the proposed docking channel. This action would require the use of soil and construction aggregates, most of which would be obtained from the excavation of the docking channel, and if deemed necessary, from quarries in the region authorized by the DNER and/or the Municipality of Ponce.
- Irreversible utilization of natural resources such as fuels, lumber, cement, asphalt, metals, plastics, water, electricity, and land for the proposed activities and elements of the Project.

#### **4.24 Local Short-Term Uses and Maintenance of Long-Term Productivity**

The main objective of the proposed project is the development of an international commercial base for the transshipment of goods and materials in Puerto Rico. This effort represents an important development of infrastructure for the entire Island, particularly for the south coast, where the socioeconomic advantages of the Project would benefit the municipalities of the region. The construction and operation of the PTA would require some local short-term uses of the environment, which would in turn result in enhanced long-term productivity.

- Short-term uses of the environment include the use of soil, rock, stone and gravel for filling of wetlands and construction of the harbor facilities. There are certain risks to the environment associated with extraction of material from the earth's crust, including erosion and sedimentation, which, if unattended, would result in adverse impacts to the environment.

- The elimination of a portion of coastal lands for the construction of the docking channel and container parking area would be permanent and irreversible. The excavation would eliminate approximately 45 acres of land, but at the same time would establish the same amount of new marine bottoms.
- The use of heavy equipment during construction would cause some alterations to the soil and would result in a temporary increase in gas emissions to the air.
- The development of the value-added activities would necessitate the removal of the vegetative cover, temporarily exposing the soil and increasing the potential for erosion and sedimentation of nearby water bodies.

Notwithstanding these short-term impacts, the proposed project would result in a number of long-term benefits, such as:

- The creation of an estimated 5,000 direct and indirect jobs during the first year of operation.
- Greater access to foreign manufactured goods and increased capacity for exportation of local products to international markets.
- New incentives for the development of value-added activities such as manufacturing and assembly of products, as well as the promotion of other economic activities such as banking services, communications etc.

The economic revitalization of the region, where the unemployment rate is almost 13.6 %, (3.5 % higher than Puerto Rico), and where approximately two thirds of the families live below the Federal poverty level standards with a median annual income of \$8,500 per family.

#### **4.25 Irreversible and Irrecoverable Commitment of Resources**

The development of the PTA would require the irreversible commitment of certain natural and socioeconomic resources, both during the construction and operation phases of the Project:

- The construction of the docking channel pier and container parking area would require the removal of approximately 5.5 MM m<sup>3</sup> of soil and the fill of approximately 59 acres of wetlands near the Ponce Harbor. The later action would commit the use of soil, stone and gravel and other construction aggregates, which would be obtained from the docking channel excavation. The commitment of fill material for the Project would not constitute a significant depletion of this abundant natural resource.
- Disposal of the unused soil resulting from the construction of the docking channel would commit landfill space at the Ponce Landfill. These wastes, already characterized as non-hazardous, would most likely be disposed at this disposal facility. This would contribute to reduce the useful life of the landfill by approximately 4 percent of its expected life of 12 years (or approximately four months).
- The Project would result in the permanent loss about 45 acres of coastal lands as a consequence of the construction of the proposed docking channel. However, the additional channel area would be considered an Essential Fish Habitat, as it would constitute the creation of new habitat to promote the reproduction of fish and wildlife.

- Raw materials such as wood, sand, gravel, cement and steel, as well as any other material used for construction would be irreversibly committed by the Project. Similarly, cranes and other equipment for handling containers in the piers would also be committed.
- Approximately 0.3 to 0.5 mgd of water would be initially committed for use by the Project in the pier and value-added areas.

The commitment of natural and economic resources is necessary when undertaking infrastructure projects for the social benefit of the community. The proposed project would bring long-range economic and environmental benefits, mainly through the creation of new jobs and the overall revitalization of the regional economy, which justifies the investment in the proposed natural and economic resources.

#### **4.26 Environmental Commitments**

The following paragraphs summarize the environmental commitments stated by the Applicant as part of the proposed action, as described throughout this document:

##### **4.26.1 General Environmental Effects**

- Prevention of erosion and sedimentation consequences would be achieved through the development of Sediment and Erosion Control Plans, in accordance with the Federal and local requirements established by the EPA and the EQB.
- The Applicant will ensure compliance with the NPDES Phase II stormwater requirements for construction works. Temporary systems would be installed to control the erosion and sedimentation around the entire project area before construction begins.
- Draining dikes and temporary retention lagoons would be built to facilitate draining control inside and outside the project area, until permanent drainage systems can be installed. Temporary and permanent drainage structures would be designed to control runoff from rain events with frequencies of 25 to 100-year recurrence intervals, as required by the area and the nature of the activities. In areas where electric lines and other utilities may be affected, temporary erosion control systems would be installed on the work areas and any nearby wetlands or surface bodies of water.
- A landscape architect would plan the reforestation, according to the recommendations, suggestions and requirements established by the DNER, and it would be executed and supervised by a certified tree expert or landscaping professionals.
- An Environmental Inspector would be present at the sites during all the construction phases. The inspector would have the primary responsibility for ensuring that the construction is in compliance with applicable environmental laws and regulations.

##### **4.26.2 Fish and Wildlife Resources**

- Wetland mitigation measures will be executed by the Applicant to compensate adverse impacts brought about by the fill of 59 acres of mangrove and salt flat wetlands located adjacent to the proposed pier. Wetland potential mitigation strategies include, among others, the restoration and creation of new mangrove areas, and would favor the establishment of species that prefer this type of habitat

- Dredging activities will incorporate BMPs to minimize consequences of dredging and disposal on bottom communities.
- Additional habitats for aquatic birds would be created through the design of the infrastructure for the collection of stormwaters within the Project, which would include retention lagoons that can serve as habitats for locally occurring species.

#### **4.26.3 Marine Resources and Special Aquatic Sites**

- As previously mentioned, wetland mitigation measures will be executed by the Applicant to compensate adverse impacts brought about by the fill of 59 acres of mangrove and salt flat wetlands located adjacent to the proposed pier.

#### **4.26.4 Threatened and Endangered Species**

- The Applicant will implement a host of measures aimed at protecting the Antillean manatee:
  1. Installation of permanent signs near the pier area to identify marine zones designated for the protection of manatees.
  2. Coordination with the Ports Authority (PA) and the Coast Guard to increase the enforcement of the speed limit regulations in the port, with the DNER to control the use of recreational vehicles in the bay including water bikes and jet skis, where applicable.
  3. Development of a training program to educate employees about the presence of federally protected species in the port area and the importance of presenting them.
- Compliance with other requirement from the USACE as part of Section 7 Consultation with the USFWS.

#### **4.26.5 Wetlands**

- The Applicant has indicated that it would provide adequate compensation for the fill of wetlands in the Ponce Harbor. An accurate and consistent evaluation of the ecological value of wetlands within the proposed project area will be carried out in order to pursue an adaptive approach regarding the mitigation plan to be put in effect.

#### **4.26.6 Water and Sediment Quality**

- The Applicant proposes to implement BMPs to reduce and minimize the temporary effects of the fill activities on the environment. These measures could include the placement of barriers or curtains to lessen sediment diffusion during filling activities. Sheet piles would also be installed prior to the filling activities at the perimeter of the affected areas. Sheet piling consist of a series of panels with interlocking connections driven into the ground with impact or vibratory hammers to form an impermeable barrier.
- A Stormwater Pollution Prevention Plan and a Sedimentation and Erosion Control Plan would be prepared to comply with the permit requirements of the EQB and USEPA. The permit provides two levels of control: technology-based limits (based on the ability of dischargers in the same industrial category to treat wastewater) and water quality-based limits (if technology-based limits are not sufficient to provide protection of the water body). The Applicant would address contingencies and control measures to prevent discharge of these substances into US waters in accordance with the NPDES permit and other pertinent local and Federal regulations.

- Ballast water from ships is one of the largest pathways for the intercontinental introduction and spread of aquatic nuisance species (ANS). The National Invasive Species Act of 1996 established both regulations and guidelines to control the invasion of ANS. The existing rule establishes voluntary water management guidelines for ballast in US waters and establishes mandatory reporting and sampling procedures for nearly all vessels entering US waters. The Applicant will abide by these guidelines.
- The Federal Clean Water Act (33 USC 1322) requires that vessels traveling in waters under the jurisdiction of the US have "*Marine Sanitation Devices*" (MSD) that are certified by the USCG, to prevent wastewater with no treatment or with an inappropriate treatment, to be discharged into US waters. The Applicant will abide by these guidelines.

#### **4.26.7 Dredging and Disposal of Dredged Material**

- Dredging activities will incorporate BMPs to minimize consequences of dredging and disposal on water quality. Please refer to Appendix L for a summary of these measures.

#### **4.26.8 Stormwater**

- The exposed areas would be kept to a minimum and would remain in this condition for the least amount of time.
- Silt fences would be used as an erosion control measure. These fences typically retain 75% of the transported sediment, and would let the water continue flowing. With the implementation of fences and soil stabilization measures, the water turbidity would be reduced up to 70%.
- In all cases, the erosion control measures would be carefully observed during the construction activity in order to ensure their efficiency. Once the soil is stable after the construction activities, the erosion control measures would not be necessary anymore.
- Improvements to the existing drainage system would be made as part of the Project. These improvements would follow the BMPs and would comply with the design parameters of the Puerto Rico Planning Board.

#### **4.26.9 Noise**

- Noise mitigation measures will be implemented during project construction and operation to lessen the adverse impacts caused by the operation of the cranes and trasterainer lifts. Noise mitigation measures would include source controls as well as structural barriers to obstruct the effects of construction machinery and port operation noise on nearby residential receptors.

#### **4.27 Natural or Depletable Resources**

Development of the Project would require utilization of non-renewable natural resources, including fill material, cement, steel, fuels and lubricants. To a certain extent, the power needed for the Project also can be considered non-renewable.

- The principal non-renewable material used in the Project would be the fill material that would be used to reclaim 59 acres of wetlands near the Ponce Harbor. It is estimated that the excavation of the docking channel, which would be located adjacent to the wetland, would supply a portion of this material, estimated in 1.9 MM m<sup>3</sup>. However, some of this material may have to be obtained from adjacent areas within the Project,

such as the Percon property. The use of this material for fill, the construction of the pier and container storage area would partially deplete the resource, regardless of its origin. This non-renewable natural resource cannot be replenished once extracted and used.

- Cement, gasoline, diesel fuel and lubricants, as well as any other petroleum products used for the construction, or to operate equipment at the ports, are also considered depletable non-renewable resources.

#### 4.28 Reuse and Conservation Potential

The Applicant investigated the potential for reuse of the materials to be generated from the excavation or dredging activities as a result of the elements of the Project. Relative to this:

- Approximately 1.9 MM m<sup>3</sup> of the total 3.4 MM m<sup>3</sup> of soils to be excavated from the area for the docking channel would be reused for fill of the nearby wetlands and raising the elevation of uplands at the Percon parcel,
- None of the material to be dredged from the Ponce Harbor, estimated at 5.5 MM m<sup>3</sup>, is suitable for reuse within the project areas, or by other projects and/or activities in the vicinity of the Port of Ponce. The material has a high content of silts and clays, which makes it unsuitable for construction projects. A potential use would be for landfill daily cover. However, at the Ponce Landfill, where transport of some of the material could be undertaken, there is an abundance of readily available clay-limestone.
- Recycling programs would be instituted by the PTA for the solid wastes to be generated within the project areas, in compliance with local laws.
- The Applicant would develop mitigation and conservation measures to compensate for the loss of wetlands or other natural resources in the area of the Project.

#### 4.29 Compatibility with State Objectives

The proposed project is compatible with the objectives and public policies of the Commonwealth agencies with authority over the development of projects of this nature.

##### 4.29.1 Environmental Quality Board (EQB)

The EQB is responsible for the enforcement of the basic environmental laws in Puerto Rico, and for the administration of certain Federal programs delegated by EPA for the protection of the quality of the water, air, land and other components of the natural environment.

- ***Environmental Public Policy Act of Puerto Rico (Law No. 9 of 1970, as amended.*** The Environmental Public Policy Act sets forth the environmental public policy of the Commonwealth of Puerto Rico and its dependencies. The Act created the EQB, which was assigned the authority to implement this public policy. Article 9 of the Act declares that it is the responsibility of the Commonwealth to promote the general well being of its entire people; to use every practical means to create and maintain the conditions under which humanity and nature can exist in productive harmony; and to fulfill the social and economic needs of present and future generations. Article 4(C) of the Act mandates all government entities to comply with this public policy, to take into account environmental considerations in decision-making, and to submit a detailed written statement for

decisions that have significant impact on the environment. Conforming to the law, the Applicant submitted in August 2003 to the EQB a Final Environmental Impact Statement (FEIS) for the Project. The Applicant is now preparing an amendment to the local FEIS to reflect the current changes to the Project as described in this SDEIS.

- **Federal Clean Water Act of 1972, as amended.** As indicated earlier, Section 401 of the Clean Water Act requires that, prior to the issuance of a permit under Section 404 of the Act, a Water Quality Certificate from the state agency with jurisdiction over water pollution must be obtained. In Puerto Rico this responsibility is under the jurisdiction of EQB. The Applicant submitted an application to the EQB for the WQC as required by the Act, and would coordinate with that agency the issuance of the certificate.

#### 4.29.2 Department of Natural and Environmental Resources (DNER)

The DNER is responsible for the implementation several laws and regulations related to the protection of natural resources in Puerto Rico. The applicability of these laws and regulations relative to the proposed project is discussed below:

- Regulation for the Use, Surveillance, Conservation and Management of the Territorial Waters, Submerged Lands, and the Maritime Zone. This regulation was promulgated to implement Section 19, Article VI of the Constitution of Puerto Rico, which states that it shall be the public policy of the Commonwealth to conserve, develop and use its natural resources in the most effective manner possible for the general welfare of the community.
- **Law Number 23 of June 20, 1972 (*Organic Act of the Department of Natural Resources*).** This law grants the DNER the authority to implement the constitutionally mandated public policy, but also the surveillance and conservation of the territorial waters and its submerged lands, and the maritime zone.
- **Law Number 6 of February 29, 1968.** This law was delegated initially to the DTOP and now to the DNER responsibility for the conservation of coastal resources, including the authority to investigate and control floods; the surveillance, conservation and cleanup of beaches; control of sand and gravel extractions from beaches; delineation and reparation of the maritime zone; and the surveillance and care of mangrove forests under Commonwealth ownership. The provisions of this regulation do not apply to “... *harbors and their waters, piers on public property, submerged lands in harbors and under all piers and their waters, the maritime zone within any port zone duly delineated by regulation, and all buildings therein under the jurisdiction of the Ports Authority; or under the jurisdiction of any municipal entity...*”. This exclusion clearly exempts the proposed project from compliance with this Regulation since the Port of Ponce is under the jurisdiction of the Municipality of Ponce.
- **Regulation to Direct the Extraction of Materials from the Earth’s Crust.** Law Number 144 of June 3, 1976 grants the DNER the authority to regulate the issuance of permits for the extraction, excavation, removal and dredging of earth’s crust components. Among these are included sand, gravel, rock, earth, silica, clay and other similar constituents, which are not regulated as economic minerals in private and public lands. The proposed project requires the extraction of soil for the construction of a docking channel at the Ponce Harbor.

#### **4.29.3 State Historic Preservation Office (SHPO)**

Section 2 of the Historic Preservation Act of 1966 (16 USC 470) sets forth the public policy of the Federal Government on historic preservation, including:

- To contribute in the preservation of historic and prehistoric resources outside of Federal property, and to encourage to the maximum the work of institutions and individuals involved in their preservation.
- To encourage the preservation of historic resources by public or private entities, and to promote the utilization of all useful elements of the nation's historic environment.
- To assist state and local governments in expanding their historic preservation programs and activities.

In Puerto Rico, the State Historic Preservation Office (SHPO), ascribed to the Office of the Governor, administers the national program. SHPO is responsible for the review and analysis of archaeological and cultural resources documents related to projects with a Federal component (i.e. the need for a Federal permit or funds) submitted as part of the local environmental evaluation process, and for the coordination of the participation of the Commonwealth in the implementation of the Act and its regulations.

#### **4.29.4 Institute of Puerto Rican Culture (ICP)**

One of the main objectives of the Institute of Puerto Rican Culture (ICP) is the preservation of Puerto Rico's cultural values. As such, the ICP has the responsibility to see for the preservation and restoration of structures with historic and cultural value.

- **Law 112 of July 20, 1988.** This law created the Council for the Protection of Puerto Rico's Terrestrial Archaeological Heritage, ascribed to the IPC. The Council has authority to approve studies and archaeological excavations and research conducted on land, and supervises compliance of its resolutions. The Regulation for the Submittal and Archaeological Evaluation of Construction and Development Projects was adopted under this law. The principal objective of this Regulation is to insure adequate protection and study of Puerto Rico's terrestrial archaeological heritage, through the establishment of minimum criteria to guide different phases of archaeological research subject to regulation.

In compliance with the objectives of Law 112, Phase IA investigations of the terrestrial, and Phase IA, IB and II of the submarine archaeology of elements of the project sites were completed. A copy of these studies, along with their conclusions and recommendations, were submitted to the ICP for approval.

#### **4.29.5 Puerto Rico Planning Board (PB)**

The Planning Board is responsible for implementing the public policy on land use throughout the Island, among other responsibilities. The board has issued a series of regulations with the objective of achieving a controlled development of the land resources in Puerto Rico. The pertinent regulations relative to the Project include:

- **Comprehensive Development Plan of April 1979.** Chapter II, Sector III sets forth as public policy of the Commonwealth to foster external commerce, and with the US to broaden the industrial and commercial capacity of the Island, as well as a source of employment. Among the specific objectives of this public policy are:

- The development of infrastructure capable of augmenting the commercial interchange with foreign countries and promoting the exportation of locally produced products; and
- Develop Puerto Rico into an international center for commerce and services taking maximum advantage of its geographical position and transportation facilities.
- Chapter IV, Sector I establishes the development of infrastructure as an important source of direct and indirect employment, both during the construction phase as well as during basic services provision activities. Similarly, it encourages the creation of additional jobs as promoter of other economic activities. This chapter also emphasizes the vital importance of shipping to the economic development of the Island, since it is the main venue for the transportation of goods and products for commerce and industry.

The Commonwealth's public policy on transportation is the creation of an integrated, balanced and coordinated system encompassing all the means and elements of transportation. Similarly, according to the Plan, both air and maritime transportation should respond to the growing demand for these services.

The proposed project is an initiative of the Commonwealth of Puerto Rico, not only to serve the domestic demand for maritime transportation services, but also to allow the Island to compete as an international trade center. In addition, construction of the PTA would bring economic opportunities to thousands of Island residents, both during its construction and operation phases.

- ***Four Year Investments Program of the Planning Board dated November 1997.*** One of the main objectives of the Four Year Investments Program is to improve maritime and air transportation systems to favor the development and expansion of commerce, industry and tourism. As indicated before, the proposed project would not only serve the need for development and expansion of these three elements, but would also give Puerto Rico a competitive advantage for the establishment of an international trade center.
- ***Siting Requirements in Floodable Areas (Planning Regulation Number 13).*** Portions of the proposed project would be built in floodable areas classified as Zones 1M and 2 by the PB.
  - In the Ponce Bay area, the PB classifies the proposed construction sites as Zones 1M and 2. Zone 1M is used to identify high-risk areas, subject to flooding by wave action, which are located along the coast. Zone 2 includes the area of the floodway subject to floods with a frequency of 100 years where construction is allowed as long as backwater effects do not exceed 0.3 meters.
  - Construction in areas classified as Zone 2 and/or 1M would be conducted in compliance with the design criteria required for the type of location, consistent with the Flood Zone Regulation. Construction of the Project does not represent a risk to public safety inasmuch that it would comply with the design criteria required for this type of location.

- ***Puerto Rico's Land Use Plan – Public Policy Goals and Objectives for Industrial and Infrastructure Development.*** The policy and goals of the Commonwealth for industrial development include the siting of new developments in strategic areas whose location, characteristics, infrastructure and services are better adapted for that type of use, in harmony with the general objective of attaining a full and judicious use of the land and its natural resources. Within this goal, the public policy to concentrate industrial developments on locations appropriately adapted for such uses, while fostering maximum intense use of the land.
  - The project site lies within an industrial zone with the necessary infrastructure to attend its needs and uses. This characteristic provides for the best use of the land, while assuring it's most intensive use.
  - The goals and public policies of the Commonwealth in the area of infrastructure include the development of projects to attain a level of economic strength and expansion that could stimulate a harmonious and complementary relationship among all regions of the Island. These goals also have the objective of modifying the external perception of Puerto Rico as a good place for investments, using scheduling and infrastructure construction as instruments of land use planning to plan and promote comprehensive development.
  - Within this goal, one of the objectives of the Plan is the development of each of the components associated with socioeconomic activity: tourism, industry, commerce, construction and agriculture, among others. Section 23.00 of the Land Use Plan establishes the following public polices:
  - Complement marine, air and terrestrial transportation to respond to real demand; and
  - Set aside coastal lands for port use, expansion, improvements and implementation of future plans.

In accordance with these public policies, construction of the PTA would:

- Attend domestic and international demands and develop an infrastructure to provide more and better marine transportation services; and
  - Use of industrial coastal lands in Ponce for the long-term improvement of existing facilities and services.
- ***Puerto Rico Coastal Zone Management Program.*** The Planning Board approved the Puerto Rico Coastal Zone Management Program (the CZMP, or "Program") on June 22, 1976. The Program, developed under the Coastal Zone Management Act (16 U.S.C §1451 et seq.), guides state agencies in decision-making and actions pertaining to developments in private and public properties in the coastal zone. Among the principal objectives of the Program are:
    - The protection of natural resources in the coastal zone, including wetlands, flood zones, estuaries, beaches, dunes, coral reefs, fish and wildlife and their habitats;
    - Management of coastal development to minimize the loss of life and property due to inappropriate use of the land;

- Assign priority to coastal-dependent uses and siting procedures for major recreational facilities, among others; and
  - Provide coastal access for recreation.
- The CZMP divides the Island in eight coastal sectors. The proposed PTA area is located within the south sector, which encompasses the area between Río Grande de Patillas and Río Tallaboa in Peñuelas. The south sector has been characterized as relatively dry.
- One of the Program's main tasks is to identify coastal problems and their characteristics. For each problem identified, the Program recommends management measures to resolve the issues, including the application of existing public policies, past actions taken by state and Federal agencies, and new areas of opportunity requiring future action. A major element of the Program is the identification of coastal areas suitable for coast-dependent industrial development.
- The CZMP acknowledges that there are certain projects that are critical to the economic development of Puerto Rico, and that some of these projects need to be located on or near the coast. Ports, for example, need to be located on the coast in order to function properly. In view of the coastline configuration and water depth characteristics in Puerto Rico, the areas where some of these water-dependent industries can be located are limited. The most suitable areas for port development are located along the south and west coasts, between Yabucoa and Punta Rincón. The Commonwealth identified potential coastal sites where these industries can be established and developed. The Ponce Harbor was recognized as one of these sites.
- Conflicts may arise when some of these sites are also important for other purposes, in particular when valuable natural resources are present. In some cases, through careful planning, many, if not all of these conflicts can be resolved without harming the environment or its natural resources.
- The Program enunciates several policies to deal with coastal-dependent industry:
  - Urban development shall, to the maximum extent practicable, be located away from the shorefront;
  - Coastal sites designated by the PB as suitable for coastal-dependent industries shall, to the maximum extent practicable, be protected against other kinds of development and reserved for coastal-dependent industry except in those instances where natural systems destruction is unacceptable.
- Sites reserved for coastal-dependent industry, but which are also important from the standpoint of natural values, shall be developed for industry only after the fullest practicable consideration of location and design alternatives available to protect natural systems.
- The PTA is compatible with the public policies of the CZMP related to coastal-dependent developments. It is important to point out that the proposed project would be located in an area currently used by industry, that the project site is relatively far from urban developments, and that it was previously impacted by the construction of industrial facilities.

- The Applicant submitted to the PB the application for the certificate of consistency with the CZMP, and would coordinate its issuance with the agency.

#### **4.30 Compliance with Federal Environmental Requirements**

##### **4.30.1 National Environmental Policy Act of 1973 (NEPA)**

All relevant environmental information on the PTA was compiled in this SDEIS. Copies of the DEIS and its appendices were circulated to the pertinent Federal and local agencies. In parallel, PAA filed with the DNER a Joint Federal/Commonwealth Permit Application for the potential permits required for the Project under Sections 10, 103 and 404 of the pertinent laws; for the Water Quality Certificate from the EQB; and the CZMP conformance from the PB. The USACE published in the local media and the Federal Register on August 28, 2001 a Public Notice to inform the general public of its intent to prepare and circulate the DEIS for the Project. The purpose of these announcements is to provide an open forum for comments relative to the Project and the DEIS to any agency, organization or individual.

This SDEIS was prepared in response to modifications in the project definition brought about by the consulting process under which the DEIS was analyzed and the comments resulting from this process. The USACE also created a Web page under the following address:

**<http://www.saj.usace.army.mil/permit/EIS-Las-Américas/CONRTENT.html>**

Additional information is available to the general public at this site, and written comments can be submitted. Upon completion of the evaluation process of the SDEIS, after consideration of all comments and suggestions relative to the Project, either from the announcements in the local media, the Federal Register or the Web page, USACE will incorporate the pertinent information into a Final Environmental Impact Statement (FEIS). Preparation and publication of the FEIS would complete the requirements under NEPA.

##### **4.30.2 Endangered Species Act of 1973 (ESA)**

Section 7 of the Endangered Species Act (ESA) requires that Federal agencies, in consultation and with the assistance of the Secretary of the Interior, insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of habitat of such species. Since the range of endangered species includes terrestrial as well marine species, both the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) play active roles in Section 7 consultations.

In early scoping with the USFWS and the NMFS, a total of 18 threatened and or endangered species were identified in the general vicinity of the Project. The Section 7 consultation process includes the preparation of a Biological Assessment by the proponent agency and a Biological Opinion prepared by the USFWS and the NMFS, which outlines any mitigation requirements and measures that must be undertaken by the potential permit holder. The USACE has prepared an Amended Biological Assessment for the Project and has initiated an informal Section 7 consultation as required by the Act.

##### **4.30.3 Fish and Wildlife Coordination Act of 1958**

The Fish and Wildlife Coordination Act (FWCA) was enacted to assure that fish and wildlife resources receive equal consideration with other values during the planning of water resources development projects, including navigation. The Act requires Federal agencies to consult with

the USFWS whenever they plan to conduct, license, or permit an activity involving the impoundment, diversion, deepening, control or modification of a stream or body of water. The purpose of this process is to promote conservation of wildlife resources by preventing loss of and damage to such resources and to provide for the development and improvement of these resources in connection with the agency action. Coordination under the FWCA has been initiated as part of the Clean Water Act's Section 404 permitting process.

#### **4.30.4 National Historic Preservation Act of 1966 (Inter Alia)**

The National Historic Preservation Act (NHPA) created the Advisory Council on Historic Preservation to advise the President on matters related to historic preservation. The Council also provides a forum to private citizens, local communities, and other concerned parties, to influence Federal programs and decisions as they impact historic properties and their attendant values. Section 106 of the NHPA requires that all Federal agencies take into account the effects of their actions on historic properties, and provide the Council with a reasonable opportunity to comment on those actions and the manner in which Federal agencies are taking historic properties into account in their decisions. The effects may be any change in the qualities that make the property eligible for the National Register of Historic Places. These properties include historic, archaeological, architectural, engineering, or cultural sites or objects. The Section 106 process must be completed before the USACE issues any authorization under its jurisdiction.

The Archeology and Historic Preservation Act of 1960 and 1974 directs Federal agencies to notify the Secretary of Interior whenever they find that a Federal or federally assisted, licensed, funded, or permitted project may cause loss or destruction of significant prehistoric or archaeological data. The Secretary may take action necessary to recover and preserve the data prior to the commencement of the Project. These actions usually take the form of imposing certain preservation obligations upon the permit holder in the form of mitigating measures incorporated into the EIS and final permit conditions.

The Project is not expected to cause loss or destruction of significant prehistoric, historic, archaeological or cultural properties, structures or data. The Project is in compliance.

#### **4.30.5 Clean Water Act of 1972 (CWA)**

The Clean Water Act (CWA) derives from a 1977 amendment to the Federal Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants into US waters. Section 404 of the CWA establishes programs to regulate the discharge of dredged and fill material into US waters, including wetlands. Activities in US waters include fills for development, water resources projects, infrastructure development, and conversion of wetlands to uplands for farming and forestry.

The basic premise of the Section 404 Permit program is that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters will be significantly degraded. Before obtaining a permit under Section 404, it must be demonstrated that:

- Steps have been taken to avoid wetland impacts where practicable;
- Potential impacts to wetlands have been minimized; and
- Compensatory mitigation for any remaining, unavoidable impacts through restoration or creation of wetlands is provided.

The Applicant has performed an appropriate inquiry under 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material pursuant to 40 CFR Part 230.

Section 401 of the Act requires that, prior to the issuance of a permit under Section 404, the Applicant must obtain a Water Quality Certificate (WQC) from the State Agency responsible for regulating water pollution. In Puerto Rico this agency is the EQB. The Federal/Commonwealth Joint Permit Application was filed by the PAA with the DNER, including the appropriate WQC to also comply with Section 401 requirements. According to EQB regulations, a Section 401 water quality certification cannot be applied for until the NEPA process is complete.

#### **4.30.6 Clean Air Act of 1972**

The Clean Air Act is a comprehensive Federal law that regulates air emissions from area, stationary and mobile sources. This law authorizes EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. The goal of the act was to set and achieve NAAQS in every state. The setting of maximum pollutant standards was coupled with directing states to develop state implementation plans applicable to appropriate industrial sources in the state. The Act was amended in 1977 primarily to set new dates for achieving NAAQS since many areas of the country had failed to meet the original deadlines.

The DEIS addresses potential air emissions associated with the development and operation of the PTA. The proposed project would not be a major source of air emissions. Any emissions associated with the Project would be minor and in compliance with the NAAQS. The Project is in compliance with this Act.

#### **4.30.7 Coastal Zone Management Act of 1972 (CZMA)**

In response to the intense pressures for development in the coastal zone, and its importance of the welfare of the US, Congress passed in 1972 the Coastal Zone Management Act (CZMA). The Act affirms a national interest in the effective protection and development of the coastal zone by providing assistance and encouragement to coastal states and territories to develop and implement regional programs for managing their coastal zones. The purpose of the CZMA was to establish a national policy and develop a national program for the management, beneficial use, protection and development of the land and water resources of the Nation's coastal zone. The Puerto Rico Coastal Zone Management Program (PRCZMP) was approved in September 1976.

The term "*Federal consistency*" refers to the requirement in Section 307(c) of the CMZA that identifies several types of Federal actions that must be consistent with the approved Coastal Zone Management Program. In Puerto Rico, the Planning Board is the agency designated to administer Federal consistency procedures.

All Federal projects to be carried out in the coastal zone are subject to consistency review. The Act also requires that any non-Federal applicant for a Federal license or permit to furnish a consistency certification that the proposed activity will comply with the local coastal zone management program. Generally, no permit will be issued until the Planning Board has concurred with the non-Federal applicant's certification.

The proposed project involves dredging and activities within the coastal zone. The PRCZMP established the following criteria for permitting these activities:

- Diking or filling of coastal waters shall, to the maximum extent practicable, be permitted only where necessary and where there is no less environmentally damaging alternative for port or airport expansion or coastal-dependent facilities;

- Dredging of coastal waters shall to the maximum extent practicable be limited to port facilities, navigational channels, turning basins, vessel berthing and mooring areas

In view of the above, it is anticipated that the proposed project would be consistent with the PRCZMP.

#### **4.30.8 Farmland Protection Policy Act of 1972**

The purpose of the Farmland Protection Act is to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. The Act insures, to the maximum extent practicable, that Federal programs are administered in a manner that is compatible with State, unit of local government and private programs to protect farmland.

The proposed project would be located in an industrial zone. Therefore, no unnecessary and irreversible conversion of farmland to non-agricultural uses would take place. This Act is not applicable.

#### **4.30.9 Wild and Scenic River Act of 1968**

The Wild and Scenic River Act declared as policy of the US that certain selected rivers of the Nation, with immediate environments that possess outstanding and remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, will be preserved in free-flowing condition. The Act also states that their immediate environments will be protected for the benefit and enjoyment of present and future generations. The purpose of this Act is to institute a national wild and scenic rivers system, designating the components of that system, and prescribing the methods and standards by which additional components may be added to the system from time to time.

There are no designated wild and scenic rivers within or near the proposed project site. Therefore, this Act is not applicable.

#### **4.30.10 Marine Mammal Protection Act of 1972**

The Marine Mammal Protection Act (MMPA) was enacted to protect and manage marine mammals and their products. The primary authority for implementing the act is assigned to the USFWS and the NMFS. The Act expresses the intent of Congress that all marine mammals (regardless of protective status) be protected and encouraged to propagate in order to maintain the health and stability of the marine environment. It also imposes a perpetual moratorium on the harassment, hunting, capturing or killing of marine mammals and marine mammal products without a permit.

Consultation with the USFWS and the NMFS in the context of the MMPA would occur jointly with Section 7 consultation under the Endangered Species Act. The results of the MMPA consultation would be incorporated into the same Biological Opinion issued by the resource agencies outlining the authorized level of "taking." These protective measures will be included and formalized in the permit conditions that would be issued by the USACE. An Amended Biological Assessment addressing potential impacts to marine mammals, among other species, has been prepared and submitted pursuant to a Biological Opinion from the USFWS and the NMFS.

#### **4.30.11 Estuary Protection Act of 1968**

The Estuary Protection Act of 1968 highlights the values of estuaries and the need to conserve their natural resources. It authorized the Secretary of the Interior, in cooperation with other Federal agencies and the States, to study and inventory estuaries in the US, and to determine whether such systems should be by the Federal Government and protected. The Secretary was also required to encourage State and local governments to consider the importance of estuaries in their planning activities related to Federal natural resource grants.

The areas proposed for development of the elements of the PTA are outside of any estuary of importance. Although various rivers discharge into, or near, the Ponce Bay, forming riverine estuaries, none of the proposed structures would impact these estuaries. The natural environment within the project area is maritime but distant from the mouth of the rivers in the zone, and there is no federally owned estuarine lands or habitats in the vicinity. Compliance with this statute need not be further considered.

#### **4.30.12 Federal Water Project Recreation Act**

The Federal Water Project Recreation Act (FWPRA) declares the intent of Congress that recreation and fish and wildlife enhancement be provided full consideration in Federal water development projects. This is conditioned to non-Federal local sponsors agreeing to bear part of the costs allocated for recreation and fish and wildlife enhancement, administer project land and water devoted for these purposes, and bear all costs of operation and maintenance.

The proposed project is not a Federal water development project. Hence, compliance with the FWPRA is not required.

#### **4.30.13 Fishery Conservation and Management Act of 1976**

This law, also known as the Magnuson Fishery Conservation and Management Act, established a 200-mile fishery conservation zone and Regional Fishery Management Councils comprised of Federal and State officials, including the Fish and Wildlife Service. The concept of a fishery conservation zone was later changed to the Exclusive Economic Zone (EEZ), with the inner boundary being the seaward boundary of coastal states (10.35 miles for Puerto Rico). The Act provides for management of fish and other species in the EEZ under plans drawn up by the Regional Councils (Caribbean Fishery Management Council, CFMC in Puerto Rico).

Section 305 of the Act requires the NMFS to coordinate with and provide information to other Federal agencies on Essential Fish Habitat (EFH), defined in the Act as those waters and substrate necessary to the fish for spawning, breeding, feeding, or growth to maturity. According to the CFMC, in Puerto Rico and the US Caribbean, EFH includes virtually all marine waters and substrates from the shoreline to the seaward limit of the EEZ.

#### **4.30.14 Submerged Lands Act of 1953**

Under the Submerged Lands Act of 1953, the location of the energy and mineral resources determines whether or not they fall under state jurisdiction. Specifically, the Act granted states title to the natural resources located within three miles of their coastline (three marine leagues for Puerto Rico). For the purpose of the Act, the term "*natural resources*" includes oil, gas, and all other minerals.

The proposed project would be located over submerged lands controlled by the State. Therefore, the Act does not apply.

#### **4.30.15 Coastal Barriers Resources Act and Coastal Barrier Improvement Act of 1990**

The Omnibus Budget Reconciliation Act (OBRA) was passed in 1981. Section 341 of that Act amended the National Flood Insurance Act of 1968, to prohibit the issuance of Federal flood insurance coverage after October 1, 1983, for any new construction or substantial improvements of structures located on undeveloped coastal barriers. The OBRA set a precedent for withdrawal of Federal financial assistance for development as one means of protecting coastal barriers and reducing recurring Federal costs associated with their development and reconstruction.

In accordance with the OBRA, in 1982 the Secretary of the Interior submitted to Congress a report that made recommendations relating to the term coastal barrier and listed 188 sites recommended for designation as undeveloped coastal barriers under OBRA. In the fall of 1982, acting on the Secretary's recommendations, Congress passed the Coastal Barrier Resources Act (CBRA).

The CBRA retained the prohibition under OBRA against issuing Federal flood insurance for new construction of substantial improvements on structures on undeveloped coastal barriers. However, it expanded the scope of the prohibition of Federal expenditures and financial assistance to include all Federal programs that support development on the undeveloped coastal barriers within the Coastal Barrier Resource System (CBRS).

In 1990, Congress enacted the Coastal Barrier Improvement Act, which greatly expanded the CBRS to include Great Lakes units and otherwise protected areas, including public or private lands that are held for conservation purposes. After the Coastal Barrier Improvement Act, the System contained approximately 1.3 million acres of undeveloped coastal barrier fastland and associated aquatic habitat, 1,200 miles of shoreline, and 585 units.

In Puerto Rico, the CBRS contains 41 units totaling 19,381 acres distributed along 51.4 miles of shoreline. The proposed site is not within any of the listed units, and therefore compliance with the CBRA is not required.

#### **4.30.16 Rivers and Harbors Act of 1899**

Section 10 of the Rivers and Harbors Act of 1899 as amended (RHA) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. It requires that a permit be issued by the Secretary of the Army prior to the construction of any wharf, pier, dolphin, bulkhead or other structures in any port, harbor, canal or other US waters. Prior authorization is also required to excavate or fill, or in any manner alter the condition of any port, harbor or channel of any navigable water of the United States.

#### **4.30.17 Anadromous Fish Conservation Act**

Anadromous fish species would not be affected by the proposed project. The Project has been coordinated with the NMFS and compliance with the Act is not required.

#### **4.30.18 Migratory Bird Treaty Act and Migratory Bird Conservation Act**

No migratory birds would be affected by the proposed activities. Compliance with the Act is not required.

#### **4.30.19 Marine Protection, Research and Sanctuaries Act**

Section 103 of the Marine Protection, Research and Sanctuaries Act (MPRSA) specifies that all proposed operations involving the transportation and dumping of dredged material into ocean waters have to be evaluated to determine the potential environmental impact of such activities. In accordance with Section 103, the USACE is the permitting authority for dredged material handling, subject to EPA review. Environmental evaluations have to comply with applicable criteria developed by the EPA.

The Project, as proposed, would involve offshore disposal of material dredged from the Ponce Bay navigation channel. Prior to any disposal of dredged material from the Ponce Harbor at the designated ODMDS, EPA must approve a “*Site Management and Monitoring Plan*” for the proposed action. On November 4, 2003 EPA approved the Site Management and Monitoring Site for the Ponce Harbor Ocean Dredge Material Disposal Site.

#### **4.30.20 E.O. 11990, Protection of Wetlands**

Executive Order 11990 mandates Federal agencies to take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. The Order, however, does not apply to the issuance by Federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-Federal property.

#### **4.30.21 E.O. 11988, Flood Plain Management**

Executive Order 11988 requires Federal agencies to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains. The regulations require that any new development within the parcels proposed for port operation and value-added activities in Ponce would have to be designed following specific construction standards, criteria and guidelines aimed at minimizing potential harm to the floodplain, as well as reducing the impacts of floods on human safety and the general welfare of the surrounding population.

Final construction plans have not been completed. The Project is not yet compliant with the Executive Order.

#### **4.30.22 E.O. 12898, Environmental Justice**

Executive Order 12898 issued by President William J. Clinton indicates, among others aspects that: “*each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations...*”. Moreover, the executive order states that all Federal agencies “*whenever practicable and appropriate, shall collect, maintain and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding facilities or sites expected to have a substantial environmental, human health, or economic effect on surrounding populations, when such facilities or sites become the subject of substantial Federal environmental administrative or judicial action. Such information shall be made available to the public...*”.

The Environmental Justice Analysis prepared for the Project concluded that locating the PTA at the Playa Ward in Ponce does not constitute a socioeconomic discrimination that would violate Environmental Justice precepts as described in Executive Order 12898. The Project is in compliance with the Executive Order.

#### **4.30.23 E.O. 13089, Coral Reef Protection**

Executive Order 13089 established a Federal policy for the protection of coral reefs. All Federal agencies whose actions may affect US coral reef ecosystems shall: (1) identify their actions that may affect coral reefs; (2) utilize their programs and authorities to protect and enhance the conditions of such ecosystems; and (3) to the extent permitted by law, insure that any actions they authorize, fund, or carry out will not degrade the conditions of such ecosystems.

There are no significant coral reefs formations within the potential dredging site at the Ponce Bay, and no degradation of coral reefs are anticipated. The Project is in compliance with the Executive Order.

#### **4.31 Conflicts and Controversies**

Currently, the most sensitive possible area of controversy associated with the Project includes the fill of 59 acres of wetlands near the Port of Ponce and the potential dredging of the Ponce Bay, including the navigation channel, with the ocean disposal of the dredged material. The fill would eliminate a wetland composed of mangroves and salt flats, while the dredging would temporarily eliminate any benthic flora and fauna in the harbor. The ocean dumping of the dredged material could impact marine species in the disposal zone.

- The project design would take into consideration the adverse effects that result from fill and dredging activities, thereby adjustments are planned to avoid and minimize, to the maximum extent practicable, the adverse effects associated with this action.
- The impacts to mangroves and associated salt flats have been estimated in approximately 59 acres, located east of the Ponce Harbor. Mitigation for the loss of benthic habitat may be required to maintain the ecological integrity of these systems. The coastal corridor between Punta Guayanilla and Ponce contains natural resources of great value and provides excellent opportunities for restoration, enhancement and protection of fish and wildlife habitat. Similarly, the La Esperanza sector and its environs presents itself as another area of opportunity, where mangrove restoration measures would be implemented, as well as additional measures to assure the preservation and conservation of dry forest areas, endangered species, marine bird nesting areas, and basin mangroves.
- Relative to the dredging of the Ponce Harbor, the navigation channel and turning basin are essentially devoid of permanent organisms, since dredging is required periodically, the last occurring in 1986. Dredging of the harbor would require a Section 404 Permit, while the disposal of the dredged material would require a Section 103 Permit. Prior to any disposal of dredged material from the Ponce Harbor at the designated ODMDS, EPA must approve a "*Site Management and Monitoring Plan*" for the proposed action.

#### **4.32 Uncertain, Unique or Unknown Risks**

The development of the PTA does not involve uncertain or unknown risks. The PTA has been planned taking into account the economic, physical, environmental and social aspects and requirements of the proposed action, to insure its feasibility with the least risks possible. As previously discussed, it has been demonstrated that the Project is an attractive enterprise, financially, economically, and commercially feasible (Frankel, 2000).

The possible environmental and socioeconomic risks associated with the Project are methodically anticipated, evaluated and discussed in this SDEIS, and it is concluded that they are predictable and manageable under current laws and regulations. The development of the Project does not require the use of experimental techniques or methods that would present uncertain or unknown risks.

#### **4.33 Precedent and Principles for Future Actions**

Although the PTA is unique in its class in Puerto Rico, it would not set a precedent that determines or justifies future actions. Its operations would be similar to those of other ports on the island that currently handle containership cargo, such as San Juan and Ponce. The main difference between current and proposed operations is the volume of cargo and maritime traffic. It is anticipated that approximately 600 mainline containerships would use the port to reach the goal of 1.5 million TEU's per year. This goal assumes that one third of half of the containers are loaded and unloaded during each ship's entry to port, and that Puerto Rico is the final destiny of 15 % of the cargo in containers. It is also anticipated that maritime traffic would increase from 300 to 500 ships per year to 1,200 ships per year when the PTA is in full operation.