

MEMORANDUM FOR RECORD

SUBJECT: Department of the Army Environmental Assessment and Statement of Findings for the Above-Numbered Permit Application

1. Applicant: Mr. Ovidio Garcia-Amador  
PO Box 340  
Mayagilez, PR 00681-0340

Berrios Realty, Inc.  
Mr. Florencio Berrios, President and CEO  
PO Box 1658  
Cidra, Puerto Rico 00739

2. Location, Project Description, Existing Conditions:

a. Location: The project at PR-2, Km. 179, intersection with PR-64, El Mani Sector, Sabanetas Ward, Mayaguez, Puerto Rico.

Latitude/Longitude: Lat. 18°14'53"N, Lon. 67°09'40"W.

b. Existing Site Conditions: The Environmental Sensitivity Index (ESI) for Puerto Rico identifies the area as freshwater marshes. A jurisdictional determination was approved on June 14, 2000, for a parcel of land of 200 acres, which include the 20 acres property that is being currently proposed for development. This property includes three open water channels, which are the only areas determined to be jurisdictional. The channels proposed to be filled drain into Boquilla Creek, a tributary to navigable waters, and contiguous wetlands.

c. Project Description: The applicant proposes to discharge fill material over 1.2 acres of waters of the United States in three open water channels, as shown in the application drawings (channel B-B, 2180m<sup>2</sup>, channel C-C, 800m<sup>2</sup>, and channel D-D, 1820m<sup>2</sup>). Channel B-B would be relocated by the excavation of a 61 x 15.24 x 1.83 meters retention pond, an open water channel of 85 x 8 x 3.5 meters, and the installation of a 125 x 6.6 x 5.2 meters box culvert, all in uplands. These structures are identified and shown in cross-sections H-H, G-G, and A-A respectively. Channel C-C would be relocated by the installation of a 230 x 3.5 x 2 meters box culvert in uplands, identified and shown in cross-section F-F. Channel D-D would be widened and covered with concrete as shown in the correspondent cross-section. A 15 meters wide by 210 meters long soil cement fringe would be built between boxculvert A-A and the property

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line. The applicant proposes to develop a shopping center, formerly known as Ellite Valley Town Center, now El Mani Plaza.

3. Project Purpose:

a. Basic: The proposed project would provide space for commercial activity.

b. Overall: The purpose of the project is to prepare the site for the development of a shopping center in Mayagliez.

4. Scope of Analysis: The Corps has control of the proposed project, as to fulfill the basic and overall project purpose the applicant determined that is necessary to perform the channelization.

5. Statutory Authority: Section 404 of the Clean Water Act (33 U.S.C. 1344).

6. Other Federal, State, and Local Authorizations Obtained or Required and Pending:

a. Water Quality Certification (WQC): By letter dated 26 June 2001, the EQB declared the Joint Permit Application complete. By letter dated 20 December 2001, the EQB forwarded the applicant the Public Notice for the Intent to Issue a Water Quality Certificate for the project. The EQB, Water Quality Area has been copied on all letter the Corps has written to the applicant (12 July 2001, 17 August 2001, 8 November 2001, 15 January 2002, 19 July 2002, and 4 December 2002. As of this date the EQB has not taken final action on the WQC. Pursuant to 33CFR 325.2 (b)(1), the WQC could be presumed to be waived.

b. Coastal Zone Consistency Certificate: By letter dated 14 August 2001, the Puerto Rico Planning Board (PRPB) determined that a certificate of consistency with the Puerto Rico Coastal Zone Management Plan is not required for this project, since it is outside of the coastal zone limits and/or is not expected to affect natural resources, land uses or water uses in the Coastal Zone.

c. PRPB Site Approval: The site approval was granted on 28 January 2001, however it was appealed. As of 24 January 2003, the appeal has not been resolved.

7. Date of Public Notice and Summary of Comments:

a. The application was received on 26 June 2001. Additional information was requested on 12 July 2001. The application was considered complete on 30 August 2001. A public notice (PN) was issued on 18 September 2001 and sent to all interested

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parties, including appropriate Commonwealth and Federal agencies. All comments received on this application have been reviewed and are summarized below.

(1) U.S. Environmental Protection Agency (EPA): No comments were received.

(2) U.S. Fish and Wildlife Service (FWS), by letter dated 23 October 2001, requested that cumulative effects to the Cano Boquilla natural system be considered. They stated that Cario Boquilla is a proposed natural reserve and a designated Critical Coastal Wildlife Area. The existing *Pterocarpus* forest at the Cario Boquilla natural system is one of the few left in western Puerto Rico. It is documented that hydroperiod and local topography may be important in the establishment and maintenance of a forested swamp. Artificial raising of the water level could lead to extensive mortality of freshwater swamps forests dominated by *Pterocarpus*. The FWS is concerned about spill of wastes from parking lots, as well as contaminants and sediments, carried from runoff waters from the project site into the Boquilla channel, and its' possible impacts downstream. In previous letters the FWS recommended the applicant to consider different ways to reduce pollutant loads and protect aquatic resources through non-structural practices that could address the quality, as well as the quantity of runoff waters reaching the Cano Boquilla natural system.

(3) National Marine Fisheries Service (NMFS), Habitat Conservation Division, by letter dated 16 October 2001, recommended that the channel fill and relocation not be authorized at this time. The NMFS stated that the waters of these channels will be diverted to Cano Boquilla, the main source of fresh water for Sabanetas Swamp, which is known to support fish and crustaceans of commercial and recreational value. The Sabanetas Swamp is an important nursery area for snook and tarpon. Also silk snapper, queen snapper, and king mackerel have been found in the mouth of the system. The NMFS is concerned with the effects of the modifications in the hydrology of Cano Boquilla on fishery resources. The proposed discharge of storm water from the shopping center parking lots directly to Carlo Boquilla will increase the magnitude and velocity of flow to downstream areas. This could lead to increase flooding, and the potential rapid discharge of pollutants and sediments, impacting the *Pterocarpus* and mangrove forests, and fishery resources. This could also, prevent Gallo Boquilla from performing water quality maintenance functions that are vital to maintain optimum ecological functions, such as fishery production. The NMFS recommends that the applicant provide an evaluation of the impacts of channel alterations and associated hydrology, runoff, and sedimentation, as well as details on development plans for the entire 200-acre parcel so that the cumulative impacts on the area hydrology, water quality, and fishery production may be better addressed. Based on this information, once provided, the NMFS will reassess potential project impacts and provide comments and recommendations.

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(4) State Historic Preservation Office (SHPO), by letter dated 26 September 2001, stated that their records support the finding of no historic properties located within the project's area of potential effects.

(5) USDA Forest Service – International Institute of Tropical Forestry, by letter dated 16 October 2001, recommended that certain clarifications be made before a permit is issued for this development. The main concern is the effect of the proposal on Can<sup>o</sup> Boquilla. The proposed activities would have significant hydrological effects. The Forest Service inquired the extent of the effect if the project in the hydroperiod of Carlo Boquilla and the Pterocarpus wetland. They also requested information on the effects of the project in the water quality, and the wetland functions.

(5) Commonwealth and local agencies

(a) Department of Natural and Environmental Resources, (DNER) by letter dated 19 December 2001, stated that evaluated the permit application, as well as the H/H and have no objections in these regards. However, they recommended that extensive erosion control measures, as synthetic barriers, and hay bales, be installed prior earth movement operations begin.

(6) Organizations and groups: No comments were received.

(7) Individuals: No individuals responded to the public notice.

(8) Internal Coordination: Not necessary.

c. Applicant's response to comments: The comments received in response to the public notice were coordinated with the applicant on 8 November 2001. The applicant provided his response by letter dated 29 November 2001. Regarding the FWS comments he stated that all their concerns were addressed in the hydrologic / hydraulic study (H/H) and attached the study to his response. Regarding the NMFS comments the applicant stated that runoff waters would be discharged to a retention pond, and not directly to the Boquilla Creek, preventing generation of higher velocities in the runoff. This would also prevent discharge of pollutants and sediments to the Creek. He stated that there would be no cumulative impacts to the hydrology of the area, and referred to the attached H/H. Regarding the Forest Service comments he also referred to the H/H study and determined that impacts to the Boquilla Creek would be minimized and mitigated with the implementation of all the measures proposed in the H/H. Regarding the flood hazard and flood plain values he stated that there would be no effects on those, as DNER approved the H/H. The applicant stated that the proposed site is the only practicable alternative. He evaluated other sites to buy and develop the proposed

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project, but other sites had greater wetland cover. In addition, the rest of the 180-acre parcel he owns does not have facilities or infrastructure as the proposed site. Regarding minimization he narrated certain modifications made to the H/H to comply with the DNER. Regarding mitigation, he stated that mitigation would not be required. The construction of a detention pond, the proposed realignments, and the improvement of the open channel, as proposed in the HAI would prevent cumulative impacts. These measures are similar to the ones proposed by the USDA back in 1964.

d. Additional Coordination:

1) By letter dated 15 January 2002, the Corps determined that the applicant did not address all the resource agencies' comments and requested to provide complete response and clarification of some of the provided answers. Issued un-answered were as follows:

a. The FINS and NMFS concerns were on potential impacts to the Boquilla Creek natural system due to degradation of the water quality and artificial raising of the water level. On paragraph (1) and (2) of the letter the applicant provided information regarding the storm water management by the construction of a retention pond. According to the Hydrologic I Hydraulic study (H/H), pg. 44, the main purpose on the retention pond is to control the water quality prior discharging to the Boquilla Creek. On page 18 of the H/H it is mentioned that the flows would be controlled such that the storm water discharges with the new development does not exceed the current ones. According to page 29 of the H/H the construction of the retention pond fulfills the zero increase in maximum flows for significant events requirements for Regulation 3, and 13. On page 59-60 of the H/H it is stated that the excess of storm water could be evacuated, and that the maximum flows would not exceed the existing ones, if the proposed measures are implemented. However, the information provided does not detail how would be controlled the increased volume reaching the Boquilla natural system, such to not adversely affect the natural system. Points a, b, c, and d of the Corps letter of 8 November 2001, were unanswered. Specific response regarding the increase in water volume and its' potential impacts to the Boquilla natural system needed to be provided, and considered as a cumulative impact to the system.

b. Regarding compliance with the Clean Water Act Section 404(b)(1) guidelines, avoidance criteria, on page 5 of the letter the applicant concluded that the proposed site is the only practicable alternative for the project. He stated that the no-action alternative, as well as other adjoining locations, and the rest of the 180-acres property were considered. The information provided is not enough to base the conclusion. The Corps requested an alternative analysis where explains the criteria used to evaluate the alternate sites that resulted in the selection of the current site. The

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Corps also requested the applicant to provide information regarding the future plan development for the 180-acres property.

c. Regarding minimization the Corps clarified the concept of minimization according to the Clean Water Act Section 404(b)(1) guidelines. The Corps requested the applicant to explain why impacts could not be minimized by developing the project in the existing uplands available at the site, or to leave the channels in their existing alignments, or make earth channels, instead of concrete channels. This might mean to reduce the project scope, sections, or dimensions, and needs also to be considered and discussed.

d. Regarding compensatory mitigation, the Corps directed the applicant to refer to the Regulatory Guidance Letter, issued on October 31, 2001, and submit a riparian mitigation plan proposal according to this guidelines. The Corps clarified that the construction of a retention pond is not an acceptable mitigation.

e. The Corps forwarded the applicant the DNER comments to the PN. The DNER recommended that extensive erosion control measures, as synthetic barriers, and hay bales, be installed prior earth movement operations begin. The Corps requested the applicant to explain which erosion control measures are planned to be implemented during the construction of the project such to prevent pollution of waters downstream, and the resultant impact on the Boquilla natural system.

f. The Corps forwarded six addresses, which the applicant submitted for adjoining property owners, which were incorrect. The Corps requested the applicant to provide corrected addresses to deliver the Public Notices.

2) The applicant provided partial response by letter dated 4 April 2002. In response to the water volume and velocity concerns he answered that DNER is the one with jurisdiction on the H/H, which covered those aspects. Regarding alternative analysis he stated that the criteria used was the available infrastructure. Regarding future plans for the remaining 180-acres, he stated that his company was in bankruptcy, which was the mayor constrain for any future development. He stated that he committed to obtain the Corps permit in order to sell the project site property and clear the bankruptcy requirements. The applicant stated that they minimized impacts by leaving channel D-D and G-G as open channels. He also proposed to restore a channel that was previously filled, in property of Orlando Gonzalez. He proposed that impacts to riparian habitat are adequately compensated by the proposal, as the new channels would have larger surface area. To address concerns of the DNER on impacts to the Boquilla natural system during construction, the applicant stated that would implement erosion control measures through a Erosion and Sedimentation

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Control Plan. Regarding adjoining property owners, he stated that from the six addresses, only three were truly adjoining property owners. He stated that these three received the PN.

3) The Corps requested a meeting with the applicant, as the submitted response was still incomplete. The meeting was held on 7 May 2002. The Corps requested the applicant to answer comments and issues still un-answered as follows: i) Would the quantity of water reaching the Boquilla Creek be the same once the project is built, than with the current condition? If not, how would it be controlled? ii) Would the velocity of the water reaching the Boquilla Creek be the same once the project is built, than with the current condition? If not, how would it be controlled? iii) What specific measures to control water quality would be implemented in the pond?, How would the pond be managed?, iv) the base of the no-cumulative impacts statement, v) more information on avoidance, minimization and compensatory mitigation. The Corps also asked the applicant to consider the use of open channels instead of box culverts, as minimization measure. vi) The proposed use of the rest of the 180-acre property. The Corps also stated that mitigation of impacts would be required for the installation of box culverts and concrete lining.

4) The applicant provided new response by letter dated 3 June 2002. In response to the resource agencies concerns on potential impacts of the proposed channelizations to the Boquilla Creek natural system the applicant stated that, according to the H/H, a detention pond (the pond), will be constructed. The pond would be rectangular with vertical walls and a surface area of 0.23 acre. The bottom of the pond will be 11 inches below the actual terrain surface, this is at 6.5 feet over msl. The outfall structure will be a 2 feet diameter hole with an inverted elevation of 8 feet, and a rectangular spillway 10 feet wide, with its' top at 9 feet. The main purpose of the pond is to control the water quality prior to be discharged to the Boquilla Creek (H/H, pg. 44). The pond would have installed mechanisms for wastes and oils removal (water filters, water quality control devices), prior water is discharged to the Boquilla Creek. Also, according to the H/H the excess of stormwater produced by the construction of the project would be managed such that maximum flows currently discharged are not increased if the H/H recommendations are followed: These recommendations are as follows:

a. Relocate the channel that currently flows to the south-west, from intersection of PR-2 and PR-64, to the Boquilla Creek (identified in the PN as C-C). A boxculvert would be installed from an existing box culvert underneath PR-2, westward to the Boquilla channel (identified in the PN as D-D). It would be a 230 x 3.5 x 2 meters box culvert with capacity for the 100-year flow.

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b. Relocate the portion of the Boquilla Creek that currently flows to the northwest, from PR-2 (identified in the PN as B-B). A combination of box culvert, concrete-covered open water channel, and detention pond would be installed from an existing box culvert at PR-2, westward, to the Boquilla channel (identified in the PN as D-D). The dimensions of the box culvert would be 125 x 6.6 x 5.2 meters. The dimensions of the open water channel would be 85 x 8 x 3.5 meters. The dimensions of the detention pond would be 61 x 15.24 x 1.83 meters. The detention pond would collect runoff waters from the parking lot prior to discharge to channel D-D. The pond would not collect waters from the proposed box culverts.

c. Along the structures mentioned in number 2 the H/H recommends to improve the hydrological conditions by constructing a 210 meters long by 15 meters wide concrete corridor.

d. The Boquilla channel (identified in the PN as D-D) would be hydrological improved by widening and covering it with concrete. The dimensions of the concrete channel would be 364 meters long by 10 meters wide, and 4 meters height.

With the implementation of these measures the maximum flows result of the construction of the project would not exceeded the current ones. Regarding the alternative analysis, he mentioned that the northern part of Mayaguez is the only available space for the town to expand. The "Plan de Ordenamiento Territorial de Mayaguez" considers this area as the main urban core currently, and for the near future, under development. The applicant stated that selection of the site for the project development was made based on the exposure the site has to PR-2, and the existing infrastructure available at the site. Other existing sites near PR-2 were found to have up to 95% cover of wetlands. Other portions of the rest of the property (180-acres) do not have the exposure or access to PR-2. Regarding the justification for the proposed box culverts he stated that those were necessary for economical, safety, and engineering reasons. He again proposed to restore a pre-existing channel, in property he does not own, as mitigation for the proposed impacts. He requested the WQC be waived, as the EQB has not taken final action within the term provided in the regulation.

5) The Corps met with the applicant again on 11 July 2002, and subsequently requested additional information by letter dated July 19, 2002, as the applicant failed to provide complete response to the Corps questions. Also, as the applicant provide peace-mealed Unanswered issues were as follows: i) to evaluate different alternatives other than box culverts in the proposed alignment, like one or two open channels in the existing alignments, ii) to propose a mitigation within property he owns, iii) to evaluate the possibility to construct a second retention pond to treat waters running through the

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culverts prior to discharge to channel D-D, and iv) plans on future development on the additional 180-acres property to determine cumulative impacts.

6) The applicant provided partial response by letter dated 6 September 6, 2002. He stated that the El Mani Plaza comprises an area of 18.9 acres of a total area of 1,349 acres that drains into the Boquilla natural system. This represents 1.4% of the total area that drains to the system. Therefore, any increase in velocity will have only local effects and would be dissipated prior to reach the natural system. Also, the water table at the channel is above the channel invert, reason why no infiltration is occurring currently. Consequently, the soils permeability will have no impact on the water velocity and volume on the channels. Therefore there would be no cumulative impacts to the Boquilla natural system due to the project construction. The detention pond would control the water quality reaching the Boquilla Creek. The retention pond will comply with the federal regulations to prevent pollution of waters downstream. The H/H also recommends the installation of water energy dissipaters, and a system to collect wastes and oils. The mechanisms to be implemented to control water quality at the pond would be in compliance with the EQB regulations for water treatment, and the pond's maintenance plan should be implemented by a pollution control managements company. Therefore there would not be degradation of the water quality that currently reaches the Boquilla natural system. The hydrological regime (water volume and velocity) should not be modified, therefore, no impacts to the *Pterocarpus* forest, or the fisheries resources at the estuary are expected.

7) On 25 October 2002, the applicant met again with the Corps to submit additional information. The applicant proposed the excavation of channel I-I within his property, as mitigation for proposed impacts. The Corps stated that he still needed to evaluate different project layouts and provide reasons why each were not practicable. The applicant also stated that any plans for development of the rest of the 180 acres were independent of this project. The construction of the El Mani Plaza would not promote, or impede development of the rest of the property. Therefore, cumulative or secondary impacts to waters of the U.S. present at the remaining part of the property are not expected, since the development of the rest of the property is not determined by this project.

8) The applicant submitted new information on 7 November 2002. The potential alternatives for the channels were consulted with the potential buyers. The project as proposed is preferred because it allows the maximum use of a lot, which from a real state perspective is of prime value. The proposed box culverts are needed due to economics (maximization of space use), safety, and engineering reasons to keep the project buyer interested in the parcel of land. Other alternatives considered were: i) accommodate the project leaving the channels open and in the existing location, ii)

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accommodate the project relocating the channels in the proposed locations, but leaving both channels open, and iii) accommodate the project relocating the channels in the proposed locations, but leaving at least one of the channels open, were evaluated but determined to be not economically, commercially or logistically suitable in light of the overall project purpose and real state value. To perform any of these alternatives, i, ii, or iii, would divide the lot prime available space in such a way that the construction, location of a building and parking space would be seriously affected. Also would mean a safety issue for users. To construct earth channels instead of concrete covered ones, would raise the flood risks due to increase sediments loads, and roughness by vegetation that may grow. The preferred alternative is the most practical one, capable of being done after taking into consideration cost, existing technology and logistics in light of the overall project purpose. Regarding minimization he stated that impacts were minimized by leaving portions of the proposed channels opened. He also proposed that the bottom of the channel be left on earth (without concrete cover).

(9) On November 20, 2002, the Corps met with Mr. Enrique CalderOn at his request, as adjoining property owner across PR-2. He argued that he was not aware on the proposed project reason why he requested the meeting Corps to express his concerns. The property owner is concerned on the effect of the hydrological modifications proposed for the El Mani Plaza project on his property. The Boquilla Creek (channel B-B), which is proposed to be filled and relocated in boxculvert A-A and open channel G--G, limits his property across PR-2. He is of the opinion that the proposed structure to relocate the Creek is not long enough and would not provide enough slope to maintain the flow of the water downstream, in a west, north-west direction. He stated that since the water table is high in the area an inadequate slope would promote that the water remains stagnant, or even may produce a backflow, affecting his property. He suggested that a boxculvert be placed on the current location of the Boquilla Creek (channel B-B), and be extended to discharge directly underneath PR-64. He opines that this would provide the adequate slope to drain the waters coming from the Creek underneath PR-2. He also expressed concerns on the conditions of the bridge at the northwest corner of the El Mani Plaza site, where channel D-D drains underneath PR-64. He stated that the improvements proposed for channel D-D, are useless to improve drainage downstream, since this bridge would not be capable of adequately drainage the water load. The property owner also stated that the U.S. Department of Agriculture study of 1964, cited in the Public Notice as similar to the current proposal, was made to maintain the agricultural lands. Therefore, should not be used as reference to manage the hydrology in the area, since land use is different than agriculture, the surrounding properties have been developed, and the hydrology modified.

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(10) By letter dated 4 December 2002, the Corps forwarded the applicant the concerns raised by the adjoining property owners and requested response as follows:

a) Clarify if the proposed channel A-A and G-G has the appropriate length and slope to maintain water flowing downstream. Certify that the water would not remain stagnant, or that backflow would not be produced at the channel.

b) Clarify if proposed channel D-D provides the appropriate slope such that waters flowing through channel A-A and G-G would effectively drain, and would not remain stagnant or cause a backflow.

c) Explain any effects of the high water table in restricting water drainage downstream the earth-gabion-bottom channels.

d) Evaluate the alternative to place the proposed boxculvert A-A in the current location of the Boquilla Creek (north-west orientation), and elongate it to the discharge point underneath PR-64. Discuss if this alternative would provide better slopes, such that the water does not remain stagnant, or backflow is caused.

e) Clarify how is proposed to join the proposed culvert A-A, which is 8 meters wide, with the existing underneath PR-2, which is 6 meters wide.

f) Clarify if improvements are proposed to the culvert underneath PR-64, which is the discharge point of the proposed channels. If not, explain how to manage water flows at the channels if this point is clogged. Is the capacity of the culvert underneath PR-64 compatible with the proposed dimensions of channel D-D? Would the culvert have the hydrological capacity to manage the water loads flowing through the new channels?

(11) By letter dated 3 January 2003, the applicant provided response to the Corps letter of 4 December 2002, regarding the adjoining property owner as follows:

Channels A-A and G-G discharge into channel D-D. The top elevation of the west site of channel D-D is 2.85 meters, while the top elevation of the box culvert at PR-2 is 3.55 meters. It is expected that waters will overflow on top of channel D-D before reversing direction. The proposed channel A-A has a bottom slope of 0.30%, an improved one in comparison to the irregular current conditions. Channel D-D has a proposed slope of 0.011%, slightly improving the current conditions. Regarding the concern of the inadequate slopes at the proposed channels the consultant stated that under current conditions water flows downstream, therefore, at the proposed channels, with steeper slopes, water would also flow downstream. The applicant's consultant

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opines that backflow is impossible in this project. In case of water remaining stagnant and a total clogging of the culvert at PR-64, water would overflow to the west of channel D-D or over PR-64. The applicant's consultant understands that the water table levels will not make a significant difference between the response of the hydraulic system for the existing and proposed design conditions during critical rainfall events. In addition, the H/H recommended that the new channels be concrete lined. This would prevent water exchange and any influence of the groundwater level into the channels. The proposed channel A-A carries the same flow as the existing channel B-B (the Boquilla Creek, which limits the property across PR-2). A discharge of less than  $7.5 \text{ m}^3/\text{s}$  would overtop channel D-D to the west. Water elevation at the culvert at PR-2 is 2.95 meters. This value is below the top chord elevation. According to the consultant, the culvert is operating normally and the upstream side will not be surcharged. The consultant is of the opinion that the flooding conditions at the property across PR-2 are not caused by the culvert capacity, or the El Mani Plaza channels, but by the lack of maintenance of the Boquilla Creek to the east of PR-2. Vegetation has invaded the main channel therefore, water finds a large resistance to flow. Flow is stagnant due to excessive vegetation and lack of infiltration capacity. Regarding the adjoining property owner suggestion to channelize the Boquilla Creek along its' current alignment (a longer culvert), the applicant provided the following analysis: Such channel or culvert would be 390 meters long, with an upstream bottom elevation at the existing culvert at PR-2 of 0.53 meters, and a downstream bottom elevation at the existing culvert at PR-64 of 0.38 meters. The channel width would be 8 meters with a discharge capacity of  $4.05 \text{ m}^3/\text{s}$ . He stated that due to the existing control structures (culverts at PR-2 and PR-64), the proposed culvert's slope would be 0.038%. This slope is more gentle than the one proposed at channel A-A, which is 0.30%. In addition, comparing this alternative with the proposed channel A-A, water level at the PR-2 culvert is the same with both alternatives. The longer culvert alternative would produce the same water elevation at the culvert of PR-2 than the proposed channel A-A. However, the long-culvert would concentrate water close to PR-64, aggravating flooding conditions at that point, making it difficult to provide adequate maintenance. The configuration proposed (channel A-A, and F-F, discharging at two different points into channel D-D), distributes the excess flow along the west side of the project, in the event that channel D-D is overtopped. The consultant is of the opinion that to distribute overland flow is a better alternative than concentrate the discharge into one point at PR-64.

The applicant also explain how the proposed culvert A-A, which is 8 meters wide, would be joined with the existing culvert underneath PR-2, which is 6 meters wide. Hydraulic channel transition is the common engineer practice used for these cases. Cylinder quadrants, wedged or wrapped wall are among the alternatives to be presented to ARPE for evaluation and approval. Regarding the culvert underneath PR-64 the consultant stated that this culvert does not have the hydraulic capacity for the design

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flows. The H/H study calculations were made assuming that this culvert is fully operational and clean. He stated that under conditions were the culvert is clogged, water would overtop PR-64. He recommended that the applicant provide adequate maintenance to the new channels, as well as the culvert underneath PR-64. The consultant concluded that there would be no adverse effects on the property in front of PR-2 as result of the channelizations proposed at the El Mani Plaza project. Backflow is an impossible condition when flow runs downstream. The suggested alignment for culvert A-A along the existing alignment of the Boquilla Creek would produce the same water levels in the properties adjoining the project site. He stated that this alternative would result in negative impacts, as would cause flow concentrations at the PR-64 culvert, and may be more difficult to perform maintenance. in the case that water remain stagnant, and culvert at PR-64 is clogged, water flowing at the culverts would overtop channel D-D prior to any backflow. The property of concern would not be flooded, more that is flooded at current conditions, as result of any water stagnation at the project site. Water table would not influence flow at the channels since those would be concrete lined.

(12) By telephone conversation to the applicant on 24 January 2003, the Corps requested the applicant clarification on the following points: i) the proposed mitigation is not enough to compensate for the proposed impacts. The mitigation should be increased to reach at least a 1:1 ratio, and should be forested wetland, ii) if he would voluntarily place the mitigation areas in conservation easement, iii) maintenance of the culvert underneath PR-64 would be required as permit condition, iv) provide information on maintenance of the culverts and retention pond within the project site, v) provide name and address of the person he is selling the property to place him as co-permittee.

(13) By letter dated 27 January 2003, the Corps communicated the EQB our determination that the WQC has been waived.

(14) By letter dated 3 February 2003, the applicant provided response to the issues talked on the telephone conversation. Regarding mitigation he agreed to construct a wetland mitigation area of 0.5 acre in the intersection of Channel I-I and existing channel, as shown in the permit drawings. He suggested to make an herbaceous wetland, proposing to use *Cyperus* sp. Regarding the conservation easement he stated that would not voluntarily place the mitigation sites into conservation easements. Regarding maintenance of the culvert underneath PR-64, he stated that such maintenance would not be his responsibility. Regarding maintenance of culverts and ponds he stated that regular maintenance would be provided to remove accumulated debris. A mini-loader, or similar equipment would be used. As the Corps requested, the applicant provided information on the name and address of the property buyer:

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Berrios Realty, Inc., Mr. Florencio Berrios, President and CEO, PO Box 1658, Cidra, Puerto Rico 00739. His telephone number is 787-739-5995, and fax, 787-739-9205.

(15) By telephone conversation on 7 February 2003, the Corps clarified with the applicant that the proposed mitigation would need to be of at least 0.8 acre, and of forested species. As he suggested, *P. officirialis* would need to be used as planting species. The Corps also clarified that maintenance to the culvert underneath PR-64 was not optional to him, but was going to be required as a special condition to the permit. He agreed to the conversation.

(16) By telephone conversation on 24 February 2003, the applicant stated that there would be a change in the project by adding a new channel.

(17) By letter dated 10 March 2003 the Corps requested the applicant the information of the project modifications in writing.

(18) By letter dated 5 April 2003, the applicant's consultant on hydrology provided the information on the proposed channel to be added to the project.

(19) By telephone conversation on 17 April 2003, the Corps requested the applicant clarification to the hydrologist's letter, as he did not refer to the public notice drawings. It was impossible to determine which channels he was referring to. Requested the applicant to provide revised drawings with the channels as were identified in the public notice drawings.

(20) By letter dated 16 May 2003, the Corps requested in writing clarification of the 5 April 2003 letter.

(21) By letter dated 19 May 2003, and meeting on 20 May 2003, the applicant clarified that he had noticed that the channel he was referring to as new was shown in the public notice drawings. He provided a new copy of the public notice drawings showing the 210 meters long by 15 meters wide soil-cement fringe located between the boxculvert A-A and the property line.

## 8. Alternatives:

a. Avoidance (No action, uplands, availability of other sites): The no-action alternative would not allow the development of the proposed project. The geographical area where the proposed project is located is the only existing area available for the Mayagüez urban growth. This was determined in alternative analysis made for a prior permit application numbered 199000257. Furthermore, the Municipality of Mayagüez

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Land Distribution Plan ("Plan de Ordenamiento Territorial") considers this area as the main urban core available for current and future development. The applicant performed an alternative analysis of parcels of land available in the area, and stated that he choose the one with the least wetland presence. The portion of his 180-acres property chosen to locate the project has available necessary infrastructure, local land use zoning concordant with the proposed use, appropriate access from the main road (PR-2), and is considered commercial prime space due to its' exposure to PR-2. For this reasons it was determined the preferred alternative to locate the project, within the 180-acres property owned by the applicant.

b. Minimization (modified project designs, etc.): The applicant proposed to fill and relocate a portion of the Boquilla Creek (channel B-B), by the excavation of a 61 x 15.24 x 1.83 meters retention pond, an open water channel of 85 x 8 x 3.5 meters, and the installation of a 125 x 6.6 x 5.2 meters box culvert. He also proposed to discharge fill on a third unnamed channel (channel D-D) by constructing an open concrete channel. He stated that proposed some of the channelizations as open channels as minimization measure. The Corps requested him to consider the following alternatives: (i) to accommodate the project leaving the channels open and in the existing location, (ii) to accommodate the project relocating the channels, but leaving both open, (iii) to accommodate the project relocating the channels, but leaving one open. The applicant stated that for the feasibility of the project, and to be able to maximize the land use at prime real state valued land, the preferred alternative was the necessary one. The surface area on top of the culvert would be used as parking space and roadway for the mall. The other alternatives (i, ii, iii), are not economically, commercially or logistically suitable in light of the overall project purpose and real state value of the parcel of land. Alternatives i, and ii, would divide the parcel prime available space such that the construction, location of building and parking space would be seriously affected. Also, to leave one or both channels open may mean a safety issue. Although, the three non-preferred alternatives would have less impacts to waters of the United States, the preferred alternative is the one available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose. A practicable alternative with less impact on aquatic resources was not found.

To minimize proposed impacts the applicant suggested to put metal screens, and gabion mattress instead of a concrete top and bottom to the culverts to be installed within the project site. However, the Corps determined that this measures does not minimize impacts as such do not serve any waters of U.S. functions and values. In addition, runoff from the parking lot may reach the culvert and be discharged to Channel D-D, without the contaminants being collected into the pond. Also, water table may enter the culvert through the gabions, influencing water flow from the culverts to channel D-D.

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c. Project as proposed: The project proposes to impact 1.2 acres of riparian habitat in three open water channels. Vegetation along the creek is all herbaceous, consisting mainly in *Paspalum fasciculatum*. Ecological value of the channels as riparian habitat is low. However, downstream the channels is found the Can<sup>o</sup> Boquilla estuary, a proposed natural reserve by the Department of Natural and Environmental Resources, for its' high ecological value. If sediments reach the channels once channelized, there would be no vegetation to serve as sediment filter and prevent turbid discharges to the estuary.

d. Conclusion of the Alternative Analysis: Alternatives to the proposed project (i, ii, iii) are least damaging to the aquatic ecosystem, as they would allow some riparian habitat current functions by leaving the channels open. However, these are not practicable for the project feasibility. The preferred alternative would cause riparian habitat loss, as box culverts would be installed. The preferred alternative would also cause riparian habitat modification, as channel D-D would be concrete lined. These unavoidable impacts would be compensated. With the appropriate impacts compensation the preferred alternative would be the least damaging alternative. A suitable alternative with less impact on aquatic resources was not found.

#### 9. Evaluation of the 404 (b)(1) Guidelines:

##### a. Factual determinations:

(1) Physical substrate: A total of 1.2 acres of riparian habitat in three open water channels are proposed for impact. Soils present at the project site, and in the channels are Coloso. Vegetation present along the channels is mainly *P. fasciculatum*.

(2) Water circulation, fluctuation, and salinity: The proposed project was evaluated through a hydrologic / hydraulic study, and approved by the DNER. Therefore, it is expected that water flow at the project site would not be affected. It is neither expected that the proposed channelizations cause impacts on water flow to the adjoining properties.

(3) Suspended particulate/turbidity: Turbid discharges may occur during the project construction and channelizations. If a permit is issued, the Corps will request that the applicant install the turbidity barriers prior to any discharge of fill necessary for the project construction, and shall be left in place until all earth work (discharge and removal of fill) is finalized. It is expected that increase turbidity and sedimentation would be controlled with the installation of the barriers. Turbid discharges may also

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occur if sediments reach the boxculverts, once built, as those discharge directly to channel D-D, which flow downstream to the Carlo Boquilla estuary.

(4) Contaminant availability: Contaminants generated at the mall parking lot would be collected in a retention pond prior to discharge to channel D-D. A grease and trash collection device would be installed at the pond, and the pond maintained accordingly. The pond maintenance and the collection device would be in compliance with the EPA NPDES regulations, and EQB water treatment regulations.

(5) Aquatic ecosystem effects: The project would impact 1.2 acre of riparian habitat. Functions and values of the habitat present at the project site are low, as there is not much species variability, or forested species. Herbaceous vegetation consisting mainly of *P. fasciculatum*, is present along the channels banks. Although channel D-D and G-G would be open, those would not serve to mitigate riparian habitat functions and values, as those would be subject to maintenance activities.

(6) Proposed disposal site: The Corps will request that any surplus material as result of the project construction is disposed in uplands.

(7) Cumulative effects: The parcel of land where the proposed project would be constructed is part of a 180-acres parcel owned by the applicant, which contains wetlands. However, the project construction would not promote, or in some way affect the development of the rest of the parcel, as any future development would be restricted mainly by financial constraints. The issuance of a Corps permit would not necessarily result in additional impacts to wetlands.

(8) Secondary effects: Water quality degradation may occur as a secondary impact of the proposed project. In the current conditions the vegetation along the channels serve as sediment filters. With the installation of the boxculverts any sediments reaching the culverts would be directly discharged to channel D-D, which flows to the Carlo Boquilla estuary. Appropriate maintenance of the culverts would be required to minimize turbid discharges to the estuary. In addition, contaminants from the parking lot may degrade water quality. A retention pond would be installed to collect waters from the parking lot, prior to discharge into channel D-D. A grease and trash collection device would be installed at the pond, and the pond maintained accordingly.

b. Restrictions on discharges:

(1) Alternatives (See paragraph 7):

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a. The activity is located in a special aquatic site (wetlands, sanctuaries and refuges, mudflats, vegetated shallows, coral reefs, riffle and pool complexes, etc.)

yes no \_

b. The activity needs to be located in a special aquatic site to fulfill its basic purpose.

yes no \_

c. All practicable alternatives have been reviewed in paragraph 7 above. It has been demonstrated that the alternative with the fewest impacts on the aquatic ecosystem (least damaging alternative), has been identified.

yes \_ no

d. The least damaging alternative has other significant environmental effects.

yes\_ no \_

(2) Other program requirements:

a. The proposed activity violates applicable State water quality standards or Section 307 prohibitions or effluent standards.

yes no \_

b. The proposed activity jeopardizes the continued existence of federally listed threatened or endangered species or affects their critical habitat.

yes no \_

c. The proposed activity violates the requirements of a federally designated marine sanctuary.

yes no \_

(3) The activity will cause or contribute to significant degradation of waters of the United States, including adverse effects on human health; life stages of aquatic organisms; ecosystem diversity, productivity and stability; and recreational, esthetic, and economic values.

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yes \_\_\_ no X \_

Water quality degradation is not expected as result of the proposed project construction. During the construction phase erosion control devices would be require to avoid turbid discharges to the Carlo Boquilla estuary. With the installation of the boxculverts any sediments reaching the culvers would be directly discharged to channel D-D, which flows to the Carlo Boquilla estuary. Appropriate maintenance of the culverts would be required to minimize turbid discharges to the estuary. In addition, contaminants from the parking lot may degrade water quality. However, a retention pond would be installed to collect waters from the parking lot, prior to discharge into channel D-D. A grease and trash collection device would be installed at the pond, and the pond maintained accordingly.

(4) Minimization of adverse effects:

a. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.

yes X \_ no

b. Compensatory Mitigation (Wetland enhancement, creations, etc.): Total project impact on waters of the U.S. is 1.2 acres of riparian habitat. The applicant proposed to compensate for such impacts by the creation of riparian habitat and wetlands. The riparian habitat lost by the installation of culverts and open channel would be mitigated with the excavation of a 370 meters long by 5 meters wide earth channel in uplands (channel I-I). Native trees would be planted along the channel banks. The 0.16 acre of channel that would be created by open channel G-G are not accounted for as mitigation because such channel will be subject to maintenance activities. Therefore, would not have riparian habitat functions and values. The riparian habitat that would be lost by the construction of concrete open channel D-D would be mitigated by the construction of a 0.8 acre of *P. officinalis* wetland in the intersection of channel I-I and existing channel. Mitigation ratio is 1:1. The exact location, and detailed mitigation plan, including mitigation construction and monitoring schedule, as well as planting scheme would be required as special condition to the permit. This plan must be submitted and approved by the Corps before impacts to waters of the U.S. occur.

c. Findings: The proposed project complies with Section 404(b)(1) guidelines. The no-action alternative would not allow to obtain economical benefit from the development of the proposed project site. Various alternatives were considered, however, others than the preferred alternative would not allow the maximum use of

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surface area on a prime real state valued land, and would not make the project feasible. Permanent impacts as result of the preferred alternative would be mitigated in a 1:1 ratio. Riparian habitat and wetlands would be created by the excavation of an open water earth channel and wetland area and the planting of forested species.

10. Public Interest Review:

a. All public interest factors have been reviewed. The following public interest review factors are considered relevant to this proposal:

(1) Conservation: The applicant stated that would not voluntarily agreed to place deed restrictions to his property for the created channel I-I and wetlands.

(2) Economics: The parcel of land where the proposed project would be constructed is of prime real state value due to its' strategic location in relation to PR-2, intersection with PR-64. Available necessary infrastructure, local land use zoning concordant with the proposed use, appropriate access from the main road (PR-2), and exposure of the site make the development of the site to result in a high economical benefit to the owner. The applicant stated that he needed to sale the property with the necessary permits for the project development as his company is in bankruptcy.

(3) General environmental concerns: The proposed project site is upstream the Carlo Boquilla estuary, which is a proposed natural reserve by the Department of Natural and Environmental Resources. The resource agencies were concerned on modifications of the hydrological regime that currently reach the estuary, as the channelizations may result in higher water volumes with a higher velocity reaching the system. However, the applicant's consultant stated that maximum flows currently discharged would not increased if the H/H recommendations are followed.

(4) Historic and Cultural Resources: The project would eliminate a portion of the train railroad, as well as two related bridges. The Puerto Rico ESI does not show cultural resources in the area of the project. On 29 March 1993, the SHPO evaluated the cultural resources report prepared for the 180-acres parcel (SHPO #12-18-92-11). In response to the public notice the SHPO reported that their records support the Corps finding of no historic properties located within the project's area of potential effect. Based on this information the Corps concluded consultation pursuant to 36 CFR Part 800.

(5) Fish and Wildlife Values: The FWS and NMFS expressed concerns on potential changes to the hydrological regime at the Carlo Boquilla estuary, and potential effects to the *Pterocarpus* forest, and the estuarine functions. However, according to the applicant's consultant maximum flows currently discharged would not increased if

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the H/H recommendations are followed. Therefore, detrimental effects to the estuary are not expected as result of the proposed channelizations.

(6) Flood Hazards: An adjoining property owner in front of the property across PR-2 raised concern on potential flooding of his property as result of the proposed channelizations. The consultant concluded that there would be no adverse effects on the property in front of PR-2 as result of the channelizations proposed at the El Mani Plaza project. Backflow is an impossible condition when flow runs downstream. The suggested alignment for culvert A-A along the existing alignment of the Boquilla Creek would produce the same water levels in the properties adjoining the project site. He stated that this alternative would result in negative impacts, as would cause flow concentrations at the PR-64 culvert, and may be more difficult to perform maintenance. In the case that water remain stagnant, and culvert at PR-64 is clogged, water flowing at the culverts would overtop channel D-D prior to any backflow. The property of concern would not be flooded, more than is flooded at current conditions, as result of any water stagnation at the project site. Water table would not influence flow at the channels since those would be concrete lined. The property adjoining channel D-D to the west would be impacted in case that water overtop the channel. This property is zoned as AE in the FEMA Flood Maps, which is a special flood hazard area inundated by the 100-year flood. The 210 meters long by 15 meters wide soil-cement fringe has the purpose to provide for evacuation of stormwaters coming from the K-mart Plaza located south of the project. In case that excess stormwater could not be managed by the K-mart Plaza stormwater system, such excess would be discharged through the fringe, to open channel G-G, and directed to flow to channel D-D, downstream to the Boquilla Creek.

(7) Land use: A location approval was issued by the PB on 28 January 2001, however, it was appealed. The applicant stated that a public hearing would be conducted on 14 February 2003, regarding the Site Approval appeal. The permit would be conditioned to the PB final approval of the project site location.

(8) Water Quality: Contaminants generated at the parking lot would be collected into a retention pond to be built to collect waters from the parking lot. A grease and trash collection device would be installed at the pond, and the pond maintained accordingly. The pond maintenance and the collection device would be in compliance with the EPA NPDES regulations, and EQB water treatment regulations. Additional sedimentation may reach channel D-D from the culverts. However, regular maintenance would be required to prevent such impacts. The proposed project may impact water quality by increasing turbidity during the project construction. The Corps will request the installation of such barriers during any discharge of fill to be performed in navigable waters. The EQB has not issued a WQC for the project. According to the

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information available in the file, and pursuant to 33CFR 325.2 (b)(1), the WQC is presumed to be waived.

(9) Considerations of property ownership: The land owner has inherent right to reasonable private use of his property. In this case, the land owner needs the proposed project development for the financial recovery of his company. Once the proposed project obtain the permits required for its' development the owner would sell the property to be able to solve his bankruptcy.

(10) Safety: When evaluated the different alternatives to the project the applicant stated that to leave the channels open may mean a safety hazard for the mall clients. Additional safety measures would have been necessary to address this issue, if the open channels alternative has been chosen.

b. Describe the relative extent of the public and private need for the proposed structure or work: Among the public benefits as result of the project is the creation of employment opportunities in MayagOez, and area currently affected by high unemployment. Also, the establishment of a commercial operation at the proposed site would generate additional tax-based income for the Municipality. The owner needs the earnings generated from the sale of the property with the necessary permits for its' development. His company is currently in bankruptcy.

c. Describe the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed work where there are unresolved conflicts as to resource use: There are not unresolved conflicts as to resource use. Alternatives to the proposed project were discussed and shown to be non-practicable for the project feasibility. The preferred alternative is the practical one in light of the overall project purpose. Proposed impacts would be properly compensated by the creation of 1.25 acres of wetlands and riparian habitat.

d. Describe the extent and permanence of the beneficial and/or detrimental effects which the proposed work is likely to have on the public and private uses to which the area is suited: No detrimental effects are expected as result of the proposed work. Private use of the land would result in economical benefit to the current and future owners, as well as to the Municipality of Mayaguez. Beneficial economic impacts are considered permanent as long as the local and regional economy promotes the sales at the proposed mall. The public resource that would be impacted, would be properly compensated.

e. Threatened or Endangered Species: The Puerto Rico ESI did not show endangered species or critical habitat in the area of the project. In response to the

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public notice the FWS did not raised concerns regarding the presence of endangered species or their critical habitat within the proposed project site. Based on this information the Corps determines that the proposed project would have no effect on endangered species or their critical habitat, and terminates consultation pursuant to Section 7 of the Endangered Species Act.

f. Corps Wetland Policy: As result of the proposed project 1.2 acres of riparian habitat would be impacted. These unavoidable impacts would be compensated by the creation of 0.45 acre of riparian habitat and 0.8 acre of wetlands.

4e. g. Cumulative and Secondary Impacts: The project construction would not promote, or in someway affect the development of the 180-acres parcel owned by the applicant. In addition any future development would be restricted mainly by financial constrains, as the applicant is in bankruptcy. The issuance of a Corps permit would not necessarily result in additional impacts to wetlands. Water quality degradation that may occur as a secondary impact of the proposed project would be controlled by erosion control measures during the project construction, grease and trash collection devices installed at the retention pond, and proper maintenance of the boxculverts.

h. Essential Fish Habitat (EFH): The NMFS did not provide any EFH recommendations. However, they were concerned on potential degradation of water quality reaching the Boquilla estuary. Water quality would be controlled with the installation of a retention pond to collect runoff waters from the parking lot. Grease and trash removal devices would be installed at the pond to control pollutants prior to discharge to channel D-D, which flows to the Boquilla estuary. Sediments accumulated in the culverts would need to be removed such to prevent turbid discharges from the culverts to channel D-D.

11. Corps analysis of comments and responses: All comments received in response to the Public Notice have been taken into consideration. The applicant addressed the resource agencies comments, as well as the Corps concerns. There would be no increase in water volume or velocity reaching to the Boquilla estuary as result of the project construction. Therefore, hydrologic regime at the estuary should not be modified as result of the proposed project. Water quality of waters reaching the estuary would not be degraded as water quality control measures would be implemented, both during construction and operation of the project. The proposed project would not vary flood hazards in the area, as the whole area is within flood zone AE according to the FEMA flood maps. The adjoining property across PR-2 would not be flooded more than it is currently, as prior to occur a backflow to the property, channel D-D would be overtopped. The property to the west of channel D-D, is also within the AE flood zone,

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therefore in a flood event that would cause channel D-D overtop such property would be flooded regardless of the project.

12. Determinations:

a. Finding of No Significant Impact (FONSI): Having reviewed the information provided by the applicant up to date, and all interested parties, and assessing the environmental impacts, I find that this permit action will not have a significant impact on the quality of the human environment. Therefore, an Environmental Impact Statement will not be required.

b. Compliance with 404(b)(1) guidelines: Having completed the evaluation in paragraph 7 above, I have determined that the proposed discharge complies with the 404(b)(1) guidelines.

c. Section 176(c) of the Clean Air Act General Conformity Rule Review: The proposed permit action has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Water Act. It has been determined that the activities proposed under this permit will not exceed de minimis levels of direct emissions of a criteria pollutant or its precursors and are exempted by 40 CFR Part 93.153. Any later indirect emissions are generally not within the Corps' continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons a conformity determination is not required for this permit action.

d. Public Interest Determination: I find that issuance of a Department of the Army permit is not contrary to the public interest. Furthermore, the project will fulfill the need and welfare of persons with disabilities.

PREPARED BY:



MYRNA I LOPEZ  
Project Manager

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REVIEWED BY:

APPROVED BY:

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DWIN E.

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for Edwin  
JAMES G. MAY

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Chief, Antilles Regulatory Section

Colonel, Corps of Engineer  
Commanding