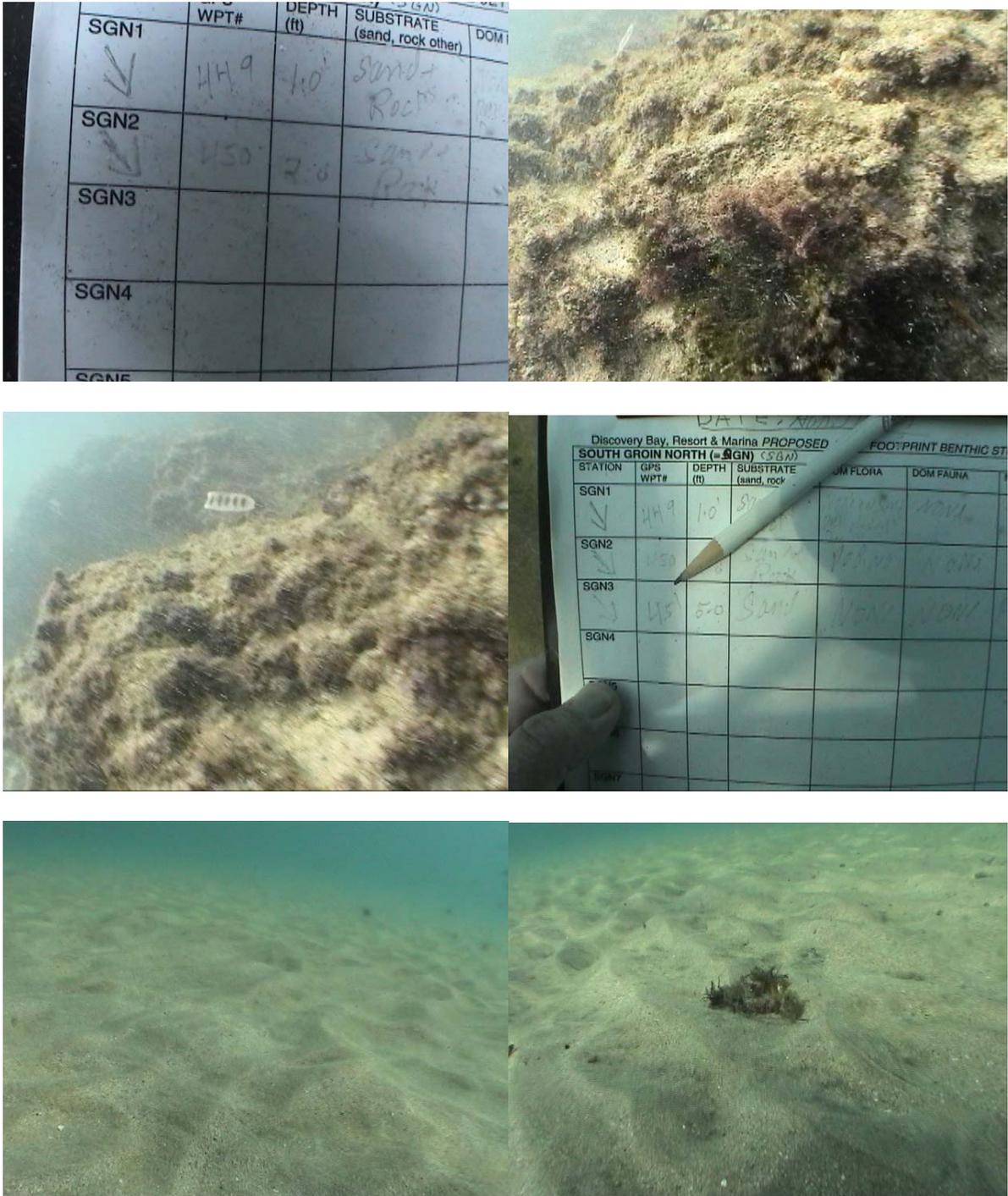
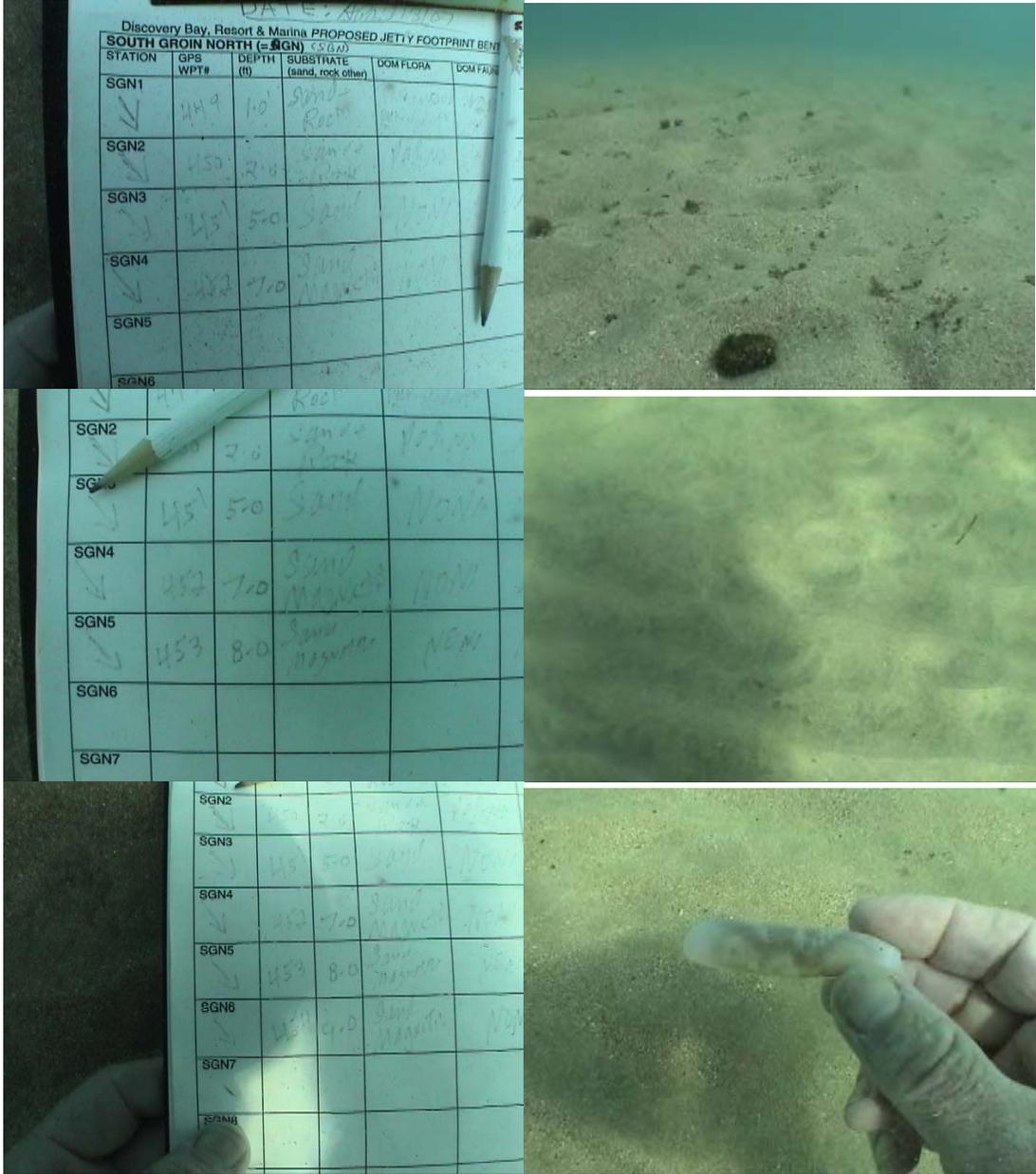


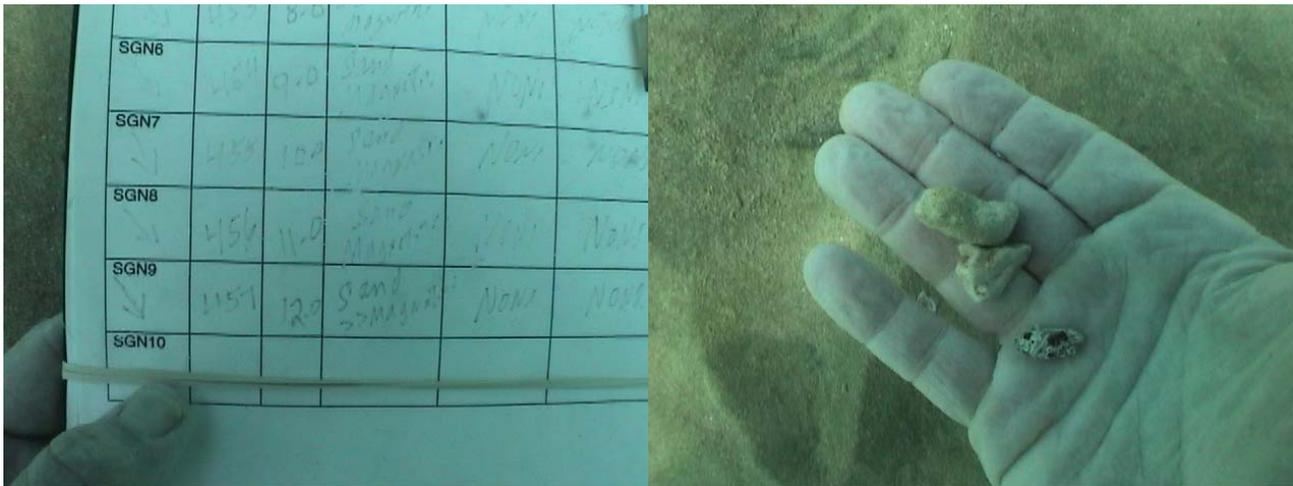
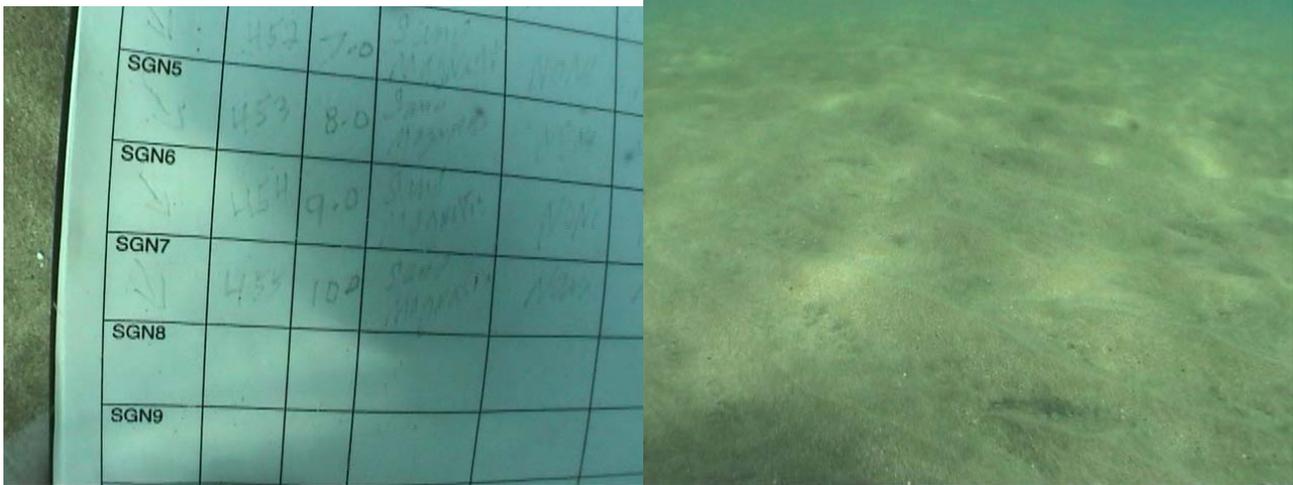
**FIGURE 9.** Selected representative underwater photos taken off the northern side of the SOUTH GROIN, (SGN1 – SGN10) in April 13, 2007 and along the proposed extension of the same.



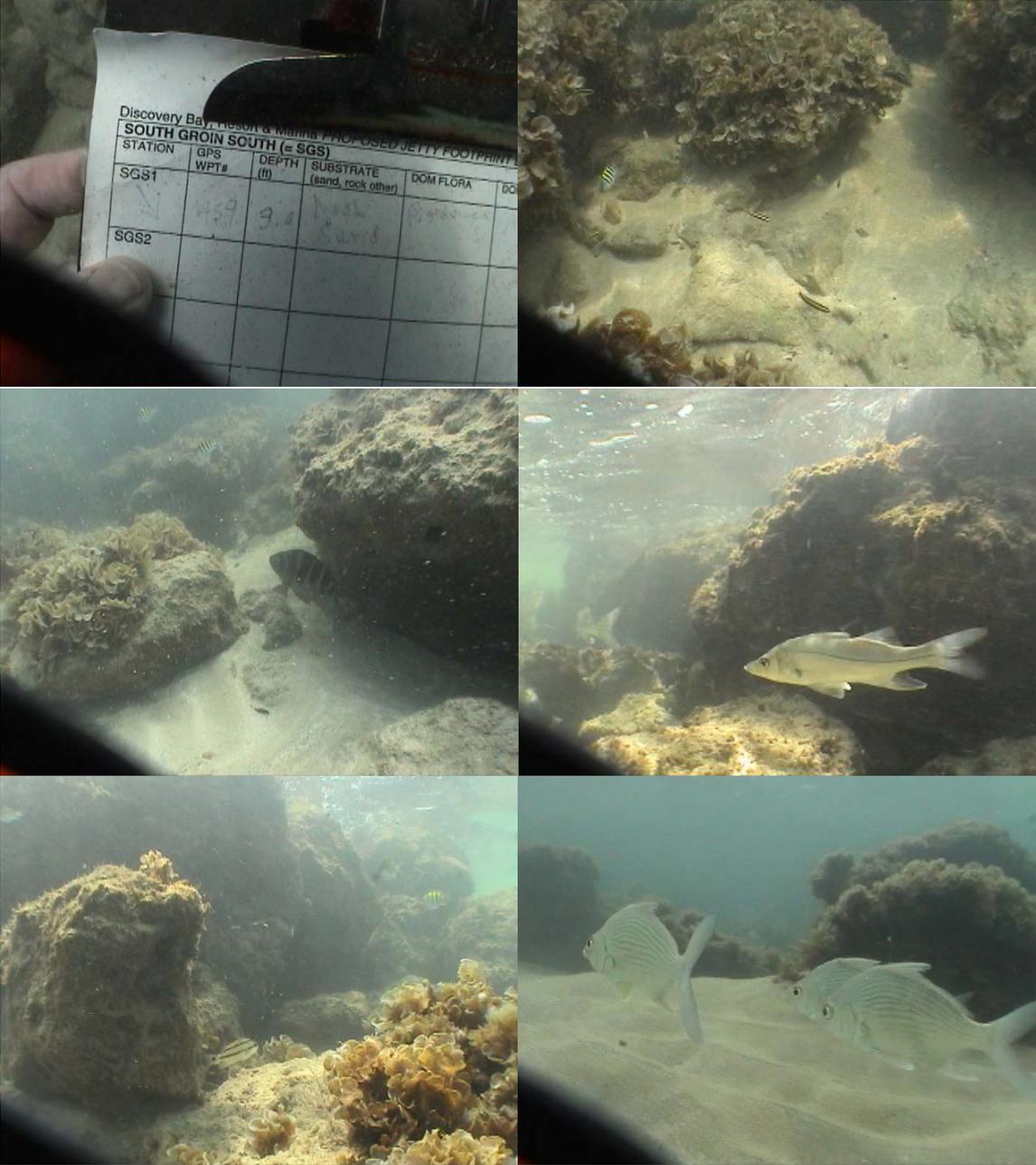
**FIGURE 9 (continued).** Selected representative underwater photos taken off the northern side of the SOUTH GROIN, (SGN1 – SGN10) in April 13, 2007 and along the proposed extension of the same.



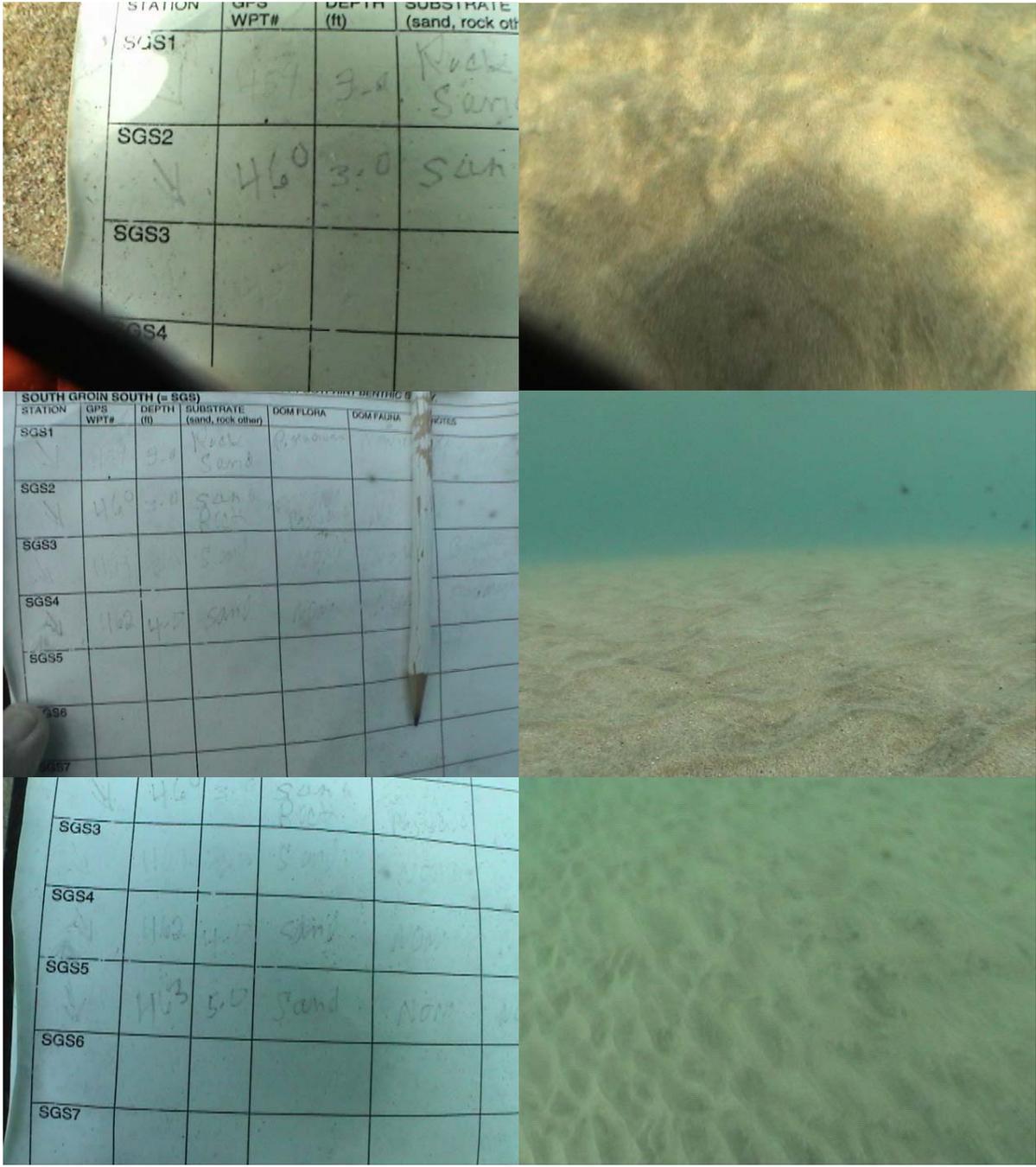
**FIGURE 9 (continued).** Selected representative underwater photos taken off the northern side of the SOUTH GROIN, (SGN1 – SGN10) in April 13, 2007 and along the proposed extension of the same.



**FIGURE 10.** Selected representative underwater photos taken off the southern side of the SOUTH GROIN, (SGS1 – SGS10) in April 13, 2007 and along the proposed extension of the same.



**FIGURE 10 (continued).** Selected representative underwater photos taken off the southern side of the SOUTH GROIN, (SGS1 – SGS10) in April 13, 2007.



**FIGURE 10 (continued).** Selected representative underwater photos taken off the southern side of the SOUTH GROIN, (SGS1 – SGS10) in April 13, 2007.

SGS6	464	5.0	Sand	NOV
SGS7	465	8.0	Sand	NOV
SGS8				
SGS9				



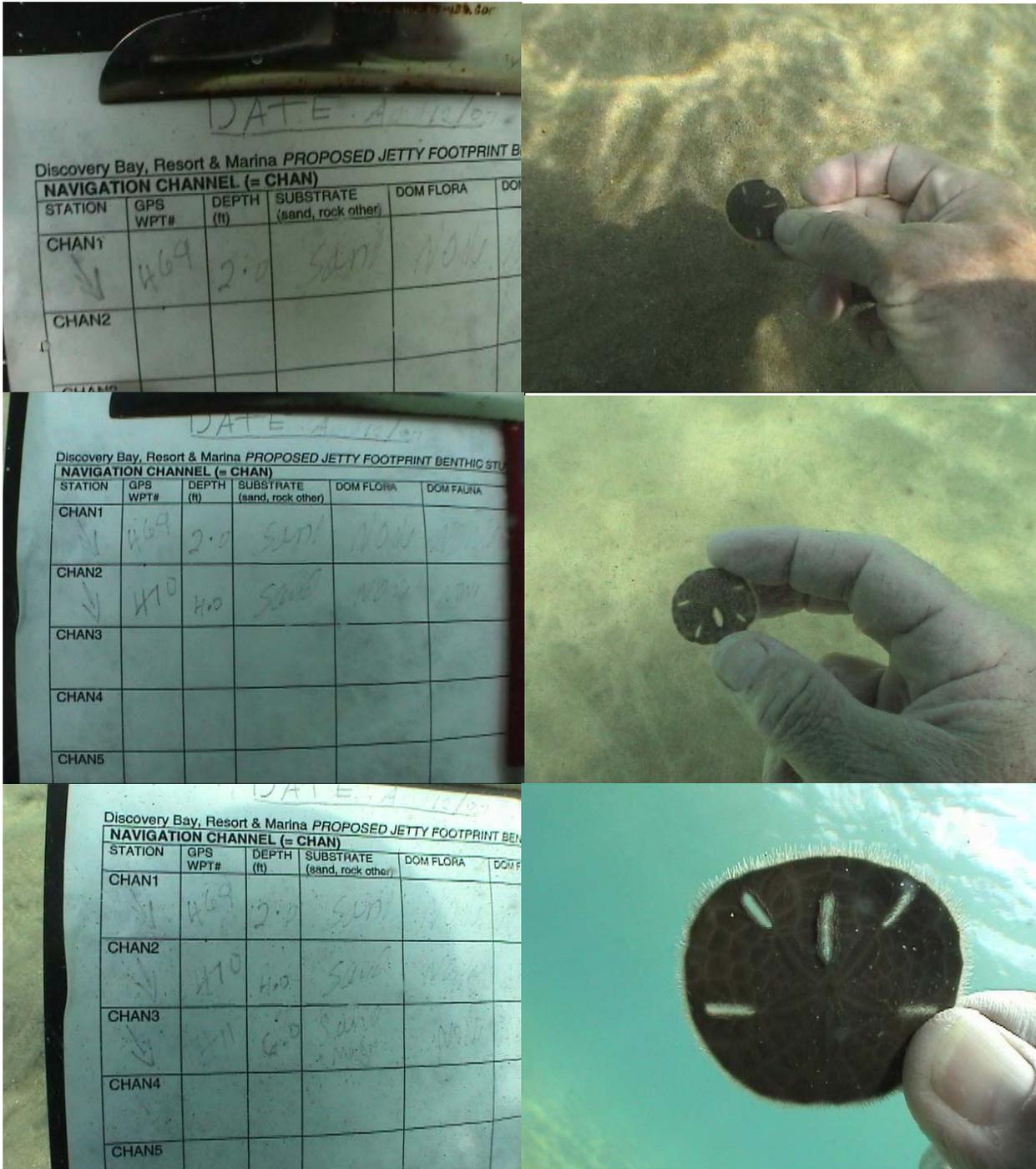
SGS8	466	9.0	Sand	
SGS9	467	10.0	Sand	
SGS10				



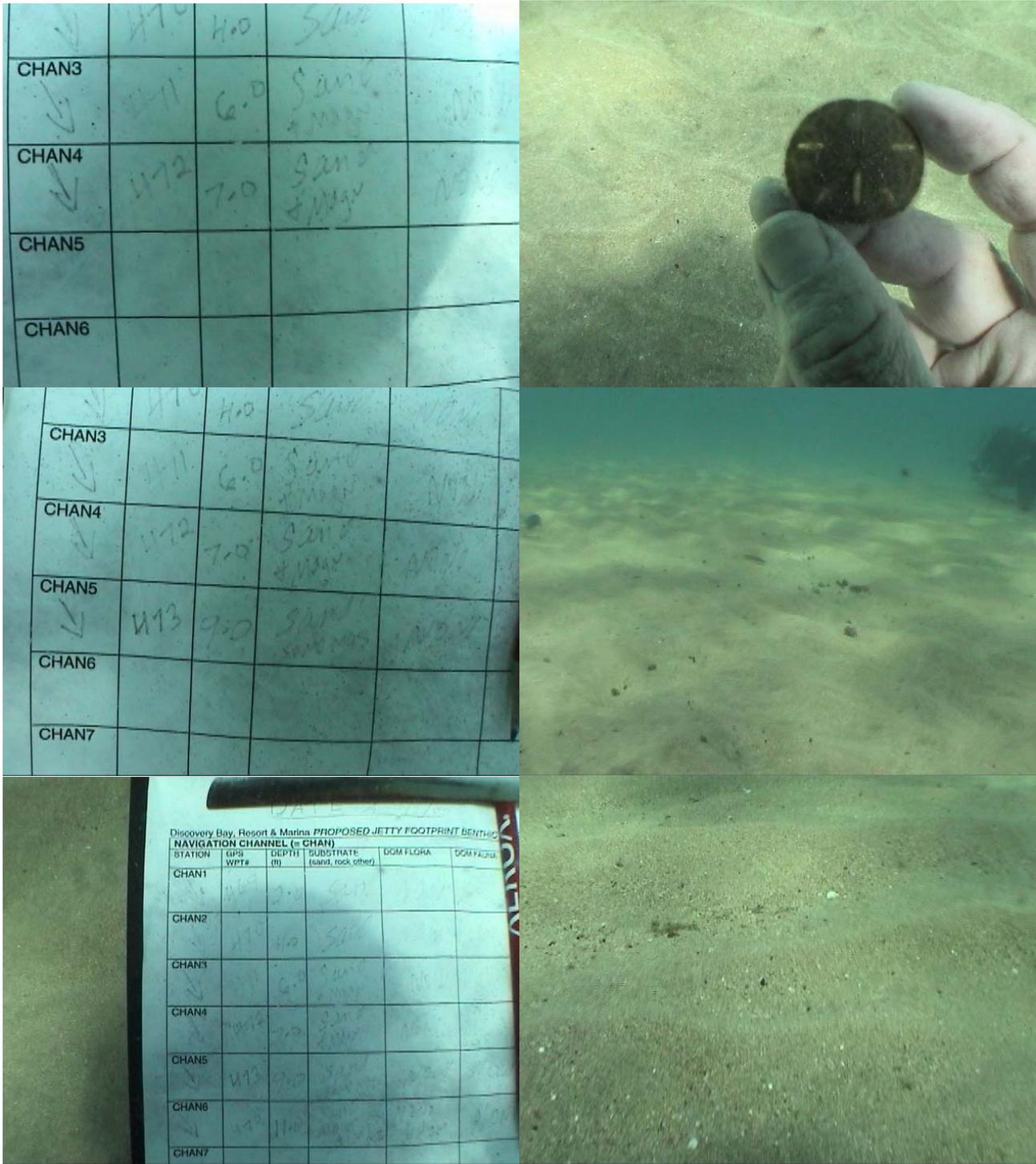
SGS9	467	10.0	Sand	
SGS10	468	11.0	Sand Magnet	NOV



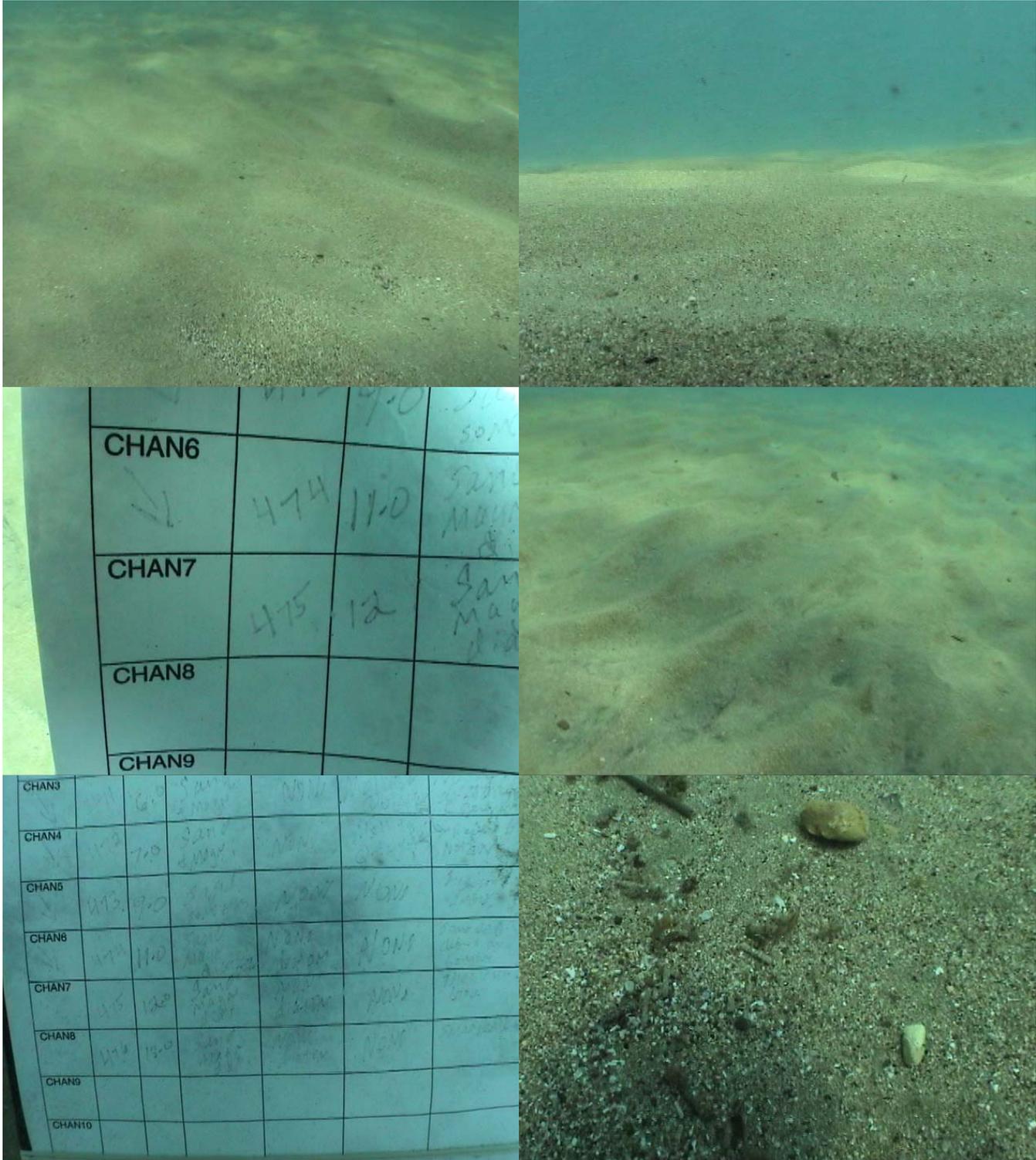
**FIGURE 11.** Selected representative underwater photos taken along the proposed navigation channel (CHAN1 – CHAN11) in April 13, 2007.



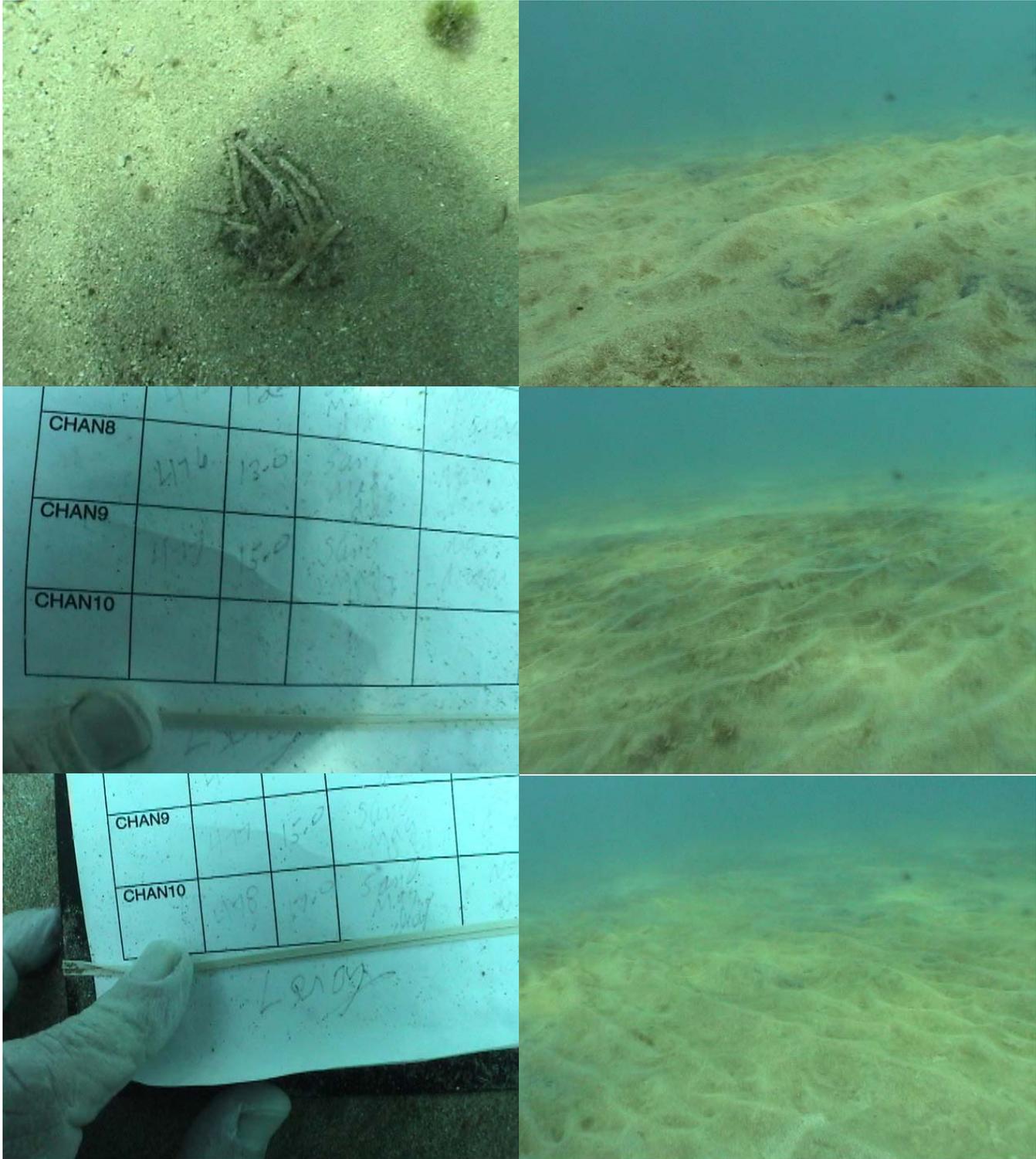
**FIGURE 11 (continued).** Selected representative underwater photos taken along the proposed navigation channel (CHAN1 – CHAN11) in April 13, 2007.



**FIGURE 11 (continued).** Selected representative underwater photos taken along the proposed navigation channel (CHAN1 – CHAN11) in April 13, 2007.



**FIGURE 11 (continued).** Selected representative underwater photos taken along the proposed navigation channel (CHAN1 – CHAN11) in April 13, 2007.



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**Culebrinas River Flood Control Project**

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U.S. Fish and Wildlife Service  
Boqueron Field Office**

**November 1999**

## Culebrinas River Flood Control Project

### Executive Summary

The U.S. Army Corps of Engineers, Jacksonville District, is planning a flood control project for an associated river mouth drainage of the Culebrinas River, Caño Madre Vieja. During high flood events, the Culebrinas River overflows its channel upstream of highway PR-2 and at the first meander curve just downstream of PR-2. The flood waters enter Caño Madre Vieja flooding out the southwestern sectors of Aguadilla and the northeastern portion of the community of Espinar.

The preferred alternative would place two dikes east and west of the Caño to maintain the flood waters within this floodway. To accommodate the eastern levee, a double meander of flowing stream in the Caño would be eliminated via a cut-off channel. The western levee would cross a mangrove forest and channel near the mouth of the Caño, directly impacting some mangroves and indirectly affecting the existing hydrology that supplies tidal flow to the mangrove forest that would be left outside the flood dikes.

The Service's major concern centers around the potential indirect and secondary impacts for the mangrove forest and other wetlands that would remain outside the flood levee. The section of the mangrove forest where the west levee would pass through lies within Coastal Barrier unit PR-75. Our understanding is that this precludes the use of Federal funds for projects, including flood control projects authorized after the date of the inclusion of the Coastal Barrier unit. Another concern is for the section of river to be eliminated. The Service believes that ample opportunities exist in the area for appropriate mitigation, however, there has been no specific mitigation plan discussed to this point.

## Introduction

The Río Culebrinas is the fifth largest watershed in Puerto Rico with a total drainage area of approximately 103 square miles. The river flows at a relatively low gradient out of the central mountain region in a northwesterly direction, emptying into Aguadilla Bay southwest of the town of Aguadilla. Historically the river has meandered throughout the valley (C type meandering stream, Rosgen hydrogeomorphic classification), and the mouth of the river has periodically migrated. Caño Madre Vieja, to the north of the Culebrinas River, is considered to be an abandoned river mouth that now carries only localized drainage except during flood stages on the Culebrinas. The beach in this area receives moderate to high energy sea conditions, and the coastline is subject to erosion. The beach between the Culebrinas River and Caño Madre Vieja has a low berm, and is backed by herbaceous and mangrove forest wetlands with a direct hydrological connection to the Caño.

One of the major island highways, PR-2, crosses the Culebrinas River in a north/south direction. The highway is elevated above the surrounding floodplain, although the river is capable of going over the highway during flood stage (Figure 1). The highway bridges the Culebrinas River and culverts maintain flow in the upper part of Caño Madre Vieja. When the Culebrinas exceeds bank-full flows, it floods over the first large meander below PR-2, and into the drainage for Caño Madre Vieja, flooding both the Espinar Community and the southwestern low-lying portions of Aguadilla. In higher flood stages, it overflows above PR-2, also draining towards the Caño.

The river has no major impoundments, but does have a small low head dam (Photos 1 and 2) built in the early part of the century to provide a water diversion for the Coloso Sugar Mill. This diversion is still used to provide process water for the mill. In 1998, the Puerto Rico Aqueducts and Sewers Authority (PRASA) along with the Commonwealth Infrastructure Agency (AFI) developed a surface water intake for potable water using the impoundment from this dam. The dam is located several hundred meters upstream of PR-2, and the pump house is located on an elevated stand next to the diversion dam (presumably above the 100 year flood stage). The raw water is currently pumped up to the Aguadilla treatment plant, but AFI is considering the creation of an off-river reservoir/ sedimentation lake near the damsite to supply additional firm yield and reduce the very high sediment load in the raw water extracted from the river. Because of its narrow design, it is likely that the existing dam serves as a constriction creating overflow into the floodplain above PR-2 during flood stage.

The dam acts as a partial barrier for fish and shrimp migration upstream, and juvenile shrimp can generally be seen migrating upstream on the cement bulkhead of the weir in the wetted zone above the water flow (Photo 3). Native fish (approximately 6 species) and shrimp (as many as 14 species) are compulsory migrators, requiring a portion of their life cycles in estuarine or marine waters. At least six species of shrimps are large enough to be fished for human consumption, one species reaching very large sizes (Photo 4). Most of these species are also likely to occur in Caño Madre Vieja along with estuarine fish such as snook, tarpon, mullet, mojarra, and jacks; and crustaceans such as blue crabs and land crabs. Fishermen of the area



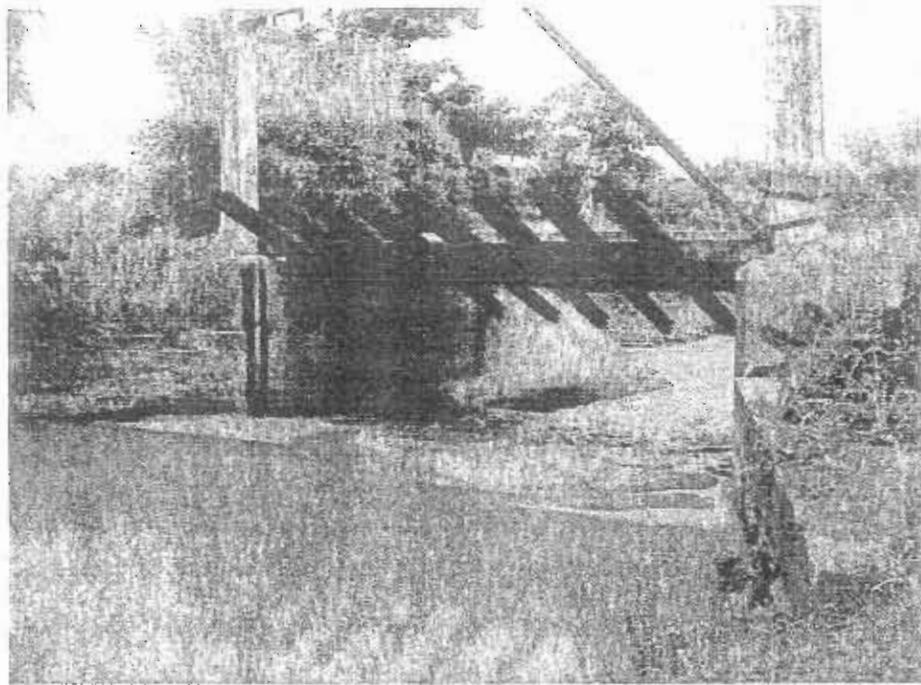


Photo 1. Coloso diversion dam from the upstream side. Note that the opening is very narrow and topped by a road.

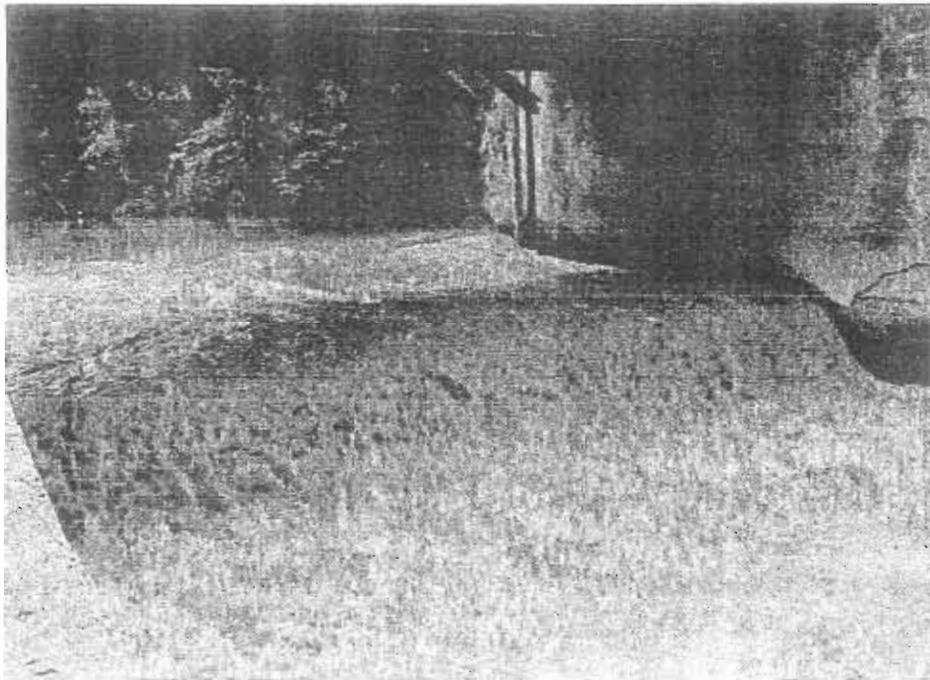


Photo 2. Downstream side of the Coloso dam. Drop during lower flows (photo condition) approximately 2 meters including a lower step not shown in the photo. Note that the vertical sidewalls have a wetted zone.

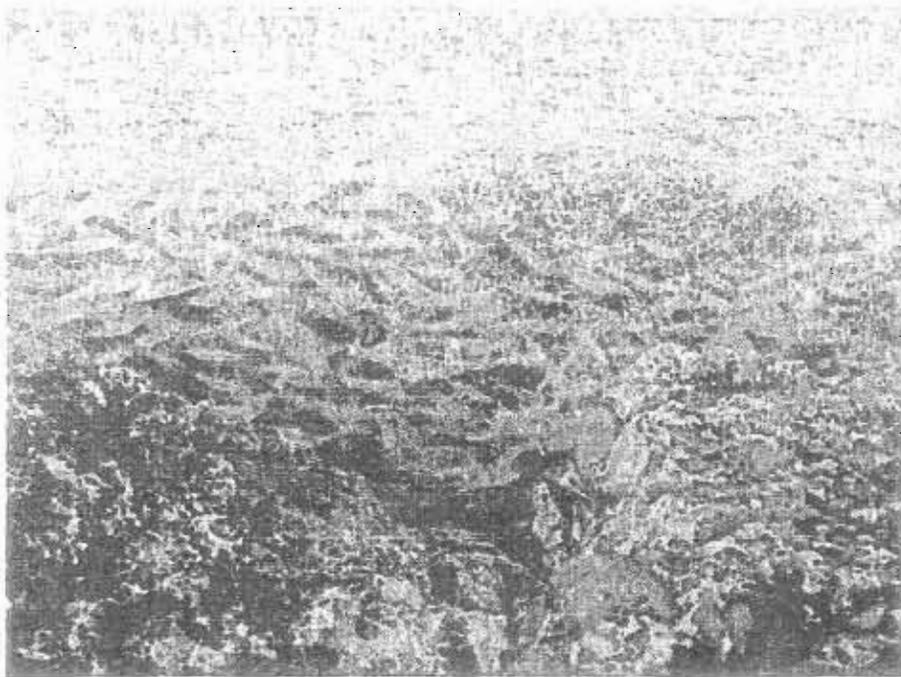


Photo 3. Juvenile shrimps, approximately 1 cm long, migrating upstream in the wetted (splash zone of the dam side walls.

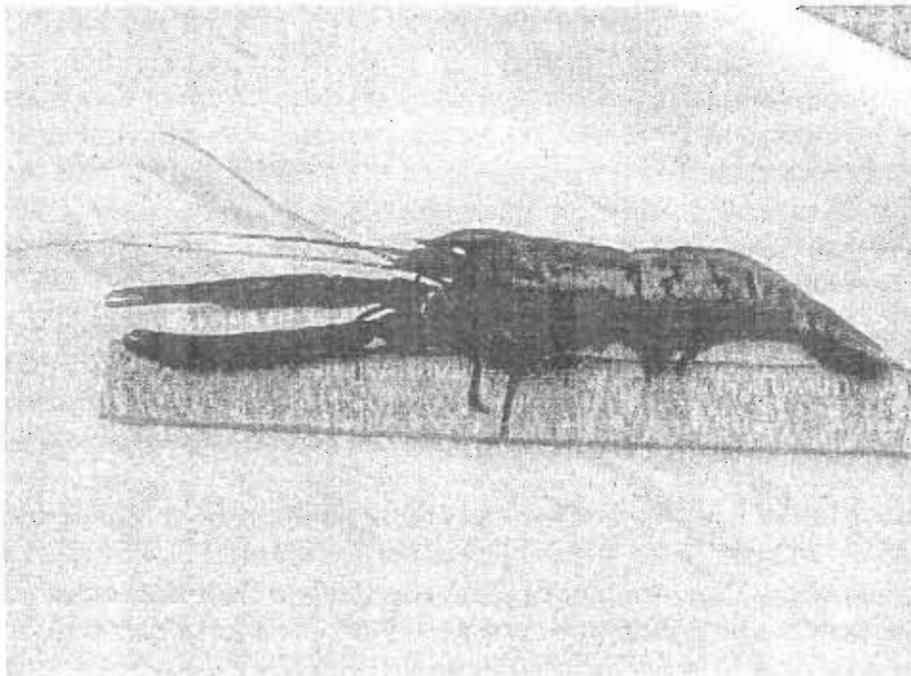


Photo 4. A specimen of *Macrobrachium carcinus*, the largest species of freshwater shrimp. This species can reach overall lengths of 18 inches and a pound in weight. This, and four other species of shrimp are actively fished.

have commented that they catch fish and the larger species of shrimp from both the Culebrinas and the Caño and its canals for consumption. The Service is participating in a fishway project for the Coloso Mill dam with AFI and PRASA.

A large wetland area, the Cayures marsh, lies south of the Culebrinas River near the Coloso sugar mill. This wetland area is a DNER designated Critical Coastal Wildlife Area providing habitat for a number of waterfowl species. The marsh consists of some interconnected ponding areas associated with overflow from the river. This wetland area will not be discussed further as the preferred alternative would not impact this marsh. In addition to the Cayures marsh, herbaceous wetlands occur on the south side of the Culebrinas River and are directly associated with the river.

From documents provided by the Corps, we understand that a number of alternatives have been considered to provide some Flood Hazard Mitigation for already developed portions of the community of Espinar and the southwestern communities of Aguadilla. The first alternative proposed was to construct a single flood levee from PR-2, just southwest of Caño Madre Vieja extending along the south side of Espinar, tying into a hill to the west to isolate the Caño from the floodwaters of the Culebrinas River (Figure 2). This would have provided flood protection for the western communities of Aguadilla, greatly reduced the floodplain of Caño Madre Vieja, and protected portions of the Espinar community. It would have raised flood levels in the Culebrinas River, however, thus affecting other portions of the Espinar community along the Culebrinas River. It also would have reduced the frequency of high flows that help maintain the channel and mouth of Caño Madre Vieja and encouraged development in much of the currently uninhabited floodplain along the Caño, violating E.O. 11888 for the protection of floodplains. To be effective, this plan would have to include channelization of the lower Culebrinas River to minimize the flood levels on its course, eliminating the river meanders and associated wetlands, and increasing maintenance costs for the floodway channel. Channelization of the lower Culebrinas River would have been likely to affect hydrology in the neighboring associated Cayures marsh. Our understanding is that this alternative has been discarded due to high costs and environmental considerations.

Alternative 2 from the original Reconnaissance Report (Figure 3) would provide two flood levees: one along the eastern side of Caño Madre Vieja north of PR-2 to protect southern Aguadilla, and a flood ring levee on the west side of the Caño. The original design would also have included a continuation of this levee on the north side of Espinar. Various permutations of Alternative 2 have been considered by the Corps as additional alternatives, mostly as variations to the western levee. In addition to the levees, the various permutations of this alternative also require the elimination of a double meander of Caño Madre Vieja via a short cut-off channel to accommodate the eastern levee. A modified version of Alternative 2 is the currently preferred alternative described as "Plan 1" in the Detailed Project Report (Figure 4). The western levee of this plan was altered to include the Iglesia de Espinar, a historic church for that community, in the protected area. The portion of the levee behind the beach berm and just north of Espinar community was eliminated, and the end of the levee was tied into the beach berm on the west side of the mouth of the Caño. One-way drainage structures are to be incorporated into the levee at strategic points. This last alternative has been further modified to include a two-way culvert

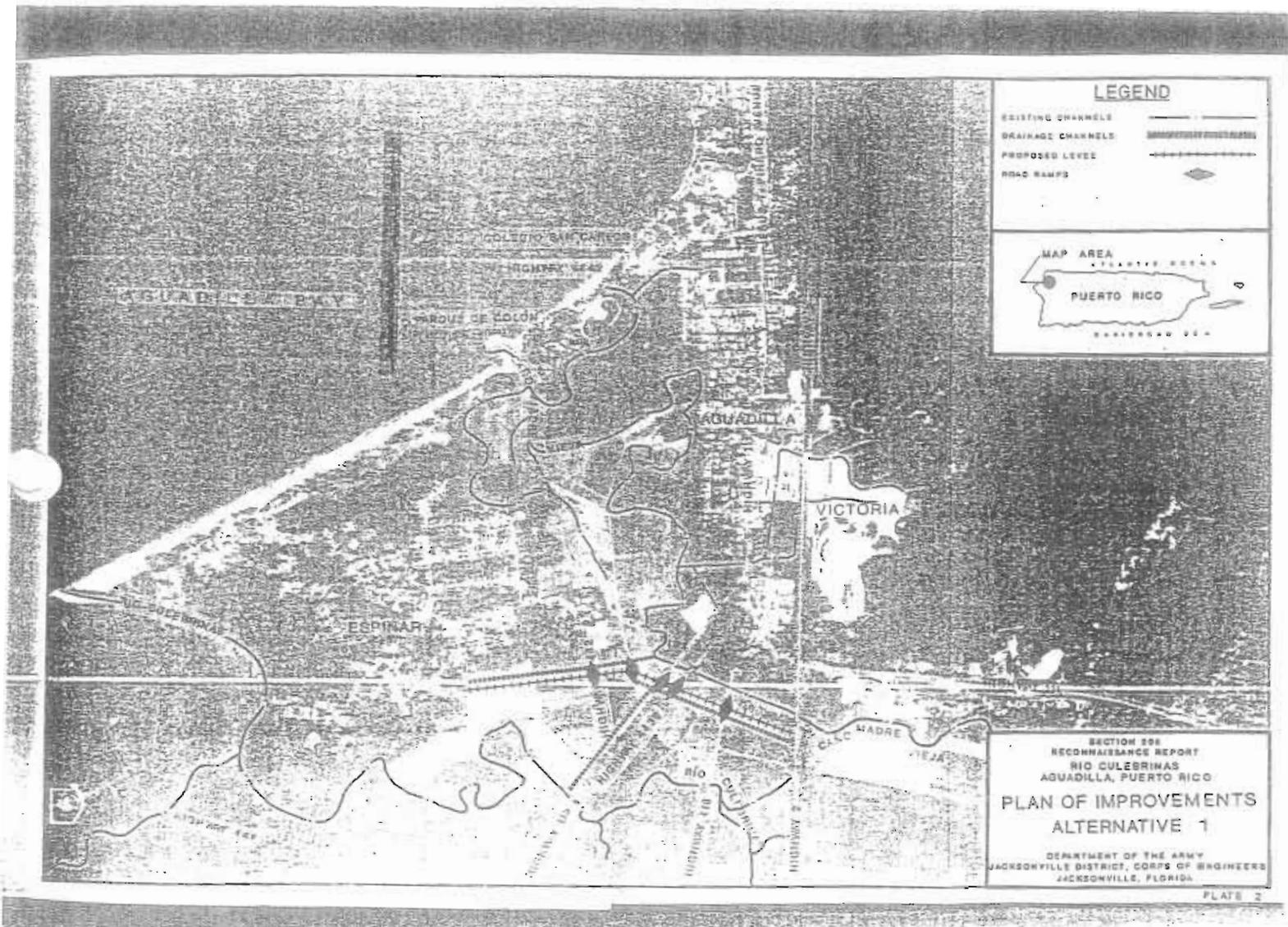


Figure 2. Original alternative 1 from Section 205 Reconnaissance Report, 1992.

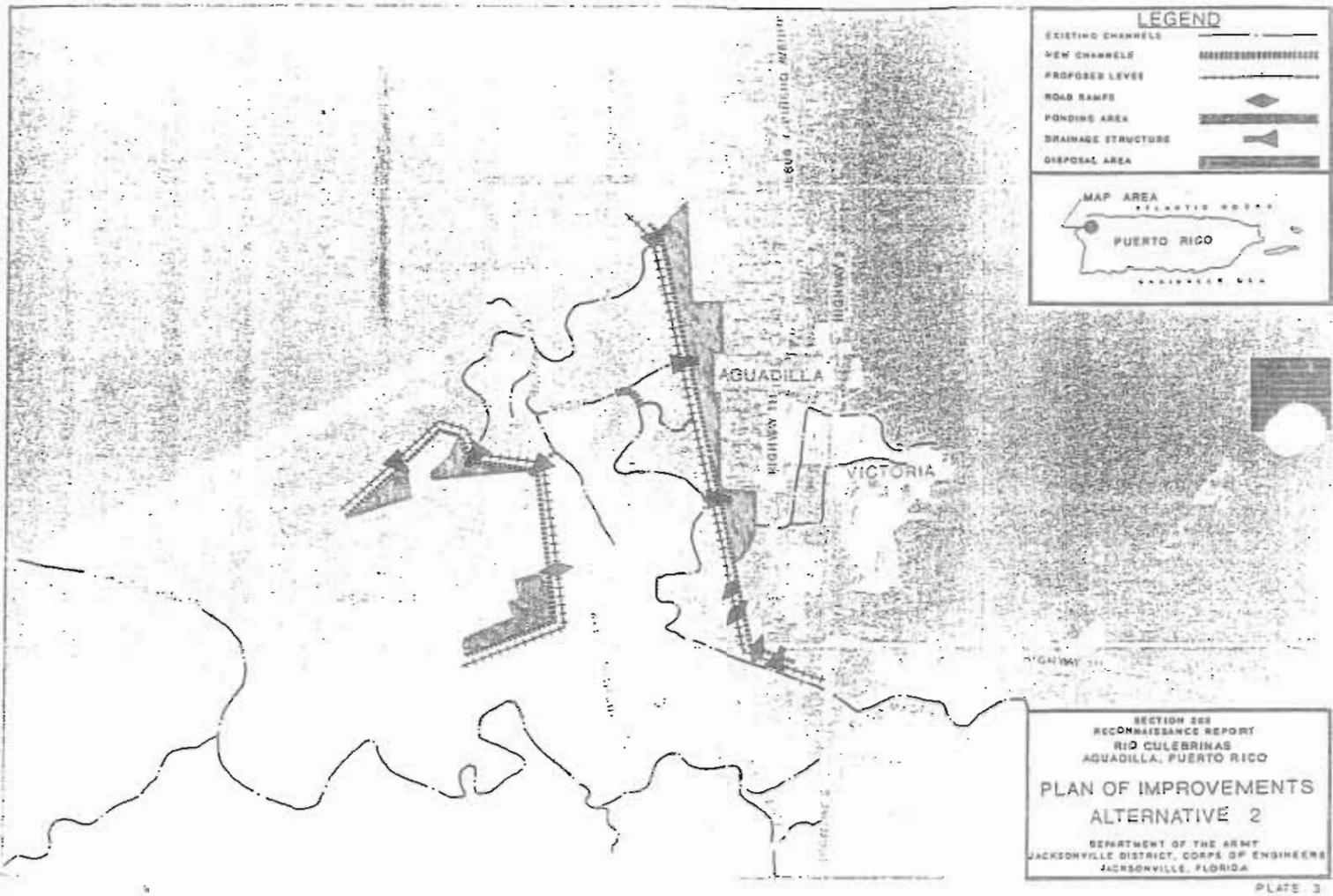


Figure 3. Original Alternative 2 from Section 205 Reconnaissance Report, 1992.



Figure 4. Currently favored alternative with the modified west levee.

to provide hydrology to the mangrove forest channel that runs on the north and east sides of the Espinar community.

### Fish and Wildlife Trust Resources

Evaluation of the fish and wildlife trust resources for this CAR focus strictly on the Caño Madre Vieja area that would be affected by the currently favored alternative. Both the Cayures marsh and the low-head dam discussed above are outside of the immediate project area, but should be evaluated if further alternatives outside the lower Caño Madre Vieja area are considered. The lower Culebrinas River valley includes areas of herbaceous and forested (mostly mangrove) wetlands. Most of the forested wetlands in the immediate project area are located near the mouth of Caño Madre Vieja.

On the east side of the Caño, Aguadilla developed a public park with recreational facilities, a boat ramp, and an athletic field and track. The beach front road on the west side from the town to the park is protected in most areas by rip-rap. The mouth of the Caño is protected by breakwater/groins, the larger one lying on the east side of the mouth (Photos 5 and 6). These help maintain the mouth open and provide some protection for small boats entering and leaving the mouth. Our understanding is that the municipality of Aguadilla may also periodically provide maintenance to keep the mouth open, and that no new alterations are planned for the mouth the the Caño. The eastern side of the Caño mouth lies within Coastal Barrier unit PR-75P, while the western side of the mouth lies within Coastal Barrier PR-75 (Figure 5). On the west side of the Caño mouth is a small groin, but the beach berm is otherwise in a relatively natural condition. The western levee would tie into the beach berm within PR-75. According to the information available in our office on CBRA, the use of Federal funds is prohibited, and exempt activities do not include flood control work authorized after the date the relevant unit was included in the CBRA (in this case 1990).

While the Service has no ongoing beach monitoring projects in the area, a previous site inspection revealed the beach between Caño Madre Vieja and the Espinar community is likely to be suitable nesting habitat for the endangered hawksbill sea turtle (*Eretmochelys imbricata*) and the leatherback sea turtle (*Dermochelys coriacea*). While the project does not contemplate any alterations to the beach area, project changes that would require alterations to this beach should require consultation under Section 7 of the Endangered Species Act. This section of the beach also lies within Coastal Barrier Unit PR-75.

### Soils

Caño Madre Vieja and the lower Culebrinas River lie within two major soil associations: the Coloso-Toa Association described as nearly level porous loamy soils, and the Bejucos-Jobos Association consisting of strongly leached soils with a very tight, clayey subsoil. Caño Madre Vieja lies mostly within the intersection of these two major associations. Soils in the project area are all either considered to be hydric soils or non-hydric soils with hydric inclusions (Figure 6). Those considered to be hydric soils include Bajura clay (Ba), Iguadad clay (Ig), and Tidal swamp (Td). The non hydric soils with hydric inclusions include Toa silty clay-loam (ToA),



Photo 5. A view of southwestern Aguadilla from PR-2 above the town. The jetty visible in the middle of the coastline is the eastern jetty of Caño Madre Vieja.

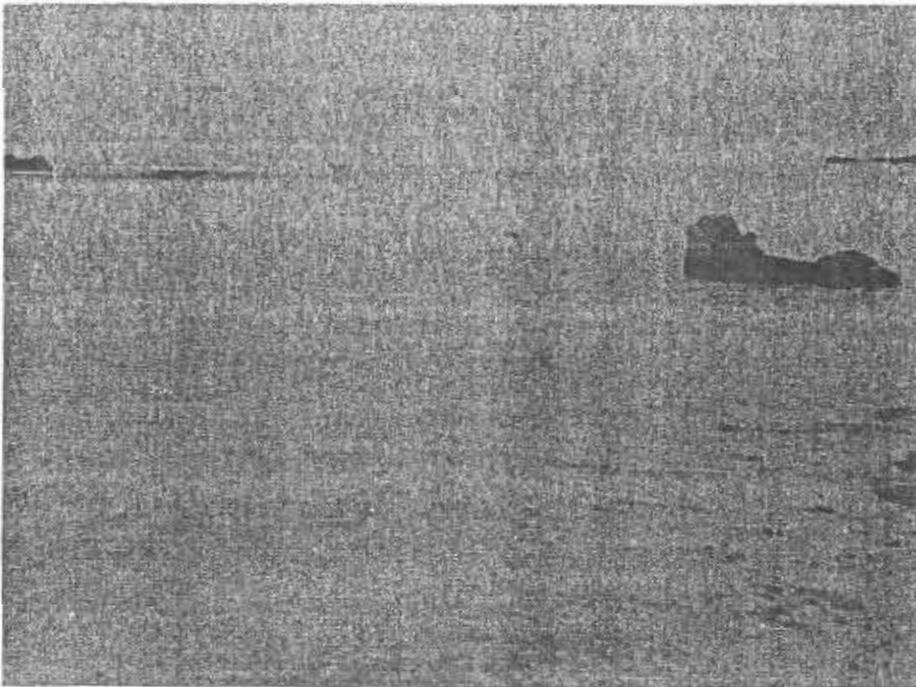


Photo 6. Open mouth of Caño Madre Vieja from Parque Colón on the east side. The tip of the small western jetty is visible on the left side of the picture.





Figure 6. Enlarged soil map showing Caño Madre Vieja.

Coloso silty clay-loam (Cn), Cataño sandy clay-loam (Ce), and Cataño sand (Cd). In general, the unmapped inclusions may be small units of the above listed known hydric soils, or would be described as “unnamed inclusions”. These unnamed inclusions generally have a lot of the characteristics of the surrounding soils and may lack obvious hydric indicators, but are often ponded. In the case of soils with heavy clay content, hydric indicators may not be obvious, and inclusions are usually within depressional wetland areas where the hydrology is maintained by ponding rather than flooding. NRCS has noted that the hydric soil indicators in such soils are good for saturation only and may not be present in ponding situations. Drainage channels have been dug on both sides of the Caño in various places, and while some have been maintained others have not, making the hydrology of the area complex.

### Existing Conditions

The National Wetland Inventory Map (Figure 7) of the area indicates relatively extensive wetlands in the Caño Madre Vieja area. While wetlands east of Caño Madre Vieja may be over-estimated in the maps, some areas marked as uplands within the proposed levees may be in the process of reverting to wetlands. The mouth of Caño Madre Vieja is mapped as Cd on the soil map, and is a classic small stream opening on a dynamic beach. The beach berms, while considered to be uplands are relatively narrow. On the eastern side of the Caño, as mentioned above, the beach berm has been elevated for the coastal road and further altered with groins and rip-rap to protect the park development, the public road, and the school. The beach berm on the western side of the Caño mouth has retained more natural characteristics with some forest of coconut palms and portia tree (*Thespesia populnea*), and West-Indian almond (*Terminalia catappa*).

Typically small rivers form sand bar sills in the river mouths during low flows and may even close during very low flows. As mentioned above, this channel is generally maintained open by the groins and occasional maintenance. Both east and west of the mouth, the beach berm is backed by the two side drainages that enter into the Caño near the mouth. These drainages are mapped as Tidal swamp (Td) and contain the riverine mangrove associations commonly found in small drainages where water accumulates behind the river mouth bar. Red mangroves (*Rhizophora mangle*) generally occur as fringes immediately adjacent to the channels, while black mangroves (*Avicennia germinans*) dominate in the saturated areas away from the open channel. On the beach side of this channel, red mangrove on the channel is backed by white mangrove (*Laguncularia racemosa*), and indication that soils are not hypersaline in this area. Leather ferns (*Achrosticum* spp.) are also commonly found in this association.

The eastern forested wetlands have been reduced since the NWI maps were made by the park development, particularly the athletic track and by the western edge of the school (Colegio San Carlos). The remaining wetlands still retain mangroves and other wet tolerant trees such as west-indian almond (*Terminalia catappa*), and palms (Photos 7 and 8). The seaward edge of the east dike would pass through the edge of the school yard, possibly cutting off a small segment of this drainage and wetland forest.

The western drainage divides with one arm passing just behind the beach berm directly west,



Figure 7. NW1 map of the project with the dike layout and rough approximation of wetland types

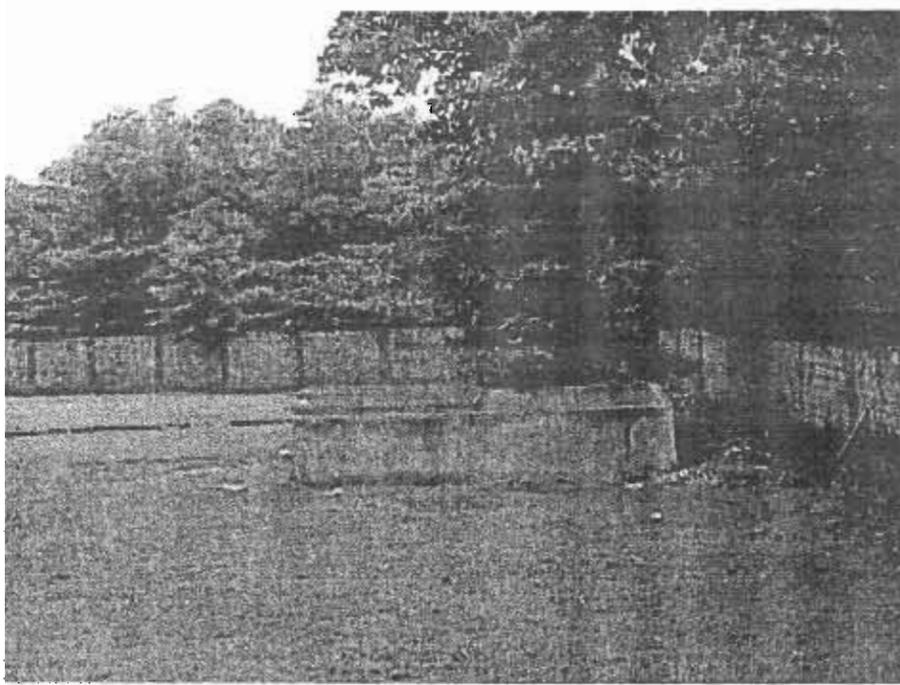


Photo 7. Colegio San Carlos school yard with the forested drainage behind it. The eastern levee would pass through part of the school yard and forest.



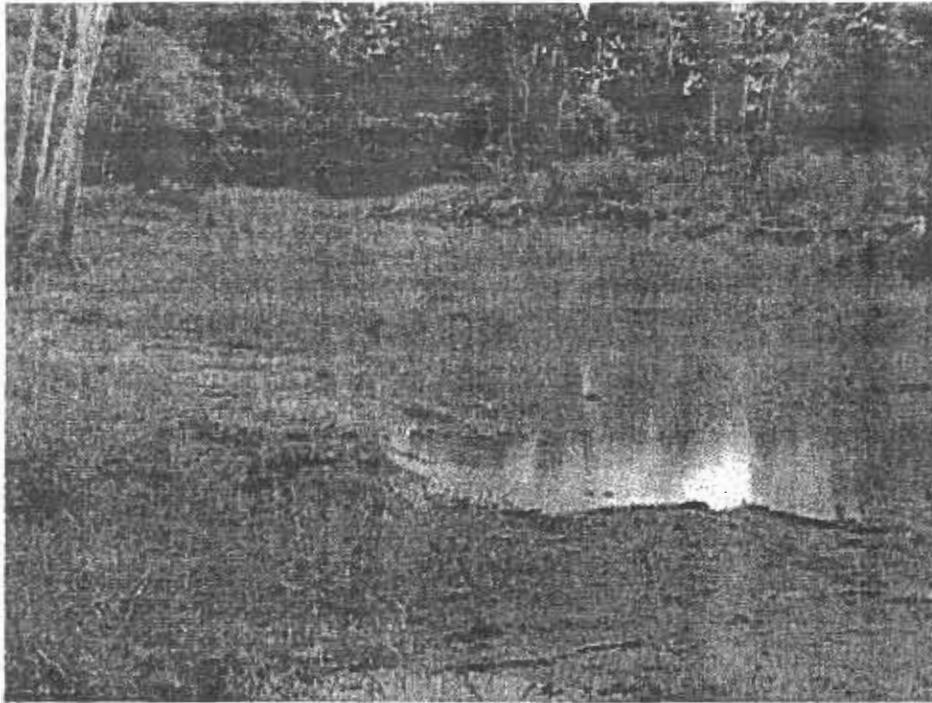
Photo 8. The forested drainage from the road just west of the school. Upland trees are in the foreground on the road levee and mangroves are in the background.

and the other arm meandering south on the edge of Espinar community. The mangrove forest along the southern portion of this drainage next to the Espinar community is well developed with some trees exceeding 30 feet in height. The channel is also connected to an intermittent drainage lying on the north side of Espinar, just behind the beach berm. The wetlands behind the beach berm are dominated by cattail (*Typha domingensis*) and other herbaceous vegetation to the west, probably a result of past (and current) land clearing and sand extraction. A previous wetland violation was noted in that area, and these wetlands were recently disturbed by land clearing activities (Photos 9 and 10). It appears that most of the cleared wetlands consisted of cattail (*Typha domingensis*) mixed with sedges and salt grass. The western dike would cut across the mangrove channel to tie into the existing beach berm just to the west of the mouth of Caño Madre Vieja. While the current plan calls for a two-way culvert to maintain tidal flow into this channel, the size of the culvert is critical in maintaining the hydraulic capacity of this channel. At the narrowest point in the vicinity of the proposed dike, the channel is approximately five feet in width and at least a foot in depth (Photos 11 and 12). Our understanding is that the Corps is currently considering a 2' diameter two-way culvert which appears to be considerably below the existing hydraulic capacity of the channel.

The east side of the Caño, south of the mangrove channel and park, lies between the side channel and a large curve in the main channel. It is mapped as Cataño sandy clay-loam (Ce) just south of the channel, shifting to Coloso silty clay-loam (Cn) and Igualdad clay (Ig) to the east. Probably reflecting these mixed soil associations, the plant community is patchy, varying between FACU and FACW herbaceous plant species. Most of the area is in grasses classified as FACU (*Panicum maximum*) with patches including sedges and FACW grasses such as *Brachiaria purpurascens*. The plant association shifts to cyperids and leather fern as the wetland forest is approached to the north, and the soils shift to Cataño sandy clay-loam. Much of the area on the eastern side of the Caño near the existing community could be considered as uplands, however, small changes in topography promote the wetland plant species in shallow depressions. The area is complex, and should be considered to be a mixture of wetlands and uplands that perform a number of wetland functions including filtration and sedimentation.

On the west side of Caño Madre Vieja, south of the mangrove channel, the soils are mapped as Cataño sandy clay-loam (Ce), grading into Bajuras clay. The plant community in this area strongly reflects the hydric soils, being dominated by wetland grasses and sedges (Photos 13 and 14). The ground in this area was completely saturated, with ponded water in places during the October 12 site visit. This area is bordered on the west by the mangrove lined channel adjacent to Espinar community. The dike would pass through this area.

Further south, in the vicinity of the double meander that would be impacted by the project (see below), the soils shift from Coloso silty clay-loam (Cn) on the east bank and within the meander area to Toa silty clay-loam (ToA) further west. Some small forest stands of geno-geno (*Lonchocarpus domingensis*) lie on or near the Caño meanders to be cut off by the levee (Photo 15 and 16). This tree is often found associated with drainages in drier areas and is considered to be a FACW tree. Some of the trees lie within a meander channel below bankfull levels, and fiddler crabs were abundant in the area indicating the likelihood of occasional estuarine conditions. Otherwise, the east bank area is dominated by guinea grass (*Panicum maximum*,



**Photo 9.** Recently disturbed wetland area behind the beach berm to the west of Caño Madre Vieja. Note the piles of cleared vegetation and soil deposited in wetlands towards the mangrove forest.



**Photo 10.** Cleared wetland area behind beach berm west of the Caño showing piled debris that includes some trees.

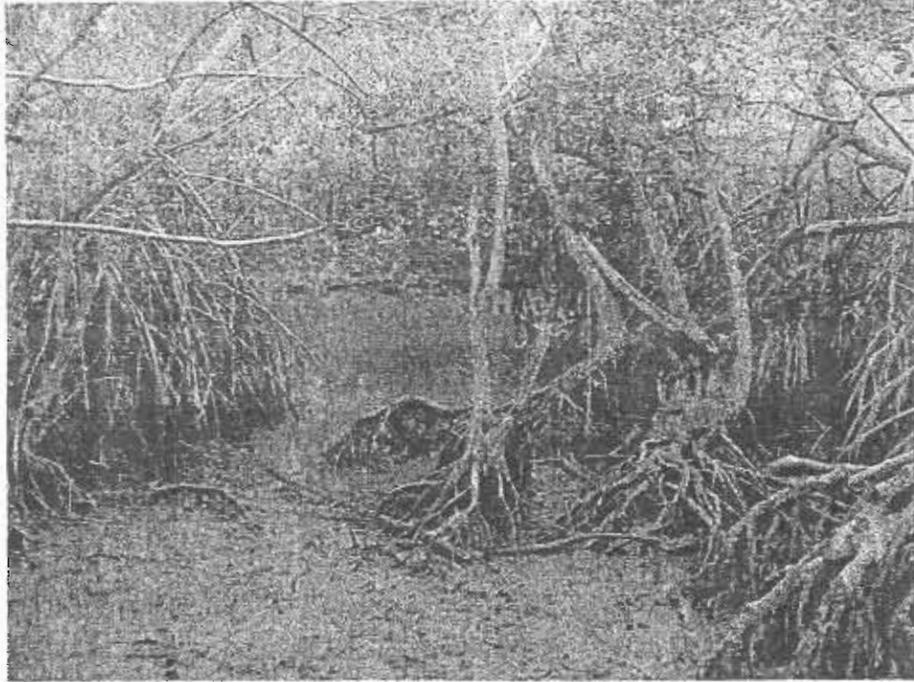


Photo 11. Predominantly red mangrove forest in the area where the western dike would cross and near the narrow point of the channel. The tide was moving out and at low stage.



Photo 12. Mixed red and white mangroves along the mangrove channel area behind the beach berm west of the Caño.

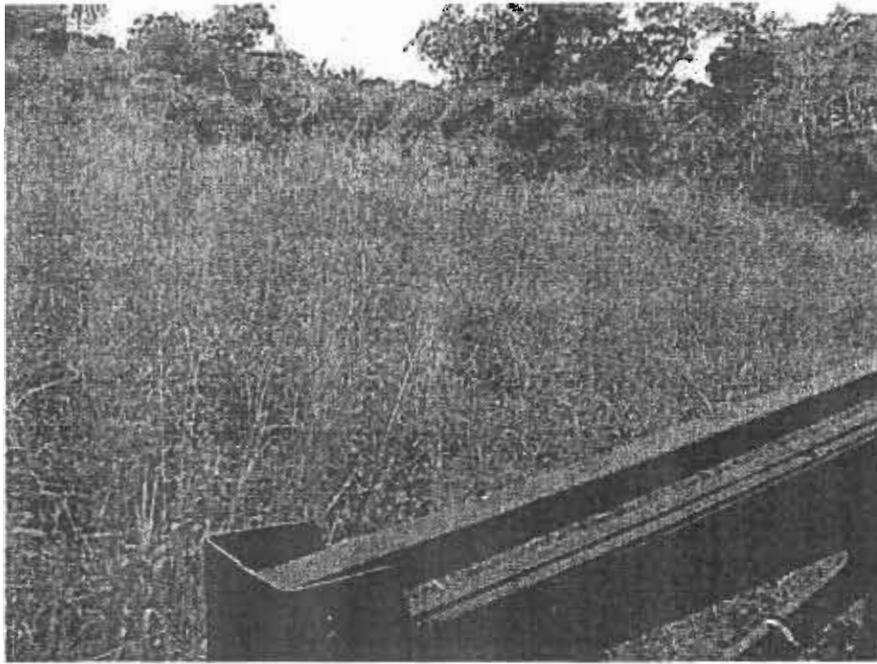


Photo 13. Sedge dominated wetlands on the west side of the Caño, south of the mangrove channel (visible in background). The ground was ponded with several inches of water during this visit.

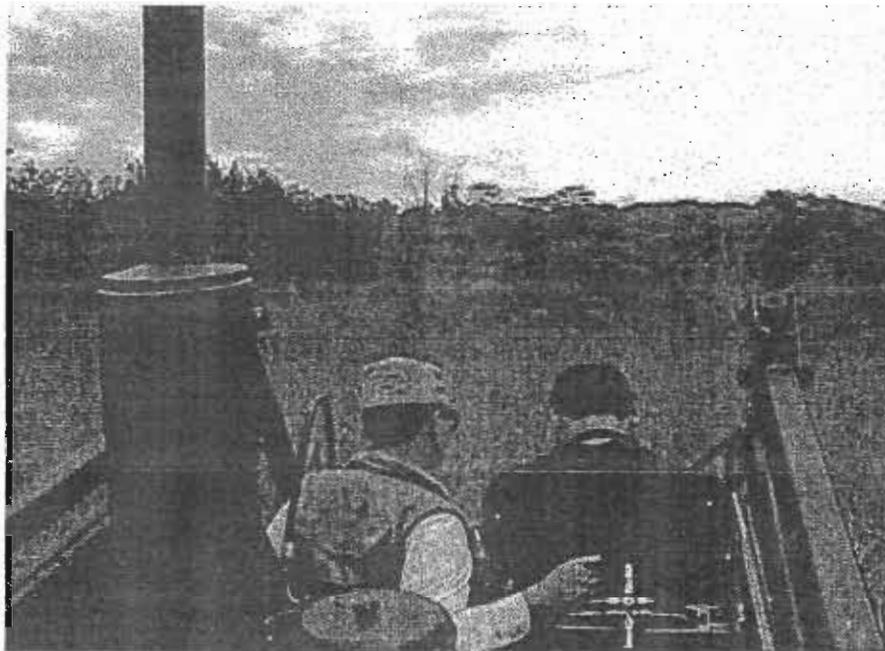


Photo 14. Another view of sedge/wetland grass dominated area. The entire area on the west side of the channel was too wet to enter with conventional 4 wheel drive vehicles and could only be accessed on foot or by tractor.

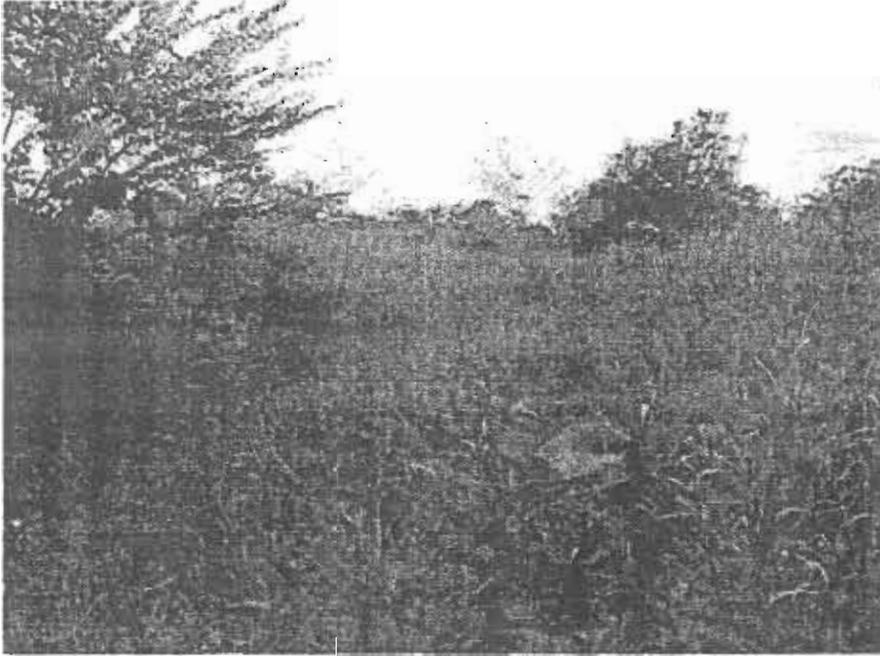


Photo 15. Mixed uplands and wet prairie area on the eastern side of the Caño, near the meanders that would be impacted. The larger trees are geno-geno (*Lonchocarpus domingensis*), and the herbaceous plants are mostly guinea grass (*Panicum maximum*) mixed with cyperids and *Brachiaria purpurascens*.



Photo 16. Geno-geno trees next to the river. Fiddler crabs were in abundance around the roots of the trees in this area.

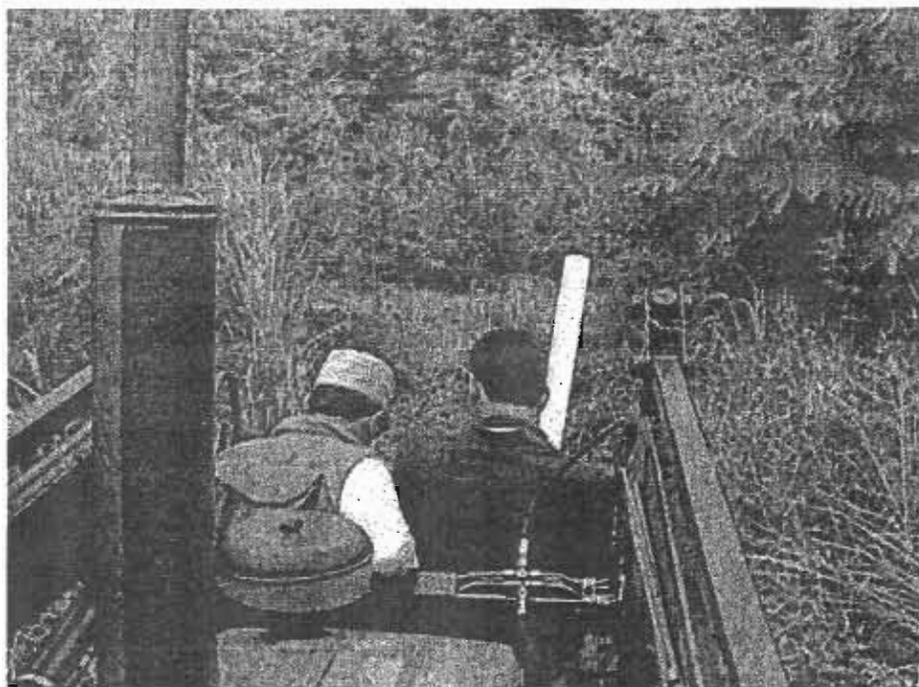


Photo 17. Western side of the Caño, approaching the edge. Note upland trees on the top of the river bank. Many of the grasses are FACW such as *Brachiaria purpurascens* and *Paspalum millegrana*.

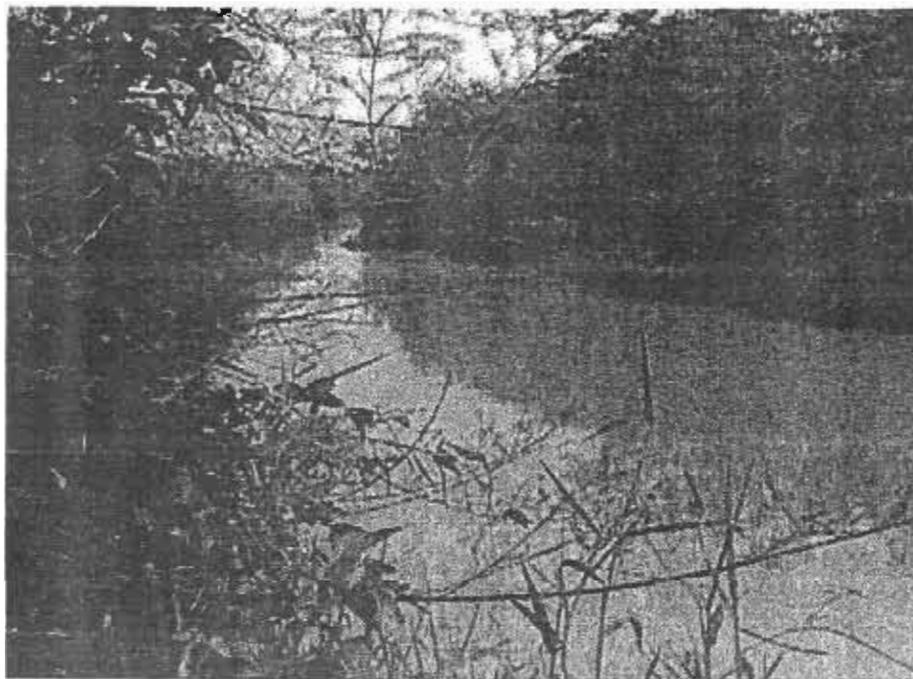


Photo 18. View downstream of the Caño from the west bank just downstream of the meanders. Trees near the water-line are mangroves (red and some white). Most are under 10 feet in height.

FACU), and the southern Aguadilla communities have developed up to the edges of the meanders at some points. The west bank is still largely in sugarcane production, with very deep furrows made to help drain the soils. Depressional areas have sedges and FACW grasses moving in. A drainage channel coming from the edge of Espinar community divides this area from the sedge dominated areas further north.

Small mangroves still occur on the Caño banks just downstream of the double meander (Photos 17 and 18). The size of the mangroves probably reflect the last time this Caño was mechanically cleaned out. While the Corps does not intend further alteration to the cut-off meander, the hydrology would be highly altered from an estuarine to a fresh-water ponding condition. Some of the trees would be eliminated, though it appears that most would be outside the immediate footprint of the levee.

Further upstream, to the southeast, the eastern dike would pass through a forested area and over two roads (Figure 4). The forest in this area has some mature mango trees, but is heavily dominated by *Albizia procera*, an introduced legume that colonizes old cane fields and disturbed areas. *Albizia* tends to form monocultures and provides little wildlife habitat value. While this species is often found in relatively wet soils on the edges of wetlands, it is considered to be an upland species.

Wildlife seen in the Caño Madre Vieja included a number of herons and egrets, smooth-billed anis (*Crotophaga ani*), and the red bishop (*Euplectes orix*). The presence of fiddler crabs in the vicinity of the double meander indicates that estuarine conditions occur at least that far upstream. Other likely fauna would include mongoose, rats, the cane toad (*Bufo marinus*), and other common amphibians, reptiles, and birds in the less disturbed areas with trees. The aquatic freshwater species of fishes and shrimps should occur in the Caño as well as the Culebrinas River.

### **Potential Project Impacts and Recommendations**

The draft Environmental Assessment for the project estimates a wetland loss of approximately 0.5 acres of mangroves (under worst case scenario), and approximately 1.5 acres of wet prairie. It would also eliminate approximately 980 meters of active stream (meander to be cut off). The EA emphasizes that these are strictly estimates of direct impacts from the footprint of the levee, and do not include indirect or secondary impacts likely to occur in wetlands outside of the flood levees. The EA does not consider the fragmentation of wetlands by the dike and associated construction (including the small pilot channel and land to be disturbed during the construction phase). Estimated impact width for the levee footprint includes: a side access on the inside of the levee (5m), the levee footprint (approximately 21m with side slopes), access between the levee and small pilot channel (9m), pilot channel on the outside of levee (7m), and 4m of disturbed area outside of the pilot channel. The total width of the disturbed area would be approximately 46m or 150 feet. Permanent impacts would likely be less, but should include at least the levee footprint to the pilot channel (approximately 21 m).

Indirect and secondary impacts should receive careful consideration as they are likely to be

greater and have longer term impacts on the Caño's wetlands than the direct impacts. Indirect effects would be likely to include hydrology modifications to wetlands lying outside the flood levee and meander wetlands to be cut off by the diversion channel within the flood levees. Secondary impacts would include the likelihood that wetlands remaining outside of the levees would be filled for urban expansion.

Much of the alignment of the eastern levee would lie within uplands, except where it passes in the vicinity of the mangrove wetlands near the school and where it cuts off the Caño meanders. The eastern levee would impinge on the edge of the mangrove fringed channel between the track and Colegio San Carlos, and the impact area is likely to be small as this is a much more restricted forested wetland area than the mangrove channel next to Espinar. The major impact to the meander to be cut off would be due to the cut-off channel within the levee. The tendency over time should be for this meander to fill with sediment since the only hydrology would be provided by the one-way drainage structure through the dike. At the least, the character of the channel and any associated wetlands would change.

The western dike, as currently contemplated cuts across a small portion of the mangrove forest and channel near Espinar and bisects the relatively large herbaceous (sedge dominated) wetland south of the mangroves. The hydrology currently supporting the mangroves is likely to be altered. As mentioned above, the seaward end of the dike, including the mangrove channel crossing, lies within Coastal Barrier PR-75. The two-way culvert being proposed for maintaining hydrology to the Espinar mangrove channel is only 2 feet in diameter. Heavy flood waters moving down this channel would be drained through additional one way drainage structures. Our understanding is that the sizing of the two-way culvert was based on a need to prevent back-flow flooding into the side channel as the flood stage rises on the main channel within the dikes. Apparently this is also based on the assumption of continued partial closing of the Caño, forcing flood levels to as high as 2 meter near the mouth of the Caño. Heavy flooding has traditionally opened this mouth, and the mouth rarely closes now due to the groin/breakwater modifications and periodic maintenance by the municipality.

The original version of the two-levee alternative (Figure 3) included a flood ring levee immediately adjacent to the south, east and north sides of Espinar community. The variation to include the church could still be used within this alternative. That alternative would have impinged on the mangrove channel immediately adjacent to the northeast part of Espinar community, but would have remained south of the back-berm herbaceous and forested wetlands and Coastal Barrier Unit PR-75 and it would have avoided impacts to the sedge dominated wetlands south of the mangroves. The mangroves that would be impacted could be mitigated by relocating the portion of the channel to be impacted slightly eastward and replanting mangroves.

If the currently favored alternative can still be developed under the Coastal Barriers Resources Act, we strongly recommend that the Corps consider installing a larger two-way culvert to maintain tidal flows in the mangrove channel. Reducing the hydraulic capacity of this channel would be likely to encourage sedimentation upstream of the culvert. While the general tendency of flows in the existing mangrove channel is seaward, the persistence of mangroves far upstream along this channel indicates that seawater moves in as a tidal salinity wedge, at least during

spring tides (or normal tides in low rainfall periods). Maintaining adequate two-way flow may be critical to maintaining this system. The additional one-way flood-plain culverts should be slightly elevated above the two-way culvert to encourage the normal flows to continue passing through the principal two-way culvert, and to maintain the existing hydrology in the wetlands upstream.

Wetlands outside of the dike are supposed to be maintained as ponding areas to reduce community flooding, and allow these areas to drain out as flood levels recede within the flood dikes. The Corps should stipulate how these ponding areas would be maintained. Considerations for maintaining these areas as wetlands should include careful evaluation of the elevations of the one-way drainage structures through the dikes. If these ponding areas are not protected through acquisition and posting, they are likely to be developed in a piece-meal fashion through incidental filling and should be considered as part of the secondary impacts of the project.

For wetland impacts that cannot be avoided, we believe that significant opportunities exist within the flood levee dikes for wetland restoration, and possibly some creation. The presence of young mangroves far up the channel of Caño Madre Vieja indicates that the area has probably been periodically altered through channel clearing. Mangroves could be planted, and to some degree, allowed to naturally colonize the Caño margins. Post-project conditions within the dike floodway area may preclude the little agricultural use currently occurring there. Without maintenance of existing drainage channels, more of the area would be likely to revert to wetlands. This obviously depends on the future plans for agricultural use and sand/earth extraction in the area.

The sedge dominated area on the west side of the Caño near the mangrove forest would be particularly suitable for estuarine and freshwater forested wetland restoration. Since this area would lie mostly outside the flood levee, protection of this area from future development would be critical. If no use restrictions are put on these wetlands, they should be considered to be part of secondary project impacts. The upstream portions of this area may be capable of supporting fresh-water wetland trees such as swamp apple (*Annona glabra*), (*Machaerium lunatum*), and swamp bloodwood (*Pterocarpus officinalis*). Freshwater forested wetlands in similar positions on the landscape used to be quite abundant in Puerto Rico, but were largely eliminated by clearing for agriculture early in this century. A *Pterocarpus officinalis* forest (Caño Boquilla) occurs on a similar small drainage associated with the Añasco River to the south and is in the process of becoming a Natural Reserve.

In summary, we recommend that the preferred alternative be re-evaluated to avoid impacts within Coastal Barrier PR-75. If the Corps determines that the project can still proceed as proposed under CBRA, careful consideration should be given to the capacity of the two-way culvert to maintain hydrology to the mangrove channel. The wetland areas outside of the flood dikes would also have to be protected in some manner and the drainage culvert elevations would be critical to maintaining these wetlands. Mitigation needs could be met through development of additional estuarine and freshwater forested wetlands within the flood levees.

# APENDICE H



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## DELINEATION OF THE WATERS OF UNITED STATES

DISCOVERY BAY RESORT & MARINA  
ESPINAR WARD, AGUADA PR

PREPARED FOR:

CORDECO NORTHWEST CORP.  
PO BOX 610  
AGUADA, PR 00602

FEBRUARY 2007

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1	Field indicator for Hydric Soils
2	Field indicator for Wetland Hydrology

## LIST OF EXHIBITS

<u>EXHIBIT</u>	<u>TITLE</u>
1	Location Map with sections A, B, C and D
2	Copies of Sheet 14 Soil Survey of Mayagüez Area of Puerto Rico
3	Soil Survey Map

## **INTRODUCTION**

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The purpose of this study is to identify and delineate the wetland and/or waters of the United States present within the project area. The area is located in State Highway PR-412, Km. 2.1, Espinar Ward in the Municipality of Aguada, Puerto Rico and encompasses approximately 200 acres. The study was conducted in four section identified as Section A, Section B, Section C and Section D.

The terms waters of the United States is defined in 33 CFR 328.3 and includes a variety of water bodies such as lakes, rivers, streams (including intermittent streams) mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, beaches, lakes, and natural ponds. Wetlands are subset of the waters of the United States. Pursuant to Section 404 of the Clean Water Act of the US Army Corps of Engineers defines wetlands in 33 CFR 328.3b as those areas that are inundated or saturated surface or ground waters at a frequency and duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

## **METHODS**

The wetland study was conducted following the technical standards and procedures recommended in the Corps of Engineers Wetland Delineation Manual.

The project area was located in Soil Conservation Service (SCS) Soil Survey Area of Mayagüez, Puerto Rico (1975) Sheet Number 14 (Appendix 3)

The field inspections at each Section were conducted as follow:

Section A - During the months of January and February 2002.

Section B – During the month of August 2005.

Section C – During the month of January 2006.

Section D – During the month of January 2007.

Soil observation points were established within the boundaries of the study area. At each observation point an approximately 18 inches deep hole was excavated if soil conditions permitted. A slice from the edge of the hole was taken and the soil profile characteristics recorded and compared to the profile described by SCS (1975) for the area.

The area around each observation point was inspected for wetland hydrology (Table 2) and the dominant plant species within the study area were recorded. Species dominance was utilized to determine the indicator status of the dominant species within Espinar Ward. Table 1 details the definitions used for each National Wetland Plant List indicator category. Under these indicator categories and under normal circumstances, areas dominated by Facultative Wetland Plant (FACW) are wetland and Obligated Upland Plant (UPL) species are not wetlands. Areas that are dominated by species in the Facultative Plant (FAC) indicator category are normally considered the transition zone and can be either wetlands or non-wetlands. At those sited where the soil hydrology criteria were met, the site was declared wetlands if more than 50 percent of the

dominant species in each community were FAC, FACW, or OBL. Dominance by UPL and FAC species was utilized as back up to the soils and to establish the limits of the wetland delineation.

The data gathered was recorded on field data sheets.

## RESULTS:

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### Vegetation:

The dominant vegetation for the upland and wetland areas at each Section studied are:

1. Section A

- a. Upland vegetation: *Panicum maximum*, *Paspalum fasciculatum*, *Ipomea sp.*, among others.
- b. Wetland vegetation: *Laguncularia racemosa*, *Rhizophora mangle*, *Typha domingensis*, *Sesbania sericea*, among others.

2. Section B

- a. Upland vegetation: *Panicum maximum*, *Ipomea sp.*, among others.
- b. Wetland vegetation: *Laguncularia racemosa*, *Conocarpus erectus*, *Typha domingensis*, *Sesbania sericea*, among others.

3. Section C

- a. Upland vegetation: *Panicum maximum*, *Paspalum fasciculatum*, among others.
- b. Wetland vegetation: *Brachiaria sp.*, *Ludwigia sp.*, *Cyperus sp.*, *Mimosa pigra*, *Hymenachne amplexicaulis*, among others.

4. Section D

- a. Upland vegetation: *Panicum maximum*, *Ipomea sp.*, among others.
- b. Wetland vegetation: *Laguncularia racemosa*, *Rhizophora mangle*, among others.

## **Soils:**

SCS (1975) identifies seven soils mapping units within the study area and/or its immediate vicinity:

### **1. Bajura series**

The Bajura series consists of poorly drained soils that are medium acid and slowly permeable. These soils are in the lower lying areas of the flood plains along rivers and drainage channels. They formed in recent deposits of silt and clay washed from the volcanic and limestone hills. The water table is seasonally high. The climate is humid. The annual temperature ranges from 76° to 79° F.

In a representative profile the surface layer is very dark grayish-brown, medium acid clay about 6 inches thick. The subsoil is very dark grayish-brown and gray, medium acid, very firm, sticky and plastic clay to a depth of about 12 inches. The substratum is dark-gray or dark greenish-gray, medium acid, very firm, sticky and plastic clay.

Ap-0 to 6 inches- very dark grayish-brown (10YR 3/2) clay; massive; few pressure faces; hard, firm, slightly sticky and plastic; common, fine, black concretions; many fine roots; medium acid; clear, smooth boundary.

B2-6 to 12 inches- very dark grayish-brown (2.5Y 3/2) and gray (2.5Y 6/0) clay; few, medium, distinct mottles of reddish brown (5YR 4/4); weak, fine and medium, subangular blocky structure; few pressure faces; very firm,

sticky and plastic; common, fine, black concretions; common fine roots; medium acid; gradual, smooth boundary.

C1g-12 to 32 inches- dark gray (N 4/0) and dark greenish-gray (5BG 4/1) clay; few, medium, distinct mottles of brown (7.5YR 4/4); massive; few pressure faces; very firm, sticky and plastic; few fine roots; medium acid; gradual, smooth boundary.

a) Bajura clay (Ba) - This soil is nearly level. It is on the flood plains along the river in the lower lying areas that are farther from the riverbanks. It is subject to frequent flooding that causes some damage to crops. The water table is seasonally high. This soil is fertile. Permeability is slow in the subsoil, and the available water capacity is high.

## **2. Catano series**

The Catano series consist of deep, excessively drained, nearly level soils that are calcareous and rapidly permeable. These soils occur along the coast in areas that are close to sea level but above high tide.

In a representative profile the surface layer is light gray and very dark brown, calcareous sand about 4 inches thick. The next layer, to a depth of about 10 inches is dark brown, calcareous, loose, nonsticky and nonplastic sand. Underlying this are layers of brown and grayish brown, calcareous, loose, nonsticky and nonplastic sand.

A1-0 to 4 inches – light gray (10 YR 7/2) sand, sand size, shell fragments, very dark brown (10 YR 2/2) subrounded grains of quartz, and volcanic rock fragments coated with organic matter; very dark grayish brown (10 YR 3/2) overall; single grained; loose, nonsticky and nonplastic; many fine roots; strong effervescence: clear, smooth boundary.

AC-4 to 10 inches – sand that is dark brown (10 YR 3/3) overall; light gray (10 YR 7/2) shell fragment and very dark brown (10 YR 2/2) volcanic rock fragments; single grained; loose, nonsticky and nonplastic; common fine roots; strong effervescence: clear, smooth boundary.

CI-10 to 50 inches – sand that is brown (10 YR 4/3) overall; light gray (10 YR 7/2) shell fragment and very dark brown (10 YR 2/2) subrounded volcanic rock fragments; single grained; loose, nonsticky and nonplastic; few fine roots; strong effervescence; clear, smooth boundary.

C2-50 to 60 inches – sand that is grayish brown (10 YR 5/2) overall; single grained; loose, nonsticky and nonplastic; very few fine roots; strong effervescence.

b) Ce (Catano sandy clay loam) – It has a profile similar to the one described as representative of the series, but the surface layer is sandy clay loam instead of sand and is lighter colored. It has slightly higher available water capacity. It has a

surface layer of grayish brown, calcareous sandy clay loam about 5 to 7 inches thick and is underlain by lighter colored, calcareous sand that is several feet thick.

The available water capacity is moderate in the thin surface layer.

### **3. Coloso series**

The Coloso series consist of deep, somewhat poorly drained, nearly level soils that are slightly acid and moderately permeable. These soils are on the flood plains of rivers that drain uplands underlain by volcanic rocks and limestone. The depth to a water table is 24 to 48 inches. The climate is humid. Rainfall amounts to 70 to 90 inches, and the annual temperature ranges from 76° to 79° F.

In a representative profile the surface layer is dark brown, slightly acid silty clay loam about 7 inches thick. The subsoil, to a depth of about 13 inches, is dark brown, slightly acid silty clay loam that has common fine mottles of yellowish red and light gray. The substratum is dark gray and light gray, slightly acid, firm, slightly sticky and plastic silty clay loam or silty clay. It has many medium mottles of reddish brown, yellowish brown and greenish gray.

Ap-0 to 7 inches - dark brown (10YR 4/3) silty clay loam; weak, medium, granular structure; Firm, slightly sticky and plastic; many fine roots; few wormholes; slightly acid; clear, smooth boundary.

B2-7 to 13 inches - dark brown (10YR 4/3) silty clay loam; common fine, distinct mottles of yellowish red (5YR 4/6) and common, fine, faint mottles of light gray (10YR 7/2); weak, fine, subangular blocky structure; firm, slightly sticky and slightly plastic; common fine roots; few, fine, black concretions; few wormholes; slightly acid; clear, smooth boundary.

C1-13 to 33 inches - dark gray (10YR 4/1) and light gray (5YR 7/1) silty clay loam; many, medium, distinct mottles of reddish brown (5YR 4/3); massive; firm, slightly sticky and plastic; few fine roots; common, fine, black concretions; few wormholes; slightly acid; gradual, smooth boundary.

C2g-33 to 58 inches - + dark gray (10YR 4/1) silty clay; many, fine, faint mottles of yellowish brown (10YR 5/8) and common, fine, distinct mottles of greenish gray (5GY 5/1); massive; firm, slightly sticky and plastic; few fine roots; common, fine, black concretions; few wormholes; slightly acid.

- a) Cn (Coloso silty clay loam) - This soil is on flood plains not far from the banks of the streams and rivers and is subject to occasional flooding that causes damage. It is a nearly level, somewhat poorly drained soil that is fertile and has high available water capacity.

#### 4. Espinal Series

The Espinal series consists of deep, nearly level, excessively drained soils that are rapidly permeable. These soils occur along the coast at elevations close to sea level. They formed in sandy material that consisted of quartz grains and sub rounded fragments of volcanic rock. The climate is subhumid. Rainfall amounts to 60 to 65 inches, and the temperature ranges from 76° to 79° F.

In a representative profile the surface layer is dark brown, medium acid sand about 12 inches thick. This layer contains very dark brown, sand-sized volcanic fragments. The next layer, to a depth of about 19 inches, is dark yellowish-brown, medium acid, loose, nonsticky and nonplastic sand. The substratum, to a depth of more than 5 feet, consists of very pale brown, calcareous, loose, nonsticky and nonplastic sand.

Ap-0 to 6 inches - dark garyish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable, slightly sticky and slightly plastic; many fine roots; medium acid; clear, smooth boundary.

B2-6 to 12 inches- dark grayish-brown (10YR 4/2) loam; brown (10YR 4/3) crushed; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; common fine roots; medium acid; clear, smooth boundary.

B3-12 to 36 inches- dark yellowish-brown (10YR 4/4) silt loam; weak, fine, subangular blocky structure; friable, slightly sticky and slightly plastic; common fine roots; medium acid; gradual, smooth boundary.

a) Es (Espinal sand) - This soil occurs at elevations close to sea level. It has rapid permeability, low available water capacity, and low fertility. Included in mapping were small areas of Catano sand and Coastal beach. These areas make up to 5 percent or less of the acreage. This soil is generally not suitable for cultivation. Its use is restricted mainly to coconuts, pasture, and wildlife habitat. Most of the acreage is in old coconut trees and an under growths of native pasture plants and low brush. Small areas are planted to subsistence crops and citrus. Other areas are used for residential sites and recreational purposes. Available water capacity, permeability, and fertility are severe limitations.

## **5. Santoni Series**

The Santoni series consists of nearly level, poorly drained soils that are calcareous and slowly permeable. These soils are in the lower lying areas of the flood plains along the river and near the limestone hills. The depth to a water table ranges from 20 to 36 inches. The climate is humid. Rainfall amounts to 80 to 90 inches, and the annual temperature ranges from 76° to 78° F.

In a representative profile the surface layer is very dark grayish-brown, calcareous clay about 12 inches thick. The lower 5 inches of this layer has many medium mottles of olive

brown and common fine mottles of yellowish red. The subsoil is calcareous, firm, sticky and plastic clay about 6 inches thick. This layer is gray, olive brown, dark grayish brown and dark reddish brown. The substratum is gray and dark gray, calcareous, firm, sticky and plastic clay mottled with greenish gray and olive brown.

Ap-0 to 7 inches - very dark grayish-brown (2.5Y 3/2) clay; weak, coarse, subangular blocky structure; hard, very firm, sticky and plastic; many fine roots; few pressure faces; strong effervescence; abrupt, smooth boundary.

A1-7 to 12 inches - very dark grayish-brown (2.5Y 3/2) clay; many, medium, faint mottles of olive brown (2.5Y 4/2) and common, fine, prominent mottles of yellowish red (5YR 5/8); weak, coarse, subangular blocky structure; firm, sticky and plastic; common, fine roots ; common pressure faces; strong effervescence; clear, smooth boundary.

B2g-12 to 18 inches - mixed gray (5Y 7/1), olive brown ( 2.5Y 4/4) and dark grayish brown (2.5Y4/2) clay; few, fine, prominent mottles of dark reddish brown (5YR 3/4); dark grayish brown (2.5Y 4/2) crushed; weak, coarse, subangular blocky structure; firm, sticky and plastic; few fine roots; common pressure faces; black stains because of root decay; strong effervescence; clear, wavy boundary.

C1g - 18 to 29 inches - gray (5Y 5/1) clay; common, medium, prominent mottles of olive brown (2.5Y 4/4); massive; firm, sticky and plastic; few fine roots; common pressure faces; few, fine, calcareous fragments; slight effervescence; gradual, wavy boundary.

C2g - 29 to 38 inches - mixed dark gray (5Y 4/1), gray (5Y 5/1), olive brown (2.5 4/4), and brownish-yellow (10YR 6/6) clay; olive (5Y 4/3) crushed; massive; firm, sticky and plastic; few fine calcareous fragments; slight effervescence; gradual; wavy boundary.

C3g - 38 to 54 inches - dark gray (5Y 4/1) clay; common, medium, prominent mottles of olive brown (2.5Y 4/4); massive; firm, sticky and plastic; slight effervescence; gradual, wavy boundary.

C4g - 54 to 61 inches - mixed dark gray (5Y 4/1) yellowish-brown (10YR 5/6) and greenish-gray (5BG 6/1) clay; olive brown (2.5 4/4) crushed; massive; firm, sticky and plastic; slight effervescence.

a) Sn (Santoni clay) - This soil is on flood plains and generally occupies the lower lying areas farther from the riverbanks. It is subject to frequent flooding that causes some crop damage. It is fertile. Permeability is slow, and the available water capacity is high.

## **6. Td (Tidal Swamp)**

These areas are covered with a thick growth of mangrove trees. These areas are long that seacoast and inlet and are under salt water most of the time. The soil material consists of light colored, saline, sandy or clayey materials and some organic materials form decaying mangrove trees. The underlying material, at variable depths consists of such substances as coral, shells, and marl.

## **7. ToA (Toa Series)**

The Toa series consists of deep, moderately well drained soils that are slightly acid and moderately permeable. These soils are on flood plains along rivers. The climate is humid. Rainfall amounts to 70 to 90 inches, and the annual temperature ranges from 72° to 79° F.

In a representative profile the surface layer is dark brown, slightly acid silty clay loam about 10 inches thick. The subsoil, to a depth of 22 inches, is dark brown, slightly acid, firm, slightly sticky and slightly plastic silty clay loam. The upper part of the substratum is brown, slightly acid, friable, slightly sticky and slightly plastic silt loam that has a few fine mottles of gray. The lower part is a thick layer of brown to dark brown, slightly acid, friable, slightly sticky and slightly plastic silty clay loam that has common fine mottles of reddish brown and gray.

Ap - 1 to 10 inches - dark brown (10YR 3/3) silty clay loam; weak, medium, granular structure; firm, slightly sticky and slightly plastic; many fine roots; few wormholes; slightly acid ; clear, smooth boundary.

B - 10 to 22 inches - dark brown (10YR 3/3) silty clay loam; weak, fine, subangular blocky structure; firm, slightly sticky and slightly plastic; common fine roots; few wormholes; common, fine, black specks; slightly acid; clear, smooth boundary.

C1 - 22 to 38 inches - brown (10YR 5/3) silt loam; few, fine, faint mottles of gray (10YR 6/1); massive; friable, slightly sticky and slightly plastic; few fine roots; common fine pores; few, fine, black specks; slightly acid; clear, smooth boundary.

C2 - 38 to 47 inches - brown (10YR 4/3) silty clay loam, many, fine, distinct mottles of reddish brown (5YR 3/4) and few, fine, faint mottles gray (10YR 6/1); massive; firm, slightly sticky and slightly plastic; very few fine roots; common fine pores; few, fine, black specks; slightly acid; clear, smooth boundary.

C3 - 47 to 60 inches - brown to dark brown (7.5YR 4/2) silty clay loam; common, fine, distinct mottles of reddish brown (5YR 3/4) and gray (10YR 6/1); massive; friable, slightly and sticky and slightly plastic; very few

fine roots; common fine pores; few, fine, black specks; slightly acid.

- a) Toa silty clay loam. 0 to 2 percent slopes. This soil is on flood plains not far from the stream bank or riverbank but at a slightly higher elevation. It has the profile described as representative of the series. It is fertile and has high available water capacity. Included in mapping were strips of Coloso silty clay loam, Dique silt loam, and Corcega silty clay loam were areas of soil that is associated with Mani clay, over wash and that is underlain by Coastal Plain clay at a depth below 20 inches. These areas make up 5 percent or less of the acreage.

This soil is suited to many kinds of plants and may be used mainly for sugarcane, to which it is better suited than to other crops. This soil is easily worked, and only ordinary management practices are needed. Crops respond well o fertilizer.

**Hydrology:**

Section A – The hydrology is influence by the Caño Madre Vieja area and a man made channel. To the west is the Caño Espinal and at the south is the Culebrinas River.

Section B - The hydrology of the area is it influenced by the “Caño Madre Vieja”, and the inter-tidal process.

Section C - The hydrology of the area is it influenced by the “Culebrinas River that flow through the South side of the studied area.

Section D – The hydrology of the area is it influenced by the “Caño Madre Vieja” and the inter-tidal process.

### **CONCLUSION:**

According to the section 404 of the Clean Water Act, the jurisdictional areas present in the property are limited. The study revealed that through out the four sections exists, upland and wetland area classified most as an emergent palustrine freshwater wetland, which complies with the criteria's: hydrology, vegetation and soil. The areas are delimited in the map enclosed.

### **RECOMMENDATIONS:**

In the study area it is proposed the construction of a tourist development which includes without limiting to 360 residential housing units, a hotel, a marina and its facilities as roads, the construction of (2) dikes that will protect the life and properties of (3,200) people protecting them from floods hazards of the Culebrinas River, the construction of a navigation channel and the improvement and enlargement of the existing breakwater.

For the purpose of leading the construction, it is visualized the impact of jurisdictional areas including wetlands (constituted by herbaceous, mangrove and/or trees species) and Water of the United States. In order to minimize the direct, indirect and cumulative impacts to these areas we have the following recommendations.

According to the final conceptual plan, the footprint of the dike for the Municipality of Aguadilla intercepts some areas of wetlands and meanders that will cause the division of these systems. Ours greater worry revert in the possibility that long-term impacts occur upon the wetlands at both sides of the dike. Taking in consideration the hydrology of the area, we understand that the wetlands located to the western side of the dike will not suffer drastic changes since they will continue receiving it from the Caño Madre Vieja. However, the wetlands located to the east of the dike will be obstructed directly from the connection with the Caño Madre Vieja, for which is a possibility that the hydrology of these systems and their main characteristic will suffer some changes, although we understand that this will be insignificant. It is for this that we understand that both of the dikes proposed should be built with the specifications and/or recommendations offered by the United States Corps of Engineer and Fish & Wildlife Service, in the study carried out for the flood control of the River Culebrinas.

Since it is contemplated that the western dike will cut across the mangrove channel to tie into the existing beach berm, just to the west of the mouth of Caño Madre Vieja, it is recommended that an exhausted evaluation of the selection of the culvert size is preformed to maintain the hydraulic capacity of the mangrove channel and the wetland associated. According to the footprint of the eastern levee shows that most of it would be within uplands, except where it passes in the vicinity of the mangrove wetlands near the school and where it cuts off the Caño meanders.

Due to our knowledge in wetlands functions and values and after verifying it with the Fish & Wildlife Service evaluation, the wetlands located outside of the dike are supposed to be maintained as ponding areas to reduce community flooding. We agreed with the

recommendations given by the Fish & Wildlife Service (USFWS, 1999) in protecting these areas either by acquisition and/or posting, to avoid the development in a piece meal through incidental filling; to considerate the capacity of two-way culvert to maintain an hydrology connection to the mangrove channel and avoid the establishment of barriers to the fish migration; protect the wetlands areas located outside of the flood dikes and take critical consideration in the drainage culvert elevation to maintain these wetlands.

## LITERATURE CITED

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Reed, Porter B., Jr. 1988. *National List of Plant Species That Occur in Wetlands*. 1988. U. S. Fish and Wildlife.

Soil Conservation Service. 1975. *Soil Survey of Mayagüez Area of Puerto Rico*.

US Army Corps of Engineers; Section 205 Flood Control-Rio Culebrinas Aguadilla-Aguada, Puerto Rico; Draft Detailed Project Report and Environmental Assessment. March 2002.

**TABLE 1**

**FIELD INDICATORS FOR HYDRIC SOILS**

---

1. Organic Soils

A soil is an organic soil when: (1) More than 50% (by volume) of the upper 32 inches of soil is composed of organic material; or (2) organic soil material of any thickness rests on bedrock.

2. Histic Epipedons

A histic epipedon is an 8 to 16 inch layer at or near the surface of a mineral hydric soil that is saturated with water for 30 consecutive days or more in most years and contains a minimum of 20% organic matter when no clay is present or minimum of 30% organic matter when clay content is 60% or greater.

3. Sulfidic Materials

When mineral soils emit an odor of rotten eggs, hydrogen sulfide is present. Such odors are only detected in waterlogged soils that are permanently saturated and have sulfidic material within a few centimeters of the soil surface.

4. Aquic or Peraquic Moisture Regime

An aquic moisture regime is a reducing one: I.e., it is virtually free of dissolved oxygen because the soils are saturated by the presence of ground water always at or near the soil surface.

5. Direct Observation of Reducing Soil Conditions

Soil saturated for long or very long duration will usually exhibit reducing conditions. Under such conditions, ions of iron are transformed from a ferric valence state to a ferrous valence state. This condition can be detected in the field by ferrous iron test.

6. Soil Colors

The colors of various soil components are often the most diagnostic indicator of hydric soils. Colors of these components are influenced by the frequency and duration of soil saturation, which leads gleyed (gray colors) or will have bright mottles (rust colored spots) and/or low matrix chrome. The soil matrix is the portion of the soil that has the predominant color.

**TABLE 1**  
**(Continuation)**  
**FIELD INDICATORS FOR HYDRIC SOILS**

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7. Soil Appearing on Hydric Soils List

Using the National Technical Committee on Hydric Soils (NTCHS) criteria for hydric soils the NTCHS has developed a list of hydric soils. Listed soils have reducing soil conditions for a significant portion of the growing season in major portion of the root zone and are frequently saturated within 12 inches of the soil surface.

8. Iron and Manganese Concretions

During the oxidation-reduction process, iron and manganese in suspension are sometimes segregated as oxides into concretions or soft masses. These accumulations are usually black or dark brown. Concretions >2 mm in diameter occurring within 7.5 cm of surface are evidence that the soil is saturated for long periods near the surface.

9. Indicators of Coarse-textured or Sandy Hydric soils

- a. High Organic Matter Content in the Surface Horizon
- b. Dark Vertical Streaking of Subsurface Horizon
- c. Wet spodosols
- d. New Sandbars

TABLE 2

FIELD INDICATOR FOR WETLAND HYDROLOGY

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A. Primary Indicators

1. Visual observation of inundation
2. Soil saturation within 12 inches of the soil surface
3. Water marks
4. Drift line
5. Sediment deposits
6. Drainage patterns in wetlands

B. Secondary indicators (At least two secondary indicators required)

1. Oxidized root channel (rhizopheres) surrounding living roots within the upper 12 inches of the soil.
2. Water-stained leaves.
3. Local soil survey data.
4. Fac-neutral test

# FIELD DATA SHEETS

**SECTION A  
FIELD DATA SHEETS**

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Cordeco Farms</u>	Date: <u>Jan. &amp; Feb. 2002</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>JAT Wetland Research Inc. / José Torres</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>1</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Rhizophora mangle	T	obl	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b> Depth of Surface Water: <u>2</u> (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks:	

**SOILS**

Map Unit Name (Series and Phase):		<u>Ce- Cataño sandy clay loam</u>		Drainage Class:	<u>nl</u>
Taxonomy (Subgroup):		<u>Entisols</u>		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>2</u>		<u>Organic material</u>			
<u>0-3</u>		<u>10 YR 7/2</u>			<u>Sandy clay loam with organic material</u>
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol	<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Gleyed or Low-Chroma Colors
<input type="checkbox"/> Concretions	<input checked="" type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils	<input type="checkbox"/> Organic Streaking in Sandy Soils	<input type="checkbox"/> Listed on Local Hydric Soils List	<input type="checkbox"/> Listed on National Hydric Soils List	<input type="checkbox"/> Other (Explain in Remarks)
Remarks:					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Cordeco Farms</u>	Date: <u>Jan. &amp; Feb. 2002</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>JAT Wetland Research Inc. / José Torres</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>2</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Typha domingensis</u>	<u>G</u>	<u>obl</u>	9. _____	_____	_____
2. <u>Panicum maximum</u>	<u>G</u>	<u>Fac</u>	10. _____	_____	_____
3. <u>Albizia lebeck</u>	<u>T</u>	<u>Ni</u>	11. _____	_____	_____
4. <u>Eleocharis cellulosa</u>	<u>G</u>	<u>obl</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: <u>1</u> (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		<u>Ce- Cataño sandy clay loam</u>		Drainage Class:	<u>nl</u>
Taxonomy (Subgroup):		<u>Entisols</u>		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>2</u>		<u>Organic material</u>			
<u>0-3</u>		<u>10 YR 7/2</u>			<u>Sandy clay loam with organic material</u>
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input checked="" type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			
Remarks:					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Cordeco Farms</u>	Date: <u>Jan. &amp; Feb. 2002</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>JAT Wetland Research Inc. / José Torres</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>3</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Typha domingensis</u>	<u>G</u>	<u>obl</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input checked="" type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: <u>0</u> (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		<u>Ce- Cataño sandy clay loam</u>		Drainage Class:	<u>nl</u>
Taxonomy (Subgroup):		<u>Entisols</u>		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>1"</u>		<u>Organic material</u>			
<u>0-10</u>		<u>10 YR 5/1</u>			<u>Sandy clay loam with organic material</u>
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input checked="" type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input checked="" type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			
Remarks:					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Cordeco Farms</u>	Date: <u>Jan. &amp; Feb. 2002</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>JAT Wetland Research Inc. / José Torres</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>4</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Paspalum fasciculatum</u>	<u>G</u>	<u>Ni</u>	9. _____	_____	_____
2. <u>Panicum maximum</u>	<u>G</u>	<u>Fac</u>	10. _____	_____	_____
3. <u>Bracharia sp.</u>	<u>G</u>	<u>Ni</u>	11. _____	_____	_____
4. <u>Albizia lebeck</u>	<u>T</u>	<u>Ni</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: <u>28</u> (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		Ba - Bajura clay		Drainage Class:	nl
Taxonomy (Subgroup):		Suceptisols		Field Observations Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-10		10 YR 4/3			silty clay
13-18		10 YR 6/2	7.5 YR 4/6	M	
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol	<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Gleyed or Low-Chroma Colors
<input type="checkbox"/> Concretions	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils	<input type="checkbox"/> Organic Streaking in Sandy Soils	<input type="checkbox"/> Listed on Local Hydric Soils List	<input type="checkbox"/> Listed on National Hydric Soils List	<input type="checkbox"/> Other (Explain in Remarks)
Remarks:					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Cordeco Farms</u>	Date: <u>Jan. &amp; Feb. 2002</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>JAT Wetland Research Inc. / José Torres</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>5</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximum</u>	<u>G</u>	<u>Facu-</u>	9. _____	_____	_____
2. <u>Cynodon doctylon</u>	<u>G</u>	<u>Fac</u>	10. _____	_____	_____
3. <u>Sida sp.</u>	<u>G</u>	<u>Fac</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC  
(excluding FAC-). 0 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		<u>Es - Espinal sand</u>		Drainage Class:	<u>rp</u>
Taxonomy (Subgroup):		<u>Suceptisols</u>		Field Observations	
				Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-10		Losca			old sand extractions

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Cordeco Farms</u>	Date: <u>Jan. &amp; Feb. 2002</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>JAT Wetland Research Inc. / José Torres</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>6</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Paspalum fasciculatum</u>	<u>G</u>	<u>Ni</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		<u>Toa - Toa silty clay loam</u>		Drainage Class:	<u>rb</u>
Taxonomy (Subgroup):				Field Observations	
				Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-18</u>		<u>10 YR 3/3</u>			<u>Sandy loam</u>
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			
Remarks: <u>N/A</u>					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	(Check)		
Wetland Hydrology Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No			
Hydric Soils Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No			
			Is this Sampling Point Within a Wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Remarks					

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Cordeco Farms</u>	Date: <u>Jan. &amp; Feb. 2002</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>JAT Wetland Research Inc. / José Torres</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>7</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Paspalum fasciculatum</u>	<u>G</u>	<u>Ni</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		Es- Espinal sand		Drainage Class:	rp
Taxonomy (Subgroup):		Entisols		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18		10 YR 3/3			Sandy clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: N/A

**WETLAND DETERMINATION**

<p>Hydrophytic Vegetation Present?   <input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No   (Check)</p> <p>Wetland Hydrology Present?   <input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</p> <p>Hydric Soils Present?   <input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</p>	<p style="text-align: right;">(Check)</p> <p>Is this Sampling Point Within a Wetland?   <input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</p>
<p>Remarks</p>	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Cordeco Farms</u>	Date: <u>Jan. &amp; Feb. 2002</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>JAT Wetland Research Inc. / José Torres</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>8</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximum</u>	<u>G</u>	<u>Facu-</u>	9. _____	_____	_____
2. <u>Mimosa ceratonia</u>	<u>G</u>	<u>Ni</u>	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		<u>Cn- Coloso silty clay loam</u>		Drainage Class:	<u>pd</u>
Taxonomy (Subgroup):		<u>Entisols</u>		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-7</u>		<u>10 YR 4/3</u>			<u>Silty clay loam</u>
<u>7-18</u>		<u>10 YR 4/3</u>	<u>5 YR 4/6</u>		<u>Silty clay loam</u>
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol	<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Gleyed or Low-Chroma Colors
<input type="checkbox"/> Concretions	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils	<input type="checkbox"/> Organic Streaking in Sandy Soils	<input type="checkbox"/> Listed on Local Hydric Soils List	<input type="checkbox"/> Listed on National Hydric Soils List	<input type="checkbox"/> Other (Explain in Remarks)
Remarks: <u>N/A</u>					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

SECTION B  
FIELD DATA SHEETS

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>1</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Laguncularia racemosa</u>	<u>T</u>	<u>OBL</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks:

Seedlings

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input checked="" type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks:	

**SOILS**

Map Unit Name (Series and Phase):		Catano sand	Drainage Class:	Ed	
Taxonomy (Subgroup):		Typic Tropopsamments	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-18					Sand
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol	<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Gleyed or Low-Chroma Colors
<input type="checkbox"/> Concretions	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils	<input type="checkbox"/> Organic Streaking in Sandy Soils	<input type="checkbox"/> Listed on Local Hydric Soils List	<input type="checkbox"/> Listed on National Hydric Soils List	<input type="checkbox"/> Other (Explain in Remarks)
Remarks: Not sand indicators presente in the area					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>2</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximum</u>	<u>G</u>	<u>FACU-</u>	9. _____	_____	_____
2. <u>Eustachys petraea</u>	<u>G</u>	<u>FACU</u>	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		Td - Tidal Swamp		Drainage Class:	_____
Taxonomy (Subgroup):		_____		Field Observations	_____
				Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
	0-18					Sand

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Not sand indicators presente in the area

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>3</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Laguncularia racemosa</u>	<u>T</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Conocarpus erectus</u>	<u>T</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Paspalum virgatum</u>	<u>G</u>	<u>OBL</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input checked="" type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b> Depth of Surface Water: <u>2"</u> (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks:	

**SOILS**

Map Unit Name (Series and Phase):		Td	Drainage Class:	
Taxonomy (Subgroup):			Field Observations	
			Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
Depth (inches)      Horizon				
0-18	10 YR 5/1	5 GY 5/1		Sandy clay loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input checked="" type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>4</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximum</u>	<u>G</u>	<u>FACU-</u>	9. _____	_____	_____
2. <u>Terminalia catappa</u>	_____	_____	10. _____	_____	_____
3. <u>Ipomea sp.</u>	<u>G</u>	<u>FAC</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b> Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		Cd - Cantano Sand		Drainage Class:	Ed
Taxonomy (Subgroup):		Typic Tropopsamments		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
	0-18		10 YR 5/7			Sand

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Not sand indicators presente in the area

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>5</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximun</u>	<u>G</u>	<u>FACU-</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b> Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks:	

**SOILS**

Map Unit Name (Series and Phase):		Catano sand	Drainage Class:	Ed	
Taxonomy (Subgroup):		Typic Tropopsamments	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18		10 YR 5/7			Sand
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol	<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Gleyed or Low-Chroma Colors
<input type="checkbox"/> Concretions	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils	<input type="checkbox"/> Organic Streaking in Sandy Soils	<input type="checkbox"/> Listed on Local Hydric Soils List	<input type="checkbox"/> Listed on National Hydric Soils List	<input type="checkbox"/> Other (Explain in Remarks)
Remarks: Not sand indicators presente in the area					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>6</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximun</u>	<u>G</u>	<u>FACU-</u>	9. _____	_____	_____
2. <u>Terminalia catappa</u>	_____	_____	10. _____	_____	_____
3. <u>Eustachys petraea</u>	<u>G</u>	<u>FACU</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		Catano sand	Drainage Class:		Ed
Taxonomy (Subgroup):		Typic Tropopsamments	Field Observations		
			Confirm Mapped Type?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-18		10 YR 5/7			Sand

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Not sand indicators presente in the area

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
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Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>7</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximun</u>	<u>G</u>	<u>FACU-</u>	9. _____	_____	_____
2. <u>Terminalia catappa</u>	_____	_____	10. _____	_____	_____
3. <u>Ipomea sp</u>	<u>G</u>	<u>FAC</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		Catano sand		Drainage Class:	Ed
Taxonomy (Subgroup):		Typic Tropopsamments		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18		10 YR 5/7			Sand

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Not sand indicators presente in the area

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(Check)
Wetland Hydrology Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Is this Sampling Point Within a Wetland?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks		

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
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Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>8</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Brachiaria purpurascens</u>	<u>G</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Sesbania sericea</u>	<u>W</u>	<u>OBL</u>	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: <u>8"</u> (in.)	
Remarks: _____	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>9</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximum</u>	<u>G</u>	<u>FACU-</u>	9. _____	_____	_____
2. <u>Sesbania sericea</u>	<u>W</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Ipomea sp</u>	<u>G</u>	<u>FAC</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC  
(excluding FAC-). 33 %

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks:	

**SOILS**

Map Unit Name (Series and Phase):		Catano sand	Drainage Class:	Ed
Taxonomy (Subgroup):		Typic Tropopsamments	Field Observations	
			Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
	0-18		10 YR 4/3			Clay loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

	11/20/01
Remarks Isolated elevation that can be defined as Up-land area (Disturb)	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>10</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Typha</u>	<u>G</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Eleocharis interstincta</u>	<u>G</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Scirpus spp</u>	<u>G</u>	<u>OBL</u>	11. _____	_____	_____
4. <u>Cyperus spp</u>	<u>G</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Paspalum millegrana</u>	<u>G</u>	<u>FACW</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input checked="" type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: <u>2-6"</u> (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks:	

**SOILS**

Map Unit Name (Series and Phase):		Catano sand	Drainage Class:	Ed
Taxonomy (Subgroup):		Typic Tropopsamments	Field Observations	
			Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18		10 YR 5/1	5 G 5/1	High	Sandy clay loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	(Check)
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Is this Sampling Point Within a Wetland?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks		

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>11</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Typha</u>	<u>G</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Eleocharis interstincta</u>	<u>G</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Scirpus spp</u>	<u>G</u>	<u>OBL</u>	11. _____	_____	_____
4. <u>Cyperus spp</u>	<u>G</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Paspalum millegrana</u>	<u>G</u>	<u>FACW</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC  
(excluding FAC-). 100 %

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input checked="" type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: <u>2-6"</u> (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks:	

**SOILS**

Map Unit Name (Series and Phase):		Catano sand	Drainage Class:	Ed	
Taxonomy (Subgroup):		Typic Tropopsamments	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18		10 YR 5/1	5 G 5/1	High	Sandy clay loam
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol	<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Aquic Moisture Regime	<input checked="" type="checkbox"/> Reducing Conditions	<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors
<input type="checkbox"/> Concretions	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils	<input type="checkbox"/> Organic Streaking in Sandy Soils	<input type="checkbox"/> Listed on Local Hydric Soils List	<input type="checkbox"/> Listed on National Hydric Soils List	<input type="checkbox"/> Other (Explain in Remarks)
Remarks:					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>August 2005</u>
Applicant/Owner: <u>Cordeco Northwest Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>12</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Typha</u>	<u>G</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Eleocharis interstincta</u>	<u>G</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Scirpus spp</u>	<u>G</u>	<u>OBL</u>	11. _____	_____	_____
4. <u>Cyperus spp</u>	<u>G</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Paspalum millegrana</u>	<u>G</u>	<u>FACW</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: <b>Primary Indicators:</b> <input checked="" type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>2-6"</u> (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		Catano sand	Drainage Class:	Ed
Taxonomy (Subgroup):		Typic Tropopsamments	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-18		10 YR 5/1	5 G 5/1	Medium	Sandy clay loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks

**SECTION C  
FIELD DATA SHEETS**

1

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>1</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Brachiaria sp.</u>		<u>FAC</u>	9. _____		
2. <u>Ludwiia</u>		<u>OBL</u>	10. _____		
3. <u>Ipomea sp.</u>		<u>FAC</u>	11. _____		
4. <u>Paspalum fasciculatum</u>		<u>NI</u>	12. _____		
5. <u>Commelina elegans</u>		<u>FAC</u>	13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 20%

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>0 %</u>	

**SOILS**

Map Unit Name (Series and Phase):		Es - Espinal	Drainage Class:	Ed
Taxonomy (Subgroup):		Tropopsamments	Field Observations	
			Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
1-12		10YR 3/4			sandy clay
12-18		10YR 8/6			tosca

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	(Check)		
Wetland Hydrology Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No			
Hydric Soils Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No			
			Is this Sampling Point Within a Wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Remarks Sand Extraction Area

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>2</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Cyperus sp.</u>		<u>FACW</u>	9. _____		
2. <u>Panicum maximum</u>		<u>FACU-</u>	10. _____		
3. <u>Paspalum virgatum</u>		<u>NI</u>	11. _____		
4. _____			12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):  
Remarks: 33%

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: N/A	

**SOILS**

Map Unit Name (Series and Phase):		<u>Es - Espinal</u>	Drainage Class:	<u>Ed</u>
Taxonomy (Subgroup):		<u>Tropopsamments</u>	Field Observations	
			Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
1-4		10 YR 4/4			<i>Tosca (fill material)</i>

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: *N/A*

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks *Sand Extraction Area*

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>3</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Brachyaria sp.</u>		<u>FAC</u>	9. _____		
2. _____			10. _____		
3. _____			11. _____		
4. _____			12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): \_\_\_\_\_

Remarks: 0%

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		Es - Espinal		Drainage Class:	Ed
Taxonomy (Subgroup):		Tropopsamments		Field Observations	
				Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-6		10 YR 4/4			Tosca (fill material)

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: N/A

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks: Sand Extraction Area

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>4</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. _____	_____	_____	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): \_\_\_\_\_

Remarks: 0

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>0 %</u>	

**SOILS**

Map Unit Name (Series and Phase):		Es - Espinal		Drainage Class:	Ed
Taxonomy (Subgroup):		Troposammets		Field Observations	
				Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
					Tosca (fill material)

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: 0

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks: Sand Extraction Area

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>5</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. _____	_____	_____	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): \_\_\_\_\_

Remarks: 0

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: 0 %	

**SOILS**

Map Unit Name (Series and Phase):		Cn - Coloso	Drainage Class:	Pd
Taxonomy (Subgroup):		Fluvaquents	Field Observations	
			Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18					Tosca (fill material)

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: 0

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>6</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. _____	_____	_____	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): _____					
Remarks: <u>0</u>					

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>0 %</u>	

**SOILS**

Map Unit Name (Series and Phase):		Es - Espinal	Drainage Class:	Ed
Taxonomy (Subgroup):		Tropopsamments	Field Observations	
			Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
Depth (inches)    Horizon				
0-18				Tosca (fill material)

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: 0

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	
Wetland Hydrology Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(Check)
Hydric Soils Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks Sand Extraction Area

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>7</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. _____	_____	_____	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): \_\_\_\_\_

Remarks: 0

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: 0 %	

**SOILS**

Map Unit Name (Series and Phase):		Cn - Coloso	Drainage Class:	Pd
Taxonomy (Subgroup):		Fluvaquents	Field Observations	Confirm Mapped Type? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18					Sandy Clay - Tosca

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: 0

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks Sand Extraction Area



**SOILS**

Map Unit Name (Series and Phase):		Cn - Coloso	Drainage Class:	Pd
Taxonomy (Subgroup):		Fluvaquents	Field Observations Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:	Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
	0-18					Sandy Clay - Tosca

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: 0

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks: Sand Extraction Area

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>9</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Brachiaria purp.</u>		<u>FACW</u>	9. _____		
2. <u>Ipomea sp.</u>		<u>FAC</u>	10. _____		
3. _____			11. _____		
4. _____			12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).					
Remarks: <u>100%</u>					

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		ToA - Toa		Drainage Class:	mwd
Taxonomy (Subgroup):		Fluentic Hapludolls		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-8		10 YR 4/2			
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol	<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Reducing Conditions	<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors
<input type="checkbox"/> Concretions	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils	<input type="checkbox"/> Organic Streaking in Sandy Soils	<input type="checkbox"/> Listed on Local Hydric Soils List	<input type="checkbox"/> Listed on National Hydric Soils List	<input type="checkbox"/> Other (Explain in Remarks)
Remarks:					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>10</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. _____	_____	_____	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):					
Remarks: 0					

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: 0 %	

**SOILS**

Map Unit Name (Series and Phase):		Cn - Coloso	Drainage Class:	pd
Taxonomy (Subgroup):		Fluvaquents	Field Observations	
			Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18		10 YR 4/3			sandy clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovey Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Tomás Cordero</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>11</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximun</u>		<u>FACU-</u>	9. _____		
2. _____			10. _____		
3. _____			11. _____		
4. _____			12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): \_\_\_\_\_

Remarks: 0

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>0 %</u>	

**SOILS**

Map Unit Name (Series and Phase):		ToA - Toa	Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls	Field Observations	
			Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
	0-18		10YR 4/4			silty clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>12</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Paspalum fasciculatum</u>	<u>G</u>	<u>Ni</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): \_\_\_\_\_

Remarks: 0

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>0 %</u>	

**SOILS**

Map Unit Name (Series and Phase):		<u>ToA - Toa</u>	Drainage Class:	<u>mwd</u>
Taxonomy (Subgroup):		<u>Fluventic Hapludolls</u>	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
	0-6		10YR 4/3			clay
	6-18		10YR 4/4			

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    (Check)	
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(Check)
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>13</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximun</u>	_____	<u>FACU-</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): \_\_\_\_\_

Remarks: 0

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>0 %</u>	

**SOILS**

Map Unit Name (Series and Phase):		ToA _Toa		Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls		Field Observations	
				Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Matrix Color	Mottle Colors	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
Depth (inches)    Horizon	(Munsell Moist)	(Munsell Moist)		
0-18	10YR 3/3			silty clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>14</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>P. fasciculatum</u>	_____	<u>NI</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): \_\_\_\_\_

Remarks: 0

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>0 %</u>	

**SOILS**

Map Unit Name (Series and Phase):		ToA - Toa		Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls		Field Observations	
				Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
	0-18		10YR 3/3			silty clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check)	
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>15</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>P. maximun</u>		<u>FACU-</u>	9. _____		
2. <u>M. pigra</u>		<u>FACW</u>	10. _____		
3. _____			11. _____		
4. _____			12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):  
Remarks: 50%

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>0 %</u>	

**SOILS**

Map Unit Name (Series and Phase):		ToA - Toa	Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls	Field Observations	
			Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Matrix Color	Mottle Colors	Mottle Abundance/	Texture, Concretions,
Depth (inches)	(Munsell Moist)	(Munsell Moist)	Size/Contrast	Structure, etc,
0-18	10YR 4/4			sandy clay / rock

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: 0

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   (Check)	
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>16</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>P. fasciculatum</u>		<u>NI</u>	9. _____		
2. <u>Sorghum halepense</u>		<u>FAC</u>	10. _____		
3. _____			11. _____		
4. _____			12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): \_\_\_\_\_

Remarks: 50%

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>0 %</u>	

**SOILS**

Map Unit Name (Series and Phase):		ToA - Toa	Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls	Field Observations	Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
	0-18		10YR 4/4			sandy clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>17</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>P. millegrana</u>	_____	<u>FACW</u>	9. _____	_____	_____
2. <u>Echinochloa colona</u>	_____	<u>FACW</u>	10. _____	_____	_____
3. <u>Brachiaria purp.</u>	_____	<u>FACW</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		ToA - Toa	Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls	Field Observations	
			Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:		Matrix Color	Mottle Colors	Mottle Abundance/	Texture, Concretions,
Depth	Horizon	(Munsell Moist)	(Munsell Moist)	Size/Contrast	Structure, etc,
(inches)					
0-18		10YR 4/2	7.5 YR 4/6	5 GY 4/1	Clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2006</u>
Applicant/Owner: <u>Cordeco Northwest</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres Alicea / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>18</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Hymenache amplexicaulis</u>	_____	<u>OBL</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC  
(excluding FAC-). 100%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		ToA - Toa	Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls	Field Observations	
			Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-18		10YR 4/2	7.5 YR 4/6	5 GY 4/1	clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**SECTION D**  
**FIELD DATA SHEETS**

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>1</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximun</u>	<u>G</u>	<u>FACU</u>	9. _____	_____	_____
2. <u>Sporobolus spp.</u>	<u>G</u>	<u>FACU</u>	10. _____	_____	_____
3. <u>Inga sp.</u>	<u>G</u>	<u>FAC</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 33%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		<u>Toa Series</u>		Drainage Class:	<u>mwd</u>
Taxonomy (Subgroup):		<u>Fluventic Hapludolls</u>		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-18</u>		<u>10 YR 5/4</u>			<u>Tosca</u>
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol			<input type="checkbox"/> Concretions		
<input type="checkbox"/> Histic Epipedon			<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils		
<input type="checkbox"/> Sulfidic Odor			<input type="checkbox"/> Organic Streaking in Sandy Soils		
<input type="checkbox"/> Aquic Moisture Regime			<input type="checkbox"/> Listed on Local Hydric Soils List		
<input type="checkbox"/> Reducing Conditions			<input type="checkbox"/> Listed on National Hydric Soils List		
<input type="checkbox"/> Gleyed or Low-Chroma Colors			<input type="checkbox"/> Other (Explain in Remarks)		
Remarks: <u>N/A</u>					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check) Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(Check)  Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>2</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Laguncularia racemosa</u>	<u>T</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Rhizophora mangle</u>	<u>T</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Terminalia catappa</u>	<u>T</u>	<u>Ni</u>	11. _____	_____	_____
4. <u>Calophyllum brasiliense</u>	<u>T</u>	<u>FACW</u>	12. _____	_____	_____
5. <u>Phyllanthus epiphyllanthus</u>	_____	<u>FAC</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC  
(excluding FAC-): 80%

Remarks: Calophyllum brasiliense; Terminalia catappa, and Phyllanthus epiphyllanthus are located between the up-land and through out the wetland limit.

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		Td- Tidal Swamp		Drainage Class:	
Taxonomy (Subgroup):				Field Observations	
				Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-6					Sand & Sandy Clay
6-18					Sand Clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input checked="" type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input checked="" type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>3</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Annona glabra</u>	<u>T</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Rhizophora mangle</u>	<u>T</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Terminalia catappa</u>	<u>T</u>	<u>Ni</u>	11. _____	_____	_____
4. <u>Calophyllum brasiliense</u>	<u>T</u>	<u>FACW</u>	12. _____	_____	_____
5. <u>Roystonea borinquena</u>	<u>T</u>	<u>Ni</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 60%

Remarks: Calophyllum brasiliense; Terminalia catappa, Roystonea borinquena are located between the wetland limit.

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input checked="" type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		Td- Tidal Swamp	Drainage Class:	
Taxonomy (Subgroup):			Field Observations	
			Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-3					3" Sand
3-10		Polychromatic colors			
10-++					Sandy clay - Muck

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input checked="" type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input checked="" type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>4</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Desmodium tortuosum</u>	<u>T</u>	<u>FACU</u>	9. _____	_____	_____
2. <u>Cecropia peltata</u>	<u>T</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Terminalia catappa</u>	<u>T</u>	<u>NI</u>	11. _____	_____	_____
4. <u>Tabebuia heterophylla</u>	<u>T</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Albizia lebbek</u>	<u>T</u>	<u>NI</u>	13. _____	_____	_____
6. <u>Ficus sp</u>	<u>T</u>	<u>FACU</u>	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 33%

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		<u>Sn - Santoni Clay</u>		Drainage Class:	<u>pd</u>
Taxonomy (Subgroup):		<u>Vertic Tropaquepts</u>		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-6</u>		<u>10 YR 4/2</u>			<u>Sand clay</u>
<u>6-18</u>		<u>10 YR 4/3</u>			<u>Sand clay</u>

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>5</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Laguncularia racemosa</u>	<u>T</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Rhizophora mangle</u>	<u>T</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Terminalia catappa</u>	<u>T</u>	<u>NI</u>	11. _____	_____	_____
4. <u>Calophyllum brasiliense</u>	<u>T</u>	<u>FACW</u>	12. _____	_____	_____
5. <u>Albizia lebeck</u>	<u>T</u>	<u>NI</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 60%

Remarks: Terminalia catappa and Alvesia tomentosa are located between the wetland and up-land limit.

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>Saturated in upper 7"</u>	

**SOILS**

Map Unit Name (Series and Phase):		<u>Ce- Cataño Sandy Clay Loam</u>		Drainage Class:	<u>ed</u>
Taxonomy (Subgroup):		<u>Typic Tropopsamments</u>		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-4</u>		<u>10 YR 4/1</u>			<u>Sandy clay</u>
<u>4-18</u>		<u>10 YR 4/2</u>	<u>7.5 YR 5/6</u>		
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol			<input type="checkbox"/> Concretions		
<input type="checkbox"/> Histic Epipedon			<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils		
<input type="checkbox"/> Sulfidic Odor			<input type="checkbox"/> Organic Streaking in Sandy Soils		
<input type="checkbox"/> Aquic Moisture Regime			<input type="checkbox"/> Listed on Local Hydric Soils List		
<input checked="" type="checkbox"/> Reducing Conditions			<input type="checkbox"/> Listed on National Hydric Soils List		
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors			<input type="checkbox"/> Other (Explain in Remarks)		
Remarks:					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>6</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Laguncularia racemosa</u>	<u>T</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Ficus sp.</u>	<u>T</u>	<u>FACU</u>	10. _____	_____	_____
3. <u>Terminalia catappa</u>	<u>T</u>	<u>NI</u>	11. _____	_____	_____
4. <u>Acrostichum aureum</u>	<u>G</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Albizia lebeck</u>	<u>T</u>	<u>NI</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 60%

Remarks: Terminalia catappa and Alvesia tomentosa are located between the wetland and up-land limit.

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		<u>Ce- Cataño Sandy Clay Loam</u>		Drainage Class:	<u>ed</u>
Taxonomy (Subgroup):		<u>Typic Tropopsamments</u>		Field Observations	
				Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-18		10 YR 4/1	7.5 YR 4/5		

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	(Check)
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks		

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>7</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Albizia lebbbeck</u>	<u>T</u>	<u>Ni</u>	9. _____	_____	_____
2. <u>Desmodium tortosum</u>	<u>T</u>	<u>Ni</u>	10. _____	_____	_____
3. <u>Petiveria alliacea</u>	_____	<u>Ni</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		Sn-Santoni Clay	Drainage Class:	pd
Taxonomy (Subgroup):		Vertic Tropaquepts	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-18		10 YR 4/2			

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>8</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Terminalia catappa	T	Ni	9. _____	_____	_____
2. Desmodium tortuosum	T	Ni	10. _____	_____	_____
3. Petiveria alliacea	_____	Ni	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0%

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: N/A	

**SOILS**

Map Unit Name (Series and Phase):		Sn-Santoni Clay	Drainage Class:	pd
Taxonomy (Subgroup):		Vertic Tropaquepts	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-18		10 YR 4/3			

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>9</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Terminalia catappa</u>	<u>T</u>	<u>Ni</u>	9. _____	_____	_____
2. <u>Laguncularia racemosa</u>	<u>T</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Typha domingensis</u>	_____	<u>OBL</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 66%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: <u>        </u> (in.)  Depth to Free Water in Pit: <u>        </u> (in.)  Depth to Saturated Soil: <u>        </u> (in.)	
Remarks: <u>Saturated in upper 4"</u>	

**SOILS**

Map Unit Name (Series and Phase):		<u>Cn - Coloso Silty Clay Loam</u>		Drainage Class:	<u>pd</u>
Taxonomy (Subgroup):		<u>Aeric Tropic Fluvaquents</u>		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-18</u>		<u>10 YR 4/1</u>			<u>Sandy clay</u>
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions				
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils				
<input checked="" type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils				
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List				
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List				
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)				
Remarks:					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>10</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Sporobolus spp.</u>	<u>G</u>	<u>FACU</u>	9. _____	_____	_____
2. <u>Mimosa pigra</u>	<u>G</u>	<u>FACW</u>	10. _____	_____	_____
3. <u>Inga spp.</u>	<u>G</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Panicum maximun</u>	<u>G</u>	<u>FACU</u>	12. _____	_____	_____
5. <u>Albizia lebbeck</u>	<u>T</u>	<u>Ni</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC  
(excluding FAC-). 40%

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		<u>Toa - Toa Silty clay</u>		Drainage Class:	<u>mwd</u>
Taxonomy (Subgroup):		<u>Fluventic Hapludolls</u>		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-18</u>		<u>10 YR 4/3</u>			<u>clay</u>
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			
Remarks: <u>N/A</u>					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	(Check)		
Wetland Hydrology Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No			
Hydric Soils Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No			
			is this Sampling Point Within a Wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Remarks					

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>11</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Inga spp.</u>	<u>G</u>	<u>FACU</u>	9. _____	_____	_____
2. <u>Panicum maximun</u>	<u>G</u>	<u>FACU</u>	10. _____	_____	_____
3. <u>Paspalum fasciculatum</u>	<u>G</u>	<u>Ni</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0%

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		Toa - Toa Silty clay		Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls		Field Observations	
				Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-18		10 YR 4/3			clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: N/A

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>12</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Brachiaria purpurascens.</u>	<u>G</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Commelina diffusa</u>	<u>G</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Paspalum millegrana</u>	<u>G</u>	<u>FACW</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC  
(excluding FAC-). 100%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		Toa - Toa Silty clay	Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-18		10 YR 4/1		7.5 YR 5/4	

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   (Check) Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	(Check)  Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>13</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Brachiaria purpurascens.</u>	<u>G</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Lucya tetrandra</u>	<u>G</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Paspalum millegrana</u>	<u>G</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Ludwigia spp.</u>	<u>G</u>	<u>OBL</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC  
(excluding FAC-). 100%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

**SOILS**

Map Unit Name (Series and Phase):		<u>Toa - Toa Silty clay</u>		Drainage Class:	<u>mwd</u>
Taxonomy (Subgroup):		<u>Fluventic Hapludolls</u>		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-18</u>		<u>10 YR 4/1</u>		<u>10 YR 5/4</u>	<u>clay</u>
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions				
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils				
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils				
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List				
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List				
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)				
Remarks:					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>14</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Ipomea spp.	G	FACU-	9. _____	_____	_____
2. Albizia lebeck	G	Ni	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0%

Remarks:

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b> Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: N/A	

**SOILS**

Map Unit Name (Series and Phase):		Cn - Coloso Silty	Drainage Class:	mwd	
Taxonomy (Subgroup):		Fluventic Hapludolls	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-18		10 YR 4/3			
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol				<input type="checkbox"/> Concretions	
<input type="checkbox"/> Histic Epipedon				<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils	
<input type="checkbox"/> Sulfidic Odor				<input type="checkbox"/> Organic Streaking in Sandy Soils	
<input type="checkbox"/> Aquic Moisture Regime				<input type="checkbox"/> Listed on Local Hydric Soils List	
<input type="checkbox"/> Reducing Conditions				<input type="checkbox"/> Listed on National Hydric Soils List	
<input type="checkbox"/> Gleyed or Low-Chroma Colors				<input type="checkbox"/> Other (Explain in Remarks)	
Remarks:					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>15</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximum</u>	<u>G</u>	<u>FACU</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		<u>Toa Silty Clay Loam</u>	Drainage Class:	<u>mwd</u>
Taxonomy (Subgroup):		<u>Fluventic Hapludolls</u>	Field Observations	
			Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18		10 YR 4/4			

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(Check)
Wetland Hydrology Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Is this Sampling Point Within a Wetland?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>16</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Mimosa pigra</u>	<u>G</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Paspalum millegrana</u>	<u>G</u>	<u>FACW</u>	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). <u>100%</u>					
Remarks: _____					

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		ToA- Toa Silty Clay Loam		Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-18		10 YR 4/1	7.5 YR 4/5		clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>17</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Panicum maximum</u>	<u>G</u>	<u>FACU</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		ToA- Toa Silty Clay Loam		Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
	0-18		10 YR 4/3			clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>18</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Albizia lebbbeck</u>	<u>T</u>	<u>Ni</u>	9. _____	_____	_____
2. <u>Paspalum fasciculatum</u>	<u>G</u>	<u>Ni</u>	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		ToA- Toa Silty Clay Loam	Drainage Class:	mwd
Taxonomy (Subgroup):		Fluventic Hapludolls	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18		10 YR 4/3			clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   (Check)	
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(Check)
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>19</u>
(If needed, explain on reverse.)	

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Albizia lebeck</u>	<u>T</u>	<u>Ni</u>	9. _____	_____	_____
2. <u>Paspalum fasciculatum</u>	<u>G</u>	<u>Ni</u>	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		<u>ToA- Toa Silty Clay Loam</u>		Drainage Class:	<u>mwd</u>
Taxonomy (Subgroup):		<u>Fluventic Hapludolls</u>		Field Observations	
				Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
	<u>0-18</u>		<u>10 YR 4/3</u>			<u>Clay</u>

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Discovery Bay Resort &amp; Marina</u>	Date: <u>January 2007</u>
Applicant/Owner: <u>Corderco Northwest, Corp.</u>	County: <u>Aguada</u>
Investigator: <u>José A. Torres / JAT Wetland Research, Inc.</u>	State: <u>PR</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: _____
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>20</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Albizia lebeck</u>	<u>T</u>	<u>Ni</u>	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0%

Remarks: \_\_\_\_\_

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: _____ (in.)  Depth to Free Water in Pit: _____ (in.)  Depth to Saturated Soil: _____ (in.)	
Remarks: <u>N/A</u>	

**SOILS**

Map Unit Name (Series and Phase):		Sn- Santoni Clay	Drainage Class:	pd
Taxonomy (Subgroup):		Vertic Trophaquepts	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:	Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
	0-18		10 YR 4/3			clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

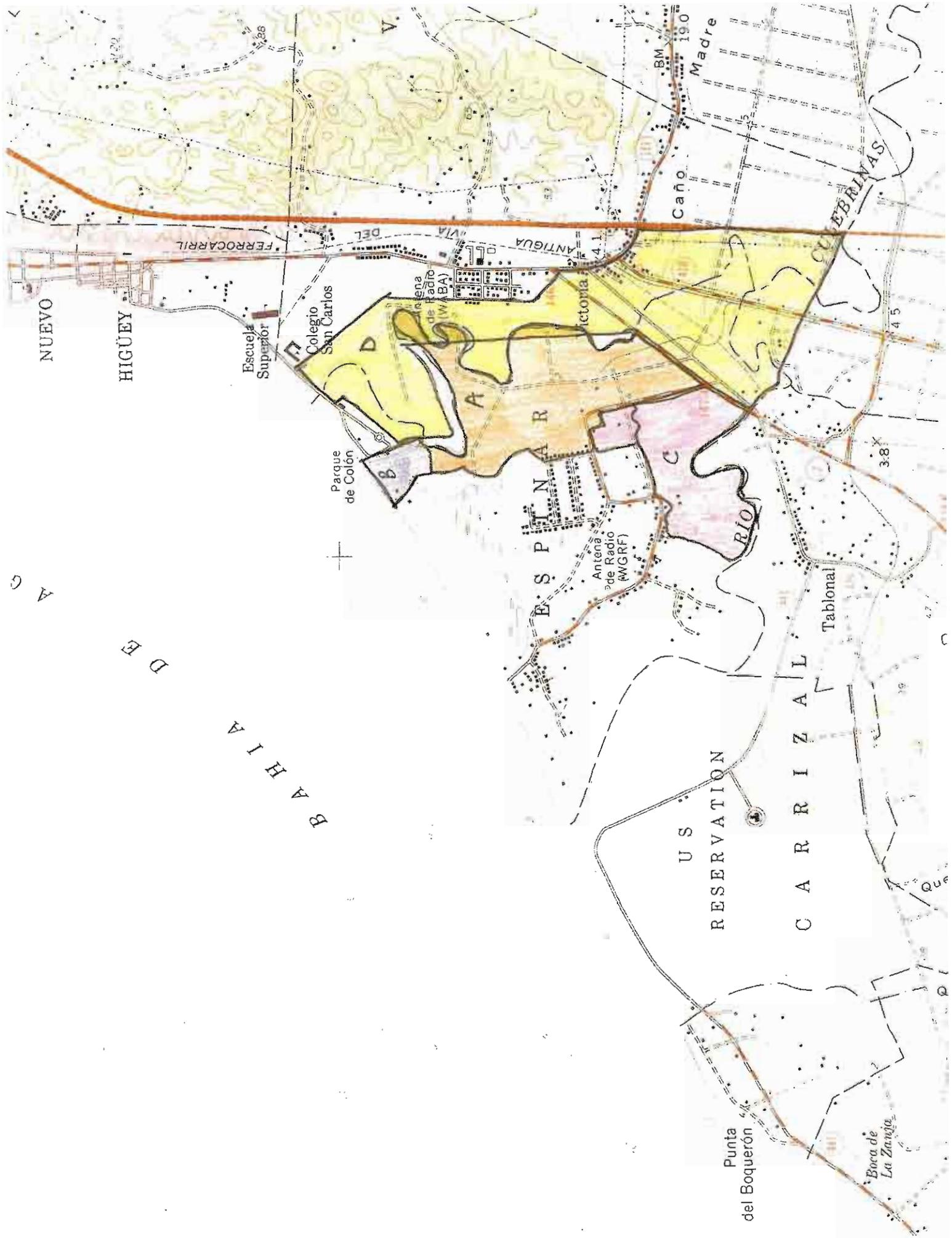
  

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

## LOCATION MAP



B A H I A  
D E  
H I G Ü E Y

NUEVO  
HIGÜEY

B A H I A

Escuela Superior  
Colegio San Carlos

Parque de Colón

E S P I N A R

U S  
RESERVATION

C A R R I Z A L

Punta del Boquerón

Boca de La Zanja

ANTIGUA DEL FERROCARRIL

Caño Madre

Tablonal

Punta del Boquerón

Boca de La Zanja



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4.5

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BM

V.

K

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3.9

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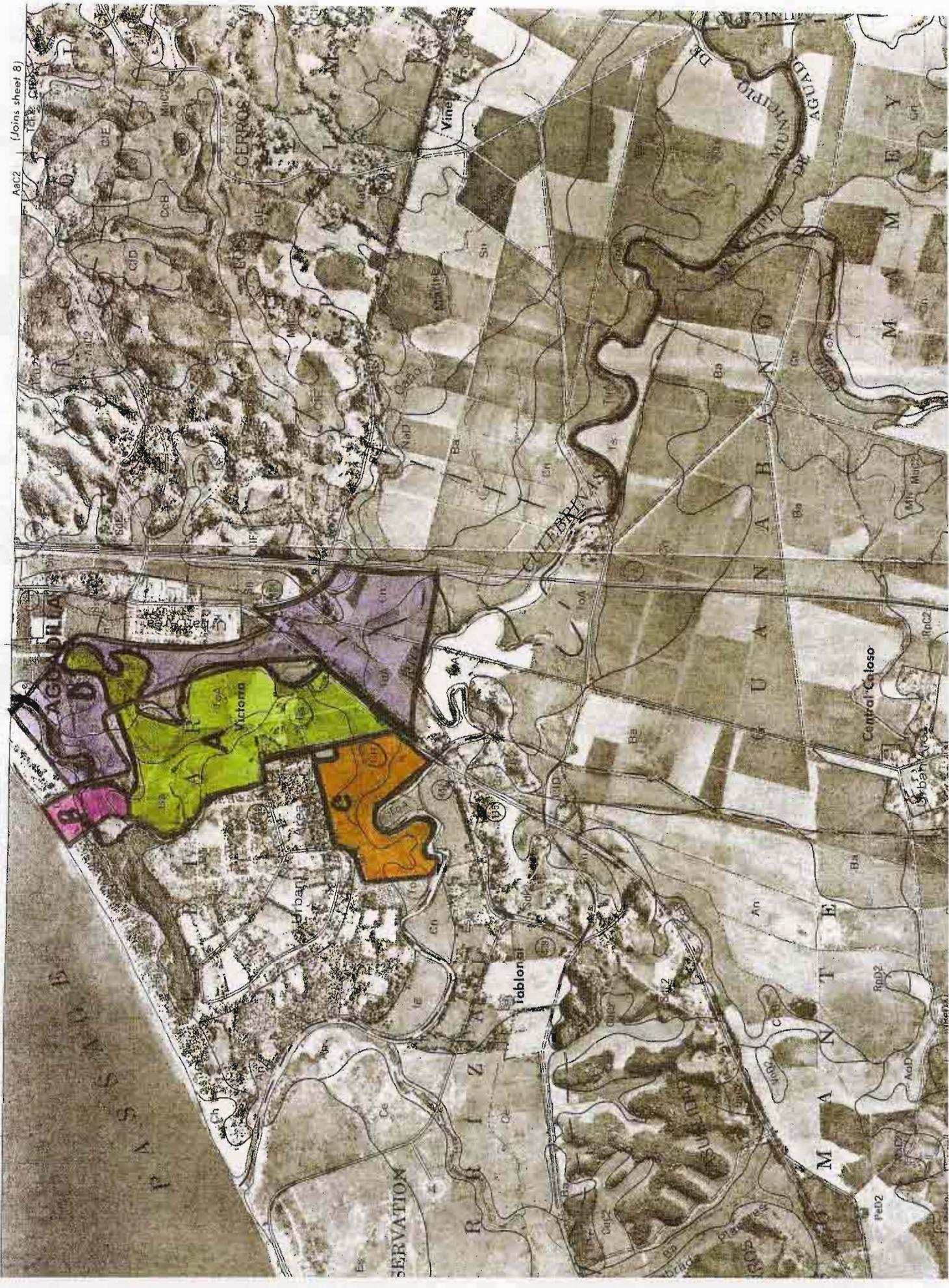
283

284

# SOIL SURVEY MAP

74 000 METERS

AaC2 (Joins sheet 8)



## DETERMINATION OF JURISDICTIONAL AREAS



9-24-04



2302-2-3

## PHOTOGRAPHS

**SECTION A  
PHOTOGRAPHS**

GENERAL VIEW OF THE PROPERTY





PART OF "CAÑO MADRE VIEJA"

**SOIL SAMPLING PROCESS**



**TYPICAL UPLAND SOIL**



**SECTION B  
PHOTOGRAPHS**

ILLUSTRATION OF THE BORING # 1

---



Terrestrial maritime zone



ILLUSTRATION OF THE BORING # 3 & # 8

---



Positive for wetland area



Positive for wetland area

ILLUSTRATION OF THE BORING

---



Transitory areas



Mangrove area in the property

ILLUSTRATION OF THE JURISDICTIONAL AREA LIMIT

---



ILLUSTRATION OF THE JURISDICTIONAL AREA LIMIT

---



Drainage Channel

GENERAL VIEW OF THE NORTH SIDE OF THE PROJECT

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GENERAL VIEW OF THE WEST SIDE OF THE PROJECT

---



**SECTION C**  
**PHOTOGRAPHS**

**Estudio de Determinación de Jurisdicción  
Discovery Bay Resort & Marina,  
Aguada PR**

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General View of the Typical Soil of Up-land areas.



General view of the West side trough the East of the property.



General view of the West side of the property.



General view of the West side of the property



General view of the Boring # 6



General view of the Boring # 9



General view of the Boring # 11 area (*Panicum maximum*)



General view of the Boring # 11 area (*Panicum maximum*)



General view of the Boring # 13



General view of the Boring # 15



General view of the Drainage Channel located at the South of the property

**SECTION D**  
**PHOTOGRAPHS**

**Photographs of the Jurisdiccional Determination Study  
Discovery Bay Resort & Marina**

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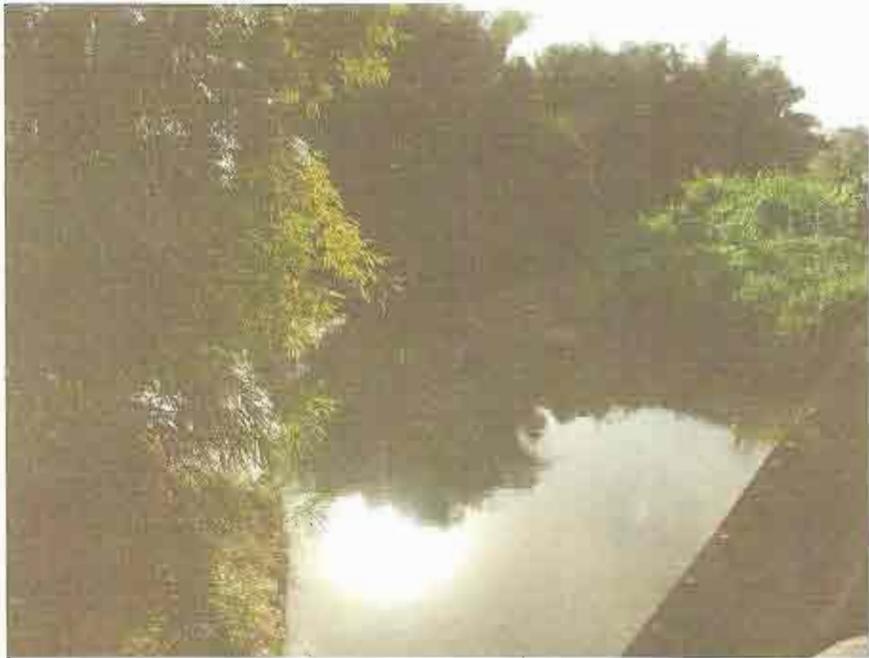
**View of the sampling process**



**Up-land soil**



**General View of the Water of the U.S. and jurisdictional areas**











**Wetland Soil**







**ESTUDIO DE FLORA Y FAUNA**

**DISCOVERY BAY RESORT & MARINA  
FINCA NUEVA  
BARRIO ESPINAR, AGUADA PR**

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## 1.0 *INTRODUCCION*

### 1.1 *Descripción y Localización del Proyecto:*

El presente estudio fue preparado por la Firma JAT Wetland Research, Inc., a petición de Cordeco Northwest Corp., con el propósito de someterlo antes las agencias con inherencia para conseguir los endosos y/o permisos necesarios para el desarrollo propuesto. Entre éstas: El Departamento de Recursos Naturales y Ambientales (DRNA), la Junta de Planificación (JP), la Administración de Reglamentos y Permisos, (ARPE), etc.

Cordeco Northwest Corp., propone la construcción de una marina en el Barrio Espinar en el Municipio de Aguada. La construcción de ésta, forma parte del proyecto del desarrollo turístico Discovery Bay Resort & Marina.

La finca bajo estudio se encuentra en la Carretera PR-412, Km. 2.1, Barrio Espinar en el Municipio de Aguada, Puerto Rico. El área comprende aproximadamente 7.10 cuerdas de terreno. (Ver figura # 1)

En cumplimiento con el reglamento de la Junta de Calidad Ambiental se llevó a cabo el estudio que se presenta en este informe. El mismo se encuentra dirigido a la identificación científica de los diferentes elementos bióticos (flora y fauna) dentro del área propuesta. Este estudio es de naturaleza cualitativa y tiene el objetivo de reconocer la composición biológica más evidente a los largo de los hábitat menos alterados.

## 2.0 *ESTUDIO DE FLORA Y FAUNA*

Con este estudio se pretende presentar un cuadro actualizado de los componentes bióticos y abióticos dentro del área bajo consideración.

### 2.1 *Metodología*

Este estudio se realizó en cuatro fases principales, según se discute a continuación:

Fase I: Durante esta fase se recopilaron los datos relacionados con el área del proyecto. A estos efectos se verificó entre otros; literatura disponible y el inventario de especies críticas que mantiene la División de Patrimonio Natural del Departamento de Recursos Naturales y Ambientales, (DRNA).

Fase II: Esta fase consistió en delimitar varios transeptos y efectuar visitas al área durante las cuales se recorrieron los transeptos tomando nota e identificando taxonómicamente las especies escuchadas o avistadas, tanto fauna como flora, según se muestra en el Apéndice.

1. Durante esta fase se tomaron muestras de algunos especímenes para luego ser identificadas.

Cómo parte de los estudios de campo para la identificación de aves se realizaron censos del modo de transeptos combinado con el con el radio fijo. En estos el observador lista todas las especies avistadas y/o escuchadas en un radio fijo de 25 metros durante un periodo de 20 minutos,

además de identificar mediante canto o avistamiento todas aquellas especies que son identificadas dentro de los límites de la propiedad. Estos censos radiales son repetidos a lo largo de cada transepto, separando el punto de observación por lo menos a 50 metros. El número de censos radiales por transeptos depende: de la naturaleza de la topografía, del tamaño del área y del largo de cada transepto.

Los censos para los reptiles y anfibios se llevaron a cabo caminando rutas o transeptos en los lugares que entendemos pueden ser hábitat potencial para estas especies. A lo largo de estos transeptos se escudriñó y se buscó debajo de troncos, basura, piedras u otros objetos y paralelo a los cuerpos de agua o áreas húmedas, o a las áreas de reproducción.

A lo largo de este recorrido, se identificaron los diferentes especímenes a medida que fueron apareciendo. Los especímenes que no fueron identificados en el momento, fueron recolectados, secados y prensados para su posterior identificación haciendo uso de diferentes recursos según listados en la sección de referencias de este informe.

**Fase III:**

Se resumieron todos los datos de campo, se caracterizaron e identificaron los especímenes colectados y se llevó a cabo el análisis correspondiente.

Fase IV: Se procedió con la redacción del informe escrito, la confección de las tablas, mapas, figuras y recomendaciones.

## 2.2 *Datos Del Inventario De Especies Críticas De La División de Patrimonio Natural Del Departamento de Recursos Naturales y Ambientales.*

De acuerdo al inventario de Especies Críticas y en Peligro de Extinción de la División de Patrimonio Natural del Departamento de Recursos Naturales y Ambientales y luego de revisar el cuadrángulo topográfico en donde se ubica el área bajo estudio, se determinó que no hay especies en peligro de extinción y/o amenazadas en serlo dentro de los límites del área del proyecto.

Sin embargo en el área del proyecto se avistó el pelícano (*Pelecanus occidentalis*). Esta ave se encuentra clasificada como una especie en peligro de extinción. El pelícano es un pájaro acuático relativamente grande que se alimenta de peces y normalmente se encuentra a lo largo de todas las costas de Puerto Rico. Esta especie se encuentra protegida por las leyes estatales y federales desde el 1970.

Por otro lado, de acuerdo a la información obtenida del DRNA el suroeste del proyecto ubica un área identificada en el Plan de Manejo de Zona Costanera con valor natural y ecológico en la Zona Costanera de Puerto Rico. Esta zona se identifica con el nombre de Pantano Espinar.

### 2.3 *Descripción General:*

El área de estudio comprende los terrenos adyacentes al Parque Colón en el Municipio de Aguadilla.

Estos terrenos se encuentran localizados dentro de la zona de vida identificada por Ewel y Whitmore (1973) como Bosque Húmedo Subtropical. Esta zona comprende el 58.4% de la totalidad de los terrenos de la Isla de Puerto Rico (incluyendo Vieques y Culebra). Las demás zonas de vida en la Isla de Puerto Rico de acuerdo Ewel y Whitmore son el Bosque Seco Subtropical (17.6%), el Bosque Mojado Subtropical (22.6%), el Bosque Lluvioso Subtropical (0.1%), el Bosque Mojado de las Montañas Bajas (1.2%) y el Bosque Lluvioso de las Montañas Bajas (0.1%).

La zona de vida del bosque seco subtropical se encuentra delineada por una precipitación pluvial que fluctúa desde un mínimo de 1,000 y 1,100 milímetros anuales hasta un máximo de 2,000 a 2,200 mililitros anuales y una temperatura de entre los 18 y 24 grados centígrados. En esta zona de vida se encuentran una gran variedad de asociaciones florísticas dependiendo de la topografía y el material geológico sobre el cual se encuentre.

En general, los regímenes de humedad anual en esta zona de vida se encuentran cerca de los niveles ideales. El agua es suficiente cómo para mantener la agricultura sin haber humedad excesiva. Con excepción de las regiones con suelos derivados de serpentina y caliza, muchos de los terrenos en esta zona de vida se encuentran en usos no forestales. Gran parte de estos terrenos han sido deforestados en algún momento de la historia para dar paso a una gran variedad

de cultivos. En aquellos lugares donde se ha abandonado los cultivos, estos terrenos se pueden encontrar en bosques secundarios, pastos o desarrollados.

## 2.4 *Descripción General del Área del Proyecto*

### 2.4.1 *Descripción de la Flora*

En la Tabla # 2 de este informe se incluye una lista de las especies de flora identificadas en el área del proyecto. Como puede apreciarse en la tabla de flora, en el área se identificaron 91 especies florísticas. Aun cuando la vegetación predominante en el área son los mangles encontramos gran variedad de especies en los terrenos circundantes.

Las especies que dominan el área son especies que poseen la capacidad de resistir altos niveles de salinidad. Por otro lado todas las especies identificadas son de amplia distribución en Puerto Rico y se encuentran en diferentes etapas sucesionales.

En términos generales, las especies de flora observadas se pueden clasificar de dos formas: dentro de la asociación del matorral costero y de bosque estuarino. El matorral costero estuvo dominado por especies típicas de la asociación como lo es la emjaguilla (*Thespeia populena*). El área estaurina estuvo dominada por los mangles blanco y de botón (*Laguncularia racemosa* y *Conocarpus erectus* respectivamente).

#### 2.4.2 *Descripción de la Fauna*

Durante el estudio de la fauna se identificaron un total de 13 especies de aves, 2 especies de reptiles. La Tabla # 1 resume las especies faunísticas observadas en el área. En términos generales, las aves fueron las especies más conspicuas, las cuales se observaron mayormente sobrevolando en el área, en las aguas costeras a su alrededor y posándose sobre los árboles del área.

Aún cuando no se observó dominio de ninguna especie pudimos notar que existen varias especies de la familia ARDEIDAE y de la Familia COLUMBIDAE. En el caso de la familia ARDEIDAE estas son especies de aves acuáticas como los son el martinete (*Butorides striatus*), la garza blanca (*Egretta thula*), la garza azul (*Egretta coerulea*).

En cuanto a la familia COLUMBIDAE estas son especies acostumbradas a convivir en áreas desarrolladas. Las especies pertenecientes a esta familia son la rolita (*Columba passerina*), la paloma casera (*Columba livia*) y la tórtola cardosantera (*Zenaida aurita*)

#### 2.4.3 *Potencial de Humedales y/o Áreas Jurisdiccionales*

Durante el análisis del potencial de humedales y/o áreas bajo jurisdicción del Cuerpo de Ingenieros del Ejército de los Estados Unidos en el área del proyecto utilizamos las siguientes fuentes:

1. Catastro de Suelos del Área de Mayagüez (Soil Survey of Mayagüez Area of Western Puerto Rico). Hoja número 14
2. Mapa de Inventario Nacional de Humedales (National Wetlands Inventory Maps) correspondiente al cuadrángulo topográfico Aguadilla.
3. Información de la Vegetación obtenida durante las inspecciones de campo al área del proyecto.

De acuerdo con el catastro del área de Mayagüez los suelos en el área del proyecto se encuentran clasificadas como “Tidal Swamp” (Td) y Cataño Sand (Cd) (Ce). Según el manual de referencia “Hydric soils of the Caribbean area” estos suelos se encuentran clasificados como hídrico y con intrusiones hídricas, respectivamente.

El Inventario Nacional de Humedales (Figura # 3), muestra la existencia de dos sistemas de humedales (M2US2P y R2OWH) en el área del proyecto. De acuerdo a Cowarding (1979), estos se definen de la siguiente manera:

M: Marino; 2: Intermareal; US: Costa No Consolidada; 2: Arenosa, P: Irregularmente inundado.

R: Riverino; 2: Perenne Bajo; OW: “Open Water” Fondo Desconocido; H: Permanentemente Inundado.

En vista de lo anterior, los terrenos comprendidos dentro del área de estudio se encuentran bajo la jurisdicción del Cuerpo de Ingenieros del Ejército de los Estados Unidos bajo la Ley Federal de Aguas Limpias.