



# PUERTO MOSQUITO: TOWARD SUSTAINABILITY

Agreement X797210301-0  
Semi-annual performance report



10/29/2011

Submitted by the Vieques Conservation  
and Historical Trust

# Puerto Mosquito – Toward Sustainability: Semi-Annual performance report

OCTOBER, 2011

## CONTEXT –

### WHAT THE PROPOSAL (GRANT REQUEST) STATES/ OUTPUTS

On April 1 2011, the Vieques Conservation and Historical Trust was awarded this agreement from the EPA Region II in order to fund the project Puerto Mosquito: Toward Sustainability. The project's objectives are:

1. To implement a demonstration project in runoff and erosion control on the road from Sun Bay to Puerto Mosquito by implementing one of the remedies recommended in the 2008 study "Land Erosion and Sedimentation of Mosquito Bay, Vieques, Puerto Rico" by Carlos E. Ramos-Scharrón, Ph.D.
2. Install a turbidity measurement station in coordination with the USGS Caribbean Water Sciences Center. The data gathered will be correlated with weather data gathered on site to evaluate the relation between rain events and erosion/sedimentation.
3. To develop and implement a pilot program for the certification of Puerto Mosquito guides and tour operators in coordination with the Puerto Rico Department of Natural and Environmental Resources. An estimated 24 persons will be trained.
4. To develop and implement training for Vieques law enforcement staff including municipal police and state police so that these professionals can be pro-active in protecting and enhancing the bay as they carry out their regular duties. Approximately 30 law-enforcement officials will be trained.

5. To develop and implement workshops for Vieques' hospitality and tourism key leaders. Approximately 30 key members of the hospitality and tourism sector will be trained.

## PROJECT DEVELOPMENT

### THE QAPP

A first draft was submitted to EPA on June 28<sup>th</sup>. This QAPP contemplated collecting water quality data at 15 minute intervals for a year and included the use of probes for water temperature, salinity, conductivity, dissolved oxygen, and dissolved oxygen percent saturation in addition to the turbidity probe considered in the original project proposal. On August 21 we submitted a request to the Chief of Grants and Contracts for an authorization for this addition to the Cooperative Agreement, as it didn't require any changes to the approved grant budget. On September 27 we received the approval for the change. We were notified by Mrs. Van Rabenswaay that:

"We have reviewed the information you provided and agree that adding other basic water quality parameters to the data collection component of the project. would provide a more complete baseline of information for the project. Also, since the technical aspect of these changes are reflected in the QAPP currently under EPA's, official approval of these activities will be granted with the QAPP approval.

Since there is no monetary changes to the approved grant, and the addition work will be funded by outside source, no official modification to the agreement is needed. This means that this additional data will be collected at no added cost to the EPA. We will use the funds for obtaining the equipment as budgeted in the proposal approved by EPA and will match them with these funds we have obtained and that will be reflected in our reporting."

On September 19 we received the EPA's Division of Environmental Science and Assessment (DESA) comments to the QAPP. These comments were addressed and on September 29, we sent the amended QAPP to EPA. We have everything ready and are now waiting for their approval of our QAPP to install the water quality monitoring equipment.

### WATER QUALITY DATA-GATHERING

Matching funds to cover the cost for the probes to test for water temperature, salinity, conductivity, dissolved oxygen, and dissolved oxygen percent saturation have been secured by means of a Cooperative Agreement that has already been signed between the Trust and the USGS

Caribbean Water Sciences Center –they will contribute \$3,500 - and by an Agreement between USGS and the PREQB. PREQB will contribute the remaining amount.

On July 14. we conducted a site visit to analyze the placement of this water quality data-gathering instrument with the participation of DNER, USGS and PREQB. The site was selected during the visit.

## RUNOFF AND EROSION CONTROL ON THE ROAD TO PUERTO MOSQUITO

We began planning for the installation of the erosion and sedimentation control measures in the road to Puerto Mosquito with site visits to study the current conditions on the road from Sun Bay. The first of these site visits took place on April 1<sup>st</sup>, where we had a team of technicians and experts from DNER: This visit served the purpose of explaining the goals and extent of our project to DNER.

During the month of July we examined the road with Dr. Carlos Ramos-Scharron (author of the report for DNER that this project is based on), and PE Juan Amador, pro-bono technical advisor to the project, who was recommended to us by Dr. Ramos-Scharron. During these site visits we discussed the feasibility of reducing erosion and sediments reaching the bay from the road currently in use. The experts indicated that the last stretch of the current road is lower than the surrounding terrain, particularly the last 163.06 meters that run downhill to the bay, making it difficult to divert the water flow and sediments during rain events. Their appreciation is that it will always act as a chute to transport large amounts of sediments into the bay during rain events.

This situation was presented to Nesmarie Negrón, Environmental Engineer for US EPA Region 2 Watershed Management Branch during her visit to Puerto Rico in August) and with DNER. We committed to analyzing various erosion/sedimentation management options (that would be combined with the BMP's recommended in the Ramos Scharron report), and to produce a decision matrix to be presented to EPA and DNER. These options are:

- No action.
- Implement one (or some) of the erosion and sedimentation control measures on the current road as per Dr. Ramos Scharron's report;
- Divert last downhill segment of road to more level terrain and integrate the recommended erosion and sedimentation control measures from the design and planning stages on, so they can be an integral, sustainable, long-lasting feature of the access to the bay (*vis a vis* an added remedy). The portion of the current road no longer used should be closed to vehicular traffic, and reforested to prevent it from being further eroded and to stop sediments from reaching the bay;

- Recommend to DNER to discontinue the use of the road currently being used to access the bay, reforest same and utilize the unpaved road coming into the bay from PR997, located at the Western end of the bay.

Experts, user groups and management agency were consulted during the analysis process. Another site visit was held in September with the participation of the Director of the Bureau of Coasts, Reserves and Refuges, DNER Botanist Vicente Quevedo, Eng. Amador, the Manager of the Reserve and VCHT Project Manager and Assistant Project Manager to explore one of the alternatives (a route for the re-alignment of the last stretch of the Sun Bay road).

### Community meetings


Community meetings were held during the month of September to discuss the various road management alternatives with the main users of the resource and their opinions were collected regarding how they felt each alternative would impact their commercial/personal use of the resource. Separate meetings were held for the DNER- authorized concessionaires currently operating in the Bay, fishermen, and the resident community. The results are covered in a separate report.

### TRAINING FOR GUIDES: PILOT CERTIFICATION PROJECT

The course was advertised using local media: Vieques Blog, Kathy Gannett's listserve, flyers located in high-volume traffic areas such as the post office, the supermarket, and other commercial establishments, the VCHT bulletin board. There has been great interest in the community; we already have twenty-four registrants and a waiting list.

The course will run from October 31 through November 11<sup>th</sup>. Some of the speakers/instructors will be Dr. Juan González Lagoa and MSc Brenda Soler, bioluminescence experts; Elizabeth Padilla, Manager of the Puerto Rico Conservation Trust's Cabezas de San Juan Reserve (site of Laguna Grande bioluminescent lagoon); Jorge Fernández-Porto, Director of the Puerto Rico Senate Natural Resources Committee; experts from the Puerto Rico Tourism Company; DNER Department Directors –Concessions, Navigation, Coasts, Reserves and Refuges, among others. The course will

**Reunión comunitaria/Community meeting**



Estamos comenzando un proyecto piloto para reducir la sedimentación en la bahía bioluminiscente Puerto Mosquito (Cafío Hondo) financiado por la EPA. Te invitamos a conocer de qué se trata. Queremos tus comentarios.

We are starting an EPA-funded pilot project on erosion and sedimentation control for Puerto Mosquito. We invite you to learn about it. We'd like your comments.

**Viernes 30 de septiembre • 5pm • Friday, September 30**

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**FIDEICOMISO DE CONSERVACION E HISTORIA DE VIEQUES**

cover many subjects, among them, the ecology of the system, managing tours while protecting the environment; laws and regulations; customer service, CPR.

## LEVERAGE

Ever since we were notified of the award, the VCHT has been working not just towards achieving the project's goals, but also towards enhancing the project at no cost to the EPA.

We have obtained extensive cooperation and involvement from the Puerto Rico Department of Natural and Environmental Resources, managers of the Vieques Bioluminescent Bay Natural Reserve. Since the project began four site visits with experts from the Main Island have been conducted. For every one of these site visits, the DNER has contributed agency technicians and department heads. They have also contributed the agency's plane to transport the specialists to and from Vieques.. DNER has also provided transportation to USGS experts and to Engineer Juan Amador.

Project Engineer Juan Amador Gutierrez, Executive President of Gregory L. Morris Engineering, COOP (GLME), President of the Institute of Environmental Engineers, Professional College of Engineers and Land Surveyors of P.R. and Erosion Control Association Government Relations Committee Member, through a voluntary work service agreement is contributing analysis and planning for the erosion and sedimentation component of this project.

Carlos Ramos Scharron, PhD, Author of the 2008 study "Land Erosion and Sedimentation of Mosquito Bay, Vieques, Puerto Rico", who lives in Texas, donated a site visit to examine the current conditions of the Sun Bay road.

Pedro Nieves Miranda, PREQB President and Executive Director, and Angel Meléndez, Chief of Plans and Special Projects, PREQB Strategic Planning Area put a lot of effort into identifying funds to contribute to the match so that we may develop a one-year multi-parameter water quality study.

Damaris Delgado, Director of DNER's Bureau of Coasts, Reserves and Refuges, Eng. Waldemar Quiles, DNER Director of the Water and Mineral Resources Area; Botanist Vicente Quevedo, Technical Advisor, DNER Planning Area; Ramona Paris, DNER Director of the Bureau of Water Resources, DNER Geologist Verónica Santa Rosa; Raúl Santini, DNER, Non-point source pollution; and Eng. Rafael Dávila, UPR Mayagüez, have all contributed a lot of time to site visits and analysis of the Sun Bay Road.

The Puerto Rico Tourism Company will contribute to the Pilot Certification Project a one-day training seminar on customer service, quality control, appropriate language, and recommended practices for the tourism industry in Puerto Rico.

Juan González Lagoa, PhD; Brenda Soler, MSc; Jorge Fernández-Porto, Director of the Senate of Puerto Rico’s Natural Resources Comitee will donate their time and knowledge to the Pilot Certification Project.

WORKPLAN (ACTUALIZED)

Dates as per workplan submitted with the proposal. The dates contemplated in the original workplan submitted with the proposal appear in black. **Actual or projected dates/situations according to the way the project has been developing are indicated in green.**

• Objectives	• Tasks	• Date
<ul style="list-style-type: none"> <li>I. Address water contamination issues – QUAPP</li> </ul>	<ul style="list-style-type: none"> <li>1. Prepare QUAPP</li> <li>2. QUAPP Approval/Comments</li> </ul>	<ul style="list-style-type: none"> <li>Starts after grant acceptance QUAPP was submitted on June 28th</li> <li>8 weeks after submission (approximately June 2011)</li> <li><b>When we receive QAPP approval. We would like to begin in November 2011, as we have everything ready to install the equipment and would like to do so before the peak tourist season begins by mid-November.</b></li> </ul>
<ul style="list-style-type: none"> <li>I. Address water contamination issues – Ia. Sediment measurements</li> </ul>	<ul style="list-style-type: none"> <li>1. Design – study: select site and equipment, design housing (with USGS)</li> <li>2. Community meeting to explain what will be</li> </ul>	<ul style="list-style-type: none"> <li>Starts after grant acceptance Site has already been selected, housing design has already been determined. Alternatives have been contemplated in case the use of the road at the western end of Puerto Mosquito is selected as the preferred option for bay access.</li> <li>After QUAPP approval <b>Community meetings have</b></li> </ul>

• Objectives	• Tasks	• Date
	<p>done; need for community support; recruitment of volunteers; explain impacts to community (if any) and duration of project by stages</p> <ul style="list-style-type: none"> <li>• 2. Procure equipment and materials</li> <li>• 3. Construct housing and install sonde and weather station</li> <li>• 4. Train volunteers on managing data and equipment maintenance</li> <li>• 5. Initiate data collection</li> <li>• 6. Analyze data prior to installation of remedy</li> <li>• 7. Prepare report on pre-remedy data</li> <li>• 8. Data collection after installation of remedy</li> <li>• 9. Data analysis after installation of remedy</li> <li>• 10. Final report on</li> </ul>	<p><b>already been carried out.</b></p> <ul style="list-style-type: none"> <li>• Begins with QUAPP approval <b>Coop agreement with USGS has already been signed in order to secure the funds. Some materials for the housing that were ordered off island have already arrived in Vieques and are in storage.</b></li> <li>• Begins with QUAPP approval (June 2011)</li> <li>• Begins 4 weeks after QUAPP approval (July 2011) (Aug)</li> <li>• Monthly basis after data collection initiates</li> <li>• 8 months after data collection has initiated (March 2012) (?)</li> <li>• June 2012</li> <li>• Monthly for 8 months (until January 2013) (?)</li> <li>• January 2013</li> </ul>

• Objectives	• Tasks	• Date
	sediment data	
<ul style="list-style-type: none"> <li>• I. Address water contamination issues –</li> <li>Ib. Design and installation of erosion and sedimentation control remedy</li> </ul>	<ul style="list-style-type: none"> <li>• 1. Coordinate with DNER and experts</li> <li>• 2. Carry out detailed site visit for purposes of analyzing terrain – slope, soils, etc- in order to design remedy</li> <li>• 3. Remedy is agreed upon and plans are made</li> <li>• 4. Before implementation, plans are adjusted (if needed) depending on sediment data</li> <li>• 4. Contractor is selected</li> <li>• 5. Remedy is put in place</li> <li>• 6. Interim report on remedy installation</li> </ul>	<ul style="list-style-type: none"> <li>• Starts after grant acceptance</li> <li>• April 2011 (Several site visits have already been carried out with DNER, USGS, EQB, Carlos Ramos Scharron, Juan Amador)</li> <li>• Last quarter 2011</li> <li>• Prior to the final decision on the remedy, a decision matrix will be developed to explore three options for bay access/sedimentation and erosion control (discussed in the meetings report). This matrix will be ready to be analyzed by VCHT, Technical advisors and the agencies in October 2011. Final decision/selection of remedy should happen in November 2011. March 2012</li> <li>• March 2012</li> <li>• April – May 2012</li> <li>• June 2012</li> </ul>
<ul style="list-style-type: none"> <li>• I. Address water contamination issues –</li> <li>Ic. On-site</li> </ul>	<ul style="list-style-type: none"> <li>• 1. Select and reproduce materials to be distributed</li> <li>• 2. Determine date with</li> </ul>	<ul style="list-style-type: none"> <li>• Starts 6 months after grant acceptance</li> <li>• March 2012</li> </ul>

<ul style="list-style-type: none"> <li>• Objectives</li> </ul>	<ul style="list-style-type: none"> <li>• Tasks</li> </ul>	<ul style="list-style-type: none"> <li>• Date</li> </ul>
<p>training for construction industry and Municipal Public Works Agency</p>	<ul style="list-style-type: none"> <li>experts and builders and distribute invitations</li> <li>• 3. Provide one-day training on-site and at the Trust</li> <li>• 4. Interim report on training</li> </ul>	<ul style="list-style-type: none"> <li>• April or May 2012</li> <li>• June 2012</li> </ul>
<ul style="list-style-type: none"> <li>• II. Pilot certification course for tour operators – legal framework component will be used to train local law enforcement officers with component for law enforcement personnel</li> </ul>	<ul style="list-style-type: none"> <li>• 1. Plan content with DNER and other specialists</li> <li>• 2. Prepare materials – includes decision about dates on which law enforcement officials will be invited to the course</li> <li>• 3. Coordinate dates with external resources –experts, Red Cross, DNER navigation office</li> <li>• 4. Provide course</li> <li>• 5. Test participants</li> <li>• 6. Interim report on guides certification training</li> </ul>	<ul style="list-style-type: none"> <li>• Starts May 2011 (several meetings have been carried out; course has been designed; planning with DNER was slow)</li> <li>• Summer 2011</li> <li>• August 2011</li> <li>• October 2011 <b>Course begins on Oct. 31 and will run until Nov. 11</b></li> <li>• November 2011</li> <li>• January 2012</li> </ul>
<ul style="list-style-type: none"> <li>• III.a Outreach for elected officials</li> </ul>	<ul style="list-style-type: none"> <li>• 1. Prepare materials</li> <li>• 2. Distribute invitations</li> </ul>	<ul style="list-style-type: none"> <li>• February 2013</li> </ul>

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• Objectives	• Tasks	• Date
	• 3. Hold activity	
• III.b. Outreach for Hospitality Course	• 1. Prepare materials • 2. Distribute invitations • 3. Hold activity	• Summer 2012
• Final report	• Track success of objectives throughout project	• Final report: April 2013

SITE VISITS

