

Guanica Bay Watershed Management Plan

Implementation Update



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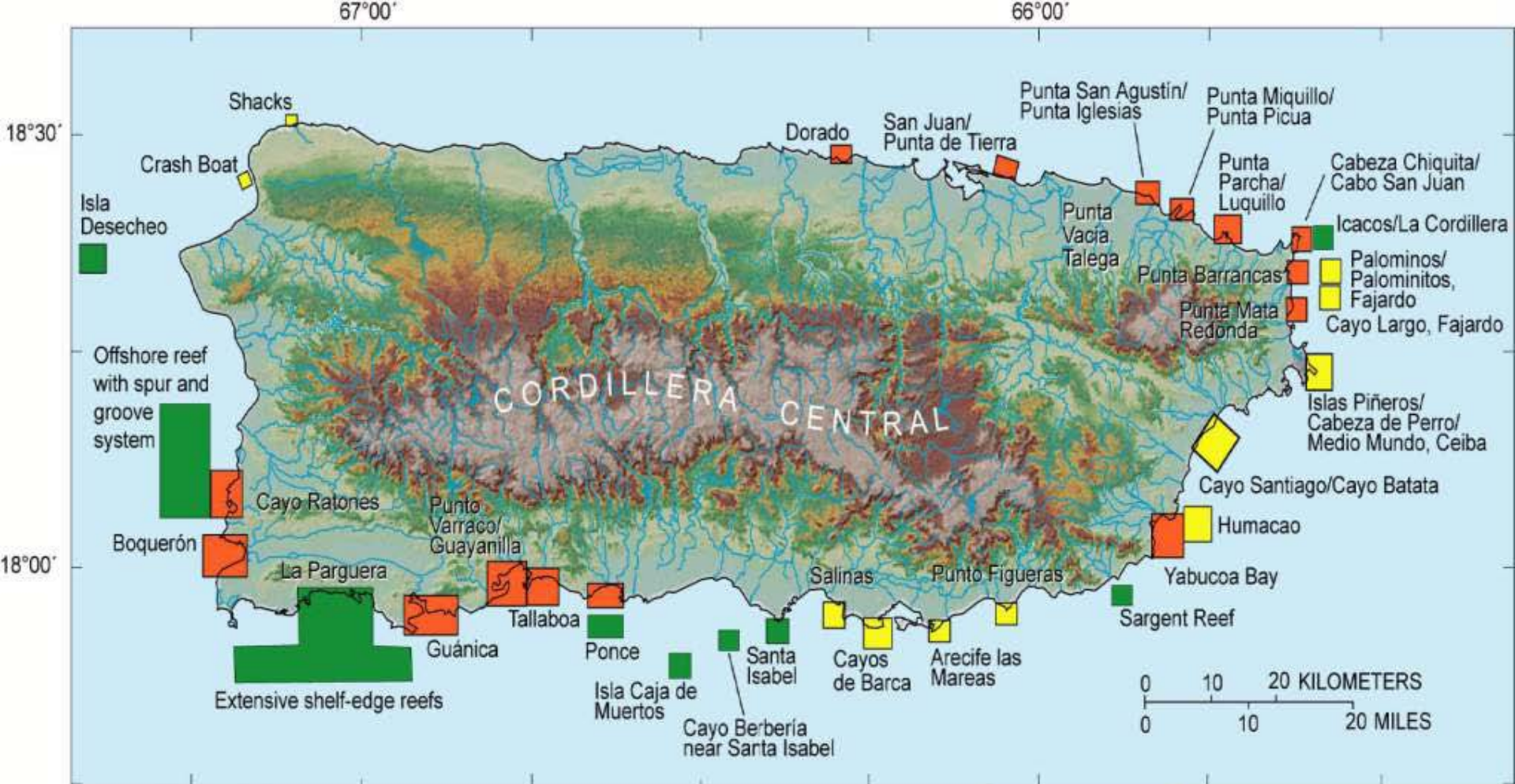
Watershed Management Plan Implementation

- Project overview/background
- Four top projects



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Base from US. Geological Survey
National Elevation Data Set (NED) for Puerto Rico

EXPLANATION

- Reefs with high coral diversity and density
- Reefs with moderate coral diversity and density
- Degraded reefs



Sample Site

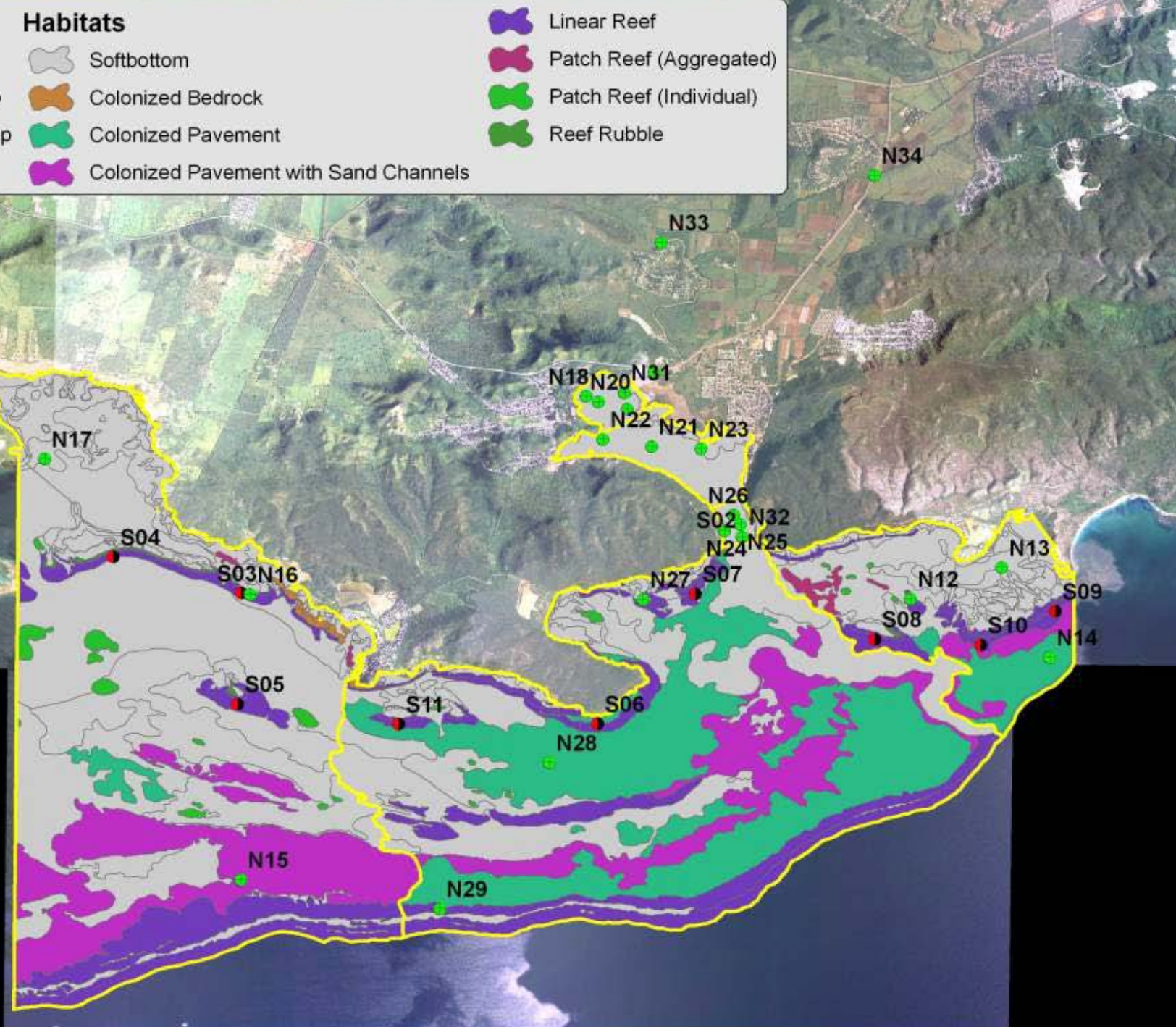
Habitats

Type

- Nutrient Grab
- Sediment Trap

-  Softbottom
-  Colonized Bedrock
-  Colonized Pavement
-  Colonized Pavement with Sand Channels

-  Linear Reef
-  Patch Reef (Aggregated)
-  Patch Reef (Individual)
-  Reef Rubble



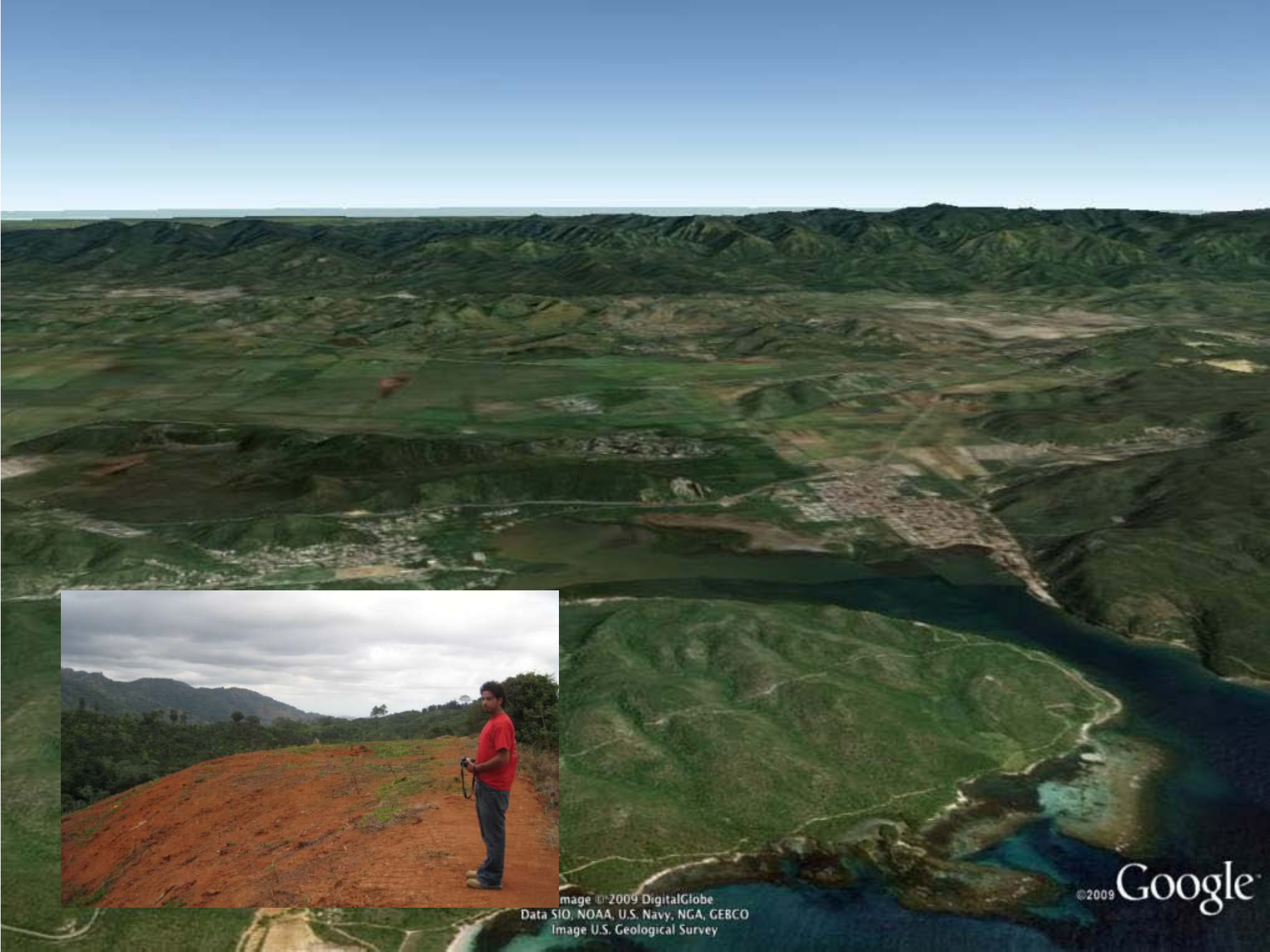


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Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image U.S. Geological Survey

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Improve Sediment and Erosion Control on High Mountain Farms

Restoration of the Guanica Lagoon

Rio Loco Bank Stabilization

Creation of Treatment Wetlands



Priority Watershed Restoration Options



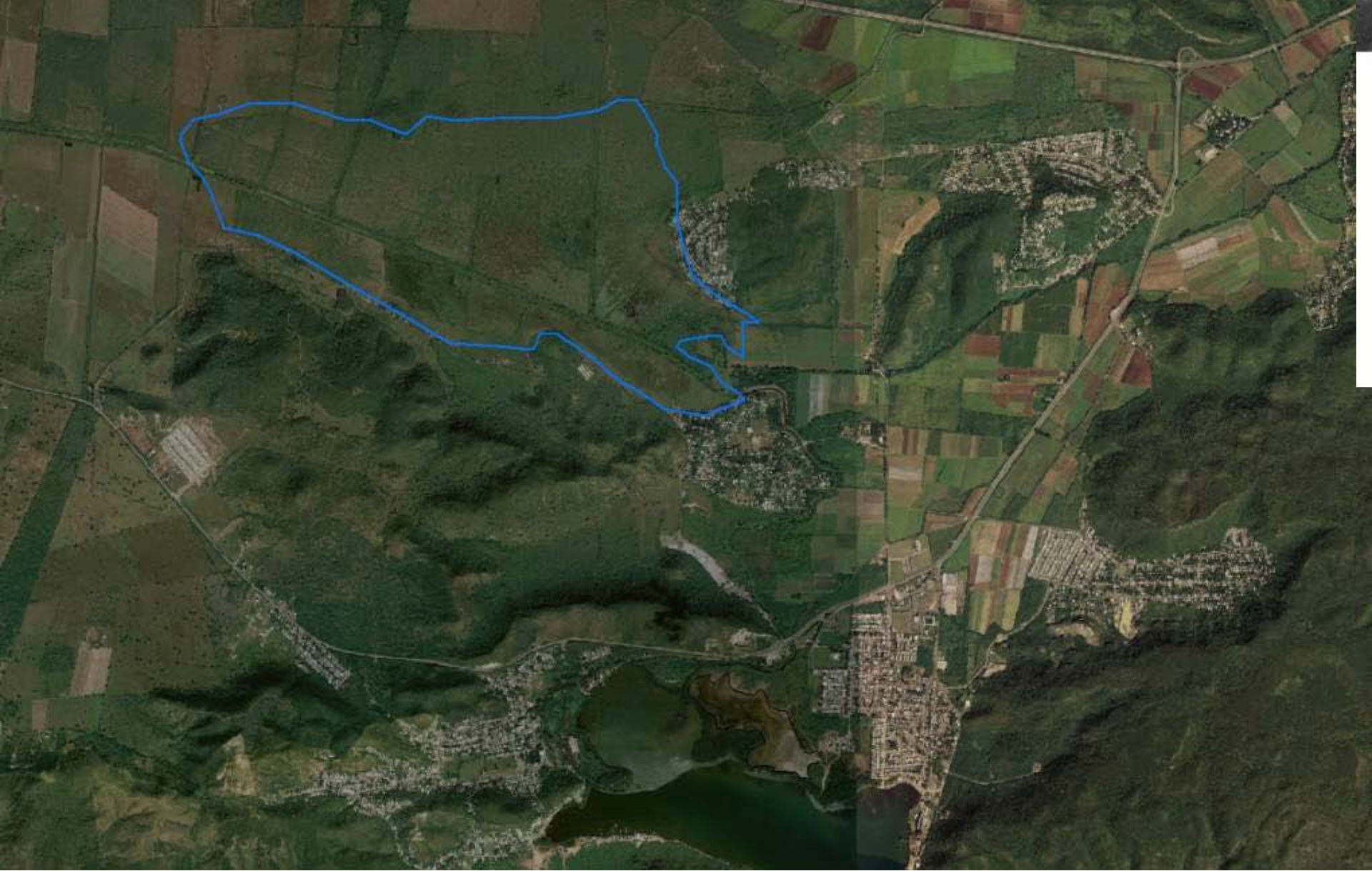
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#1 Restoration of Historic Guanica Lagoon

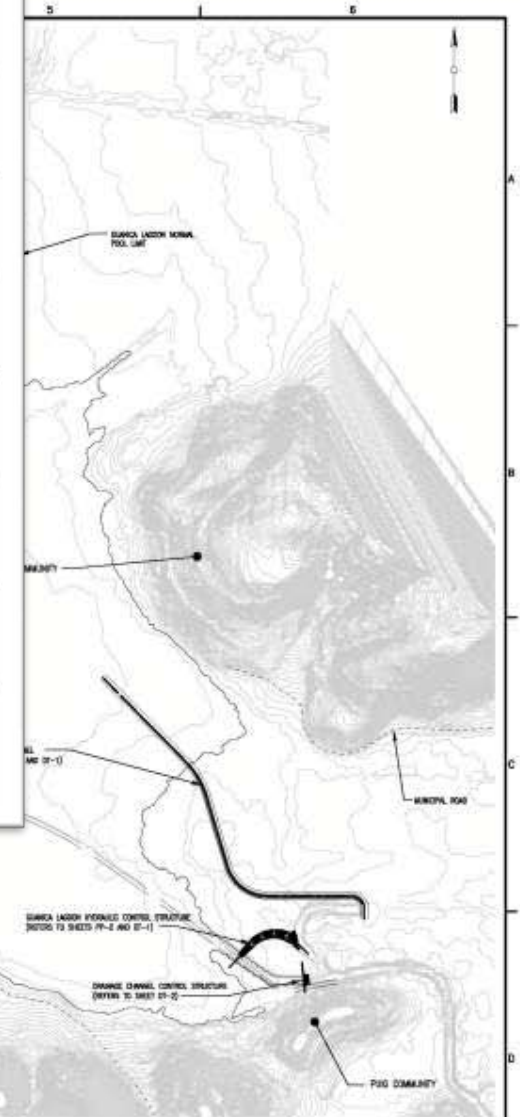
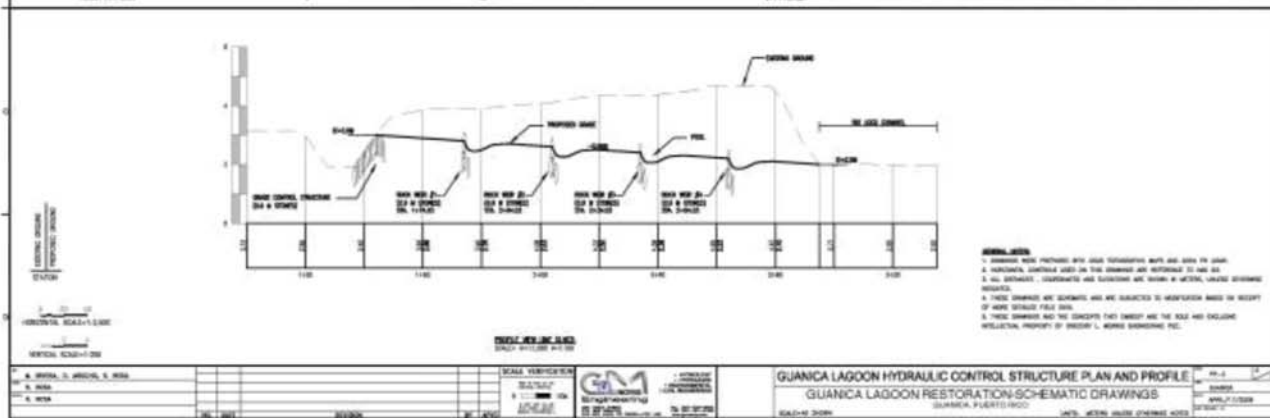
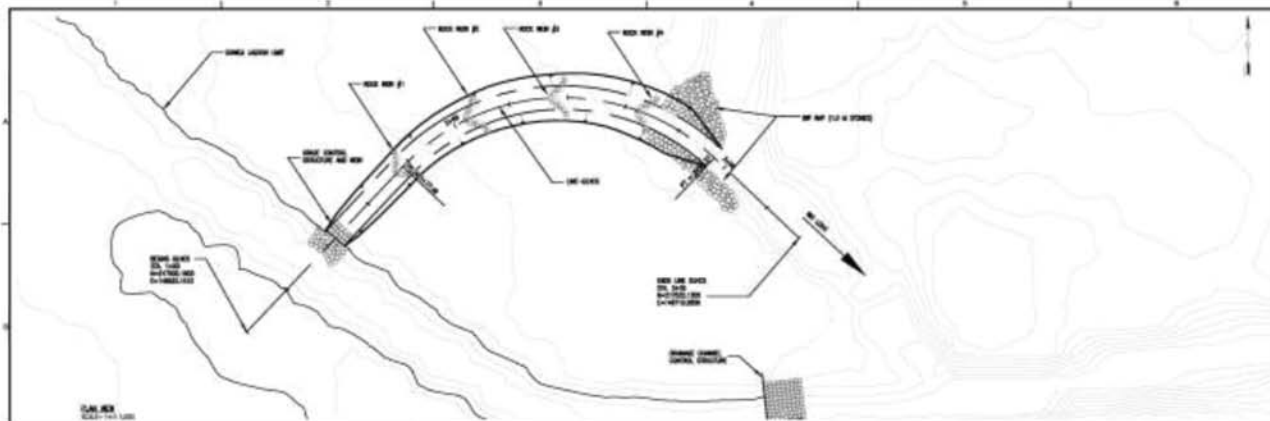






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LEGEND:

- CONTOUR
- ROAD
- ROAD NUMBER

SCALE 1:10,000

0 100 200

GENERAL NOTES:

1. DRAWINGS WERE PREPARED WITH USGS TOPOGRAPHIC MAPS AND 2004 PM LIDAR.
2. HORIZONTAL CONTROLS USED ON THIS DRAWING ARE REFERENCED TO NAD 83.
3. ALL DISTANCES, COORDINATES AND ELEVATIONS ARE SHOWN IN METERS, UNLESS OTHERWISE INDICATED.
4. THESE DRAWINGS ARE SCHEMATIC AND ARE SUBJECTED TO MODIFICATION BASED ON RECEIPT OF MORE DETAILED FIELD DATA.
5. THESE DRAWINGS AND THE CONCEPTS THEY EMBODY ARE THE SOLE AND EXCLUSIVE INTELLECTUAL PROPERTY OF CREDENT L. MORIN ENGINEERING P.C.

DR. M. ROSA, D. ANICHO, E. ROSA DR. E. ROSA DR. E. ROSA	<table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>REVISION</th> <th>BY</th> <th>APPV.</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DATE	REVISION	BY	APPV.						SCALE VERIFICATION 0 100 200 METERS		• HYDROLOGY • HYDRAULICS • ENVIRONMENTAL • CIVIL ENGINEERING	KEY MAP AND GENERAL NOTES GUANICA LAGOON RESTORATION-SCHEMATIC DRAWINGS GUANICA, PUERTO RICO SCALE=1:10,000	DR. G-2 DR. GUANICA APRIL/17/2008 DR. ROSA
NO.	DATE	REVISION	BY	APPV.												



Restoration Update

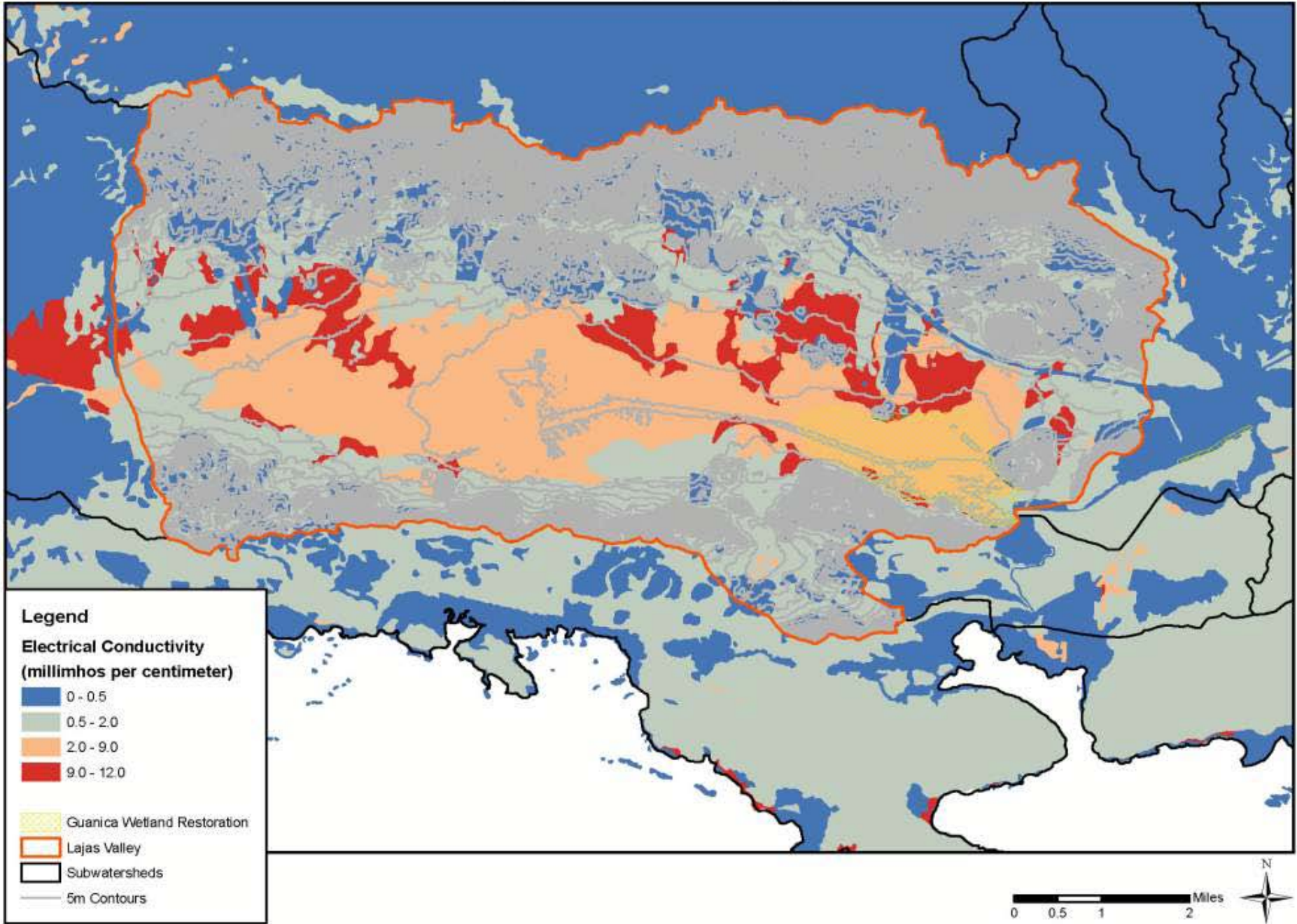
- Initial designs and hydrologic feasibility completed in the past by DNER and Greg Morris and Associates
- More acreage needs to be acquired – 3-5 private owners in the 100 yr floodplain
- Outreach to the Lajas Agricultural Community is a critical next step to ensure coexistence of lagoon and existing agriculture
- Concern about potential soil salinity increases after lagoon restoration is a critical research need



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Lajas Valley - Salinity



#2 Constructed wetlands treatment system for existing Guanica STP



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Restoration Update

- Currently only secondary treatment – plant is quickly moving to 2.2 mgd currently at 700,000 gallons/day effluent
- Coral reefs extremely sensitive to nitrogen
- PRASA is very interested in the project – have met with Alberto Lazaro – Director of Infrastructure – willing to acquire land and manage construction
- Have estimates of the sizing, land area and rough estimates of cost
- Exploring a couple of avenues for funding including NFWF and EPA



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