

# Puerto Rico Water Resources and Environmental Research Institute

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PRWRERI

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Mayagüez, P.R.

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# Introduction

- ▶ The Water Resources and Environmental Research Institute is one of 54 similar research centers in the States, DC, Puerto Rico, Virgin Islands, and Guam/Federated States of Micronesia.
- ▶ It was established in 1964 by the Water Resources Research Act and presently operating under Section 104B of the Water Research and Development Act of 1984 (P.L. 98-242).
- ▶ It conduct basic and applied research to solve water and environment problems unique to Puerto Rico, the Caribbean, and Latin America.



# Objectives

- ▶ Plan, conduct, and otherwise arrange for competent research that foster
  - the entry of new research scientists into the water resources and environmental fields,
  - the training and education of future water scientists, engineers, and technicians,
  - the preliminary exploration of new ideas that address water problems or expand understanding of water and water-related phenomena, and
  - the dissemination of research results to water managers, professional community, and the public.



# Focus on...

- ▶ Research
- ▶ Information and Technology Transfer
- ▶ Professional Training
- ▶ Education
- ▶ Advising
- ▶ Consulting



# Research Program

## ► Externally funded

- USEPA
- USGS
- USCoE
- USFWL
- USDA-NRCS
- FEMA
- PRASA
- PREQB
- PRDNER
- PRPB
- PRIFA
- Office of the Comptroller
- Municipalities
- Private Professional Firms
- Industry



# Research Interest

- ▶ Surface Hydrology and Watershed Management
  - Multiobjective optimization for decision making
  - Computer model calibration and error analysis
  - Sustainable watershed management
- ▶ Surface Water Quality
  - Non-point pollutant sources identification
  - Optimization techniques for waste allocation
  - Simulation



# Research Interest

- ▶ Water and Wastewater (w&ww) Treatment
  - Nanotechnology applications in w&ww treatment
  - New material and techniques for w&ww treatment
  - Small systems new technology development
- ▶ Soil Remediation
  - Bio-remediation
  - Physical-chemical remediation



# The Comprehensive Integrated Management Plan (CIMP) for the Mayagüez Bay Watershed





# The Mayagüez Bay



**(PLANATION**

1440 ▲ SURFACE-WATER STATION AND NUMBER

1430 ▼ QUALITY-OF-WATER STATION AND NUMBER

1326 ● WELL AND WELL NUMBER

1415 △ LAKE-ELEVATION STATION AND NUMBER

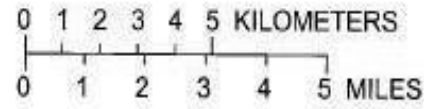
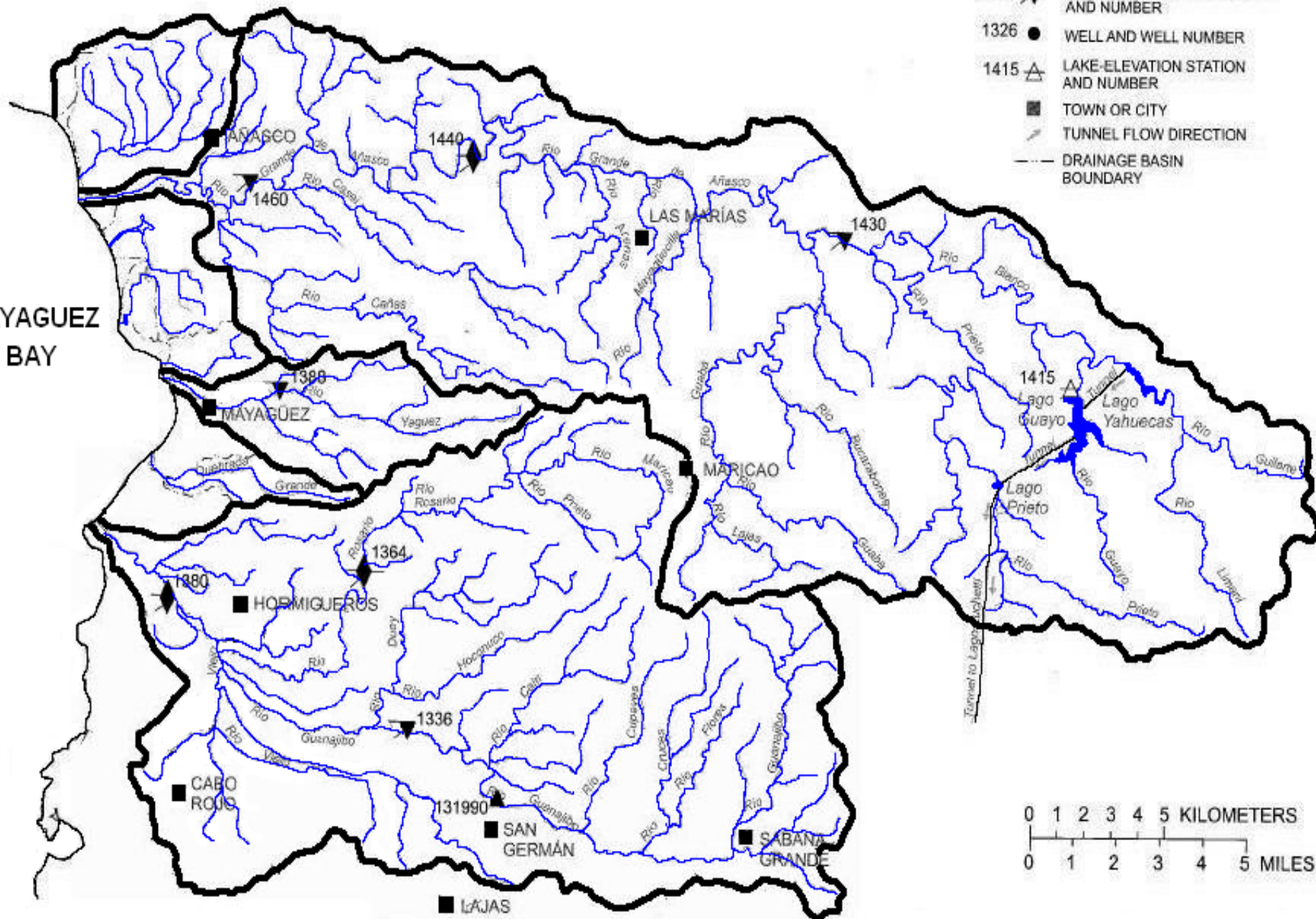
■ TOWN OR CITY

— TUNNEL FLOW DIRECTION

--- DRAINAGE BASIN BOUNDARY

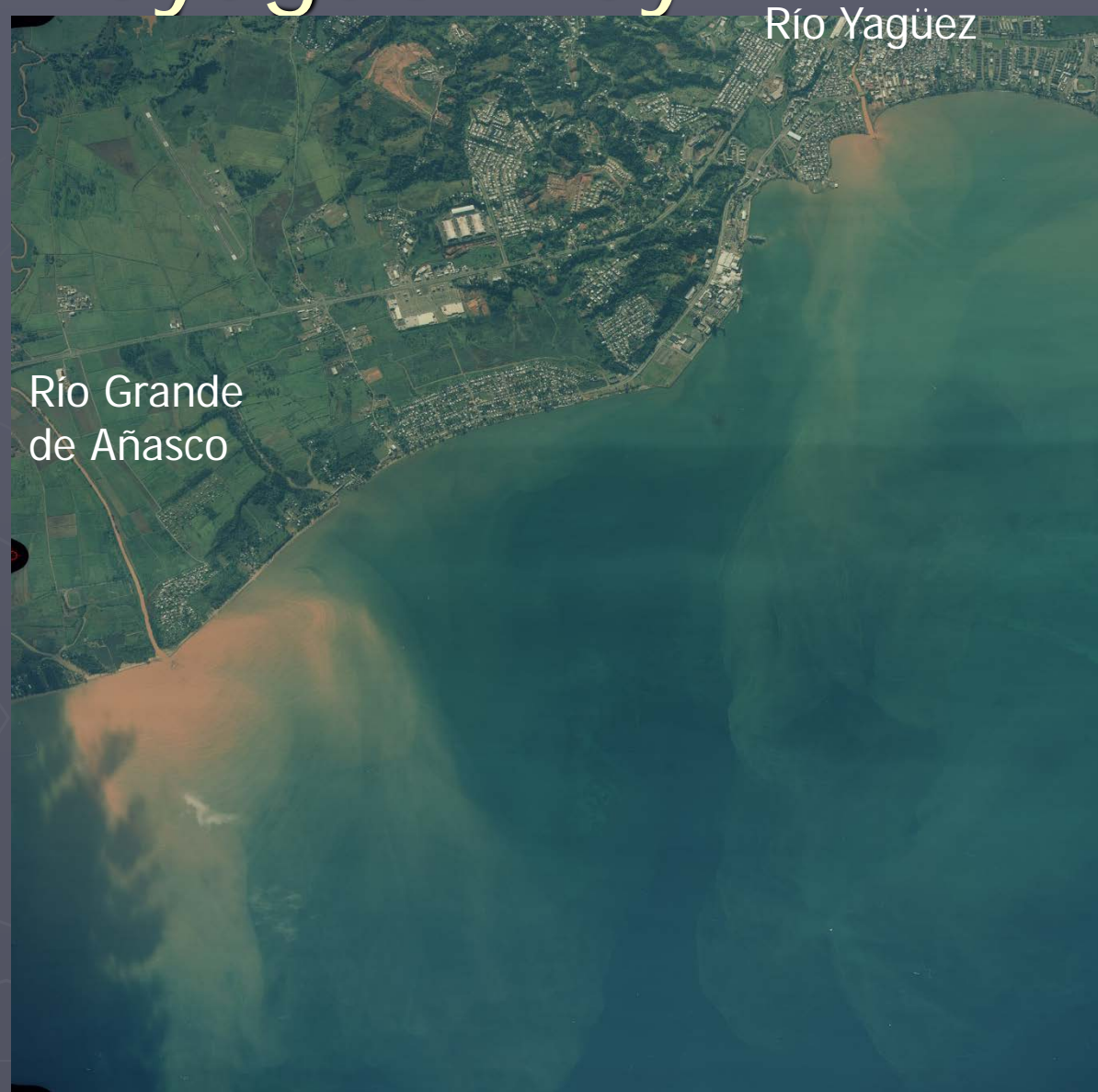
SAN SEBASTIÁN ■

MAYAGUEZ BAY



# The Mayagüez Bay

Sediment  
discharge from  
Río Grande de  
Añasco and Río  
Yagüez



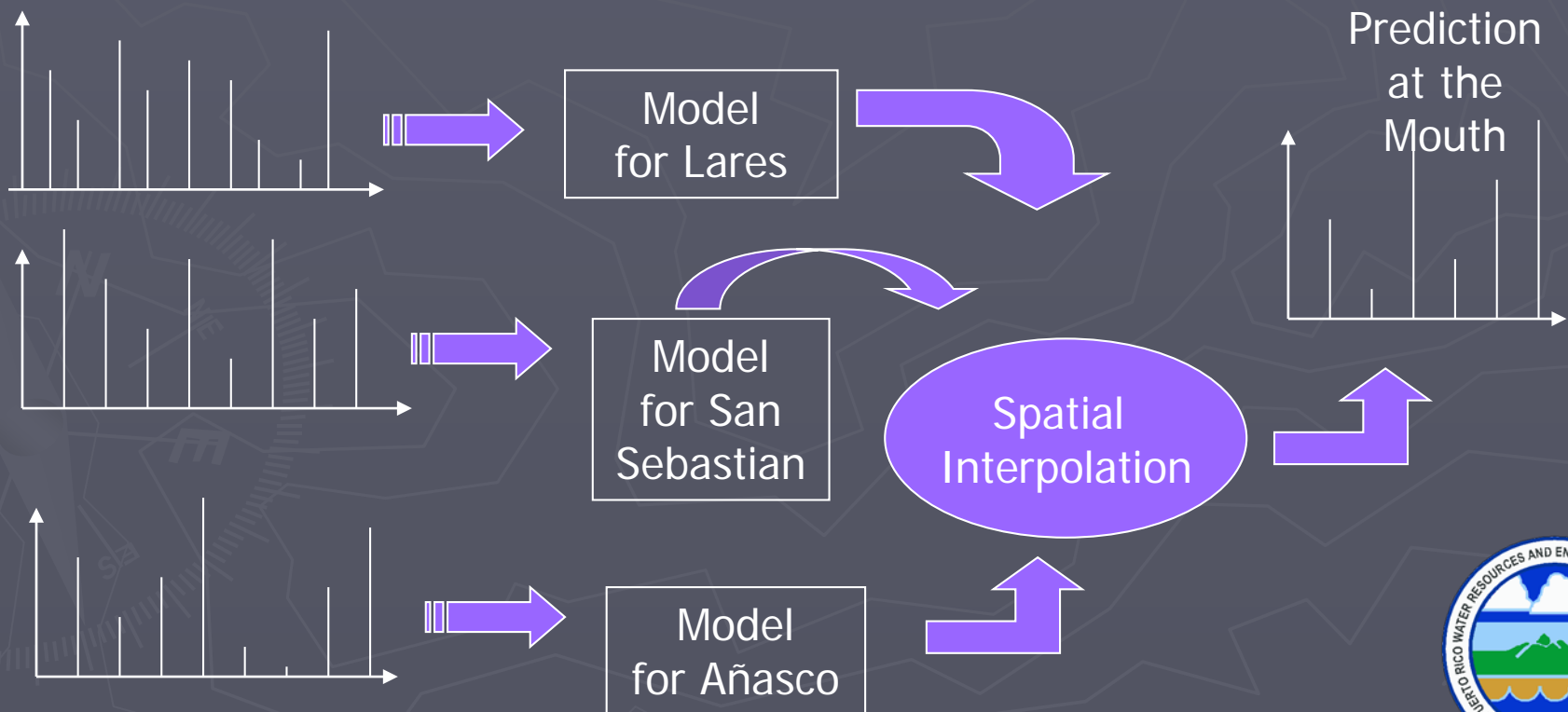
# The Mayagüez Bay

Sediment discharge  
from Río Yagüez  
and Río Guanajibo

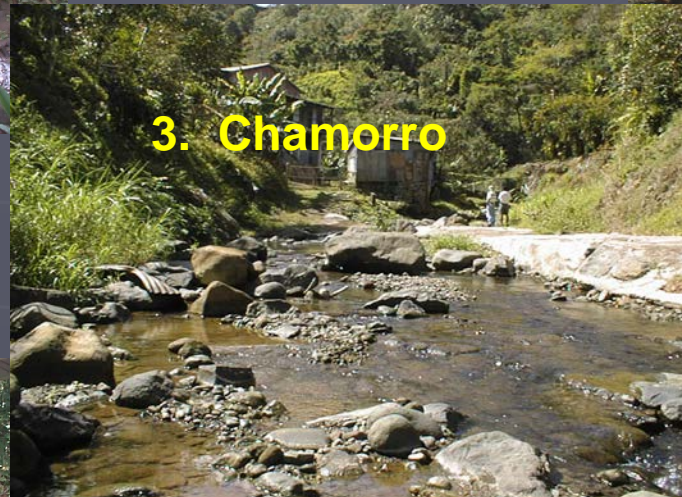


# Research Program

- ▶ Monitoring the Water Quality Parameters of Mayagüez Bay.



# Nutrient Discharges from Mayagüez Bay Watershed.



# Nutrient Discharges from Mayagüez Bay Watershed.



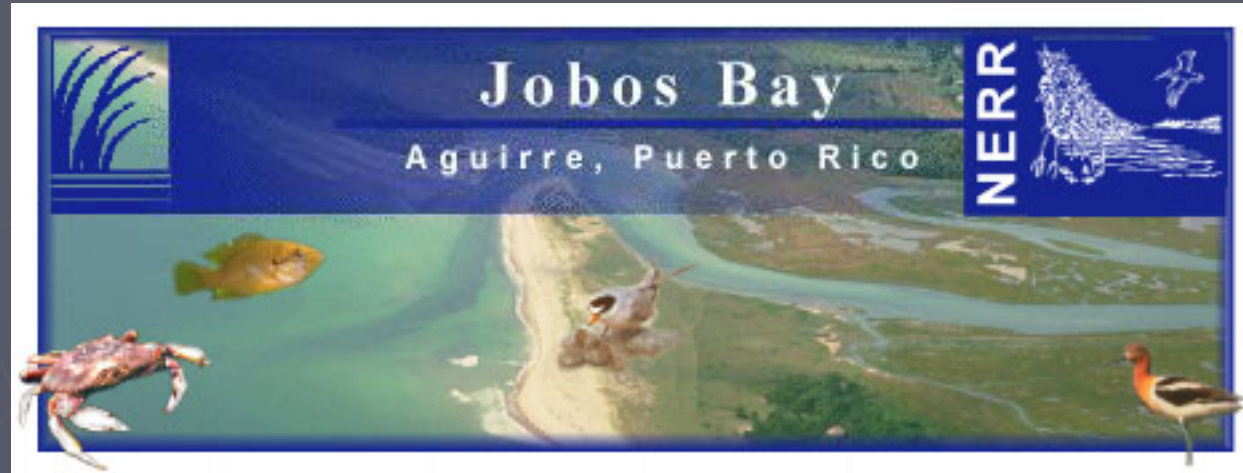
# Research Program

Development of an education program for the CIMP project.





# JBNERR



- ▶ USING *BASINS* TO ASSESS POINT AND NONPOINT SOURCES OF POLLUTION WITHIN THE JOBOS BAY WATERSHED



# JBNEER



# JBNEER



# JBNEER

