Simple Tidal Flow Study Of Laguna Barra de Navidad

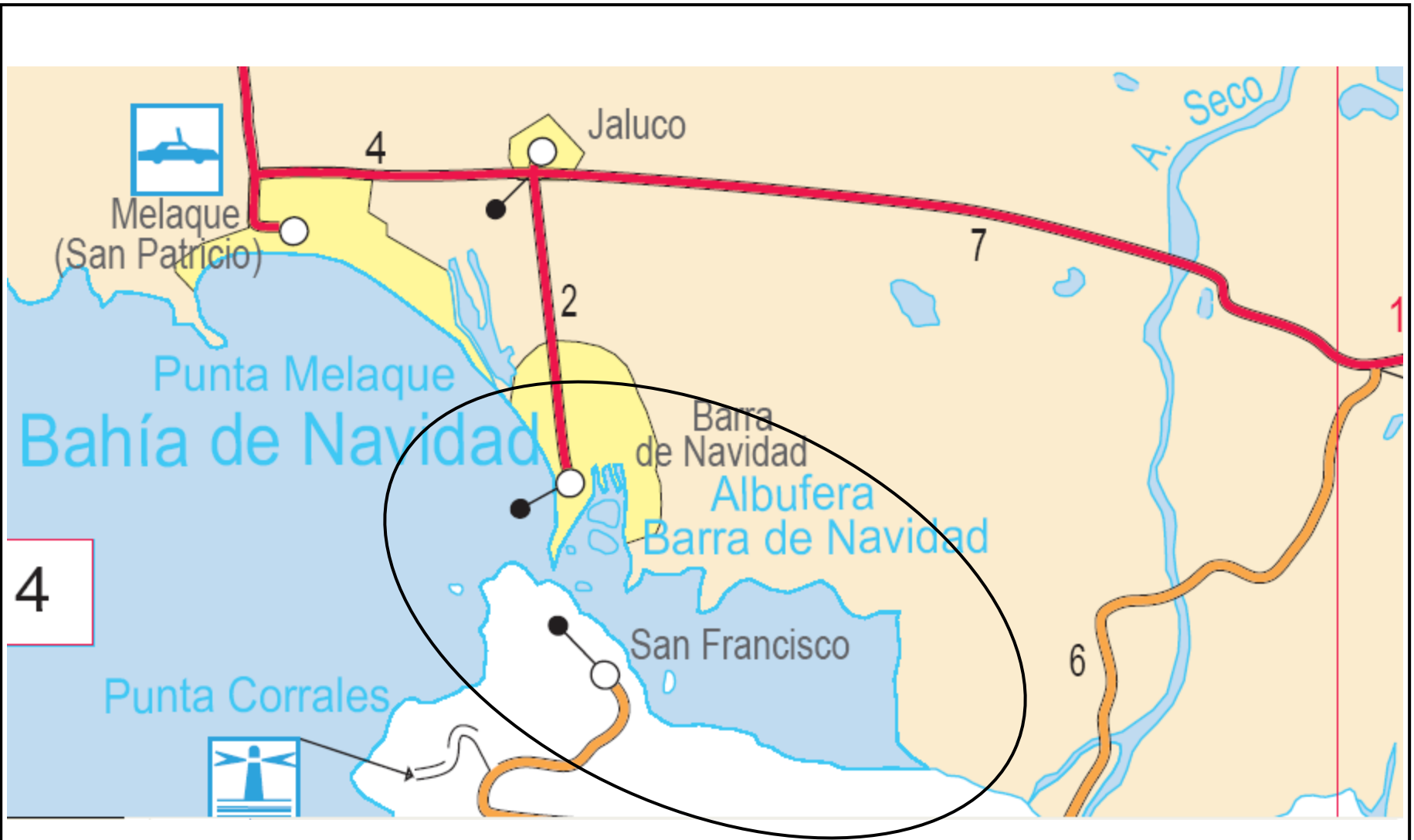# During

the Dry Season

When

The Rio Marabasco is not Flowing
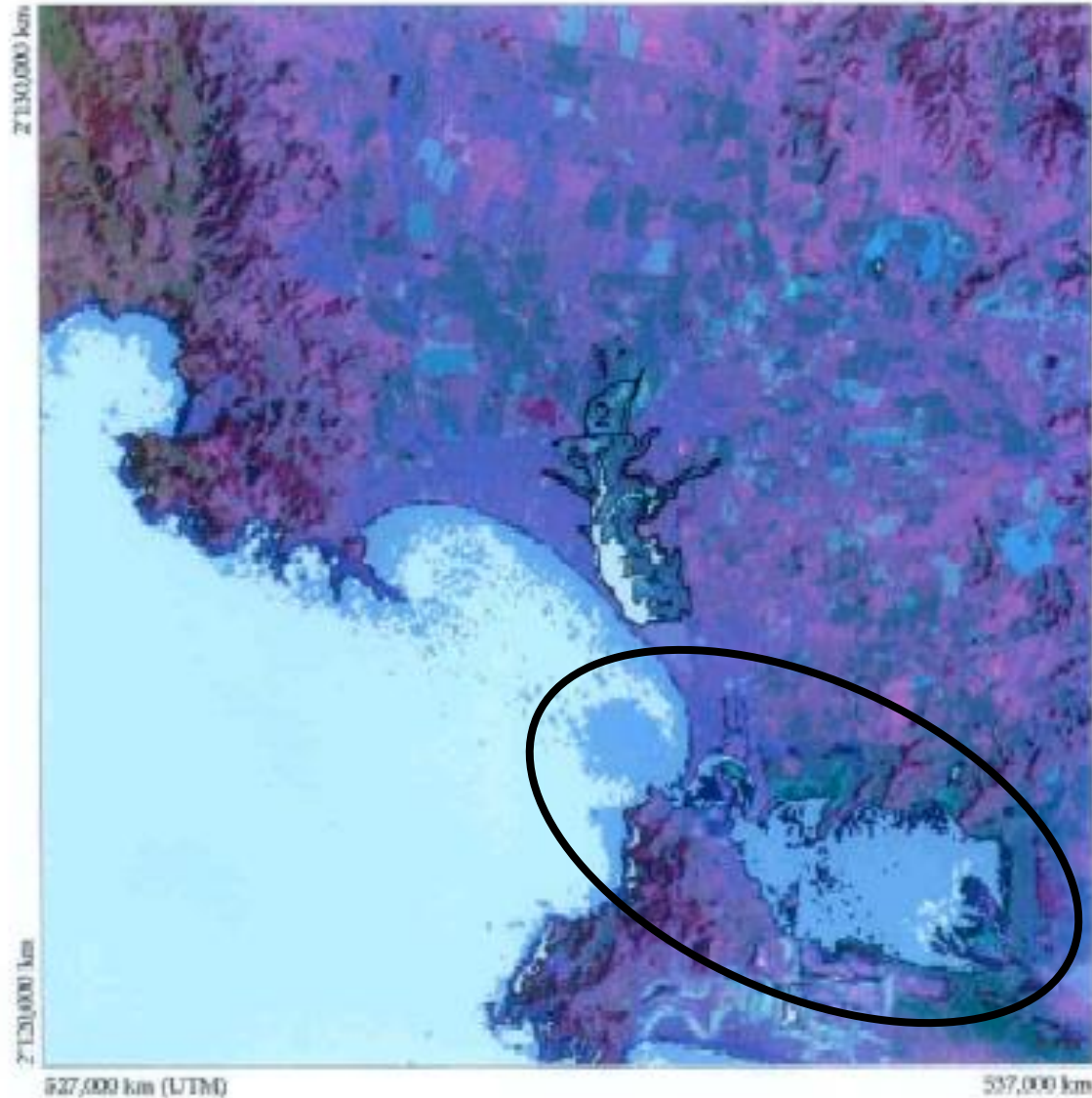
A Finite Element Analysis (FEA) using flexPDE

Craig E. Nelson - Consultant Engineer

Nelson Applied Research, Inc.   2142 – N. 88th St. Seattle, WA. 98103   USA   206-498-9447   Craigmail @ aol.com
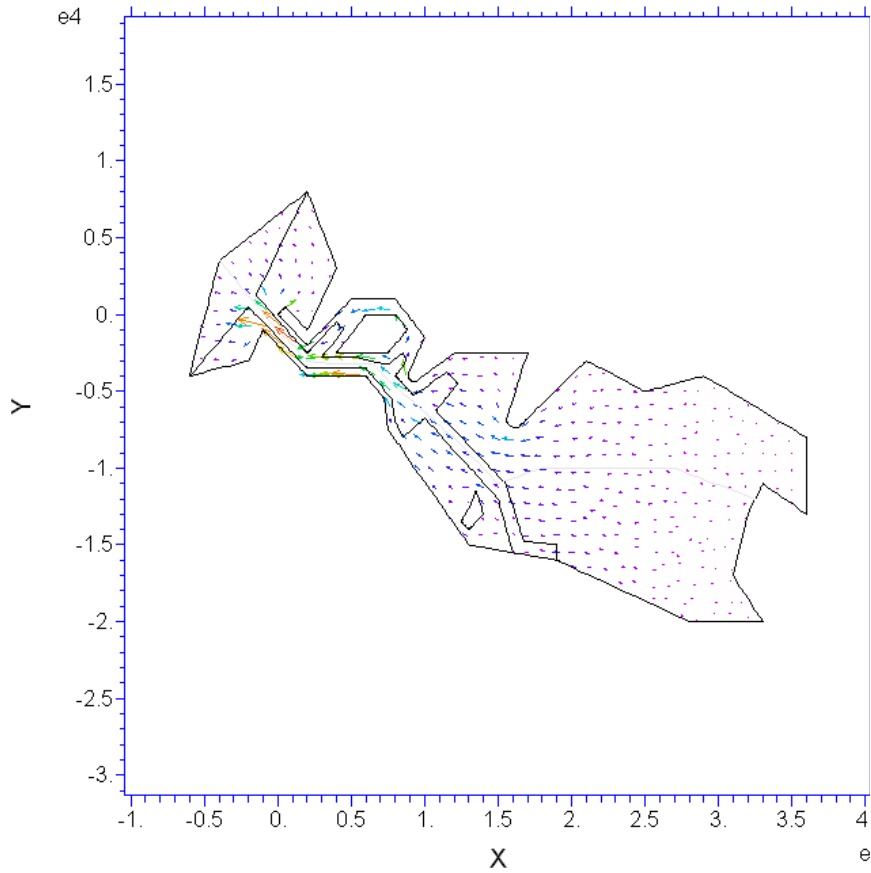
The General Region

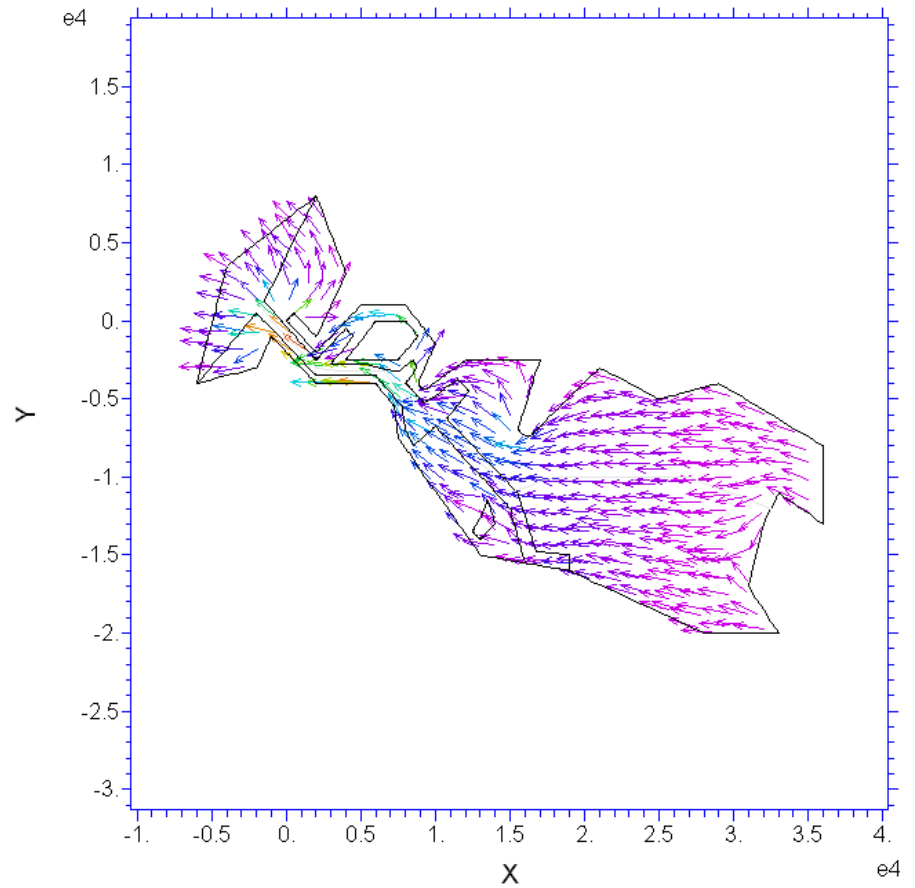# Laguna de Tule and Laguna de Navidad

Source: El Colegio de Mexico

Laguna de Barra Tidal Outflow with Rio Marabasco Dry

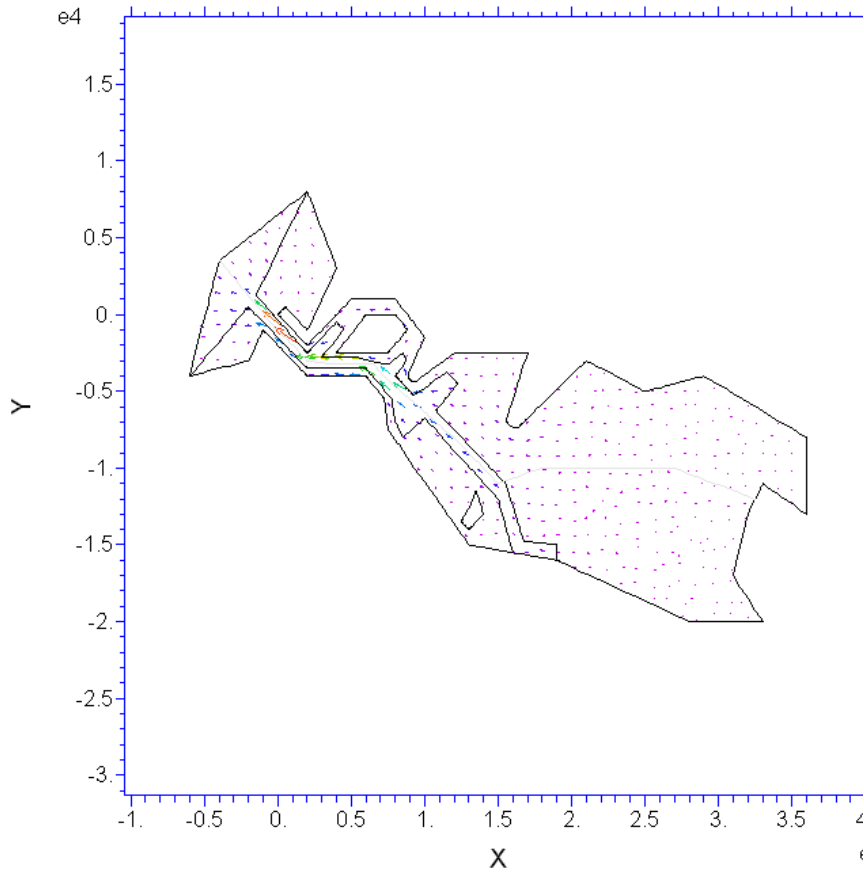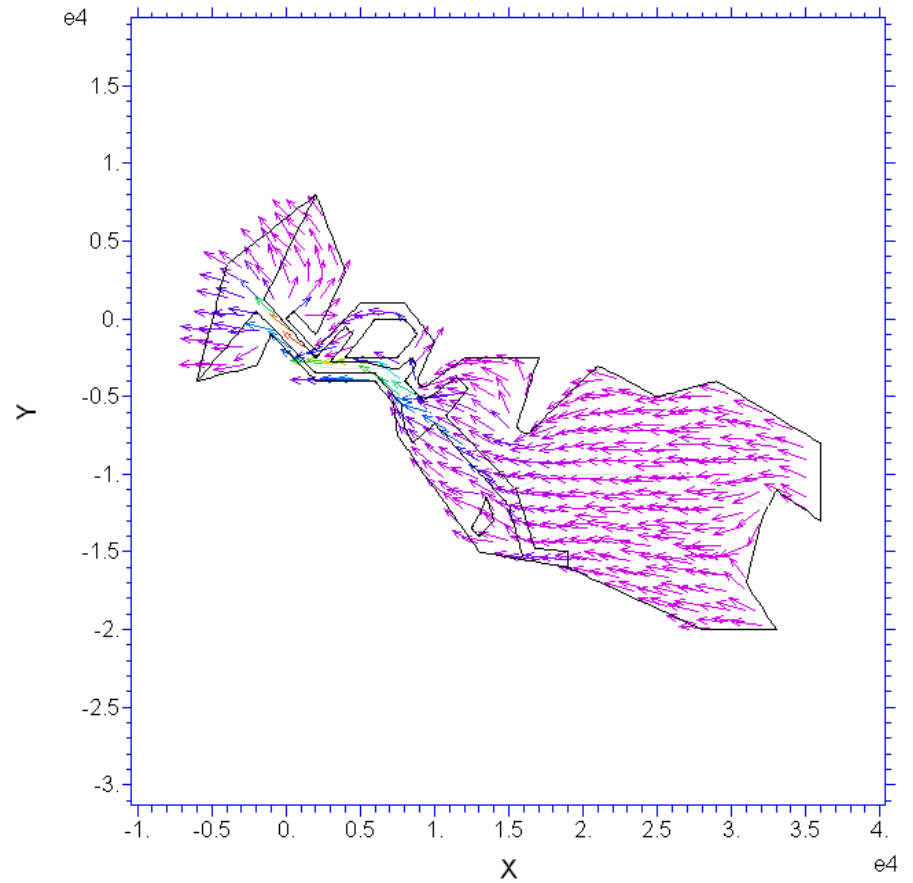Laguna de Barra Tidal Outflow with Rio Marabasco Dry

Vector Plot of Current Velocity During Ebb Tide

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Vector Plot of Volumetric Current Flux During Ebb Tide
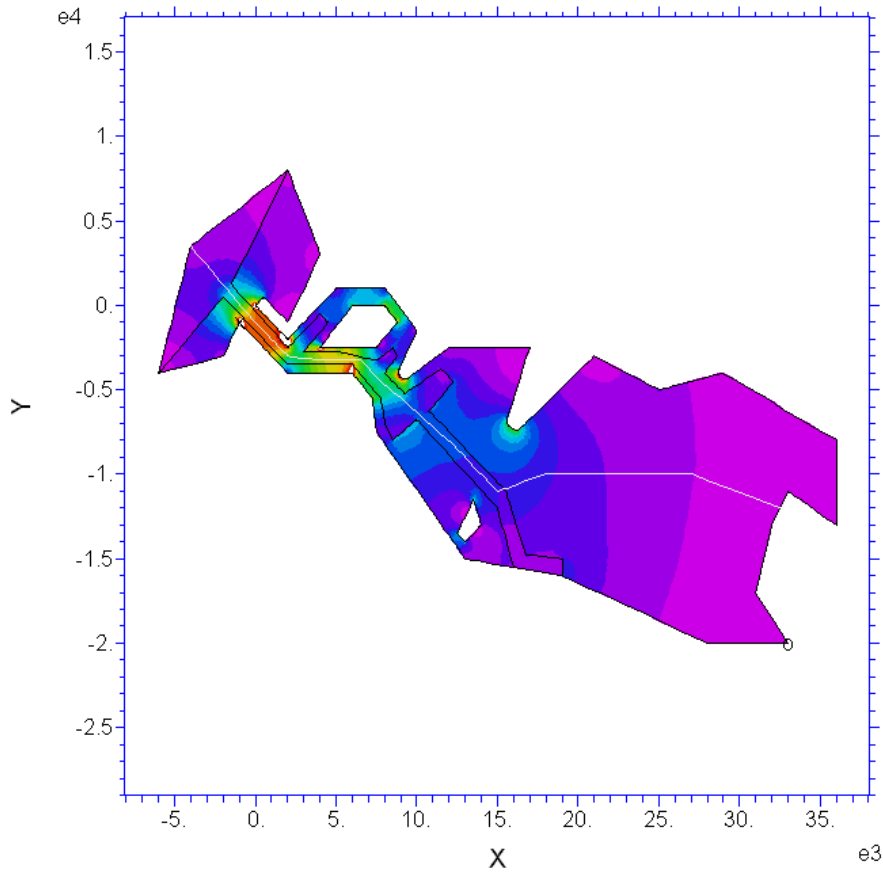
Current Velocity During Ebb Tide

Laguna de Barra Tidal Outflow with Rio Marabasco Dry
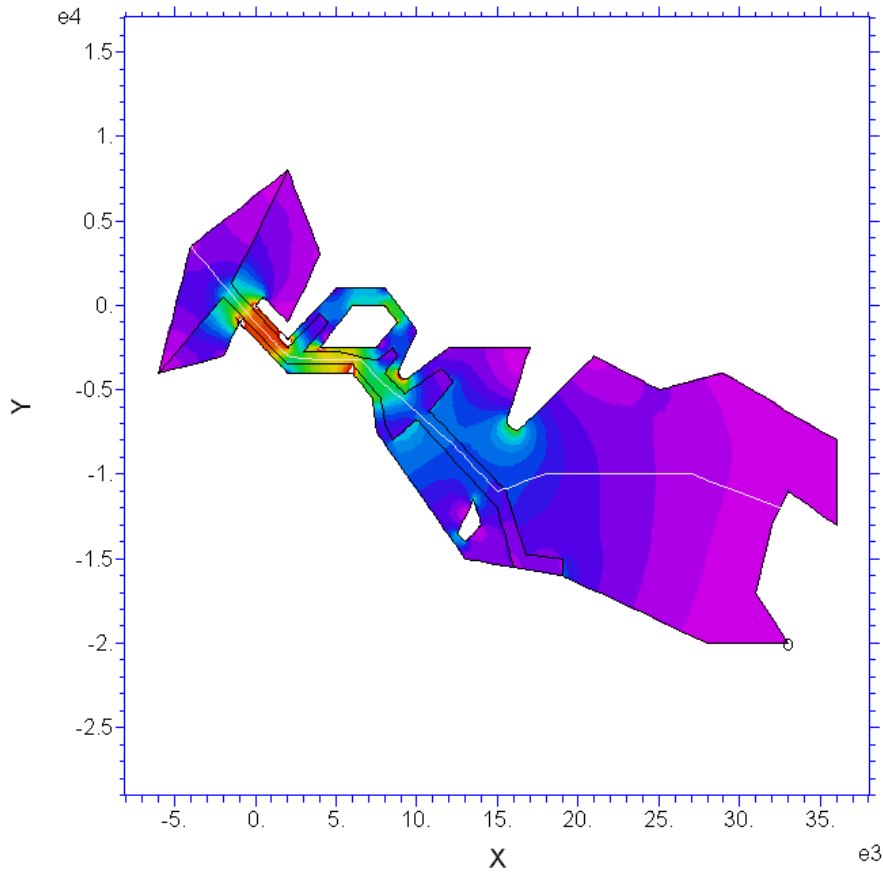
Laguna de Barra Tidal Outflow with Rio Marabasco Dry

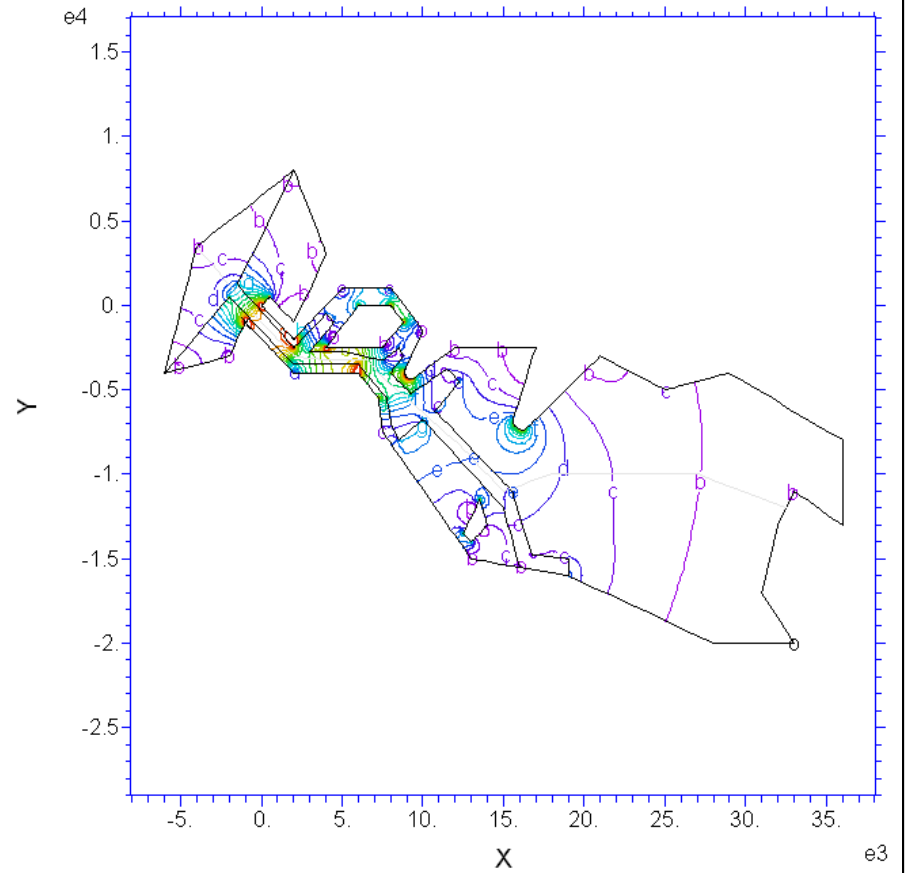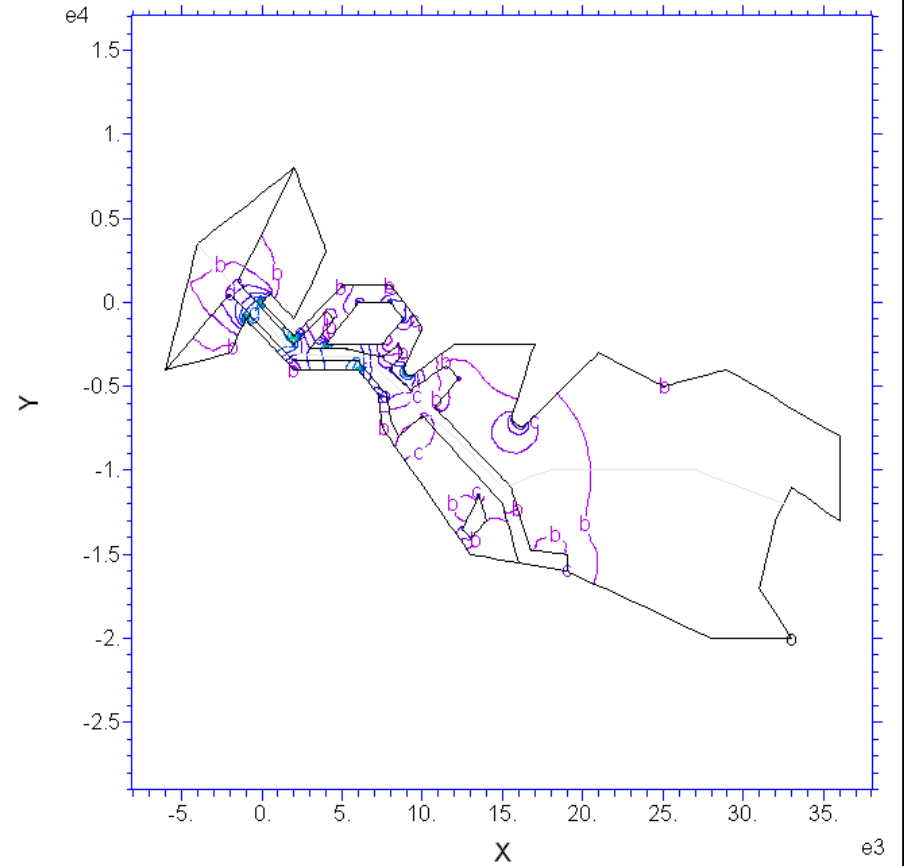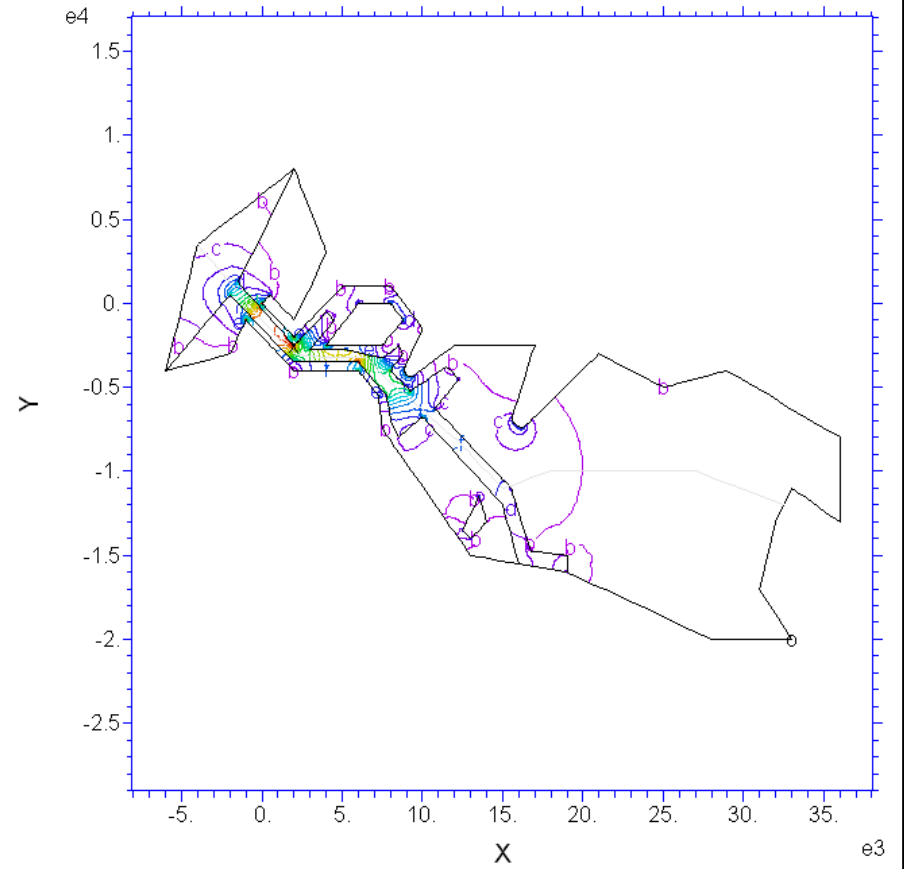Logarithm Plot of Current Velocity During Ebb Tide
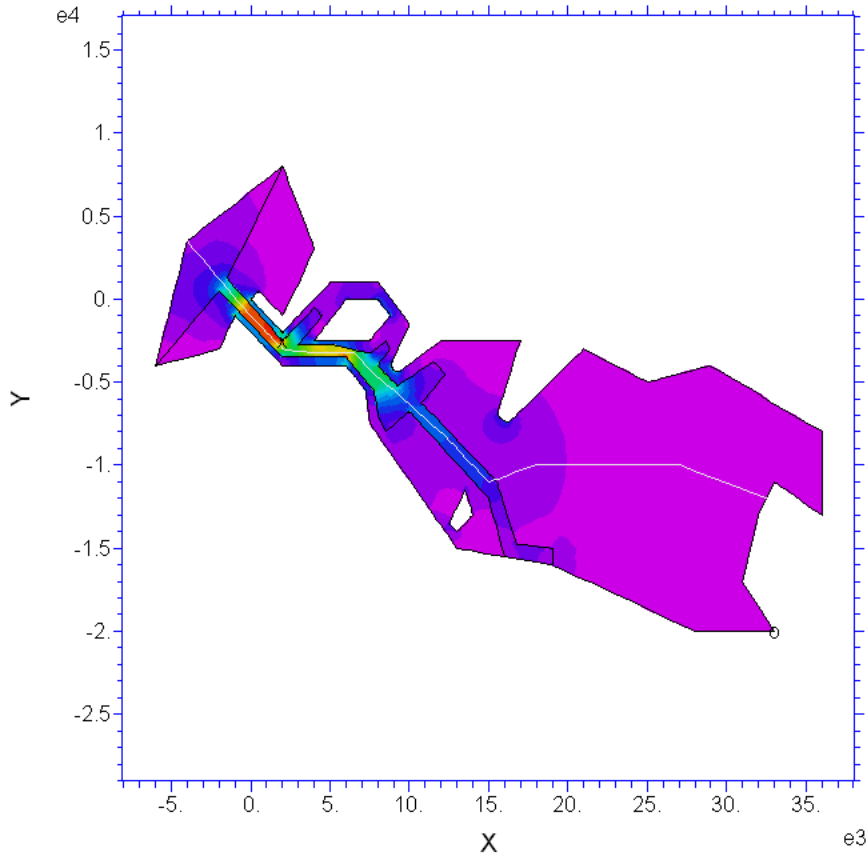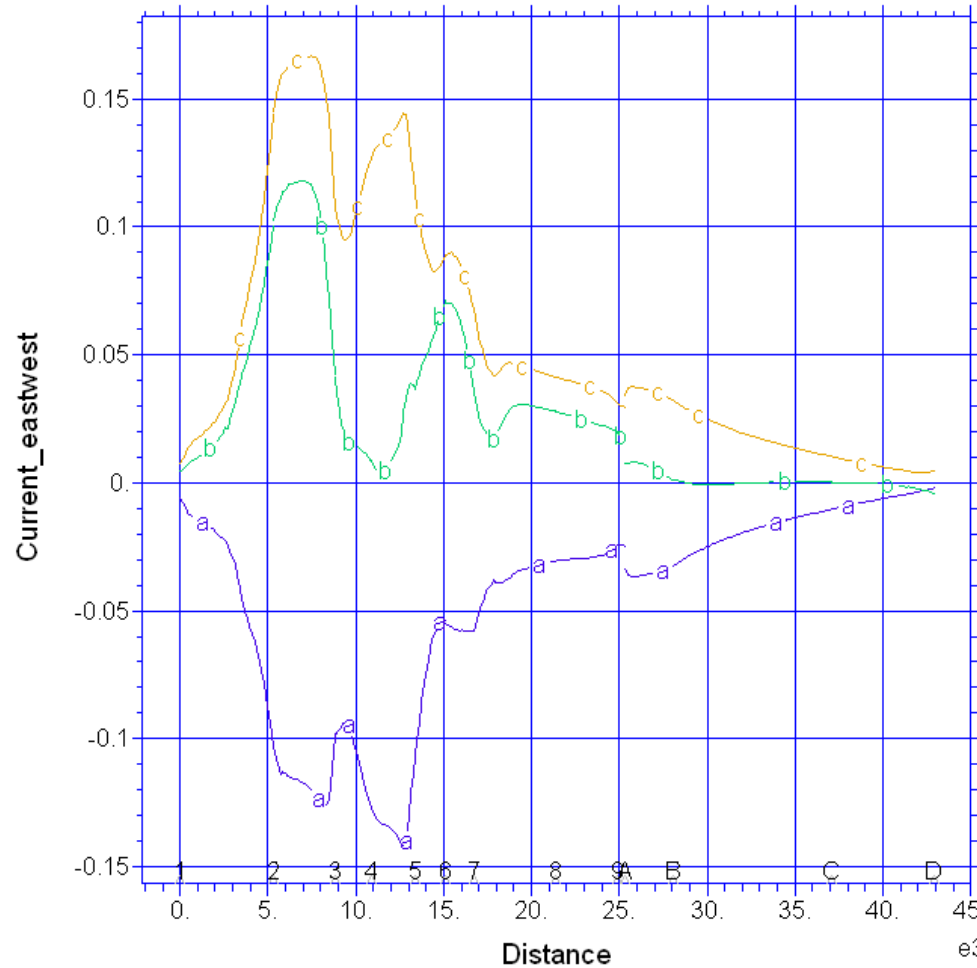
Volumetric Current Flux During Ebb Tide

Laguna de Barra Tidal Outflow with Rio Marabasco Dry
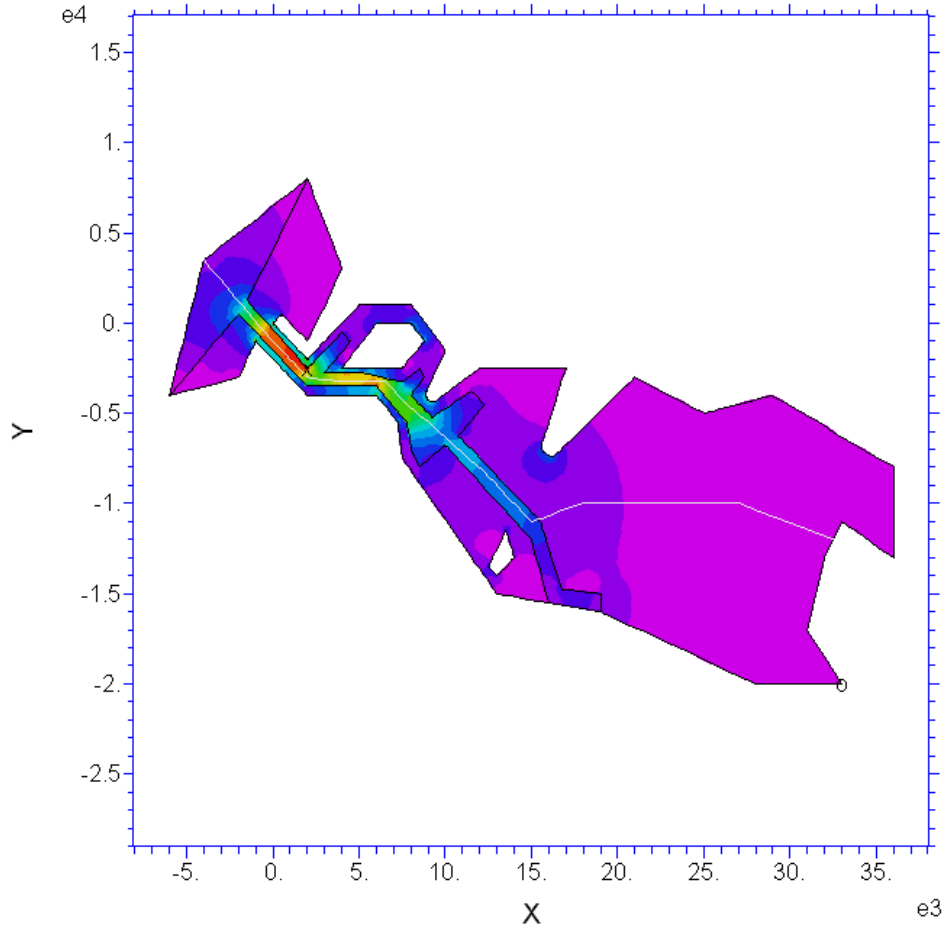
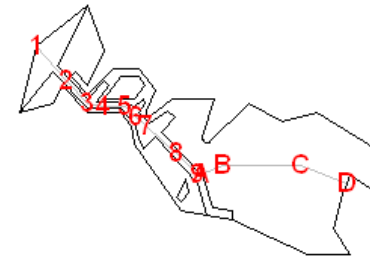Logarithm Plot of Volumetric Current Flux During Ebb Tide

Tidal Current Plot Along a Central Path Within the Lagoon
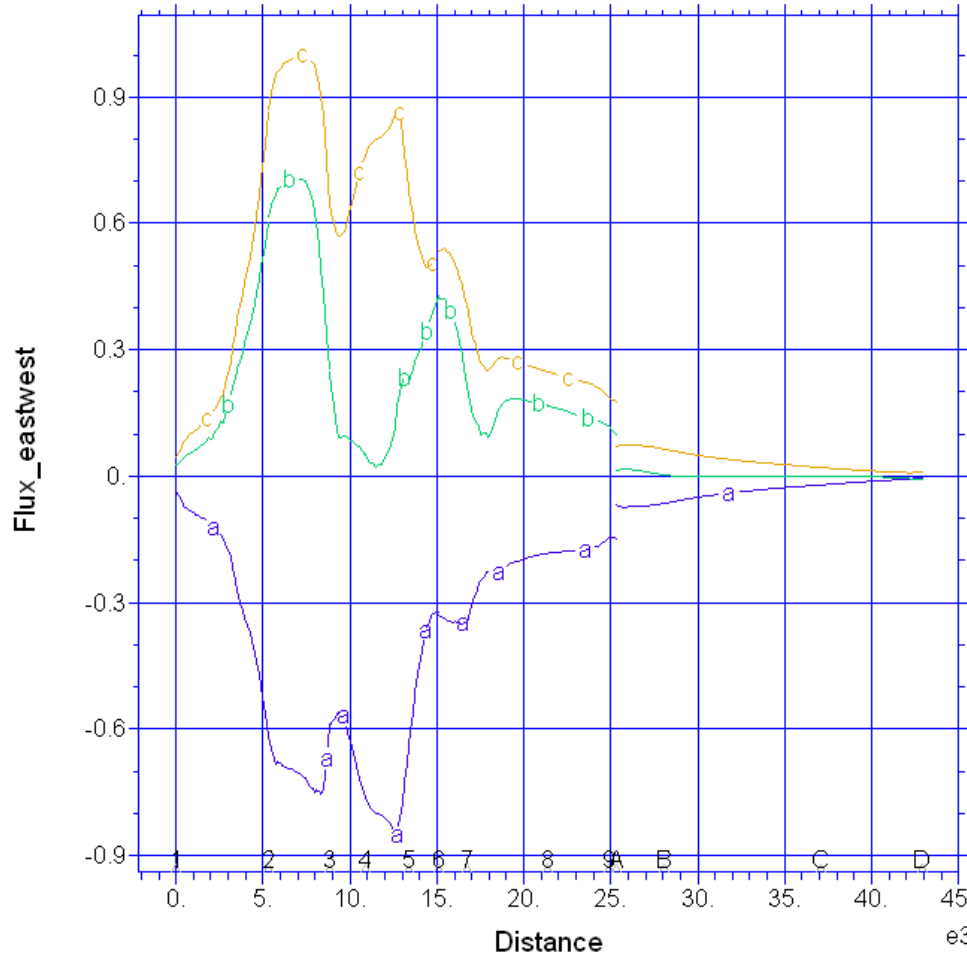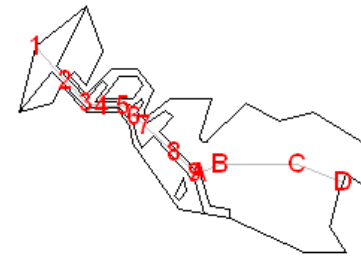
Volumetric Tidal Current Flux Plot Along a Central Path Within the Lagoon

Summary

A simple yet useful numerical model has been made for the purpose of understanding the
Tidal current flow within the Laguna de Barra de Navidad Estuary.

The model shows general current flow characteristics during a moderate ebb tide during
The dry season when the Rio Marabasco is not flowing.

With further work, many kinds of additional information can be obtained. This includes,
but is not limited to, information about where pollutants will travel and where silt deposits may form.