



Public Consultation for Environmental and Social Impact

24 September 2015

HKND GROUP



K.W.PANG
Executive Vice President

Introduction

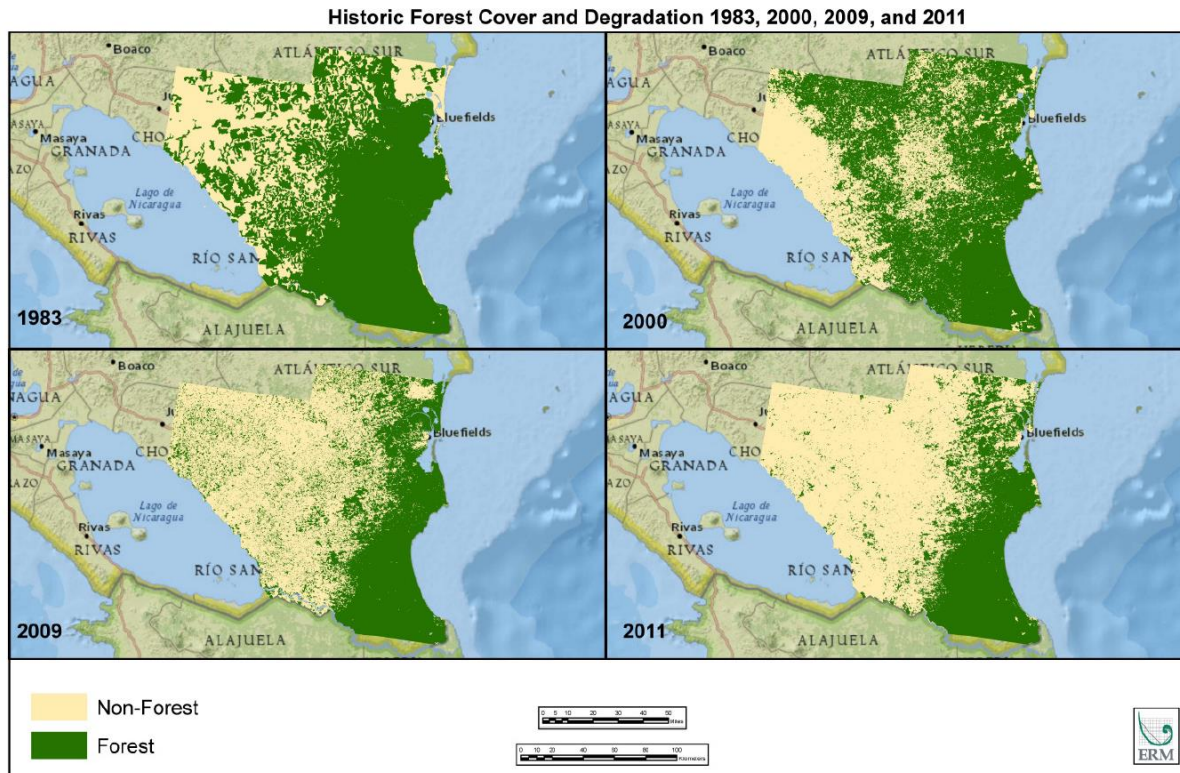
- The Canal will unavoidably have some negative impacts, but if ERM's recommendations are followed, we expect a NET POSITIVE IMPACT.
- The Canal is the only realistic way of saving the remaining Nicaraguan forest and restoring degraded areas.
- Changes have been made to the original canal design to avoid and mitigate some of its negative impacts.
- The ESIA approval will require the completion of further studies before approval of the final design for construction.
- These further studies can only be completed as the final design is developed.
- The social impact of the Canal will be hugely positive with economic benefits to Nicaragua and its people.
- HKND is totally committed to ensuring that affected people are better off.

Deforestation is still occurring



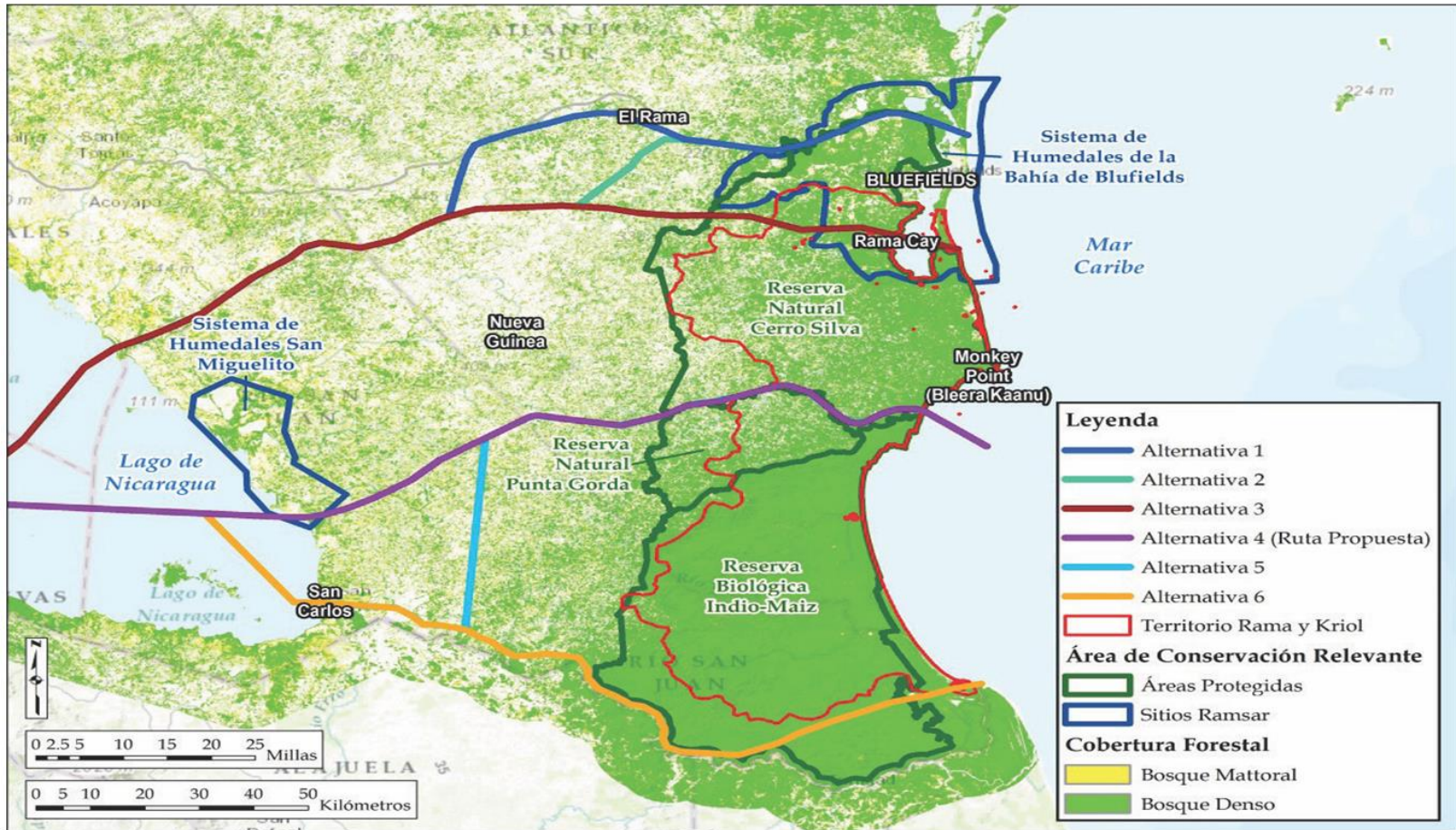
- Without the Canal the ever increasing rate of forest degradation means that most of the forest will be lost within 10 to 15 years.
- With the Canal people will be better off economically and there won't be a need to clear the forest and engage in subsistence farming for livelihood. We will also start to restore the forests.

Rate of deforestation is increasing



Over the past 30 years, Lago de Nicaragua watershed has lost much of its forest cover to cattle grazing and agriculture. These, coupled with the slope gradients of the watershed, has resulted in increased rates of erosion and runoff. 13.3 tons of sediment per hectare are transported to Lago de Nicaragua annually (World Bank 2013a). Increased erosion and runoff have increased Lake nutrient loadings.

Route selection for minimum E&S impact



Route 4 was found to be the only route where Net Positive Impact could be achieved.

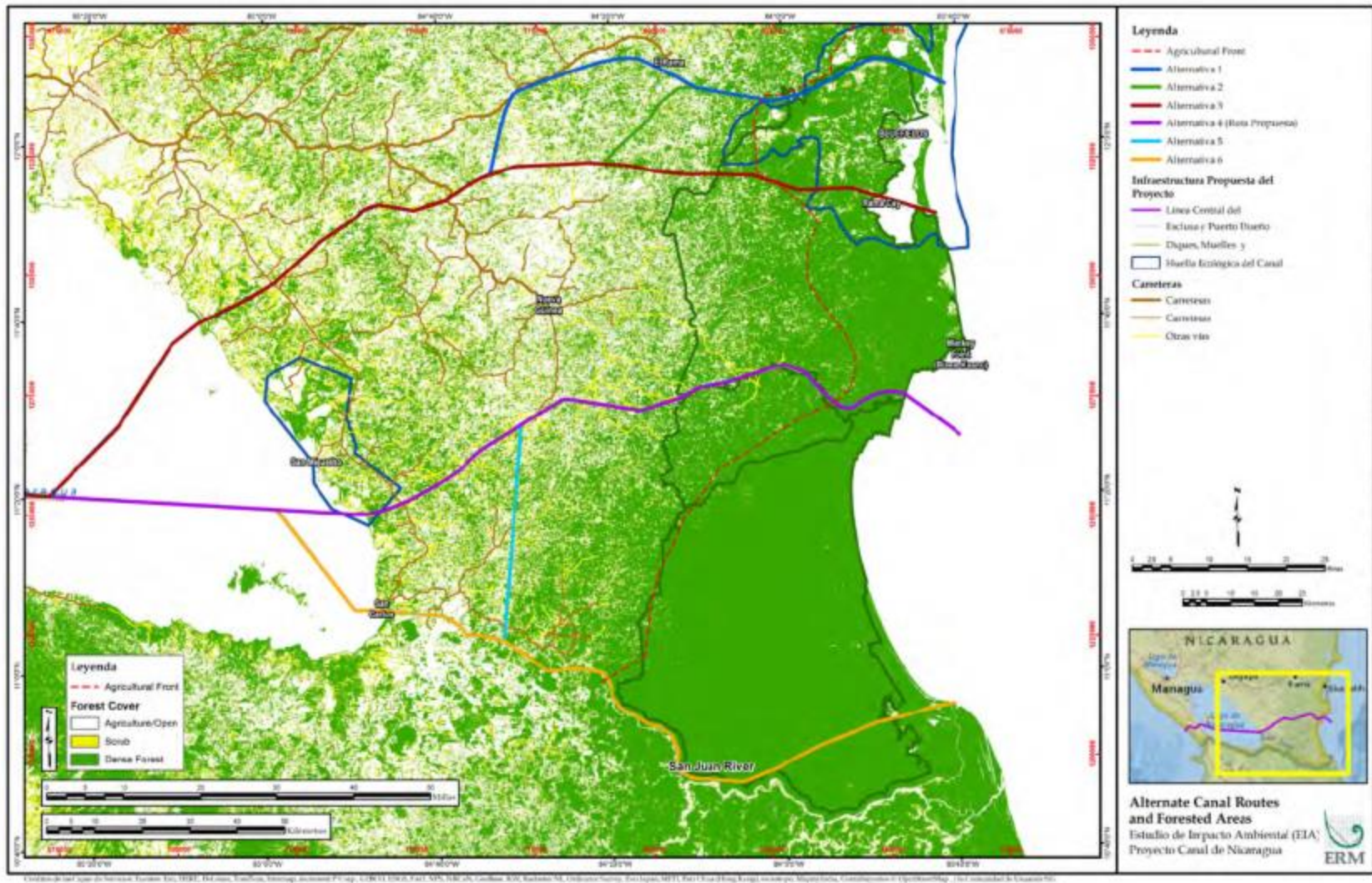
Minimize social impact



- Route 4 requires the displacement of the least number of people;
- Affects minimum of existing social infrastructure.

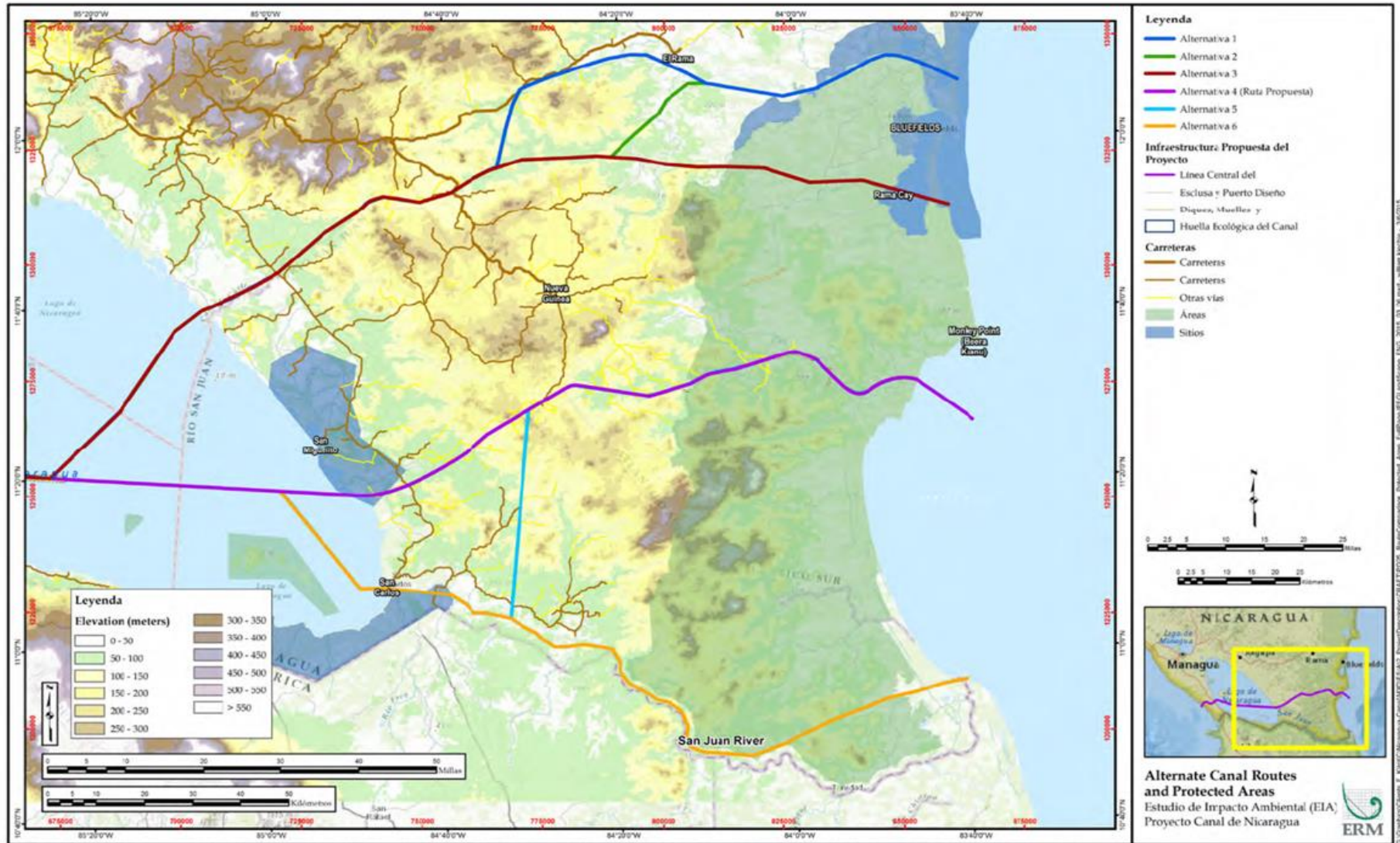


Remaining Forest and “Agricultural Front”



Almost the only intact areas of forest remaining are the Indio Maiz and a part of the Mesoamerican Biological Corridor (Cerro Silva)

Internationally Recognized Protected Areas



Map of Nicaragua: Alternate Canal Routes and Indigenous Areas

Legend (Leyenda):

- Alternativa 1 (Blue line)
- Alternativa 2 (Green line)
- Alternativa 3 (Red line)
- Alternativa 4 (Ruta Propuesta) (Purple line)
- Alternativa 5 (Cyan line)
- Alternativa 6 (Orange line)

Infraestructura Propuesta del Proyecto:

- Línea Central del Canal (Purple line)
- Exclusa y Puerto Diqueo (White line)
- Diques, Muelles y Represas (Yellow line)
- Huella Ecológica del Canal (Blue outline)

Carreteras:

- Carreteras Primarias (Brown line)
- Carreteras Secundarias (Light brown line)
- Otras vías cartografiadas (Yellow line)
- Territorio GTRK (Hatched area)

Elevation (meters):

- 0 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- 200 - 250
- 250 - 300
- 300 - 350
- 350 - 400
- 400 - 450
- 450 - 500
- 500 - 2000
- > 3500

Map Labels: Lago de Managua, Lago de Amoyog, Río San Juan, San Juan River, Managua, Nueva Guinea, Monkey Point (Riera Mami), San Mateo, San Carlos, San Pedro de Macoris, San Juan, San Carlos, San Pedro de Macoris, San Juan, San Carlos, San Pedro de Macoris.

Scale: 0 to 50 Kilómetros, 0 to 50 Millas.

Inset Map: Nicaragua map showing the location of the project area in the central-eastern part of the country.

Project Title: Alternate Canal Routes and Indigenous Areas. Estudio de Impacto Ambiental (EIA). Proyecto Canal de Nicaragua.

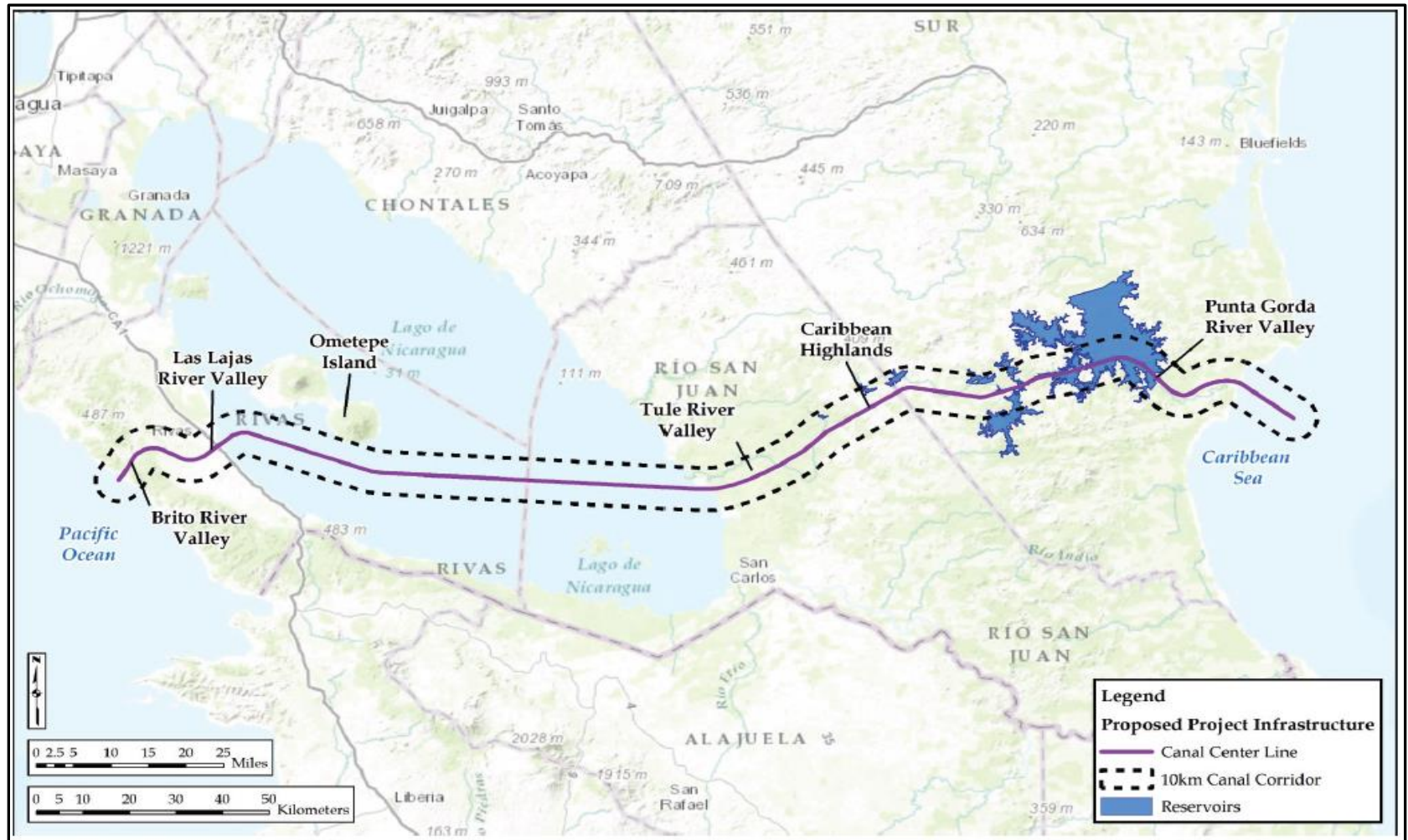
Logo: ERM

Canal alignment mostly in areas already damaged



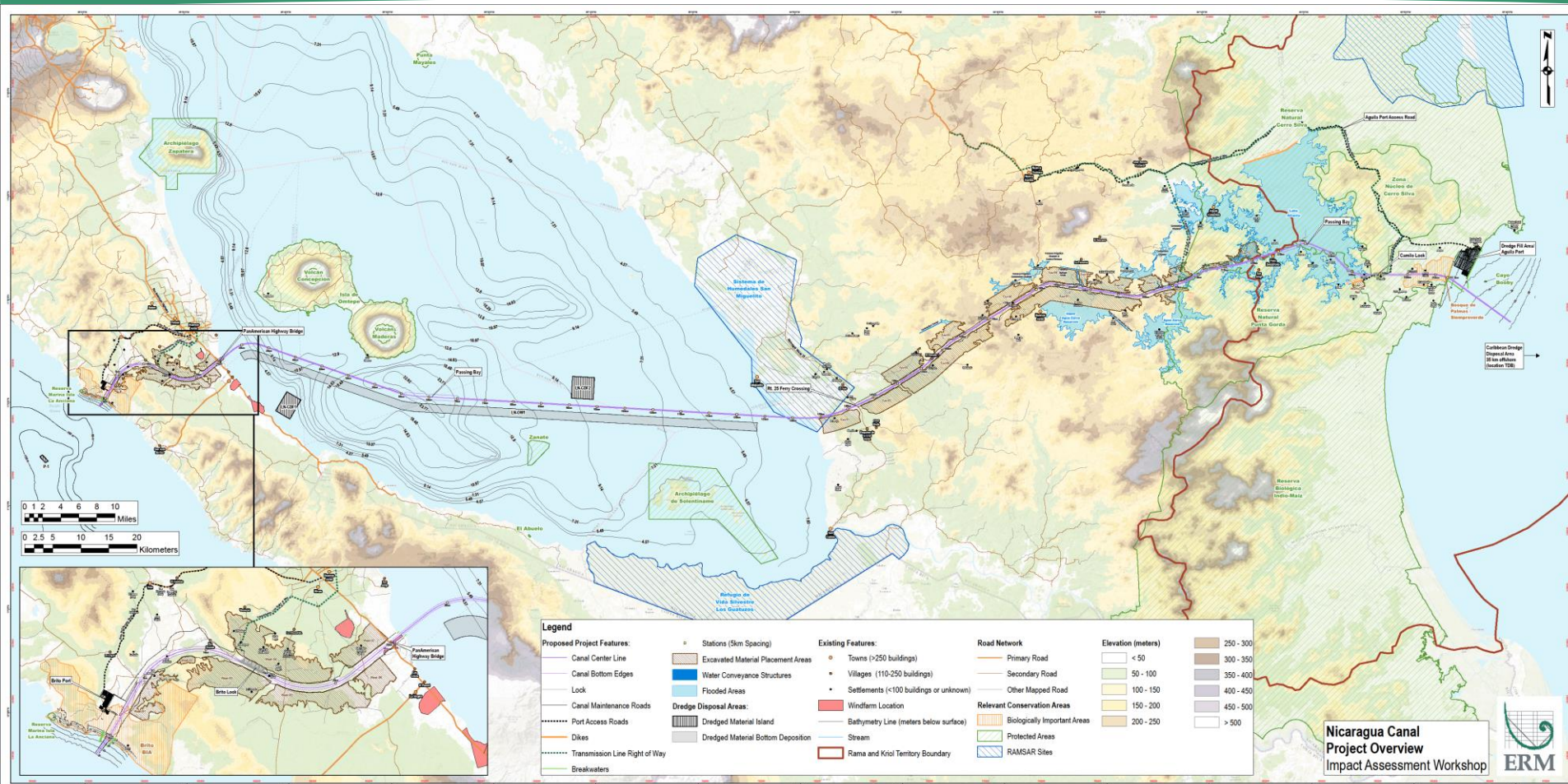
- Canal will act as a buffer for Indio Maiz;
- Mesoamerican Corridor to be protected;
- Minimum impact on Caribbean palm forest.

10 Km Canal Corridor for ESIA



10KM wide corridor was adopted for the ESIA & design development

Improved route alignment for the ESIA



- This alignment addresses many environmental & social concerns
- Excavation quantities and cost increased as a result.

Improvements to the original scheme

➤ Brito

- Minimize impact to the Brito Mangroves and Lagoon; preserve the mouth of the Rio Brito
- Avoid the La Anciana Marine reserve
- Preserve most of the Brito Beach turtle nesting beach

➤ Rivas

Minimize impact on the City

➤ Tule

- Minimize impact on the San Miguelito Wetland
- Preserve the lower reaches of the Rio Tule
- Avoid the township of El Tule

➤ Caribbean Coast

- Minimize impact on Mesoamerican Biological Corridor
- Minimize impact on the Caribbean Coast Palm Forest
- Avoid impacting the lower reaches of the Rio Punta Gorda
- Protection Zone around Booby Cayo Marine Reserve
- No encroachment into Indio Maiz

Rio Brito and Mangroves

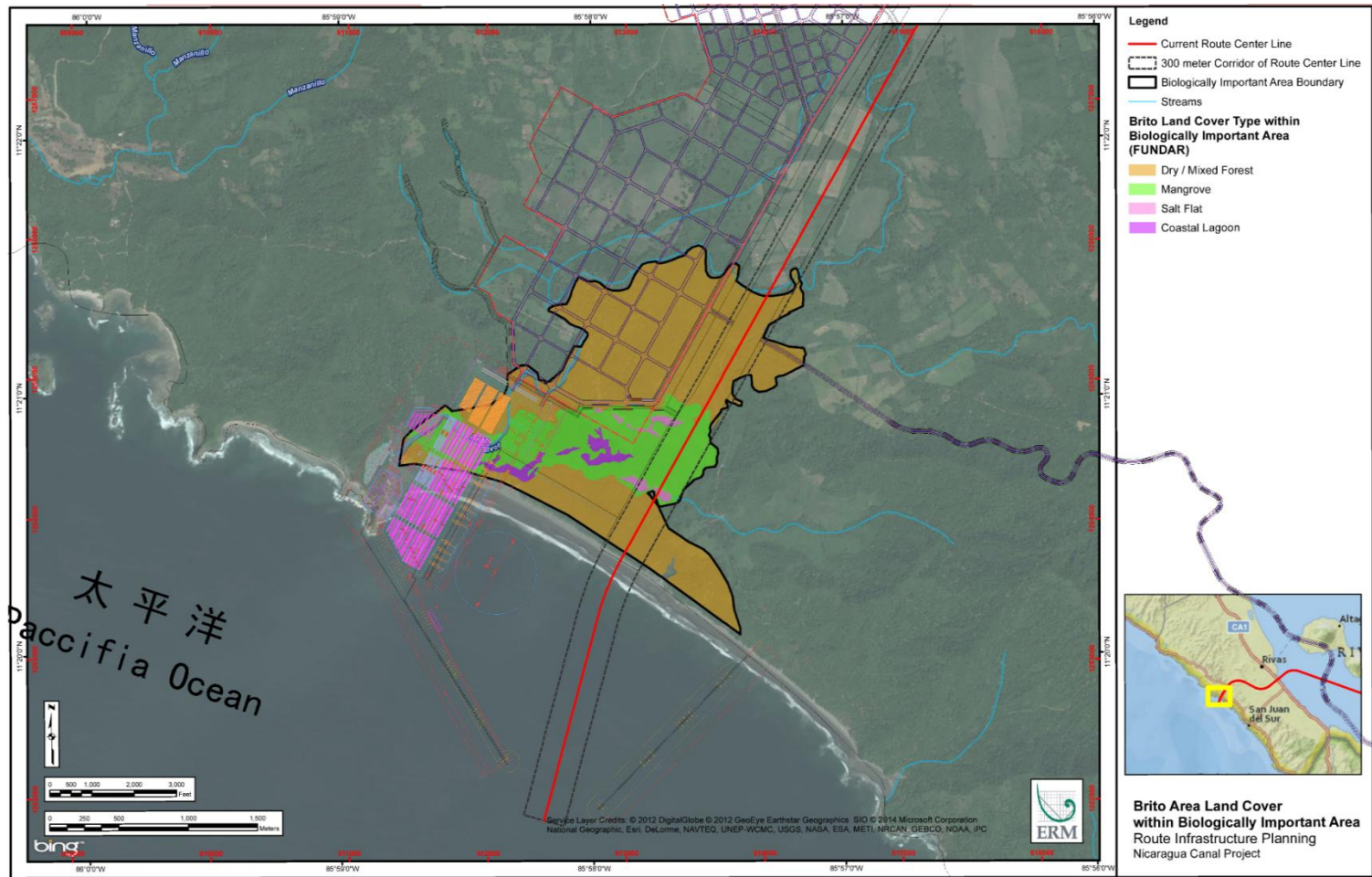


Lower reaches of the Rio Brito and the healthy mangroves will NOT be affected

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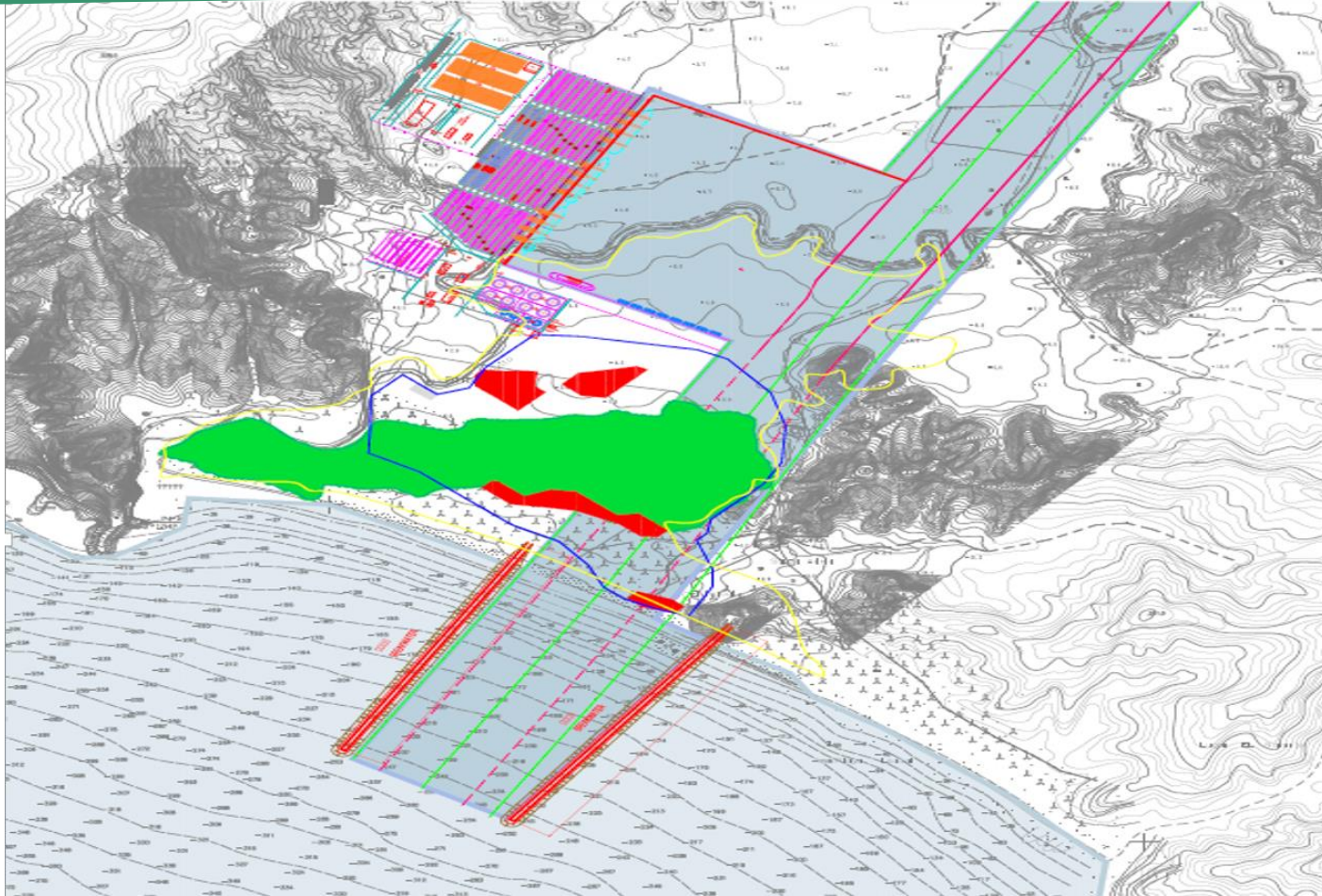


West Port - Initial ocean port design



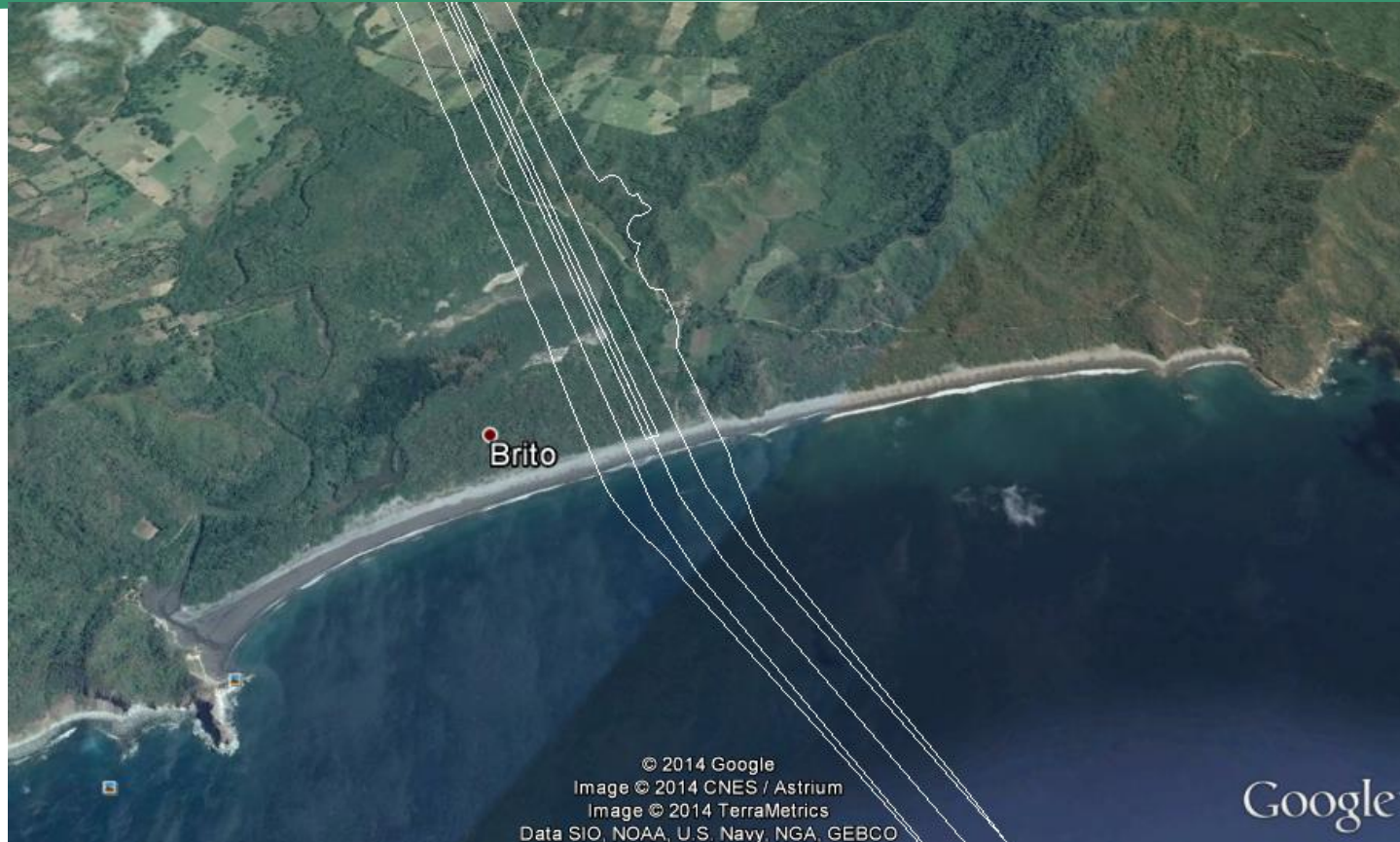
- Significant impact on Rio Brito, Archaeological sites & Mangroves
- Large portion of turtle nesting beach impacted

West Port – Inland port design



- Much reduced environmental and cultural impacts
- Reduced construction activity in ocean

West Canal Entrance – 1st relocated location



- Canal moved further to Southeast
- Reduced impact on Mangroves and mouth of Rio Brito
- Most beach preserved
- Impact on La Anciana Marine Reserve minimal

West Canal Entrance – 2nd relocated location

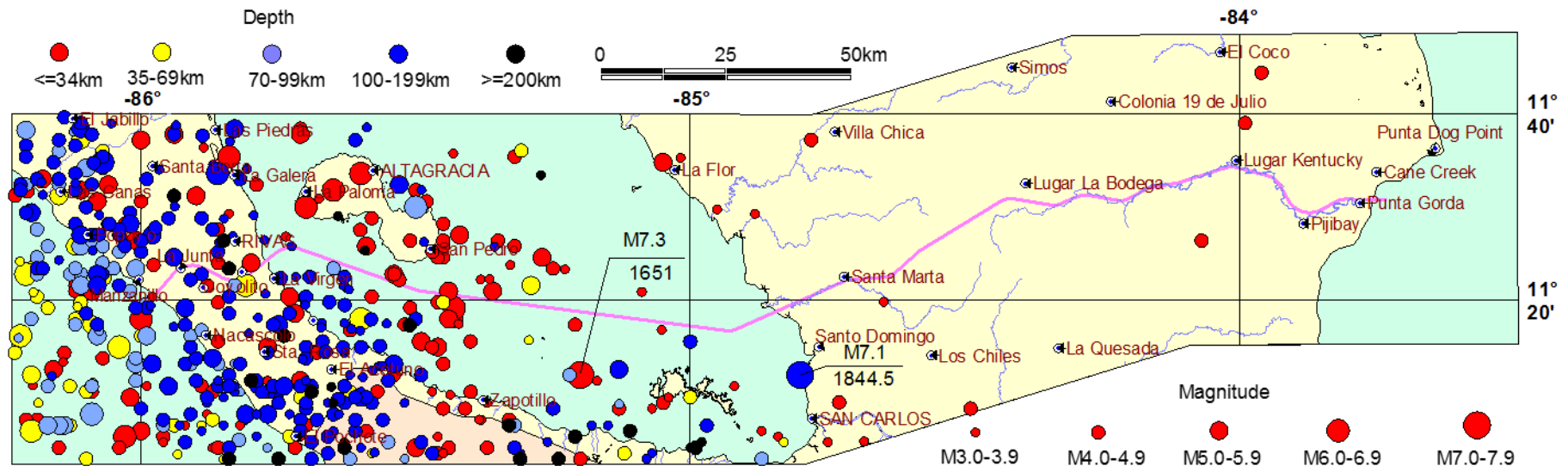


- Canal moved a further 250 metres to Southeast (as per Expert Committee recommendation)
- Width of Canal footprint reduced
- Mangrove lagoon avoided
- Impact on Mangroves minimized

Brito will still be beautiful after Canal opens



Seismic Risk

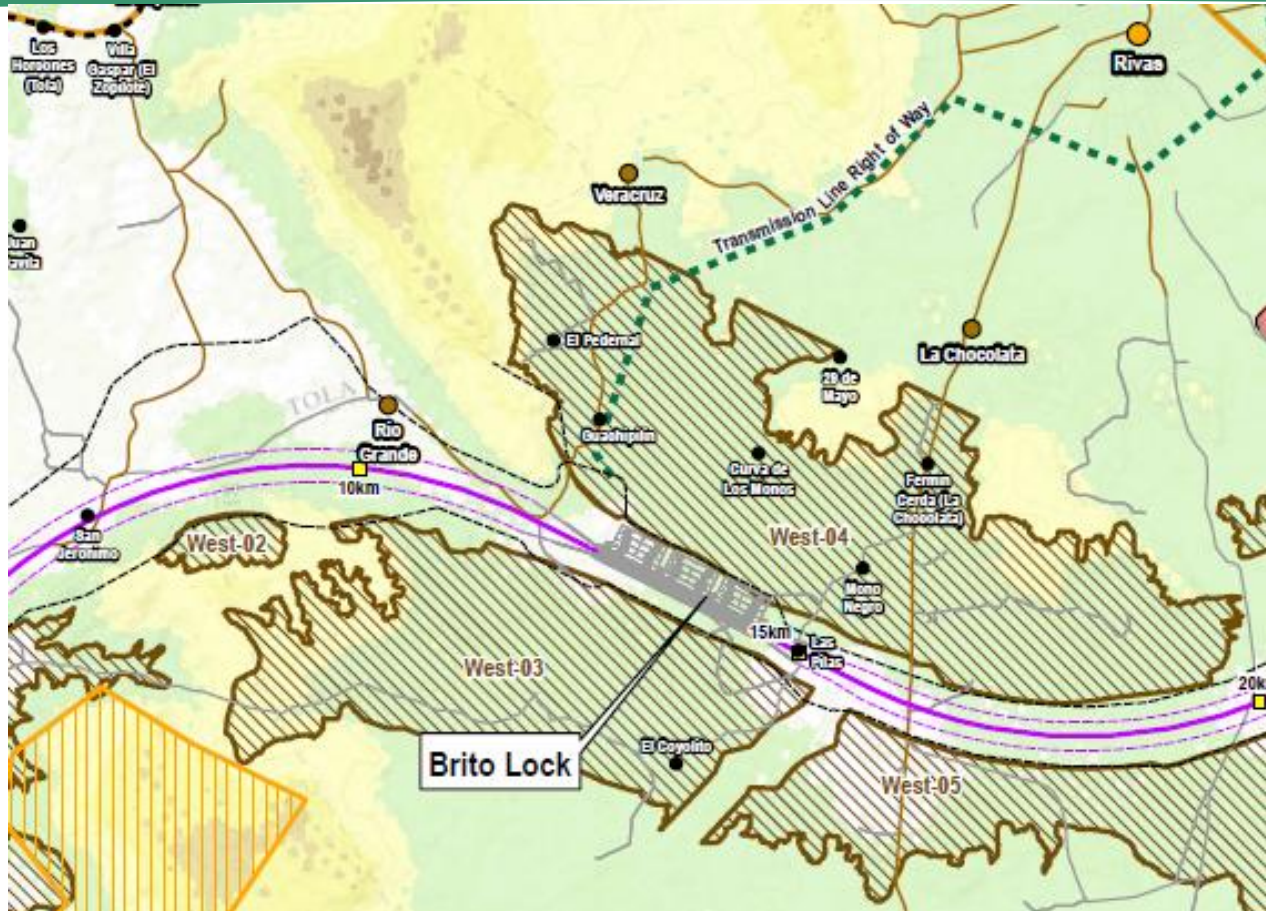


- Rivas area is high earthquake zone
- Earthquake affects batter stability and lock safety

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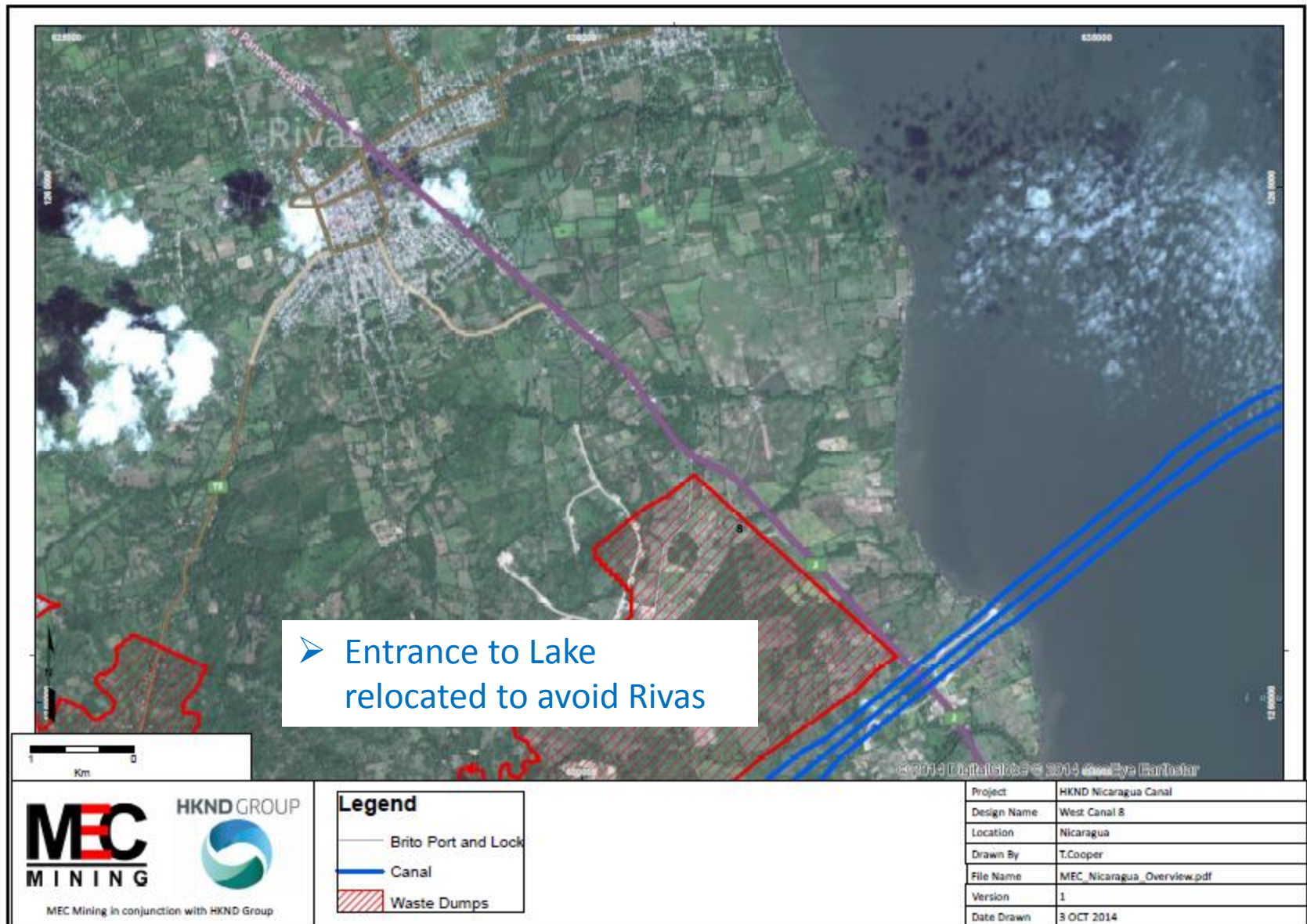


Brito Lock – seismic risk

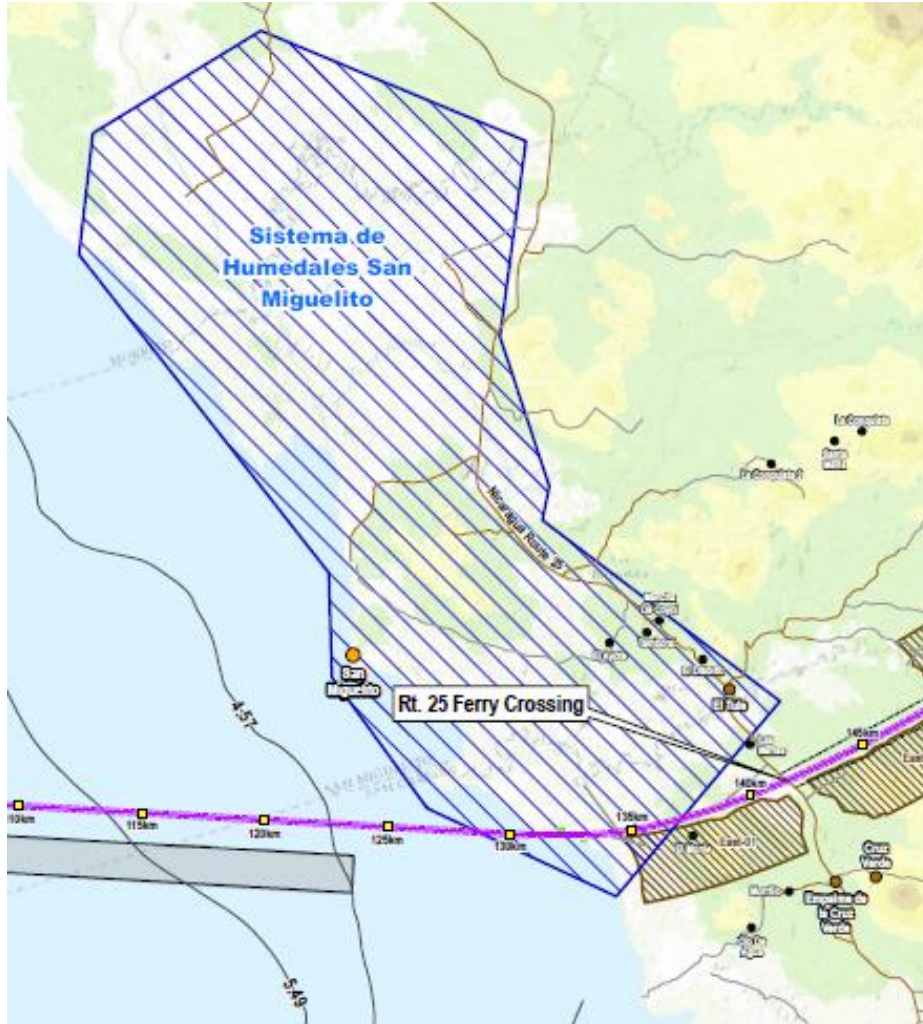


- Lock location relocated to 13km inland
- Improved foundations, reduced Seismic & Tsunami risks

West Canal alignment moved at Rivas

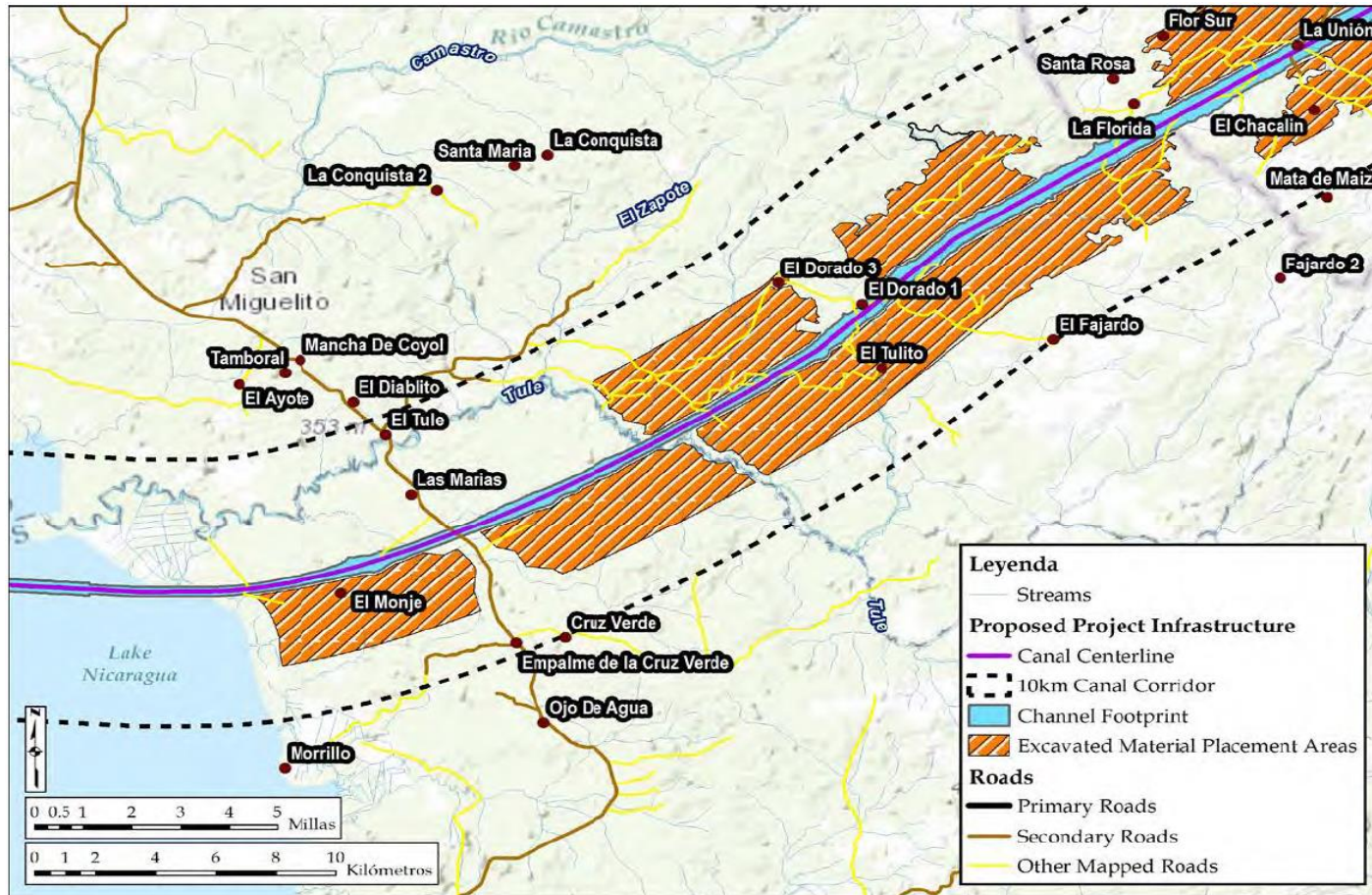


Rio Tule and San Miguelito Wetland



- Alignment relocated to minimize impact on San Miguelito Wetland (RAMSAR site)
- Preserves lower reaches of Rio Tule which is important for the wetland

Rio Tule and El Tule township



Avoiding Rio Tule and the township of El Tule added \$700 million cost

San Miguelito Wetlands currently degraded

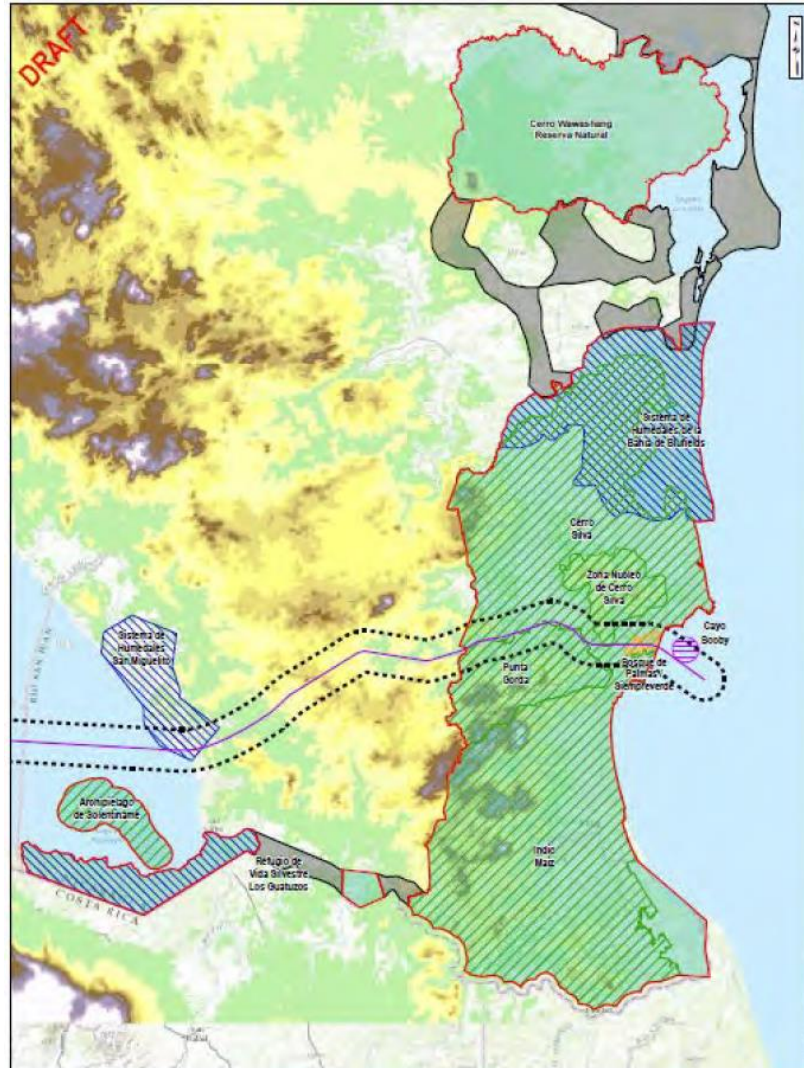


- Currently heavily degraded
- Major restoration program agreed

The map illustrates the proposed Panama Canal expansion route through the Zona Núcleo de Cerro Silva. The route starts at Passing Bay, passes through Camilo Lock, and ends at the Dredge Fill Area/Aguila Port. Key locations include Lake Atlanta Dam Wall, Cayo Booby, and Bosque de Palmas / Siempreverde. The map also shows the existing canal route and the proposed expansion route.



Mesoamerican Biological Corridor



- Official protected areas comprise most of MBC;
- Canal commitment to maintaining 10KM wide corridor;
- Port Aguila located offshore;
- No other development in MBC

Palm Forest



Hydraulic dredging for excavation through Palm Forest
to minimize impact

Possible alignment change to reduce impact



Canal will be clear of Rio Punta Gorda until 17KM inland

Canal alignment in Caribbean



- Indio Maiz avoided completely.
- Lower reaches of Punta Gorda avoided completely

NOTE- heavy siltation of Caribbean by sediment from Rio Punta Gorda

Indio Maiz and Rio Punta Gorda are quarantined

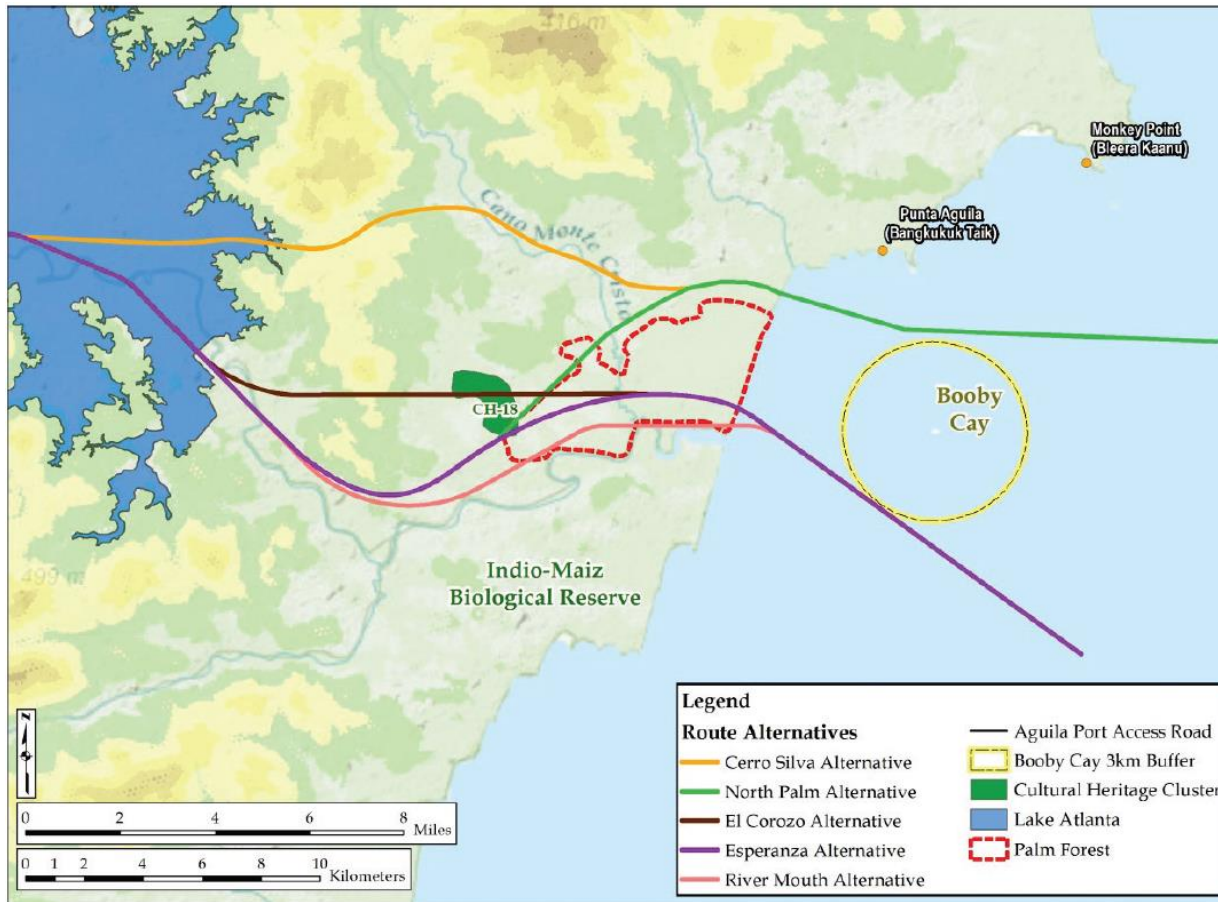


No Encroachment into Indio Maiz



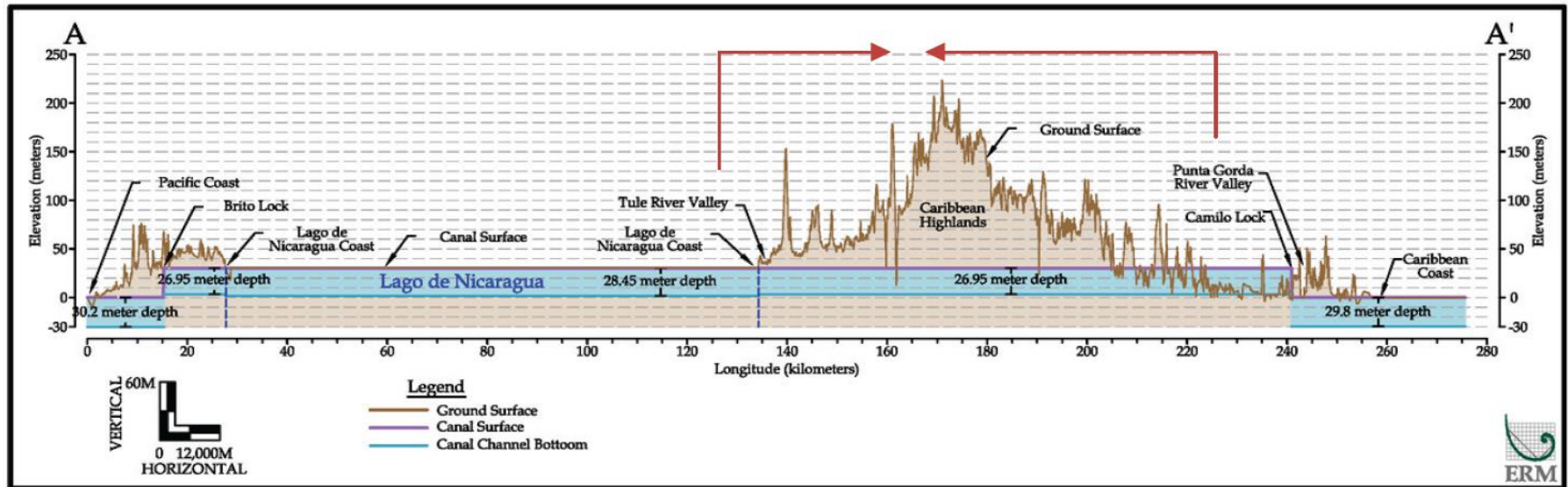
- The Canal “barrier” provides a means of protecting the Indio Maiz
- HKND and GoN to cooperate to exclude people
- The Canal does NOT encroach into Indio Maiz anywhere

Booby Cay Reserve



3KM Booby Cay
“Protection Zone”

Canal water supply principle



- No net use of water from Lake Nicaragua;
- Water losses replenished with water from Rio Punta Gorda that previously ran to Caribbean;
- Agua Zarca Reservoir provides “top-up” water for El Nino events

Lake Atlanta artificially created



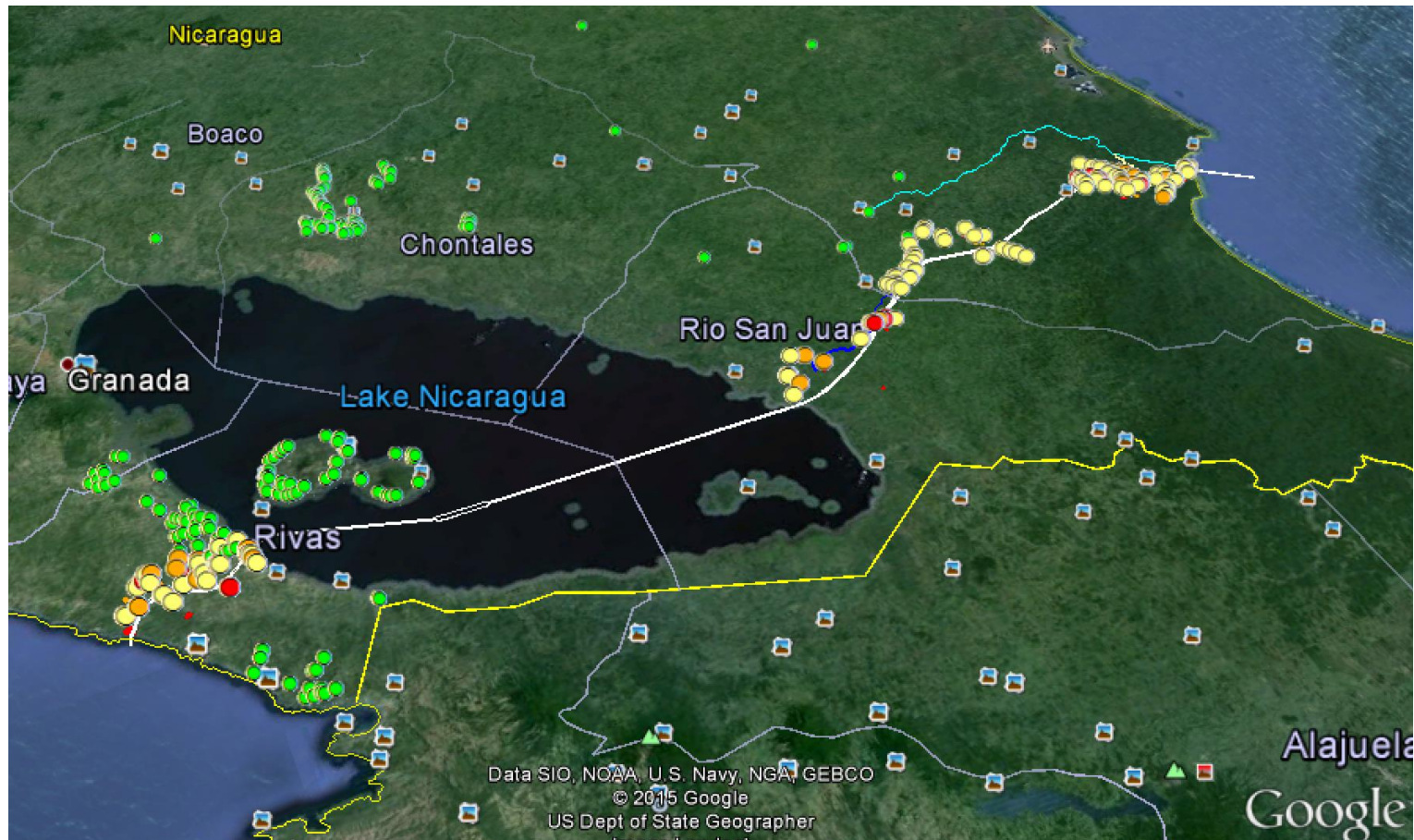
- Single east lock creates large inland poundage
- Studies underway to determine if impact can be reduced

Archaeological Heritage resources



- Management Plan will create huge database of pre-Columbian resources
- Significant archaeological finds during ESIA study
- HKND commitment to protection and recovery

Archaeological Heritage sites



- Important archaeological clusters at “Brito” and “El Corozo”
- Minor finds throughout area

Archaeological Heritage artifacts



Museums to preserve artifacts and other finds

Resettlement of Affected Persons



- Less than 6,800 households will be affected and approximately 27,000 people;
- 25 Indigenous households only

Resettlement Surveys



CRCC detailed survey from July to October 2014

Social and Community Buildings recorded



Church

School



Factories recorded



Infrastructures recorded



Survey Records signed

<p>尼加拉瓜瓜拉韦建设地居民人口、房屋及附属设施调查表</p> <p>Formulario de investigación sobre la población, las viviendas y los accesorios del terreno objeto de utilización del CPHU de Nicaragua</p>									
省	市	多族	所属县	地址	地址	地址	地址	地址	地址
Departamento	Municipio	Comarca	Subcomarca	Cantón	Caserío	Ruta	Paraje	Forma	Formulario
Parque	Nombre	Apellido	与户主关系	Relación con el jefe de hogar	性别	出生日期	身份证号	Número de ID	
Sexo	Edad	Fecha de nacimiento	Identificación						
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391</									

人口房屋调查表

尼加拉瓜运河建设用地土地调查表

Formulario de la investigación del terreno objeto de utilización del Proyecto Canal Nicaragua

土地编号
Número de Terreno

3214

所属项目:
Subproyecto:

运河

单位
Unidad:

hm²

调查2
Formulario 2

省 Departament o	市 Municipio	多镇 Comarca	用地性质 Carácter		合计 Total	农用地 Terreno agrícola			畜牧业 Terreno pecuario			建设用地 Terreno para construcción	水域 Aguas	交通用地 Terreno para transporte	其他土地 Otros terrenos	备注 Notas			
			原始 original	临时占用 ocupación temporal		小计 Total parcial	H1	H2	H3	小计 Total parcial	P1						P2	P3	
RAS	bluefields relacionado	Manatiguila		✓	135.27	0	0	0	0	85.07	0	85.07	0	0.94	49.26	0	0	运河临时施工用地	
RAS	bluefields relacionado	Manatiguila	✓		4721.53	29.56	0	15.96	13.6	4626.51	0	753.61	3872.9	0.65	64.81	0	0	印其他用地	
RAS	bluefields relacionado	Puerto Aguila			合计 Total	4856.8	29.56	0	15.96	13.6	4711.58	0	838.68	3872.9	1.59	114.07	0	0	

政府代表:
Representante del Gobierno:

长征资产公司代表:
Persona de CSPDR:

王凯 赵峰

时间: 2014年 10月 / 日
Fecha: día 10 mes octubre del año 2014

土地调查表

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企业、单位调查表

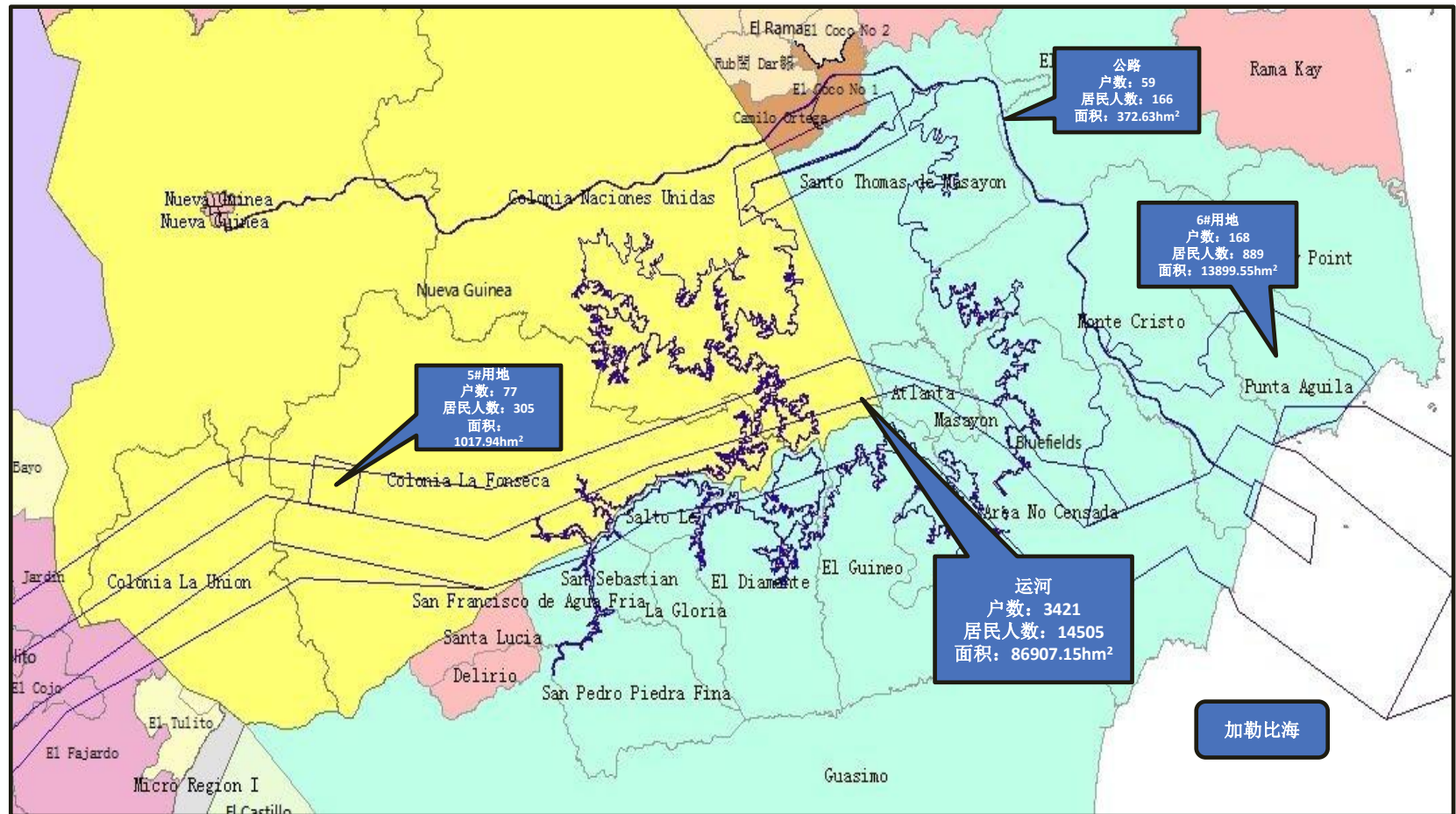
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专业项目调查表

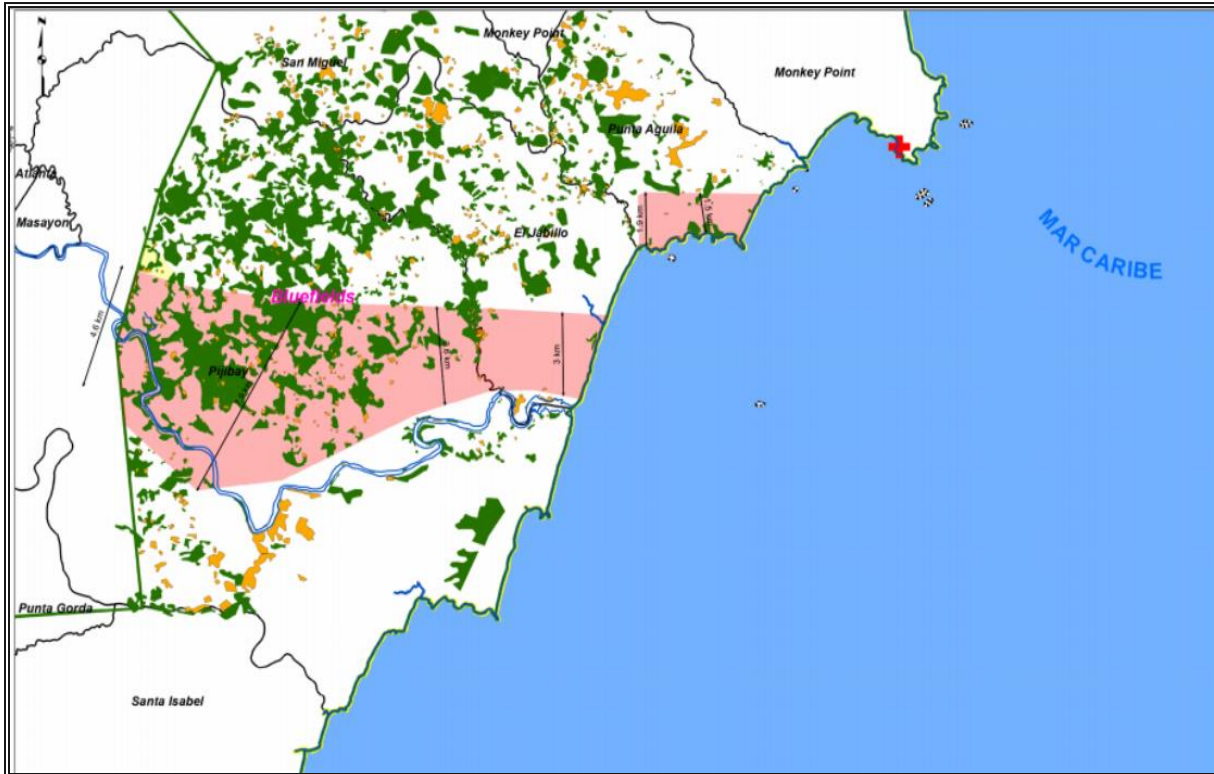
Affected People - Department of Rivas



Affected People - South Atlantic Autonomous Region



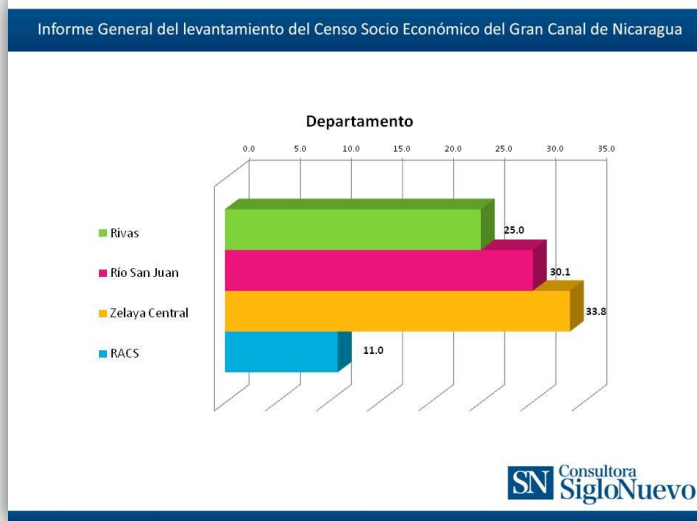
Affected People - Indigenous Lands



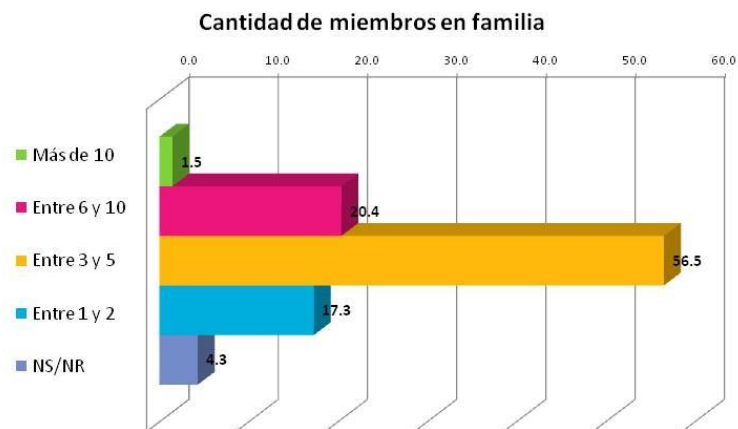
- Canal will rent 26,000 Hectares of Indigenous Land
- Total of 362 household affected
- Only 25 families are Indigenous
- The other 337 families are settlers

Only 25 indigenous households affected

Government census



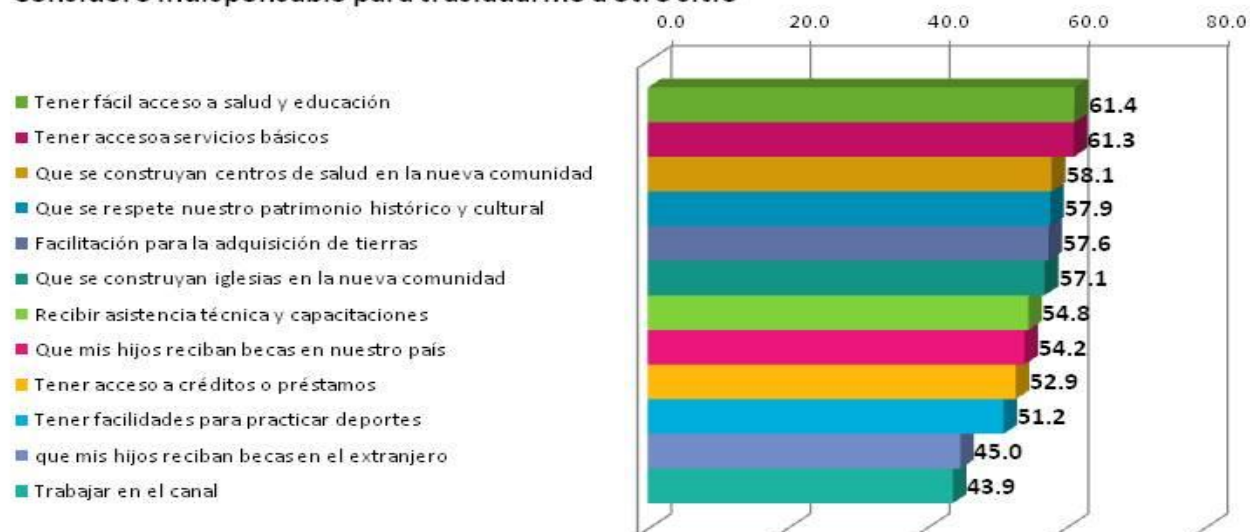
Informe General del levantamiento del Censo Socio Económico del Gran Canal de Nicaragua



Government census

Informe General del levantamiento del Censo Socio Económico del Gran Canal de Nicaragua

Considero indispensable para trasladarme a otro sitio



Land Expropriation Boundaries



Resettlement Action Plans



Resettlement Action Plan Nicaraguan InterOceanic Grand Canal project & Related Sub-projects

Release date:..	06 Mar 2015..
Version : ..	Draft..

MARCO DEL PLAN DE ACCIÓN PARA EL REASENTAMIENTO

con respeto al

PROYECTO DEL GRAN CANAL DE NICARAGUA
(Y SUB-PROYECTOS RELACIONADOS)

23 de junio de 2014

so del Plan de Acción para el Reasentamiento se acuerda en el día 23
de 2014 por y entre los abajo firmantes.

COMISIÓN DEL PROYECTO DE DESARROLLO
DEL CANAL DE NICARAGUA



por: Dr. Paul Oquist

su: Secretaría Ejecutiva

HK NICARAGUA CANAL DEVELOPMENT
INVESTMENT CO., LIMITED

actuando en nombre y en beneficio de

EMPRESA DESARROLLADORA DE GRANDES
INFRAESTRUCTURAS S.A.



por: Sr. Mo Xiaoling

su: Subdirector General del Departamento de Gestión
de la Construcción

Resettlement villages proposed by GON



Surplus material disposal

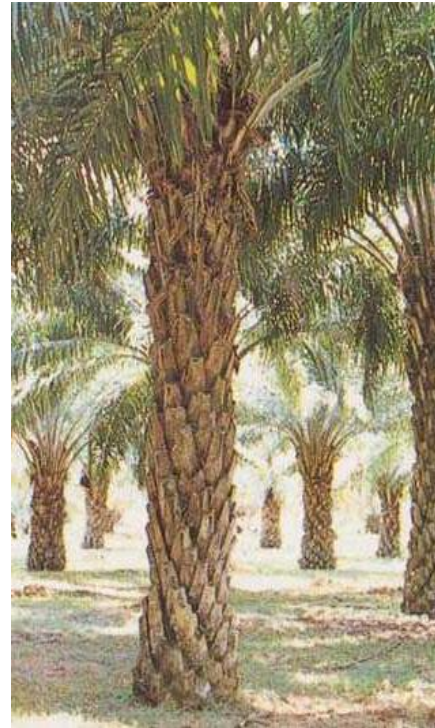
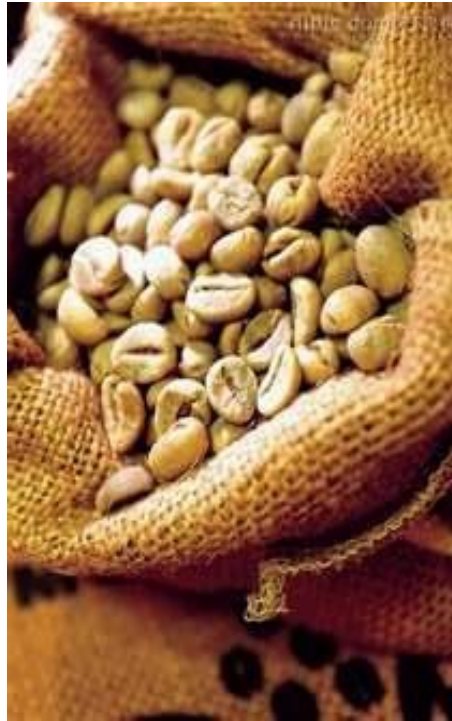


Soil
Management



- Over 30,000 hectares of new farmland from material disposal
- Land for land exchange option is available to affected people

Livelihood Restoration



- New agricultural industry on farmland created
- Reprocessing industries to be developed

Agricultural product reprocessing



Coffee making



Meat processing



Beverage

Training and technical support



General training



Training for women



Improve farming technique



Technical advice

Industrial employment



Shipping industry



Port and Logistics



Ship Repairs



Container Transport

Positive Environmental & Social impacts

- Indio Maiz protected from encroachment
- Improvements to MBC
- Create bird reserves on Lake Nicaragua artificial islands
- Massive reforestation program
- Archaeological heritage opportunities
- Economic growth for Nicaragua
- Improved employment opportunities for all Nicaraguans
- Improved social infrastructure “roads, health, education and facilities”
- NET IMPACT IS POSITIVE

Negative Environmental & Social impacts

- Lake Atlanta
- Risk to Lake Nicaragua
- Relocation of affected people
- Clearing of some forests
- Impacts of excavation
- Encroachment on San Miguelito Wetland
- Impact on Rio Punta Gorda
- Impacts at Brito
- Loss of farm land

Environmental offsets

- Creation of forest “corridors” with surplus excavation material
- Reforestation programs for whole Rio Punta Gorda catchment
- Reforestation to protect MBC
- Reforestation of San Miguelito wetland
- Protection of Indio Maiz from encroachment

Future studies

Studies to be completed before final design of approval and commencement of construction:

- Topography Survey
- Geotechnical & seismic risk assessment
- Acid Rock Drainage potential
- Lake Nicaragua sediment study
- Lake Nicaragua bathymetry study
- Water balance & salinity study
- Archaeological study

Further studies – Topography survey & Bathymetry



- LiDAR survey more than 4,500 KM²
- Shallow water bathymetry of Lake Nicaragua

Stakeholder Engagement



- Improve communication with the community about project impacts and benefits
- Resettlement Action Plan communication is important

Thank You !



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